

TA-F345R

SERVICE MANUAL

AEP Model
E Model



SPECIFICATIONS

Amplifier

Continuous RMS power output (both channels driven simultaneously)

DIN, 1 kHz	8 ohms	55 W + 55 W
20 Hz – 20 kHz	8 ohms	40 W + 40 W

Input

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

S/N

PHONO (MM)	76 dB
TUNER, CD, AUX, TAPE 1/DAT, TAPE 2/MD	100 dB

Output

Output jack	Jack type	Voltage/impedance
REC OUT	Phono jack	Voltage 150 mV Impedance 1 kohm
SPEAKERS	—	8 – 16 ohms
HEADPHONES	Stereo phone jack	Accepts low and high impedance headphones

Tone controls

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

Harmonic distortion Less than 0.03 % at 10 W output
Intermodulation (IM) distortion (60 Hz : 7 kHz = 4:1)

Frequency response Less than 0.03 % at 10 W output
PHONO: RIAA equalization curve
±0.5 dB

Residual noise TUNER, CD, AUX, TAPE 1/DAT,
TAPE 2/MD: 7 Hz – 100 kHz $\frac{1}{3}$ dB
Damping factor Less than 170 μ V (network A)
50 (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 (AEP, German)

120 V/220 V/240 V AC adjustable, 50/60 Hz (E)

Power consumption Model for Scandinavian countries,
Switzerland, Spain and Portugal

100 W

Model for other countries

140 W

— Continued on next page —

INTEGRATED STEREO AMPLIFIER
SONY®

Dimensions	Approx. 430 x 135 x 315 mm (w/h/d) (17 x 5 ³ / ₈ x 12 ¹ / ₂ inches)
Mass	Approx. 6.4 kg (14 lb 2 oz)
Supplied accessories	Remote commander RM-S311 (1) Sony SUM-3 (NS) batteries (2)

The above values are measured at 230 V AC.

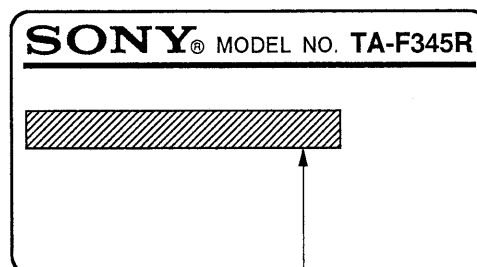
Design and specifications are subject to change without notice.

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MODEL IDENTIFICATION

– Specification Label Printed on Back Panel –



AEP, German model: AC 220 – 230 V ~50/60 Hz
E model: AC 120/220/240 V ~50/60 Hz

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

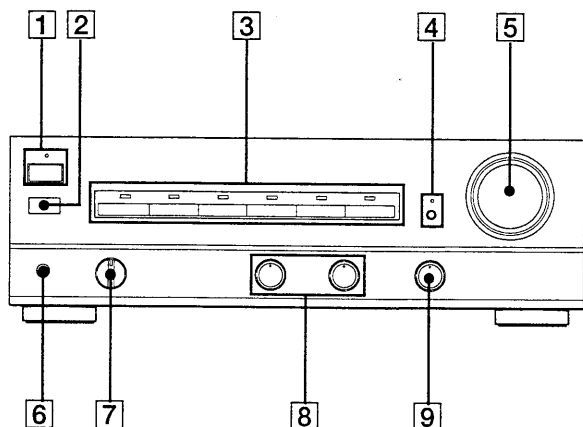
SAFETY-RELATED COMPONENT WARNING!!

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

SECTION 1 GENERAL

This section is extracted from instruction manual.

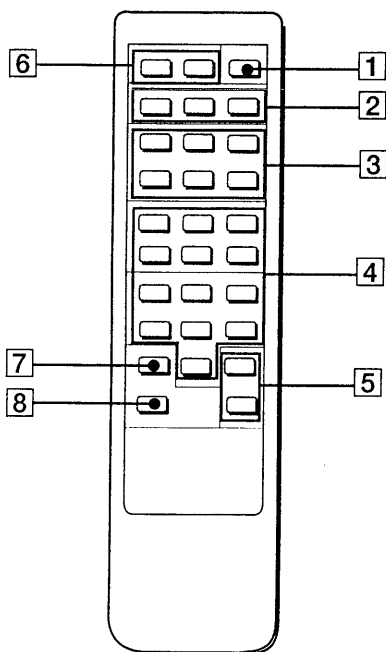
LOCATION OF CONTROLS



Front Panel

- 1 POWER switch and STANDBY indicator
- 2 Remote control sensor
- 3 Function selectors and indicators
TAPE 1/DAT
TAPE 2/MD
AUX
CD
TUNER
PHONO
- 4 SOURCE DIRECT button and indicator
- 5 VOLUME control
Adjusts the sound level.
- 6 HEADPHONES jack
- 7 SPEAKERS selector
- 8 TONE (BASS/TREBLE) controls
- 9 BALANCE control

Remote Commander



- 1 POWER switch
- 2 TUNER operation buttons
TUNER: Select the TUNER mode.
PRESET +/- buttons: Select the preset station.
- 3 CD operation buttons
⏮/⏭: Automatic music sensor.
D. (Disc) SKIP: Disc skip (for CD player equipped with a multi-disc changer)
▶: The amplifier enters the CD mode and the CD player starts playback automatically.
■: Stop.
⏸: Pause.
- 4 TAPE 2 DECK A/DECK B operation buttons
⏮/⏭: Fast winding.
■: Stop.
◀: The amplifier enters the TAPE 2 mode and the tape deck starts reverse playback automatically.
▶: The amplifier enters the TAPE 2 mode and the tape deck starts forward playback automatically.
- + ▶ : Start recording
● + ◀ : Start recording in the reverse direction
⏸: 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

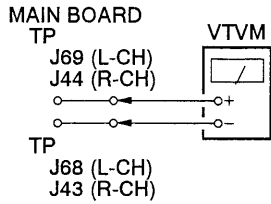
ELECTRICAL ADJUSTMENT

Note:

1. DC BIAS adjustments should be made within 2 to 3 minutes after the POWER switch is turned on (POWER ON).
2. After replacing the power transistors, DC BIAS adjustments should be made.

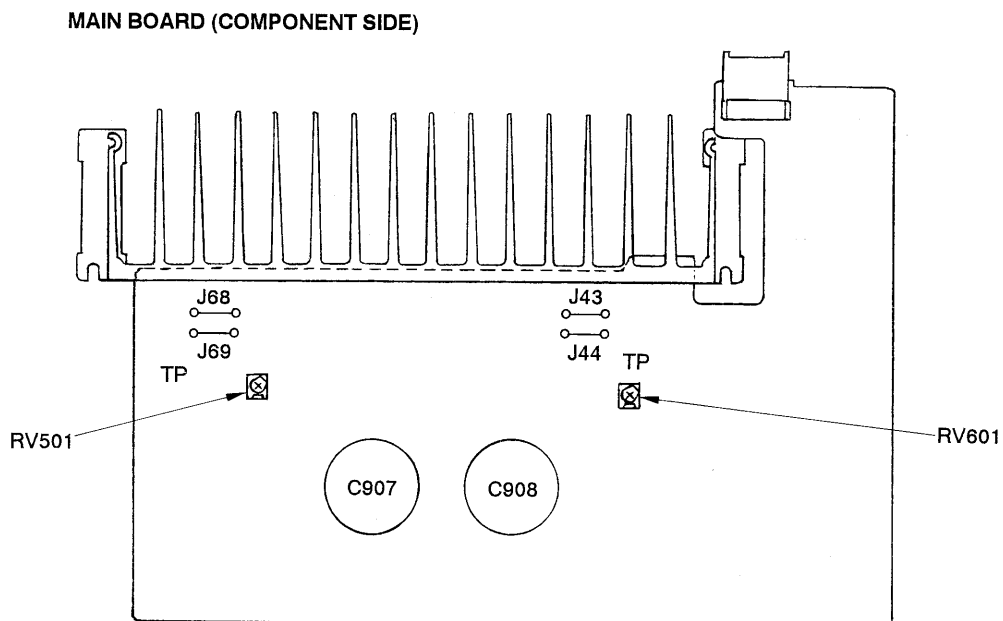
DC Bias Adjustment (with no signal input)

Procedure:

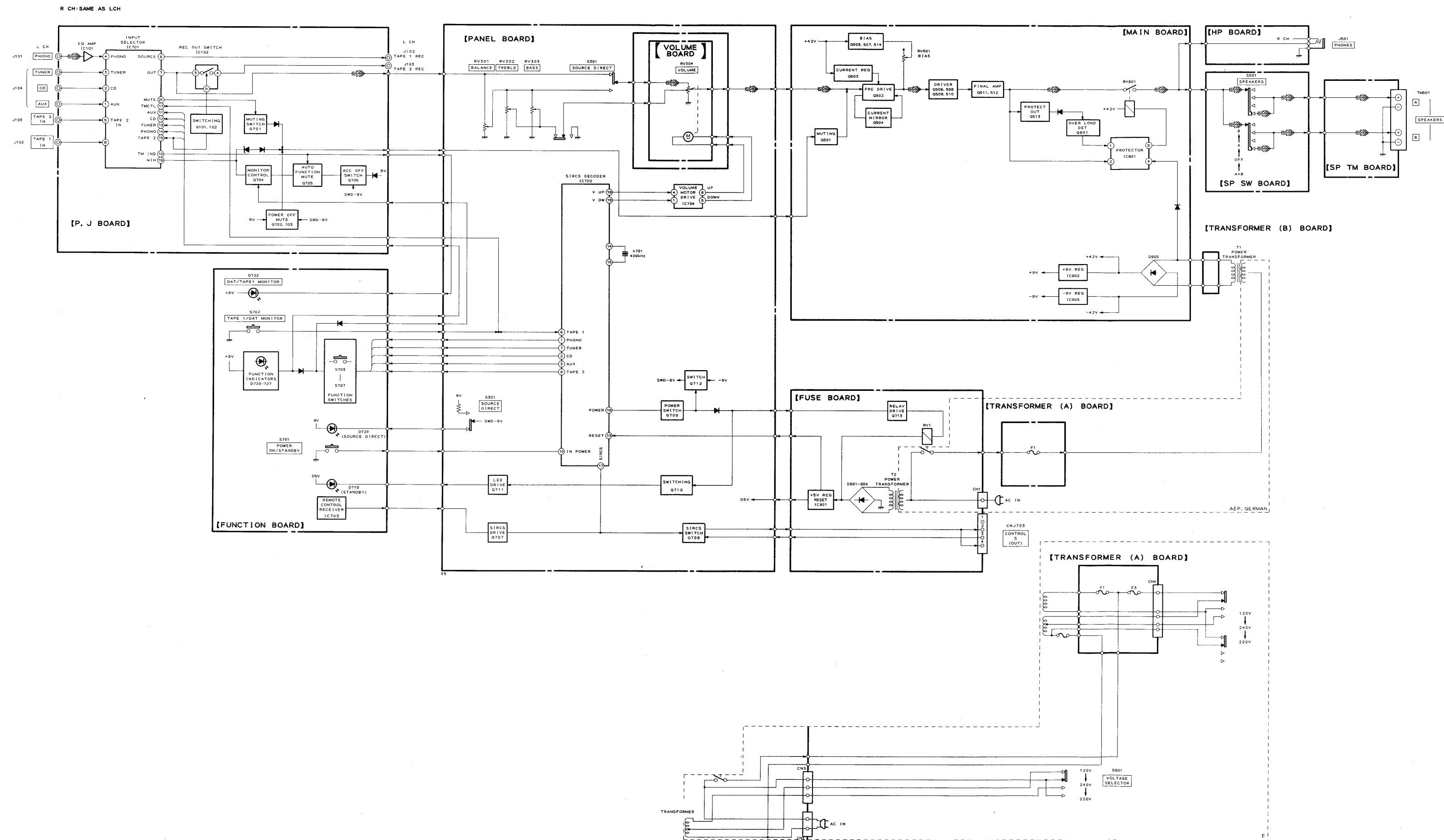


	Adjustment part	Reading on VTVM
L-CH	RV501	6.5 mV
R-CH	RV601	6.5 mV

[ADJUSTMENT LOCATIONS]



SECTION 3
3-1. BLOCK DIAGRAM
DIAGRAMS

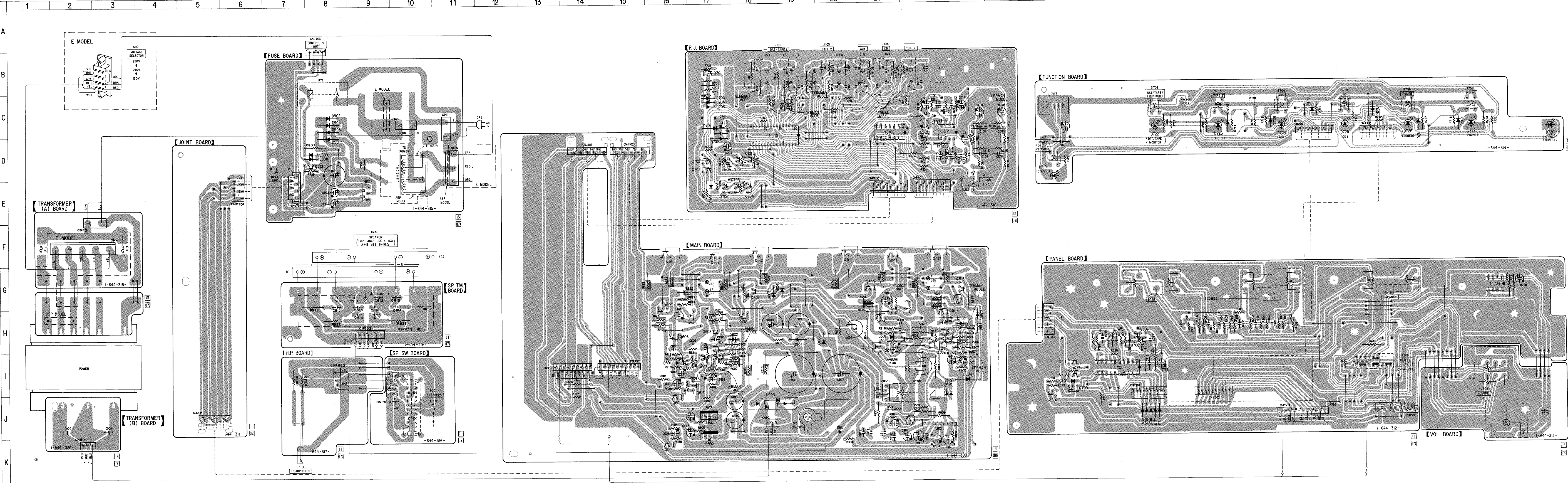


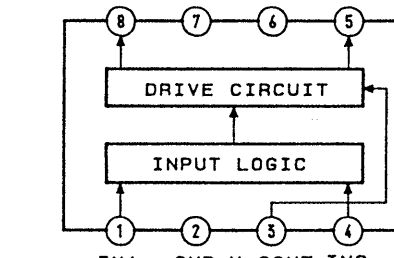
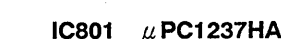
3-2. PRINTED WIRING BOARDS • See page 18 for Semiconductor Lead Layouts.

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D501	H-21	0101	E-18
D502	H-23	0102	E-18
D503	H-23	0501	K-16
D504	I-23	0502	H-22
D601	I-16	0503	H-22
D602	H-18	0504	H-23
D603	G-18	0505	H-22
D604	G-19	0506	H-21
D701	C-17	0508	H-23
D702	D-17	0509	G-21
D703	C-17	0510	G-23
D704	C-17	0513	G-23
D705	C-17	0514	I-21
D706	E-17	0601	J-16
D707	C-33	0602	H-18
D708	C-29	0603	I-17
D709	C-30	0604	I-17
D710	C-31	0605	I-16
D711	C-34	0606	H-16
D712	C-35	0608	H-17
D713	J-27	0609	H-16
D714	J-27	0610	H-18
D715	J-27	0613	G-18
D716	J-27	0614	I-17
D717	J-27	0701	B-17
D718	H-27	0702	D-17
D719	E-25	0703	D-17
D720	D-37	0704	E-18
D722	C-27	0705	E-18
D723	C-29	0706	E-17
D724	C-30	0707	H-27
D725	C-32	0708	H-27
D726	C-33	0709	J-26
D727	C-35	0710	I-25
D728	I-25	0711	I-25
D801	J-20	0712	J-25
D802	J-23	0713	D-8
D803	J-23	0801	J-22
D901	D-8		
D902	C-8		
D903	C-8		
D904	C-8		
D905	J-18		
D907	H-19		
D908	D-8		
D909	D-8		
IC101	D-23		
IC102	D-21		
IC701	D-19		
IC702	I-27		
IC703	C-25		
IC704	G-35		
IC801	J-22		
IC901	E-9		
IC902	K-17		
IC903	J-17		

Note:
• : parts extracted from the component side.





3-4. IC702 FUNCTION CONTROLLER (M50761-291P)

Pin No.	Pin Name	I/O	Description						
1	PHONO	O	Function select output. (one-shot output) (L : PHONO)						
2	CD	O	Function select output. (one-shot output) (L : CD)						
3	AUX	O	Function select output. (one-shot output) (L : AUX)						
4	CN VSS	—	Ground						
5	VSS	—	Ground						
6	TAPE1	O	Function select output. (one-shot output) (L : TAPE1)						
7	TUNER	O	Function select output. (one-shot output) (L : TUNER)						
8	POWER	O	Power supply ON/OFF relay (RY1) control output. (L : POWER ON, H : POWER OFF)						
9	TAPE2	O	Function select output. (one-shot output) (L : TAPE2)						
10	POWER IN	I	POWER ON/STANDBY key switch input.						
11	MODE	I	Mode select input. This model is used "L" level only. <table border="1"><tr><td></td><td>POWER ON/OFF mode</td></tr><tr><td>H</td><td>USED</td></tr><tr><td>L</td><td>NOT USED</td></tr></table>		POWER ON/OFF mode	H	USED	L	NOT USED
	POWER ON/OFF mode								
H	USED								
L	NOT USED								
12	NC	—	Ground						
13	RESET	I	Reset signal input.						
14	X OUT	O	Ceramic vibrator connection terminal. (400Hz)						
15	X IN	I	Ceramic vibrator connection terminal. (400Hz)						
16	NC	—	Ground						
17	SIRCS	I	SIRCS code signal input. (serial input)						
18	VOL UP	O	Volume motor up control output. (continuous output)						
19	VOL DOWN	O	Volume motor down control output. (continuous output)						
20	VDD	—	+5V power supply.						

Ref. No.	Part No.	Description	Remark
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< CONNECTOR >

* CN301	1-564-512-11	PLUG, CONNECTOR 9P	
* CN302	1-564-513-11	PLUG, CONNECTOR 10P	
* CN501	1-564-507-11	PLUG, CONNECTOR 4P	
CN901	1-564-506-11	PLUG, CONNECTOR 3P	
CNJ101	1-568-321-11	SOCKET, CONNECTOR 10P	

CNJ102	1-568-321-11	SOCKET, CONNECTOR 10P	
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< DIODE >

D501	8-719-933-36	DIODE	HZS6B1L
D502	8-719-987-63	DIODE	1N4148M
D503	8-719-987-63	DIODE	1N4148M
D504	8-719-987-63	DIODE	1N4148M
D601	8-719-933-36	DIODE	HZS6B1L

D602	8-719-987-63	DIODE	1N4148M
D603	8-719-987-63	DIODE	1N4148M
D604	8-719-987-63	DIODE	1N4148M
D801	8-719-200-02	DIODE	10E2
D802	8-719-987-63	DIODE	1N4148M

D803	8-719-987-63	DIODE	1N4148M
D905	8-719-302-38	DIODE	RBV-602-01
D906	8-719-200-02	DIODE	10E2
D907	8-719-200-02	DIODE	10E2

< IC >

IC801	8-759-111-68	IC	uPC1237HA
IC902	8-759-701-59	IC	NJM78M09FA
IC903	8-759-245-82	IC	TA7909S

< COIL >

L501	1-420-872-00	COIL, AIR-CORE	
L601	1-420-872-00	COIL, AIR-CORE	

< TRANSISTOR >

Q501	8-729-141-26	TRANSISTOR	2SC3622A-LK
Q502	8-729-620-18	TRANSISTOR	2SA979-FG
Q503	8-729-140-82	TRANSISTOR	2SA988-PAFAEA
Q504	8-729-620-05	TRANSISTOR	2SC2603-EF
Q505	8-729-620-05	TRANSISTOR	2SC2603-EF
Q506	8-729-820-82	TRANSISTOR	2SA1208
Q507	8-729-209-15	TRANSISTOR	2SD2012
Q508	8-729-255-12	TRANSISTOR	2SC2551-0
Q509	8-729-017-06	TRANSISTOR	2SC4793
Q510	8-729-017-05	TRANSISTOR	2SA1837
Q511	8-729-020-84	TRANSISTOR	2SC3180N-RO
Q512	8-729-020-85	TRANSISTOR	2SA1263N-RO
Q513	8-729-140-84	TRANSISTOR	2SC1841-PAFAEA
Q514	8-729-224-62	TRANSISTOR	2SK246-GR

Ref. No.	Part No.	Description	Remark
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Q601	8-729-141-26	TRANSISTOR	2SC3622A-LK
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Q602	8-729-620-18	TRANSISTOR	2SA979-FG
Q603	8-729-140-82	TRANSISTOR	2SA988-PAFAEA
Q604	8-729-620-05	TRANSISTOR	2SC2603-EF
Q605	8-729-620-05	TRANSISTOR	2SC2603-EF
Q606	8-729-820-82	TRANSISTOR	2SA1208

Q607	8-729-209-15	TRANSISTOR	2SD2012
Q608	8-729-255-12	TRANSISTOR	2SC2551-0
Q609	8-729-017-06	TRANSISTOR	2SC4793
Q610	8-729-017-05	TRANSISTOR	2SA1837
Q611	8-729-020-84	TRANSISTOR	2SC3180N-RO

Q612	8-729-020-85	TRANSISTOR	2SA1263N-RO
Q613	8-729-140-84	TRANSISTOR	2SC1841-PAFAEA
Q614	8-729-224-62	TRANSISTOR	2SK246-GR
Q801	8-729-900-63	TRANSISTOR	DTA124ES

< RESISTOR >

R501	1-249-423-11	CARBON	3.3K 5% 1/4W F
R502	1-249-417-11	CARBON	1K 5% 1/4W F
R503	1-249-421-11	CARBON	2.2K 5% 1/4W F
R504	1-249-393-11	CARBON	10 5% 1/4W F (German)
R505	1-249-415-11	CARBON	680 5% 1/4W F

R506	1-247-704-11	CARBON	220 5% 1/4W F
R507	1-247-704-11	CARBON	220 5% 1/4W F
R508	1-249-490-11	CARBON	27K 5% 1/2W
R509	1-249-542-11	CARBON	390 5% 1/4W
R510	1-249-438-11	CARBON	56K 5% 1/4W

R511	1-249-466-11	CARBON	56K 5% 1/4W
R513	1-249-433-11	CARBON	22K 5% 1/4W
R514	1-249-429-11	CARBON	10K 5% 1/4W
R515	1-249-435-11	CARBON	33K 5% 1/4W
R516	1-247-692-11	CARBON	22 5% 1/4W F

R517	1-249-425-11	CARBON	4.7K 5% 1/4W
R518	1-249-419-11	CARBON	1.5K 5% 1/4W F
R519	1-247-692-11	CARBON	22 5% 1/4W F
R520	1-247-700-11	CARBON	100 5% 1/4W F
R521	1-247-700-11	CARBON	100 5% 1/4W F

R522	1-247-745-11	CARBON	330 5% 1/2W F
R523	1-249-455-11	CARBON	4.7 5% 1/4W
R524	1-249-455-11	CARBON	4.7 5% 1/4W
R525	1-216-361-00	METAL OXIDE	0.22 5% 2W F
R526	1-216-361-00	METAL OXIDE	0.22 5% 2W F

R527	1-247-717-11	CARBON	2.2K 5% 1/4W F
R528	1-249-426-11	CARBON	5.6K 5% 1/4W
R529	1-247-727-11	CARBON	10 5% 1/2W
R530	1-247-727-11	CARBON	10 5% 1/2W
R531	1-249-437-11	CARBON	47K 5% 1/4W

R536	1-249-409-11	CARBON	220 5% 1/4W F
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MAIN

P.J.

Ref. No.	Part No.	Description	Remark		
R537	1-249-417-11	CARBON	1K	5%	1/4W F
R538	1-249-423-11	CARBON	3.3K	5%	1/4W F
R601	1-249-423-11	CARBON	3.3K	5%	1/4W F
R602	1-249-417-11	CARBON	1K	5%	1/4W F
R603	1-249-421-11	CARBON	2.2K	5%	1/4W F
R604	1-249-393-11	CARBON	10	5%	1/4W F (German)
R605	1-249-415-11	CARBON	680	5%	1/4W F
R606	1-247-704-11	CARBON	220	5%	1/4W F
R607	1-247-704-11	CARBON	220	5%	1/4W F
R608	1-249-490-11	CARBON	27K	5%	1/2W
R609	1-249-542-11	CARBON	390	5%	1/4W
R610	1-249-438-11	CARBON	56K	5%	1/4W
R611	1-249-466-11	CARBON	56K	5%	1/4W
R613	1-249-433-11	CARBON	22K	5%	1/4W
R614	1-249-429-11	CARBON	10K	5%	1/4W
R615	1-249-435-11	CARBON	33K	5%	1/4W
R616	1-247-692-11	CARBON	22	5%	1/4W F
R617	1-249-425-11	CARBON	4.7K	5%	1/4W
R618	1-249-419-11	CARBON	1.5K	5%	1/4W F
R619	1-247-692-11	CARBON	22	5%	1/4W F
R620	1-247-700-11	CARBON	100	5%	1/4W F
R621	1-247-700-11	CARBON	100	5%	1/4W F
R622	1-247-745-11	CARBON	330	5%	1/2W F
R623	1-249-455-11	CARBON	4.7	5%	1/4W
R624	1-249-455-11	CARBON	4.7	5%	1/4W
R625	1-216-361-00	METAL OXIDE	0.22	5%	2W F
R626	1-216-361-00	METAL OXIDE	0.22	5%	2W F
R627	1-247-717-11	CARBON	2.2K	5%	1/4W F
R628	1-249-426-11	CARBON	5.6K	5%	1/4W
R629	1-247-727-11	CARBON	10	5%	1/2W
R630	1-247-727-11	CARBON	10	5%	1/2W
R631	1-249-438-11	CARBON	56K	5%	1/4W
R636	1-249-409-11	CARBON	220	5%	1/4W F
R637	1-249-417-11	CARBON	1K	5%	1/4W F
R638	1-249-423-11	CARBON	3.3K	5%	1/4W F
R801	1-249-427-11	CARBON	6.8K	5%	1/4W F
R802	1-249-441-11	CARBON	100K	5%	1/4W
R803	1-249-428-11	CARBON	8.2K	5%	1/4W F
R804	1-249-439-11	CARBON	68K	5%	1/4W
R805	1-249-430-11	CARBON	12K	5%	1/4W
R806	1-215-869-11	METAL OXIDE	1K	5%	1W F (AEP, E)
R806	1-216-432-00	METAL OXIDE	820	5%	1W F (German)
R905	1-249-385-11	CARBON	2.2	5%	1/6W F
R906	1-249-385-11	CARBON	2.2	5%	1/6W F
R913	1-216-478-11	METAL OXIDE	390	5%	3W F (AEP, E)
R913	1-216-477-11	METAL OXIDE	270	5%	3W F (German)
R916	1-215-915-11	METAL OXIDE	470	5%	3W F (AEP, E)
R916	1-216-478-11	METAL OXIDE	390	5%	3W F (German)

Ref. No.	Part No.	Description	Remark		
< VARIABLE RESISTOR >					
RV501	1-241-761-11	RES, ADJ, CARBON 1K (BIAS)			
RV601	1-241-761-11	RES, ADJ, CARBON 1K (BIAS)			
< RELAY >					
RY801	1-515-920-11	RELAY (24V)			

*	A-4369-824-A	P. J. BOARD, COMPLETE (AEP, E)			

*	A-4369-841-A	P. J. BOARD, COMPLETE (German)			

< CAPACITOR >					
C101	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C102	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C103	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C104	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C105	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C106	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C107	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C108	1-162-285-31	CERAMIC	180PF	10%	50V
C109	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C110	1-124-907-11	ELECT	10uF	20%	50V
C111	1-124-477-11	ELECT	47uF	20%	25V
C112	1-162-282-31	CERAMIC	100PF	10%	50V (AEP, E)
C112	1-162-286-31	CERAMIC	220PF	10%	50V (German)
C113	1-130-480-00	MYLAR	0.0056uF	5%	50V
C114	1-130-473-00	MYLAR	0.0015uF	5%	50V
C115	1-124-927-11	ELECT	4.7uF	20%	100V
C116	1-124-477-11	ELECT	47uF	20%	25V
C117	1-124-925-11	ELECT	2.2uF	20%	100V
C201	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C202	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C203	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C204	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C205	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C206	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C207	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C208	1-162-285-31	CERAMIC	180PF	10%	50V
C209	1-162-284-31	CERAMIC	150PF	10%	50V (German)
C210	1-124-907-11	ELECT	10uF	20%	50V
C211	1-124-477-11	ELECT	47uF	20%	25V
C212	1-162-282-31	CERAMIC	100PF	10%	50V (AEP, E)
C212	1-162-286-31	CERAMIC	220PF	10%	50V (German)
C213	1-130-480-00	MYLAR	0.0056uF	5%	50V
C214	1-130-473-00	MYLAR	0.0015uF	5%	50V
C215	1-124-927-11	ELECT	4.7uF	20%	100V

Ref. No.	Part No.	Description	Remark
C216	1-124-477-11	ELECT 47uF 20% 25V	
C701	1-124-472-11	ELECT 470uF 20% 10V	
C702	1-161-494-00	CERAMIC 0.022uF 25V	
C703	1-161-494-00	CERAMIC 0.022uF 25V	
C704	1-124-477-11	ELECT 47uF 20% 25V	
C705	1-164-159-11	CERAMIC 0.1uF 50V	

< CONNECTOR >

- * CNP101 1-568-322-21 PLUG, CONNECTOR 10P
 * CNP102 1-568-322-21 PLUG, CONNECTOR 10P

< DIODE >

D701	8-719-200-02	DIODE 10E2
D702	8-719-200-02	DIODE 10E2
D703	8-719-987-63	DIODE 1N4148M
D704	8-719-987-63	DIODE 1N4148M
D705	8-719-933-33	DIODE HZS6A1L
D706	8-719-987-63	DIODE 1N4148M

< IC >

IC101	8-759-636-74	IC M5218AP-22
IC102	8-759-801-01	IC LC4966
IC701	8-759-802-52	IC LC7818

< JACK >

- J101 1-573-141-21 JACK 2P (PHONO)
 * J102 1-573-142-21 JACK, PIN 4P (TAPE1/DAT)
 * J103 1-573-142-21 JACK, PIN 4P (TAPE2/MD)
 J104 1-568-978-11 JACK 6P (TUNER, CD, AUX)

< TRANSISTOR >

Q101	8-729-900-36	TRANSISTOR DTC124ES
Q102	8-729-900-63	TRANSISTOR DTA124ES
Q701	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q702	8-729-900-63	TRANSISTOR DTA124ES
Q703	8-729-900-63	TRANSISTOR DTA124ES
Q704	8-729-900-63	TRANSISTOR DTA124ES
Q705	8-729-900-63	TRANSISTOR DTA124ES
Q706	8-729-900-63	TRANSISTOR DTA124ES

< RESISTOR >

R101	1-249-409-11	CARBON 220 5% 1/4W F (German)
R102	1-249-417-11	CARBON 1K 5% 1/4W F
R103	1-249-409-11	CARBON 220 5% 1/4W F (German)
R104	1-249-417-11	CARBON 1K 5% 1/4W F
R105	1-249-409-11	CARBON 220 5% 1/4W F (German)
R106	1-249-409-11	CARBON 220 5% 1/4W F (German)
R107	1-249-409-11	CARBON 220 5% 1/4W F (German)

Ref. No.	Part No.	Description	Remark
R108	1-249-418-11	CARBON 1.2K 5% 1/4W F	
R109	1-249-418-11	CARBON 1.2K 5% 1/4W F (German)	
R110	1-249-441-11	CARBON 100K 5% 1/4W	
R111	1-249-416-11	CARBON 820 5% 1/4W F	
R112	1-247-897-11	CARBON 560K 5% 1/4W	
R113	1-249-437-11	CARBON 47K 5% 1/4W	
R114	1-249-409-11	CARBON 220 5% 1/4W F	
R115	1-249-441-11	CARBON 100K 5% 1/4W	
R116	1-249-441-11	CARBON 100K 5% 1/4W	
R117	1-249-433-11	CARBON 22K 5% 1/4W	
R118	1-249-433-11	CARBON 22K 5% 1/4W	
R119	1-249-441-11	CARBON 100K 5% 1/4W	
R201	1-249-409-11	CARBON 220 5% 1/4W F (German)	
R202	1-249-417-11	CARBON 1K 5% 1/4W F	
R203	1-249-409-11	CARBON 220 5% 1/4W F (German)	
R204	1-249-417-11	CARBON 1K 5% 1/4W F	
R205	1-249-409-11	CARBON 220 5% 1/4W F (German)	
R206	1-249-409-11	CARBON 220 5% 1/4W F (German)	
R207	1-249-409-11	CARBON 220 5% 1/4W F (German)	
R208	1-249-418-11	CARBON 1.2K 5% 1/4W F	
R209	1-249-418-11	CARBON 1.2K 5% 1/4W F (German)	
R210	1-249-441-11	CARBON 100K 5% 1/4W	
R211	1-249-416-11	CARBON 820 5% 1/4W F	
R212	1-247-897-11	CARBON 560K 5% 1/4W	
R213	1-249-437-11	CARBON 47K 5% 1/4W	
R214	1-249-409-11	CARBON 220 5% 1/4W F	
R215	1-249-441-11	CARBON 100K 5% 1/4W	
R216	1-249-441-11	CARBON 100K 5% 1/4W	
R301	1-247-807-31	CARBON 100 5% 1/4W	
R401	1-247-807-31	CARBON 100 5% 1/4W	
R701	1-247-901-11	CARBON 820K 5% 1/4W	
R702	1-249-433-11	CARBON 22K 5% 1/4W	
R703	1-249-441-11	CARBON 100K 5% 1/4W	
R704	1-249-433-11	CARBON 22K 5% 1/4W	
R705	1-249-429-11	CARBON 10K 5% 1/4W	
R706	1-249-429-11	CARBON 10K 5% 1/4W	
R707	1-249-433-11	CARBON 22K 5% 1/4W	
R732	1-249-433-11	CARBON 22K 5% 1/4W	

- * A-4369-830-A PANEL BOARD, COMPLETE

< CAPACITOR >

C301	1-130-481-00	MYLAR 0.0068uF 5% 50V
C302	1-130-474-00	MYLAR 0.0018uF 5% 50V
C303	1-136-159-00	FILM 0.033uF 5% 50V
C304	1-130-479-00	MYLAR 0.0047uF 5% 50V
C401	1-130-481-00	MYLAR 0.0068uF 5% 50V

PANEL

SP.SW.

SP.TM.

Ref.No.	Part No.	Description	Remark
C402	1-130-474-00	MYLAR 0.0018uF 5%	50V
C403	1-136-159-00	FILM 0.033uF 5%	50V
C404	1-130-479-00	MYLAR 0.0047uF 5%	50V
C709	1-161-494-00	CERAMIC 0.022uF	25V
C710	1-162-284-31	CERAMIC 150PF 10%	50V
C711	1-162-284-31	CERAMIC 150PF 10%	50V
C712	1-124-477-11	ELECT 47uF 20%	25V
C713	1-161-494-00	CERAMIC 0.022uF	25V
C717	1-161-494-00	CERAMIC 0.022uF	25V
C718	1-124-477-11	ELECT 47uF 20%	25V
C719	1-136-165-00	FILM 0.1uF 5%	50V

< CONNECTOR >

CNP301	1-695-415-11	PIN, CONNECTOR (PC BOARD) 10P
CNP302	1-695-415-11	PIN, CONNECTOR (PC BOARD) 10P
* CNP702	1-568-320-11	PLUG, CONNECTOR 8P

< DIODE >

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	8-719-987-63	DIODE 1N4148M
D718	8-719-987-63	DIODE 1N4148M
D728	8-719-987-63	DIODE 1N4148M

< IC >

IC702	8-759-077-08	IC M50761-291P
IC704	8-759-820-62	IC LB1639

< TRANSISTOR >

Q707	8-729-904-39	TRANSISTOR DTC114TS
Q708	8-729-904-39	TRANSISTOR DTC114TS
Q709	8-729-900-63	TRANSISTOR DTA124ES
Q710	8-729-806-30	TRANSISTOR 2SC4048
Q711	8-729-900-80	TRANSISTOR DTC114ES
Q712	8-729-620-05	TRANSISTOR 2SC2603-EF

< RESISTOR >

R302	1-249-421-11	CARBON 2.2K 5%	1/4W F
R303	1-249-426-11	CARBON 5.6K 5%	1/4W
R304	1-247-903-00	CARBON 1M 5%	1/4W
R305	1-247-903-00	CARBON 1M 5%	1/4W
R306	1-247-852-11	CARBON 7.5K 5%	1/4W
R308	1-247-870-11	CARBON 43K 5%	1/4W
R309	1-249-436-11	CARBON 39K 5%	1/4W
R310	1-249-437-11	CARBON 47K 5%	1/4W

Ref.No.	Part No.	Description	Remark
R402	1-249-421-11	CARBON 2.2K 5%	1/4W F
R403	1-249-426-11	CARBON 5.6K 5%	1/4W
R404	1-247-903-00	CARBON 1M 5%	1/4W
R405	1-247-903-00	CARBON 1M 5%	1/4W
R406	1-247-852-11	CARBON 7.5K 5%	1/4W
R408	1-247-870-11	CARBON 43K 5%	1/4W
R409	1-249-436-11	CARBON 39K 5%	1/4W
R410	1-249-437-11	CARBON 47K 5%	1/4W
R719	1-249-433-11	CARBON 22K 5%	1/4W
R720	1-249-433-11	CARBON 22K 5%	1/4W
R721	1-247-903-00	CARBON 1M 5%	1/4W
R722	1-249-423-11	CARBON 3.3K 5%	1/4W F

R723	1-249-429-11	CARBON 10K 5%	1/4W
R724	1-249-417-11	CARBON 1K 5%	1/4W F
R725	1-249-417-11	CARBON 1K 5%	1/4W F
R726	1-249-393-11	CARBON 10 5%	1/4W F
R727	1-249-425-11	CARBON 4.7K 5%	1/4W F

R730	1-249-421-11	CARBON 2.2K 5%	1/4W F
R731	1-249-421-11	CARBON 2.2K 5%	1/4W F
R733	1-249-441-11	CARBON 100K 5%	1/4W
R734	1-249-425-11	CARBON 4.7K 5%	1/4W F
R736	1-249-419-11	CARBON 1.5K 5%	1/4W F

< VARIABLE RESISTOR >

RV301	1-238-513-11	RES, VAR, CARBON 150K/150K (BALANCE)
RV302	1-238-514-11	RES, VAR 250K/250K (TREBLE)
RV303	1-238-515-11	RES, VAR, CARBON 520K/520K (BASS)

< SWITCH >

S301	1-572-642-11	SWITCH, PUSH (1 KEY) (SOURCE DIRECT)
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< VIBRATOR >

X701	1-577-077-11	OSCILLATOR, CERAMIC (400KHz)
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*	1-644-316-11	SP.SW. BOARD

< SWITCH >

S501	1-692-168-11	SWITCH, ROTARY SLIDE (SPEAKERS)
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*	1-644-319-11	SP.TM. BOARD

< CAPACITOR >

C513	1-136-157-00	FILM 0.022uF 5%	50V (German)
C514	1-136-157-00	FILM 0.022uF 5%	50V (German)
C515	1-136-157-00	FILM 0.022uF 5%	50V (German)

SP.TM.

TRANSFORMER (A)

TRANSFORMER (B)

VOL.

Ref. No.	Part No.	Description	Remark
C516	1-136-157-00	FILM 0.022uF 5% 50V (German)	
C517	1-136-157-00	FILM 0.022uF 5% 50V (German)	
C613	1-136-157-00	FILM 0.022uF 5% 50V (German)	
C614	1-136-157-00	FILM 0.022uF 5% 50V (German)	
C615	1-136-157-00	FILM 0.022uF 5% 50V (German)	
C616	1-136-157-00	FILM 0.022uF 5% 50V (German)	
C617	1-136-157-00	FILM 0.022uF 5% 50V (German)	

< CONNECTOR >

* CN502 1-564-509-11 PLUG, CONNECTOR 6P

< RESISTOR >

R532	1-247-727-11	CARBON 10 5% 1/2W (German)	
R533	1-247-727-11	CARBON 10 5% 1/2W (German)	
R632	1-247-727-11	CARBON 10 5% 1/2W (German)	
R633	1-247-727-11	CARBON 10 5% 1/2W (German)	

< TERMINAL >

TM501	1-537-227-11	TERMINAL BOARD (SP) (AEP2)	
TM501	1-537-228-11	TERMINAL BOARD (SP) (German)	
TM501	1-537-235-11	TERMINAL BOARD (SP) (AEP1, E)	

* 1-644-318-13 TRANSFORMER (A) BOARD

< CONNECTOR >

* CN4	1-580-633-11	PIN, CONNECTOR 5P (E)	
CN5	1-564-687-11	PIN, CONNECTOR 3P (E)	

< FUSE >

△F1	1-532-259-00	FUSE, TIME-LAG (T1. 6A)	
△F3	1-532-259-00	FUSE, TIME-LAG (T1. 6A) (E)	

* 1-644-320-13 TRANSFORMER (B) BOARD

< CAPACITOR >

C905	1-136-165-00	FILM 0.1uF 5% 50V	
C906	1-136-165-00	FILM 0.1uF 5% 50V	

* 1-644-313-11 VOL BOARD

< VARIABLE RESISTOR >

RV304	1-223-743-11	RES, VAR, CARBON 120K/120K (VOLUME)	
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Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS *****	
57	1-569-007-11	ADAPTER, CONVERSION 2P (E)	
△CP1	1-558-943-41	CORD, POWER (E)	
△CP1	1-575-651-21	CORD, POWER (AEP, German)	
△S901	1-571-515-11	SWITCH, POWER VOLTAGE SELECTION (E)	
△T1	1-423-625-11	TRANSFORMER, POWER (AEP)	
△T1	1-423-627-11	TRANSFORMER, POWER (German)	
△T1	1-423-649-11	TRANSFORMER, POWER (E)	

ACCESSORIES & PACKING MATERIALS

1-693-131-11	REMOTE COMMANDER (RM-S311)	
2-181-754-21	COVER, BATTERY	
3-758-870-11	MANUAL, INSTRUCTION (AEP, E)	
3-758-870-41	MANUAL, INSTRUCTION (AEP)	
3-758-870-51	MANUAL, INSTRUCTION (German)	

* 4-967-235-01 INDIVIDUAL CARTON
* 4-967-239-01 CUSHION

HARDWARE LIST

#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-682-548-09	SCREW +B 3X8	
#3	7-682-560-04	SCREW +BVTT 4X6 (S)	
#4	7-685-648-79	SCREW +BVTP 3X12 TYPE2	
#5	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3	
#6	7-682-547-09	SCREW +BVTT 3X6 (S)	

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

