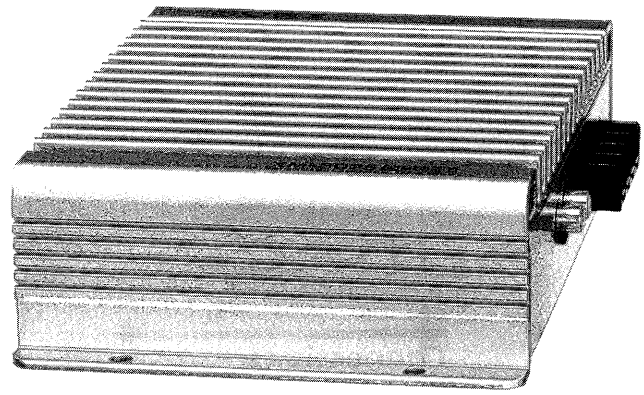
XM-3025

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model



SPECIFICATIONS

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION 30 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
Inputs: RCA pin jacks
Outputs: Speaker terminals
Speaker impedance: 2 – 8 ohms (stereo)
4 – 8 ohms (when used as a bridging amplifier)
Maximum output at 4 ohms
60 watts per channel
160 watts (monaural)
Rated outputs (supply voltage at 14.4 V)
30 watts per channel
(20 Hz – 20 kHz, 0.04% THD, at 4 ohms)
40 watts per channel
(20 Hz – 20 kHz, 0.1% THD, at 2 ohms)
Monaural: 70 watts
(20 Hz – 20 kHz, 0.1% THD, at 4 ohms)
Frequency response
5 Hz – 100 kHz ($^{+0}_{-3}$ dB)
Harmonic distortion
0.005% or less (at 1 kHz, 4 ohms)
Input level adjustment range
0.2 – 2 V

Power requirements
12 V DC car battery (negative ground)
Power supply voltage
10.5 – 16 V
Current drain: at rated output: 8 A (4 ohms, 30 watts x 2)
at 10% THD: 11 A
Remote input: 5 mA
Dimensions: Approx.
179 x 56 x 140 mm (w/h/d)
($7\,^1/_8$ x $2\,^1/_4$ x $5\,^5/_8$ inches)
not incl. projecting parts and controls
Mass: Approx. 1.4 kg (3 lb. 1 oz.) not incl. accessories
Supplied accessories
Mounting screws (4)

Design and specifications are subject to change without notice.

STEREO POWER AMPLIFIER

SONY®

SECTION 1
GENERAL

This section is extracted from instruction manual.

Features

- Maximum power output of 60 watts per channel (at 4 ohms).
- The XM-3025 can be used as a monaural amplifier with a maximum output of 160 watts.
- Dual mode connection can be made for a multi-speaker system.
- Provided with a protection circuit.
- Pulse power supply** for stable and regulated output power.

Pulse power supply

This unit has a built-in convertor which converts the power supply from the DC 12 volt 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 being converted into 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 a low impedance output.

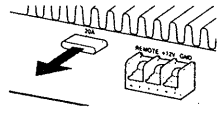
Precautions

Fuse Replacement

If the fuse blows, check the power connection and replace the fuse. If the fuse blows again after the replacement, there may be an internal malfunction. In this case, consult your nearest Sony dealer.

Warning

Use the specified fuse with correct amperage. Use of a fuse with higher amperage rating may cause serious damage to the unit.

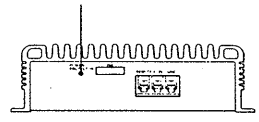


Protection circuit

This amplifier is provided with a protection circuit which operates in the following cases when:
— the unit is overheated
— a DC current is generated
— the speaker terminals are short circuited.

The color of the POWER/PROTECTOR indicator will change from green to red and the unit will shut down. If this happens, turn off the connected equipment and take out the cassette tape or disc and determine the cause of the malfunction. If the amplifier has overheated, wait until the unit cools off.

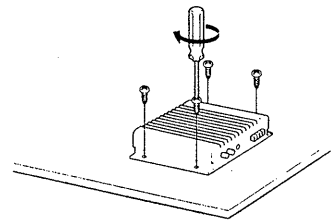
POWER/PROTECTOR indicator



Installation

Before Installation

- Mount the unit either inside the trunk room or under a seat.
- Choose the mounting location carefully so that the unit will not interfere with the normal driving functions of the driver and it will not be exposed to direct sunlight or hot air from the heater.
- Do not install the unit under the floor carpet, where the heat dissipation from the unit will be considerably impaired.



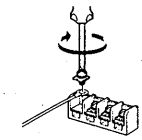
Firstly, use the template printed on the back of the carton to mark the positions of the four screw holes on the surface of the mounting board (not supplied). Then drill the holes whose diameter should be approximately 3 millimeters (mm) and mount the unit onto the board with the supplied mounting screws. The supplied mounting screws are 15 mm long. Therefore, make sure that the mounting board is thicker than 15 mm.

Connections

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 ⊖ terminal of the speaker system with the car chassis, and do not connect the ⊖ terminal of the right speaker with that of the left speaker.
- Run the input and output cords away from the power supply 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 leads 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 volt power supply lead only after all the other leads have been connected.

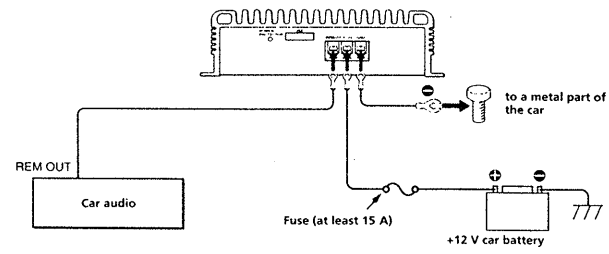
Make the terminal connections as illustrated below.



When you tighten the screw, be careful not to apply too much torque* as doing so may damage the screw.

* The torque value should be less than 1 N•m.

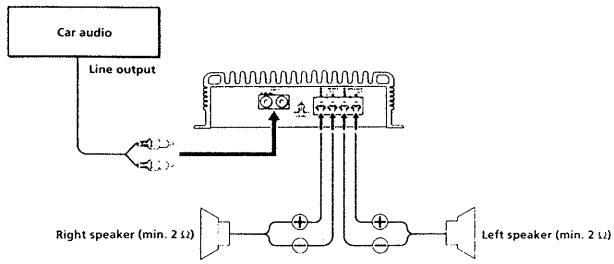
Power Connection Leads



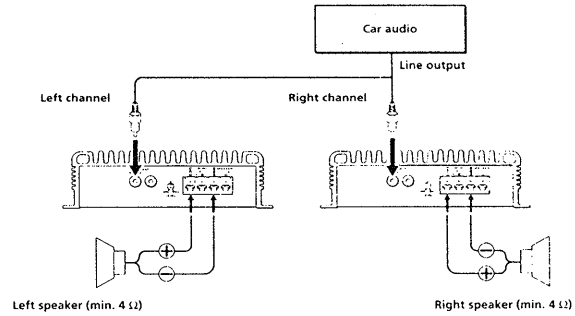
Notes on the power supply

- Connect the +12 volt power supply lead only after all the other leads have been connected.
- **Be sure to connect the ground lead of the unit securely to a metal part of the car. A loose connection may cause a malfunction of the amplifier.**
- Be sure to connect the remote control lead of the car audio to the remote terminal.
- Use the power supply lead with a fuse attached (at least 15 A).
- Place the fuse in the power supply lead as close as possible to the car battery.
- Make sure that the leads to be connected to the **+12V** and **GND** terminals of this unit respectively must be larger than 14-Gauge (A.W.G.-14) or with the sectional area of more than 2 mm².

2-Speaker System



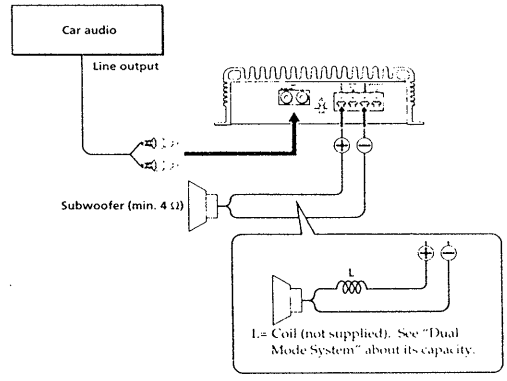
As a Monaural Amplifier



Note

Make sure that the line output from the car audio is connected to the jack marked "R (MONO)" on the unit.

As the Monaural Amplifier for a Subwoofer



Notes

- If you wish to use a subwoofer as a monaural speaker, connect the speaker as illustrated above. The output signals to the subwoofer will be the combination of both right and left output signals.
- As the XM-3025 is not equipped with the built-in low-pass filter, use a coil (not supplied) as a substitute for the low-pass filter.

Dual Mode System (With a Bridged Subwoofer)

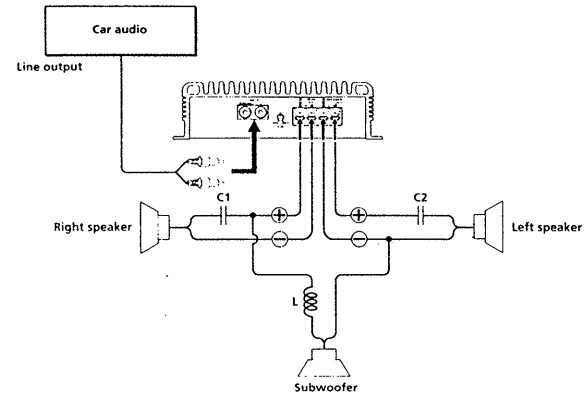


Table of crossover values for 6 dB/octave (4 ohms)

Crossover Frequency unit: Hz	L (coil)** unit: mH	C1/C2 (capacitor)** unit: μF
50	12.7	800
80	8.2	500
100	6.2	400
130	4.7	300
150	4.2	270
200	3.3	200
250	2.4	150
400	1.6	100
600	1.0	68
800	0.8	50
1000	0.6	39

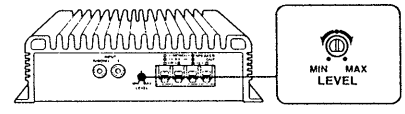
(not supplied)

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 a 12 decibels/octave system in your car, the following points must be considered. In a 12 decibels/octave system where both a choke and 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 into 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.

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. Turn it to MAX when the output level of the cassette car audio or CD player seems low.

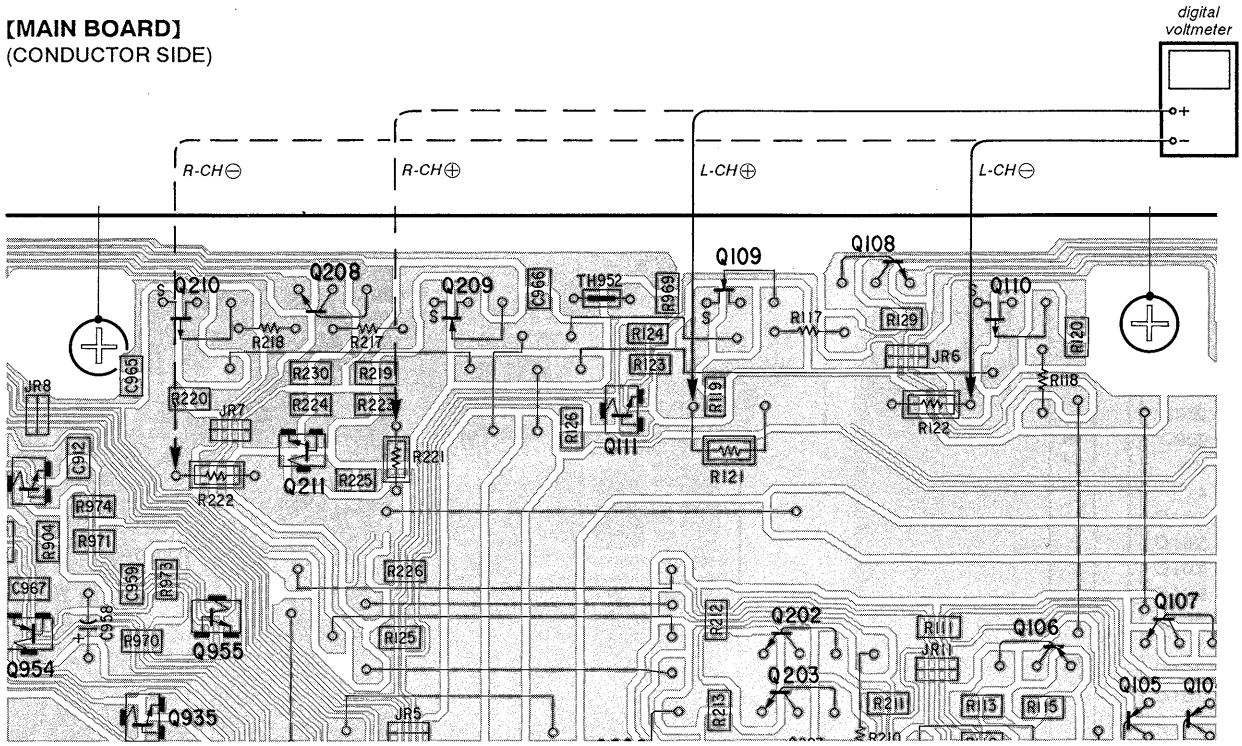


SECTION 2
ELECTRICAL ADJUSTMENTS

Bias Adjustment

Setting :

[MAIN BOARD]
(CONDUCTOR SIDE)

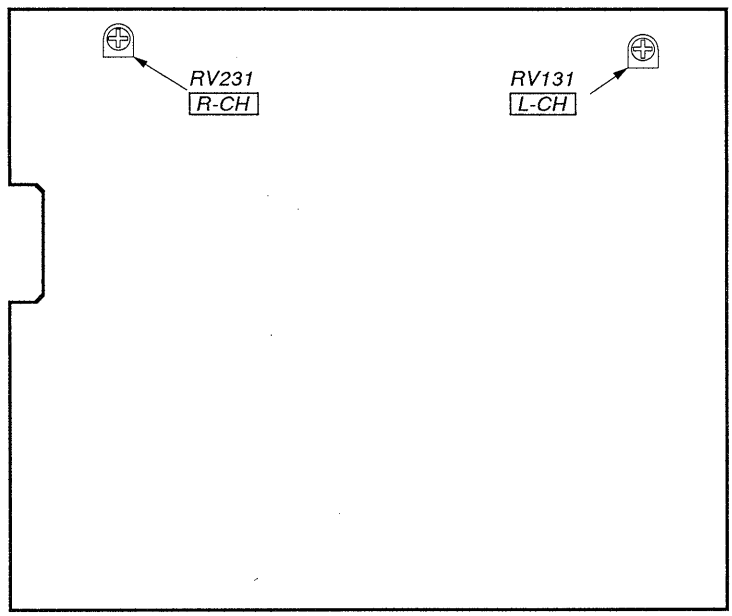


Procedure :

1. Adjust the RV131 (L-CH) and RV231 (R-CH) so the digital voltmeter reading becomes the adjustment limits below.
   Adjustment Limits : 8 to 12mV

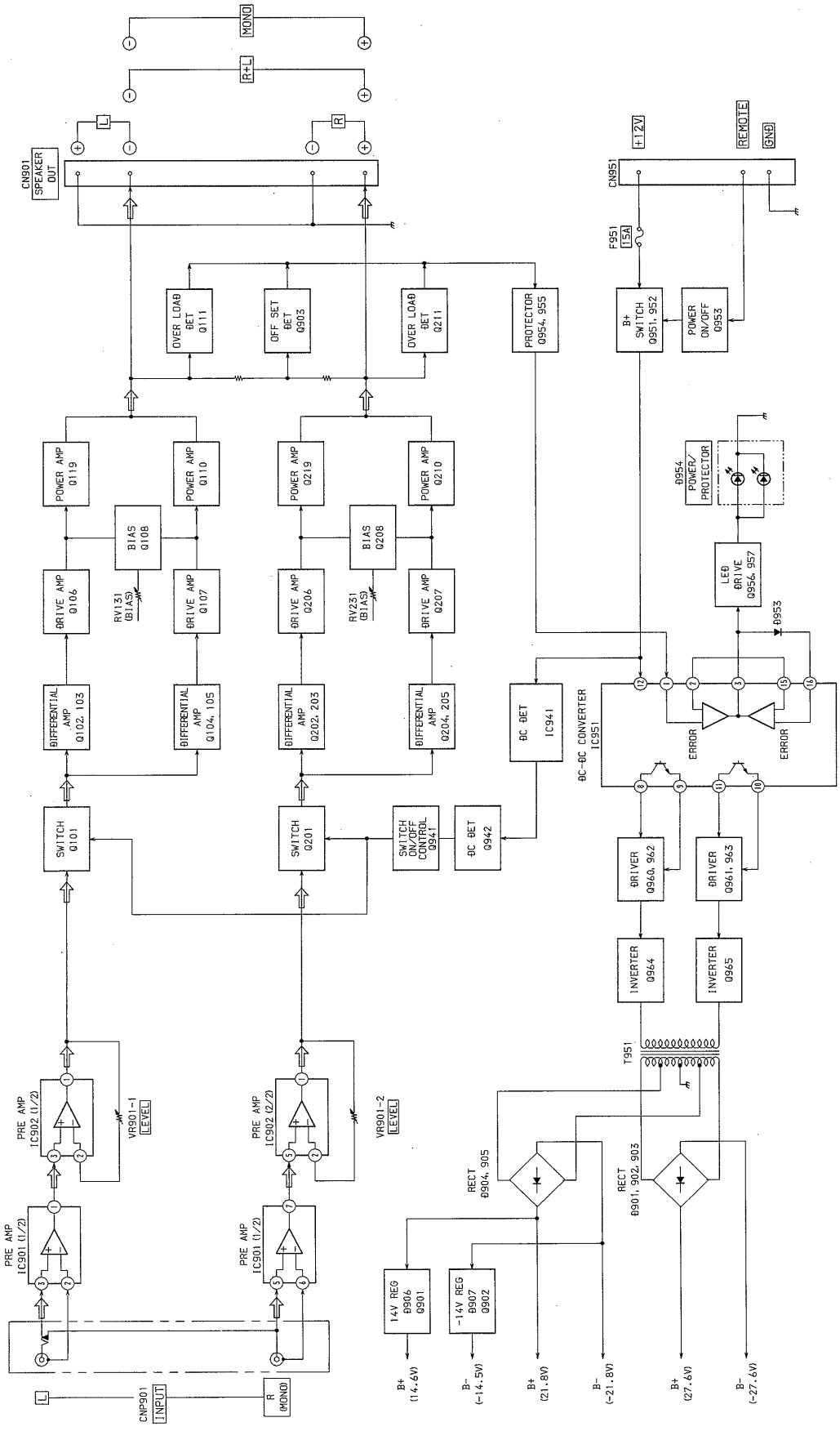
Adjustment Location : MAIN board

[MAIN BOARD]
(COMPONENT SIDE)



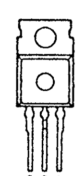
SECTION 3
DIAGRAMS

3-1. BLOCK DIAGRAM

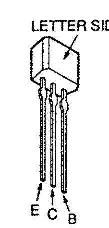


• SEMICONDUCTOR LEAD LAYOUTS

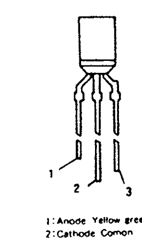
MTAJ10P10
MTAJ25N06HD
MTAJ30N06HD



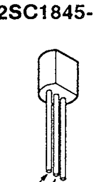
2SC2785-HFE



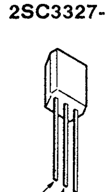
GL9ED4



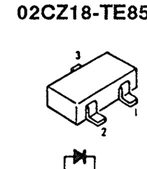
2SA733-K
2SC1845-EA



2SC3327-A

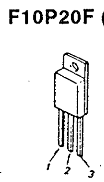


02CZ4.7-TE85L
02CZ6.8-TE85L
02CZ15-TE85L
02CZ18-TE85L

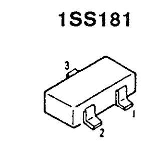


2SA881-Q
2SC2021-Q

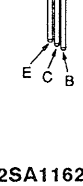
F10P20F (R)



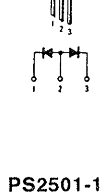
1SS181



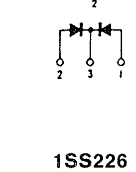
2SA988-PAFAEA



F10P20FR

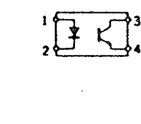


1SS184

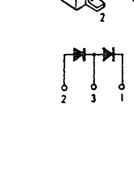


2SA1162Y
2SC2712-YG
RN1405

PS2501-1K



1SS226



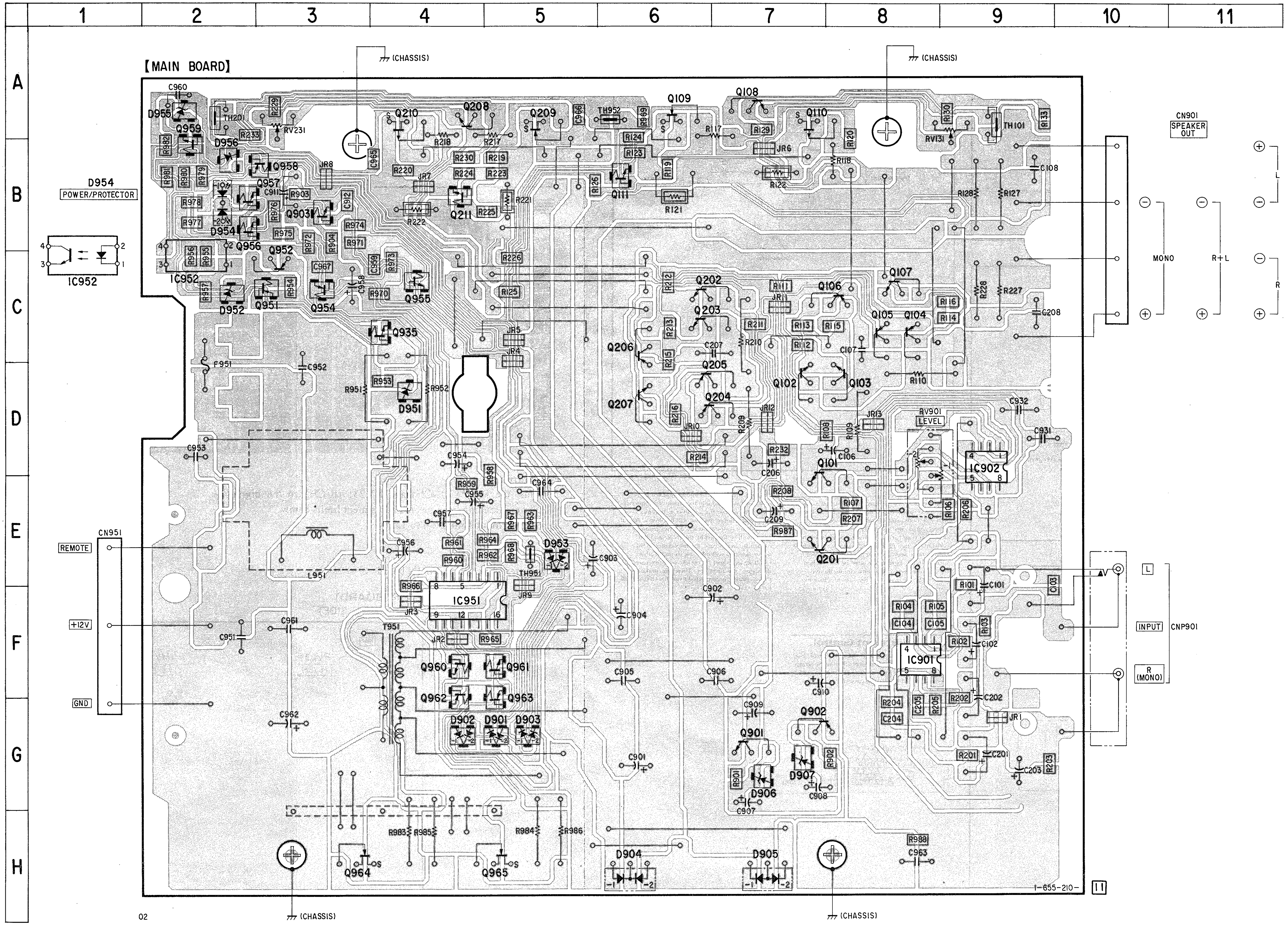
• SEMICONDUCTOR LOCATION

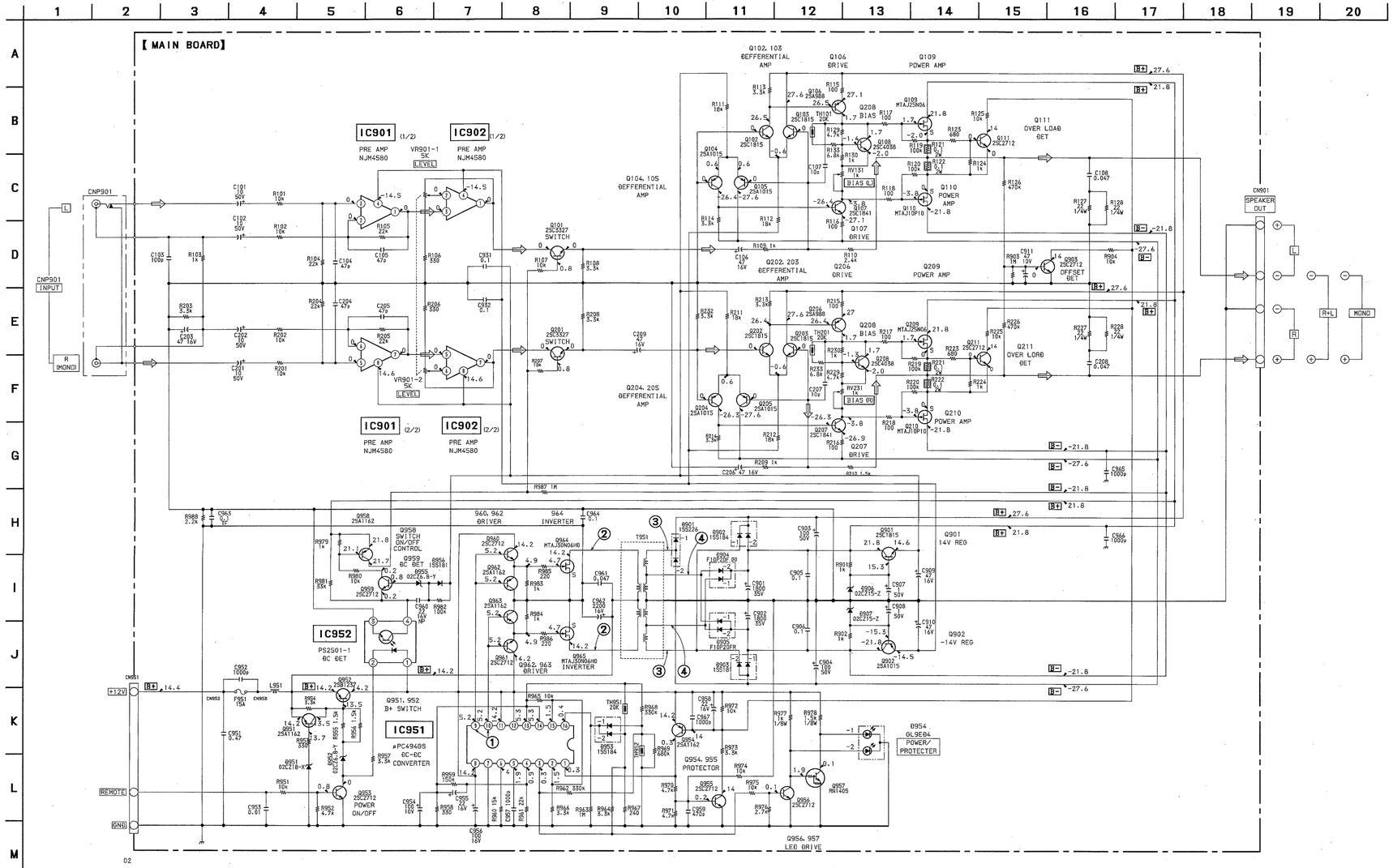
Ref. No.	Location	Ref. No.	Location
D901	G - 5	Q205	D - 6
D902	G - 4	Q206	C - 6
D903	G - 5	Q207	D - 6
D904	H - 6	Q208	A - 4
D905	H - 7	Q209	A - 5
D906	G - 7	Q210	A - 4
D907	G - 7	Q211	B - 4
D951	D - 4	Q901	G - 7
D952	C - 2	Q902	G - 7
D953	E - 5	Q903	B - 3
D954	B - 2	Q951	C - 3
D955	A - 2	Q952	C - 3
D956	B - 2	Q953	C - 4
		Q954	C - 3
		Q955	C - 4
IC901	F - 8		
IC902	D - 9	Q956	B - 2
IC951	F - 4	Q957	B - 2
IC952	C - 2	Q958	B - 3
		Q959	B - 2
		Q960	F - 4
Q101	D - 4		
Q102	D - 7	Q961	F - 5
Q103	D - 8	Q962	F - 4
Q104	C - 8	Q963	F - 5
Q105	C - 8	Q964	H - 3
		Q965	H - 5
Q106	C - 8		
Q107	C - 8		
Q108	A - 7		
Q109	A - 6		
Q110	A - 7		
Q111	B - 6		
Q201	E - 7		
Q202	C - 6		
Q203	C - 6		
Q204	D - 6		

Note:

- O— : parts extracted from the component side.
- ░░ : Pattern on the side which is seen.

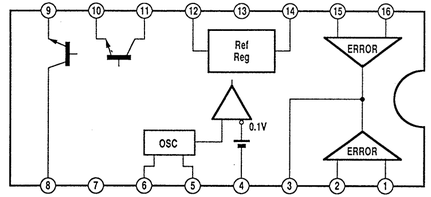
3-2. PRINTED WIRING BOARD



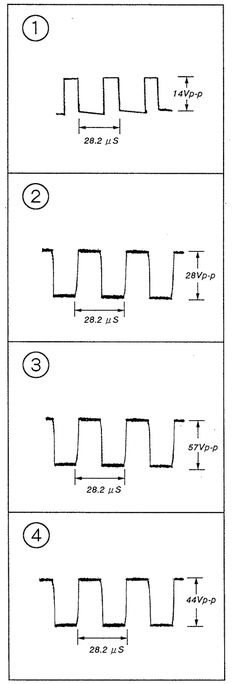


• IC BLOCK DIAGRAM

IC951 μPC494GS



• WAVEFORMS



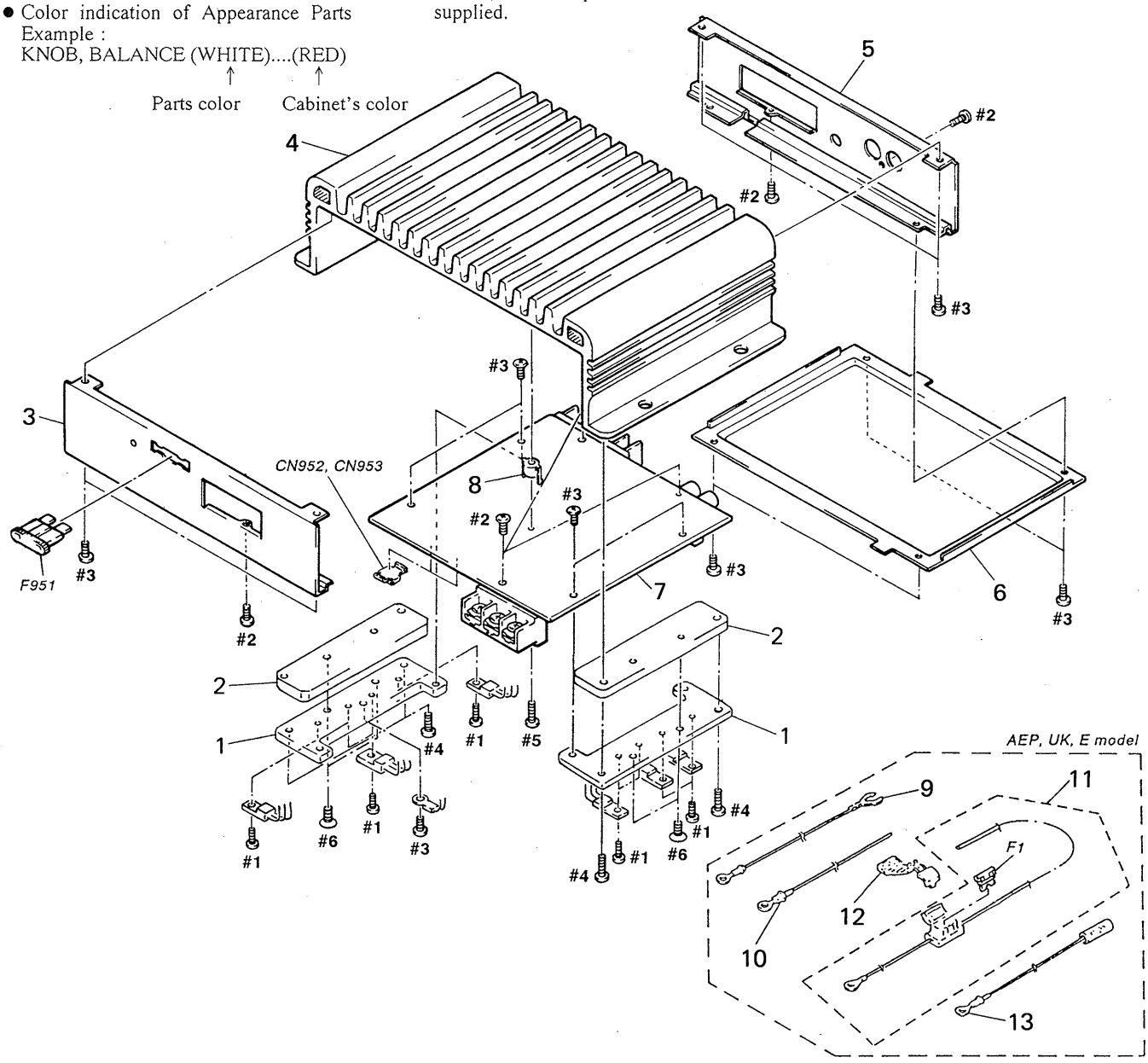
Note :

- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/10W or less unless otherwise specified.
- : nonflammable resistor.
- B+ : B+ Line
- B− : B − Line
- Power voltage is dc 14.4V and fed with regulated dc power supply from 12V/REMOTE/GND terminal (CN951).
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.

SECTION 4
EXPLODED VIEW

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color indication of Appearance Parts Example :
  KNOB, BALANCE (WHITE)....(RED)
  ↑ Parts color ↑ Cabinet's 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 and accessories and packing materials are given in the last of this parts list.



Ref. No.	Part No.	Description	Remark
* 1	3-921-080-01	HEAT SINK (SUB)	
* 2	3-921-081-01	HEAT SINK (SPACER)	
3	3-921-076-21	PANEL (FRONT) (US, Canadian)	
3	3-921-076-31	PANEL (FRONT) (AEP, UK, E)	
* 4	3-921-078-01	HEAT SINK	
* 5	3-921-079-11	PANEL (REAR)	
* 6	3-921-077-01	PLATE, BOTTOM	
* 7	A-3298-505-A	MAIN BOARD, COMPLETE	
* 8	3-395-832-01	SPACER	
* 9	1-575-056-11	CORD (WITH TERMINAL) (GND)	(BLACK) (AEP, UK, E)
* 10	1-575-055-11	CORD (WITH TERMINAL) (12V)	(YEL) (AEP, UK, E)
11	1-769-678-21	CORD (WITH TERMINAL) (including F1) (POWER EXTENSION CORD)	(AEP, UK, E)
12	1-562-594-11	CONNECTOR (CL-1814T)	(AEP, UK, E)
* 13	1-575-090-11	CORD (WITH TERMINAL) (REMOTE) (BLUE/WHITE)	(AEP, UK, E)
CN952	1-537-479-11	TERMINAL (For F951)	
CN953	1-537-479-11	TERMINAL (For F951)	
F1	1-532-732-11	FUSE (BLADE TYPE) (AUTO FUSE) (20A)	(AEP, UK, E)
F951	1-532-982-11	FUSE (BLADE TYPE) (AUTO FUSE) (15A)	

SECTION 5
ELECTRICAL PARTS LIST

MAIN

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

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

Ref.No.	Part No.	Description			Remark
*	A-3298-505-A	MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-126-059-11	ELECT	10uF	20%	50V
C102	1-126-059-11	ELECT	10uF	20%	50V
C103	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C104	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C105	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C106	1-126-022-11	ELECT	47uF	20%	16V
C107	1-102-947-00	CERAMIC	10PF	5%	50V
C108	1-136-161-00	FILM	0.047uF	5%	50V
C201	1-126-059-11	ELECT	10uF	20%	50V
C202	1-126-059-11	ELECT	10uF	20%	50V
C203	1-126-022-11	ELECT	47uF	20%	16V
C204	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C205	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C206	1-126-022-11	ELECT	47uF	20%	16V
C207	1-102-947-00	CERAMIC	10PF	5%	50V
C208	1-136-161-00	FILM	0.047uF	5%	50V
C209	1-126-022-11	ELECT	47uF	20%	16V
C901	1-110-609-11	ELECT	1800uF	20%	35V
C902	1-110-609-11	ELECT	1800uF	20%	35V
C903	1-126-052-11	ELECT	100uF	20%	50V
C904	1-126-052-11	ELECT	100uF	20%	50V
C905	1-162-806-11	CERAMIC	0.1uF	10%	50V
C906	1-162-806-11	CERAMIC	0.1uF	10%	50V
C907	1-126-044-11	ELECT	1uF	20%	50V
C908	1-126-044-11	ELECT	1uF	20%	50V
C909	1-126-022-11	ELECT	47uF	20%	16V
C910	1-126-022-11	ELECT	47uF	20%	16V
C911	1-126-947-11	ELECT	47uF	20%	10V
C931	1-136-165-00	FILM	0.1uF	5%	50V
C932	1-136-165-00	FILM	0.1uF	5%	50V

Ref.No.	Part No.	Description			Remark
C951	1-136-173-00	FILM	0.47uF	5%	50V
C952	1-130-471-00	MYLAR	0.001uF	5%	50V
C953	1-136-153-00	FILM	0.01uF	5%	50V
C954	1-126-933-11	ELECT	100uF	20%	10V
C955	1-126-006-11	ELECT	22uF	20%	16V
C956	1-126-933-11	ELECT	100uF	20%	16V
C957	1-130-471-00	MYLAR	0.001uF	5%	50V
C958	1-126-006-11	ELECT	22uF	20%	16V
C959	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C960	1-124-282-00	ELECT	22uF	20%	16V
C961	1-136-961-11	FILM	0.047uF	10%	160V
C962	1-126-234-11	ELECT	2200uF	20%	16V
C963	1-136-165-00	FILM	0.1uF	5%	50V
C964	1-136-165-00	FILM	0.1uF	5%	50V
C965-967	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
		< TERMINAL >			
CN901	1-537-478-11	TERMINAL BOARD (4P) (SPEAKER OUT)			
CN951	1-537-477-11	TERMINAL BOARD (3P) (REMOTE/+12V/GND)			
CN952	1-537-479-11	TERMINAL(For F951)			
CN953	1-537-479-11	TERMINAL(For F951)			
		< JACK >			
CNP901	1-770-068-21	JACK, PIN 2P (INPUT)			
		< DIODE >			
D901	8-719-800-76	DIODE	1SS226		
D902	8-719-801-78	DIODE	1SS184		
D903	8-719-820-05	DIODE	1SS181		
D904	8-719-210-30	DIODE	F10P20F (R)		
D905	8-719-210-38	DIODE	F10P20FR		
D906	8-719-025-49	DIODE	02CZ15-TE85L		
D907	8-719-025-49	DIODE	02CZ15-TE85L		

MAIN

Ref.No.	Part No.	Description		Remark
D951	8-719-025-51	DIODE	02CZ18-TE85L	
D952	8-719-025-34	DIODE	02CZ6.8-TE85L	
D953	8-719-801-78	DIODE	1SS184	
D954	8-719-989-31	LED	GL9ED4 (POWER/PROTECTOR)	
D955	8-719-025-28	DIODE	02CZ4.7-TE85L	
D956	8-719-820-05	DIODE	1SS181	
		< IC >		
IC901	8-759-711-82	IC	NJM4580E	
IC902	8-759-711-82	IC	NJM4580E	
IC951	8-759-144-88	IC	uPC494GS	
IC952	8-719-156-72	DIODE	PS2501-1-K	
		< COIL >		
L951	1-424-301-11	COIL, CHOKE	760uH	
		< TRANSISTOR >		
Q101	8-729-203-48	TRANSISTOR	2SC3327A	
Q102	8-729-119-78	TRANSISTOR	2SC2785-HFE	
Q103	8-729-119-78	TRANSISTOR	2SC2785-HFE	
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	8-729-902-11	TRANSISTOR	2SC2021-Q	
Q109	8-729-030-74	TRANSISTOR	MTAJ25N06HD	
Q110	8-729-025-70	TRANSISTOR	MTAJ10P10	
Q111	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q201	8-729-203-48	TRANSISTOR	2SC3327A	
Q202	8-729-119-78	TRANSISTOR	2SC2785-HFE	
Q203	8-729-119-78	TRANSISTOR	2SC2785-HFE	
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	8-729-902-11	TRANSISTOR	2SC2021-Q	
Q209	8-729-030-74	TRANSISTOR	MTAJ25N06HD	
Q210	8-729-025-70	TRANSISTOR	MTAJ10P10	
Q211	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q901	8-729-119-78	TRANSISTOR	2SC2785-HFE	
Q902	8-729-173-38	TRANSISTOR	2SA733-K	
Q903	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q951	8-729-216-21	TRANSISTOR	2SA1162-Y	
Q952	8-729-988-12	TRANSISTOR	2SA881-Q	
Q953	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q954	8-729-216-21	TRANSISTOR	2SA1162-Y	
Q955	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q956	8-729-230-49	TRANSISTOR	2SC2712-YG	

Ref.No.	Part No.	Description		Remark
Q957	8-729-207-60	TRANSISTOR	RN1405	
Q958	8-729-216-21	TRANSISTOR	2SA1162-Y	
Q959-961				
	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q962	8-729-216-21	TRANSISTOR	2SA1162-Y	
Q963	8-729-216-21	TRANSISTOR	2SA1162-Y	
Q964	8-729-030-73	TRANSISTOR	MTAJ30N06HD	
Q965	8-729-030-73	TRANSISTOR	MTAJ30N06HD	
		< RESISTOR >		
R101	1-216-675-11	METAL CHIP	10K 0.5% 1/10W	
R102	1-216-675-11	METAL CHIP	10K 0.5% 1/10W	
R103	1-216-651-11	METAL CHIP	1K 0.5% 1/10W	
R104	1-208-814-11	METAL GLAZE	22K 2% 1/10W	
R105	1-208-814-11	METAL GLAZE	22K 2% 1/10W	
R106	1-208-770-11	METAL GLAZE	330 2% 1/10W	
R107	1-216-675-11	METAL CHIP	10K 0.5% 1/10W	
R108	1-216-663-11	METAL CHIP	3.3K 0.5% 1/10W	
R109	1-247-713-11	CARBON	1K 5% 1/4W	
R110	1-249-561-11	CARBON	2.4K 5% 1/4W	
R111	1-208-812-11	METAL GLAZE	18K 2% 1/10W	
R112	1-208-812-11	METAL GLAZE	18K 2% 1/10W	
R113	1-216-663-11	METAL CHIP	3.3K 0.5% 1/10W	
R114	1-216-663-11	METAL CHIP	3.3K 0.5% 1/10W	
R115	1-216-627-11	METAL CHIP	100 0.5% 1/10W	
R116	1-216-627-11	METAL CHIP	100 0.5% 1/10W	
R117	1-259-404-11	CARBON	100 5% 1/6W	
R118	1-259-404-11	CARBON	100 5% 1/6W	
R119	1-216-699-11	METAL CHIP	100K 0.5% 1/10W	
R120	1-216-699-11	METAL CHIP	100K 0.5% 1/10W	
R121	1-217-611-00	RES, METAL PLATE		0.1 F
R122	1-217-611-00	RES, METAL PLATE		0.1 F
R123	1-216-647-11	METAL CHIP	680 0.5% 1/10W	
R124	1-216-651-11	METAL CHIP	1K 0.5% 1/10W	
R125	1-216-675-11	METAL CHIP	10K 0.5% 1/10W	
R126	1-216-113-00	METAL CHIP	470K 5% 1/10W	
R127	1-249-883-11	CARBON	22 5% 1/4W	
R128	1-249-883-11	CARBON	22 5% 1/4W	
R129	1-216-667-11	METAL CHIP	4.7K 0.5% 1/10W	
R130	1-216-651-11	METAL CHIP	1K 0.5% 1/10W	
R133	1-216-671-11	METAL CHIP	6.8K 2% 1/10W	
R201	1-216-675-11	METAL CHIP	10K 0.5% 1/10W	
R202	1-216-675-11	METAL CHIP	10K 0.5% 1/10W	
R203	1-216-663-11	METAL CHIP	3.3K 0.5% 1/10W	
R204	1-208-814-11	METAL GLAZE	22K 2% 1/10W	
R205	1-208-814-11	METAL GLAZE	22K 2% 1/10W	
R206	1-208-770-11	METAL GLAZE	330 2% 1/10W	
R207	1-216-675-11	METAL CHIP	10K 0.5% 1/10W	
R208	1-216-663-11	METAL CHIP	3.3K 0.5% 1/10W	

Ref.No.	Part No.	Description			Remark
R209	1-247-713-11	CARBON	1K	5%	1/4W
R210	1-249-556-11	CARBON	1.5K	5%	1/4W
R211	1-208-812-11	METAL GLAZE	18K	2%	1/10W
R212	1-208-812-11	METAL GLAZE	18K	2%	1/10W
R213	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R214	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R215	1-216-627-11	METAL CHIP	100	0.5%	1/10W
R216	1-216-627-11	METAL CHIP	100	0.5%	1/10W
R217	1-259-404-11	CARBON	100	5%	1/6W
R218	1-259-404-11	CARBON	100	5%	1/6W
R219	1-216-699-11	METAL CHIP	100K	0.5%	1/10W
R220	1-216-699-11	METAL CHIP	100K	0.5%	1/10W
R221	1-217-611-00	RES, METAL PLATE			0.1 F
R222	1-217-611-00	RES, METAL PLATE			0.1 F
R223	1-216-647-11	METAL CHIP	680	0.5%	1/10W
R224	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R225	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R226	1-216-262-00	METAL GLAZE	470K	2%	1/8W
R227	1-249-883-11	CARBON	22	5%	1/4W
R228	1-249-883-11	CARBON	22	5%	1/4W
R229	1-216-667-11	METAL CHIP	4.7K	0.5%	1/10W
R230	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R232	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R233	1-216-671-11	METAL CHIP	6.8K	2%	1/10W
R901	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R902	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R903	1-218-776-11	METAL GLAZE	1M	2%	1/10W
R904	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R951	1-247-725-11	CARBON	10K	5%	1/4W
R952	1-247-721-11	CARBON	4.7K	5%	1/4W
R953	1-208-770-11	METAL GLAZE	330	2%	1/10W
R954	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R955	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W
R956	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W
R957	1-216-210-00	METAL GLAZE	3.3K	2%	1/8W
R958	1-208-770-11	METAL GLAZE	330	2%	1/10W
R959	1-218-756-11	METAL GLAZE	150K	2%	1/10W
R960	1-216-679-11	METAL CHIP	15K	0.5%	1/10W
R961	1-208-814-11	METAL GLAZE	22K	2%	1/10W
R962	1-218-764-11	METAL CHIP	330K	2%	1/10W
R963	1-218-776-11	METAL GLAZE	1M	2%	1/10W
R964	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R965	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R966	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R967	1-208-767-11	METAL GLAZE	240	2%	1/10W
R968	1-218-764-11	METAL CHIP	330K	2%	1/10W
R969	1-208-850-11	METAL CHIP	680K	2%	1/10W
R970	1-208-502-11	METAL GLAZE	4.7K	2%	1/8W
R971	1-216-667-11	METAL CHIP	4.7K	0.5%	1/10W
R972	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R973	1-216-210-00	METAL GLAZE	3.3K	2%	1/8W
R974	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R975	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R976	1-216-661-11	METAL CHIP	2.7K	0.5%	1/10W
R977	1-208-782-11	METAL GLAZE	1K	2%	1/8W
R978	1-216-655-11	METAL CHIP	1.5K	0.5%	1/8W
R979	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R980	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R981	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R982	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R983	1-247-713-11	CARBON	1K	5%	1/4W
R984	1-247-713-11	CARBON	1K	5%	1/4W
R985	1-247-704-11	CARBON	220	5%	1/4W
R986	1-247-704-11	CARBON	220	5%	1/4W
R987	1-218-776-11	METAL GLAZE	1M	2%	1/10W
R988	1-216-206-00	METAL GLAZE	2.2K	2%	1/8W

< VARIABLE RESISTOR >

RV131	1-241-761-11	RES, ADJ, CARBON 1K (BIAS L-CH)
RV231	1-241-761-11	RES, ADJ, CARBON 1K (BIAS R-CH)
RV901	1-223-667-11	RES, VAR, CARBON 5K/5K (LEVEL)

< TRANSFORMER >

T951	1-427-767-11	TRANSFORMER, DC-DC CONVERTER

< THERMISTOR >

TH101	1-808-877-11	THERMISTOR
TH102	1-808-877-11	THERMISTOR
TH951	1-808-877-11	THERMISTOR
TH952	1-809-664-41	THERMISTOR, POSITIVE

****

MISCELLANEOUS

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* 9	1-575-056-11	CORD (WITH TERMINAL) (GND) (BLACK) (AEP, UK, E)
* 10	1-575-055-11	CORD (WITH TERMINAL) (12V) (YEL) (AEP, UK, E)
11	1-769-678-21	CORD (WITH TERMINAL) (including F1) (POWER EXTENSION CORD) (AEP, UK, E)
* 12	1-562-594-11	CONNECTOR (CL-1814T) (AEP, UK, E)
* 13	1-575-090-11	CORD (WITH TERMINAL) (REMOTE) (BLUE/WHITE) (AEP, UK, E)
F1	1-532-732-11	FUSE (BLADE TYPE) (AUTO FUSE) (20A) (AEP, UK, E)
F951	1-532-982-11	FUSE (BLADE TYPE) (AUTO FUSE) (15A)

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Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS	
		********	
	1-769-678-21	CORD (WITH TERMINAL) (including F1) (POWER EXTENSION CORD) (AEP, UK, E)	
	1-562-594-11	CONNECTOR (CL-1814T) (AEP, UK, E)	
*	1-575-055-11	CORD (WITH TERMINAL) (12V) (YEL)	(AEP, UK, E)
*	1-575-056-11	CORD (WITH TERMINAL) (GND) (BLACK)	(AEP, UK, E)
*	1-575-090-11	CORD (WITH TERMINAL) (REMOTE) (BLUE/WHITE) (AEP, UK, E)	
	3-367-410-01	SCREW (DIA. 5×15), TAPPING	
	3-706-714-00	GROMMET (AEP, UK, E)	
	3-798-221-11	MANUAL, INSTRUCTION (ENGLISH, GERMAN, SPANISH, CHINESE) (AEP, UK, E)	
	3-798-221-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH)	(US, Canadian)
	3-798-221-41	MANUAL, INSTRUCTION (FRENCH, DUTCH, SWEDISH, ITALIAN, PORTUGUESE) (AEP)	

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****
HARDWARE LIST
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#1	7-682-948-01	SCREW +PSW 3×8
#2	7-685-546-19	SCREW +BTP 3×8 TYPE2 N-S
#3	7-685-545-11	SCREW +BTP 3×6 TYPE2 N-S
#4	7-685-549-11	SCREW +BTP 3×14 TYPE2 N-S
#5	7-685-648-79	SCREW +BTP 3×12 TYPE2 N-S
#6	7-685-259-11	SCREW +KTP 4×8 TYPE2 N-S

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