

# TA-F419R/F519R

## SERVICE MANUAL

AEP Model



Photo : TA-F519R

### SPECIFICATIONS

#### Amplifier

Continuous RMS power output (both channels driven simultaneously)

Model for Germany

		TA-F519R	TA-F419R
DIN, 1 kHz	4 ohms	105 W + 105 W	80 W + 80 W
	8 ohms	85 W + 85 W	75 W + 75 W
20 Hz - 20 kHz	4 ohms	80 W + 80 W	75 W + 75 W
	8 ohms	75 W + 75 W	65 W + 65 W

Model for Scandinavian countries, Switzerland, Spain and Portugal

		TA-F519R	TA-F419R
DIN, 1 kHz	6 ohms	100 W + 100 W	80 W + 80 W
	8 ohms	80 W + 80 W	70 W + 70 W
20 Hz - 20 kHz	6 ohms	75 W + 75 W	70 W + 70 W
	8 ohms	70 W + 70 W	60 W + 60 W

Model for other countries

		TA-F519R	TA-F419R
DIN, 1 kHz	4 ohms	105 W + 105 W	80 W + 80 W
	8 ohms	85 W + 85 W	75 W + 75 W
20 Hz - 20 kHz	4 ohms	80 W + 80 W	75 W + 75 W
	8 ohms	75 W + 75 W	65 W + 65 W

#### Input

Input jack	Jack type	Sensitivity	Impedance
PHONO (MM)	Phono	2.0 mV	50 kilohms
PHONO (MC)	Phono	0.17 mV	100 ohms
TUNER, CD, AUX, DAT/TAPE 1, TAPE 2	Phono	150 mV	50 kilohms

PHONO (MM/MC): only for TA-F519R

#### S/N

	TA-F519R	TA-F419R
PHONO (MM)	76 dB	—
PHONO (MC)	94 dB	94 dB
TUNER, CD, AUX, DAT/TAPE 1, TAPE 2	103 dB	103 dB

#### Output

Output jack	Jack type	Voltage/impedance
REC OUT	Phono jack	Voltage 150 mV Impedance 1 kohm
HEADPHONES	Stereo phono jack	Accepts low and high impedance headphones

INTEGRATED STEREO AMPLIFIER  
**SONY**<sup>®</sup>

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Tone controls

	Response	Turnover frequency
BASS	±7 dB (100 Hz)	300 Hz
TREBLE	±6 dB (10 kHz)	5 kHz

Harmonic distortion Less than 0.008% at 10 W output  
 Intermodulation (IM) distortion (60 Hz : 7 kHz = 4:1) Less than 0.008% at 10 W output  
 Frequency response PHONO: RIAA equalization curve  
 ±0.5 dB  
 TUNER, CD, AUX, DAT/TAPE 1,  
 TAPE 2: 7 Hz – 100 kHz ±3 dB  
 Residual noise Less than 170 µV (network A)  
 Damping factor 70 (8 ohms, 1 kHz)

**General**

System Preamplifier: Low-noise, equalizer amplifier  
 Power amplifier: Pure-complementary SEPP OCL power amplifier with all stages directly coupled  
 Power requirements 220 V – 230 V AC, 50/60 Hz  
 Power consumption Model for Germany  
 TA-F 519R: 160 W  
 TA-F 419R: 160 W  
 Model for Scandinavian countries, Switzerland, Spain and Portugal  
 TA-F 519R: 160 W  
 TA-F 419R: 160 W  
 Model for other European countries  
 TA-F 519R: 260 W  
 TA-F 419R: 260 W  
 Dimensions Approx. 430 x 150 x 375 mm (w/h/d)  
 (17 x 5 7/8 x 14 3/4 inches)  
 Weight TA-F519R: Approx. 9.1 kg (20 lb 1 oz)  
 TA-F419R: Approx. 8.6 kg (18 lb 15 oz)  
 Supplied accessories Remote commander RM-S311 (1)  
 Sony SUM-3 (NS) batteries (2)

The above values are measured at 230 V AC. (Models for European countries)



Design and specifications are subject to change without notice.

Note

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

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**SAFETY-RELATED COMPONENT WARNING!!**

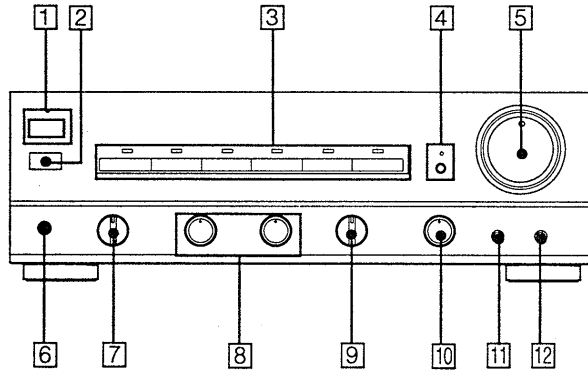
COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

## SECTION 1 GENERAL

### Identifying the Parts and Controls

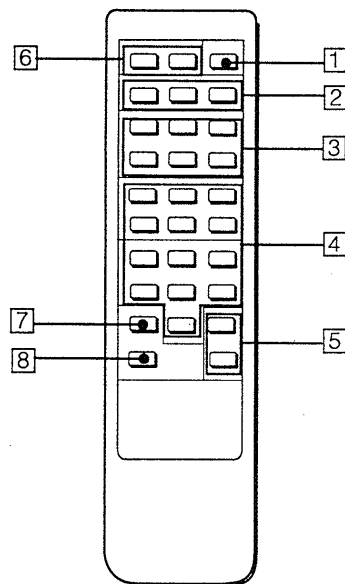
This section describes about each name of this amplifier and remote commander.

This section is extracted from instruction manual.



#### Front Panel

- 1 POWER switch and STANDBY indicator
- 2 Remote control sensor
- 3 Function selectors and indicators
- 4 SOURCE DIRECT button and indicator
- 5 VOLUME control and indicator  
Adjusts the sound level.  
Immediately after turning on the POWER switch, the VOLUME indicator blinks when the built-in muting circuit activates and the unit detects shorting of circuit of the speaker outputs or in case of short-circuit of the inputs of DC components. In such case, turn off the unit and check the connected components and speaker system.
- 6 HEADPHONES jack
- 7 SPEAKERS selector
- 8 TONE (BASS/TREBLE) controls
- 9 REC OUT SELECTOR
- 10 BALANCE control
- 11 SUBSONIC switch (TA-F519R)
- 12 CARTRIDGE selector (TA-F519R)



RM-S311

#### Remote Commander

- 1 POWER switch
- 2 TUNER operation buttons  
TUNER: Select the TUNER mode.  
PRESET +/- buttons: Select the preset station.
- 3 CD operation buttons  
◀▶▶▶: Automatic music sensor.  
D. (Disc) SKIP: Disc skip (for CD player equipped with a multi-disc changer)  
▶: The amplifier enters the CD mode and the CD player starts playback automatically.  
■: Stop.  
⏸: Pause.
- 4 TAPE 2 DECK A/DECK B operation buttons  
◀▶▶▶: Fast winding.  
■: Stop.  
◀: The amplifier enters the TAPE 2 mode and the tape deck starts reverse playback automatically.  
▶: The amplifier enters the TAPE 2 mode and the tape deck starts forward playback automatically.  
●: Recording.  
⏸: Pause. (Only for DECK B)
- 5 VOL (Volume) +/- buttons
- 6 PHONO operation buttons  
START: Pressing START automatically selects the PHONO mode on the amplifier and starts playback of the turntable system.  
STOP: Stops playback of the turntable system.
- 7 DAT/TAPE 1 button  
Selects the DAT or TAPE 1 mode.
- 8 AUX button  
Selects the AUX mode.

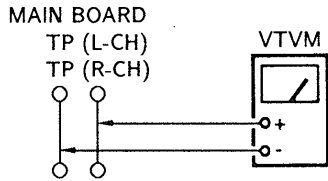
## SECTION 2 ELECTRICAL ADJUSTMENTS

**Note :**

1. DC BIAS adjustments should be made one minute after the POWER switch is turned on (POWER ON).
2. After replacing the power transistors, DC BIAS adjustments should be made.

**DC Bias Adjustment (with no signal input)**

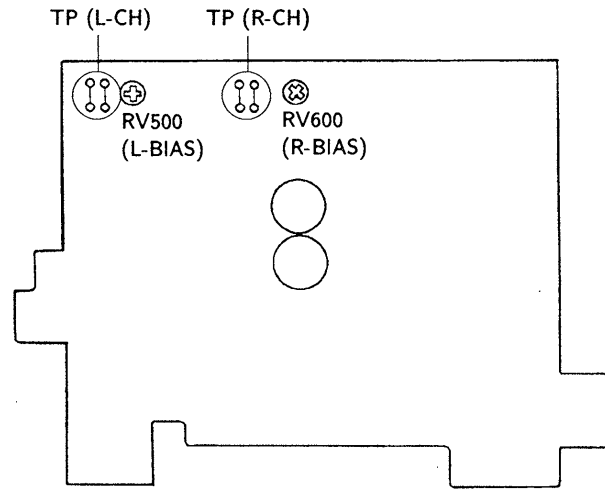
**Procedure :**



**Adjustment Location :**

**[MAIN BOARD]**

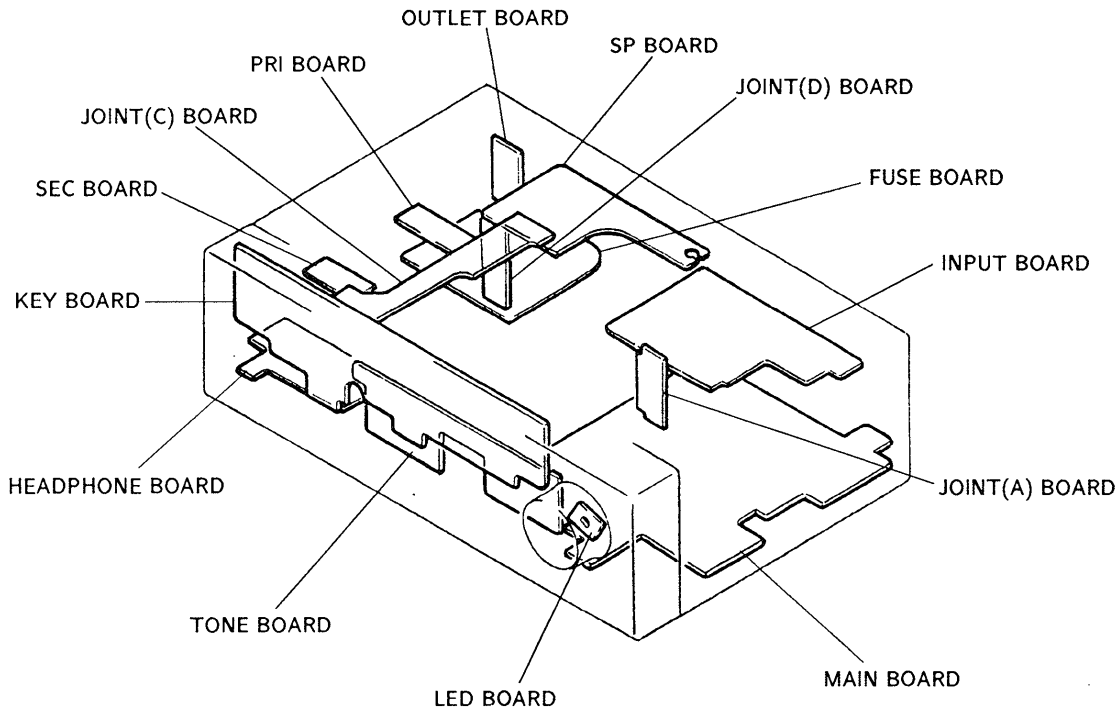
— COMPONENT SIDE —



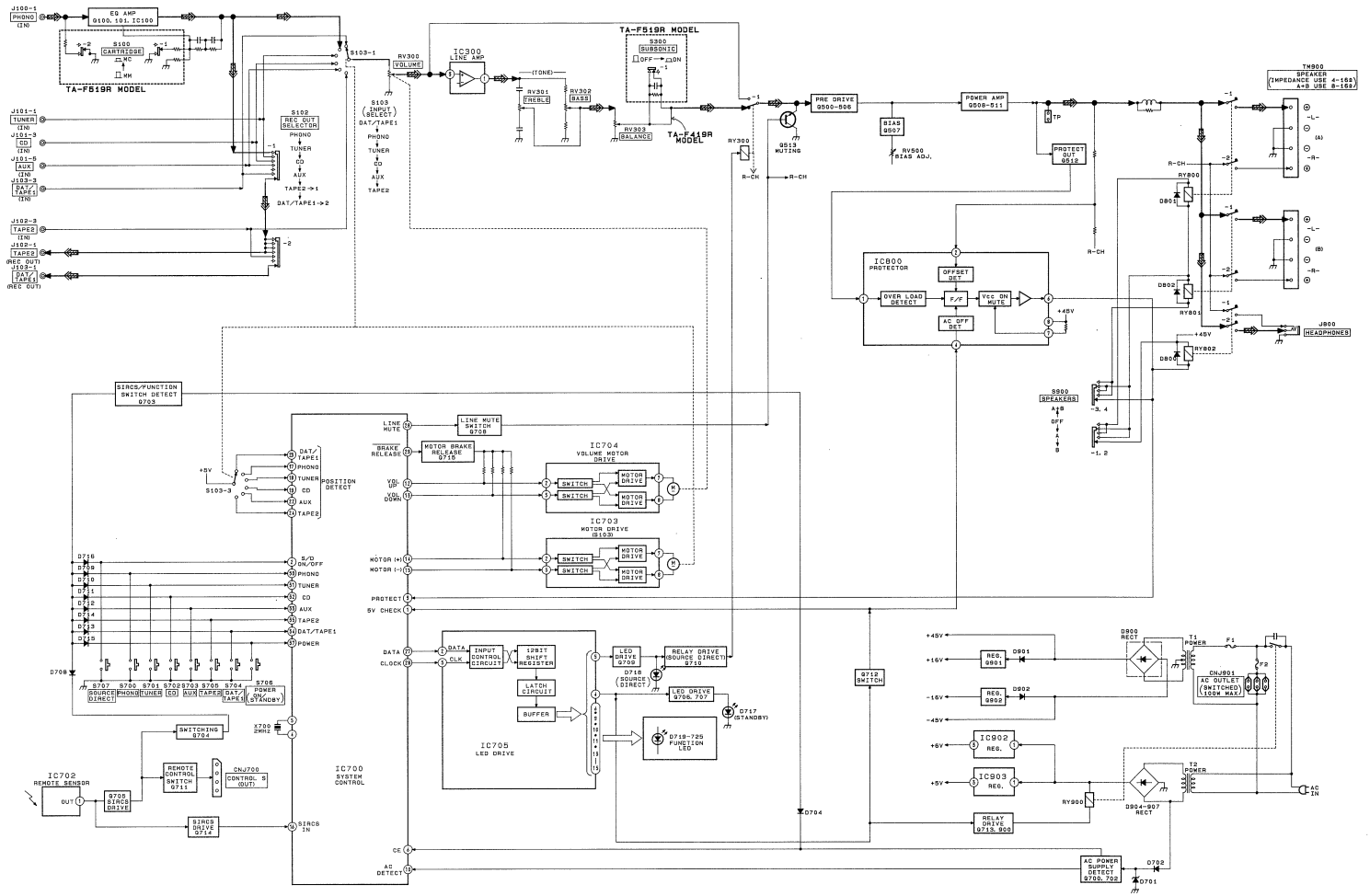
	Adjustment part	Reading on VTVM
L-CH	RV500	7mV
R-CH	RV600	7mV

## SECTION 3 DIAGRAMS

**3-1. CIRCUIT BOARDS LOCATION**



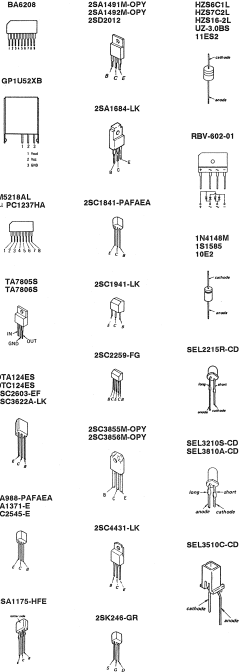
3-2. BLOCK DIAGRAM



● IC700 System Controller (M50720-358SP)

Pin No.	Pin Name	I/O	Description
1	5V CHECK	I	Power supply (+5V) check.
2	S/D ON/OFF	I	Source direct ON/OFF control input.
3	PROTECT	I	Protection signal input.
4	X OUT	O	Connected oscillator circuit.
5	X IN	I	Connected oscillator circuit.
6	CE	I	Signal input for a return to normal position.
7	RESET	I	Reset signal input. ("L" : RESET)
8	VDD	I	+5 Volts power supply.
9	CNTR	I	Ground.
10	AC DET	I	AC power supply detection input.
11	C	I	Connected 0.1 $\mu$ F capacitor.
12	VOL UP	O	Volume control (up) signal output.
13	VOL DOWN	O	Volume control (down) signal output.
14	MOTOR NORM	O	Motor (normal turn) signal output.
15	MOTOR RVS	O	Motor (reverse turn) signal output.
16	SIRCS IN	I	Serial data input (SIRCS).
17	S1	I	Function selector positioning detection input (PHONO).
18	S2	I	Function selector positioning detection input (TUNER).
19	S3	I	Function selector positioning detection input (CD).
20	CNVSS	—	Ground.
21	VSS	—	Ground.
22	S4	I	Function selector positioning detection input (AUX).
23	S5	I	Function selector positioning detection input (TAPE 1).
24	S6	I	Function selector positioning detection input (TAPE 2).
25	S7	I	Connected the resistor 22 kilohms.
26	CLOCK	O	Shift register for LED (CLK).
27	DATA	O	Shift register for LED (DATA).
28	LINE MUTE	O	Line mute signal output.
29	BRAKE RELEASE	O	Motor drive control signal output. ("L" : BRAKE RELEASE)
30	PHONO	I	Function control input for Phono mode.
31	TUNER	I	Function control input for Tuner mode.
32	CD	I	Function control input for CD mode.
33	AUX	I	Function control input for AUX mode.
34	TAPE1	I	Function control input for Tape 1 mode.
35	TAPE2	I	Function control input for Tape 2 mode.
36	—	—	Connected the resistor 22 kilohms.
37	POWER ON/OFF	I	Power ON/OFF control input.
38	K0	I	Ground.
39	K1	I	Ground.
40	K2	I	Microcomputer operation mode selection input.
41	K3	I	Microcomputer operation mode selection input.
42	MUTE	I	Connected the resistor 22 kilohms.

• SEMICONDUCTOR LEAD LAYOUTS

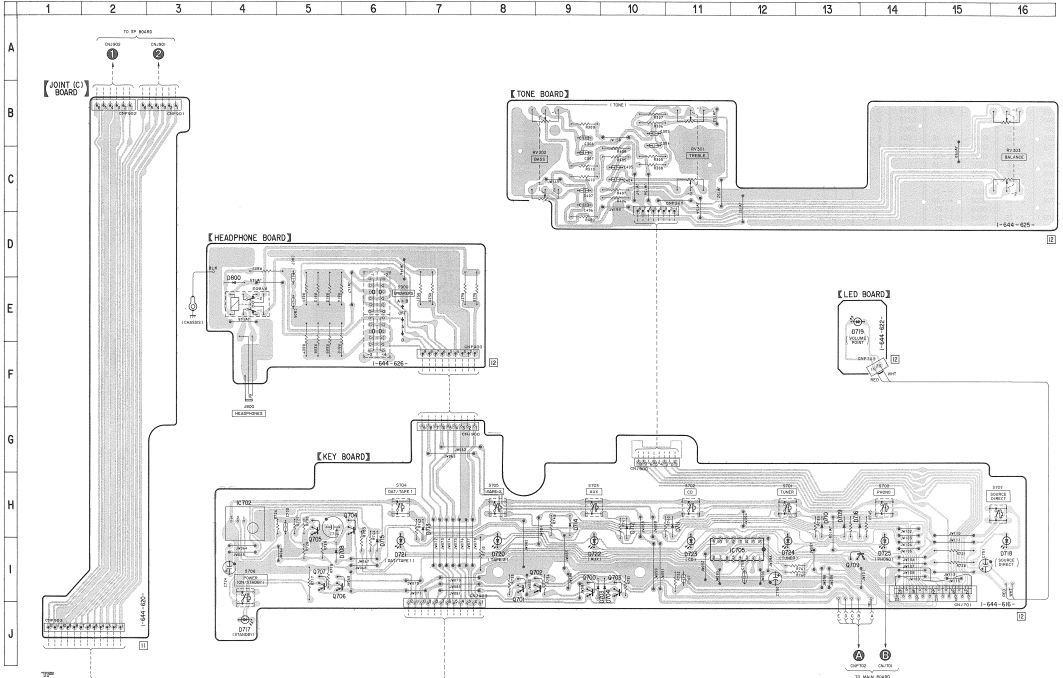


• SEMICONDUCTOR LOCATION

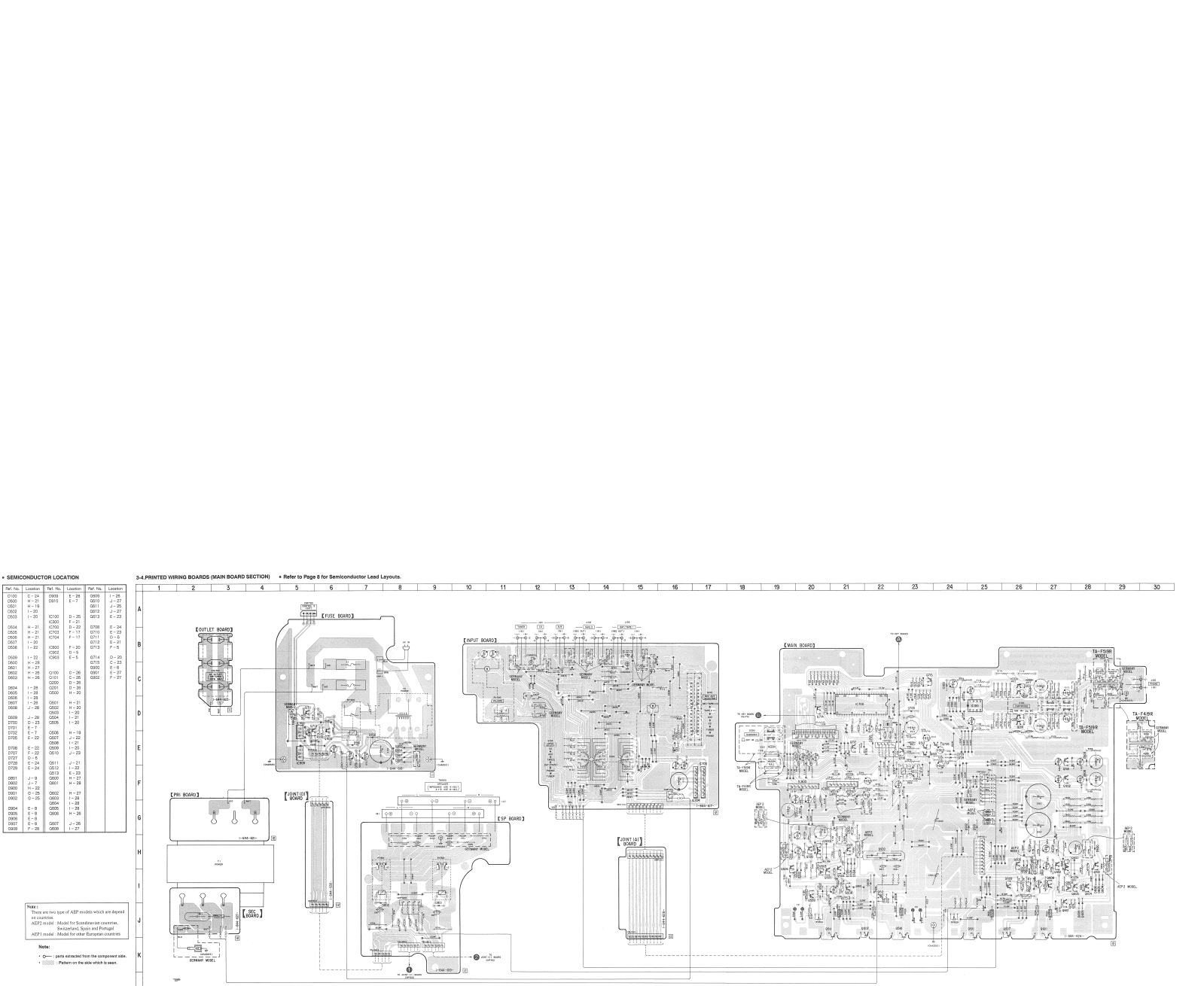
Ref. No.	Location
D703	I-9
D704	I-9
D709	I-5
D709	H-13
D710	H-13
D711	H-11
D712	H-10
D713	H-7
D714	H-9
D715	H-6
D718	H-13
D717	J-4
D718	H-18
D719	E-13
D720	H-6
D721	H-6
D722	H-6
D723	H-11
D724	H-12
D725	H-14
D800	E-4
IC702	H-4
IC705	I-12
Q700	I-9
Q701	I-8
Q702	I-8
Q703	I-10
Q704	H-6
Q705	H-5
Q706	I-5
Q707	I-5
Q709	I-12

Note:  
 • Q: parts extracted from the component side.  
 • ○: Pattern on the side which is seen.

3-3. PRINTED WIRING BOARDS (KEY BOARD SECTION)







**SEMICONDUCTOR LOCATION**

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
C200	C-20	0909	E-20	0909	F-20
0900	H-21	0910	E-7	0910	J-21
0901	H-28			0911	J-22
0902	F-26			0912	F-23
0903	I-25	0130	D-25	0913	C-23
		0300	F-01		
0904	H-21	C700	D-22	0700	C-24
0905	H-21	C702	F-17	0710	C-24
0906	H-21	C704	F-17	0711	D-5
0907	I-22	0900	F-02	0712	F-5
0908	I-22	0902	D-5	0714	D-20
0909	H-28	0101	C-28	0715	C-23
0910	H-28	0102	D-28	0901	C-22
0911	H-28	0103	E-8	0902	F-24
0912	H-28	0104	E-8		
0913	H-28	0105	H-26		
0914	H-28	0106	D-26		
0915	H-28	0107	C-26		
0916	H-28	0108	F-24		
0917	H-28	0109	H-20		
0918	H-28	0110	H-20		
0919	H-28	0111	H-20		
0920	H-28	0112	H-20		
0921	H-28	0113	H-20		
0922	H-28	0114	H-20		
0923	H-28	0115	H-20		
0924	H-28	0116	H-20		
0925	H-28	0117	H-20		
0926	H-28	0118	H-20		
0927	H-28	0119	H-20		
0928	H-28	0120	H-20		
0929	H-28	0121	H-20		
0930	H-28	0122	H-20		
0931	H-28	0123	H-20		
0932	H-28	0124	H-20		
0933	H-28	0125	H-20		
0934	H-28	0126	H-20		
0935	H-28	0127	H-20		
0936	H-28	0128	H-20		
0937	H-28	0129	H-20		
0938	H-28	0130	H-20		
0939	H-28	0131	H-20		
0940	H-28	0132	H-20		
0941	H-28	0133	H-20		
0942	H-28	0134	H-20		
0943	H-28	0135	H-20		
0944	H-28	0136	H-20		
0945	H-28	0137	H-20		
0946	H-28	0138	H-20		
0947	H-28	0139	H-20		
0948	H-28	0140	H-20		
0949	H-28	0141	H-20		
0950	H-28	0142	H-20		
0951	H-28	0143	H-20		
0952	H-28	0144	H-20		
0953	H-28	0145	H-20		
0954	H-28	0146	H-20		
0955	H-28	0147	H-20		
0956	H-28	0148	H-20		
0957	H-28	0149	H-20		
0958	H-28	0150	H-20		
0959	H-28	0151	H-20		
0960	H-28	0152	H-20		
0961	H-28	0153	H-20		
0962	H-28	0154	H-20		
0963	H-28	0155	H-20		
0964	H-28	0156	H-20		
0965	H-28	0157	H-20		
0966	H-28	0158	H-20		
0967	H-28	0159	H-20		
0968	H-28	0160	H-20		
0969	H-28	0161	H-20		
0970	H-28	0162	H-20		
0971	H-28	0163	H-20		
0972	H-28	0164	H-20		
0973	H-28	0165	H-20		
0974	H-28	0166	H-20		
0975	H-28	0167	H-20		
0976	H-28	0168	H-20		
0977	H-28	0169	H-20		
0978	H-28	0170	H-20		
0979	H-28	0171	H-20		
0980	H-28	0172	H-20		
0981	H-28	0173	H-20		
0982	H-28	0174	H-20		
0983	H-28	0175	H-20		
0984	H-28	0176	H-20		
0985	H-28	0177	H-20		
0986	H-28	0178	H-20		
0987	H-28	0179	H-20		
0988	H-28	0180	H-20		
0989	H-28	0181	H-20		
0990	H-28	0182	H-20		
0991	H-28	0183	H-20		
0992	H-28	0184	H-20		
0993	H-28	0185	H-20		
0994	H-28	0186	H-20		
0995	H-28	0187	H-20		
0996	H-28	0188	H-20		
0997	H-28	0189	H-20		
0998	H-28	0190	H-20		
0999	H-28	0191	H-20		
1000	H-28	0192	H-20		

**Note:**  
 This is the top of AEP model which are derived as standard model for Switzerland, Spain and Portugal.  
 AEP model: Model for Switzerland, Spain and Portugal.  
 AEP model: Model for other European countries.

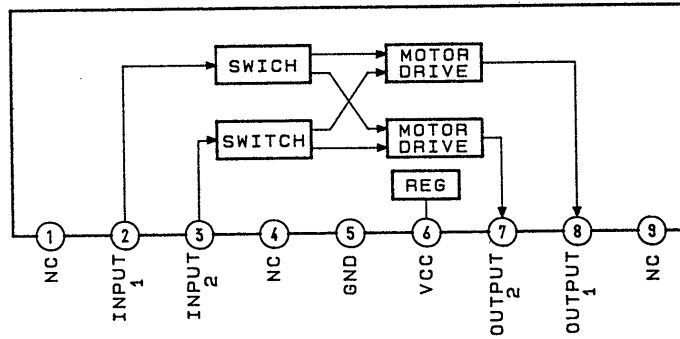
**Note:**  
 □ □ □ □ parts attached from the component side.  
 □ □ □ □ Pattern on the side which is seen.



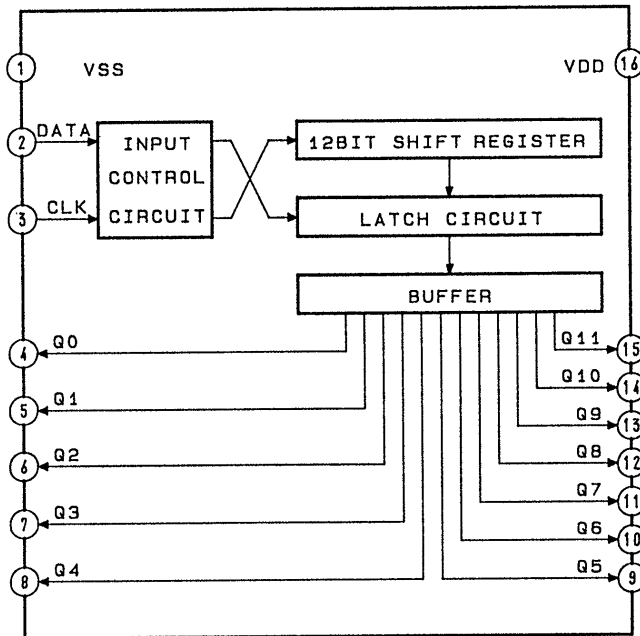


3-6. IC BLOCK DIAGRAM

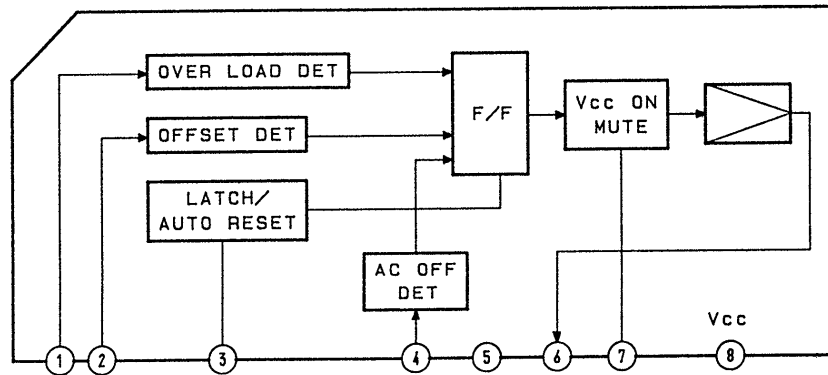
IC703, 704 BA6208



IC705 M50253P



IC800 UPC1237HA



## SECTION 4 EXPLODED VIEWS

**NOTE:**

- -XX, -X mean standardized parts, so they may have some differences 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)

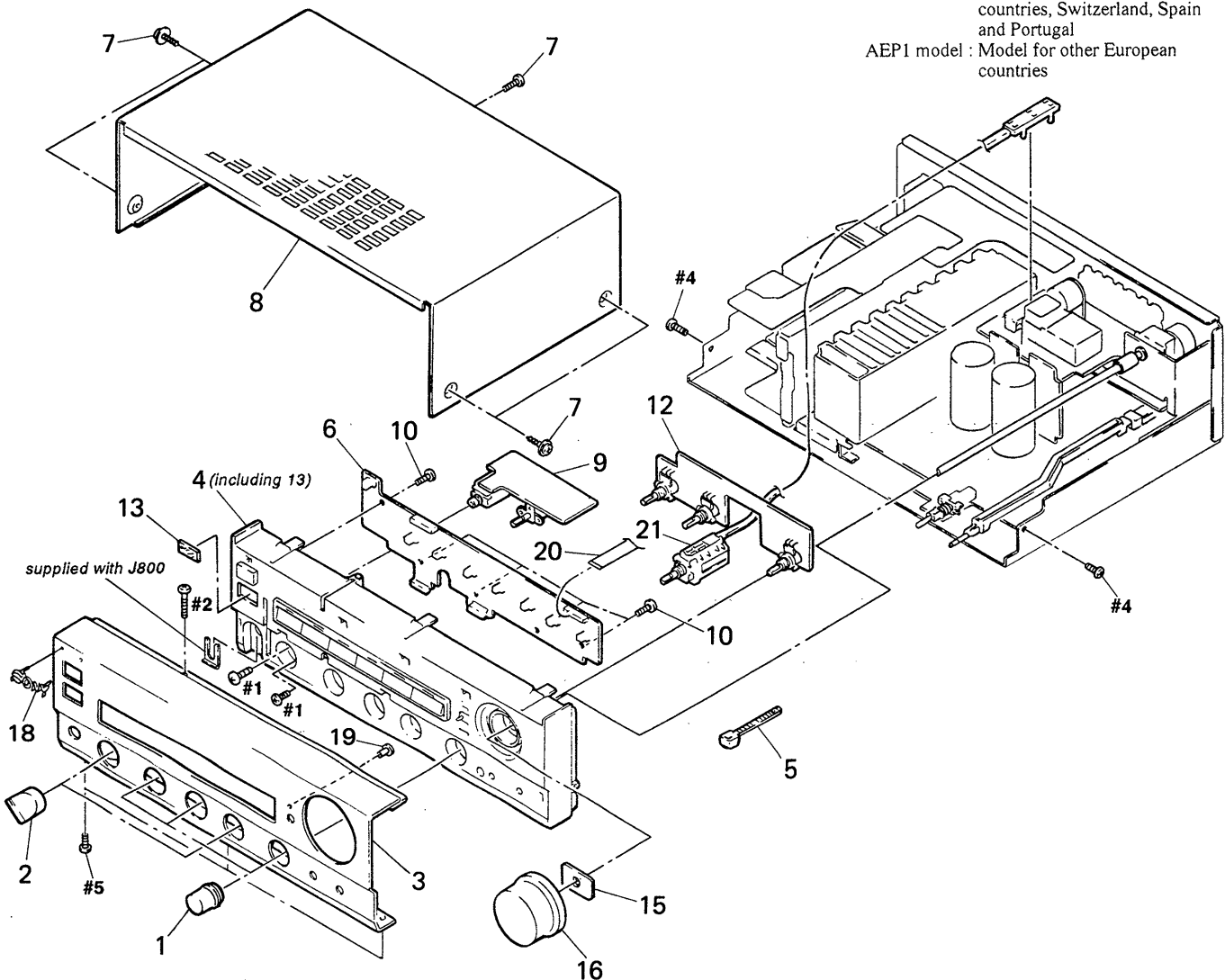
↑ Parts color      ↑ Cabinet's color

- 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 is given in the last of this parts list.

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

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

### 4-1. FRONT PANEL SECTION

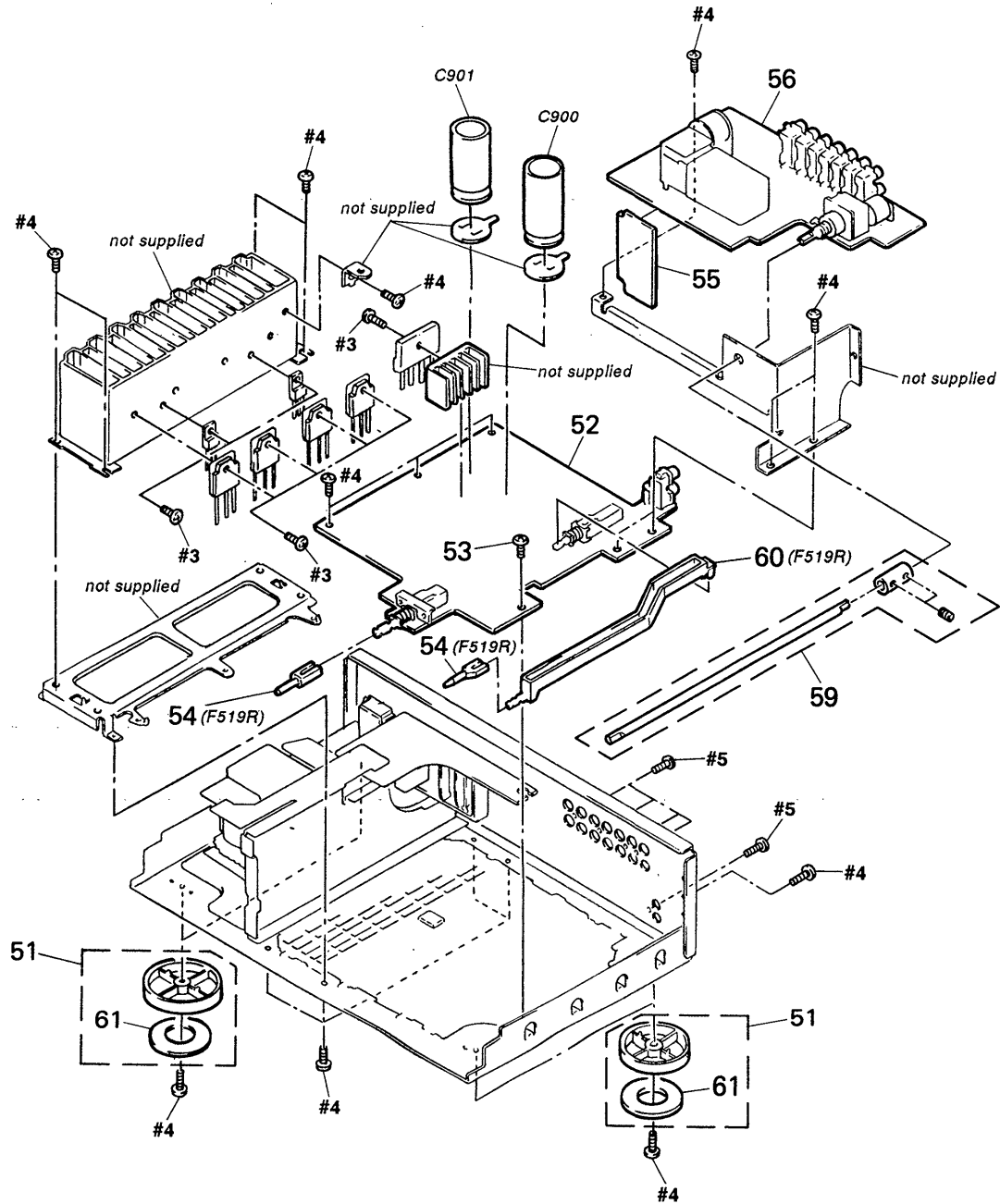


- There are two type of AEP models which are depend on countries.  
AEP2 model : Model for Scandinavian countries, Switzerland, Spain and Portugal  
AEP1 model : Model for other European countries

Ref. No.	Part No.	Description	Remark
1	4-949-931-01	KNOB (DIA. 21)	
2	4-951-344-01	KNOB (R21), FLAT	
3	4-951-336-01	PANEL, FRONT (F519R)	
3	4-951-336-11	PANEL, FRONT (F419R)	
4	X-4942-573-1	PANEL (BASE) ASSY	
5	3-655-653-21	BAND (TAITON), BINDING	
* 6	A-4347-648-A	KEY BOARD, COMPLETE (F419R:AEP/F519R:AEP)	
* 6	A-4347-649-A	KEY BOARD, COMPLETE (F419R:Germany/F519R:Germany)	

Ref. No.	Part No.	Description	Remark
8	4-931-031-11	CASE	
* 9	1-644-626-11	HEADPHONE BOARD	
10	4-951-620-01	SCREW (2. 6X8), +BVTP	
* 12	1-644-625-11	TONE BOARD	
13	4-931-911-01	FILTER	
* 15	1-644-622-11	LED BOARD	
16	X-4942-575-1	KNOB (R53) ASSY	
17	3-704-366-01	SCREW (CASE) (M3X8)	
18	4-908-848-01	EMBLEM, SONY	
19	4-938-518-01	INDICATOR (C)	
20	1-590-499-31	WIRE, FLAT TYPE (23 CORE)	
21	1-692-148-11	SWITCH, ROTARY SLIDE	

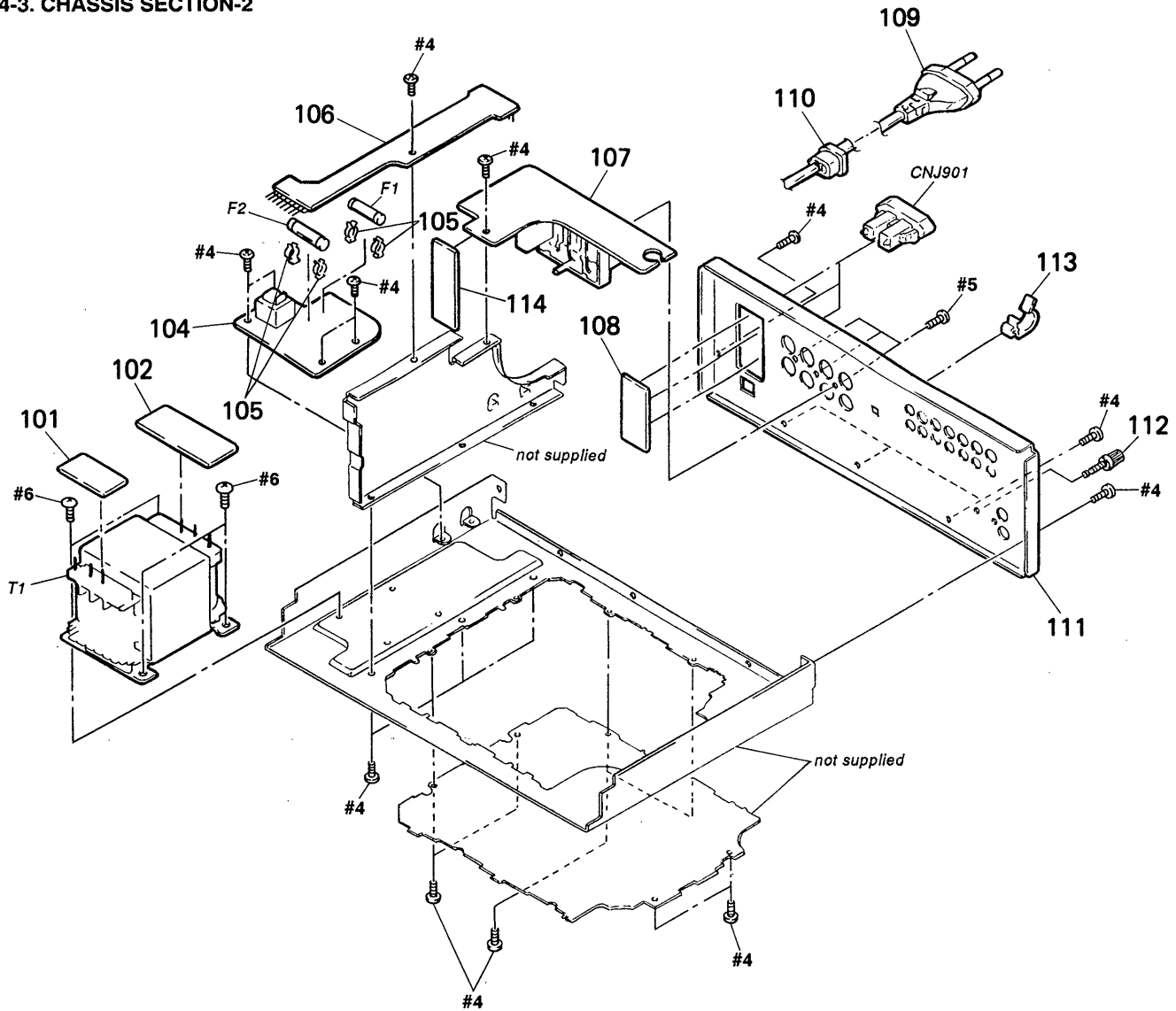
## 4-2. CHASSIS SECTION-1



Ref. No.	Part No.	Description	Remark
51	X-3304-938-2	FOOT ASSY	
* 52	A-4347-636-A	MAIN BOARD, COMPLETE (F519R:AEP1)	
* 52	A-4347-637-A	MAIN BOARD, COMPLETE (F519R:AEP2)	
* 52	A-4347-638-A	MAIN BOARD, COMPLETE (F519R:Germany)	
* 52	A-4347-678-A	MAIN BOARD, COMPLETE (F419R:AEP1)	
* 52	A-4347-679-A	MAIN BOARD, COMPLETE (F419R:AEP2)	
* 52	A-4347-680-A	MAIN BOARD, COMPLETE (F419R:Germany)	
53	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	
54	4-931-641-01	BUTTON (DIA. 4) (F519R)	
* 55	1-644-628-11	JOINT (A) BOARD	

Ref. No.	Part No.	Description	Remark
* 56	A-4347-650-A	INPUT BOARD, COMPLETE (F419R:AEP/F519R:AEP)	
* 56	A-4347-651-A	INPUT BOARD, COMPLETE (F419R:Germany/F519R:Germany)	
59	X-4942-809-1	SHAFT ASSY	
* 60	4-951-345-01	ROD, PUSH SWITCH (F519R)	
61	4-923-836-11	CUSHION	

### 4-3. CHASSIS SECTION-2



Note: The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 101	1-644-627-11	SEC BOARD	
* 102	1-644-621-11	PRI BOARD	
* 104	A-4347-654-A	FUSE BOARD, COMPLETE (F519R:AEP)	
* 104	A-4347-655-A	FUSE BOARD, COMPLETE (F519R:Germany)	
* 104	A-4347-688-A	FUSE BOARD, COMPLETE (F419R:AEP)	
* 104	A-4347-689-A	FUSE BOARD, COMPLETE (F419R:Germany)	
* 105	1-533-213-31	HOLDER, FUSE	
* 106	1-644-620-11	JOINT (C) BOARD	
* 107	1-644-619-11	SP BOARD	
* 108	1-644-623-11	OUTLET BOARD	
$\triangle$ 109	1-575-651-11	CORD, POWER	
* 110	3-703-244-00	BUSHING (2104), CORD	
* 111	4-951-342-11	PANEL, BACK (F519R:AEP)	
* 111	4-951-342-21	PANEL, BACK (F519R:Germany)	
* 111	4-951-342-41	PANEL, BACK (F419R:AEP)	
* 111	4-951-342-51	PANEL, BACK (F419R:Germany)	

Ref. No.	Part No.	Description	Remark
112	4-947-010-01	SCREW, FEEDER FIXED	
* 113	4-949-235-01	HOOK	
* 114	1-644-630-11	JOINT (D) BOARD	
$\triangle$ CNJ901	1-526-794-11	OUTLET, AC	
$\triangle$ F1	1-532-237-00	FUSE, TIME LAG (T3.15A) (F519R)	
$\triangle$ F1	1-532-286-00	FUSE (T2.5A) (F419R)	
$\triangle$ F2	1-532-286-00	FUSE (T2.5A)	
$\triangle$ T1	1-450-928-11	TRANSFORMER, POWER (F519R)	
$\triangle$ T1	1-450-929-11	TRANSFORMER, POWER (F419R:AEP1, Germany)	
$\triangle$ T1	1-450-930-12	TRANSFORMER, POWER (F419R:AEP2)	

SECTION 5  
ELECTRICAL PARTS LIST

FUSE

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 and -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
- G: Germany
- AEP2: Model for Scandinavian countries, Switzerland, Spain and Portugal
- AEP1: Model for other European countries

- 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:  $\mu$ , for example:  
uA ..:  $\mu$ A.. uPA..:  $\mu$ PA..  
uPB..:  $\mu$ PB.. uPC..:  $\mu$ PC.. uPD..:  $\mu$ PD..
- CAPACITORS  
uF:  $\mu$ F
- COILS  
uH:  $\mu$ H

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

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-4347-654-A	FUSE BOARD, COMPLETE (F519R:AEP)		D905	8-719-200-82	DIODE 11ES2	
*	A-4347-655-A	FUSE BOARD, COMPLETE (F519R:G)		D906	8-719-200-82	DIODE 11ES2	
*	A-4347-688-A	FUSE BOARD, COMPLETE (F419R:AEP)		D907	8-719-200-82	DIODE 11ES2	
*	A-4347-689-A	FUSE BOARD, COMPLETE (F419R:G)		D910	8-719-987-63	DIODE 1N4148M	
*****							
*	1-533-213-31	HOLDER, FUSE		< FUSE >			
< CAPACITOR >				$\Delta$ F1	1-532-237-00	FUSE, TIME LAG (T3. 15A) (F519R)	
$\Delta$ C1	1-161-741-00	CERAMIC	0.001uF 10% 400V	$\Delta$ F1	1-532-286-00	FUSE (T2. 5A) (F419R)	
C708	1-124-126-00	ELECT	47uF 20% 10V	$\Delta$ F2	1-532-286-00	FUSE (T2. 5A)	
C709	1-124-478-11	ELECT	100uF 20% 25V	< IC >			
C716	1-126-233-11	ELECT	22uF 20% 50V	IC902	8-759-231-54	IC TA7806S	
C717	1-126-233-11	ELECT	22uF 20% 50V	IC903	8-759-234-64	IC TA7805S	
C723	1-164-094-11	CERAMIC	0.0068uF 10% 25V (F419R:G/F519R:G)	< TRANSISTOR >			
C910	1-124-563-11	ELECT	2200uF 20% 25V	Q711	8-729-620-05	TRANSISTOR 2SC2603-EF	
C913	1-136-159-00	FILM	0.033uF 5% 50V	Q713	8-729-900-63	TRANSISTOR DTA124ES	
C914	1-164-073-11	CERAMIC	100PF 10% 50V (F419R:G/F519R:G)	Q900	8-729-620-05	TRANSISTOR 2SC2603-EF	
< CONNECTOR >				< RESISTOR >			
* CNP1	1-564-321-00	PIN, CONNECTOR 2P		R723	1-249-393-11	CARBON 10 5% 1/4W	
CNP700	1-566-213-11	PIN, CONNECTOR 4P (CONTROL S OUT)		R724	1-249-417-11	CARBON 1K 5% 1/4W	
CNP800	1-691-162-11	PIN, CONNECTOR 5P		R725	1-249-429-11	CARBON 10K 5% 1/4W	
< DIODE >				R735	1-249-419-11	CARBON 1.5K 5% 1/4W	
D701	8-719-933-39	DIODE HZS6C1L		R736	1-249-433-11	CARBON 22K 5% 1/4W	
D702	8-719-200-82	DIODE 11ES2		R737	1-249-423-11	CARBON 3.3K 5% 1/4W	
D727	8-719-987-63	DIODE 1N4148M		R908	1-247-733-11	CARBON 33 5% 1/2W (F419R)	
D904	8-719-200-82	DIODE 11ES2		R908	1-247-727-11	CARBON 10 5% 1/2W (F519R)	
< RELAY >				< TRANSFORMER >			
< TRANSFORMER >				$\Delta$ RY900	1-515-516-00	RELAY (F419R)	
< TRANSFORMER >				$\Delta$ RY900	1-515-617-11	RELAY (F519R)	
< TRANSFORMER >				$\Delta$ T2	1-449-071-11	TRANSFORMER, POWER	



# HEADPHONE INPUT

Ref. No.	Part No.	Description	Remark
*	1-644-626-11	HEADPHONE BOARD *****	
		< CAPACITOR >	
C805	1-136-161-00	FILM 0.047uF 5% 50V	
C807	1-136-161-00	FILM 0.047uF 5% 50V	
		< CONNECTOR >	
* CNP900	1-560-943-00	PIN, CONNECTOR 9P	
		< DIODE >	
D800	8-719-987-63	DIODE 1N4148M	
		< JACK >	
J800	1-573-203-11	JACK, LARGE TYPE (HEADPHONES)	
		< RESISTOR >	
R527	1-247-752-11	CARBON 1K 5% 1/2W	
R528	1-247-752-11	CARBON 1K 5% 1/2W	
R627	1-247-752-11	CARBON 1K 5% 1/2W	
R628	1-247-752-11	CARBON 1K 5% 1/2W	
R805	1-247-757-11	CARBON 2.7K 5% 1/2W (F419R)	
R805	1-247-251-00	CARBON 3K 5% 1/2W (F519R)	
R807	1-247-757-11	CARBON 2.7K 5% 1/2W (F419R)	
R807	1-247-758-11	CARBON 3.3K 5% 1/2W (F519R)	
R808	1-247-757-11	CARBON 2.7K 5% 1/2W (F419R)	
R808	1-247-758-11	CARBON 3.3K 5% 1/2W (F519R)	
R809	1-247-757-11	CARBON 2.7K 5% 1/2W (F419R)	
R809	1-247-758-11	CARBON 3.3K 5% 1/2W (F519R)	
R810	1-247-757-11	CARBON 2.7K 5% 1/2W (F419R)	
R810	1-247-758-11	CARBON 3.3K 5% 1/2W (F519R)	
R811	1-247-757-11	CARBON 2.7K 5% 1/2W (F419R)	
R811	1-247-758-11	CARBON 3.3K 5% 1/2W (F519R)	
R812	1-247-757-11	CARBON 2.7K 5% 1/2W (F419R)	
R812	1-247-758-11	CARBON 3.3K 5% 1/2W (F519R)	
R813	1-247-757-11	CARBON 2.7K 5% 1/2W (F419R)	
R813	1-247-758-11	CARBON 3.3K 5% 1/2W (F519R)	
R814	1-247-757-11	CARBON 2.7K 5% 1/2W (F419R)	
R814	1-247-758-11	CARBON 3.3K 5% 1/2W (F519R)	
		< RELAY >	
RY802	1-515-793-11	RELAY	
		< SWITCH >	
S900	1-692-147-11	SWITCH, ROTARY SLIDE (SPEAKERS)	

Ref. No.	Part No.	Description	Remark
*	A-4347-650-A	INPUT BOARD, COMPLETE (F419R:AEP/F519R:AEP)	
*	A-4347-651-A	INPUT BOARD, COMPLETE (F419R:G/F519R:G) *****	
		< CAPACITOR >	
C151	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C152	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C153	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C154	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C155	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C156	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C157	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C159	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C251	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C252	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C253	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C254	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C255	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C256	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C257	1-162-286-31	CERAMIC 220PF 10% 50V (F419R:G/F519R:G)	
C353	1-164-058-11	CERAMIC 33PF 5% 50V (F419R:G/F519R:G)	
C711	1-124-471-00	ELECT 1000uF 20% 6.3V	
C712	1-124-907-11	ELECT 10uF 20% 50V	
C713	1-124-907-11	ELECT 10uF 20% 50V	
C714	1-124-907-11	ELECT 10uF 20% 50V	
C715	1-124-907-11	ELECT 10uF 20% 50V	
		< CONNECTOR >	
* CNJ101	1-691-180-11	CONNECTOR (BOARD TO BOARD) 10P	
* CNP702	1-564-505-11	PLUG, CONNECTOR 2P	
		< IC >	
IC703	8-759-962-08	IC BA6208	
IC704	8-759-962-08	IC BA6208	
		< JACK >	
J101	1-566-883-71	JACK, PIN 6P (AUX/CD/TUNER)	
J102	1-566-882-51	JACK, PIN 4P (TAPE2)	
J103	1-566-882-51	JACK, PIN 4P (DAT/TAPE1) (F419R:AEP/F519R:AEP)	
J103	1-566-882-61	JACK, PIN 4P (DAT/TAPE1) (F419R:G/F519R:G)	

**INPUT**    **JOINT (A)**    **JOINT (C)**    **JOINT (D)**    **KEY**

Ref. No.	Part No.	Description	Remark
< RESISTOR >			
R115	1-247-713-11	CARBON	1K 5% 1/4W
R116	1-247-713-11	CARBON	1K 5% 1/4W
R117	1-259-500-11	CARBON	1M 5% 1/6W
R118	1-259-500-11	CARBON	1M 5% 1/6W
R119	1-259-500-11	CARBON	1M 5% 1/6W
R120	1-259-500-11	CARBON	1M 5% 1/6W
R121	1-259-500-11	CARBON	1M 5% 1/6W
R215	1-247-713-11	CARBON	1K 5% 1/4W
R216	1-247-713-11	CARBON	1K 5% 1/4W
R217	1-259-500-11	CARBON	1M 5% 1/6W
R218	1-259-500-11	CARBON	1M 5% 1/6W
R219	1-259-500-11	CARBON	1M 5% 1/6W
R220	1-259-500-11	CARBON	1M 5% 1/6W
R221	1-259-500-11	CARBON	1M 5% 1/6W
R350	1-247-700-11	CARBON 100 5%	1/4W (F419R:G/F519R:G)
R450	1-247-700-11	CARBON 100 5%	1/4W (F419R:G/F519R:G)
< VARIABLE RESISTOR >			
RV300	1-241-913-11	RES, VAR, CARBON	120K/120K (VOLUME)
< SWITCH >			
S102	1-571-115-11	SWITCH, SLIDE	(REC OUT SELECTOR)
S103	1-692-142-11	SWITCH, ROTARY	(WITH MOTOR) (INPUT SELECTOR)
*****			
*	1-644-628-11	JOINT (A) BOARD	*****
< CONNECTOR >			
* CNJ501	1-691-180-11	CONNECTOR (BOARD TO BOARD)	10P
CNP101	1-691-167-11	PIN, CONNECTOR	10P
*****			
*	1-644-620-11	JOINT (C) BOARD	*****
< CONNECTOR >			
* CNP901	1-580-854-11	PIN, CONNECTOR (PC BOARD)	6P
* CNP902	1-580-854-11	PIN, CONNECTOR (PC BOARD)	6P
* CNP903	1-560-443-11	PIN, CONNECTOR	12P
*****			

Ref. No.	Part No.	Description	Remark
*	1-644-630-11	JOINT (D) BOARD	*****
< CONNECTOR >			
* CNJ800	1-691-175-11	CONNECTOR (BOARD TO BOARD)	5P
CNP801	1-691-162-11	PIN, CONNECTOR	5P
*****			
*	A-4347-648-A	KEY BOARD, COMPLETE	(F419R:AEP/F519R:AEP)
*	A-4347-649-A	KEY BOARD, COMPLETE	(F419R:G/F519R:G)
*****			
< CAPACITOR >			
C705	1-164-085-11	CERAMIC	0.001uF 10% 50V
C706	1-126-176-11	ELECT	220uF 20% 10V
C707	1-136-161-00	FILM	0.047uF 5% 50V
C724	1-124-927-11	ELECT	4.7uF 20% 100V
C750	1-126-233-11	ELECT	22uF 20% 50V
C751	1-126-233-11	ELECT	22uF 20% 50V
C752	1-164-085-11	CERAMIC	0.001uF 10% 50V
< CONNECTOR >			
* CNJ300	1-565-321-11	SOCKET, CONNECTOR (PC BOARD)	8P
* CNJ701	1-568-865-11	SOCKET, CONNECTOR	23P
CNJ900	1-562-088-00	SOCKET, CONNECTOR	9P
* CNJ903	1-561-652-00	SOCKET, CONNECTOR	12P
< DIODE >			
D703	8-719-987-63	DIODE	1N4148M
D704	8-719-987-63	DIODE	1N4148M
D708	8-719-987-63	DIODE	1N4148M
D709	8-719-987-63	DIODE	1N4148M
D710	8-719-987-63	DIODE	1N4148M
D711	8-719-987-63	DIODE	1N4148M
D712	8-719-987-63	DIODE	1N4148M
D713	8-719-987-63	DIODE	1N4148M
D714	8-719-987-63	DIODE	1N4148M
D715	8-719-987-63	DIODE	1N4148M
D716	8-719-987-63	DIODE	1N4148M
D717	8-719-313-69	DIODE	SEL3210S-CD
D718	8-719-313-72	LED	SEL3810A-CD
D720	8-719-018-46	LED	SEL3510C-CD
D721	8-719-018-46	LED	SEL3510C-CD
D722	8-719-018-46	LED	SEL3510C-CD
D723	8-719-018-46	LED	SEL3510C-CD
D724	8-719-018-46	LED	SEL3510C-CD
D725	8-719-018-46	LED	SEL3510C-CD

**KEY**

**LED**

**MAIN**

Ref. No.	Part No.	Description	Remark
< IC >			
IC702	8-749-920-83	IC GP1U52XB	
IC705	8-759-635-31	IC M50253P	
< TRANSISTOR >			
Q700	8-729-900-63	TRANSISTOR DTA124ES	
Q701	8-729-900-63	TRANSISTOR DTA124ES	
Q702	8-729-900-36	TRANSISTOR DTC124ES	
Q703	8-729-900-63	TRANSISTOR DTA124ES	
Q704	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q705	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q706	8-729-900-63	TRANSISTOR DTA124ES	
Q707	8-729-900-63	TRANSISTOR DTA124ES	
Q709	8-729-900-63	TRANSISTOR DTA124ES	
< RESISTOR >			
R717	1-247-710-11	CARBON 560 5% 1/4W	
R718	1-249-433-11	CARBON 22K 5% 1/4W	
R719	1-247-702-11	CARBON 150 5% 1/4W	
R720	1-247-703-11	CARBON 180 5% 1/4W	
R721	1-247-703-11	CARBON 180 5% 1/4W	
R726	1-249-429-11	CARBON 10K 5% 1/4W	
R727	1-249-429-11	CARBON 10K 5% 1/4W	
R728	1-249-417-11	CARBON 1K 5% 1/4W	
R729	1-249-417-11	CARBON 1K 5% 1/4W	
R730	1-249-429-11	CARBON 10K 5% 1/4W	
R731	1-249-433-11	CARBON 22K 5% 1/4W	
R732	1-249-438-11	CARBON 56K 5% 1/4W	
R733	1-249-433-11	CARBON 22K 5% 1/4W	
R734	1-249-433-11	CARBON 22K 5% 1/4W	
R738	1-249-433-11	CARBON 22K 5% 1/4W	
R739	1-249-433-11	CARBON 22K 5% 1/4W	
R740	1-249-433-11	CARBON 22K 5% 1/4W	
R741	1-249-433-11	CARBON 22K 5% 1/4W	
R742	1-249-433-11	CARBON 22K 5% 1/4W	
R743	1-249-433-11	CARBON 22K 5% 1/4W	
R744	1-249-433-11	CARBON 22K 5% 1/4W	
R745	1-249-433-11	CARBON 22K 5% 1/4W	
R753	1-249-429-11	CARBON 10K 5% 1/4W	
R760	1-249-405-11	CARBON 100 5% 1/4W	
R761	1-249-405-11	CARBON 100 5% 1/4W	
< SWITCH >			
S700	1-554-303-21	SWITCH, TACTILE (PHONO)	
S701	1-554-303-21	SWITCH, TACTILE (TUNER)	
S702	1-554-303-21	SWITCH, TACTILE (CD)	
S703	1-554-303-21	SWITCH, TACTILE (AUX)	
S704	1-554-303-21	SWITCH, TACTILE (DAT/TAPE 1)	

Ref. No.	Part No.	Description	Remark
S705	1-554-303-21	SWITCH, TACTILE (TAPE 2)	
S706	1-554-303-21	SWITCH, TACTILE (POWER)	
S707	1-554-303-21	SWITCH, TACTILE (SOURCE DIRECT)	
*****			
*	1-644-622-11	LED BOARD	*****
< CONNECTOR >			
* CNP703	1-564-505-11	PLUG, CONNECTOR 2P	
< DIODE >			
D719	8-719-028-38	DIODE SEL2215R-CD-TP	
*****			
*	A-4347-636-A	MAIN BOARD, COMPLETE (F519R:AEP1)	
*	A-4347-637-A	MAIN BOARD, COMPLETE (F519R:AEP2)	
*	A-4347-638-A	MAIN BOARD, COMPLETE (F519R:G)	
*	A-4347-678-A	MAIN BOARD, COMPLETE (F419R:AEP1)	
*	A-4347-679-A	MAIN BOARD, COMPLETE (F419R:AEP2)	
*	A-4347-680-A	MAIN BOARD, COMPLETE (F419R:G)	
*****			
< CAPACITOR >			
C100	1-164-077-11	CERAMIC 220PF 10% 50V	
C101	1-123-369-00	ELECT 4.7uF 20% 50V	
C102	1-161-377-00	CERAMIC 0.0047uF 30% 16V	
C103	1-136-162-00	FILM 0.056uF 5% 50V	
C104	1-137-471-11	FILM 0.016uF 5% 50V	
C105	1-126-059-11	ELECT 10uF 20% 50V	
C106	1-124-910-11	ELECT 47uF 20% 50V(F419R)	
C106	1-126-541-11	ELECT 330uF 20% 16V(F519R)	
C107	1-126-059-11	ELECT 10uF 20% 50V	
C150	1-162-282-31	CERAMIC 100PF 10% 50V	(F419R:G/F519R:G)
C158	1-164-073-11	CERAMIC 100PF 10% 50V	
C200	1-164-077-11	CERAMIC 220PF 10% 50V	
C201	1-123-369-00	ELECT 4.7uF 20% 50V	
C202	1-161-377-00	CERAMIC 0.0047uF 30% 16V	
C203	1-136-162-00	FILM 0.056uF 5% 50V	
C204	1-137-471-11	FILM 0.016uF 5% 50V	
C205	1-126-059-11	ELECT 10uF 20% 50V	
C206	1-124-910-11	ELECT 47uF 20% 50V(F419R)	
C206	1-126-541-11	ELECT 330uF 20% 16V(F519R)	

**MAIN**

Ref. No.	Part No.	Description	Remark		
C250	1-162-282-31	CERAMIC	100PF	10%	50V (F419R:G/F519R:G)
C258	1-164-073-11	CERAMIC	100PF	10%	50V
C300	1-123-369-00	ELECT	4.7uF	20%	50V
C301	1-164-064-11	CERAMIC	56PF	5%	50V
C302	1-123-369-00	ELECT	4.7uF	20%	50V
C303	1-136-166-00	FILM	0.12uF	5%	50V(F519R)
C351	1-164-073-11	CERAMIC	100PF	10%	50V (F419R:G/F519R:G)
C352	1-136-161-00	FILM	0.047uF	5%	50V (F419R:G/F519R:G)
C354	1-124-791-11	ELECT	1.0uF	20%	100V
C355	1-162-306-11	CERAMIC	0.01uF	20%	16V (F419R:G/F519R:G)
C400	1-123-369-00	ELECT	4.7uF	20%	50V
C401	1-164-064-11	CERAMIC	56PF	5%	50V
C402	1-123-369-00	ELECT	4.7uF	20%	50V
C403	1-136-166-00	FILM	0.12uF	5%	50V(F519R)
C451	1-164-073-11	CERAMIC	100PF	10%	50V (F419R:G/F519R:G)
C452	1-136-161-00	FILM	0.047uF	5%	50V (F419R:G/F519R:G)
C500	1-123-369-00	ELECT	4.7uF	20%	50V
C501	1-164-073-11	CERAMIC	100PF	10%	50V
C502	1-164-083-11	CERAMIC	680PF	10%	50V
C503	1-124-910-11	ELECT	47uF	20%	50V
C504	1-162-550-11	CERAMIC	39PF	5%	500V
C505	1-124-120-11	ELECT	220uF	20%	25V
C506	1-123-306-00	ELECT	47uF	20%	10V
C507	1-102-943-00	CERAMIC	6.0PF	+-0.5PF	50V
C511	1-126-049-11	ELECT	22uF	20%	50V
C550	1-164-073-11	CERAMIC	100PF	10%	50V
C554	1-162-306-11	CERAMIC	0.01uF	20%	16V
C600	1-123-369-00	ELECT	4.7uF	20%	50V
C601	1-164-073-11	CERAMIC	100PF	10%	50V
C602	1-164-083-11	CERAMIC	680PF	10%	50V
C603	1-124-910-11	ELECT	47uF	20%	50V
C604	1-162-550-11	CERAMIC	39PF	5%	500V
C605	1-124-120-11	ELECT	220uF	20%	25V
C606	1-123-306-00	ELECT	47uF	20%	10V
C607	1-102-943-00	CERAMIC	6.0PF	+-0.5PF	50V
C611	1-126-049-11	ELECT	22uF	20%	50V
C650	1-164-073-11	CERAMIC	100PF	10%	50V
C654	1-162-306-11	CERAMIC	0.01uF	20%	16V
C700	1-164-062-11	CERAMIC	47PF	5%	50V
C701	1-164-062-11	CERAMIC	47PF	5%	50V
C702	1-124-471-00	ELECT	1000uF	20%	6.3V

Ref. No.	Part No.	Description	Remark		
C703	1-124-903-11	ELECT	1uF	20%	50V
C704	1-136-153-00	FILM	0.01uF	5%	50V
C718	1-136-161-00	FILM	0.047uF	5%	50V
C719	1-136-161-00	FILM	0.047uF	5%	50V
C720	1-136-161-00	FILM	0.047uF	5%	50V
C721	1-136-168-00	FILM	0.18uF	5%	50V
C722	1-124-907-11	ELECT	10uF	20%	50V
C800	1-164-085-11	CERAMIC	0.001uF	10%	50V
C801	1-124-443-00	ELECT	100uF	20%	10V
C802	1-136-153-00	FILM	0.01uF	5%	50V
C804	1-124-482-11	ELECT	33uF	20%	35V(F419R)
C804	1-124-443-00	ELECT	100uF	20%	10V(F519R)
C806	1-124-472-11	ELECT	470uF	20%	10V
C900	1-125-748-11	ELECT	10000uF	20%	50V(F419R)
C900	1-125-747-11	ELECT	10000uF	20%	63V(F519R)
C901	1-125-748-11	ELECT	10000uF	20%	50V(F419R)
C901	1-125-747-11	ELECT	10000uF	20%	63V(F519R)
C902	1-126-170-11	ELECT	1000uF	20%	50V(F419R)
C902	1-124-922-11	ELECT	1000uF	20%	63V(F519R)
C903	1-126-170-11	ELECT	1000uF	20%	50V(F419R)
C903	1-124-922-11	ELECT	1000uF	20%	63V(F519R)
C904	1-124-122-11	ELECT	100uF	20%	50V
C905	1-124-122-11	ELECT	100uF	20%	50V
C906	1-124-122-11	ELECT	100uF	20%	50V
C907	1-124-122-11	ELECT	100uF	20%	50V
C908	1-106-379-12	MYLAR	0.033uF	5%	200V
C909	1-106-379-12	MYLAR	0.033uF	5%	200V
C911	1-124-910-11	ELECT	47uF	20%	50V
C912	1-124-910-11	ELECT	47uF	20%	50V

&lt; CONNECTOR &gt;

\* CNJ700 1-568-839-11 SOCKET, CONNECTOR 23P  
 \* CNP500 1-564-511-11 PLUG, CONNECTOR 8P  
 CNP501 1-691-167-11 PIN, CONNECTOR 10P  
 \* CNP702 1-564-508-11 PLUG, CONNECTOR 5P

&lt; DIODE &gt;

D100 8-719-933-50 DIODE HZS7C2L  
 D500 8-719-987-63 DIODE 1N4148M  
 D501 8-719-933-39 DIODE HZS6C1L  
 D502 8-719-987-63 DIODE 1N4148M  
 D503 8-719-987-63 DIODE 1N4148M  
 D504 8-719-987-63 DIODE 1N4148M  
 D505 8-719-987-63 DIODE 1N4148M  
 D506 8-719-987-63 DIODE 1N4148M

## MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
D507	8-719-987-63	DIODE 1N4148M		Q201	8-729-354-52	TRANSISTOR 2SC2545-E	
D508	8-719-815-85	DIODE 1S1585		Q500	8-729-620-17	TRANSISTOR 2SC2259-FG	
D509	8-719-815-85	DIODE 1S1585		Q501	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D600	8-719-987-63	DIODE 1N4148M		Q502	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA	
D601	8-719-933-39	DIODE HZS6C1L		Q503	8-729-224-62	TRANSISTOR 2SK246-GR	
D602	8-719-987-63	DIODE 1N4148M		Q504	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
D603	8-719-987-63	DIODE 1N4148M		Q505	8-729-803-76	TRANSISTOR 2SA1371-E	
D604	8-719-987-63	DIODE 1N4148M		Q506	8-729-142-01	TRANSISTOR 2SC1941-LK	
D605	8-719-987-63	DIODE 1N4148M		Q507	8-729-209-15	TRANSISTOR 2SD2012	
D606	8-719-987-63	DIODE 1N4148M		Q508	8-729-141-46	TRANSISTOR 2SC4431-LK	
D607	8-719-987-63	DIODE 1N4148M		Q509	8-729-141-37	TRANSISTOR 2SA1684-LK	
D608	8-719-815-85	DIODE 1S1585		Q510	8-729-011-14	TRANSISTOR 2SC3855M-OPY (F419R)	
D609	8-719-815-85	DIODE 1S1585		Q510	8-729-010-97	TRANSISTOR 2SC3856M-OPY (F519R)	
D700	8-719-200-82	DIODE 11ES2		Q511	8-729-011-13	TRANSISTOR 2SA1491M-OPY (F419R)	
D705	8-719-987-63	DIODE 1N4148M		Q511	8-729-010-98	TRANSISTOR 2SA1492M-OPY (F519R)	
D706	8-719-987-63	DIODE 1N4148M		Q512	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
D707	8-719-987-63	DIODE 1N4148M		Q513	8-729-141-26	TRANSISTOR 2SC3622A-LK	
D728	8-719-010-15	DIODE UZ-3. OBS		Q600	8-729-620-17	TRANSISTOR 2SC2259-FG	
D729	8-719-987-63	DIODE 1N4148M		Q601	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D900	8-719-302-38	DIODE RBV-602-01		Q602	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA	
D901	8-719-200-02	DIODE 10E2		Q603	8-729-224-62	TRANSISTOR 2SK246-GR	
D902	8-719-200-02	DIODE 10E2		Q604	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
D908	8-719-933-88	DIODE HZS16-2L		Q605	8-729-803-76	TRANSISTOR 2SA1371-E	
D909	8-719-933-88	DIODE HZS16-2L		Q606	8-729-142-01	TRANSISTOR 2SC1941-LK	
		< IC >		Q607	8-729-209-15	TRANSISTOR 2SD2012	
IC100	8-759-745-61	IC NJM4560D-D		Q608	8-729-141-46	TRANSISTOR 2SC4431-LK	
IC300	8-759-634-50	IC M5218AL		Q609	8-729-141-37	TRANSISTOR 2SA1684-LK	
IC700	8-759-082-11	IC M50720-358SP		Q610	8-729-011-14	TRANSISTOR 2SC3855M-OPY (F419R)	
IC800	8-759-111-68	IC uPC1237HA		Q610	8-729-010-97	TRANSISTOR 2SC3856M-OPY (F519R)	
		< JACK >		Q611	8-729-011-13	TRANSISTOR 2SA1491M-OPY (F419R)	
J100	1-580-054-21	JACK, PIN 2P		Q611	8-729-010-98	TRANSISTOR 2SA1492M-OPY (F519R)	
		< COIL >		Q612	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
L100	1-410-979-11	INDUCTOR 220uH (F419R:G)		Q613	8-729-141-26	TRANSISTOR 2SC3622A-LK	
L100	1-424-397-11	COIL, CHOKE 200uH (F519R:G)		Q708	8-729-900-63	TRANSISTOR DTA124ES	
L101	1-424-397-11	COIL, CHOKE 200uH (F519R:G)		Q710	8-729-900-36	TRANSISTOR DTC124ES	
L200	1-410-979-11	INDUCTOR 220uH (F419R:G)		Q712	8-729-900-63	TRANSISTOR DTA124ES	
L200	1-424-397-11	COIL, CHOKE 200uH (F519R:G)		Q714	8-729-620-05	TRANSISTOR 2SC2603-EF	
L201	1-424-397-11	COIL, CHOKE 200uH (F519R:G)		Q715	8-729-900-63	TRANSISTOR DTA124ES	
		< TRANSISTOR >		Q901	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA	
Q100	8-729-354-52	TRANSISTOR 2SC2545-E		Q902	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q101	8-729-354-52	TRANSISTOR 2SC2545-E				< RESISTOR >	
Q200	8-729-354-52	TRANSISTOR 2SC2545-E		R100	1-247-700-11	CARBON 100 5% 1/4W(F519R)	
				R101	1-249-469-11	CARBON 100K 5% 1/4W	
				R102	1-247-706-11	CARBON 330 5% 1/4W	
				R103	1-249-469-11	CARBON 100K 5% 1/4W	
				R104	1-247-725-11	CARBON 10K 5% 1/4W	

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R105	1-247-710-11	CARBON	560 5% 1/4W	R504	1-247-704-11	CARBON	220 5% 1/4W (F419R:AEP1, G/F519R:AEP1, G)
R106	1-247-702-11	CARBON	150 5% 1/4W	△R504	1-212-889-00	FUSIBLE	220 5% 1/4W F (F419R:AEP2/F519R:AEP2)
R107	1-247-710-11	CARBON	560 5% 1/4W	R505	1-247-704-11	CARBON	220 5% 1/4W (F419R:AEP1, G/F519R:AEP1, G)
R108	1-247-716-11	CARBON	1.8K 5% 1/4W	△R505	1-212-889-00	FUSIBLE	220 5% 1/4W F (F419R:AEP2/F519R:AEP2)
R109	1-260-661-11	CARBON	6.8 5% 1/4W (F519R)	R506	1-247-704-11	CARBON	220 5% 1/4W
R110	1-247-700-11	CARBON	100 5% 1/4W	R507	1-249-490-11	CARBON	27K 5% 1/2W
R111	1-246-545-00	CARBON	1.0M 5% 1/4W	R508	1-247-721-11	CARBON	4.7K 5% 1/4W
R112	1-249-844-11	CARBON	56K 5% 1/2W	R509	1-249-516-11	CARBON	33 5% 1/4W (F419R:AEP1, G/F519R:AEP1, G)
R113	1-249-689-11	CARBON	4.7K 5% 1/2W	△R509	1-212-869-00	FUSIBLE	33 5% 1/4W F (F419R:AEP2/F519R:AEP2)
R114	1-247-713-11	CARBON	1K 5% 1/4W	R510	1-249-524-11	CARBON	68 5% 1/4W (F419R:AEP1, G/F519R:AEP1, G)
R150	1-259-436-11	CARBON	2.2K 5% 1/6W (F419R:G)	△R510	1-212-877-11	FUSIBLE	68 5% 1/4W F (F419R:AEP2/F519R:AEP2)
R150	1-259-428-11	CARBON	1K 5% 1/6W (F519R:G)	R511	1-247-713-11	CARBON	1K 5% 1/4W
R151	1-259-428-11	CARBON	1K 5% 1/6W (F519R:G)	R512	1-249-561-11	CARBON	2.4K 5% 1/4W
R200	1-247-700-11	CARBON	100 5% 1/4W (F519R)	R513	1-247-710-11	CARBON	560 5% 1/4W
R201	1-249-469-11	CARBON	100K 5% 1/4W	△R514	1-212-857-00	FUSIBLE	10 5% 1/4W F
R202	1-247-706-11	CARBON	330 5% 1/4W	△R515	1-212-857-00	FUSIBLE	10 5% 1/4W F
R203	1-249-469-11	CARBON	100K 5% 1/4W	R516	1-249-469-11	CARBON	100K 5% 1/4W
R204	1-247-725-11	CARBON	10K 5% 1/4W	△R517	1-212-994-00	FUSIBLE	330 5% 1/2W F
R205	1-247-710-11	CARBON	560 5% 1/4W	△R518	1-212-849-00	FUSIBLE	4.7 5% 1/4W F
R206	1-247-702-11	CARBON	150 5% 1/4W	△R519	1-212-849-00	FUSIBLE	4.7 5% 1/4W F
R207	1-247-710-11	CARBON	560 5% 1/4W	R520	1-217-611-00	METAL PLATE	0.1
R209	1-260-661-11	CARBON	6.8 5% 1/4W (F519R)	R521	1-217-611-00	METAL PLATE	0.1
R210	1-247-700-11	CARBON	100 5% 1/4W	R522	1-249-421-11	CARBON	2.2K 5% 1/4W
R211	1-246-545-00	CARBON	1.0M 5% 1/4W	R523	1-249-431-11	CARBON	15K 5% 1/4W
R212	1-249-844-11	CARBON	56K 5% 1/2W	R525	1-247-887-00	CARBON	220K 5% 1/4W
R213	1-249-689-11	CARBON	4.7K 5% 1/2W	R529	1-247-846-11	CARBON	4.3K 5% 1/4W
R214	1-247-713-11	CARBON	1K 5% 1/4W	R530	1-247-713-11	CARBON	1K 5% 1/4W
R250	1-259-436-11	CARBON	2.2K 5% 1/6W (F419R:G)	R531	1-247-887-00	CARBON	220K 5% 1/4W
R250	1-259-428-11	CARBON	1K 5% 1/6W (F519R:G)	R600	1-247-713-11	CARBON	1K 5% 1/4W
R251	1-259-428-11	CARBON	1K 5% 1/6W (F519R:G)	R601	1-249-469-11	CARBON	100K 5% 1/4W
R300	1-249-469-11	CARBON	100K 5% 1/4W	R602	1-247-704-11	CARBON	220 5% 1/4W
R301	1-247-713-11	CARBON	1K 5% 1/4W	R603	1-247-717-11	CARBON	2.2K 5% 1/4W
R302	1-247-713-11	CARBON	1K 5% 1/4W	R604	1-247-704-11	CARBON	220 5% 1/4W (F419R:AEP1, G/F519R:AEP1, G)
R303	1-247-719-11	CARBON	3.3K 5% 1/4W	△R604	1-212-889-00	FUSIBLE	220 5% 1/4W F (F419R:AEP2/F519R:AEP2)
R304	1-247-704-11	CARBON	220 5% 1/4W	R605	1-247-704-11	CARBON	220 5% 1/4W (F419R:AEP1, G/F519R:AEP1, G)
R311	1-246-545-00	CARBON	1.0M 5% 1/4W (F519R)	△R605	1-212-889-00	FUSIBLE	220 5% 1/4W F (F419R:AEP2/F519R:AEP2)
R400	1-249-469-11	CARBON	100K 5% 1/4W				
R401	1-247-713-11	CARBON	1K 5% 1/4W				
R402	1-247-713-11	CARBON	1K 5% 1/4W				
R403	1-247-719-11	CARBON	3.3K 5% 1/4W				
R404	1-247-704-11	CARBON	220 5% 1/4W				
R411	1-246-545-00	CARBON	1.0M 5% 1/4W (F519R)				
R500	1-247-713-11	CARBON	1K 5% 1/4W				
R501	1-249-469-11	CARBON	100K 5% 1/4W				
R502	1-247-704-11	CARBON	220 5% 1/4W				
R503	1-247-717-11	CARBON	2.2K 5% 1/4W				

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



## MAIN

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark			
R606	1-247-704-11	CARBON	220	5%	1/4W	R748	1-249-433-11	CARBON	22K	5%	1/4W	
R607	1-249-490-11	CARBON	27K	5%	1/2W	R749	1-247-903-00	CARBON	1M	5%	1/4W	
R608	1-247-721-11	CARBON	4.7K	5%	1/4W	R750	1-249-429-11	CARBON	10K	5%	1/4W	
R609	1-249-516-11	CARBON	33	5%	1/4W	R751	1-249-430-11	CARBON	12K	5%	1/4W	
△R609	1-212-869-00	FUSIBLE	(F419R:AEP1, G/F519R:AEP1, G)	33	5%	1/4W F	R752	1-249-417-11	CARBON	1K	5%	1/4W
			(F419R:AEP2/F519R:AEP2)				R753	1-249-433-11	CARBON	22K	5%	1/4W
R610	1-249-524-11	CARBON	68	5%	1/4W	R760	1-249-405-11	CARBON	100	5%	1/4W	
△R610	1-212-877-11	FUSIBLE	(F419R:AEP1, G/F519R:AEP1, G)	68	5%	1/4W F	R761	1-249-433-11	CARBON	22K	5%	1/4W
			(F419R:AEP2/F519R:AEP2)				R800	1-249-429-11	CARBON	10K	5%	1/4W
R611	1-247-713-11	CARBON	1K	5%	1/4W	R801	1-247-887-00	CARBON	220K	5%	1/4W	
R612	1-249-561-11	CARBON	2.4K	5%	1/4W	R802	1-247-881-00	CARBON	120K	5%	1/4W	
R613	1-247-710-11	CARBON	560	5%	1/4W	R803	1-249-432-11	CARBON	18K	5%	1/4W	
△R614	1-212-857-00	FUSIBLE	10	5%	1/4W F	R900	1-247-754-11	CARBON	1.5K	5%	1/2W(F419R)	
△R615	1-212-857-00	FUSIBLE	10	5%	1/4W F	R900	1-247-755-11	CARBON	1.8K	5%	1/2W(F519R)	
R616	1-249-469-11	CARBON	100K	5%	1/4W	R901	1-247-754-11	CARBON	1.5K	5%	1/2W(F419R)	
△R617	1-212-994-00	FUSIBLE	330	5%	1/2W F	R901	1-247-755-11	CARBON	1.8K	5%	1/2W(F519R)	
△R618	1-212-849-00	FUSIBLE	4.7	5%	1/4W F	R902	1-247-754-11	CARBON	1.5K	5%	1/2W(F419R)	
△R619	1-212-849-00	FUSIBLE	4.7	5%	1/4W F	R903	1-247-755-11	CARBON	1.8K	5%	1/2W(F519R)	
R620	1-217-611-00	METAL PLATE	0.1			R903	1-247-755-11	CARBON	1.8K	5%	1/2W(F519R)	
R621	1-217-611-00	METAL PLATE	0.1			R904	1-247-754-11	CARBON	1.5K	5%	1/2W(F419R)	
R622	1-249-421-11	CARBON	2.2K	5%	1/4W	R904	1-247-755-11	CARBON	1.8K	5%	1/2W(F519R)	
R623	1-249-431-11	CARBON	15K	5%	1/4W	R905	1-247-754-11	CARBON	1.5K	5%	1/2W(F419R)	
R625	1-247-887-00	CARBON	220K	5%	1/4W	R905	1-247-755-11	CARBON	1.8K	5%	1/2W(F519R)	
R629	1-247-846-11	CARBON	4.3K	5%	1/4W	R906	1-247-754-11	CARBON	1.5K	5%	1/2W(F419R)	
R630	1-247-713-11	CARBON	1K	5%	1/4W	R906	1-247-755-11	CARBON	1.8K	5%	1/2W(F519R)	
R631	1-247-887-00	CARBON	220K	5%	1/4W	R907	1-247-754-11	CARBON	1.5K	5%	1/2W(F419R)	
R700	1-249-433-11	CARBON	22K	5%	1/4W	R907	1-247-755-11	CARBON	1.8K	5%	1/2W(F519R)	
R701	1-249-433-11	CARBON	22K	5%	1/4W	R909	1-247-722-11	CARBON	5.6K	5%	1/4W	
R702	1-249-433-11	CARBON	22K	5%	1/4W	R910	1-247-722-11	CARBON	5.6K	5%	1/4W	
R703	1-249-427-11	CARBON	6.8K	5%	1/4W						< VARIABLE RESISTOR >	
R704	1-249-427-11	CARBON	6.8K	5%	1/4W	RV500	1-237-455-11	RES, ADJ, CARBON 500 (DC BIAS L-CH)				
R705	1-249-433-11	CARBON	22K	5%	1/4W	RV600	1-237-455-11	RES, ADJ, CARBON 500 (DC BIAS R-CH)				
R706	1-249-433-11	CARBON	22K	5%	1/4W						< RELAY >	
R707	1-249-433-11	CARBON	22K	5%	1/4W	RY300	1-515-793-11	RELAY				
R708	1-249-433-11	CARBON	22K	5%	1/4W						< SWITCH >	
R709	1-249-433-11	CARBON	22K	5%	1/4W	S100	1-571-111-11	SWITCH, PUSH (1 KEY) (CARTRIDGE) (F519R)				
R710	1-249-433-11	CARBON	22K	5%	1/4W	S300	1-692-146-11	SWITCH, PUSH (1 KEY) (SUBSONIC) (F519R)				
R711	1-249-441-11	CARBON	100K	5%	1/4W						< THERMISTOR >	
R713	1-249-433-11	CARBON	22K	5%	1/4W	△TH900	1-806-882-11	THERMISTOR, POSITIVE 2.2				
R714	1-249-433-11	CARBON	22K	5%	1/4W			(F419R:AEP2/F519R:AEP2)				
R715	1-249-433-11	CARBON	22K	5%	1/4W	△TH901	1-806-882-11	THERMISTOR, POSITIVE 2.2				
R716	1-249-433-11	CARBON	22K	5%	1/4W			(F419R:AEP2/F519R:AEP2)				
R722	1-247-757-11	CARBON	2.7K	5%	1/2W							
R746	1-249-433-11	CARBON	22K	5%	1/4W							
R747	1-249-433-11	CARBON	22K	5%	1/4W							

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

**MAIN**

**OUTLET**

**PRI**

**SEC**

**SP**

**STONE**

Ref.No.	Part No.	Description	Remark
		< VIBRATOR >	
X700	1-567-254-11	VIBRATOR, CERAMIC	
*****			
*	1-644-623-11	OUTLET BOARD	
		*****	
		< OUTLET >	
△CNJ901	1-526-794-11	OUTLET, AC	
*****			
*	1-644-621-11	PRI BOARD	
		*****	
		< CAPACITOR >	
C508	1-136-163-00	FILM 0.068uF 5% 50V	
C509	1-136-163-00	FILM 0.068uF 5% 50V	
C608	1-136-163-00	FILM 0.068uF 5% 50V	
C609	1-136-163-00	FILM 0.068uF 5% 50V	
		< CONNECTOR >	
* CNJ801	1-691-175-11	CONNECTOR (BOARD TO BOARD) 5P	
CNJ901	1-561-115-00	SOCKET, CONNECTOR 6P	
CNJ902	1-561-115-00	SOCKET, CONNECTOR 6P	
* CNP903	1-564-241-00	PIN, CONNECTOR (B4P-VH) 4P	
		< DIODE >	
D801	8-719-987-63	DIODE 1N4148M	
D802	8-719-987-63	DIODE 1N4148M	
		< COIL >	
L500	1-428-133-11	COIL, AIR-CORE	
L600	1-428-133-11	COIL, AIR-CORE	
		< RESISTOR >	
R524	1-247-727-11	CARBON 10 5% 1/2W	
R526	1-247-727-11	CARBON 10 5% 1/2W	
R624	1-247-727-11	CARBON 10 5% 1/2W	
R626	1-247-727-11	CARBON 10 5% 1/2W	
		< RELAY >	
RY800	1-515-676-11	RELAY	
RY801	1-515-676-11	RELAY	
*****			

Ref.No.	Part No.	Description	Remark
*	1-644-627-11	SEC BOARD	
		*****	
*	1-690-880-31	LEAD (WITH CONNECTOR) (F419R:G/F519R:G)	
		< CAPACITOR >	
C950	1-164-094-11	CERAMIC 0.0068uF 10% 25V	
		(F419R:G/F519R:G)	
C951	1-130-789-00	FILM 1uF 5% 100V	
		< RESISTOR >	
△R950	1-212-966-00	FUSIBLE 22 5% 1/2W F	
*****			
*	1-644-619-11	SP BOARD	
		*****	
		< CAPACITOR >	
C551	1-136-161-00	FILM 0.047uF 5% 50V(F419R:G/F519R:G)	
C552	1-136-161-00	FILM 0.047uF 5% 50V(F419R:G/F519R:G)	
C553	1-136-153-00	FILM 0.01uF 5% 50V(F419R:G/F519R:G)	
C651	1-136-161-00	FILM 0.047uF 5% 50V(F419R:G/F519R:G)	
C652	1-136-161-00	FILM 0.047uF 5% 50V(F419R:G/F519R:G)	
C653	1-136-153-00	FILM 0.01uF 5% 50V(F419R:G/F519R:G)	
		< RESISTOR >	
R551	1-249-482-11	CARBON 4.7 5% 1/2W (F419R:G/F519R:G)	
R552	1-249-482-11	CARBON 4.7 5% 1/2W (F419R:G/F519R:G)	
R651	1-249-482-11	CARBON 4.7 5% 1/2W (F419R:G/F519R:G)	
R652	1-249-482-11	CARBON 4.7 5% 1/2W (F419R:G/F519R:G)	
		< TERMINAL >	
TM900	1-537-227-11	TERMINAL BOARD (SP)	
		(F419R:AEP2/F519R:AEP2)	
TM900	1-537-228-11	TERMINAL BOARD (SP)	
		(F419R:AEP1, G/F519R:AEP1, G)	
*****			
*	1-644-625-11	STONE BOARD	
		*****	
		< CAPACITOR >	
C304	1-136-155-00	FILM 0.015uF 5% 50V	
C305	1-136-161-00	FILM 0.047uF 5% 50V	
C306	1-136-169-00	FILM 0.22uF 5% 50V	
C307	1-136-175-00	FILM 0.68uF 5% 50V	

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**STONE**

Ref. No.	Part No.	Description	Remark
C404	1-136-155-00	FILM 0.015uF 5%	50V
C405	1-136-161-00	FILM 0.047uF 5%	50V
C406	1-136-169-00	FILM 0.22uF 5%	50V
C407	1-136-175-00	FILM 0.68uF 5%	50V
< CONNECTOR >			
CNP300	1-695-240-11	PIN, CONNECTOR 8P	
< RESISTOR >			
R305	1-259-421-11	CARBON 510 5%	1/4W
R306	1-246-545-00	CARBON 1.0M 5%	1/4W
R307	1-246-545-00	CARBON 1.0M 5%	1/4W
R308	1-247-703-11	CARBON 180 5%	1/4W
R309	1-247-718-11	CARBON 2.7K 5%	1/4W
R310	1-249-551-11	CARBON 910 5%	1/4W
R405	1-259-421-11	CARBON 510 5%	1/4W
R406	1-246-545-00	CARBON 1.0M 5%	1/4W
R407	1-246-545-00	CARBON 1.0M 5%	1/4W
R408	1-247-703-11	CARBON 180 5%	1/4W
R409	1-247-718-11	CARBON 2.7K 5%	1/4W
R410	1-249-551-11	CARBON 910 5%	1/4W
< VARIABLE RESISTOR >			
RV301	1-241-974-11	RES, VAR, CARBON 10K (TREBLE)	
RV302	1-241-972-11	RES, VAR, CARBON 10K (BASS)	
RV303	1-241-973-11	RES, VAR, CARBON 100K/100K (BALANCE)	

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MISCELLANEOUS  
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20	1-590-499-31	WIRE, FLAT TYPE (23 CORE)
21	1-692-148-11	SWITCH, ROTARY SLIDE
△109	1-575-651-11	CORD, POWER
△T1	1-450-928-11	TRANSFORMER, POWER (F519R)
△T1	1-450-929-11	TRANSFORMER, POWER (F419R:AEP1, Germany)
△T1	1-450-930-12	TRANSFORMER, POWER (F419R:AEP2)

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Ref. No.	Part No.	Description	Remark
ACCESSORIES & PACKING MATERIALS *****			
	1-693-131-11	REMOTE COMMANDER (RM-S311)	
	2-181-754-01	COVER, BATTERY	
	3-755-074-11	MANUAL, INSTRUCTION (ENGLISH/FRENCH/SPANISH/PORTUGUESE) (F419R:AEP/F519R:AEP)	
	3-755-074-41	MANUAL, INSTRUCTION (GERMAN/DUTCH/SWEDISH/ITALIAN)	
*	4-951-287-01	INDIVIDUAL CARTON (F419R)	
*	4-951-288-01	INDIVIDUAL CARTON (F519R)	
*	4-952-575-01	CUSHION	
*****			
***** HARDWARE LIST *****			
#1	7-682-547-04	SCREW +BVTT 3X6 (S)	
#2	7-685-651-79	SCREW +BVTP 3X20 TYPE2 N-S	
#3	7-685-648-79	SCREW +BVTP 3X12 TYPE2	
#4	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#5	7-621-849-00	SCREW (BV/RING)	
#6	7-682-560-04	SCREW +BVTT 4X6 (S)	

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