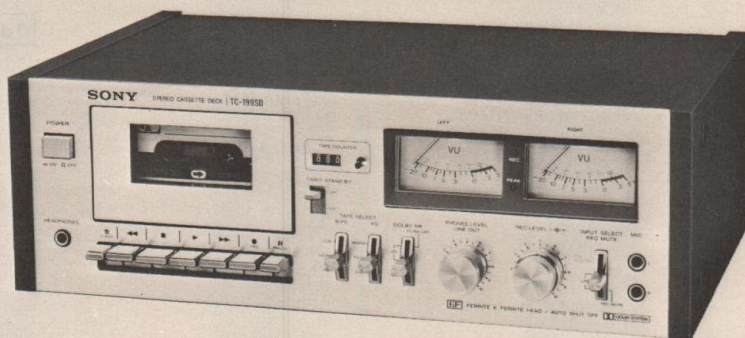


TC-199SD

*AEP Model
E Model
Canadian Model*



STEREO CASSETTE DECK

SPECIFICATIONS

Power Requirements:	120V ac, 60 Hz (Canadian model) 110, 120, 220, 240V ac, 50/60 Hz (AEP, E model)	Wow and Flutter:	0.08% (RMS) weighted NAB ±0.2% DIN
Power Consumption:	11W ac	S/N Ratio:	DOLBY NR OFF With Ferri-Chrome cassette 59 dB at peak level (NAB) 57 dB (DIN, 1975 rev.) 49 dB (DIN, old) With chromium dioxide cassette 55 dB at peak level (NAB)
Dimensions:	Approx. 440 (w) x 145 (h) x 290 (d) mm 17 $\frac{1}{4}$ (w) x 5 $\frac{3}{4}$ (h) x 11 $\frac{3}{8}$ (d) inches including projecting parts and controls	DOLBY NR ON	Improved by 5 dB at 1 kHz, 10 dB above 5 kHz
Weight:	Approx. 7 kg, 15 lb 7 oz		
Track:	4-track 2-channel stereo		
Fast Forward Rewind Time:	Approx. 90 seconds with Sony cassette C-60		
Frequency Response:	DOLBY NR OFF With Ferri-Chrome cassette 20–18,000 Hz (NAB) 30–16,000 Hz ±3 dB (NAB) 30–16,000 Hz (DIN) With chromium dioxide cassette 20–17,000 Hz (NAB) 30–15,000 Hz ±3 dB (NAB) 30–15,000 Hz (DIN) With regular cassette 20–15,000 Hz (NAB) 30–13,000 Hz (DIN)		

— Continued on page 2 —

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

Total Harmonic Distortion: 1.3%

Record Bias Frequency: 105 kHz

Inputs: MIC (two phono jacks)
Sensitivity: 0.2 mV (-72 dB)
Impedance: for low-impedance microphone

LINE IN (two phono jacks)
Sensitivity: 0.06 V (-22 dB)
Impedance: 100 kΩ

REC/PB (connector)
Input impedance: less than 10 kΩ

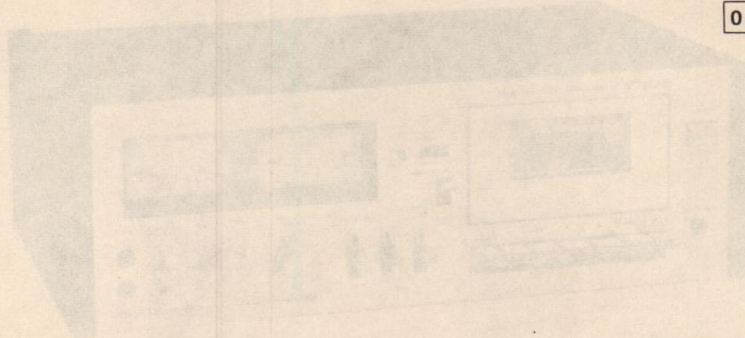
Outputs: VARIABLE LINE OUT (two phono jacks)
Output level: 0.775 V (0 dB)
at load impedance 100 kΩ
with LINE OUT level control at "10"
suitable load impedance more than 10 kΩ

FIXED LINE OUT (two phono jacks)
Output level: 0.435 V (-5 dB)
at load impedance 100 kΩ
suitable load impedance more than 10 kΩ

HEADPHONES (binaural jack)
for low-impedance headphones

REC/PB (connector)
Output impedance: less than 10 kΩ

0 dB = 0.775 V



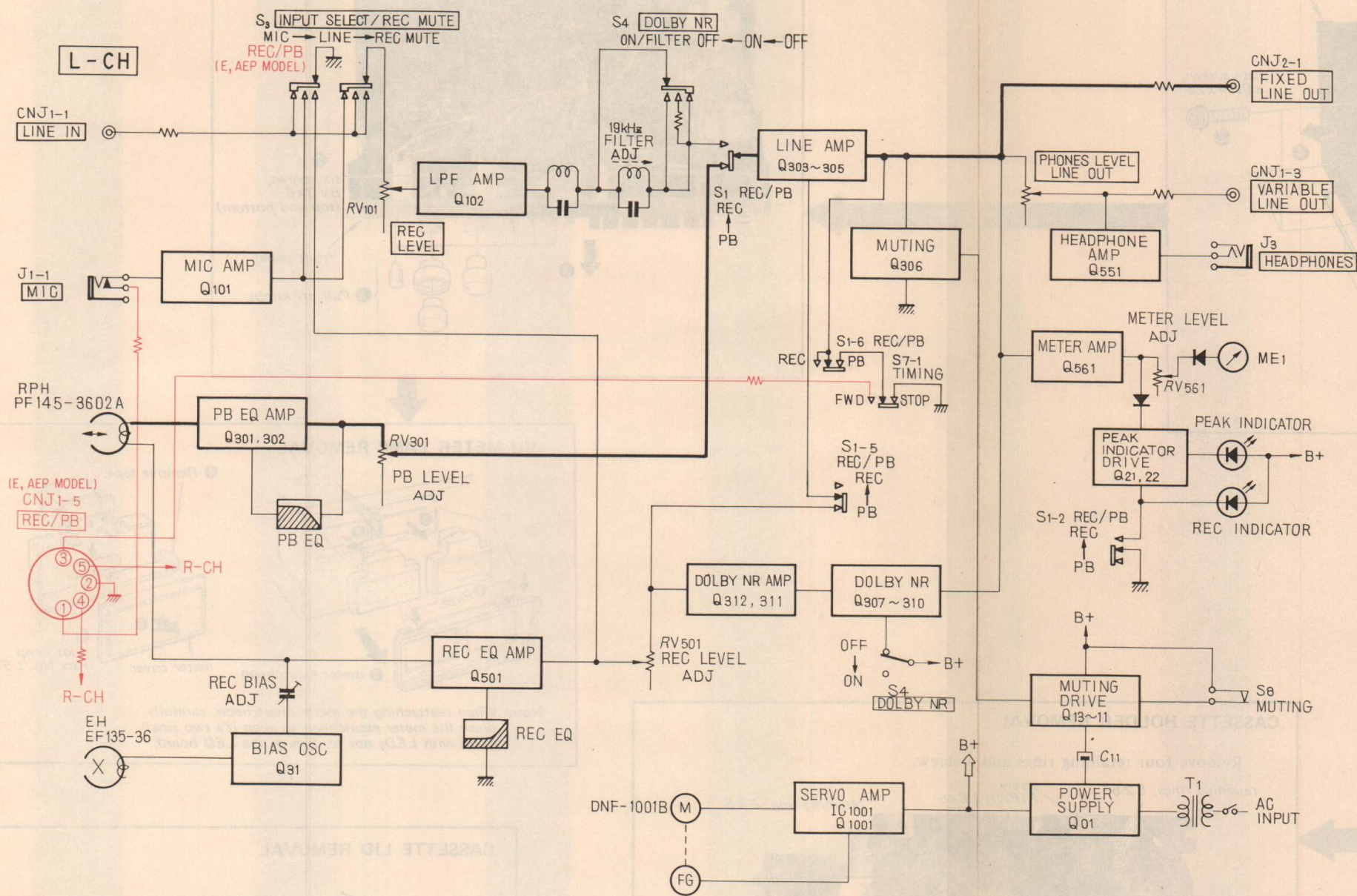
SPECIFICATIONS

Power Requirements:	150V ac 60Hz (Canadian model) 110/120/220/240V ac 50/60Hz (AEP-E model)
Power Consumption:	11W ac
Dimensions:	Approx. 140 (w) x 140 (h) x 230 (d) mm 17 1/2 (w) x 5 1/2 (h) x 11 1/2 (d) inches including projecting parts and controls
Weight:	Approx. 7.5 lb (3.4 kg)
Track:	4-track 2-channel stereo
Fast Forward:	Approx. 90 seconds with 30 sec cassette
Reverse Time:	C-50
Frequency Response:	DOLBY NR OFF With Ferrite-Chrome cassette 20-18,000 Hz (NAB) 30-18,000 Hz ±3 dB (NAB) 30-18,000 Hz (DIN) With chromium dioxide cassette 20-17,000 Hz (NAB) 30-18,000 Hz ±3 dB (NAB) 30-18,000 Hz (DIN) With regular cassette 20-18,000 Hz (NAB) 30-13,000 Hz (DIN)
Wow and Flutter:	0.08% (RMS) weighted NAB ±0.2% DIN
S/N Ratio:	DOLBY NR OFF With Ferrite-Chrome cassette 59 dB at peak level (NAB) 57 dB (DIN, 10% tape) 49 dB (DIN, 10%) With chromium dioxide cassette 55 dB at peak level (NAB) 53 dB at peak level (DIN) Improved by 5 dB at 1 kHz, 10 dB above 5 kHz

Continued on page 2

SECTION 1
OUTLINE

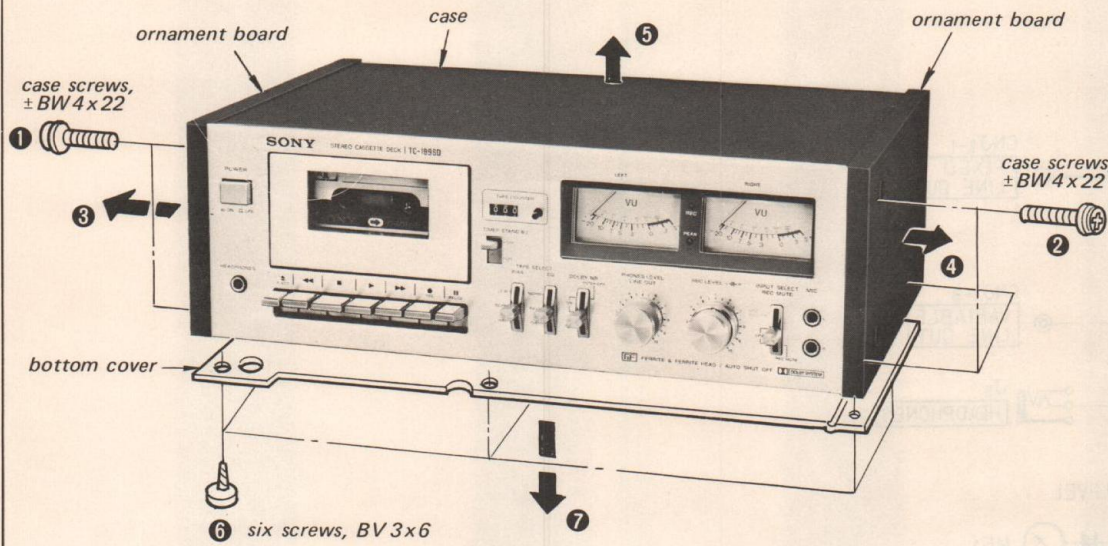
1-1. BLOCK DIAGRAM



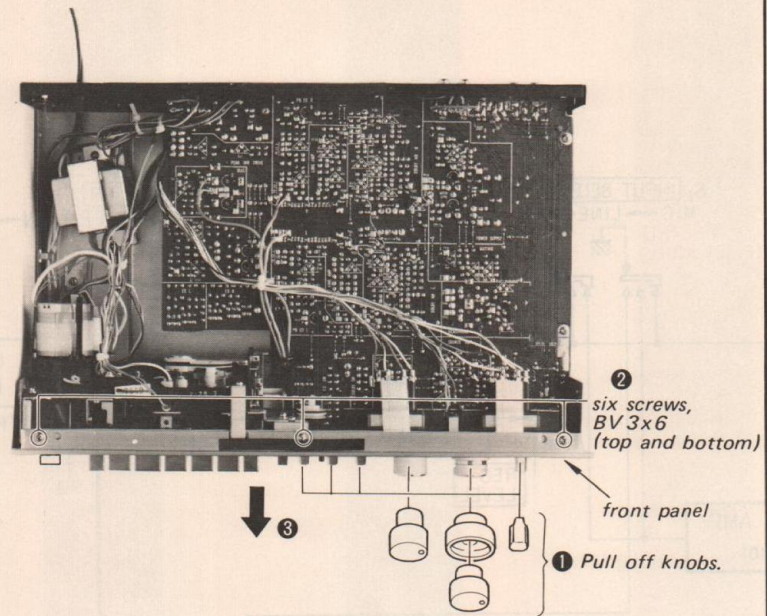
SECTION 2
DISASSEMBLY

CASE AND BOTTOM COVER REMOVAL

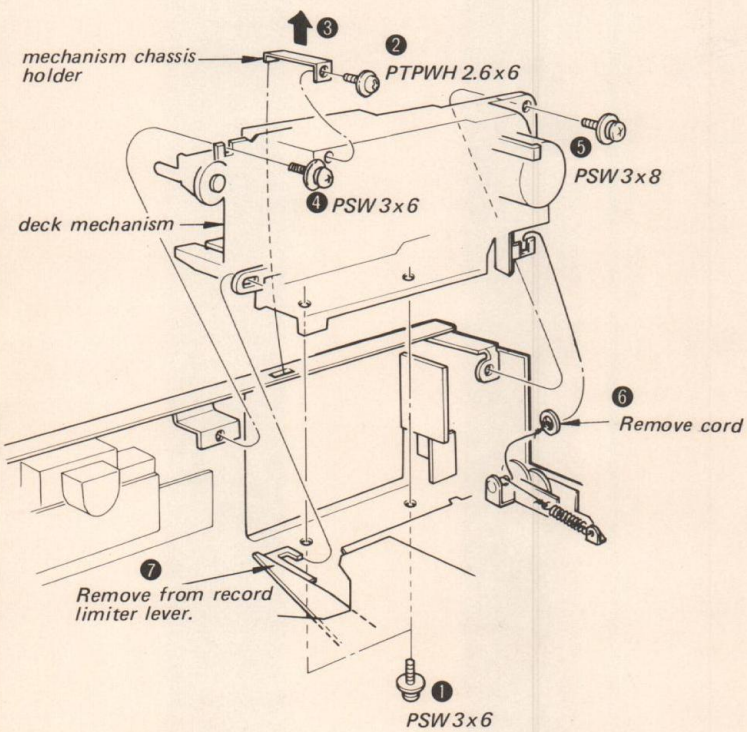
- Case Removal: 1, 2, 3, 4, 5
Bottom Cover Removal: 6, 7



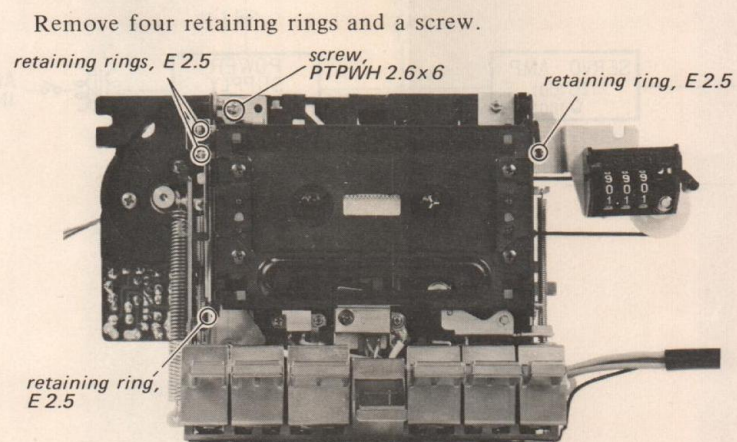
FRONT PANEL REMOVAL



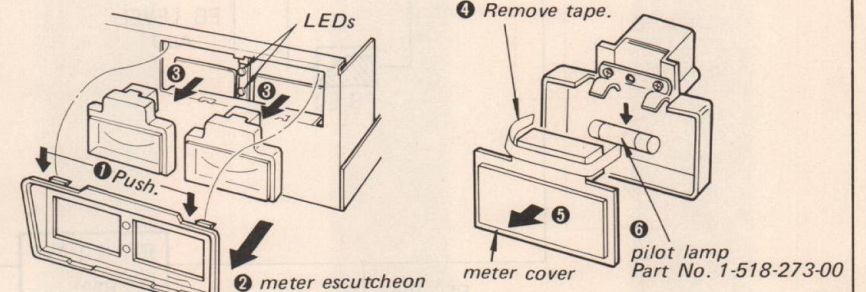
DECK MECHANISM REMOVAL



CASSETTE HOLDER REMOVAL

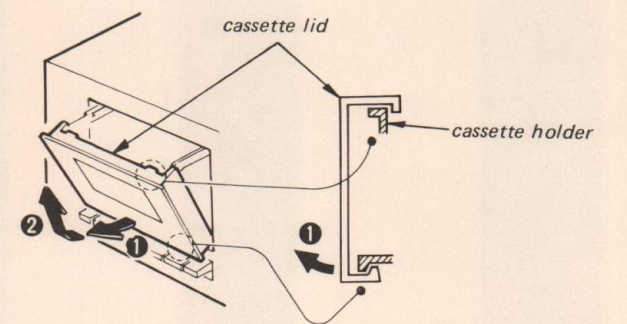


VU METER LAMP REMOVAL



Note: When reattaching the meter escutcheon, carefully place the meter escutcheon to align its two small holes with LEDs not to damage the LED board.

CASSETTE LID REMOVAL



SECTION 3 ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

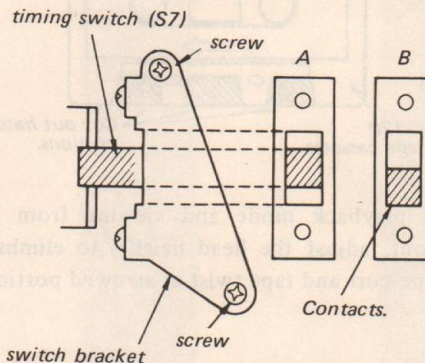
record/playback head	pinch roller
erase head	rubber belts
capstan	idlers
2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply a suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Timing Switch (S7) Position Adjustment

– Stop Mode –

Loosen the screws and adjust position of the switch bracket so that it is placed as shown in Fig. B.

After the adjustment, tighten the screws.

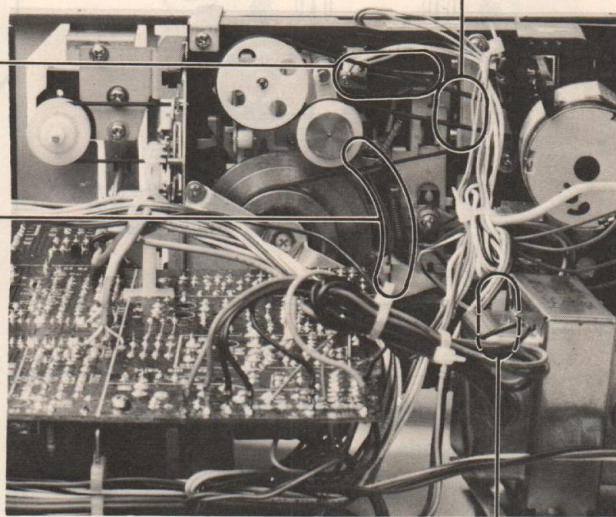
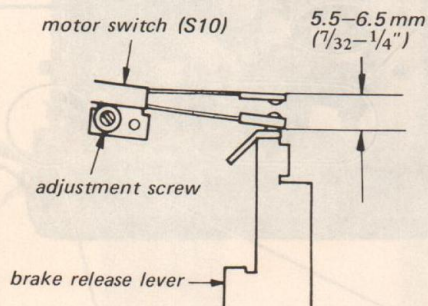


Motor Switch (S10) Position Adjustment

– Stop Mode –

Loosen adjustment screw and adjust the position of the switch for the specified clearance between the switch leaves.

After the adjustment, tighten and lock the screw with a suitable locking compound.

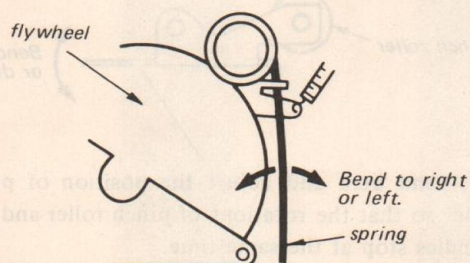


Fast Forward and Rewind Torque Adjustment

– Fast Forward and Rewind Modes –

Use type CQ-201A cassette torque meter.

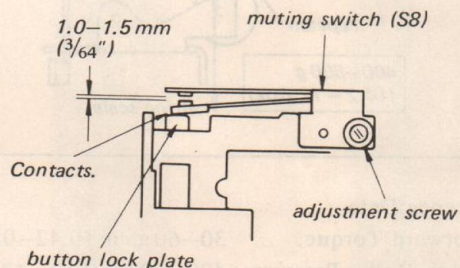
Bend the spring for the torque of 55–95 g-cm (0.8–1.3 oz-inch).



Muting Switch (S8) Position Adjustment

– Stop Mode –

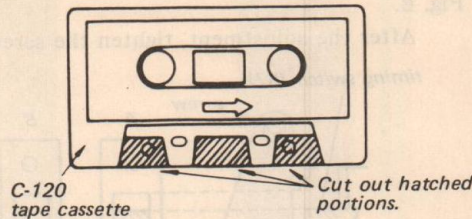
Loosen the adjustment screw and adjust the position of the switch for the specified clearance between the switch leaves.



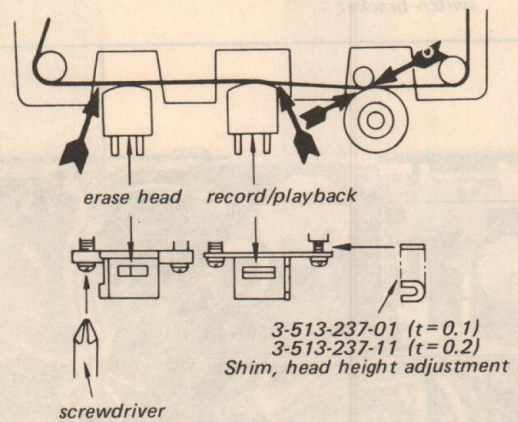
Tape Path Adjustment

— Playback Mode —

1. Make an adjustment cassette as shown below.



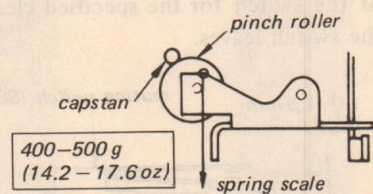
2. In playback mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at arrowed portions.



Pinch Roller Pressure Adjustment

— Playback Mode —

1. Hook the pinch roller with a spring scale.
2. Pull the spring scale.
3. Slowly return the pinch roller and read the spring scale just when the pinch roller starts to rotate.



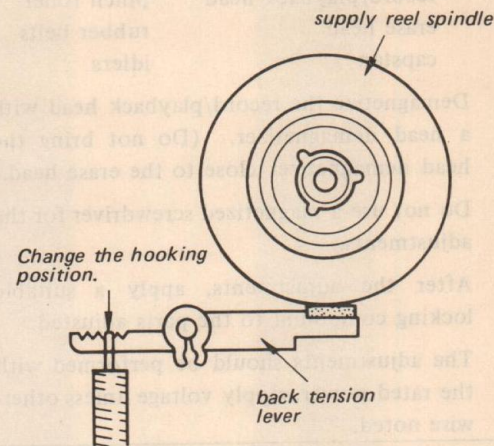
Reference Data

Forward Torque: 30-60 g.cm (0.42-0.8 oz.inch)
Pinch Roller Pressure: 400-500 g (14.2-17.6 oz)
Shut-off Time: Within six seconds

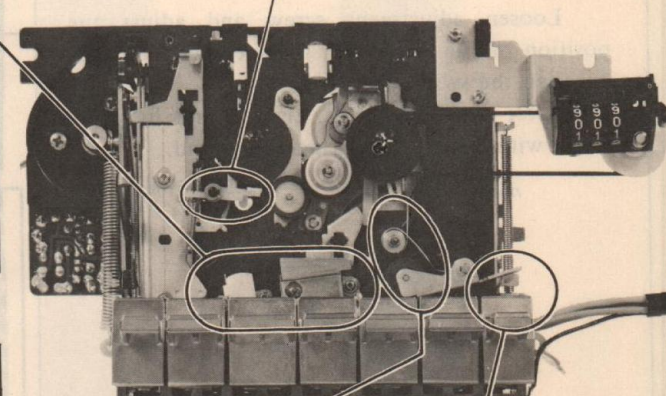
Playback Tension Torque Adjustment

— Playback Mode —

Use type CQ-101A or CQ-102A cassette torque meter.

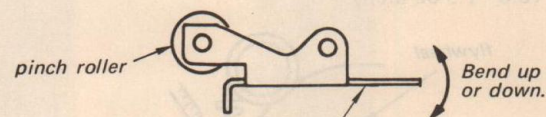


Specification: 2.5-3.5 g.cm (0.04 oz.-inch)



PAUSE Timing Adjustment

— PAUSE Mode —



Bend here and adjust the position of pinch roller so that the rotations of pinch roller and reel spindles stop at the same time.

3-2. ELECTRICAL ADJUSTMENTS

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

Test Equipment/Tools Required:

- audio oscillator (af osc)
 - VTVM
 - digital frequency counter
 - speed checker SONY LFM-30
 - oscilloscope
 - attenuator (600 Ω)
 - non-magnetic screwdriver
 - resistors ... 600 Ω (1/4 W), 10 kΩ (1/4 W), 100 kΩ (1/4 W)
 - blank tapes (completely erased with bulk eraser)
SONY CS-10 (HF), CS-20 (CrO₂), CS-30 (Fe-Cr)
- BIAS and EQ switch settings in accordance with tape used are as follows.

Tape	BIAS switch	EQ switch
CS-10	NORMAL	NORMAL
CS-20	HIGH	CrO ₂
CS-30	NORMAL	Fe-Cr

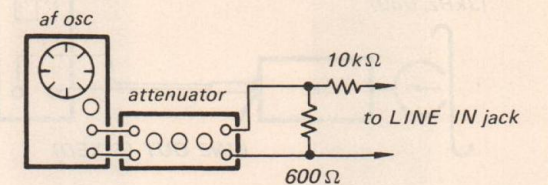
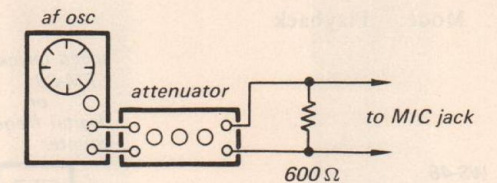
- SONY test tapes
- P-4-A81S (6.3 kHz, -10 dB)
 - P-4-A82 (10 kHz, -10 dB)
 - P-4-L81 (333 Hz, 0 dB)
 - WS-48 (3 kHz, 0 dB)

Switches and controls should be set as follows unless otherwise specified.

- DOLBY NR switch: OFF
- LINE OUT control: MAX
- EQ switch: NORMAL
- BIAS switch: NORMAL

Test Equipment Connections:

Input side:



Standard Record:

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

	MIC	LINE IN	REC/PB (AEP model)
source impedance	300 Ω	10 kΩ	82 kΩ
input level	0.77 mV (-60 dB)	0.25 V (-10 dB)	31 mV (-28 dB)

Standard Output Level

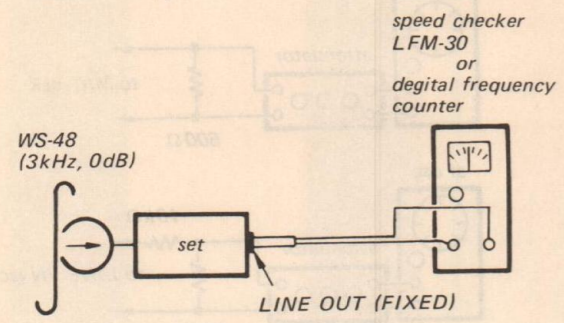
	LINE OUT	HEAD-PHONES	REC/PB (AEP model)
load impedance	100 kΩ	8 Ω	50 kΩ
output level	0.44 V (-5 dB)	62 mV* (-22 dB)	0.44 V (-5 dB)

* with PHONES LEVEL LINE OUT control at "10"

1. Tape Speed Adjustment

Procedure:

Mode: Playback



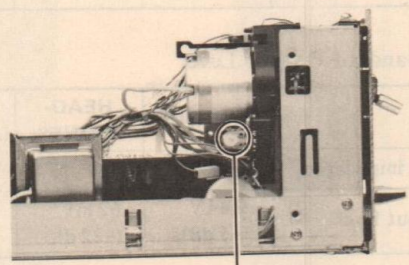
Adjust RV1001 to obtain the values specified below.

Specification:

Speed checker	Digital frequency counter
-0.7—+0.7%	2,980—3,020 Hz

Frequency difference between beginning and end of tape should be within 0.7% (20 Hz).

Adjustment Location:

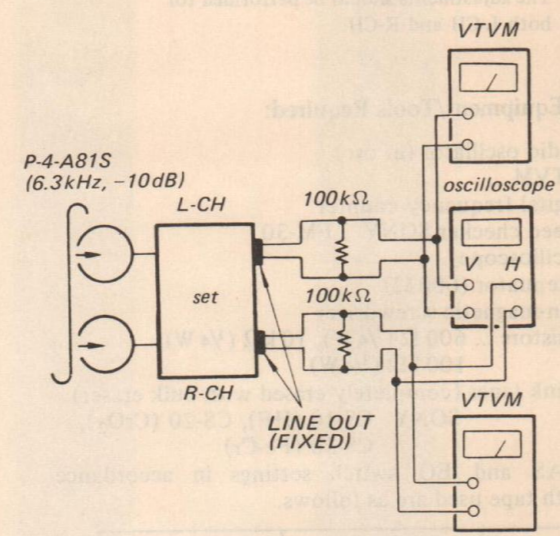


RV1001

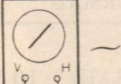
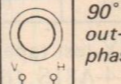
2. Record/playback Head Azimuth Adjustment

Procedure:

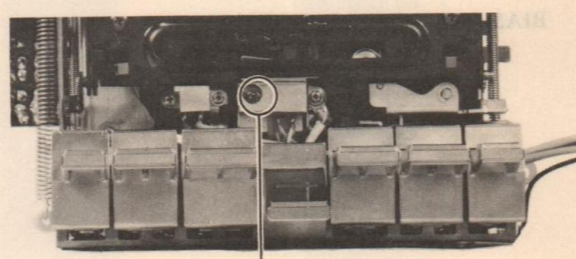
1. Mode: Playback



2.

Adjust	Oscilloscope patterns
azimuth adjustment screw to obtain the in-phase pattern around the highest VTVM readings.	<p>[Allowance]</p> <p>in-phase  90° out-of-phase </p> <p>(L) (R) (L) (R)</p> <p>Level drop should be within 0.5 dB</p>

Adjustment Location:



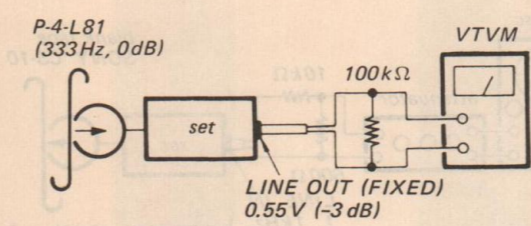
adjustment screw

Note: This adjustment can be performed with the cassette lid (A) removed.

3. Playback Level Adjustment

Procedure:

1. Mode: Playback



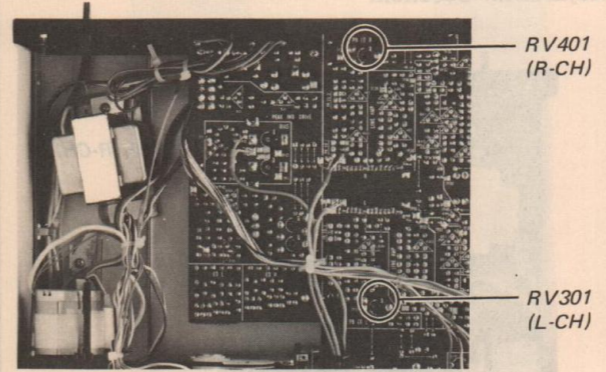
Adjust RV301 (L-CH) and RV401 (R-CH) to obtain 0.55V (-3 dB) VTVM reading.

2. Assure that the LINE OUT level does not change when the mode is changed from playback to stop several times.

Specification:

LINE OUT level: 0.52—0.58 V (-2.5—-3.5 dB)
 Level difference between channels: less than 0.5 dB

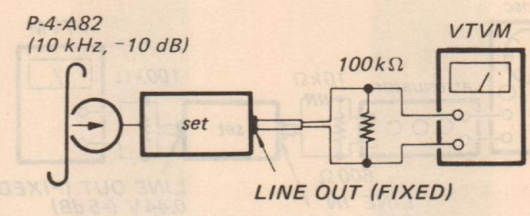
Adjustment Location:



4. Playback Equalizer Adjustment

Procedure:

Mode: Playback

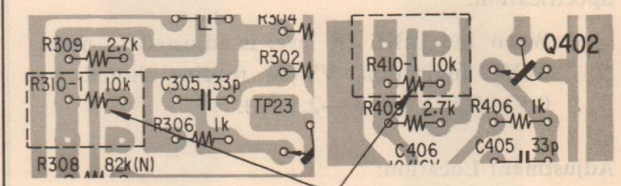


Adjust R310-1 (L-CH) and R410-1 (R-CH) for 0.12—0.25V (-16—-10 dB) VTVM reading.

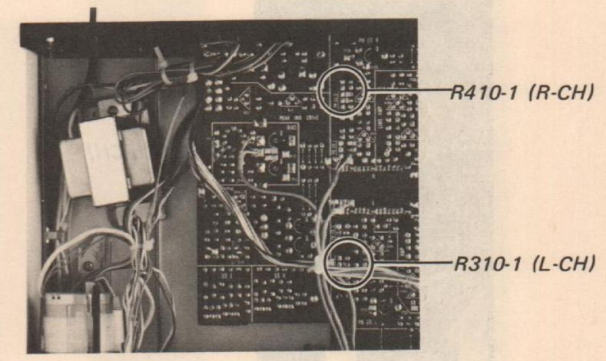
TAPE SELECT EQ switch:

Fe-Cr or CrO ₂	0.069—0.14 V (-21—-15 dB)
---------------------------	---------------------------

Adjustment Location:



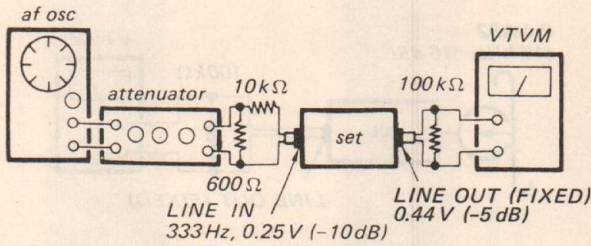
Bridge patterns.



5. Level Meter Calibration

Procedure:

1. Mode: Standard record (See page 9.)



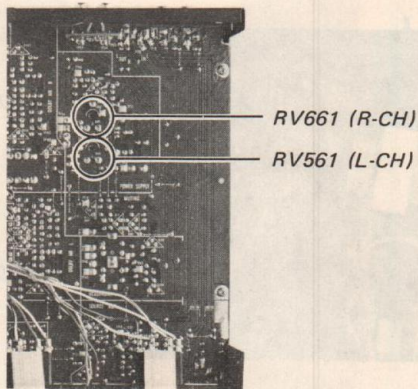
- 2.

Adjust	VU meter reading: 0 VU
RV561 (L-CH)	
RV661 (R-CH)	

Specification:

When the LINE IN level is adjusted to make 0 VU indication, VTVM reading should be 0.52–0.58V (–3.5––2.5 dB).

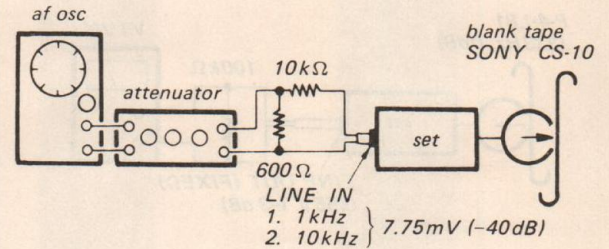
Adjustment Location:



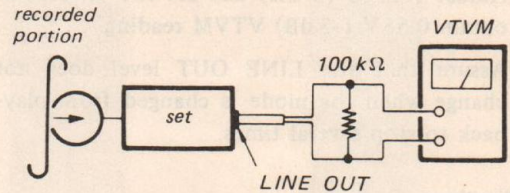
6. Record Bias Adjustment

Procedure:

1. Mode: Standard record (See page 9.)



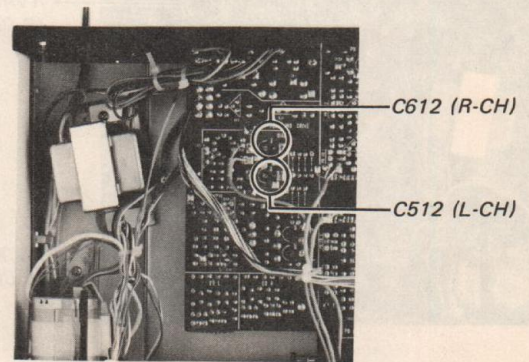
2. Mode: Playback



Adjust C512 (L-CH) and C612 (R-CH) to make 10 kHz and 1 kHz signal output levels equal.

Level difference between the two output levels: 0 dB ± 1 dB

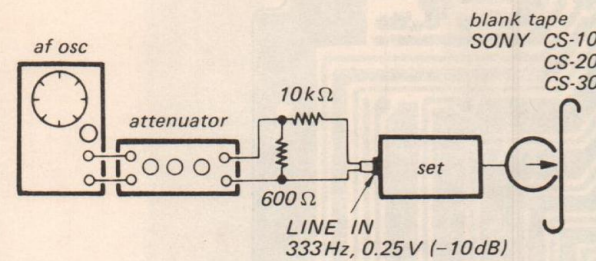
Adjustment Location:



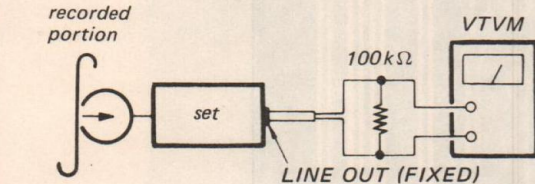
7. Record Level Adjustment

Procedure:

1. Mode: Standard record (See page 9.)



2. Mode: Playback



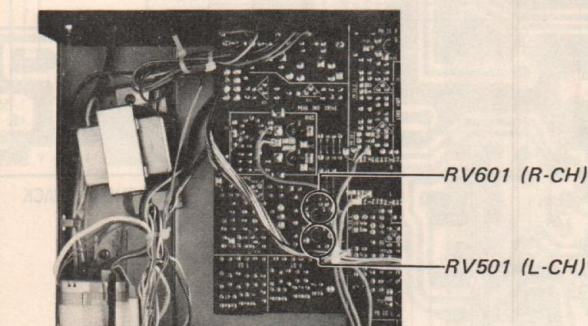
Adjust RV501 (L-CH) and RV601 (R-CH) to obtain 0.44 V (-5 dB) VTVM reading.

3. Change the blank tape to CS-20 and CS-30, and perform the same record and playback procedure. Measure LINE OUT level.

Specification:

SONY tape	LINE OUT level
CS-10	0.41-0.46 V (-5.5--4.5 dB)
CS-20	0.37-0.52 V
CS-30	(-6.5--3.5 dB)

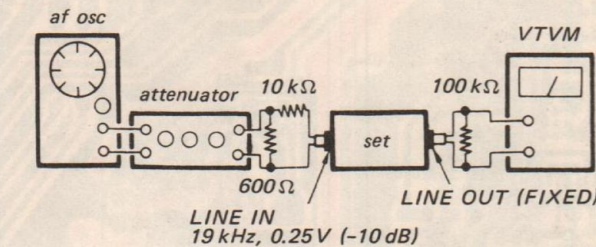
Adjustment Location:



8. 19 kHz Filter Adjustment

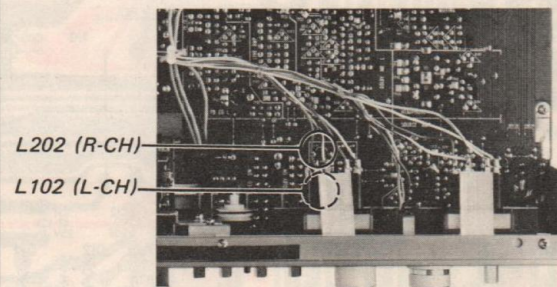
Procedure:

DOLBY NR switch: ON



Adjust L102 (L-CH) and L202 (R-CH) for 25 mV (-30 dB) or less VTVM reading.

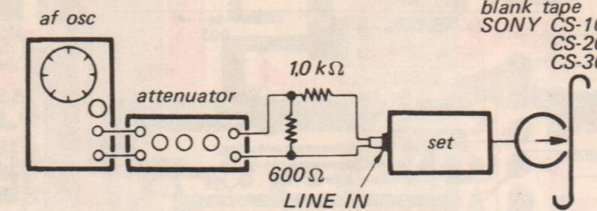
Adjustment Location:



9. Playback Frequency Response Adjustment

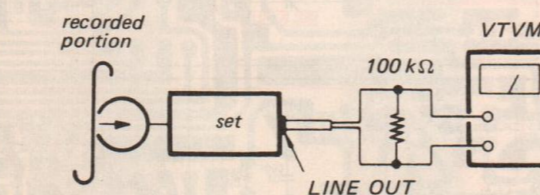
Procedure:

1. Mode: Standard record (See page 9.)



f	Level difference
333 Hz	7.7 mV (-40 dB)
40 Hz	
5 kHz	
10 kHz	
12.5 kHz	
15 kHz	

2. Mode: Playback

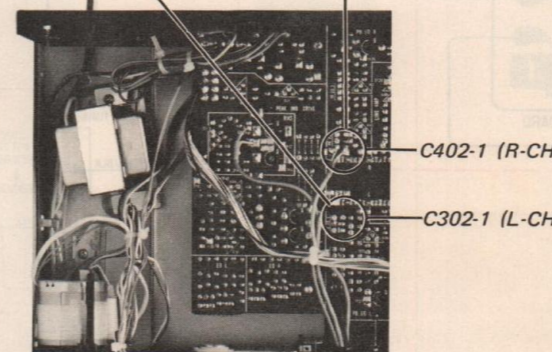
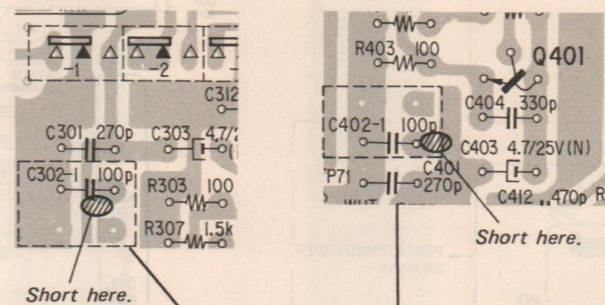


Measure LINE OUT level with 333 Hz output level as reference.

Tape	f	Level difference				
		40 Hz	5 kHz	10 kHz	12.5 kHz	15 kHz
CS-10		± 3 dB	± 2 dB		± 3 dB	
CS-20				± 2 dB		+ 4 dB
CS-30						- 3 dB

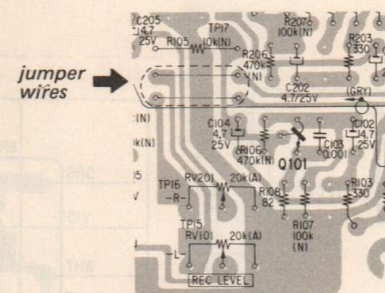
If the 15 kHz level is out of the specification, adjust by shorting patterns.

Adjustment Location:



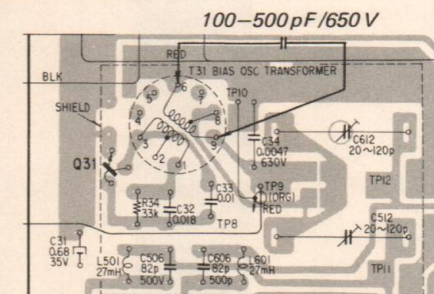
Correcting REC LEVEL Controls' Mechanical Error

To correct mechanical error of REC LEVEL controls, remove the jumper wires and install suitable resistors.



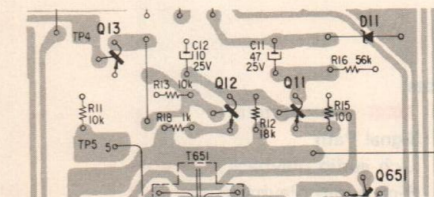
Rejecting AM Beat

To solve AM beat trouble at the record bias oscillator, connect a ceramic capacitor of 100-500 pF/650V between pins 6 and 9 of the bias oscillator transformer.



Correcting Abnormal Operation of Muting

To correct abnormal muting operation due to power supply noise, decrease the value of R16 or C11.



SECTION 4
DIAGRAMS

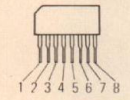
4-1. MOUNTING DIAGRAMS

— Conductor Side —

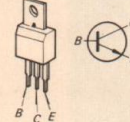
Replacement semiconductors

For replacement, use semiconductors except in ().

IC1001: CX065A



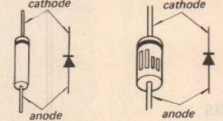
Q01: 2SC1760
Q1001: 2SC1760 (2SC1761)



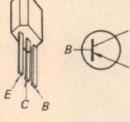
D01: EQB01-21 (EQA01-21R)
D11: EQB01-24 (EQA01-24R)



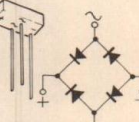
D02, 03: 10E2 (SIB01-02)



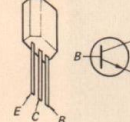
Q11, 13
Q312, 412 : 2SA678 (2SA677)



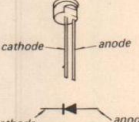
D04: SIRB-10



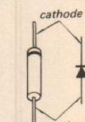
Q12, 21, 22
Q304-310
Q404-410
Q501, 551, 561
Q601, 651, 661
Q102, 202
Q301, 303, 311
Q401, 403, 411



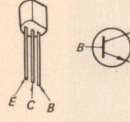
D21, 22: SLP24B



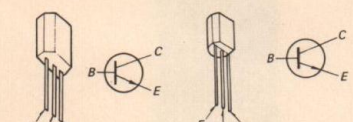
D301, 401: 1S1555 (1T22A)
D302, 402: 1T22A
D303, 403: 1S1555
D304, 404 : 1S1555 (1T40)
D563, 663 : 1S1555 (1T40)
D561, 661: 1T22A (1T22)



Q31: 2SC1475

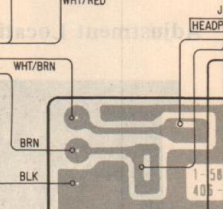
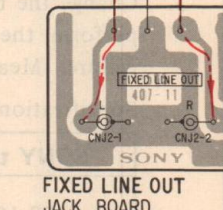
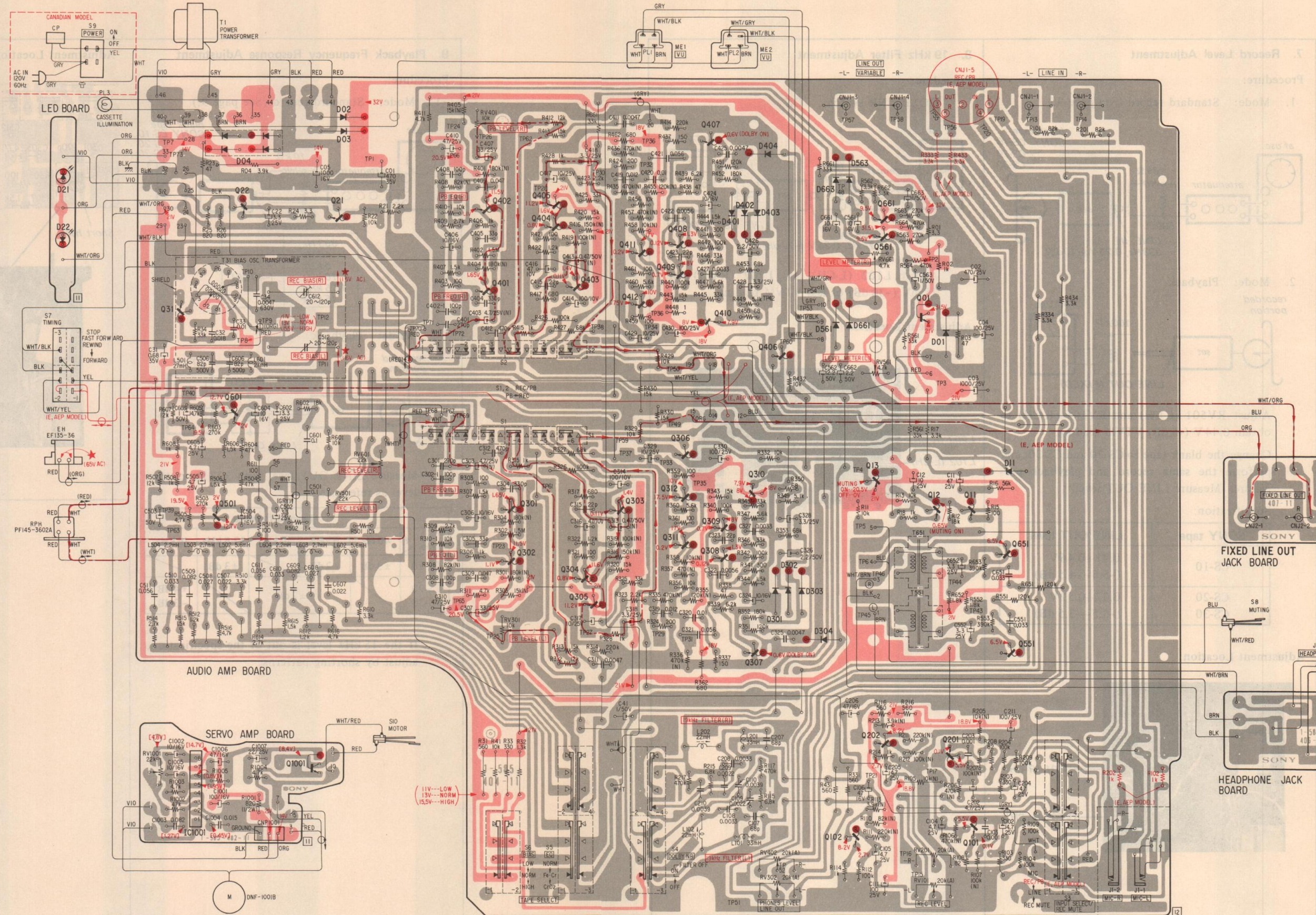
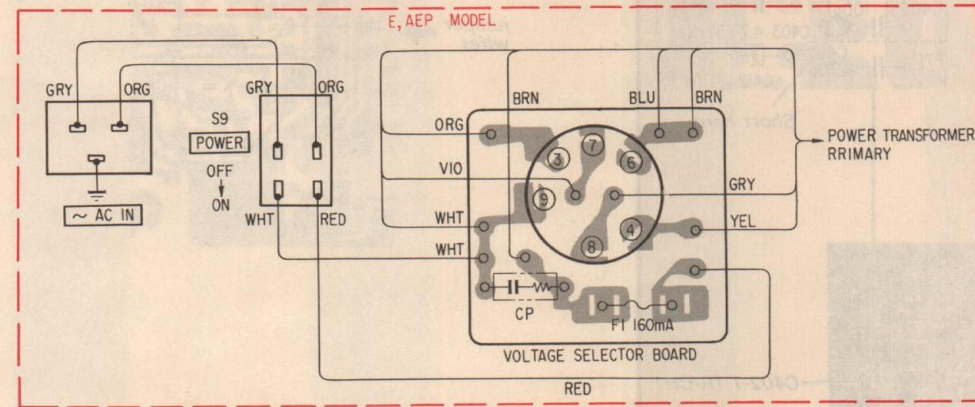
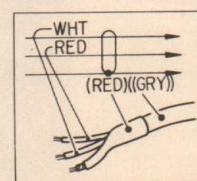


Q101, 201
Q302, 402 : 2SC632A (2SC1361)



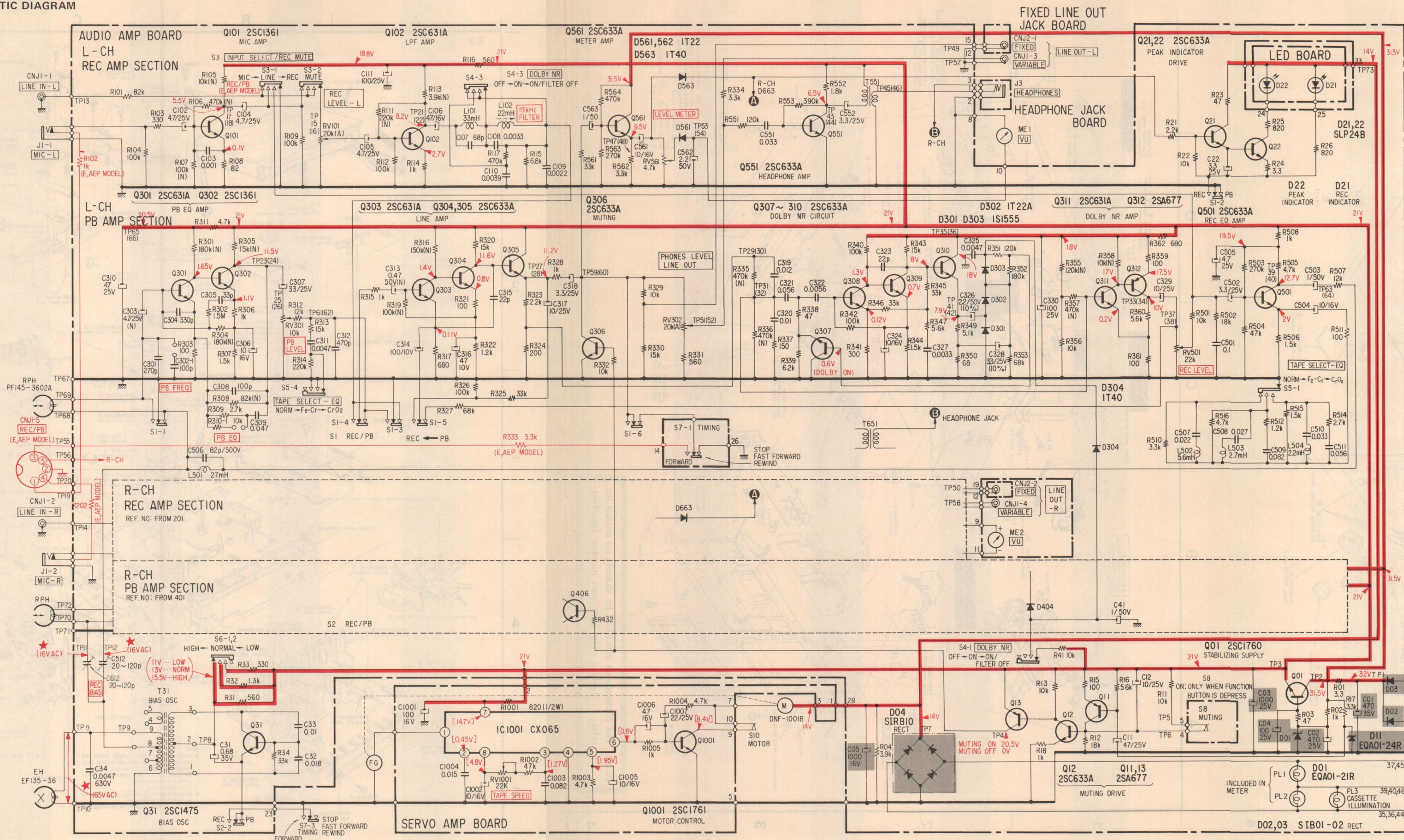
Note:

- B+ pattern
- Signal Path
- L-ch audio playback:
- R-ch audio playback:
- Color code of sleeving over the end of the jacket.



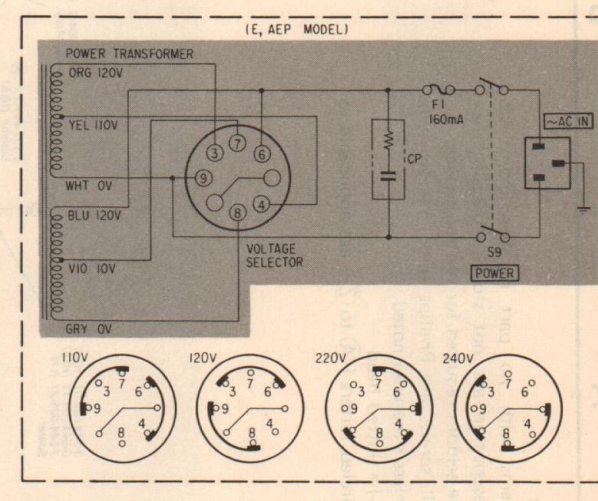
Q & IC	31	22	21	402	301	405	403	303	411	408	407	310	406	661	01	11	651
	IC1001	50101	1001	402	301	405	403	303	411	408	407	310	406	661	01	11	651
D	21	22	04	02	03									102			
												401 402 403	404	663 563			
												301 302 303	304	562 662			
														561 661			

4-2. SCHEMATIC DIAGRAM



- Note:**
- Components for right channel have the same values as for left channel. Reference numbers are coded from 201 or 401.
 - All capacitors are in μF unless otherwise noted. $\text{pF} = \mu\text{F} \times 10^{-6}$ or less are not indicated except for electrolytics.
 - All resistors are in ohms, $\frac{1}{4}\text{W}$ unless otherwise noted. $\text{k}\Omega = 1000\Omega$, $\text{M}\Omega = 1000\text{k}\Omega$.
 - (N) : low-noise capacitor and resistor.
 - 10% indicates component tolerance.
 - : B+ bus.
 - : panel designation.
 - : adjustment for repair.
 - \perp : direct connection to points marked \perp on the chassis.
 - \square : chassis ground.
 - TP□ (□) indicates test point.
 - () : R-ch test point.
 - Voltages are dc with respect to ground unless otherwise noted.
 - Readings are taken under no-signal conditions with a VOM (20 $\text{k}\Omega/\text{V}$).
 - () : record mode
 - [] : forward mode
 - AC voltage readings indicated by * in the bias oscillator circuit are taken with a VTVM.
 - Voltage variations may be noted due to normal production tolerances.
 - Switch

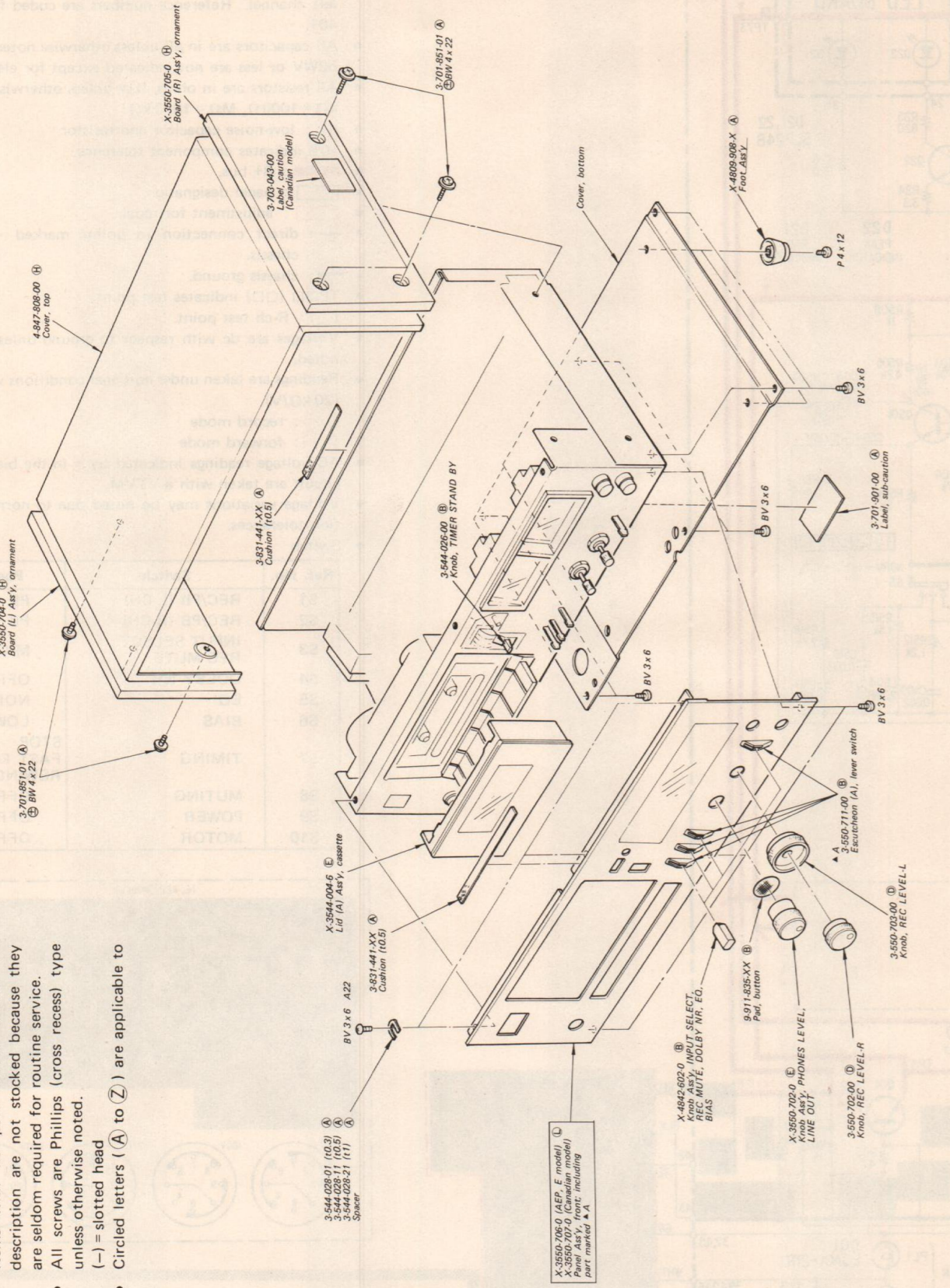
Ref. No.	Switch	Position
S1	REC/PB (L-CH)	PB
S2	REC/PB (R-CH)	PB
S3	INPUT SELECT	MIC
S4	DOLBY NR	OFF
S5	EQ	NORMAL
S6	BIAS	LOW
S7	TIMING	STOP FAST FORWARD REWIND
S8	MUTING	OFF
S9	POWER	OFF
S10	MOTOR	OFF



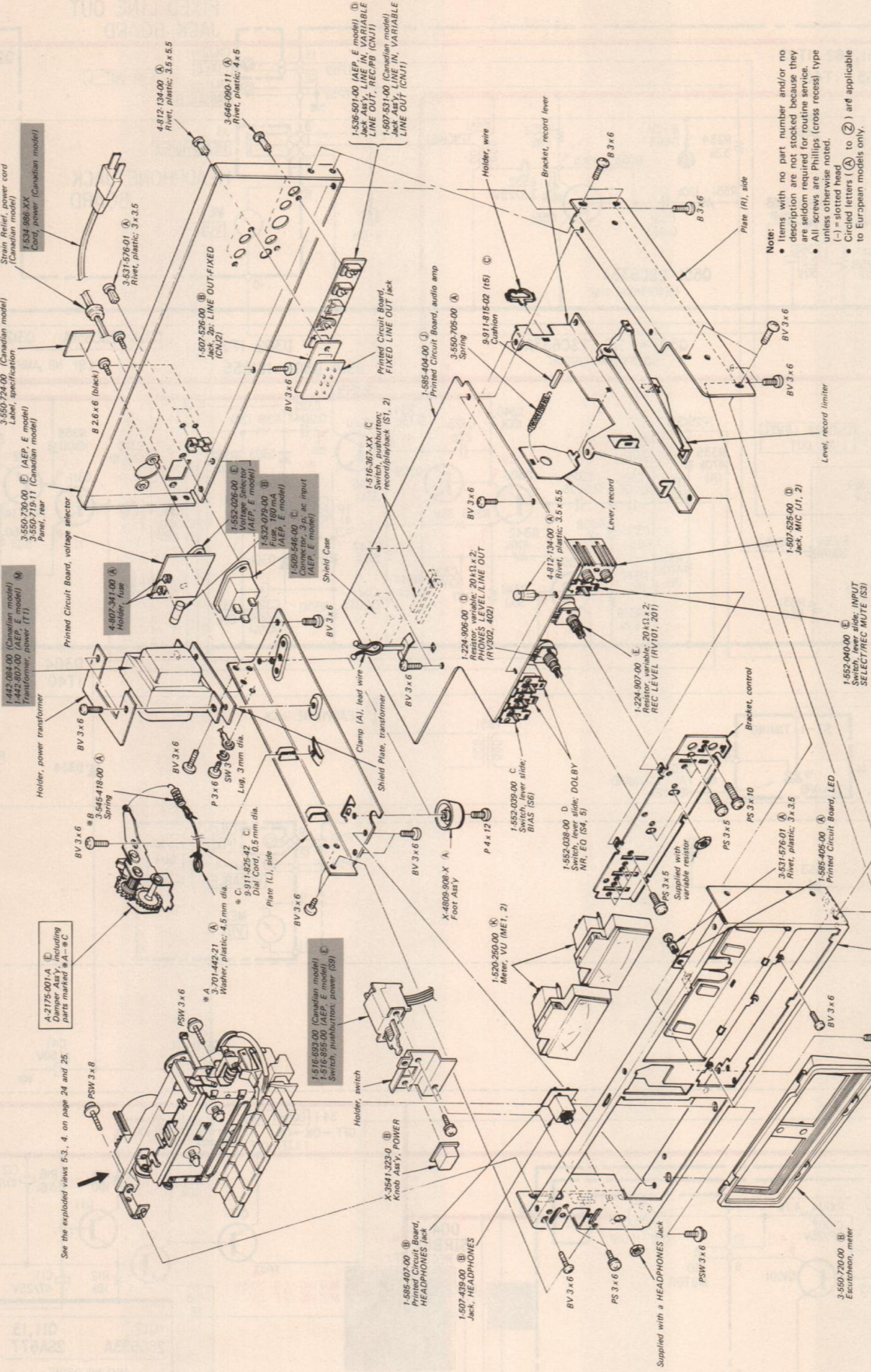
Note: The components identified by shading are critical for safety. Replace only with part number specified.

SECTION 5
EXPLODED VIEWS

5-1.



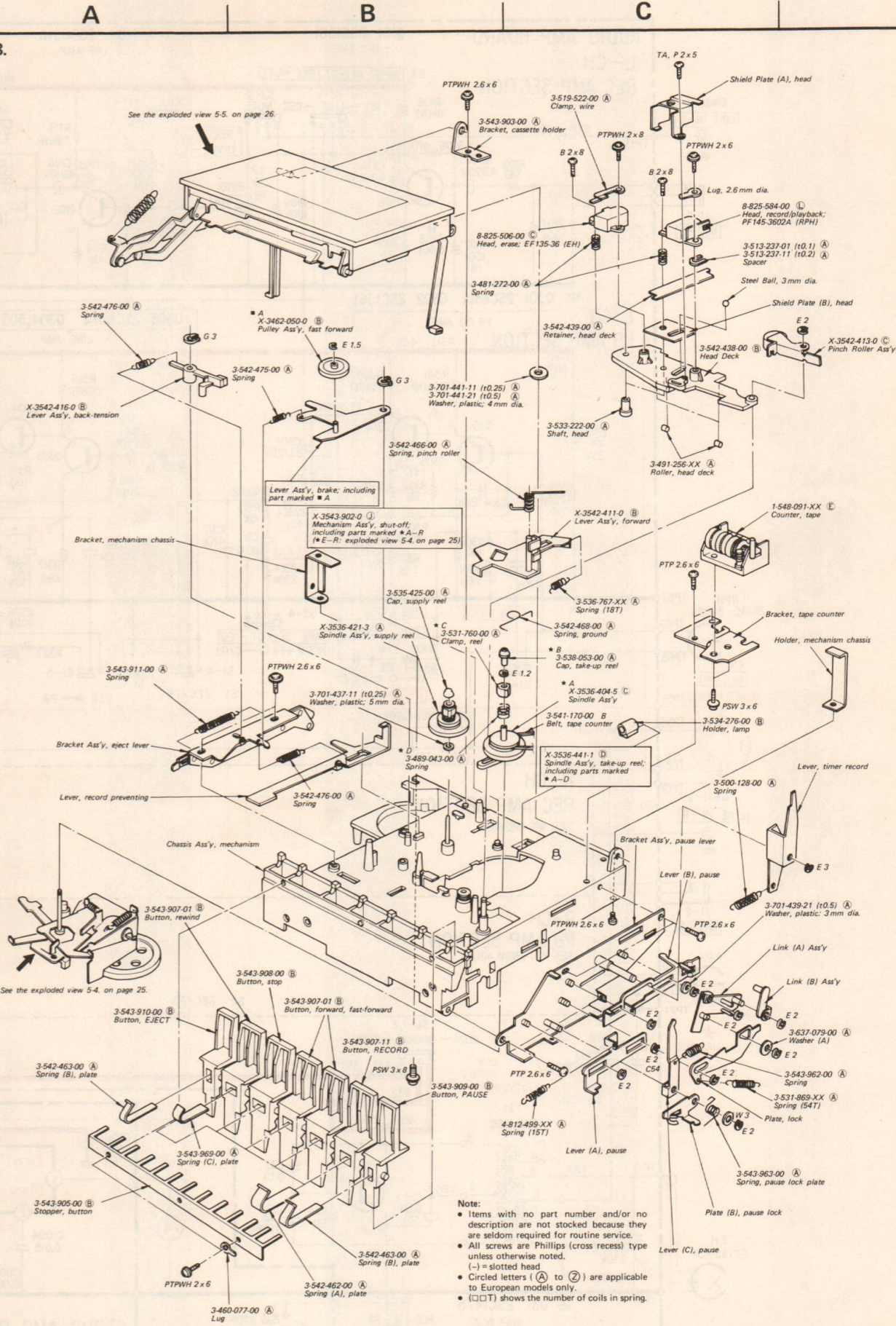
5-2.



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
 • (□) = slotted head
 • (A) to (Z) are applicable to European models only.

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

5-3.



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
 • (A) to (Z) are applicable to European models only.
 • (□) shows the number of coils in spring.

A

B

C

D

54.

1

2

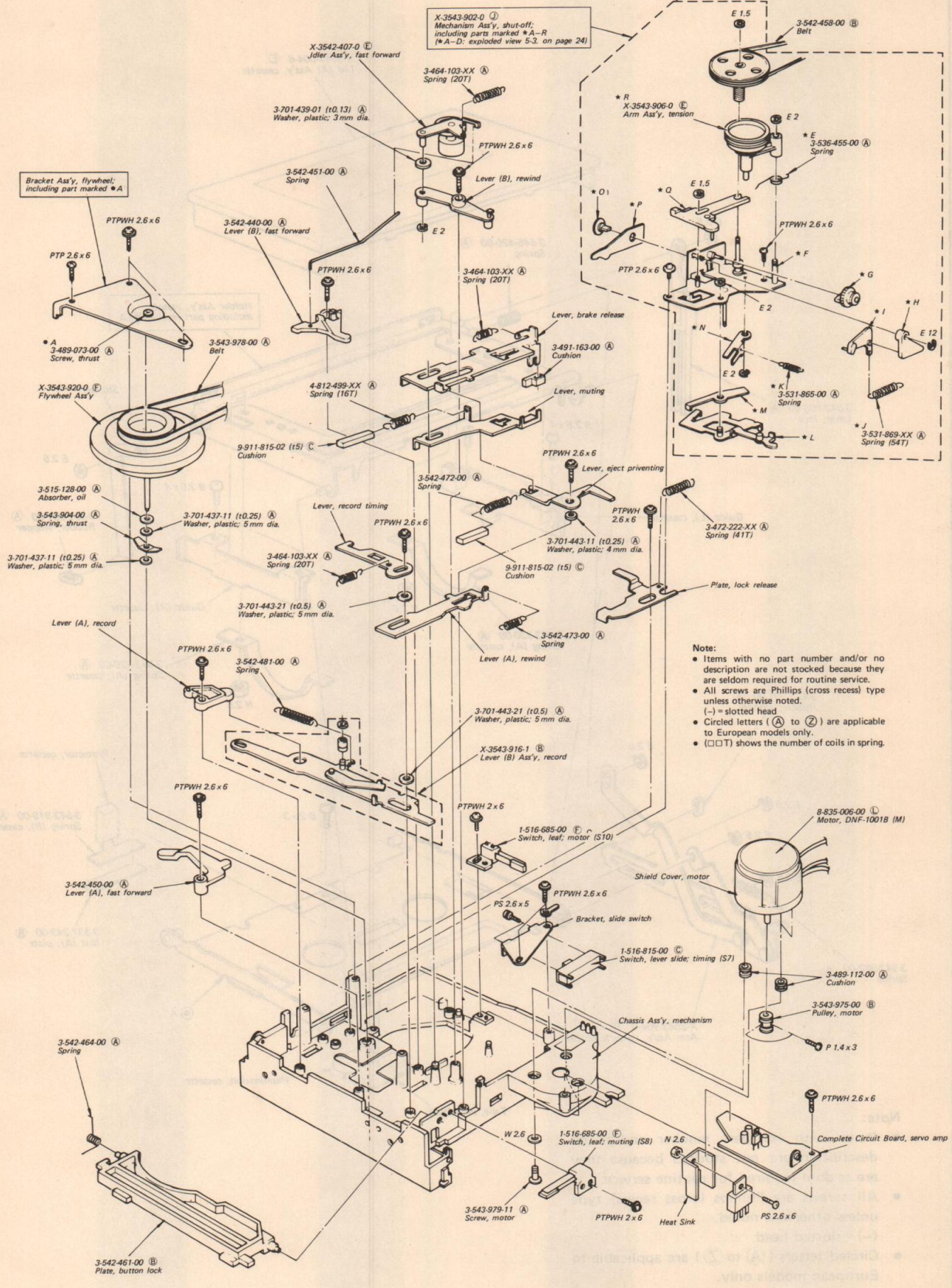
3

4

5

Bracket Ass'y, flywheel; including part marked *A

X-3543-902-0
Mechanism Ass'y, shut-off; including parts marked *A-R (A-D, exploded view 5-3, on page 24)



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

8-835-006-00 Motor, DNF-1001B (M)

Shield Cover, motor

3-489-112-00 Cushion

3-543-975-00 Pulley, motor

P 1.4 x 3

Complete Circuit Board, servo amp

PTPWH 2.6 x 6

Heat Sink

PS 2.6 x 6

1-516-815-00 Switch, lever slide; timing (S7)

Bracket, slide switch

PS 2.6 x 5

1-516-885-00 Switch, leaf; muting (S8)

W 2.6

3-543-979-11 Screw, motor

8-835-006-00 Motor, DNF-1001B (M)

Shield Cover, motor

3-489-112-00 Cushion

3-543-975-00 Pulley, motor

P 1.4 x 3

Complete Circuit Board, servo amp

PTPWH 2.6 x 6

Heat Sink

PS 2.6 x 6

1-516-815-00 Switch, lever slide; timing (S7)

Bracket, slide switch

PS 2.6 x 5

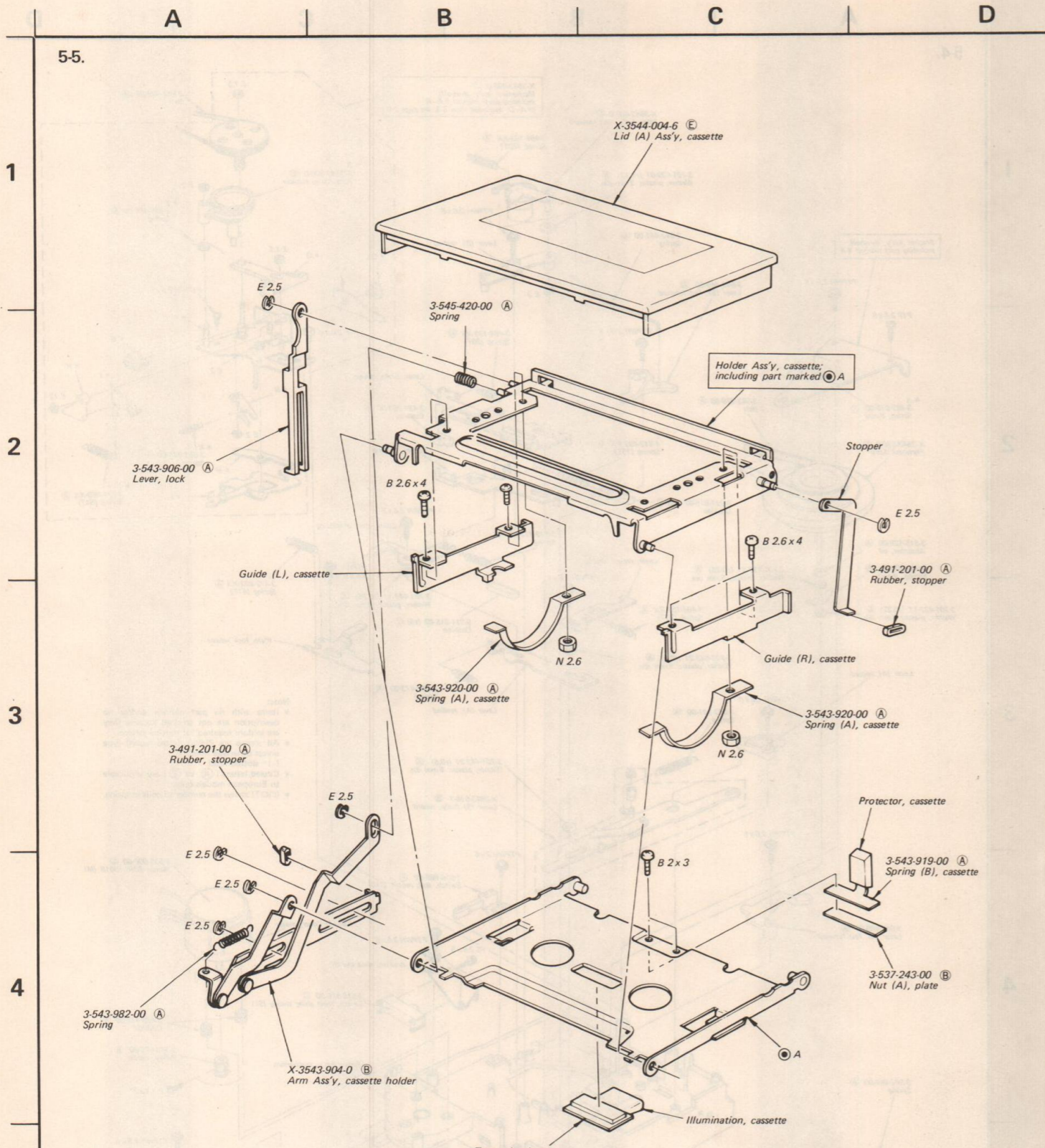
1-516-885-00 Switch, leaf; muting (S8)

W 2.6

3-543-979-11 Screw, motor

SECTION 6
ELECTRICAL PARTS LIST

5-5.



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.

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

Ref. No.	Part No.	Description
PRINTED CIRCUIT BOARDS		
1-585-405-00	(A)	LED
1-585-406-00	(B)	FIXED LINE OUT jack
1-585-407-00	(B)	HEADPHONES jack
SEMICONDUCTORS		
Transistors		
Q01	(C)	2SC1760
⇒ Q11	(C)	2SA678
⇒ Q12	(B)	2SC634A
⇒ Q13	(C)	2SA678
⇒ Q21,22	(B)	2SC634A
Q31	(C)	2SC1475
⇒ Q101,201	(B)	2SC632A
⇒ Q102,202	(B)	2SC632A
⇒ Q301-303	(B)	2SC632A
⇒ Q401-403	(B)	2SC634A
⇒ Q304-310	(B)	2SC634A
⇒ Q404-410	(B)	2SC632A
⇒ Q311,411	(B)	2SC632A
⇒ Q312,412	(C)	2SA678
⇒ Q501,601	(B)	2SC634A
⇒ Q551,651	(B)	2SC634A
⇒ Q561,661	(B)	2SC634A
⇒ Q1001	(C)	2SC1760
⇒ IC1001	(F)	CX-065A
Diodes		
⇒ D01	(B)	EQB01-21
⇒ D02,03	(B)	10E2
D04	(C)	SIRB-10
⇒ D11	(B)	EQB01-24
D21,22	(C)	SLP24B
⇒ D301,401	(B)	1S1555
D302,402	(B)	1T22A

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

Ref. No.	Part No.	Description
D303,403	(B)	1S1555
⇒ D304,404	(B)	1S1555
⇒ D561,661	(B)	1T22A
⇒ D563,663	(B)	1S1555
COILS		
L101,201	1-407-212-XX	(A) 33 mH, microinductor
L102,202	1-407-240-00	(B) 22 mH, variable inductor
L501,601	1-407-211-XX	(A) 27 mH, microinductor
L502,602	1-407-203-XX	(A) 5.6 mH, microinductor
L503,603	1-407-199-XX	(B) 2.7 mH, microinductor
L504,604	1-407-198-XX	(A) 2.2 mH, microinductor
TRANSFORMERS		
T1	1-442-084-00	Power (Canadian model)
	1-442-807-00	(M) Power (AEP, E model)
T31	1-433-132-11	(B) Osc
T551,651	1-427-284-00	(B) Headphone
CAPACITORS		
All capacitors are in μF and electrolytic unless otherwise noted. 50WV or less are not indicated except for electrolytics. $\text{pF} = \mu\mu\text{F}$		
C01	1-121-361-11	(B) 470 35V
C02	1-121-733-11	(B) 470 25V
C03	1-123-066-11	(B) 1000 25V
C04	1-121-416-11	(A) 100 25V
C05	1-121-944-11	(E) 1000 16V
C11	1-121-410-11	(B) 47 25V
C12	1-121-398-11	(A) 10 25V
C22	1-121-392-11	(A) 3.3 25V
C31	1-131-214-11	(B) 0.68 35V tantalum
C32	1-108-358-12	(A) 0.018 mylar
C33	1-108-239-12	(A) 0.01 mylar
C34	1-129-710-11	(B) 0.0047 630V polyethylene
C41	1-121-391-11	(A) 1 50V

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

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

Ref. No.	Part No.	Description
C102,202	1-121-395-11 (A) 4.7	25V
C103,203	1-101-918-11 (A) 0.001	ceramic
C104,204	1-121-395-11 (A) 4.7	25V
C105,205	1-121-395-11 (A) 4.7	25V
C106,206	1-121-409-11 (A) 47	16V
C107,207	1-101-888-11 (A) 68p	ceramic
C108,208	1-108-567-12 (A) 0.0033	mylar
C109,209	1-108-563-12 (B) 0.0022	mylar
C110,210	1-108-569-12 (B) 0.0039	mylar
C111,211	1-121-416-11 (A) 100	25V
C301,401	1-102-111-11 (A) 270p	ceramic
C302,1,402-11	1-102-106-11 (A) 100p	ceramic
C303,403	1-121-915-11 (A) 4.7	25V
C304,404	1-102-820-11 (A) 330	ceramic
C305,405	1-102-963-11 (A) 33p	ceramic
C306,406	1-121-651-11 (A) 10	16V
C307,407	1-121-404-11 (A) 33	25V
C308,408	1-102-106-11 (A) 100p	ceramic
C309,409	1-108-595-12 (B) 0.047	mylar
C310,410	1-121-410-11 (B) 47	25V
C311,411	1-108-571-12 (A) 0.0047	mylar
C312,412	1-102-114-11 (A) 470p	ceramic
C313,413	1-121-911-11 (B) 0.47	50V
C314,414	1-121-414-11 (A) 100	10V
C315,415	1-102-959-11 (A) 22p	ceramic
C316,416	1-121-352-11 (A) 47	10V
C317,417	1-121-398-11 (A) 10	25V
C318,418	1-121-392-11 (A) 3.3	25V
C319,419	1-108-581-12 (B) 0.012	mylar
C320,420	1-108-579-12 (A) 0.01	mylar
C321,421	1-108-597-12 (B) 0.056	mylar
C322,422	1-108-573-12 (A) 0.0056	mylar
C323,423	1-102-959-11 (A) 22p	ceramic
C324,424	1-121-651-11 (A) 10	16V
C325,425	1-108-234-12 (A) 0.0047	mylar
C326,426	1-121-986-11 (A) 2.2	50V
C327,427	1-108-567-12 (A) 0.0033	mylar
C328,428	1-121-960-11 (A) 3.3	25V
C329,429	1-121-398-11 (A) 10	25V
C330,430	1-121-416-11 (A) 100	25V

Ref. No.	Part No.	Description
C501,601	1-108-251-12 (B) 0.1	mylar
C502,602	1-121-392-11 (A) 3.3	25V
C503,603	1-121-391-11 (A) 1	50V
C504,604	1-121-651-11 (A) 10	16V
C505,605	1-121-395-11 (A) 4.7	25V
C506,606	1-107-037-11 (A) 82p	500V silvered mica
C507,607	1-108-587-12 (B) 0.022	mylar
C508,608	1-108-589-12 (B) 0.027	mylar
C509,609	1-108-362-12 (B) 0.082	mylar
C510,610	1-108-591-12 (B) 0.033	mylar
C511,611	1-108-361-12 (A) 0.056	mylar
C512,612	1-141-010-XX (B) Trimmer	
C551,651	1-108-244-12 (A) 0.033	mylar
C552,652	1-121-392-11 (A) 3.3	25V
C561,661	1-121-651-11 (A) 10	16V
C562,662	1-121-450-11 (A) 2.2	50V
C563,663	1-121-391-11 (A) 1	50V
C1001	1-121-415-11 (A) 100	16V
C1002	1-121-651-11 (A) 10	16V
C1003	1-108-550-12 (A) 0.082	mylar
C1004	1-108-583-12 (B) 0.015	mylar
C1005	1-121-651-11 (A) 10	16V
C1006	1-121-409-11 (A) 47	16V

RESISTORS

All resistors are in ohms. Common 1/4W carbon resistors are omitted. Check schematic diagram for values.

RV101,201	1-224-907-00 (E) 20 k x 2, variable; REC LEVEL
RV301,401	1-224-645-XX (B) 10 k, adjustable
RV302,402	1-224-906-00 (D) 20 k x 2, variable; PHONES LEVEL/LINE OUT
RV501,601	1-224-646-XX (B) 22 k, adjustable
RV561,661	1-224-644-XX (B) 4.7 k, adjustable
RV1001	1-224-635-11 (B) 22 k, adjustable

Ref. No.	Part No.	Description
SWITCHES		
S1,2	1-516-367-XX (C) Pushbutton, REC/PB	
S3	1-552-040-00 (E) Lever Slide, INPUT SELECT/REC MUTE	
S4,5	1-552-038-00 (D) Lever Slide, DOLBY NR, EQ	
S6	1-552-039-00 (C) Lever Slide, BIAS	
S7	1-516-815-00 (C) Lever Slide, timing	
S8	1-516-685-00 (F) Leaf, muting	
S9	1-516-693-00 Pushbutton, POWER (Canadian model)	
	1-516-855-00 (E) Pushbutton, POWER (AEP, E model)	
S10	1-516-685-00 (F) Leaf, motor	
JACKS		
J1,2	1-507-525-00 (D) MIC	
J3	1-507-439-00 (B) HEADPHONES	
CNJ1	1-536-501-00 (D) Jack Ass'y, LINE IN, LINE OUT-VARIABLE REC/PB (AEP, E model)	
	1-507-531-00 Jack Ass'y, LINE IN, LINE OUT-VARIABLE (Canadian model)	
CNJ2	1-507-526-00 (B) 2p, LINE OUT-FIXED	

MISCELLANEOUS

CP	1-231-057-31 (B) Encapsulated Component (AEP, E model)
	1-231-341-00 Encapsulated Component (Canadian model)
EH	8-825-506-00 (C) Head, erase; EF135-36
F1	1-532-079-00 (A) Fuse, 160 mA (AEP, E model)
M	8-835-006-00 (L) Motor, DNF-1001B
ME1,2	1-520-250-00 (K) Meter, VU
PL1,2	1-518-273-00 (B) Lamp, VU meter
PL3	1-518-115-XX (B) Lamp, 6V 35 mA
RPH	8-825-584-00 (L) Head, record/playback; PF145-3602A

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

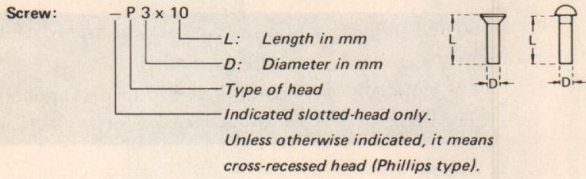
Ref. No.	Part No.	Description
1-509-546-00 (C) Connector, 3-p; ac input (AEP, E model)		
1-534-986-XX Cord, power (Canadian model)		
1-552-026-00 (E) Voltage Selector (AEP, E model)		

ACCESSORIES & PACKING MATERIALS

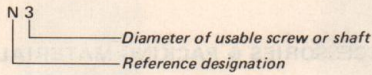
Part No.	Description
X-3544-013-2 (B) Cushion Ass'y	
X-3701-018-2 (A) Tips Ass'y, head cleaning	
1-534-049-31 (D) Cord, connection; RK-74H	
1-534-754-00 Cord, power; parallel-blade plug (E model)	
1-551-216-00 Cord, power; euro-plug (E model)	
3-429-126-00 (B) Bag, plastic	
3-550-630-00 (A) Bag, plastic	
3-550-731-00 (E) Carton (AEP model)	
3-550-732-00 Carton (Canadian, E model)	
3-550-733-00 (B) Spacer (AEP model)	
3-550-734-00 Holder, power cord; euro-plug (E model)	
3-770-227-11 (F) Manual Instruction (AEP model)	
3-770-227-31 Manual Instruction (Canadian model)	
3-794-063-31	

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

HARDWARE NOMENCLATURE



Nut, Washer, Retaining ring:



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		braizer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self-tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 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	