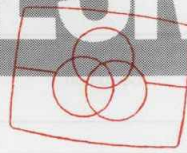


TA-F22ESR/F530ES

SERVICE MANUAL



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Digitized by **Canadian Model**
AEP Model
UK Model

www.freeservicemanuals.info

TA - F530ES

E Model
TA - F22ESR



photo : TA - F530ES

SPECIFICATIONS

Amplifier section

Item	Condition		Data
Continuous RMS power out (both channels driven simultaneously)	4 ohms, 20 Hz-20 kHz THD 0.008%	Canadian, UK, E model	120 W + 120 W (THD 0.01%) (DIN: 160 W + 160 W)
	6 ohms, 20 Hz-20 kHz THD 0.006%	Canadian, UK, E model	100 W + 100 W (DIN: 120 W + 120 W)
		AEP, West Germany model	95 W + 95 W (DIN: 115 W + 115 W)
	8 ohms, 20 Hz-20 kHz THD 0.004%	Canadian, UK, E model	90 W + 90 W (DIN: 110 W + 110 W)
AEP, West Germany model		80 W + 80 W (DIN: 100 W + 100 W)	
Power band width (IHF)	8 ohms, THD 0,02%		10 Hz - 100 kHz at 45 W
Dynamic headroom ('78 IHF)	4 ohms		2 dB
	8 ohms		1.2 dB
Total harmonic distortion	8 ohms, at 10 watt output		0.003%
Intermodulation (IM) distortion 60 Hz: 7 kHz = 4:1	4 ohm, at rated output		0.008%
	6 ohms at rated output		0.006%
	8 ohms at rated output		0.004%
Damping factor	8 ohms, 1 kHz		50
Residual noise	network A		less than 90µV
Frequency response	PHONO MM		RIAA equalization curve ±0.2 dB
	TUNER, CD, TAPE 1, 2, 3, DIRECT IN		2 Hz - 200 kHz $\begin{matrix} +0 \\ -3 \end{matrix}$ dB

—Continued on page 2—

INTEGRATED STEREO AMPLIFIER
SONY®



Item	Condition		Data
Input sensitivity	PHONO	MC	0.17 mV, 100 ohms.
		MM	2.5 mV, 50 kohms
	TUNER, CD, DIRECT IN, TAPE 1, 2, 3 ADAPTOR IN		150 mV, 50 kohms
S/N (network)	PHONO	MC	68 dB 76 dB* (A)
		MM	80 dB 87 dB* (A)
	TUNER, CD, DIRECT IN, TAPE 1, 2, 3 ADAPTOR IN		84 dB 105 dB* (A)
Output voltage impedance	REC OUT 1, 2, 3 ADAPTOR OUT		150 mV, 1 kohm
	HEADPHONES		25 milliwatts (at 8 ohms) Accepts low and high impedance headphones.
Tone controls	BASS, at 100 Hz		±6 dB (turnover freq. 400 Hz)
	TREBLE, at 10 kHz		±6 dB (freq. 4 kHz)

General

System Preamplifier section: Low-noise high gain NFB type equalizer amplifier, passive type direct tone control
Power amplifier section: Pure-complementary SEPP power amplifier

Power requirements

AEP, West Germany model : 220 V AC, 50 Hz
U K model: 240 V AC, 50 Hz
E model : 120 V, 220 V or 240 V AC adjustable, 50/60 Hz
Canadian model : 120 V AC, 50/60Hz

Power consumption

Canadian model	510 VA
AEP, UK, West Germany model	220 W
UK model	600 W
E model	340 W

AC outlet

Canadian model	2 switched, 1 unswitched, 100 watts max. each
AEP, UK, West Germany model	—
E model	1 switched, 1 unswitched, 100 watts each

Dimensions

Approx. 430 x 150 x 370 mm (w/h/d)
(17 x 5⁷/₈ x 14⁹/₁₆ inches)

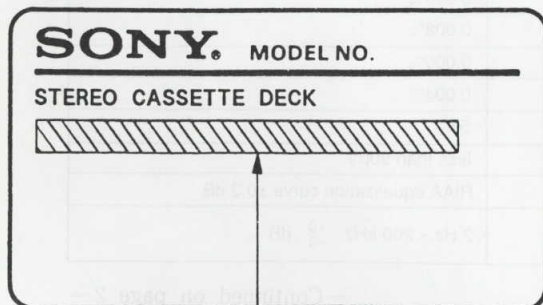
Weight

Approx. 13.5 kg (29 lbs 13 oz) net

TABLE OF CONTENTS

MODEL IDENTIFICATION

— Specification Label —



Canadian model : AC 120V 60Hz

AEP, West Germany model : AC 220V~50/60Hz

UK model : AC 240V~50/60Hz

E model : AC 120/220/240V~50/60Hz

Section	Title	Page
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Servicing Notes	3
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Parts Identification	4
2. ELECTRICAL ADJUSTMENTS	5
3. DIAGRAMS		
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4. EXPLODED VIEWS	17
5. ELECTRICAL PARTS LIST	19

SERVICING NOTES

On operating voltage
Before operating the unit, check that the operating voltage of your unit is identical with the voltage of your local power supply.

Where purchased	Operating voltage
UK Model	240 V AC
Canadian Model	120V AC
AEP, West Germany Model	220 V AC
E Model	120 V, 220 V or 240 V AC adjustable by AC voltage selector

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

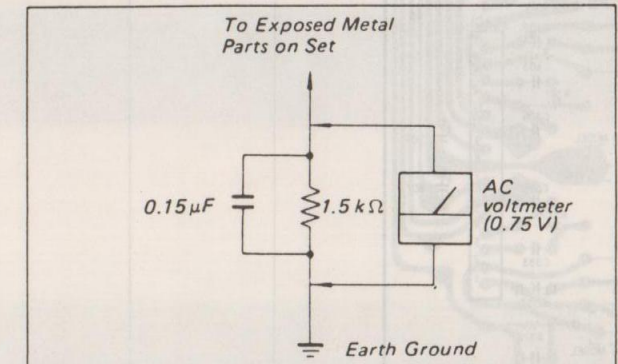
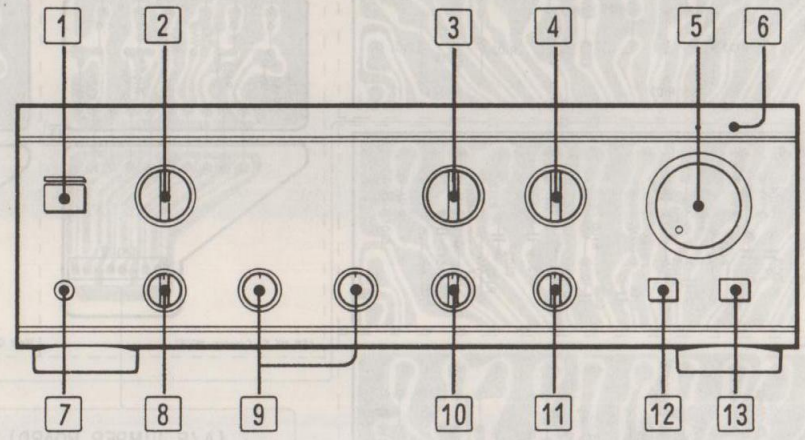


Fig. A. Using an AC voltmeter to check AC leakage.

SECTION 1 GENERAL

PARTS IDENTIFICATION



- 1 POWER switch and power/standby indicator**
Immediately after turning ON the power, the standby indicator lights in red as the built-in muting circuit activates. When the amplifier stays in a stable operating condition, the indicator lights in green. The indicator lights in red when the unit detects shorting of circuit of the speaker outputs or in case of short-circuit of the inputs of DC components. In such a case, disconnect the power source and check the connected components and speaker systems.
- 2 SPEAKERS selector**
Select speaker system A or B, or both.
- 3 ADAPTOR/DIRECT IN switch**
Set to NORMAL to select program source by INPUT SELECTOR. To listen to a program source processed through adaptor (graphic equalizer, for example) connected to ADAPTOR jacks, set the selector to ADAPTOR. To listen to a program source connected to DIRECT IN jacks, set it to DIRECT IN. Note that selecting ADAPTOR has no effect upon the signals output through the REC OUT jacks.
- 4 INPUT SELECTOR**
Selects the desired program source.
- 5 ATTENUATOR knob**
Regulates the sound level.
- 6 MUTING switch and indicator**
Generally, keep the switch released (OFF). Depress the switch to reduce the sound level by 20 dB. (Output voltage becomes 1/10.)
- 7 HEADPHONES jack (stereo phone jack)**
- 8 MODE selector**
STEREO: For listening to a stereo program.
MONO: For listening to a monaural program.
- 9 BASS and TREBLE controls**
- 10 REC OUT SELECTOR**
Selects the program source sent to the REC OUT jacks (rear panel).
- 11 BALANCE control**
Controls the sound level of left and right speakers.
- 12 SOURCE DIRECT switch and indicator**
- 13 CARTRIDGE selector**
Set the selector according to your cartridge.
MM: For moving-magnet type cartridge
MC: For moving-coil type cartridge

SECTION 2 ELECTRICAL ADJUSTMENTS

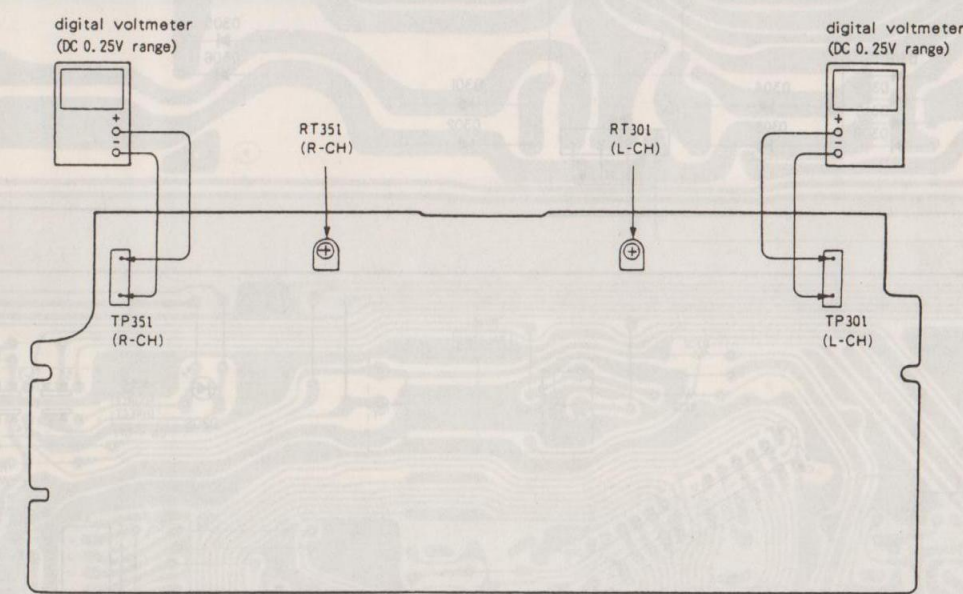
PRECAUTIONS

1. Adjust the idling after tuning the unit on for about 10-15 minutes, giving it time to warm up.
2. Always make sure to adjust the idling when repairing the power amp section or when replacing any parts.

[IDLING ADJUSTMENT]

Procedure :
Set the ATTENUATOR control as low as possible and adjust RT301 (L-CH) and RT351 (R-CH) so that the voltmeter reads 7mV at TP301 (L-CH) and TP351 (R-CH).

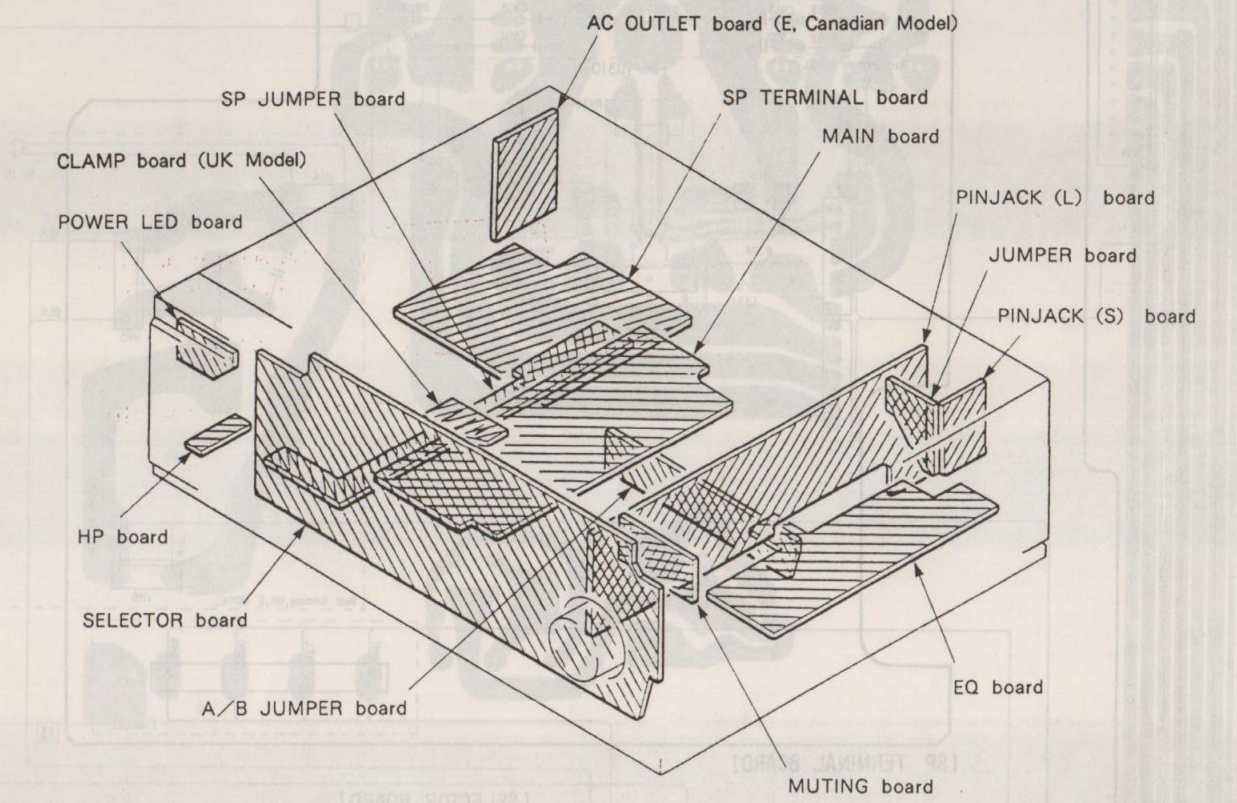
Adjustment Location: power board



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SECTION 3 DIAGRAMS

CIRCUIT BOARD LOCATION



● Semiconductor Lead Layouts

STK-3102-3 	25C3423 	SEL2510C
25A1215M-0 25C2921M-0 	25D774-3 	SEL2810A
25A733-Q 25A988-F 25C945-P 25C2545 	US1060M UZL-16L 10E2N 30DF2 	HZS-7B2L
25A985A 25C2275-P 		

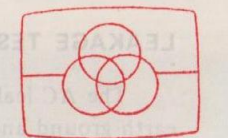
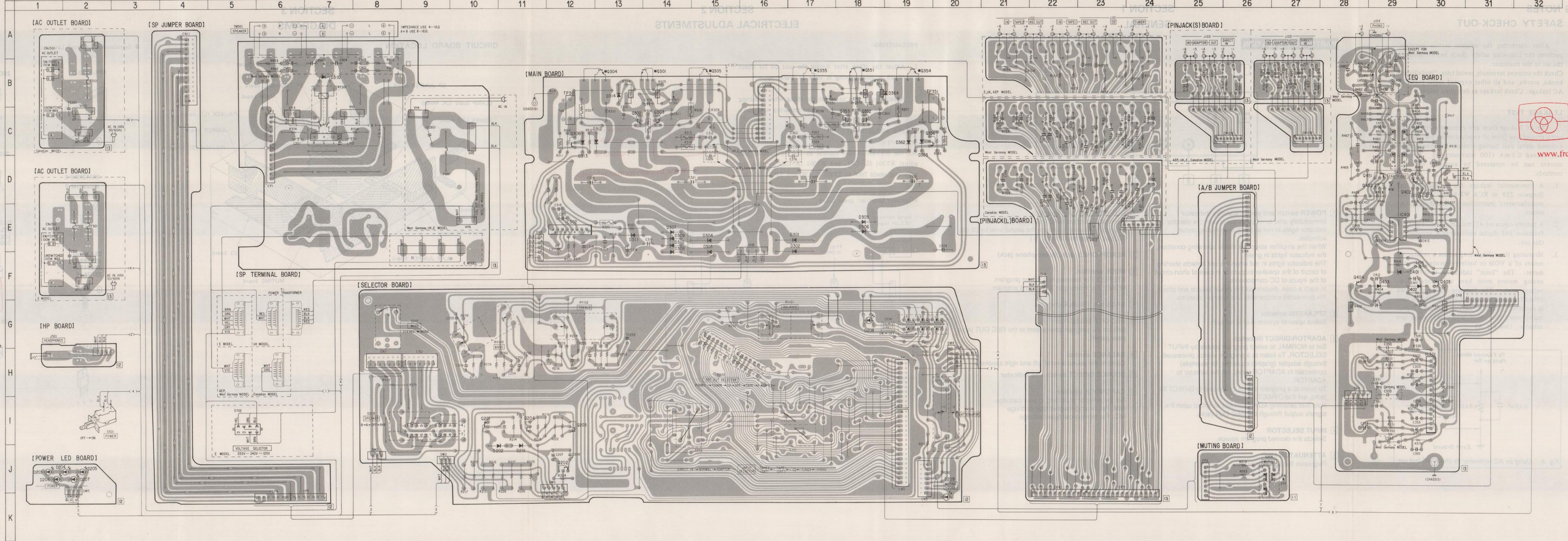
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3-1. PRINTED WIRING BOARDS • See page 7 for Semiconductor Lead Layouts.

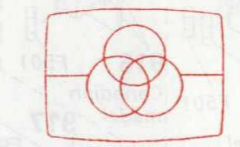
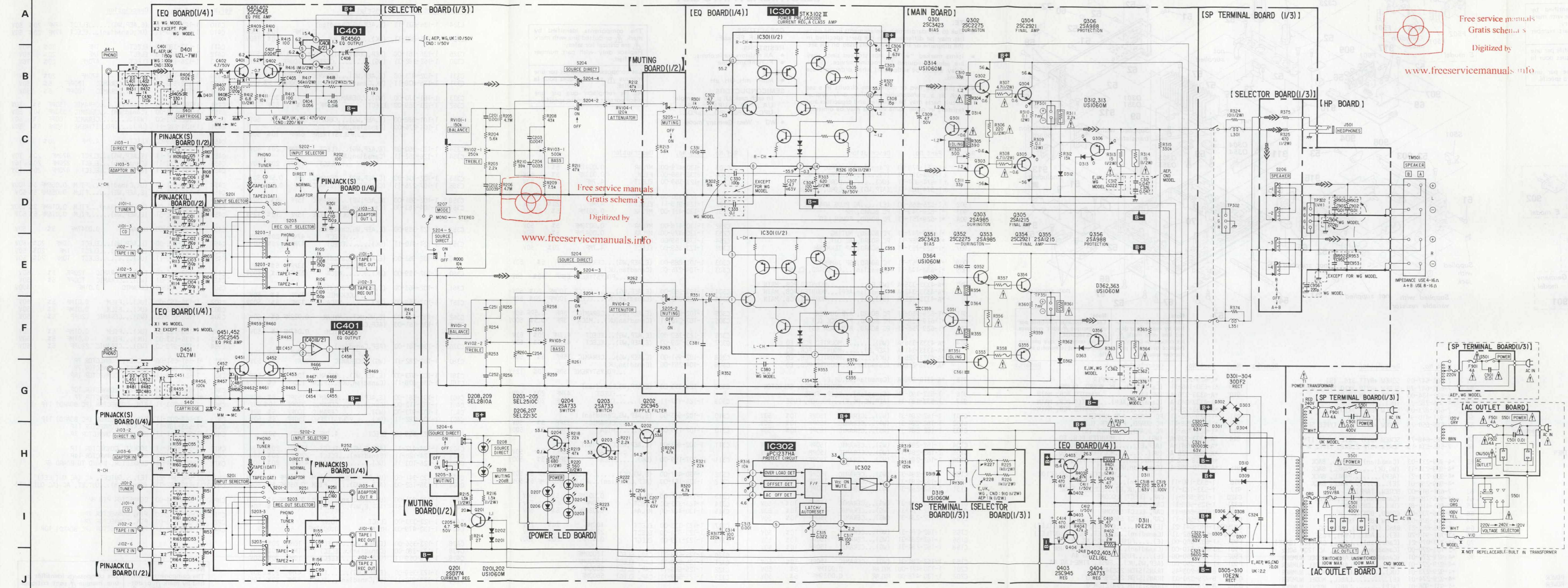
● Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D201	J-11	IC301	I-30
D202	J-11	IC302	E-12
D203	J-1	IC401	E-30
D204	J-2		
D205	J-2	Q201	I-10
D206	J-1	Q202	J-12
D207	J-2	Q203	I-12
D208	G-19	Q204	I-11
D209	K-20	Q301	B-14
D301	E-17	Q302	C-14
D302	F-17	Q303	C-14
D303	F-15	Q304	B-13
D304	E-15	Q305	B-15
D305	E-18	Q306	C-12
D306	E-18	Q351	B-18
D307	E-14	Q352	C-18
D308	F-14	Q353	C-18
D309	E-14	Q354	B-19
D310	F-14	Q355	B-17
D311	E-14	Q356	C-20
D312	C-13	Q401	D-30
D313	C-12	Q402	D-30
D314	B-13	Q403	F-31
D319	B-7	Q404	F-21
D362	C-19	Q451	D-29
D363	C-20	Q452	D-29
D364	B-19		
D401	F-30		
D402	F-30		
D403	F-29		

Note on Printed Wiring Boards:
 ○ — : parts extracted from the component side.
 ● — : parts mounted on the conductor side.



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- Note on Schematic Diagrams :**
- 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 1/2W or less unless otherwise specified.
 - Components for right channel have same values as for left channel.
 - : 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.

Note: Les composants identifiés par une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions. no mark : PHONO
- Voltages are taken with a VOM. (input impedance 10M Ω)
- Voltage variations may be noted due to normal production tolerances.
- Signal path.
- : PHONO
- WG : West Germany
- CND : Canadian

SECTION 4 EXPLODED VIEWS

- NOTE: The mechanical parts with no reference number in the exploded views are not supplied. The construction parts of an assembled part are indicated with a collation number in the remark column. Items marked "*" are not stocked since they are seldom required for routine service.

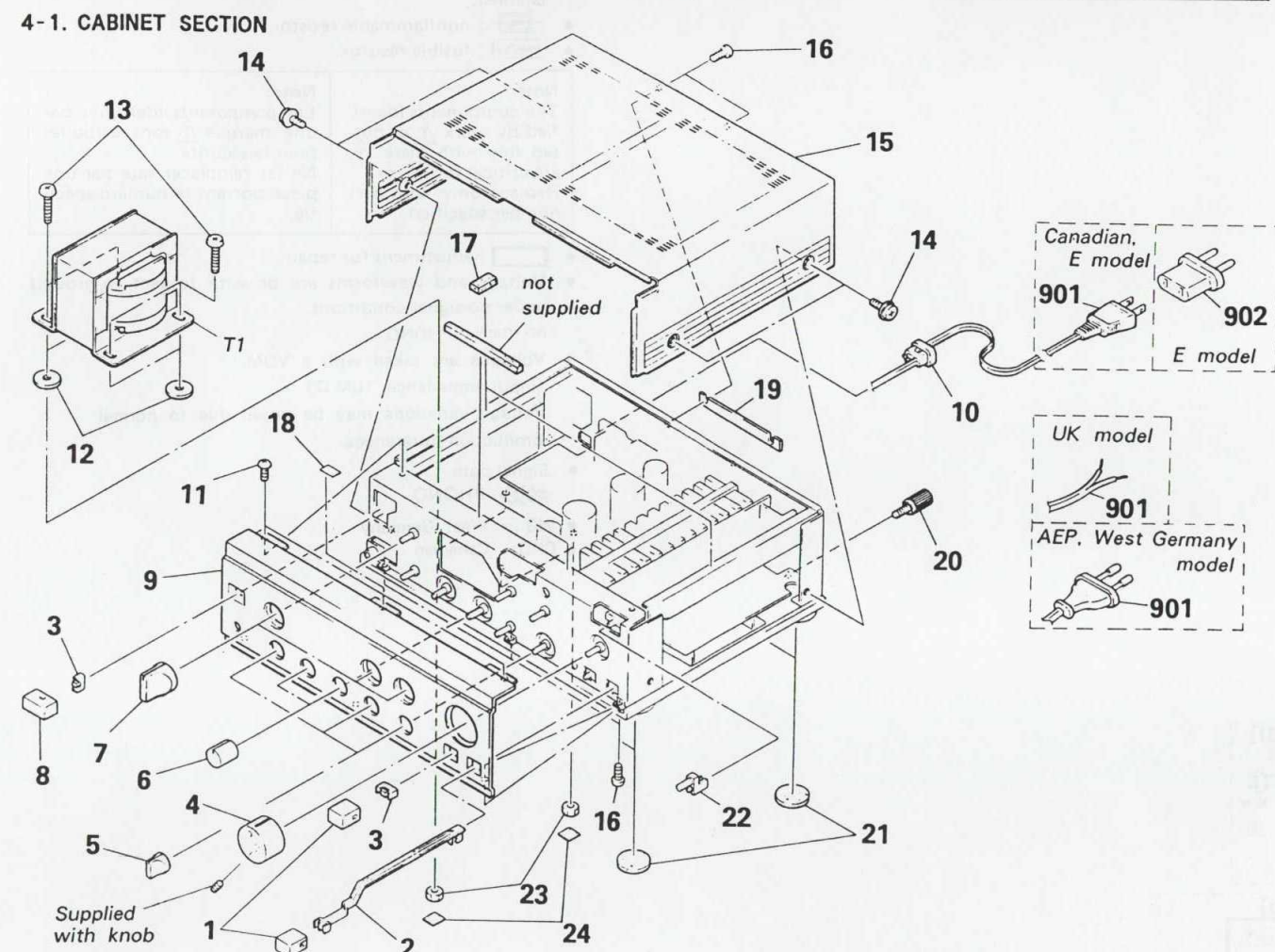


Table with 4 columns: No., Part No., Description, Remarks. Lists parts for cabinet assembly including knobs, screws, and panels.

4-2. CHASSIS SECTION

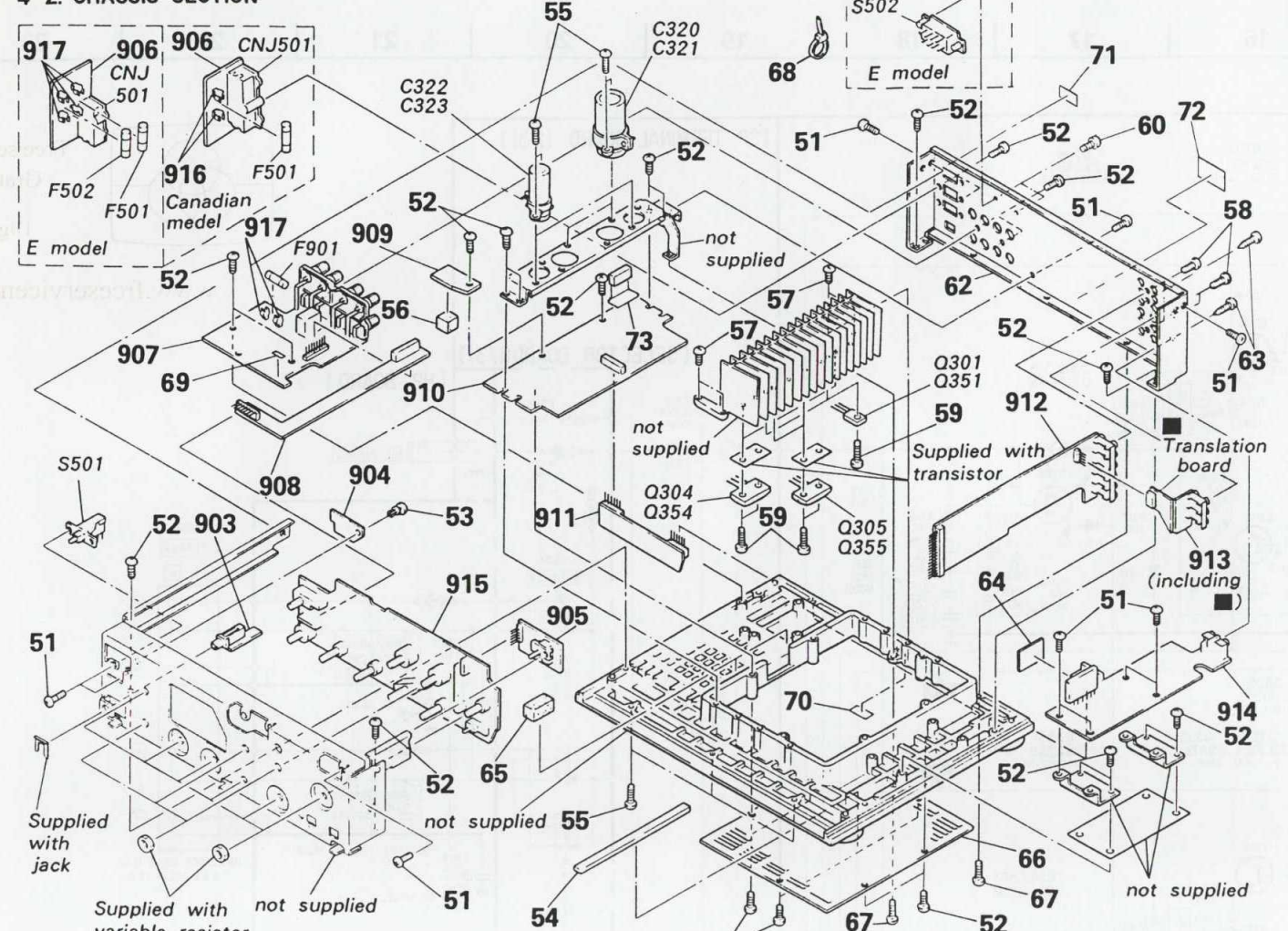


Table with 4 columns: No., Part No., Description, Remarks. Lists electronic components for the chassis section.

SECTION 5 ELECTRICAL PARTS LIST

- 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. Items marked "*" are not stocked since they are seldom required for routine service.

Table with 3 columns: Ref.No., Part No., Description. Lists electrical components with their reference numbers and descriptions.

- CAPACITORS: MF: μF, PF: μμF. RESISTORS: All resistors are in ohms. F: nonflammable. COILS: MMH: mH, UH: μH. SEMICONDUCTORS: In each case, U: μ, for example: UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

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

Table with 3 columns: Ref.No., Part No., Description. Continuation of electrical parts list.

Table with 3 columns: Ref.No., Part No., Description. Continuation of electrical parts list.

Table with 3 columns: Ref.No., Part No., Description. Continuation of electrical parts list.

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

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
CP5	1-568-120-11	PIN, CONNECTOR (PC BOARD) 7P	Q204	8-729-713-36	TRANSISTOR 2SA733Q
CP6	1-568-120-11	PIN, CONNECTOR (PC BOARD) 7P	Q301	8-729-203-45	TRANSISTOR 2SC3423
CP7	*1-568-204-11	PIN, CONNECTOR (PC BOARD) 16P	Q302	8-729-127-53	TRANSISTOR 2SC2275-P
D201	8-719-000-26	DIODE US1060M	Q303	8-729-190-53	TRANSISTOR 2SA985A
D202	8-719-000-26	DIODE US1060M	Q304	8-729-320-03	TRANSISTOR 2SC2921M-0
D203	8-719-303-00	DIODE SEL2510C	Q305	8-729-320-01	TRANSISTOR 2SA1215M-0
D204	8-719-303-00	DIODE SEL2510C	Q306	8-729-108-04	TRANSISTOR 2SA988F
D205	8-719-303-00	DIODE SEL2510C	Q351	8-729-203-45	TRANSISTOR 2SC3423
D206	8-719-300-82	DIODE SEL2213C	Q352	8-729-127-53	TRANSISTOR 2SC2275-P
D207	8-719-300-82	DIODE SEL2213C	Q353	8-729-190-53	TRANSISTOR 2SA985A-P
D208	8-719-301-49	DIODE SEL2810A	Q354	8-729-320-03	TRANSISTOR 2SC2921M-0
D209	8-719-301-49	DIODE SEL2810A	Q355	8-729-320-01	TRANSISTOR 2SA1215M-0
D301	8-719-230-02	DIODE 30DF2	Q356	8-729-108-04	TRANSISTOR 2SA988F
D302	8-719-230-02	DIODE 30DF2	Q401	8-729-354-52	TRANSISTOR 2SC2545
D303	8-719-230-02	DIODE 30DF2	Q402	8-729-354-52	TRANSISTOR 2SC2545
D304	8-719-230-02	DIODE 30DF2	Q403	8-729-194-57	TRANSISTOR 2SC945P
D305	8-719-200-77	DIODE 10E2N	Q404	8-729-173-36	TRANSISTOR 2SA733Q
D306	8-719-200-77	DIODE 10E2N	Q451	8-729-354-52	TRANSISTOR 2SC2545
D307	8-719-200-77	DIODE 10E2N	Q452	8-729-354-52	TRANSISTOR 2SC2545
D308	8-719-200-77	DIODE 10E2N	R000	1-247-725-11	CARBON 10K 5% 1/4W
D309	8-719-200-77	DIODE 10E2N	R101	1-246-545-00	CARBON 1M 5% 1/4W
D310	8-719-200-77	DIODE 10E2N	R102	1-246-545-00	CARBON 1M 5% 1/4W
D311	8-719-200-77	DIODE 10E2N	R103	1-246-545-00	CARBON 1M 5% 1/4W
D312	8-719-000-26	DIODE US1060M	R104	1-246-545-00	CARBON 1M 5% 1/4W
D313	8-719-000-26	DIODE US1060M	R105	1-247-713-11	CARBON 1K 5% 1/4W
D314	8-719-000-26	DIODE US1060M	R106	1-249-417-11	CARBON 1K 5% 1/4W
D319	8-719-000-26	DIODE US1060M	R107	1-246-545-00	CARBON 1M 5% 1/4W
D362	8-719-000-26	DIODE US1060M	R108	1-246-545-00	CARBON 1M 5% 1/4W
D363	8-719-000-26	DIODE US1060M	R109	1-249-417-11	(WG)...CARBON 1K 5% 1/4W
D364	8-719-000-26	DIODE US1060M	R110	1-249-417-11	(WG)...CARBON 1K 5% 1/4W
D401	8-719-933-47	DIODE HZS7B2L	R111	1-249-417-11	(WG)...CARBON 1K 5% 1/4W
D402	8-719-001-97	DIODE UZL-16L	R112	1-249-417-11	(WG)...CARBON 1K 5% 1/4W
D403	8-719-001-97	DIODE UZL-16L	R113	1-249-417-11	(WG)...CARBON 1K 5% 1/4W
D403	8-719-001-97	DIODE UZL-16L	R114	1-249-417-11	(WG)...CARBON 1K 5% 1/4W
EH2	*1-564-508-11	PLUG, CONNECTOR 5P	R151	1-246-545-00	CARBON 1M 5% 1/4W
EH3	*1-564-508-11	PLUG, CONNECTOR 5P	R152	1-246-545-00	CARBON 1M 5% 1/4W
F501	△1-532-350-00	(E)....FUSE, TIME-LAG 4A	R153	1-246-545-00	CARBON 1M 5% 1/4W
F501	△1-532-510-00	(Canadian)....FUSE, GLASE TUBE 8A	R154	1-246-545-00	CARBON 1M 5% 1/4W
F502	△1-532-350-00	(E)....FUSE, TIME-LAG 4A	R155	1-247-713-11	CARBON 1K 5% 1/4W
F901	△1-532-350-00	(AEP,WG,UK)...FUSE, TIME-LAG 4A	R156	1-249-417-11	CARBON 1K 5% 1/4W
IC301	8-749-920-70	IC STK3102-3	R157	1-246-545-00	CARBON 1M 5% 1/4W
IC302	8-759-111-68	IC UPC1237HA	R158	1-246-545-00	CARBON 1M 5% 1/4W
IC401	8-759-981-96	IC RC4560D	R159	1-249-417-11	(WG)...CARBON 1K 5% 1/4W
J101	1-565-320-51	JACK, PIN 6P (TUNER/CD/TAPE1,RECOUT)	R160	1-249-417-11	(WG)...CARBON 1K 5% 1/4W
J102	1-565-320-41	JACK, PIN 6P (TAPE2/REC OUT)	R161	1-249-417-11	(WG)...CARBON 1K 5% 1/4W
J103	1-565-320-51	JACK, PIN 6P (ADAPTOR IN,OUT/DIRECT IN)	R162	1-249-417-11	(WG)...CARBON 1K 5% 1/4W
J104	1-568-250-11	JACK, PIN 2P (PHONO)	R163	1-249-417-11	(WG)...CARBON 1K 5% 1/4W
L301	*1-420-872-00	(E,AEP,WG,UK)...COIL, AIR CORE	R164	1-249-417-11	(WG)...CARBON 1K 5% 1/4W
L301	*1-420-872-31	(Canadian).....COIL, AIR CORE	R201	1-249-417-11	CARBON 1K 5% 1/4W
L351	*1-420-872-00	(E,AEP,WG,UK)...COIL, AIR CORE	R202	1-247-700-11	CARBON 100 5% 1/4W
L351	*1-420-872-31	(Canadian).....COIL, AIR CORE	R203	1-247-717-11	CARBON 2.2K 5% 1/4W
L401	1-413-101-00	(WG)...COIL INPUT	R204	1-247-722-11	CARBON 5.6K 5% 1/4W
L402	1-413-101-00	(WG)...COIL INPUT	R205	1-249-753-15	CARBON 4.7M 5% 1/4W
L451	1-413-101-00	(WG)...COIL INPUT	R206	1-249-753-15	CARBON 4.7M 5% 1/4W
L452	1-413-101-00	(WG)...COIL INPUT	R208	1-247-170-00	CARBON 43K 5% 1/4W
Q201	8-729-177-42	TRANSISTOR 2SD774-3			
Q202	8-729-194-57	TRANSISTOR 2SC945P			
Q203	8-729-713-36	TRANSISTOR 2SA733Q			

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

Note:
Les composants identifiés par une marque **△** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description							
R209	1-247-152-00	CARBON	7.5K	5%	1/4W				
R210	1-249-464-11	CARBON	39K	5%	1/4W				
R211	1-249-465-11	CARBON	47K	5%	1/4W				
R212	1-249-465-11	CARBON	47K	5%	1/4W				
R213	1-247-722-11	CARBON	5.6K	5%	1/4W				
R214	1-247-693-11	CARBON	27	5%	1/4W				
R215	1-247-754-11	CARBON	1.5K	5%	1/2W				
R216	1-247-754-11	CARBON	1.5K	5%	1/2W				
R217	1-247-750-11	CARBON	680	5%	1/2W				
R218	1-249-462-11	CARBON	22K	5%	1/4W				
R219	1-249-465-11	CARBON	47K	5%	1/4W				
R220	1-247-749-11	CARBON	560	5%	1/2W				
R221	1-247-717-11	CARBON	2.2K	5%	1/4W				
R222	1-247-725-11	CARBON	10K	5%	1/4W				
R223	1-249-465-11	CARBON	47K	5%	1/4W				
R224	1-247-721-11	CARBON	4.7K	5%	1/4W				
R225	1-247-752-11	CARBON	1K	5%	1/2W				
R226	1-247-752-11	CARBON	1K	5%	1/2W				
R227	1-247-752-11	(E,WG,Canadian,UK) ...CARBON 1K	1K	5%	1/2W				
R227	1-247-239-00	(AEP)...CARBON 910	910	5%	1/2W				
R228	1-247-752-11	(E,WG,Canadian,UK) ...CARBON 1K	1K	5%	1/2W				
R228	1-247-239-00	(AEP)...CARBON 910	910	5%	1/2W				
R251	1-249-417-11	CARBON	1K	5%	1/4W				
R252	1-247-700-11	CARBON	100	5%	1/4W				
R253	1-247-717-11	CARBON	2.2K	5%	1/4W				
R254	1-247-722-11	CARBON	5.6K	5%	1/4W				
R255	1-249-753-15	CARBON	4.7M	5%	1/4W				
R256	1-249-753-15	CARBON	4.7M	5%	1/4W				
R258	1-247-170-00	CARBON	43K	5%	1/4W				
R259	1-247-152-00	CARBON	7.5K	5%	1/4W				
R260	1-249-464-11	CARBON	39K	5%	1/4W				
R261	1-249-465-11	CARBON	47K	5%	1/4W				
R262	1-249-465-11	CARBON	47K	5%	1/4W				
R263	1-247-722-11	CARBON	5.6K	5%	1/4W				
R301	1-247-713-11	CARBON	1K	5%	1/4W				
R302	1-249-599-11	CARBON	91K	5%	1/4W				
R303	1-249-668-11	CARBON	620	5%	1/2W				
R304	1-247-713-11	CARBON	1K	5%	1/4W				
R305	1-247-707-11	CARBON	390	5%	1/4W				
R306	△ 1-212-990-00	FUSIBLE	220	5%	1/2W	F			
R307	△ 1-212-950-00	FUSIBLE	4.7	5%	1/2W	F			
R308	△ 1-212-950-00	FUSIBLE	4.7	5%	1/2W	F			
R309	1-217-611-00	METAL PLATE	0.1	10%	2W				
R310	1-217-611-00	METAL PLATE	0.1	10%	2W				
R311	△ 1-247-717-11	CARBON	2.2K	5%	1/4W	F			
R312	1-249-460-11	CARBON	15K	5%	1/4W				
R313	△ 1-212-962-00	FUSIBLE	15	5%	1/2W	F			
R314	△ 1-212-962-00	FUSIBLE	15	5%	1/2W	F			
R315	1-247-891-00	CARBON	330K	5%	1/4W				
R316	1-247-725-11	CARBON	10K	5%	1/4W				
R317	1-247-887-00	CARBON	220K	5%	1/4W				
R318	1-247-881-00	CARBON	120K	5%	1/4W				
R319	1-249-461-11	CARBON	18K	5%	1/4W				
R320	1-247-721-11	CARBON	4.7K	5%	1/4W				
R321	1-249-462-11	CARBON	22K	5%	1/4W				
R323	△ 1-212-849-00	FUSIBLE	4.7	5%	1/4W	F			
R324	1-247-727-11	CARBON	10	5%	1/2W				
R325	1-247-747-11	CARBON	470	5%	1/2W				
R326	1-249-721-11	CARBON	100K	5%	1/2W				
R327	1-247-708-11	CARBON	470	5%	1/4W				
R351	1-247-713-11	CARBON	1K	5%	1/4W				
R352	1-249-599-11	CARBON	91K	5%	1/4W				
R353	1-249-668-11	CARBON	620	5%	1/2W				
R354	1-247-713-11	CARBON	1K	5%	1/4W				
R355	1-247-707-11	CARBON	390	5%	1/4W				
R356	△ 1-212-990-00	FUSIBLE	220	5%	1/2W	F			
R357	△ 1-212-950-00	FUSIBLE	4.7	5%	1/2W	F			
R358	△ 1-212-950-00	FUSIBLE	4.7	5%	1/2W	F			
R359	1-217-611-00	METAL PLATE	0.1	10%	2W				
R360	1-217-611-00	METAL PLATE	0.1	10%	2W				
R361	△ 1-247-717-11	CARBON	2.2K	5%	1/4W	F			
R362	1-249-460-11	CARBON	15K	5%	1/4W				
R363	△ 1-212-962-00	FUSIBLE	15	5%	1/2W	F			
R364	△ 1-212-962-00	FUSIBLE	15	5%	1/2W	F			
R365	1-247-891-00	CARBON	330K	5%	1/4W				
R374	1-247-727-11	CARBON	10	5%	1/2W				
R375	1-247-747-11	CARBON	470	5%	1/2W				
R376	1-249-721-11	CARBON	100K	5%	1/2W				
R377	1-247-708-11	CARBON	470	5%	1/4W				
R401	△ 1-216-459-00	METAL OXIDE	2.7K	5%	2W	F			
R402	△ 1-215-895-11	METAL OXIDE	3.3K	5%	2W	F			
R403	1-247-721-11	CARBON	4.7K	5%	1/4W				
R404	1-247-721-11	CARBON	4.7K	5%	1/4W				
R405	1-247-706-11	(E,AEP,UK,Canadian) ...CARBON 330	330	5%	1/4W				
R406	1-249-469-11	CARBON	100K	5%	1/4W				
R407	1-247-700-11	CARBON	100	5%	1/4W				
R408	1-249-469-11	CARBON	100K	5%	1/4W				
R409	1-247-713-11	CARBON	1K	5%	1/4W				
R410	1-247-713-11	CARBON	1K	5%	1/4W				
R411	1-247-725-11	CARBON	10K	5%	1/4W				
R412	1-249-484-11	CARBON	6.8	5%	1/2W				
R413	1-247-739-11	CARBON	100	5%	1/2W				
R414	1-247-138-00	CARBON	2K	5%	1/4W				
R415	1-247-700-11	CARBON	100	5%	1/4W				
R416	1-214-937-00	CARBON	1M	5%	1/2W				
R417	1-249-844-11	CARBON	56K	5%	1/2W				
R418	1-249-818-11	CARBON	4.7K	1%	1/2W				
R419	1-247-713-11	CARBON	1K	5%	1/4W				
R431	1-247-713-11	(WG)...CARBON 1K	1K	5%	1/4W				
R432	1-247-713-11	(WG)...CARBON 1K	1K	5%	1/4W				
R455	1-247-706-11	(E,AEP,UK,Canadian) ...CARBON 330	330	5%	1/4W				
R456	1-249-469-11	CARBON	100K	5%	1/4W				
R457	1-247-700-11	CARBON	100	5%	1/4W				
R458	1-249-469-11	CARBON	100K	5%	1/4W				
R459	1-247-713-11	CARBON	1K	5%	1/4W				
R460	1-247-713-11	CARBON	1K	5%	1/4W				
R461	1-247-725-11	CARBON	10K	5%	1/4W				
R462	1-249-484-11	CARBON	6.8	5%	1/2W				
R463	1-247-739-11	CARBON	100	5%	1/2W				
R465	1-247-700-11	CARBON	100	5%	1/4W				

Note:

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

Note:

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description
R466	1-214-937-00	CARBON 1M 5% 1/2W
R467	1-249-844-11	CARBON 56K 5% 1/2W
R468	1-249-818-11	CARBON 4.7K 1% 1/2W
R469	1-247-713-11	CARBON 1K 5% 1/4W
R481	1-247-713-11	(WG)...CARBON 1K 5% 1/4W
R482	1-247-713-11	(WG)...CARBON 1K 5% 1/4W
R902	1-247-727-11	(WG)...CARBON 10 5% 1/2W
R903	1-247-727-11	(WG)...CARBON 10 5% 1/2W
RT301	1-237-455-11	RES, ADJ, CARBON 500
RT351	1-237-455-11	RES, ADJ, CARBON 500
RV101	1-238-448-11	RES, VAR, CARBON 150K/150K (BALANCE)
RV102	1-238-446-11	RES, VAR, CARBON 250K/250K (TREBLE)
RV103	1-238-447-11	RES, VAR, CARBON 25K/500K (BASS)
RV104	1-237-472-11	RES, VAR, CARBON 120K/120K (ATTENUATOR)
RY301	1-515-501-00	RELAY
S201	1-571-824-11	SWITCH, ROTARY (INPUT SELECTOR)
S202	1-571-826-11	SWITCH, ROTARY (INPUT SELECTOR)
S203	1-571-823-11	SWITCH, ROTARY SLIDE (REC OUT SELECTOR)
S204	1-571-828-11	SWITCH, PUSH (1 KEY) (SOURCE DIRECT)
S205	1-571-827-11	SWITCH, PUSH (1 KEY) (MUTING)
S206	1-571-822-11	SWITCH, ROTARY SLIDE (SPEAKER)
S207	1-571-825-11	SWITCH, ROTARY (MODE)
S401	1-571-111-11	SWITCH, PUSH (1 KEY) (CARTRIDGE)
S501	▲1-554-920-31	SWITCH, PUSH (AC POWER) (1 KEY) (POWER)
S502	▲1-570-307-11	(E)...SWITCH, VOLTAGE CHANGE (VOLTAGE SELECTOR)
T1	▲1-449-685-11	(Canadian)...TRANSFORMER, POWER
T1	▲1-449-687-11	(WG)...TRANSFORMER, POWER
T1	▲1-449-688-11	(AEP)...TRANSFORMER, POWER
T1	▲1-449-689-11	(UK)...TRANSFORMER, POWER
T1	▲1-449-690-11	(E)...TRANSFORMER, POWER
TM501	1-537-235-11	TERMINAL BOARD (SP)
TP301	1-535-135-00	BASE POST 14MM (10MM PITCH) 2P
TP351	1-535-135-00	BASE POST 14MM (10MM PITCH) 2P
VH2	*1-564-321-00	PIN, CONNECTOR 2P
VH3	1-564-320-00	PIN, CONNECTOR 2P
VH4	*1-564-321-00	(AEP,UK,WG)...PIN, CONNECTOR 2P
VH5	*1-565-792-11	PIN, CONNECTOR 2P
VH6	*1-564-321-00	(AEP,UK,WG)...PIN, CONNECTOR 2P
VH8	*1-564-241-00	PIN, CONNECTOR 4P
VH9	*1-560-595-21	TERMINAL (WITH BASE)
VH11	1-564-321-00	(Canadian,E)...PIN, CONNECTOR 2P
VH12	1-564-320-00	PIN, CONNECTOR 2P
VH20	*1-535-141-00	(E)...BASE POST 22MM (10MM PITCH) 4P

ACCESSORY & PACKING MATERIAL

3-786-976-11 (Canadian,UK,E)...MANUAL, INSTRUCTION
 3-786-976-41 (AEP,WG)...MANUAL, INSTRUCTION

*4-929-219-01 CUSHION
 *4-929-263-11 INDIVIDUAL CARTON

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

Note:
 Les composants identifiés par une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Part No.	Description	Part No.	Description
4445	1-244-821-00 CARBON	4446	1-244-821-00 CARBON
4447	1-244-821-01 CARBON	4448	1-244-821-01 CARBON
4449	1-244-821-02 CARBON	4450	1-244-821-02 CARBON
4451	1-244-821-03 CARBON	4452	1-244-821-03 CARBON
4453	1-244-821-04 CARBON	4454	1-244-821-04 CARBON
4455	1-244-821-05 CARBON	4456	1-244-821-05 CARBON
4457	1-244-821-06 CARBON	4458	1-244-821-06 CARBON
4459	1-244-821-07 CARBON	4460	1-244-821-07 CARBON
4461	1-244-821-08 CARBON	4462	1-244-821-08 CARBON
4463	1-244-821-09 CARBON	4464	1-244-821-09 CARBON
4465	1-244-821-10 CARBON	4466	1-244-821-10 CARBON
4467	1-244-821-11 CARBON	4468	1-244-821-11 CARBON
4469	1-244-821-12 CARBON	4470	1-244-821-12 CARBON
4471	1-244-821-13 CARBON	4472	1-244-821-13 CARBON
4473	1-244-821-14 CARBON	4474	1-244-821-14 CARBON
4475	1-244-821-15 CARBON	4476	1-244-821-15 CARBON
4477	1-244-821-16 CARBON	4478	1-244-821-16 CARBON
4479	1-244-821-17 CARBON	4480	1-244-821-17 CARBON
4481	1-244-821-18 CARBON	4482	1-244-821-18 CARBON
4483	1-244-821-19 CARBON	4484	1-244-821-19 CARBON
4485	1-244-821-20 CARBON	4486	1-244-821-20 CARBON
4487	1-244-821-21 CARBON	4488	1-244-821-21 CARBON
4489	1-244-821-22 CARBON	4490	1-244-821-22 CARBON
4491	1-244-821-23 CARBON	4492	1-244-821-23 CARBON
4493	1-244-821-24 CARBON	4494	1-244-821-24 CARBON
4495	1-244-821-25 CARBON	4496	1-244-821-25 CARBON
4497	1-244-821-26 CARBON	4498	1-244-821-26 CARBON
4499	1-244-821-27 CARBON	4500	1-244-821-27 CARBON
4501	1-244-821-28 CARBON	4502	1-244-821-28 CARBON
4503	1-244-821-29 CARBON	4504	1-244-821-29 CARBON
4505	1-244-821-30 CARBON	4506	1-244-821-30 CARBON
4507	1-244-821-31 CARBON	4508	1-244-821-31 CARBON
4509	1-244-821-32 CARBON	4510	1-244-821-32 CARBON
4511	1-244-821-33 CARBON	4512	1-244-821-33 CARBON
4513	1-244-821-34 CARBON	4514	1-244-821-34 CARBON
4515	1-244-821-35 CARBON	4516	1-244-821-35 CARBON
4517	1-244-821-36 CARBON	4518	1-244-821-36 CARBON
4519	1-244-821-37 CARBON	4520	1-244-821-37 CARBON
4521	1-244-821-38 CARBON	4522	1-244-821-38 CARBON
4523	1-244-821-39 CARBON	4524	1-244-821-39 CARBON
4525	1-244-821-40 CARBON	4526	1-244-821-40 CARBON
4527	1-244-821-41 CARBON	4528	1-244-821-41 CARBON
4529	1-244-821-42 CARBON	4530	1-244-821-42 CARBON
4531	1-244-821-43 CARBON	4532	1-244-821-43 CARBON
4533	1-244-821-44 CARBON	4534	1-244-821-44 CARBON
4535	1-244-821-45 CARBON	4536	1-244-821-45 CARBON
4537	1-244-821-46 CARBON	4538	1-244-821-46 CARBON
4539	1-244-821-47 CARBON	4540	1-244-821-47 CARBON
4541	1-244-821-48 CARBON	4542	1-244-821-48 CARBON
4543	1-244-821-49 CARBON	4544	1-244-821-49 CARBON
4545	1-244-821-50 CARBON	4546	1-244-821-50 CARBON
4547	1-244-821-51 CARBON	4548	1-244-821-51 CARBON
4549	1-244-821-52 CARBON	4550	1-244-821-52 CARBON
4551	1-244-821-53 CARBON	4552	1-244-821-53 CARBON
4553	1-244-821-54 CARBON	4554	1-244-821-54 CARBON
4555	1-244-821-55 CARBON	4556	1-244-821-55 CARBON
4557	1-244-821-56 CARBON	4558	1-244-821-56 CARBON
4559	1-244-821-57 CARBON	4560	1-244-821-57 CARBON
4561	1-244-821-58 CARBON	4562	1-244-821-58 CARBON
4563	1-244-821-59 CARBON	4564	1-244-821-59 CARBON
4565	1-244-821-60 CARBON	4566	1-244-821-60 CARBON
4567	1-244-821-61 CARBON	4568	1-244-821-61 CARBON
4569	1-244-821-62 CARBON	4570	1-244-821-62 CARBON
4571	1-244-821-63 CARBON	4572	1-244-821-63 CARBON
4573	1-244-821-64 CARBON	4574	1-244-821-64 CARBON
4575	1-244-821-65 CARBON	4576	1-244-821-65 CARBON
4577	1-244-821-66 CARBON	4578	1-244-821-66 CARBON
4579	1-244-821-67 CARBON	4580	1-244-821-67 CARBON
4581	1-244-821-68 CARBON	4582	1-244-821-68 CARBON
4583	1-244-821-69 CARBON	4584	1-244-821-69 CARBON
4585	1-244-821-70 CARBON	4586	1-244-821-70 CARBON
4587	1-244-821-71 CARBON	4588	1-244-821-71 CARBON
4589	1-244-821-72 CARBON	4590	1-244-821-72 CARBON
4591	1-244-821-73 CARBON	4592	1-244-821-73 CARBON
4593	1-244-821-74 CARBON	4594	1-244-821-74 CARBON
4595	1-244-821-75 CARBON	4596	1-244-821-75 CARBON
4597	1-244-821-76 CARBON	4598	1-244-821-76 CARBON
4599	1-244-821-77 CARBON	4600	1-244-821-77 CARBON
4601	1-244-821-78 CARBON	4602	1-244-821-78 CARBON
4603	1-244-821-79 CARBON	4604	1-244-821-79 CARBON
4605	1-244-821-80 CARBON	4606	1-244-821-80 CARBON
4607	1-244-821-81 CARBON	4608	1-244-821-81 CARBON
4609	1-244-821-82 CARBON	4610	1-244-821-82 CARBON
4611	1-244-821-83 CARBON	4612	1-244-821-83 CARBON
4613	1-244-821-84 CARBON	4614	1-244-821-84 CARBON
4615	1-244-821-85 CARBON	4616	1-244-821-85 CARBON
4617	1-244-821-86 CARBON	4618	1-244-821-86 CARBON
4619	1-244-821-87 CARBON	4620	1-244-821-87 CARBON
4621	1-244-821-88 CARBON	4622	1-244-821-88 CARBON
4623	1-244-821-89 CARBON	4624	1-244-821-89 CARBON
4625	1-244-821-90 CARBON	4626	1-244-821-90 CARBON
4627	1-244-821-91 CARBON	4628	1-244-821-91 CARBON
4629	1-244-821-92 CARBON	4630	1-244-821-92 CARBON
4631	1-244-821-93 CARBON	4632	1-244-821-93 CARBON
4633	1-244-821-94 CARBON	4634	1-244-821-94 CARBON
4635	1-244-821-95 CARBON	4636	1-244-821-95 CARBON
4637	1-244-821-96 CARBON	4638	1-244-821-96 CARBON
4639	1-244-821-97 CARBON	4640	1-244-821-97 CARBON
4641	1-244-821-98 CARBON	4642	1-244-821-98 CARBON
4643	1-244-821-99 CARBON	4644	1-244-821-99 CARBON
4645	1-244-821-00 CARBON	4646	1-244-821-00 CARBON

Note:
 The component shown
 led by mark Δ or ∇
 led line with mark Δ
 are critical for safety
 Please only with our
 number specified.
 Note:
 Les composants montrés par
 une bande Δ ou une bande
 pointillée
 sont critiques pour la
 sécurité
 Veuillez utiliser uniquement
 les numéros spécifiés.