

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®

SECTION 1 GENERAL

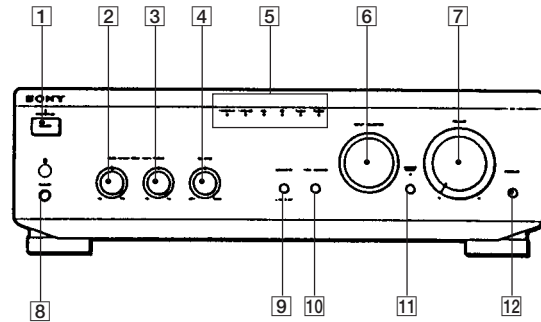
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This section is extracted from instruction manual.

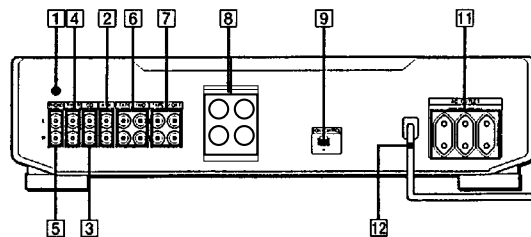
1-1. INDEX TO PARTS AND CONTROLS

Front Panel



- 1 SYSTEM POWER switch
- 2 BASS control
- 3 TREBLE control
- 4 BALANCE control
- 5 INPUT SELECTOR indicators
- 6 INPUT SELECTOR
- 7 VOLUME control
- 8 PHONES jack
- 9 LOUDNESS switch
- 10 TAPE 1 MONITOR switch (TA-FE510R only)
- 11 SOURCE DIRECT switch
- 12 EON LINK switch (TA-FE510R only)

Rear Panel



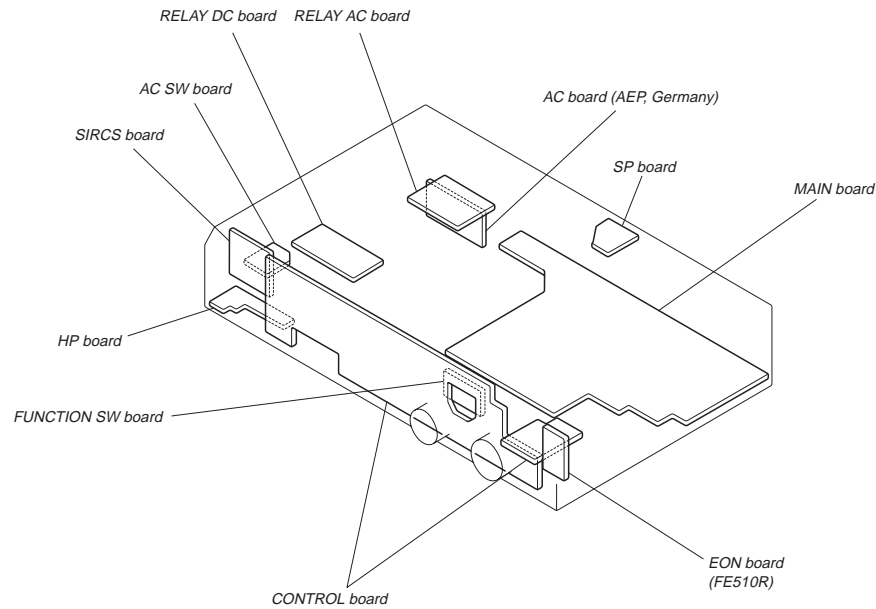
- 1 ∇ (SIGNAL GND)
- 2 AUX
- 3 CD
- 4 TUNER
- 5 PHONO
- 6 TAPE2/MD
- 7 TAPE1/DAT
- 8 SPEAKERS
- 9 EON CONTROL IN FE510R only)
- 11 AC OUTLET (unavailable on the UK model)
- 12 Mains lead

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 2 DIAGRAMS

2-1. CIRCUIT BOARDS LOCATION

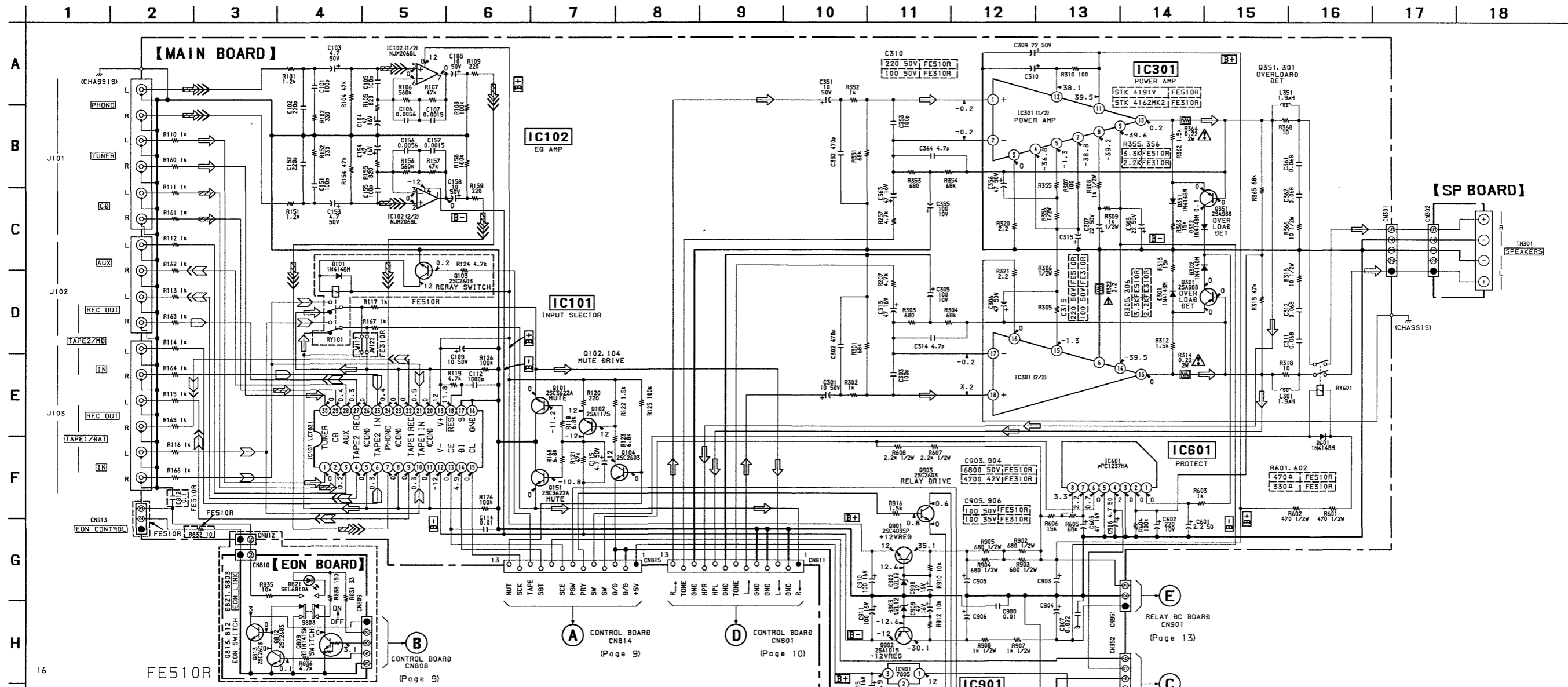


2-2. IC PIN FUNCTION DESCRIPTION

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 "I" 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

- 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 $1/4\text{W}$ or less unless otherwise specified.
- : nonflammable resistor.
- : panel designation.

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

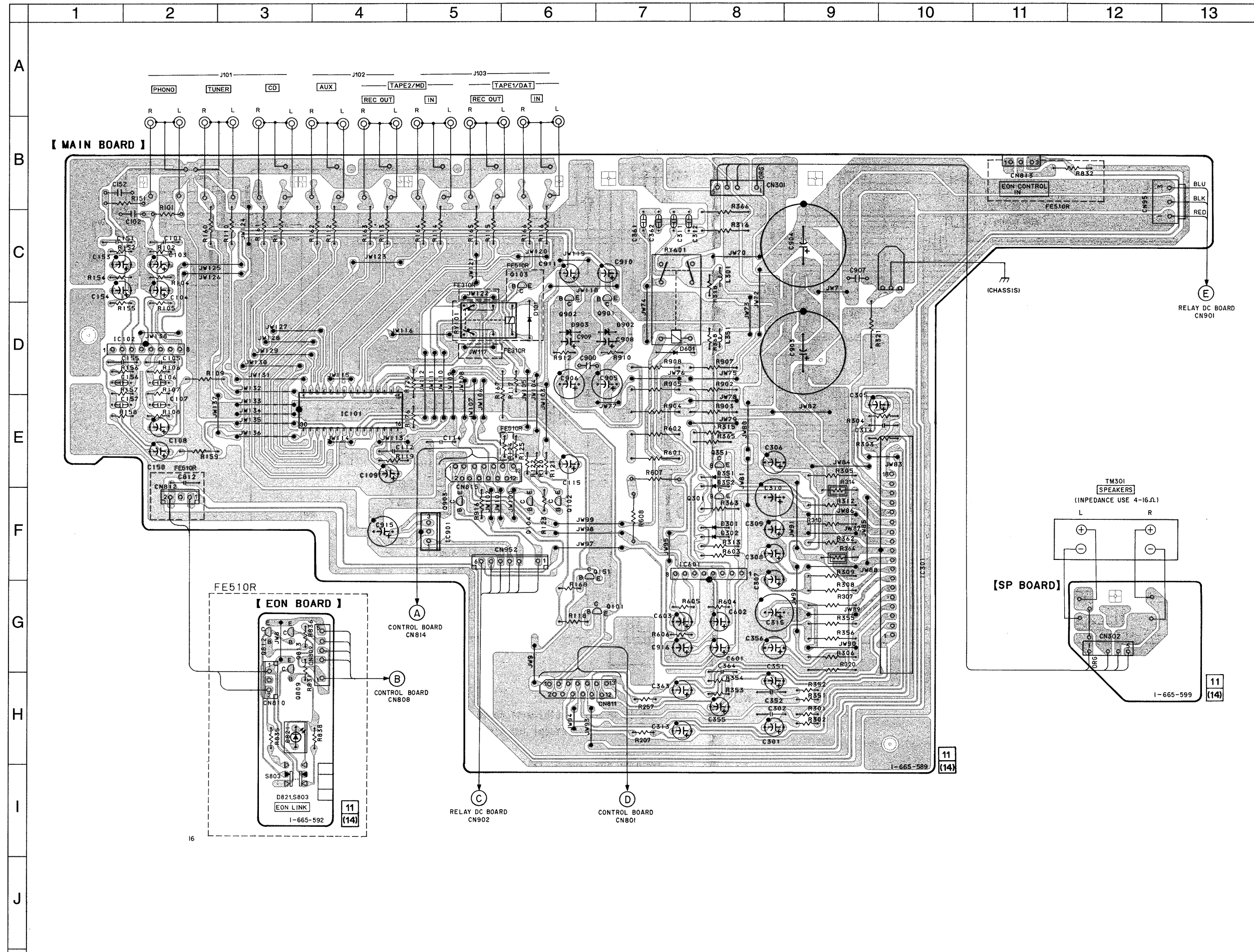
- Voltages are taken with a VOM (Input impedance $10\text{M}\Omega$). Voltage variations may be noted due to normal production tolerances.
- : B+ Line.
- : B- Line.
- : adjustment for repair.
- Voltages are dc with respect to ground under no-signal conditions. no mark: TUNER

- Signal path.
- : TUNER
- : PB (TAPE1/BAT)
- : PB (TAPE2/MD)
- : REC
- : CD
- : PHONO

Note:

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

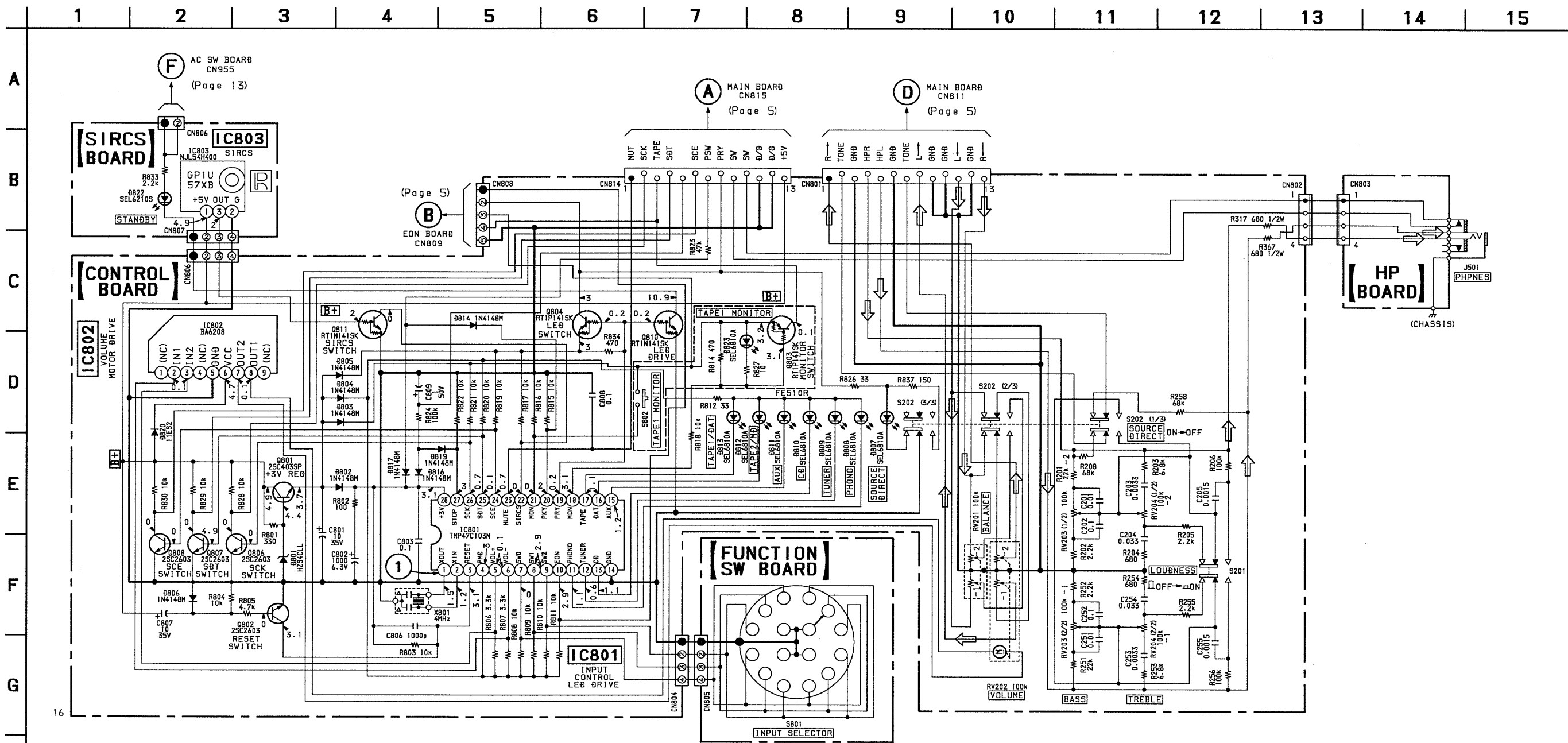
2-4. PRINTED WIRING BOARD — MAIN SECTION — • See page 3 for Circuit Boards Location.



• 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.

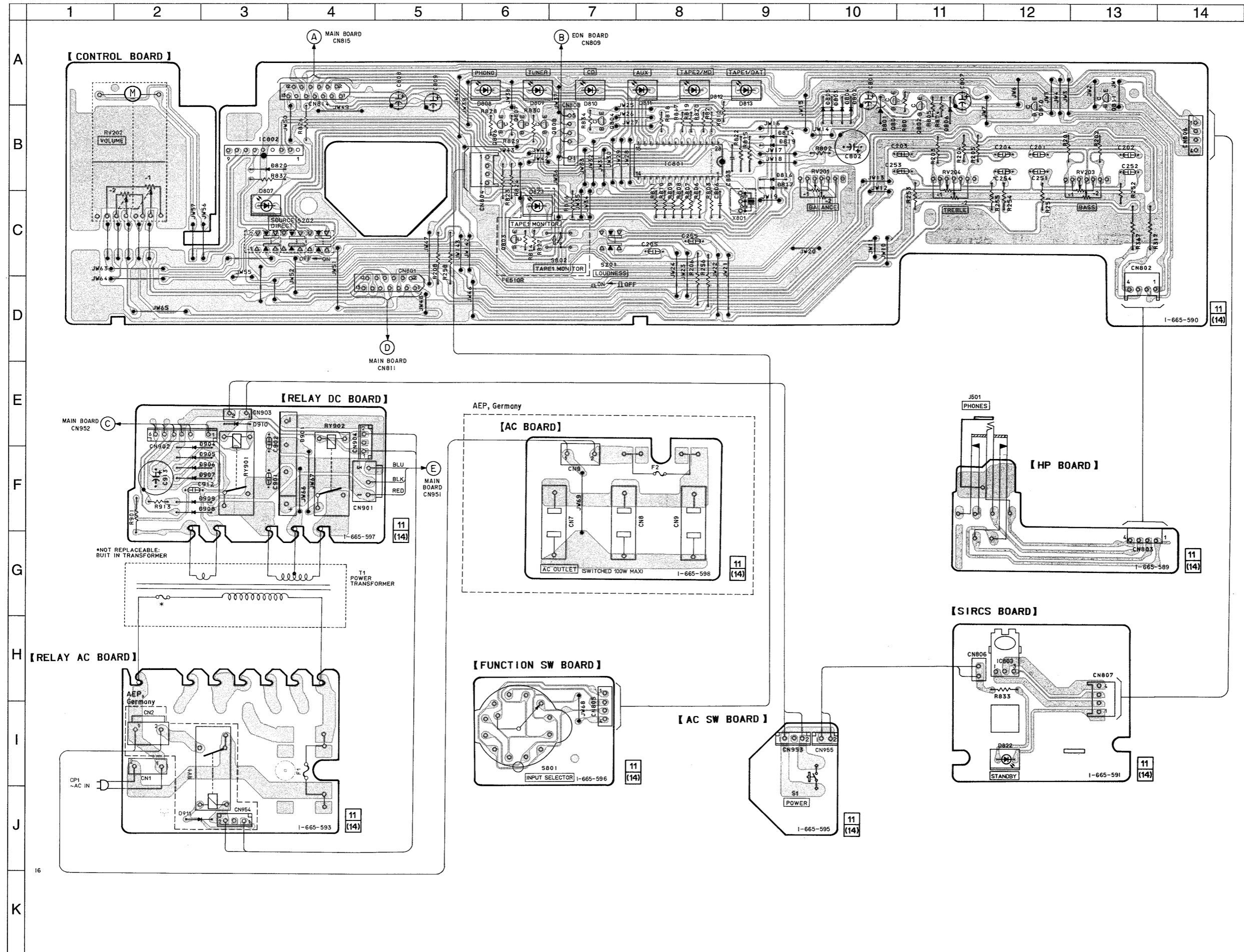


NOTE

- All capacitors are in μF unless otherwise noted. $\text{pF} = \mu\text{F} / 100$. 50W or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
- : nonflammable resistor.
- : panel designation.
- : B+ Line.
- : B- Line.
- : adjustment for repair.
- Voltages are dc with respect to ground under no-signal conditions. no mark: TUNER
- Voltages are taken with a VOM (input impedance $10\text{M}\Omega$). Voltage variations may be noted due to normal production tolerances.
- Signal path. : TUNER

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

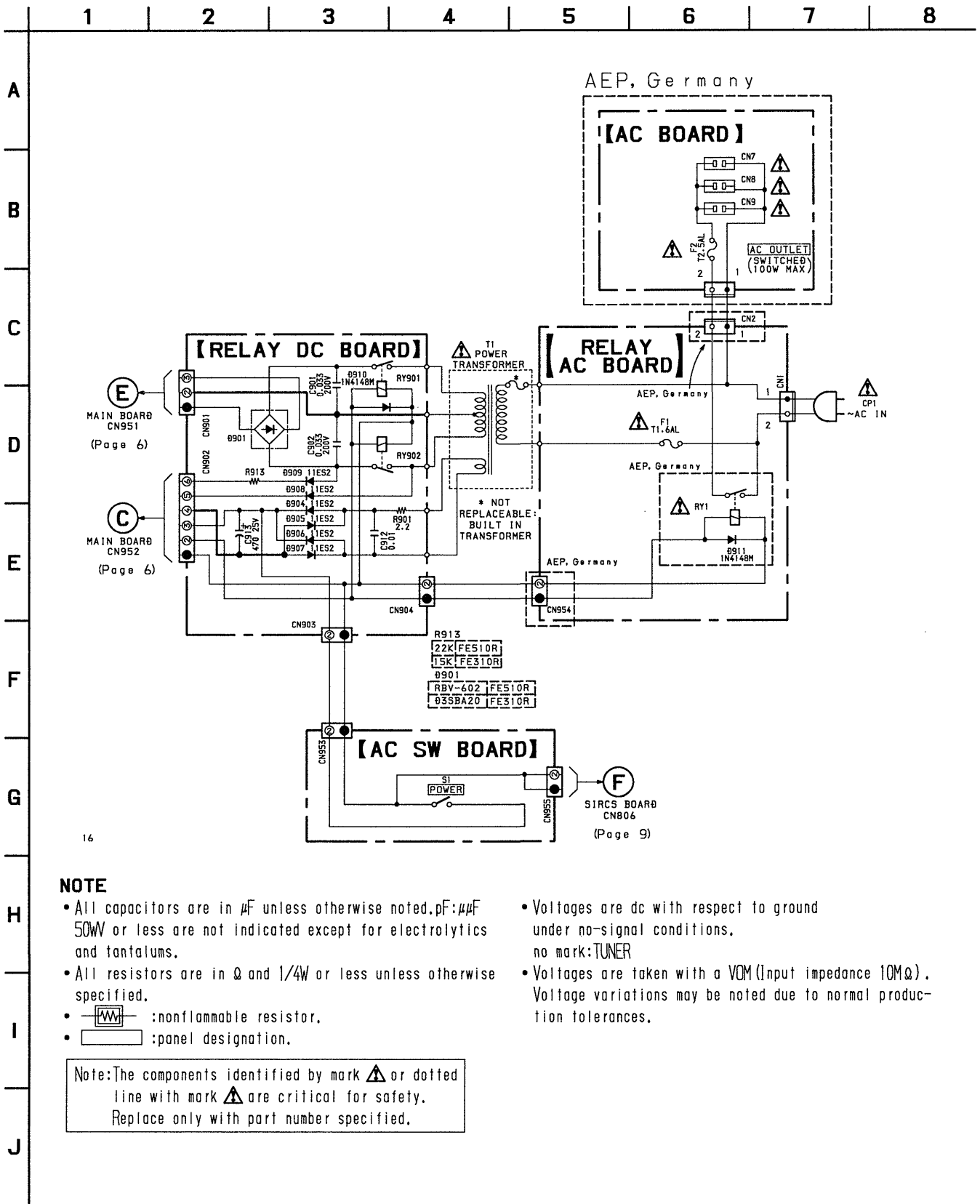
2-6. PRINTED WIRING BOARD — PANEL SECTION — • See page 3 for Circuit Boards Location.



• Semiconductor Location

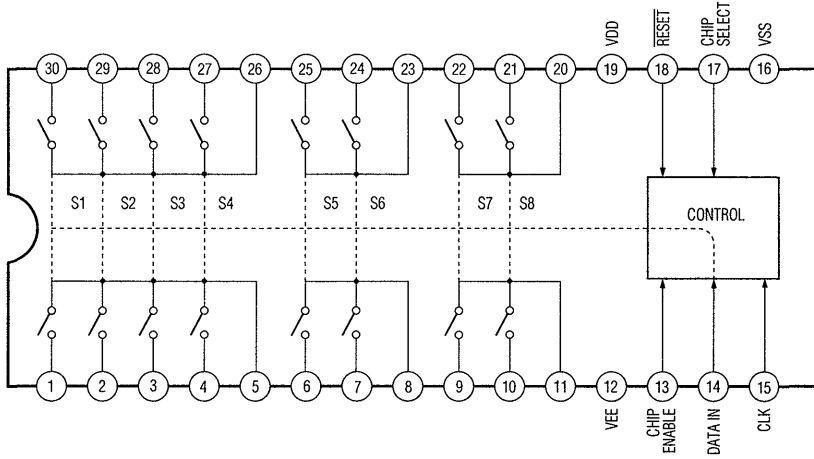
Ref. No.	Location
D801	B-10
D802	A-10
D803	A-10
D804	A-10
D805	A-10
D806	B-11
D807	C-3
D808	A-6
D809	A-6
D810	A-7
D811	A-8
D812	A-8
D813	A-9
D814	B-9
D816	B-9
D817	B-9
D819	B-9
D820	B-3
D822	I-12
D823	C-6
D901	E-4
D904	F-3
D905	F-6
D906	F-3
D907	F-7
D908	F-3
D909	F-3
D910	E-3
D911	J-2
IC801	B-8
IC802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

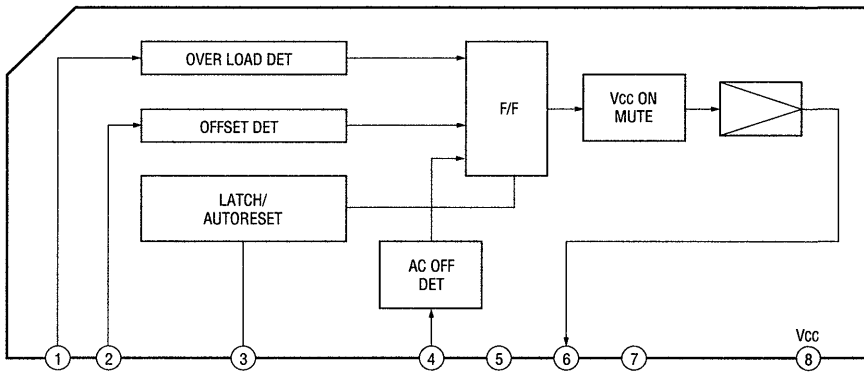


• IC Block Diagrams

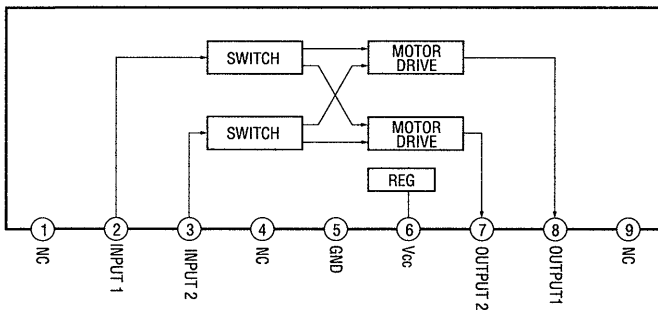
IC101 LC7821



IC601 μ PC1237HA



IC802 BA6208



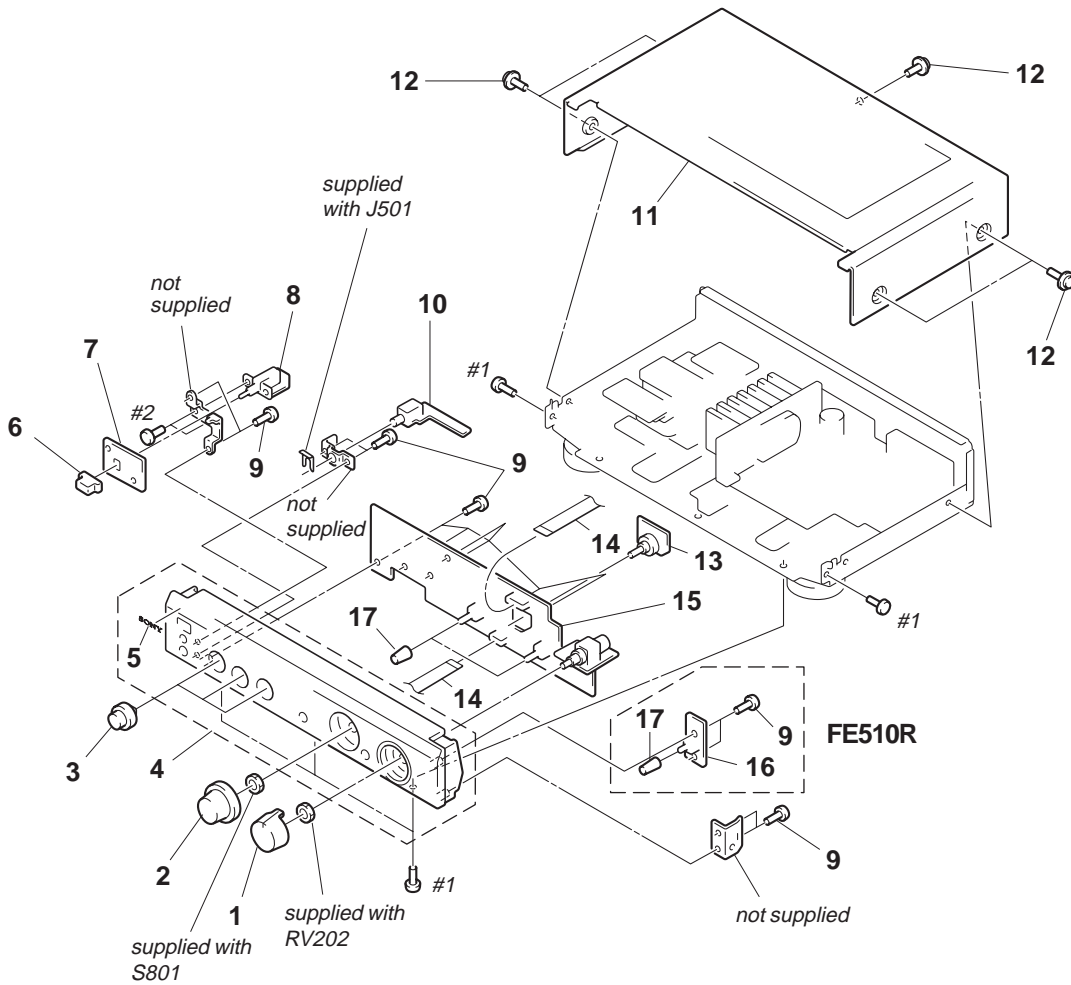
SECTION 3 EXPLODED VIEWS

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 part list.

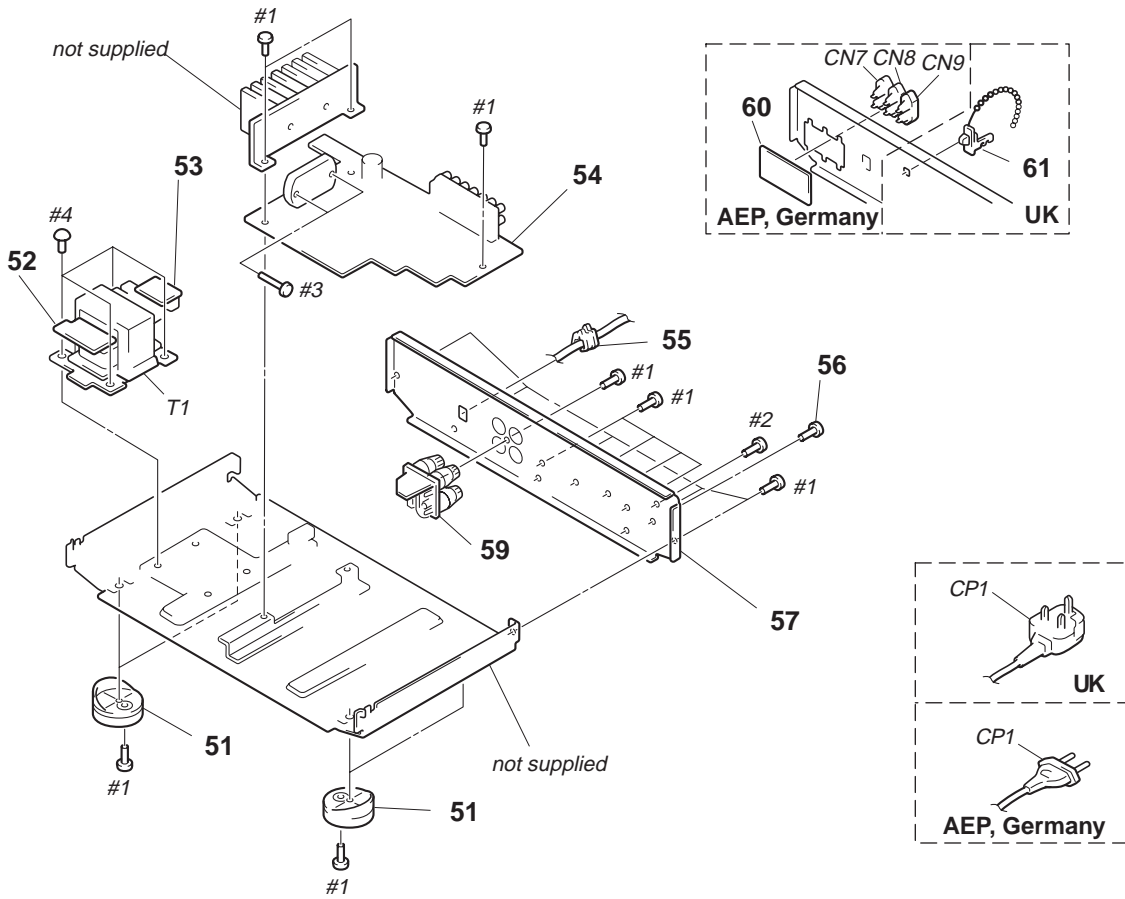
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

(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 Δ or dotted line with mark Δ 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	
Δ CN7	1-526-794-11	OUTLET, AC				< DIODE >	
Δ CN8	1-526-794-11	OUTLET, AC		D801	8-719-985-59	DIODE HZS4CLL	
Δ CN9	1-526-794-11	OUTLET, AC < FUSE >		D802	8-719-987-63	DIODE 1N4148M	
				D803	8-719-987-63	DIODE 1N4148M	
Δ F2	1-532-464-51	FUSE, TIME LAG 2.5A/250V *****		D804	8-719-987-63	DIODE 1N4148M	
				D805	8-719-987-63	DIODE 1N4148M	
*	1-665-595-11	AC SW BOARD ***** < CONNECTOR >		D806	8-719-987-63	DIODE 1N4148M	
				D807	8-719-313-50	DIODE SEL6810A-TH12 (SOURCE DIRECT)	
* CN953	1-564-506-11	PLUG, CONNECTOR 3P		D808	8-719-313-50	DIODE SEL6810A-TH12 (PHONO)	
CN955	1-564-505-11	PLUG, CONNECTOR 2P < SWITCH >		D809	8-719-313-50	DIODE SEL6810A-TH12 (TUNER)	
				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) ***** < CAPACITOR >		D816	8-719-987-63	DIODE 1N4148M	
				D817	8-719-987-63	DIODE 1N4148M	
				D819	8-719-987-63	DIODE 1N4148M	
				D820	8-719-024-99	DIODE 11ES2-NTA2B	
				D823	8-719-313-50	DIODE SEL6810A-TH12 (TAPE1 MONITOR) (FE510R)	
						< IC >	
C201	1-136-153-00	FILM 0.01uF 5% 50V		IC801	8-759-392-41	IC TMP47C103N	
C202	1-136-165-00	FILM 0.1uF 5% 50V		IC802	8-759-962-08	IC BA6208	
C203	1-130-477-00	MYLAR 0.0033uF 5% 50V				< TRANSISTOR >	
C204	1-136-159-00	FILM 0.033uF 5% 50V		Q801	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C205	1-130-473-00	MYLAR 0.0015uF 5% 50V		Q802	8-729-620-05	TRANSISTOR 2SC2603-EF	
				Q803	8-729-661-98	TRANSISTOR RT1P141SK-TP (FE510R)	
C251	1-136-153-00	FILM 0.01uF 5% 50V		Q804	8-729-661-98	TRANSISTOR RT1P141SK-TP	
C252	1-136-165-00	FILM 0.1uF 5% 50V		Q806	8-729-620-05	TRANSISTOR 2SC2603-EF	
C253	1-130-477-00	MYLAR 0.0033uF 5% 50V				< RESISTOR >	
C254	1-136-159-00	FILM 0.033uF 5% 50V		Q807	8-729-620-05	TRANSISTOR 2SC2603-EF	
C255	1-130-473-00	MYLAR 0.0015uF 5% 50V		Q808	8-729-620-05	TRANSISTOR 2SC2603-EF	
				Q810	8-729-661-94	TRANSISTOR RT1N141SK-TP	
C801	1-126-096-11	ELECT 10uF 20% 35V		Q811	8-729-661-94	TRANSISTOR RT1N141SK-TP	
C802	1-126-916-11	ELECT 1000uF 20% 6.3V				< RESISTOR >	
C803	1-164-159-11	CERAMIC 0.1uF 50V		R201	1-249-433-11	CARBON 22K 5% 1/4W	
C806	1-162-294-31	CERAMIC 0.001uF 10% 50V		R202	1-249-421-11	CARBON 2.2K 5% 1/4W F	
C807	1-126-096-11	ELECT 10uF 20% 35V		R203	1-249-427-11	CARBON 6.8K 5% 1/4W F	
				R204	1-249-415-11	CARBON 680 5% 1/4W F	
C808	1-124-463-00	ELECT 0.1uF 20% 50V		R205	1-249-421-11	CARBON 2.2K 5% 1/4W F	
C809	1-126-301-11	ELECT 1uF 20% 50V					

CONTROL**EON****FUNCTION SW****HP****MAIN**

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R206	1-249-441-11	CARBON	100K 5%	1/4W	*	1-665-592-11	EON BOARD (FE510R) *****
R208	1-249-439-11	CARBON	68K 5%	1/4W			
R251	1-249-433-11	CARBON	22K 5%	1/4W			
R252	1-249-421-11	CARBON	2.2K 5%	1/4W F			< CONNECTOR >
R253	1-249-427-11	CARBON	6.8K 5%	1/4W F			
R254	1-249-415-11	CARBON	680 5%	1/4W F	CN810	1-564-506-11	PLUG, CONNECTOR 3P
R255	1-249-421-11	CARBON	2.2K 5%	1/4W F			< DIODE >
R256	1-249-441-11	CARBON	100K 5%	1/4W			
R258	1-249-439-11	CARBON	68K 5%	1/4W	D821	8-719-313-50	DIODE SEL6810A-TH12 (EON LINE)
R317	1-247-750-11	CARBON	680 5%	1/2W F			< TRANSISTOR >
R367	1-247-750-11	CARBON	680 5%	1/2W F			
R801	1-249-411-11	CARBON	330 5%	1/4W	Q809	8-729-661-94	TRANSISTOR RT1N141SK-TP
R802	1-247-807-31	CARBON	100 5%	1/4W	Q812	8-729-620-05	TRANSISTOR 2SC2603-EF
R803	1-249-429-11	CARBON	10K 5%	1/4W	Q813	8-729-620-05	TRANSISTOR 2SC2603-EF
R804	1-249-429-11	CARBON	10K 5%	1/4W			< RESISTOR >
R805	1-249-425-11	CARBON	4.7K 5%	1/4W F			
R806	1-247-843-11	CARBON	3.3K 5%	1/4W	R831	1-249-399-11	CARBON 33 5% 1/4W F
R807	1-247-843-11	CARBON	3.3K 5%	1/4W	R835	1-249-429-11	CARBON 10K 5% 1/4W
R808	1-249-429-11	CARBON	10K 5%	1/4W	R836	1-249-425-11	CARBON 4.7K 5% 1/4W F
R809	1-249-429-11	CARBON	10K 5%	1/4W	R838	1-249-407-11	CARBON 150 5% 1/4W F
R810	1-249-429-11	CARBON	10K 5%	1/4W			< SWITCH >
R811	1-249-429-11	CARBON	10K 5%	1/4W			
R812	1-249-399-11	CARBON	33 5%	1/4W F	S803	1-571-112-21	SWITCH, PUSH (1 KEY) (EON LINE)
R814	1-249-413-11	CARBON	470 5%	1/4W F			*****
R815	1-249-429-11	CARBON	10K 5%	1/4W	*	1-665-596-11	FUNCTION SW BOARD *****
R816	1-249-429-11	CARBON	10K 5%	1/4W			< CONNECTOR >
R817	1-249-429-11	CARBON	10K 5%	1/4W			
R818	1-249-429-11	CARBON	10K 5%	1/4W			
R819	1-249-429-11	CARBON	10K 5%	1/4W	CN805	1-774-913-11	PIN, CONNECTOR 4P
R820	1-249-429-11	CARBON	10K 5%	1/4W			< SWITCH >
R821	1-249-429-11	CARBON	10K 5%	1/4W			
R822	1-249-429-11	CARBON	10K 5%	1/4W	S801	1-692-974-11	SWITCH, ROTARY (INPUT SELECTOR)
R823	1-249-437-11	CARBON	47K 5%	1/4W			*****
R824	1-249-441-11	CARBON	100K 5%	1/4W			
R826	1-249-399-11	CARBON	33 5%	1/4W F	*	1-659-964-11	HP BOARD *****
R827	1-249-393-11	CARBON	10 5%	1/4W F			< CONNECTOR >
R828	1-249-429-11	CARBON	10K 5%	1/4W			
R829	1-249-429-11	CARBON	10K 5%	1/4W	CN803	1-560-941-11	PIN, CONNECTOR 4P
R830	1-249-429-11	CARBON	10K 5%	1/4W			< JACK >
R834	1-249-413-11	CARBON	470 5%	1/4W F			
R837	1-249-407-11	CARBON	150 5%	1/4W F	J501	1-774-933-11	JACK (LARGE TYPE)(PHONES) (FE310R/FE510R:AEP (BLACK))
		< VARIABLE RESISTOR >			J501	1-580-903-11	JACK, LARGE TYPE (PHONES) (FE510R:AEP (SILVER))
RV201	1-223-396-11	RES, VAR, CARBON 100K/100K (BALANCE)					*****
RV202	1-241-426-11	RES, VAR, CARBON 100KX2 (VOLUME)					
RV203	1-223-397-11	RES, VAR, CARBON 100K/100K (BASS)			*	A-4398-016-A	MAIN BOARD, COMPLETE (FE310R) *****
RV204	1-223-397-11	RES, VAR, CARBON 100K/100K (TREBLE)			*	A-4398-020-A	MAIN BOARD, COMPLETE (FE510R) *****
		< SWITCH >					< CAPACITOR >
S201	1-571-112-21	SWITCH, PUSH (1 KEY)(LOUDNESS)					
S202	1-571-828-11	SWITCH, PUSH (1 KEY)(SOURCE DIRECT)					
S802	1-762-750-11	SWITCH, TACTILE (TAPE1 MONITOR)(FE510R)			C101	1-162-282-31	CERAMIC 100PF 10% 50V
		< VIBRATOR >			C102	1-162-286-31	CERAMIC 220PF 10% 50V
X801	1-577-358-21	VIBRATOR, CERAMIC 4MHZ			C103	1-126-963-11	ELECT 4.7uF 20% 50V
		*****			C104	1-126-967-11	ELECT 47uF 20% 16V

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				
C305	1-126-933-11	ELECT	100uF 20% 10V				
							< CONNECTOR >
C306	1-126-967-11	ELECT	47uF 20% 50V	* CN811	1-568-832-11	SOCKET, CONNECTOR 13P	
C307	1-126-965-11	ELECT	22uF 20% 50V	CN812	1-564-506-11	PLUG, CONNECTOR 3P (FE510R)	
C308	1-126-965-11	ELECT	22uF 20% 50V	CN813	1-566-212-11	PIN, CONNECTOR 3P (FE510R)	
C309	1-126-965-11	ELECT	22uF 20% 50V	* CN815	1-568-832-11	SOCKET, CONNECTOR 13P	
C310	1-126-968-11	ELECT	100uF 20% 50V	* CN951	1-564-104-00	PIN, CONNECTOR (B3P-VH) 3P	
			(FE310R)				
C310	1-126-969-11	ELECT	220uF 20% 50V	CN952	1-691-768-11	PLUG (MICRO CONNECTOR) 6P	
			(FE510R)				
							< DIODE >
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	
C351	1-126-964-11	ELECT	10uF 20% 50V				< TERMINAL >
C352	1-162-290-31	CERAMIC	470PF 10% 50V				
C353	1-162-282-31	CERAMIC	100PF 10% 50V	* EB1	1-537-738-21	TERMINAL, EARTH	
C355	1-126-933-11	ELECT	100uF 20% 10V				< IC >
C356	1-126-967-11	ELECT	47uF 20% 50V				
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	IC901	8-759-701-75	IC NJM7805FA	
C603	1-126-967-11	ELECT	47uF 20% 16V				< JACK >
C812	1-164-159-11	CERAMIC	0.1uF 50V				
			(FE510R)				
C900	1-136-153-00	FILM	0.01uF 5% 50V	J101	1-774-411-11	JACK, PIN 6P (PHONO,TUNER,CD)	
C903	1-126-224-11	ELECT	4700uF 20% 42V	J102	1-573-028-31	JACK, PIN 4P (AUX,TAPE2/MD(REC OUT)	
			(FE310R)	J103	1-770-015-11	JACK, PIN 6P (TAPE1/DAT,TAPE2/MD(IN))	
C903	1-126-307-11	ELECT	6800uF 20% 50V				< COIL >
			(FE510R)				
				L301	1-420-872-00	COIL, AIR-CORE	
				L351	1-420-872-00	COIL, AIR-CORE	

MAIN

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
< TRANSISTOR >				R301	1-249-439-11	CARBON	68K 5% 1/4W
Q101	8-729-141-26	TRANSISTOR	2SC3622A-LK	R302	1-249-417-11	CARBON	1K 5% 1/4W F
Q102	8-729-119-77	TRANSISTOR	2SA1175-FEK	R303	1-249-415-11	CARBON	680 5% 1/4W F
Q103	8-729-620-05	TRANSISTOR	2SC2603-EF (FE510R)	R304	1-249-439-11	CARBON	68K 5% 1/4W
Q104	8-729-620-05	TRANSISTOR	2SC2603-EF	R305	1-249-421-11	CARBON	2.2K 5% 1/4W F (FE310R)
Q151	8-729-141-26	TRANSISTOR	2SC3622A-LK	R305	1-247-843-11	CARBON	3.3K 5% 1/4W (FE510R)
Q301	8-729-140-82	TRANSISTOR	2SA988-PAFAEA	R306	1-260-103-11	CARBON	2.2K 5% 1/2W (FE310R)
Q351	8-729-140-82	TRANSISTOR	2SA988-PAFAEA	R306	1-260-105-11	CARBON	3.3K 5% 1/2W (FE510R)
Q901	8-729-119-78	TRANSISTOR	2SC2785-HFE	R307	1-249-405-11	CARBON	100 5% 1/4W F
Q902	8-729-201-53	TRANSISTOR	2SA1015-GR	R308	1-260-099-11	CARBON	1K 5% 1/2W
Q903	8-729-620-05	TRANSISTOR	2SC2603-EF	R309	1-260-099-11	CARBON	1K 5% 1/2W
< RESISTOR >				R310	1-249-405-11	CARBON	100 5% 1/4W F
R101	1-249-418-11	CARBON	1.2K 5% 1/4W F	R312	1-249-419-11	CARBON	1.5K 5% 1/4W F
R102	1-249-411-11	CARBON	330 5% 1/4W	R313	1-249-431-11	CARBON	15K 5% 1/4W
R104	1-249-437-11	CARBON	47K 5% 1/4W	△R314	1-217-151-00	RES, METAL PLATE	0.22
R105	1-249-416-11	CARBON	820 5% 1/4W F	R315	1-249-437-11	CARBON	47K 5% 1/4W
R106	1-247-897-11	CARBON	560K 5% 1/4W	R316	1-247-727-11	CARBON	10 5% 1/2W
R107	1-249-437-11	CARBON	47K 5% 1/4W	R318	1-249-393-11	CARBON	10 5% 1/4W F
R108	1-249-441-11	CARBON	100K 5% 1/4W	R320	1-249-385-11	CARBON	2.2 5% 1/6W F
R109	1-249-409-11	CARBON	220 5% 1/4W F	R321	1-249-385-11	CARBON	2.2 5% 1/6W F
R110	1-249-417-11	CARBON	1K 5% 1/4W F	R322	1-249-385-11	CARBON	2.2 5% 1/6W F
R111	1-249-417-11	CARBON	1K 5% 1/4W F	R351	1-249-439-11	CARBON	68K 5% 1/4W
R112	1-249-417-11	CARBON	1K 5% 1/4W F	R352	1-249-417-11	CARBON	1K 5% 1/4W F
R113	1-249-417-11	CARBON	1K 5% 1/4W F	R353	1-249-415-11	CARBON	680 5% 1/4W F
R114	1-249-417-11	CARBON	1K 5% 1/4W F	R354	1-249-439-11	CARBON	68K 5% 1/4W
R115	1-249-417-11	CARBON	1K 5% 1/4W F	R355	1-249-421-11	CARBON	2.2K 5% 1/4W F (FE310R)
R116	1-249-417-11	CARBON	1K 5% 1/4W F	R355	1-247-843-11	CARBON	3.3K 5% 1/4W (FE510R)
R117	1-249-417-11	CARBON	1K 5% 1/4W F	R356	1-260-103-11	CARBON	2.2K 5% 1/2W (FE310R)
R118	1-249-427-11	CARBON	6.8K 5% 1/4W F	R356	1-260-105-11	CARBON	3.3K 5% 1/2W (FE510R)
R119	1-249-425-11	CARBON	4.7K 5% 1/4W F	R362	1-249-419-11	CARBON	1.5K 5% 1/4W F
R120	1-249-409-11	CARBON	220 5% 1/4W F	R363	1-249-431-11	CARBON	15K 5% 1/4W
R121	1-249-437-11	CARBON	47K 5% 1/4W	△R364	1-217-151-00	RES, METAL PLATE	0.22
R122	1-249-419-11	CARBON	1.5K 5% 1/4W F	R365	1-249-439-11	CARBON	68K 5% 1/4W
R123	1-249-427-11	CARBON	6.8K 5% 1/4W F	R366	1-247-727-11	CARBON	10 5% 1/2W
R124	1-249-425-11	CARBON	4.7K 5% 1/4W F (FE510R)	R368	1-249-393-11	CARBON	10 5% 1/4W F
R125	1-249-441-11	CARBON	100K 5% 1/4W	R601	1-247-745-11	CARBON	330 5% 1/2W F (FE310R)
R126	1-249-441-11	CARBON	100K 5% 1/4W	R601	1-247-747-11	CARBON	470 5% 1/2W (FE510R)
R151	1-249-418-11	CARBON	1.2K 5% 1/4W F	R602	1-247-745-11	CARBON	330 5% 1/2W F (FE310R)
R152	1-249-411-11	CARBON	330 5% 1/4W	R602	1-247-747-11	CARBON	470 5% 1/2W (FE510R)
R154	1-249-437-11	CARBON	47K 5% 1/4W	R603	1-249-417-11	CARBON	1K 5% 1/4W F
R155	1-249-416-11	CARBON	820 5% 1/4W F	R604	1-249-441-11	CARBON	100K 5% 1/4W
R156	1-247-897-11	CARBON	560K 5% 1/4W	R605	1-249-439-11	CARBON	68K 5% 1/4W
R157	1-249-437-11	CARBON	47K 5% 1/4W	R606	1-249-431-11	CARBON	15K 5% 1/4W
R158	1-249-441-11	CARBON	100K 5% 1/4W	R607	1-247-756-11	CARBON	2.2K 5% 1/2W
R159	1-249-409-11	CARBON	220 5% 1/4W F	R608	1-247-756-11	CARBON	2.2K 5% 1/2W
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				

The components identified by mark △ or dotted line with mark △ are critical for safety. 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)	

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

TA-FE310R/FE510R

<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)