

# TC-208

*USA Model*



## 8-TRACK 2 CHANNEL STEREO TAPE DECK

### SPECIFICATIONS

**Power Requirements:** AC 120 V, 60 Hz

**Power Consumption:** 35 W

**Track System:** 8-track 2 channel stereo

**Tape Size:** 8-track cartridge

**Tape Speed:** 9.5 cm/sec,  $3\frac{3}{4}$  ips

**Frequency Response:** 50 ~ 10000 Hz

**Signal-to-Noise Ratio:** 50 dB

**Wow and Flutter:** 0.25 % (RMS) weighted

**Distortion:** 3 %

**Output:** LINE OUT (2)  
normal output level: 0.775 V (0 dB)  
with 100 k $\Omega$  load  
load impedance: more than 10 k $\Omega$

**Semiconductors:** 6 transistors and 2 diodes

**Head:** 1 playback head

**Dimensions:** 222 (w) x 103 (h) x 242 (d) mm,  
 $8\frac{3}{4}$  (w) x  $4\frac{1}{16}$  (h) x  $9\frac{9}{16}$  (d) inches

**Weight:** 3.5 kg, 7 lb 12 oz

**Supplied Accessory:** Connection cord RK-74

**SONY®**  
**SERVICE MANUAL**

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*When ordering replacement parts, use PART NUMBERS listed in Parts List or shown in EXPLODED VIEWS.  
Parts List reference numbers should not be used.*

**Note:** All screws in the set are Phillips type (cross recess type) unless otherwise indicated.  
(-): slotted head

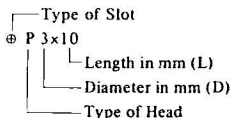
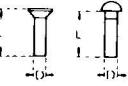
## CAUTION

*When replacing microswitch S401, cut the switch terminals short to avoid contacting the bracket.*

### Hardware Nomenclature

|                                                         |                                                                                     |                                                |                                                                                       |
|---------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>P</b> - Pan Head Screw . . . . .                     |  | <b>SC</b> - Set Screw . . . . .                |  |
| <b>PS</b> - Pan Head Screw with Spring Washer . . . . . |  | <b>E</b> - Retaining Ring (E Washer) . . . . . |  |
| <b>K</b> - Flat Countersunk Head Screw . . . . .        |  | <b>W</b> - Washer . . . . .                    |  |
| <b>B</b> - Binding Head Screw . . . . .                 |  | <b>SW</b> - Spring Washer . . . . .            |  |
| <b>RK</b> - Oval Countersunk Head Screw . . . . .       |  | <b>LW</b> - Lock Washer . . . . .              |  |
| <b>T</b> - Truss Head Screw . . . . .                   |  | <b>N</b> - Nut . . . . .                       |  |
| <b>R</b> - Round Head Screw . . . . .                   |  |                                                |                                                                                       |
| <b>F</b> - Flat Fillister Head Screw . . . . .          |  |                                                |                                                                                       |

|                                                                                      |                                                                                       |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| - Example -                                                                          |                                                                                       |
|  |  |

## SECTION 1 OUTLINE

### 1-1. EXTERNAL VIEWS

Case — Front —

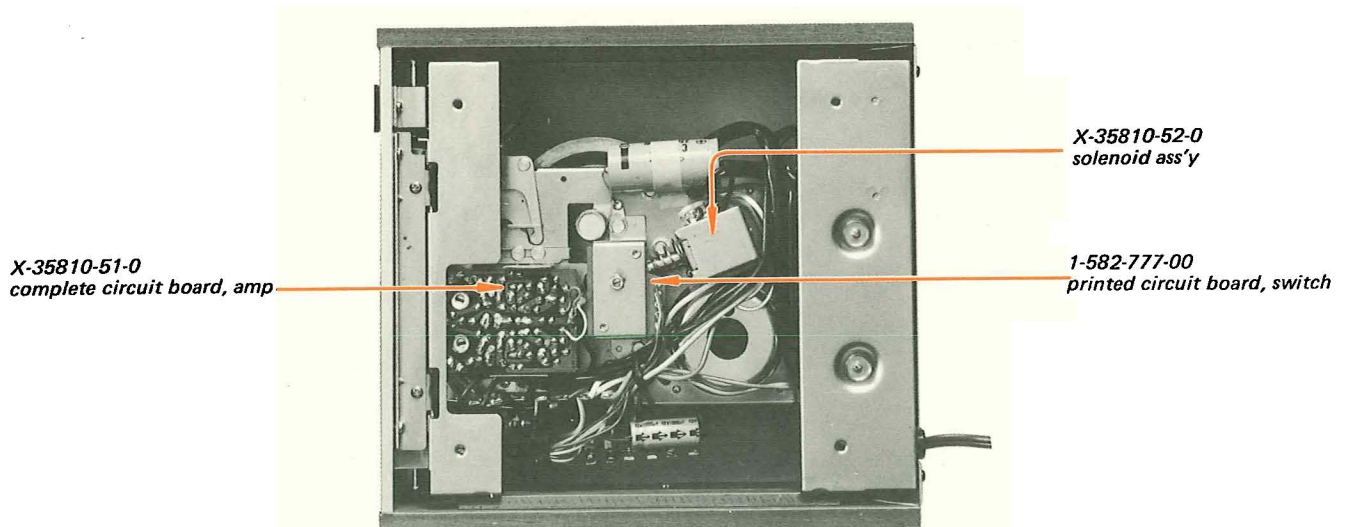


Case — rear —



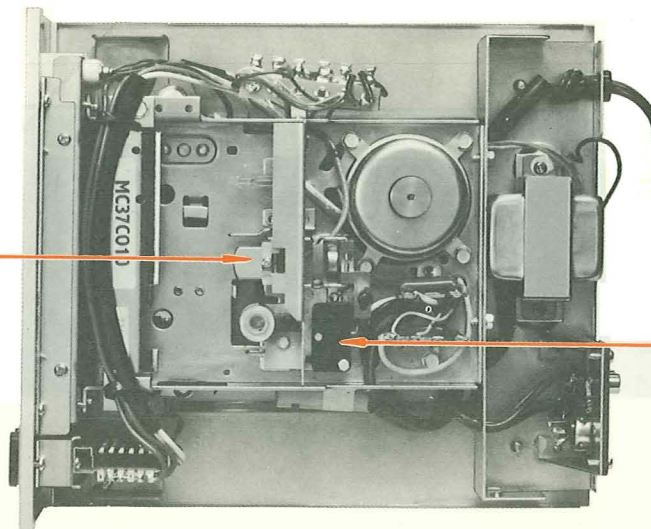
### 1-2. INTERNAL VIEWS

Chassis — bottom —



Chassis — top —

1-543-048-00  
head, playback



1-514-126-12  
switch, micro; power (S401)

## 1-3. SERVICE HINTS

### 1. Head Lead Wire Color

Head lead wire color of TC-810 is different from usual SONY tape recorders. L channel is red and R channel white. Be careful when you identify L channel or R channel with the lead wire color.

### 2. Track Indicator Lamps

When reinserting the lamps to lamp holders;

- 1) By pressing PROGRAM button, set the head to the highest position.
- 2) Insert the illuminated lamp to the top holder.

- 3) Insert the lamp illuminated by next press of PROGRAM button to the second holder from the top.
- 4) In the same way, insert the lamps to the third holder and the lowest holder.

### 3. REPEAT Button

With REPEAT button pressed, the unit does not change the track even if the tape sensing foil short-circuits the sensing poles. The track can be manually changed with PROGRAM button even if REPEAT button is pressed.

## SECTION 2

### ADJUSTMENTS

#### 2-1. ELECTRICAL ADJUSTMENTS

##### Precaution:

1. Clean the following parts with an alcohol moistened swab:
  - \* playback head
  - \* capstan
  - \* rubber belts
  - \* idlers
2. Demagnetize playback head with a head demagnetizer.
3. Do not use magnetized screwdriver for adjustments.
4. After adjustments, apply locking paint to the parts adjusted.
5. Adjustments should be performed in the order arranged in this service manual.
6. Adjustments and measurements should be performed for each channel with rated power supply voltage unless otherwise specified.

##### Test Equipment/Tools Required:

VTVM

non-magnetic screwdriver

empty cartridge

SONY test tapes

R-9-A1 (5 kHz, -10 dB)

R-9-T1 (1 kHz, 0 dB)

R-9-L1 (400 Hz, 0 dB)

resistor 100 k $\Omega$  (1/4 W)

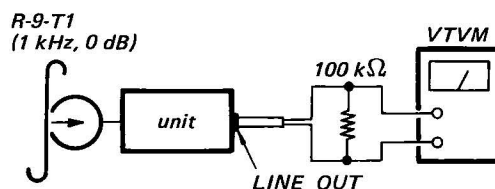
#### 1. Head Height Adjustment

##### Settings:

PROGRAM button: pushed so that lamp 3 illuminates.

##### Procedure:

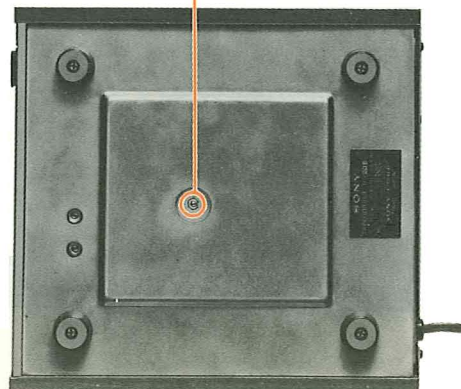
1. Place the unit horizontally.
2. Mode: playback



3. Loosen nut and adjust adjusting screw for the lowest VTVM reading.

##### Adjustment Location:

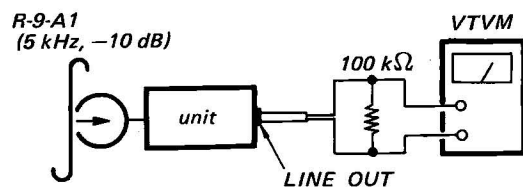
nut and adjusting screw



## 2. Head Azimuth Adjustment

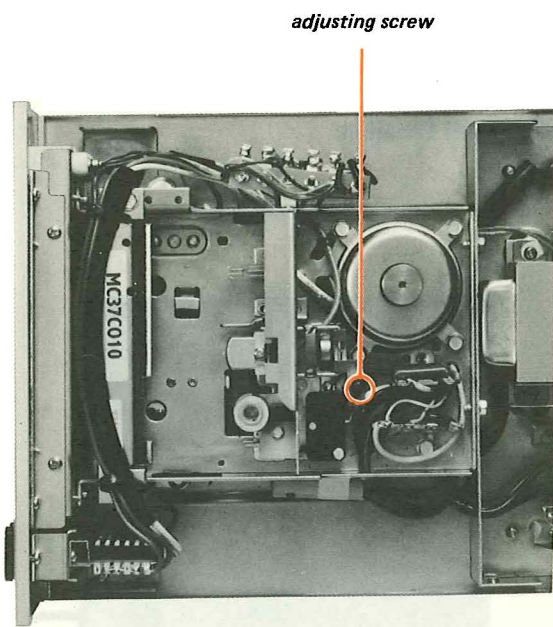
### Procedure:

1. Mode: playback



2. Adjust adjusting screw for the highest VTVM reading.

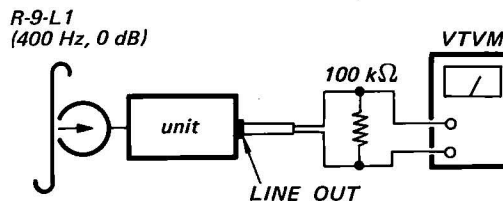
### Adjustment Location:



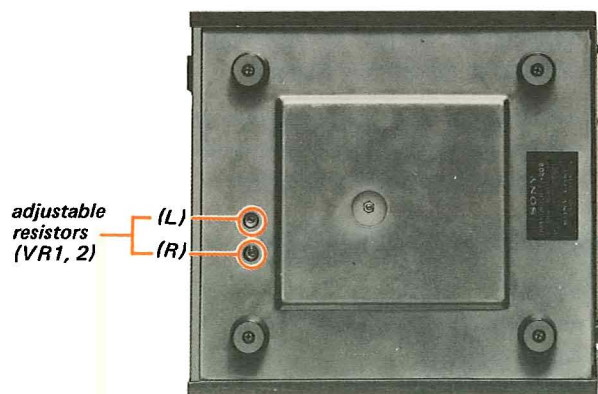
## 3. Playback Level Adjustment

### Procedure:

1. Mode: playback



2. Adjust adjustable resistors (VR1, 2) for 0 dB (0.775 V)  $\pm$  3 dB LINE OUT put level.

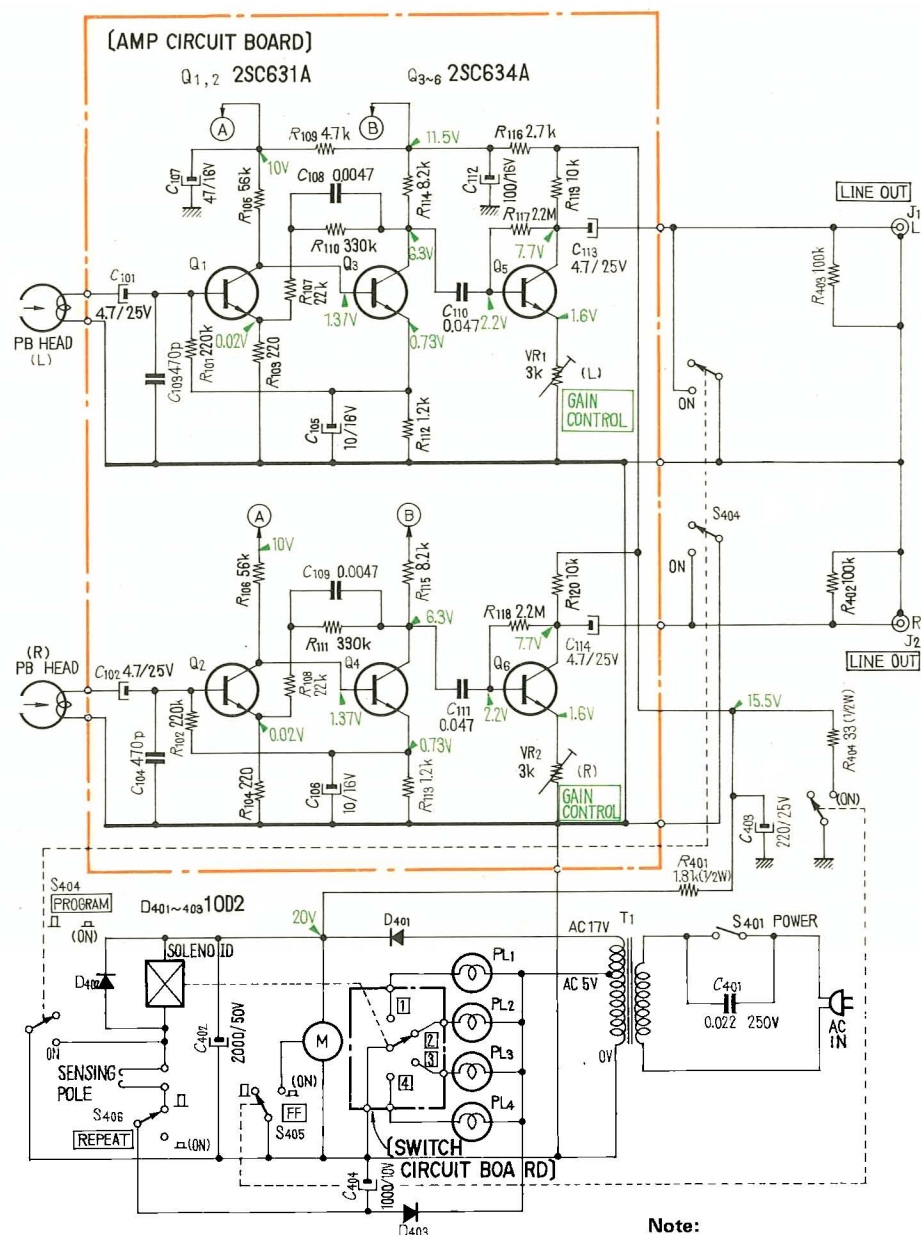


[illegible]

## SECTION 3

### DIAGRAMS

### 3-1. SCHEMATIC DIAGRAM

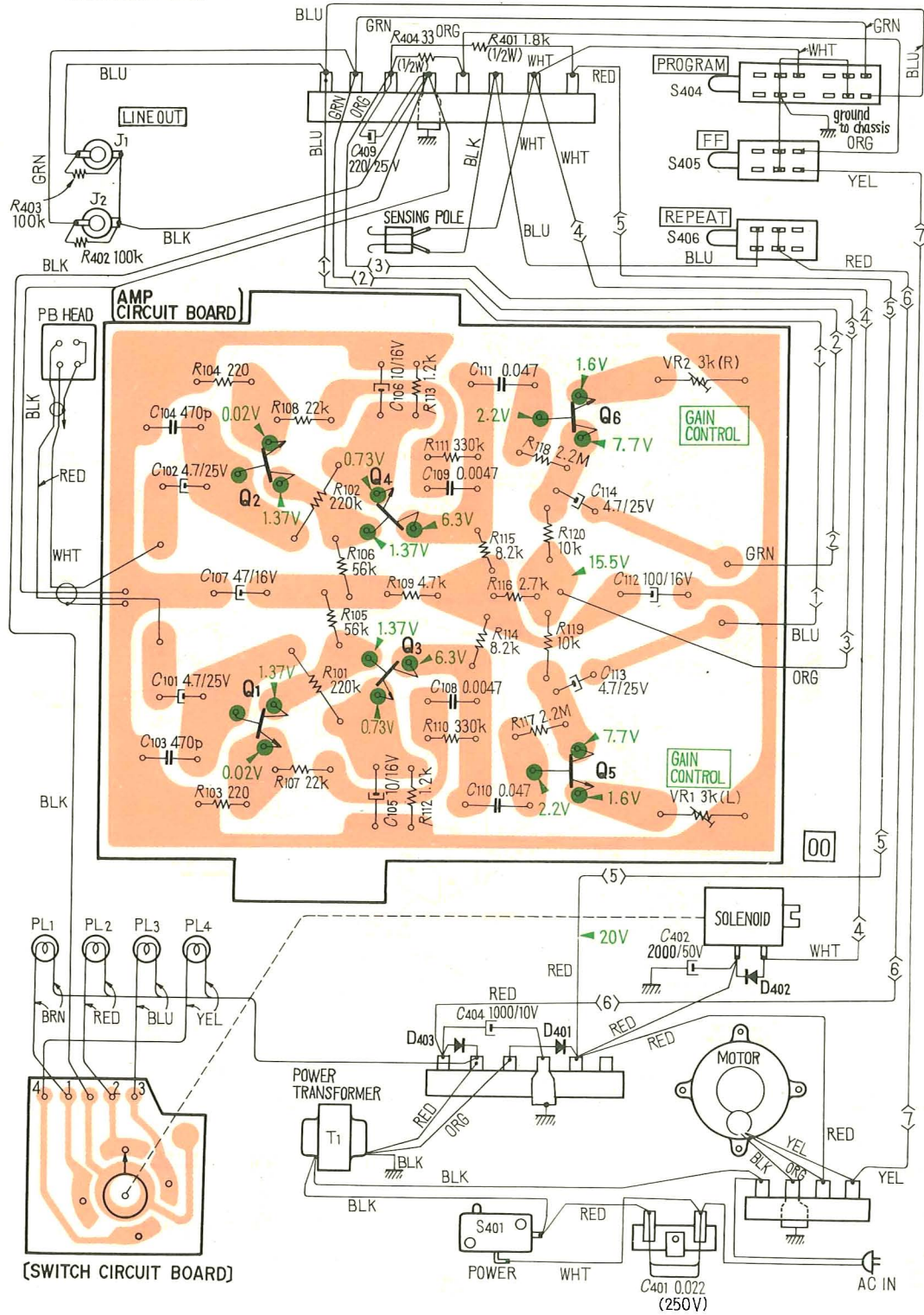


**Note:**

- All resistors and capacitors are in  $\Omega$  and  $\mu F$ , unless otherwise specified.
- Voltage values shown are measured with a voltmeter (DC 20 k $\Omega/V$ , AC 8 k $\Omega/V$ ) with cartridge loaded. Variations may be noted due to normal production tolerances.
-  : ground

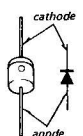
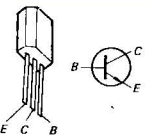
| Ref. No. | Switch  | Mode |
|----------|---------|------|
| S401     | power   | OFF  |
| S404     | PROGRAM | OFF  |
| S405     | FF      | OFF  |
| S406     | REPEAT  | OFF  |

### 3-2. MOUNTING DIAGRAM — Conductor Side —



Q1, 2: 2SC631A  
Q3, 4: 2SC634A  
Q5, 6: 2SC634A

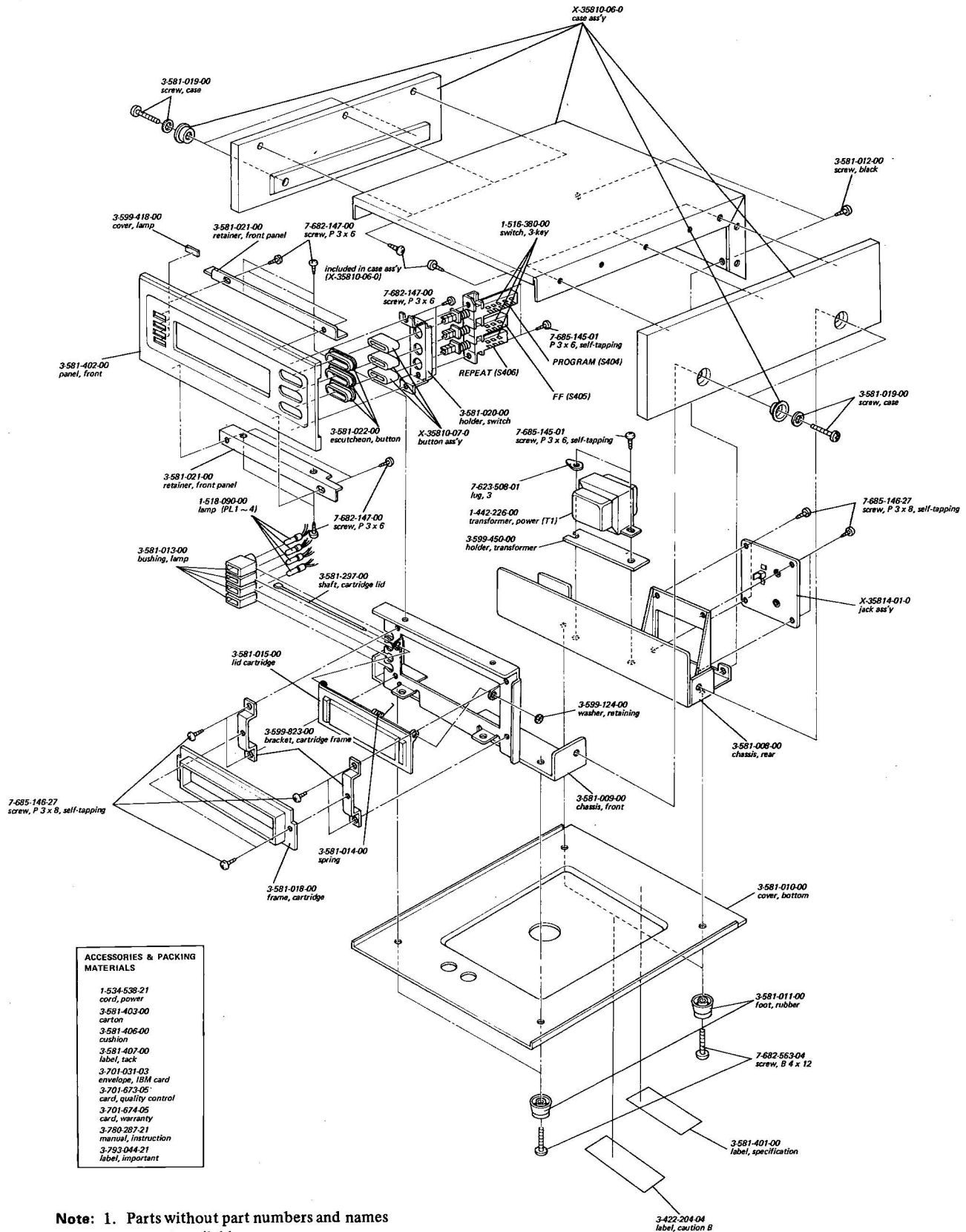
D401: 10D2  
D402: 10D2  
D403: 10D2



## SECTION 4

### EXPLODED VIEWS

#### 4-1. EXPLODED VIEW (I)

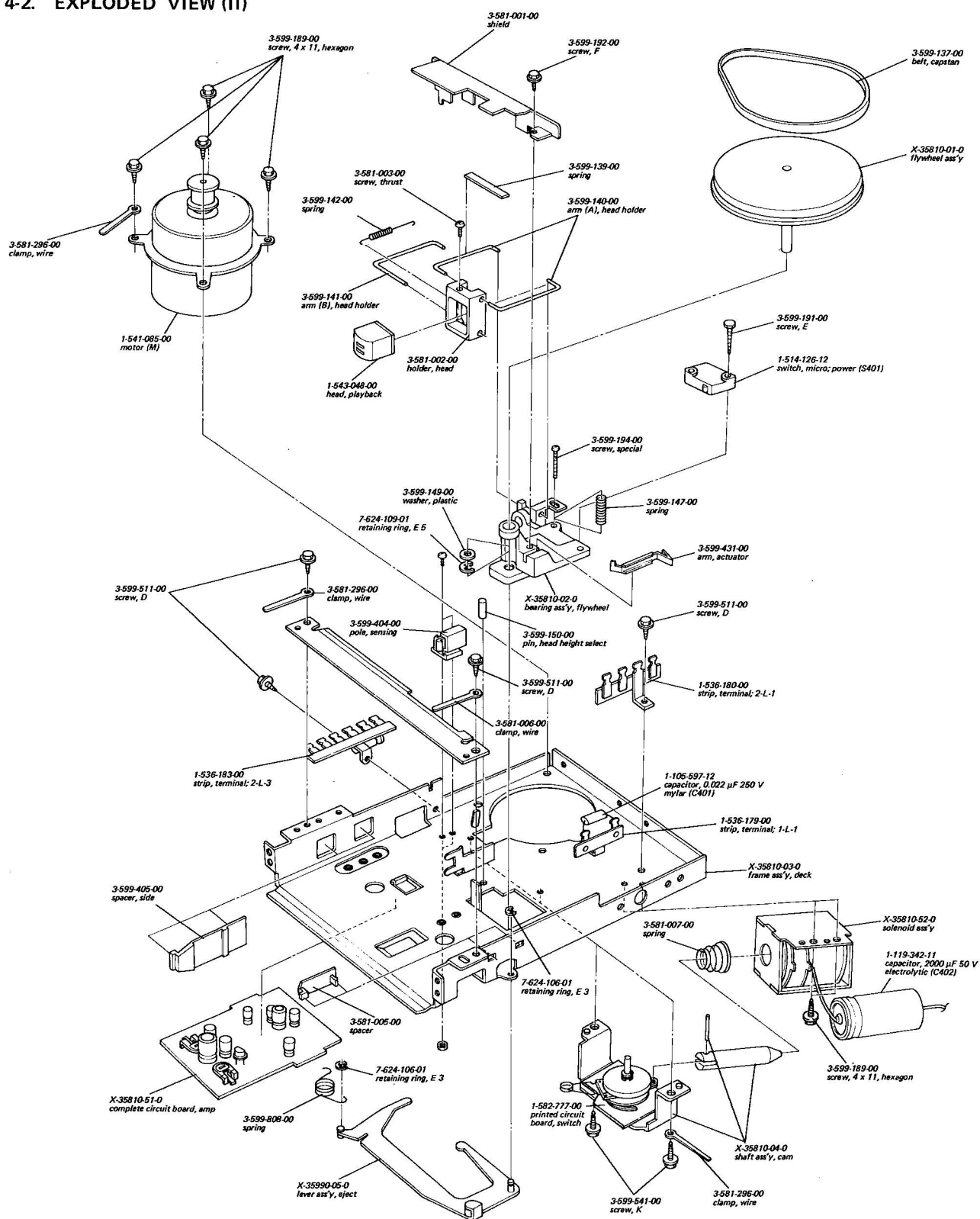


**Note: 1. Parts without part numbers and names are not available.**

2. All screws are Phillips type (cross recess type) unless otherwise indicated.

(—): slotted head

#### 4-2. EXPLODED VIEW (II)



**Note:** 1. Parts without part numbers and names are not available.

2. All screws are Phillips type (cross recess type) unless otherwise indicated.  
(-): slotted head

# SECTION 5

## ELECTRICAL PARTS

| <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u>            | <u>Ref. No.</u>            | <u>Part No.</u> | <u>Description</u>                           |
|-----------------|-----------------|-------------------------------|----------------------------|-----------------|----------------------------------------------|
|                 | X-35810-51-0    | complete circuit board, amp   | R102                       | 1-242-729-11    | 220 k                                        |
|                 | 1-582-777-00    | printed circuit board, switch | R103                       | 1-242-657-11    | 220                                          |
|                 |                 |                               | R104                       | 1-242-657-11    | 220                                          |
|                 |                 |                               | R105                       | 1-242-715-11    | 56 k                                         |
|                 |                 |                               | R106                       | 1-242-715-11    | 56 k                                         |
|                 |                 |                               | R107                       | 1-242-705-11    | 22 k                                         |
|                 |                 |                               | R108                       | 1-242-705-11    | 22 k                                         |
|                 |                 |                               | R109                       | 1-242-689-11    | 4.7 k                                        |
|                 |                 |                               | R110                       | 1-242-733-11    | 330 k                                        |
|                 |                 |                               | R111                       | 1-242-733-11    | 330 k                                        |
|                 |                 |                               | R112                       | 1-242-675-11    | 1.2 k                                        |
|                 |                 |                               | R113                       | 1-242-675-11    | 1.2 k                                        |
|                 |                 |                               | R114                       | 1-242-695-11    | 8.2 k                                        |
|                 |                 |                               | R115                       | 1-242-695-11    | 8.2 k                                        |
|                 |                 |                               | R116                       | 1-242-683-11    | 2.7 k                                        |
|                 |                 |                               | R117                       | 1-202-463-31    | 2.2 M composition                            |
|                 |                 |                               | R118                       | 1-202-463-31    | 2.2 M composition                            |
|                 |                 |                               | R119                       | 1-242-697-11    | 10 k                                         |
|                 |                 |                               | R120                       | 1-242-697-11    | 10 k                                         |
|                 |                 |                               | R401                       | 1-244-879-11    | 1.8 k ½ W                                    |
|                 |                 |                               | R402                       | 1-242-721-11    | 100 k                                        |
|                 |                 |                               | R403                       | 1-242-721-11    | 100 k                                        |
|                 |                 |                               | R404                       | 1-244-837-11    | 33 ½ W                                       |
|                 |                 |                               | R405                       | 1-244-835-11    | 27                                           |
|                 |                 |                               | VR1 }<br>VR2 }             | 1-221-620-00    | 3 k, adjustable                              |
|                 |                 |                               | SWITCHES                   |                 |                                              |
|                 |                 |                               | S401                       | 1-514-126-12    | micro, power                                 |
|                 |                 |                               | S404 }<br>S405 }<br>S406 } | 1-516-380-00    | 3-key, PROGRAM<br>3-key, FF<br>3-key, REPEAT |
|                 |                 |                               | MISCELLANEOUS              |                 |                                              |
|                 |                 |                               |                            | X-35810-52-0    | solenoid ass'y                               |
|                 |                 |                               | M                          | 1-541-085-00    | motor                                        |
|                 |                 |                               | PL1                        | 1-518-090-00    | lamp                                         |
|                 |                 |                               | PL2                        | 1-518-090-00    | lamp                                         |
|                 |                 |                               | PL3                        | 1-518-090-00    | lamp                                         |
|                 |                 |                               | PL4                        | 1-518-090-00    | lamp                                         |
|                 |                 |                               |                            | 1-536-179-00    | strip, terminal; 1-L-1                       |
|                 |                 |                               |                            | 1-536-180-00    | strip, terminal; 2-L-1                       |
|                 |                 |                               |                            | 1-536-183-00    | strip, terminal; 2-L-3                       |
|                 |                 |                               |                            | 1-543-048-00    | head, playback                               |

| <u>Ref. No.</u>                                                                                          | <u>Part No.</u> | <u>Description</u>            |
|----------------------------------------------------------------------------------------------------------|-----------------|-------------------------------|
|                                                                                                          | X-35810-51-0    | complete circuit board, amp   |
|                                                                                                          | 1-582-777-00    | printed circuit board, switch |
| SEMICONDUCTORS                                                                                           |                 |                               |
| Q1                                                                                                       |                 | transistor 2SC631A            |
| Q2                                                                                                       |                 | transistor 2SC631A            |
| Q3                                                                                                       |                 | transistor 2SC634A            |
| Q4                                                                                                       |                 | transistor 2SC634A            |
| Q5                                                                                                       |                 | transistor 2SC634A            |
| Q6                                                                                                       |                 | transistor 2SC634A            |
| D401                                                                                                     |                 | diode 10D2                    |
| D402                                                                                                     |                 | diode 10D2                    |
| D403                                                                                                     |                 | diode 10D2                    |
| TRANSFORMER                                                                                              |                 |                               |
| T1                                                                                                       | 1-442-226-00    | power                         |
| CAPACITORS                                                                                               |                 |                               |
| All capacitors are in $\mu\text{F}$ unless otherwise indicated.<br>(p = $\mu\mu$ , elect = electrolytic) |                 |                               |
| C101                                                                                                     | 1-121-395-11    | 4.7 25 V elect                |
| C102                                                                                                     | 1-121-395-11    | 4.7 25 V elect                |
| C103                                                                                                     | 1-129-662-11    | 470 p 50 V polypropylene      |
| C104                                                                                                     | 1-129-662-11    | 470 p 50 V polypropylene      |
| C105                                                                                                     | 1-121-347-11    | 10 16 V elect                 |
| C106                                                                                                     | 1-121-347-11    | 10 16 V elect                 |
| C107                                                                                                     | 1-121-409-11    | 47 16 V elect                 |
| C108                                                                                                     | 1-105-669-12    | 0.0047 50 V mylar             |
| C109                                                                                                     | 1-105-669-12    | 0.0047 50 V mylar             |
| C110                                                                                                     | 1-105-681-12    | 0.047 50 V mylar              |
| C111                                                                                                     | 1-105-681-12    | 0.047 50 V mylar              |
| C112                                                                                                     | 1-121-413-11    | 100 16 V elect                |
| C113                                                                                                     | 1-121-395-11    | 4.7 25 V elect                |
| C114                                                                                                     | 1-121-395-11    | 4.7 25 V elect                |
| C401                                                                                                     | 1-105-597-12    | 0.022 250 V mylar             |
| C402                                                                                                     | 1-119-342-11    | 2000 50 V elect               |
| C403                                                                                                     | 1-121-422-11    | 220 25 V elect                |
| C404                                                                                                     | 1-119-355-11    | 1000 10 V elect               |
| RESISTORS                                                                                                |                 |                               |
| All resistors are ¼ W, carbon type unless otherwise indicated. (k = 1000 M = 1000 k)                     |                 |                               |
| R101                                                                                                     | 1-242-729-11    | 220 k                         |

SONY CORPORATION