

# M-101/101B

M-101 (Panel: Silver)

**US Model**  
**Canadian Model**  
**E Model**

M-101B (Panel: Black)

**US Model**



## MICRO CASSETTE-CORDER

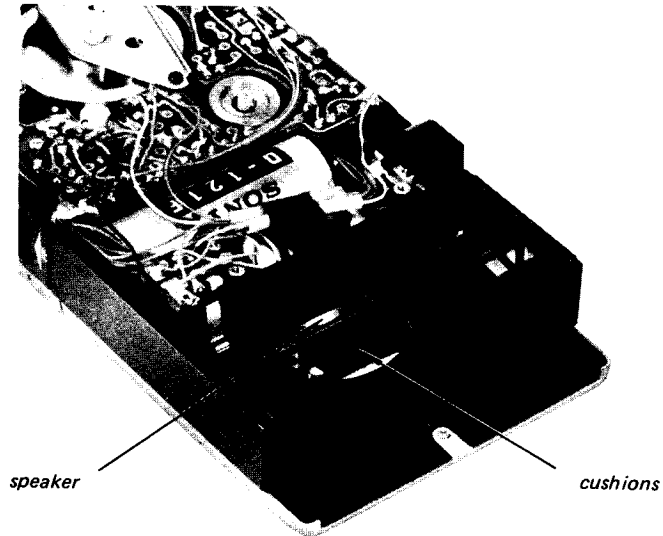
### SPECIFICATIONS

<b>Power Requirements:</b>	3V dc Battery size-AA (IEC Designation R6). 2 pcs Rechargeable Battery Pack BP-31 (optional)	<b>Input:</b>	MIC (mini jack) Maximum sensitivity: 0.2 mV (-72dB) Impedance: Low-impedance microphone
	120 V ac, 60 Hz with Sony AC Power Adaptor AC-31 (optional) (US, Canadian model) 110, 120, 220 or 240 V ac, 50/60 Hz with Sony AC Power Adaptor AC-32 (optional) (E model)	<b>output:</b>	EARPHONE (mini jack) Load impedance: 8Ω earphone or more than 10 kΩ
<b>Power Consumption:</b>	5 W ac with Sony AC Power Adaptor AC-31 (US, Canadian model) 7.2 W ac (50Hz) 6.8 W ac (60Hz) with Sony AC Power Adaptor AC-32 (E model)	<b>Speaker:</b>	4.5 cm (1 3/4 inches) dia.
<b>Power Output:</b>	150 mW (max.)	<b>Dimensions:</b>	Approx. 64(w) x 26 (h) x 143 (H) mm 2 9/16 (w) x 1 1/16 (h) x 5 11/16 inches not including projecting parts and controls
<b>Recording System:</b>	2-track 1-channel monaural	<b>Weight:</b>	Approx. 350 g, 13 oz including batteries
<b>Tape Speed:</b>	2.4 cm/s (1 5/16 ips)		
<b>Fast Winding Time:</b>	Approx. 1 minute 30 seconds with Sony Micro cassette MC-60		
<b>Frequency Response:</b>	200 - 7,000 Hz		
<b>Battery Life:</b>	Continuous recording hours: Approx. 2 hours with Sony long-life battery size-AA Approx. 4 hours with Eveready Heavy Duty Battery No. 1215 Approx. 7.5 hours with Eveready Alkaline Battery No. E91		

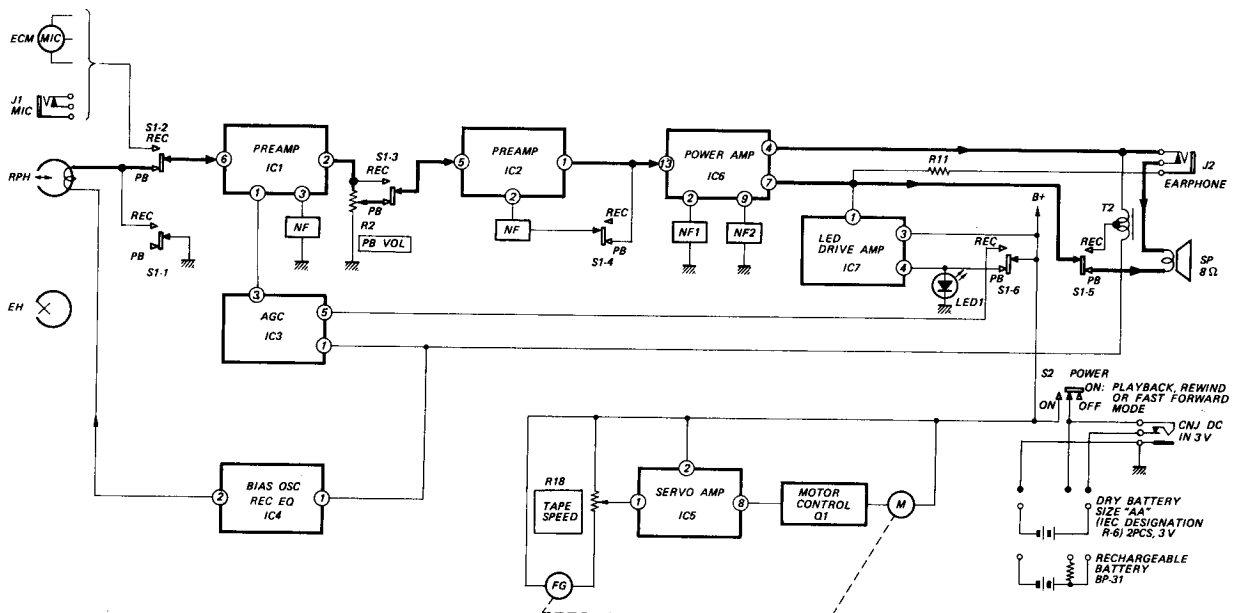
**SONY**  
**SERVICE MANUAL**

## SERVICING NOTE

- Never put a soldering iron on a thru-hole or a terminal of IC for long time, otherwise the thru-hole connection will be cut or the terminals of IC will be detached from the circuit board.
- Remove parts as quickly as possible with a desoldering metal braid or something else.
- When unsoldering an IC, nip the terminal of IC with a pair of tweezers or something else to radiate heat.
- After replacing the speaker, be sure to stick the cushions on the speaker as shown below.



## SECTION 1 BLOCK DIAGRAM



SECTION 2  
DISASSEMBLY

M-101 (Panel: Silver)  
M-101B (Panel: Black)

**UPPER PANEL (A) REMOVAL**

③ 7-627-551-59 (B)  
7-627-551-53 (S)  
P 1.4 x 3

② 7-627-551-39 (B)  
7-627-551-33 (S)  
P 1.4 x 5

④ upper panel (A)

① 7-627-551-69 (B)  
7-627-551-63 (S)  
P 1.4 x 3.5  
Never lose the cushion

(S): M-101  
(B): M-101B

**LOWER PANEL REMOVAL**

② 7-627-551-69 (B)  
7-627-551-63 (S)  
P 1.4 x 3.5

③ lower panel

① 7-627-551-69 (B)  
7-627-551-63 (S)  
P 1.4 x 3.5

(S): M-101  
(B): M-101B

**REC BUTTON REMOVAL**

① Make a hole at the center of the ornament (B) with a heated soldering iron.

soldering iron

③ REC button

ornament (B)

② Insert a Phillips screwdriver into the hole and remove the screw P 2 x 4.5 (Part No. 7-627-553-53).

**ORNAMENT (C) REMOVAL**

④ 7-627-850-63  
P 1.4 x 4

② 7-627-850-09  
P 1.4 x 2

③ 7-627-850-29  
P 1.4 x 3

⑤ ornament (C)

① 7-627-850-09  
P 1.4 x 2

**CASSETTE LID REMOVAL**

③ cassette lid

② 7-627-551-69 (B)  
7-627-551-63 (S)  
P 1.4 x 3.5

① 7-627-551-63 (S)  
7-627-551-69 (B)  
P 1.4 x 3.5

(S): M-101  
(B): M-101B

**UPPER PANEL (B) REMOVAL**

④ upper panel (B)

③ 7-627-551-19 (B)  
7-627-551-13 (S)  
P 1.4 x 2

① battery case

② 7-627-551-19 (B)  
7-627-551-13 (S)  
P 1.4 x 2

(S): M-101  
(B): M-101B

51-69 (B)  
51-63 (S)  
3.5

0-29

51-19 (B)  
51-13 (S)  
2

### AUDIO AMP BOARD REMOVAL

① 7-627-850-29  
P 1.4 x 3

② audio amp board

**<NOTE>**  
WITH CARE: These portions are fragile.

power switch

record/playback switch

Before installing the audio amp board, set the power switch to off and record/playback switch to playback.

### MOTOR REMOVAL

② 7-627-850-29  
P 1.4 x 3

① 7-627-850-29  
P 1.4 x 3

③ motor

### RECORD TRANSFORMER BOARD REMOVAL

① 7-627-850-29  
P 1.4 x 3

② record transformer board

### CASSETTE HOLDER REMOVAL

② 7-627-850-29  
P 1.4 x 3

① 7-627-850-29  
P 1.4 x 3

③ cassette holder

eject spring

Be sure to put the eject springs on the cassette holder as shown below before installing the cassette holder.

eject spring

### DC-IN-3 V CONNECTOR REMOVAL

② 7-627-850-29  
P 1.4 x 3

④ DC IN 3 V connector

SW1.4

DC IN 3 V connector

C20

③ Unsolder C20.

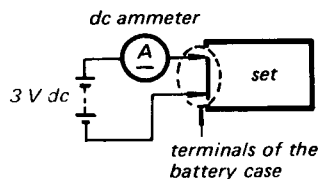
① 7-627-851-03  
P 2 x 3.5

# SECTION 3

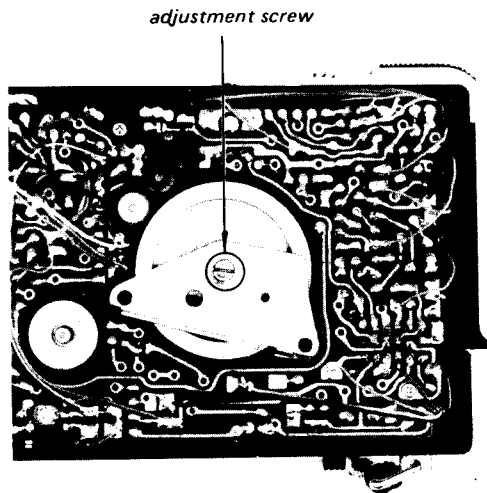
## ADJUSTMENTS

### 3-1. MECHANICAL ADJUSTMENT AND MEASUREMENTS

#### 1. Flywheel Thrust Play Adjustment — playback mode —



1. Loosen the adjustment screw, and turn it clockwise carefully.
2. Stop turning it when the current suddenly increases and back it  $\frac{1}{8}$  turn.
3. Make sure that the belt is clean and installed without twist.
4. Secure the adjustment screw with locking compound.



#### 2. Torque Measurement

Power source: 3 V dc  
Keep the set horizontally.

Torque	SONY Torque Meter	Permissible Reading
Forward	CQ103M	4~8 g · cm (0.06~0.11 oz · inch)
Fast Forward and Rewind	CQ201M	11 g · cm (0.15 oz · inch)

#### 3. Wow and Flutter Measurement

Power source: 3 V dc  
Test tape: WS-24 (3 kHz, 0 dB)  
Permissible value: within 0.55 %

**3-2. ELECTRICAL 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, and do not use a magnetized screwdriver for adjustments).
3. After the adjustments, apply the locking compound to the adjusted parts.
4. The adjustments should be performed in the order listed in this service manual.

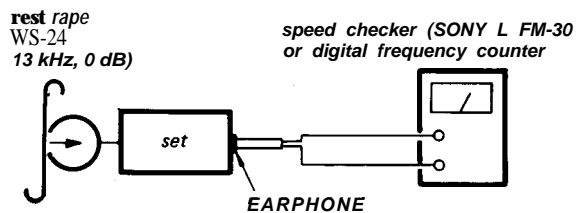
**1. Tape Speed Adjustment**

**Setting:**

Power source: 2.5 V dc

**Procedure:**

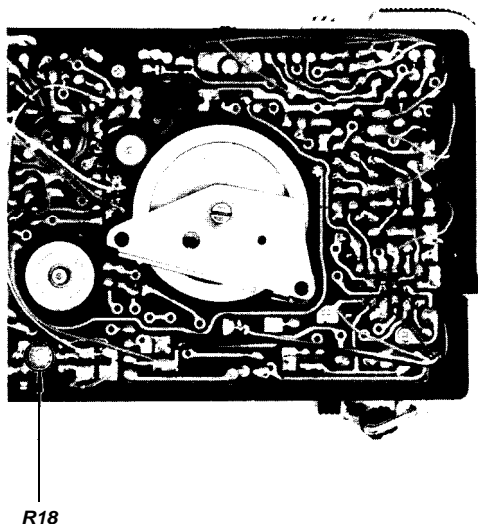
1. Mode: playback



- 1) Adjust R18 for 0 % on the speed checker or 3000 Hz on the digital frequency counter.
- 2) Following specifications should be satisfied with the power source from 2 V dc to 3.5 V dc.
- 3) Specifications:

Speed checker	Digital frequency counter
+3% - 2.5 %	2925 Hz ~ 3090 Hz
Frequency difference between beginning and end of tape should be within 1 % (30 Hz).	

**Adjustment Location:**



## 2. Record/Playback Head Azimuth Adjustment

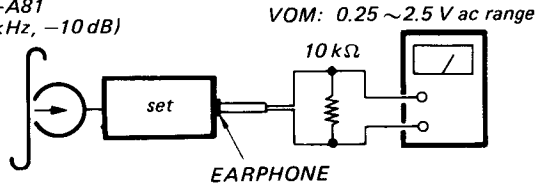
### Setting:

Power source: 2.5 V

### Procedure:

1. Mode: playback

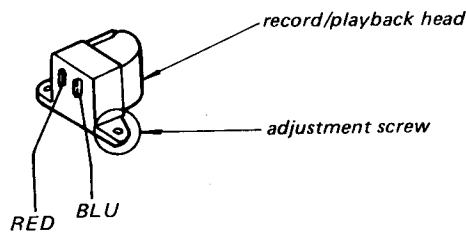
test tape  
S-2-A81  
(5 kHz, -10 dB)



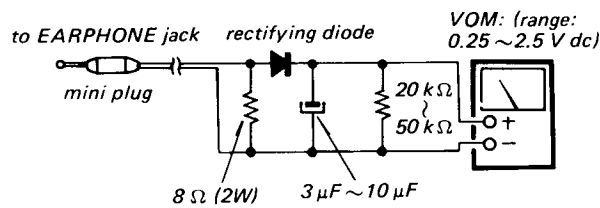
2. Turn the adjustment screw for the highest VOM reading.

**Note:** Several peaks may appear, take the highest.

### Adjustment Location:



**Note:** When 0.25 ~ 2.5 V ac range is not available on the VOM, use a network as shown below.



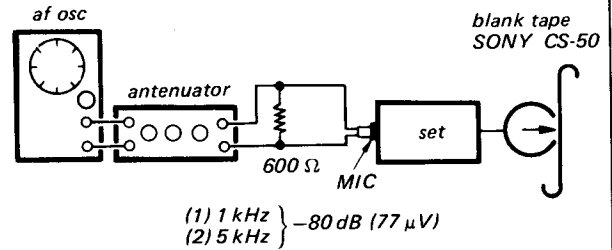
## 3. Record Bias Adjustment

### Setting:

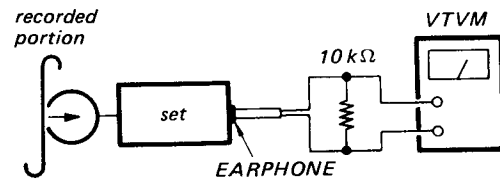
Power source: 2.5 V

### Procedure:

1. Mode: record



2. Mode: playback

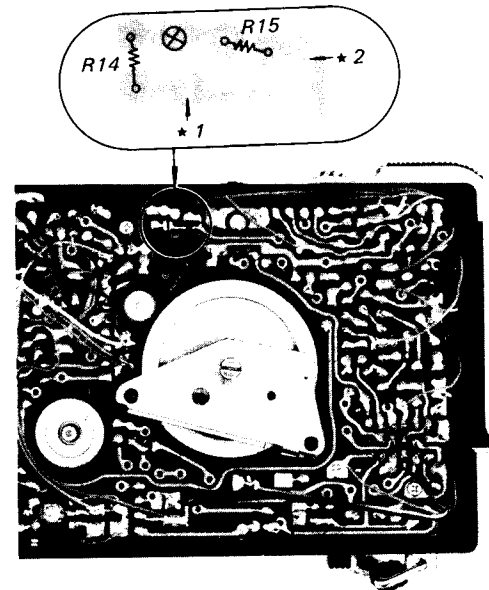


Record signal	VTVM reading
1 kHz	Adjust PB VOL control for -10 dB (0.25 V).
5 kHz	Should be $-15 \pm 2$ dB (0.11 ~ 0.17 V)

If necessary, change the soldering portions (\*1 and \*2).

Soldering Portion	5 kHz Level
*1 and *2	down
*2	↑
*1	up

### Adjustment Location:

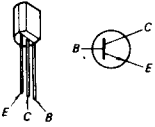


SECTION 4  
DIAGRAMS

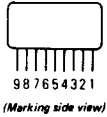
IC6 Q1 IC5 IC7

4-1. MOUNTING DIAGRAM  
— Conductor Side —

Q1: 2SC1859



IC1: BX283A



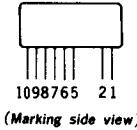
IC2: BX284



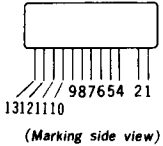
IC3: BX285  
IC4: BX286A



IC5: BX287



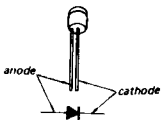
IC6: BX288



IC7: BX290



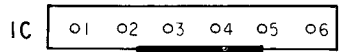
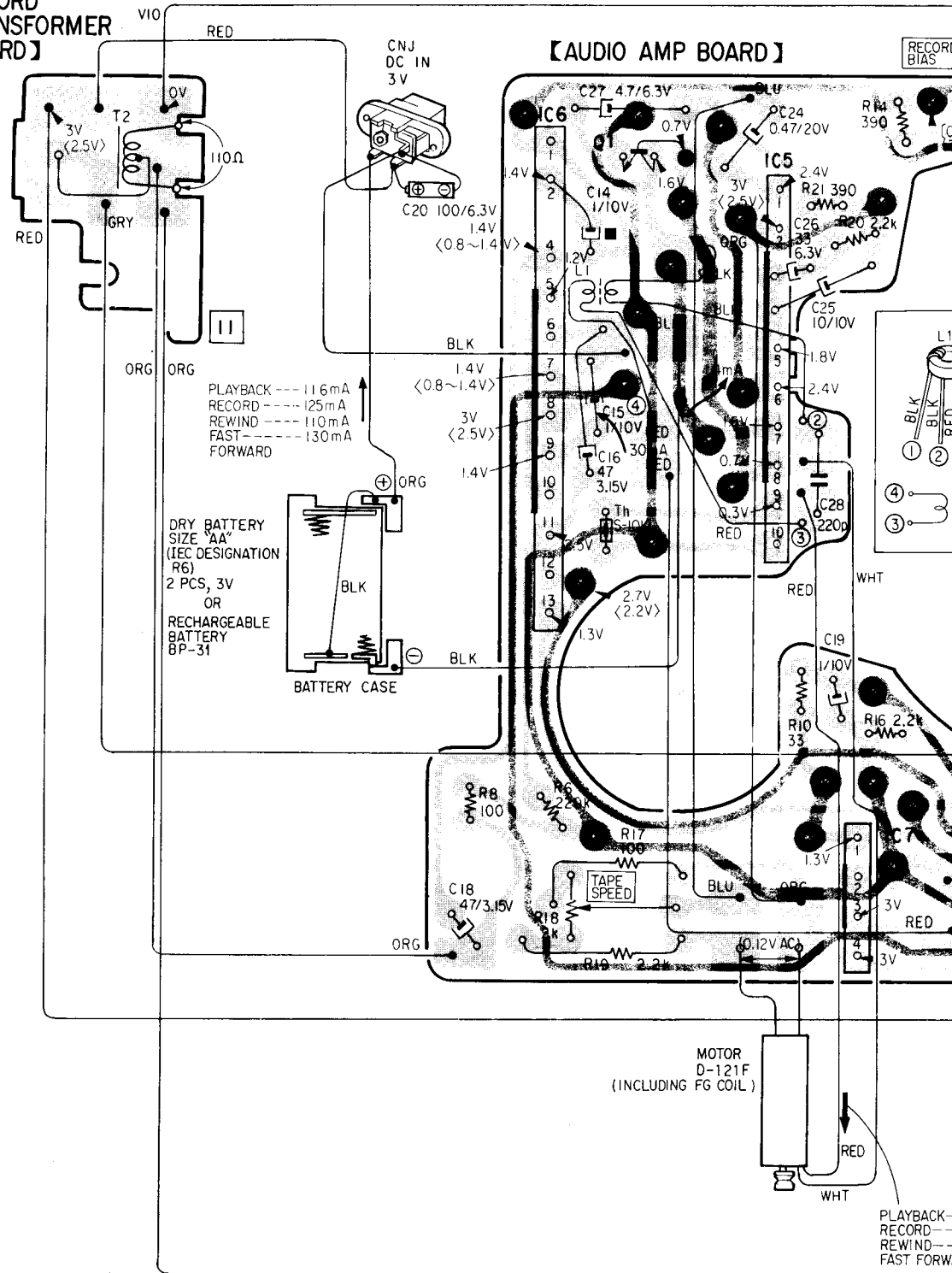
LED1: TLR109



Note:

- ■ : part mounted on the conductor side.
- ● — indicates lead wire connection on the conductor side.
- ○ — indicates lead wire connection through the component side.
- ⊗ indicates thru-hole.
- ■ : component side pattern
- ■ : B+ pattern
- DC resistance of transformer is measured on the mounted board. The average value is indicated.

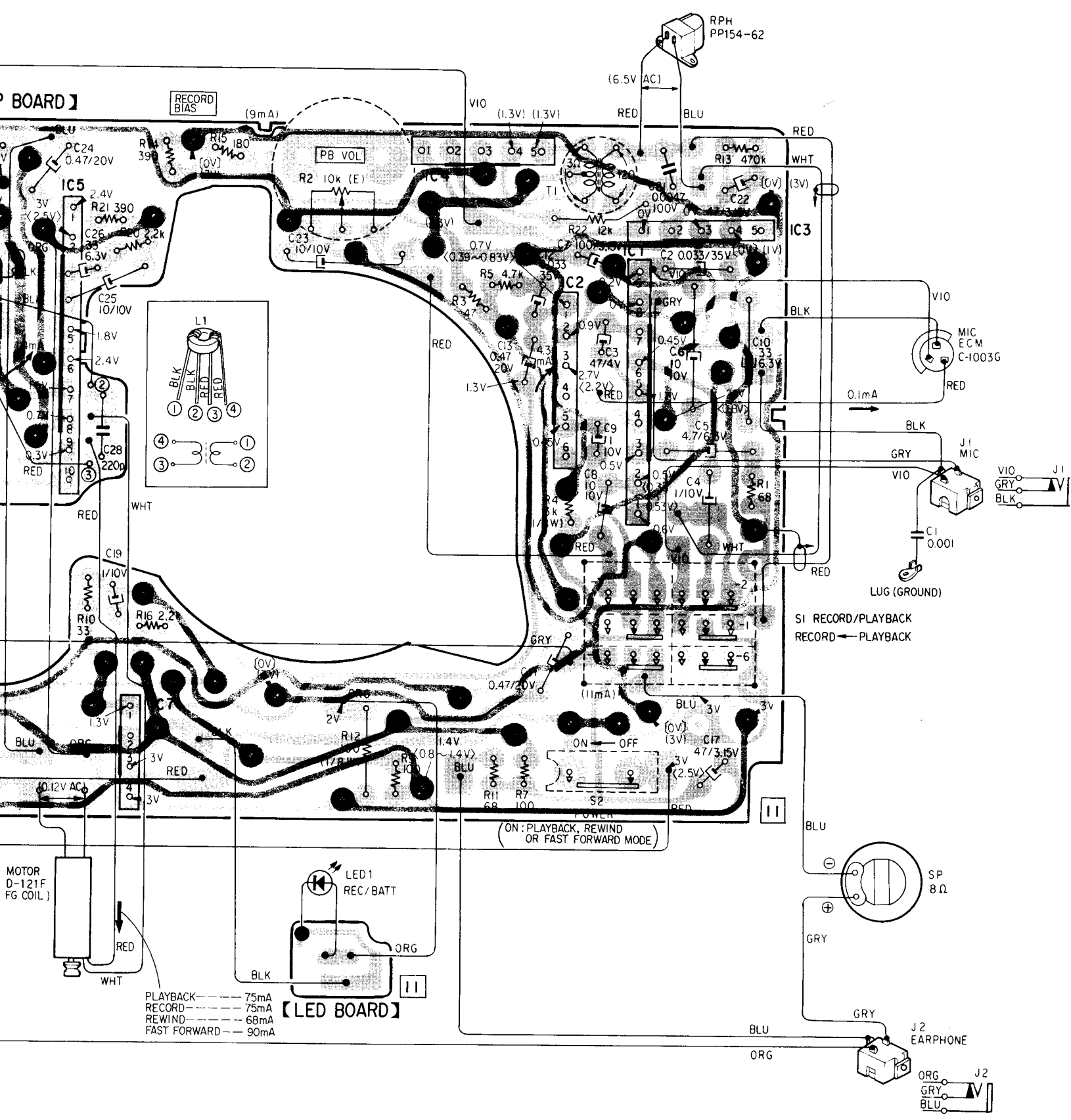
[ RECORD TRANSFORMER BOARD ]



MARKING SIDE



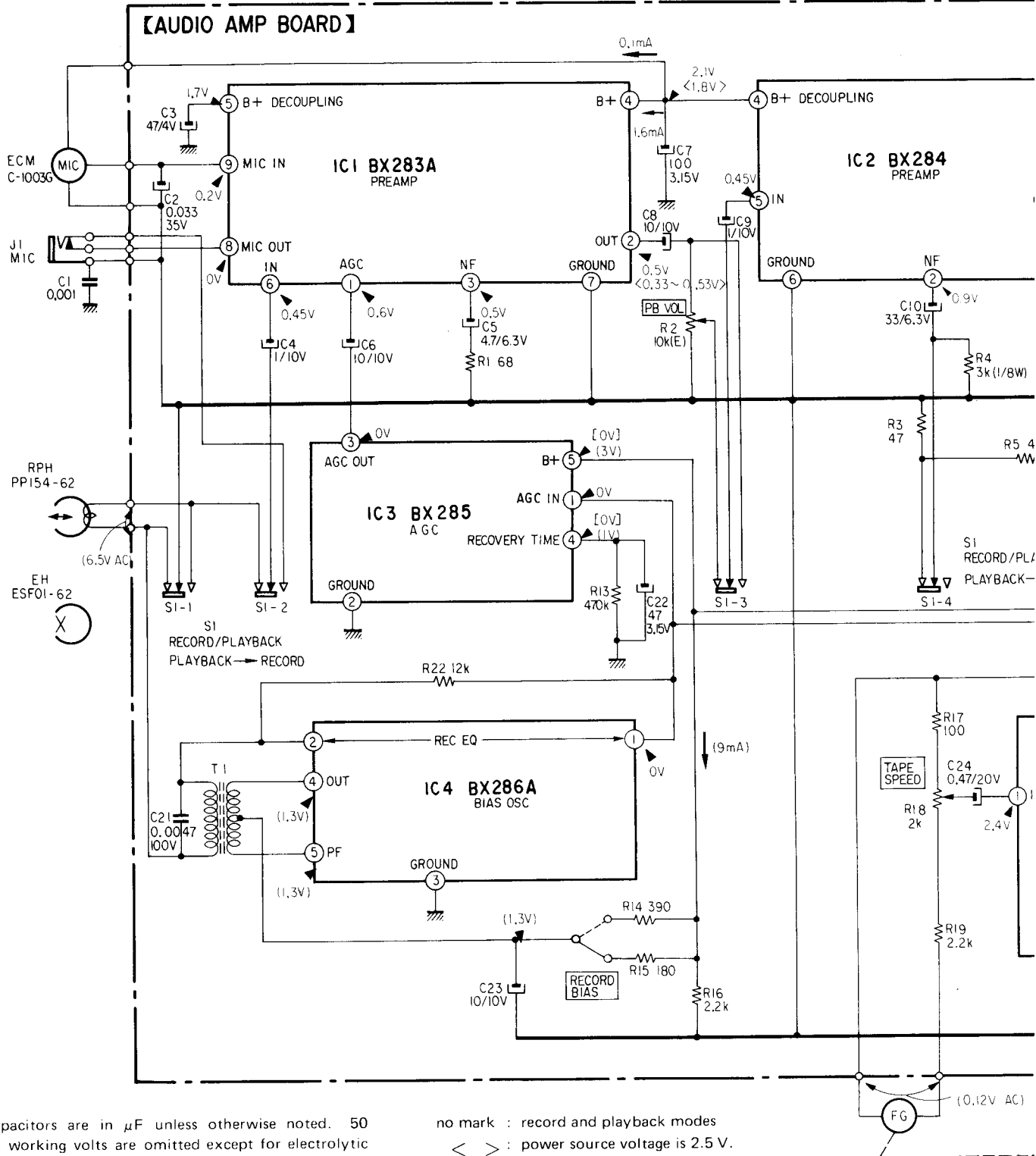
IC5 IC7 LED1 IC4 IC2 IC1 IC3



PLAYBACK-----75mA  
 RECORD-----75mA  
 REWIND-----68mA  
 FAST FORWARD---90mA

LED BOARD

4-2. SCHEMATIC DIAGRAM



Note:

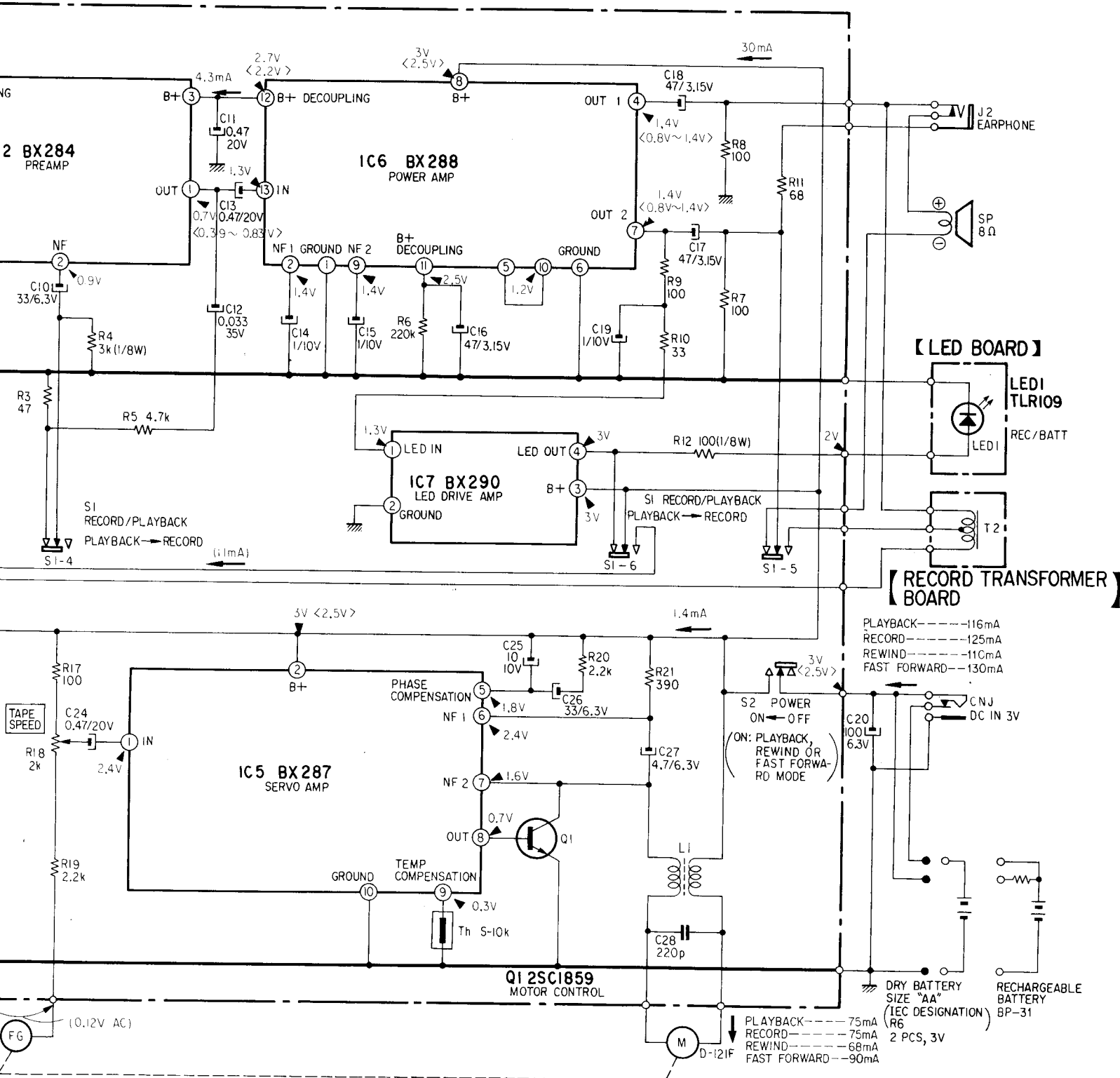
- All capacitors are in  $\mu\text{F}$  unless otherwise noted. 50 or less working volts are omitted except for electrolytic type.  $\rho = \mu\mu\text{F}$
- All resistors are in  $\Omega$ ,  $1/16\text{ W}$ , unless otherwise noted.  $k = 1,000$
- Voltages are DC with respect to ground unless otherwise noted. Readings are taken under no-signal conditions with a VOM ( $20\text{ k}\Omega/\text{v}$ ).

( ) : record mode  
 [ ] : playback mode

no mark : record and playback modes  
 < > : power source voltage is 2.5 V.

- AC voltage readings on bias oscillator circuit are taken with a VTVM.
- Switch Mode:

Ref. No.	Switch	Position
S1	RECORD/PLAYBACK	PLAYBACK
S2	POWER	OFF

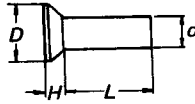


# SECTION 5

## EXPLODED VIEWS

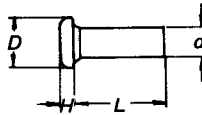
### DIMENSIONS OF SCREWS

Flat-countersunk-head screw



Part No.	Description	d (mm)	L (mm)	H (mm)	D (mm)	Color
7-627-451-13	K 1.4 x 2.5	1.4	2.5	0.45	2	silver
7-627-451-23	K 1.4 x 3	1.4	3	0.45	2	silver

Pan-head screw



Part No.	Description	d (mm)	L (mm)	H (mm)	D (mm)	Color
7-627-551-03	P 1.4 x 1.6	1.4	1.6	0.5	2	silver
7-627-551-13	P 1.4 x 2	1.4	2	0.5	2	silver
7-627-551-19						black
7-627-551-33	P 1.4 x 5	1.4	5	0.5	2	silver
7-627-551-39						black
7-627-551-43	P 1.4 x 1.4	1.4	1.4	0.5	2	silver
7-627-551-53	P 1.4 x 3	1.4	3	0.5	2	silver
7-627-551-63	P 1.4 x 3.5	1.4	3.5	0.5	2	silver
7-627-551-69						black
7-627-552-63	P 1.7 x 4.5	1.7	4.5	0.5	2.5	silver
7-627-553-53	P 2 x 4.5	2	4.5	0.6	3	silver
7-627-850-09	P 1.4 x 2	1.4	2	0.8	2.5	black
7-627-850-29	P 1.4 x 3	1.4	3	0.8	2.5	black
7-627-850-43	P 1.4 x 1.6	1.4	1.6	0.8	2.5	silver
7-627-850-53	P 1.4 x 3.5	1.4	3.5	0.8	2.5	silver
7-627-850-63	P 1.4 x 4	1.4	4	0.8	2.5	silver
7-627-851-03	P 2 x 3.5	2	3.5	1	3.5	silver
7-627-852-09	P 1.7 x 2.5	1.7	2.5	0.9	3	black
7-627-852-13	P 1.7 x 4	1.7	4	0.9	3	silver

A

B

C

5-1.

M-101

**CAUTION**

Be sure to use screws specified below.

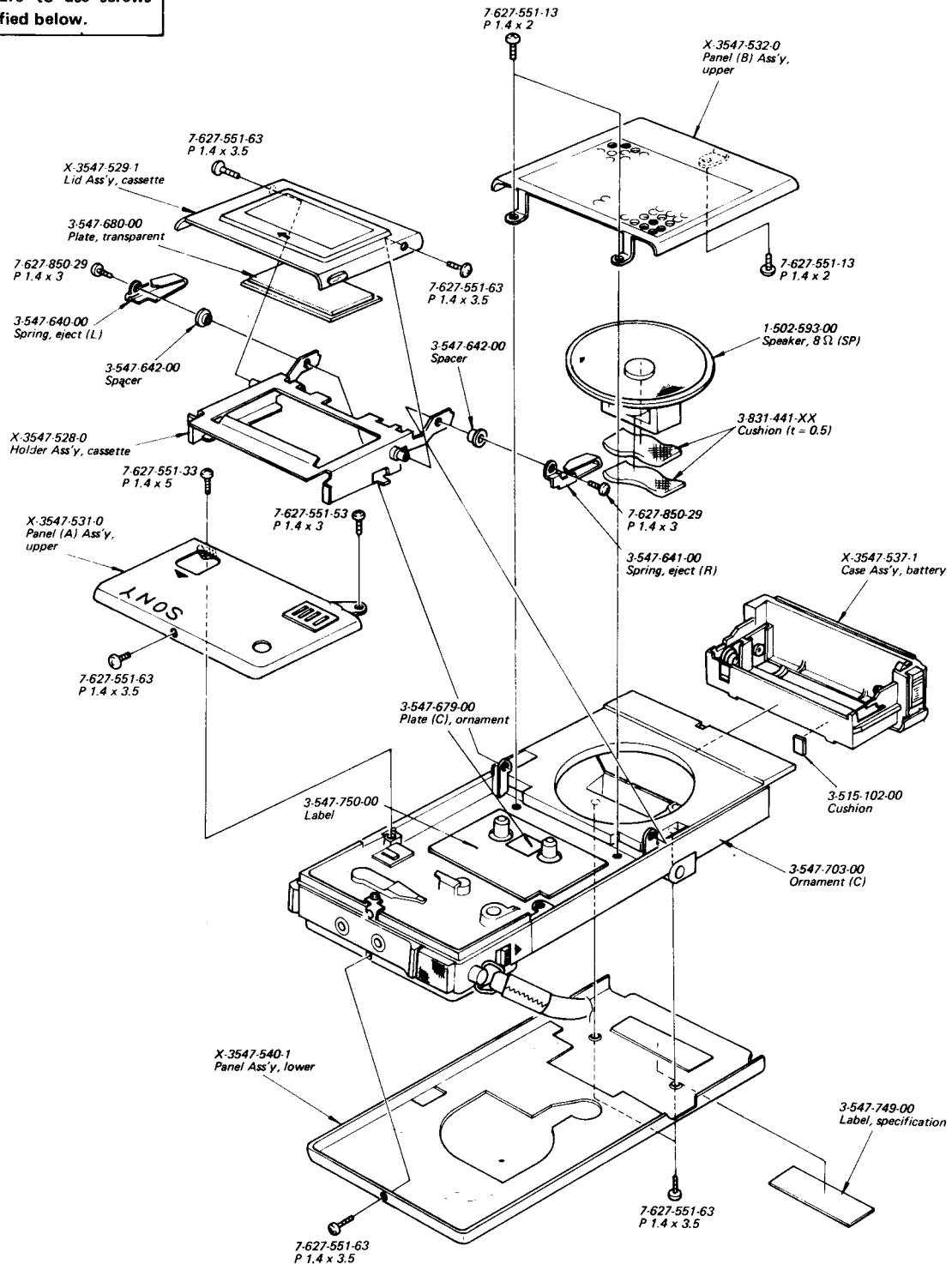
1

2

3

4

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

A B C

M-101B

5-2.

**CAUTION**  
Be sure to use screws specified below.

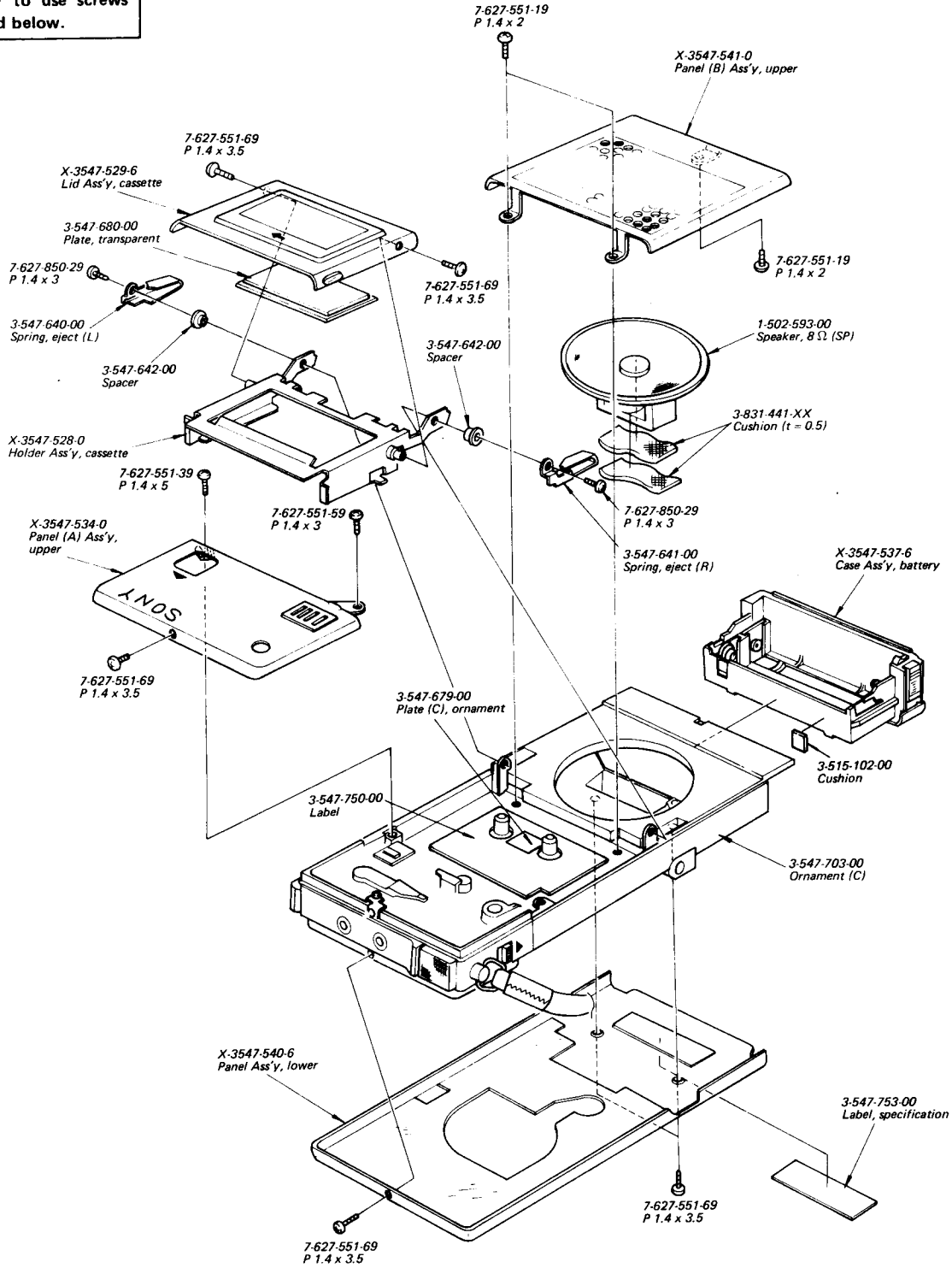
1

2

3

4

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

5-3.

**CAUTION**

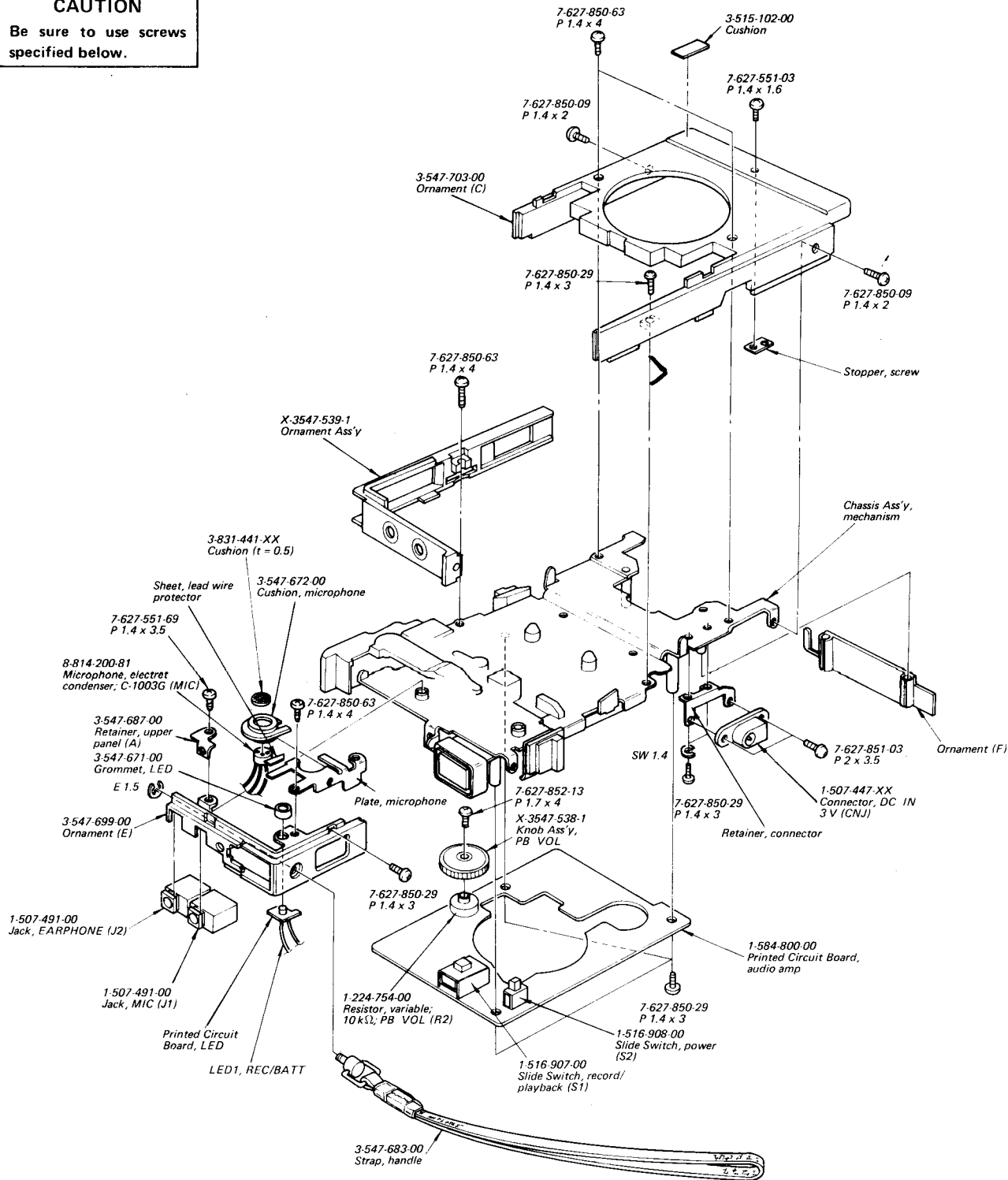
Be sure to use screws specified below.

1  
2  
3  
4  
5

A

B

C



**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

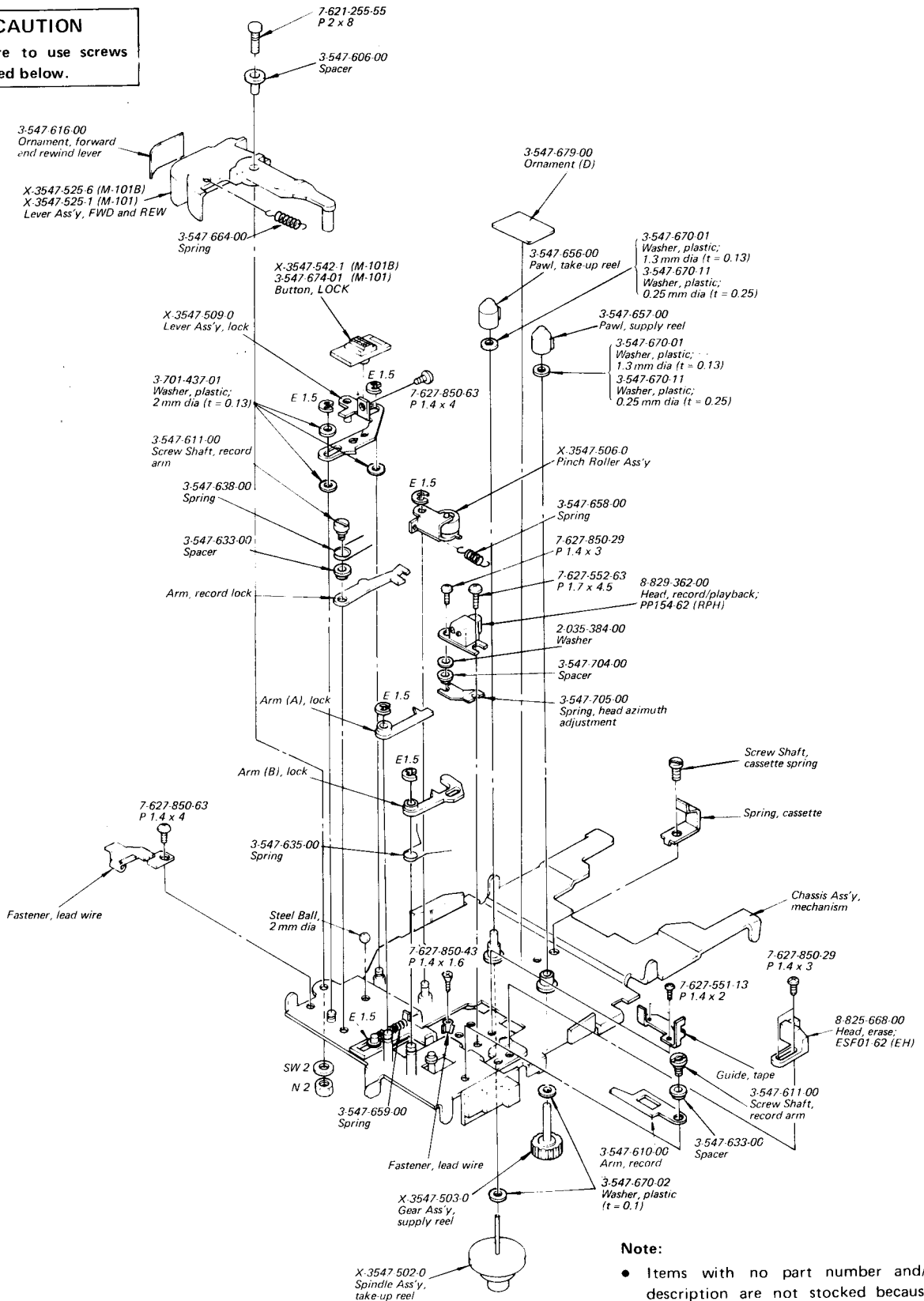
B

C

5-4.

**CAUTION**

Be sure to use screws specified below.

**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

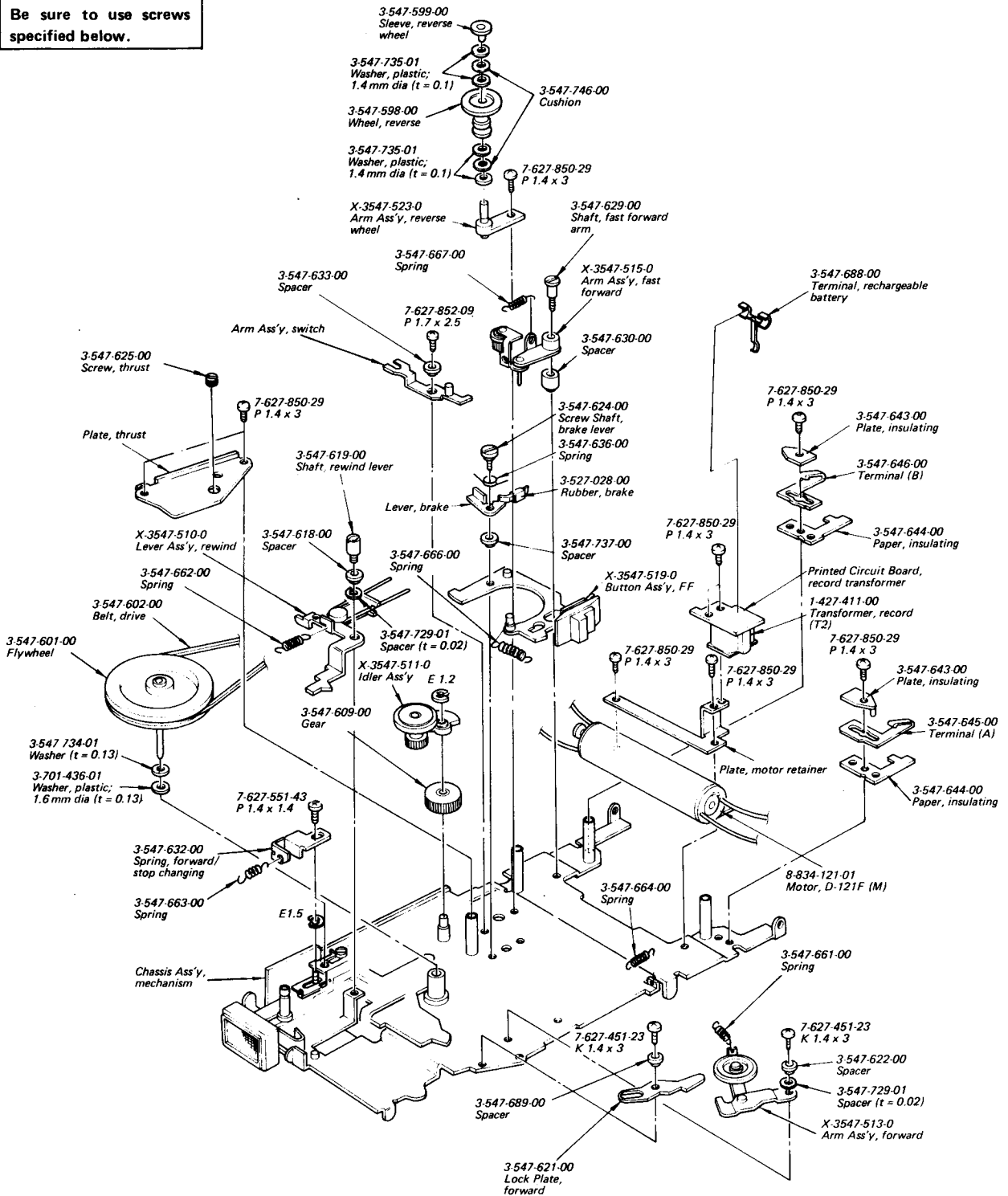
B

C

5-5.

**CAUTION**

Be sure to use screws specified below.

**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

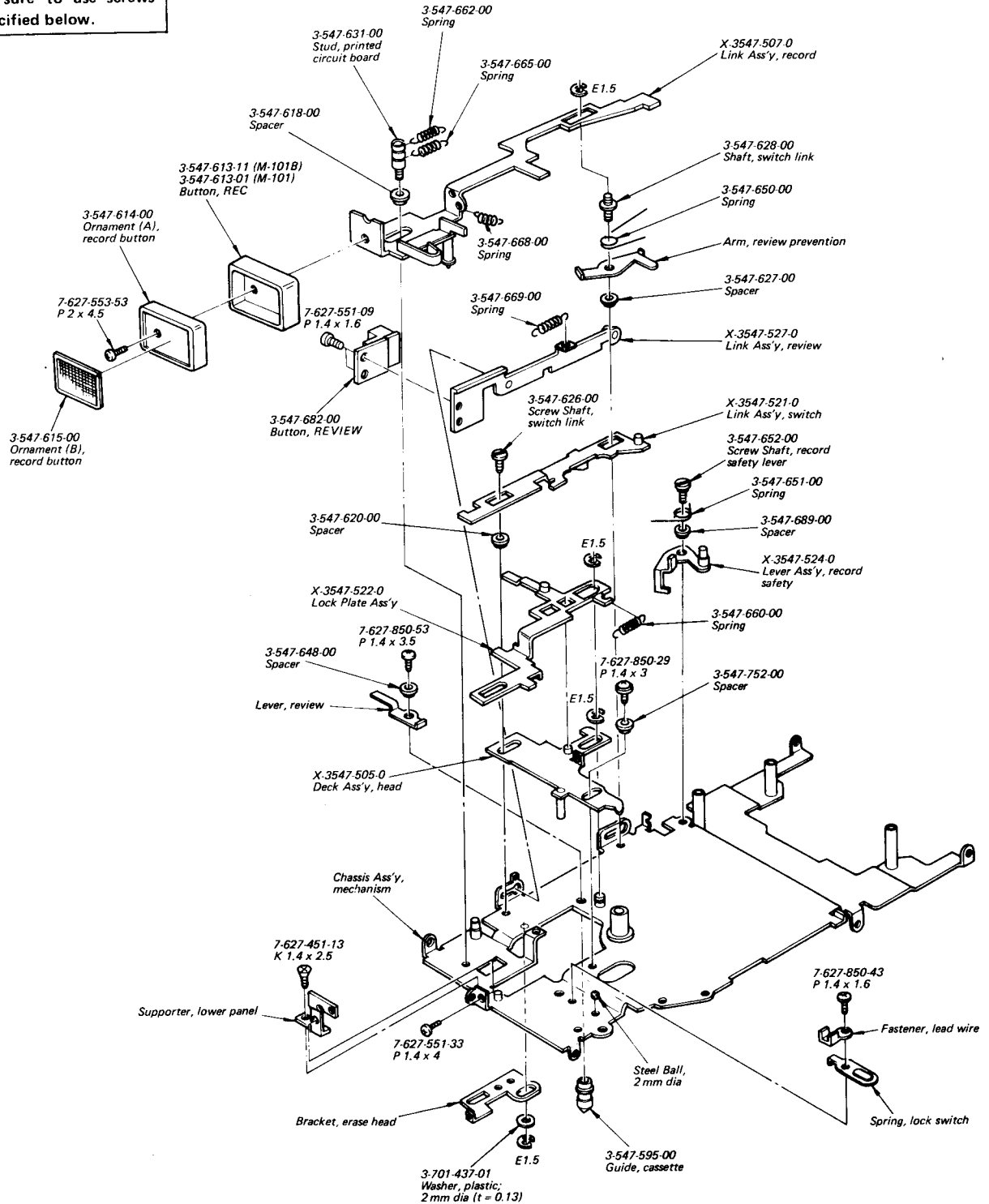
A

B

C

5-6.

**CAUTION**  
Be sure to use screws  
specified below.

**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

# SECTION 6

## ELECTRICAL PARTS LIST

<u>Ref. No.</u>	<u>Parr No.</u>	<u>Description</u>	
<b>PRINTED CIRCUIT BOARD</b>			
	1-584-800-00	Audio Amp	
<b>SEMICONDUCTORS</b>			
Q1		Transistor	2SC1859
IC1		IC	BX283A
IC2		IC	BX284
IC3		IC	BX285
IC4		IC	BX286A
IC5		IC	BX287
IC6		IC	BX288
IC7		IC	BX290
LED1		Diode	TLR109
Th	1-800-202-Xx	Thermistor	S-10k
<b>MICROINDUCTOR</b>			
L1	1-407-847-00	35 $\mu$ H	
<b>TRANSFORMERS</b>			
T1	1-433-191-00	Bias Osc	
T2	1-427-41 1-00	Record	
<b>CAPACITORS</b>			
All capacitors are in $\mu$ F and of tantalum unless otherwise noted. (p = $\mu$ $\mu$ F)			
C1	1-161-190-1 1	0.001	25 V ceramic (boundary layer)
c2	1-1 31-273-1 1	0.033	3.5 v
C3	1-131-288-1 1	47	4 v
c4	1-131-254-1 1		10v
C5	1-1 31-251-1 1	4.7	6.3V
C6	1-131-256-1 1	10	10v
C7	1-13 1-395-11	100	3.15v
C8	1-1 31-256-1 1	10	10V
c9	1-131-254-1 1		10v
C10	1-131-253-t 1	33	6.3 v

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	
C11	1-131-264-11	0.47	20 v
C12	1-131-273-11	0.033	35 v
C13	1-131-264-11	0.47	20 v
C14,15	1-131-254-11	1	10V
C16-C18	1-131-393-11	47	3.15v
C19	1-131-254-11	1	10v
C20	1-131-177-11	100	6.3V
c21	1-108-373-12	0.0047	100v mylar
c22	1-131-393-11	47	3.15 v
C23	1-1 31-256-11	10	10v
C24	1-1 31-264-11	0.47	20 v
C25	1-131-251-1 1	10	10v
C26	1-131-253-1 1	33	6.3 V
C27	1-131-251-11	4.7	6.3 V
C28	1-102-1 10-11	220 p	50 v ceramic
<b>RESISTORS</b>			
All resistors are in $\Omega$ , and 1/16 W carbon resistors unless otherwise noted.			
R1	1-210-353-11	68	
R2	1-224-754-00	10 k	variable, PB VOL
R3	1-210-395-1 1	47	
R4	1-246-484-1 1	3k	18 w
R5	1-209-773-1 1	4.7	
R6	1-21 0-840-1 1	220k	
R7-9	1-210-355-11	100	
R10	1-210-846-11	33	
R11	1-210-353-11	68	
R12	1-201-978-1 1	100	18 w composition
R13	1-210-844-1 1	470k	
R14	1-21 0-365-1 1	390	
R15	1-210-360-1 1	180	
R16	1-209-768-1 1	2.2k	
R17	1-210-355-1 1	100	
R18	1-224-727-00	2 k	adjustable
R19	1-209-768-1 1	2.2k	
R20	1-209-768-1 1	2.2 k	
R21	1-210-365-1 1	390	
R22	1-210-111-11	12k	

