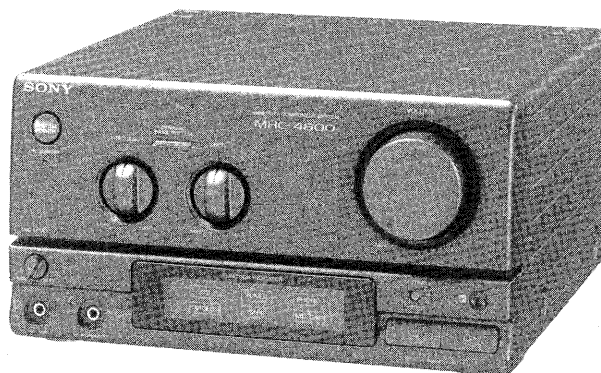


TA-H4800

SERVICE MANUAL

*AEP Model
E Model
Australian Model
Tourist Model*



TA-H4800 is the Power amplifier section in MHC-4800/FH-E8X.

SPECIFICATIONS

For Europe

Continuous RMS power output

60 + 60 watts
(6 ohms at 1 kHz, DIN)
70 + 70 watts
(6 ohms at 1 kHz, 5% THD)
140 + 140 watts
(6 ohms at 1 kHz, 10% THD)

For Australia

Continuous RMS power output

70 + 70 watts
(16 ohms at 1 kHz, 5% THD)

Peak music power output

800 watts (4 speaker driven)

For other countries

Peak music power output

800 watts (4 speaker driven)

Continuous RMS power output

70 + 70 watts
(16 ohms at 1 kHz, 5% THD)

Inputs

MIX MIC (minijack)
sensitivity: 1 mV,
impedance: 600 ohms

Outputs

HEADPHONES
(stereo minijack)
accepts headphones of
8 ohms or more
SPEAKER
accepts speakers of 6 to
16 ohms
SURROUND SPEAKER (phono
jacks)
(Model for Europe)
accepts speakers of
16 ohms
(Model for other countries)
accepts speakers of 8 to
16 ohms

General

Power requirements

European model:
220 V — 230 V, 50/60 Hz
Model for other countries:
110 — 120 V, or 220 — 240 V
AC adjustable, 50/60 Hz

Power consumption

European model:
180 watts
Model for other countries:
210 watts

Dimensions

Approx. 225 x 390 x 280 mm
(w/h/d)
(8⁷/₈ x 15³/₈ x 11¹/₈ in.) incl.
projecting parts and controls

Mass

Approx. 13 kg (28 lb 11 oz)

Supplied accessories

Remote Commander (1) (RM-S380)
Sony SUM-3 (NS)
batteries (2)
AM loop antenna (1)
FM antenna (1)
AC power cord (2)
Flat cord (1)
Speaker cord (2) (except for
Europe)

Design and specifications subject to change
without notice.

Note

This appliance conforms with EEC Directive
87/308/EEC regarding interference
suppression.

POWER AMPLIFIER
SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

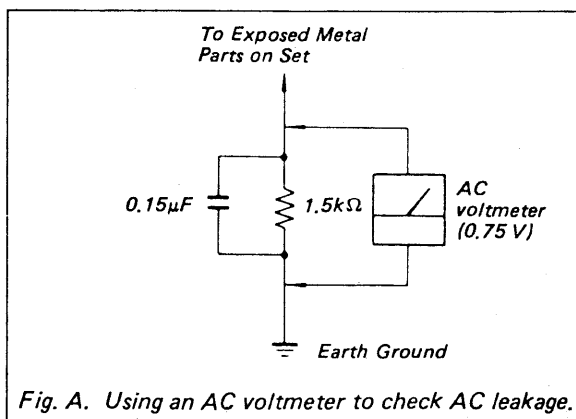


Fig. A. Using an AC voltmeter to check AC leakage.

TABLE OF CONTENTS

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	• Parts Identification	3
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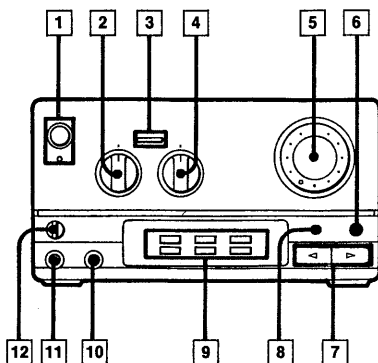
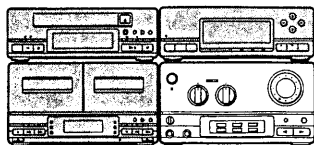
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1 GENERAL

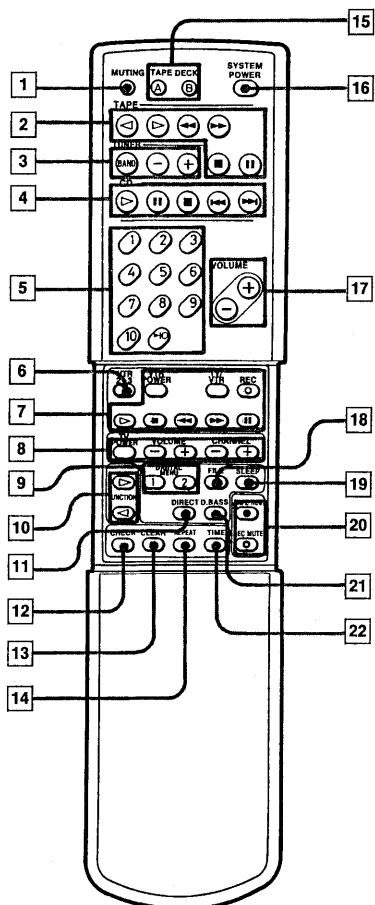
This section is extracted from instruction manual.

F



30

G



Parts Identification

Refer to the pages indicated in () for use of the buttons.

Amplifier Section **F**

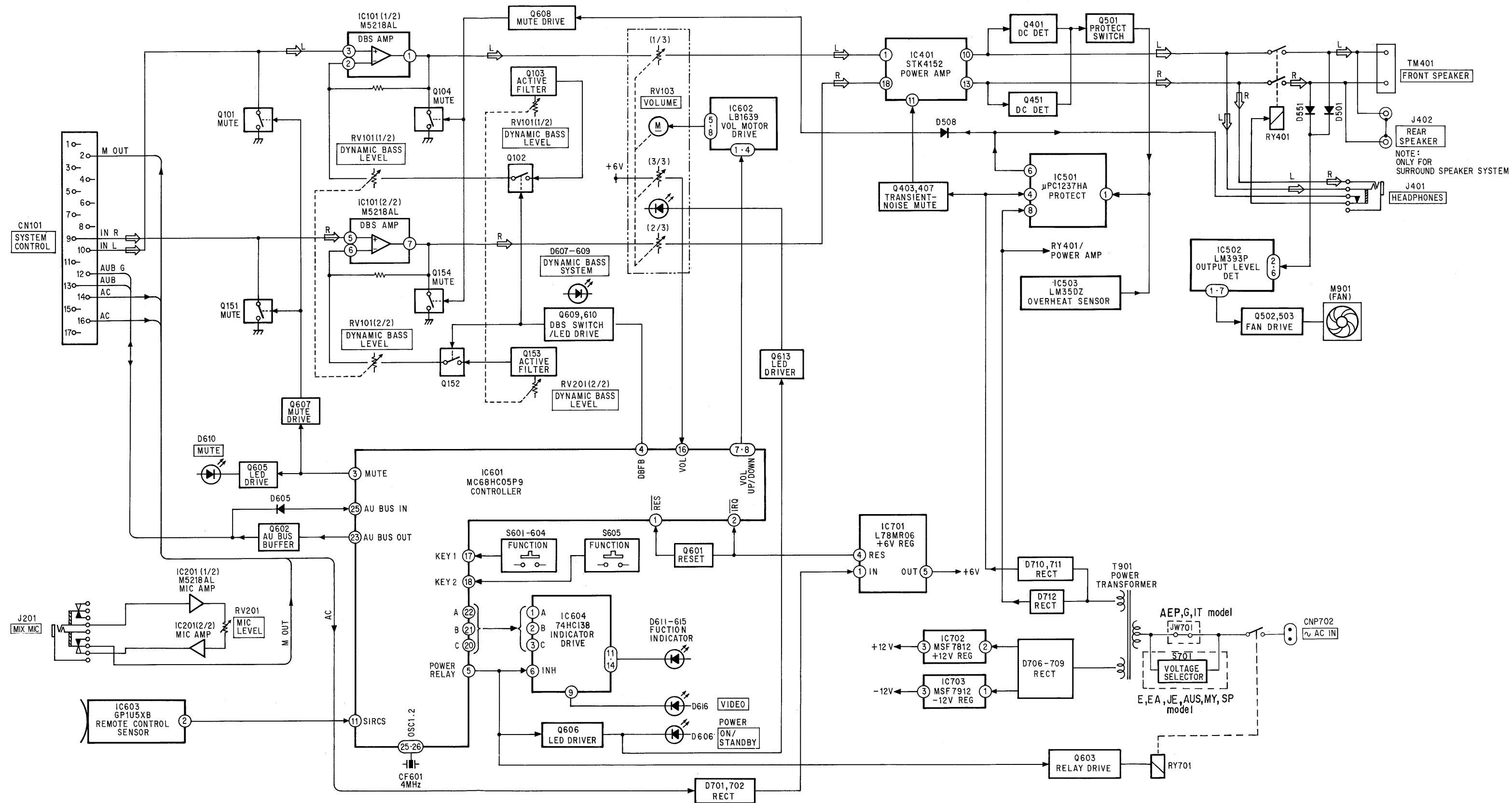
- 1 SYSTEM POWER button and ON/STANDBY indicator
The indicator remains lit as long as the AC power cord is connected to the wall outlet.
- 2 FREQUENCY control (36)
- 3 DYNAMIC BASS SYSTEM button and indicator (36)
- 4 LEVEL (Bass level) control (36)
- 5 VOLUME control (36)
- 6 Remote control sensor
- 7 FUNCTION <I/> buttons (22, 68, 114)
- 8 MUTING button and indicator (36)
- 9 FUNCTION INDICATOR
- 10 HEADPHONES jack (stereo minijack) (36)
- 11 MIX MIC (microphone) input jack (minijack) (114)
- 12 MIC (microphone) LEVEL control (114)

Remote Commander **G**

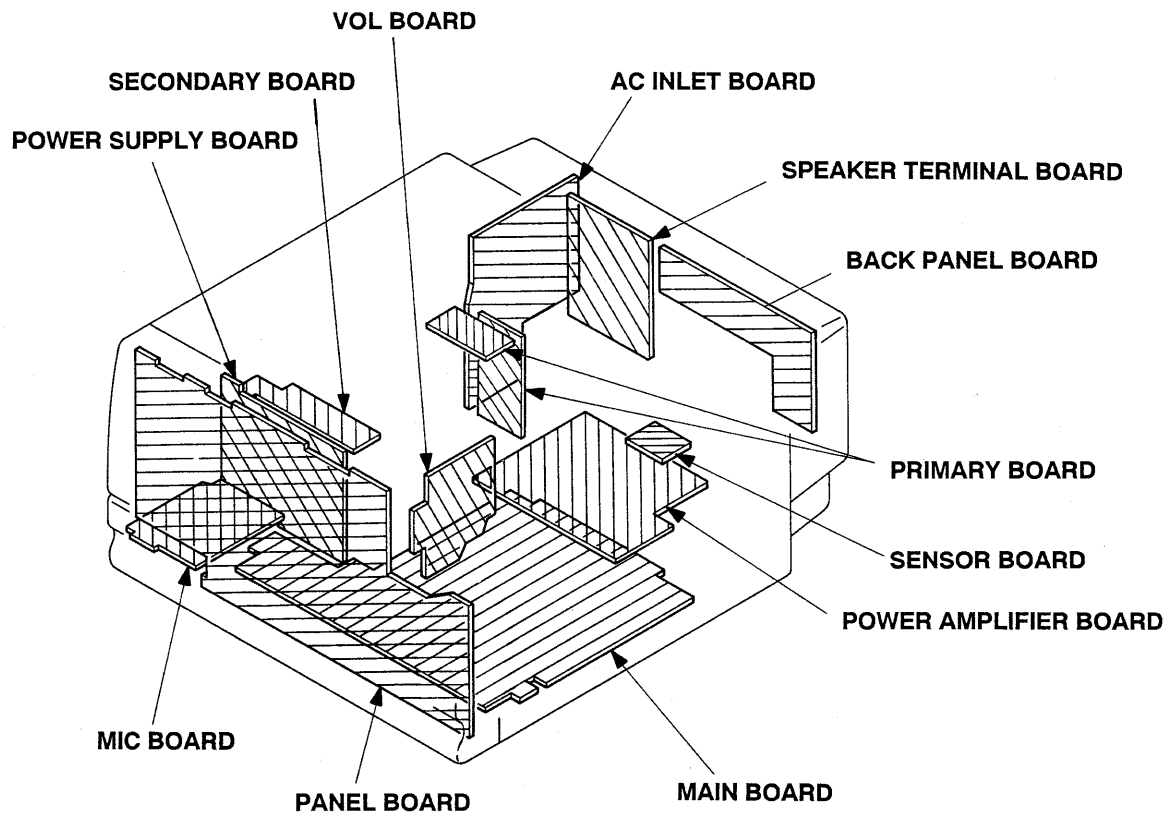
- 1 MUTING button (36)
- 2 Cassette deck operation buttons
- 3 Tuner operation buttons
BAND button
-/+ buttons
- 4 CD player operation buttons
- 5 Tuner/CD player numeric buttons (40, 60)
- 6 VTR 2/3 selector
Select VTR 2 for Sony 8 mm format VCRs.
Select VTR 3 for Sony VHS format VCRs.
- 7 VTR operation buttons
(for Sony VCRs only)
- 8 TV operation buttons
(for Sony TVs only)
- 9 DIGITAL MENU 1/2 (Digital Sound Menu) buttons (96)
- 10 FUNCTION <I/> buttons
- 11 DIRECT button (96)
- 12 CHECK button (52)
- 13 CLEAR button (48, 52)
- 14 REPEAT button (44)
- 15 TAPE DECK A/B buttons (62)
- 16 SYSTEM POWER button
- 17 VOLUME +/- buttons (36)
- 18 P. FILE button (102)
- 19 SLEEP button (112)
- 20 Recording operation buttons
TAPE REC ● button (68)
REC MUTE ○ button (70)
- 21 D. BASS button (36)
- 22 TIME button (42)

SECTION 2 DIAGRAMS

2-1. BLOCK DIAGRAMS



2-2. CIRCUIT BOARDS LOCATION



• Semiconductor Location

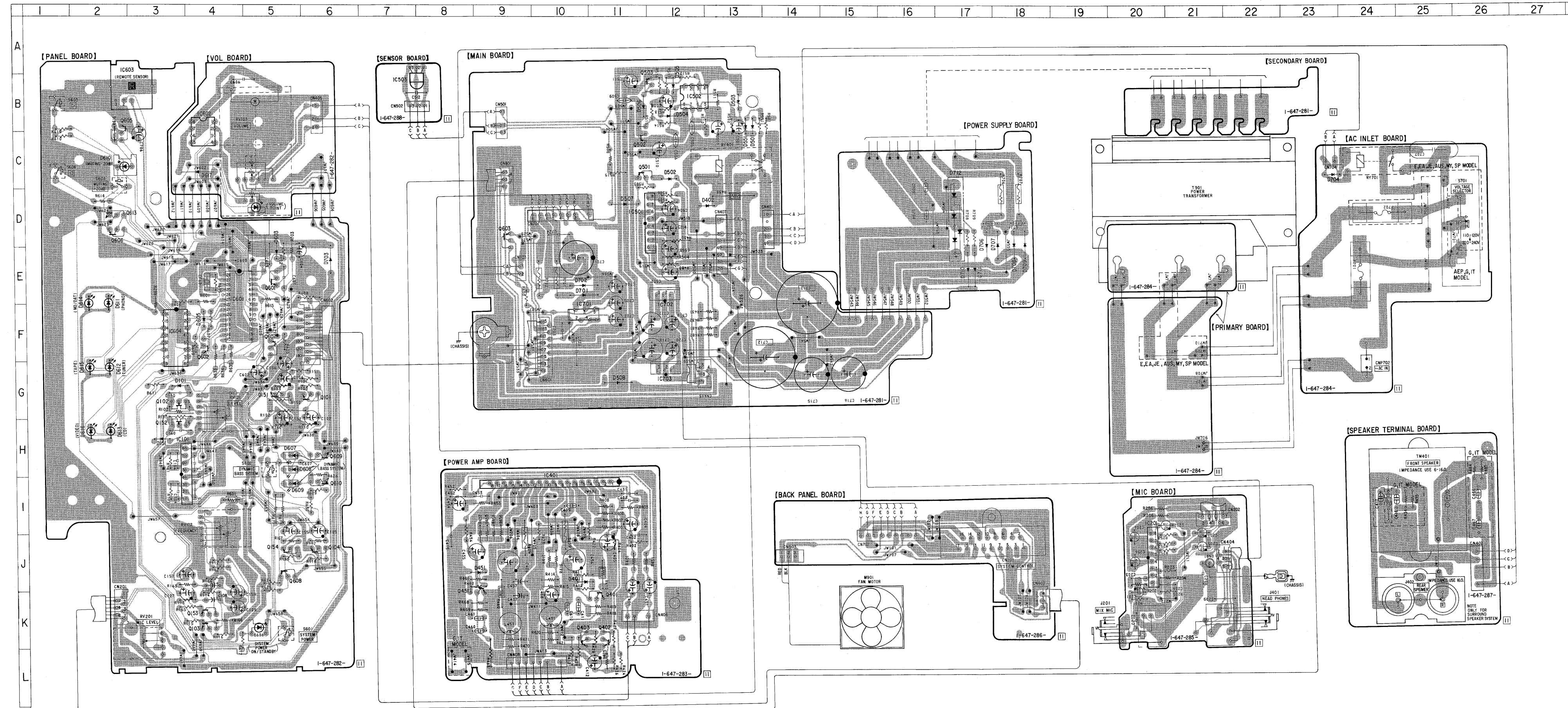
Ref. No.	Location	Ref. No.	Location
D101	G-3	IC101	H-3
D151	H-3	IC201	J-20
D401	J-10	IC401	I-9
D402	D-12	IC501	D-11
D451	J-8	IC502	B-12
D501	C-13	IC503	B-7
D502	C-12	IC601	E-4
D503	B-13	IC602	B-4
D504	B-12	IC603	B-2
D505	B-12	IC604	F-3
D506	B-11	IC701	F-10
D507	D-11	IC702	E-12
D508	G-11	IC703	G-12
D551	C-13		
D603	E-5	Q101	G-5
D605	F-4	Q102	G-3
D606	K-4	Q103	K-4
D607	H-5	Q104	J-6
D608	H-5	Q151	G-5
D609	I-5	Q152	H-3
D610	C-2	Q153	K-4
D611	E-2	Q154	J-5
D612	G-2	Q401	K-10
D613	H-2	Q402	K-10
D614	E-2	Q403	K-10
D615	G-2	Q451	K-8
D616	H-2	Q501	C-11
D617	C-4	Q502	C-11
D701	E-10	Q503	B-11
D702	E-10	Q601	E-5
D703	E-6	Q602	F-4
D704	D-23	Q603	D-9
D706	E-17	Q605	B-2
D707	E-17	Q606	D-2
D708	E-18	Q607	F-5
D709	E-18	Q608	J-5
D710	E-17	Q609	H-6
D711	E-17	Q610	I-6
D712	D-17	Q613	D-2

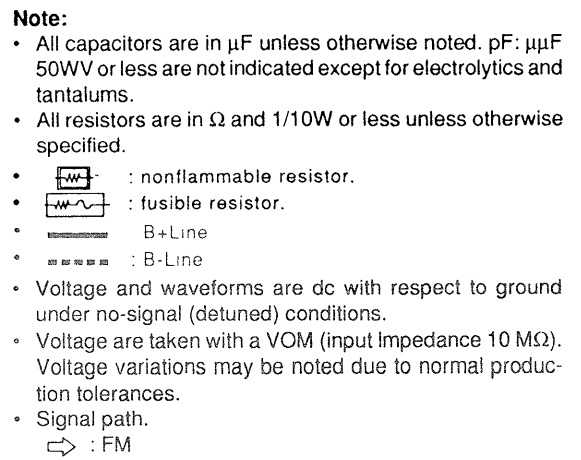
Note on Printed Wiring Boards:

Note:

- : parts extracted from the component side.
- : parts extracted from the component side.
- ▨ : Pattern on the side which is seen.

2-3. PRINTED WIRING BOARDS • Ref to page 16,17 for Semiconductor Lead Layout.



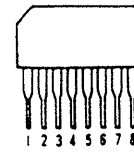


2-5. SEMICONDUCTOR LEAD LAYOUT

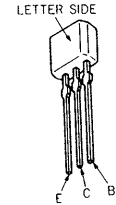
GP1U57XB



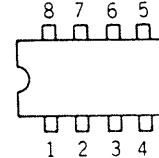
M5218AL
μPC1237HA



DTA124ES

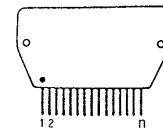


LB1639
μPC393C



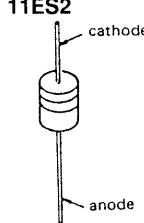
(Top view)

STK-4172MK2K
STK-4192MK2

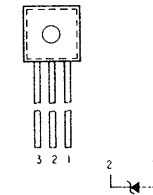


MARKING SIDE VIEW

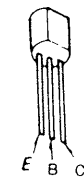
UZL-15M
11ES2



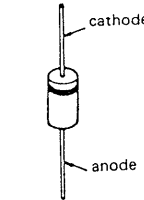
LM35DZ



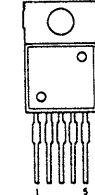
2SB1116



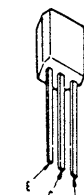
10E2
1N4148M



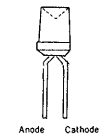
L78MR06



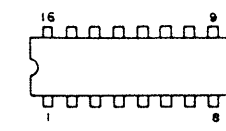
2SC2603-EF
2SC3622A-LK
DTA144WS
DTC124ES



SEL2213C-C



MC68HC05P9SC405649B
SN74HC138AN

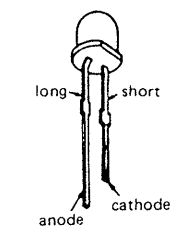


(TOP VIEW)

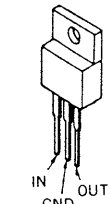
2SC1841-PAFAEA



SEL2210S-CD
SML1860A



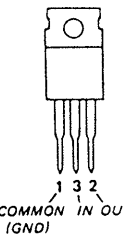
M5F7812L



2SK246GR3



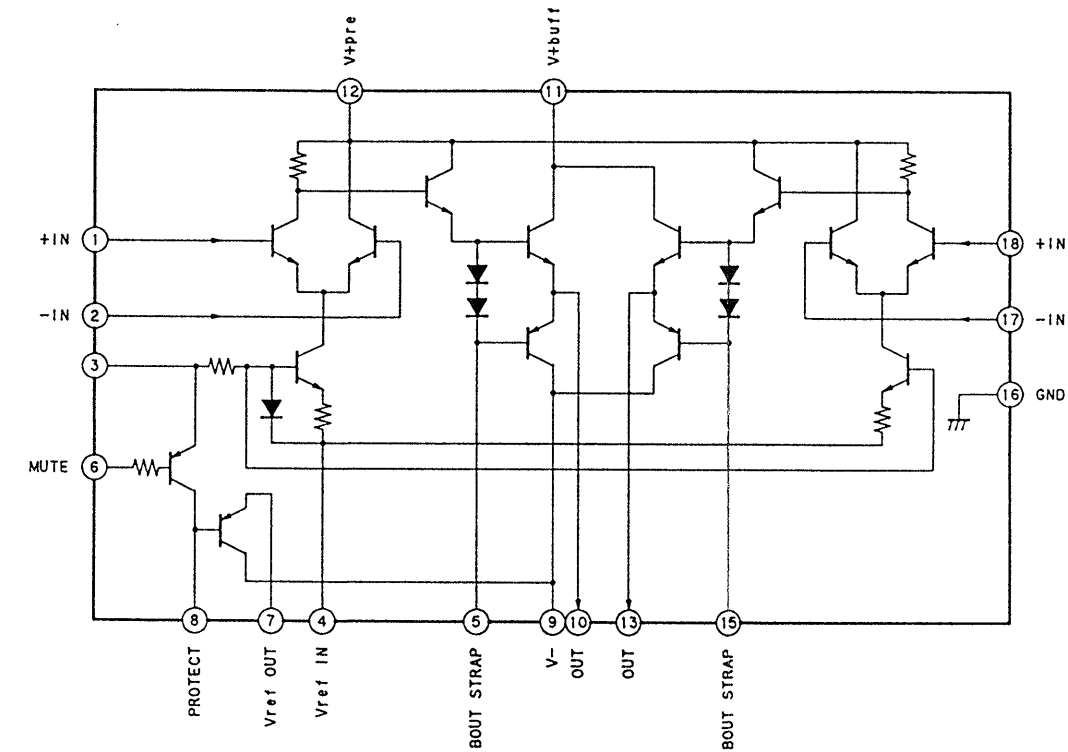
TA7912S



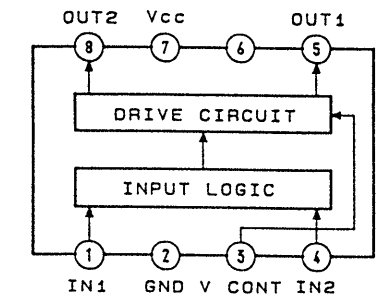
COMMON IN OUT
(GND)

• IC Block Diagrams

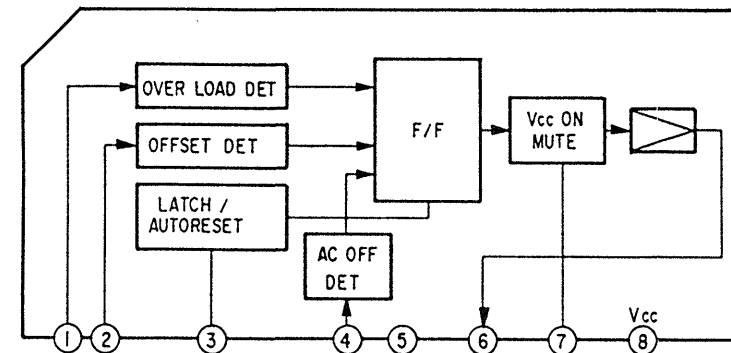
IC401 STK-4172MK2K, STK-4192MK2



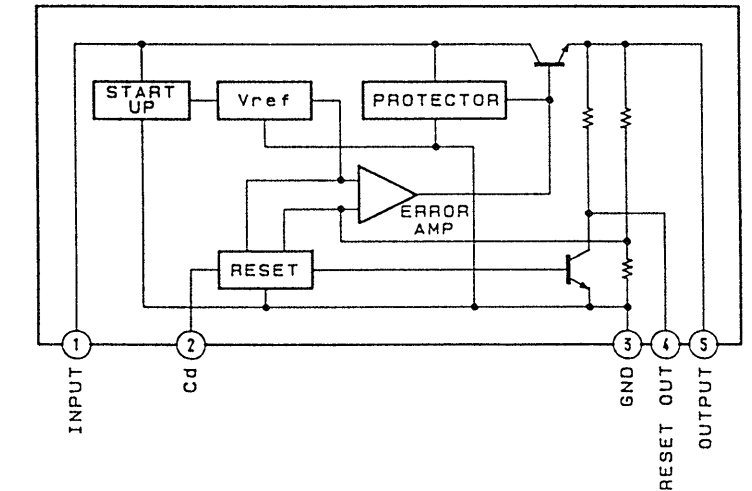
IC602 LB1639



IC501 μPC1237HA



IC701 L78MR06

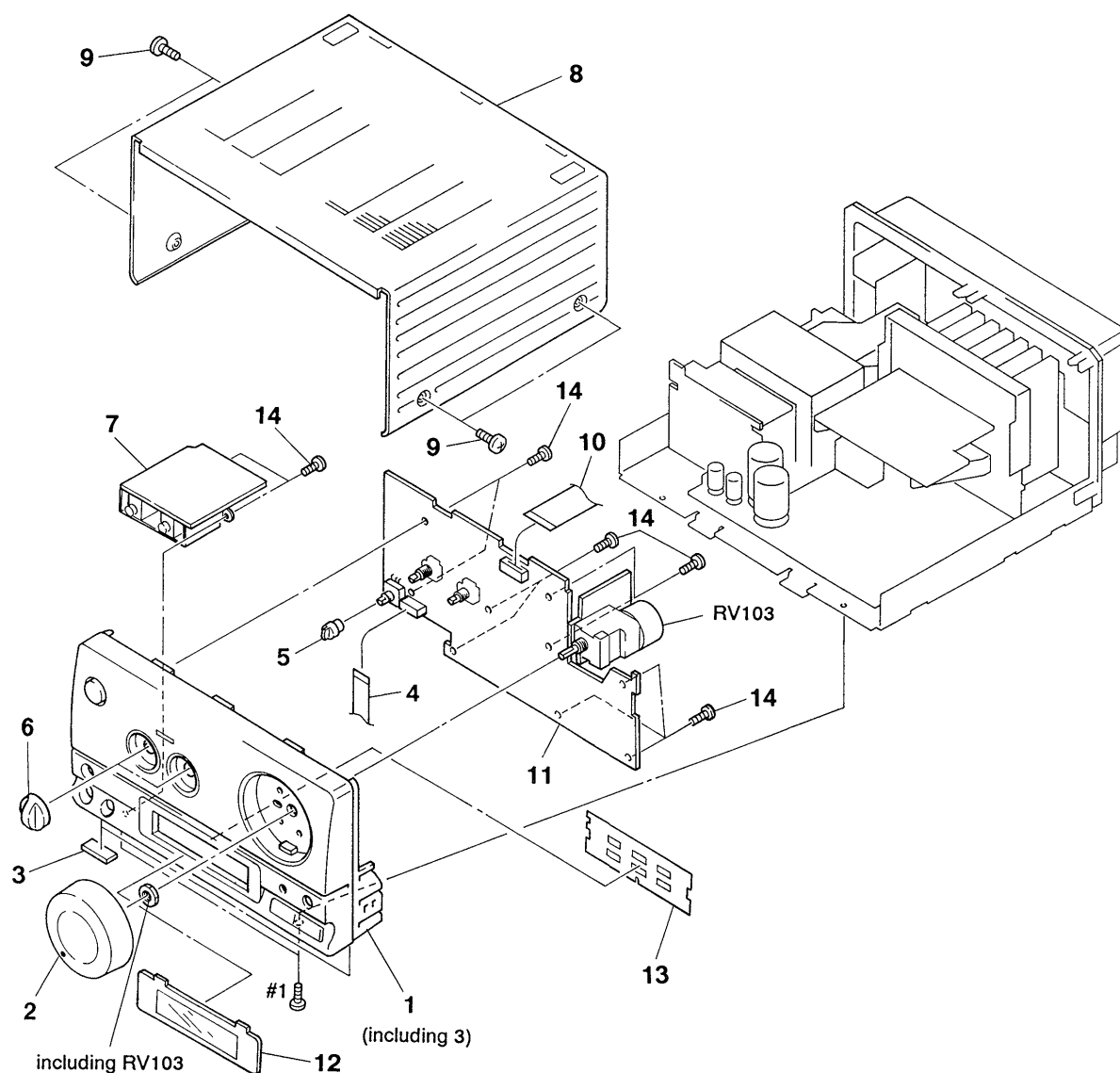


EXPLODED VIEWS

NOTE:

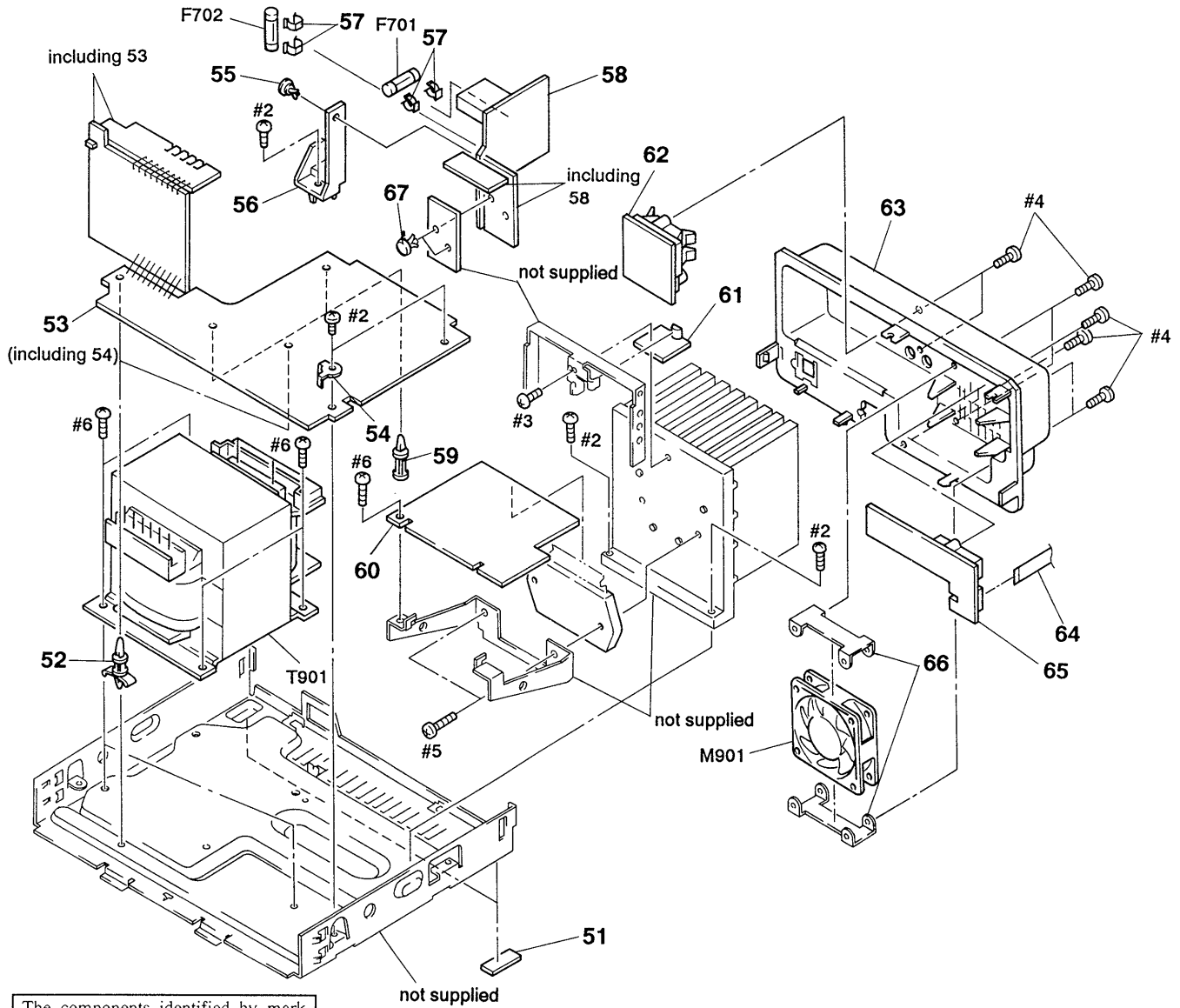
- The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

3-1. CASE AND FRONT PANEL ASSEMBLIES



<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
1	X-4943-427-2	PANEL ASSY, FRONT (AEP, G, IT)		10	1-751-032-11	WIRE (FLAT TYPE) (15 CORE)	
	X-4943-448-2	PANEL ASSY, FRONT (E, AUS, EA, JE, MY, SP)		* 11	A-4360-169-A	PANEL BOARD, COMPLETE	
2	X-4942-957-1	KNOB (VOLUME) ASSY				(AEP, E, AUS, EA, JE, MY, SP)	
3	4-930-336-31	FOOT (FELT)		* 12	A-4360-189-A	PANEL BOARD, COMPLETE (G, IT)	
4	1-590-033-11	WIRE, FLAT TYPE (7 CORE)		13	4-957-038-01	PLATE (WINDOW), INDICATION	
					4-957-039-01	PLATE (DISPLAY), INDICATION	
5	4-954-799-01	KNOB (MICROPHONE)		14	4-951-620-01	SCREW (2.6X8), +BVTP	
6	4-956-577-01	KNOB (DBFB)		RV103	1-223-200-11	RES, VAR, CARBON 10K/100K/100K	
* 7	1-647-285-11	MIC BOARD				(VOLUME)	
* 8	3-382-491-11	CASE					
9	3-363-099-21	SCREW (CASE 3 TP2)					

3-2. CHASSIS ASSEMBLY



The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	4-930-336-31	FOOT (FELT)		* 61	1-647-288-11	SENSOR BOARD	
* 52	4-924-098-11	HOLDER, PC BOARD		* 62	1-647-287-11	SPEAKER TERMINAL BOARD	
* 53	A-4360-168-A	MAIN BOARD, COMPLETE (AEP)		* 63	4-954-256-31	PANEL, BACK (E, AUS, EA, JE, MY, SP)	
*	A-4360-193-A	MAIN BOARD, COMPLETE (G, IT)		*	4-954-256-41	PANEL, BACK (AEP, G, IT)	
*	A-4360-207-A	MAIN BOARD, COMPLETE (E, AUS, EA, JE, MY, SP)		64	1-751-023-11	WIRE (FLAT TYPE) (5 CORE)	
				* 65	1-647-286-11	BACK PANEL BOARD	
* 54	4-942-204-01	PLATE, GROUND		66	4-956-816-01	BRACKET (FAN 20A)	
55	4-812-134-11	RIVET NYLON, 3.5		67	4-812-134-00	RIVET NYLON, 3.5	
* 56	4-954-242-01	BRACKET (IN)		△F701	1-532-350-00	FUSE, TIME-LAG (T4.0AL)	
* 57	1-533-213-31	HOLDER FUSE				(E, AUS, EA, JE, MY, SP)	
* 58	1-647-284-11	AC INLET BOARD		△F702	1-532-203-00	FUSE, TIME-LAG (T2.0AL)	
				M901	1-541-953-11	MOTOR, DC FAN	
* 59	3-669-610-00	SPACER		△T901	1-423-535-11	TRANSFORMER, POWER (AEP, G, IT)	
* 60	A-4360-186-A	POWER AMPLIFIER BOARD, COMPLETE (AEP)		△	1-423-537-11	TRANSFORMER, POWER (E, AUS, EA, JE, MY, SP)	
*	A-4360-194-A	POWER AMPLIFIER BOARD, COMPLETE (G, IT)					
*	A-4360-209-A	POWER AMPLIFIER BOARD, COMPLETE (E, AUS, EA, JE, MY, SP)					

SECTION 4 ELECTRICAL PARTS LIST

BACK PANEL

MAIN

NOTE:

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

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

- 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
- Color Indication of Appearance Parts Example:
KNOB, BALANCE (WHITE) ... (RED)

↑
Parts color
↑
Cabinet's color
- Hardware (# mark) list is given in the last of this parts list.

- 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

- Italian, German, Australian, Sudi Arabia, Tourist, Malaysia and Singapore model is abbreviated as IT, G, AUS, EA, JE, MY and SP.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	1-647-284-11	AC INLET BOARD *****		4-957-043-01	HOLDER, LED		
*	1-533-213-11	HOLDER, FUSE		< CAPACITOR >			
*	1-533-213-31	HOLDER, FUSE		C501	1-124-907-11	ELECT 10uF 20% 50V	
< CAPACITOR >				C502	1-126-923-11	ELECT 220uF 20% 10V	
Δ C707	1-161-744-00	CERAMIC 0.01uF 400V		C503	1-126-923-11	ELECT 220uF 20% 10V	
< CONNECTOR >				C504	1-124-443-00	ELECT 100uF 20% 10V	
* CN704	1-564-517-11	PLUG, CONNECTOR 2P		C505	1-136-169-00	FILM 0.22uF 5% 50V	
Δ CNP702	1-526-931-11	INLET, AC (~AC IN)		C506	1-136-169-00	FILM 0.22uF 5% 50V	
< DIODE >				C507	1-124-903-11	ELECT 1uF 20% 50V	
D704	8-719-987-63	DIODE 1N4148M		C508	1-124-907-11	ELECT 10uF 20% 50V	
< RELAY >				C509	1-130-483-00	MYLAR 0.01uF 5% 50V	
RY701	1-515-720-11	RELAY		C510	1-124-477-11	ELECT 47uF 20% 25V	
< SWITCH >				C511	1-124-477-11	ELECT 47uF 20% 25V	
Δ S701	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (VOLTAGE SELECTOR) (E, AUS, EA, JE, MY, SP)		C701	1-126-768-11	ELECT 2200uF 20% 16V	
*****				C702	1-124-463-00	ELECT 0.1uF 20% 50V	
*	1-647-286-11	BACK PANEL BOARD *****		C703	1-162-294-31	CERAMIC 0.001uF 10% 50V	
< CONNECTOR >				C704	1-124-477-11	ELECT 47uF 20% 25V	
* CN101	1-580-740-11	SOCKET, CONNECTOR 17P		C705	1-124-907-11	ELECT 10uF 20% 50V	
*****				C712	1-126-138-11	ELECT 4700uF 20% 50V (AEP, G, IT)	
*	A-4360-168-A	MAIN BOARD, COMPLETE (AEP) *****			1-126-258-11	ELECT 4700uF 20% 56V (E, AUS, EA, JE, MY, SP)	
*	A-4360-193-A	MAIN BOARD, COMPLETE (G, IT) *****		C713	1-126-138-11	ELECT 4700uF 20% 50V (AEP, G, IT)	
*	A-4360-207-A	MAIN BOARD, COMPLETE ***** (E, AUS, EA, JE, MY, SP)			1-126-258-11	ELECT 4700uF 20% 56V (E, AUS, EA, JE, MY, SP)	
*	4-942-204-01	PLATE, GROUND		C714	1-124-925-11	ELECT 2.2uF 20% 100V	
				C715	1-124-557-11	ELECT 1000uF 20% 25V	
				C716	1-124-557-11	ELECT 1000uF 20% 25V	
				C717	1-126-935-11	ELECT 470uF 20% 16V	
				C718	1-126-935-11	ELECT 470uF 20% 16V	
				C719	1-124-907-11	ELECT 10uF 20% 50V	
				C720	1-124-907-11	ELECT 10uF 20% 50V	
				C723	1-164-159-11	CERAMIC 0.1uF 50V	
				C724	1-164-159-11	CERAMIC 0.1uF 50V	
				< CONNECTOR >			
				CN401	1-691-766-11	PLUG (MICRO CONNECTOR) 4P	
				* CN403	1-568-824-11	SOCKET, CONNECTOR 5P	
				CN405	1-691-765-11	PLUG (MICRO CONNECTOR) 3P	
				CN407	1-691-769-11	PLUG (MICRO CONNECTOR) 7P	
				* CN601	1-568-834-11	SOCKET, CONNECTOR 15P	

MAIN

MIC

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
CN701	1-691-770-11	PLUG (MICRO CONNECTOR) 8P		R516	1-249-441-11	CARBON 100K 5% 1/4W	
* CN703	1-564-505-11	PLUG, CONNECTOR 2P		R517	1-249-426-11	CARBON 5.6K 5% 1/4W	
* CN801	1-568-824-11	SOCKET, CONNECTOR 5P		R518	1-249-421-11	CARBON 2.2K 5% 1/4W F	
< DIODE >				R519	1-249-441-11	CARBON 100K 5% 1/4W	
D402	8-719-987-63	DIODE 1N4148M		R551	1-249-435-11	CARBON 33K 5% 1/4W	
D501	8-719-987-63	DIODE 1N4148M		R600	1-249-417-11	CARBON 1K 5% 1/4W F	
D502	8-719-987-63	DIODE 1N4148M		△R701	1-212-934-00	FUSIBLE 1 5% 1/2W F	
D503	8-719-001-91	DIODE UZL-15M		△R702	1-212-934-00	FUSIBLE 1 5% 1/2W F	
D504	8-719-987-63	DIODE 1N4148M		< RELAY >			
D505	8-719-987-63	DIODE 1N4148M		RY401	1-515-765-11	RELAY	
D506	8-719-200-82	DIODE 11ES2		*****			
D507	8-719-987-63	DIODE 1N4148M					
D508	8-719-987-63	DIODE 1N4148M					
D551	8-719-987-63	DIODE 1N4148M					
D701	8-719-200-02	DIODE 10E2					
D702	8-719-200-02	DIODE 10E2					
< IC >							
IC501	8-759-111-68	IC uPC1237HA					
IC502	8-759-103-93	IC uPC393C					
IC701	8-759-820-13	IC L78MR06					
IC702	8-759-231-58	IC M5F7812L					
IC703	8-759-245-86	IC TA7912S					
< TRANSISTOR >							
Q501	8-729-900-63	TRANSISTOR DTA124ES					
Q502	8-729-118-01	TRANSISTOR 2SB1116					
Q503	8-729-118-01	TRANSISTOR 2SB1116					
Q603	8-729-620-05	TRANSISTOR 2SC2603-EF					
< RESISTOR >							
R430	1-249-438-11	CARBON 56K 5% 1/4W					
R431	1-249-418-11	CARBON 1.2K 5% 1/4W F					
R432	1-249-418-11	CARBON 1.2K 5% 1/4W F					
△R433	1-215-891-11	METAL OXIDE 680 5% 2W F					
R480	1-249-437-11	CARBON 47K 5% 1/4W					
R481	1-249-418-11	CARBON 1.2K 5% 1/4W F					
R482	1-249-418-11	CARBON 1.2K 5% 1/4W F					
R501	1-249-435-11	CARBON 33K 5% 1/4W					
R502	1-249-441-11	CARBON 100K 5% 1/4W					
R503	1-249-429-11	CARBON 10K 5% 1/4W					
R504	1-249-441-11	CARBON 100K 5% 1/4W					
R505	1-249-437-11	CARBON 47K 5% 1/4W					
R506	1-249-430-11	CARBON 12K 5% 1/4W					
R510	1-249-429-11	CARBON 10K 5% 1/4W					
R511	1-249-417-11	CARBON 1K 5% 1/4W F					
R512	1-249-405-11	CARBON 100 5% 1/4W F					
R513	1-249-426-11	CARBON 5.6K 5% 1/4W					
R514	1-249-441-11	CARBON 100K 5% 1/4W					
R515	1-249-426-11	CARBON 5.6K 5% 1/4W					

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R252	1-249-438-11	CARBON 56K 5% 1/4W		D603	8-719-987-63	DIODE 1N4148M	
R253	1-249-441-11	CARBON 100K 5% 1/4W		D605	8-719-987-63	DIODE 1N4148M	
R256	1-249-409-11	CARBON 220 5% 1/4W F		D606	8-719-301-37	LED SEL2210S-CD (ON/STANDBY)	
*****				D607	8-719-026-72	DIODE SML1860A (DYNAMIC BASS SYSTEM)	
*	A-4360-169-A	PANEL BOARD, COMPLETE ***** (AEP, E, AUS, EA, JE, MY, SP)		D608	8-719-026-72	DIODE SML1860A (DYNAMIC BASS SYSTEM)	
*	A-4360-189-A	PANEL BOARD, COMPLETE (G, IT) *****		D609	8-719-026-72	DIODE SML1860A (DYNAMIC BASS SYSTEM)	
*	1-690-880-31	LEAD (WITH CONNECTOR) < CAPACITOR >		D610	8-719-301-37	LED SEL2210S-CD (MUTING -20dB)	
C102	1-126-301-11	ELECT 1uF 20% 50V		D611	8-719-302-23	DIODE SEL2213C-C (PHONO)	
C103	1-162-282-31	CERAMIC 100PF 10% 50V		D612	8-719-302-23	DIODE SEL2213C-C (TUNER)	
C104	1-162-282-31	CERAMIC 100PF 10% 50V		D613	8-719-302-23	DIODE SEL2213C-C (CD)	
C105	1-126-301-11	ELECT 1uF 20% 50V		D614	8-719-302-23	DIODE SEL2213C-C (MD/DAT)	
C106	1-126-157-11	ELECT 10uF 20% 16V		D615	8-719-302-23	DIODE SEL2213C-C (TAPE)	
C107	1-124-465-00	ELECT 0.47uF 20% 50V		D616	8-719-302-23	DIODE SEL2213C-C (VIDEO)	
C108	1-124-464-11	ELECT 0.22uF 20% 50V		D703	8-719-200-82	DIODE 11ES2	
C109	1-126-301-11	ELECT 1uF 20% 50V		< IC >			
C110	1-162-282-31	CERAMIC 100PF 10% 50V		IC101	8-759-634-50	IC M5218AL	
C152	1-126-301-11	ELECT 1uF 20% 50V		IC601	8-759-164-19	IC MC68HC05P9-SC405649B	
C153	1-162-282-31	CERAMIC 100PF 10% 50V		IC603	8-749-923-43	IC GPIU57XB	
C154	1-162-282-31	CERAMIC 100PF 10% 50V		IC604	8-759-917-43	IC SN74HC138AN	
C155	1-126-301-11	ELECT 1uF 20% 50V		< TRANSISTOR >			
C156	1-126-157-11	ELECT 10uF 20% 16V		Q101	8-729-141-26	TRANSISTOR 2SC3622A-LK	
C157	1-124-465-00	ELECT 0.47uF 20% 50V		Q102	8-729-202-67	TRANSISTOR 2SK246-GR3	
C158	1-124-464-11	ELECT 0.22uF 20% 50V		Q103	8-729-620-05	TRANSISTOR 2SC2603-EF	
C159	1-126-301-11	ELECT 1uF 20% 50V		Q104	8-729-141-26	TRANSISTOR 2SC3622A-LK	
C160	1-162-282-31	CERAMIC 100PF 10% 50V		Q151	8-729-141-26	TRANSISTOR 2SC3622A-LK	
C601	1-161-494-00	CERAMIC 0.022uF 25V		Q152	8-729-202-67	TRANSISTOR 2SK246-GR3	
C602	1-126-096-11	ELECT 10uF 20% 35V		Q153	8-729-620-05	TRANSISTOR 2SC2603-EF	
C603	1-161-379-00	CERAMIC 0.01uF 20% 25V		Q154	8-729-141-26	TRANSISTOR 2SC3622A-LK	
C604	1-126-157-11	ELECT 10uF 20% 16V		Q601	8-729-900-36	TRANSISTOR DTC124ES	
C607	1-164-159-11	CERAMIC 0.1uF 50V		Q602	8-729-620-05	TRANSISTOR 2SC2603-EF	
C609	1-164-159-11	CERAMIC 0.1uF 50V		Q605	8-729-900-36	TRANSISTOR DTC124ES	
C706	1-126-157-11	ELECT 10uF 20% 16V		Q606	8-729-900-63	TRANSISTOR DTA124ES	
< FILTER >				Q607	8-729-900-63	TRANSISTOR DTA124ES	
CF601	1-577-358-21	VIBRATOR, CERAMIC		Q608	8-729-900-69	TRANSISTOR DTA144WS	
< CONNECTOR >				Q609	8-729-900-36	TRANSISTOR DTC124ES	
* CN201	1-568-826-11	SOCKET, CONNECTOR 7P		Q610	8-729-900-63	TRANSISTOR DTA124ES	
* CN602	1-568-858-11	SOCKET, CONNECTOR 15P		Q613	8-729-900-36	TRANSISTOR DTC124ES	
< DIODE >				< RESISTOR >			
D101	8-719-987-63	DIODE 1N4148M		R101	1-249-429-11	CARBON 10K 5% 1/4W	
D151	8-719-987-63	DIODE 1N4148M		R102	1-249-429-11	CARBON 10K 5% 1/4W	
				R103	1-249-417-11	CARBON 1K 5% 1/4W F	
				R107	1-247-903-00	CARBON 1M 5% 1/4W	
				R110	1-249-441-11	CARBON 100K 5% 1/4W	
				R111	1-249-431-11	CARBON 15K 5% 1/4W	

PANEL POWER AMP

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R112	1-249-435-11	CARBON 33K 5% 1/4W				< VARIABLE RESISTOR >	
R113	1-249-418-11	CARBON 1. 2K 5% 1/4W F		RV101	1-223-336-11	RES, VAR, CARBON 50K/50K (LEVEL)	
R114	1-247-895-00	CARBON 470K 5% 1/4W		RV102	1-223-201-11	RES, VAR, CARBON 100K/100K (FREQUENCY)	
R115	1-249-429-11	CARBON 10K 5% 1/4W		RV201	1-241-813-11	RES, VAR, CARBON 50K (MIC LEVEL)	
R116	1-249-417-11	CARBON 1K 5% 1/4W F				< SWITCH >	
R117	1-249-417-11	CARBON 1K 5% 1/4W F		S601	1-572-184-11	SWITCH, KEYBOARD (SYSTEM POWER)	
R118	1-249-429-11	CARBON 10K 5% 1/4W		S602	1-572-184-11	SWITCH, KEYBOARD (DYNAMIC BASS SYSTEM)	
R151	1-249-429-11	CARBON 10K 5% 1/4W		S603	1-572-184-11	SWITCH, KEYBOARD (MUTING -20dB)	
R152	1-249-429-11	CARBON 10K 5% 1/4W		S604	1-572-184-11	SWITCH, KEYBOARD (<)	
R153	1-249-417-11	CARBON 1K 5% 1/4W F		S605	1-572-184-11	SWITCH, KEYBOARD (>)	
R157	1-247-903-00	CARBON 1M 5% 1/4W				*****	
R160	1-249-441-11	CARBON 100K 5% 1/4W		*	A-4360-186-A	POWER AMP BOARD, COMPLETE (AEP)	
R161	1-249-431-11	CARBON 15K 5% 1/4W				*****	
R162	1-249-435-11	CARBON 33K 5% 1/4W		*	A-4360-194-A	POWER AMP BOARD, COMPLETE (G, IT)	
R163	1-249-418-11	CARBON 1. 2K 5% 1/4W F				*****	
R164	1-247-895-00	CARBON 470K 5% 1/4W		*	A-4360-209-A	POWER AMP BOARD, COMPLETE	
R165	1-249-429-11	CARBON 10K 5% 1/4W				*****	
R166	1-249-417-11	CARBON 1K 5% 1/4W F				(E, AUS, EA, JE, MY, SP)	
R167	1-249-417-11	CARBON 1K 5% 1/4W F				< CAPACITOR >	
R168	1-249-429-11	CARBON 10K 5% 1/4W		C401	1-124-257-00	ELECT 2. 2uF 20% 50V	
R601	1-249-417-11	CARBON 1K 5% 1/4W F		C402	1-162-286-31	CERAMIC 220PF 10% 50V	
R602	1-249-429-11	CARBON 10K 5% 1/4W		C403	1-162-282-31	CERAMIC 100PF 10% 50V	
R605	1-247-903-00	CARBON 1M 5% 1/4W		C404	1-126-967-11	ELECT 47uF 20% 50V	
R606	1-249-429-11	CARBON 10K 5% 1/4W		C405	1-126-967-11	ELECT 47uF 20% 50V	
R607	1-249-429-11	CARBON 10K 5% 1/4W		C406	1-124-122-11	ELECT 100uF 20% 50V	
R608	1-249-393-11	CARBON 10 5% 1/4W F				(AEP, G, IT)	
R609	1-249-429-11	CARBON 10K 5% 1/4W			1-124-572-11	ELECT 100uF 20% 63V	
R610	1-249-432-11	CARBON 18K 5% 1/4W				(E, AUS, EA, JE, MY, SP)	
R611	1-249-429-11	CARBON 10K 5% 1/4W		C407	1-124-927-11	ELECT 4. 7uF 20% 100V	
R612	1-249-422-11	CARBON 2. 7K 5% 1/4W F		C408	1-124-916-11	ELECT 22uF 20% 63V	
R613	1-249-424-11	CARBON 3. 9K 5% 1/4W F		C409	1-136-165-00	FILM 0. 1uF 5% 50V	
R614	1-249-428-11	CARBON 8. 2K 5% 1/4W F		C410	1-136-163-00	FILM 0. 068uF 5% 50V	
R615	1-249-424-11	CARBON 3. 9K 5% 1/4W F		C411	1-136-163-00	FILM 0. 068uF 5% 50V	
R616	1-249-416-11	CARBON 820 5% 1/4W F		C412	1-126-967-11	ELECT 47uF 20% 50V	
R617	1-249-411-11	CARBON 330 5% 1/4W		C431	1-161-494-00	CERAMIC 0. 022uF 25V	
R619	1-249-437-11	CARBON 47K 5% 1/4W		C432	1-162-294-31	CERAMIC 0. 001uF 10% 50V	
R620	1-249-441-11	CARBON 100K 5% 1/4W		C451	1-124-257-00	ELECT 2. 2uF 20% 50V	
R624	1-249-429-11	CARBON 10K 5% 1/4W		C452	1-162-286-31	CERAMIC 220PF 10% 50V	
R625	1-249-441-11	CARBON 100K 5% 1/4W		C453	1-162-282-31	CERAMIC 100PF 10% 50V	
R626	1-249-417-11	CARBON 1K 5% 1/4W F		C454	1-126-967-11	ELECT 47uF 20% 50V	
R628	1-249-409-11	CARBON 220 5% 1/4W F		C455	1-126-967-11	ELECT 47uF 20% 50V	
R629	1-249-438-11	CARBON 56K 5% 1/4W		C457	1-124-927-11	ELECT 4. 7uF 20% 100V	
R630	1-249-441-11	CARBON 100K 5% 1/4W		C460	1-136-163-00	FILM 0. 068uF 5% 50V	
R631	1-249-417-11	CARBON 1K 5% 1/4W F		C461	1-136-163-00	FILM 0. 068uF 5% 50V	
R633	1-249-417-11	CARBON 1K 5% 1/4W F					
R634	1-249-417-11	CARBON 1K 5% 1/4W F					
R635	1-249-417-11	CARBON 1K 5% 1/4W F					
R703	1-249-417-11	CARBON 1K 5% 1/4W F					

POWER AMP

POWER SUPPLY

SENSOR

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< DIODE >							
D401	8-719-987-63	DIODE 1N4148M		R452	1-249-438-11	CARBON 56K 5% 1/4W	
D451	8-719-987-63	DIODE 1N4148M		R453	1-249-416-11	CARBON 820 5% 1/4W F	
< IC >				R454	1-249-438-11	CARBON 56K 5% 1/4W	
IC401	8-749-920-22	IC STK-4172MK2K (AEP, G, IT)		R455	1-249-427-11	CARBON 6.8K 5% 1/4W F	
	8-749-900-78	IC STK-4192MK2		R456	1-249-427-11	CARBON 6.8K 5% 1/4W F	
		(E, AUS, EA, JE, MY, SP)		R457	1-249-427-11	CARBON 6.8K 5% 1/4W F	
< COIL >				R458	1-249-427-11	CARBON 6.8K 5% 1/4W F	
L401	1-420-872-00	COIL, AIR CORE		△R459	1-212-881-11	FUSIBLE 100 5% 1/4W F	
L451	1-420-872-00	COIL, AIR CORE		△R460	1-217-151-00	RES, METAL PLATE 0.22 2W	
< TRANSISTOR >				R461	1-249-417-11	CARBON 1K 5% 1/4W F	
Q401	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA		R462	1-249-431-11	CARBON 15K 5% 1/4W	
Q402	8-729-900-36	TRANSISTOR DTC124ES		R463	1-249-441-11	CARBON 100K 5% 1/4W	
Q403	8-729-620-05	TRANSISTOR 2SC2603-EF		R468	1-249-397-11	CARBON 22 5% 1/4W F	
Q451	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA		R469	1-249-397-11	CARBON 22 5% 1/4W F	
< RESISTOR >				R470	1-249-397-11	CARBON 22 5% 1/4W F	
R401	1-249-417-11	CARBON 1K 5% 1/4W F		R471	1-249-397-11	CARBON 22 5% 1/4W F	
R402	1-249-438-11	CARBON 56K 5% 1/4W		*****			
R403	1-249-416-11	CARBON 820 5% 1/4W F		POWER SUPPLY BOARD			
R404	1-249-438-11	CARBON 56K 5% 1/4W		*****			
R405	1-249-427-11	CARBON 6.8K 5% 1/4W F		< CAPACITOR >			
R406	1-249-427-11	CARBON 6.8K 5% 1/4W F		C708	1-136-165-00	FILM 0.1uF 5% 50V	
R407	1-249-427-11	CARBON 6.8K 5% 1/4W F		C709	1-136-165-00	FILM 0.1uF 5% 50V	
R408	1-249-427-11	CARBON 6.8K 5% 1/4W F		C710	1-130-483-00	MYLAR 0.01uF 5% 50V	
△R409	1-212-881-11	FUSIBLE 100 5% 1/4W F		C711	1-130-483-00	MYLAR 0.01uF 5% 50V	
△R410	1-217-151-00	RES, METAL PLATE 0.22 2W		< DIODE >			
R411	1-249-417-11	CARBON 1K 5% 1/4W F		D706	8-719-200-02	DIODE 10E2	
R412	1-249-431-11	CARBON 15K 5% 1/4W		D707	8-719-200-02	DIODE 10E2	
R413	1-249-441-11	CARBON 100K 5% 1/4W		D708	8-719-200-02	DIODE 10E2	
R414	1-249-421-11	CARBON 2.2K 5% 1/4W F		D709	8-719-200-02	DIODE 10E2	
R415	1-249-421-11	CARBON 2.2K 5% 1/4W F		D710	8-719-987-63	DIODE 1N4148M	
R416	1-249-421-11	CARBON 2.2K 5% 1/4W F		D711	8-719-987-63	DIODE 1N4148M	
R417	1-249-421-11	CARBON 2.2K 5% 1/4W F		D712	8-719-302-38	DIODE RBV-602-01	
R418	1-249-397-11	CARBON 22 5% 1/4W F		< RESISTOR >			
R419	1-249-397-11	CARBON 22 5% 1/4W F		△R706	1-212-934-00	FUSIBLE 1 5% 1/2W F	
R420	1-249-397-11	CARBON 22 5% 1/4W F		△R707	1-212-934-00	FUSIBLE 1 5% 1/2W F	
R421	1-249-397-11	CARBON 22 5% 1/4W F		R708	1-249-429-11	CARBON 10K 5% 1/4W	
R422	1-249-429-11	CARBON 10K 5% 1/4W		R709	1-249-429-11	CARBON 10K 5% 1/4W	
R423	1-247-881-00	CARBON 120K 5% 1/4W		*****			
R424	1-249-437-11	CARBON 47K 5% 1/4W		* 1-647-288-11 SENSOR BOARD			
R425	1-249-417-11	CARBON 1K 5% 1/4W F		*****			
R426	1-249-439-11	CARBON 68K 5% 1/4W		< CAPACITOR >			
R427	1-249-437-11	CARBON 47K 5% 1/4W		C512	1-164-159-11	CERAMIC 0.1uF 50V	
R428	1-249-426-11	CARBON 5.6K 5% 1/4W					
R429	1-249-433-11	CARBON 22K 5% 1/4W					
R451	1-249-417-11	CARBON 1K 5% 1/4W F					

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

SENSOR**SPEAKER****VOL**

Ref.No.	Part No.	Description	Remark
		< CONNECTOR >	
* CN502	1-564-518-11	PLUG, CONNECTOR 3P	
		< IC >	
IC503	8-759-947-34	IC LM35DZ	

*	1-647-287-11	SPEAKER BOARD	

		< CAPACITOR >	
C416	1-136-163-00	FILM 0.068uF 5% 50V (G, IT)	
C417	1-136-163-00	FILM 0.068uF 5% 50V (G, IT)	
C466	1-136-163-00	FILM 0.068uF 5% 50V (G, IT)	
C467	1-136-163-00	FILM 0.068uF 5% 50V (G, IT)	
		< CONNECTOR >	
CN402	1-691-766-11	PLUG (MICRO CONNECTOR) 4P	
		< JACK >	
J402	1-568-572-11	JACK, PIN 2P (REAR SPEAKER)	
		< RESISTOR >	
R434	1-249-397-11	CARBON 22 5% 1/4W F (G, IT)	
R435	1-249-397-11	CARBON 22 5% 1/4W F (G, IT)	
R484	1-249-397-11	CARBON 22 5% 1/4W F (G, IT)	
R485	1-249-397-11	CARBON 22 5% 1/4W F (G, IT)	
		< TERMINAL >	
TM401	1-537-445-11	TERMINAL BOARD (SP) (FRONT SPEAKER)	

		VOL BOARD	

		< CAPACITOR >	
C606	1-161-494-00	CERAMIC 0.022uF 25V	
		< DIODE >	
D617	8-719-200-82	DIODE 11ES2	
		< IC >	
IC602	8-759-820-62	IC LB1639	
		< VARIABLE RESISTOR >	
RV103	1-223-200-11	RES, VAR, CARBON 10K/100K/100K (VOLUME)	

Ref.No.	Part No.	Description	Remark

		MISCELLANEOUS	

4	1-590-033-11	WIRE, FLAT TYPE (7 CORE)	
10	1-751-032-11	WIRE (FLAT TYPE) (15 CORE)	
* 57	1-533-213-31	HOLDER FUSE	
64	1-751-023-11	WIRE (FLAT TYPE) (5 CORE)	
△F701	1-532-350-00	FUSE, TIME-LAG (T4.0AL) (E, AUS, EA, JE, MY, SP)	
△F702	1-532-203-00	FUSE, TIME-LAG (T2.0AL)	
M901	1-541-953-11	MOTOR, DC FAN	
RV103	1-223-200-11	RES, VAR, CARBON 10K/100K/100K (VOLUME)	
△T901	1-423-535-11	TRANSFORMER, POWER (AEP, G, IT)	
△	1-423-537-11	TRANSFORMER, POWER (E, AUS, EA, JE, MY, SP)	

		HARDWARE LIST	

#1	7-682-547-09	SCREW +BVTT 3X6 (S)	
#2	7-682-548-04	SCREW +BVTT 3X8 (S)	
#3	7-685-647-71	SCREW +BVTP 3X10 TYPE2 IT-3	
#4	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#5	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	
#6	7-685-871-01	SCREW +BVTT 3X6 (S)	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.