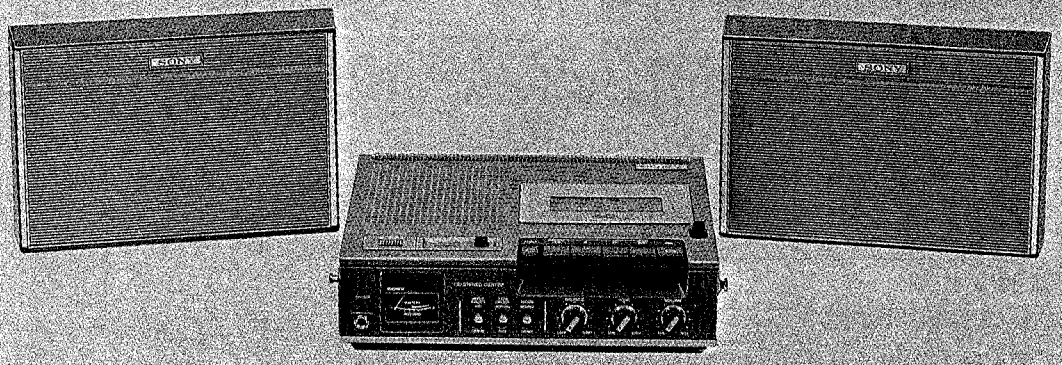
TC-520CS

504

US Model
Canadian Model
UK Model
AEP Model
E Model



STEREO CASSETTE-CORDER

SPECIFICATIONS

Power Requirements:
120V ac, 60 Hz (US, Canadian model)
240V ac, 50 Hz (UK model)
110, 127, 220 or 240V ac, 50 Hz (AEP model)
100–110, 115–127, 200–220 or 230–250V ac, 50/60 Hz (E model)
6V dc
Battery size-D (IEC designation R20), 4 pcs
Rechargeable battery BP-8H (optional)
Car battery cord DCC-129 (optional) for 12V car battery

Power Consumption:
7W ac (US, Canadian model)
10W ac (E model)
14W ac (UK, AEP model)

Power Output:
(US model)
2W (1W x 2) max. with external speakers
1W max. with the built-in speaker
(UK model)
2.2W (1.1W x 2) max. with external speakers
1.1W max. with the built-in speaker
(Canadian, AEP, E model)
3W (1.5W x 2) max. with external speakers
1.5W max. with the built-in speaker

Speakers:
Built-in speaker 10 cm (4 inches) dia.
External speakers 10 cm (4 inches) dia.

Track:
4-track 2-channel stereo or monaural

Fast Winding Time:
Approx. 1 minutes 30 seconds with Sony cassette C-60

Frequency Response:
(US, Canadian, AEP, E model)
50–10,000 Hz with standard cassette
50–13,000 Hz with chromium dioxide cassette
(UK model)
60–10,000 Hz with standard cassette
60–13,000 Hz with chromium dioxide cassette

Wow and Flutter:
0.26% (RMS) weighted

S/N Ratio:
45 dB

Total Harmonic Distortion:
2.5%

Battery Life:
In continuous recording with built-in microphone: Approx. 6 hours with Sony long-life battery size-D

Inputs:
MIC (two minijacks)
Sensitivity: 0.2 mV (–72 dB)
Impedance: for low-impedance microphone
LINE IN (two minijacks)
Sensitivity: 0.06V (–22 dB)
Impedance: 1,000 kΩ

Outputs:
SPEAKER (two minijacks)
Load impedance: for 8Ω-impedance speakers
PHONES (stereo binaural jack)
Load impedance: for 8Ω-impedance headphones

Other Jack:
REMOTE
REC/PB (UK, AEP, E model)

Dimensions:
280 (w) x 90 (h) x 245 (d) mm
11 1/8 (w) x 3 5/8 (h) x 9 3/4 (d) inches
incl. projecting parts and controls

Weight:
3.4 kg, 7 lb 8 oz with batteries

SAFETY-RELATED COMPONENT WARNING!!

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

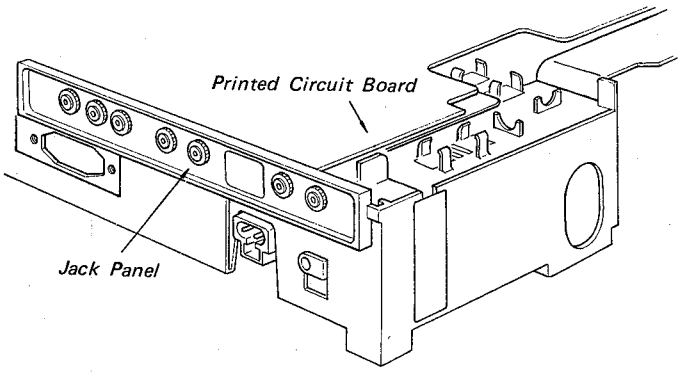
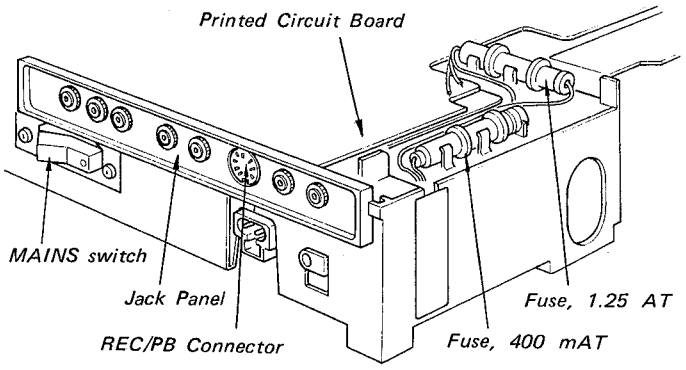
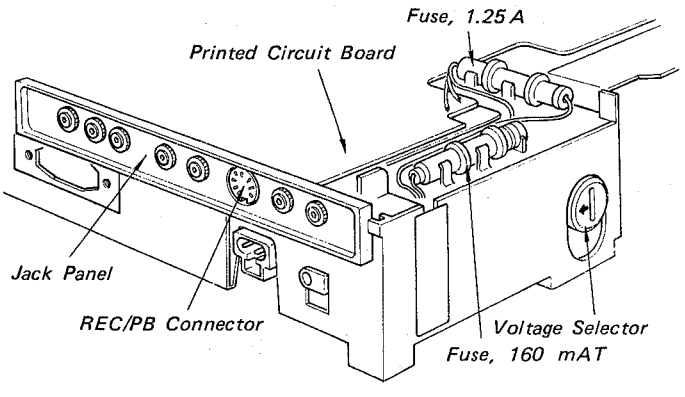
SONY®

SERVICE MANUAL

504

IDENTIFICATION OF SET

TC-520CS is classified by the specification label as shown below.

Specification Label	Jack Side View with lower case removed
US model SONY STEREO CASSETTE-CORDER TC-520CS AC : 120V 60Hz 7 W DC : 6 V FLASHLIGHT BATT SIZE D X 4 OR EQUIV MADE IN Canadian model SONY STEREO CASSETTE-CORDER TC-520CS AC : 120V 60Hz 7 W DC : 6 V FLASHLIGHT BATT SIZE D X 4 OR EQUIV MADE IN	
UK model SONY STEREO CASSETTE-CORDER TC-520CS AC : 240V ~ 50Hz 14 W DC : 6 V ⎓ FLASHLIGHT BATT SIZE D X 4 OR EQUIV MADE IN	
AEP model SONY STEREO CASSETTE-CORDER TC-520CS AC: 110, 127, 220, 240V ~ 50 Hz 14 W DC: 6 V ⎓ FLASHLIGHT BATT SIZE D X 4 OR EQUIV MADE IN	

E model

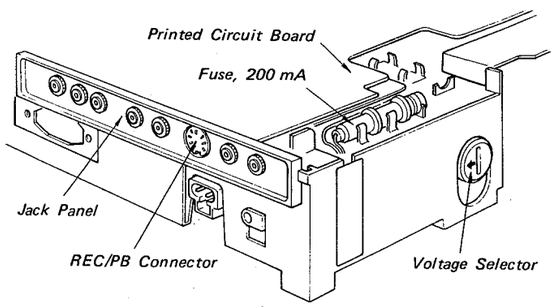
SONY

STEREO CASSETTE-CORDER TC-520CS

AC: 100-110.115-127.200-220
230-250V 50/60Hz 10 W

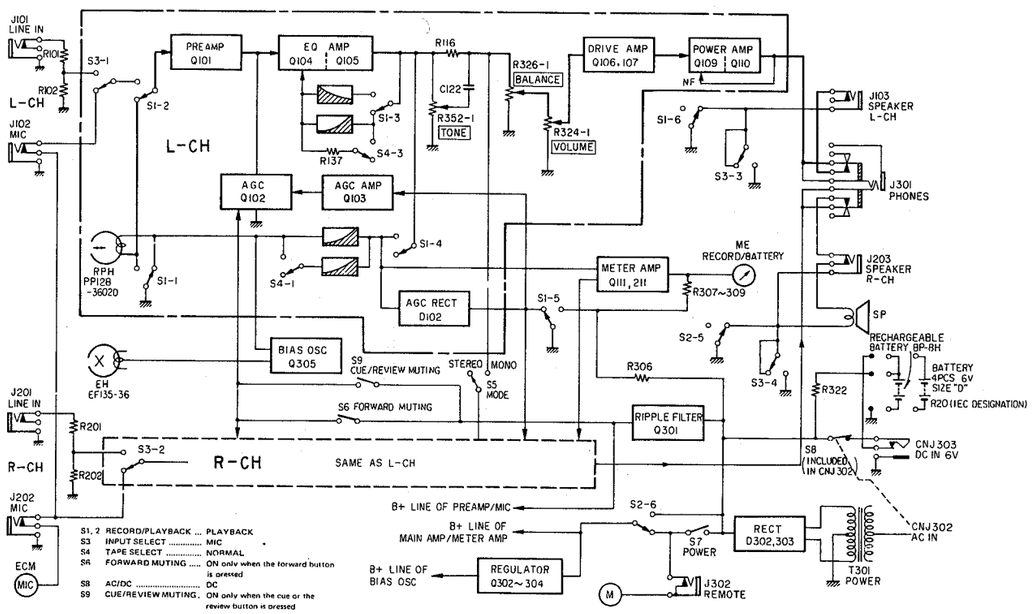
DC: 6 V FLASHLIGHT BATT
SIZE D X 4 OR EQUIV

MADE IN JAPAN



SECTION 1
OUTLINE

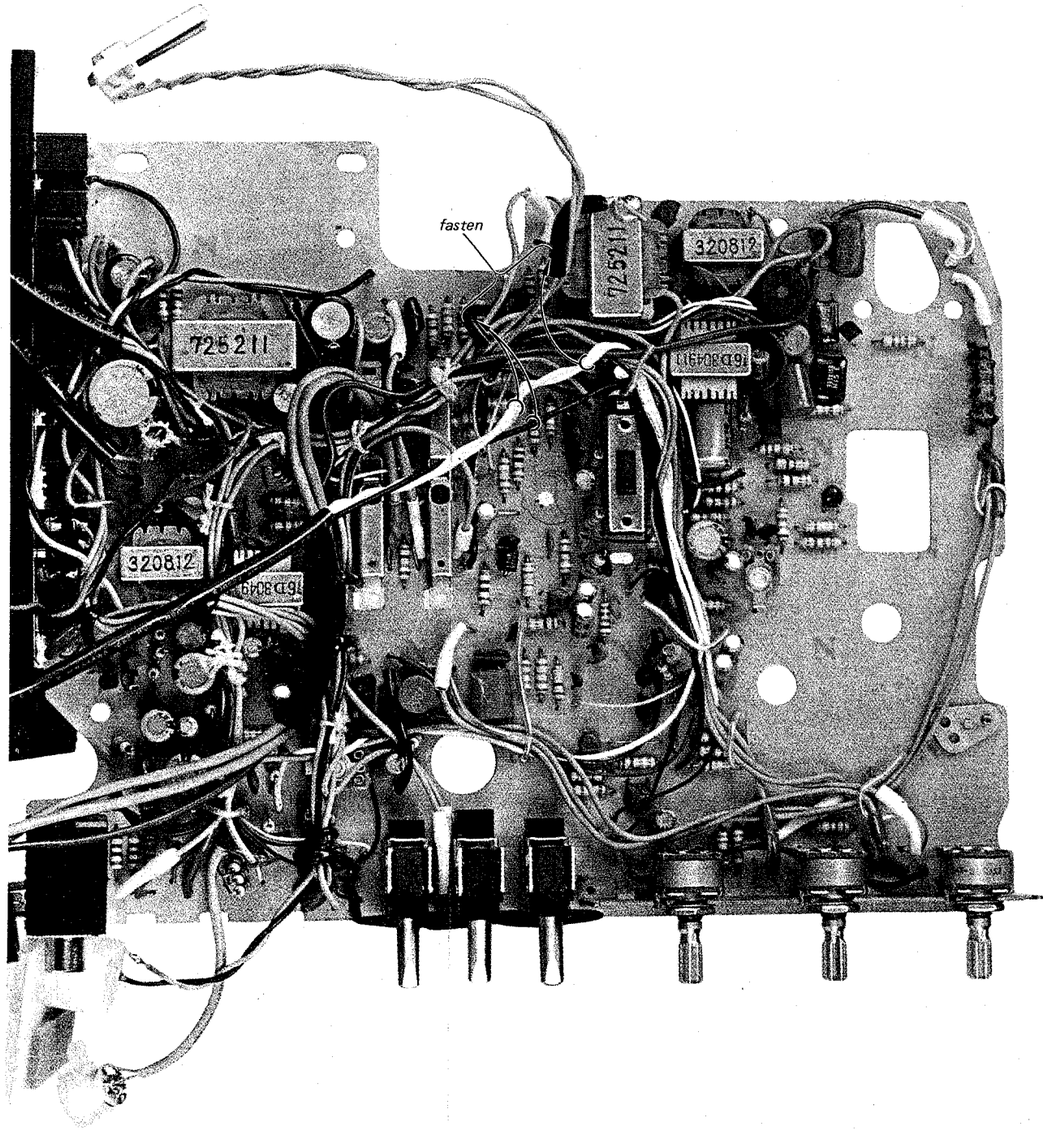
1-1. BLOCK DIAGRAM



S1, 2 RECORD/PLAYBACK ... PLAYBACK
S3 INPUT SELECT ..... MIC
S4 TAPE SELECT ..... NORMAL
S6 FORWARD MUTING ..... ON only when the forward button is pressed
S8 AC/DC ..... DC
S9 CUE/REVIEW MUTING ... ON only when the cue or the review button is pressed

1-2. INTERNAL VIEW

Top view with circuit board removed.

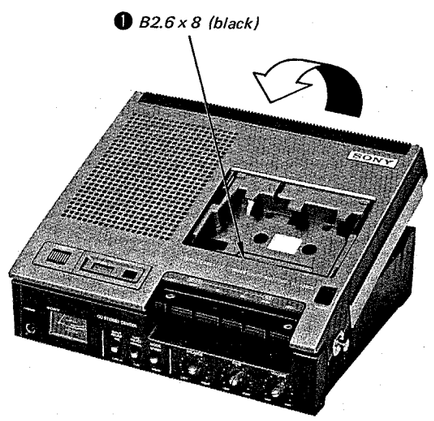


SECTION 2
DISASSEMBLY AND REPLACEMENT

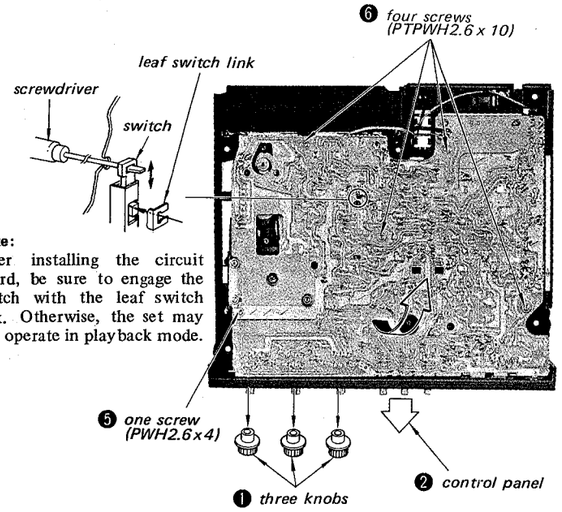
LOWER CASE REMOVAL

Remove six screws (B3 x 14, self-tapping) on the lower case.

UPPER CASE REMOVAL

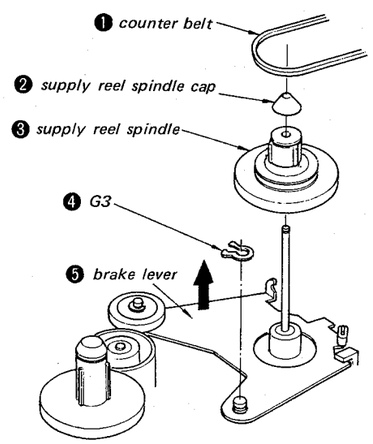


CIRCUIT BOARD REMOVAL

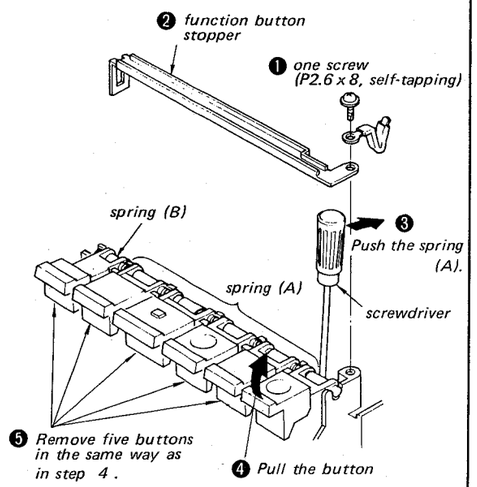


Note:
After installing the circuit board, be sure to engage the switch with the leaf switch link. Otherwise, the set may not operate in playback mode.

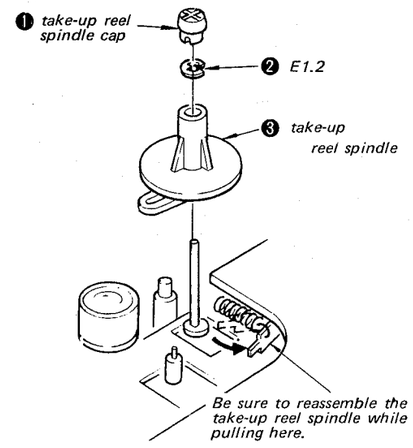
BRAKE LEVER REMOVAL



FUNCTION BUTTON REMOVAL

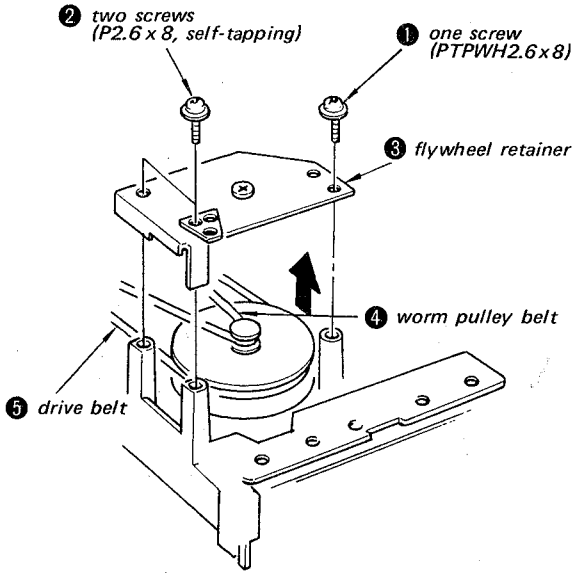


TAKE-UP REEL SPINDLE REMOVAL

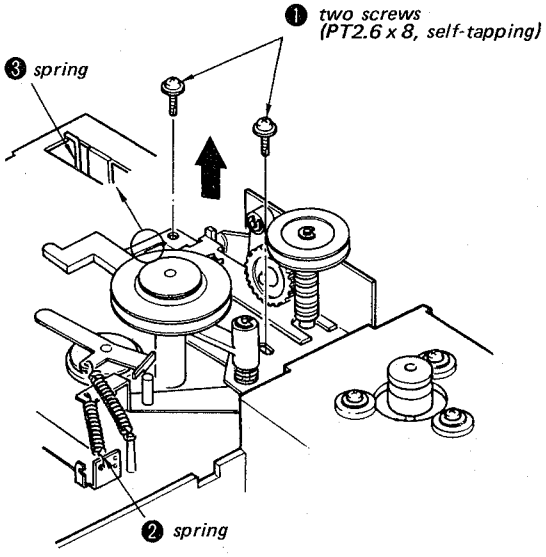


Note: FLYWHEEL REMOVAL can be performed after removing the complete circuit board or the main chassis.

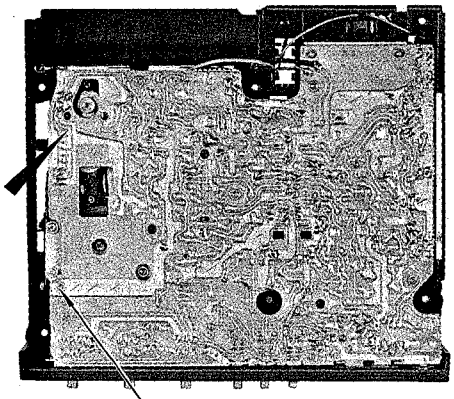
FLYWHEEL REMOVAL

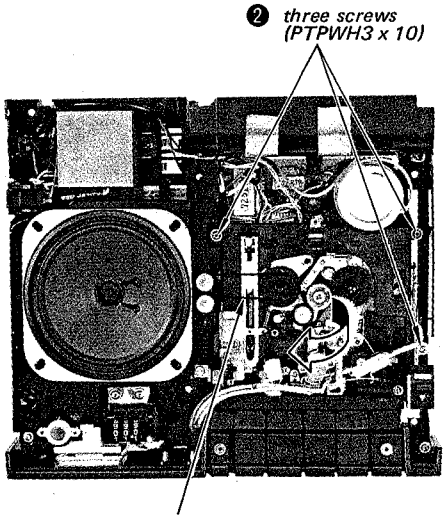


SHUT-OFF BLOCK REMOVAL



MAIN CHASSIS REMOVAL



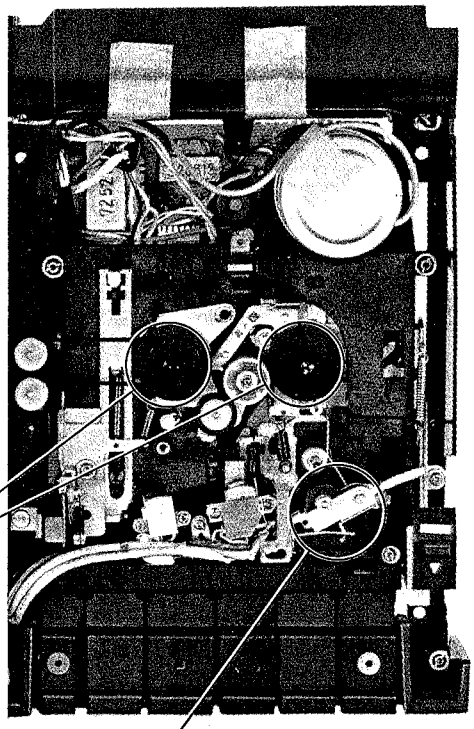


SECTION 3
ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   record/playback head — pinch roller
   erase head — rubber belts
   capstan — idlers
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the
4. After the adjustments, apply a suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

3-1. MECHANICAL ADJUSTMENTS AND MEASUREMENTS



Forward Torque Measurement

Torque meter	Meter reading
SONY CQ-101A, 102A, 103A	20~50 g.cm (0.28~0.69 oz.inch)

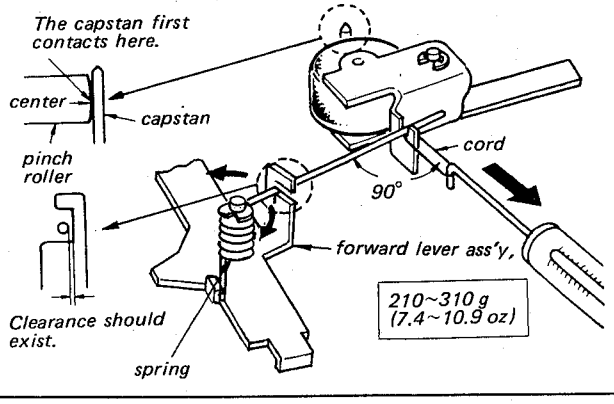
Fast Forward and Rewind Torque Measurement

Torque meter	Meter reading
SONY CQ-201A	52~97 g.cm (0.72~1.35 oz.inch)

Pinch Roller Pressure Adjustment

– Playback Mode –

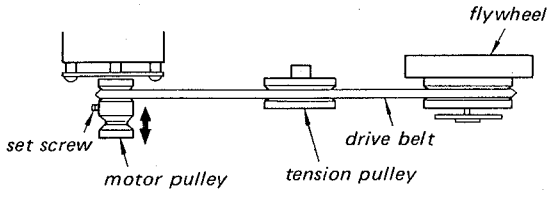
1. Pull the spring scale.
2. Slowly return the pinch roller and read the spring scale just when the pinch roller starts to rotate.
3. If necessary, bend or replace the spring.



Motor Pulley Height Adjustment

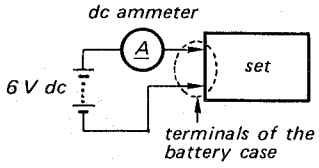
Note: Perform this adjustment after replacing the motor or the motor pulley.

1. Place the set horizontal.
2. Loosen the set screw and adjust the position of the motor pulley so that the drive belt becomes straight.
3. Tighten the set screw.

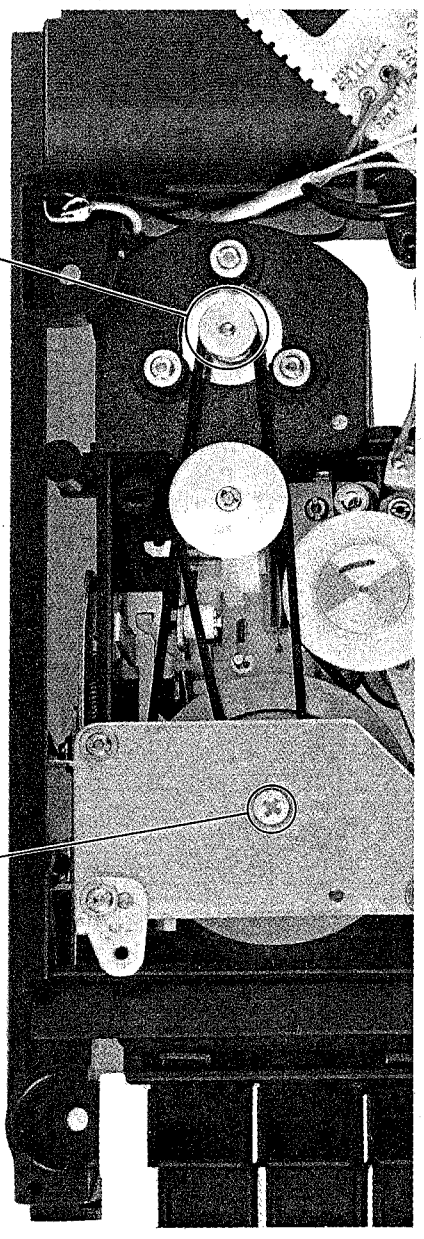


Flywheel Thrust Play Adjustment

– Playback Mode –



1. Horizontally place the set the reel-spindle-side down.
2. Loosen the adjustment screw.
3. Gradually turn the adjustment screw clockwise and stop it when the motor current suddenly. increases.
4. Turn the adjustment screw ¼ turn counterclockwise and secure it with a locking compound.



3-2. ELECTRICAL ADJUSTMENTS

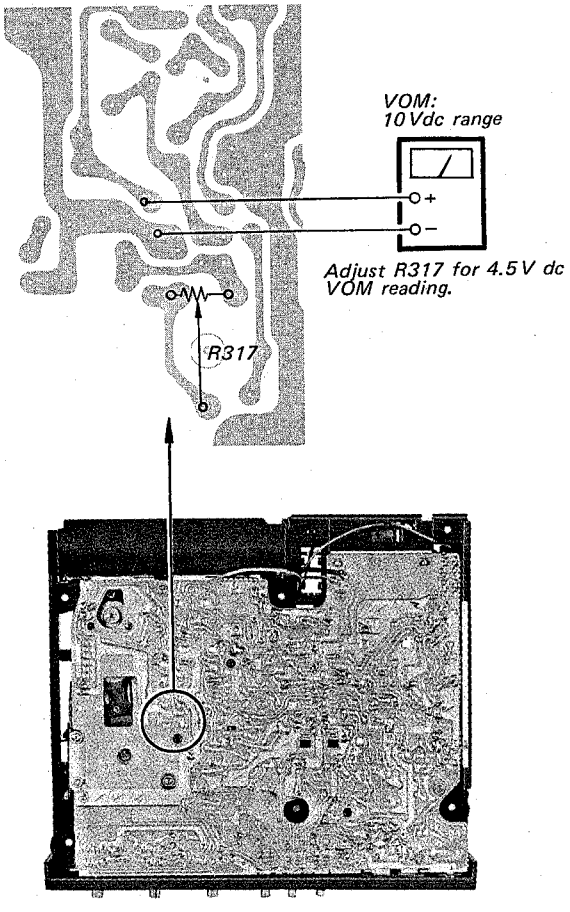
Note: The adjustments should be performed in the order given in this service manual. The adjustments should be performed for both L-CH and R-CH.

B+ Voltage Adjustment

Settings:

Power source . . . . . 6V dc
Mode . . . . . record without signal

Procedure and Adjustment Location:



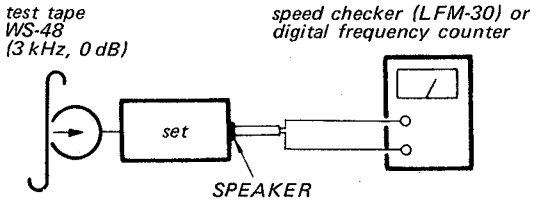
Tape Speed Adjustment

Setting:

Power source . . . . . 6V dc

Procedure:

1. Mode . . . . . playback



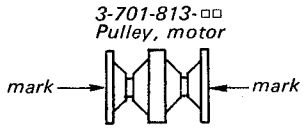
Specifications

1)

Speed checker	Digital frequency counter
±1%	2970 Hz~3030 Hz

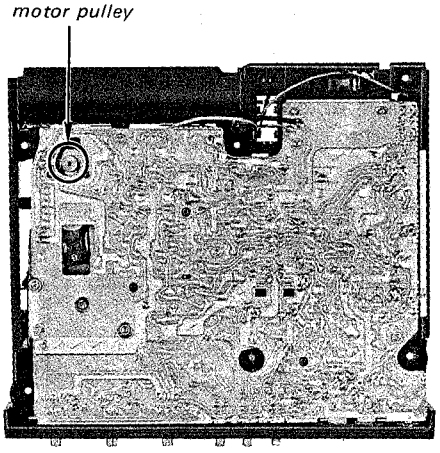
2) Frequency difference between beginning and end of tape should be within 1% (30 Hz).

2. If necessary, replace motor pulley.



Part No.		Mark	Tape Speed
3-701-813-	06	L	down ↕ up
		M	
	07	N	
		P	
	08	Q	

Adjustment Location:

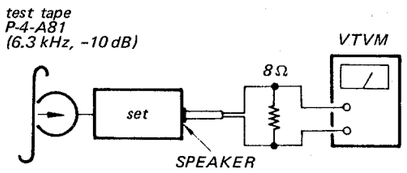


Record/playback Head Azimuth Adjustment

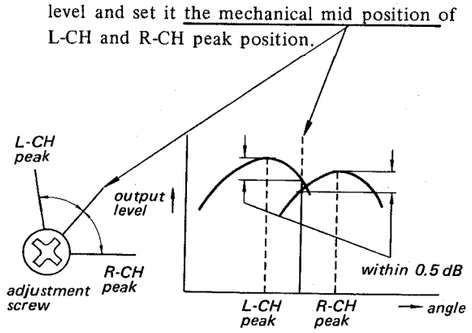
Settings:

TONE switch . . . . . HIGH position
Mode . . . . . playback

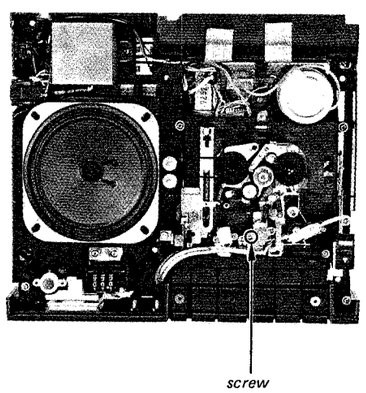
Procedure:



Turn the adjustment screw for the maximum level and set it the mechanical mid position of L-CH and R-CH peak position.



Adjustment Location:



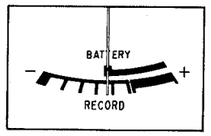
Record/battery Meter Calibration

Settings:

Mode . . . . . playback without cassette
Power source . . . . . 4.4 V dc

Procedure:

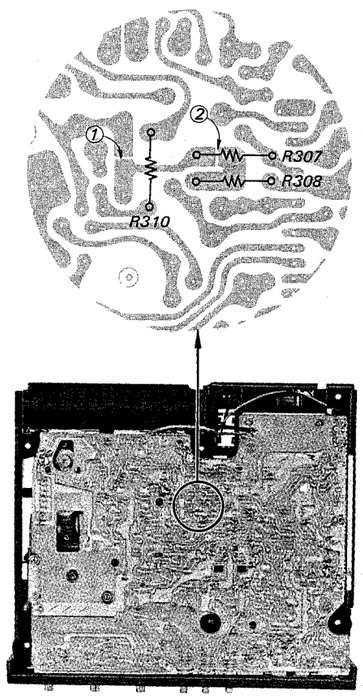
1. Push the forward button without a cassette.
2. The pointer indication should be as shown below.



3. If necessary, solder ① or ②.

Soldering Portion	Pointer
①	+ mark ↕ − mark
nothing	
②	

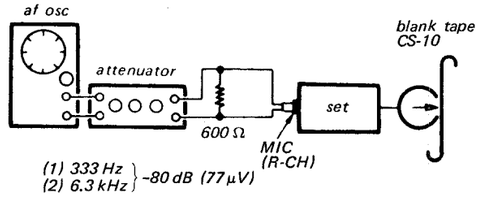
Adjustment Location:



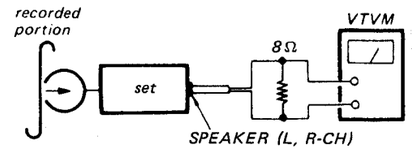
Record Bias Adjustment

Procedure:

1. Mode . . . . . record



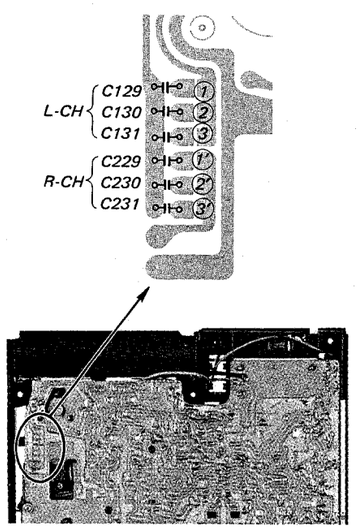
2. Mode . . . . . playback



Select a soldering portion for each channel to obtain the smallest difference between the 333 Hz and 6 kHz signal output levels.

Soldering portion		6.3 kHz signal output level
L-CH	R-CH	
①	①'	up ↕ down
②	②'	
③	③'	

Adjustment Location:



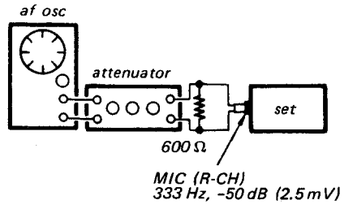
AGC Stereo Balance Adjustment

Setting:

MODE switch . . . . STEREO

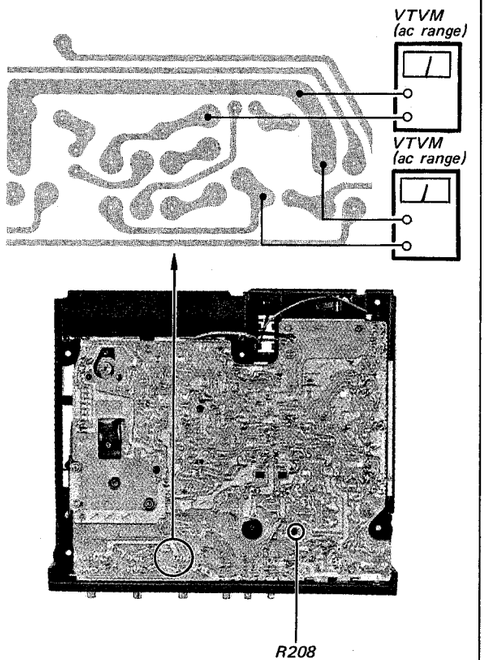
Procedure:

Mode . . . . . record



Adjust R208 for the same VTVM readings.

Adjustment Location:



SECTION 4
DIAGRAMS

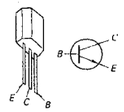
4-1. MOUNTING DIAGRAM

– Conductor Side –

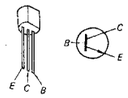
D	Q
	109
	110
	108 301 107 305
	106
302	302 105
303	303 211
301	111
102 202	209 208 210 304
	101
	104
	201
	103 207
	206
	102 204 202 205
101 201	203

Q101, 201 } : 2SC631A
Q104, 204 }

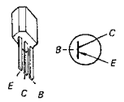
Q102, 202
Q103, 203
Q105~108 } : 2SC633A
Q205~208
Q111, 211
Q301, 303~305



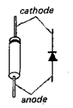
Q109, 209 } : 2SC1474
Q110, 210 }



Q302: 2SA677

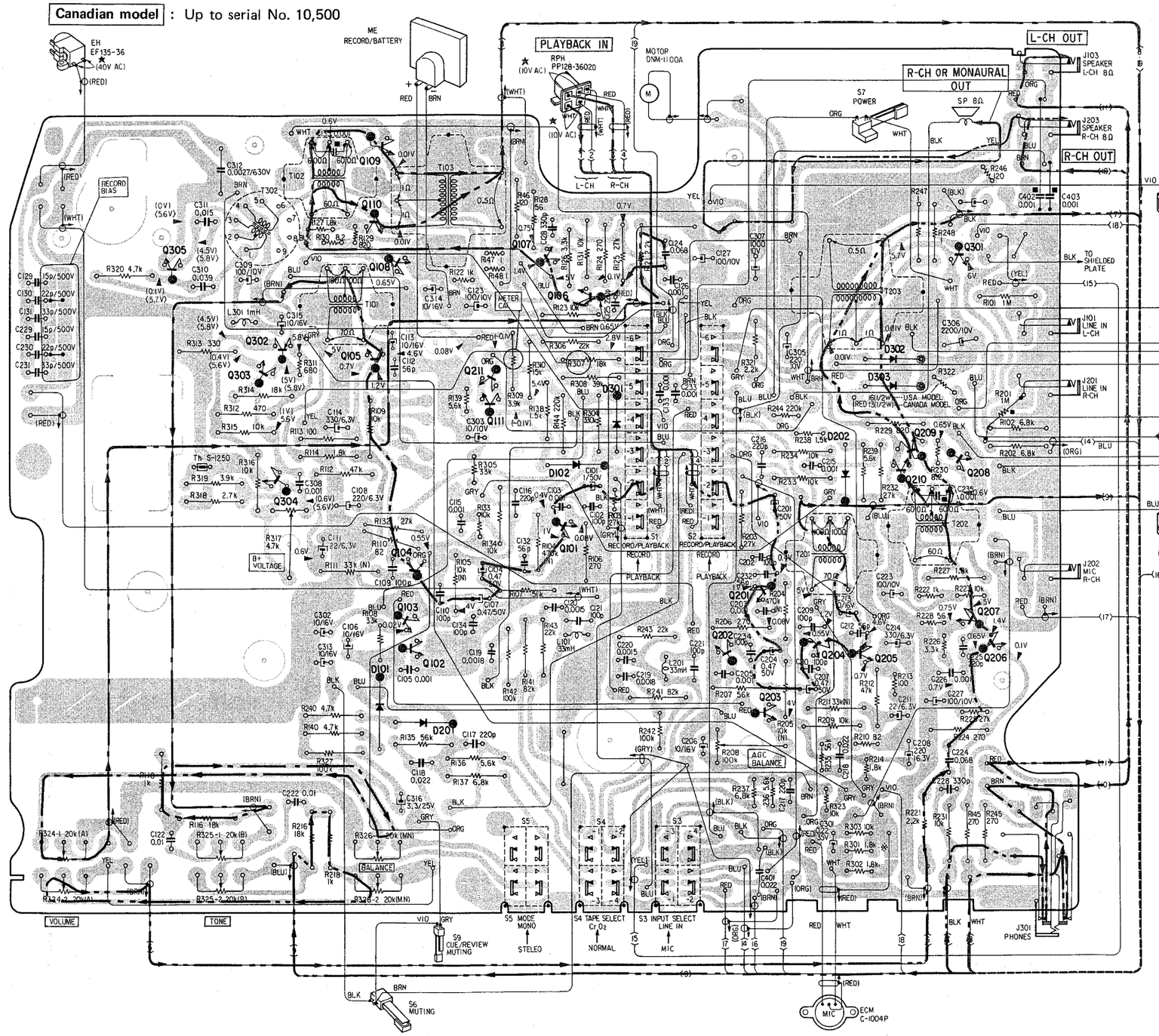


D101, 102
D201, 202 : 1T40
D301: 1T22
D302, 303: 10E1



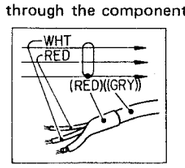
US model : Up to serial No. 12,000

Canadian model : Up to serial No. 10,500



Note:

- ■ indicates parts on the conductor side.
- ●— indicates lead wire connection on the conductor side.
- ○— indicates lead wire connection through the component side.



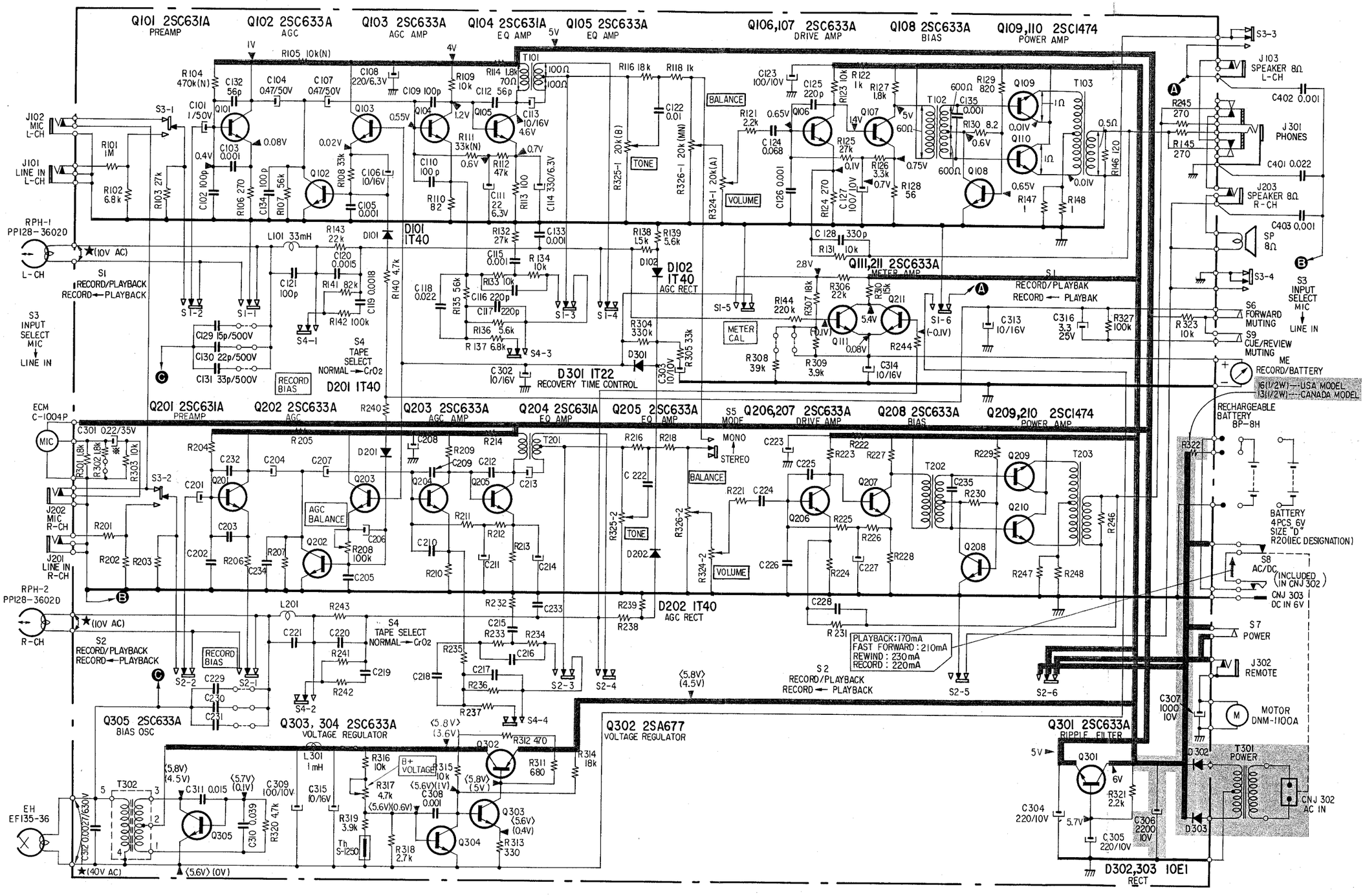
- ▒▒ indicates B+ pattern.
- SIGNAL PATH
  - L-CH
  - R-CH OR MONAURAL
  - MONAURAL

4-2. SCHEMATIC DIAGRAM

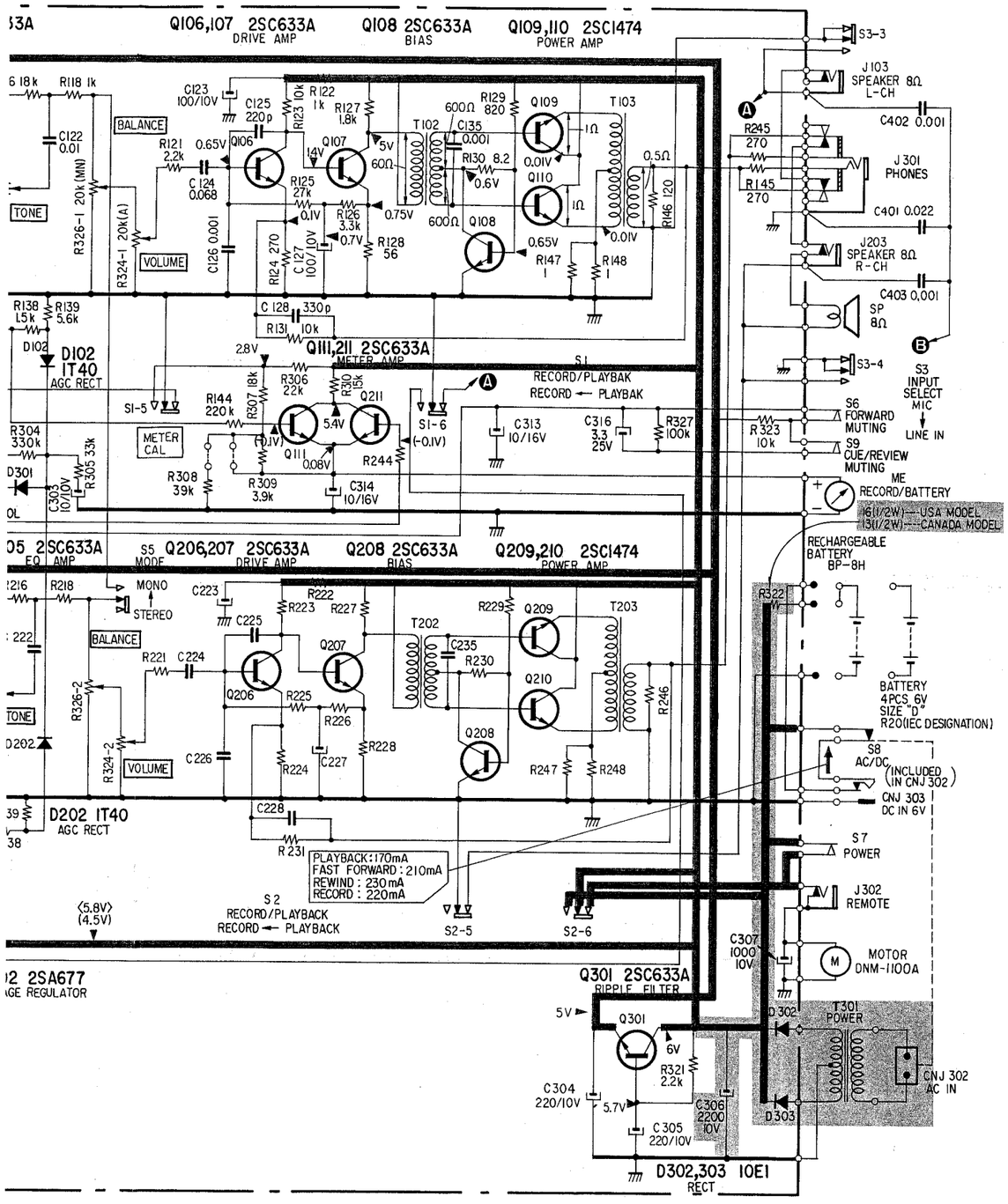
US model : Up to serial No. 12,000

Canadian model : Up to serial No. 10,500

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



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



Note:

- All capacitors are in μF unless otherwise noted. 50 or less working voltages are omitted except for electrolytic type. p = μμF
- All resistors are in Ω, ¼W, unless otherwise noted. k = 1,000 M = 1,000 k
- ⏚ indicates chassis ground.
- (N) indicates a low-noise resistor.
- ▬ indicates B+ circuit.
- Voltages are DC with respect to ground unless otherwise noted. Readings are taken under no-signal conditions with a VOM (20 kΩ/V).
  ( ): in record mode no mark: common
  〈 〉: in playback mode
  ★: measured with VTVM
- Voltage variations may be noted due to normal production tolerances.
- Total current is measured with no cassette loaded.
- DC resistance value of transformer is measured on the mounted board. The average value is indicated.
- In using an electret condenser microphone with red mark on side of case, connect R302 shown with ※ in parallel with R301.
- S6: ON only when the forward button in pressed.
- S9: ON only when the cue or the review button is pressed.
- Switch Mode:

Ref. No.	Switch	Position
S1	RECORD/PLAYBACK	PLAYBACK
S2	RECORD/PLAYBACK	PLAYBACK
S3	INPUT SELECT	MIC
S4	TAPE SELECT	NORMAL
S5	MODE	STEREO
S6	FORWARD MUTING	OFF
S7	POWER	OFF
S8	AC/DC (included in CNJ302)	DC
S9	CUE/REVIEW MUTING	OFF

E, AEP, UK model

US model : Serial No. 12,001 and later

Canadian model : Serial No. 10,501 and later

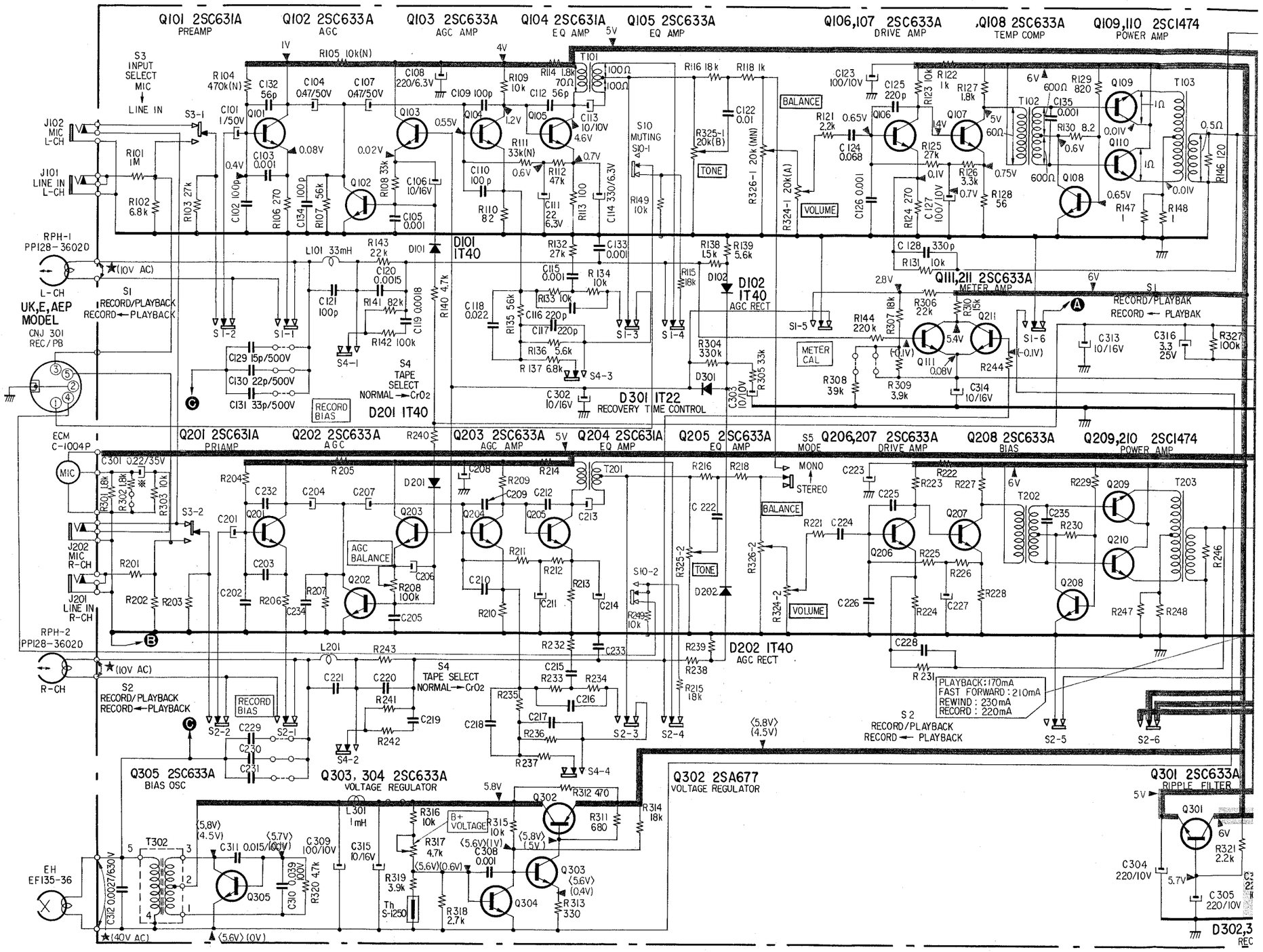
Note: The components identified by shading are critical for safety. Replace only with part number specified.

4-3. SCHEMATIC DIAGRAM

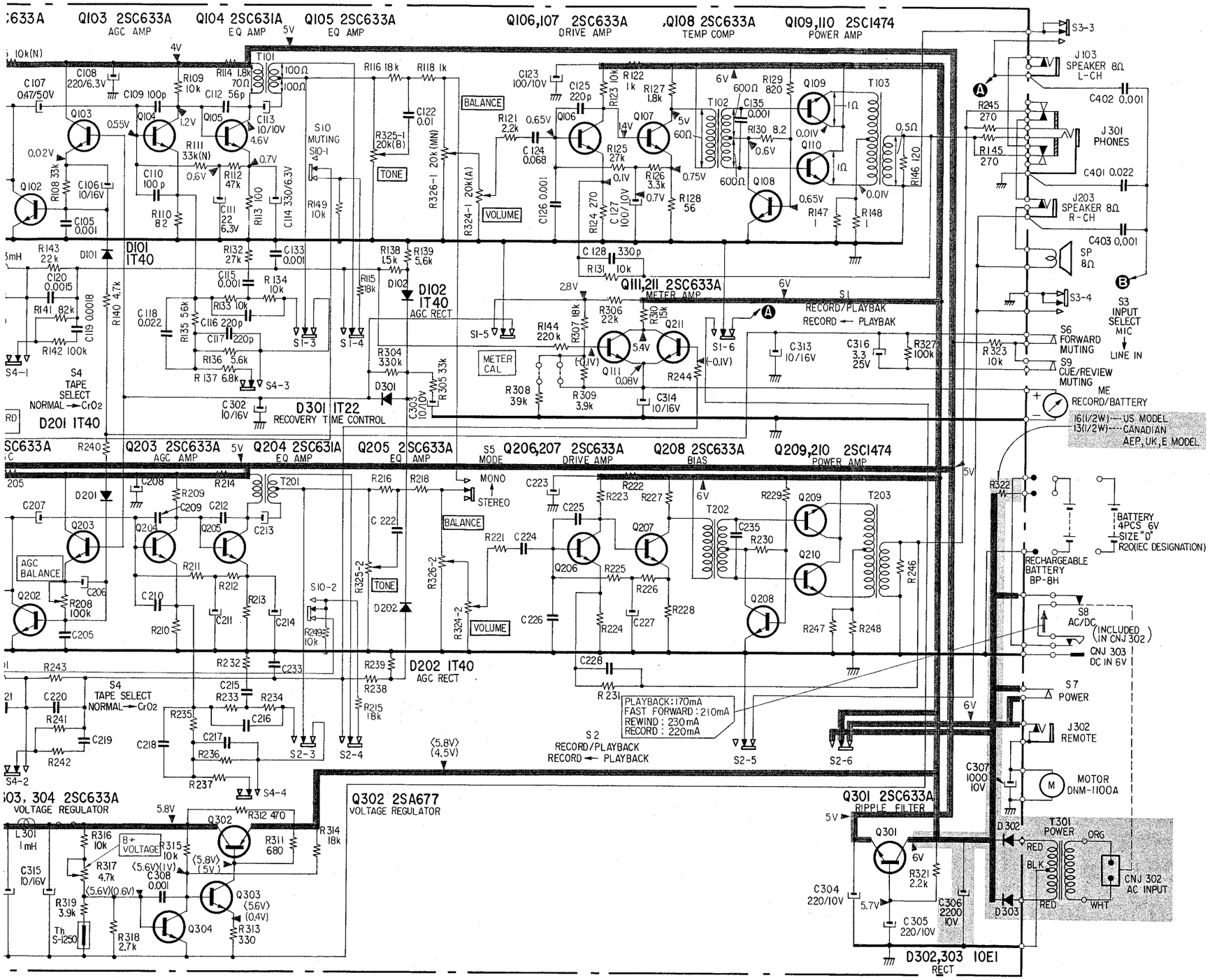
Note:

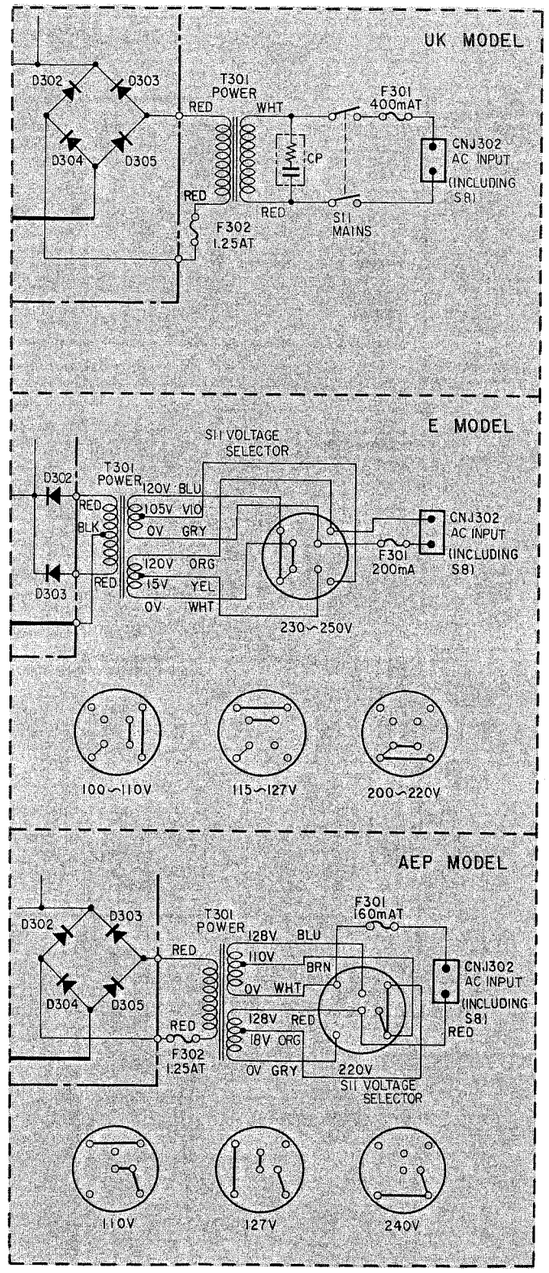
- All capacitors are in μF unless otherwise noted. 50 or less working voltages are omitted except for electrolytic type. p = μμF
- All resistors are in Ω, ¼W, unless otherwise noted. k = 1,000 M = 1,000 k
- ⏚ indicates chassis ground.
- (N) indicates a low-noise resistor.
- ▬ indicates B+ circuit.
- Voltages are DC with respect to ground unless otherwise noted. Readings are taken under no-signal conditions with a VOM (20 kΩ/V).
  ( ): in record mode no mark: common
  〈 〉: in playback mode
  ★: measured with VTVM
- Voltage variations may be noted due to normal production tolerances.
- Total current is measured with no cassette loaded.
- DC resistance value of transformer is measured on the mounted board. The average value is indicated.
- In using an electret condenser microphone with red mark on side of case, connect R302 shown with ※ in parallel with R301.
- S6: ON only when the forward button in pressed.
- S9: ON only when the cue or the review button is pressed.
- Switch Mode:

Ref. No.	Switch	Position
S1	RECORD/PLAYBACK	PLAYBACK
S2	RECORD/PLAYBACK	PLAYBACK
S3	INPUT SELECT	MIC
S4	TAPE SELECT	NORMAL
S5	MODE	STEREO
S6	FORWARD MUTING	OFF
S7	POWER	OFF
S8	AC/DC (included in CNJ302)	DC
S9	CUE/REVIEW MUTING	OFF
S10	MUTING (E, AEP, UK model)	ON
S11	MAINS	OFF (UK model) 220V (AEP model)
	VOLTAGE SELECTOR	230~250V (E model)



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





4-4. MOUNTING DIAGRAM

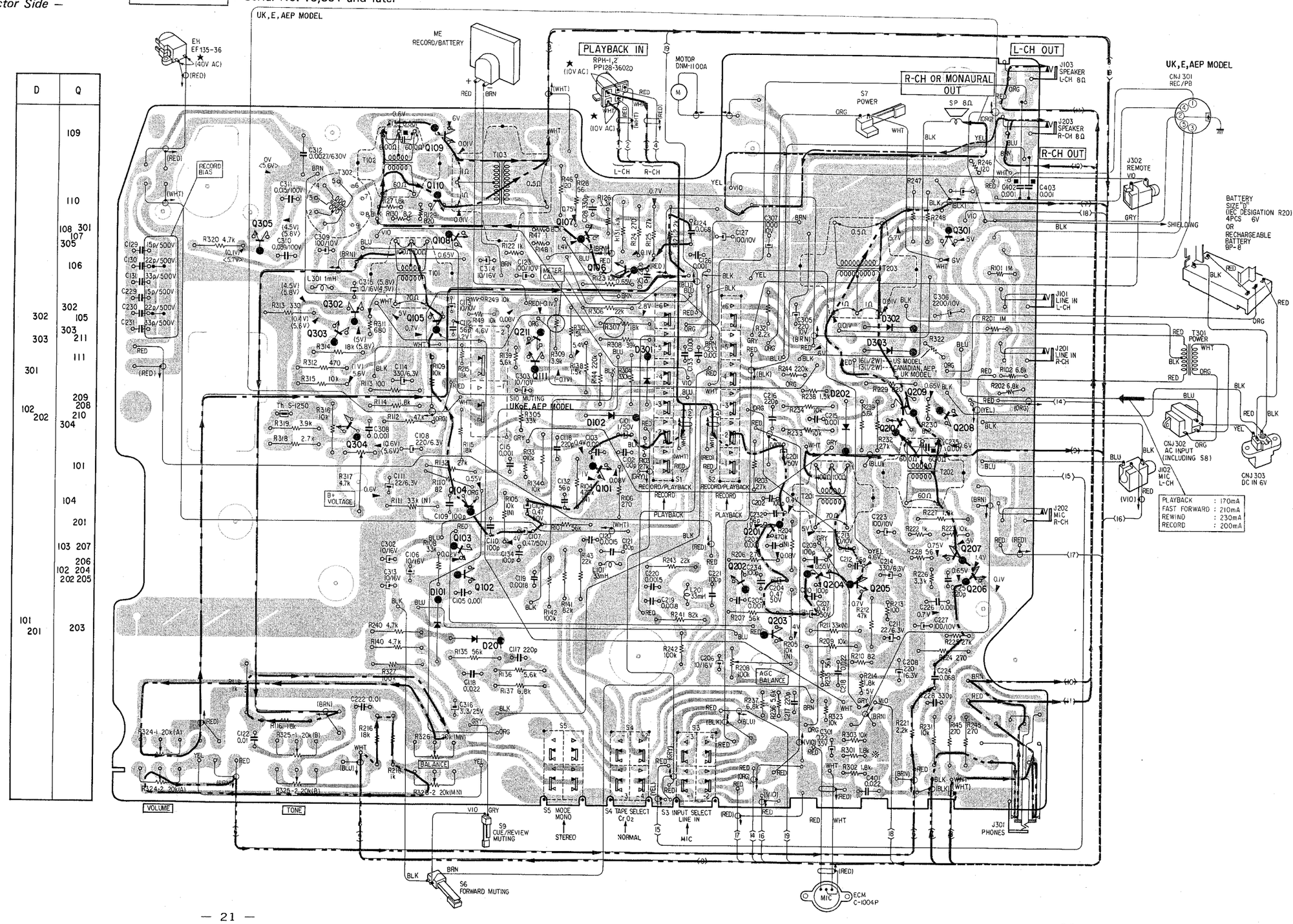
– Conductor Side –

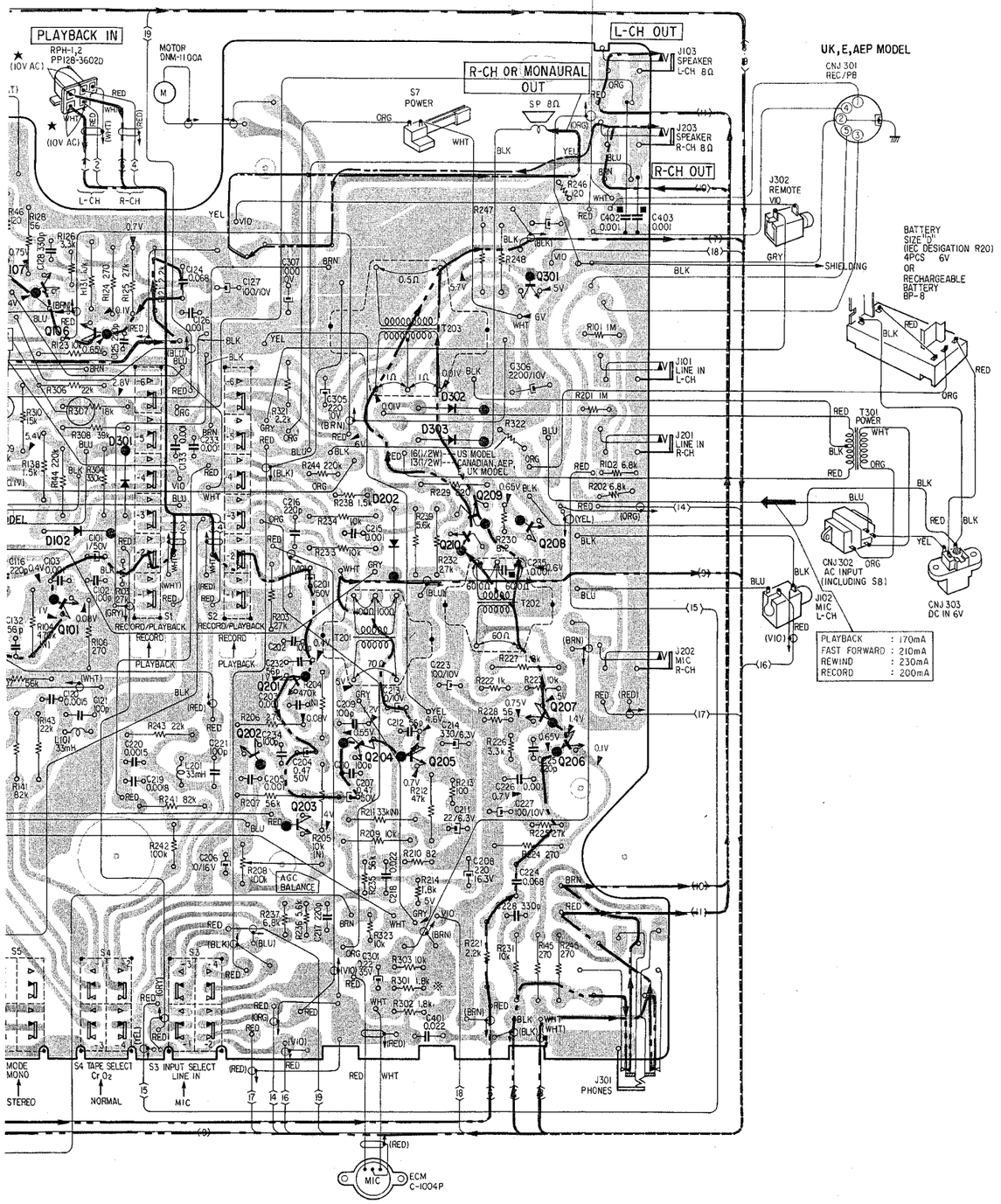
E, AEP, UK model

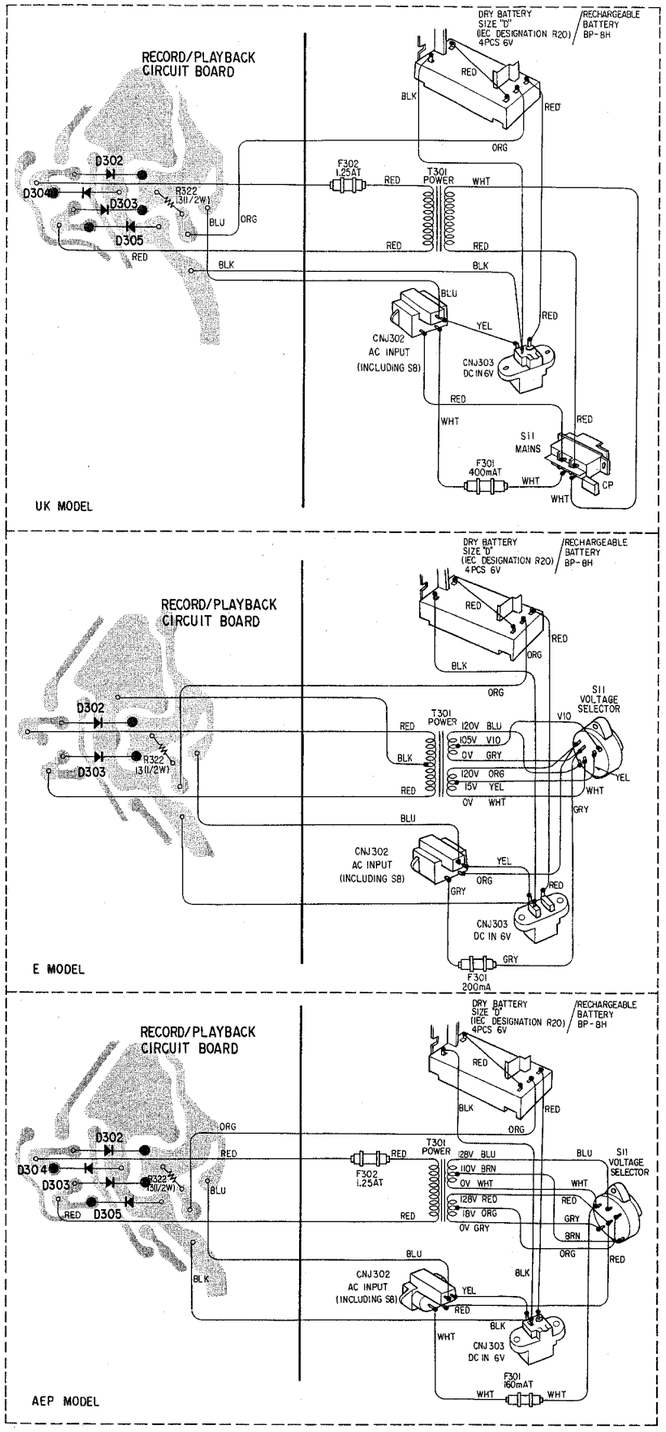
US mode : Serial No. 12,001 and later

Canadian model : Serial No. 10,501 and later

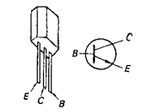
D	Q
	109
	110
	108 301
	107 305
	106
302	302
	105
303	303
	211
301	111
	209
102 202	208 210
	304
	101
	104
	201
	103 207
	206
	102 204 202 205
101 201	203



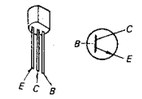




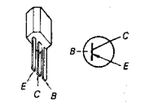
Q101, 201 } : 2SC631A
Q104, 204 }
Q102, 202
Q103, 203
Q105~108 } : 2SC633A
Q205~208
Q111, 211
Q301, 303~305



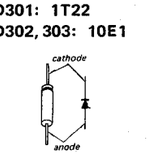
Q109, 209 } : 2SC1474
Q110, 210 }



Q302: 2SA677

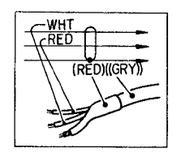


D101, 102 : 1T40
D201, 202
D301: 1T22
D302, 303: 10E1



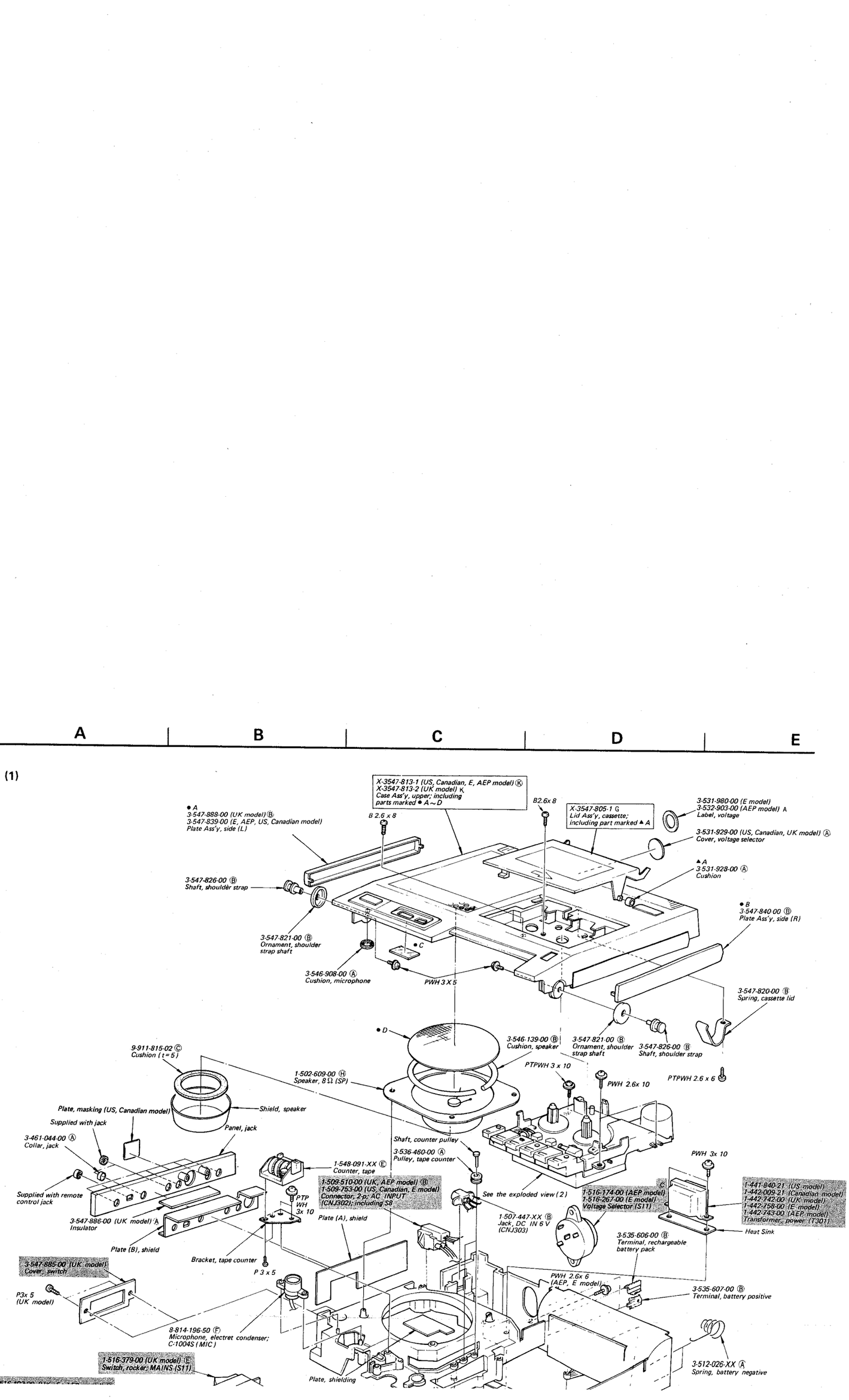
Note:

- ■ indicates parts on the conductor side.
- ●— indicates lead wire connection on the conductor side.
- ○— indicates lead wire connection through the component side.

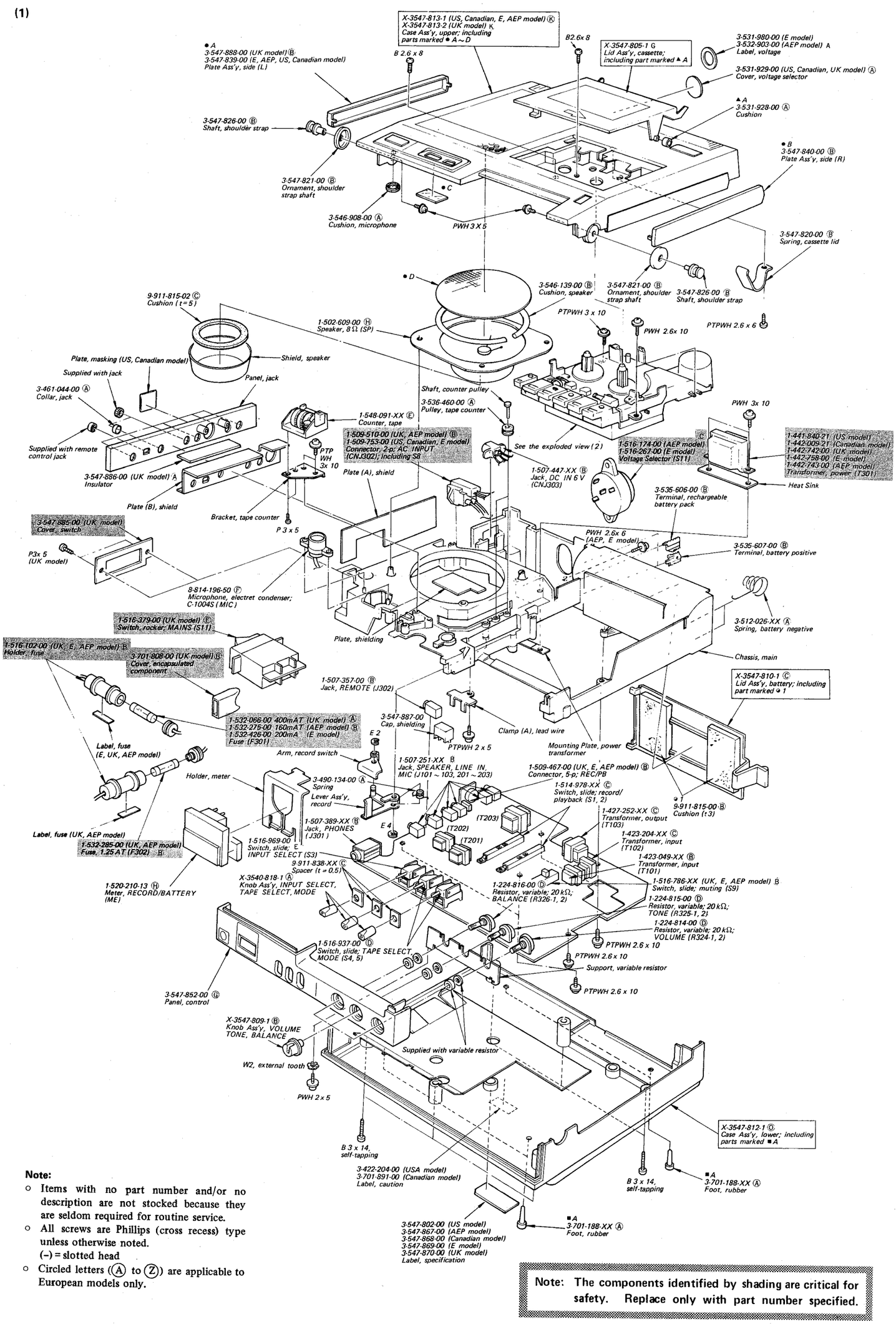


- ▒▒ indicates B+ pattern.
- SIGNAL PATH
  - L-CH
  - R-CH OR MONAURAL
  - MONAURAL

(1)


X-3547-813-1 (US, Canadian, E, AEP model) Ⓚ
X-3547-813-2 (UK model) K
Case Ass'y, upper; including parts marked • A ~ D
B2.6x 8
B 2.6 x 8
X-3547-805-1 G
Lid Ass'y, cassette; including part marked ▲ A
3-531-980-00 (E model)
3-532-903-00 (AEP model) A
Label, voltage
3-531-929-00 (US, Canadian, UK model) Ⓐ
Cover, voltage selector
• A
3-547-888-00 (UK model) Ⓑ
3-547-839-00 (E, AEP, US, Canadian model)
Plate Ass'y, side (L)
▲ A
3-531-928-00 Ⓐ
Cushion
3-547-826-00 Ⓑ
Shaft, shoulder strap
• B
3-547-840-00 Ⓑ
Plate Ass'y, side (R)
3-547-821-00 Ⓑ
Ornament, shoulder strap shaft
• C
3-546-908-00 Ⓐ
Cushion, microphone
PWH 3 X 5
3-547-820-00 Ⓑ
Spring, cassette lid
• D
3-546-139-00 Ⓑ
Cushion, speaker
3-547-821-00 Ⓑ
Ornament, shoulder strap shaft
3-547-826-00 Ⓑ
Shaft, shoulder strap
9-911-815-02 Ⓒ
Cushion (t = 5)
1-502-609-00 Ⓗ
Speaker, 8Ω (SP)
PTPWH 3 x 10
PWH 2.6x 10
PTPWH 2.6 x 6
Plate, masking (US, Canadian model)
Supplied with jack
Shield, speaker
Panel, jack
3-461-044-00 Ⓐ
Collar, jack
Shaft, counter pulley
3-536-460-00 Ⓐ
Pulley, tape counter
PWH 3x 10
1-548-091-XX Ⓔ
Counter, tape
1-509-510-00 (UK, AEP model) Ⓑ
1-509-753-00 (US, Canadian, E model)
Connector, 2-p; AC INPUT (CNJ302); including SB
See the exploded view (2)
1-516-174-00 (AEP model)
1-516-267-00 (E model)
Voltage Selector (S11)
1-441-840-21 (US model)
1-442-009-21 (Canadian model)
1-442-742-00 (UK model)
1-442-758-00 (E model)
1-442-743-00 (AEP model)
Transformer, power (T301)
Supplied with remote control jack
PTP WH 3x 10
3-547-886-00 (UK model) A
Insulator
Plate (A), shield
1-507-447-XX Ⓑ
Jack, DC IN 6 V (CNJ303)
Heat Sink
3-535-606-00 Ⓑ
Terminal, rechargeable battery pack
Plate (B), shield
Bracket, tape counter
P 3 x 5
3-547-885-00 (UK model)
Cover, switch
P3x 5
(UK model)
PWH 2.6x 6
(AEP, E model)
3-535-607-00 Ⓑ
Terminal, battery positive
8-814-196-50 Ⓕ
Microphone, electret condenser; C-1004S (MIC)
1-516-379-00 (UK model) Ⓒ
Switch, rocker; MAINS (S1)
Plate, shielding
3-512-026-XX Ⓐ
Spring, battery negative

(1)

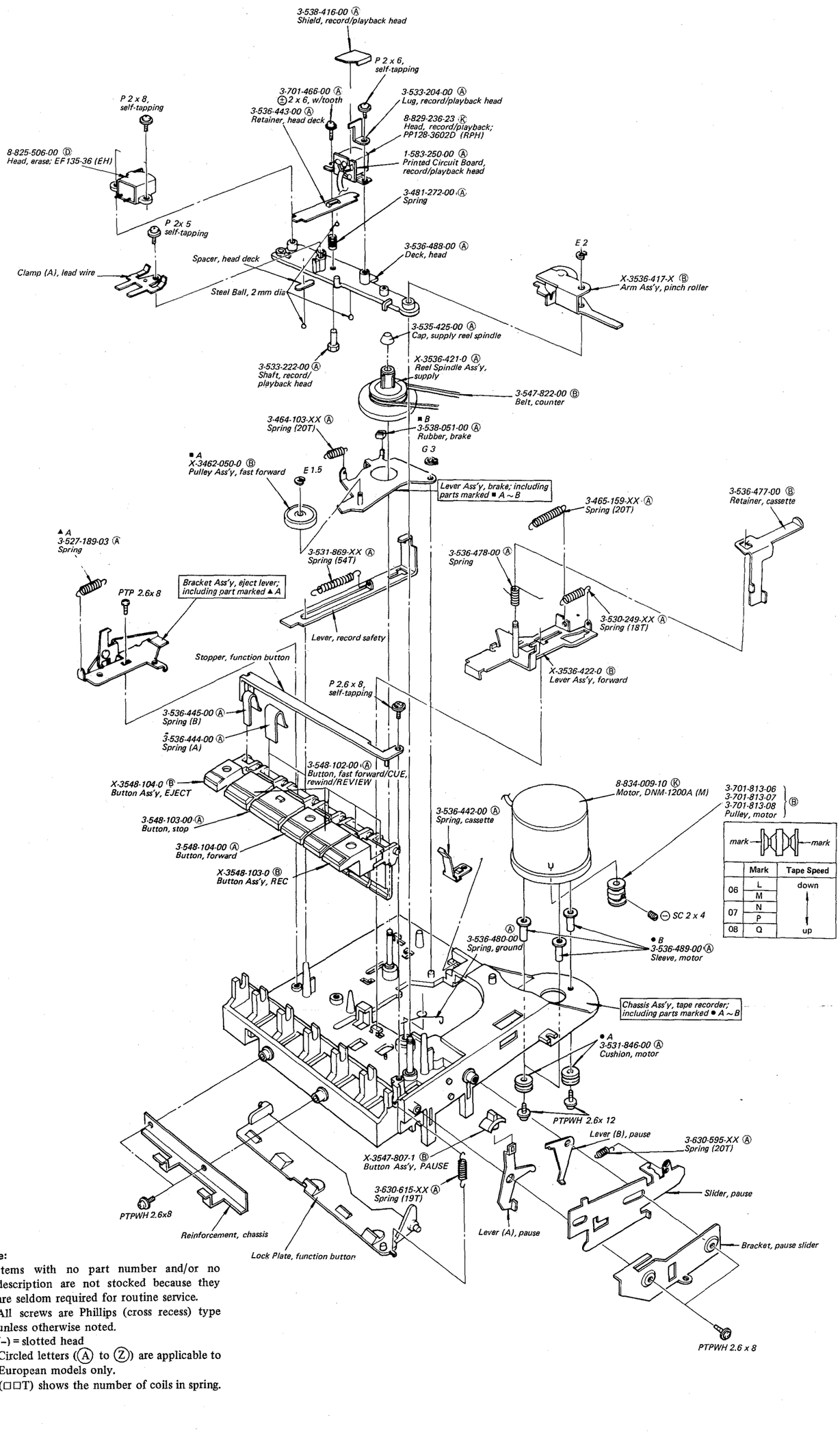


Note:

- 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.

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

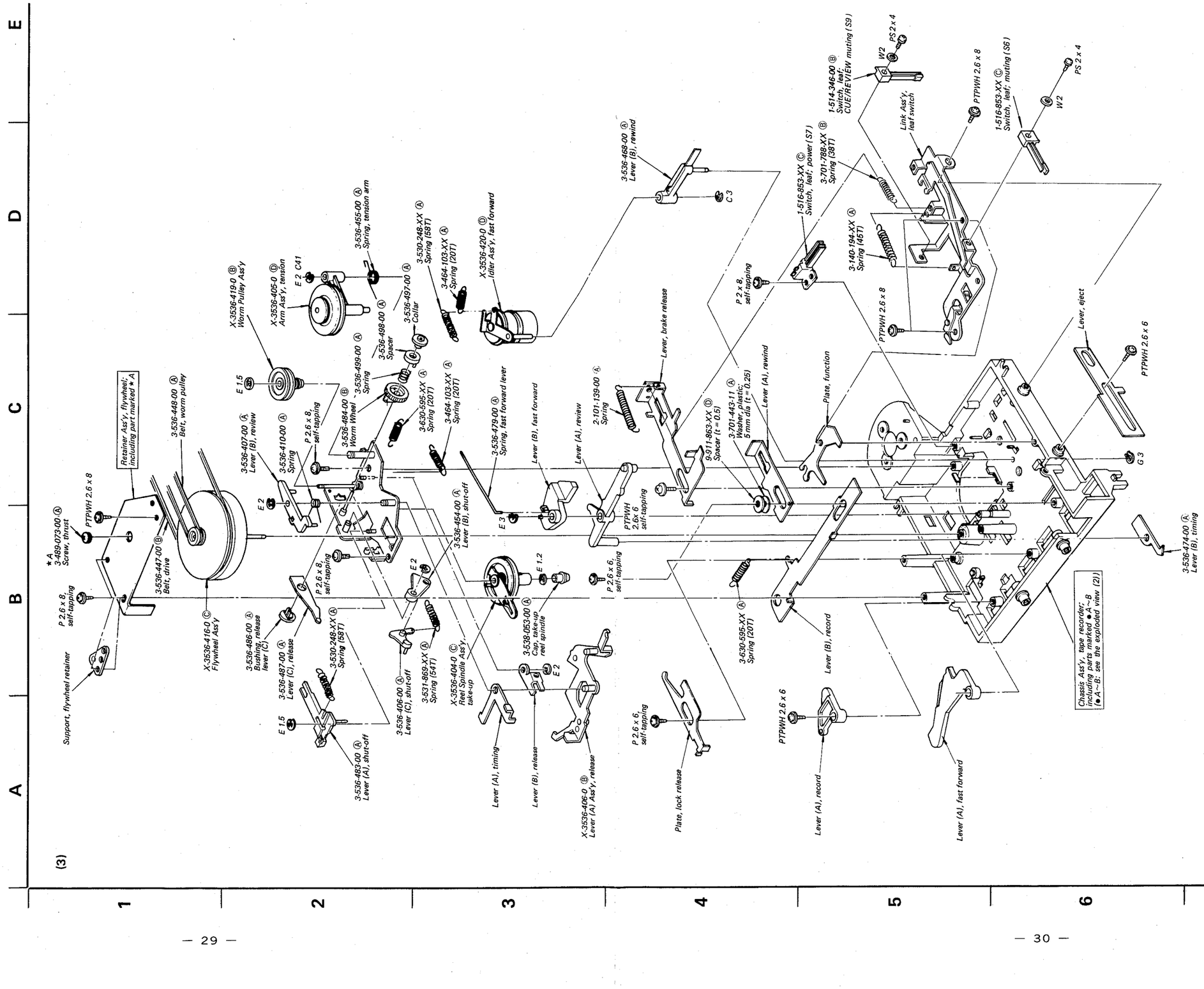
(2)



	Mark	Tape Speed
06	L	down
	M	
07	N	
	P	
08	Q	up

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.
- (□□T) shows the number of coils in spring.



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.
- (□□T) shows the number of coils in spring.

SECTION 6
ELECTRICAL PARTS LIST

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

Ref. No.	Part No.	Description
		PRINTED CIRCUIT BOARD
	1-583-250-00	Ⓐ Record/Playback Head
		SEMICONDUCTORS
		Transistors
⇒ Q101,201	8-726-368-10	Ⓑ 2SC632A
⇒ Q102,202 Q103,203	8-726-388-00	Ⓑ 2SC634A
⇒ Q104,204	8-726-368-10	Ⓑ 2SC632A
⇒ Q105~108 Q205~208	8-726-388-00	Ⓑ 2SC634A
Q109,209 Q110,210	8-726-335-10	Ⓑ 2SC1474
⇒ Q111,211	8-726-388-00	Ⓑ 2SC634A
⇒ Q301	8-726-388-00	Ⓑ 2SC634A
⇒ Q302	8-726-786-01	Ⓑ 2SA678
⇒ Q303~305	8-726-388-00	Ⓑ 2SC634A
		Diodes
⇒ D101,201 ⇒ D102,202	8-719-815-55	Ⓑ 1S1555
⇒ D301	8-719-722-21	Ⓐ 1T22A
⇒ D302,303	8-719-210-02	Ⓑ 10D2
⇒ D304,305	8-719-210-02	Ⓑ 10D2 (AEP, UK model)
		Thermistor
Th	1-800-198-XX	Ⓐ S-1250
		COILS
L101,201	1-407-212-XX	Ⓑ Microinductor, 33 mH
L301	1-407-195-XX	Ⓑ Microinductor, 1 mH
		TRANSFORMERS
T101,201	1-423-049-XX	Ⓑ Input
T102,202	1-423-204-XX	Ⓒ Input
T103,203	1-427-252-XX	Ⓒ Output
T301	1-441-840-21	Power (US model)
	1-442-009-21	Power (Canadian model)
	1-442-742-00	Power (UK model)
	1-442-743-00	Power (AEP model)
	1-442-785-00	Power (E model)
T302	1-433-177-00	Ⓒ Bias Osc

⇒: Due to replacement parts, the descriptions are different from the diagrams.

CAPACITORS

All capacitors are in μF and electrolytic unless otherwise noted. (p = μμF)
50 WV or less are not indicated except for electrolytics.

Ref. No.	Part No.			
C101,201	1-121-391-11	Ⓐ 1	50 V	
C102,202	1-102-975-11	Ⓐ 100 p		ceramic
C103,203	1-101-455-11	Ⓐ 0.001		ceramic
C104,204	1-121-726-11	Ⓐ 0.47	50 V	
C105,205	1-101-455-11	Ⓐ 0.001		ceramic
C106,206	1-121-651-11	Ⓐ 10	16 V	
C107,207	1-121-726-11	Ⓐ 0.47	50 V	
C108,208	1-121-419-11	Ⓐ 220	6.3 V	
C109,209 C110,210	1-102-975-11	Ⓐ 100 p		ceramic
C111,211	1-131-190-11	22	6.3 V	tantalum
C112,212	1-101-881-11	Ⓐ 10		ceramic
C113,213	1-212-651-11	Ⓐ 10	16 V	(US model: Up to serial No. 12,000; Canadian model: Up to serial No. 10,500)
C113,213	1-131-193-11	Ⓑ 10	10 V	tantalum (US model: serial No. 12,001 and later; Canadian model: serial No. 10,501 and later)

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

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

Ref. No.	Part No.			
C114,214	1-121-751-11	Ⓐ 330	6.3 V	
C115,215	1-108-227-12	Ⓐ 0.001		mylar
C116,216 C117,217	1-102-110-11	Ⓐ 220 p		ceramic
C118,218	1-108-242-12	Ⓐ 0.022		mylar
C119,219	1-108-352-12	Ⓐ 0.0018		mylar
C120,220	1-108-227-12	Ⓐ 0.001		mylar
C121,221	1-107-169-11	Ⓐ 100 p	500 V	silvered mica
C122,222	1-108-239-12	Ⓐ 0.01		mylar
C123,223	1-121-414-11	Ⓐ 100	10 V	
C124,224	1-108-249-12	Ⓐ 0.068		mylar
C125,225	1-102-112-11	Ⓐ 330 p		ceramic
C126,226	1-101-455-11	Ⓐ 0.001		ceramic
C127,227	1-121-414-11	Ⓐ 100	10 V	
C128,228	1-102-112-11	Ⓐ 330 p		ceramic
C129,229	1-107-206-12	Ⓐ 15 p	500 V	silvered mica
C130,230	1-107-210-12	Ⓐ 22 p	500 V	silvered mica
C131,231	1-107-159-12	Ⓐ 33 p	500 V	silvered mica
C132,232	1-101-885-11	Ⓐ 56 p		ceramic
C133,233	1-101-455-11	Ⓐ 0.001		ceramic
C134,234	1-102-975-11	Ⓐ 100 p		ceramic
C135,235	1-102-074-11	Ⓐ 0.001		ceramic
C301	1-131-211-11	Ⓑ 0.22	10 V	tantalum
C302	1-121-968-11	Ⓑ 20	16 V	
C303	1-131-193-11	Ⓑ 10	10 V	tantalum
C304,305	1-121-420-11	Ⓐ 220	10 V	
C306	1-121-659-11	Ⓑ 2200	10 V	
C307	1-121-736-11	Ⓑ 1000	10 V	
C308	1-101-455-11	Ⓐ 0.001		ceramic
C309	1-121-414-11	Ⓐ 100	10 V	
C310	1-108-384-12	Ⓑ 0.039	100 V	mylar
C311	1-108-379-12	Ⓐ 0.015	100 V	mylar
C312	1-129-707-11	Ⓐ 0.0027	630 V	plastic
C313~315	1-121-651-11	Ⓐ 10	16 V	
C316	1-121-392-11	Ⓐ 3.3	25 V	
C401	1-108-242-12	Ⓐ 0.022		mylar
C402,403	1-108-227-12	Ⓐ 0.001		mylar

Ref. No.	Part No.	Description
		RESISTORS
		All resistors are in ohms. Common ¼W carbon resistors are omitted. Check schematic diagram for values. (k = 1000)
R208	1-224-648-XX	Ⓑ 100 k, adjustable
R317	1-224-644-XX	Ⓑ 4.7 k, adjustable
R322	1-244-828-11	Ⓐ 13 ½W carbon (Canadian, UK, AEP, E model)
	1-244-830-11	Ⓐ 16 ½W carbon (US model)
R324-1,2	1-224-814-00	Ⓓ 20 k, variable; VOLUME
R325-1,2	1-224-815-00	Ⓓ 20 k, variable; TONE
R316-1,2	1-224-816-00	Ⓓ 20 k, variable; BALANCE
		SWITCHES
S1,2	1-514-978-XX	Ⓒ Slide, record/playback
S3	1-516-969-00	Ⓔ Slide, INPUT SELECT
S4,5	1-516-937-00	Ⓓ Slide, TAPE SELECT, MODE
S6,7	1-516-853-XX	Ⓒ Leaf, forward muting; power
S8		Included in CNJ302
S9	1-514-346-00	Ⓑ Leaf, muting; CUE/REVIEW
S10	1-516-786-XX	Ⓑ Slide, muting (UK, E, AEP model)
S11	1-516-174-00	Ⓒ Voltage Selector (AEP model)
	1-516-267-00	Voltage Selector (E model)
	1-516-379-00	Ⓔ Rocker, MAINS (UK model)
		JACKS
J101~103 J201~203	1-507-251-XX	Ⓑ SPEAKER, LINE IN, MIC
J301	1-507-389-XX	Ⓑ PHONES (Headphones)
J302	1-507-357-00	Ⓑ REMOTE
J303	1-509-467-00	Ⓑ Connector, 5-p; REC/PB (UK, E, AEP model)

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

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

Ref. No.	*Part No.*	*Description*
CNJ302	1-509-510-00	Ⓑ Connector, 2-p; AC INPUT; including S8 (UK, AEP model)
	1-509-753-00	Ⓑ Connector, 2-p; AC INPUT; including S8 (US, Canadian, E model)
CNJ303	1-507-447-XX	Ⓑ DC IN 6V

MISCELLANEOUS

CP	1-231-057-31	Ⓑ Encapsulated Component, C-R
EH	8-825-506-00	Ⓓ Head, erase; EF135-36
F301	1-532-066-00	Ⓐ Fuse, 400 mAT (UK model)
	1-532-275-00	Ⓑ Fuse, 160 mAT (AEP model)
	1-532-426-00	Ⓑ Fuse, 200 mA (E model)
F302	1-532-285-00	Ⓑ Fuse, 1.25 AT (UK, AEP model)
M	8-834-009-10	Ⓚ Motor, DNM-1200A
MIC	8-814-196-50	Ⓕ MICROPHONE, electret condenser; C-1004S
ME	1-520-210-13	Ⓗ Meter, RECORD/BATTERY
RPH	8-829-236-24	Ⓚ Head, record/playback; PP128-3602D
SP	1-502-609-00	Ⓗ Speaker, 8Ω
	1-516-102-00	Ⓑ Holder, fuse (UK, E, AEP model)

ACCESSORIES AND PACKING MATERIALS

Part No.	*Description*
X-3547-814-0	Ⓗ Strap, shoulder
X-3701-018-2	Ⓐ Tips Ass'y, cleaning
1-526-565-00	Adapter, ac plug (E model)
1-528-022-00	Battery, size-D; IEC designation R20 (E model)
1-534-032-01	Ⓔ Cord, connection; RK-50
1-534-830-00	Cord, power; DK-33H (E model)
1-534-840-XX	Ⓓ Cord, power (AEP model)
1-534-867-11	Cord, power; DK-35 (US model)
1-551-002-XX	Cord, power; DK-36 (Canadian model)
1-551-218-00	Ⓔ Cord, power (UK model)
3-544-142-00	Ⓑ Bag, plastic; unit
3-547-835-00	Cushion (E model)
3-547-851-00	Ⓑ Case, carrying
3-547-857-00	Ⓑ Cushion, carrying case
3-547-858-00	Ⓑ Cushion, speaker
3-547-859-00	Ⓔ Carton
3-547-862-00	Ⓐ Sheet (A), protection
3-547-863-00	Ⓐ Sheet (B), protection
3-547-865-00	Ⓒ Cushion, unit
3-701-683-00	Card, voltage (E model)
3-701-684-00	Ⓑ Card, voltage (AEP model)
3-780-964-11	Ⓑ Manual, instruction (UK, E, AEP model)
3-780-964-21	Manual, instruction (US model)
3-780-964-31	Manual, instruction (Canadian model)
3-793-408-11	Ⓐ Card, cassette
3-793-828-11	Ⓐ Card, cassette (UK, E, AEP model)
3-793-965-21	Ⓐ Pamphlet, BM series
3-794-001-31	Manual, instruction; French (Canadian model)

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

9-954-421-02
(with SS-16A)

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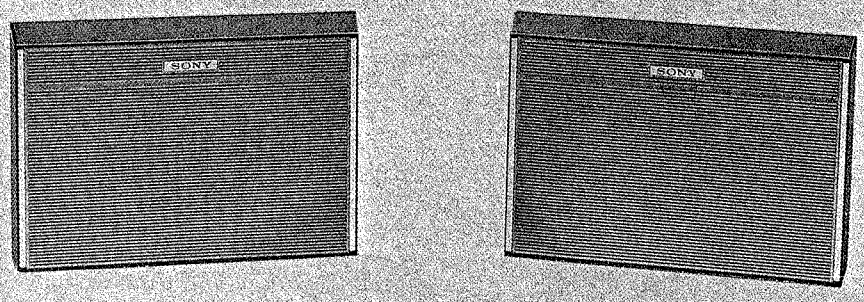
SS-16A



SPEAKER SYSTEM

SPECIFICATIONS

Dimensions: 253 (w) x 173 (h) x 73 (d) mm
10 (w) x $6\frac{13}{16}$ (h) x $2\frac{7}{8}$ (d) inches

Weight: 0.8 kg, 1 lb 12 oz

Speaker: 8Ω, 10 cm (4 inches) dia.

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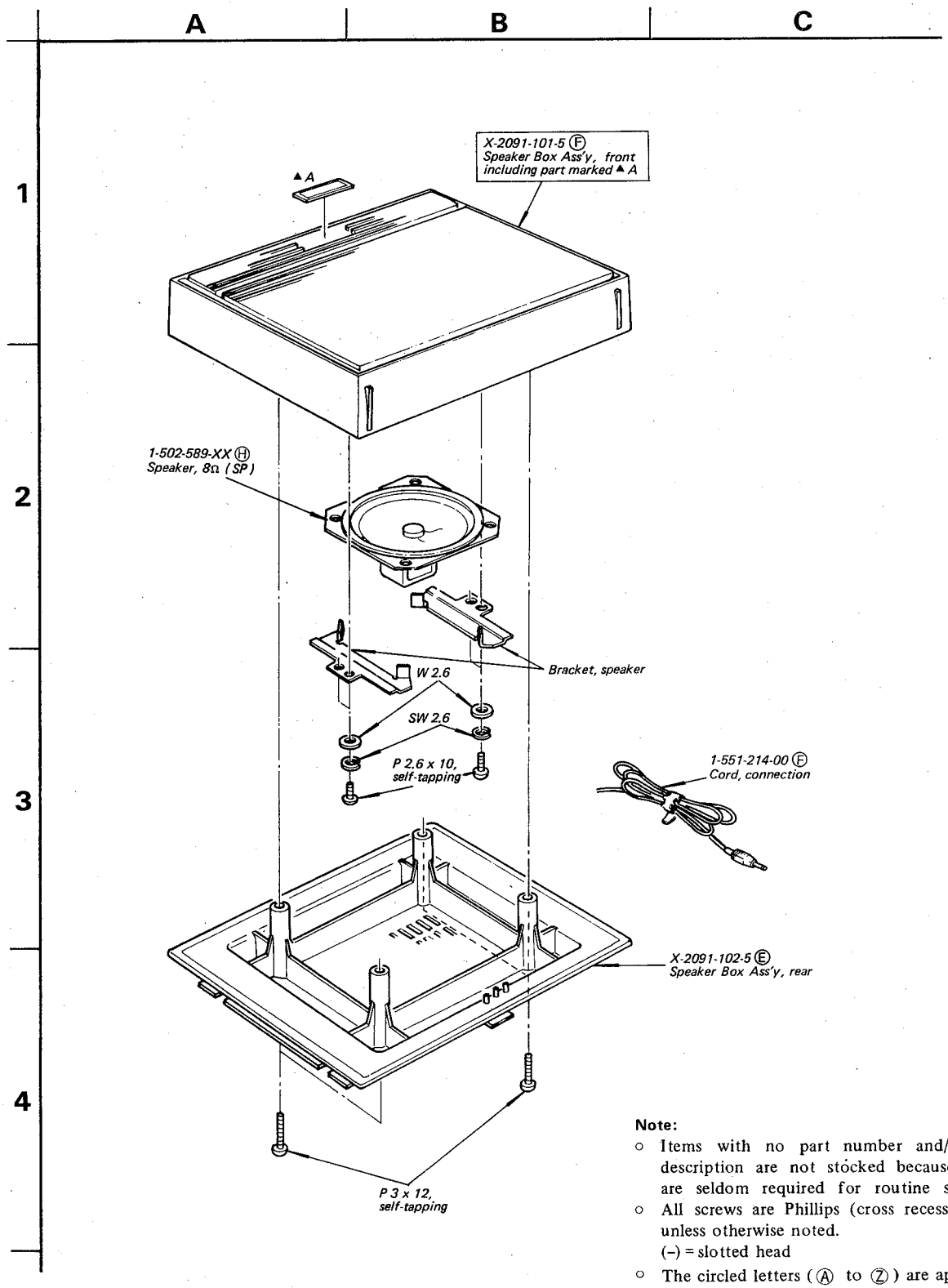
EXPLODED VIEW



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
- The circled letters (Ⓐ to Ⓩ) are applicable for European model only.

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