

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®



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)

Supplied accessories
 TA-F419R: Approx. 8.6 kg (18 lb 15 oz)
 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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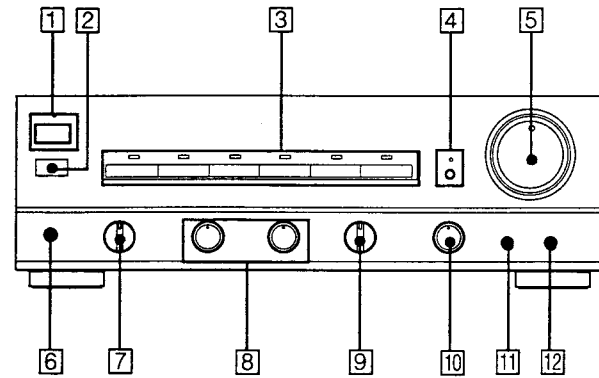
SAFETY-RELATED COMPONENT WARNING!!

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

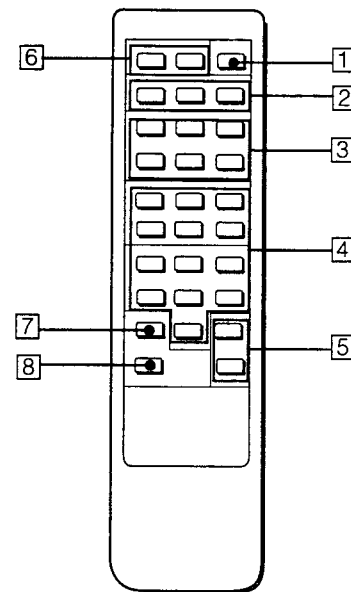
This section describes about each name of this amplifier and remote commander.



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)

Remote Commander



RM-S311

- 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 :

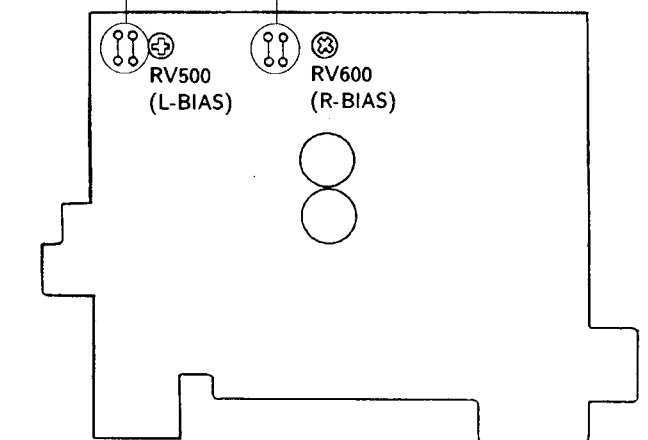
1. DC BIAS adjustments should be made one minute after the POWER switch is turned on (POWER ON).
2. After replacing the power transistors, DC BIAS adjustments should be made.

Adjustment Location :

[MAIN BOARD]

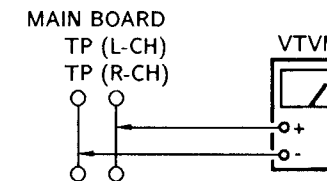
— COMPONENT SIDE —

TP (L-CH) TP (R-CH)



DC Bias Adjustment (with no signal input)

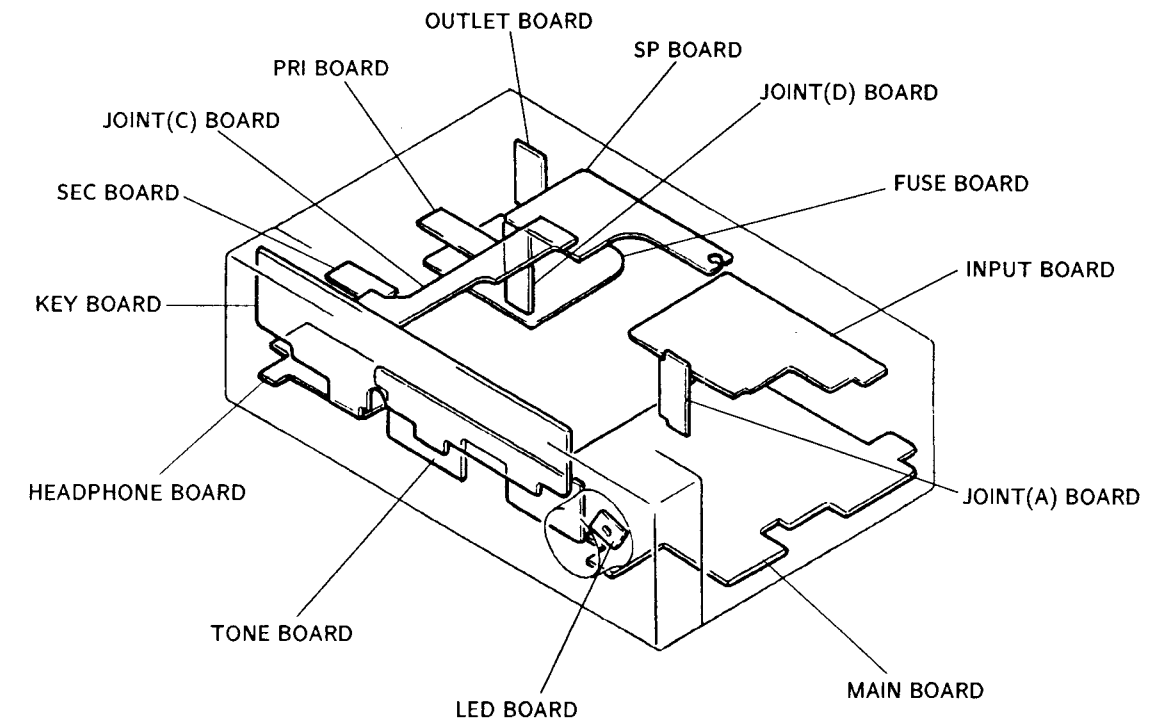
Procedure :



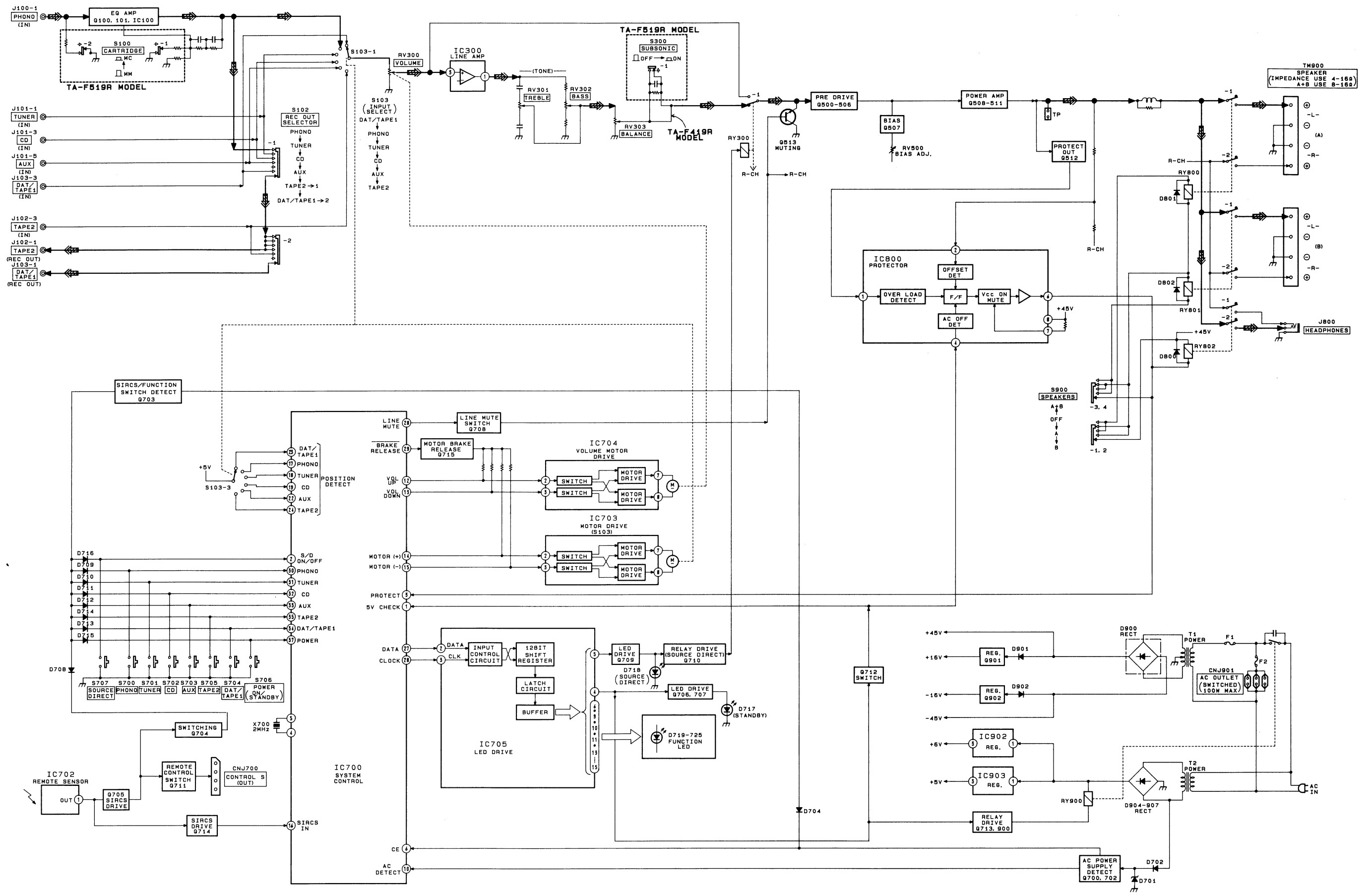
	Adjustment part	Reading on VTVM
L-CH	RV500	7mV
R-CH	RV600	7mV

SECTION 3 DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION



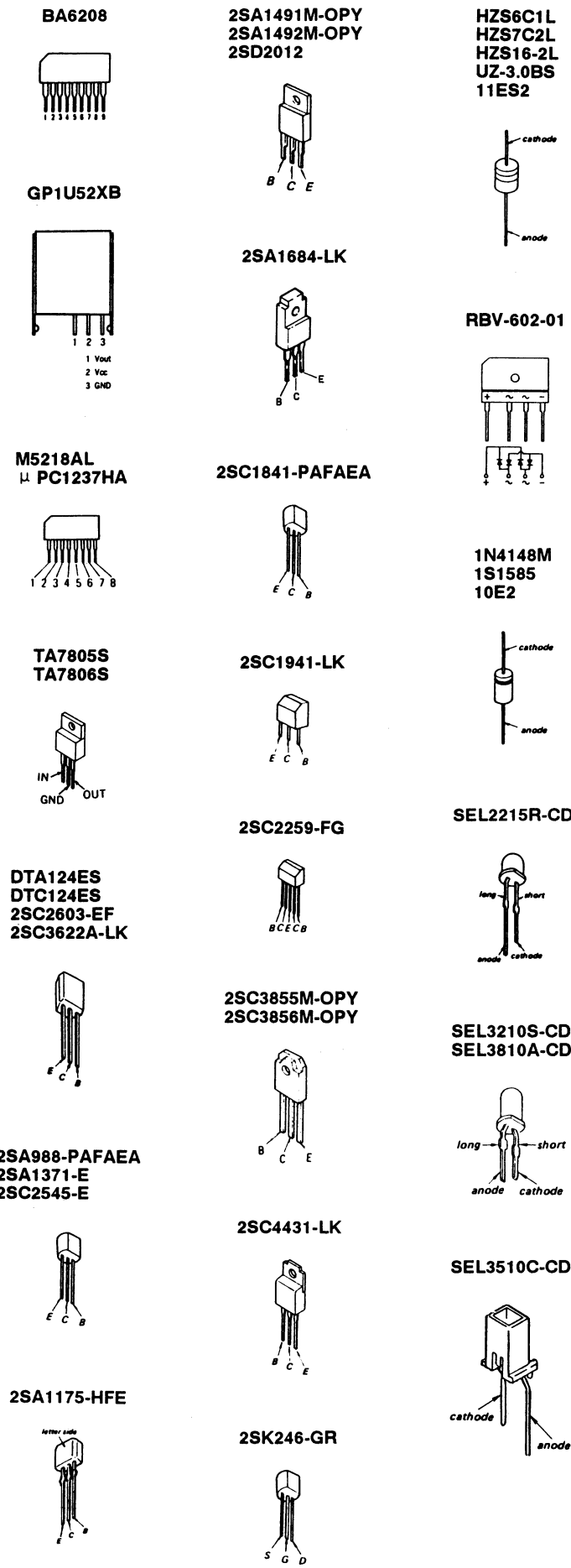
3-2. BLOCK DIAGRAM



● 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 μ 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



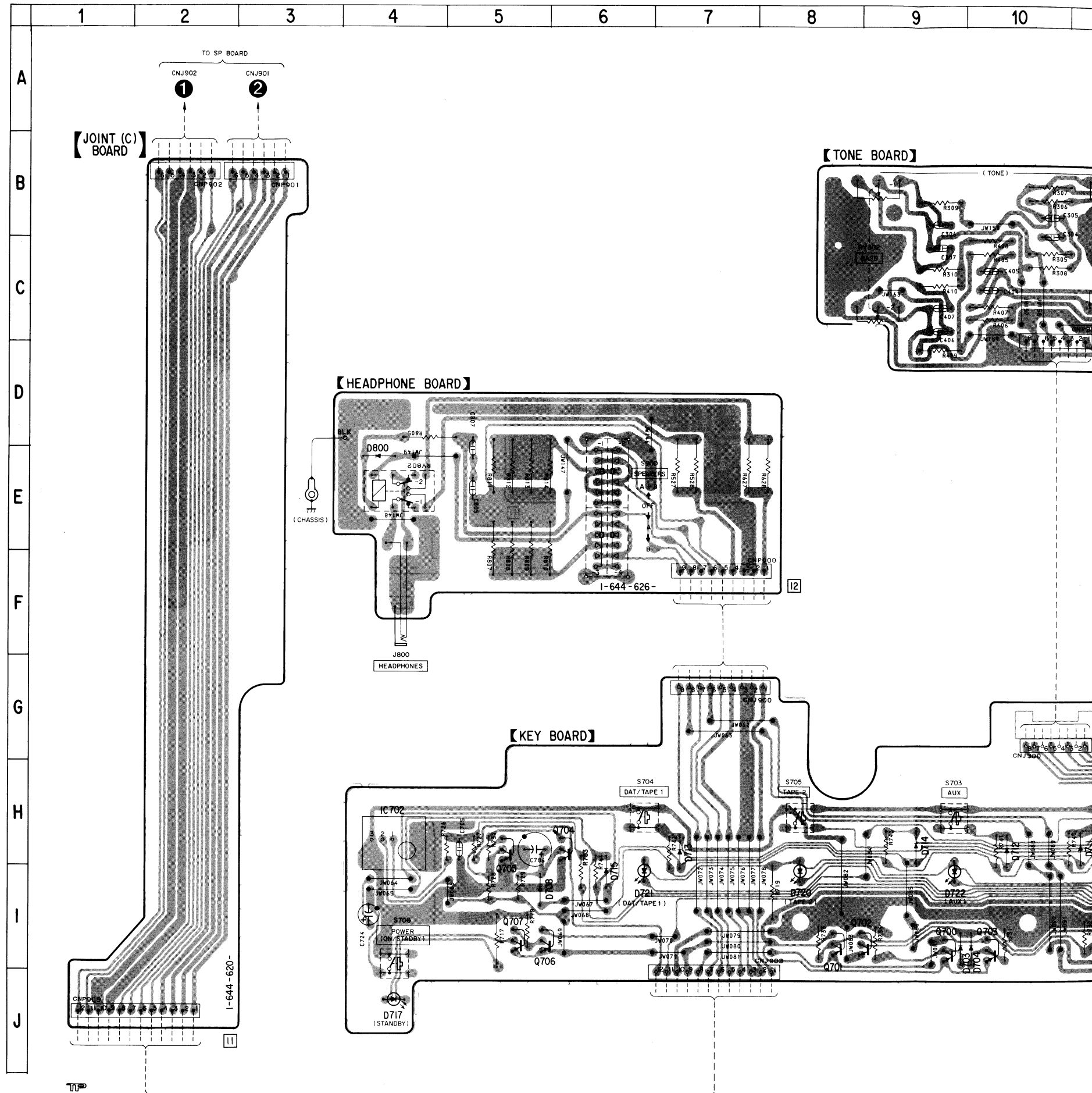
• SEMICONDUCTOR LOCATION

Ref. No.	Location
D703	I-9
D704	I-9
D708	I-5
D709	H-13
D710	H-13
D711	H-11
D712	H-10
D713	H-7
D714	H-9
D715	H-6
D716	H-13
D717	J-4
D718	H-16
D719	E-13
D720	H-8
D721	H-6
D722	H-9
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-13

Note:

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

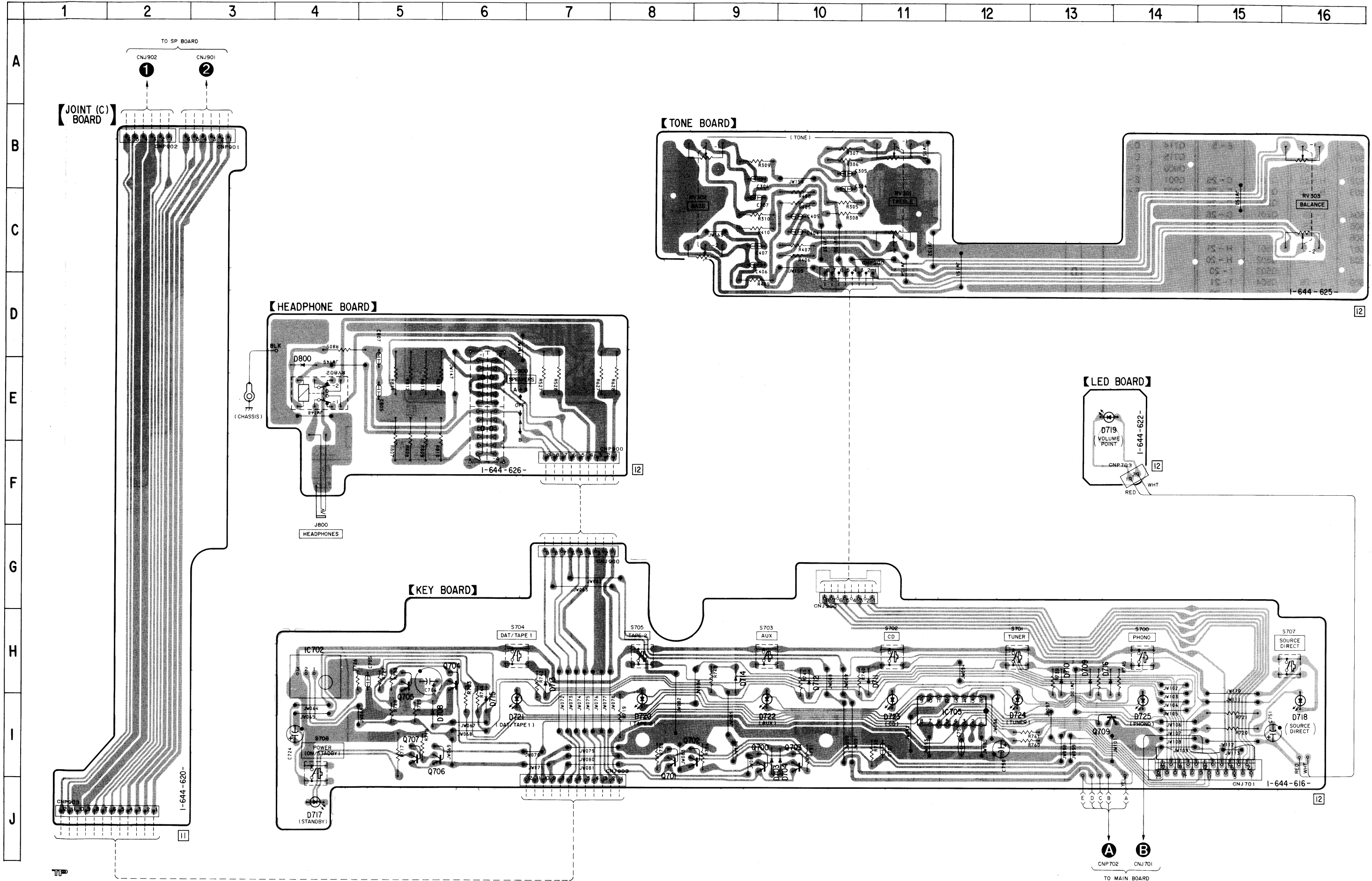
3-3.PRINTED WIRING BOARDS (KEY BOARD SECTION)



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

INDUCTOR ON

Location
I-9
I-9
I-5
H-13
H-13
H-11
H-10
H-7
H-9
H-6
H-13
J-4
H-16
E-13
H-8
H-6
H-9
H-11
H-12
H-14
E-4
H-4
I-12
I-9
I-8
I-8
I-10
H-6
H-5
I-5
I-5
I-13

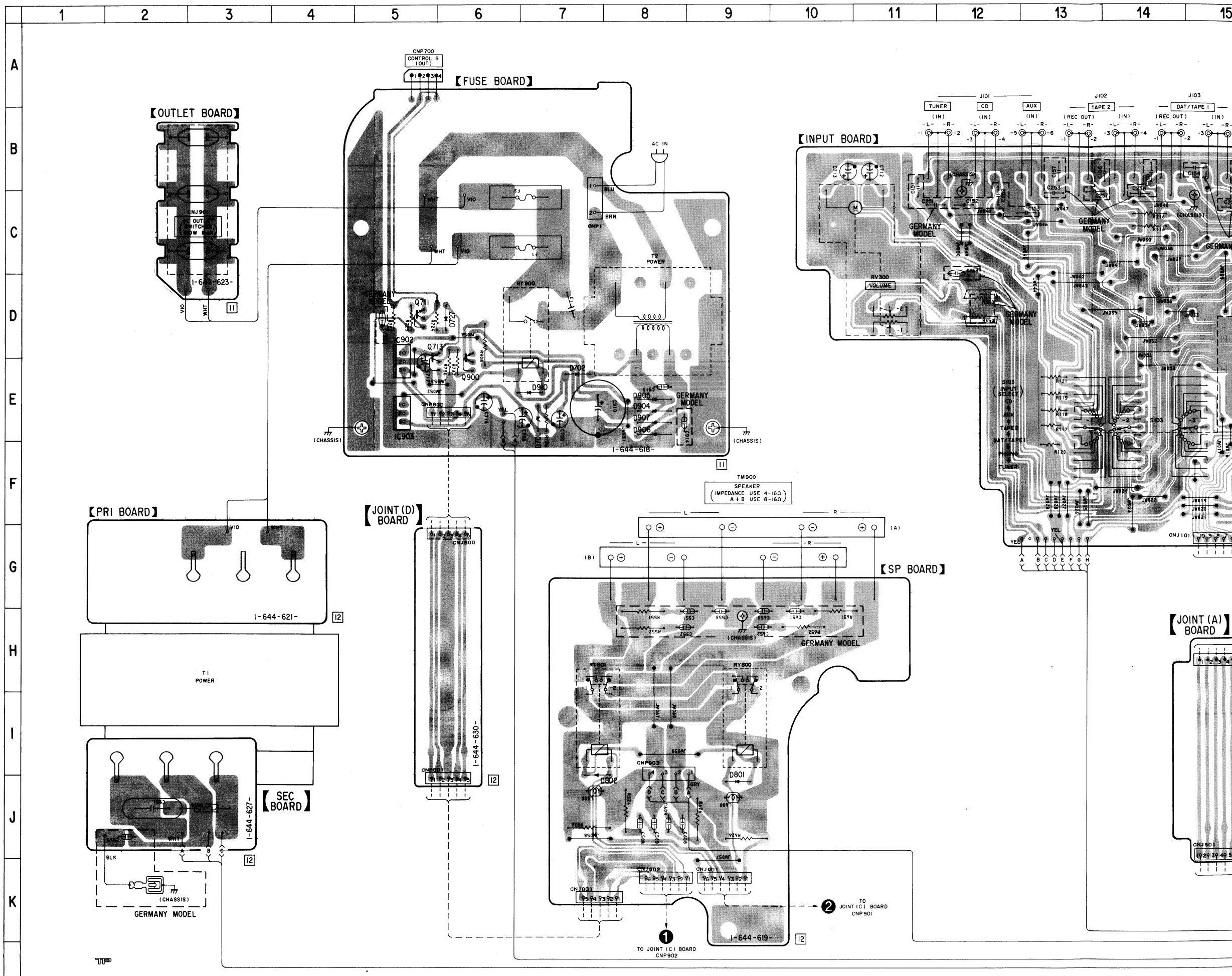


component side.
which is seen.

• SEMICONDUCTOR LOCATION

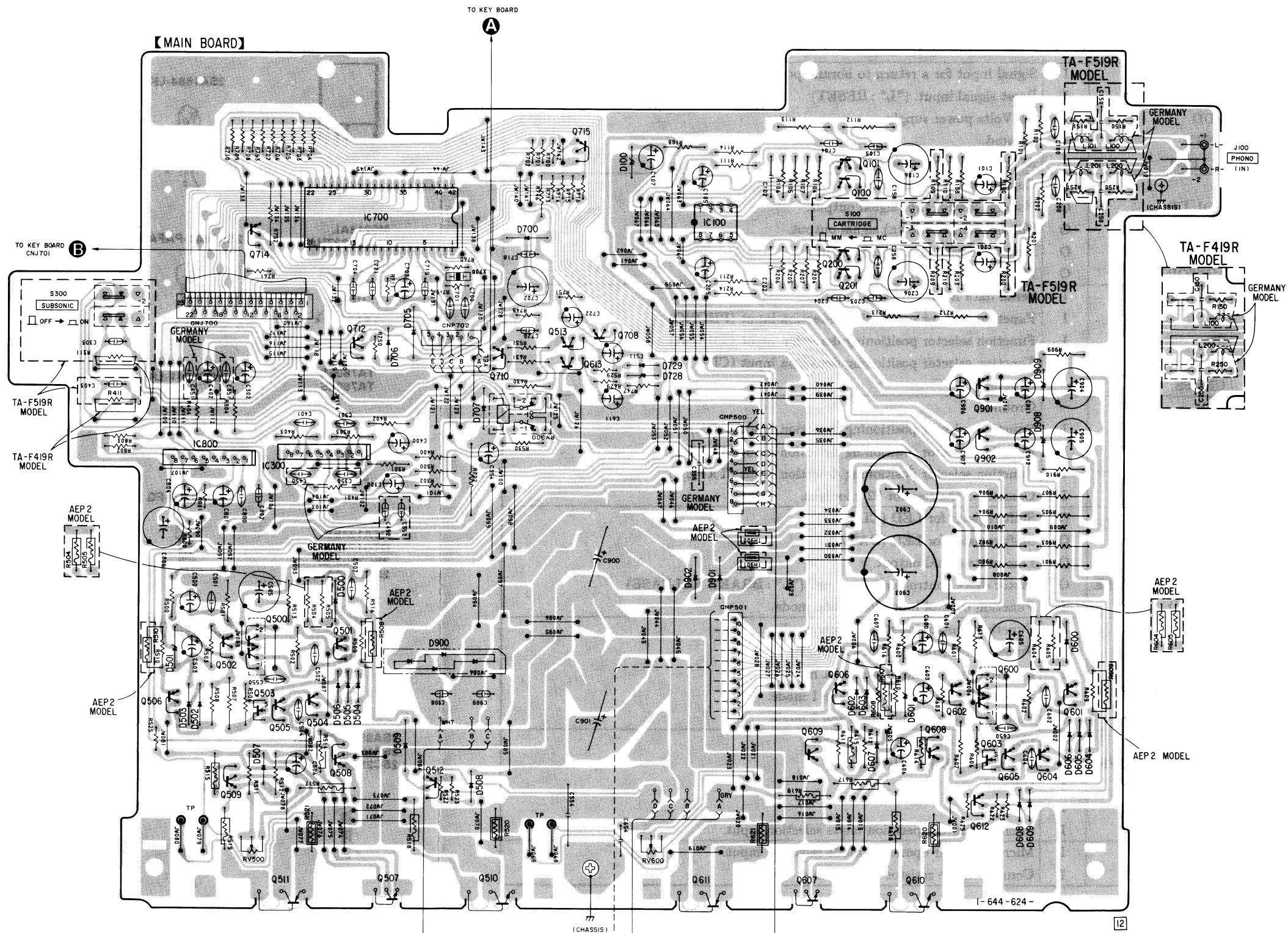
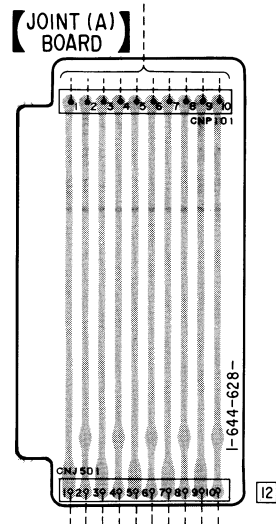
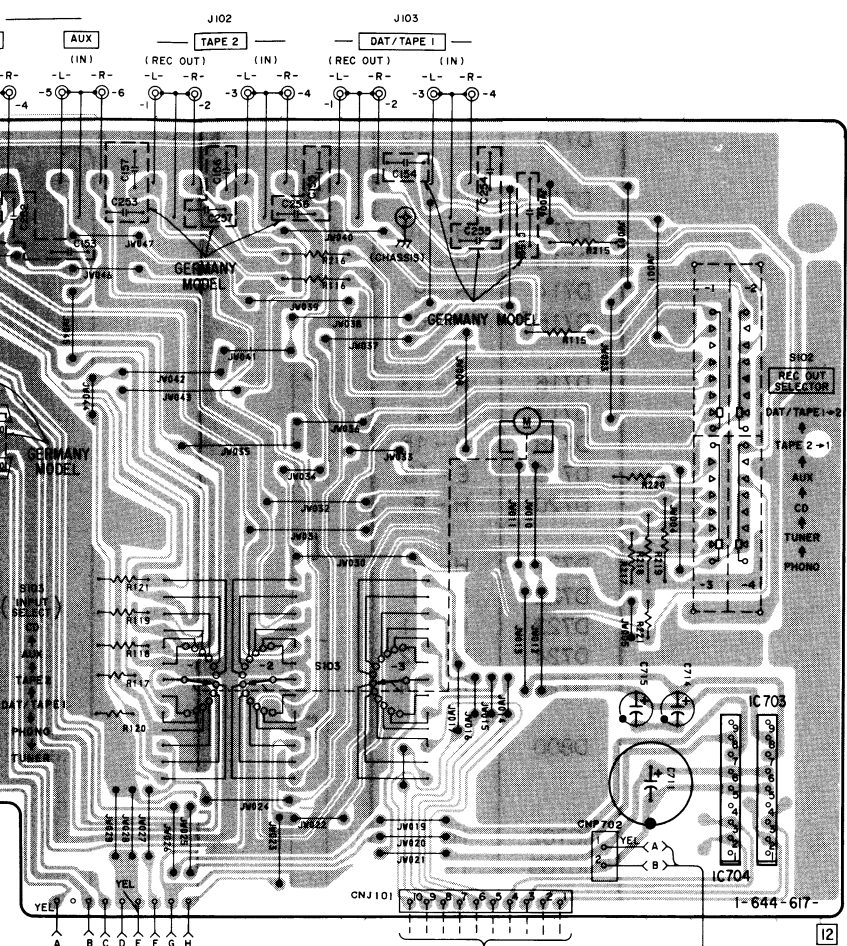
Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D100	C-24	D909	E-28	Q609	I-26
D500	H-21	D910	E-7	Q610	J-27
D501	H-19			Q611	J-25
D502	I-20			Q612	J-27
D503	I-20	IC100	D-25	Q613	E-23
		IC300	F-21		
D504	H-21	IC700	D-22	Q708	E-24
D505	H-21	IC703	F-17	Q710	E-23
D506	H-21	IC704	F-17	Q711	D-5
D507	I-20			Q712	E-21
D508	I-22	IC800	F-20	Q713	F-5
		IC902	D-5		
D509	I-22	IC903	E-5	Q714	D-20
D600	H-28			Q715	C-23
D601	H-27			Q900	E-6
D602	H-26	Q100	C-26	Q901	E-27
D603	H-26	Q101	C-26	Q902	F-27
		Q200	D-26		
D604	I-28	Q201	D-26		
D605	I-28	Q500	H-20		
D606	I-28				
D607	I-26	Q501	H-21		
D608	J-28	Q502	H-20		
		Q503	I-20		
D609	J-28	Q504	I-21		
D700	D-23	Q505	I-20		
D701	E-7				
D702	E-7	Q506	H-19		
D705	E-22	Q507	J-22		
		Q508	I-21		
D706	E-22	Q509	I-20		
D707	F-22	Q510	J-23		
D727	D-6				
D728	E-24	Q511	J-21		
D729	E-24	Q512	I-22		
		Q513	E-23		
D801	J-9	Q600	H-27		
D802	J-7	Q601	H-28		
D900	H-22				
D901	G-25	Q602	H-27		
D902	G-25	Q603	I-28		
		Q604	I-28		
D904	E-8	Q605	I-28		
D905	E-8	Q606	H-26		
D906	E-8				
D907	E-8	Q607	J-26		
D908	F-28	Q608	I-27		

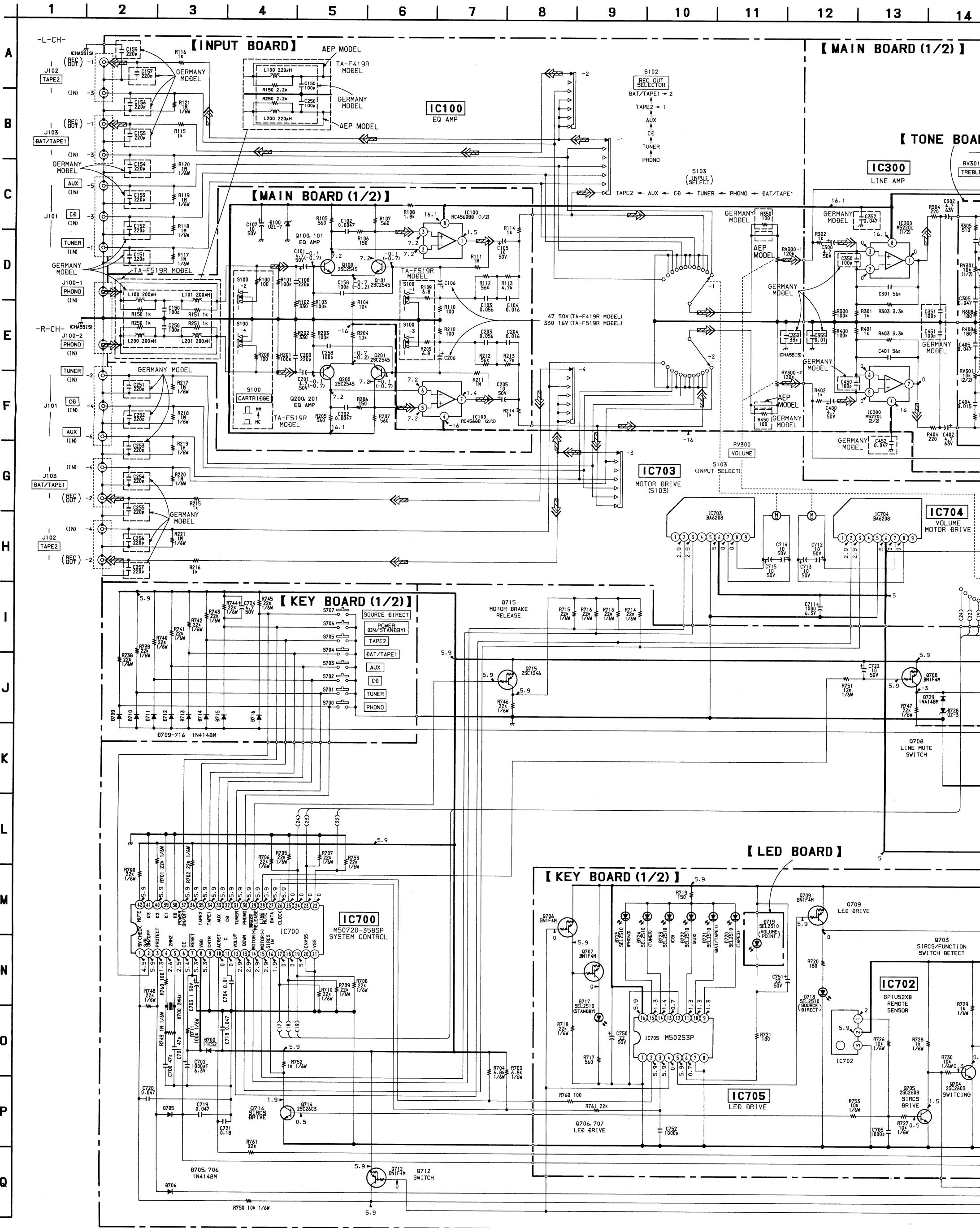
3-4. PRINTED WIRING BOARDS (MAIN BOARD SECTION) • Refer to Page 8 for Semiconductor Lead Layouts.



Note :
 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

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

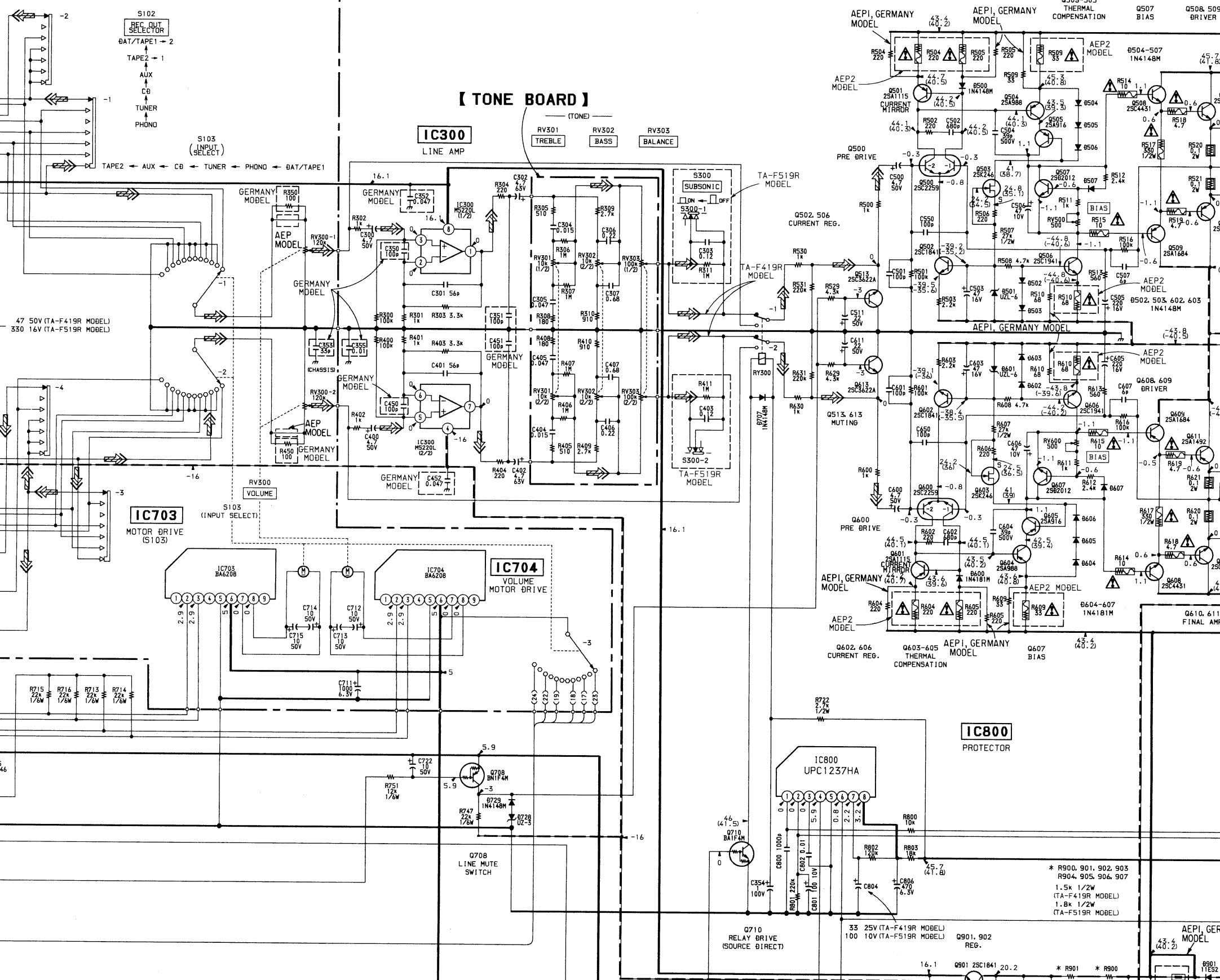




TP

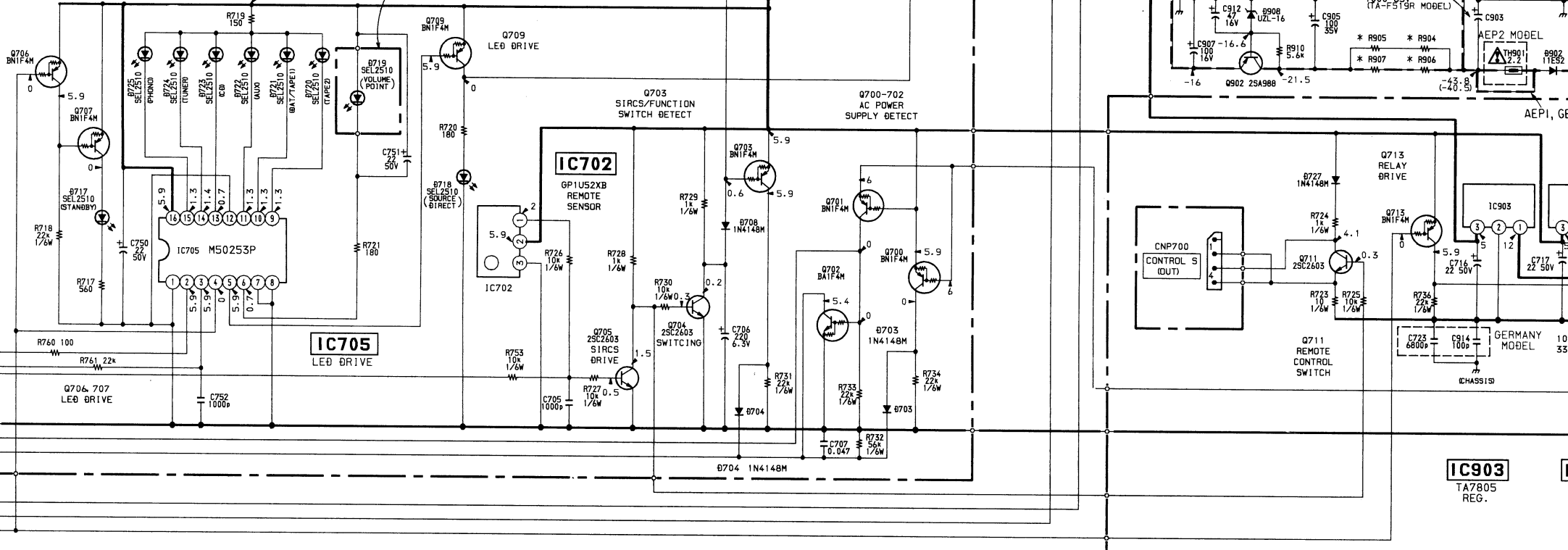
【 MAIN BOARD (1/2) 】

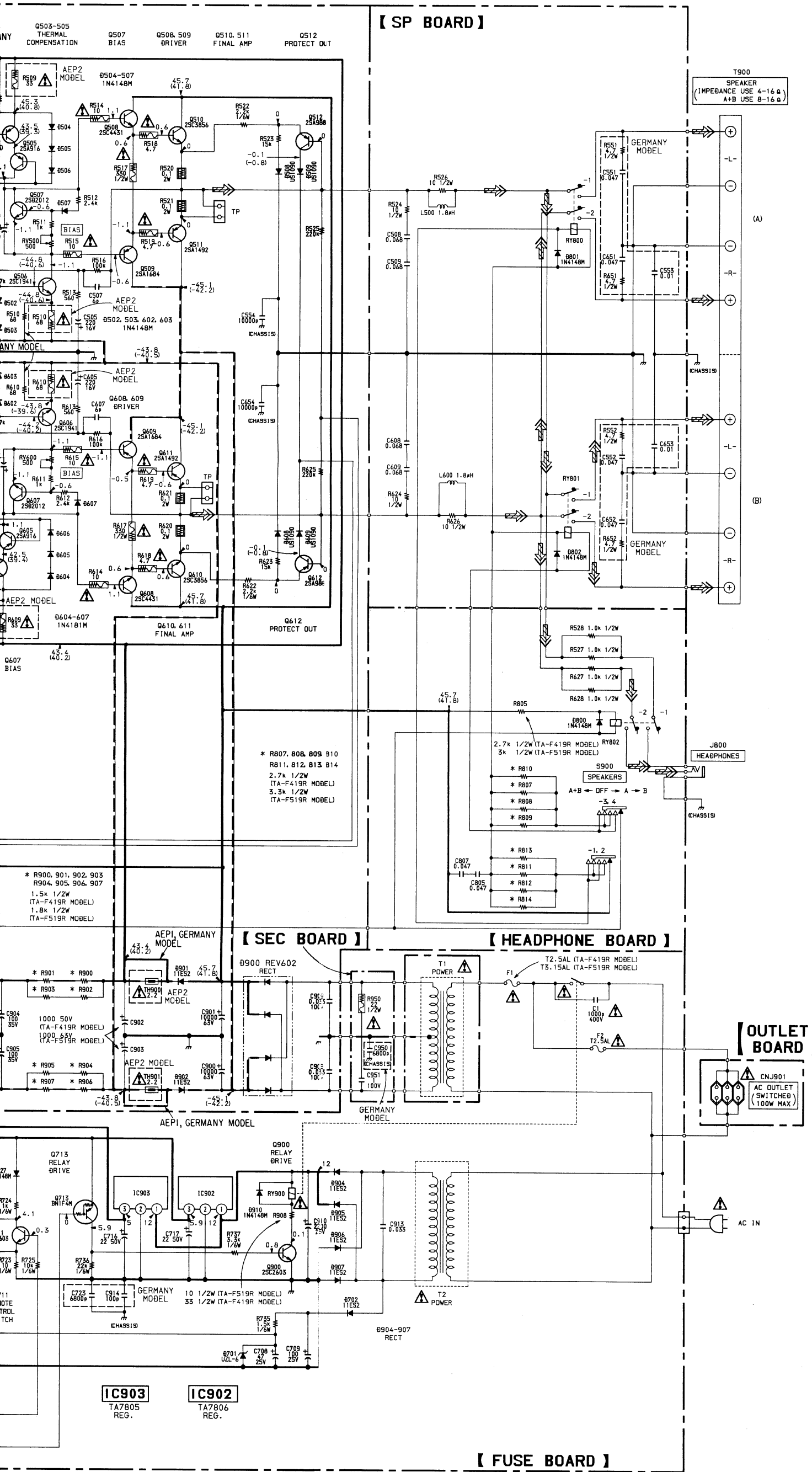
【 TONE BOARD 】



【 LED BOARD 】

【 KEY BOARD (1/2) 】





Note :

- All capacitors are in μF unless otherwise noted. pF : μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- : nonflammable resistor.
- : fusible resistor.

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

- : B+ Line
- : B - Line
- : adjustment for repair.

• Voltage and waveforms are dc with respect to ground under no-signal conditions.
no mark : CD
() : F419R only

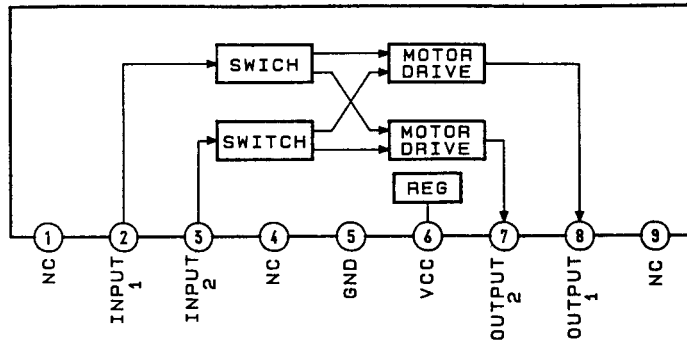
• Voltages are taken with a VOM (Input impedance $10\text{M}\Omega$). Voltage variations may be noted due to normal production tolerances.

• Signal path.
 : PHONO

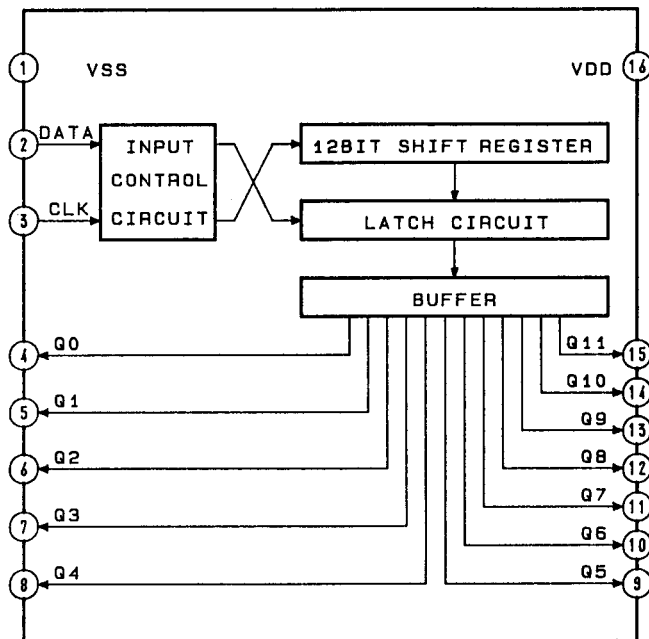
Note :
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3-6. IC BLOCK DIAGRAM

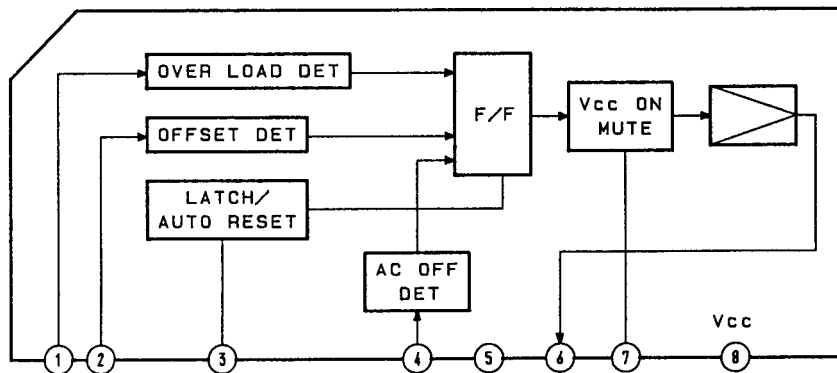
IC703, 704 BA6208



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

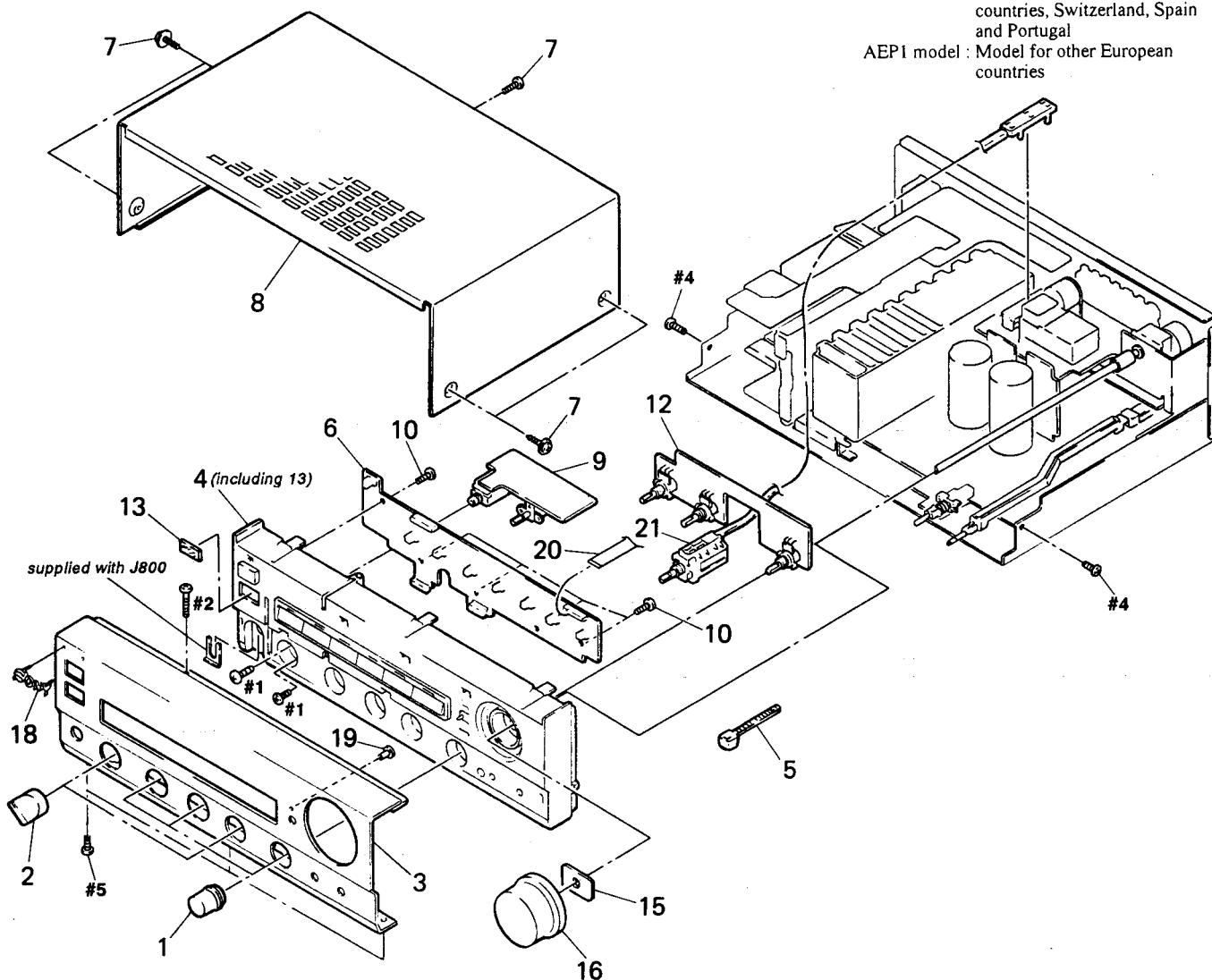
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

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.

- 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

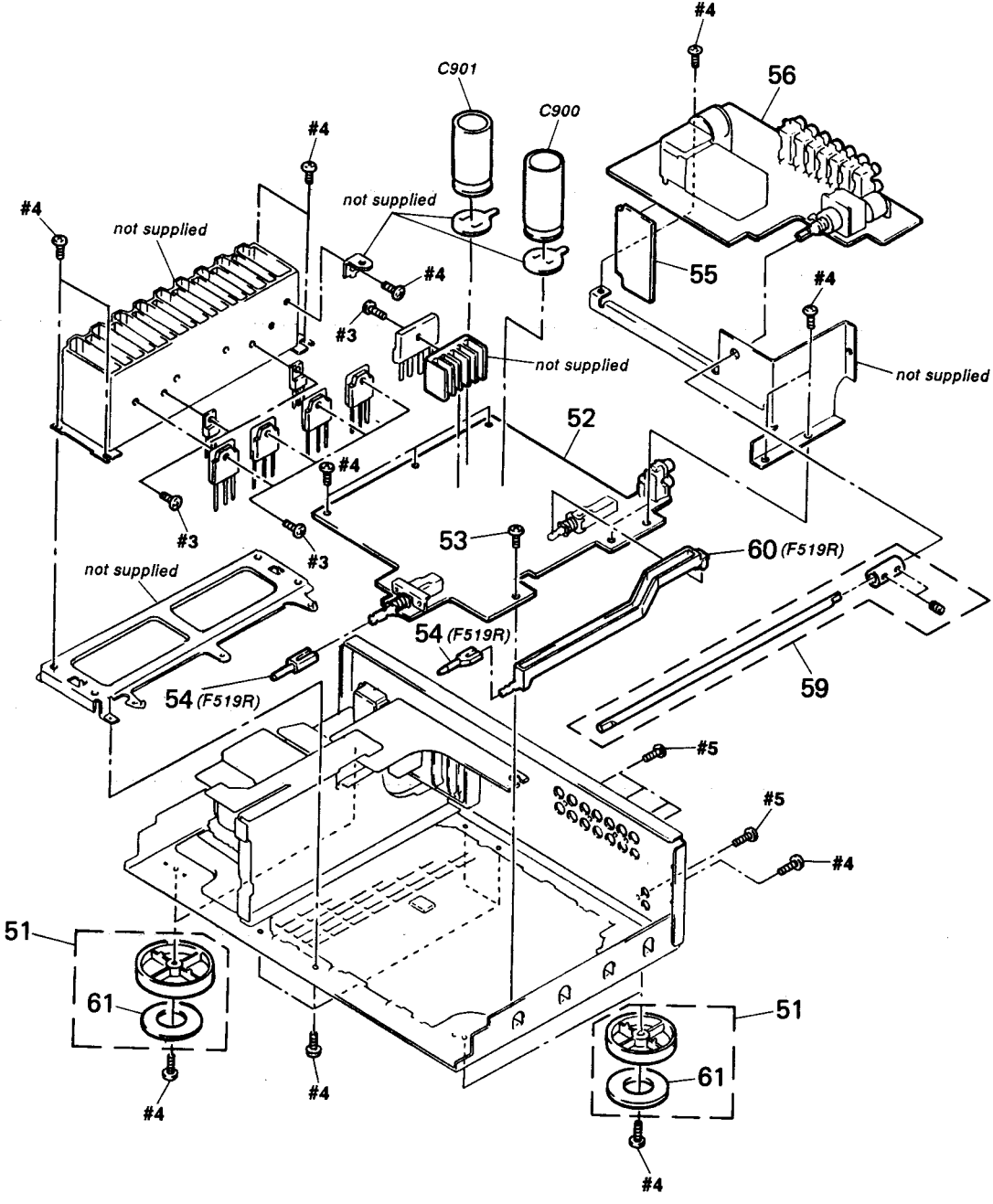
4-1. FRONT PANEL SECTION



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	

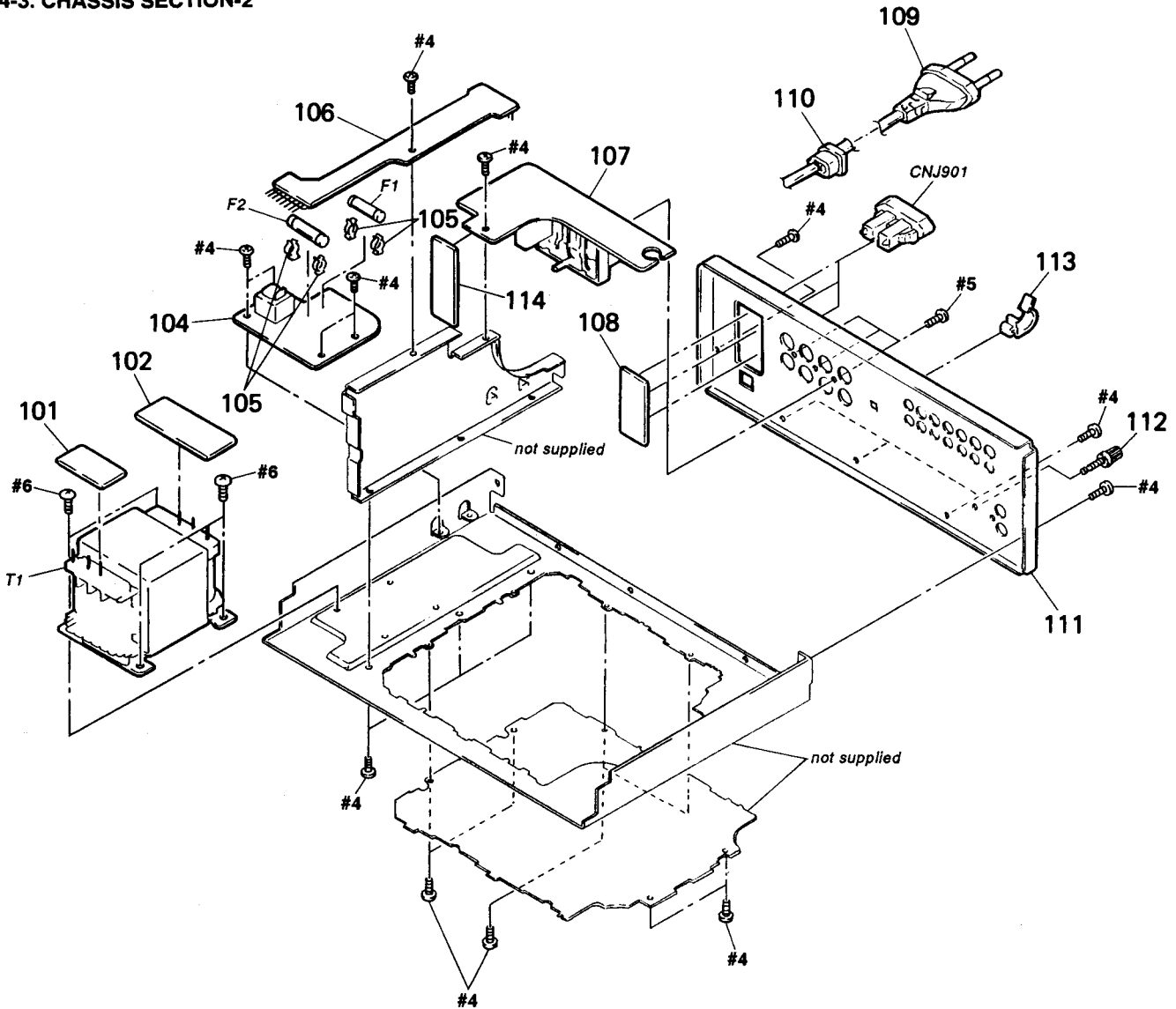
4-2. CHASSIS SECTION-1



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 Δ or dotted line with mark Δ 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	
△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	
△CNJ901	1-526-794-11	OUTLET, AC	
△F1	1-532-237-00	FUSE, TIME LAG (T3.15A) (F519R)	
△F1	1-532-286-00	FUSE (T2.5A) (F419R)	
△F2	1-532-286-00	FUSE (T2.5A)	
△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)	

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: 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

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.

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	
*****				< FUSE >			
*	1-533-213-31	HOLDER, FUSE		Δ F1	1-532-237-00	FUSE, TIME LAG (T3. 15A) (F519R)	
< CAPACITOR >				Δ F1	1-532-286-00	FUSE (T2. 5A) (F419R)	
Δ C1	1-161-741-00	CERAMIC	0.001uF 10% 400V	Δ F2	1-532-286-00	FUSE (T2. 5A)	
C708	1-124-126-00	ELECT	47uF 20% 10V	< IC >			
C709	1-124-478-11	ELECT	100uF 20% 25V	IC902	8-759-231-54	IC TA7806S	
C716	1-126-233-11	ELECT	22uF 20% 50V	IC903	8-759-234-64	IC TA7805S	
C717	1-126-233-11	ELECT	22uF 20% 50V	< TRANSISTOR >			
C723	1-164-094-11	CERAMIC	0.0068uF 10% 25V (F419R:G/F519R:G)	Q711	8-729-620-05	TRANSISTOR 2SC2603-EF	
C910	1-124-563-11	ELECT	2200uF 20% 25V	Q713	8-729-900-63	TRANSISTOR DTA124ES	
C913	1-136-159-00	FILM	0.033uF 5% 50V	Q900	8-729-620-05	TRANSISTOR 2SC2603-EF	
C914	1-164-073-11	CERAMIC	100PF 10% 50V (F419R:G/F519R:G)	< RESISTOR >			
< CONNECTOR >				R723	1-249-393-11	CARBON 10 5% 1/4W	
* CNP1	1-564-321-00	PIN, CONNECTOR 2P		R724	1-249-417-11	CARBON 1K 5% 1/4W	
CNP700	1-566-213-11	PIN, CONNECTOR 4P (CONTROL S OUT)		R725	1-249-429-11	CARBON 10K 5% 1/4W	
CNP800	1-691-162-11	PIN, CONNECTOR 5P		R735	1-249-419-11	CARBON 1.5K 5% 1/4W	
< DIODE >				R736	1-249-433-11	CARBON 22K 5% 1/4W	
D701	8-719-933-39	DIODE HZS6C1L		R737	1-249-423-11	CARBON 3.3K 5% 1/4W	
D702	8-719-200-82	DIODE 11ES2		R908	1-247-733-11	CARBON 33 5% 1/2W(F419R)	
D727	8-719-987-63	DIODE 1N4148M		R908	1-247-727-11	CARBON 10 5% 1/2W(F519R)	
D904	8-719-200-82	DIODE 11ES2		< RELAY >			
				Δ RY900	1-515-516-00	RELAY (F419R)	
				Δ RY900	1-515-617-11	RELAY (F519R)	
				< TRANSFORMER >			
				Δ 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 >			
1C702	8-749-920-83	IC GP1U52XB	
1C705	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	Ref. No.	Part No.	Description	Remark
C250	1-162-282-31	CERAMIC	100PF 10% 50V (F419R:G/F519R:G)	C703	1-124-903-11	ELECT	1uF 20% 50V
C258	1-164-073-11	CERAMIC	100PF 10% 50V	C704	1-136-153-00	FILM	0.01uF 5% 50V
C300	1-123-369-00	ELECT	4.7uF 20% 50V	C718	1-136-161-00	FILM	0.047uF 5% 50V
C301	1-164-064-11	CERAMIC	56PF 5% 50V	C719	1-136-161-00	FILM	0.047uF 5% 50V
C302	1-123-369-00	ELECT	4.7uF 20% 50V	C720	1-136-161-00	FILM	0.047uF 5% 50V
C303	1-136-166-00	FILM	0.12uF 5% 50V(F519R)	C721	1-136-168-00	FILM	0.18uF 5% 50V
C351	1-164-073-11	CERAMIC	100PF 10% 50V (F419R:G/F519R:G)	C722	1-124-907-11	ELECT	10uF 20% 50V
C352	1-136-161-00	FILM	0.047uF 5% 50V (F419R:G/F519R:G)	C800	1-164-085-11	CERAMIC	0.001uF 10% 50V
C354	1-124-791-11	ELECT	1.0uF 20% 100V	C801	1-124-443-00	ELECT	100uF 20% 10V
C355	1-162-306-11	CERAMIC	0.01uF 20% 16V (F419R:G/F519R:G)	C802	1-136-153-00	FILM	0.01uF 5% 50V
C400	1-123-369-00	ELECT	4.7uF 20% 50V	C804	1-124-482-11	ELECT	33uF 20% 35V(F419R)
C401	1-164-064-11	CERAMIC	56PF 5% 50V	C804	1-124-443-00	ELECT	100uF 20% 10V(F519R)
C402	1-123-369-00	ELECT	4.7uF 20% 50V	C806	1-124-472-11	ELECT	470uF 20% 10V
C403	1-136-166-00	FILM	0.12uF 5% 50V(F519R)	C900	1-125-748-11	ELECT	10000uF 20% 50V(F419R)
C451	1-164-073-11	CERAMIC	100PF 10% 50V (F419R:G/F519R:G)	C900	1-125-747-11	ELECT	10000uF 20% 63V(F519R)
C452	1-136-161-00	FILM	0.047uF 5% 50V (F419R:G/F519R:G)	C901	1-125-748-11	ELECT	10000uF 20% 50V(F419R)
C500	1-123-369-00	ELECT	4.7uF 20% 50V	C901	1-125-747-11	ELECT	10000uF 20% 63V(F519R)
C501	1-164-073-11	CERAMIC	100PF 10% 50V	C902	1-126-170-11	ELECT	1000uF 20% 50V(F419R)
C502	1-164-083-11	CERAMIC	680PF 10% 50V	C902	1-124-922-11	ELECT	1000uF 20% 63V(F519R)
C503	1-124-910-11	ELECT	47uF 20% 50V	C903	1-126-170-11	ELECT	1000uF 20% 50V(F419R)
C504	1-162-550-11	CERAMIC	39PF 5% 500V	C903	1-124-922-11	ELECT	1000uF 20% 63V(F519R)
C505	1-124-120-11	ELECT	220uF 20% 25V	C904	1-124-122-11	ELECT	100uF 20% 50V
C506	1-123-306-00	ELECT	47uF 20% 10V	C905	1-124-122-11	ELECT	100uF 20% 50V
C507	1-102-943-00	CERAMIC	6.0PF +-0.5PF 50V	C906	1-124-122-11	ELECT	100uF 20% 50V
C511	1-126-049-11	ELECT	22uF 20% 50V	C907	1-124-122-11	ELECT	100uF 20% 50V
C550	1-164-073-11	CERAMIC	100PF 10% 50V	C908	1-106-379-12	MYLAR	0.033uF 5% 200V
C554	1-162-306-11	CERAMIC	0.01uF 20% 16V	C909	1-106-379-12	MYLAR	0.033uF 5% 200V
C600	1-123-369-00	ELECT	4.7uF 20% 50V	C911	1-124-910-11	ELECT	47uF 20% 50V
C601	1-164-073-11	CERAMIC	100PF 10% 50V	C912	1-124-910-11	ELECT	47uF 20% 50V
C602	1-164-083-11	CERAMIC	680PF 10% 50V			< CONNECTOR >	
C603	1-124-910-11	ELECT	47uF 20% 50V			* CNJ700 1-568-839-11 SOCKET, CONNECTOR 23P	
C604	1-162-550-11	CERAMIC	39PF 5% 500V			* CNP500 1-564-511-11 PLUG, CONNECTOR 8P	
C605	1-124-120-11	ELECT	220uF 20% 25V			CNP501 1-691-167-11 PIN, CONNECTOR 10P	
C606	1-123-306-00	ELECT	47uF 20% 10V			* CNP702 1-564-508-11 PLUG, CONNECTOR 5P	
C607	1-102-943-00	CERAMIC	6.0PF +-0.5PF 50V			< DIODE >	
C611	1-126-049-11	ELECT	22uF 20% 50V	D100	8-719-933-50	DIODE	HZS7C2L
C650	1-164-073-11	CERAMIC	100PF 10% 50V	D500	8-719-987-63	DIODE	1N4148M
C654	1-162-306-11	CERAMIC	0.01uF 20% 16V	D501	8-719-933-39	DIODE	HZS6C1L
C700	1-164-062-11	CERAMIC	47PF 5% 50V	D502	8-719-987-63	DIODE	1N4148M
C701	1-164-062-11	CERAMIC	47PF 5% 50V	D503	8-719-987-63	DIODE	1N4148M
C702	1-124-471-00	ELECT	1000uF 20% 6.3V	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
D507	8-719-987-63	DIODE 1N4148M	
D508	8-719-815-85	DIODE 1S1585	
D509	8-719-815-85	DIODE 1S1585	
D600	8-719-987-63	DIODE 1N4148M	
D601	8-719-933-39	DIODE HZS6C1L	
D602	8-719-987-63	DIODE 1N4148M	
D603	8-719-987-63	DIODE 1N4148M	
D604	8-719-987-63	DIODE 1N4148M	
D605	8-719-987-63	DIODE 1N4148M	
D606	8-719-987-63	DIODE 1N4148M	
D607	8-719-987-63	DIODE 1N4148M	
D608	8-719-815-85	DIODE 1S1585	
D609	8-719-815-85	DIODE 1S1585	
D700	8-719-200-82	DIODE 11ES2	
D705	8-719-987-63	DIODE 1N4148M	
D706	8-719-987-63	DIODE 1N4148M	
D707	8-719-987-63	DIODE 1N4148M	
D728	8-719-010-15	DIODE UZ-3.0BS	
D729	8-719-987-63	DIODE 1N4148M	
D900	8-719-302-38	DIODE RBV-602-01	
D901	8-719-200-02	DIODE 10E2	
D902	8-719-200-02	DIODE 10E2	
D908	8-719-933-88	DIODE HZS16-2L	
D909	8-719-933-88	DIODE HZS16-2L	
< IC >			
IC100	8-759-745-61	IC NJM4560D-D	
IC300	8-759-634-50	IC M5218AL	
IC700	8-759-082-11	IC M50720-358SP	
IC800	8-759-111-68	IC uPC1237HA	
< JACK >			
J100	1-580-054-21	JACK, PIN 2P	
< COIL >			
L100	1-410-979-11	INDUCTOR 220uH (F419R:G)	
L100	1-424-397-11	COIL, CHOKE 200uH (F519R:G)	
L101	1-424-397-11	COIL, CHOKE 200uH (F519R:G)	
L200	1-410-979-11	INDUCTOR 220uH (F419R:G)	
L200	1-424-397-11	COIL, CHOKE 200uH (F519R:G)	
L201	1-424-397-11	COIL, CHOKE 200uH (F519R:G)	
< TRANSISTOR >			
Q100	8-729-354-52	TRANSISTOR 2SC2545-E	
Q101	8-729-354-52	TRANSISTOR 2SC2545-E	
Q200	8-729-354-52	TRANSISTOR 2SC2545-E	

Ref. No.	Part No.	Description	Remark
Q201	8-729-354-52	TRANSISTOR 2SC2545-E	
Q500	8-729-620-17	TRANSISTOR 2SC2259-FG	
Q501	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q502	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA	
Q503	8-729-224-62	TRANSISTOR 2SK246-GR	
Q504	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q505	8-729-803-76	TRANSISTOR 2SA1371-E	
Q506	8-729-142-01	TRANSISTOR 2SC1941-LK	
Q507	8-729-209-15	TRANSISTOR 2SD2012	
Q508	8-729-141-46	TRANSISTOR 2SC4431-LK	
Q509	8-729-141-37	TRANSISTOR 2SA1684-LK	
Q510	8-729-011-14	TRANSISTOR 2SC3855M-OPY (F419R)	
Q510	8-729-010-97	TRANSISTOR 2SC3856M-OPY (F519R)	
Q511	8-729-011-13	TRANSISTOR 2SA1491M-OPY (F419R)	
Q511	8-729-010-98	TRANSISTOR 2SA1492M-OPY (F519R)	
Q512	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q513	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q600	8-729-620-17	TRANSISTOR 2SC2259-FG	
Q601	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q602	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA	
Q603	8-729-224-62	TRANSISTOR 2SK246-GR	
Q604	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q605	8-729-803-76	TRANSISTOR 2SA1371-E	
Q606	8-729-142-01	TRANSISTOR 2SC1941-LK	
Q607	8-729-209-15	TRANSISTOR 2SD2012	
Q608	8-729-141-46	TRANSISTOR 2SC4431-LK	
Q609	8-729-141-37	TRANSISTOR 2SA1684-LK	
Q610	8-729-011-14	TRANSISTOR 2SC3855M-OPY (F419R)	
Q610	8-729-010-97	TRANSISTOR 2SC3856M-OPY (F519R)	
Q611	8-729-011-13	TRANSISTOR 2SA1491M-OPY (F419R)	
Q611	8-729-010-98	TRANSISTOR 2SA1492M-OPY (F519R)	
Q612	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q613	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q708	8-729-900-63	TRANSISTOR DTA124ES	
Q710	8-729-900-36	TRANSISTOR DTC124ES	
Q712	8-729-900-63	TRANSISTOR DTA124ES	
Q714	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q715	8-729-900-63	TRANSISTOR DTA124ES	
Q901	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA	
Q902	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
< RESISTOR >			
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
R606	1-247-704-11	CARBON	220 5% 1/4W
R607	1-249-490-11	CARBON	27K 5% 1/2W
R608	1-247-721-11	CARBON	4.7K 5% 1/4W
R609	1-249-516-11	CARBON	33 5% 1/4W (F419R:AEP1, G/F519R:AEP1, G)
△R609	1-212-869-00	FUSIBLE	33 5% 1/4W F (F419R:AEP2/F519R:AEP2)
R610	1-249-524-11	CARBON	68 5% 1/4W (F419R:AEP1, G/F519R:AEP1, G)
△R610	1-212-877-11	FUSIBLE	68 5% 1/4W F (F419R:AEP2/F519R:AEP2)
R611	1-247-713-11	CARBON	1K 5% 1/4W
R612	1-249-561-11	CARBON	2.4K 5% 1/4W
R613	1-247-710-11	CARBON	560 5% 1/4W
△R614	1-212-857-00	FUSIBLE	10 5% 1/4W F
△R615	1-212-857-00	FUSIBLE	10 5% 1/4W F
R616	1-249-469-11	CARBON	100K 5% 1/4W
△R617	1-212-994-00	FUSIBLE	330 5% 1/2W F
△R618	1-212-849-00	FUSIBLE	4.7 5% 1/4W F
△R619	1-212-849-00	FUSIBLE	4.7 5% 1/4W F
R620	1-217-611-00	METAL PLATE	0.1
R621	1-217-611-00	METAL PLATE	0.1
R622	1-249-421-11	CARBON	2.2K 5% 1/4W
R623	1-249-431-11	CARBON	15K 5% 1/4W
R625	1-247-887-00	CARBON	220K 5% 1/4W
R629	1-247-846-11	CARBON	4.3K 5% 1/4W
R630	1-247-713-11	CARBON	1K 5% 1/4W
R631	1-247-887-00	CARBON	220K 5% 1/4W
R700	1-249-433-11	CARBON	22K 5% 1/4W
R701	1-249-433-11	CARBON	22K 5% 1/4W
R702	1-249-433-11	CARBON	22K 5% 1/4W
R703	1-249-427-11	CARBON	6.8K 5% 1/4W
R704	1-249-427-11	CARBON	6.8K 5% 1/4W
R705	1-249-433-11	CARBON	22K 5% 1/4W
R706	1-249-433-11	CARBON	22K 5% 1/4W
R707	1-249-433-11	CARBON	22K 5% 1/4W
R708	1-249-433-11	CARBON	22K 5% 1/4W
R709	1-249-433-11	CARBON	22K 5% 1/4W
R710	1-249-433-11	CARBON	22K 5% 1/4W
R711	1-249-441-11	CARBON	100K 5% 1/4W
R713	1-249-433-11	CARBON	22K 5% 1/4W
R714	1-249-433-11	CARBON	22K 5% 1/4W
R715	1-249-433-11	CARBON	22K 5% 1/4W
R716	1-249-433-11	CARBON	22K 5% 1/4W
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

Ref. No.	Part No.	Description	Remark
R748	1-249-433-11	CARBON	22K 5% 1/4W
R749	1-247-903-00	CARBON	1M 5% 1/4W
R750	1-249-429-11	CARBON	10K 5% 1/4W
R751	1-249-430-11	CARBON	12K 5% 1/4W
R752	1-249-417-11	CARBON	1K 5% 1/4W
R753	1-249-433-11	CARBON	22K 5% 1/4W
R760	1-249-405-11	CARBON	100 5% 1/4W
R761	1-249-433-11	CARBON	22K 5% 1/4W
R800	1-249-429-11	CARBON	10K 5% 1/4W
R801	1-247-887-00	CARBON	220K 5% 1/4W
R802	1-247-881-00	CARBON	120K 5% 1/4W
R803	1-249-432-11	CARBON	18K 5% 1/4W
R900	1-247-754-11	CARBON	1.5K 5% 1/2W(F419R)
R900	1-247-755-11	CARBON	1.8K 5% 1/2W(F519R)
R901	1-247-754-11	CARBON	1.5K 5% 1/2W(F419R)
R901	1-247-755-11	CARBON	1.8K 5% 1/2W(F519R)
R902	1-247-754-11	CARBON	1.5K 5% 1/2W(F419R)
R902	1-247-755-11	CARBON	1.8K 5% 1/2W(F519R)
R903	1-247-754-11	CARBON	1.5K 5% 1/2W(F419R)
R903	1-247-755-11	CARBON	1.8K 5% 1/2W(F519R)
R904	1-247-754-11	CARBON	1.5K 5% 1/2W(F419R)
R904	1-247-755-11	CARBON	1.8K 5% 1/2W(F519R)
R905	1-247-754-11	CARBON	1.5K 5% 1/2W(F419R)
R905	1-247-755-11	CARBON	1.8K 5% 1/2W(F519R)
R906	1-247-754-11	CARBON	1.5K 5% 1/2W(F419R)
R906	1-247-755-11	CARBON	1.8K 5% 1/2W(F519R)
R907	1-247-754-11	CARBON	1.5K 5% 1/2W(F419R)
R907	1-247-755-11	CARBON	1.8K 5% 1/2W(F519R)
R909	1-247-722-11	CARBON	5.6K 5% 1/4W
R910	1-247-722-11	CARBON	5.6K 5% 1/4W
< VARIABLE RESISTOR >			
RV500	1-237-455-11	RES, ADJ, CARBON 500 (DC BIAS L-CH)	
RV600	1-237-455-11	RES, ADJ, CARBON 500 (DC BIAS R-CH)	
< RELAY >			
RY300	1-515-793-11	RELAY	
< SWITCH >			
S100	1-571-111-11	SWITCH, PUSH (1 KEY) (CARTRIDGE) (F519R)	
S300	1-692-146-11	SWITCH, PUSH (1 KEY) (SUBSONIC) (F519R)	
< THERMISTOR >			
△TH900	1-806-882-11	THERMISTOR, POSITIVE 2.2 (F419R:AEP2/F519R:AEP2)	
△TH901	1-806-882-11	THERMISTOR, POSITIVE 2.2 (F419R:AEP2/F519R:AEP2)	

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	TONE 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)	

MISCELLANEOUS

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)	

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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