

TA-FE310R/FE510R

SERVICE MANUAL

AEP Model
TA-FE310R/FE510R

UK Model
TA-FE310R



Photo : TA-FE510R

SPECIFICATIONS

Amplifier section

DIN power output

TA-FE510R: 80 W+80 W (4 ohms at 1 kHz)
60 W+60 W (8 ohms at 1 kHz)
TA-FE310R: 55 W+55 W (4 ohms at 1 kHz)
45 W+45 W (8 ohms at 1 kHz)

Frequency response

PHONO (20 Hz-20 kHz): RIAA equalization curve
±0.5 dB
TUNER, CD, AUX, TAPE1/DAT,
TAPE2/MD: 7 Hz-70 kHz dB

S/N (network A)

PHONO: 80dB
TUNER, CD, AUX, TAPE1/DAT,
TAPE2/MD: 105 dB

Output voltage/ impedance

REC OUT: 200 mV, 1 kilohm
PHONES: 5 mW (at 8 ohms)

Speakers impedance:

4-16 ohms, 8-16 ohms (SPEAKERS A+B)

Damping factor

80 (8 ohms, 1 kHz)

General

System

Power amplifier: Pure-complementary SEPP OCL
power amplifier with all stages directly coupled
Preamplifier: Low-noise, equalizer amplifier

Power requirements

Models not supplied with a voltage selector:
220-230 V AC, 50/60 Hz

Power consumption

TA-FE510R: 160 W
TA-FE310R: 120 W

Dimensions (approx.) (w/h/d):

430×105×300 mm
incl. projecting parts and controls

Mass (approx.)

TA-FE510R: 4.8 kg
TA-FE310R: 4.3 kg

Supplied accessories

Remote commander (remote) (1)
RM-S315
Sony batteries SUM-3 (NS) (2)

Design and specifications are subject to change without
notice.

INTEGRATED STEREO AMPLIFIER

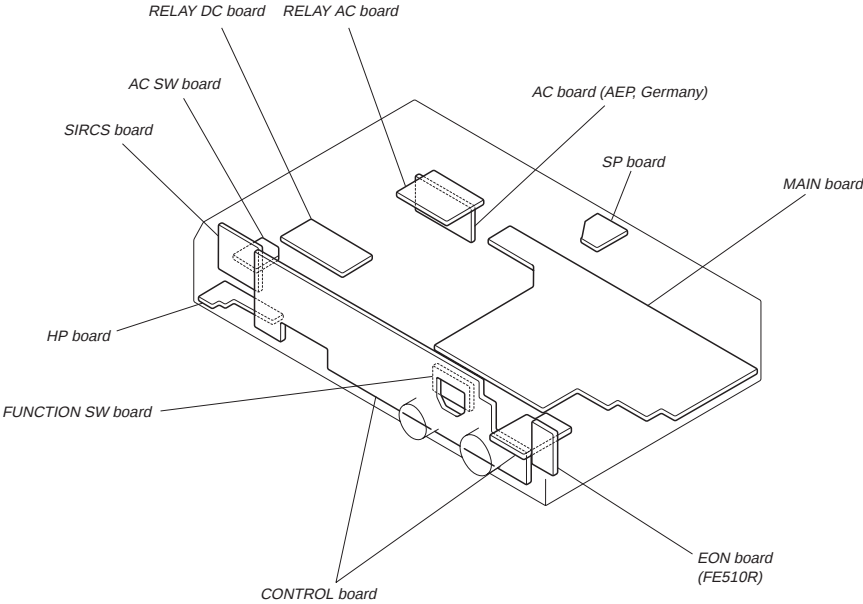


SONY®

— 2 —

SECTION 2
DIAGRAMS

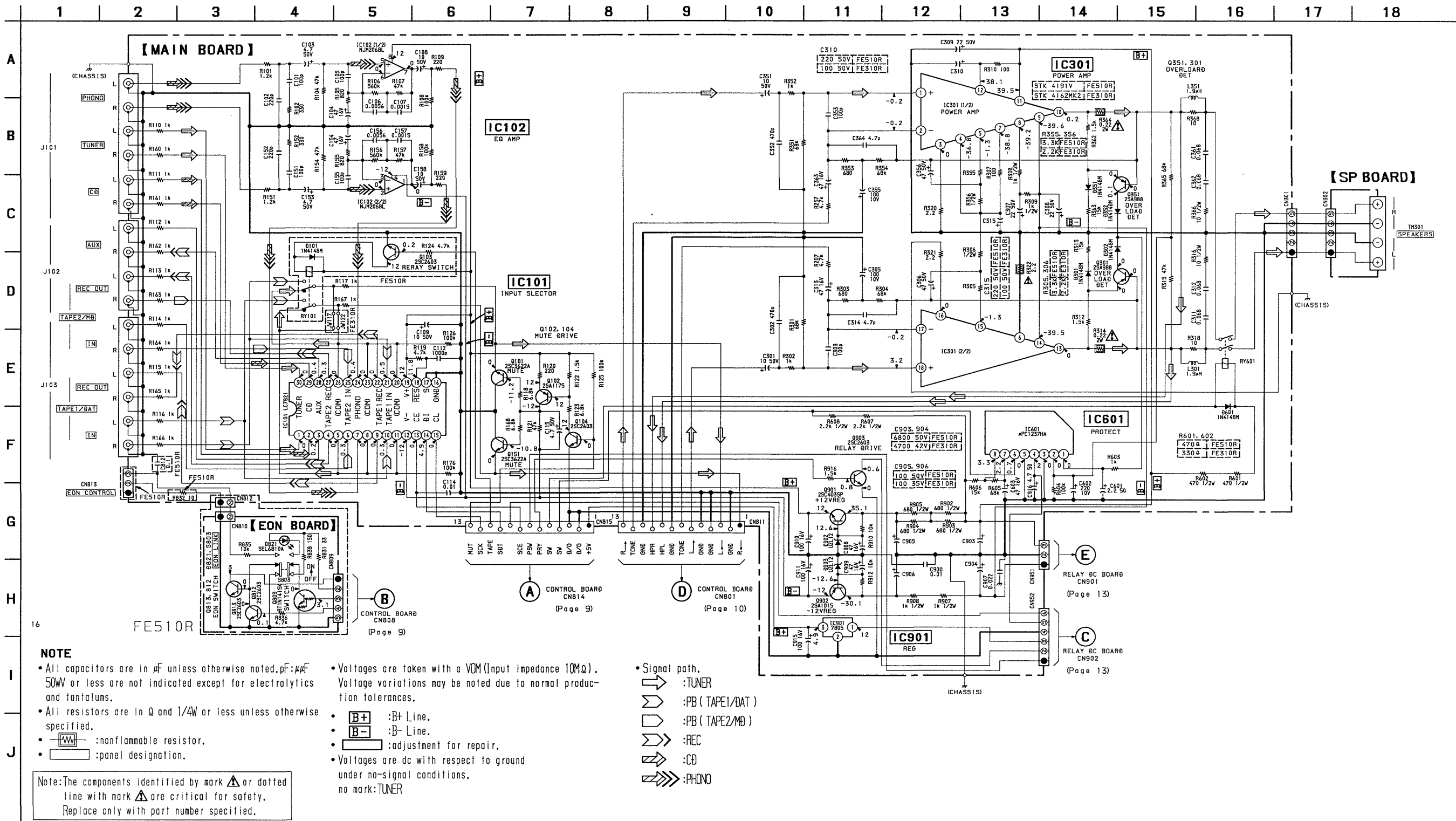
2-1. CIRCUIT BOARDS LOCATION



2-2. IC PIN FUNCTION DESCRIPTION
CONTROL BOARD IC801 TMP47C103N (INPUT CONTROL, LED DRIVE)

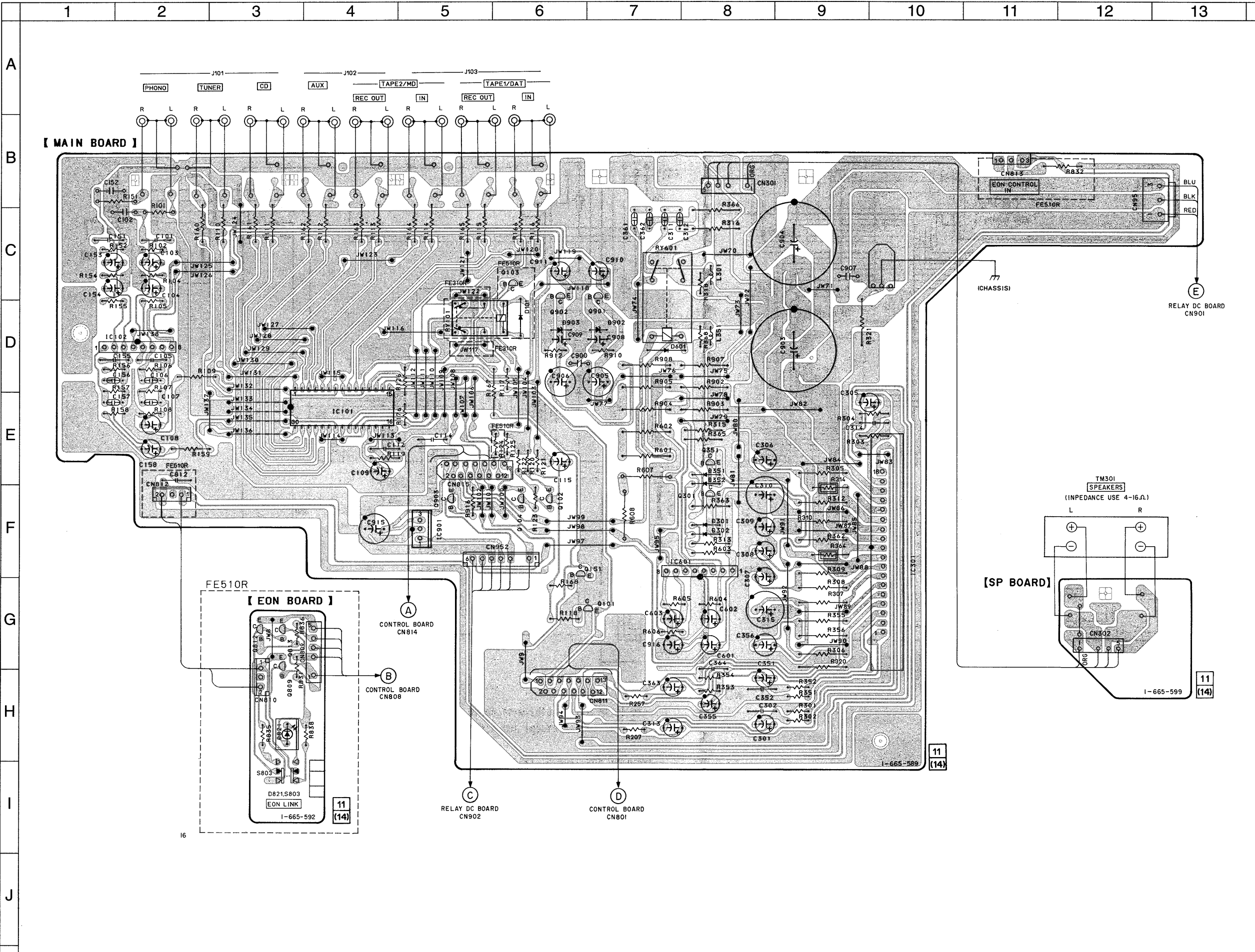
Pin No.	Pin Name	I/O	Function
1	X OUT	O	System clock. (4 MHz)
2	X IN	I	System clock. (4 MHz)
3	RESET	I	RESET input.
4	PMD	I	MODE select input.
5	VOL+	O	Motor drive output (+).
6	VOL -	O	Motor drive output (-).
7	SW0	I	Rotary switch input (CD).
8	SW1	I	Rotary switch input (TUNER).
9	SW2	I	Rotary switch input (PHONO).
10	EON	I	EON signal input.
11	PHONO	O	PHONO LED drive output.
12	TUNER	O	TUNER LED drive output.
13	CD	O	CD LED drive output.
14	GND	-	Ground.
15	AUX	O	AUX LED drive output.
16	DAT	O	TAPE "Z" LED drive output.
17	TAPE	O	TAPE "1" LED drive output.
18	MON	O	MONITOR output.
19	PRY	O	Power relay output.
20	PKY	I	Power key input.
21	MON	I	MONITOR input.
22	SIRCS	I	SIRCS input.
23	MUTE	O	Muting output.
24	SCE	O	Chip enable output.
25	SDT	O	Serial data output.
26	SCK	O	Serial clock output.
27	STOP	I	Stop input.
28	+3 V	-	+3 V power supply.

2-3. SCHEMATIC DIAGRAM — MAIN SECTION — • See page 14 for IC Block Diagrams.



- Note:
- — : Parts extracted from the component side.
 - △ : Internal component.
 - [Pattern] : Pattern from the side which enable seeing.

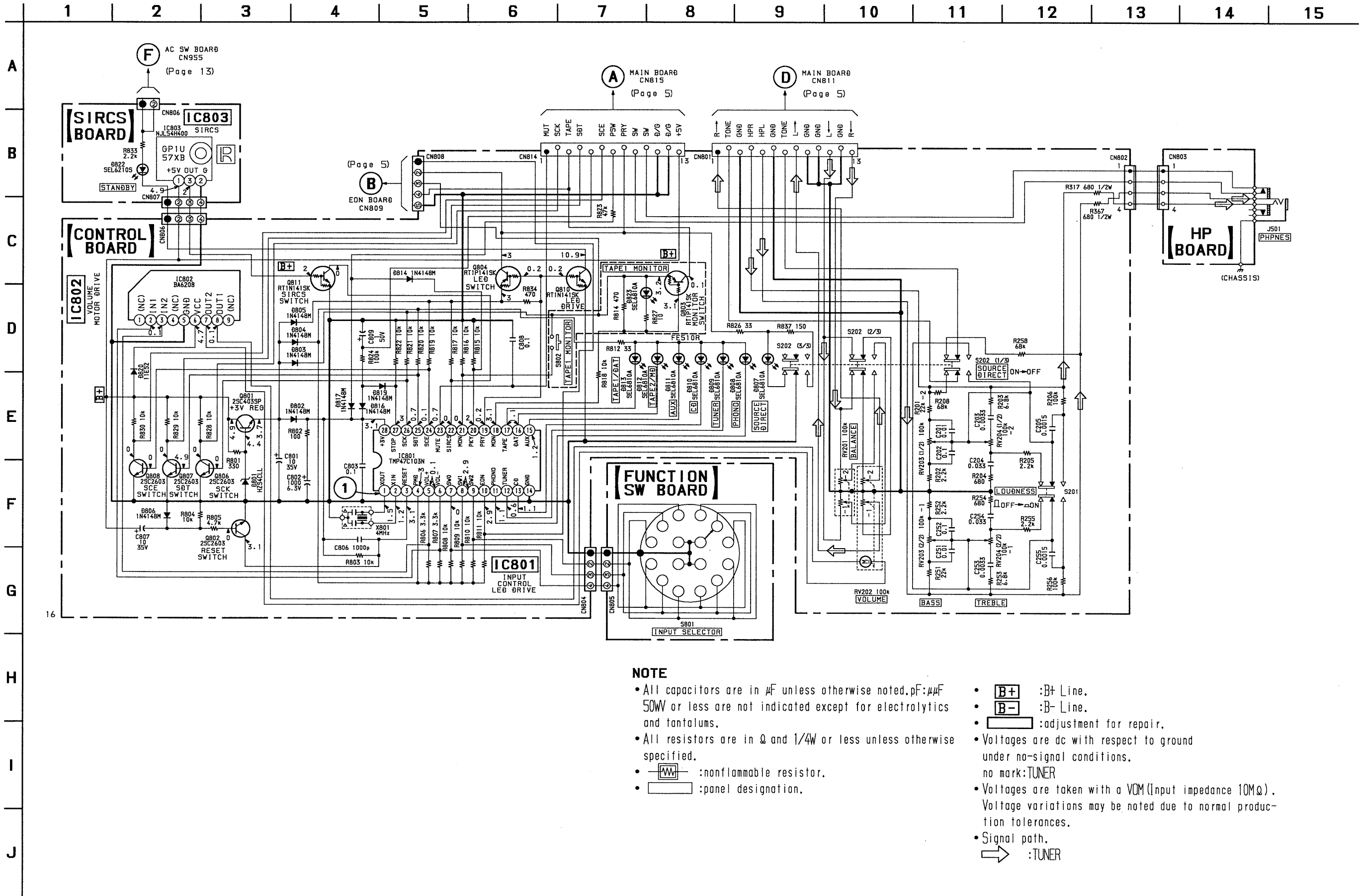
2-4. PRINTED WIRING BOARD — MAIN SECTION — • See page 3 for Circuit Boards Location.



• Semiconductor Location

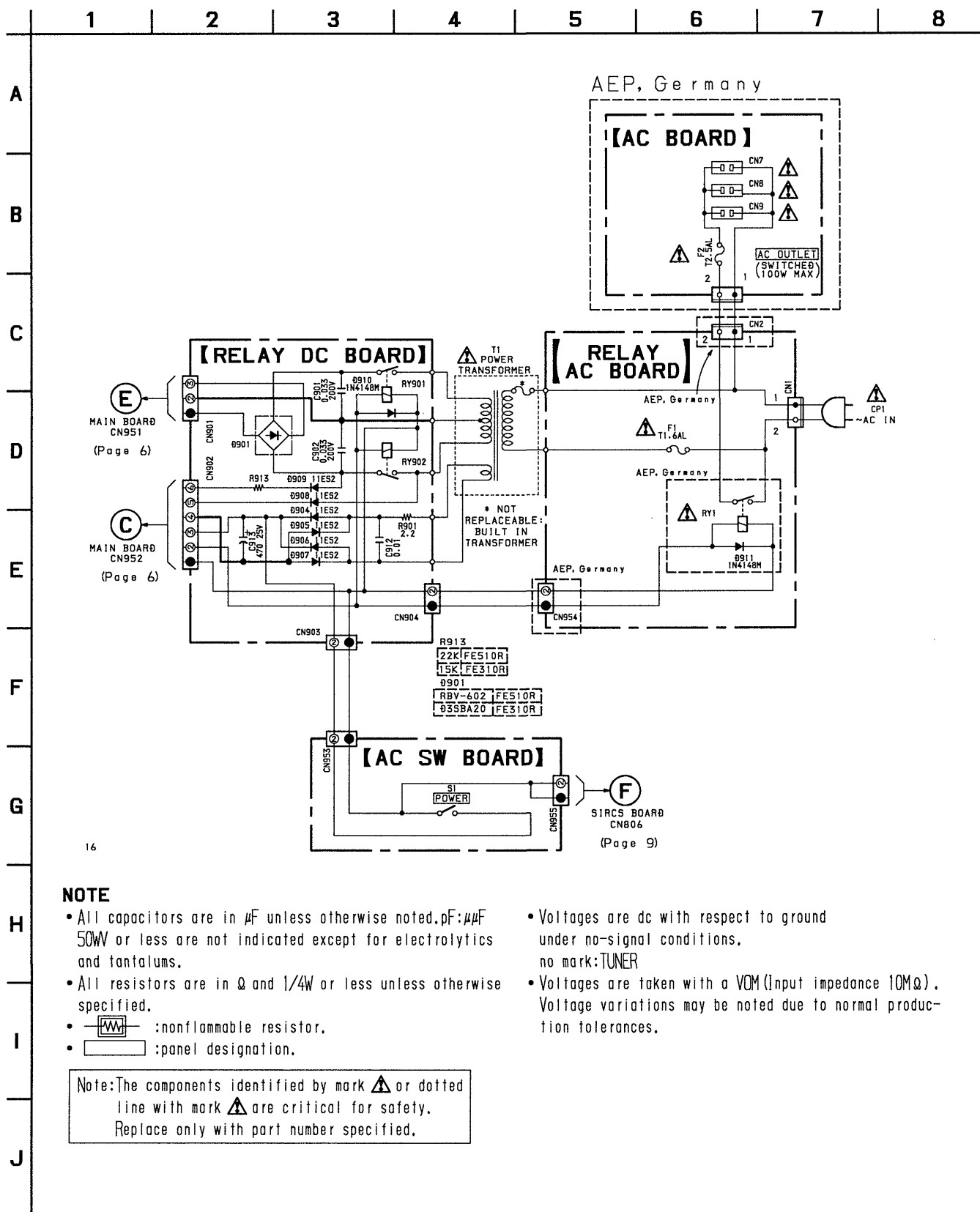
Ref. No.	Location
D101	D-6
D301	F-8
D302	F-8
D351	E-8
D352	E-8
D601	D-7
D821	H-3
D902	D-7
D903	D-6
IC101	E-4
IC102	D-2
IC301	F-10
IC601	F-8
IC901	F-5
Q101	G-7
Q102	F-6
Q103	C-6
Q104	F-6
Q151	G-7
Q301	F-8
Q351	E-8
Q809	G-3
Q812	G-3
Q813	G-3
Q901	D-7
Q902	C-6
Q903	F-5

2-5. SCHEMATIC DIAGRAM — PANEL SECTION — • See page 14 for IC Block Diagrams. • See page 4 for IC Pin Function Description.



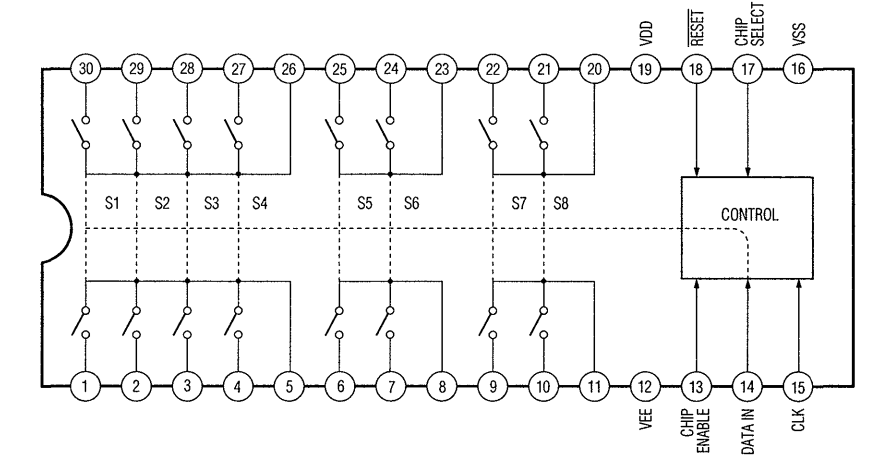
Ref. No.	Location
D801	B-10
D802	A-10
D803	A-10
D804	A-10
D805	A-10
D806	B-11
D807	C-3
D808	A-6
D809	A-6
D810	A-7
D811	A-8
D812	A-8
D813	A-9
D814	B-9
D816	B-9
D817	B-9
D819	B-9
D820	B-3
D822	I-12
D823	C-6
D901	E-4
D904	F-3
D905	F-6
D906	F-3
D907	F-7
D908	F-3
D909	F-3
D910	E-3
D911	J-2
IC801	B-8
IC802	B-3
IC803	H-12
Q801	B-11
Q802	B-11
Q803	C-6
Q804	B-7
Q806	B-6
Q807	B-6
Q808	B-7
Q810	A-12
Q811	A-13

2-7. SCHEMATIC DIAGRAM — POWER SECTION — • See page 11 for Printed Wiring Bord.

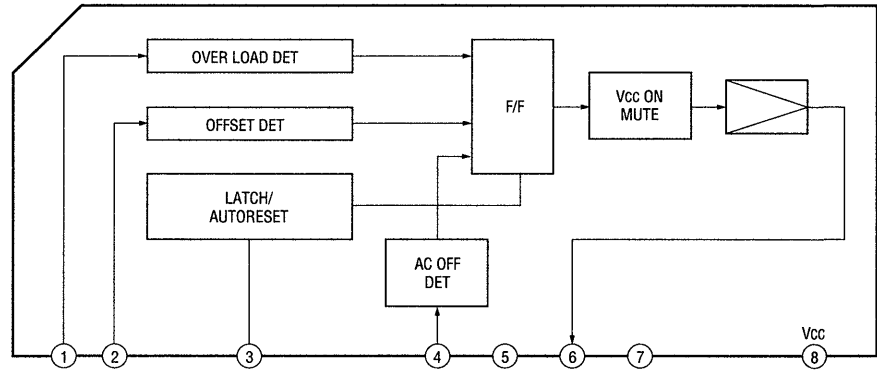


• IC Block Diagrams

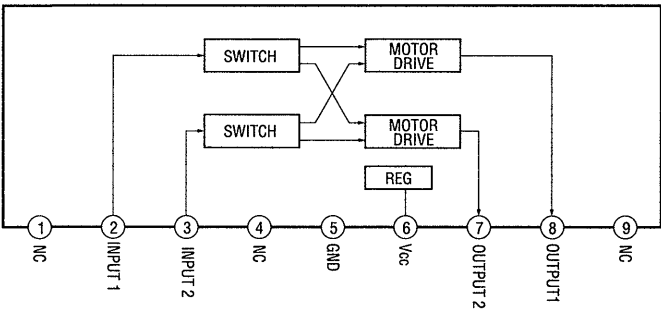
IC101 LC7821



IC601 μ PC1237HA



IC802 BA6208



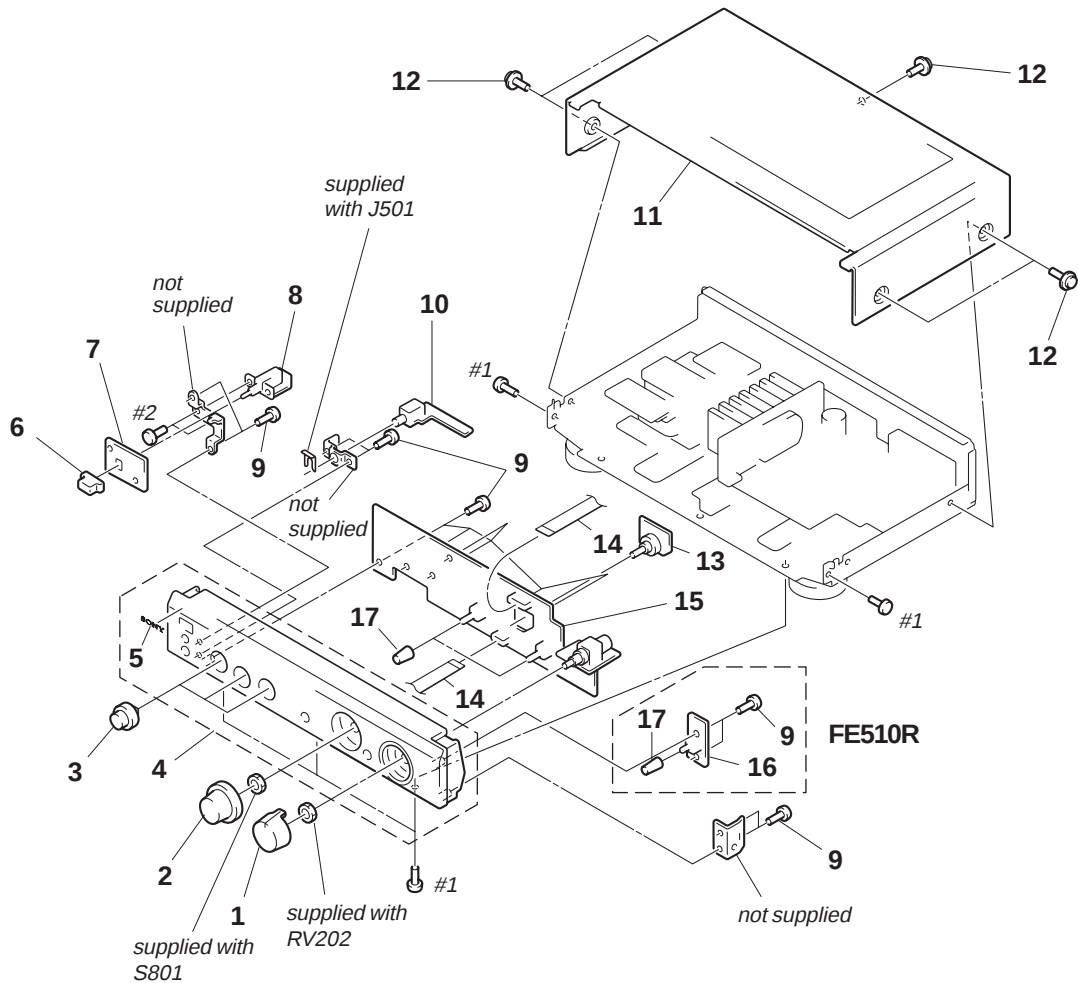
SECTION 3 EXPLODED VIEWS

Note:

- XX, -X mean standardized parts, so they may have some differences from the original one.
- 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.
- Color Indication of Appearance Parts Example:
KNOB, BALANCE (WHITE)
↑
Cabinet's Color
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

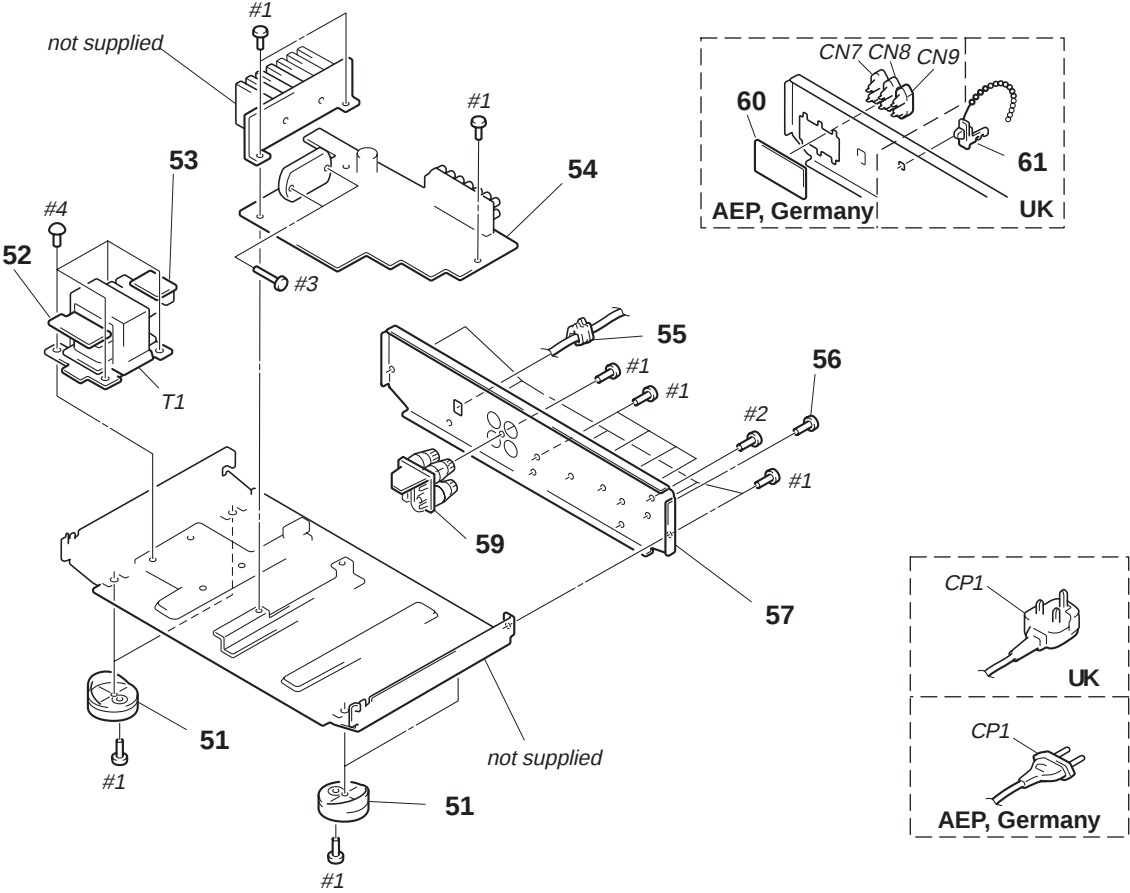
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

(1) CASE, FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	X-4946-800-1	KNOB (VOL) ASSY (VOLUME)(BLACK)		* 8	1-665-595-11	AC SW BOARD	
1	X-4947-624-1	KNOB (VOL) ASSY (VOLUME)(SILVER)		9	4-951-620-01	SCREW (2.6X8), +BVTP	
2	X-4947-336-1	KNOB (DIA.47) ASSY (BLACK)		* 10	1-659-964-11	HP BOARD	
		(INPUT SELECTOR)		* 11	4-980-777-41	CASE (409526)(BLACK)	
2	X-4947-625-1	KNOB (DIA.47) ASSY (SILVER)		* 11	4-980-777-61	CASE (409526)(SILVER)	
		(INPUT SELECTOR)		12	3-704-366-01	SCREW (CASE)(M3X8)(BLACK)	
3	4-980-204-01	KNOB (DIA.24)(BLACK) (BALANCE TONE)		12	3-704-366-71	SCREW (CASE)(M3X8)(SILVER)	
3	4-980-204-11	KNOB (DIA.24)(SILVER)(BALANCE TONE)		* 13	1-665-596-11	FUNCTION SW BOARD	
4	X-4948-253-1	PANEL ASSY, FRONT (BLACK)		14	1-769-983-11	WIRE (FLAT TYPE) (13 CORE)	
4	X-4948-254-1	PANEL ASSY, FRONT (BLACK)		* 15	A-4398-021-A	CONTROL BOARD, COMPLETE (FE510R)	
4	X-4948-418-1	PANEL ASSY, FRONT (SILVER)					
5	4-963-404-21	EMBLEM (5-A), SONY		* 15	A-4398-017-A	CONTROL BOARD, COMPLETE (FE310R)	
6	4-980-199-01	BUTTON (POWER)(BLACK)		* 16	1-665-592-11	EON BOARD (FE510R)	
6	4-980-199-11	BUTTON (POWER)(SILVER)		17	4-980-189-01	KNOB (DIA. 6)(BLACK)	
* 7	1-665-591-11	SIRCS BOARD		17	4-980-189-11	KNOB (DIA. 6)(SILVER)	

(2) CHASSIS SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	X-4947-124-1	FOOT ASSY (F50150S)(SILVER)		* 57	4-989-462-12	PANEL, BACK (FE310R:UK)	
51	X-4947-207-1	FOOT ASSY (F50150S)(BLACK)		* 59	1-665-599-11	SP BOARD	
* 52	1-665-597-11	RELAY DC BOARD		* 60	1-665-598-11	AC BOARD (AEP,Germany)	
* 53	1-659-962-11	RELAY AC BOARD (UK)		61	4-956-370-12	BAND, PLUG FIXED (UK)	
* 53	1-665-593-11	RELAY AC BOARD (AEP,Germany)		△ CN7	1-526-794-11	OUTLET, AC (AEP,Germany)	
* 54	A-4398-020-A	MAIN BOARD, COMPLETE (FE510R)		△ CN8	1-526-794-11	OUTLET, AC (AEP,Germany)	
* 54	A-4398-016-A	MAIN BOARD, COMPLETE (FE310R)		△ CN9	1-526-794-11	OUTLET, AC (AEP,Germany)	
* 55	3-703-244-00	BUSHING (2104), CORD		△ CP1	1-575-651-21	CORD, POWER (AEP,Germany)	
56	3-704-515-11	SCREW (BV/RING)		△ CP1	1-696-586-11	CORD, POWER (UK)	
* 57	4-989-459-02	PANEL, BACK (FE510R)		△ T1	1-429-448-11	TRANSFORMER, POWER (FE510R)	
* 57	4-989-462-02	PANEL, BACK (FE310R:AEP,Germany)		△ T1	1-429-452-11	TRANSFORMER, POWER (FE310R)	

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

SECTION 4 ELECTRICAL PARTS LIST

AC SW

CONTROL

Note:

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

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

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
uF: μ F
- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- COILS
uH: μ H
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA..., μ PA...,
uPB..., μ PB..., uPC..., μ PC...,
uPD..., μ PD...

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
*	1-665-598-11	AC BOARD (AEP,Germany) *****				< CONNECTOR >	
	1-533-293-11	FUSE HOLDER < CONNECTOR >		* CN801	1-568-832-11	SOCKET, CONNECTOR 13P	
				CN802	1-562-087-00	SOCKET, CONNECTOR 4P	
				CN804	1-562-087-00	SOCKET, CONNECTOR 4P	
				CN806	1-774-913-11	PIN, CONNECTOR 4P	
				* CN814	1-568-832-11	SOCKET, CONNECTOR 13P	
$\triangle$ CN7	1-526-794-11	OUTLET, AC				< DIODE >	
$\triangle$ CN8	1-526-794-11	OUTLET, AC					
$\triangle$ CN9	1-526-794-11	OUTLET, AC < FUSE >		D801	8-719-985-59	DIODE HZS4CLL	
				D802	8-719-987-63	DIODE 1N4148M	
$\triangle$ F2	1-532-464-51	FUSE, TIME LAG 2.5A/250V *****		D803	8-719-987-63	DIODE 1N4148M	
				D804	8-719-987-63	DIODE 1N4148M	
				D805	8-719-987-63	DIODE 1N4148M	
*	1-665-595-11	AC SW BOARD *****		D806	8-719-987-63	DIODE 1N4148M	
		< CONNECTOR >		D807	8-719-313-50	DIODE SEL6810A-TH12 (SOURCE DIRECT)	
				D808	8-719-313-50	DIODE SEL6810A-TH12 (PHONO)	
* CN953	1-564-506-11	PLUG, CONNECTOR 3P		D809	8-719-313-50	DIODE SEL6810A-TH12 (TUNER)	
CN955	1-564-505-11	PLUG, CONNECTOR 2P < SWITCH >		D810	8-719-313-50	DIODE SEL6810A-TH12 (CD)	
S1	1-554-920-11	SWITCH, PUSH (AC POWER)(1 KEY) *****		D811	8-719-313-50	DIODE SEL6810A-TH12 (AUX)	
				D812	8-719-313-50	DIODE SEL6810A-TH12 (TAPE2/MD)	
*	A-4398-017-A	CONTROL BOARD, COMPLETE (FE310R) *****		D813	8-719-313-50	DIODE SEL6810A-TH12 (TAPE1/DAT)	
				D814	8-719-987-63	DIODE 1N4148M	
* A-4398-021-A		CONTROL BOARD, COMPLETE (FE510R) *****		D816	8-719-987-63	DIODE 1N4148M	
		< CAPACITOR >		D817	8-719-987-63	DIODE 1N4148M	
				D819	8-719-987-63	DIODE 1N4148M	
C201	1-136-153-00	FILM 0.01uF 5% 50V		D820	8-719-024-99	DIODE 11ES2-NTA2B	
C202	1-136-165-00	FILM 0.1uF 5% 50V		D823	8-719-313-50	DIODE SEL6810A-TH12 (TAPE1 MONITOR) (FE510R)	
C203	1-130-477-00	MYLAR 0.0033uF 5% 50V				< IC >	
C204	1-136-159-00	FILM 0.033uF 5% 50V		IC801	8-759-392-41	IC TMP47C103N	
C205	1-130-473-00	MYLAR 0.0015uF 5% 50V		IC802	8-759-962-08	IC BA6208	
						< TRANSISTOR >	
C251	1-136-153-00	FILM 0.01uF 5% 50V		Q801	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C252	1-136-165-00	FILM 0.1uF 5% 50V		Q802	8-729-620-05	TRANSISTOR 2SC2603-EF	
C253	1-130-477-00	MYLAR 0.0033uF 5% 50V		Q803	8-729-661-98	TRANSISTOR RT1P141SK-TP (FE510R)	
C254	1-136-159-00	FILM 0.033uF 5% 50V		Q804	8-729-661-98	TRANSISTOR RT1P141SK-TP	
C255	1-130-473-00	MYLAR 0.0015uF 5% 50V		Q806	8-729-620-05	TRANSISTOR 2SC2603-EF	
C801	1-126-096-11	ELECT 10uF 20% 35V		Q807	8-729-620-05	TRANSISTOR 2SC2603-EF	
C802	1-126-916-11	ELECT 1000uF 20% 6.3V		Q808	8-729-620-05	TRANSISTOR 2SC2603-EF	
C803	1-164-159-11	CERAMIC 0.1uF 50V		Q810	8-729-661-94	TRANSISTOR RT1N141SK-TP	
C806	1-162-294-31	CERAMIC 0.001uF 10% 50V		Q811	8-729-661-94	TRANSISTOR RT1N141SK-TP	
C807	1-126-096-11	ELECT 10uF 20% 35V				< RESISTOR >	
				R201	1-249-433-11	CARBON 22K 5% 1/4W	
C808	1-124-463-00	ELECT 0.1uF 20% 50V		R202	1-249-421-11	CARBON 2.2K 5% 1/4W F	
C809	1-126-301-11	ELECT 1uF 20% 50V		R203	1-249-427-11	CARBON 6.8K 5% 1/4W F	
				R204	1-249-415-11	CARBON 680 5% 1/4W F	
				R205	1-249-421-11	CARBON 2.2K 5% 1/4W F	

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
C105	1-162-282-31	CERAMIC	100PF	10%	50V	C904	1-126-224-11	ELECT	4700uF	20%	42V
C106	1-130-480-00	MYLAR	0.0056uF	5%	50V						(FE310R)
C107	1-130-473-00	MYLAR	0.0015uF	5%	50V	C904	1-126-307-11	ELECT	6800uF	20%	50V
C108	1-126-964-11	ELECT	10uF	20%	50V						(FE510R)
C109	1-126-964-11	ELECT	10uF	20%	50V	C905	1-126-948-11	ELECT	100uF	20%	35V
											(FE310R)
C112	1-162-294-31	CERAMIC	0.001uF	10%	50V	C905	1-126-968-11	ELECT	100uF	20%	50V
C114	1-162-306-11	CERAMIC	0.01uF	20%	16V						(FE510R)
C115	1-126-963-11	ELECT	4.7uF	20%	50V	C906	1-126-948-11	ELECT	100uF	20%	35V
C151	1-162-282-31	CERAMIC	100PF	10%	50V						(FE310R)
C152	1-162-286-31	CERAMIC	220PF	10%	50V	C906	1-126-968-11	ELECT	100uF	20%	50V
											(FE510R)
C153	1-126-963-11	ELECT	4.7uF	20%	50V	C907	1-164-097-11	CERAMIC	0.022uF		50V
C154	1-126-967-11	ELECT	47uF	20%	16V	C908	1-126-967-11	ELECT	47uF	20%	16V
C155	1-162-282-31	CERAMIC	100PF	10%	50V						
C156	1-130-480-00	MYLAR	0.0056uF	5%	50V	C909	1-126-967-11	ELECT	47uF	20%	16V
C157	1-130-473-00	MYLAR	0.0015uF	5%	50V	C910	1-126-933-11	ELECT	100uF	20%	16V
						C911	1-126-933-11	ELECT	100uF	20%	16V
C158	1-126-964-11	ELECT	10uF	20%	50V	C915	1-126-933-11	ELECT	100uF	20%	16V
C301	1-126-964-11	ELECT	10uF	20%	50V	C916	1-126-963-11	ELECT	4.7uF	20%	50V
C302	1-162-290-31	CERAMIC	470PF	10%	50V						
C303	1-162-282-31	CERAMIC	100PF	10%	50V			< CONNECTOR >			
C305	1-126-933-11	ELECT	100uF	20%	10V						
						* CN811	1-568-832-11	SOCKET, CONNECTOR 13P			
C306	1-126-967-11	ELECT	47uF	20%	50V	CN812	1-564-506-11	PLUG, CONNECTOR 3P (FE510R)			
C307	1-126-965-11	ELECT	22uF	20%	50V	CN813	1-566-212-11	PIN, CONNECTOR 3P (FE510R)			
C308	1-126-965-11	ELECT	22uF	20%	50V	* CN815	1-568-832-11	SOCKET, CONNECTOR 13P			
C309	1-126-965-11	ELECT	22uF	20%	50V	* CN951	1-564-104-00	PIN, CONNECTOR (B3P-VH) 3P			
C310	1-126-968-11	ELECT	100uF	20%	50V						
					(FE310R)	CN952	1-691-768-11	PLUG (MICRO CONNECTOR) 6P			
C310	1-126-969-11	ELECT	220uF	20%	50V			< DIODE >			
					(FE510R)						
C311	1-136-495-11	FILM	0.068uF	5%	50V	D101	8-719-987-63	DIODE 1N4148M (FE510R)			
C312	1-136-495-11	FILM	0.068uF	5%	50V	D301	8-719-987-63	DIODE 1N4148M			
C313	1-126-967-11	ELECT	47uF	20%	16V	D302	8-719-987-63	DIODE 1N4148M			
C314	1-162-195-31	CERAMIC	4.7PF	10%	50V	D351	8-719-987-63	DIODE 1N4148M			
C315	1-126-968-11	ELECT	100uF	20%	50V	D352	8-719-987-63	DIODE 1N4148M			
					(FE310R)						
C315	1-126-969-11	ELECT	220uF	20%	50V	D601	8-719-987-63	DIODE 1N4148M			
					(FE510R)	D902	8-719-001-64	DIODE UZL-12L2			
						D903	8-719-001-64	DIODE UZL-12L2			
								< TERMINAL >			
C351	1-126-964-11	ELECT	10uF	20%	50V						
C352	1-162-290-31	CERAMIC	470PF	10%	50V						
C353	1-162-282-31	CERAMIC	100PF	10%	50V						
C355	1-126-933-11	ELECT	100uF	20%	10V	* EB1	1-537-738-21	TERMINAL, EARTH			
C356	1-126-967-11	ELECT	47uF	20%	50V			< IC >			
C361	1-136-495-11	FILM	0.068uF	5%	50V	IC101	8-759-805-13	IC LC7821			
C362	1-136-495-11	FILM	0.068uF	5%	50V	IC102	8-759-184-02	IC NJM2068L-D			
C363	1-126-967-11	ELECT	47uF	20%	16V	IC301	8-749-900-24	IC STK-4162MK2 (FE310R)			
C364	1-162-195-31	CERAMIC	4.7PF	10%	50V	IC301	8-749-941-91	IC STK-4191V (FE510R)			
C601	1-126-961-11	ELECT	2.2uF	20%	50V	IC601	8-759-111-68	IC uPC1237HA			
C602	1-126-923-11	ELECT	220uF	20%	10V						
C603	1-126-967-11	ELECT	47uF	20%	16V	IC901	8-759-701-75	IC NJM7805FA			
C812	1-164-159-11	CERAMIC	0.1uF		50V			< JACK >			
					(FE510R)						
C900	1-136-153-00	FILM	0.01uF	5%	50V						
C903	1-126-224-11	ELECT	4700uF	20%	42V	J101	1-774-411-11	JACK, PIN 6P (PHONO,TUNER,CD)			
					(FE310R)	J102	1-573-028-31	JACK, PIN 4P (AUX,TAPE2/MD(REC OUT)			
C903	1-126-307-11	ELECT	6800uF	20%	50V	J103	1-770-015-11	JACK, PIN 6P (TAPE1/DAT,TAPE2/MD(IN))			
					(FE510R)			< COIL >			
						L301	1-420-872-00	COIL, AIR-CORE			
						L351	1-420-872-00	COIL, AIR-CORE			

Ref. No.	Part No.	Description				Remarks
< TRANSISTOR >						
Q101	8-729-141-26	TRANSISTOR	2SC3622A-LK			
Q102	8-729-119-77	TRANSISTOR	2SA1175-FEK			
Q103	8-729-620-05	TRANSISTOR	2SC2603-EF (FE510R)			
Q104	8-729-620-05	TRANSISTOR	2SC2603-EF			
Q151	8-729-141-26	TRANSISTOR	2SC3622A-LK			
Q301	8-729-140-82	TRANSISTOR	2SA988-PAFAEA			
Q351	8-729-140-82	TRANSISTOR	2SA988-PAFAEA			
Q901	8-729-119-78	TRANSISTOR	2SC2785-HFE			
Q902	8-729-201-53	TRANSISTOR	2SA1015-GR			
Q903	8-729-620-05	TRANSISTOR	2SC2603-EF			
< RESISTOR >						
R101	1-249-418-11	CARBON	1.2K	5%	1/4W	F
R102	1-249-411-11	CARBON	330	5%	1/4W	
R104	1-249-437-11	CARBON	47K	5%	1/4W	
R105	1-249-416-11	CARBON	820	5%	1/4W	F
R106	1-247-897-11	CARBON	560K	5%	1/4W	
R107	1-249-437-11	CARBON	47K	5%	1/4W	
R108	1-249-441-11	CARBON	100K	5%	1/4W	
R109	1-249-409-11	CARBON	220	5%	1/4W	F
R110	1-249-417-11	CARBON	1K	5%	1/4W	F
R111	1-249-417-11	CARBON	1K	5%	1/4W	F
R112	1-249-417-11	CARBON	1K	5%	1/4W	F
R113	1-249-417-11	CARBON	1K	5%	1/4W	F
R114	1-249-417-11	CARBON	1K	5%	1/4W	F
R115	1-249-417-11	CARBON	1K	5%	1/4W	F
R116	1-249-417-11	CARBON	1K	5%	1/4W	F
R117	1-249-417-11	CARBON	1K	5%	1/4W	F
R118	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R119	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R120	1-249-409-11	CARBON	220	5%	1/4W	F
R121	1-249-437-11	CARBON	47K	5%	1/4W	
R122	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R123	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R124	1-249-425-11	CARBON	4.7K	5%	1/4W	F (FE510R)
R125	1-249-441-11	CARBON	100K	5%	1/4W	
R126	1-249-441-11	CARBON	100K	5%	1/4W	
R151	1-249-418-11	CARBON	1.2K	5%	1/4W	F
R152	1-249-411-11	CARBON	330	5%	1/4W	
R154	1-249-437-11	CARBON	47K	5%	1/4W	
R155	1-249-416-11	CARBON	820	5%	1/4W	F
R156	1-247-897-11	CARBON	560K	5%	1/4W	
R157	1-249-437-11	CARBON	47K	5%	1/4W	
R158	1-249-441-11	CARBON	100K	5%	1/4W	
R159	1-249-409-11	CARBON	220	5%	1/4W	F
R160	1-249-417-11	CARBON	1K	5%	1/4W	F
R161	1-249-417-11	CARBON	1K	5%	1/4W	F
R162	1-249-417-11	CARBON	1K	5%	1/4W	F
R163	1-249-417-11	CARBON	1K	5%	1/4W	F
R164	1-249-417-11	CARBON	1K	5%	1/4W	F
R165	1-249-417-11	CARBON	1K	5%	1/4W	F
R166	1-249-417-11	CARBON	1K	5%	1/4W	F
R167	1-249-417-11	CARBON	1K	5%	1/4W	F
R168	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R176	1-249-441-11	CARBON	100K	5%	1/4W	
R207	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R257	1-249-425-11	CARBON	4.7K	5%	1/4W	F

Ref. No.	Part No.	Description	Remarks			
R301	1-249-439-11	CARBON	68K	5%	1/4W	
R302	1-249-417-11	CARBON	1K	5%	1/4W	F
R303	1-249-415-11	CARBON	680	5%	1/4W	F
R304	1-249-439-11	CARBON	68K	5%	1/4W	
R305	1-249-421-11	CARBON	2.2K	5%	1/4W	F (FE310R)
R305	1-247-843-11	CARBON	3.3K	5%	1/4W	(FE510R)
R306	1-260-103-11	CARBON	2.2K	5%	1/2W	(FE310R)
R306	1-260-105-11	CARBON	3.3K	5%	1/2W	(FE510R)
R307	1-249-405-11	CARBON	100	5%	1/4W	F
R308	1-260-099-11	CARBON	1K	5%	1/2W	
R309	1-260-099-11	CARBON	1K	5%	1/2W	
R310	1-249-405-11	CARBON	100	5%	1/4W	F
R312	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R313	1-249-431-11	CARBON	15K	5%	1/4W	
△ R314	1-217-151-00	RES, METAL PLATE	0.22			
R315	1-249-437-11	CARBON	47K	5%	1/4W	
R316	1-247-727-11	CARBON	10	5%	1/2W	
R318	1-249-393-11	CARBON	10	5%	1/4W	F
R320	1-249-385-11	CARBON	2.2	5%	1/6W	F
R321	1-249-385-11	CARBON	2.2	5%	1/6W	F
R322	1-249-385-11	CARBON	2.2	5%	1/6W	F
R351	1-249-439-11	CARBON	68K	5%	1/4W	
R352	1-249-417-11	CARBON	1K	5%	1/4W	F
R353	1-249-415-11	CARBON	680	5%	1/4W	F
R354	1-249-439-11	CARBON	68K	5%	1/4W	
R355	1-249-421-11	CARBON	2.2K	5%	1/4W	F (FE310R)
R355	1-247-843-11	CARBON	3.3K	5%	1/4W	(FE510R)
R356	1-260-103-11	CARBON	2.2K	5%	1/2W	(FE310R)
R356	1-260-105-11	CARBON	3.3K	5%	1/2W	(FE510R)
R362	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R363	1-249-431-11	CARBON	15K	5%	1/4W	
△ R364	1-217-151-00	RES, METAL PLATE	0.22			
R365	1-249-439-11	CARBON	68K	5%	1/4W	
R366	1-247-727-11	CARBON	10	5%	1/2W	
R368	1-249-393-11	CARBON	10	5%	1/4W	F
R601	1-247-745-11	CARBON	330	5%	1/2W	F (FE310R)
R601	1-247-747-11	CARBON	470	5%	1/2W	(FE510R)
R602	1-247-745-11	CARBON	330	5%	1/2W	F (FE310R)
R602	1-247-747-11	CARBON	470	5%	1/2W	(FE510R)
R603	1-249-417-11	CARBON	1K	5%	1/4W	F
R604	1-249-441-11	CARBON	100K	5%	1/4W	
R605	1-249-439-11	CARBON	68K	5%	1/4W	
R606	1-249-431-11	CARBON	15K	5%	1/4W	
R607	1-247-756-11	CARBON	2.2K	5%	1/2W	
R608	1-247-756-11	CARBON	2.2K	5%	1/2W	

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Replace only with part number specified.

MAIN

RELAY AC

RELAY DC

SIRCS

SP

Ref. No.	Part No.	Description			Remarks
R832	1-249-393-11	CARBON	10	5%	1/4W F (FE510R)
R902	1-247-750-11	CARBON	680	5%	1/2W F
R903	1-247-750-11	CARBON	680	5%	1/2W F
R904	1-247-750-11	CARBON	680	5%	1/2W F
R905	1-247-750-11	CARBON	680	5%	1/2W F
R907	1-247-752-11	CARBON	1K	5%	1/2W
R908	1-247-752-11	CARBON	1K	5%	1/2W
R910	1-249-429-11	CARBON	10K	5%	1/4W
R912	1-249-429-11	CARBON	10K	5%	1/4W
R916	1-249-419-11	CARBON	1.5K	5%	1/4W F
< RELAY >					
RY101	1-515-614-11	RELAY (FE510R)			
RY601	1-515-920-11	RELAY (24V)			

*	1-659-962-11	RELAY AC BOARD (UK)			

*	1-665-593-11	RELAY AC BOARD (AEP,Germany)			

	1-533-293-11	FUSE HOLDER			
< CONNECTOR >					
* CN1	1-580-230-31	PIN, CONNECTOR (PC BOARD) 2P			
CN2	1-564-321-00	PIN, CONNECTOR 2P (AEP,Germany)			
* CN954	1-564-506-11	PLUG, CONNECTOR 3P (AEP,Germany)			
< DIODE >					
D911	8-719-987-63	DIODE 1N4148M (AEP,Germany)			
< FUSE >					
△ F1	1-532-503-51	FUSE, TIME LAG 1.6A/250V			
< RELAY >					
△ RY1	1-755-018-11	RELAY (AEP,Germany)			
< TRANSFORMER >					
△ T1	1-429-448-11	TRANSFORMER, POWER (FE510R)			
△ T1	1-429-452-11	TRANSFORMER, POWER (FE310R)			

*	1-665-597-11	RELAY DC BOARD			

< CAPACITOR >					
C901	1-106-379-12	MYLAR	0.033uF	5%	200V
C902	1-106-379-12	MYLAR	0.033uF	5%	200V
C912	1-136-153-00	FILM	0.01uF	5%	50V
C913	1-126-941-11	ELECT	470uF	20%	25V
< CONNECTOR >					
* CN901	1-564-104-00	PIN, CONNECTOR (B3P-VH) 3P			
CN902	1-691-768-11	PLUG (MICRO CONNECTOR) 6P			
* CN904	1-564-506-11	PLUG, CONNECTOR 3P			

Ref. No.	Part No.	Description	Remarks		
< DIODE >					
D901	8-719-028-23	DIODE D3SBA20-4101 (FE310R)			
D901	8-719-302-37	DIODE RBV-602 (FE510R)			
D904	8-719-024-99	DIODE 11ES2-NTA2B			
D905	8-719-024-99	DIODE 11ES2-NTA2B			
D906	8-719-024-99	DIODE 11ES2-NTA2B			
D907	8-719-024-99	DIODE 11ES2-NTA2B			
D908	8-719-024-99	DIODE 11ES2-NTA2B			
D909	8-719-024-99	DIODE 11ES2-NTA2B			
D910	8-719-987-63	DIODE 1N4148M			
< RESISTOR >					
R901	1-249-451-11	CARBON	2.2	5%	1/4W
R913	1-249-431-11	CARBON	15K	5%	1/4W (FE310R)
R913	1-249-433-11	CARBON	22K	5%	1/4W (FE510R)
< RELAY >					
RY901	1-755-018-11	RELAY			
RY902	1-755-018-11	RELAY			

*	1-665-591-11	SIRCS BOARD			

< CONNECTOR >					
CN807	1-562-087-00	SOCKET, CONNECTOR 4P			
< DIODE >					
D822	8-719-313-48	DIODE SEL6210S-TH12 (STANDBY)			
< IC >					
IC803	8-759-373-49	IC NJL54H400			
< RESISTOR >					
R833	1-249-421-11	CARBON	2.2K	5%	1/4W F

*	1-665-599-11	SP BOARD			

< TERMINAL >					
TM301	1-694-261-11	TERMINAL BOARD (SP)(SPEAKERS)			

MISCELLANEOUS					

14	1-769-983-11	WIRE (FLAT TYPE) (13 CORE)			
△ CN7	1-526-794-11	OUTLET, AC (AEP,Germany)			
△ CN8	1-526-794-11	OUTLET, AC (AEP,Germany)			
△ CN9	1-526-794-11	OUTLET, AC (AEP,Germany)			
△ CP1	1-575-651-21	CORD, POWER (AEP,Germany)			
△ CP1	1-696-586-11	CORD, POWER (UK)			
△ T1	1-429-448-11	TRANSFORMER, POWER (FE510R)			
△ T1	1-429-452-11	TRANSFORMER, POWER (FE310R)			

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<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>
ACCESSORIES & PACKING MATERIALS			

	1-473-655-11	REMOTE COMMANDER (RM-S315)	
	3-860-499-11	MANUAL, INSTRUCTION	
		(ENGLISH,FRENCH,SPANISH,PORTUGUESE)	
	3-860-499-21	MANUAL, INSTRUCTION	
		(GERMAN,DUTCH,SWEDISH,ITALIAN)	
		(AEP,Germany)	
	4-981-643-01	COVER, BATTERY (FOR RM-S315)	

HARDWARE LIST			

#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
#2	7-685-872-09	SCREW +BVTT 3X8 (S)	
#3	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	
#4	7-685-880-09	SCREW +BVTT 4X6 (S)	