Amplifier 70FA670/00R/05R

Service
Service
Service

FA670/00R/05R

Service Manual

TABLE OF CONTENTS **page**

(GB)
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)
Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambiago identici a quelli specificati.

(F)
Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviço

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agrées, seuls habilités à réparer votre appareil en panne".

Subject to modification

(GB) (NL) 4822 725 22438 (F) (D) (I)

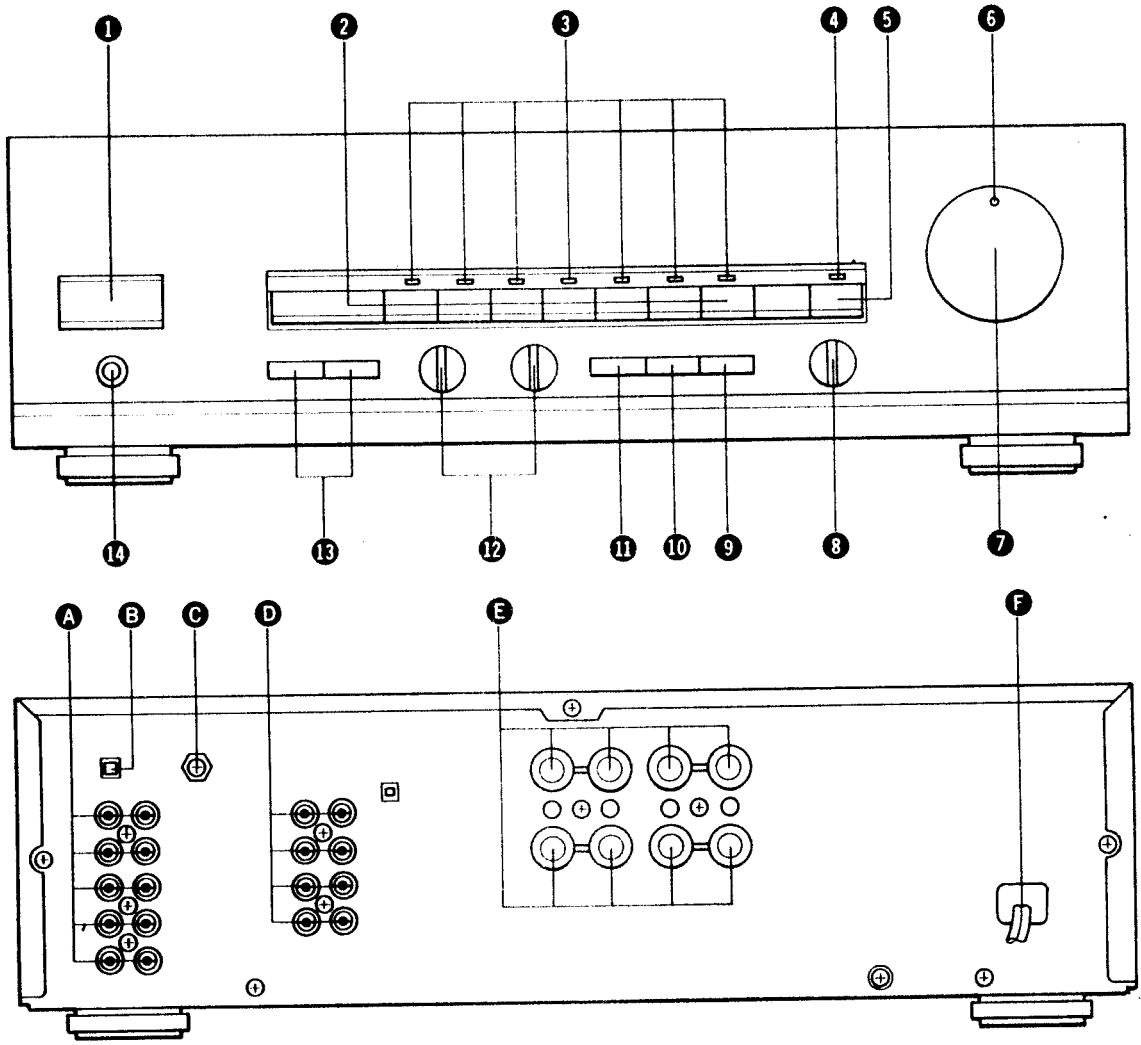
Printed in The Netherlands

PHILIPS

Published by Service Consumer Electronics

SPECIFICATION

General	Nominal value	Typical value
Mains voltage	: 220V ~ (/00R) : 240V ~ (/05R)	: 220V ~ (/00R) : 240V ~ (/05R)
Mains frequency	: 50 – 60 Hz	: 50 – 60 Hz
Power consumption	: 280W max	: 280W
Dimensions (WxHxD)	: 420 x 110 x 260 mm	: 420 x 110 x 260 mm
Weight	: 6.7 kg	: 6.7 kg
Amplifier		
Output power	: 65W in 8Ω (IEC)	: 65W in 8Ω (IEC)
Distortion (55W output)		
T.H.D.	: ⩽ 0.05% at 1 kHz : ⩽ 0.05% at 63 Hz–12.5 kHz (IEC)	: ⩽ 0.008% at 1 kHz : ⩽ 0.03% at 63 Hz–12.5 kHz (IEC)
Intermodulation	: ⩽ 0.05% at 60/7000 Hz 4:1	: ⩽ 0.03% at 60/7000 Hz 4:1
Frequency characteristic		
Phono input, Other inputs (tone control neutral)	: from 20 Hz – 20 kHz ±1 dB (IEC)	: from 20 Hz – 20 kHz ±0.5 dB (IEC)
	: from 20 Hz – 30 kHz ±1 dB	: from 15 Hz – 45 kHz ±1 dB
Bass control	: at 100 Hz +10 dB to –10 dB ±2 dB	: at 100 Hz +10 dB to –10 dB
Treble control	: at 10 kHz +10 dB to –10 dB ±2 dB	: at 10 kHz +10 dB to –10 dB
Loudness	: at 100 Hz +6 dB ±2 dB (Tap position) : at 10 kHz +4 dB ±1.5 dB (Tap position)	: at 100 Hz +6 dB (Tap position) : at 10 kHz +4 dB (Tap position)
Subsonic filter	: at 15 Hz –3 dB ±1.5 dB	: at 15 Hz –3 dB
Signal/noise ratio weighted (A-curve)		
Phono input MC (0.5 mV input)/ MM (5 mV input)	: for 55W output ⩾ 68 dB/80 dB	: for 55W output ⩾ 74 dB/86 dB
Other inputs	: for 55W output ⩾ 96 dB	: for 55W output ⩾ 100 dB
Channel separation	: at 1000 Hz ⩾ 62 dB	: at 1000 Hz ⩾ 68 dB
	: at 250 Hz – 10 kHz ⩾ 45 dB	: at 250 Hz – 10 kHz ⩾ 52 dB
Input sensitivity/Input impedance		
Audio		
Phono (MC)	: 250 μV ± 30 μV/100Ω ± 10Ω	: 250 μV/100Ω
Phono (MM)	: 2.6 mV ± 0.3 mV/47 kΩ ± 5Ω	: 2.6 mV/47 kΩ
Other inputs	: 150 mV ± 20 mV/⩾ 17 kΩ	: 150 mV/22 kΩ
Output level/Output impedance		
Tape 1, 2	: 250 mV/270Ω (Phono MM 5 mV 1 kHz input)	: 280 mV/270Ω (Phono MM 5 mV 1 kHz input)



CONNECTIONS AND CONTROLS

1	Mains switch	S901
2	Function switch	SS01
3	Function indicator	DY01~DY07
4	Loudness indicator	DY08
5	Loudness switch	SS02
6	Volume/Power indicator	DY51
7	Volume control	RG01
8	Balance control	RE33
9	Source direct switch	SE02
10	Subsonic filter switch	
11	Mono switch	
12	Tone control	RE13, RE25
13	LS switch	S701
14	Phones socket	JW51

A	Input	JV01, JV02
B	Phono selector switch	S401
C	Ground terminal	J031
D	Tape input/output	JJ01, JJ02
E	LS output A/B	JW01, JW02
F	Mains cord	W001

(GB) Mains voltage changeover method

To make the unit usable with the other local mains voltage than the factory setting, modify the lead wire connection on the primary side of the power transformer as follows.

1. With units of the /00R version, the rated voltage is 220V. To change the mains voltage for the unit to the same 240V as the /05R version, exchange the connections of the White and Red lead wires.
2. With units of the /05R version, the rated voltage is 240V. To change the mains voltage for the unit to the same 220V as the /00R version, exchange the connections of the Red and White lead wires.
3. If the unit has already experienced the voltage changeover of 1 or 2 above, confirm which of the Red (240V) or White (220V) lead wires is connected to the fuse (F901) before attempting to change the connections.

(F) Méthode de changement de la tension

Pour rendre l'appareil utilisable sur une autre tension secteur locale que celle réglée en usine, modifier la connexion du fil conducteur sur le côté primaire du transformateur d'alimentation comme suit.

1. Sur les appareils de la version /00R, la tension nominale est de 220V.
   Pour changer la tension secteur de l'appareil sur les 240V comme pour la version /05R, changer les connexions des fils conducteurs blanc et rouge.
2. Sur les appareils de la version /05R, la tension nominale est de 240V.
   Pour changer la tension secteur de l'appareil sur les 220V comme pour la version /00R, changer les connexions des fils conducteurs rouge et blanc.
3. Si l'appareil a déjà subi le changement de tension de 1 ou 2 ci-dessus, vérifier le fil conducteur, rouge (240V) ou blanc (220V), raccordé au fusible (F901) avant de tenter de changer les connexions.

(NL) Methode voor instellen op de netspanning

Verander de aansluiting van de draden op de primaire kant van de transformator als volgt om het toestel geschikt te maken voor werking op een andere netspanning dan die waarop het toestel bij levering op ingesteld staat.

1. Bij toestellen van de /00R versie, is de nominale spanning 220V.
   Verwissel de aansluiting van de witte en rode draden om het toestel aan te passen voor 240V zoals de toestellen van de /05R versie.
2. Bij toestellen van de /05R versie, is de nominale spanning 240V.
   Verwissel de aansluiting van de rode en witte draden om het toestel aan te passen voor 220V zoals de toestellen van de /00R versie.
3. Als het toestel reeds eenmaal aangepast is volgens bovenstaande procedure 1 of 2, kontroleer dan of de rode (240V) of witte (220V) draad aangesloten is op de zekering (F901) alvorens de aansluiting om te wisselen.

(D) Methode zum Umstellen der Netzspannung

Zur Verwendung dieses Gerätes mit anderen Netzspannungen als der ab Werk eingestellten, müssen die Kabelanschlüsse an der Primärseite des Netztransformators wie folgt verändert werden.

1. Bei Geräten der Version /00R ist die Nennspannung 220V.
   Zum Umstellen der Netzspannung des Gerätes auf 220V wie bei der Version /05R müssen die Anschlüsse des weißen und des roten Kabels ausgetauscht werden.
2. Bei Geräten der Version /05R ist die Nennspannung 240V.
   Zum Umstellen der Netzspannung des Gerätes auf 240V wie bei der Version /00R müssen die Anschlüsse des roten und des weißen Kabels ausgetauscht werden.
3. Falls beim Gerät bereits die unter 1 oder 2 beschriebene Spannungsumstellung durchgeführt wurde, muß festgestellt werden, ob das rote Kabel (240V) oder das weiße Kabel (220V) mit der Sicherung (F901) verbunden ist, bevor die Anschlüsse vertauscht werden.

(I) Metodo di regolazione del voltaggio di rete

Per poter utilizzare l'unità con voltaggi di rete diversi da quello previsto in fabbrica, modificate il collegamento dei fili sul lato primario del trasformatore di potenza nel modo che segue.

1. Per le unità della versione /00R, il voltaggio normale è di 220V.
   Per cambiare il voltaggio dell'unità ai 240V della versione /05R, cambiate le posizioni dei fili bianco e rosso.
2. Per le unità della versione /05R, il voltaggio normale è di 240V.
   Per cambiare il voltaggio dell'unità ai 220V della versione /00R, cambiate le posizioni dei fili rosso e bianco.
3. Se il voltaggio dell'unità è stato già cambiato come visto ai punti 1 o 2, controllate quale dei due fili rosso (240V) o bianco (220V) è collegato al fusibile (F901) prima di cambiare i collegamenti.

Idling Current

SK... SWITCH	SIGNAL	TO	VOLUME	ADJUST	OSCILLOSCOPE	D.C. METER INDICATOR
			Min.	Lch R747		Lch J707 DC2mV (11mA)
				Rch R748		Rch J708 DC2mV (11mA)

(GB) Notes:

- Adjust the trimming resistor so that the DC voltmeter reads 2 mV when the MAINS switch is set to ON.
- If the heat-sink temperature is higher than the ambient temperature, switch the power OFF, and leave the unit until the heat-sink temperature falls equal to or below the ambient temperature before proceeding to the idling current adjustment.
- For the idling current adjustment, adjust the R channel first, then the L channel.

(F) Remarques:

- Ajuster la résistance d'écrétage de sorte que le voltmètre CC indique 2 mV quand l'interrupteur MAINS est allumé (ON).
- Si la température de la plaque de refroidissement est supérieure à la température ambiante, couper l'alimentation et laisser l'appareil jusqu'à ce que la température de la plaque de refroidissement soit égale ou inférieure à la température ambiante avant de passer à l'ajustement du courant déwatté.
- Pour le réglage de la puissance réactive, ajuster le canal R (droit) en premier lieu, puis le canal L (gauche).

(NL) Opmerkingen:

- Stel de trimweerstand zo af dat de gelijkspanning-voltmeter 2mV aangeeft wanneer de MAINS schakelaar op ON wordt gezet.
- Als de temperatuur van de warmteput hoger is dan de omringende temperatuur, schakel dan de spanning uit totdat de temperatuur van de warmteput gelijk is aan of lager is dan de omringende temperatuur alvorens over te gaan tot aanpassen op de stationaire stroom.
- Bij het afstellen van de blinde stroom moet eerst het R-kanaal worden afgesteld en daarna het L-kanaal.

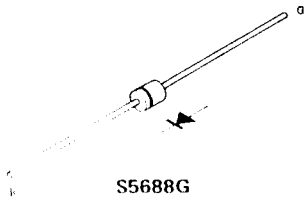
(D) Anmerkungen:

- Den Trimmwiderstand so einstellen, daß das Gleichstrom-Voltmeter 2 mV anzeigt, wenn der MAINS-Schalter auf ON gestellt wird.
- Wenn die Temperatur des Kühlkörpers höher ist als die Umgebungstemperatur, die Spannungsversorgung ausschalten und warten, bis die Temperatur des Kühlkörpers gleich der oder niedriger als die Umgebungstemperatur wird, bevor die Ruhestrom-Einstellung durchgeführt wird.
- Für die Ruhestrom-Einstellung zuerst den rechten und dann den linken Kanal einstellen.

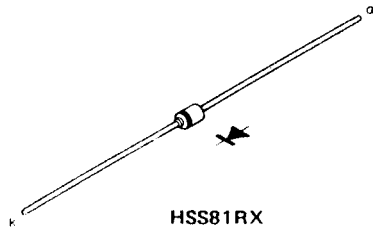
(I) Note:

- Regolare la resistenza variabile in modo che il voltmetro CA indichi 2mV quando l'interruttore MAINS si trova su ON.
- Se la temperatura degli organi di dispersione del calore è superiore a quella dell'ambiente, spegnete l'unità e lasciatela raffreddare sino a che la sua temperatura non diviene uguale o inferiore a quella ambiente, quindi procedete con la regolazione della corrente a riposo.
- Per la regolazione della corrente reattiva, regolare prima il canale destro R e quindi il canale sinistro L.

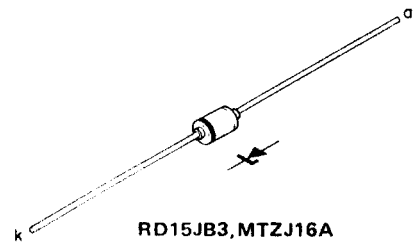
Semiconductor Layout



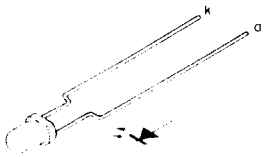
S5688G



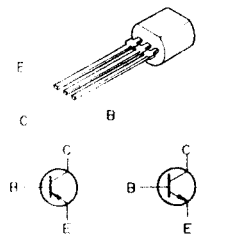
HSS81RX



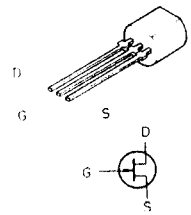
RD15JB3, MTZJ16A



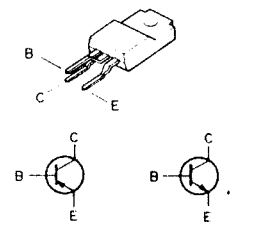
LT3D8B



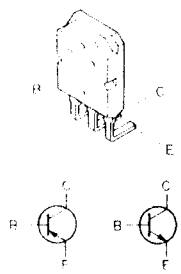
2SA970(GR) 2SC2240(GR)



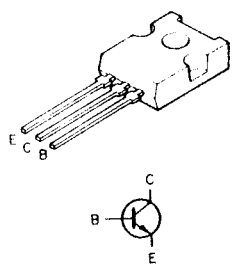
2SK369



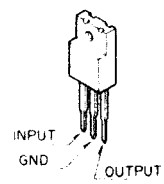
2SA1306(O,Y) 2SC3298(O,Y)



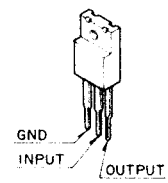
2SA1265(R,O) 2SC3182(R,O)



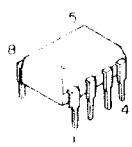
2SC3419(Y)



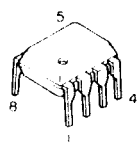
NJM7815FA



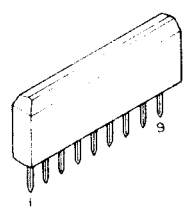
NJM7915FA



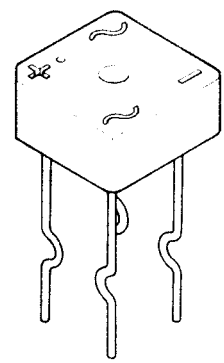
NJM2068DD



NJM4558D-D



TA7317P



BR82

Carbon film 0.125 W or 0.2 W	70°C	5%	
Carbon film 0.25 W or 0.33 W	70°C	5%	
Metal film 0.25 W or 0.33 W	70°C	5%	
Carbon film 0.5 W	70°C	5%	
Carbon film 0.67 W	70°C	5%	
Carbon film 1 W or 1.15 W	70°C	5%	

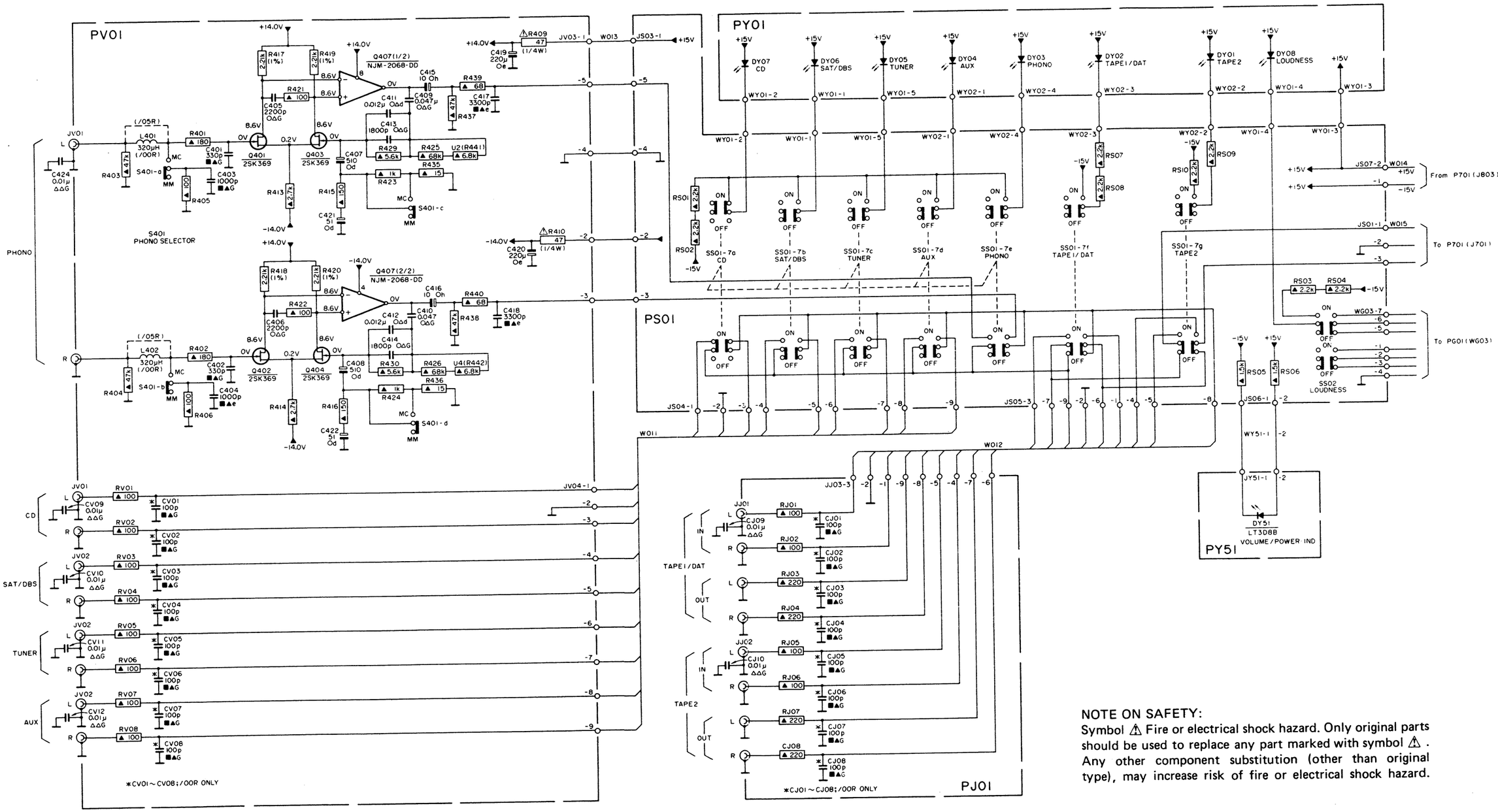
(C) Chip component

Ceramic plate Tuning ⩽ 120 pF NP.0		2%
Ceramic plate Others		−20/+80%
Polyester flat foil		10%
Metalized polyester flat film		10%
Polyester flat foil small size (Mylar)		10%
Polysterene film/foil		1%
Tubular ceramic		
Miniature single		
Subminiature tantalum		± 20%

*a = 2.5 V
b = 3.15 V or 4 V
c = 6.3 V
d = 10 V
e = 16 V
f = 25 V
g = 40 V
h = 63 V
j = 100 V
l = 125 V
m = 150 V
n = 160 V
q = 200 V
r = 250 V
s = 300 V
t = 350 V
u = 400 V
v = 500 V
w = 630 V
x = 1000 V
A = 1.6 V
B = 6 V
C = 12 V
D = 15 V
E = 20 V
F = 35 V
G = 50 V
H = 75 V
I = 80 V

SCHEMATIC DIAGRAM

R	RV01~RV08 R403 R404 R405 R406 R401 R402 R417 R418 R413~R416 R419~R422 R429 R430 R423~R426 R441 R442 R435~R440 R409 R410	RS01 RS02 RJ01~RJ08 RS07 RS08 RS10 RS09 RS05 RS06 RS03 RS04
C	C424 CV09~CV12 CV01~CV08 C401~C404 C405~C408 C421 C422 C409~C414 C415 C416 C417 C418 C419 C420	CJ09 CJ10 CJ01~CJ08
Q – D	Q401 Q402 Q403 Q404 Q407	DY07 DY06 DY05 DY04 DY03 DY02 DY01 DY51 DY08
L – S	L401 L402 S401-a S401-b S401-c S401-d	SS01-7a SS01-7b SS01-7c SS01-7d SS01-7e SS01-7f SS01-7g SS02

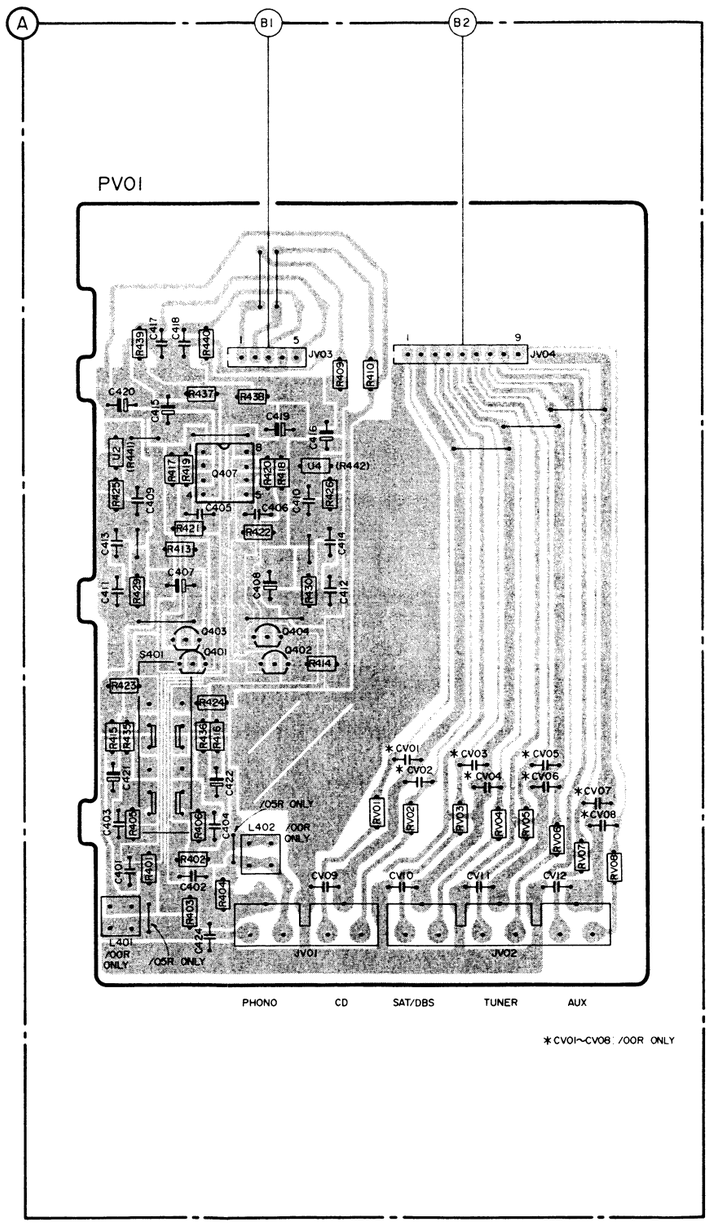


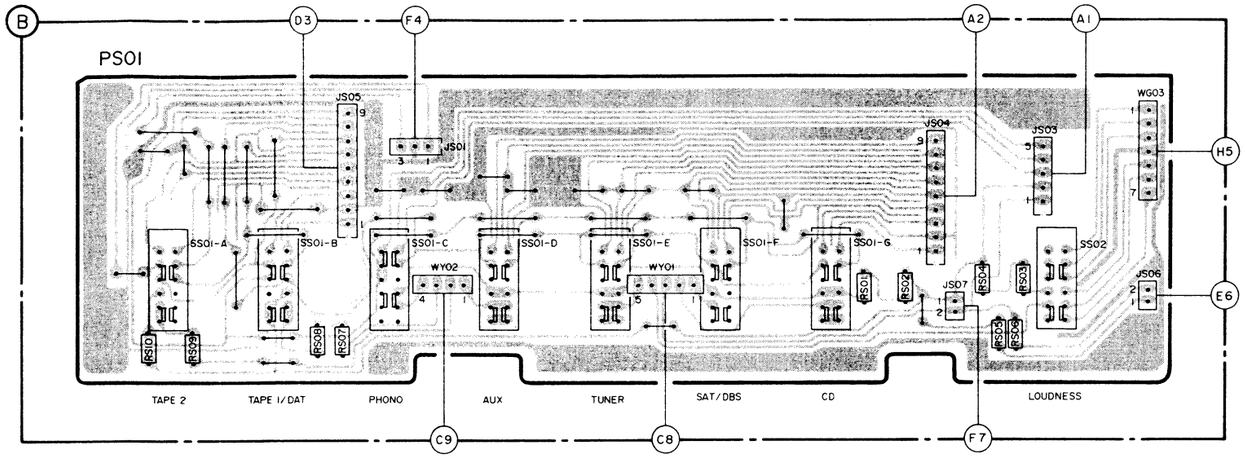
NOTE ON SAFETY:
Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

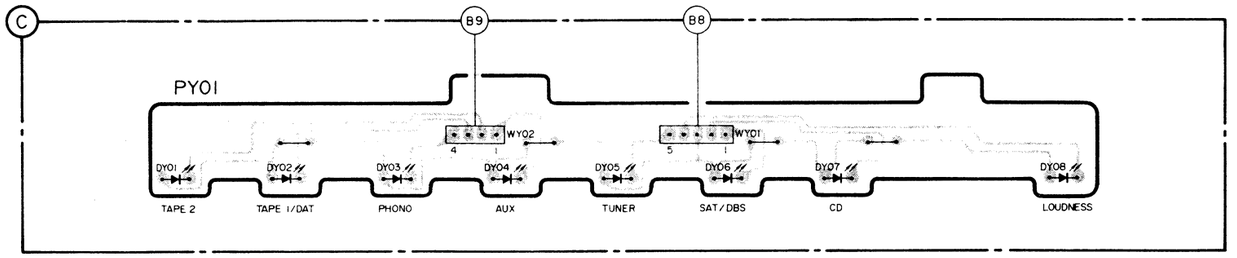
WIRING DIAGRAM

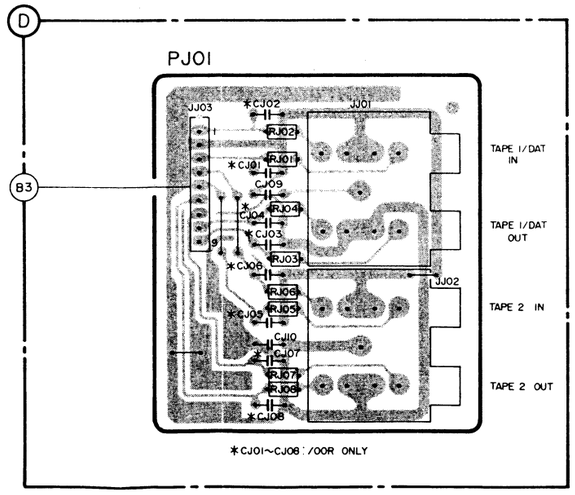
R	R441 R425 R429 R437～R440 R413 R417～R422 R442 R426 R409 R410 RS10 RS09 RS08 RS07 RS01 RS02 RS03～RS06	R
	R415 R435 R423 R401～R406 R436 R416 R424 R430 R414 RV01 RV02 RV03 RV04 RV05 RV06 RV07 RV08 RJ01～RJ08	
C	C420 C409 C417 C415 C418 C405～C408 C419 C410 C416 CV01 CV02 CV03 CV04 CV05 CV06 CV07 CV08	C
	C413 C411 C421 C401～C404 C424 C422 CV09 C414 C412 CV10 CV11 CV12 CJ01～CJ10	
Q	Q407 Q401～Q404	Q
D	DY01 DY02 DY03 DY04 DY05 DY06 DY51 DY07 DY08	D
L – S	L401 S401 L402 SS01-A SS01-B SS01-C SS01-D SS01-E SS01-F SS01-G SS02	L – S

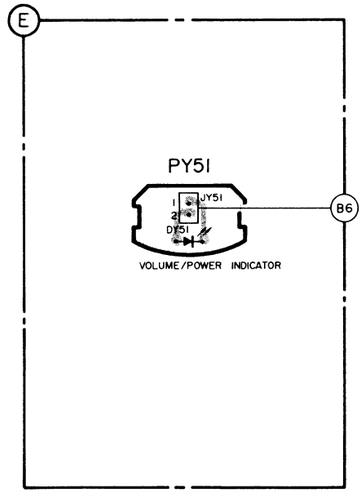
COMPONENT SIDE VIEW







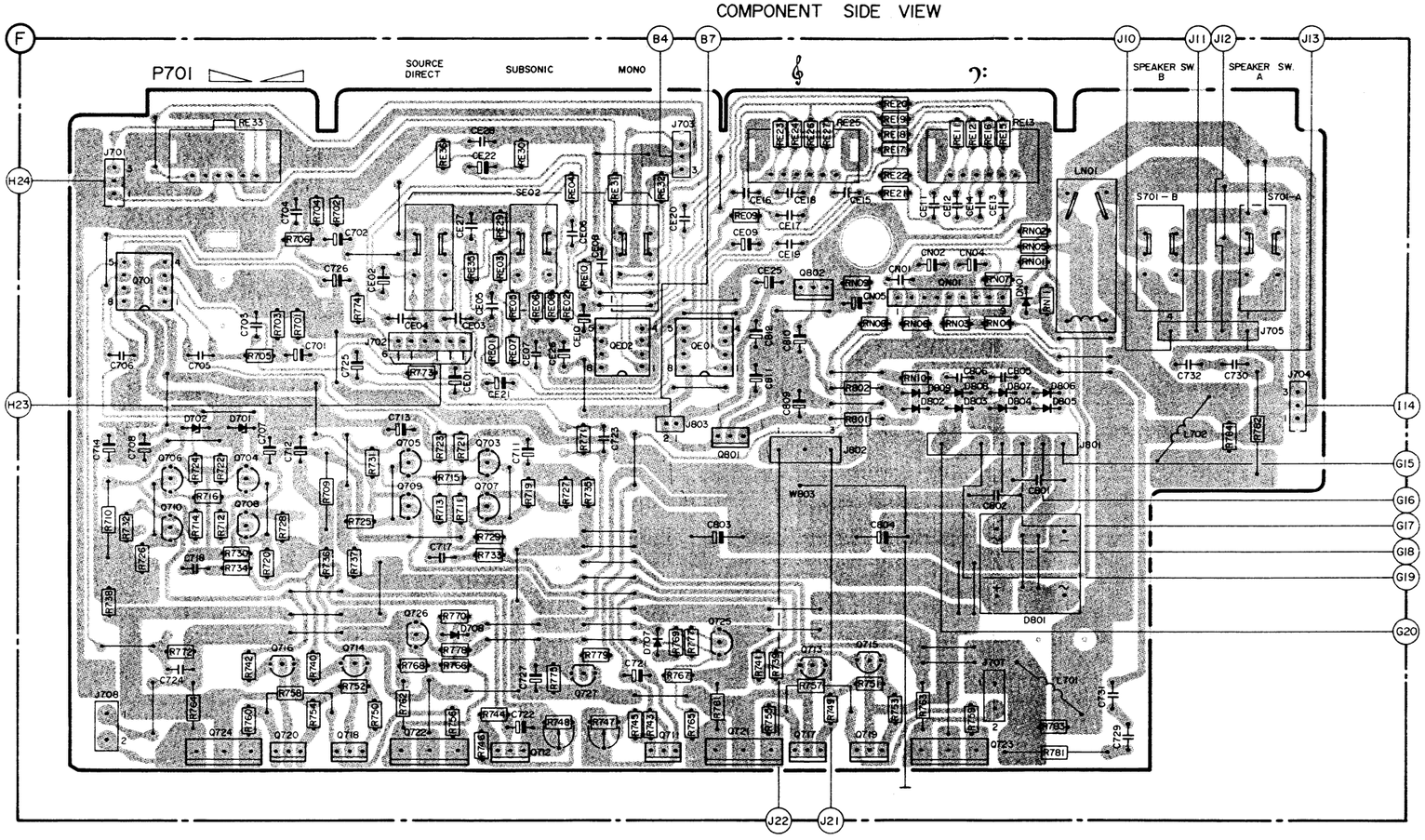


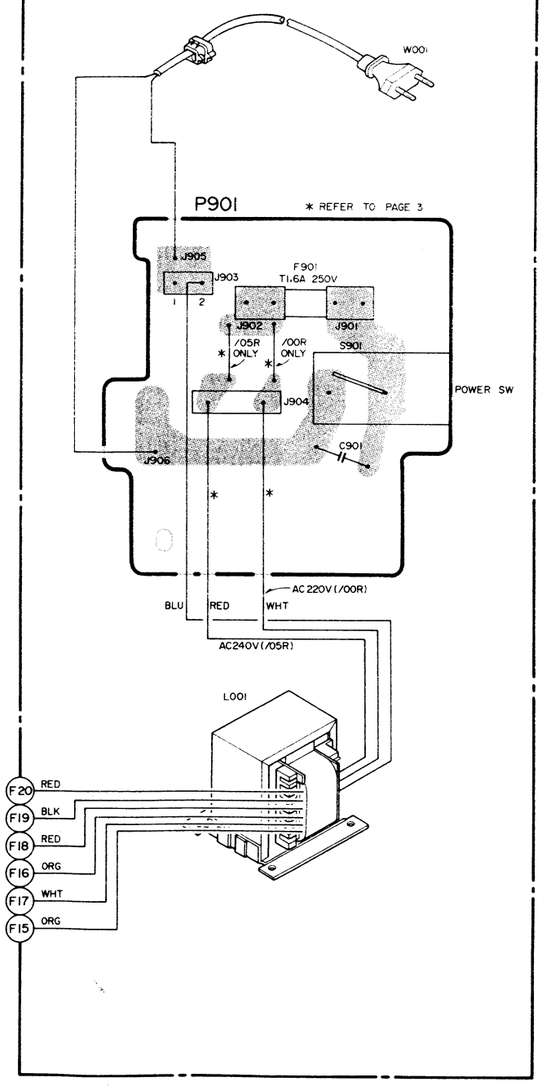


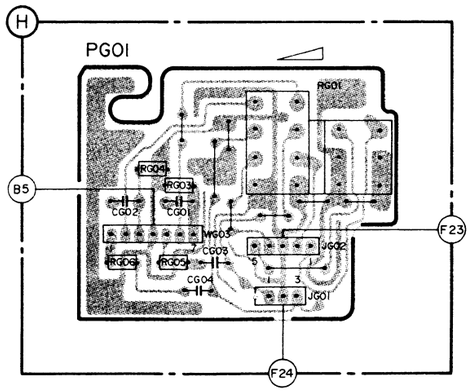
WIRING DIAGRAM

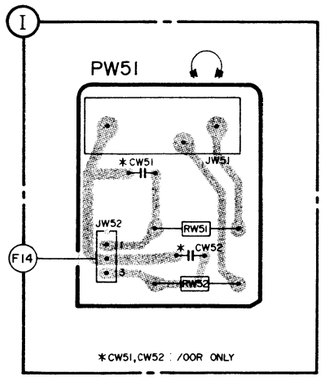
R	R724 R722 RE33 R701～R706 R709 R774 R773 RE36 RE35 RE29 RE30 RE01～RE08 RE10 RE31 RE32 RE09 RE23～RE27 RE17～RE22 RE11 RE12 RE16 RE15 RE13 RN02 RN05	R
	R738 R710 R732 R726 R714 R716 R712 R720 R728 R736 R737 R725 R731 R762 R713 R723 R715 R711 R721 R729 R733 R719 R727 R771 R735 R767 R769 R777 R801 R802 RN09 RN08 RN06 RN10 RN03 RN04 RN07 RN01 RN11 R784 R782	
	RG03～RG06 R772 R764 R730 R734 R742 R760 RG01 R758 R740 R754 R752 R750 R768 R770 R778 R766 R756 R775 R743～R748 RW51 RW52 R779 R765 R761 R741 R755 R739 R757 R749 R751 R753 R763 R759 R783 R781	
C	C706 C705 C703 C704 C701 C726 C702 CE02～CE05 CE28 CE22 CE07 CE26 CE06 CE10 CE08 CE20 CE09 CE16 CE25 CE17～CE19 CE15 CN05 CN01 CN02 CN04 CE11～CE14 C732 C730	C
	C714 C708 C724 C718 C707 C712 C725 C713 C717 CE01 CE27 CE21 C711 C722 C727 C723 C721 C803 C809～C812 C804 C806 C802 C805 C801 C731 C729 C901	
	CG01～CG04 CW51 CW52 CW03 CW01 CW04 CW02	
Q	Q701 Q706 Q704 Q705 Q703 QE02 QE01 Q801 Q802 QN01	Q
	Q710 Q724 Q708 Q716 Q720 Q718 Q714 Q709 Q726 Q722 Q707 Q712 Q727 Q711 Q725 Q721 Q717 Q713 Q719 Q715 Q723	
D	D702 D701 D708 D707 D802～D809 DN01 D801	D
F-L-S	SE02 L701 LN01 S701-B L702 S701-A L001 F901	F-L-S

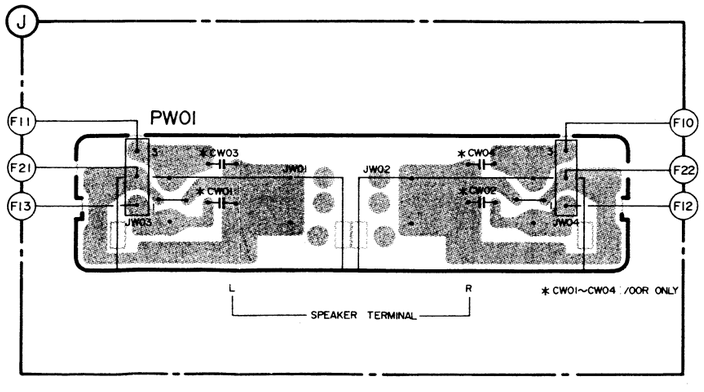
COMPONENT SIDE VIEW





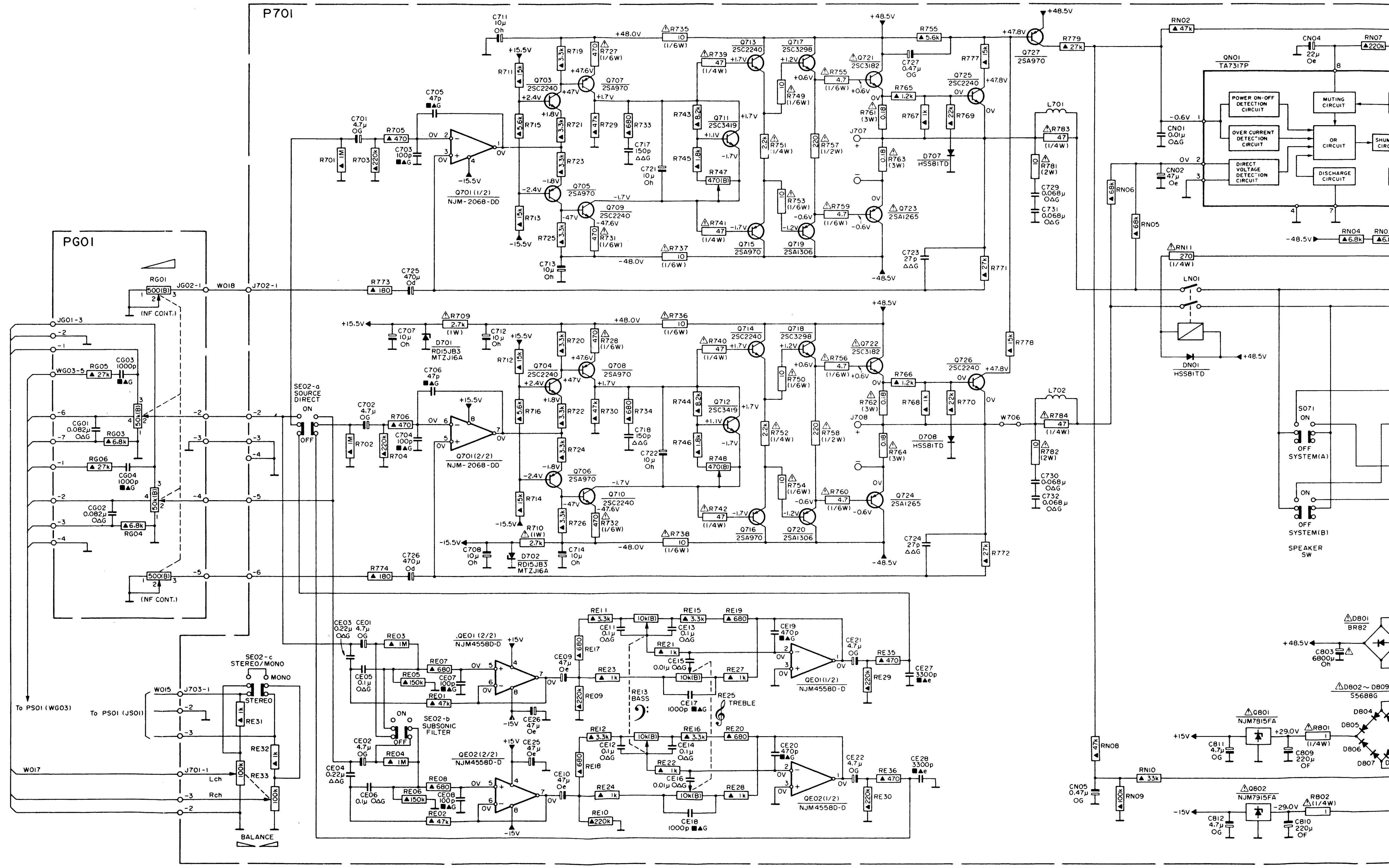






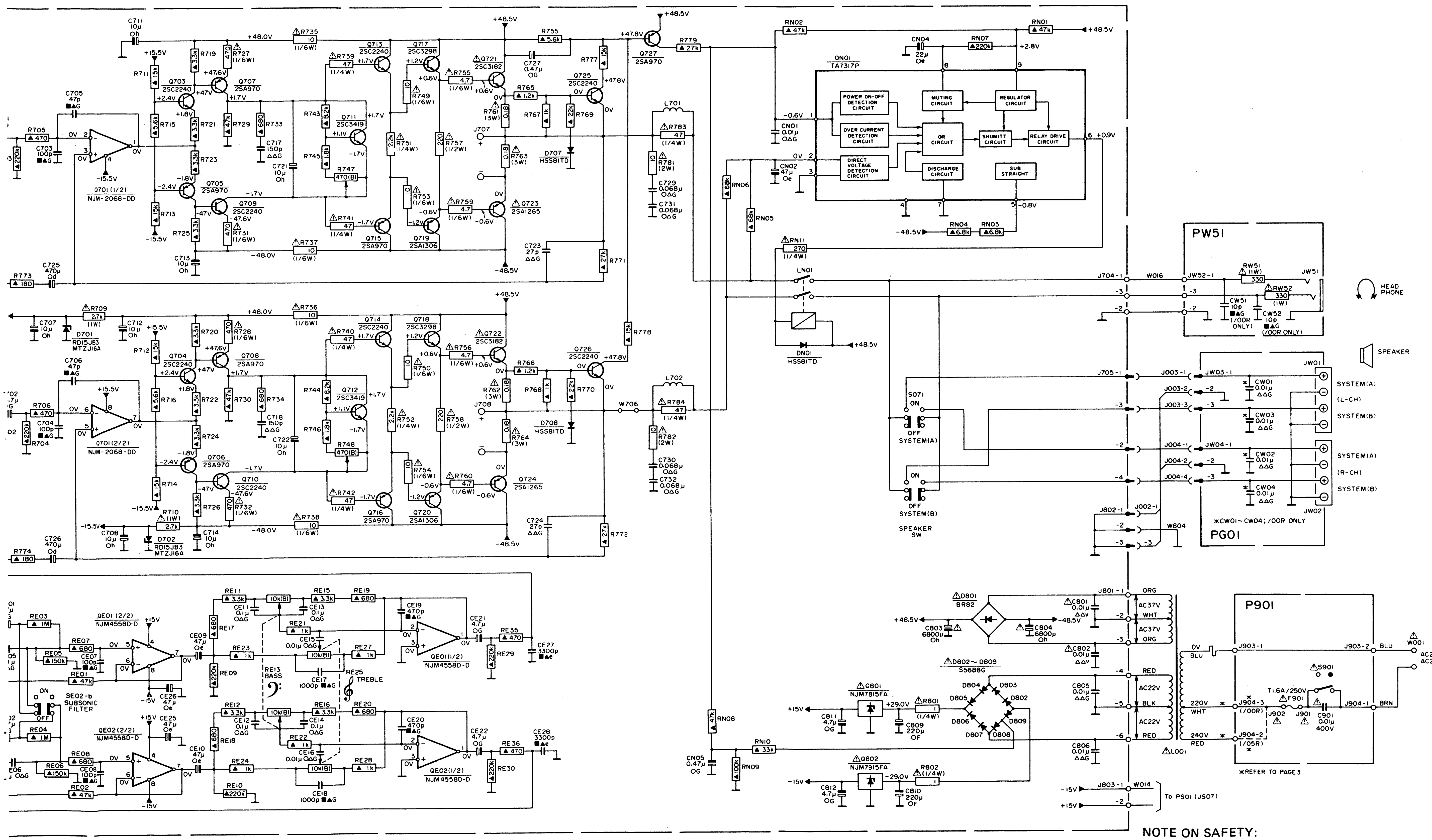
SCHEMATIC DIAGRAM

R	RG05 RG01 R701 R703 R773 R705 R711~R716 R719~R726 R727~R734 R735~R738 R739~R746 R751 R749 R753 R757 R755 R759 R755 R769 R777 R779 RN06 RN05 RN02 RN07
	RG03 RE31 RE32 R702 R704 R774 R706 R709 R710 RE09~RE12 RE13 RE15 RE16 R747 R748 R752 R750 R754 R758 R756 R760 R761~R768 R770 R771 R778 R781 R783 RN11 R801 RN04 RN03
	RG06 RG04 RE33 RE01~RE08 RE17 RE18 RE23 RE24 RE21 RE22 RE25 RE19 RE27 RE20 RE28 RE29 RE30 RE35 RE36 R772 R782 R784 RN08 RN09 RN10 R802
C	CG03 C701 C725 C703 C705 C711 C713 C717 C721 C727 C723 C729 C731 CN01 CN04
	CG01 CG04 C702 C707 C726 C704 C706 C708 C712 C714 C718 C722 C724 C730 C732 CN02 C811 C809
	CG02 CE01~CE06 CE07 CE08 CE26 CE25 CE09 CE10 CE11 CE12 CE13~CE18 CE19 CE20 CE21 CE22 CE27 CE28 CN05 C812 C810 C803
Q – D	D701 Q701 QE01(2/2) Q703 Q705 Q707 Q709 Q711 Q713 Q715 Q717 Q719 QE01(1/2) Q721 Q723 D707 Q725 Q727 DN01 QN01 Q801 D801
	QE02(2/2) D702 Q704 Q706 Q708 Q710 Q712 Q714 Q716 Q718 Q720 QE02(1/2) Q722 Q724 D708 Q726 Q802 D802~
S – L	SE02-c SE02-a SE02-b L701 L702 LN01 S071

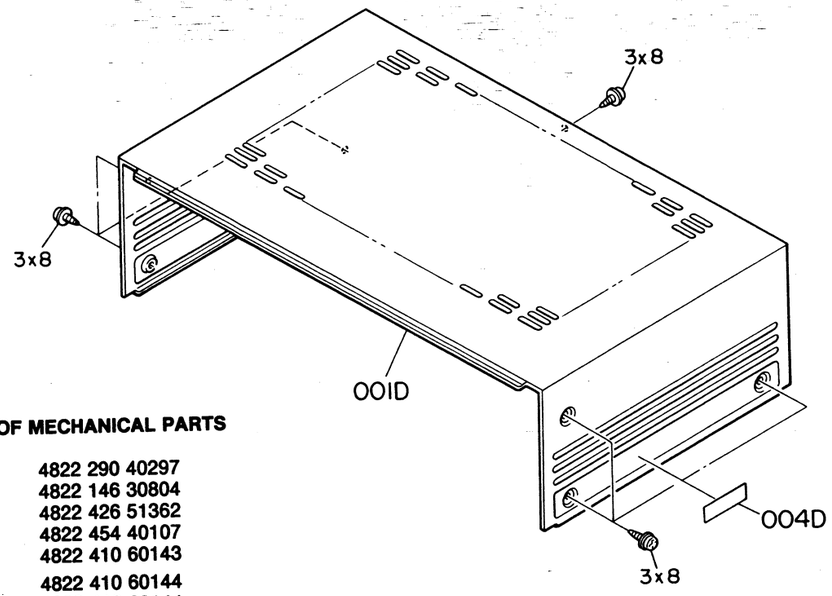


SCHEMATIC DIAGRAM

03 R773 R705 R711~R716 R719~R726 R727~R734 R735~R738 R739~R746 R751 R749 R753 R757 R755 R759 R755 R769 R777 R779 RN06 RN05 RN02 RN07 RN01 RW51 RW52	R
04 R774 R706 R709 R710 RE09~RE12 RE13 RE15 RE16 R747 R748 R752 R750 R754 R758 R756 R760 R761~R768 R770 R771 R778 R781 R783 RN11 R801 RN04 RN03	
RE01~RE08 RE17 RE18 RE23 RE24 RE21 RE22 RE25 RE19 RE27 RE20 RE28 RE29 RE30 RE35 RE36 R772 R782 R784 RN08 RN09 RN10 R802	
C725 C703 C705 C711 C713 C717 C721 C727 C723 C729 C731 CN01 CN04 CW51 CW52	C
707 C726 C704 C706 C708 C712 C714 C718 C722 C724 C730 C732 CN02 C811 C809 C801 C802 CW01 CW03	
CE06 CE07 CE08 CE26 CE25 CE09 CE10 CE11 CE12 CE13~CE18 CE19 CE20 CE21 CE22 CE27 CE28 CN05 C812 C810 C803 C804 C805 C806 CW02 CW04 C901	
D701 Q701 QE01(2/2) Q703 Q705 Q707 Q709 Q711 Q713 Q715 Q717 Q719 QE01(1/2) Q721 Q723 D707 Q725 Q727 DN01 QN01 Q801 D801	Q - D
QE02(2/2) D702 Q704 Q706 Q708 Q710 Q712 Q714 Q716 Q718 Q720 QE02(1/2) Q722 Q724 D708 Q726 Q802 D802~D809	
SE02-b L701 L702 LN01 S071 L001 S901	S - L

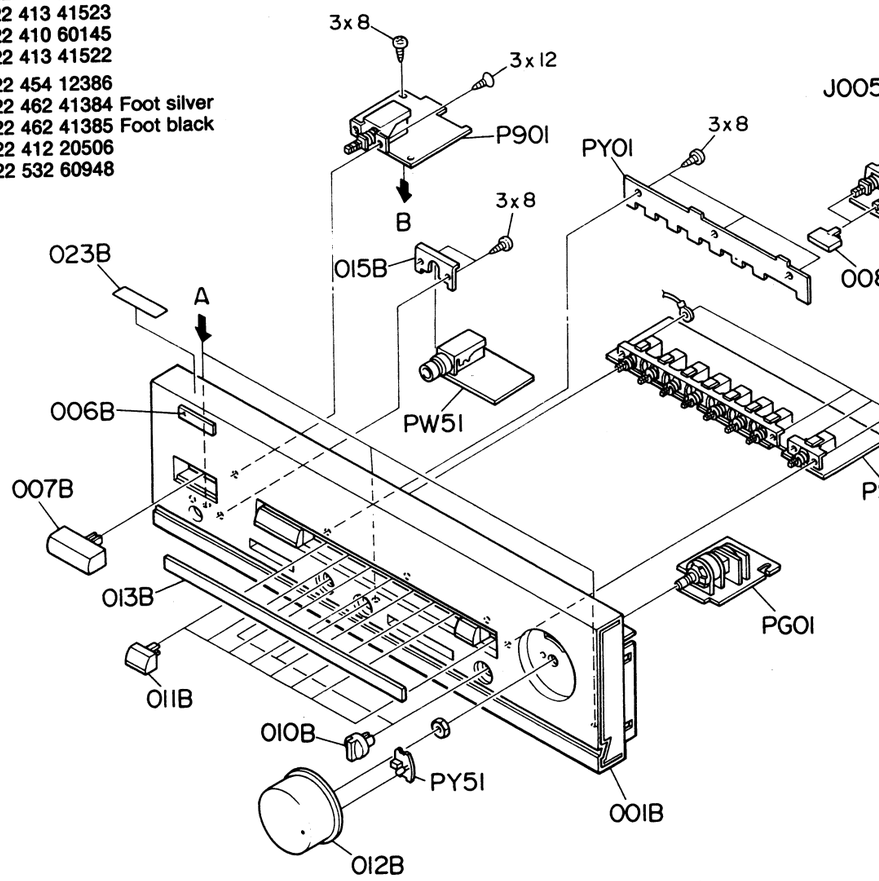


NOTE ON SAFETY:
Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

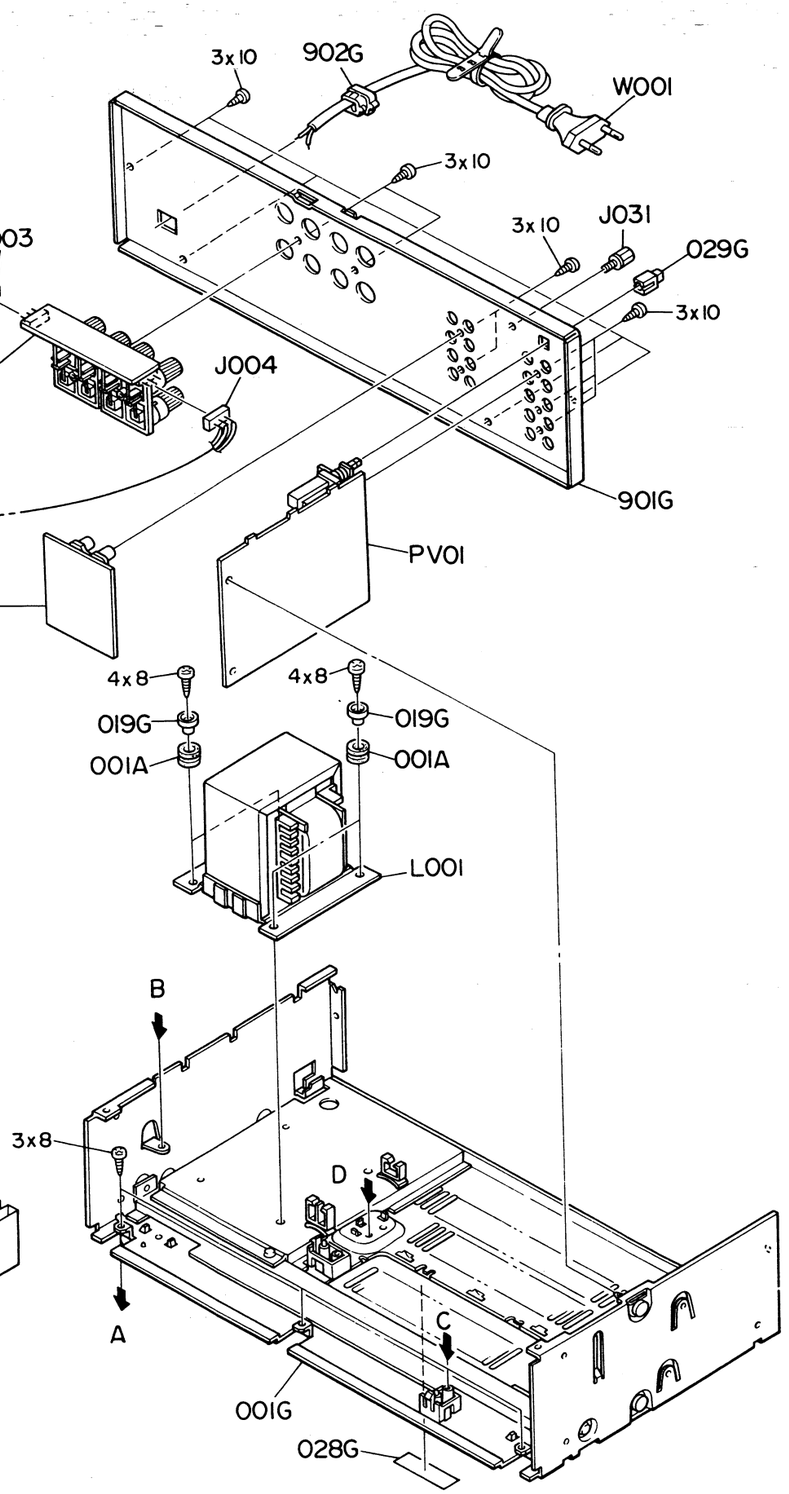


LIST OF MECHANICAL PARTS

J031	4822 290 40297	
L001	4822 146 30804	
001B	4822 426 51362	
006B	4822 454 40107	
007B	4822 410 60143	
008B	4822 410 60144	
009B	4822 410 60144	
010B	4822 413 41523	
011B	4822 410 60145	
012B	4822 413 41522	
013B	4822 454 12386	
011G	4822 462 41384	Foot silver
012G	4822 462 41385	Foot black
029G	4822 412 20506	
902G	4822 532 60948	

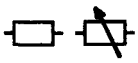


EXPLODED VIEW



Remark:
Only the parts provided with a Service codenumber are available as Service spare parts.

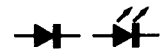
C407	4822 124 22279	Cap. electr. 510 µF 10V
C408	4822 124 22279	Cap. electr. 510 µF 10V
C413	4822 123 30054	Cap. mica 0.0018 µF 50V
C414	4822 123 30054	Cap. mica 0.0018 µF 50V
C421	4822 124 22278	Cap. electr. 51 µF 10V
C422	4822 124 22278	Cap. electr. 51 µF 10V
C802	4822 122 30043	Cap. ceramic 0,01 µF 500V
C803	4822 124 22175	Cap. electr. 6800 µF 63V
C804	4822 124 22175	Cap. electr. 6800 µF 63V
C901	4822 122 33276	Cap. ceramic 0.01 µF 400V



RE13	4822 101 30637	Potm. 10K bass
RE25	4822 101 30637	Potm. 10K treble
RE33	4822 101 30627	Potm. 100K balance
RG01	4822 100 20695	Potm. 50K-500N volume
RN11	4822 116 80828	Res. fuse 270 Ω 1/4W
RW51	4822 111 50474	Res. safety 330 Ω 1W
RW52	4822 111 50474	Res. safety 330 Ω 1W
R409	4822 111 90731	Res. fuse 47 Ω 1/4W
R410	4822 111 90731	Res. fuse 47 Ω 1/4W
R417	4822 116 81354	Res. metal 2.21K 1% 1/6W
R418	4822 116 81354	Res. metal 2.21K 1% 1/6W
R419	4822 116 81354	Res. metal 2.21K 1% 1/6W
R420	4822 116 81354	Res. metal 2.21K 1% 1/6W
R709	4822 116 60351	Res. safety 2.7K 1W
R710	4822 116 60351	Res. safety 2.7K 1W
R727	4822 116 81862	Res. safety 470 Ω 1/6W
R728	4822 116 81862	Res. safety 470 Ω 1/6W
R731	4822 116 81862	Res. safety 470 Ω 1/6W
R732	4822 116 81862	Res. safety 470 Ω 1/6W
R735	4822 111 91291	Res. safety 10 Ω 1/6W
R736	4822 111 91291	Res. safety 10 Ω 1/6W
R737	4822 111 91291	Res. safety 10 Ω 1/6W
R738	4822 111 91291	Res. safety 10 Ω 1/6W
R739	4822 116 60295	Res. fusible 47 Ω 1/4W
R740	4822 116 60295	Res. fusible 47 Ω 1/4W
R741	4822 116 60295	Res. fusible 47 Ω 1/4W
R742	4822 116 60295	Res. fusible 47 Ω 1/4W
R747	4822 100 11426	Potm. trimm. 470 Ω
R748	4822 100 11426	Potm. trimm. 470 Ω
R749	4822 111 91291	Res. safety 10 Ω 1/6W
R750	4822 111 91291	Res. safety 10 Ω 1/6W
R751	4822 116 81315	Res. fuse 2.2K 1/4W
R752	4822 116 81315	Res. fuse 2.2K 1/4W
R753	4822 111 91291	Res. safety 10 Ω 1/6W
R754	4822 111 91291	Res. safety 10 Ω 1/6W
R755	4822 116 80955	Res. safety 4.7 Ω 1/6W
R756	4822 116 80955	Res. safety 4.7 Ω 1/6W
R757	4822 116 60319	Res. fusible 220 Ω 1/2W
R758	4822 116 60319	Res. fusible 220 Ω 1/2W
R759	4822 116 80955	Res. safety 4.7 Ω 1/6W
R760	4822 116 80955	Res. safety 4.7 Ω 1/6W
R761	4822 116 80171	Res. safety 0.18 Ω 3W
R762	4822 116 80171	Res. safety 0.18 Ω 3W
R763	4822 116 80171	Res. safety 0.18 Ω 3W
R764	4822 116 80171	Res. safety 0.18 Ω 3W
R781	4822 111 90726	Res. safety 10 Ω 2W
R782	4822 111 90726	Res. safety 10 Ω 2W
R783	4822 111 30006	Res. safety 47 Ω 1/4W
R784	4822 111 30006	Res. safety 47 Ω 1/4W
R801	4822 116 60307	Res. fusible 1 Ω 1/4W
R802	4822 116 60307	Res. fusible 1 Ω 1/4W

4822 130 61358	2SA1306 O or Y
4822 130 61362	2SC3298 O or Y
4822 130 60117	2SC3419 Y
4822 130 61746	2SA1265 R or O
4822 130 42949	2SA970 (GR)
4822 130 43231	2SC2240 (GR)
4822 130 61747	2SC3182 R or O
4822 130 42839	2SK369

4822 209 73064	NJM2068-DD
4822 209 83631	NJM4558D-D
4822 209 83317	NJM7815FA
4822 209 61256	NJM7915FA
4822 209 83312	TA7317P



BR82	4822 130 81093
HSS81TD	4822 130 80837
LT3D8B RED	4822 130 80326
RD15JB3, MTZJ16A	4822 130 80322
S5688G	4822 130 80839

-MISCELLANEOUS-

F901	4822 253 30191	Fuse 1.6A 250V
JJ01	4822 267 20382	Jack 4P
JJ02	4822 267 20382	Jack 4P
JV01	4822 265 30397	Jack 4P
JV02	4822 265 30457	Jack 6P
JW01	4822 266 30279	Speaker terminal
JW02	4822 266 30281	Speaker terminal
JW51	4822 267 30617	Headphone jack
J031	4822 290 40297	Ground terminal
J901	4822 267 30978	Holder, fuse
J902	4822 256 30329	Holder, fuse
LN01	4822 280 91103	Relay DC 48V
L001	4822 146 30804	Trans. mains
L401 /00R	4822 156 11019	Coil, choke 320 MH
L402 /00R	4822 156 11019	Coil, choke 320 MH
L701	4822 157 51739	Coil, choke
L702	4822 157 51739	Coil, choke
SE02	4822 276 12617	Switch, pushbut.
SS01	4822 276 12619	Switch, pushbut.
SS02	4822 276 12618	Switch, pushbut.
S401	4822 276 20468	Switch, pushbut.
S701	4822 276 20477	Switch, pushbut.
S901	4822 276 11898	Switch, pushbut.