

Service Manual

74 PM-80/10B

Integrated amplifier

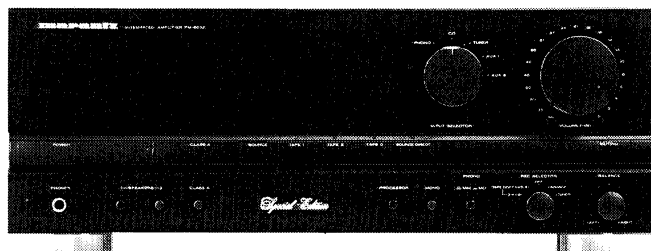


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marantz®

model PM-80SE

First issue : 1992
4822 725 50958 A.O

PCS 59 854

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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.

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The Netherlands
Phone: +31/40.758290
Telefax: +31/40.75.82.99
Telex: 35000 PHTC NL routing IND NLMTFAT

PARTS ORDERING

Parts may be ordered at the following addresses:

AUSTRIA

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

FINLAND

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

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MARANTZ AUDIO U.K. Ltd
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Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

SAUDI ARABIA

AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia
Telex: 401530

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Duenstrasse 3
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SVD DIVISION MARANTZ
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1720 Groot-Bijgaarden
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92600 Asnières
France
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SHERTON ELECTRONICS S.A.
P.O.Box 21025
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Telex: 216.795

SOUTH AFRICA

MARANTZ
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Main Road Martindale
P.O. Box. 58088
Newville 21114
South Africa

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DOGRUOL Ltd.
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6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

CHILE

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

GERMANY

MARANTZ GERMANY GmbH
Alexanderstrasse 1
2000 Hamburg
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JAPAN

MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
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PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

MALTA

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

DENMARK

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

THE NETHERLANDS

Elpro Marantz
Wint Hontlaan 28
3526 KV Utrecht
The Netherlands
Telex: 4748

KUWAIT

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

SWEDEN

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

PORTUGAL

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

ITALY

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

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.

TECHNICAL SPECIFICATIONS

Power output

FTC8 Ohms (20 Hz–20 kHz) 100/25 W (Class A)
 DIN 8 Ohms/4 Ohms 110/180 W

IHF dynamic power

8 Ohms/4 Ohms/2 Ohms 135/220/340 W
 THD at 8 Ohms RMS rated output 0.008%
 Intermodulation distortion 0.008%
 Damping factor 150

Magnetic cartridge input

Input sensitivity impedance 2.5 mV/4.7 kOhm
 Accuracy of frequency response to IEC RIAA 0.5 dB
 Signal to noise ratio 86 dB

Moving coil cartridge input

Input sensitivity impedance 250 μ V/100 Ohm
 Signal to noise ratio 72 dB

Tuner/CD/Aux/Tape inputs

Input sensitivity impedance 150 mV/33 kOhm
 Signal to noise ratio 96 dB
 Frequency response (–3 dB limits) 10 Hz–70 kHz
 Tone characteristic (100 Hz and 10 kHz) \pm 6 dB
 Channel separation (1 kHz/10 kHz) $>$ 85/ $>$ 65 dB

General

Power Requirements
 /10B versions 230/240V AC, 50/60 Hz

Dimensions

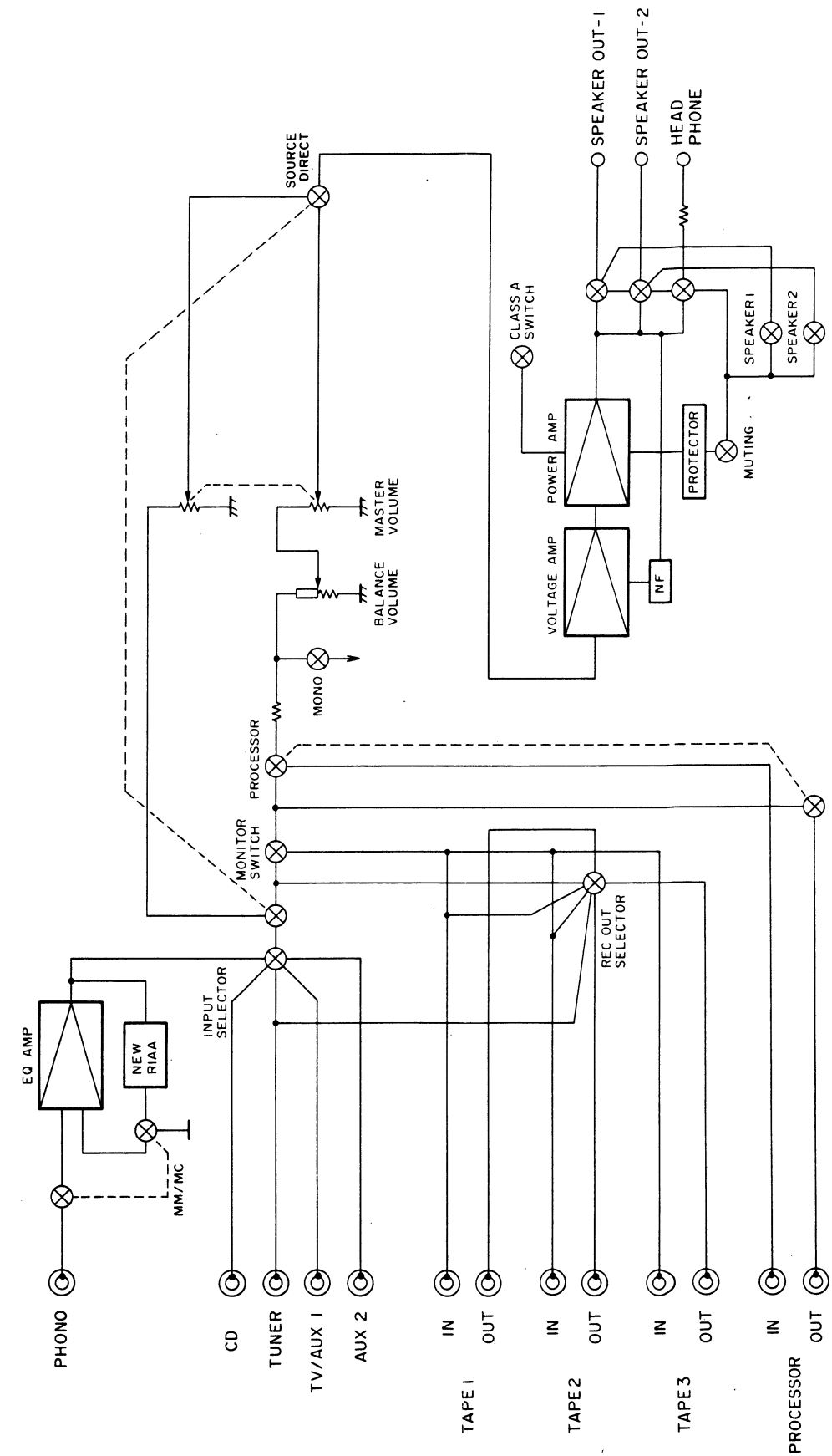
Panel Width 420 mm
 Panel Height 146 mm
 Depth 334 mm

Weight

Unit alone 13 kg

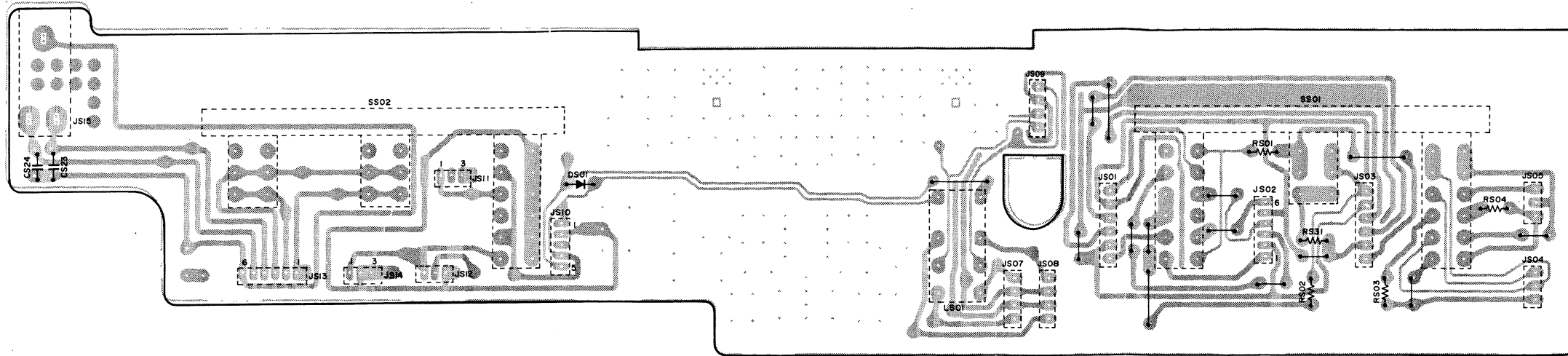
Specifications subject to change without prior notice.

1. BLOCK DIAGRAM

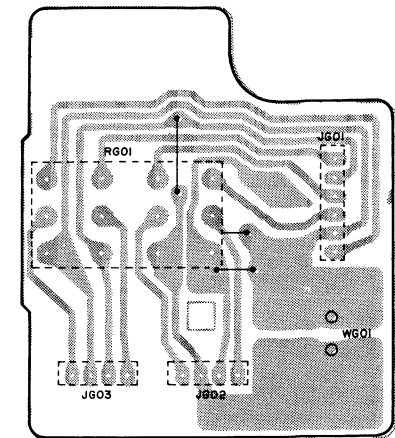


2. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern Side)

PS01



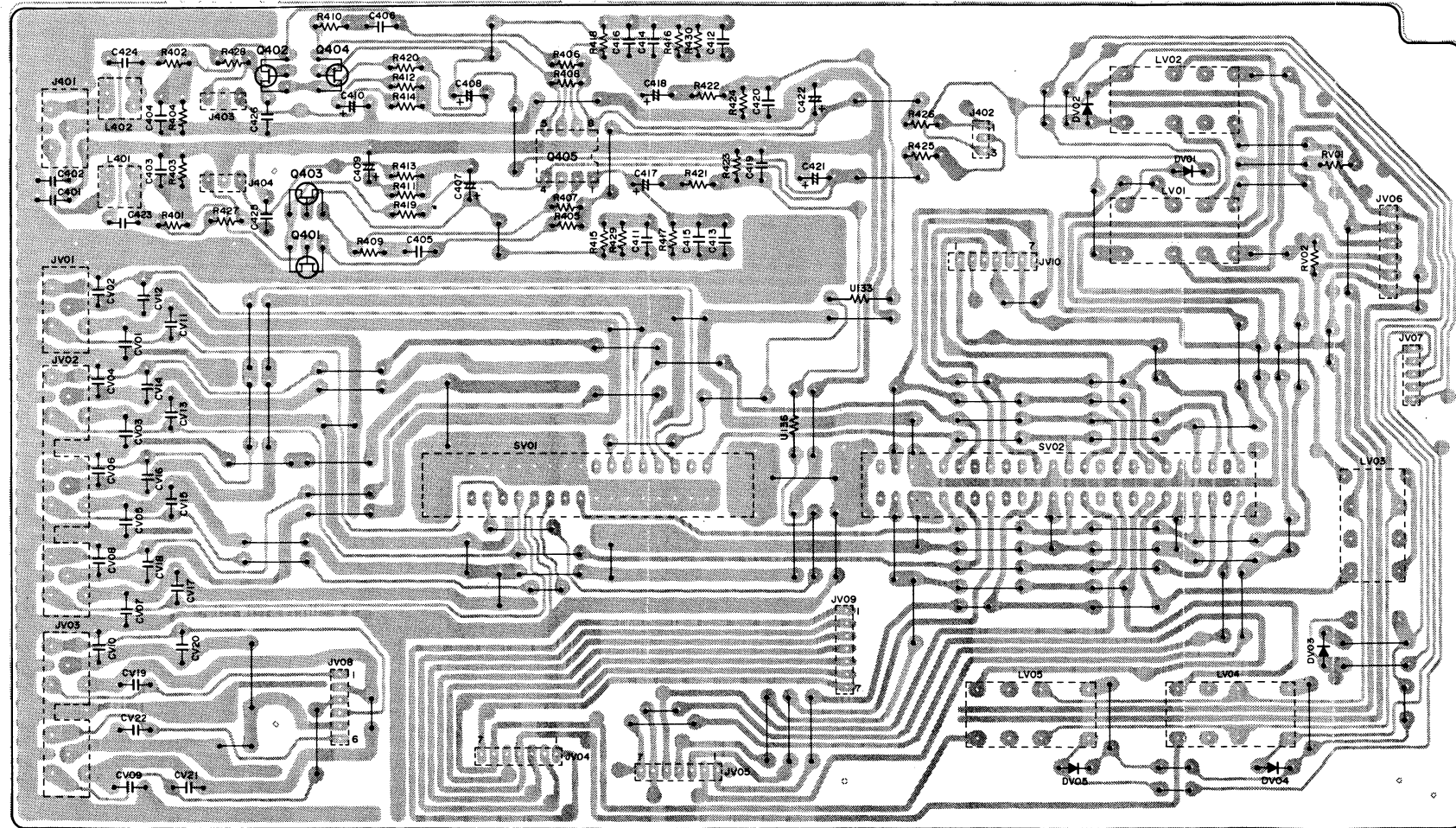
PG01



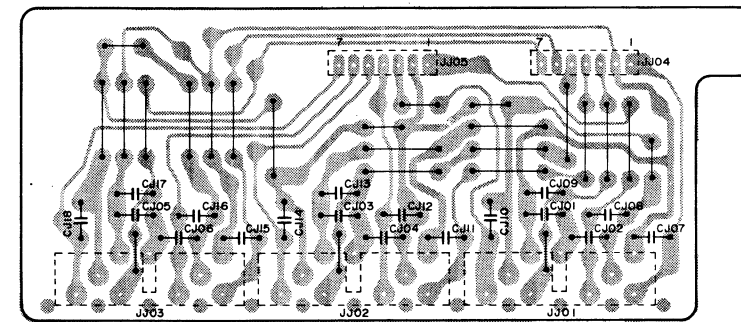
Q401~Q404

Q405

PV01

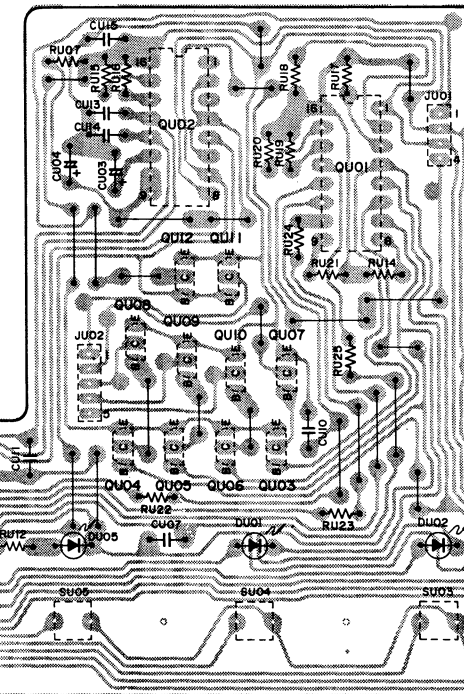


PJ01

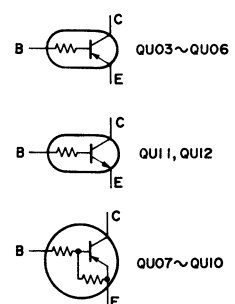
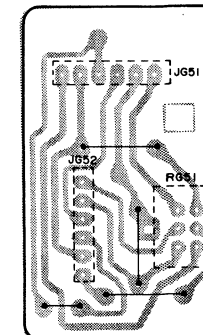


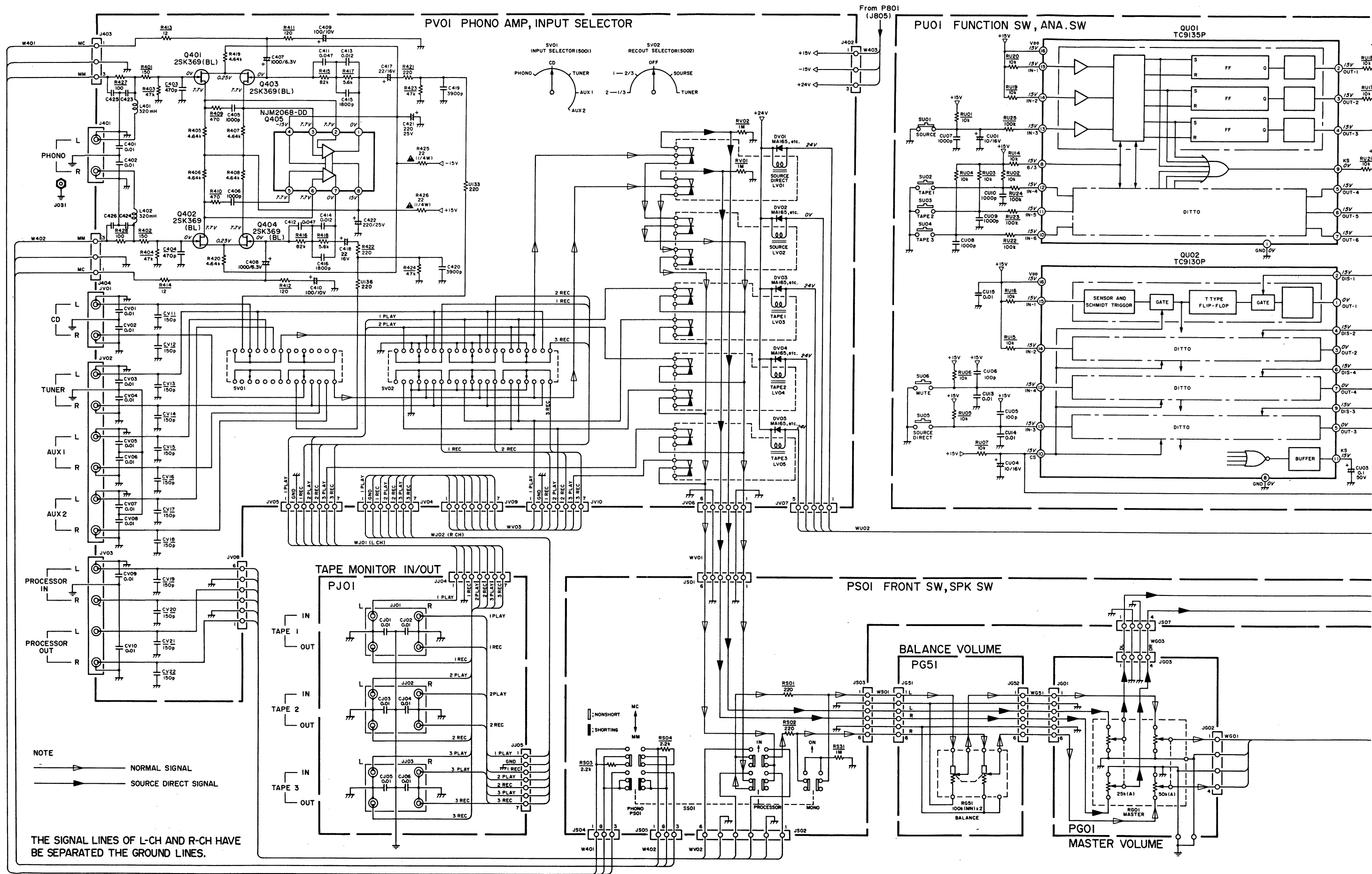
QU02 QU03~QU12 QU01

PU01

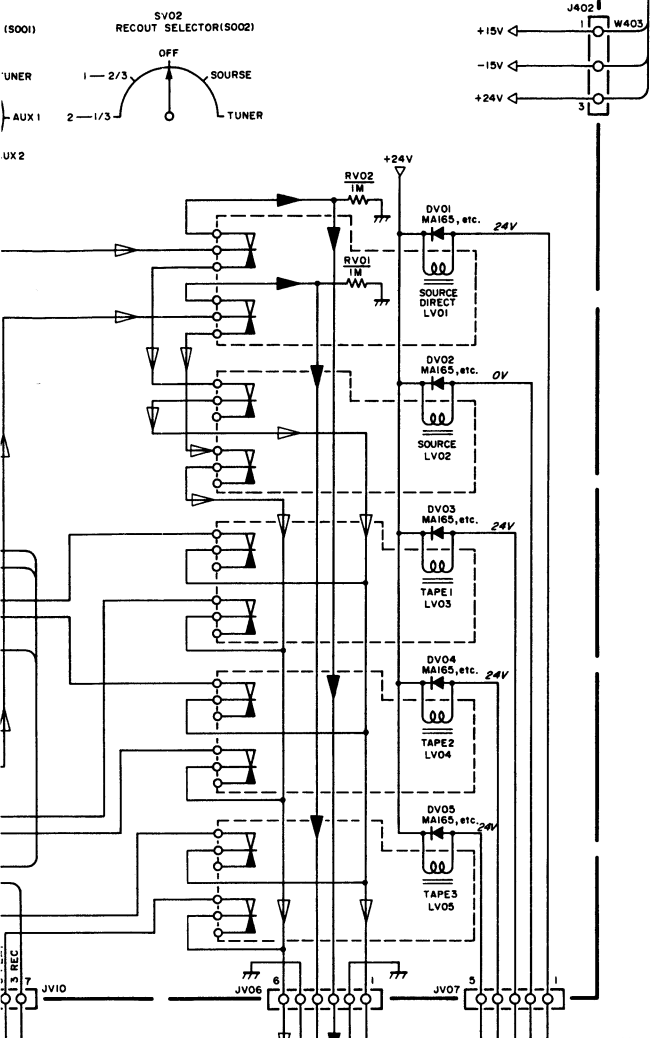


PG51

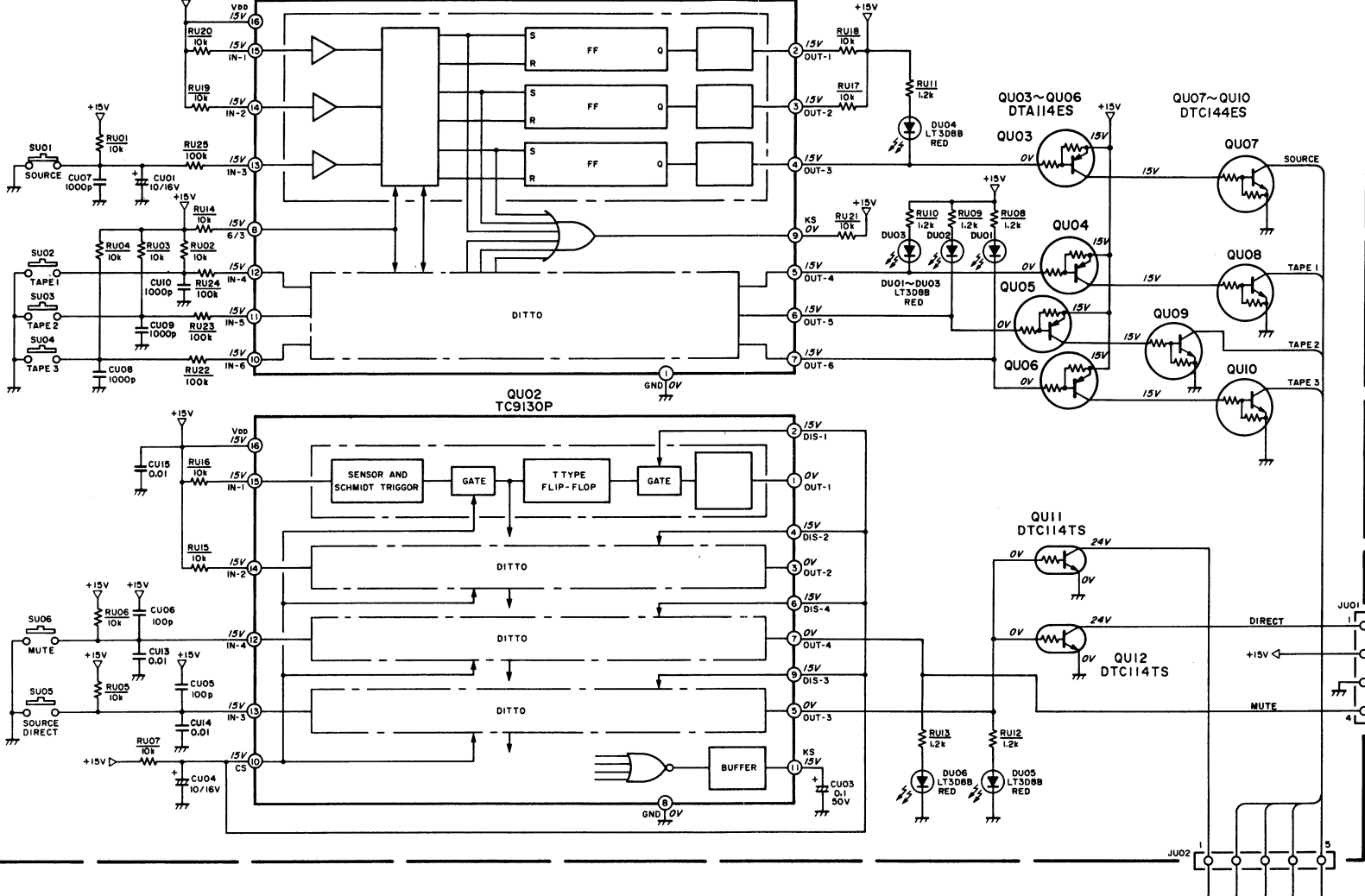




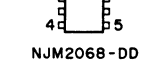
SELECTOR



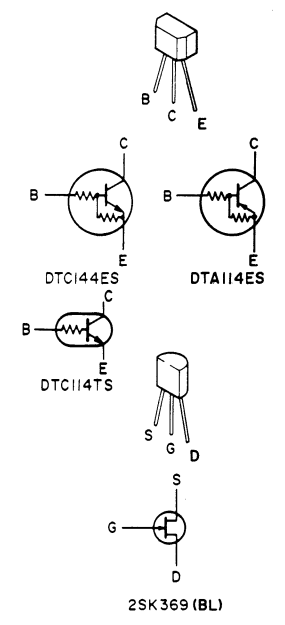
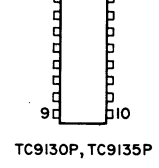
PU01 FUNCTION SW, ANA. SW



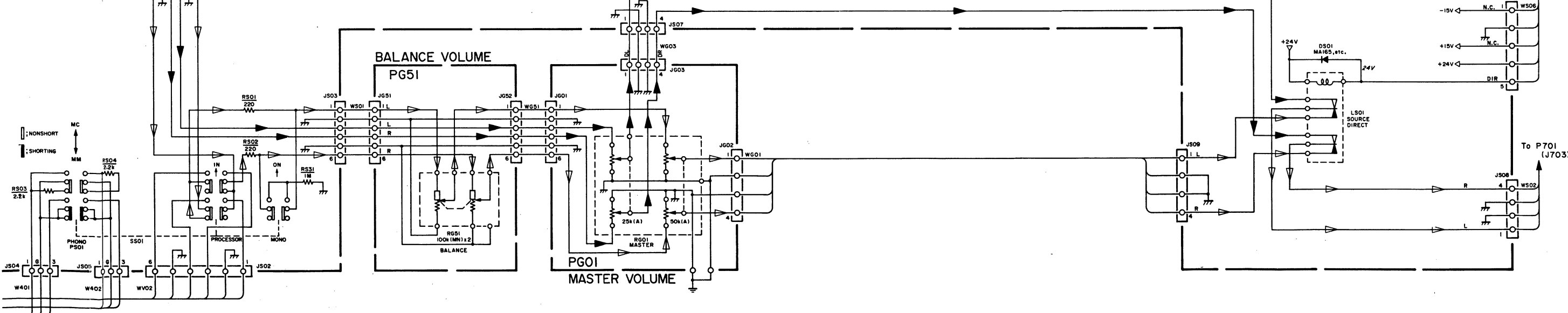
TOP VIEW



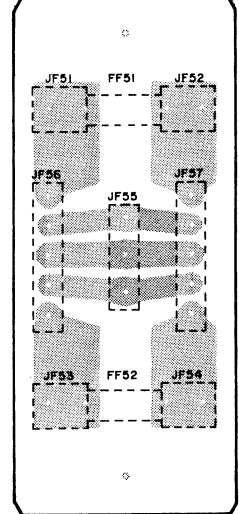
TOP VIEW



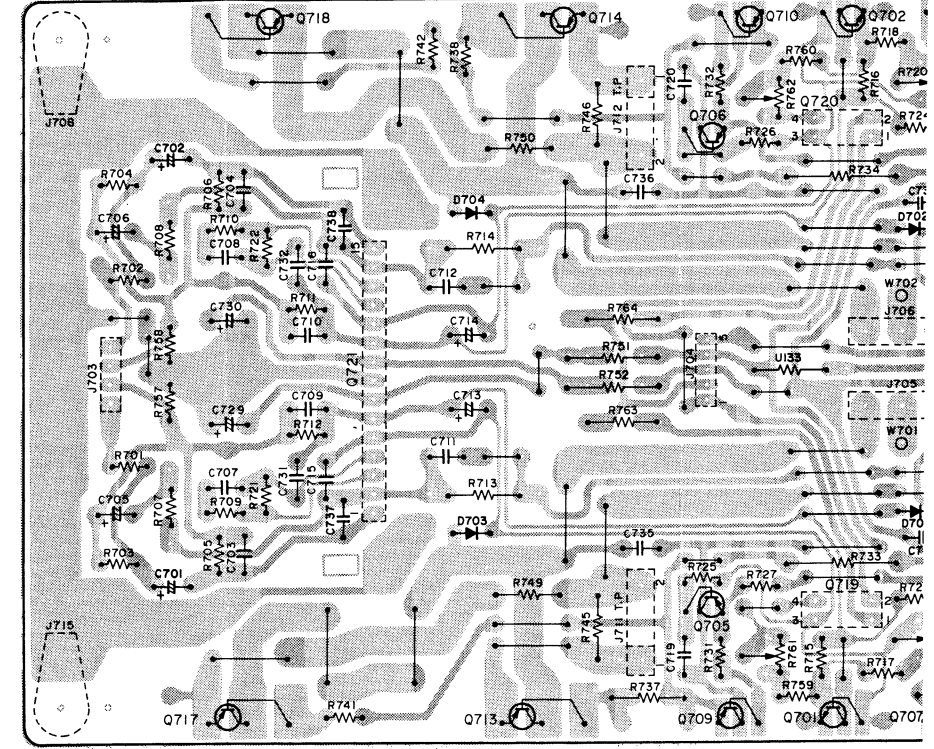
PS01 FRONT SW, SPK SW



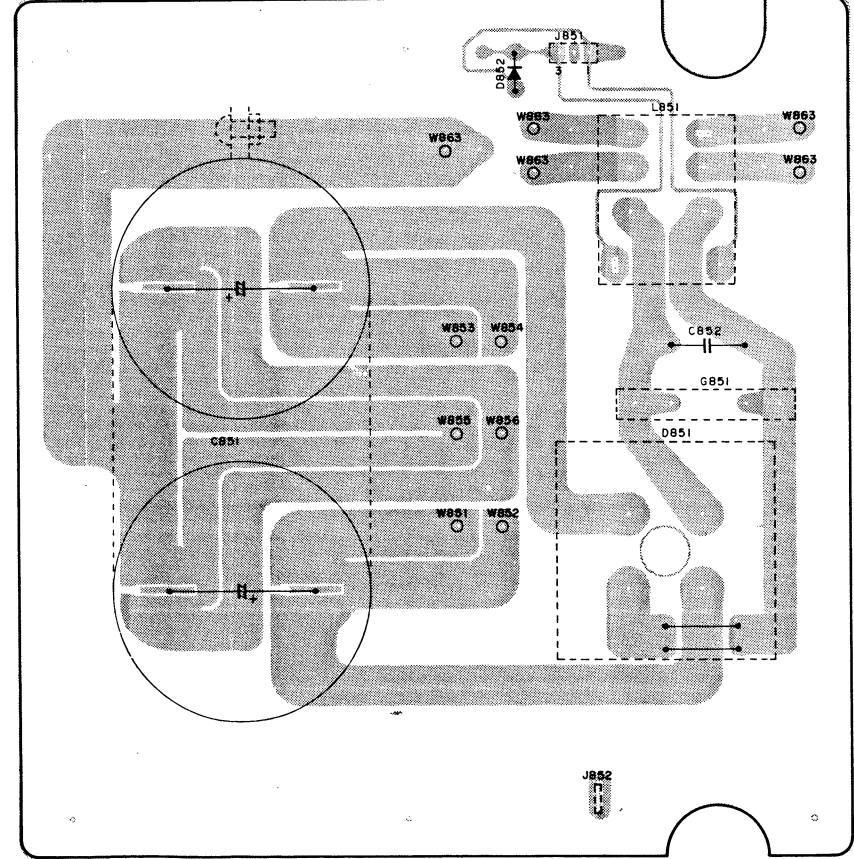
PF51



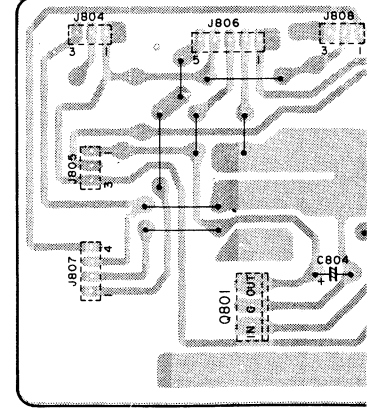
P701



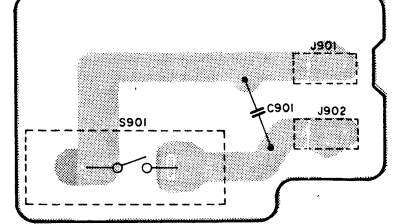
P851



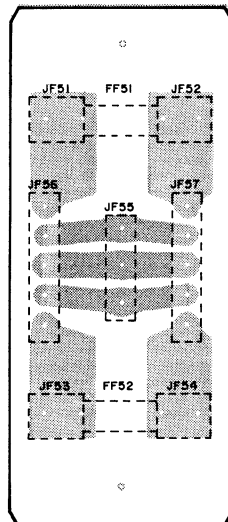
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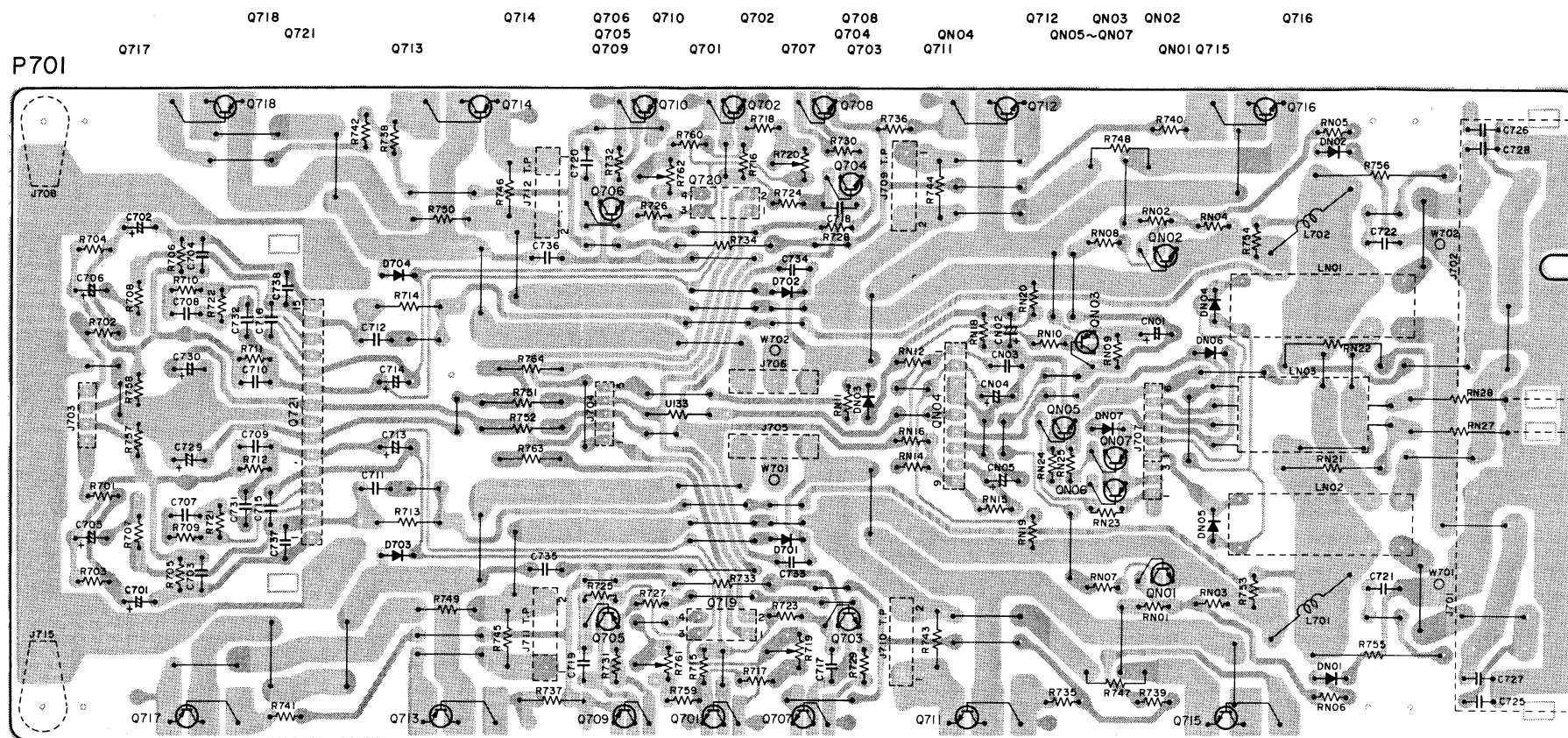
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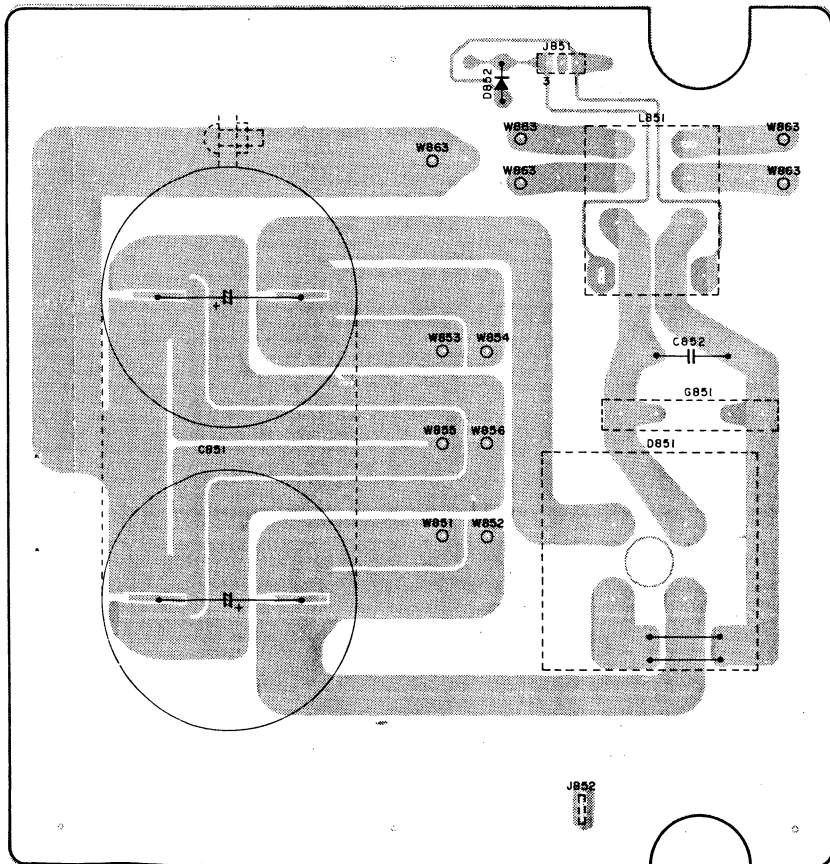
PF51



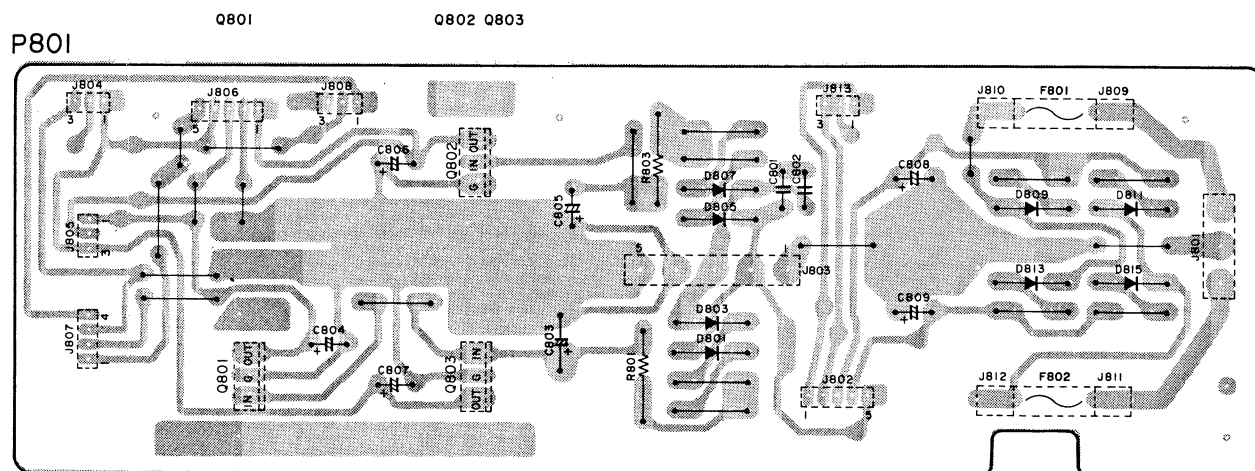
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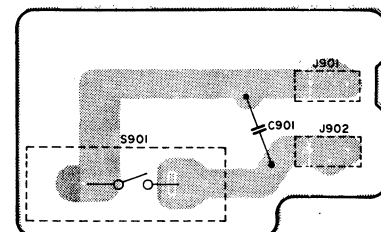
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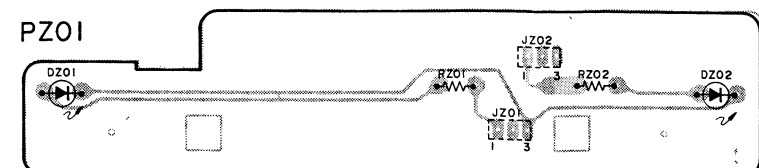
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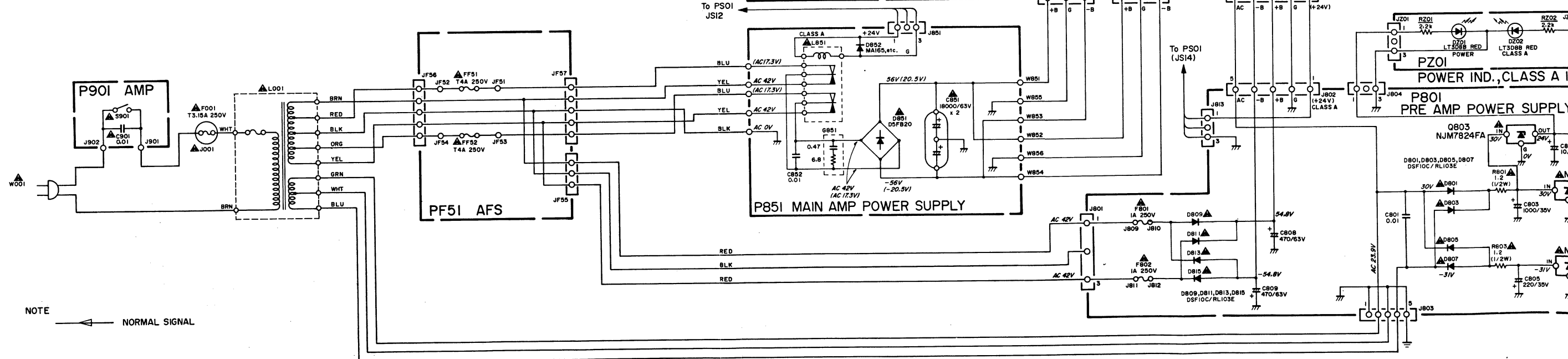
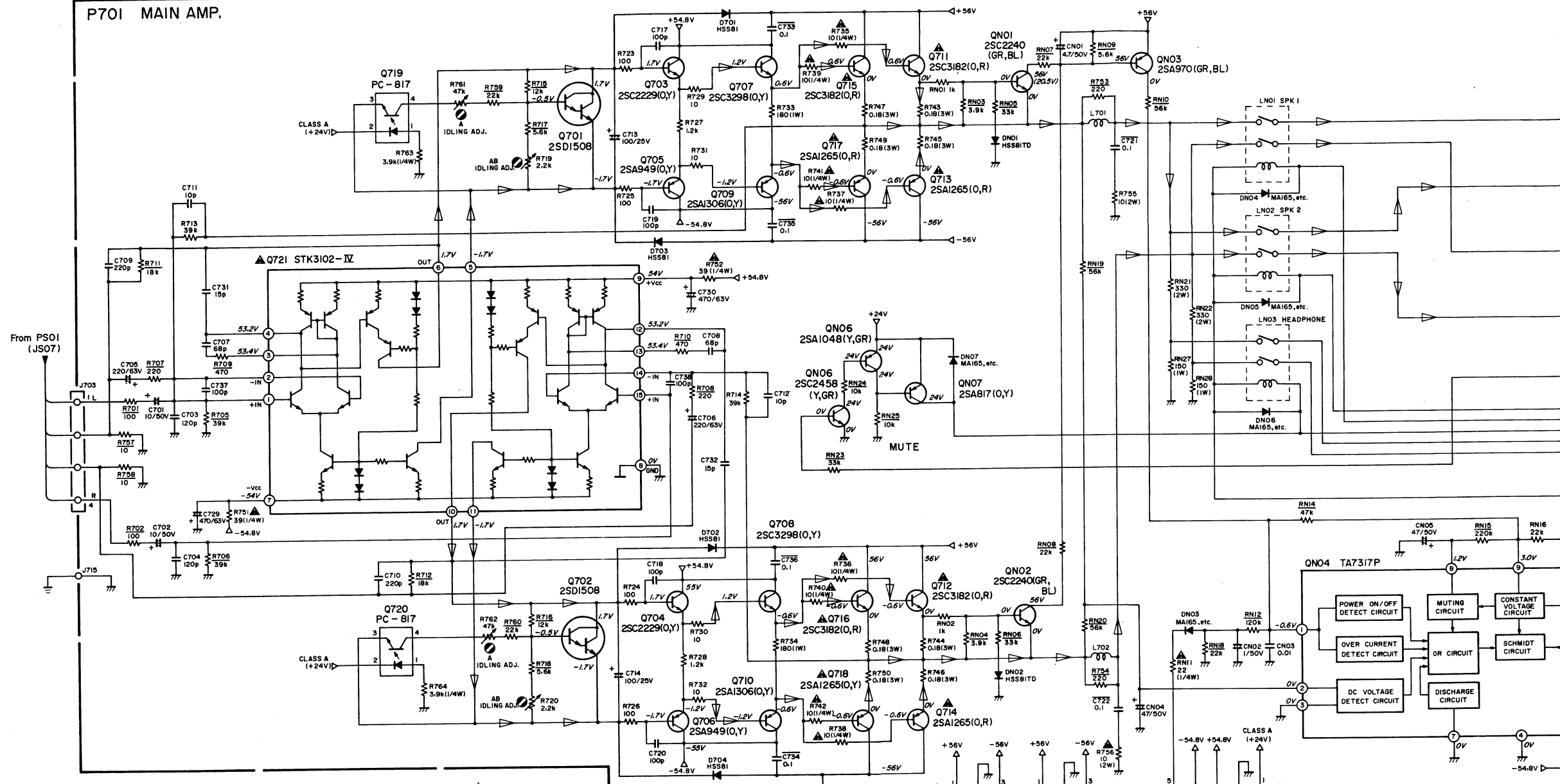
P901



PZ01

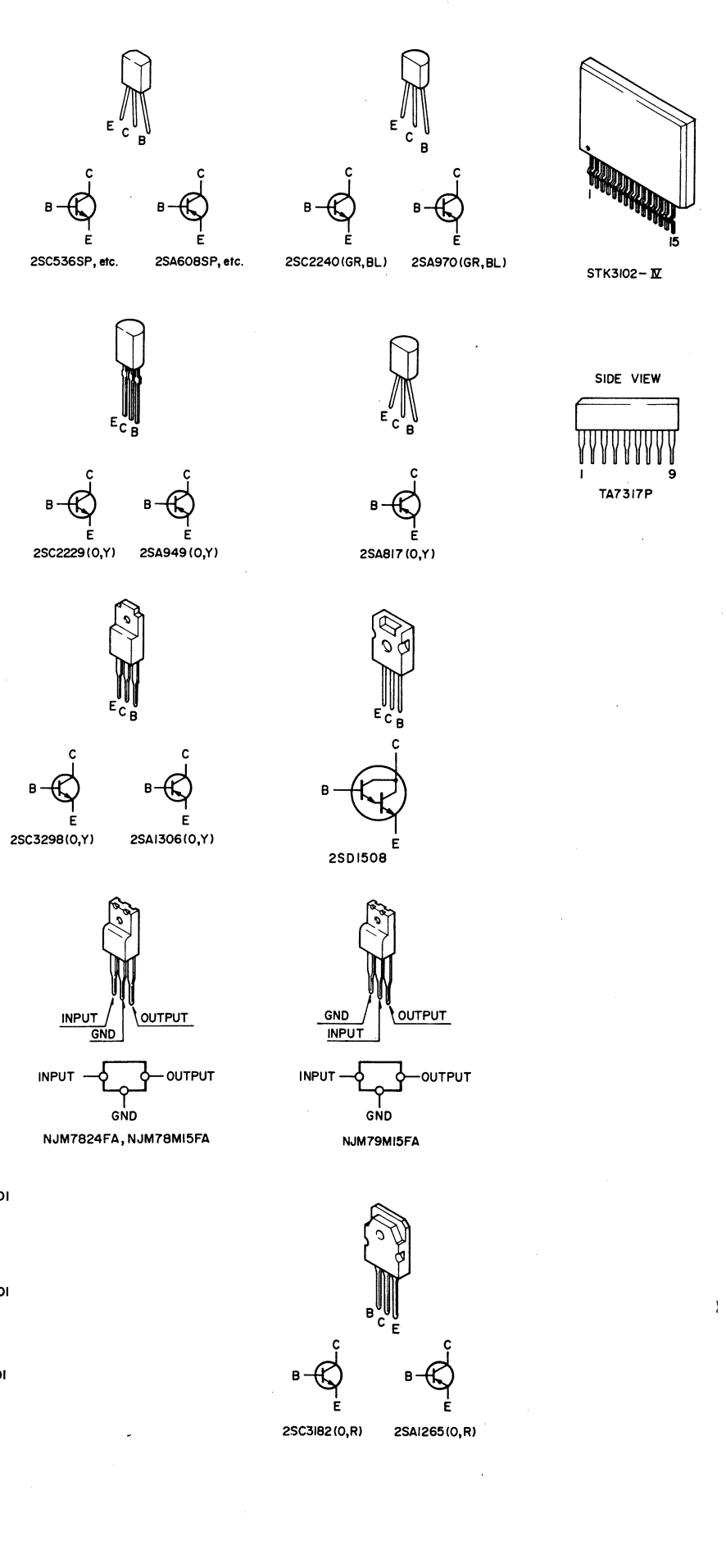
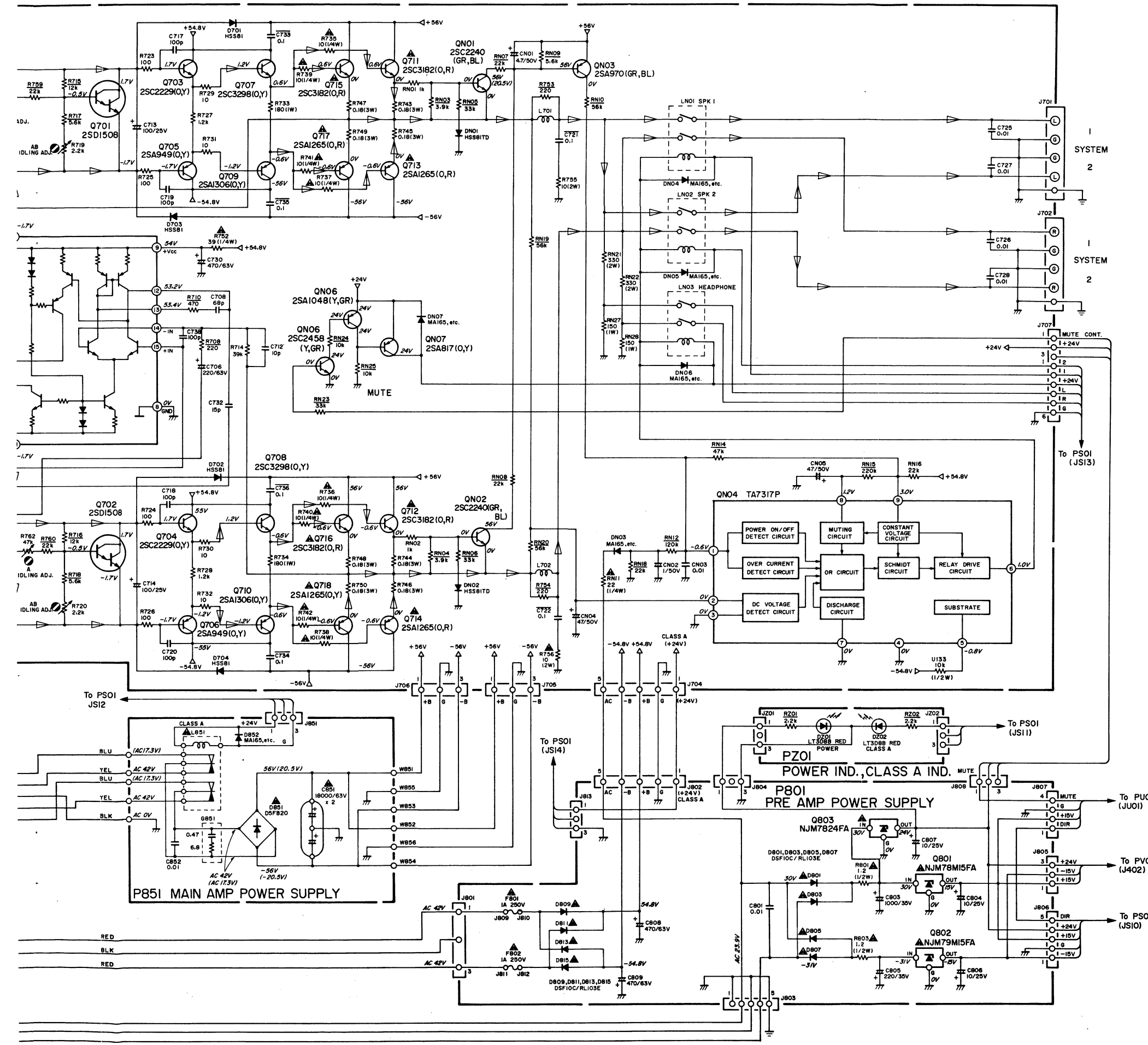


P701 MAIN AMP.

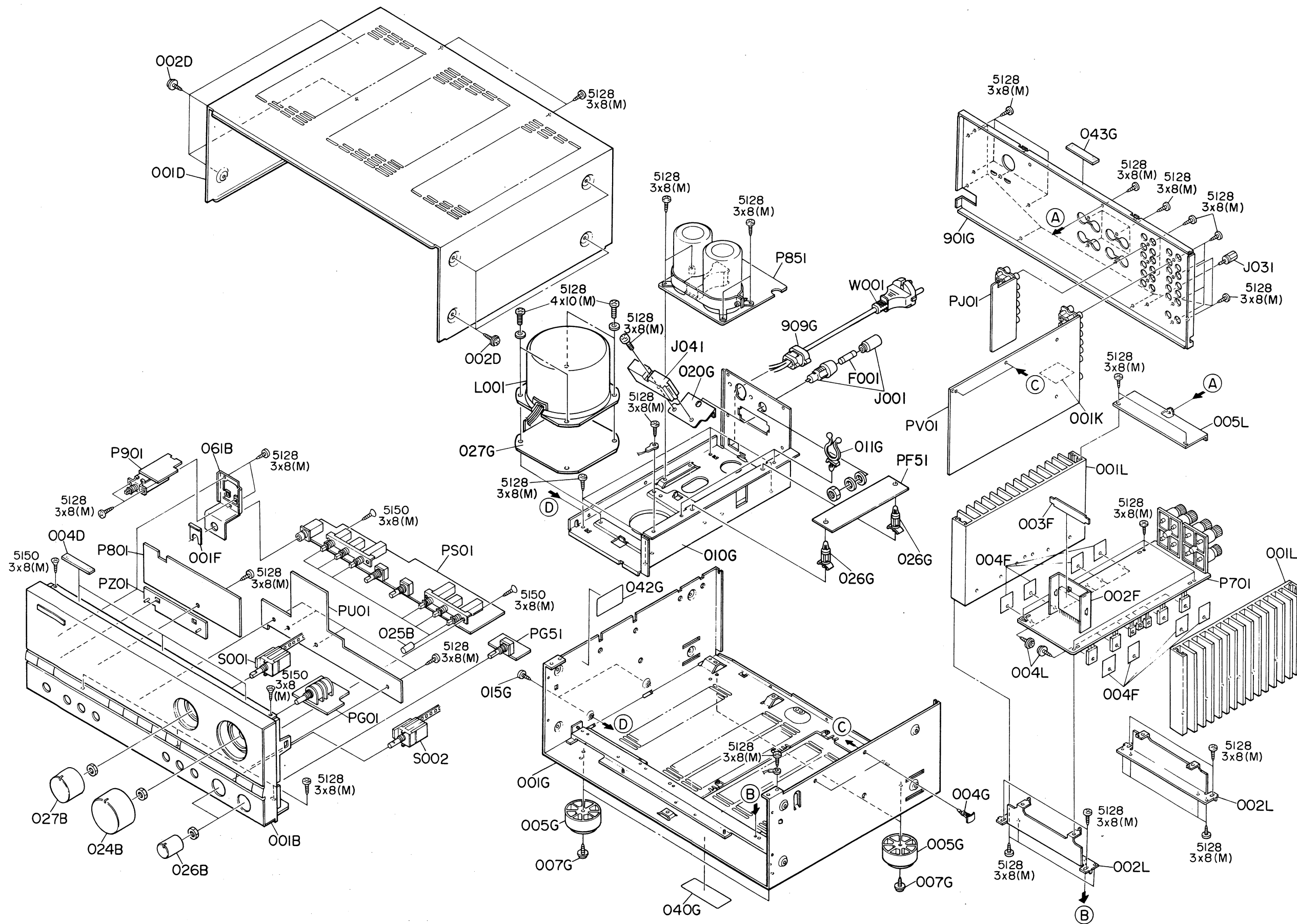


NOTE NORMAL SIGNAL

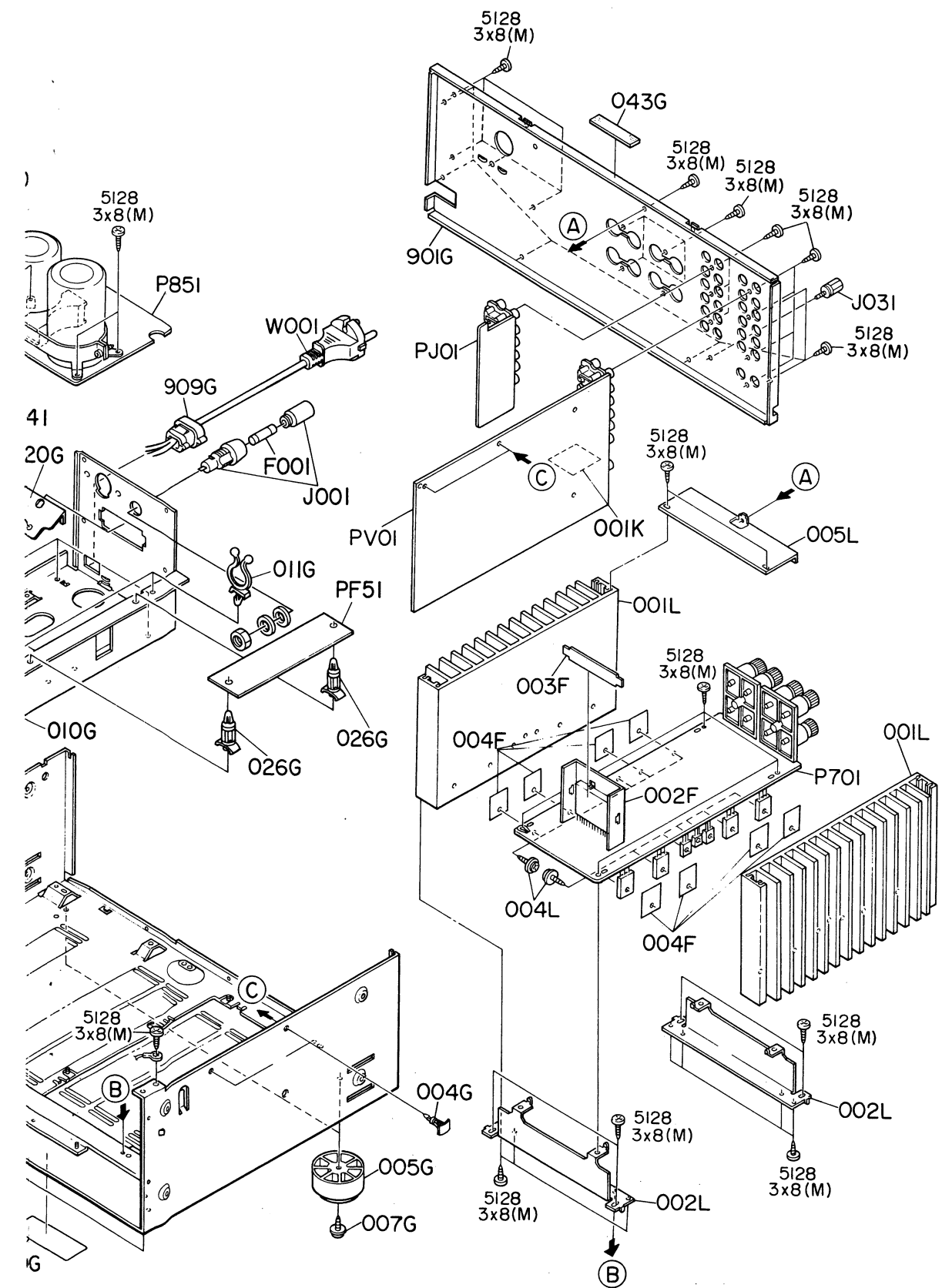
THE SIGNAL LINES OF L-CH AND R-CH HAVE BE SEPARATED THE GROUND LINES.



3. EXPLODED VIEW AND PARTS LIST



REF. DESIG.	
001B	48:
024B	48:
025B	48:
026B	48:
027B	48:
002D	48:
004F	48:
005G	48:
909G	48:
004L	48:
▲ F001	48:
▲ J001	48:
▲ L001	48:
S001	48:
S002	48:
001T	48:



REF. DESIG.	PART NO.	DESCRIPTION
001B	4822 425 20206	Front Panel Assembly
024B	4822 413 41701	Knob, Volume
025B	4822 410 61754	Button, Push
026B	4822 413 31551	Knob, Rec/Tone/Bal.
027B	4822 413 41702	Knob, Selector
002D	4822 501 11008	B.T. Screw (W/W) 4 x 8(M)
004F	4822 466 62033	Insulator, DENKA SHEET
005G	4822 462 41383	Leg
909G	4822 532 52145	Bushing, AC Cord
004L	4822 502 13851	B.T. Screw 3 x 15(M)
▲ F001	4822 070 33152	Fuse 3.15A 250V
▲ J001	4822 256 30223	Jack, Fuse Holder
▲ L001	4822 146 21659	Power Transformer
S001	4822 273 10238	Rotary Switch, Input
S002	4822 273 10189	Rotary Switch, Recout
001T	4822 736 21337	User Manual

4. TEST EQUIPMENT REQUIRED FOR SERVICING

This table lists the test equipment required for servicing the Model PM-80 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

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. Then, rotate the semi-fixed resistors R719/R761 (L CH) and R720/R762 (R CH) on the PC board P701 fully counterclockwise.
- (2) Connect a digital voltmeter, set for the DC voltage input, to the pertinent test points (the marked ones of P709-P712) on the PC board P701. (Positive: J709/J710, Negative: J711/J712)
- (3) After the completion of the above setup, perform the class-AB idling current adjustment as follows:
Switch the power ON and adjust the semi-fixed resistors R719 (L CH) and R720 (R CH) on the PC board P701 according to the reading of the digital voltmeter. The setting values are 18 mV (50.0 mA) of the both channels.
- (4) After the completion of the class-AB idling current adjustment, perform the class-A idling current adjustment as follows:
Press the Class-A switch and adjust the semi-fixed resistors R761 (L CH) and R762 (R CH) on the PC board P701 to set 198 mV (500 mA).

Note: For idling current adjustment, be sure to perform first class-AB, then class-A.

Please refer to the table below.

Elapsed time after power ON	Idling current setting value
30 sec. ~ 1 min.	17.5 mV
1 min. ~ 2 min.	19 mV
2 min. ~ 4 min.	19.5 mV
More than 4 min.	18 mV

Elapsed time after Class-A switch ON	Idling current setting value
30 sec. ~ 1 min.	205 mV
1 min. ~ 2 min.	205 mV
2 min. ~ 4 min.	200 mV
More than 4 min.	198 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. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

- R*****: (1) GD05 --- 140, Carbon film fixed resistor, $\pm 5\%$, 1/4W
R***: (2) GD05 --- 160, Carbon film fixed resistor, $\pm 5\%$, 1/6W

① — Resistance value

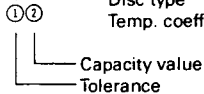
Examples

- ① Resistance value
 0.1 Ω ...001 10 Ω ...100 1k Ω ...102 100k Ω ...104
 0.5 Ω ...005 18 Ω ...180 2.7k Ω ...272 680k Ω ...684
 1 Ω ...010 100 Ω ...101 10k Ω ...103 1M Ω ...105
 6.8 Ω ...068 390 Ω ...391 22k Ω ...223 4.7M Ω ...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
 Temp. coeff. P350 ~ N1000, 50V



Examples

- ① Tolerance (Capacity deviation)
 $\pm 0.25\text{pF}$...0
 $\pm 0.5\text{pF}$...1
 $\pm 5\%$...5

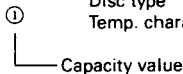
* Tolerance of COMMON PARTS handled here are as follows:

- 0.5pF ~ 5pF... $\pm 0.25\text{pF}$
 6pF ~ 10pF... $\pm 0.5\text{pF}$
 12pF ~ 560pF... $\pm 5\%$

- 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
 Temp. chara. 2B4, 50V

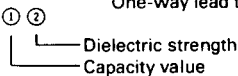


Example

- ② Capacity value
 100pF...101 1000pF...102 10000pF...103
 470pF...471 2200pF...222

C***: ELECTROLY CAP. (---), FILM CAP. (---)

- (1) EA --- 10, Electrolytic condenser
 One-way lead type, Tolerance $\pm 20\%$

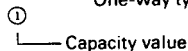


Examples

- ① Capacity value
 0.1 μF ...104 4.7 μF ...475 100 μF ...107
 0.33 μF ...334 10 μF ...106 330 μF ...337
 1 μF ...105 22 μF ...226 1100 μF ...108
 2200 μF ...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 $\pm 5\%$ 50V



Examples

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

REF. DESIG.	PART NO.	DESCRIPTION
▲ FF51	4822 253 30199	PF51-CLASS A FUSE/ CONNECTOR CIRCUIT BOARD
▲ FF52	4822 253 30199	Fuse, 4A 250V Fuse, 4A 250V
PG01	4822 100 11859	PG01-MASTER VOLUME CIRCUIT BOARD Variable Resistor 4GANG
RG51	4822 101 30652	PG51-BALANCE VOLUME CIRCUIT BOARD Variable Resistor 100K Ω (MN)x2
CJ01	4822 122 32486	PJ01-TAPE MONITOR IN/OUT CIRCUIT BOARD Ceramic 0.01 μF +80% -20%
CJ06		
JJ01	4822 267 20348	Terminal, 4P; RCA
JJ02	4822 267 20348	Terminal, 4P; RCA
JJ03	4822 267 20348	Terminal, 4P; RCA
CS23	4822 122 32486	PS01-TONE AMP/FRONT/SPK. CIRCUIT BOARD PS01-CAPACITORS Ceramic 0.01 μF +80% -20% [N]
CS24	4822 122 32486	Ceramic 0.01 μF +80% -20% [N]
DS01	4822 130 33305	PS01-SEMICONDUCTORS Diode 1SS176, etc.
JS15	4822 267 31274	PS01-MISCELLANEOUS Jack, Headphone
SS01	4822 276 30406	Push Switch
SS02	4822 276 30405	Push Switch
LS01	4822 280 20501	Relay MR62-24SR
CU01	4822 124 21894	PU01-FUNCTION/ANA SWITCH CIRCUIT BOARD PU01-CAPACITORS Elect 10 μF 16V
CU03	4822 124 90351	Elect 0.1 μF 50V
CU04	4822 124 90352	Elect 10 μF 16V
CU07	4822 122 33639	Ceramic 1000pF $\pm 10\%$
CU10		
CU13	4822 122 32486	Ceramic 0.01 μF +80% -20%
CU15		
DU01	4822 130 80326	PU01-SEMICONDUCTORS L.E.D. LT3D8B RED 30
DU06	4822 209 71781	IC TC9135P
QU01		
QU02	4822 209 70069	IC TC9130P
QU03	4822 130 61227	Transistor DTA114ES, Digital
QU06		
QU07	4822 130 42594	Transistor DTC144ES, Digital
QU10		

REF. DESIG.	PART NO.	DESCRIPTION
QU11	4822 130 61189	Transistor DTC114TS, Digital
QU12	4822 130 61189	Transistor DTC114TS, Digital
PU01-MISCELLANEOUS		
SU01 }	4822 276 20508	Push Switch, Tact
SU06		
PV01-PHONO AMP/INPUT SELECTOR CIRCUIT BOARD		
PV01-CAPACITORS		
CV01 }	4822 122 32486	Ceramic 0.01 μ F +80% -20%
CV10		
C401	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C402	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C405	4822 121 43759	Film 1000pF \pm 5%
C406	4822 121 43759	Film 1000pF \pm 5%
C407	4822 124 22694	Elect 1000 μ F 6.3V
C408	4822 124 22694	Elect 1000 μ F 6.3V
C409	4822 124 90353	Elect 100 μ F 10V
C410	4822 124 90353	Elect 100 μ F 10V
C411	4822 121 42764	Film 0.047 μ F \pm 5%
C412	4822 121 42764	Film 0.047 μ F \pm 5%
C413	4822 121 42755	Film 0.012 μ F \pm 5%
C414	4822 121 42755	Film 0.012 μ F \pm 5%
C415	4822 121 42758	Film 1800pF \pm 5%
C416	4822 121 42758	Film 1800pF \pm 5%
C417	4822 124 90358	Elect 22 μ F 16V
C418	4822 124 90358	Elect 22 μ F 16V
C419	4822 121 42763	Film 3900pF \pm 5%
C420	4822 121 42763	Film 3900pF \pm 5%
C421	4822 124 90365	Elect 220 μ F 25V
C422	4822 124 90365	Elect 220 μ F 25V
PV01-RESISTORS		
R405	4822 116 53691	4.64K Ω \pm 1% 1/6W
R406	4822 116 53691	4.64K Ω \pm 1% 1/6W
R407	4822 116 53691	4.64K Ω \pm 1% 1/6W
R408	4822 116 53691	4.64K Ω \pm 1% 1/6W
R419	4822 116 53691	4.64K Ω \pm 1% 1/6W
R420	4822 116 53691	4.64K Ω \pm 1% 1/6W
▲ R425	4822 113 90119	22 Ω \pm 2% 1/4W, Fuse
▲ R426	4822 113 90119	22 Ω \pm 2% 1/4W, Fuse
PV01-SEMICONDUCTORS		
DV01 }	4822 130 33305	Diode MA165, etc.
DV05		
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		
JV01	4822 266 30282	Terminal, 2P; RCA
JV02	4822 266 30357	Terminal, 6P; RCA
JV03	4822 266 20348	Terminal, 4P; RCA
J401	4822 266 30283	Terminal, 2P; RCA
LV01 }	4822 280 20195	Relay, SZ-2104
LV05		
L401	4822 156 11019	Choke Coil 320mH [N]
L402	4822 156 11019	Choke Coil 320mH [N]
SV01	4822 277 20832	Slide Switch, Input
SV02	4822 277 21352	Slide Switch, Recout

REF. DESIG.	PART NO.	DESCRIPTION
PZ01-POWER/CLASS A INDICATOR CIRCUIT BOARD		
DZ01	4822 130 80326	L.E.D. LT3D8B RED 30
DZ02	4822 130 80326	L.E.D. LT3D8B RED 30
P701-MAIN AMP CIRCUIT BOARD		
P701-CAPACITORS		
CN01	4822 124 22274	Elect 4.7 μ F 50V
CN02	4822 124 41543	Elect 1 μ F 50V
CN03	4822 121 42754	Film 0.01 μ F \pm 5%
CN04	4822 124 22276	Elect 47 μ F 50V
CN05	4822 124 22276	Elect 47 μ F 50V
C701	4822 124 23082	Elect 10 μ F 50V
C702	4822 124 23082	Elect 10 μ F 50V
C703	4822 121 43126	Film 120pF \pm 5%
C704	4822 121 43126	Film 120pF \pm 5%
C705	4822 124 23068	Elect 220 μ F 63V
C706	4822 124 23068	Elect 220 μ F 63V
C707	DF56680091	Film 68pF \pm 10%
C708	DF56680091	Film 68pF \pm 10%
C709	4822 121 51038	Film 220pF \pm 5%
C710	4822 121 51038	Film 220pF \pm 5%
C711	4822 121 43128	Film 10pF \pm 10%
C712	4822 121 43128	Film 10pF \pm 10%
C713	4822 124 41535	Elect 100 μ F 25V
C714	4822 124 41535	Elect 100 μ F 25V
C717	4822 121 51036	Film 100pF \pm 5%
C718	4822 121 51036	Film 100pF \pm 5%
C719	4822 121 51036	Film 100pF \pm 5%
C720	4822 121 51036	Film 100pF \pm 5%
C725	4822 122 32486	Ceramic 0.01 μ F +80% -20% [N]
C726	4822 122 32486	Ceramic 0.01 μ F +80% -20% [N]
C727	4822 122 32486	Ceramic 0.01 μ F +80% -20% [N]
C728	4822 122 32486	Ceramic 0.01 μ F +80% -20% [N]
C729	4822 124 23071	Elect 470 μ F 63V
C730	4822 124 23071	Elect 470 μ F 63V
C731	4822 121 43129	Film 15pF \pm 10%
C732	4822 121 43129	Film 15pF \pm 10%
C737	4822 126 10364	Ceramic 100pF \pm 10%
C738	4822 126 10364	Ceramic 100pF \pm 10%
P701-RESISTORS		
RN01	4822 111 91257	1K Ω \pm 5% 1/6W
RN02	4822 111 91257	1K Ω \pm 5% 1/6W
▲ RN11	4822 113 90119	22 Ω \pm 2% 1/4W, Fuse
RN16	4822 050 12203	22K Ω \pm 5% 1/6W
RN21	4822 116 60494	330 Ω \pm 5% 2W, Metal
RN22	4822 116 60494	330 Ω \pm 5% 2W, Metal
RN27	4822 116 60337	150 Ω \pm 5% 1W
RN28	4822 116 60337	150 Ω \pm 5% 1W
R713	4822 053 10393	39K Ω \pm 5% 1W
R714	4822 053 10393	39K Ω \pm 5% 1W
R719	4822 100 20681	2.2K Ω , Trimming
R720	4822 100 20681	2.2K Ω , Trimming
R723	4822 111 91285	100 Ω \pm 5% 1/6W
R724	4822 111 91285	100 Ω \pm 5% 1/6W
R725	4822 111 91285	100 Ω \pm 5% 1/6W
R726	4822 111 91285	100 Ω \pm 5% 1/6W
R727	4822 111 91287	1.2K Ω \pm 5% 1/6W
R728	4822 111 91287	1.2K Ω \pm 5% 1/6W
R729	4822 111 91291	10 Ω \pm 5% 1/6W
R730	4822 111 91291	10 Ω \pm 5% 1/6W
R731	4822 111 91291	10 Ω \pm 5% 1/6W
R732	4822 111 91291	10 Ω \pm 5% 1/6W
R733	4822 116 60342	180 Ω \pm 5% 1W
R734	4822 116 60342	180 Ω \pm 5% 1W

REF. DESIG.	PART NO.	DESCRIPTION
▲ R735 }	4822 111 41271	10Ω ±5% ¼W
▲ R742 R743 }	4822 116 80171	0.18Ω ±10% 3W
R750		
▲ R751	4822 116 52855	39Ω ±5% ¼W
▲ R752	4822 116 52855	39Ω ±5% ¼W
R755	4822 111 90726	10Ω ±5% 2W
▲ R756	4822 111 90726	10Ω ±5% 2W
R761	4822 100 11372	47KΩ, Trimming
R762	4822 100 11372	47KΩ, Trimming
R763	4822 111 91249	3.9KΩ ±5% ¼W
R764	4822 111 91249	3.9KΩ ±5% ¼W
U133	4822 050 21003	10KΩ ±5% ¼W
P701-SEMICONDUCTORS		
DN01	4822 130 80837	Diode HSS81TD
DN02	4822 130 80837	Diode HSS81TD
DN03 }	4822 130 33305	Diode MA165, etc.
DN07		
D701 }	4822 130 80837	Diode HSS81TD
D704		
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
QN05	4822 130 60839	Transistor 2SC2458(Y, GR)
QN06	4822 130 60107	Transistor 2SA1048(Y, GR)
QN07	4822 130 60693	Transistor 2SA817(O, Y)
Q701	4822 130 60526	Transistor 2SD1508
Q702	4822 130 60526	Transistor 2SD1508
Q703	4822 130 43225	Transistor 2SC2229(O, Y)
Q704	4822 130 43225	Transistor 2SC2229(O, Y)
Q705	4822 130 42941	Transistor 2SA949(O, Y)
Q706	4822 130 42941	Transistor 2SA949(O, Y)
Q707	4822 130 61362	Transistor 2SC3298(O, Y)
Q708	4822 130 61362	Transistor 2SC3298(O, Y)
Q709	4822 130 60524	Transistor 2SA1306(O, Y)
Q710	4822 130 60524	Transistor 2SA1306(O, Y)
▲ Q711	4822 130 43306	Transistor 2SC3182(O, R)
▲ Q712	4822 130 43306	Transistor 2SC3182(O, R)
▲ Q713	4822 130 43019	Transistor 2SA1265(O, R)
▲ Q714	4822 130 43019	Transistor 2SA1265(O, R)
▲ Q715	4822 130 43306	Transistor 2SC3182(O, R)
▲ Q716	4822 130 43306	Transistor 2SC3182(O, R)
▲ Q717	4822 130 43019	Transistor 2SA1265(O, R)
▲ Q718	4822 130 43019	Transistor 2SA1265(O, R)
Q719	4822 130 90347	Photo Unit PC-817
Q720	4822 130 90347	Photo Unit PC-817
Q721	4822 209 73453	IC STK3102-4
P701-MISCELLANEOUS		
J701	4822 290 61072	Terminal, Speaker
J702	4822 290 61071	Terminal, Speaker
LN01	4822 280 70354	Relay VB24MBU-UL
LN02	4822 280 70354	Relay VB24MBU-UL
LN03	4822 280 20196	Relay L-24(M)
L701	4822 157 63817	Coil, Speaker
L702	4822 157 63817	Coil, Speaker

REF. DESIG.	PART NO.	DESCRIPTION
P801-PRE AMP POWER SUPPLY CIRCUIT BOARD		
P801-CAPACITORS		
C801	4822 122 32486	Ceramic 0.01μF +80% -20%
C803	4822 124 90356	Elect 1000μF 35V
C804	4822 124 41534	Elect 10μF 25V
C805	4822 124 41538	Elect 220μF 35V
C806	4822 124 41534	Elect 10μF 25V
C807	4822 124 41534	Elect 10μF 25V
C808	4822 124 23071	Elect 470μF 63V
C809	4822 124 23071	Elect 470μF 63V
P801-RESISTORS		
▲ R801	4822 116 82032	1.2Ω ±5% ¼W
▲ R803	4822 116 82032	1.2Ω ±5% ¼W
P801-SEMICONDUCTORS		
▲ D801	4822 130 32508	Diode DSF10C/RL103E
▲ D803	4822 130 32503	Diode DSF10C/RL103E
▲ D805	4822 130 32508	Diode DSF10C/RL103E
▲ D807	4822 130 32508	Diode DSF10C/RL103E
▲ D809	4822 130 32508	Diode DSF10C/RL103E
▲ D811	4822 130 32508	Diode DSF10C/RL103E
▲ D813	4822 130 32508	Diode DSF10C/RL103E
▲ D815	4822 130 32508	Diode DSF10C/RL103E
▲ Q801	4822 209 82829	IC NJM78M15FA
▲ Q802	4822 209 61526	IC NJM79M15FA
▲ Q803	4822 209 30441	IC NJM7824FA
P801-MISCELLANEOUS		
▲ F801	4822 070 31002	Fuse 1A 250V
▲ F802	4822 070 31002	Fuse 1A 250V
P851-MAIN AMP POWER SUPPLY CIRCUIT BOARD		
▲ C851	4822 124 23067	Elect Cap. 18000μF/63V x 2
C852	4822 122 40545	Ceramic Cap. 0.01μF ±10%
▲ D851	4822 130 33132	Diode D5FB20
D852	4822 130 33305	Diode MA165, etc.
L851	4822 280 20403	Relay MC24D2-0
P901-POWER SWITCH CIRCUIT BOARD		
▲ C901	4822 122 33276	Ceramic Cap. 0.01μF ±20%
▲ S901	4822 276 12647	Push Switch, Power

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.