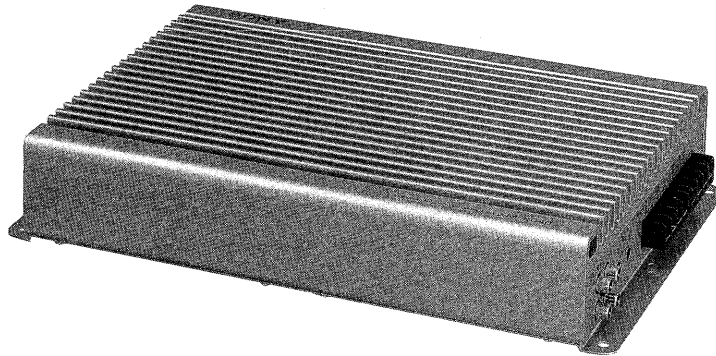


XM-4040

SERVICE MANUAL

*US Model
AEP Model
UK Model
E Model*



SPECIFICATIONS

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION 40 watts per channel minimum continuous average power into 4 ohms, both channels driven from 20–20,000 Hz with no more than 0.04 % total harmonic distortion per Car Audio Ad Hoc Committee standards.

Other Specifications

Circuit system	OTL (output transformerless) circuit pulse power supply	40 watts per channel (20 Hz – 20 kHz, 0.04 % THD, at 4 ohms) plus 100 watts (20 Hz – 20 kHz, 0.3 % THD, at 4 ohms) with 3-speaker system	Current drain	at rated output: 25 A (4 ohms, 40 W × 4) at 10% THD: 30 A remote input: 5 mA
Inputs	RCA pin jacks		Dimensions	Approx. 223 × 60 × 310 mm (w/h/d) (8 7/8 × 2 3/8 × 12 1/4 inches) not incl. projecting parts and controls
Outputs	Speaker terminals	100 watts per channel with 2-speaker system (20 Hz – 20 kHz, 0.3 % THD, at 4 ohms)	Weight	Approx. 4.6 kg (10 lb 2 oz.) not incl. accessories
Speaker impedance	2–8 ohms (stereo) 4–8 ohms (when used as a bridging amplifier)	Frequency response	Supplied accessories	Mounting screw (4)
Maximum output at 4 ohms	90 watts per channel with 4-speaker system 90 watts × 2 plus 200 watts × 1 with 3-speaker system 200 watts per channel with 2-speaker system	Harmonic distortion	Optional accessories	Connecting cord for power amplifier RC-46 RCA pin cord RC-64 (2 m) RCA pin cord RC-65 (5 m)
Rated outputs (supply voltage at 14.4 V)	40 watts per channel with 4-speaker system (20 Hz – 20 kHz, 0.04 % THD, at 4 ohms) 50 watts per channel with 4-speaker system (20 Hz – 20 kHz, 0.3 % THD, at 2 ohms)	Input level adjustment range	Design and specifications subject to change without notice.	
		Power requirements		
		Power supply voltage		

STEREO POWER AMPLIFIER
SONY®

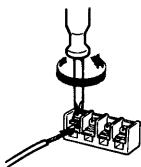
Connections

Branchements

Caution

- Before making any connections, disconnect the ground terminal of the car battery to avoid short circuits.
- Be sure to use speakers with adequate power handling capacities. If you use speakers with small capacity, they will be damaged.
- Do not connect the \ominus terminal of the speaker system with the car chassis, and do not connect the \ominus terminal of the right speaker with that of the left speaker.
- Run the input and output cords away from the power input lead as running them closely can generate some interference noise.
- This unit is a high powered amplifier. Therefore, it may not perform its full potential if used with the existing speaker cords supplied to the car.
- If your car is equipped with a computer system for navigation or some other purposes, be sure not to remove the ground wire from the car battery. If you disconnect the wire, the memory of the computer may be erased. To avoid short circuits when making connections, connect the +12 V power input lead only after all other leads have been connected.

Make terminal connections as illustrated below



Attention

- Avant d'effectuer les connexions, débrancher la borne de masse de la batterie pour éviter les courts-circuits.
- Utiliser des haut-parleurs d'une puissance adéquate sinon ils risquent d'être endommagés.
- Ne pas raccorder la borne \ominus d'un haut-parleur sur la carrosserie de la voiture; de même, ne pas établir un contact entre la borne \ominus du haut-parleur droit et celle du haut-parleur gauche.
- Tenir les cordons d'entrée et de sortie à distance du fil de l'alimentation électrique, pour éviter que des interférences se produisent.
- Cet appareil est un amplificateur de haute puissance et il peut ne pas atteindre sa puissance maximale si les cordons de haut-parleurs fournis avec la voiture lui sont raccordés.
- Si la voiture est équipée d'un ordinateur de navigation ou autre, ne pas débrancher le fil de mise à la masse de la batterie de la voiture. Si ce fil était débranché, la mémoire de l'ordinateur serait effacée. Pour éviter les courts-circuits lors des branchements, brancher le fil d'entrée d'alimentation +12 volts uniquement après avoir branché tous les autres fils.

Effectuer les connexions comme illustré ci-dessous.

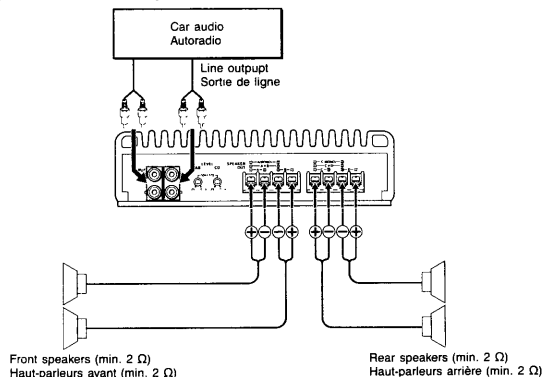
Features

- Maximum power output of 90 watts per channel with a 4-speaker system, 90 watts $\times 2$ plus 200 watts $\times 1$ with a 3-speaker system or 200 watts per channel with a 2-speaker system (at 4 ohms).
- Wide dynamic range and low distortion (less than 0.005 %).
- Provided with a protection circuit.
- Pulse power supply* for stable, regulated output power.
- **Pulse power supply**
This unit has a built-in convertor which converts the power supply from the DC 12 V car battery into high speed signals by the use of the semiconductor switch. These signals will be stepped up by the built-in pulse transformer and separated into both positive and negative power supplies before converted to the direct current again. This is to regulate the otherwise variable voltage of the car battery. The light weight power supply system provides the highly efficient power supply with low impedance output.

Caractéristiques

- Puissance de sortie maximum de 90 watts par canal avec un système de 4 enceintes, 90 watts $\times 2$ plus 200 watts $\times 1$ avec un système à 3 enceintes ou 200 watts par canal avec un système à 2 enceintes (à 4 ohms).
- Large plage dynamique et faible distorsion (moins de 0,005 %).
- Equipé d'un circuit de protection.
- Alimentation par impulsions* pour une puissance de sortie stable et régulière.
- **Alimentation par impulsions**
Le convertisseur intégré de cet appareil permet de transformer l'alimentation en courant continu de 12 V en provenance de la batterie en signaux ultra-rapides grâce à l'interrupteur à semiconducteur. Ces signaux peuvent être démultipliés par le transformateur à impulsion intégré, séparés en courant positif et négatif puis convertis de nouveau en courant continu afin de réguler la tension variable de la batterie de la voiture. Le système d'alimentation de faible poids fournit une alimentation très efficace avec une sortie de basse impédance.

4-Speaker System Système à 4 haut-parleurs



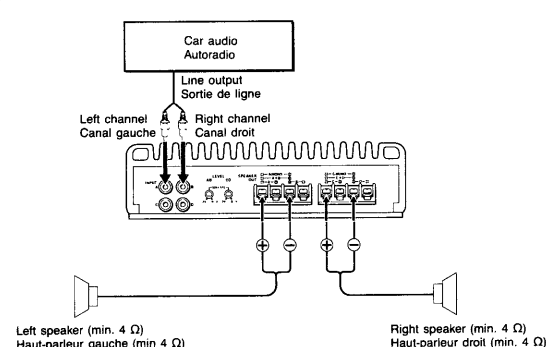
Note
Remember that the outputs from the car audio which are to be connected to the INPUT jacks A, B, C and D correspond with the output combinations of the SPEAKER OUT terminals of this unit.

Remarque
Ne pas oublier que les sorties de l'autoradio qui doivent être connectées aux prises d'entrée A, B, C et D correspondent aux combinaisons de sortie des bornes SPEAKER OUT de cet appareil.

You can also make a 4-speaker connection with only two channel inputs by using the INPUT jacks A and C. In this case, the outputs from the SPEAKER OUT terminals A and B will correspond to the input signal going into the INPUT jack A and the outputs from the SPEAKER OUT terminals C and D will correspond to the signal going into the INPUT jack C of this unit.

Il est également possible de connecter un système à 4 haut-parleurs avec deux entrées de canal en utilisant les prises INPUT A et C. Dans ce cas, les sorties des bornes SPEAKER OUT A et B correspondent au signal d'entrée allant à la prise INPUT A et les sorties des bornes SPEAKER OUT C et D correspondent au signal allant à la prise INPUT C de cet appareil.

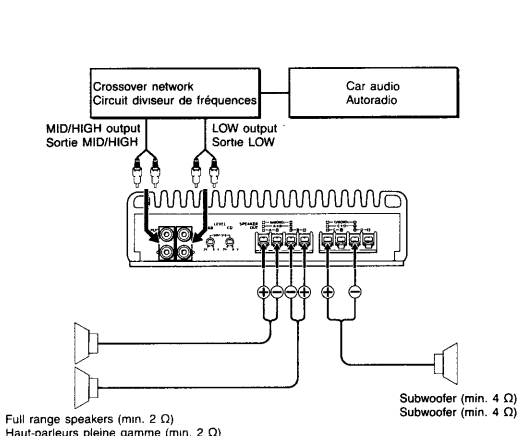
2-Speaker System Système à 2 haut-parleurs



Note
Use only the INPUT jacks A and C for connecting the outputs from the car audio and connect the speaker leads to the \oplus — A (MONO) — \ominus and \oplus — C (MONO) — \ominus terminals of this unit.

Remarque
Utiliser uniquement les prises INPUT A et C pour connecter les sorties de l'autoradio et pour raccorder les cordons des haut-parleurs aux bornes \oplus — A (MONO) — \ominus et \oplus — C (MONO) — \ominus de cet appareil.

3-Speaker System Système à 3 haut-parleurs



As the Monaural Amplifier for a Subwoofer
Utilisation comme amplificateur monaural pour un subwoofer

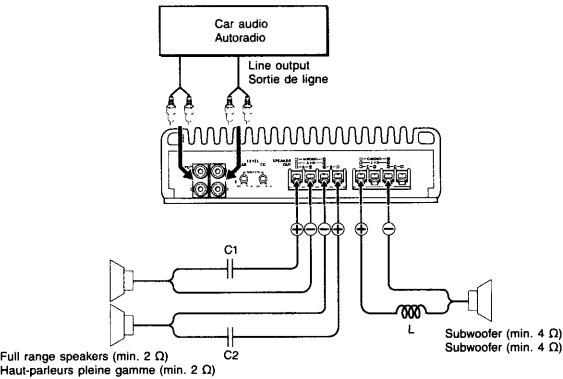


Table of crossover values for 6 dB/octave
(4 ohms) (not supplied)

Crossover Frequency unit: Hz	L (coil) unit: mH	C1/C2 (capacitor) unit: μ F
50	12.7	800
80	8.2	500
100	6.2	400
130	4.7	300
150	4.2	270
200	3.3	200
260	2.4	150
400	1.6	100
600	1.0	68
800	0.8	50
1000	0.6	39

Tableau des valeurs de division pour
6 dB/octave (4 ohms) (non fourni)

Fréquence de coupure unité: Hz	L (bobine) unité: mH	C1/C2 (condensateur) unité: μ F
50	12.7	800
80	8.2	500
100	6.2	400
130	4.7	300
150	4.2	270
200	3.3	200
260	2.4	150
400	1.6	100
600	1.0	68
800	0.8	50
1000	0.6	39

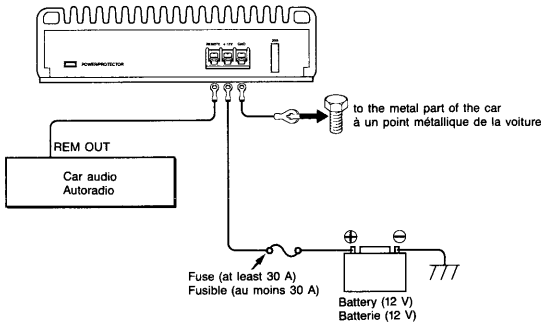
Notes

- When using passive crossover networks in a multi-speaker system, care must be taken as the speaker system's impedance should not be lower than that of the suitable impedance for this unit.
- When you are installing 12 dB/octave systems in your car, the following points must be considered. In a 12 dB/octave system where both a choke and a capacitor are used in series to form a circuit, a great care must be taken when they are connected. In such a circuit, there is going to be an increase in the current which by-passes the speaker with frequencies at around the crossover frequency. If audio signals are continued to be fed in the crossover frequency area, it may cause the amplifier to become abnormally hot or the fuse will be blown. Also if the speaker is disconnected, a series-resonant circuit will be formed by the choke and the capacitor. In this case, the impedance in the resonance area will decrease dramatically resulting in a short circuit like situation causing a damage to the amplifier. Therefore, make sure that a speaker is connected to such a circuit at all times.

Remarques

- Lors de l'utilisation de circuits diviseurs de fréquence passifs dans un système à plusieurs haut-parleurs, veiller à ce que l'impédance du système ne soit pas inférieure à celle convenant à cet appareil.
- Lors de l'installation d'un système 12 dB/octave dans votre voiture, les points suivants doivent être pris en considération: Dans un système à 12 dB/octave où la bobine d'arrêt et le condensateur sont utilisés en série pour former un circuit, les connexions doivent être exécutées avec extrêmement de précaution. Dans ce genre de circuit, une augmentation de courant contournant le haut-parleur se produit avec des fréquences se situant autour de la fréquence de coupure. Si des signaux audio continuent d'être fournis dans la zone de fréquence de coupure, une surchauffe risque de se produire dans l'amplificateur et le fusible peut sauter. Si le haut-parleur est déconnecté, un circuit de résonance série sera créé par la bobine et le condensateur. Dans ce cas, l'impédance dans la zone de résonance diminuera considérablement et comme dans le cas d'un court-circuit, l'amplificateur peut être endommagé. Par conséquent, veiller à ce que le haut-parleur soit toujours raccordé au circuit.

Power Connection Leads
Fils d'alimentation électrique



Notes on the power supply

- Connect the +12 V power input lead only after all other leads have been connected.
- Be sure to connect the ground wire of the unit securely to a metal point of the car. A loose connection may cause a malfunction of the amplifier.
- Make sure to connect the remote control lead of the car audio to the REMOTE lead.
- Use the power supply lead with a fuse attached whose value is at least 30 A.
- Place the fuse in the power supply lead as close as possible to the car battery.
- During a full-power operation, the current of more than 30 A will run through the system. Therefore, make sure that the leads to be connected to the +12 V and GND terminals of this unit respectively must be larger than 10-Gauge (A.W.G.-10) or with the sectional area of more than 5 mm².

Remarques sur l'alimentation électrique

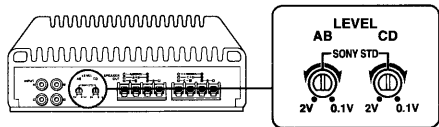
- Ne raccorder le fil d'entrée +12 volts d'alimentation qu'après avoir connecté tous les autres fils.
- Raccorder solidement le fil de masse de l'appareil à une partie métallique de la voiture, car une connexion relâchée peut entraîner des défaillances de l'amplificateur.
- Ne pas oublier de raccorder le fil de télécommande de l'autoradio au fil REMOTE.
- Utiliser le fil d'alimentation électrique muni d'un fusible d'au moins 30 A.
- Placer le fusible du fil d'alimentation électrique le plus près possible de la batterie de la voiture.
- Lors de l'utilisation de la puissance maximale, un courant de plus de 30 A passe dans le système. Par conséquent, les fils à raccorder sur les bornes +12 V et GND (masse) de cet appareil doivent être de calibre supérieur à 10 (A.W.G.-10) ou d'une section supérieure à 5 mm².

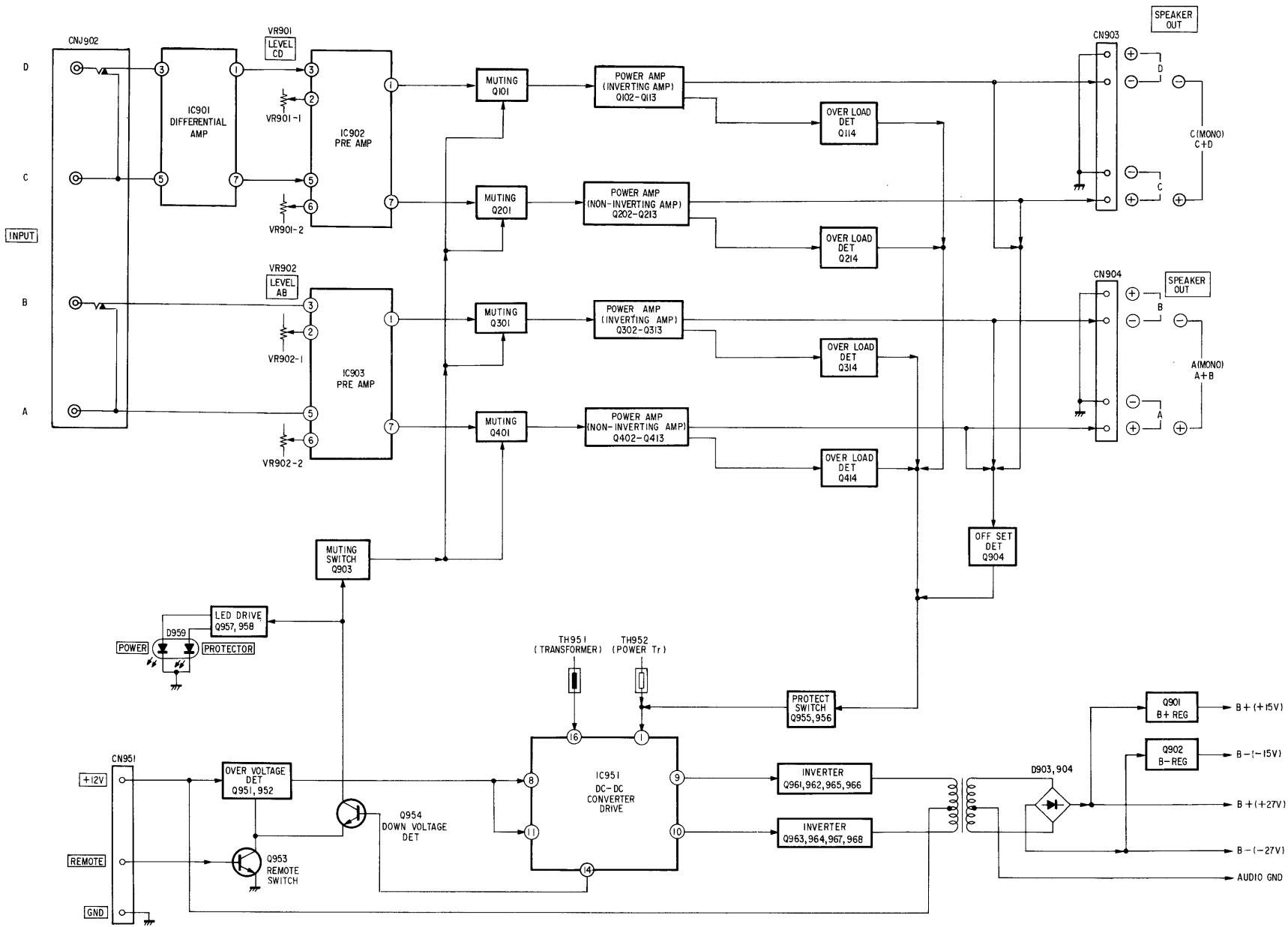
Level Adjustment Control

The input level can be varied with this control. Use it to adjust the input sound level when using source equipment of other manufacturers. Be sure to set the control to SONY STD if the unit is connected to a SONY car audio. Turn it to 0.1 V when the output level of the cassette car audio or CD player seems low.

Commande de réglage de niveau

Le niveau d'entrée peut être modifié par cette commande. Utiliser cette commande pour ajuster le niveau d'entrée du son lors de l'utilisation d'une source sonore d'un autre fabricant. Mettre le réglage sur SONY STD si l'appareil est connecté à un autoradio SONY. Le mettre sur 0,1 V quand le niveau d'entrée de l'autoradio cassette ou du lecteur CD semble trop faible.

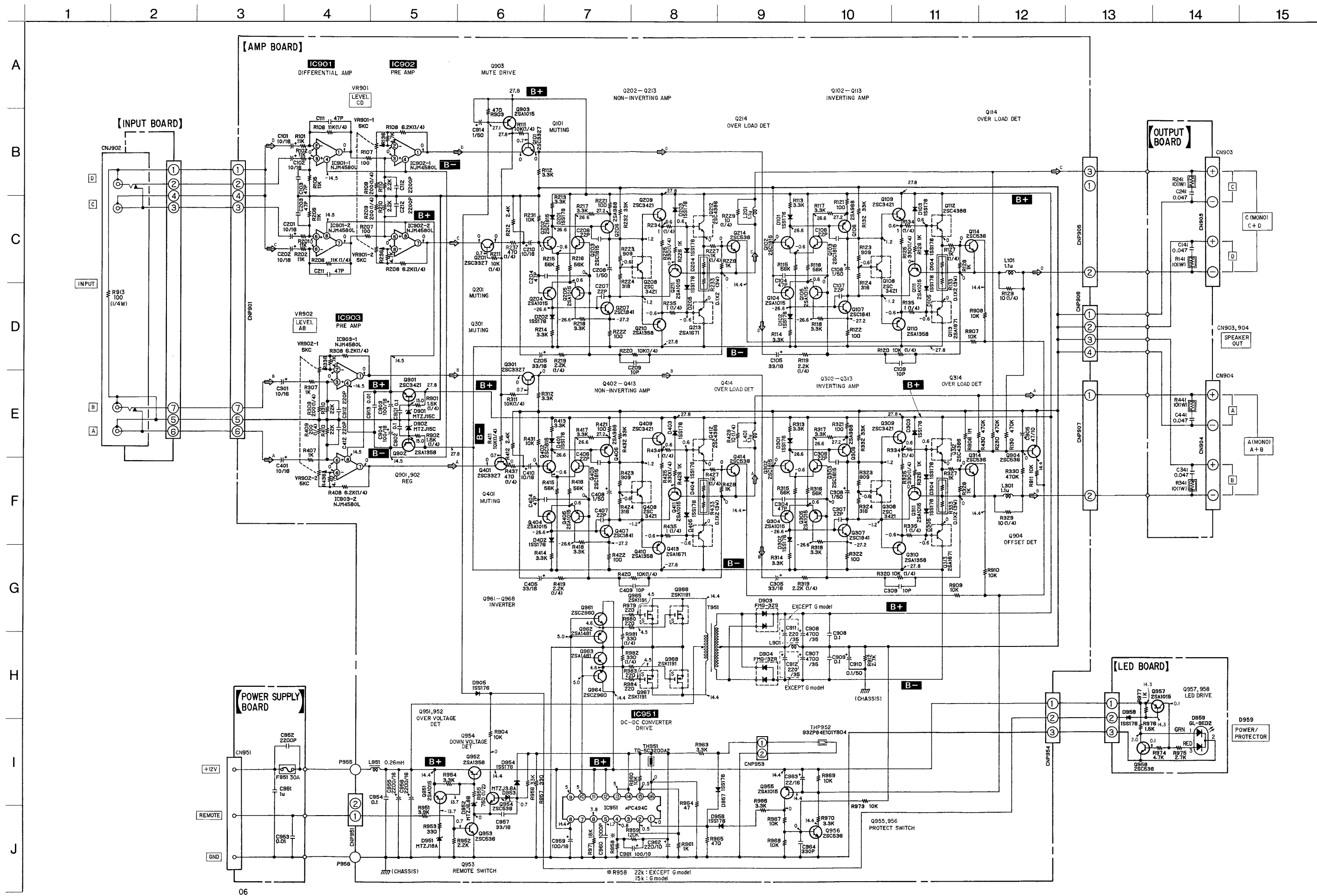




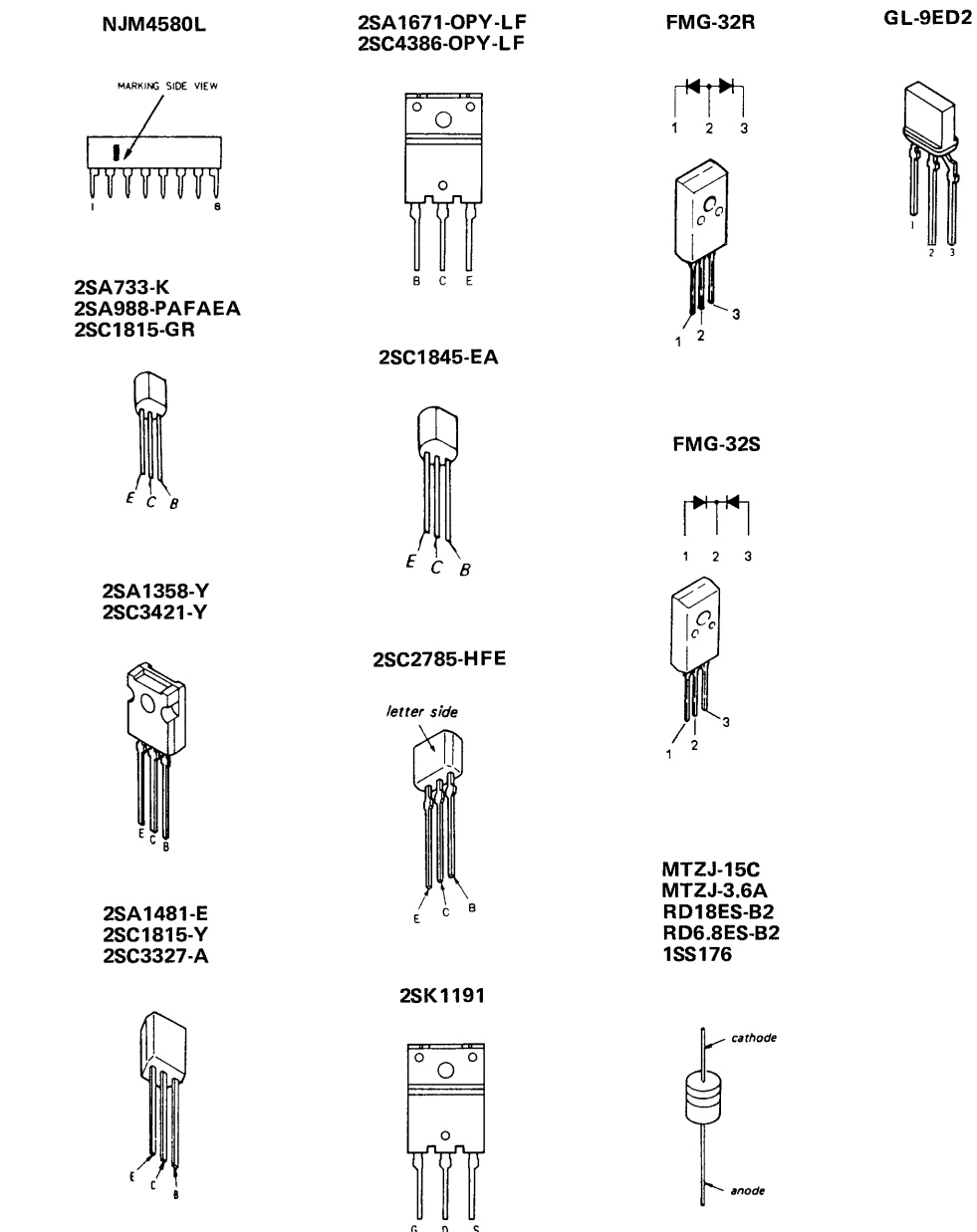
1-1. BLOCK DIAGRAM

SECTION 1
DIAGRAMS

1-3. SCHEMATIC DIAGRAM



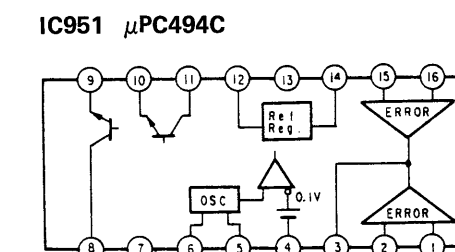
1-4. SEMICONDUCTOR LEAD LAYOUTS



Note:

- All capacitors are in μF unless otherwise noted. pF : μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- \square : nonflammable resistor.
- B+**: B+ line.
- B-**: B- line.
- Power voltage is dc 14.4V and fed with regulated dc power supply from external power voltage terminals (CN951: +12V, REMOTE).
- Voltages are taken with a VOM. (Input impedance 10M Ω) Voltage variations may be noted due to normal production tolerances.
- Signal path.
- Abbreviation
- G: Germany model

1-5. IC BLOCK DIAGRAM



SECTION 2 EXPLODED VIEW

NOTE:

- $-XX$, $-X$ mean standardized parts, so they may have some differences from the original one.

- Color Indication of Appearance Parts

Example:

KNOB, BALANCE (WHITE) ... (RED)

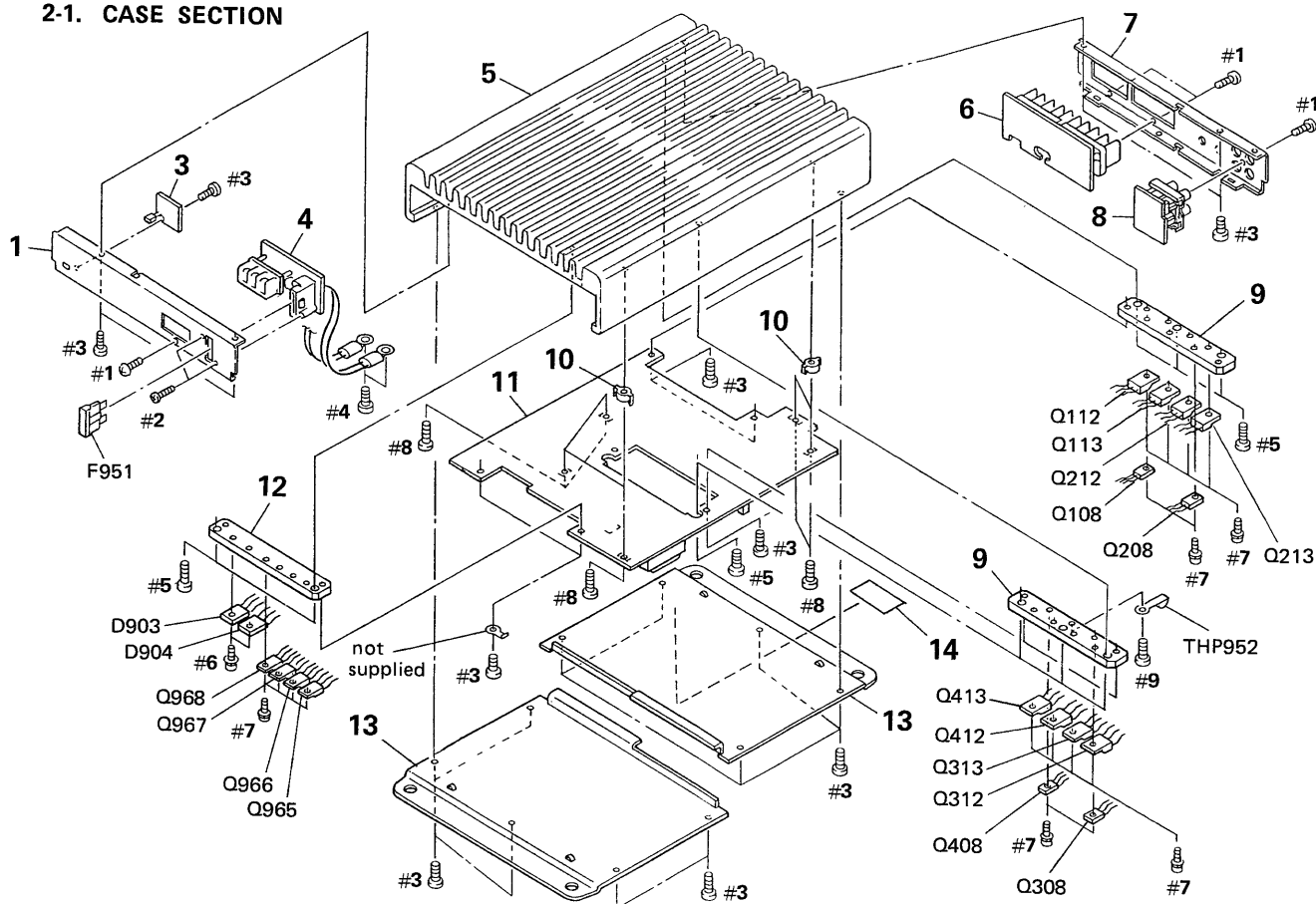
↑ ↑

Parts Cabinet's
color color

- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

- Abbreviation
G: Germany model

2-1. CASE SECTION



Ref. No.	Part No.	Description	Remark
* 1	3-377-493-01	PANEL (FRONT) (US)	
* 1	3-377-493-11	PANEL (FRONT) (AEP, UK, E, G)	
* 3	1-643-583-11	LED BOARD	
* 4	1-643-582-11	POWER SUPPLY BOARD	
* 5	3-377-491-01	HEAT SINK	
* 6	1-643-581-11	OUTPUT BOARD	
* 7	3-377-494-01	PANEL (REAR)	
* 8	1-643-580-11	INPUT BOARD	
* 9	3-377-492-01	HEAT SINK (SUB A)	
* 10	3-395-832-01	SPACER	
* 11	A-3273-961-A	AMP BOARD, COMPLETE	
* 12	3-377-169-01	HEAT SINK (SUB B)	
* 13	3-377-495-01	PLATE, BOTTOM	
* 14	3-377-499-01	LABEL, MODEL NUMBER (US, AEP, UK, E)	
* 14	3-377-500-01	LABEL, MODEL NUMBER (G)	

D903 8-719-023-35 DIODE FMG-32S
D904 8-719-023-34 DIODE FMG-32R

Ref. No.	Part No.	Description	Remark
F951	1-532-947-11	FUSE (BRAD TYPE) (AUTO FUSE)	30A
Q108	8-729-207-82	TRANSISTOR	2SC3421-Y
Q112	8-729-321-55	TRANSISTOR	2SC4386-OPY-LF
Q113	8-729-321-56	TRANSISTOR	2SA1671-OPY-LF
Q208	8-729-207-82	TRANSISTOR	2SC3421-Y
Q212	8-729-321-55	TRANSISTOR	2SC4386-OPY-LF
Q213	8-729-321-56	TRANSISTOR	2SA1671-OPY-LF
Q308	8-729-207-82	TRANSISTOR	2SC3421-Y
Q312	8-729-321-55	TRANSISTOR	2SC4386-OPY-LF
Q313	8-729-321-56	TRANSISTOR	2SA1671-OPY-LF
Q408	8-729-207-82	TRANSISTOR	2SC3421-Y
Q412	8-729-321-55	TRANSISTOR	2SC4386-OPY-LF
Q413	8-729-321-56	TRANSISTOR	2SA1671-OPY-LF
Q965	8-729-322-52	TRANSISTOR	2SK1191
Q966	8-729-322-52	TRANSISTOR	2SK1191
Q967	8-729-322-52	TRANSISTOR	2SK1191
Q968	8-729-322-52	TRANSISTOR	2SK1191
THP952	1-809-664-31	THERMISTOR,	POSITIVE

SECTION 3

ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- —XX, —X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable

- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA...,
uPB...: μ PB..., uPC...: μ PC...,
uPD...: μ PD...
- CAPACITORS
uF: μ F
- COILS
uH: μ H

- Abbreviation
G: Germany model

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
*	A-3273-961-A	AMP BOARD, COMPLETE *****					C305	1-124-034-51	ELECT	33uF	20%	16V	
*	3-377-169-01	HEAT SINK (SUB B)					C306	1-102-959-00	CERAMIC	22PF	5%	50V	
*	3-377-492-01	HEAT SINK (SUB A)					C307	1-102-959-00	CERAMIC	22PF	5%	50V	
	7-682-646-09	SCREW +PSW 3X5					C308	1-123-380-00	ELECT	1uF	20%	50V	
	7-682-947-01	SCREW +PSW 3X6					C309	1-102-947-00	CERAMIC	10PF	1%	50V	
	7-682-949-01	SCREW +PSW 3X10											
	7-682-950-01	SCREW +PSW 3X12					C312	1-102-110-00	CERAMIC	220PF	10%	50V	
	7-685-645-79	SCREW +BVTP 3X6 TYPE2 SLIT					C401	1-124-915-11	ELECT	10uF	20%	63V	
	< CAPACITOR >						C404	1-101-880-00	CERAMIC	47PF	5%	50V	
C101	1-124-915-11	ELECT	10uF	20%	63V		C405	1-124-034-51	ELECT	33uF	20%	16V	
C102	1-124-915-11	ELECT	10uF	20%	63V		C406	1-102-959-00	CERAMIC	22PF	5%	50V	
C103	1-101-880-00	CERAMIC	47PF	5%	50V		C407	1-102-959-00	CERAMIC	22PF	5%	50V	
C104	1-101-880-00	CERAMIC	47PF	5%	50V		C408	1-123-380-00	ELECT	1uF	20%	50V	
C105	1-124-034-51	ELECT	33uF	20%	16V		C409	1-102-947-00	CERAMIC	10PF	1%	50V	
C106	1-102-959-00	CERAMIC	22PF	5%	50V		C410	1-124-915-11	ELECT	10uF	20%	63V	
C107	1-102-959-00	CERAMIC	22PF	5%	50V		C412	1-102-110-00	CERAMIC	220PF	10%	50V	
C108	1-123-380-00	ELECT	1uF	20%	50V								
C109	1-102-947-00	CERAMIC	10PF	1%	50V		C901	1-136-165-00	FILM	0.1uF	5%	50V	
C111	1-101-880-00	CERAMIC	47PF	5%	50V		C902	1-136-165-00	FILM	0.1uF	5%	50V	
C112	1-102-121-00	CERAMIC	2200PF	10%	50V		C903	1-126-101-11	ELECT	100uF	20%	16V	
C201	1-124-915-11	ELECT	10uF	20%	63V		C904	1-126-101-11	ELECT	100uF	20%	16V	
C202	1-124-915-11	ELECT	10uF	20%	63V		C905	1-123-306-00	ELECT	47uF	20%	10V	
C203	1-101-880-00	CERAMIC	47PF	5%	50V								
C204	1-101-880-00	CERAMIC	47PF	5%	50V		C906	1-125-337-00	ELECT(BLOCK)	4700uF	20%	35V	
C205	1-124-034-51	ELECT	33uF	20%	16V		C907	1-125-337-00	ELECT(BLOCK)	4700uF	20%	35V	
C206	1-102-959-00	CERAMIC	22PF	5%	50V		C908	1-136-165-00	FILM	0.1uF	5%	50V	
C207	1-102-959-00	CERAMIC	22PF	5%	50V		C909	1-136-165-00	FILM	0.1uF	5%	50V	
C208	1-123-380-00	ELECT	1uF	20%	50V		C910	1-124-463-00	ELECT	0.1uF	20%	50V	
C209	1-102-947-00	CERAMIC	10PF	1%	50V								
C210	1-124-915-11	ELECT	10uF	20%	63V		C911	1-124-484-11	ELECT	220uF	20%	35V (EXCEPT G)	
C211	1-101-880-00	CERAMIC	47PF	5%	50V		C912	1-124-484-11	ELECT	220uF	20%	35V (EXCEPT G)	
C212	1-102-121-00	CERAMIC	2200PF	10%	50V		C913	1-101-004-00	CERAMIC	0.01uF		50V	
C301	1-124-915-11	ELECT	10uF	20%	63V		C914	1-123-380-00	ELECT	1uF	20%	50V	
C304	1-101-880-00	CERAMIC	47PF	5%	50V		C954	1-136-165-00	FILM	0.1uF	5%	50V	
							C955	1-124-343-00	ELECT	2200uF	20%	16V	
							C956	1-124-343-00	ELECT	2200uF	20%	16V	
							C957	1-124-034-51	ELECT	33uF	20%	16V	
							C959	1-126-101-11	ELECT	100uF	20%	16V	
							C960	1-130-471-00	MYLAR	0.001uF	5%	50V	
							C961	1-126-101-11	ELECT	100uF	20%	16V	

Ref. No.	Part No.	Description	Remark
C962	1-126-176-11	ELECT 220uF 20% 10V	
C963	1-126-233-11	ELECT 22uF 20% 35V	
C964	1-102-820-00	CERAMIC 330PF 10% 50V	

< CONNECTOR >

* CNP901	1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P	
* CNP905	1-564-104-00	PIN, CONNECTOR (B3P-VH) 3P	
* CNP906	1-564-241-00	PIN, CONNECTOR (B4P-VH) 4P	
* CNP907	1-564-320-00	PIN, CONNECTOR (B2P-VH) 2P	
* CNP951	1-569-973-11	PIN, CONNECTOR (PC BOARD) 2P	
* CNP953	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P	
* CNP954	1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P	

< DIODE >

D101	8-719-802-30	DIODE 1SS176	
D102	8-719-802-30	DIODE 1SS176	
D103	8-719-802-30	DIODE 1SS176	
D104	8-719-802-30	DIODE 1SS176	
D105	8-719-802-30	DIODE 1SS176	
D201	8-719-802-30	DIODE 1SS176	
D202	8-719-802-30	DIODE 1SS176	
D203	8-719-802-30	DIODE 1SS176	
D204	8-719-802-30	DIODE 1SS176	
D205	8-719-802-30	DIODE 1SS176	
D301	8-719-802-30	DIODE 1SS176	
D302	8-719-802-30	DIODE 1SS176	
D303	8-719-802-30	DIODE 1SS176	
D304	8-719-802-30	DIODE 1SS176	
D305	8-719-802-30	DIODE 1SS176	
D401	8-719-802-30	DIODE 1SS176	
D402	8-719-802-30	DIODE 1SS176	
D403	8-719-802-30	DIODE 1SS176	
D404	8-719-802-30	DIODE 1SS176	
D405	8-719-802-30	DIODE 1SS176	
D901	8-719-921-93	DIODE MTZJ-15C	
D902	8-719-921-93	DIODE MTZJ-15C	
D903	8-719-023-35	DIODE FMG-32S	
D904	8-719-023-34	DIODE FMG-32R	
D905	8-719-802-30	DIODE 1SS176	
D951	8-719-110-49	DIODE RD18ES-B2	
D952	8-719-109-97	DIODE RD6.8ES-B2	
D953	8-719-982-03	DIODE MTZJ-3.6A	
D954	8-719-802-30	DIODE 1SS176	
D956	8-719-802-30	DIODE 1SS176	
D957	8-719-802-30	DIODE 1SS176	

< IC >

IC901	8-759-710-73	IC NJM4580L	
-------	--------------	-------------	--

Ref. No.	Part No.	Description	Remark
IC902	8-759-710-73	IC NJM4580L	
IC903	8-759-710-73	IC NJM4580L	
IC951	8-759-103-87	IC uPC494C	

< COIL >

* L101	1-428-086-11	COIL, AIR-CORE 1.1uH	
* L201	1-428-086-11	COIL, AIR-CORE 1.1uH	
* L301	1-428-086-11	COIL, AIR-CORE 1.1uH	
* L401	1-428-086-11	COIL, AIR-CORE 1.1uH	
L901	1-424-112-11	COIL, CHOKE 7.5uH	
L951	1-424-303-11	COIL, CHOKE 0.26mH	

< TRANSISTOR >

Q101	8-729-203-48	TRANSISTOR 2SC3327-A	
Q102	8-729-281-52	TRANSISTOR 2SC1815-Y	
Q103	8-729-281-52	TRANSISTOR 2SC1815-Y	
Q104	8-729-173-38	TRANSISTOR 2SA733-K	
Q105	8-729-173-38	TRANSISTOR 2SA733-K	
Q106	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q107	8-729-184-53	TRANSISTOR 2SC1845-EA	
Q108	8-729-207-82	TRANSISTOR 2SC3421-Y	
Q109	8-729-207-82	TRANSISTOR 2SC3421-Y	
Q110	8-729-207-89	TRANSISTOR 2SA1358-Y	
Q111	8-729-173-38	TRANSISTOR 2SA733-K	
Q112	8-729-321-55	TRANSISTOR 2SC4386-OPY-LF	
Q113	8-729-321-56	TRANSISTOR 2SA1671-OPY-LF	
Q114	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q201	8-729-203-48	TRANSISTOR 2SC3327-A	
Q202	8-729-281-52	TRANSISTOR 2SC1815-Y	
Q203	8-729-281-52	TRANSISTOR 2SC1815-Y	
Q204	8-729-173-38	TRANSISTOR 2SA733-K	
Q205	8-729-173-38	TRANSISTOR 2SA733-K	
Q206	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q207	8-729-184-53	TRANSISTOR 2SC1845-EA	
Q208	8-729-207-82	TRANSISTOR 2SC3421-Y	
Q209	8-729-207-82	TRANSISTOR 2SC3421-Y	
Q210	8-729-207-89	TRANSISTOR 2SA1358-Y	
Q211	8-729-173-38	TRANSISTOR 2SA733-K	
Q212	8-729-321-55	TRANSISTOR 2SC4386-OPY-LF	
Q213	8-729-321-56	TRANSISTOR 2SA1671-OPY-LF	
Q214	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q301	8-729-203-48	TRANSISTOR 2SC3327-A	
Q302	8-729-281-52	TRANSISTOR 2SC1815-Y	
Q303	8-729-281-52	TRANSISTOR 2SC1815-Y	
Q304	8-729-173-38	TRANSISTOR 2SA733-K	
Q305	8-729-173-38	TRANSISTOR 2SA733-K	
Q306	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q307	8-729-184-53	TRANSISTOR 2SC1845-EA	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q308	8-729-207-82	TRANSISTOR	2SC3421-Y	R111	1-249-429-11	CARBON 10K 5%	1/4W
Q309	8-729-207-82	TRANSISTOR	2SC3421-Y	R112	1-249-423-11	CARBON 3.3K 5%	1/4W
Q310	8-729-207-89	TRANSISTOR	2SA1358-Y	R113	1-249-423-11	CARBON 3.3K 5%	1/4W
Q311	8-729-173-38	TRANSISTOR	2SA733-K	R114	1-249-423-11	CARBON 3.3K 5%	1/4W
Q312	8-729-321-55	TRANSISTOR	2SC4386-OPY-LF	R115	1-249-438-11	CARBON 56K 5%	1/4W
Q313	8-729-321-56	TRANSISTOR	2SA1671-OPY-LF	R116	1-249-438-11	CARBON 56K 5%	1/4W
Q314	8-729-119-78	TRANSISTOR	2SC2785-HFE	R117	1-249-423-11	CARBON 3.3K 5%	1/4W
Q401	8-729-203-48	TRANSISTOR	2SC3327-A	R118	1-249-423-11	CARBON 3.3K 5%	1/4W
Q402	8-729-281-52	TRANSISTOR	2SC1815-Y	R119	1-249-421-11	CARBON 2.2K 5%	1/4W
Q403	8-729-281-52	TRANSISTOR	2SC1815-Y	R120	1-249-429-11	CARBON 10K 5%	1/4W
Q404	8-729-173-38	TRANSISTOR	2SA733-K	R121	1-249-405-11	CARBON 100 5%	1/4W
Q405	8-729-173-38	TRANSISTOR	2SA733-K	R122	1-249-405-11	CARBON 100 5%	1/4W
Q406	8-729-140-82	TRANSISTOR	2SA988-PAFAEA	R123	1-247-830-11	CARBON 910 5%	1/4W
Q407	8-729-184-53	TRANSISTOR	2SC1845-EA	R124	1-247-818-11	CARBON 300 5%	1/4W
Q408	8-729-207-82	TRANSISTOR	2SC3421-Y	R125	1-249-411-11	CARBON 330 5%	1/4W
Q409	8-729-207-82	TRANSISTOR	2SC3421-Y	R126	1-249-417-11	CARBON 1K 5%	1/4W
Q410	8-729-207-89	TRANSISTOR	2SA1358-Y	R127	1-249-417-11	CARBON 1K 5%	1/4W
Q411	8-729-173-38	TRANSISTOR	2SA733-K	R128	1-249-417-11	CARBON 1K 5%	1/4W
Q412	8-729-321-55	TRANSISTOR	2SC4386-OPY-LF	R129	1-249-393-11	CARBON 10 5%	1/4W
Q413	8-729-321-56	TRANSISTOR	2SA1671-OPY-LF	R130	1-247-895-00	CARBON 470K 5%	1/4W
Q414	8-729-119-78	TRANSISTOR	2SC2785-HFE	R132	1-249-435-11	CARBON 33K 5%	1/4W
Q901	8-729-207-82	TRANSISTOR	2SC3421-Y	R133	1-219-130-11	RES, METAL PLATE 0.1X2 3W F	
Q902	8-729-207-89	TRANSISTOR	2SA1358-Y	R134	1-249-381-11	CARBON 1 5%	1/4W
Q903	8-729-173-38	TRANSISTOR	2SA733-K	R135	1-249-381-11	CARBON 1 5%	1/4W
Q904	8-729-119-78	TRANSISTOR	2SC2785-HFE	R136	1-249-425-11	CARBON 4.7K 5%	1/4W
Q951	8-729-173-38	TRANSISTOR	2SA733-K	R201	1-247-856-00	CARBON 11K 5%	1/4W
Q952	8-729-207-89	TRANSISTOR	2SA1358-Y	R202	1-247-856-00	CARBON 11K 5%	1/4W
Q953	8-729-119-78	TRANSISTOR	2SC2785-HFE	R205	1-247-856-00	CARBON 11K 5%	1/4W
Q954	8-729-119-78	TRANSISTOR	2SC2785-HFE	R206	1-247-856-00	CARBON 11K 5%	1/4W
Q955	8-729-173-38	TRANSISTOR	2SA733-K	R207	1-249-405-11	CARBON 100 5%	1/4W
Q956	8-729-119-78	TRANSISTOR	2SC2785-HFE	R208	1-247-850-11	CARBON 6.2K 5%	1/4W
Q961	8-729-281-53	TRANSISTOR	2SC1815-GR	R209	1-247-814-11	CARBON 200 5%	1/4W
Q962	8-729-803-57	TRANSISTOR	2SA1481-E	R210	1-249-421-11	CARBON 2.2K 5%	1/4W
Q963	8-729-803-57	TRANSISTOR	2SA1481-E	R211	1-249-429-11	CARBON 10K 5%	1/4W
Q964	8-729-281-53	TRANSISTOR	2SC1815-GR	R212	1-247-840-00	CARBON 2.4K 5%	1/4W
Q965	8-729-322-52	TRANSISTOR	2SK1191	R213	1-249-423-11	CARBON 3.3K 5%	1/4W
Q966	8-729-322-52	TRANSISTOR	2SK1191	R214	1-249-423-11	CARBON 3.3K 5%	1/4W
Q967	8-729-322-52	TRANSISTOR	2SK1191	R215	1-249-438-11	CARBON 56K 5%	1/4W
Q968	8-729-322-52	TRANSISTOR	2SK1191	R216	1-249-438-11	CARBON 56K 5%	1/4W
				R217	1-249-423-11	CARBON 3.3K 5%	1/4W
< RESISTOR >				R218	1-249-423-11	CARBON 3.3K 5%	1/4W
R101	1-247-856-00	CARBON 11K 5%	1/4W	R219	1-249-421-11	CARBON 2.2K 5%	1/4W
R102	1-247-856-00	CARBON 11K 5%	1/4W	R220	1-249-429-11	CARBON 10K 5%	1/4W
R105	1-247-856-00	CARBON 11K 5%	1/4W	R221	1-249-405-11	CARBON 100 5%	1/4W
R106	1-247-856-00	CARBON 11K 5%	1/4W	R222	1-249-405-11	CARBON 100 5%	1/4W
R107	1-249-405-11	CARBON 100 5%	1/4W	R223	1-247-830-11	CARBON 910 5%	1/4W
R108	1-247-850-11	CARBON 6.2K 5%	1/4W	R224	1-247-818-11	CARBON 300 5%	1/4W
R109	1-247-814-11	CARBON 200 5%	1/4W	R225	1-249-411-11	CARBON 330 5%	1/4W
R110	1-249-421-11	CARBON 2.2K 5%	1/4W	R226	1-249-417-11	CARBON 1K 5%	1/4W

Ref. No.	Part No.	Description	Remark
R227	1-249-417-11	CARBON 1K 5% 1/4W	
R228	1-249-417-11	CARBON 1K 5% 1/4W	
R229	1-249-393-11	CARBON 10 5% 1/4W	
R230	1-247-895-00	CARBON 470K 5% 1/4W	
R231	1-249-429-11	CARBON 10K 5% 1/4W	
R232	1-249-435-11	CARBON 33K 5% 1/4W	
R233	1-219-130-11	RES, METAL PLATE 0.1X2 3W F	
R234	1-249-381-11	CARBON 1 5% 1/4W	
R235	1-249-381-11	CARBON 1 5% 1/4W	
R236	1-249-425-11	CARBON 4.7K 5% 1/4W	
R237	1-249-413-11	CARBON 470 5% 1/4W	
R307	1-249-417-11	CARBON 1K 5% 1/4W	
R308	1-247-850-11	CARBON 6.2K 5% 1/4W	
R309	1-247-814-11	CARBON 200 5% 1/4W	
R310	1-249-433-11	CARBON 22K 5% 1/4W	
R311	1-249-429-11	CARBON 10K 5% 1/4W	
R312	1-249-423-11	CARBON 3.3K 5% 1/4W	
R313	1-249-423-11	CARBON 3.3K 5% 1/4W	
R314	1-249-423-11	CARBON 3.3K 5% 1/4W	
R315	1-249-438-11	CARBON 56K 5% 1/4W	
R316	1-249-438-11	CARBON 56K 5% 1/4W	
R317	1-249-423-11	CARBON 3.3K 5% 1/4W	
R318	1-249-423-11	CARBON 3.3K 5% 1/4W	
R319	1-249-421-11	CARBON 2.2K 5% 1/4W	
R320	1-249-429-11	CARBON 10K 5% 1/4W	
R321	1-249-405-11	CARBON 100 5% 1/4W	
R322	1-249-405-11	CARBON 100 5% 1/4W	
R323	1-247-830-11	CARBON 910 5% 1/4W	
R324	1-247-818-11	CARBON 300 5% 1/4W	
R325	1-249-411-11	CARBON 330 5% 1/4W	
R326	1-249-417-11	CARBON 1K 5% 1/4W	
R327	1-249-417-11	CARBON 1K 5% 1/4W	
R328	1-249-417-11	CARBON 1K 5% 1/4W	
R329	1-249-393-11	CARBON 10 5% 1/4W	
R330	1-247-895-00	CARBON 470K 5% 1/4W	
R332	1-249-435-11	CARBON 33K 5% 1/4W	
R333	1-219-130-11	RES, METAL PLATE 0.1X2 3W F	
R334	1-249-381-11	CARBON 1 5% 1/4W	
R335	1-249-381-11	CARBON 1 5% 1/4W	
R336	1-249-425-11	CARBON 4.7K 5% 1/4W	
R407	1-249-417-11	CARBON 1K 5% 1/4W	
R408	1-247-850-11	CARBON 6.2K 5% 1/4W	
R409	1-247-814-11	CARBON 200 5% 1/4W	
R410	1-249-433-11	CARBON 22K 5% 1/4W	
R411	1-249-429-11	CARBON 10K 5% 1/4W	
R412	1-247-840-00	CARBON 2.4K 5% 1/4W	
R413	1-249-423-11	CARBON 3.3K 5% 1/4W	
R414	1-249-423-11	CARBON 3.3K 5% 1/4W	
R415	1-249-438-11	CARBON 56K 5% 1/4W	

Ref. No.	Part No.	Description	Remark
R416	1-249-438-11	CARBON 56K 5% 1/4W	
R417	1-249-423-11	CARBON 3.3K 5% 1/4W	
R418	1-249-423-11	CARBON 3.3K 5% 1/4W	
R419	1-249-421-11	CARBON 2.2K 5% 1/4W	
R420	1-249-429-11	CARBON 10K 5% 1/4W	
R421	1-249-405-11	CARBON 100 5% 1/4W	
R422	1-249-405-11	CARBON 100 5% 1/4W	
R423	1-247-830-11	CARBON 910 5% 1/4W	
R424	1-247-818-11	CARBON 300 5% 1/4W	
R425	1-249-411-11	CARBON 330 5% 1/4W	
R426	1-249-417-11	CARBON 1K 5% 1/4W	
R427	1-249-417-11	CARBON 1K 5% 1/4W	
R428	1-249-417-11	CARBON 1K 5% 1/4W	
R429	1-249-393-11	CARBON 10 5% 1/4W	
R430	1-247-895-00	CARBON 470K 5% 1/4W	
R431	1-249-429-11	CARBON 10K 5% 1/4W	
R432	1-249-435-11	CARBON 33K 5% 1/4W	
R433	1-219-130-11	RES, METAL PLATE 0.1X2 3W F	
R434	1-249-381-11	CARBON 1 5% 1/4W	
R435	1-249-381-11	CARBON 1 5% 1/4W	
R436	1-249-425-11	CARBON 4.7K 5% 1/4W	
R437	1-249-413-11	CARBON 470 5% 1/4W	
R901	1-249-419-11	CARBON 1.5K 5% 1/4W	
R902	1-249-419-11	CARBON 1.5K 5% 1/4W	
R903	1-249-413-11	CARBON 470 5% 1/4W	
R904	1-249-429-11	CARBON 10K 5% 1/4W	
R906	1-246-545-00	CARBON 1M 1% 1/4W	
R907	1-249-429-11	CARBON 10K 5% 1/4W	
R908	1-249-429-11	CARBON 10K 5% 1/4W	
R909	1-249-429-11	CARBON 10K 5% 1/4W	
R910	1-249-429-11	CARBON 10K 5% 1/4W	
R911	1-249-429-11	CARBON 10K 5% 1/4W	
R912	1-249-422-11	CARBON 2.7K 5% 1/4W	
R951	1-249-424-11	CARBON 3.9K 5% 1/4W	
R952	1-249-421-11	CARBON 2.2K 5% 1/4W	
R953	1-249-411-11	CARBON 330 5% 1/4W	
R954	1-249-423-11	CARBON 3.3K 5% 1/4W	
R955	1-247-237-00	CARBON 750 5% 1/2W	
R956	1-247-726-11	CARBON 33K 1% 1/4W	
R957	1-249-411-11	CARBON 330 5% 1/4W	
R958	1-249-433-11	CARBON 22K 5% 1/4W (EXCEPT G)	
R958	1-249-431-11	CARBON 15K 5% 1/4W (G)	
R959	1-247-881-00	CARBON 120K 5% 1/4W	
R960	1-249-429-11	CARBON 10K 5% 1/4W	
R961	1-249-417-11	CARBON 1K 5% 1/4W	
R963	1-249-423-11	CARBON 3.3K 5% 1/4W	
R964	1-249-401-11	CARBON 47 5% 1/4W	
R965	1-249-413-11	CARBON 470 5% 1/4W	
R966	1-249-423-11	CARBON 3.3K 5% 1/4W	

AMP**INPUT****LED****OUTPUT****POWER SUPPLY**

Ref. No.	Part No.	Description	Remark
-----	-----	-----	-----
R967	1-249-429-11	CARBON 10K 5% 1/4W	
R968	1-249-429-11	CARBON 10K 5% 1/4W	
R969	1-249-429-11	CARBON 10K 5% 1/4W	
R970	1-249-423-11	CARBON 3.3K 5% 1/4W	
R971	1-249-432-11	CARBON 18K 5% 1/4W	
R973	1-249-429-11	CARBON 10K 5% 1/4W	
R979	1-249-409-11	CARBON 220 5% 1/4W	
R980	1-249-409-11	CARBON 220 5% 1/4W	
R981	1-249-411-11	CARBON 330 5% 1/4W	
R982	1-249-411-11	CARBON 330 5% 1/4W	
R983	1-249-409-11	CARBON 220 5% 1/4W	
R984	1-249-409-11	CARBON 220 5% 1/4W	
< TRANSFORMER >			
T951	1-450-528-11	TRANSFORMER, DC-DC CONVERTER	
< THERMISTOR >			
TH951	1-808-877-11	THERMISTOR	
< THERMISTOR(POSITIVE) >			
THP952	1-809-664-31	THERMISTOR, POSITIVE	
< VARIABLE RESISTOR >			
VR901	1-238-424-11	RES, VAR, CARBON 20K/20K (LEVEL CD)	
VR902	1-238-424-11	RES, VAR, CARBON 20K/20K (LEVEL AB)	

*	1-643-580-11	INPUT BOARD	

< CONNECTOR >			
CNJ902	1-569-110-11	JACK, PIN (WITH SWITCH) 4P	
< RESISTOR >			
R913	1-247-700-11	CARBON 100 5% 1/4W	

*	1-643-583-11	LED BOARD	

< DIODE >			
D958	8-719-802-30	DIODE 1SS176	
D959	8-719-974-93	LED GL-9ED2 (POWER/PROTECTOR)	
< TRANSISTOR >			
Q957	8-729-173-38	TRANSISTOR 2SA733-K	
Q958	8-729-119-78	TRANSISTOR 2SC2785-HFE	

Ref. No.	Part No.	Description	Remark
-----	-----	-----	-----
< RESISTOR >			
R974	1-249-425-11	CARBON 4.7K 5% 1/4W	
R975	1-249-422-11	CARBON 2.7K 5% 1/4W	
R976	1-249-419-11	CARBON 1.5K 5% 1/4W	
R977	1-249-417-11	CARBON 1K 5% 1/4W	

*	1-643-581-11	OUTPUT BOARD	

< CAPACITOR >			
C141	1-130-491-00	MYLAR 0.047uF 5% 50V	
C241	1-130-491-00	MYLAR 0.047uF 5% 50V	
C341	1-130-491-00	MYLAR 0.047uF 5% 50V	
C441	1-130-491-00	MYLAR 0.047uF 5% 50V	
< CONNECTOR >			
CN903	1-537-252-11	TERMINAL BOARD (4P) (SPEAKER OUT)	
CN904	1-537-252-11	TERMINAL BOARD (4P) (SPEAKER OUT)	
< RESISTOR >			
R141	1-215-857-11	METAL OXIDE 10 5% 1W F	
R241	1-215-857-11	METAL OXIDE 10 5% 1W F	
R341	1-215-857-11	METAL OXIDE 10 5% 1W F	
R441	1-215-857-11	METAL OXIDE 10 5% 1W F	

*	1-643-582-11	POWER SUPPLY BOARD	

1-533-226-11 HOLDER, FUSE (BRAID)			
< CAPACITOR >			
C951	1-136-177-00	FILM 1uF 5% 50V	
C952	1-130-475-00	MYLAR 0.0022uF 5% 50V	
C953	1-101-004-00	CERAMIC 0.01uF 50V	
< CONNECTOR >			
CN951	1-537-251-11	TERMINAL BOARD (3P) (REMOTE/+12V/GND)	

MISCELLANEOUS			

F951	1-532-947-11	FUSE (BRADE TYPE) (AUTO FUSE) 30A	

ACCESSORIES & PACKING MATERIALS			

3-367-410-01 SCREW (DIA. 5X15), TAPPING			
*	3-379-300-01	INDIVIDUAL CARTON	

Ref. No.	Part No.	Description	Remark
-----	-----	-----	-----
*	3-379-302-01	CUSHION	
	3-754-874-11	MANUAL, INSTRUCTION (AEP, UK, E, G) (ENGLISH, FRENCH, GERMAN, CHINESE)	
	3-754-874-21	MANUAL, INSTRUCTION (US) (ENGLISH, FRENCH)	
	3-754-874-41	MANUAL, INSTRUCTION (AEP, UK) (FRENCH, DUTCH, SWEDISH, ITALIAN, PORTUGUESE)	

HARDWARE LIST

#1	7-685-646-79	SCREW +BVTP 3X8	TYPE2 SLIT
#2	7-685-104-19	SCREW +P 2X6	TYPE2 SLIT
#3	7-685-645-79	SCREW +BVTP 3X6	TYPE2 SLIT
#4	7-682-646-09	SCREW +PS 3X5	
#5	7-685-647-79	SCREW +BVTP 3X10	TYPE2 SLIT
#6	7-682-950-01	SCREW +PSW 3X12	
#7	7-682-949-01	SCREW +PSW 3X10	
#8	7-685-648-79	SCREW +BVTP 3X12	TYPE2 SLIT
#9	7-682-947-01	SCREW +PSW 3X6	