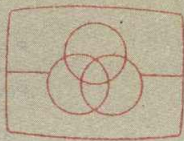


# TA-F35



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US Model  
Canadian Model  
AEP Model  
UK Model



## INTEGRATED STEREO AMPLIFIER

### SPECIFICATIONS

#### POWER AMPLIFIER SECTION

##### Power Output and Total Harmonic

**Distortion:** With 8Ω loads, both channels driven, from 20 – 20,000 Hz; rated 40 watts per channel minimum RMS power, with no more than 0.015% total harmonic distortion from 250 mW to rated output.

##### Continuous RMS power output :

(Less than 0.015% THD, both channels driven simultaneously)  
At 20 Hz – 20 kHz  
40 + 40 watts (8 ohms)  
According to DIN 45500 (AEP, UK model)  
40 + 40 watts (8 ohms)

Power bandwidth (IHF): 20 Hz – 20 kHz

Dynamic headroom: 1.8 dB\*

Harmonic distortion: Less than 0.015% at rated output  
Less than 0.01% at 20 W output

##### Intermodulation (IM) distortion :

(60 Hz : 7 kHz = 4 : 1) Less than 0.015% at rated output  
Less than 0.01% at 20 W output

##### Frequency response :

PHONO RIAA equalization curve  $\pm 0.2$  dB  
TUNER  
AUX 5 Hz – 60 kHz  $\pm 0$  dB  
TAPE  $-1$  dB

##### Residual noise :


Less than 180  $\mu$ V (8 ohms, network A)

##### Damping factor :


50 (8 ohms, 1 kHz)

– Continued on page 2 –

#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS 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.

#### ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

# SONY®

## SERVICE MANUAL

**General**

**Inputs :**

	Sensitivity	Impedance	Maximum input capability (1 kHz)	S/N (weighting network, input level)
PHONO (MM)	2.5 mV	50 kΩ	150 mV	88 dB 79 dB* (A, 2.5 mV)
PHONO (MC)	0.17 mV	100 Ω	11 mV	73 dB 73 dB* (A, 0.25 mV)
TUNER AUX TAPE	150 mV	50 kΩ	—	101 dB 78 dB* (A, 150 mV)

**System:**

Preamplifier section : low-noise NF type equalizer amp.; NF type tone control  
Power amplifier section : pure-complementary SEPP dc power amplifier with all stages direct coupled

**Power Requirements:**

US, Canadian model: 120V ac, 60 Hz  
UK model: 240V ac (or 220V ac adjustable by authorized Sony personnel), 50 Hz  
AEP model: 220V ac (or 240V ac adjustable by authorized Sony personnel), 50 Hz

**Power Consumption:**

UK model: 250W  
AEP model: 240W  
US model: 90W  
Canadian model: 140W

**Dimensions:**

Approx. 430 × 80 × 335 mm (w/h/d)  
(17 × 3<sup>1</sup>/<sub>4</sub> × 13<sup>1</sup>/<sub>4</sub> inches)

**Weight :**

including projecting parts and controls  
Approx. 6.2 kg (13 lbs 11 oz) net  
Approx. 7.2 kg (15 lbs 14 oz) in shipping carton

\* '78 IHF

Measured with rated output power into 8-ohm loads (both channels driven simultaneously) at 1 kHz

**Outputs :**

REC OUT  
Voltage 150 mV  
Impedance 4.7 kilohms  
SPEAKER A, B  
Accepts speakers of 8 - 16 ohms.  
HEADPHONES  
Accepts low and high impedance headphones.

**Tone controls :**

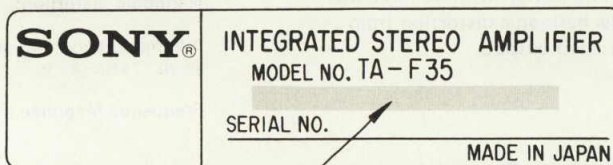
BASS  
±10 dB at 100 Hz (turnover frequency 500 Hz)  
TREBLE  
±10 dB at 25 kHz (turnover frequency 5 kHz)

Loudness (att. 30 dB)  
Low filter :

+ 10 dB at 100 Hz, + 3 dB at 10 kHz  
6 dB/octave attenuation below 15 Hz

**MODEL IDENTIFICATION**

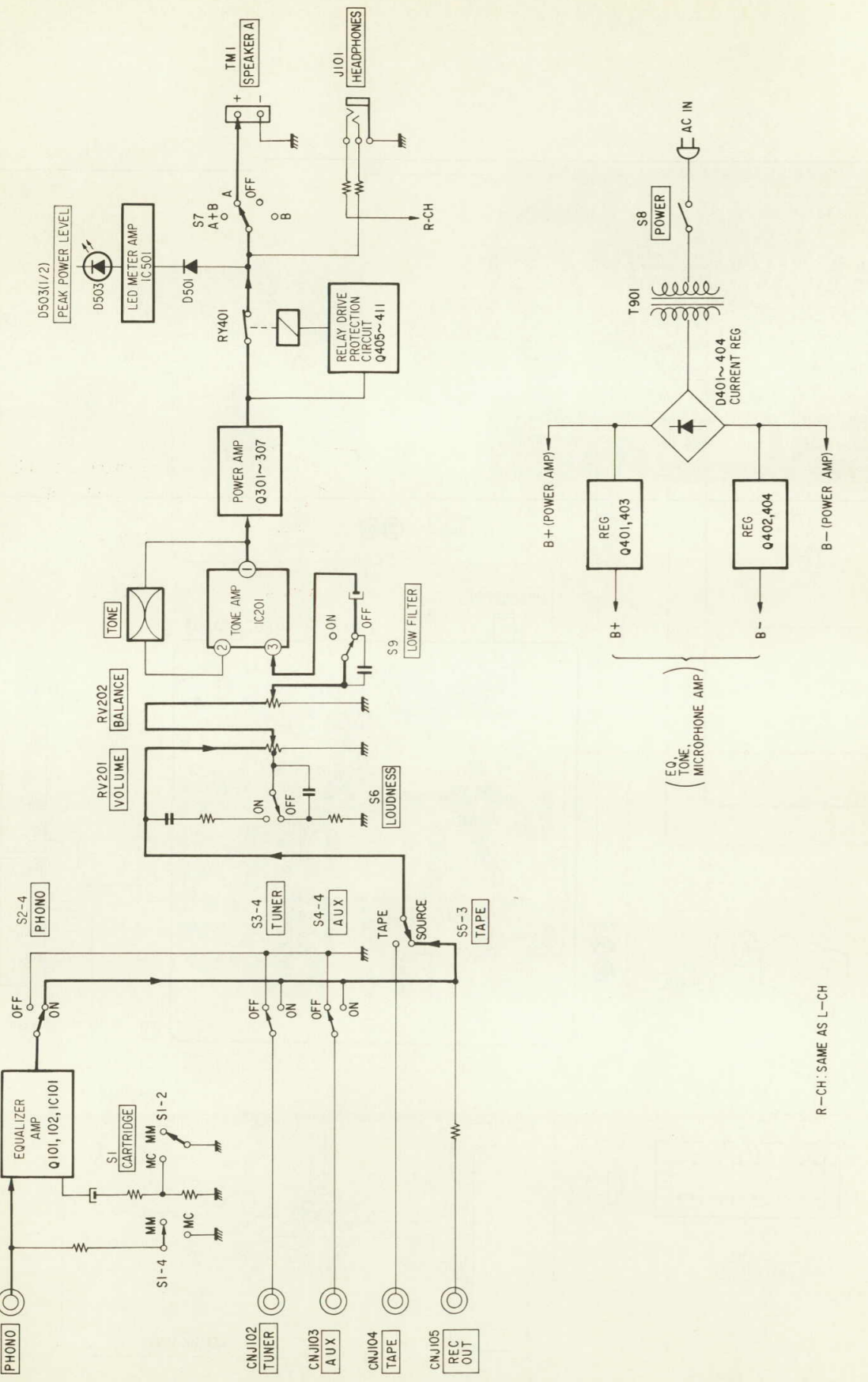
**Specification Label**



US model	:	AC 120V	60Hz	90W
Canadian model	:	AC 120V	60Hz	140W
AEP model	:	AC 220V	~50/60Hz	240W
UK model	:	AC 240V	~50/60Hz	250W



SECTION 1  
BLOCK DIAGRAM



SECTION 2  
DISASSEMBLY

• Follow the disassembly procedure in the numerical order given.

**TOP COVER/ FRONT PANEL REMOVAL**

① : top cover  
①, ② : front panel

The diagram shows the physical unit with arrows indicating the removal of the top cover (1) and the front panel (1, 2). Screws (BVTT 3 x 6) are shown being removed from the top and front. A watermark for 'www.freeservicemanuals.info' is visible.

**BOTTOM PLATE REMOVAL**

The diagram shows the physical unit with an arrow indicating the removal of the bottom plate (1) using a screw (PTTWH 3 x 6).

SECTION 3  
ADJUSTMENTS

**NOTE:**

1. DC BIAS and DC BALANCE adjustments should be made about several minutes later after the POWER switch is turned on.
2. Make the DC BIAS adjustment first.
3. Repeat DC BIAS and DC BALANCE adjustments two or three times.
4. After replacing the power transistors, DC BIAS and DC BALANCE adjustments should be performed.

**DC Bias Adjustment**

**Procedure:** Adjust RV302 (L-CH) and RV352 (R-CH) for 15mV readings with no signal input.

**Adjustment Location:**

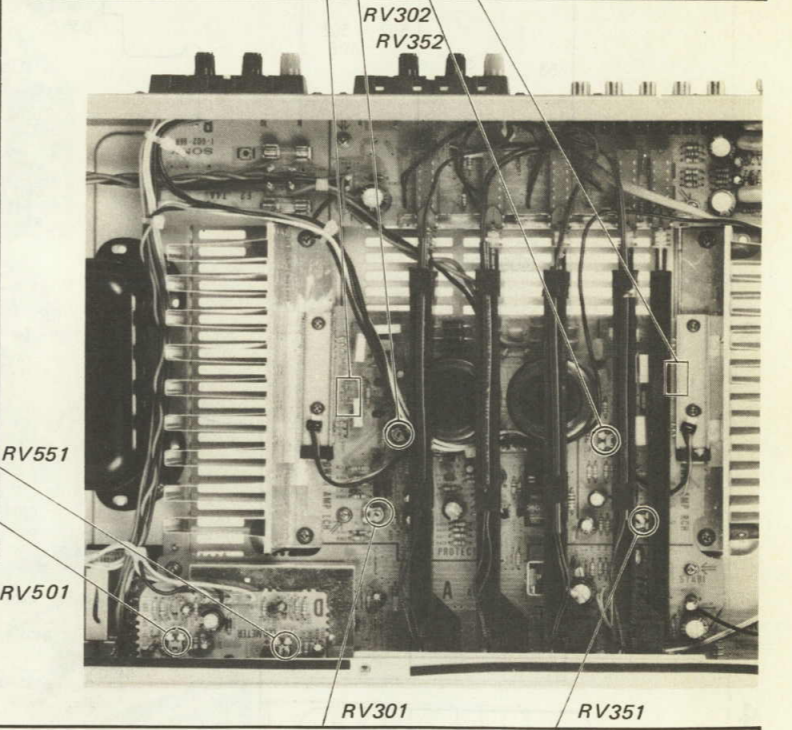
The diagram shows two VOMs (VOM) connected to the L-CH and R-CH channels. The VOMs are set to the DC range. The adjustment points are labeled as 'check point'.

**Indicator Sensitivity Adjustment**

**Procedure:**

1. Turn the VOLUME control fully clockwise.
2. Adjust the input level of the set for 1W (2.5V) reading on the VTVM.
3. Adjust RT501 (L-CH) and RT551 (R-CH) so that the PEAK POWER LEVEL indicators of 1W and less light up.

The diagram shows a circuit for indicator sensitivity adjustment. It includes an attenuator (100 kΩ), a set (8Ω, 1W), and a speaker. The input is 1 kHz. The VTVM is connected to the speaker terminals.



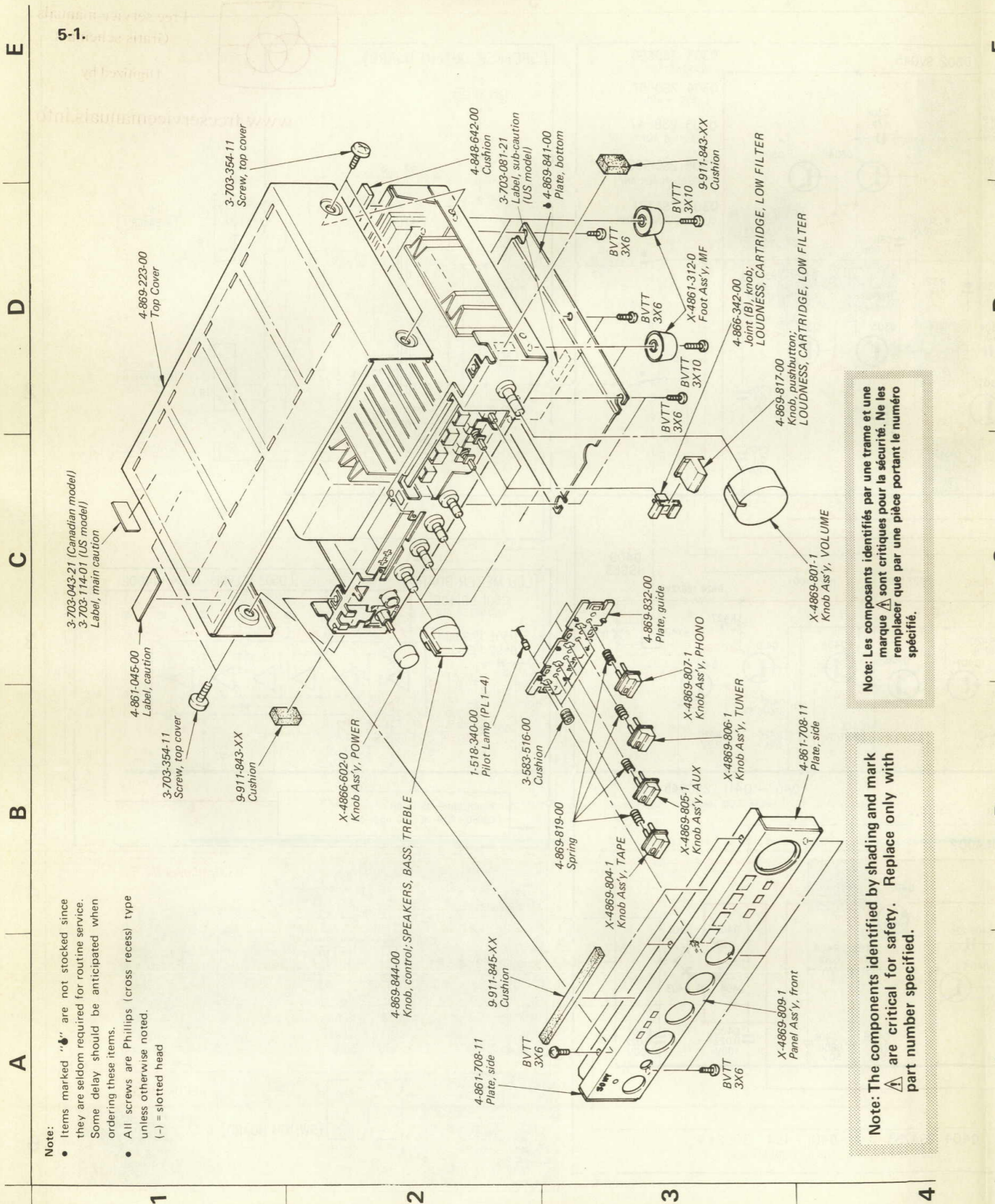
**DC Balance Adjustment**

**Procedure:** Adjust RV301 (L-CH) and RV351 (R-CH) for 0V readings with no signal input.

**Adjustment Location:**

The diagram shows two VOMs (VOM) connected to the L-CH and R-CH channels. The VOMs are set to the DC range. The adjustment points are labeled as 'check point'.

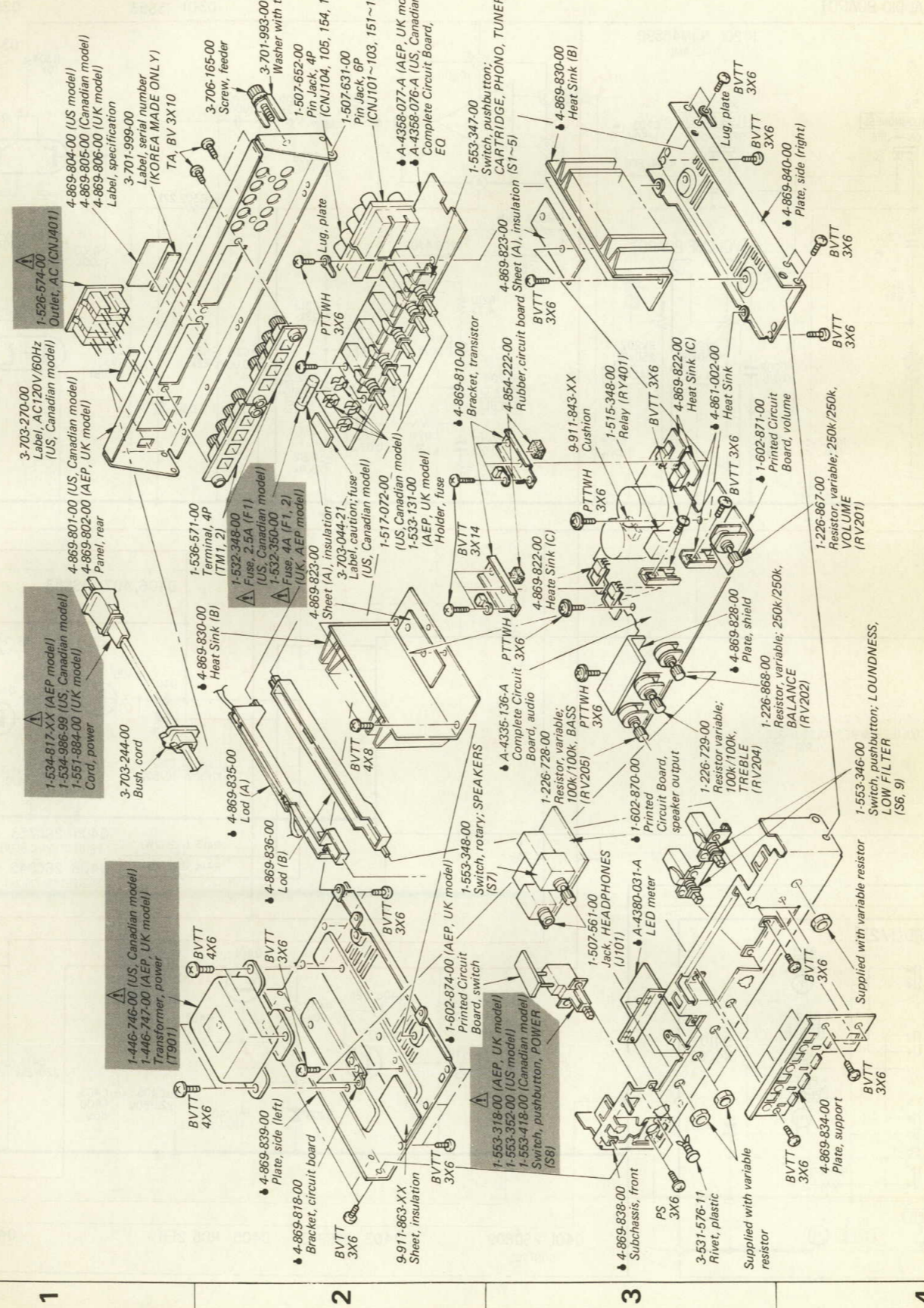
SECTION 5 EXPLODED VIEWS



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

Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

5-2.



Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

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

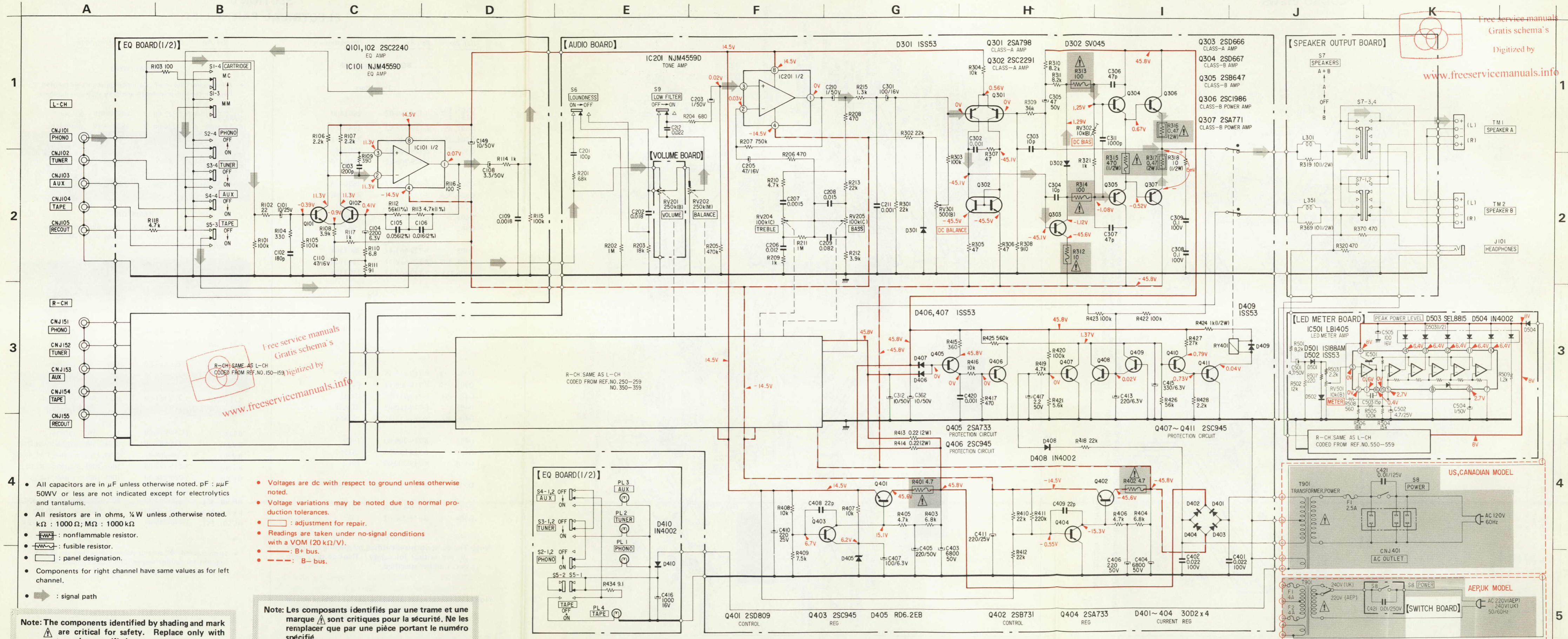
SECTION 6 ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
<b>SEMICONDUCTORS</b>		
<b>Transistors</b>		
Q101, 102	8-729-140-02	2SC1400
Q151, 152	8-729-140-02	2SC1400
Q301, 351	8-729-679-82	2SA798
Q302, 352	8-729-629-12	2SC2291
Q303, 353	8-729-300-62	2SD666A
Q304, 354	8-729-306-72	2SD667A
Q305, 355	8-729-300-72	2SB647A
Q306, 356	8-729-398-62	2SC1986
Q307, 357	8-729-377-12	2SA771
Q401	8-729-180-93	2SD809
Q402	8-729-173-13	2SB731
Q403	8-729-663-47	2SC1364
Q404, 405	8-729-612-77	2SA1027R
Q406-411	8-729-663-47	2SC1364
<b>ICs</b>		
IC101, 201	8-759-745-59	NJM4559D
IC501, 551	8-759-814-05	LB1405
<b>Diodes</b>		
D301, 351	8-719-815-55	1S1555
D302, 352	8-719-300-11	SV04S
D401-404	8-719-911-55	U05G
D405	8-719-162-07	RD6.2E
D406, 407	8-719-815-55	1S1555
D408	8-719-200-02	10E2
D409	8-719-815-55	1S1555
D410	8-719-200-02	10E2
D501	8-719-422-21	1T22AM
D502	8-719-815-55	1S1555
D504	8-719-200-02	10E2

Ref. No.	Part No.	Description
<b>CAPACITORS</b>		
• All capacitors are in $\mu$ F. Common capacitors are omitted. Refer to the lists on pages 18 and 19 for their part numbers.		
C302, 311	1-161-323-00	0.001 50V ceramic
C352, 361	1-161-323-00	0.001 50V ceramic
C403, 404	1-125-229-00	6800 50V electrolytic
C421	1-130-455-00	0.01 250V film (AEP, UK model)
	1-161-744-00	0.01 400V ceramic (AEP, UK model)
	1-161-749-00	0.001 125V ceramic (US, Canadian model)
<b>RESISTORS</b>		
All resistors are in ohms. Common $\frac{1}{4}$ W carbon resistors are omitted. Refer to the list on page 20 for their part numbers.		
R312, 362	1-212-857-00	10 fusible
R313, 314	1-212-881-51	100 fusible
R363, 364	1-212-881-51	100 fusible
R315, 365	1-212-998-00	470 $\frac{1}{2}$ W fusible
R316, 317	1-217-153-00	0.47 2W metal plate (nonflammable)
		0.47 2W metal plate (nonflammable)
R318, 368	1-244-825-00	10 $\frac{1}{2}$ W carbon
R319, 369	1-244-825-00	10 $\frac{1}{2}$ W carbon
R320, 370	1-244-865-00	470 $\frac{1}{2}$ W carbon
R401, 402	1-212-849-00	4.7 metal-oxide (nonflammable)
R413, 414	1-217-151-00	0.22 2W metal plate
R415	1-212-894-00	360 fusible
R424	1-244-873-00	1k $\frac{1}{2}$ W carbon
RV201	1-226-867-00	250k/250k, variable; VOLUME
RV202	1-226-868-00	250k/250k, variable; BALANCE
RV204	1-226-729-00	100k/100k, variable; TREBLE
RV205	1-226-728-00	100k/100k, variable; BASS
RV301, 351	1-226-232-00	500, adjustable; DC BALANCE
RV302, 352	1-226-236-00	10k, adjustable; DC BIAS
RV501, 551	1-226-236-00	10k, adjustable; LED METER

• Items marked with a star are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

4.2. SCHEMATIC DIAGRAM



- All capacitors are in  $\mu F$  unless otherwise noted. pF :  $\mu F$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms,  $\frac{1}{2} W$  unless otherwise noted. k $\Omega$  : 1000  $\Omega$ ; M $\Omega$  : 1000 k $\Omega$
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- Components for right channel have same values as for left channel.
- : signal path

- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- : adjustment for repair.
- Readings are taken under no-signal conditions with a VOM (20 k $\Omega/V$ ).
- : B+ bus.
- : B- bus.

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

Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

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<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
<b>MISCELLANEOUS</b>		
CNJ101-103) CNJ151-153)	1-507-631-00	Pin Jack, 6p
CNJ104, 105) CNJ154, 155)	1-507-652-00	Pin Jack, 4p
CNJ401	▲1-526-574-00	Outlet, AC
F1	▲1-532-348-00	Fuse, 2.5A (US, Canadian model)
F1, 2	▲1-532-350-00	Fuse, 4A (UK, AEP model)
J101	1-507-561-00	Jack, HEADPHONES
●L301, 351	1-420-838-00	Coil
RY401	1-515-348-00	Relay
PL1-4	1-518-340-00	Pilot Lamp
S1-5	1-553-347-00	Switch, pushbutton; CARTRIDGE, PHONO, TUNER, AUX, TAPE
S6	1-553-346-00	Switch, pushbutton; LOUDNESS
S7	1-553-348-00	Switch, rotary; SPEAKERS
S8	▲1-553-318-00	Switch, pushbutton; POWER (AEP, UK model)
	▲1-553-352-00	Switch, pushbutton; POWER (US model)
	▲1-553-418-00	Switch, pushbutton; POWER (Canadian model)
S9	1-553-346-00	Switch, pushbutton; LOW FILTER
T901	▲1-446-746-00	Transformer, power (US, Canadian model)
	▲1-446-747-00	Transformer, power (AEP, UK model)
TM1, 2	1-536-571-00	Terminal, 4p
	1-517-072-00	Holder, fuse (US, Canadian model)
	1-533-131-00	Holder, fuse (AEP, UK model)
	▲1-534-817-XX	Cord, power (AEP model)
	▲1-534-986-99	Cord, power (US, Canadian model)
	▲1-551-884-00	Cord, power (UK model)

**COMPLETE CIRCUIT BOARDS**

●A-4335-136-A	Audio
●A-4358-077-A	EQ (AEP, UK model)
●A-4358-076-A	EQ (US, Canadian model)
●A-4380-031-A	LED meter

**PRINTED CIRCUIT BOARDS**

●1-602-870-00	Speaker Out
●1-602-871-00	Volume
●1-602-874-00	Switch (AEP, UK model)

**ACCESSORIES AND PACKING MATERIALS**

<u>Part No.</u>	<u>Description</u>
3-701-630-00	Bag, polyethylene
3-783-201-11	Manual, instruction (AEP, UK model)
3-783-201-21	Manual, instruction (US model)
3-783-201-21)	Manual, instruction (Canadian model)
3-794-845-31	
4-863-543-00	Cushion
4-866-723-00	Sheet, polyethylene
4-869-846-00	Carton, individual

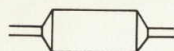
MYLAR CAPACITORS

CAP. (μF)	RATING																		
	50 VOLT.			100 VOLT.			200 VOLT.			CAP. (μF)	50 VOLT.			100 VOLT.			200 VOLT.		
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.		PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00								
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00								
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00								
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00								
0.0022	1-108-220-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00								
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	—	—								
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	—	—								
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	—	—								
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	—	—								
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00												
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00												
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00												



TANTALUM CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one.											
	3.15 VOLT.		6.3 VOLT.		10 VOLT.		20 VOLT.		25 VOLT.		35 VOLT.	
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	
0.01							→		→		1-131-396-00	
0.015									→		1-131-397-00	
0.022									→		1-131-398-00	
0.033									→		1-131-399-00	
0.047									→		1-131-400-00	
0.068							→		→		1-131-401-00	
0.1							→		→		1-131-402-00	
0.15							→		→		1-131-403-00	
0.22							→		→		1-131-404-00	
0.33							→	1-131-409-00			1-131-405-00	
0.47	—	—	—	—	—	—	1-131-412-00		→		1-131-406-00	
0.68	—	—	—	—	1-131-415-00	—	→		1-131-410-00		1-131-407-00	
1.0	—	—	—	1-131-418-00	—	—	1-131-413-00		→		1-131-408-00	
1.5	—	1-131-421-00	—	—	1-131-416-00	—	→		1-131-411-00		1-131-348-00	
2.2	1-131-424-00	—	—	1-131-419-00	—	—	1-131-414-00		1-131-355-00		1-131-349-00	
3.3	—	1-131-422-00	—	—	1-131-417-00	—	1-131-362-00		1-131-356-00		1-131-350-00	
4.7	1-131-425-00	—	—	1-131-420-00	1-131-369-00	—	1-131-363-00		1-131-357-00		1-131-351-00	
6.8	—	1-131-423-00	—	1-131-376-00	1-131-370-00	—	1-131-364-00		1-131-358-00		1-131-352-00	
10	1-131-426-00	1-131-383-00	—	1-131-377-00	1-131-371-00	—	1-131-365-00		1-131-359-00		1-131-353-00	
15	1-131-390-00	1-131-384-00	—	1-131-378-00	1-131-372-00	—	1-131-366-00		1-131-360-00		—	
22	1-131-391-00	1-131-385-00	—	1-131-379-00	1-131-373-00	—	1-131-367-00					
33	1-131-392-00	1-131-386-00	—	1-131-380-00	1-131-374-00	—						
47	1-131-393-00	1-131-387-00	—	1-131-381-00	—	—						
68	1-131-394-00	1-131-388-00	—	—	—	—						
100	1-131-395-00	—	—	—	—	—						



TANTALUM CAPACITORS

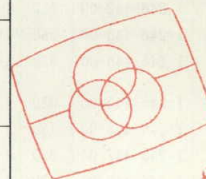
CAP. (μF)	RATING											
	3 VOLT.		6.3 VOLT.		10 VOLT.		16 VOLT.		20 VOLT.		35 VOLT.	
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.		
0.033											1-131-273-00	
0.047											1-131-274-00	
0.068											1-131-275-00	
0.1											1-131-276-00	
0.15											1-131-277-00	
0.22					—	—	—	—	1-131-262-00		1-131-278-00	
0.33					—	—	—	—	1-131-263-00		1-131-279-00	
0.47					1-131-169-00	—	—	—	1-131-264-00		1-131-280-00	
0.68					—	—	1-131-258-00	—	1-131-265-00		1-131-281-00	
1.0					1-131-254-00	—	—	—	1-131-266-00		1-131-282-00	
1.5					—	—	—	—	1-131-267-00		1-131-283-00	
2.2					—	—	1-131-259-00	—	1-131-268-00		1-131-284-00	
3.3					1-131-255-00	—	—	—	1-131-269-00		—	
4.7					1-131-251-00	1-131-171-00	—	—	1-131-270-00		—	
6.8					—	—	1-131-260-00	—	1-131-271-00		—	
10					—	—	—	—	1-131-272-00		—	
15					—	—	—	—	—		—	
22					1-131-252-00	—	—	—	—		—	
33					—	—	1-131-257-00	—	—		—	
47	1-131-176-00	—	—	—	1-131-173-00	—	—	—	—		—	
100	1-131-177-00	—	—	—	—	—	—	—	—		—	



**ELECTROLYTIC CAPACITORS**

CAP. (μF)	RATING → : Use the high voltage rated one.					
	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	-	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	-
3300	1-121-661-00	1-123-075-00	1-123-071-00	-	-	-

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	-	-	-	-
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	-	1-123-028-00
3.3	1-121-995-00	-	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	-	-
47	1-123-251-00	1-121-919-00	-	-
100	1-123-084-00	-	-	-



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**CERAMIC CAPACITORS**

RATING							
CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

**CERAMIC (SEMICONDUCTOR) CAPACITORS**

RATING → : Use the high voltage rated one.					
CAP. (μF)	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

1/4 WATT CARBON RESISTORS

$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

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HARDWARE NOMENCLATURE

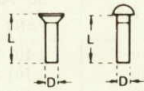
Screw:

P 3 x 10

L: Length in mm  
D: Diameter in mm  
Type of head

Indicated slotted-head only.

Unless otherwise indicated, it means cross-recessed head (Phillips type).



Nut, Washer, Retaining ring:

N 3

Diameter of usable screw or shaft  
Reference designation

Reference Designation	Shape	Description	Remarks
<b>SCREWS</b>			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
<b>SELF-TAPPING SCREWS</b>			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self-tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
<b>SET SCREWS</b>			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
<b>NUT</b>			
N		nut	
<b>WASHERS</b>			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
<b>RETAINING RINGS</b>			
E		retaining ring	
G		grip-type retaining ring	