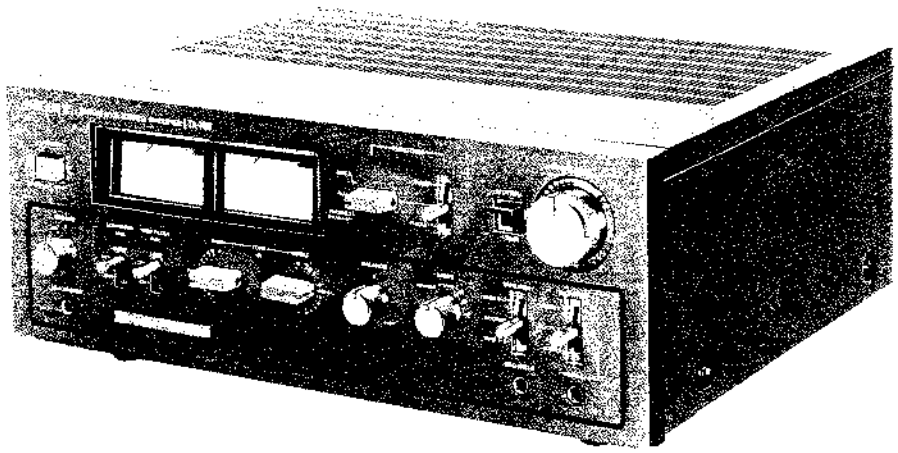
TA-F6B

US Model
Canadian Model
AEP Model
UK Model
E Model



INTEGRATED STEREO AMPLIFIER

SPECIFICATIONS

GENERAL

Power Requirements: 120 V ac, 60 Hz (US, Canadian model)
110 – 120 V and 220 – 240 V ac, adjustable 50/60 Hz (AEP, UK, E model)

Power Consumption: 190 W (US model)
490 VA (Canadian model)
450 W (AEP, E model)
550 W (UK model)

Dimensions: Approx. 430 (w) x 170 (h) x 390 (d) mm
16⅞ (w) x 6¾ (h) x 15⅜ (d) inches
including projecting parts and controls

Weight: Approx. 12.5 kg, 27 lb 9 oz (net)
Approx. 14.2 kg, 31 lb 5 oz (in shipping carton)

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 UN TRAMÉ 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 DES SUPPLÉMENTS PUBLIÉS PAR SONY.

POWER AMPLIFIER SECTION

Power Output and Total Harmonic Distortion: With 8 Ω loads, both channels driven, from 20–20,000 Hz; rated 100 W per channel minimum RMS power, with no more than 0.03 % total harmonic distortion from 250 mW to rated output.
(US, Canadian model)

Continuous RMS Power Output: (Less than 0,03 % THD, both channels driven simultaneously)
At 20 Hz–20 kHz
100 W + 100 W (8 Ω)
According to DIN 45500
100 W + 100 W (8 Ω)
(AEP, UK, E model)

Power Bandwidth (IHF): 5 Hz – 35 kHz (50 W output, 0.03 % THD, 8 Ω)
(AEP, UK, E model)

Harmonic Distortion: Less than 0.03 % at rated output
Less than 0.015 % at 1 W/10 W output

Intermodulation (IM) Distortion: (60 Hz : 7 kHz = 4 : 1)
Less than 0.03 % at rated output
Less than 0.008 % at 1 W/10 W output

Frequency Response: DC – 100 kHz $^{+0}_{-1}$ dB

– Continued on page 2 –

SONY®
SERVICE MANUAL

S/N Ratio: Greater than 115 dB, short-circuited input

Residual Noise: Less than 50 μV (8 Ω, network A)

Damping Factor: 50 (8 Ω, 1 kHz)

Inputs: POWER INPUT
Sensitivity 1.3 V (4.5 dB), for rated output
Impedance 50 kΩ

Outputs: SPEAKER terminals A, B
Accept speakers of 4 – 16 Ω
(US, Canadian model)
Accept speakers of 8 – 16 Ω
(AEP, UK, E model)

HEADPHONES jack
Accepts low and high-impedance stereo headphones

PREAMPLIFIER SECTION

Harmonic Distortion: Less than 0.003 %
(TUNER → PRE OUTPUT, 10 V output, 1 kHz)

Intermodulation (IM) Distortion: Less than 0.003 %
(60 Hz : 7 kHz = 4 : 1) (TUNER → PRE OUTPUT, 10 V output)

Frequency Response: PHONO 1, 2 RIAA equalization ±0.2 dB
TUNER, AUX 1, 2, TAPE 1, 2: 2 Hz – 150 kHz $^{+0}_{-1}$ dB

Tone Controls: BASS
±10 dB at 60 Hz
TREBLE
±10 dB at 25 kHz

Filters: LOW
6 dB/octave attenuation below 15 Hz
HIGH
6 dB/octave attenuation above 9 kHz

Residual Noise: –∞ (infinity)

Inputs:

	Sensitivity	Impedance	Phono overload (1 kHz)	S/N (weighting network, input level)
PHONO 1	2.5 mV (–50 dB)	50 kΩ	250 mV	85 dB (A, 2.5 mV)
PHONO 2 (HEAD AMP)	0.08 mV (–80 dB)	100 Ω	8 mV	70 dB (A, 0.08 mV)
TUNER AUX 1, 2 TAPE 1, 2	150 mV (–14.5 dB)	50 kΩ	———	105 dB (A, 150 mV)

Outputs:

	Voltage	Impedance
REC OUT 1, 2	150 mV (–14.5 dB) (13.5 V at max.)	10 kΩ
PRE OUTPUT	1.3 V (4.5 dB) (10 V at max.)	2.5 kΩ (max.)

0 dB = 0.775 V

MODEL IDENTIFICATION

Specification Label

UK model

SONY ASCO
INTEGRATED STEREO AMPLIFIER
MODEL NO. TA-F6B
AC 110-120/220-240V ~ 50/60Hz 550W
SERIAL NO.
MADE IN JAPAN

Canadian model

SONY ASCO
INTEGRATED STEREO AMPLIFIER
MODEL NO. TA-F6B
AC 120V 60Hz 490VA
SERIAL NO.
MADE IN JAPAN

AEP, E model

SONY ASCO
INTEGRATED STEREO AMPLIFIER
MODEL NO. TA-F6B
AC 110-120/220-240V ~ 50/60Hz 450W
SERIAL NO.
MADE IN JAPAN

US model

SONY ASCO
INTEGRATED STEREO AMPLIFIER
MODEL NO. TA-F6B
AC 120V 60Hz 190W
SERIAL NO.
MADE IN JAPAN

SERVICING NOTES

1. REPLACEMENT OF THE TRANSFORMERS IN THE PULSE-LOCKED POWER-SUPPLY CIRCUIT

The lead wire arrangement for each of T601–603 in the inverter circuit are shown in Figs. 1 and 2.

As the repair parts, T603 is formed by an iron core and a coil winding, but T601 and T602 are only iron core. Thus, if the coils are defective, arrange a new transformers as shown in Fig. 1. Note that the lead lengths must be exact. Also wind the coil carefully.

The lead wires (5) to (8) are as follows:

- *lead wire diameter:* *(7) and (8) are of equal diameter*
  (5) and (6) are of equal diameter
- *lead wire length:* *(5) longer than (6)*
  (7) longer than (8)

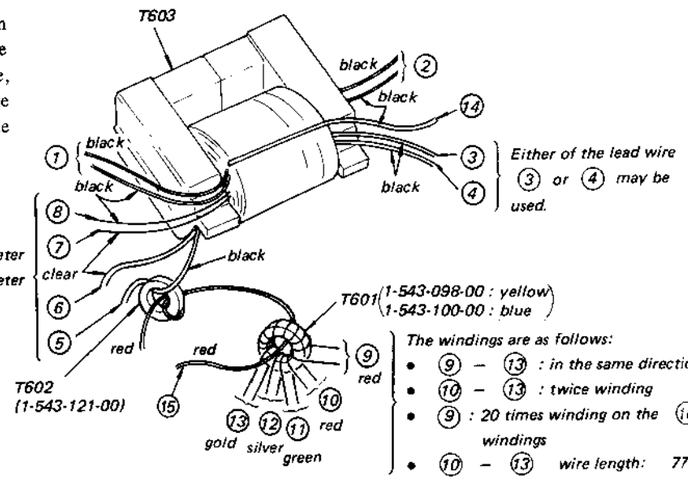


Fig. 1

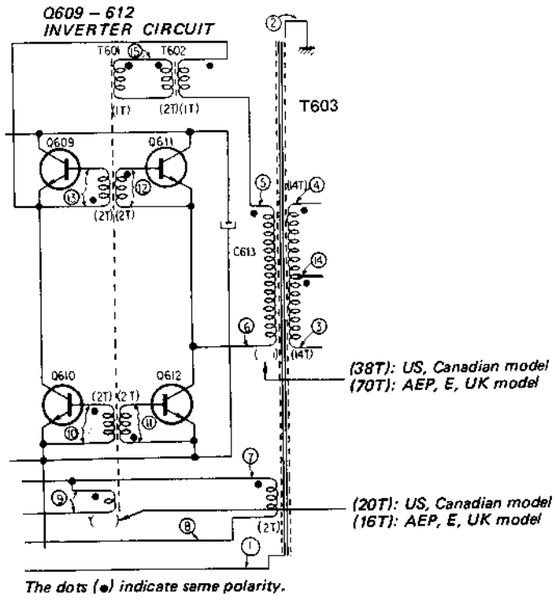
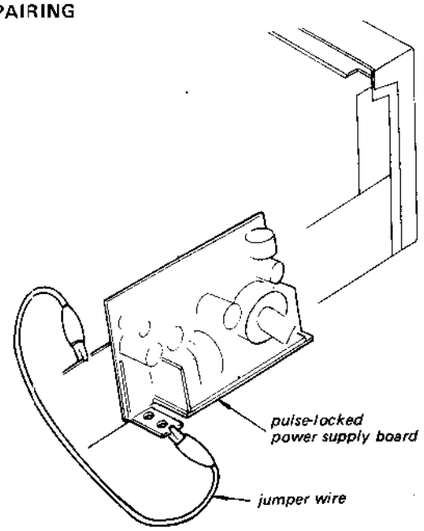


Fig. 2

2. PULSE-LOCKED POWER SUPPLY BOARD REPAIRING

This set has a pulse-locked power-supply circuit which is quite different from a conventional power-supply circuit. The pulse-locked power-supply directly rectifies and smooths the ac input power to produce the higher dc voltages required in the power supply circuit. When servicing this set, note the following.

1) To prevent unwanted radiation due to pulse signals in the pulse-locked power-supply circuit, the pulse-locked power-supply board is shielded by the aluminum diecast box.
2) The negative circuit of the secondary rectifier in the pulse-locked power-supply circuit is grounded by screws in the aluminum diecast box. When checking the pulse-locked power-supply board out of the box, use a jumper wire as shown.

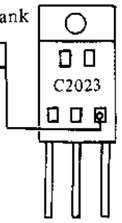


3. INVERTER CIRCUIT TRANSISTOR REPLACEMENT (Q609–612)

1) Be sure that there are no bits of solder and wire ends on the places marked *2 in Fig. 3.
2) Proceed the following items surely when replacing the transistors (Q609–612).
   * Apply thermal compound coat to the positions marked *1 and *2 in Fig. 3 before mounting the transistors.
   * Lay the F-shaped plate flat to ensure uniform contact with all 4 transistors (see Fig. 4).

AEP, UK, E model

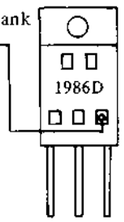
		hFE rank
Q609–612	8-729-302-31	2SC2023-R
	8-729-302-32	2SC2023-O



Note: When replacing Q609–Q612 in the pulse-locked power-supply circuit, use those which have the same hFE ranks.

US, Canadian model

		hFE rank
Q609–612	8-729-308-72	2SC1986D-O



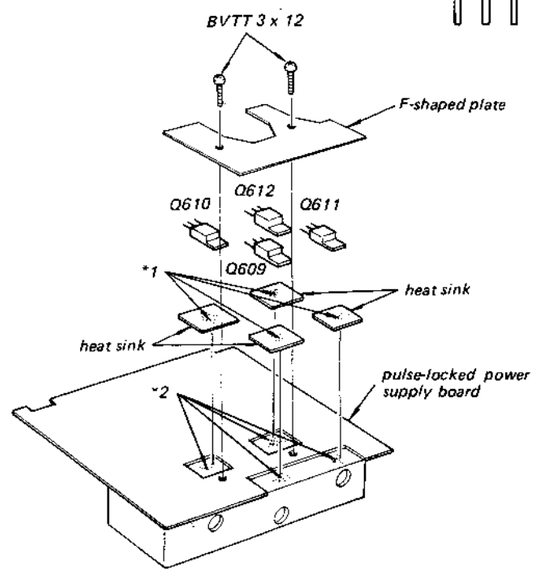


Fig. 3

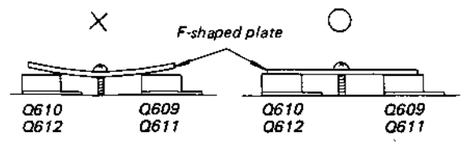
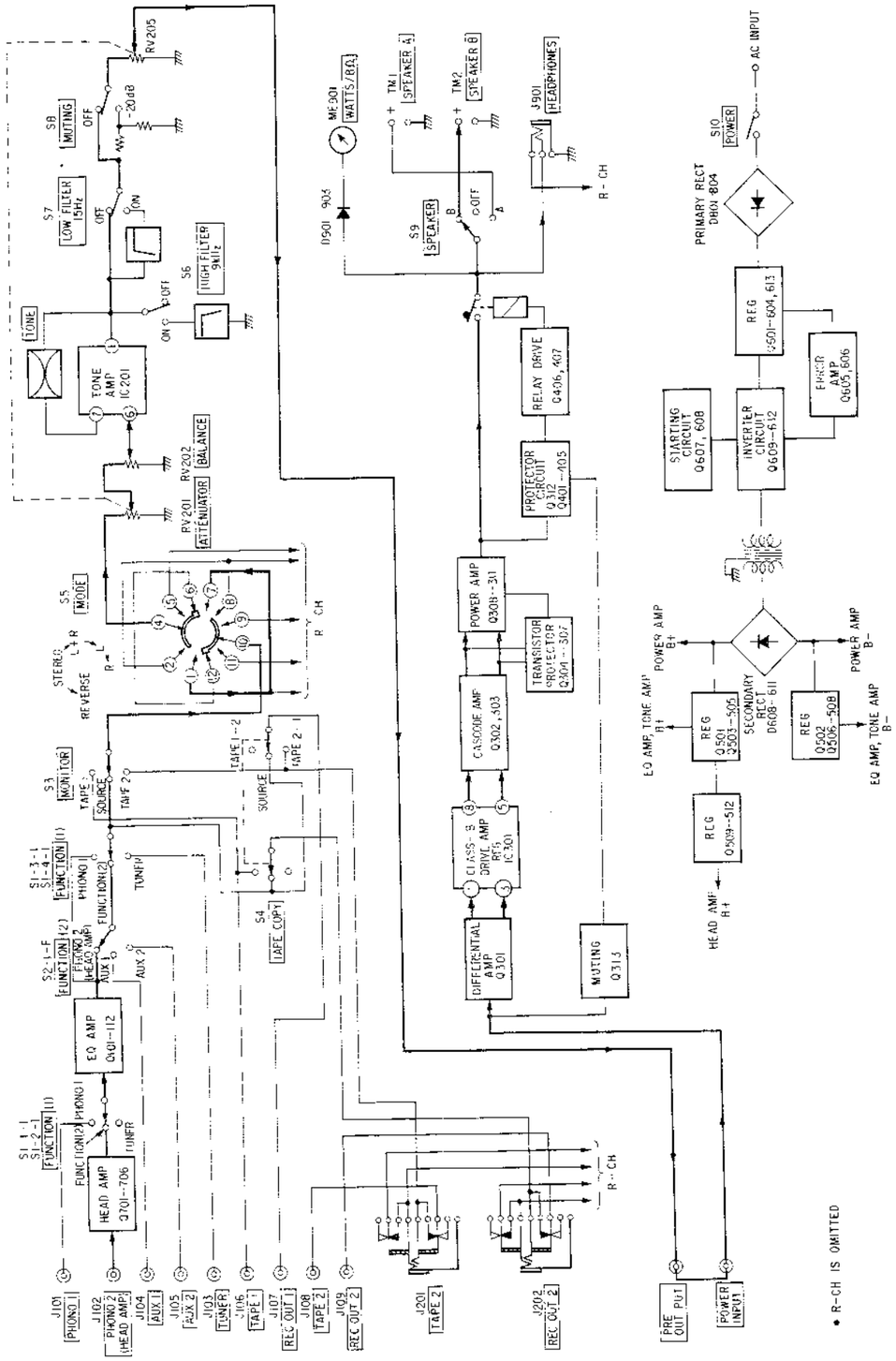


Fig. 4

SECTION 1
BLOCK DIAGRAM

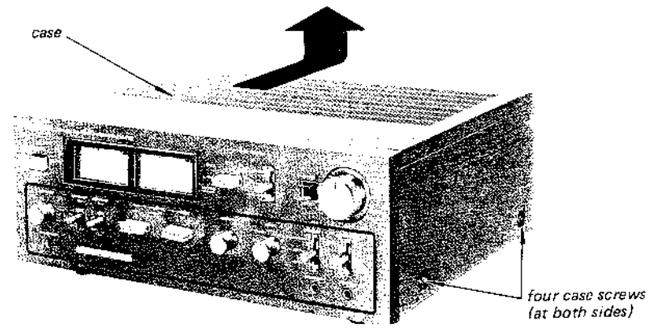


• R-CH IS OMITTED

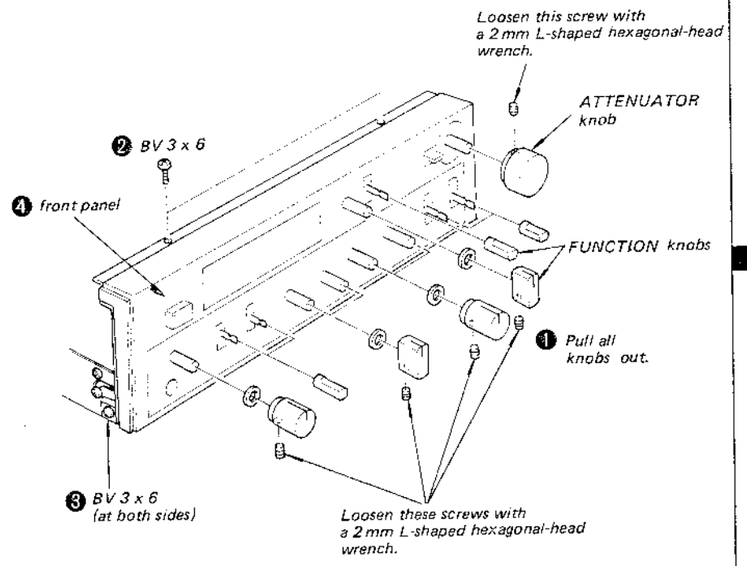
SECTION 2
DISASSEMBLY

- Follow the disassembly procedure in the numerical order given.

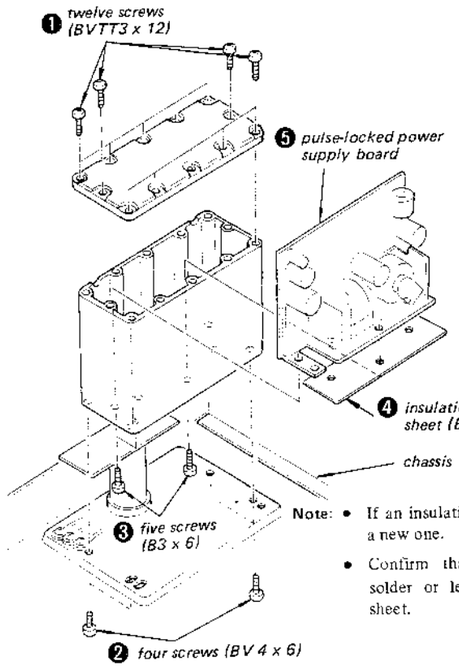
CASE REMOVAL



FRONT PANEL REMOVAL



PULSE-LOCKED POWER SUPPLY BOARD REMOVAL

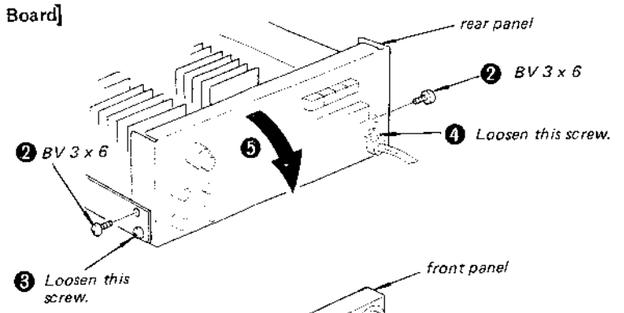


Note:
- If an insulation sheet is defective, change a new one.
- Confirm that there are no scraps of solder or lead wire on any insulation sheet.

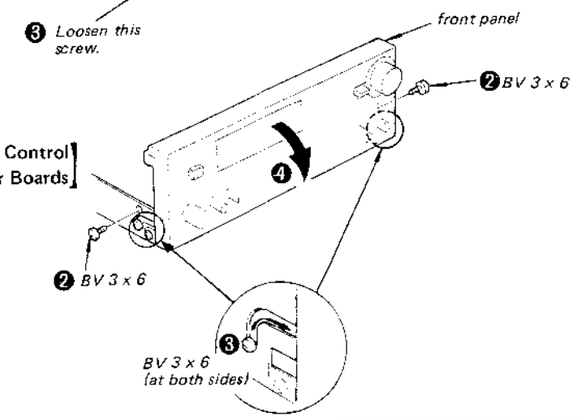
CIRCUIT BOARDS CHECKING AND REPAIRING

❶ *Remove the case (See page 6).*

[Head Amp Board]

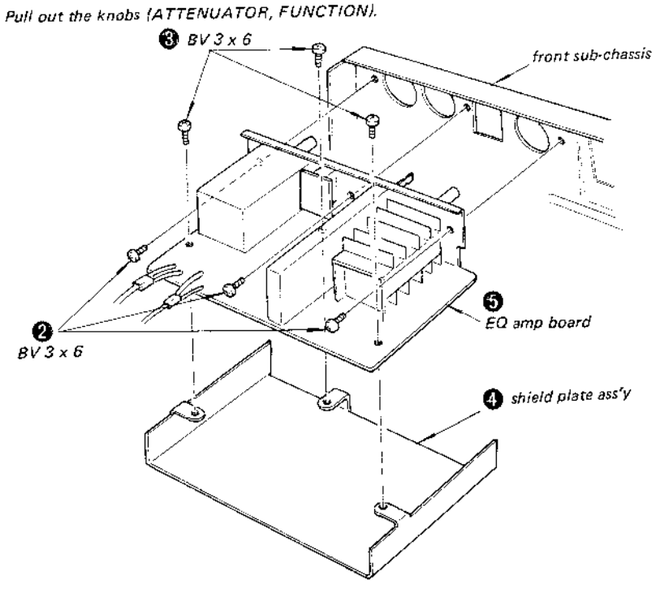


[EQ Amp, Control and Meter Boards]



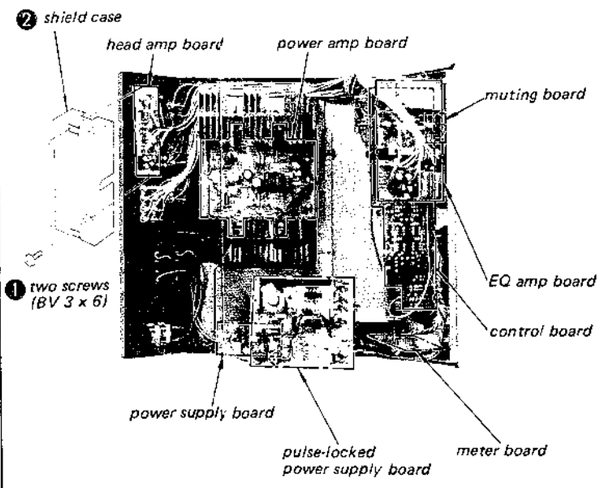
EQ AMP BOARD REMOVAL

❶ *Pull out the knobs (ATTENUATOR, FUNCTION).*

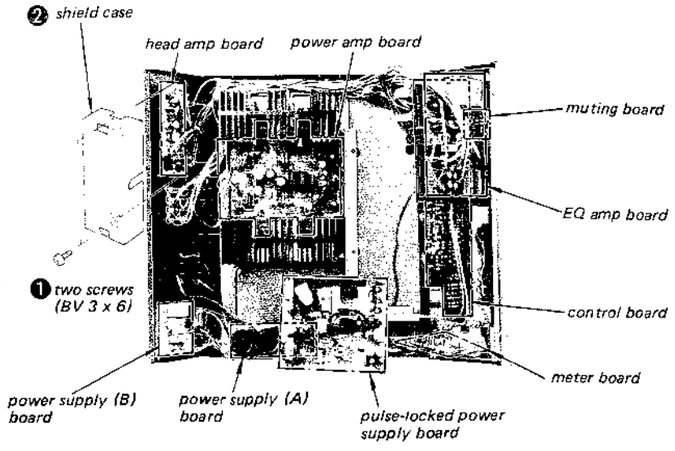


Each circuit board is located as shown below.

(US, Canadian model)



(AEP, UK, E model)

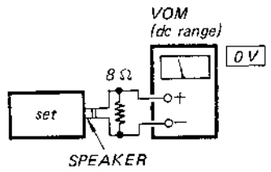


SECTION 3
ADJUSTMENTS

Note: 1. DC BIAS and DC BALANCE adjustments should be performed about several minutes later after the POWER switch (S10) is turned on.
2. Repeat DC BIAS and DC BALANCE adjustments two or three times.
3. After replacing the power transistors, DC BIAS and DC BALANCE adjustments should be performed.

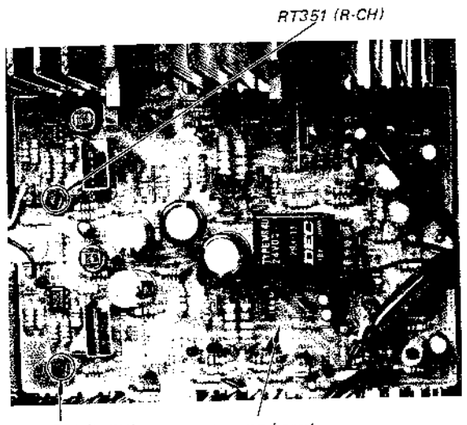
DC Balance Adjustment

Procedure:



Adjust RT301 (L-CH) and RT351 (R-CH) for 0 V reading on the VOM.

Adjustment Location:

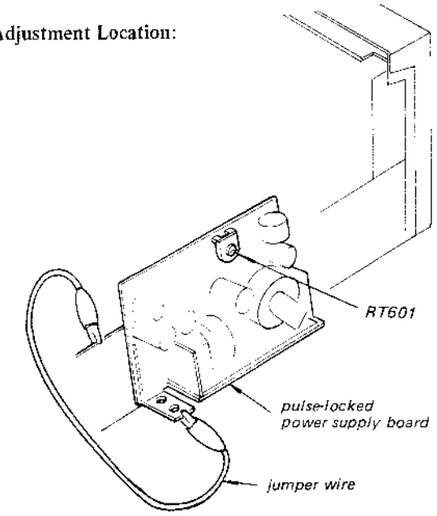


DC Voltage Adjustment

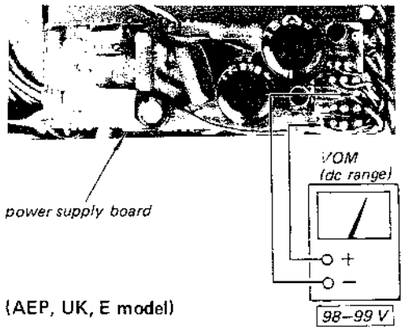
Procedure:

1. Connect a jumper wire.
2. Adjust RT601 for 98–99 V reading on the VOM.

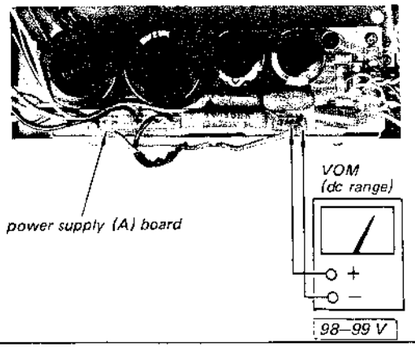
Adjustment Location:



(US, Canadian model)



(AEP, UK, E model)

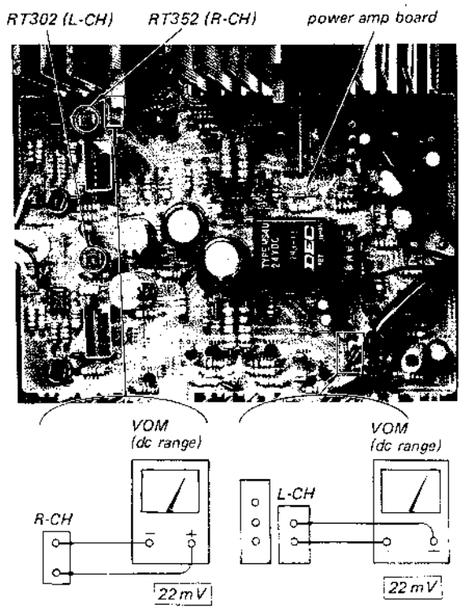


DC Bias Adjustment

Procedure:

Adjust RT302 (L-CH) and RT352 (R-CH) for 22 mV reading with no signal input.

Adjustment Location:

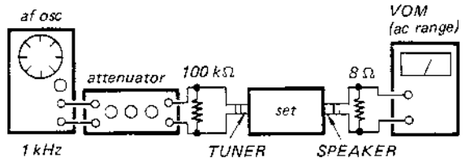


Meter Level Adjustment

Setting:

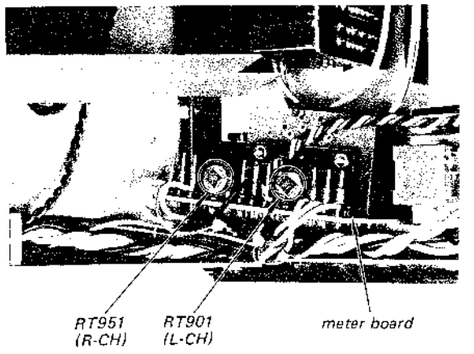
FUNCTION switch: TUNER

Procedure:



1. Turn the VOLUME control fully clockwise.
2. Adjust the TUNER input level for 2.83 V (1 W) reading on the VOM.
3. Adjust RT901 (L-CH) and RT951 (R-CH) so that the power meters indicate 1 W.

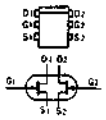
Adjustment Location:



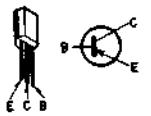
SECTION 4
DIAGRAMS

- **Replacement Semiconductors**
  For replacement, use semiconductors except in ( ).

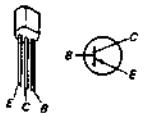
Q101, 151: 2SK97



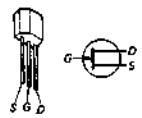
Q102, 103, 106, 108
Q152, 153, 156, 158 } : 2SA872E (2SA872)
Q705, 706, 755, 756



Q111, 161: 2SB647
Q506, 507: 2SA639 (2SA893)

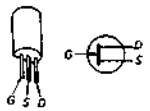


Q104, 154: 2SK23A-840 (blue) (2SK23A)

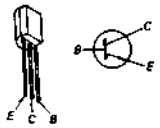


Q105, 155, 509: 2SK30A

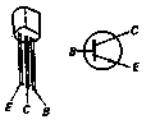
Q107, 112, Q157, 162: 2SK43-4 (2SK43)



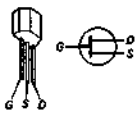
Q109, 159: 2SC1775E (2SC1775)



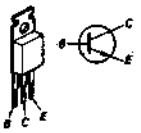
Q110, 160: 2SD667
Q510: 2SC1475 (2SC1670)



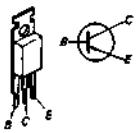
Q501, 502: 2SK42-4 (2SK42)



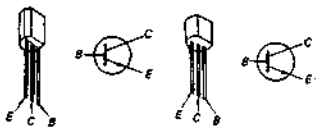
Q503: 2SC1061



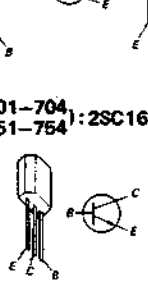
Q508: 2SA671



Q504, 505, Q511, 512: 2SC1775F (2SC1890)

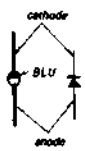


Q701–704, Q751–754: 2SC1637-1 (2SC1637)

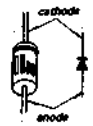


IC201, 251: HA1457

D101, 151: MV12N

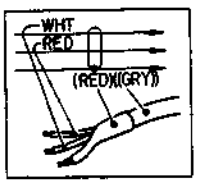


D102, 103, D152, 153: EQB01-26 (EQA01-26R)
D201, 202, D251, 252: EQB01-21 (EQA01-21R)



Note:

- Color code of sleeving over the end of the jacket.

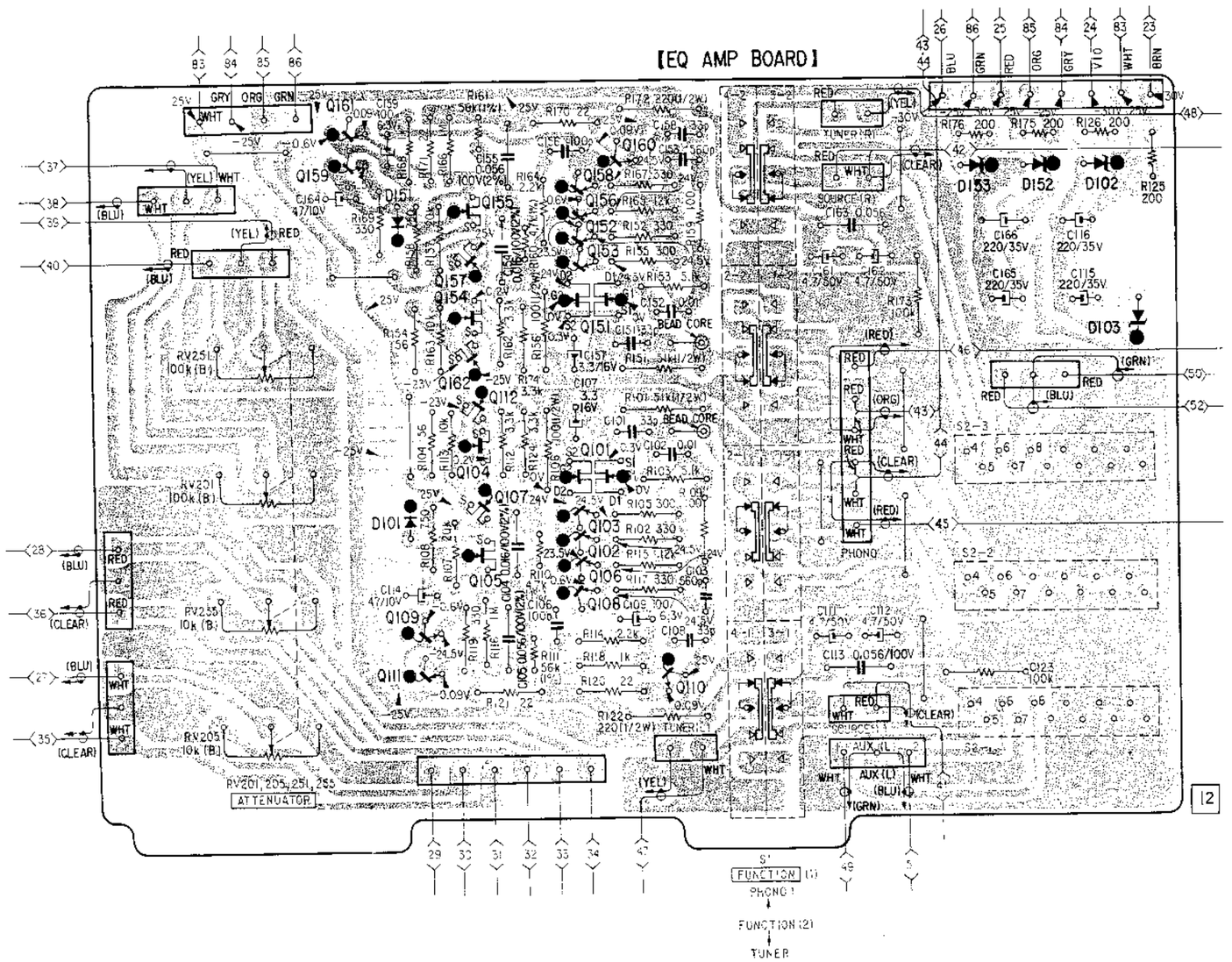


- ○— : parts extracted from the component side.
- ▬ : B+ pattern

4-1. EQ AMP BOARD MOUNTING DIAGRAM

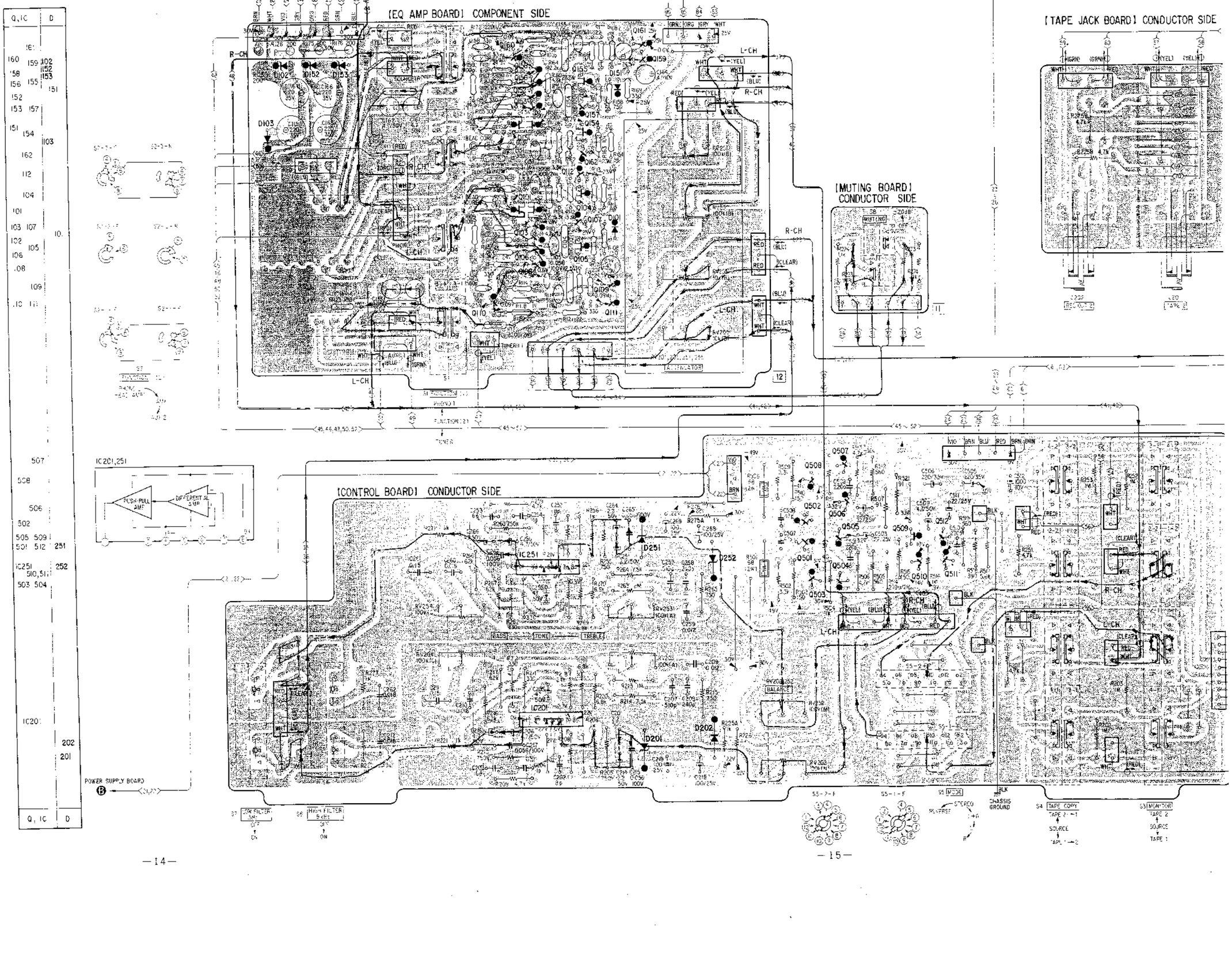
– Conductor Side –

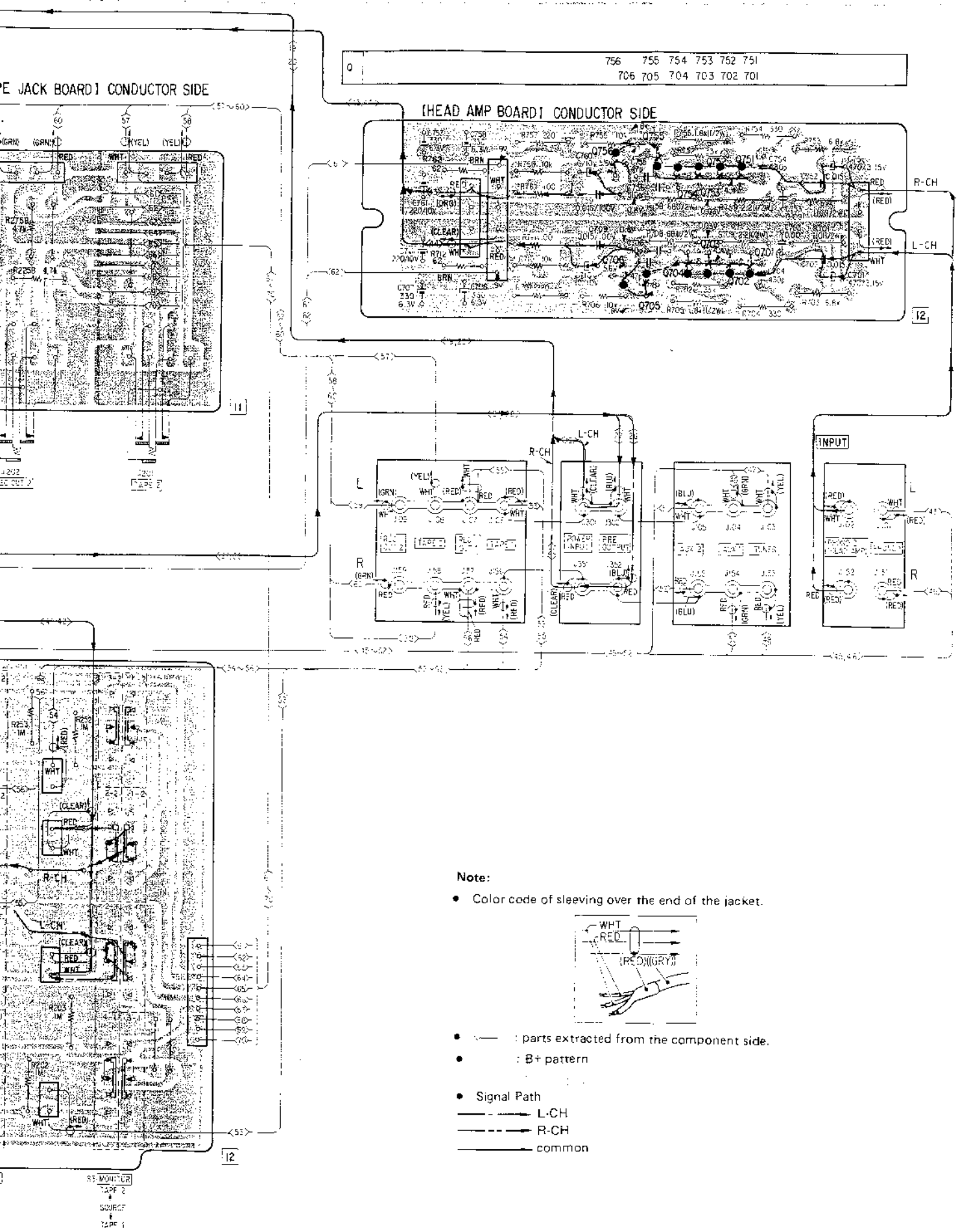
D	Q
	161
153 152 102	159 160
	158
	155 156
151	152
	157 153
	154 151
103	
	162
	112
	104
	101
	107
101	103
	102
	105 106
	108
	109
	111 110



TA-F6B TA-F6B

4-2. PREAMP SECTION MOUNTING DIAGRAM





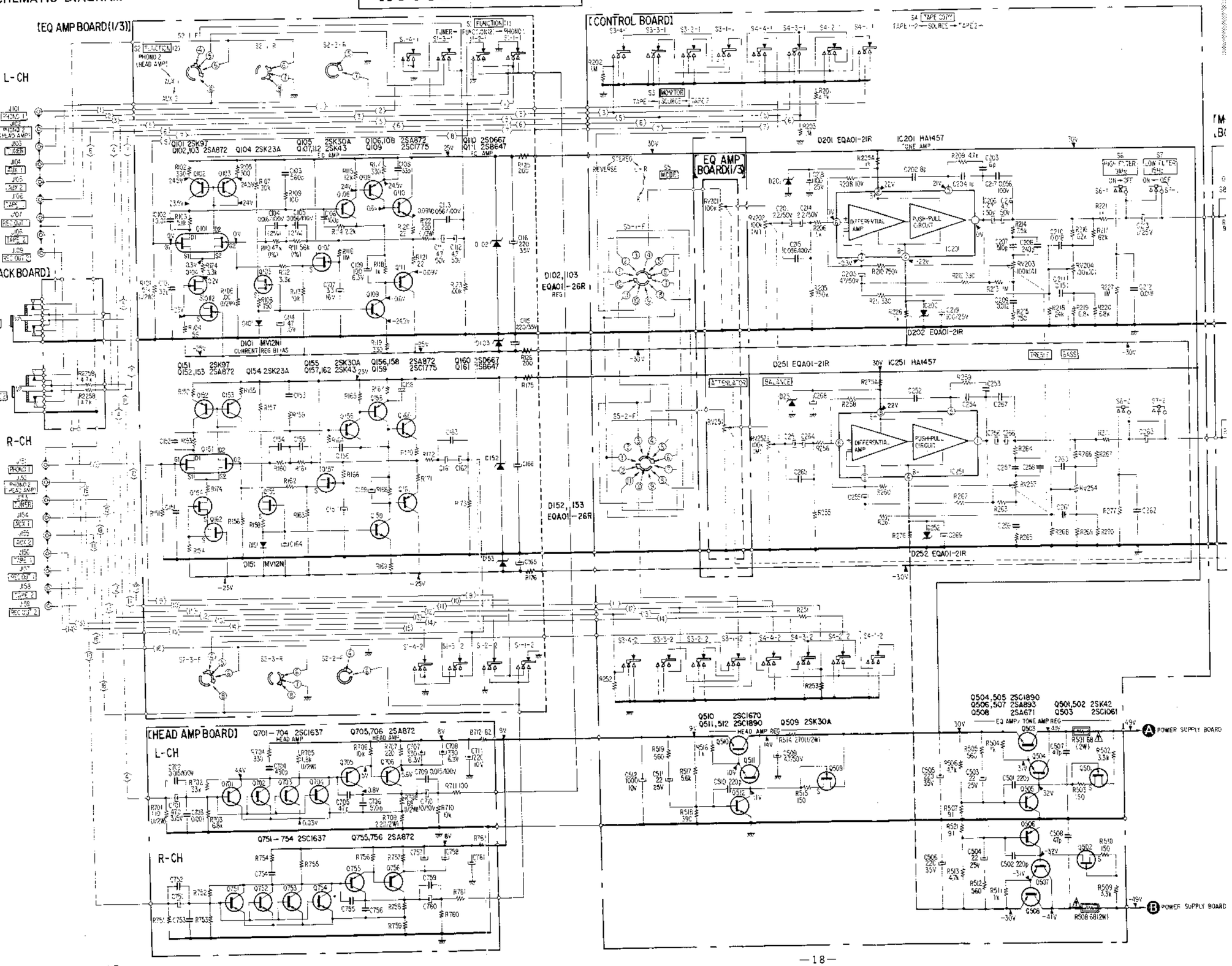
Note:

- Color code of sleeving over the end of the jacket.

- ——— : parts extracted from the component side.
- : B+ pattern

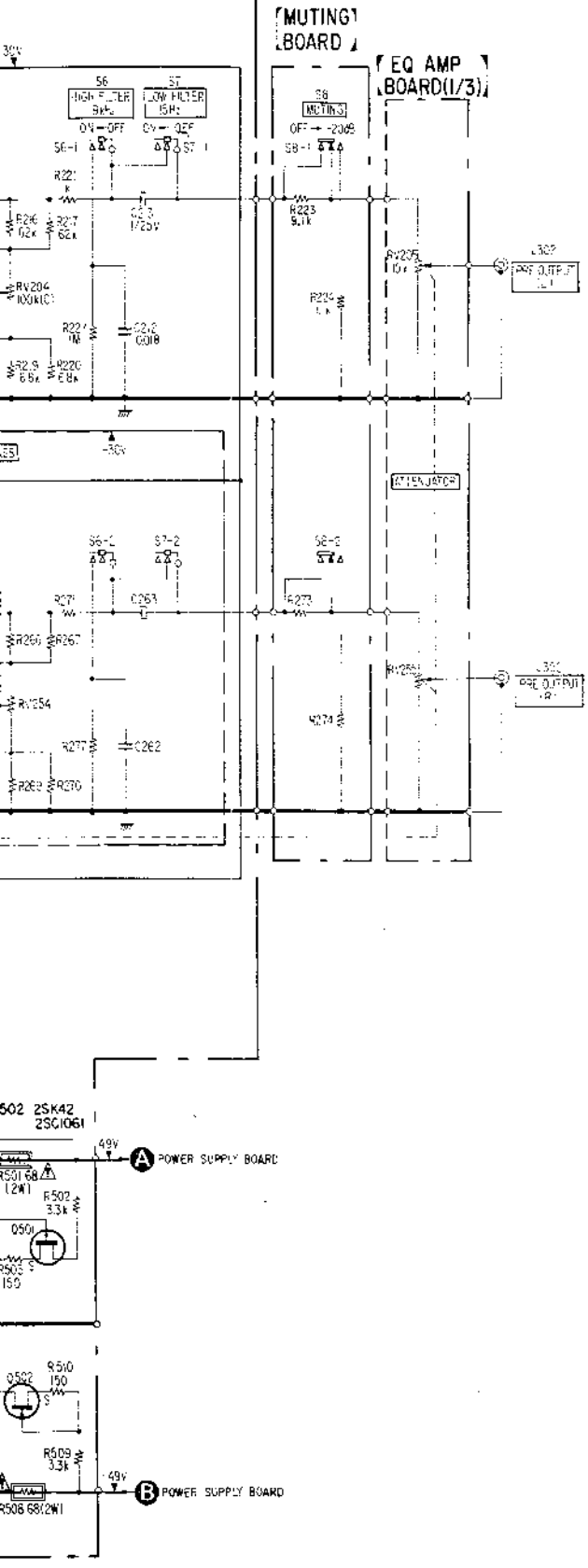
- Signal Path
  - —— L-CH
  - — — — R-CH
  - ——— common

TA-F6B TA-F6B


[EQ AMP BOARD(1/3)]
L-CH
R-CH
[TAPE JACK BOARD]
[CONTROL BOARD]
EQ AMP BOARD(1/3)
[HEAD AMP BOARD]
Q101 2SK97
Q102,103 2SA872
Q104 2SK23A
Q105 Q107,112 2SK30A 2SK43
Q106,108 Q109 2SA872 2SC1775
Q110 2SD667
Q111 2SB647
Q151 2SK97
Q152,153 2SA872
Q154 2SK23A
Q155 Q157,162 2SK30A 2SK43
Q156,158 Q159 2SA872 2SC1775
Q160 2SD667
Q161 2SB647
D101 MV12N1
D151 MV12N
D102,103 EQA01-26R1
D152,153 EQA01-26R
D201 EQA01-21R
D202 EQA01-21R
D251 EQA01-21R
D252 EQA01-21R
IC201 HA1457
IC251 HA1457
Q701-704 2SC1637
Q705,706 2SA872
Q751-754 2SC1637
Q755,756 2SA872
Q510 2SC1670
Q511,512 2SC1890
Q509 2SK30A
Q504,505 2SC1890
Q506,507 2SA893
Q508 2SA671
Q501,502 2SK42
Q503 2SC1061
A POWER SUPPLY BOARD
B POWER SUPPLY BOARD

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

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



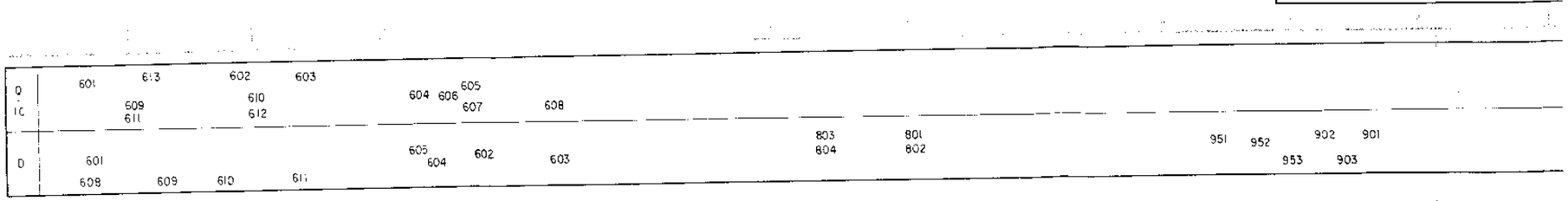
Note:

- Components for right channel have same values as for left channel. Reference numbers are coded from 151, 251 or 751.
- All capacitors are in μF unless otherwise noted. pF = μμF 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼ W unless otherwise noted. kΩ = 1000 Ω, MΩ = 1000 kΩ
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor
- 1% or 2% indicates component tolerance.
- : panel designation
- : B+ bus.
- : B− bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions with a VOM (20 kΩ/V).
- Voltage variations may be noted due to normal production tolerances.
- Switch

Ref. No.	Switch	Position
S1-1-1, 2 S1-2-1, 2 S1-3-1, 2 S1-4-1, 2	FUNCTION (1)	FUNCTION (2)
S2-1-F, R S2-2-F, R S2-3-F, R	FUNCTION (2)	PHONO 2 (HEAD AMP)
S3-1-1, 2 S3-2-1, 2 S3-3-1, 2 S3-4-1, 2	MONITOR	SOURCE
S4-1-1, 2 S4-2-1, 2 S4-3-1, 2 S4-4-1, 2	TAPE COPY	SOURCE
S5-1-F, 2-F	MODE	STEREO
S6-1, 2	HIGH FILTER 9 kHz	OFF
S7-1, 2	LOW FILTER 15 Hz	OFF
S8-1, 2	MUTING	OFF

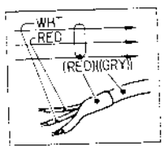
TA-F6B TA-F6B

4-4. POWER AMP SECTION MOUNTING DIAGRAM (US, Canadian model)



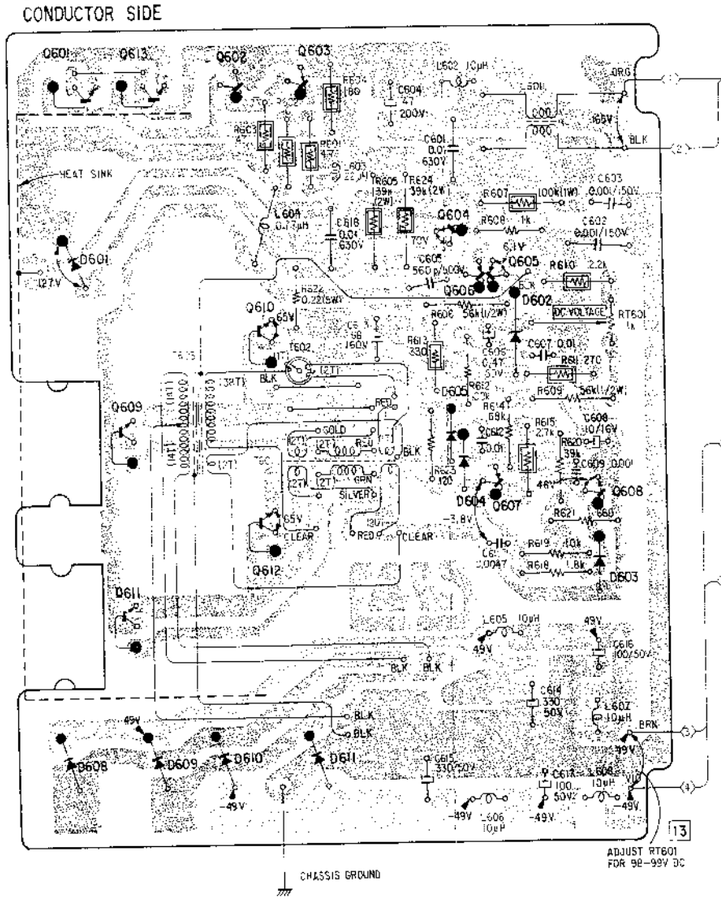
Note:

- Color code of sleeving over the end of the jacket.

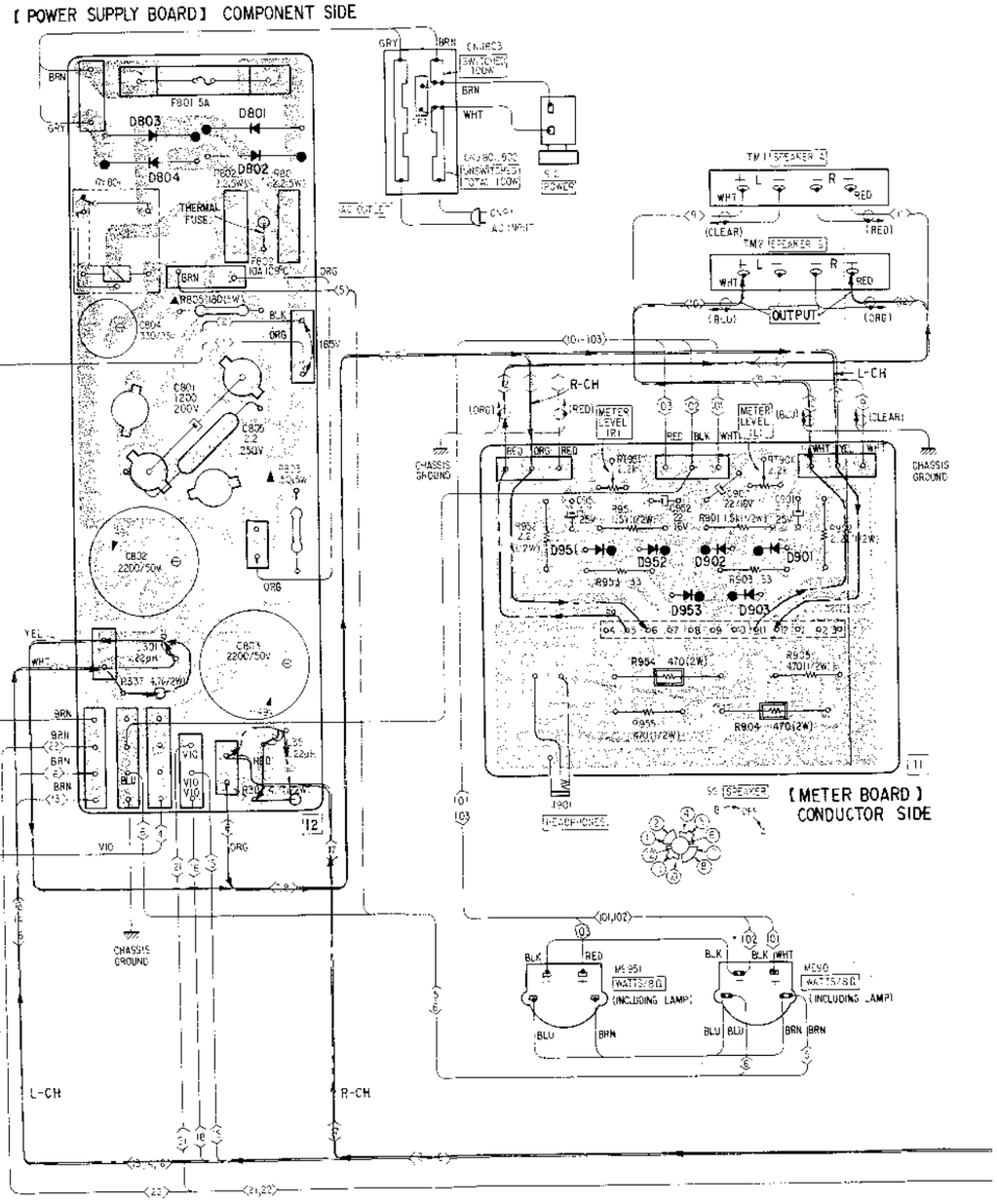


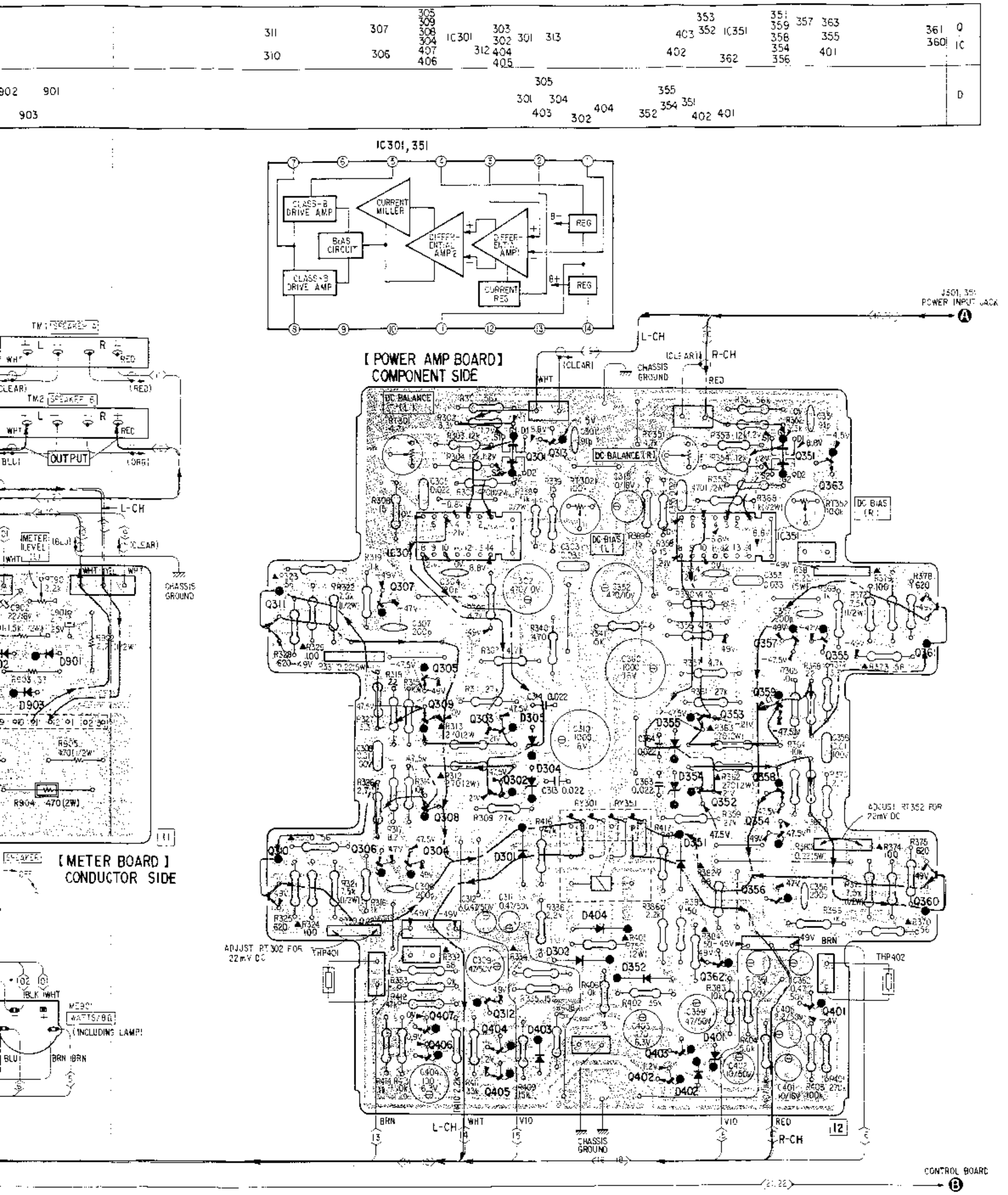
- ○— : parts extracted from the component side.
- : B+ pattern
- Signal Path
  - —— L-CH
  - - - - - R-CH
  - ——— common
- ▲ : nonflammable resistor.

【PULSE-LOCKED POWER SUPPLY BOARD】
CONDUCTOR SIDE



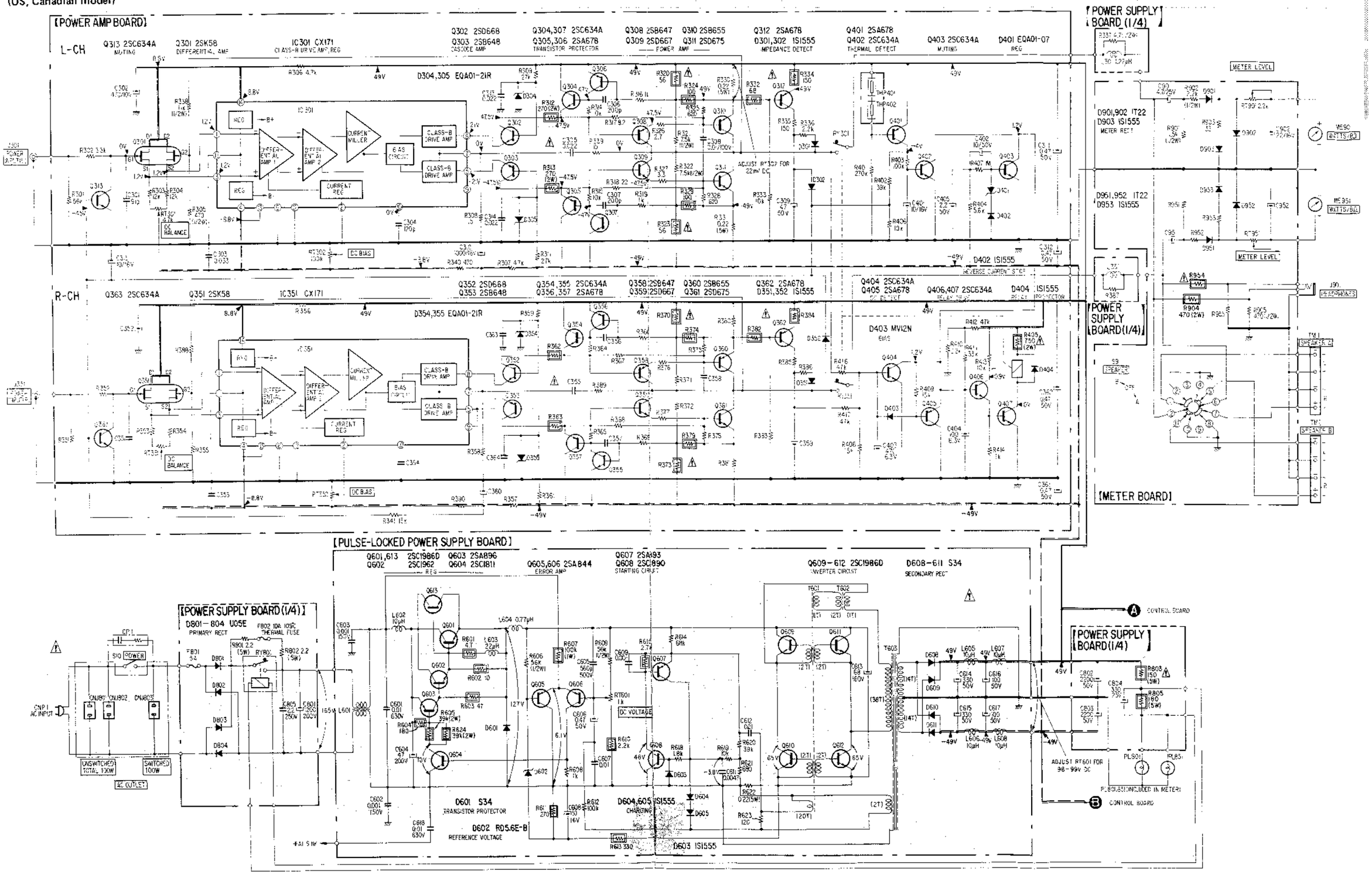
【POWER SUPPLY BOARD】 COMPONENT SIDE

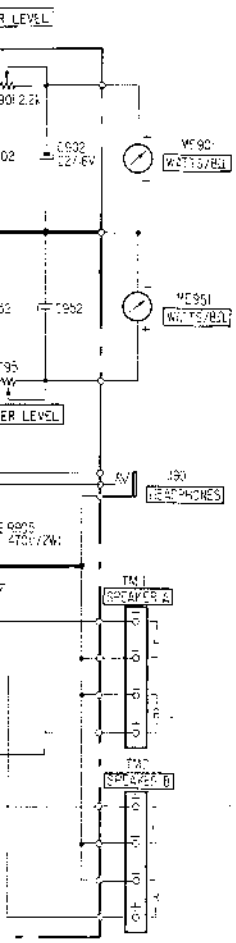



IC301, 351
CLASS-B DRIVE AMP
CURRENT MILLER
BIAS CIRCUIT
DIFFER-ENTIAL AMP2
DIFFER-ENTIAL AMP1
REG
CURRENT REG
[POWER AMP BOARD]
COMPONENT SIDE
[METER BOARD]
CONDUCTOR SIDE
J501, 351 POWER INPUT JACK
CONTROL BOARD
L-CH
R-CH
CHASSIS GROUND
DC BALANCE (L)
DC BALANCE (R)
DC BIAS (L)
DC BIAS (R)
ADJUST RT302 FOR 22mV DC
ADJUST RT352 FOR 22mV DC
OUTPUT
(INCLUDING LAMP)

4-5. POWER AMP SECTION SCHEMATIC DIAGRAM

(US, Canadian model)





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

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

Note:

- Compinents for right channel have same values as for left channel. Reference numbers are coded from 351 or 951.
- All capacitors are in μF unless otherwise noted. pF = μμF 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼ W unless otherwise noted. kΩ = 1000 Ω, MΩ = 1000 kΩ
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : panel designation
- : B+ bus.
- : adjustment for repair.
- : B− bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions with a VOM (20 kΩ/V).
- Voltage variations may be noted due to normal production tolerances.

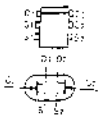
- Switch

Ref. No.	Switch	Position
S9	SPEAKER	B
S10	POWER	OFF

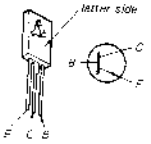
- **Replacement Semiconductors**

For replacement, use semiconductors except in ( ).

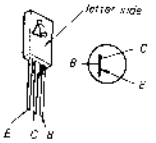
Q301, 351: 2SK58



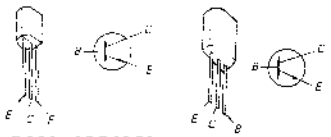
Q302, 352: 2SD668



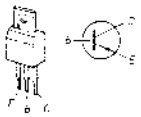
Q303, 353: 2SB648



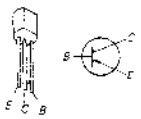
Q304, 307, Q313, 354, Q355, 363, Q402–404, Q406, 407 } 2SC1364 (2SC634A)



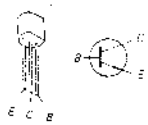
Q602: 2SC1962



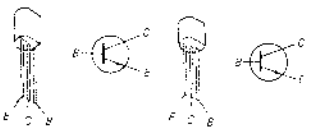
Q603: 2SA896



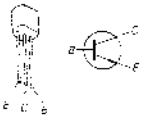
Q604: 2SC1811



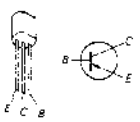
Q608: 2SC1775F (2SC1890)



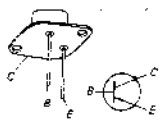
Q309, 359: 2SD667



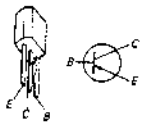
Q308, 358: 2SB647
Q607: 2SA639S (2SA893)



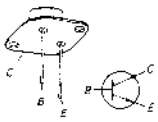
Q310, 360: 2SB655



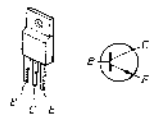
Q305, 306, 312, Q356, 357, 362, Q401, 405 } : 2SA678



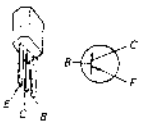
Q311, 361: 2SD675



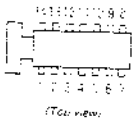
Q601, 613: 2SC1986D-R
Q609–612: 2SC1986D-O } (2SC1986D)



Q605, 606: 2SA678 (2SA844)

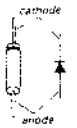


IC301, 351: CX171



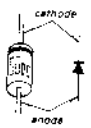
D301, 302, 351, 352, D402, 404, 603–605, D903, 953 } : 1S1555

D602 : RD5.6E (RD5.6E-B)
D901, 902, D951, 952 : 1T22AM (1T22)

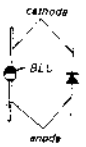


D304, 305, D354, 355 : EQB01-21 (EQA01-21R)

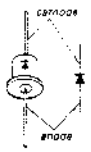
D401: EQB01-07 (EQA01-07)



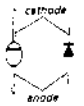
D403: MV12N



D601, 608–611: S34



D801–804: U05G (U05E)

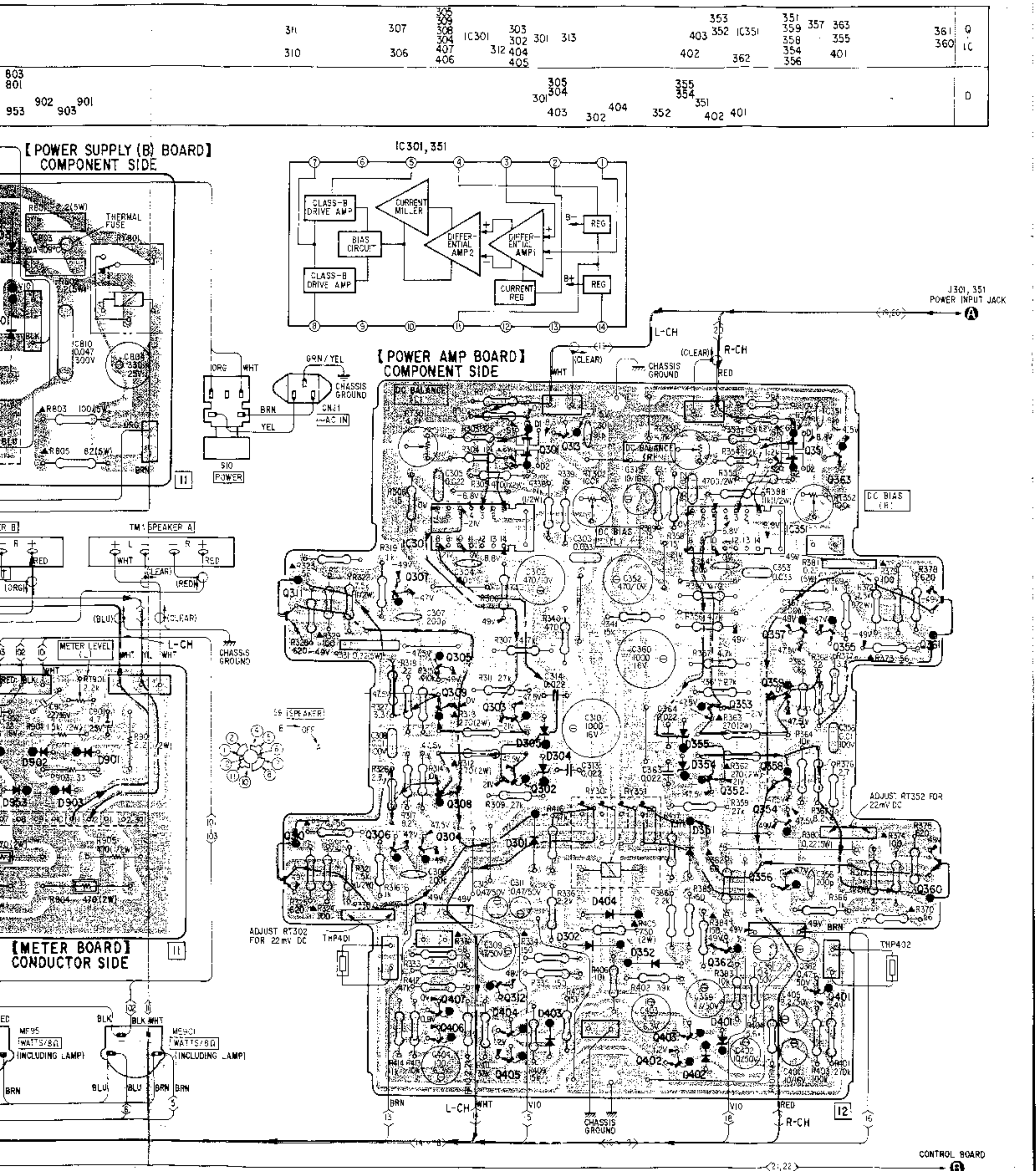


4-6. POWER AMP SECTION MOUNTING DIAGRAM
(AEP, UK, E model)

※
F801 2.5AT /AEP MODEL: UP TO SERIAL No. 501, 150
F802 5AT | UK MODEL: UP TO SERIAL No. 600, 050
\ E MODEL: UP TO SERIAL No. 400, 100
F801 3.15AT /AEP MODEL: SERIAL No. 501, 151 AND LATER
F802 6.3AT | UK MODEL: SERIAL No. 600, 051 AND LATER
\ E MODEL: SERIAL No. 400, 101 AND LATER

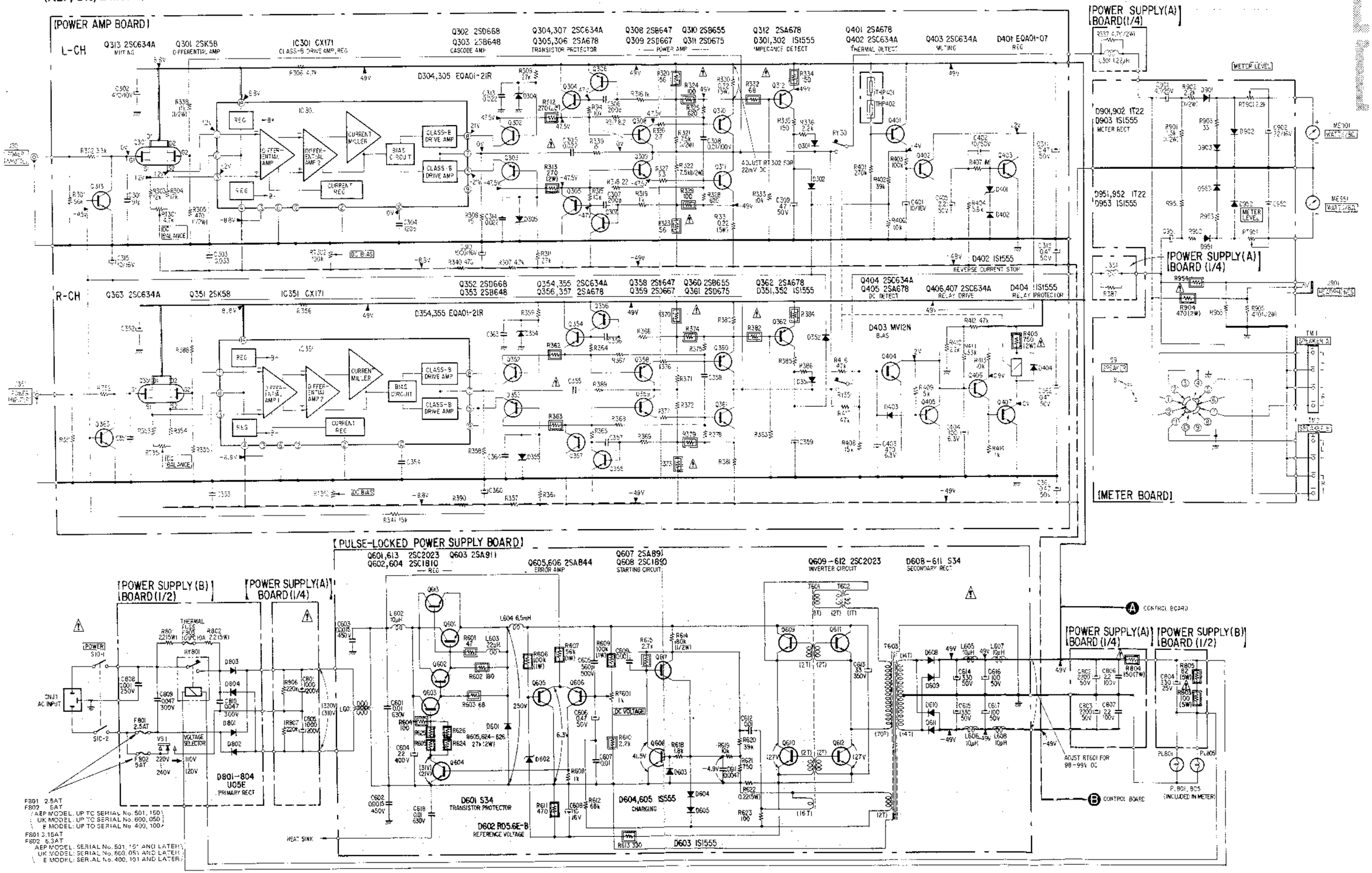
Note:
- Color code of sleeving over the end of the jacket.

- ○— : parts extracted from the component side.
- ▒ : B+ pattern
- Signal Path
  - ——·—— L-CH
  - ------ R-CH
  - ——— common
- ▲ : nonflammable resistor.



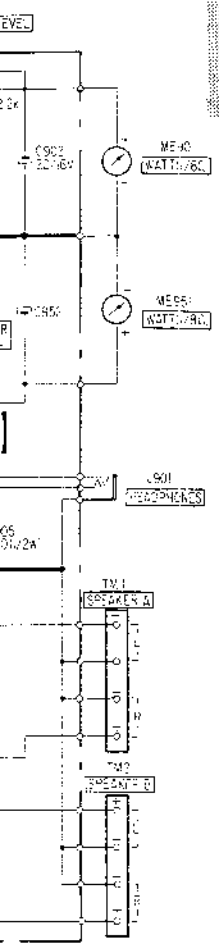
[POWER SUPPLY (B) BOARD]
COMPONENT SIDE
THERMAL FUSE
IC301, 351
CLASS-B DRIVE AMP
CURRENT MILLER
BIAS CIRCUIT
DIFFERENTIAL AMP2
DIFFERENTIAL AMP1
REG
CURRENT REG
J301, 351
POWER INPUT JACK
CHASSIS GROUND
CN31
~AC IN
S10
POWER
[POWER AMP BOARD]
COMPONENT SIDE
DC BALANCE
DC BIAS
L-CH
R-CH
SPEAKER A
METER LEVEL
ADJUST RT302 FOR 22mV DC
ADJUST RT352 FOR 22mV DC
THP401
THP402
[METER BOARD]
CONDUCTOR SIDE
ME95
WATTS/8Ω
(INCLUDING LAMP)
ME901
CONTROL BOARD

4-7. POWER AMP SECTION SCHEMATIC DIAGRAM
(AEP, UK, E model)



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

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



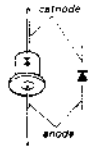
Note:

- Compinents for right channel have same values as for left channel. Reference numbers are coded from 351 or 951.
- All capacitors are in μF unless otherwise noted. pF = μμF 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼ W unless otherwise noted. kΩ = 1000 Ω, MΩ = 1000 kΩ
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⏚ : direct connection to points marked ⏚ on the chassis.
- : nonflammable resistor.
- : panel designation
- : B+ bus.
- : adjustment for repair.
- : B− bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions with a VOM (20 kΩ/V).
  ( ) : 120 V AC input
  < > : 240 V AC input
- Voltage variations may be noted due to normal production tolerances.
- Switch

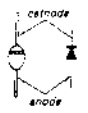
Ref. No.	Switch	Position
S9	SPEAKER	B
S10-1, 2	POWER	OFF
VS1	VOLTAGE SELECTOR	220–240 V

D403: MV12N

D601, 608–611: S34



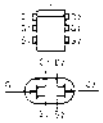
D801–804: U05G (U05E)



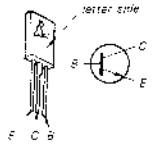
- **Replacement Semiconductors**

For replacement, use semiconductors except in ( ).

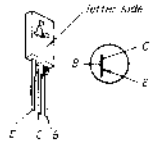
Q301, 351: 2SK58



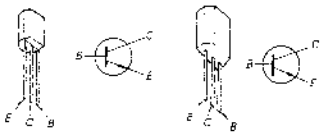
Q302, 352: 2SD668



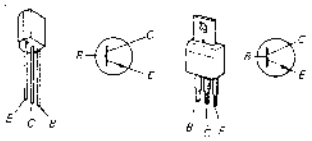
Q303, 353: 2SB648



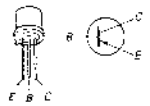
Q304, 307
Q313, 354
Q355, 363
Q402–404
Q406, 407 : 2SC1364 (2SC634A)



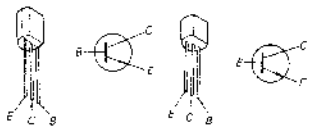
Q602, 604: 2SC1775F (2SC1810)



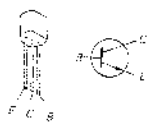
Q603: 2SA911



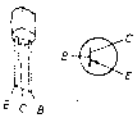
Q608: 2SC1775F (2SC1890)



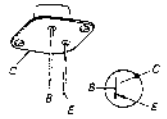
Q309, 359: 2SD667



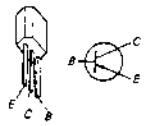
Q308, 358: 2SB647
Q607: 2SA639S (2SA893)



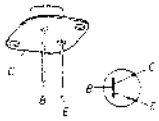
Q310, 360: 2SB655



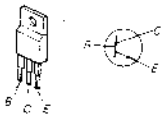
Q305, 306, 312
Q356, 357, 362
Q401, 405 : 2SA678



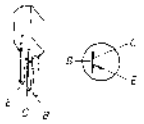
Q311, 361: 2SD675



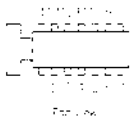
Q601, 613: 2SC2023-R
Q609–612: (2SC2023-R, 2SC2023-O) (2SC2023)



Q605, 606: 2SA678 (2SA844)



IC301, 351: CX171

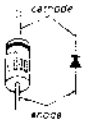


D301, 302, 351, 352
D402, 404, 603–605
D903, 953 : 1S1555

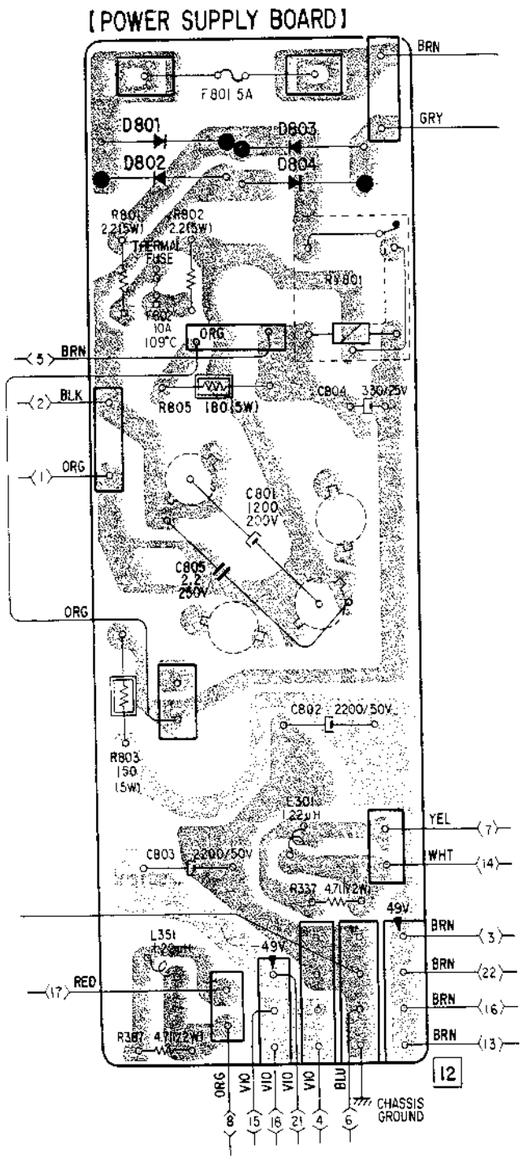
D602: RD5.6E (RD5.6E-B)
D901, 902
D951, 952 : 1T22AM (1T22)

D304, 305
D354, 355 : EQB01-21 (EQA01-21R)

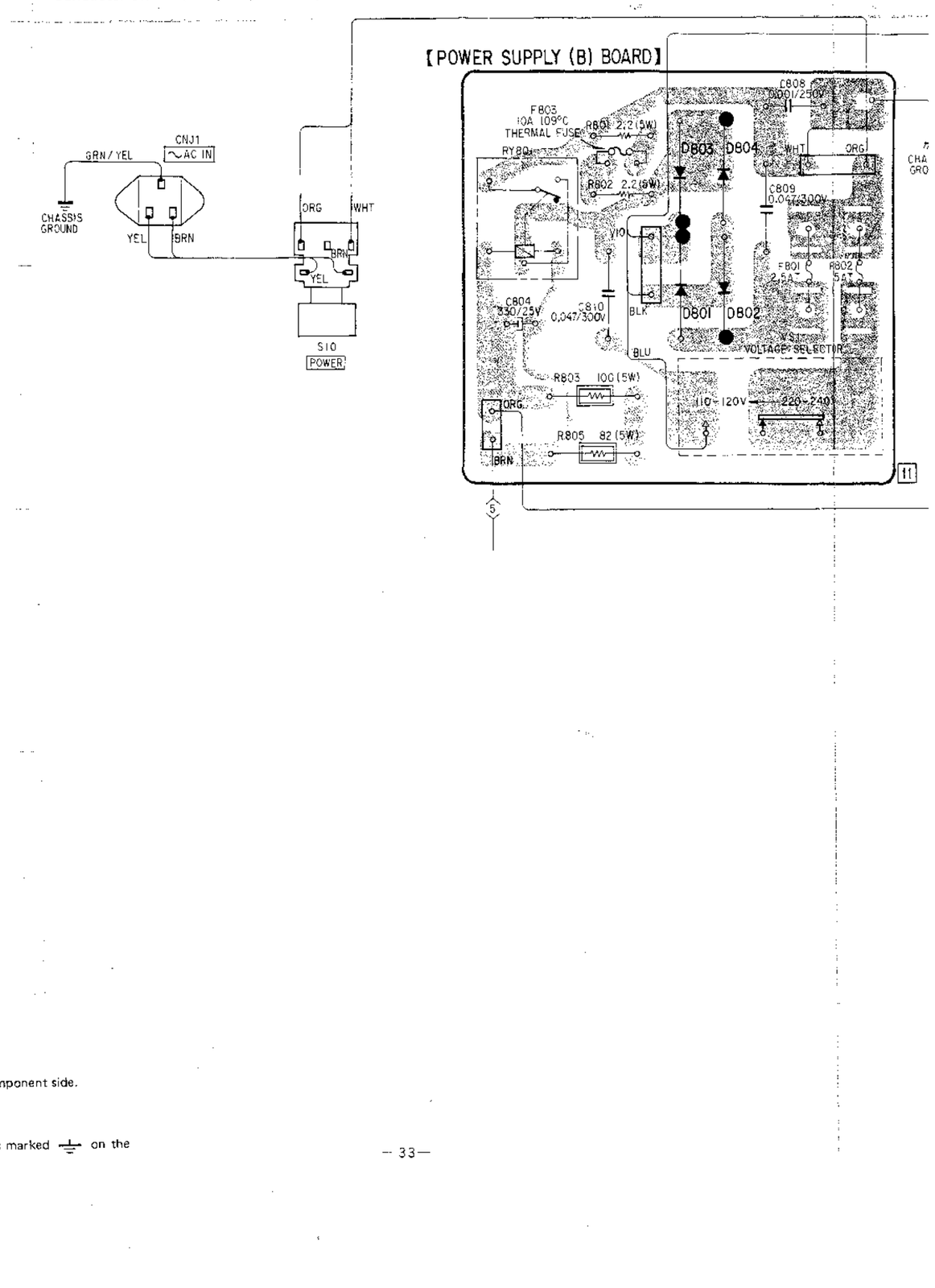
D401: EQB01-07 (EQA01-07)



4-8. POWER SUPPLY BOARD MOUNTING DIAGRAM
– Conductor Side – (US, Canadian model)

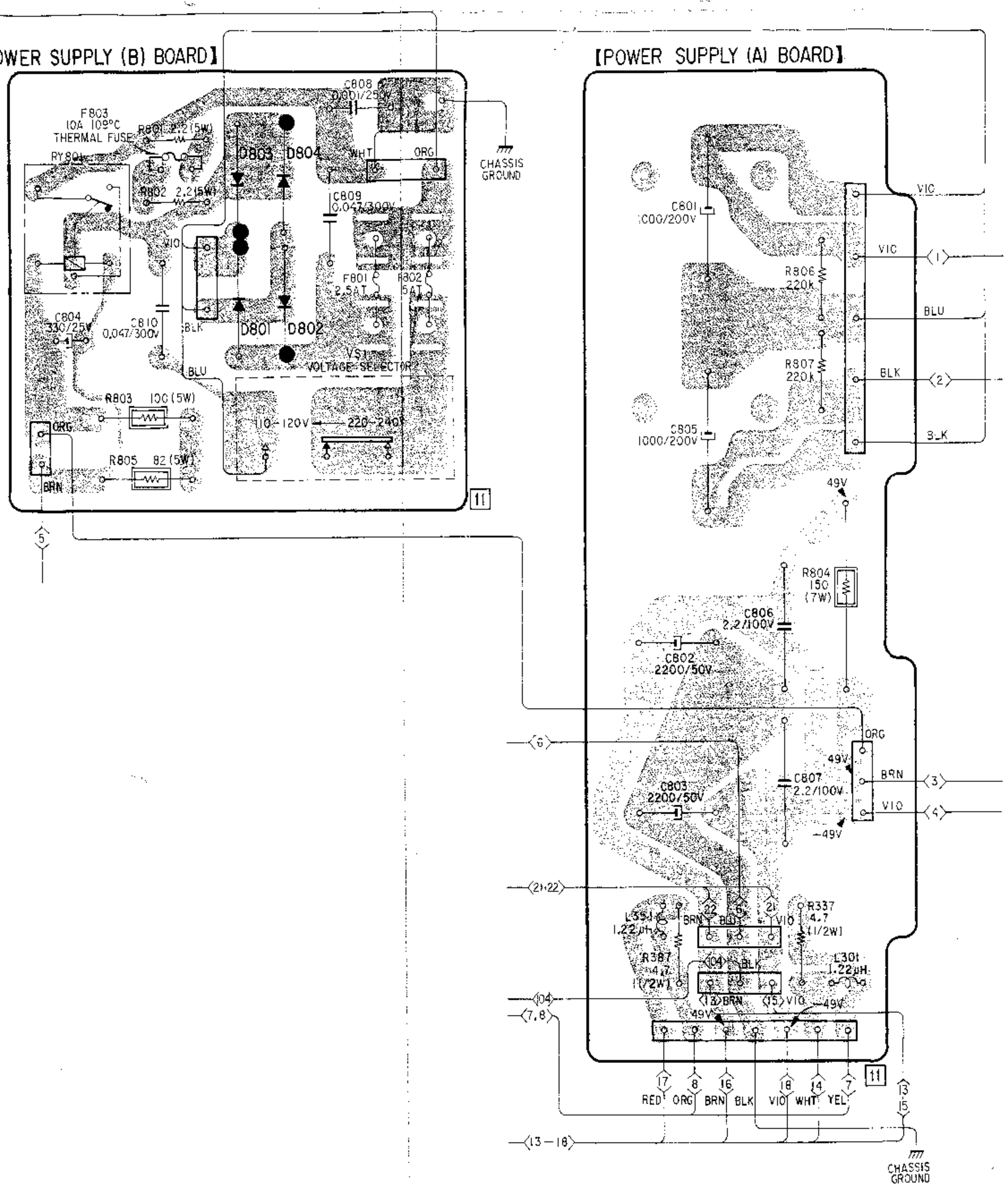


4-9. POWER SUPPLY BOARD MOUNTING DIAGRAM
– Conductor Side – (AEP, UK, E model)



Note:

- ○— : parts extracted from the component side.
- : B+ pattern
- ⏚ : direct connection to points marked ⏚ on the chassis.

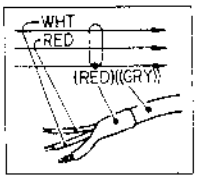

OWER SUPPLY (B) BOARD】
【POWER SUPPLY (A) BOARD】
F803
10A 109°C
THERMAL FUSE
R801 2.2(5W)
RY801
R802 2.2(5W)
C808
0.001/250V
CHASSIS
GROUND
D803
D804
D801
D802
C809
0.047/300V
F801
2.5AT
F802
5AT
C804
330/25V
C810
0.047/300V
VS1
VOLTAGE SELECTOR
R803 100(5W)
R805 82(5W)
110-120V
220-240V
C801
1000/200V
R806
220k
R807
220k
C805
1000/200V
R804
150
(7W)
C806
2.2/100V
C802
2200/50V
C803
2200/50V
C807
2.2/100V
49V
-49V
R337
4.7
(1/2W)
L351
1.22µH
R387
4.7
(1/2W)
L301
1.22µH
RED ORG BRN BLK VIO WHT YEL
CHASSIS
GROUND

4-10. POWER AMP BOARD MOUNTING DIAGRAM

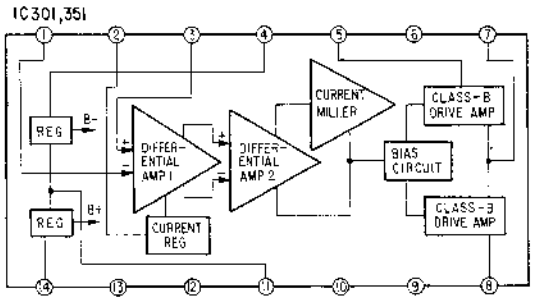
– Conductor Side –

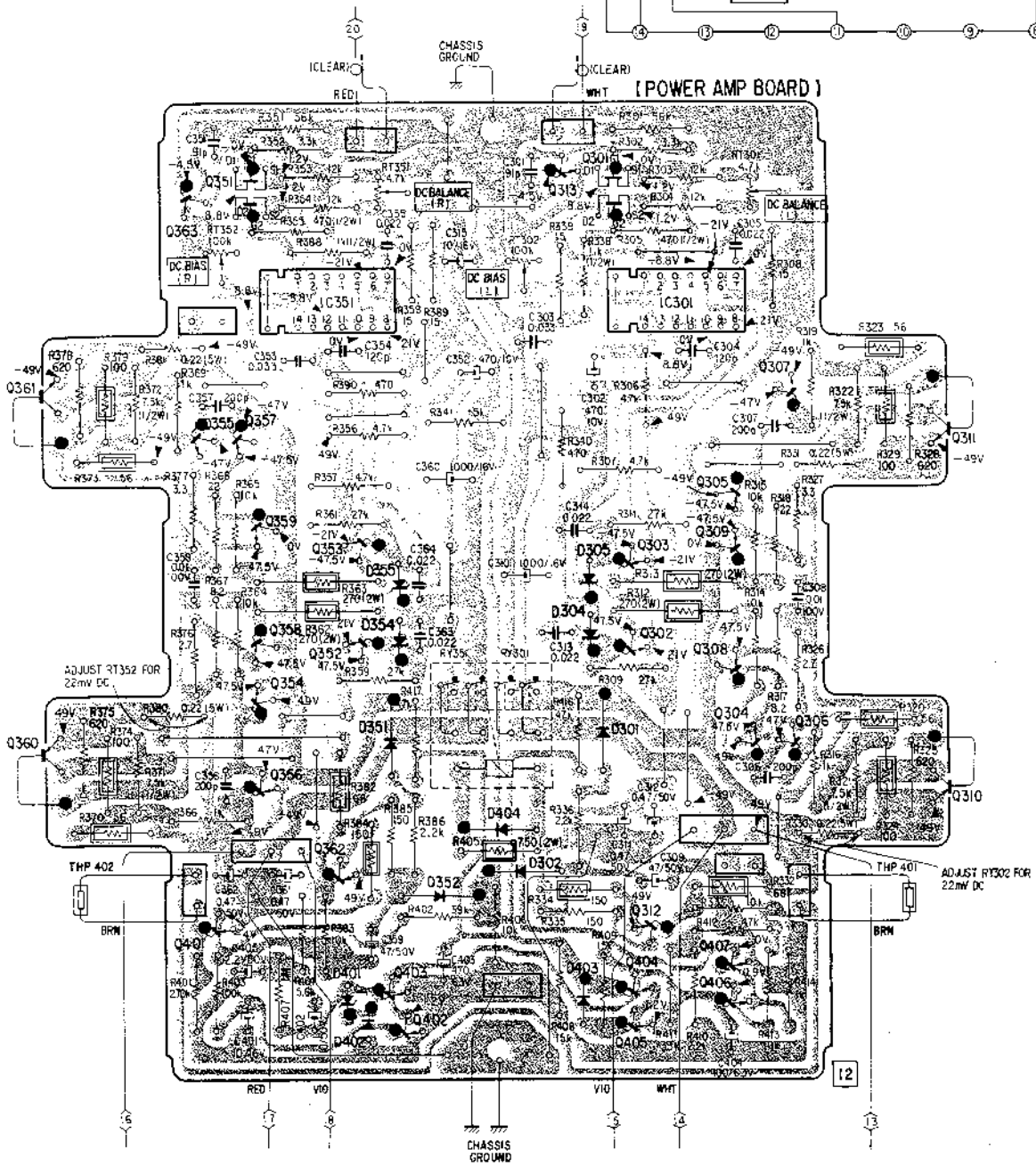
Note:

- Color code of sleeving over the end of the jacket.



- ○—— : parts extracted from the component side.
- ▨ : B+ pattern

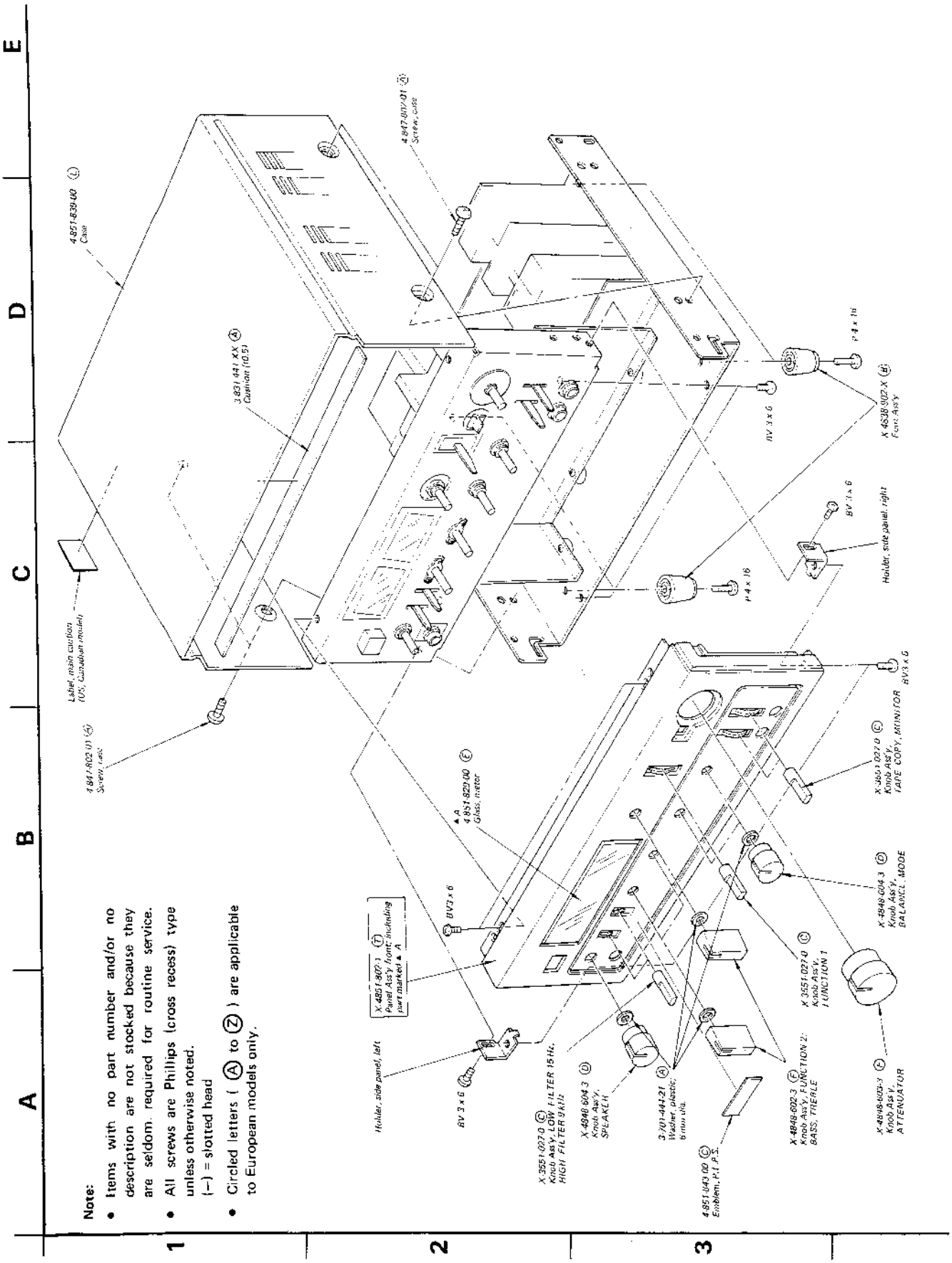




Q,IC	361 360		363 355 401	351 357 359 358 354 356	IC351 353 352 362	403 402			313	301 303 302 312 404 405	IC301	305 309 308 304 407 406	307 306		311 310	Q,IC
D					401 402	351 354 352	355	404 302		305 304 403	301					D

SECTION 5
EXPLODED VIEWS

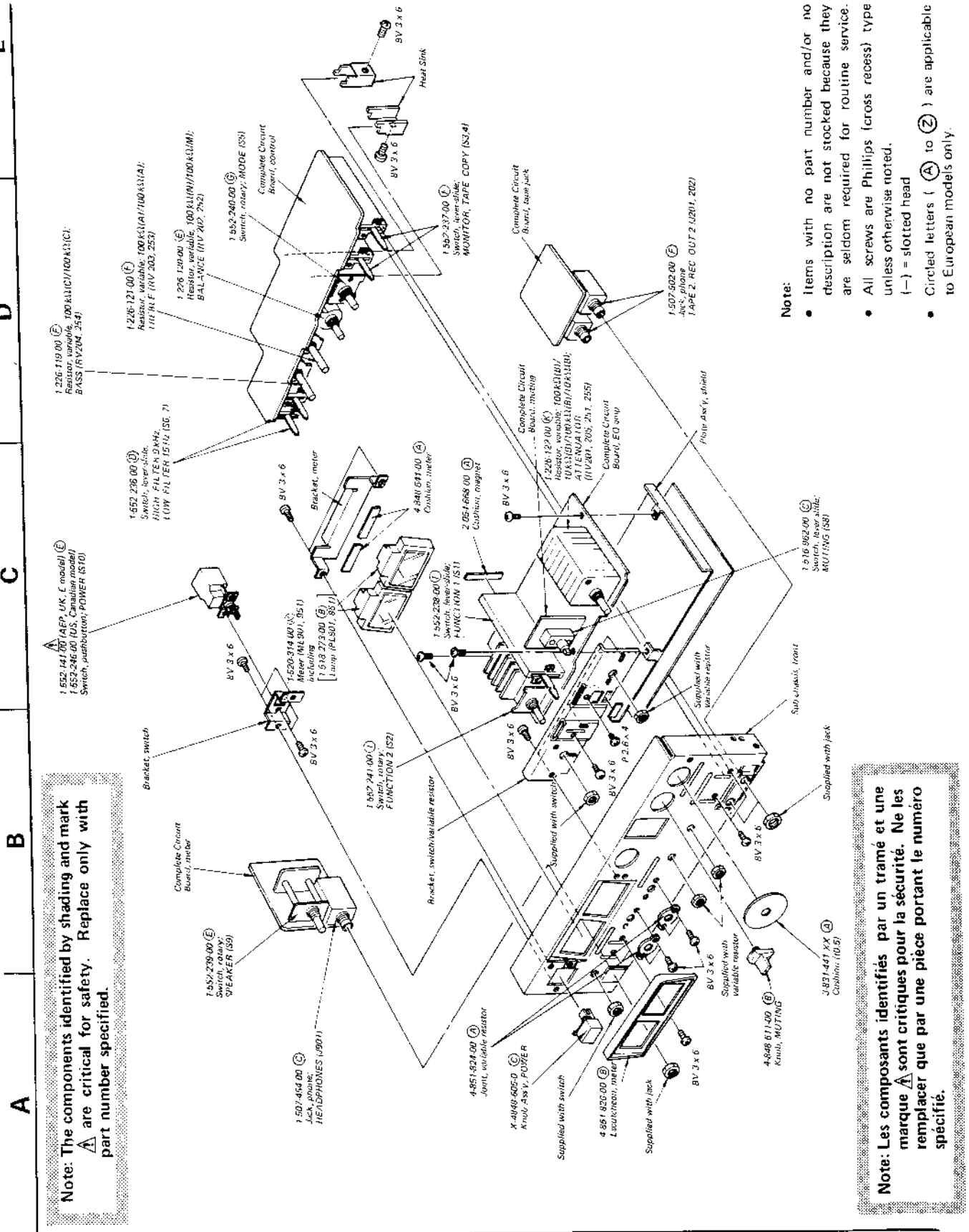
5-1.



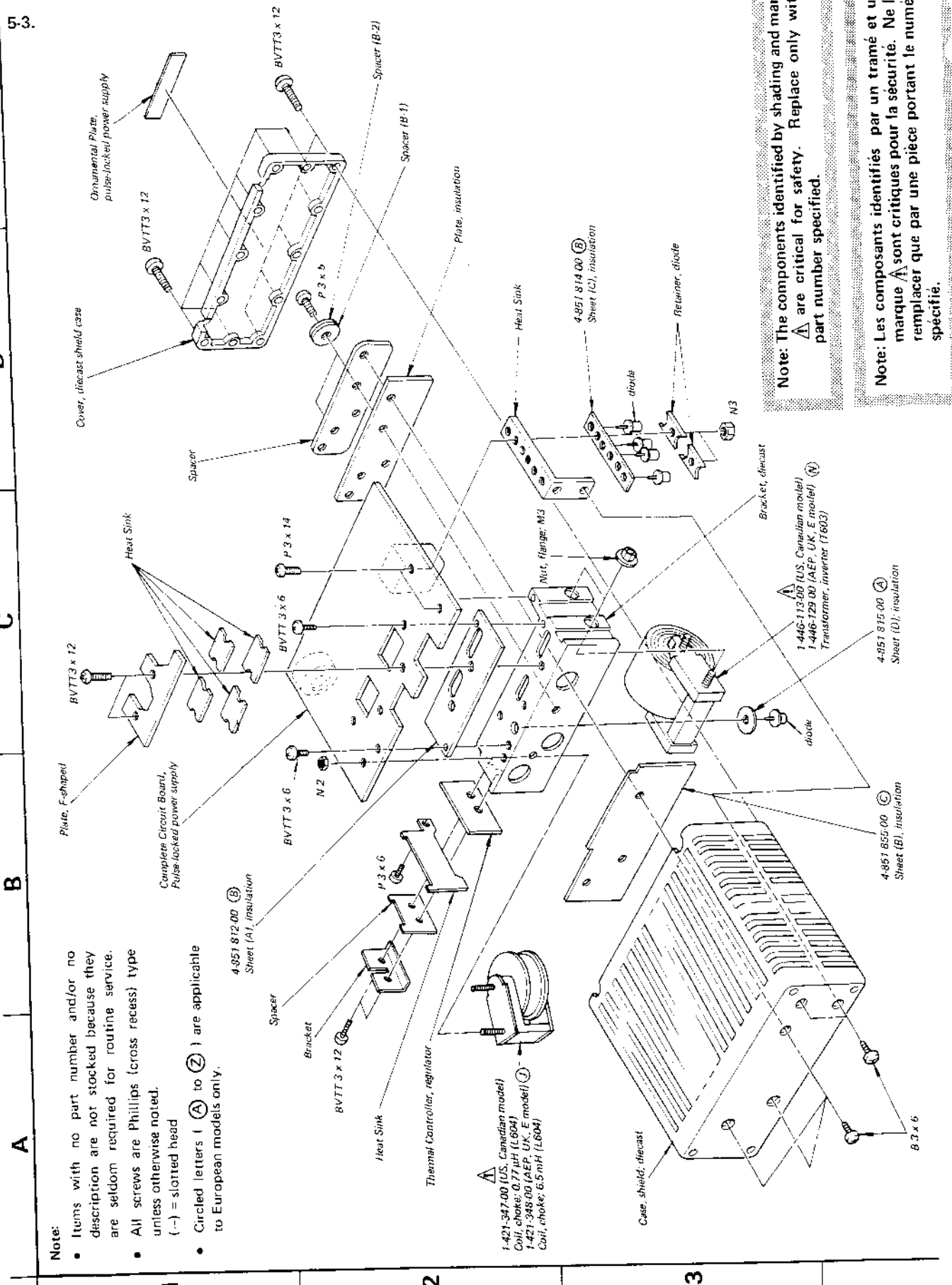
Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

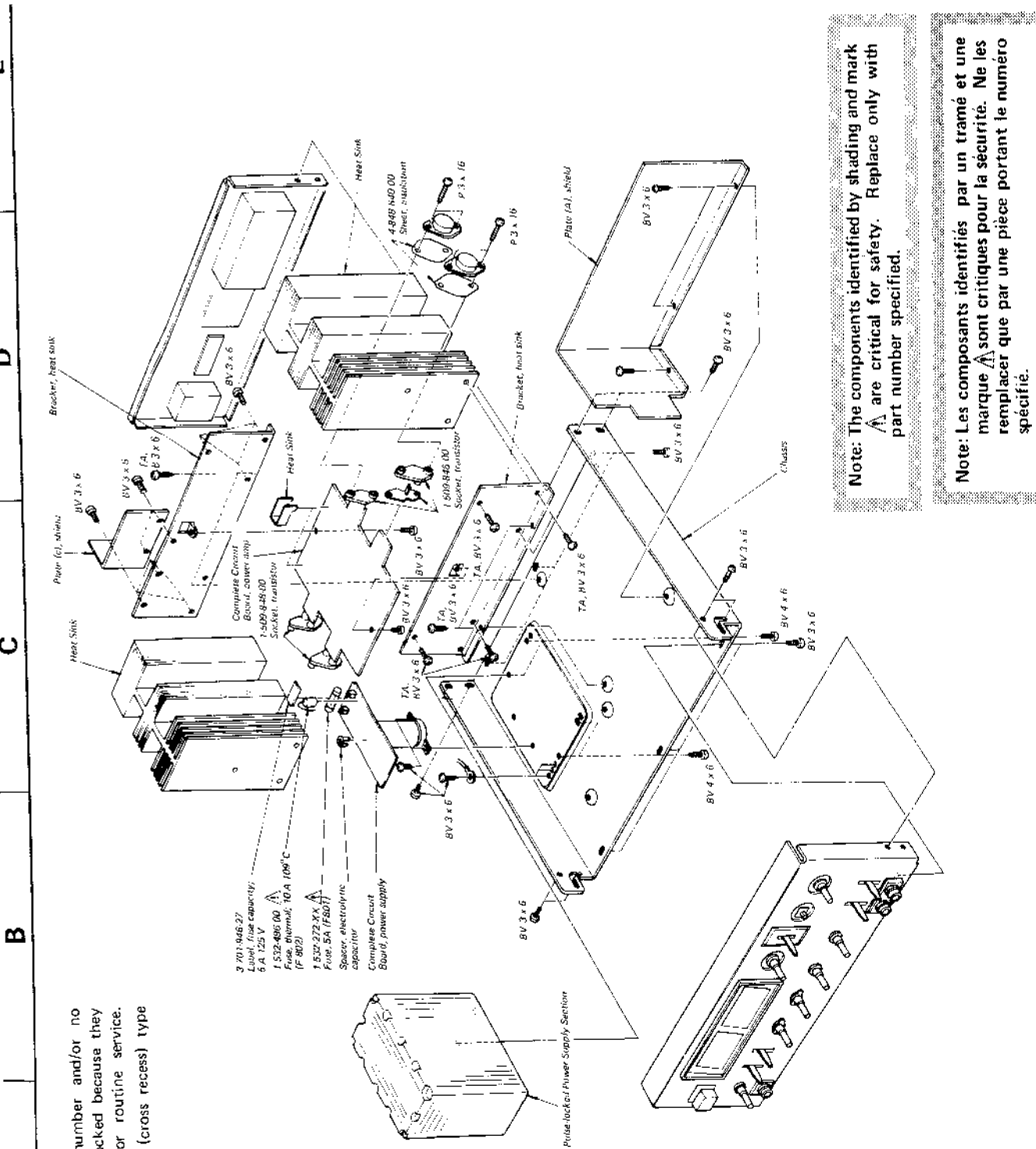
5-2.


A
B
C
D
E
1
2
3
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.
Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
⚠ 1 552-141-00 (AEP, UK, E model) (E)
1 552-246-00 (U.S, Canadian model)
Switch, pushbutton; POWER (S10)
1 226-119-00 (E)
Resistor, variable, 100kΩ(C)/100kΩ(C);
BASS (RV204, 254)
1 226-121-00 (E)
Resistor, variable, 100kΩ(A)/100kΩ(A);
HI-BLF (RV 203, 253)
1 552-236-00 (D)
Switch, lever-slide;
HIGH FILTER 12kHz
LOW FILTER 15kHz (SC 7)
1 226-120-00 (E)
Resistor, variable, 100kΩ(M)/100kΩ(M);
BALANCE (RV 202, 252)
1 552-240-00 (G)
Switch, rotary; MODE (S5)
Complete Circuit Board, control
1 552-237-00 (E)
Switch, lever-slide;
MONITOR, TAPE COPY (S3,4)
Heat Sink
BV 3 x 6
Complete Circuit Board, tape jack
1 507-502-00 (E)
Jack, phone
TAPE 2, REC OUT 2 (J201, 202)
Complete Circuit Board, metering
1 226-122-00 (E)
Resistor, variable, 100kΩ(J)/(J)/
10kΩ(D)/100kΩ(B)/(D)/10kΩ(B);
ATTENUATION
(RV201, 205, 251, 255)
Complete Circuit Board, EQ amp
Plate Ass'y, shield
1 516-962-00 (C)
Switch, lever-slide;
MUTING (S8)
Sub chassis, front
Supplied with variable resistor
Supplied with jack
Supplied with switch
Bracket, switch
Bracket, meter
Bracket, switch/variable resistor
1 552-239-00 (E)
Switch, rotary;
SPEAKER (S9)
1 507-454-00 (C)
Jack, phone;
HEADPHONES (J901)
1 520-314-00 (S)
Meter (MU901, 951)
including
1 518-773-00 (B)
Lamp (PL901, 951)
4 848 641-00 (A)
Cushion, meter
1 552-241-00 (J)
Switch, rotary;
FUNCTION 2 (S2)
1 552-238-00 (J)
Switch, lever-slide;
FUNCTION 1 (S1)
2 054-668-00 (A)
Cushion, magnet
4 851-624-00 (A)
Joint, variable resistor
X-4949-605-0 (C)
Knob Ass'y, POWER
4 851 820-00 (B)
Lever, metering
4 848 611-00 (B)
Knob, MUTING
J 831-441-XX (A)
Cushion (10.5)
Note:
• Items with no part number and/or no description are not stocked because they are seldom required for routine service.
• All screws are Phillips (cross recess) type unless otherwise noted.
(—) = slotted head
• Circled letters ((A) to (Z)) are applicable to European models only.

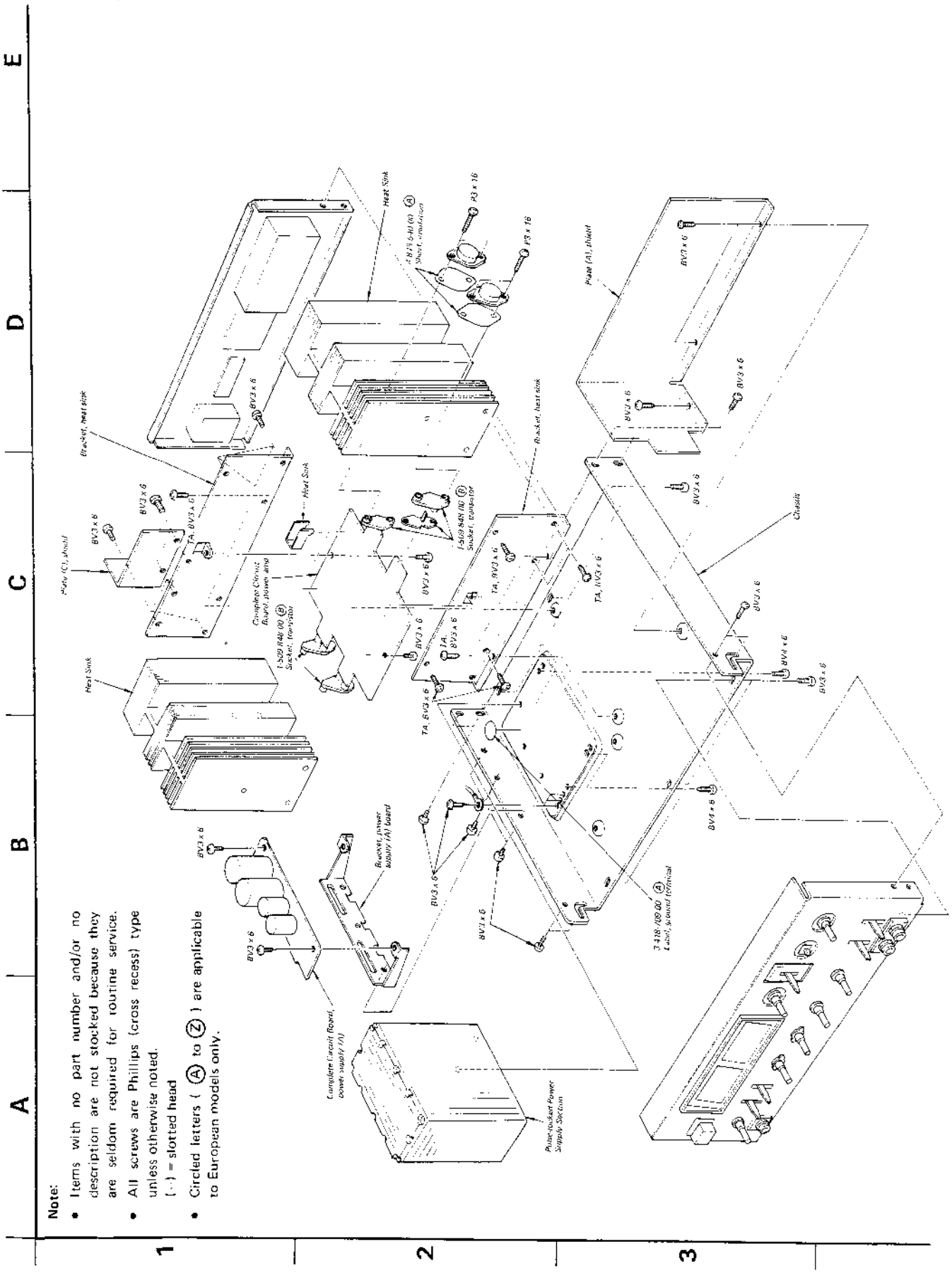
5-3.


A
B
C
D
E
1
2
3
Note:
• Items with no part number and/or no description are not stocked because they are seldom required for routine service.
• All screws are Phillips (cross recess) type unless otherwise noted.
(–) = slotted head
• Circled letters Ⓐ to Ⓩ are applicable to European models only.
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.
Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
Ornamental Plate, pulse-locked power supply
BVTT3 x 12
Cover, diecast shield case
Spacer (B-2)
Spacer (B-1)
P 3 x 5
Plate, insulation
Heat Sink
4-951 814-00 (B) Sheet (C), insulation
Retainer, diode
diode
N3
Spacer
P 3 x 14
BVTT 3 x 6
Nut, flange; M3
Bracket, diecast
1-446-113-00 (US, Canadian model) 1-446-129-00 (AEP, UK, E model) (N) Transformer, inverter (T603)
4-951 815-00 (A) Sheet (D), insulation
Plate, F-shaped
Complete Circuit Board, Pulse-locked power supply
N 2
4-951 812-00 (B) Sheet (A), insulation
4-951 855-00 (C) Sheet (B), insulation
P 3 x 6
Bracket
Spacer
BVTT 3 x 12
Heat Sink
Thermal Controller, regulator
⚠ 1-421-347-00 (US, Canadian model) Coil, choke; 0.77 µH (L604)
1-421-348-00 (AEP, UK, E model) (J) Coil, choke; 6.5 mH (L604)
Case, shield; diecast
B 3 x 6

5-4. (US, Canadian model)



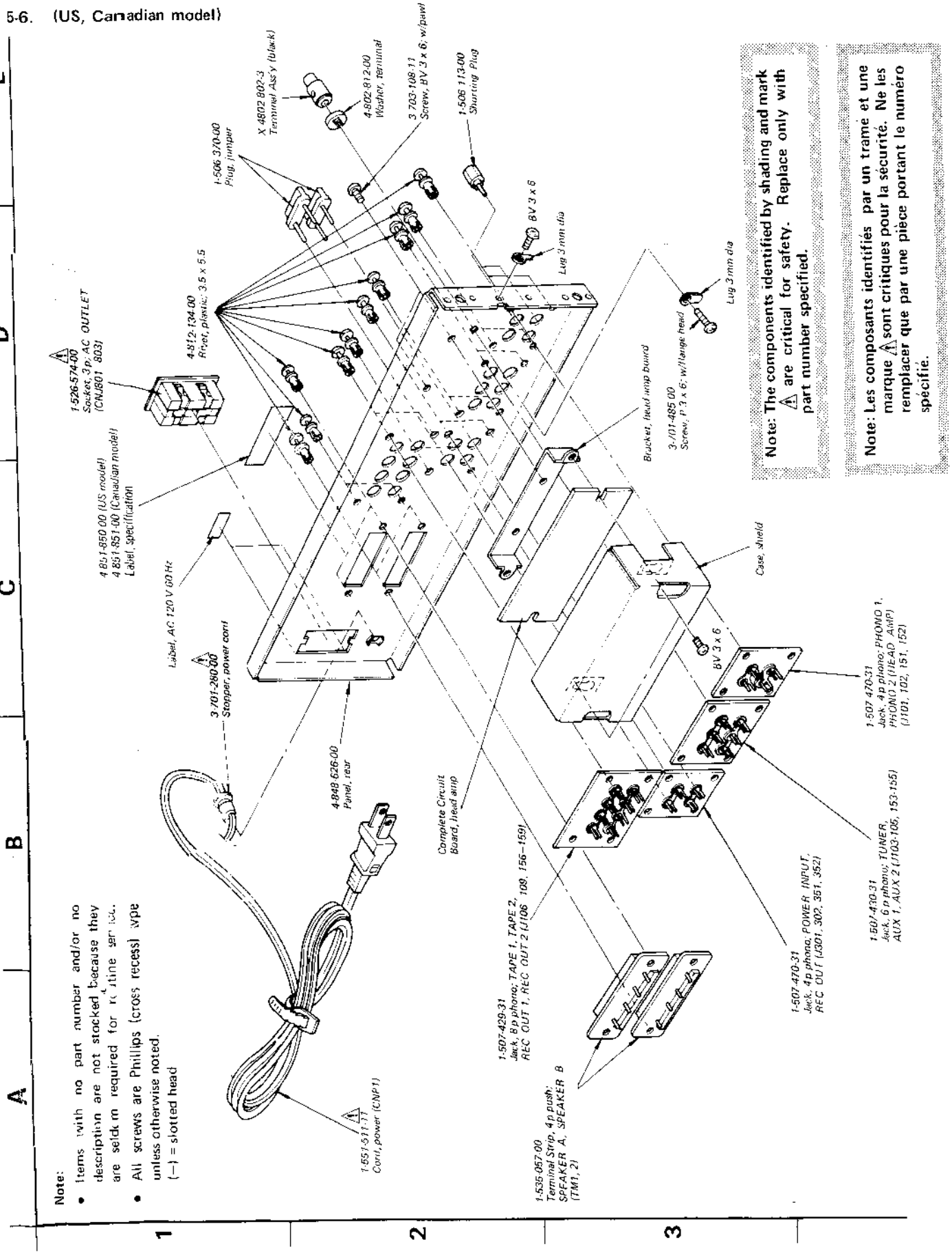
5-5. (AEP, UK, E model)



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (-) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

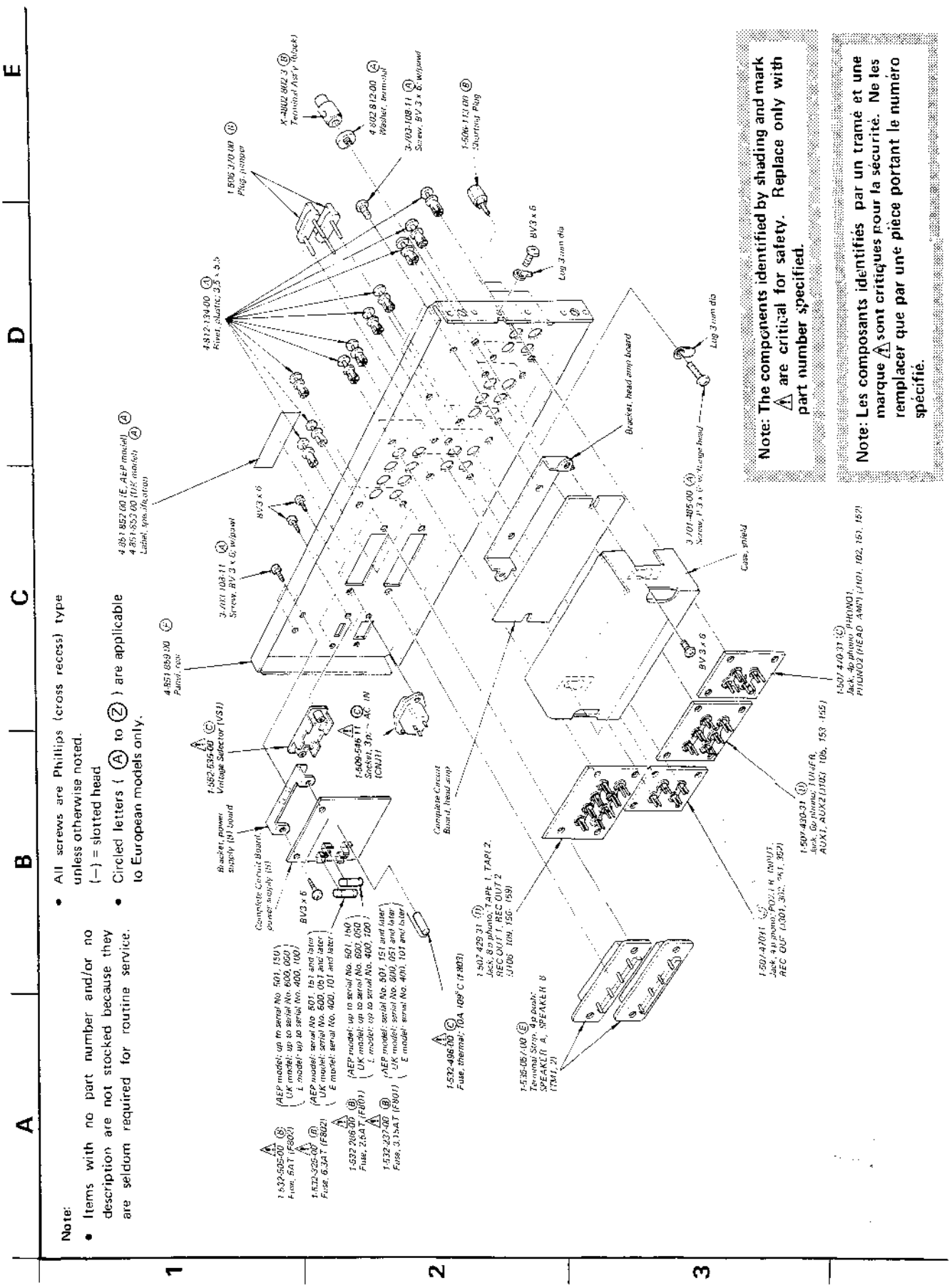
5-6. (US, Canadian model)



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

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

5-7. (AEP, UK, E model)



SECTION 6

ELECTRICAL PARTS LIST

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	Part No.	Description
		SEMICONDUCTORS
		Transistors
Q101, 151	8-765-342-10 Ⓔ	2SK97
⇒Q102, 152, ⇒Q103, 153	8-729-387-28 Ⓑ	2SA872E
⇒Q104, 154	8-722-384-01 Ⓒ	2SK23A-840 (blue)
Q105, 155	8-729-203-04 Ⓑ	2SK30A
⇒Q106, 156	8-729-387-28 Ⓑ	2SA872E
⇒Q107, 157	8-723-304-00 Ⓑ	2SK43-4
⇒Q108, 158	8-729-387-28 Ⓑ	2SA872E
⇒Q109, 159	8-729-377-58 Ⓑ	2SC1775E
Q110, 160	8-729-366-71 Ⓑ	2SD667
Q111, 161	8-729-364-71 Ⓑ	2SB647
⇒Q112, 162	8-723-304-00 Ⓑ	2SK43-4
Q301, 351	8-761-510-06 Ⓕ	2SK58
Q302, 352	8-729-366-81 Ⓒ	2SD668
Q303, 353	8-729-364-81 Ⓒ	2SB648
⇒Q304, 354	8-729-663-47 Ⓑ	2SC1364
Q305	8-727-788-00 Ⓑ	2SA678
⇒Q 355	8-729-663-47 Ⓑ	2SC1364
Q306, 356	8-727-788-00 Ⓑ	2SA678
⇒Q307	8-729-663-47 Ⓑ	2SC1364
Q 357	8-727-788-00 Ⓑ	2SA678
Q308, 358	8-729-364-71 Ⓑ	2SB647
Q309, 359	8-729-366-71 Ⓑ	2SD667
Q310, 360	8-729-365-53 Ⓘ	2SB655
Q311, 361	8-729-367-53 Ⓖ	2SD675
Q312, 362	8-727-788-00 Ⓑ	2SA678
⇒Q313, 363	8-729-663-47 Ⓑ	2SC1364
Q401	8-727-788-00 Ⓑ	2SA678
⇒Q402–404	8-729-663-47 Ⓑ	2SC1364
Q405	8-727-788-00 Ⓑ	2SA678
⇒Q406, 407	8-729-663-47 Ⓑ	2SC1364
⇒Q501, 502	8-727-314-00 Ⓒ	2SK42-4
Q503	8-729-316-12 Ⓒ	2SC1061
⇒Q504, 505	8-729-377-59 Ⓑ	2SC1775F
⇒Q506, 507	8-729-163-93 Ⓑ	2SA639S
Q508	8-729-317-12 Ⓒ	2SA671
Q509	8-729-203-04 Ⓑ	2SK30A
⇒Q510	8-760-413-10 Ⓑ	2SC1475
⇒Q511, 512	8-729-377-59 Ⓑ	2SC1775F
⇒Q601	⚠8-729-308-71	2SC1986D-R (US, Canadian model)
⇒Q601	⚠8-729-302-31 Ⓓ	2SC2023-R (AEP, UK, E model)
Q602	⚠8-765-170-01	2SC1962 (US, Canadian model)
⇒Q602	⚠8-729-377-59 Ⓑ	2SC1775F (AEP, UK, E model)
Q603	⚠8-765-082-20	2SA896 (US, Canadian model)
Q603	⚠8-765-141-00 Ⓗ	2SA911 (AEP, UK, E model)
Q604	⚠8-765-012-20	2SC1811 (US, Canadian model)
⇒Q604	⚠8-729-377-59 Ⓑ	2SC1775F (AEP, UK, E model)
⇒Q605, 606	⚠8-727-788-00 Ⓑ	2SA678
⇒Q607	⚠8-729-163-93 Ⓑ	2SA639S
⇒Q608	⚠8-729-377-59 Ⓑ	2SC1775F
⇒Q609–612	⚠8-729-308-72	2SC1986D-O (US, Canadian model)
⇒Q609–612	⚠8-729-302-31 Ⓓ / 8-729-302-32 Ⓓ	2SC2023-R / 2SC2023-O (AEP, UK, E model)
⇒Q613	⚠8-729-308-71	2SC1986D-R (US, Canadian model)
⇒Q613	⚠8-729-302-31 Ⓓ	2SC2023-R (AEP, UK, E model)
⇒Q701, 751, ⇒Q704, 754	8-761-710-00 Ⓑ	2SC1637-1
⇒Q705, 755, ⇒Q706, 756	8-729-387-28 Ⓑ	2SA872E
		ICs
IC201, 251	8-759-314-57 Ⓒ	HA1457
IC301, 351	8-751-710-00 Ⓖ	CX171
		Diodes
D101, 151	8-719-912-00 Ⓑ	MV12N
⇒D102, 152, ⇒D103, 153	8-719-931-26 Ⓑ	EQB01-26
⇒D201, 251, ⇒D202, 252	8-719-931-21 Ⓑ	EQB01-21
D301, 351, D302, 352	8-719-815-55 Ⓐ	1S1555
⇒D304, 354, ⇒D305, 355	8-719-931-21 Ⓑ	EQB01-21
⇒D401	8-719-931-07 Ⓑ	EQB01-07
D402	8-719-815-55 Ⓐ	1S1555
D403	8-719-912-00 Ⓑ	MV12N
D404	8-719-815-55 Ⓐ	1S1555

⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

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

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

Note: Circled letters ((A) to (Z)) are applicable to European models only.

Ref. No.	Part No.	Description
D601	⚠8-719-303-41	(C) S34
⇒D602	⚠8-719-156-08	(B) RD5.6E
D603–605	⚠8-719-815-55	(A) 1S1555
D608–611	⚠8-719-303-41	(C) S34
⇒D801–804	⚠8-719-811-55	(C) U05G
⇒D901, 951 ⇒D902, 952	8-719-422-21	(A) 1T22AM
D903, 953	8-719-815-55	(A) 1S1555

MISCELLANEOUS

THP401, 402	1-800-427-00	(B) Thermistor, positive

COILS

L301, 351	1-420-838-00	(B) 1.22 μH
L601	⚠1-421-349-00	(G) Line Filter (AEP, UK, E model)
L601	⚠1-421-259-00	Line Filter (US, Canadian model)
L602	⚠1-421-329-00	(B) Choke, 10 μH
L603	⚠1-407-161-XX	(A) Microinductor, 22 μH
L604	⚠1-421-347-00	Choke, 0.77 μH (US, Canadian model)
L604	⚠1-421-348-00	(J) Choke, 6.5 mH (AEP, UK, E model)
L605–608	⚠1-421-329-00	(B) Choke, 10 μH

TRANSFORMERS

T601	⚠1-543-098-00	(B) Core (yellow)
T601	⚠1-543-100-00	(B) Core (blue)
T602	⚠1-543-121-00	(B) Core
T603	⚠1-446-113-00	Inverter (US, Canadian model)
T603	⚠1-446-129-00	(N) Inverter (AEP, UK, E model)

CAPACITORS

All capacitors are in μF and ceramic unless otherwise noted.
50 WV or less are not indicated except for electrolytics.
p : μμF, elect : electrolytic

Ref. No.	Part No.	Description		
C101, 151	1-102-963-00	(A) 33 p		
C102, 152	1-102-129-00	(A) 0.01		
C103, 153	1-102-115-00	(A) 560 p		
C104, 154	1-130-125-00	(B) 0.016	100 V	polyethylene
C105, 155	1-130-126-00	(B) 0.056	100 V	polyethylene
C106, 156	1-102-973-00	(A) 100 p		
C107, 157	1-131-417-00	(B) 3.3	16 V	tantalum
C108, 158	1-102-963-00	(A) 33 p		
C109, 159	1-121-413-00	(A) 100	6.3 V	elect
C111, 161 C112, 162	1-121-396-00	(A) 4.7	50 V	elect
C113, 163	1-130-133-00	(B) 0.056	100 V	polyethylene
C114, 164	1-121-352-00	(A) 47	10 V	elect
C115, 165 C116, 166	1-121-261-00	(B) 220	35 V	elect
C201, 251	1-121-450-00	(A) 2.2	50 V	elect
C202, 252	1-102-945-00	(A) 8 p		
C203, 253	1-102-808-00	(A) 6 p		
C204, 254	1-102-934-00	(A) 1 p		
C205, 255	1-121-411-00	(A) 47	50 V	elect
C206, 256	1-121-396-00	(A) 4.7	50 V	elect
C207, 257	1-101-059-00	(A) 510 p		
C208, 258	1-102-979-00	(A) 240 p		
C209, 259	1-108-581-00	(A) 0.012		mylar
C210, 260	1-108-585-00	(A) 0.018		mylar
C211, 261	1-108-607-00	(B) 0.15		mylar
C212, 262	1-108-585-00	(A) 0.018		mylar
C213, 263	1-131-347-00	(B) 1	25 V	tantalum
C214, 264	1-121-450-00	(A) 2.2	50 V	elect
C215, 265	1-130-133-00	(B) 0.056	100 V	polyethylene
C216, 266	1-121-396-00	(A) 4.7	50 V	elect
C217, 267	1-130-133-00	(B) 0.056	100 V	polyethylene
C218, 268 C219, 269	1-121-416-00	(B) 100	25 V	elect
C301, 351	1-102-972-00	(A) 91 p		
C302, 352	1-121-425-00	(B) 470	10 V	elect
C303, 353	1-108-591-00	(A) 0.033		mylar
C304, 354	1-102-816-00	(A) 120 p		
C305, 355	1-108-587-00	(A) 0.022		mylar
C306, 356 C307, 357	1-102-977-00	(A) 200 p		
C308, 358	1-108-377-00	(A) 0.01	100 V	mylar
C309, 359	1-121-411-00	(A) 47	50 V	elect
C310, 360	1-121-245-00	(B) 1000	16 V	elect
C311, 361 C312, 362	1-121-726-00	(A) 0.47	50 V	elect

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

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

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	Part No.	Description		
C313, 363, C314, 364	1-101-924-00	Ⓐ 0.022		
C315	1-121-651-00	Ⓐ 10	16 V	elect
C401	1-121-651-00	Ⓐ 10	16 V	elect
C402	1-121-738-00	Ⓐ 10	50 V	elect
C403	1-121-424-00	Ⓑ 470	6.3 V	elect
C404	1-121-413-00	Ⓐ 100	6.3 V	elect
C405	1-121-450-00	Ⓐ 2.2	50 V	elect
C501, 502	1-102-978-00	Ⓐ 220 p		
C503, 504	1-121-480-00	Ⓐ 22	25 V	elect
C505, 506	1-121-261-00	Ⓑ 220	35 V	elect
C507, 508	1-101-880-00	Ⓐ 47 p		
C509	1-121-396-00	Ⓐ 4.7	50 V	elect
C510	1-102-978-00	Ⓐ 220 p		
C511	1-121-480-00	Ⓐ 22	25 V	elect
C512	1-121-736-00	Ⓑ 1000	10 V	elect
C601	⚠1-130-141-00	Ⓐ 0.01	630 V	polyethylene
C602, 603	⚠1-102-070-00	0.001	150 V	(US, Canadian model)
C602, 603	⚠1-115-149-00	Ⓒ 0.0015	450 V	paper (AEP, UK, E model)
C604	⚠1-123-401-00	47	200 V	elect (US, Canadian model)
C604	⚠1-123-402-00	Ⓒ 22	400 V	elect (AEP, UK, E model)
C605	⚠1-161-438-00	Ⓐ 560 p	500 V	
C606	⚠1-121-726-00	Ⓐ 0.47	50 V	elect
C607	⚠1-108-239-00	Ⓐ 0.01		mylar
C608	⚠1-121-651-00	Ⓐ 10	16 V	elect
C609	⚠1-108-227-00	Ⓐ 0.01		mylar
C611	⚠1-108-234-00	Ⓐ 0.0047		mylar
C612	⚠1-108-239-00	Ⓐ 0.01		mylar
C613	⚠1-123-277-00	68	160 V	elect (US, Canadian model)
C613	⚠1-123-280-00	Ⓒ 33	350 V	elect (AEP, UK, E model)
C614, 615	⚠1-121-656-00	Ⓑ 330	50 V	elect
C616, 617	⚠1-121-417-00	Ⓑ 100	50 V	elect
C618	⚠1-130-141-00	Ⓐ 0.01	630 V	polyethylene

Ref. No.	Part No.	Description		
C701, 751	1-131-429-00	Ⓕ 470	3.15 V	tantalum
C702, 752	1-130-127-00	Ⓑ 0.015	100 V	polyethylene
C703, 753	1-102-074-00	Ⓐ 0.001		
C704, 754	1-102-823-00	Ⓐ 430 p		
C705, 755	1-101-880-00	Ⓐ 47p		
C706, 756	1-101-059-00	Ⓐ 510 p		
C707, 757, C708, 758	1-121-751-00	Ⓑ 330	6.3 V	elect
C709, 759	1-130-127-00	Ⓑ 0.015	100 V	polyethylene
C710, 760	1-131-377-00	Ⓑ 10	10 V	tantalum
C711, 761	1-121-420-00	Ⓑ 220	10 V	elect
C801	⚠1-125-180-00	1200	200 V	elect (US, Canadian model)
C801	⚠1-125-179-00	Ⓘ 1000	200 V	elect (AEP, UK, E model)
C802, 803	1-123-256-00	Ⓓ 2200	50 V	elect
C804	1-121-654-00	Ⓑ 230	25 V	elect
C805	⚠1-130-090-00	2.2	250 V	polyethylene (US, Canadian model)
C805	⚠1-125-179-00	Ⓘ 1000	200 V	elect (AEP, UK, E model)
C806, 807	1-130-084-00	Ⓓ 2.2	100 V	polyethylene (AEP, UK, E model)
C808	⚠1-102-222-00	Ⓑ 1000 p	250 V	(AEP, UK, E model)
C809, 810	⚠1-108-749-00	Ⓑ 0.047	300 V	mylar (AEP, UK, E model)
C901, 951	1-121-395-00	Ⓐ 4.7	25 V	elect
C902, 952	1-121-479-00	Ⓐ 22	16 V	elect

RESISTORS

All resistors are in ohms. Common ¼ W carbon resistors are omitted. Refer to the list on page 49 for their part numbers.
All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
kΩ : 1000 Ω

R101, 151	1-244-914-00	Ⓐ 51 k	½ W	carbon
R106, 156	1-244-849-00	Ⓐ 100	½ W	carbon
R110, 160	1-214-148-00	Ⓐ 4.7 k	¼ W	metal oxide 1 %
R111, 161	1-214-174-00	Ⓐ 56 k	¼ W	metal oxide 1 %
R122, 172	1-244-857-00	Ⓐ 220	½ W	carbon

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

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

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	Part No.		Description	
R305, 355	1-244-865-00	Ⓐ 470	½ W	carbon
R312, 362 R313, 363	⚠1-206-650-00	Ⓐ 270	2 W	metal oxide (nonflammable)
R320, 370	⚠1-211-516-00	Ⓑ 56	¼ W	carbon (nonflammable)
R321, 371 R322, 372	1-244-894-00	Ⓐ 7.5 k	½ W	carbon
R323, 373	⚠1-211-516-00	Ⓑ 56	¼ W	carbon (nonflammable)
R324, 374 R329, 379	⚠1-211-522-00	Ⓒ 100	¼ W	carbon (nonflammable)
R330, 380 R331, 381	1-217-156-00	Ⓐ 0.22	5 W	wirewound
R332, 382	⚠1-211-518-00	Ⓒ 68	¼ W	carbon (nonflammable)
R334, 384	⚠1-211-526-00	Ⓒ 150	½ W	carbon (nonflammable)
R337, 387	1-244-817-00	Ⓐ 4.7	½ W	carbon
R405	⚠1-206-661-00	Ⓐ 750	2 W	metal oxide (nonflammable)
R501, 508	⚠1-206-483-00	Ⓐ 68	2 W	metal oxide (nonflammable)
R514	1-244-859-00	Ⓐ 270	½ W	carbon
R601	⚠1-211-490-00	4.7	¼ W	carbon (nonflammable) (US, Canadian model)
R601	⚠1-211-514-00	Ⓐ 47	¼ W	carbon (nonflammable) (AEP, UK, E model)
R602	⚠1-211-498-00	10	¼ W	carbon (nonflammable) (US, Canadian model)
R602	⚠1-211-528-00	Ⓐ 180	¼ W	carbon (nonflammable) (AEP, UK, E model)
R603	⚠1-211-514-00	47	¼ W	carbon (nonflammable) (US, Canadian model)
R603	⚠1-211-518-00	Ⓒ 68	¼ W	carbon (nonflammable) (AEP, UK, E model)
R604	⚠1-211-528-00	180	¼ W	carbon (nonflammable) (US, Canadian model)
R604	⚠1-211-522-00	Ⓒ 100	¼ W	carbon (nonflammable) (AEP, UK, E model)
R605	⚠1-214-596-00	39 k	2 W	metal oxide (nonflammable) (US, Canadian model)
R605	⚠1-206-698-00	Ⓐ 27 k	2 W	metal oxide (nonflammable) (AEP, UK, E model)
R606	⚠1-244-915-00	56 k	½ W	carbon (US, Canadian model)
R606	⚠1-214-595-00	Ⓐ 100 k	1 W	metal oxide (nonflammable) (AEP, UK E model)
R607	⚠1-214-598-00	Ⓐ 56 k	1 W	metal oxide (nonflammable)
R608	⚠1-246-473-00	Ⓐ 1 k	¼ W	carbon
R609	⚠1-244-915-00	56 k	½ W	carbon (US, Canadian model)
R609	⚠1-214-595-00	Ⓐ 100 k	1 W	metal oxide (nonflammable) (AEP, UK, E model)
R610	⚠1-211-945-00	Ⓐ 2.2 k	¼ W	carbon (nonflammable)
R611	⚠1-211-532-00	Ⓒ 270	¼ W	carbon (nonflammable)
R612	⚠1-246-521-00	100 k	¼ W	carbon (US, Canadian model)
R612	⚠1-246-519-00	Ⓐ 68 k	¼ W	carbon (AEP, UK, E model)
R613	⚠1-211-534-00	Ⓒ 330	¼ W	carbon (nonflammable)
R614	⚠1-246-519-00	68 k	¼ W	carbon (US, Canadian model)
R614	⚠1-244-927-00	Ⓐ 180 k	½ W	carbon (AEP, UK, E model)
R615	⚠1-211-553-00	Ⓐ 2.7 k	¼ W	carbon (nonflammable)
R618	⚠1-246-479-00	Ⓐ 1.8 k	¼ W	carbon
R619	⚠1-246-497-00	Ⓐ 10 k	¼ W	carbon

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

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

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	Part No.		Description	
R620	⚠1-246-511-00	Ⓐ	39 k	¼ W carbon
R621	⚠1-246-469-00		680	¼ W carbon (US, Canadian model)
R621	⚠1-246-470-00	Ⓐ	750	¼ W carbon (AEP, UK, E model)
R622	⚠1-217-156-00	Ⓐ	0.22	5 W wirewound
R623	⚠1-246-451-00		120	¼ W carbon (US, Canadian model)
R623	⚠1-246-449-00	Ⓐ	100	¼ W carbon (AEP, UK, E model)
R624	⚠1-214-596-00		39 k	2 W metal oxide (nonflammable) (US, Canadian model)
R624–626	⚠1-206-698-00	Ⓐ	27 k	2 W metal oxide (nonflammable) (AEP, UK, E model)
R701, 751	1-244-850-00	Ⓐ	110	½ W carbon
R705, 755	1-244-879-00	Ⓐ	1.8 k	½ W carbon
R708, 758	1-244-845-00	Ⓐ	68	½ W carbon
R709, 759	1-244-809-00	Ⓐ	2.2	½ W carbon
R801, 802	⚠1-217-570-00	Ⓑ	2.2	5 W metal oxide
R803	⚠1-217-312-00		150	5 W wirewound (nonflammable) (US, Canadian model)
R803	⚠1-217-310-00	Ⓑ	100	5 W wirewound (nonflammable) (AEP, UK, E model)
R804	⚠1-217-347-00	Ⓑ	150	7 W wirewound (nonflammable) (AEP, UK, E model)
R805	⚠1-217-313-00		180	5 W wirewound (nonflammable) (US, Canadian model)
R805	⚠1-217-309-00	Ⓑ	82	5 W wirewound (nonflammable) (AEP, UK, E model)
R901, 951	1-244-877-00	Ⓐ	1.5 k	½ W carbon
R902, 952	1-244-881-00	Ⓐ	2.2 k	½ W carbon
R904, 954	⚠1-207-640-00	Ⓑ	470	2 W wirewound (nonflammable)
R905, 955	1-244-865-00	Ⓐ	470	½ W carbon

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

Ref. No.	Part No.		Description
RT301, 351	1-224-251-XX	Ⓒ	4.7 k, adjustable; dc balance
RT302, 352	1-224-255-XX	Ⓒ	100 k, adjustable; dc bias
RT601	⚠1-224-642-XX	Ⓑ	1 k, adjustable; dc voltage
RT901, 951	1-224-489-00	Ⓑ	2.2 k, adjustable; meter level calibration
RV201, 251 RV205, 255	1-226-122-00	Ⓚ	100 k/100 k/10 k/10 k, variable; ATTENUATOR
RV202, 252	1-226-120-00	Ⓔ	100 k (N)/100 k (M), variable; BALANCE
RV203, 253	1-226-121-00	Ⓕ	100 k (A)/100 k (A), variable; TREBLE
RV204, 254	1-226-119-00	Ⓕ	100 k (C)/100 k (C), variable; BASS

SWITCHES

S1	1-552-238-00	Ⓕ	Lever-slide, FUNCTION (1)
S2	1-552-241-00	Ⓘ	Rotary, FUNCTION (2)
S3, 4	1-552-237-00	Ⓕ	Lever-slide, MONITOR, TAPE COPY
S5	1-552-240-00	Ⓖ	Rotary, MODE
S6, 7	1-552-236-00	Ⓓ	Lever-slide, HIGH FILTER 9 kHz, LOW FILTER 15 HZ
S8	1-516-962-00	Ⓒ	Lever-slide; MUTING
S9	1-552-239-00	Ⓔ	Rotary, SPEAKER
S10	⚠1-552-141-00	Ⓔ	Pushbutton, POWER (AEP, UK, E model)
S10	⚠1-552-246-00		Pushbutton, POWER (US, Canadian model)
VS1	⚠1-552-535-00	Ⓒ	Voltage Selector (AEP, UK, E model)

JACKS

J101, 151 J102, 152	1-507-470-31	Ⓒ	4 p Phono, PHONO1, PHONO 2 (HEAD AMP)
J103, 153 – J105, 155	1-507-430-31	Ⓓ	6 p Phono, TUNER, AUX 1, AUX 2
J106, 156 – J109, 159	1-507-429-31	Ⓓ	8 p Phono, TAPE 1, TAPE 2, REC OUT 1, REC OUT 2
J201, 202	1-507-502-00	Ⓕ	Phone, TAPE 2, REC OUT 2
J301, 351 J302, 352	1-507-470-31	Ⓒ	4 p Phono, POWER INPUT, PRE OUTPUT
J901	1-507-454-00	Ⓒ	Phone, HEADPHONES

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

Ref. No.	Part No.		Description
			MISCELLANEOUS
CNJ1	⚠1-509-546-11	Ⓒ	Socket, 3 p; ~ AC IN (AEP, UK, E model)
CNJ801 –803	⚠1-526-574-00		Socket, 3 p; AC OUTLET (US, Canadian model)
CNP1	⚠1-551-511-11		Cord, power (US, Canadian model)
CP1	⚠1-231-326-11		Encapsulated Component (US model)
CP1	⚠1-231-341-00		Encapsulated Component (Canadian model)
F801	⚠1-532-272-XX		Fuse, 5A (US, Canadian model)
F801	⚠1-532-286-00	Ⓑ	Fuse, 2.5AT (AEP model: up to serial No. 501, 150 / UK model: up to serial No. 600, 050 / E model: up to serial No. 400, 100)
F801	⚠1-532-237-00	Ⓑ	Fuse, 3,15AT (AEP model: serial No. 501, 151 and later / UK model: serial No. 600, 051 and later / E model: serial No. 400, 101 and later)
F802	⚠1-532-496-00		Fuse, thermal; 10A 109°C (US, Canadian model)
F802	⚠1-532-505-00	Ⓑ	Fuse, 5AT (AEP model: up to serial No. 501, 150 / UK model: up to serial No. 600, 050 / E model: up to serial No. 400, 100)
F802	⚠1-532-325-00	Ⓑ	Fuse, 6.3AT (AEP model: serial No. 501, 151 and later / UK model: serial No. 600, 051 and later / E model: serial No. 400, 101 and later)
F803	⚠1-532-496-00	Ⓒ	Fuse, thermal; 10A 109°C (AEP, UK, E model)

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

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

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

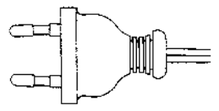
Ref. No.	Part No.		Description
ME901, 951	1-520-314-00	Ⓚ	Meter, including PL801, 851
PL801, 851	1-518-273-00	Ⓑ	Lamp, meter; included in ME901, 951
RY301, 351	1-515-257-00	Ⓗ	Relay
RY801	⚠1-515-278-00	Ⓕ	Relay
TM1, 2	1-535-057-00	Ⓔ	Terminal Strip, 4 p push; SPEAKER A, SPEAKER B
	1-506-370-00	Ⓑ	Plug, jumper
	1-509-848-00	Ⓑ	Socket, transistor
	1-543-060-00	Ⓔ	Core, bead

ACCESSORIES AND PACKING MATERIALS

Part No.		Description
1-506-113-00	Ⓑ	Shorting Plug
⚠1-534-754-00		Cord, power; parallel-blade plug (E model)
⚠1-534-819-00	Ⓖ	Cord, power (UK model)
⚠1-551-216-00		Cord, power; euro-plug (E model)
3-701-020-00	Ⓐ	Bag, check sheet
3-701-622-00	Ⓐ	Bag, plastic (Canadian, UK model)
3-770-247-11	Ⓔ	Manual, instruction (AEP, UK, E model)
3-770-247-21		Manual, instruction (US, Canadian model)
3-794-233-21		Sheet, consumer products (US model)
4-848-648-00	Ⓑ	Bag, protection
4-851-860-00	Ⓕ	Carton
4-851-861-00	Ⓑ	Cushion

– Power Cord –

euro-plug



parallel-blade plug

1/4 WATT CARBON RESISTORS Ⓐ

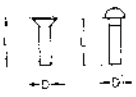
Note: Circled letter Ⓐ is applicable to European models only.

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	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	1-246-576-00	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	1-246-577-00	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	1-246-578-00	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	1-246-579-00	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	1-246-580-00	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	1-246-581-00	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	1-246-582-00	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	1-246-583-00	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	1-246-584-00	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	1-246-585-00	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	1-246-586-00	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	1-246-587-00	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	1-246-588-00	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	1-246-589-00	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		

HARDWARE NOMENCLATURE

Screw: P 3 × 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
		SCREWS	
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		brazier-head screw	

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex. TA, P 3 × 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	bind-ng-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 × 4, hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	

INTEGRATED STEREO AMPLIFIER

TA-F6B

US Model
Canadian Model
AEP Model
UK Model
E Model

SUPPLEMENT

File this supplement with the service manual.

No. 1
Jan. 1979

CIRCUIT DESCRIPTION

SONY
SERVICE MANUAL

This audio amplifier is equipped with a pulse-locked power supply which has the following desirable features:

1) Better regulation (less than 1%) due to impedance as low as 1/15 of conventional power supply impedance.
2) Square waves as high in frequency as 20 kHz are used, so hum does not occur.
3) Small in size and lightweight. Approximately 1/2 the volume and 1/4 to 1/8 the weight of a conventional power supply.
4) Operable even with a dc power source.

The circuit of this pulse-locked power supply is outlined below (See Fig. 1).

1. Surge-Current Control Circuit (See Fig. 2 or Fig. 3)

This circuit suppresses the large surge-current which occurs when the power switch S10 is first turned on, thereby preventing the burning of the switch contact and unnecessary blowing of the fuse.

In the pulse-locked power supply circuit, ac line current is directly rectified and smoothed. Since a very-large charge-current (surge-current) flows into the smoothing capacitor C801 (and C805 in AEP, UK, E models). the surge-current control circuit is required.

- When the power switch is turned on, the current flows through R801 and R802 to suppress the surge-current. After the secondary-rectified current starts to flow, the relay RY801 is turned on to shunt R801 and R802 out of the circuit.

2. Line Filter (See Fig. 2 or Fig. 3)

This filter prevents high-frequency noise (generated in the chopper-type voltage regulator and inverter circuits) from entering the ac power line.

- The filter consists of coil L601 with bifilar windings on a ferrite-ring core and three capacitors C601–C603. Noise which appears between the ac line and the ground (common-mode noise, See Fig. 4.) is suppressed, thereby reducing the amount of unwanted radiation (noticeable when this amplifier is connected to preamplifier, tuner, turntable, etc.) to insignificant levels.
- Furthermore, noise radiated directly from the voltage regulator and inverter circuits is suppressed by an aluminum diecast shield, while any leakage of noise to the dc output terminals is stopped by the LC filter of the secondary rectifier.

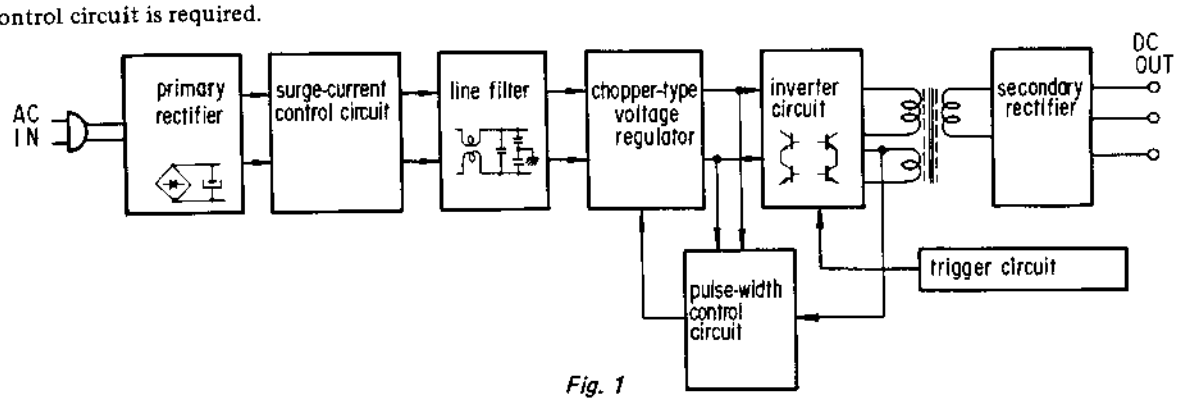


Fig. 1

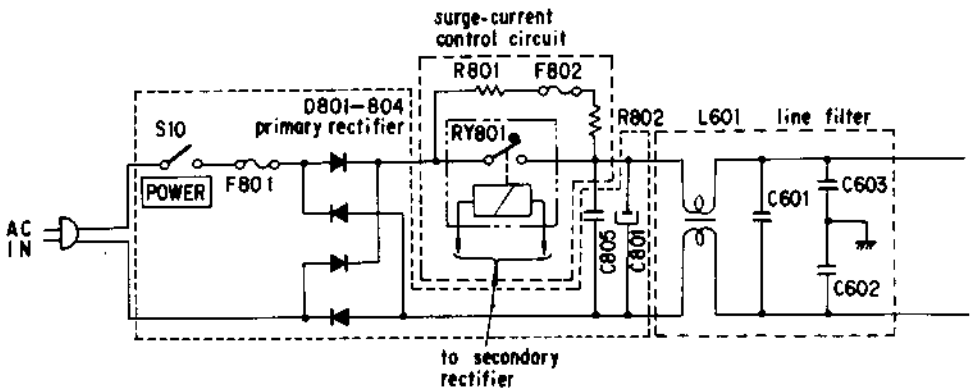


Fig. 2 (US, Canadian Model)

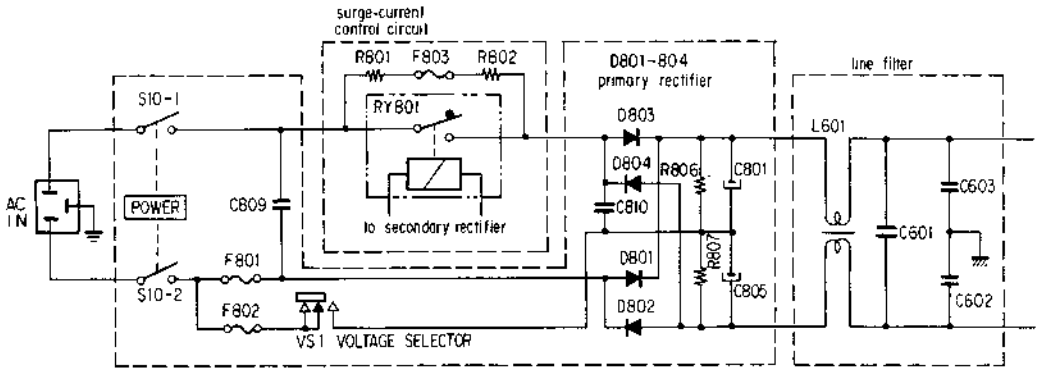


Fig. 3 (AEP, UK, E Model)

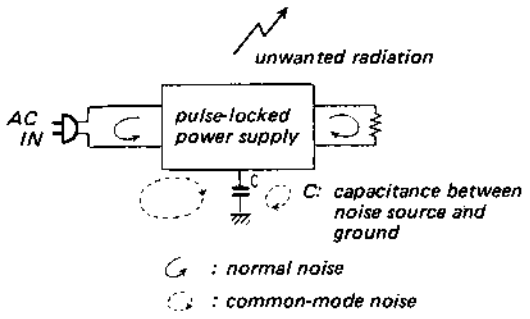


Fig. 4

3. Chopper-Type Voltage Regulator (See Fig. 5)

This voltage regulator circuit, formed by the high-speed switching circuit (Q601–603, Q613) and demodulation filter (low-pass filter L604, C613), maintains a constant voltage output (applied to the inverter) despite fluctuations in input voltage and load.

- Control signals from the error amplifier activate the high-speed switching circuit, turning the output on and off. This output is smoothed out by L604 and C613 to obtain a constant voltage.
- D601 (flywheel diode) is used to release the stored magnetic energy (accumulated when Q601 and Q613 are on) from the choke coil L604 when Q601 and Q613 are turned off. This diode also improves the switching characteristics.

  When D601 is on, the energy in the choke coil is supplied through this diode to the output circuit.
- Without this diode, the energy accumulated in the choke coil (when Q601 and Q613 are on) would result in very high voltage levels when Q601 and Q613 are turned off, and would probably damage these two transistors.
- The circuit diagram in Fig. 5 is simplified to the circuit diagram in Fig. 6.

The switching transistor Q1 is turned on and off by PWM (pulse-width modulation) waves applied to its base. Output voltage stability is achieved by varying the period that the switching transistor Q1 is on (T_{on}) or off (T_{off}). The relevant waveforms are shown in Figs. 7 and 8.

1) If, for example, the output voltage tends to drop because of a load fluctuation, the degree of fluctuation is detected by the error amplifier, resulting in a change in T_{on}/T_{off} ratio. That is, the switching transistor remains on for a longer time, thereby compensating for the output voltage drop.
2) If the output voltage then tends to increase (due to further load fluctuation) the error amplifier will again detect the degree of fluctuation, and consequently shorten the period that Q1 is on. Output voltage is stabilized by utilizing the operations described in 1) and 2) above.

The relation between E_0 and E_1 is given by the following expression:

$$E_0 = E_1 \cdot \frac{T_{on}}{T_{on} + T_{off}}$$

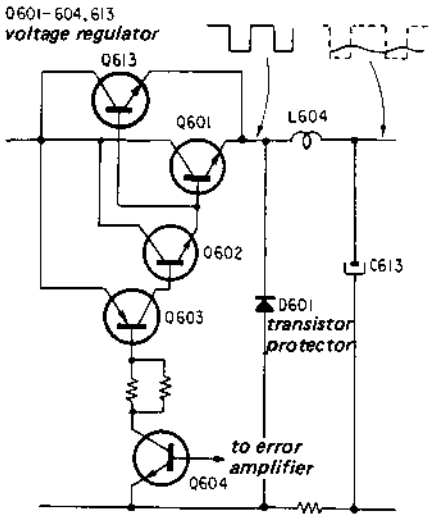


Fig. 5

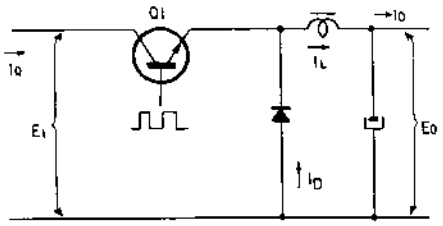


Fig. 6

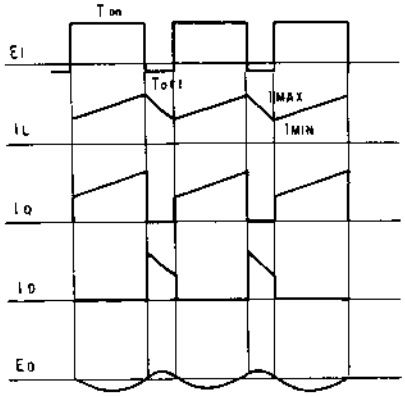


Fig. 7

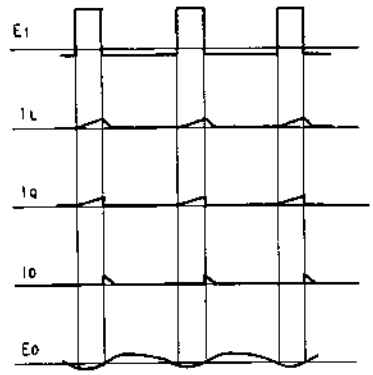


Fig. 8

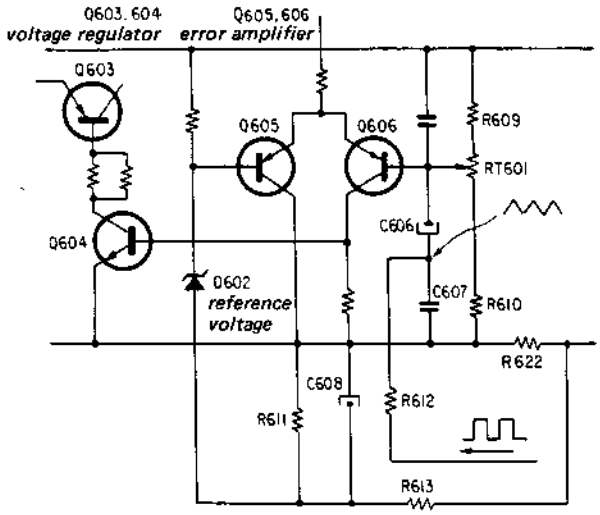


Fig. 9

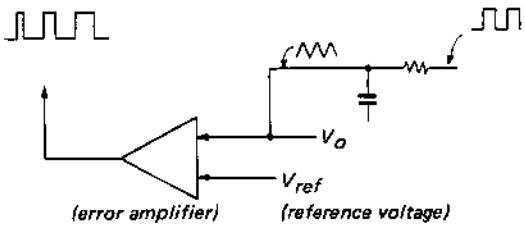


Fig. 10

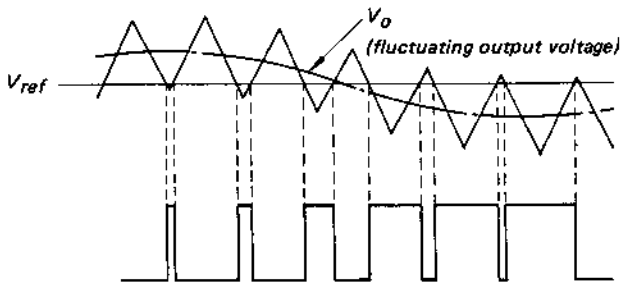


Fig. 11

4. PWM (Pulse-Width Modulation) Circuit (See Fig. 9)

This circuit is used to control the chopper-type voltage regulator to maintain constant inverter output voltage. Square-wave pulses from the inverter are converted into sawtooth waves, and are then compared with a reference voltage level.

- The circuit diagram in Fig. 9 is simplified to the circuit diagram in Fig. 10.

1) The fluctuating output voltage is divided by the detector resistors R609, R610 and RT601, and the divided voltage V_0 applied to Q606. In addition, the pulses from the inverter are converted into sawtooth waves, by the integrating circuit R612, C607, and added to V_0 through C606.
2) Variations in regulation are corrected by R611, R613, R622 and C608, while the reference voltage V_{ref} (stabilized by the zener diode D602) is applied to the base of Q605.
3) When the combined sawtooth wave and reference voltage V_{ref} are compared and amplified by the error amplifier Q605 and Q606, the output will be pulse-width modulated as shown in Fig. 11.

5. Inverter Trigger Circuit (See Fig. 12)

When the power switch is turned on, this circuit supplies a trigger pulse to the winding N1 of T601 to start the inverter oscillating.

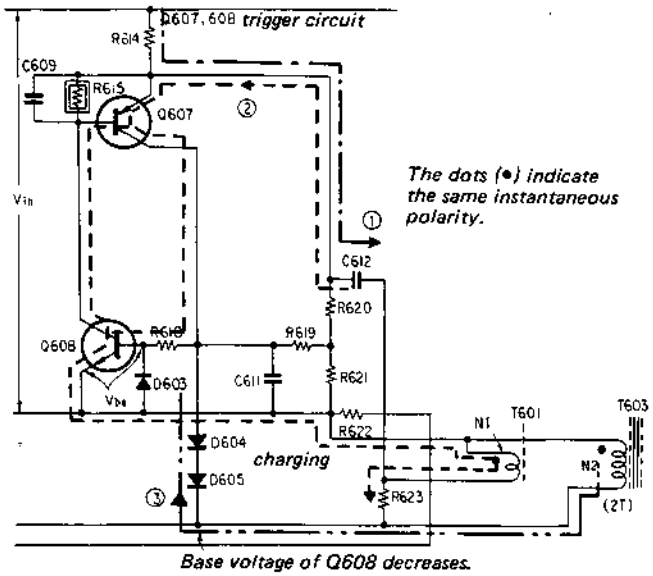


Fig. 12

1) When the power switch is turned on, C612 is charged through R614 (route ①).
2) Once the voltage difference V_{be} between base and emitter of Q608 satisfies the following relation:

$$\frac{R621}{R614 + R620 + R621} \cdot V_{in} > 0.6\ V$$

Q607 and Q608 will turn on.

3) When these two transistors are on, the charge on C612 is applied as a pulse signal to N1 through Q607 and Q608 to start the inverter oscillating. (route ②).
4) Once the inverter starts to oscillate, the voltage generated in winding N2 of T603 is rectified by D604 and D605 (thereby obtaining a minus voltage), resulting in a decrease of the Q608 base voltage. Then transistors Q607 and Q608 turn off (route ③).
5) Q607 and Q608 turn off so that winding N1 of T601 is not loaded with C612, Q607 and Q608, thereby permitting normal inverter-starting operation.

6. Inverter Circuit (See Fig. 13)

This bridge-type inverter circuit, consisting of four power transistors Q609–Q612, generates square-wave signals by using a constant dc voltage supplied from the chopper-type voltage regulator. High-frequency transformer T603 isolates the secondary circuit from the primary circuit and also changes the voltage.

The circuit diagram in Fig. 13 is simplified to the circuit diagram in Fig. 14.

- The secondary voltage waveform of the high-frequency transformer shown in Fig. 15 is obtained by switching S1 and S4 alternately, and S2 and S3 alternately. The dc voltage is consequently converted into square waves.
- The inverter circuit (Fig. 13) operates in the following manner.

1) A trigger pulse signal is applied to N1 from the inverter trigger circuit.
2) For example, an initial pulse produces voltages which cause the transistors connected to N4 and N5 to turn on and the transistors connected to N3 and N6 to turn off.
3) Q610 and Q611 turn on and the current flows from the ⊕ terminal to the ⊖ terminal through Q611, N7, N8, and Q610.
4) The current flowing through N10 will be proportional to the current flowing to T603 through T602.

   This current flowing through N10 produces voltages in N4 and N5. Such voltages turn on Q610 and Q611.
5) The transformer T602 is used to adjust the amount of current feedback.
6) Furthermore, since N2 is wound on T603, N2 generates a voltage which will be applied to N1 through R623.
7) Since N1 is wound on T601, voltages will be generated in N4 and N5, and will also turn Q610 and Q611 on again (voltage feedback).
8) Q610 and Q611 are sufficiently saturated by these two types of feedback (current and voltage) and supply the power to T603. T603 is then saturated and will no longer generate enough voltage to turn Q610 and Q611 on.

9) Q610 and Q611 turn off, and a voltage of opposite polarity is generated in N2.

10) This voltage of opposite polarity consequently produces a magnetic field in the opposite direction, generating voltages in N3 and N6. Such voltages turn Q609 and Q612 on.

11) Once these two transistors Q609 and Q612 are turned on, voltage and current feedbacks will keep Q609 and Q612 on until T601 is saturated in the same way as in the previous half cycle. Then Q610 and Q611 turn on again to continue inverter oscillation.

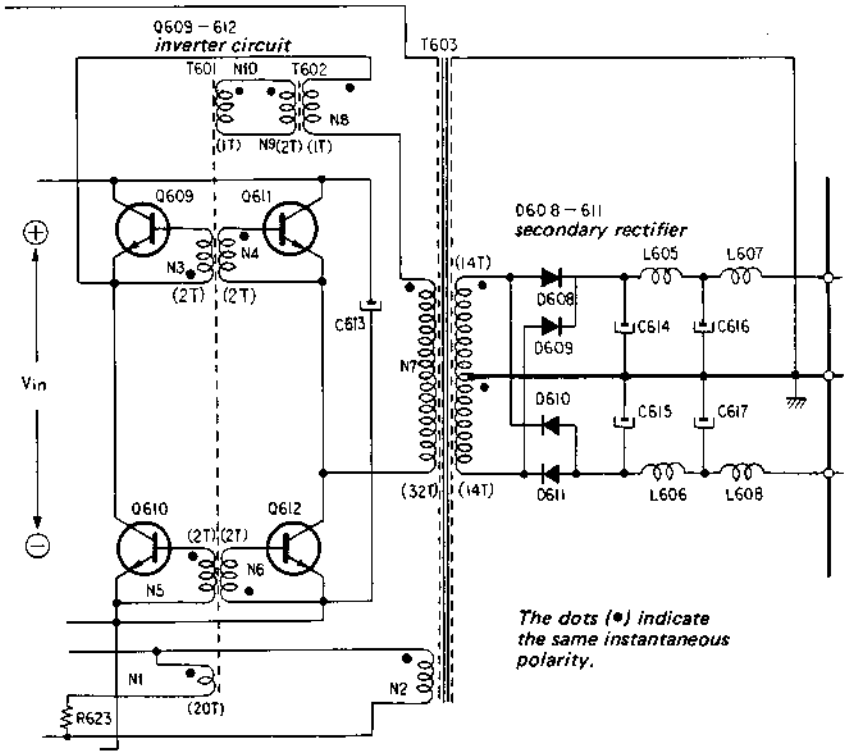


Fig. 13

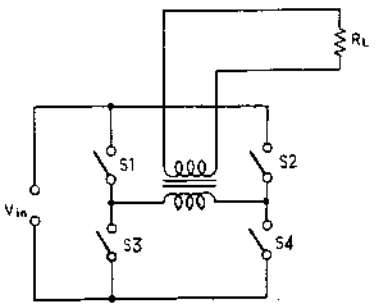


Fig. 14

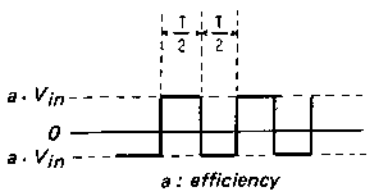


Fig. 15

7. Secondary Rectifier

- This is a rectifier/smoothing circuit which converts the square-wave (changed to the desired voltage by the high-frequency transformer) back into a direct current.
- The high-speed switching diode ensures low loss in the rectification of the square-waves.
- The smoothing circuit uses an LC filter. Due to the square-wave power input, even small value LC components ensure high smoothing efficiency.

9-958-431-81

Sony Corporation

81D0503-2
Printed in Japan