

# WM-7



US Model  
Canadian Model  
AEP Model  
UK Model  
E Model

## STEREO CASSETTE PLAYER

### SPECIFICATIONS

Tape track 4-track 2-channel stereo  
Fast winding time Approx. 2 min. with Sony cassette C-60  
Frequency response (DOLBY NR OFF)  
40-15,000 Hz (with the TAPE selector set to METAL)  
40-15,000 Hz (with the TAPE selector set to NORM)  
Power output 25 mW x 2 (max.)  
20 mW x 2 (at 10% harmonic distortion) at dc operation  
Output Headphone jack (stereo minijack) .... 1  
load impedance 8-200 ohms  
Power requirements  
3 V dc  
Two batteries: IEC designation R6 (size AA)  
External batteries (used in the optional battery case EBP-500): IEC designation R20 (size D) x 2  
DC IN 3 V jack accepts:  
AC power adaptor. Refer to the following chart to choose the correct adaptor for your area.

Country	Ac power line voltage	Optional ac power adaptor
Japan	100 V ac, 50/60 Hz	AC-39 available in Japan
U.S.A. and Canada	120 V ac, 60 Hz	AC-39 available in U.S.A. and Canada
The United Kingdom	240 V ac, 50 Hz	AC-37 available in the United Kingdom
European countries	220 V ac, 50 Hz	AC-37 available in European countries
Other countries	120 V ac (110, 220 or 240 V ac, adjustable by Sony personnel), 50/60 Hz	AC-38 available in Japan
	110, 120, 220 or 240 V ac, adjustable, 50/60 Hz	AC-38 available in other countries

DCC-127A car battery cord (optional) for use with 12 V car battery

— Continued on page 2 —

Tape Transport Mechanism MT-WM7-23



# SONY

## SERVICE MANUAL

# SECTION 1

## OUTLINE

### Battery life (continuous playback hours)

Approx. 5.0 hours with supplied Sony  
Eveready AM3 alkaline batteries  
Approx. 2.0 hours with Sony  
SUM-3 (NS) New Super  
batteries

For maximum performance we recommend the use of  
alkaline batteries.

Dimensions Approx. 79.6 × 134.8 × 31.1 mm (w/h/d)  
(3 1/8 × 5 3/8 × 1 1/8 inches)

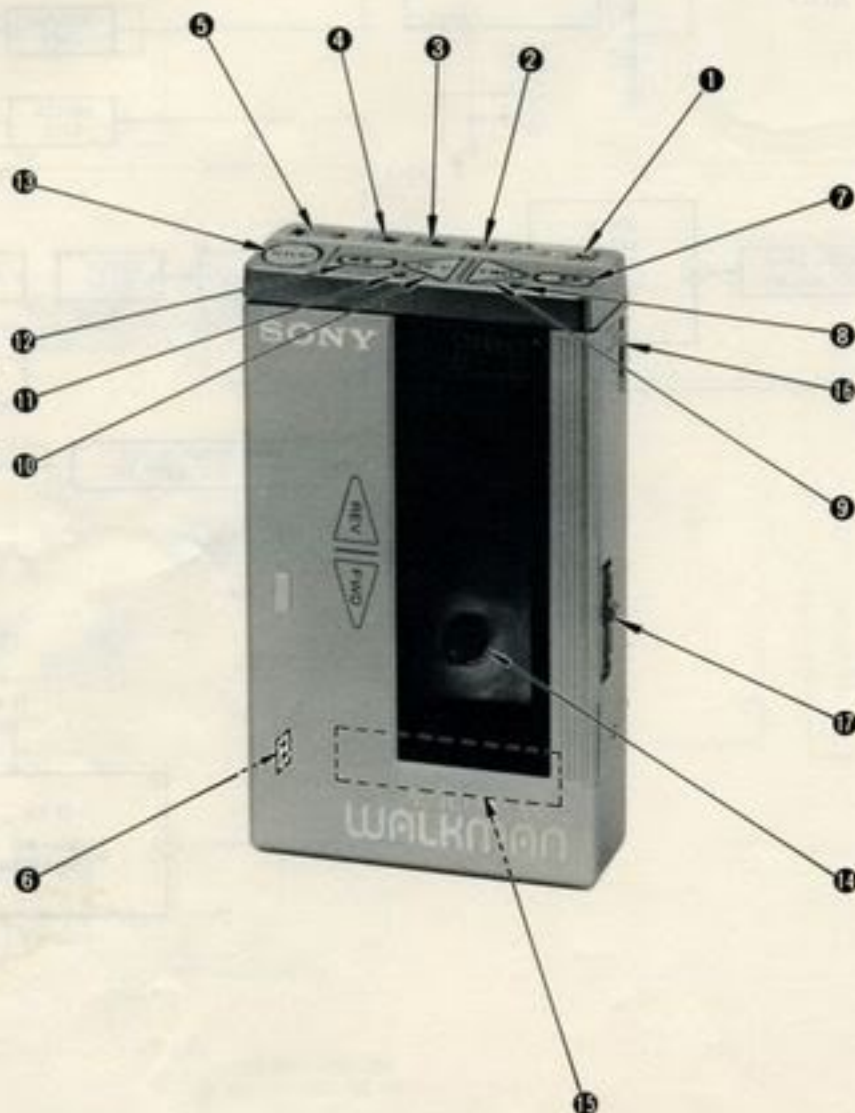
not incl. projecting parts and controls  
Weight Approx. 410 g (14 1/2 oz) incl. batteries,  
not incl. other accessories

### Accessories supplied

Demonstration tape cassette (1)  
Stereo headphones (1)  
Sony Eveready AM3 alkaline batteries (2)  
Carrying case and shoulder strap (1 set)

0 dB = 0.775 V

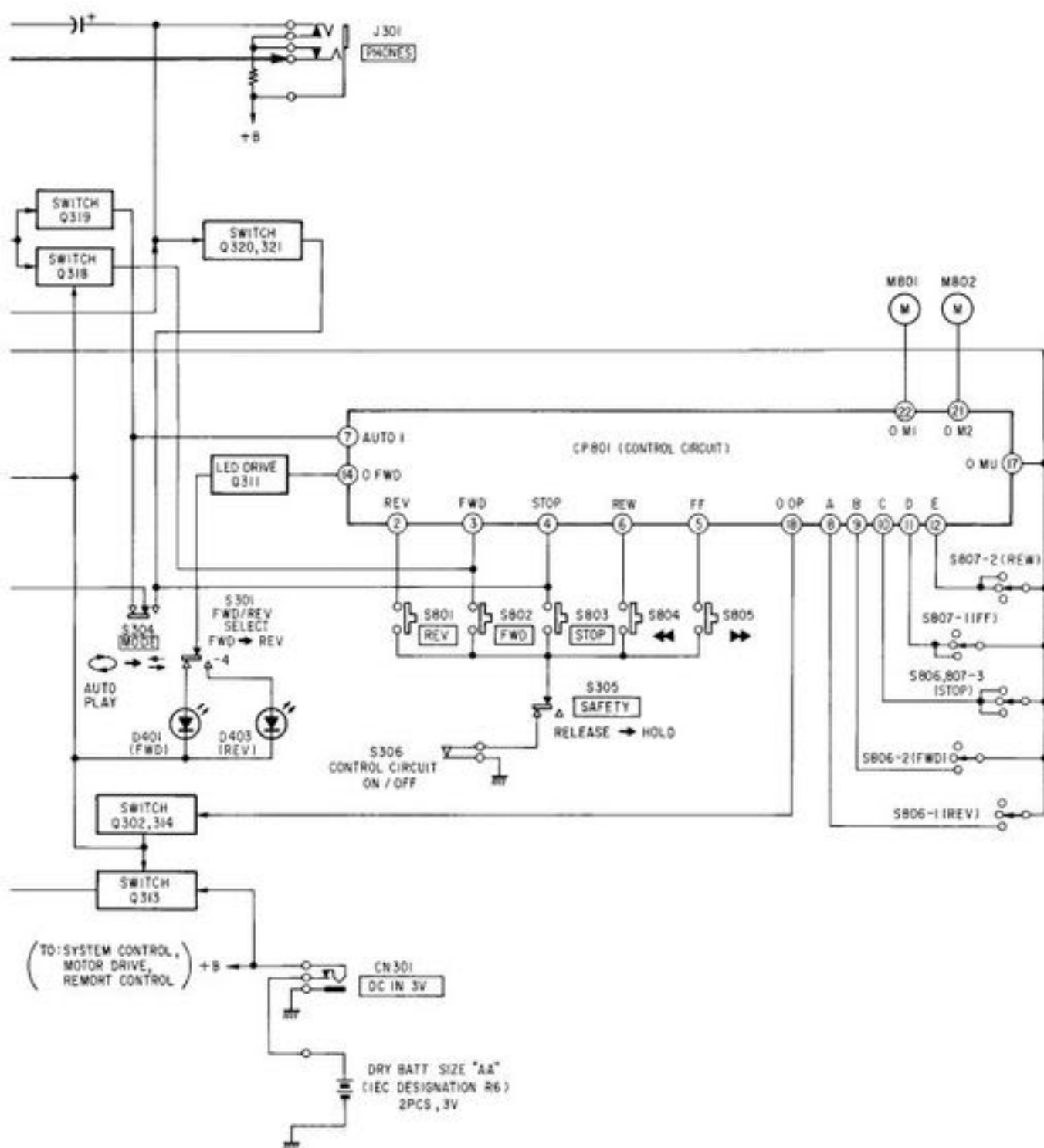
### 1-1. LOCATION OF PARTS



- ① PHONES jack (stereo minijack)
- ② DOLBY NR switch
- ③ TAPE selector
- ④ MODE selector
- ⑤ VOLUME control
- ⑥ DC IN 3 V (external power input) jack
- ⑦ FWD button
- ⑧ FWD/battery indicator (LED)

- ① FWD (forward) button
- ② REV (reverse) button
- ③ REV/battery indicator (LED)
- ④ STOP button
- ⑤ Cassette holder
- ⑥ Battery compartment (inside)
- ⑦ SAFETY switch
- ⑧ OPEN button







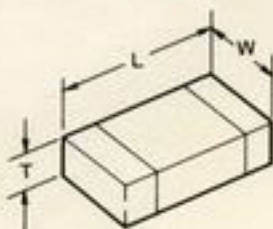


### Chip components

Chip components include resistors, capacitors, transistors, diodes, coil and adjustable resistors.

In this section, the types of resistors, ceramic capacitors, transistors and diodes which are used most frequently will be described.

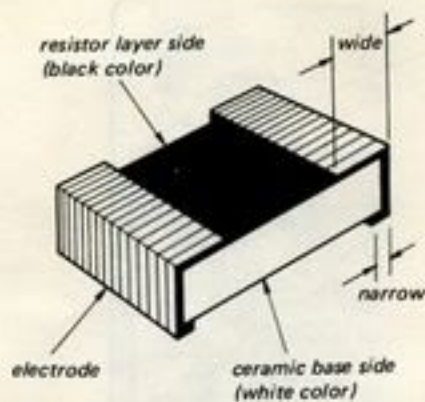
Dimension of transistors and capacitors



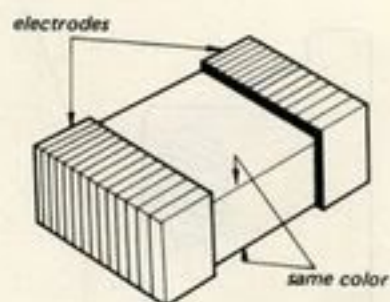
(Unit: mm)

Type	L	W	T
3216	3.2	1.6	0.45 ~ 0.6
2125	2.0	1.25	0.35 ~ 0.5

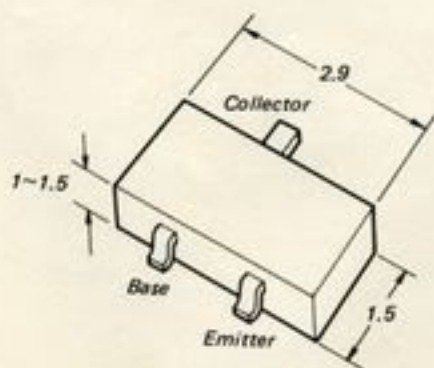
### Identification



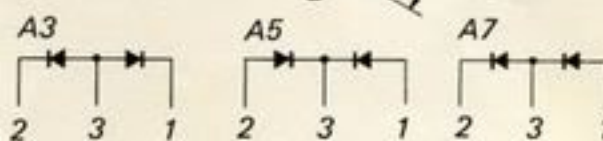
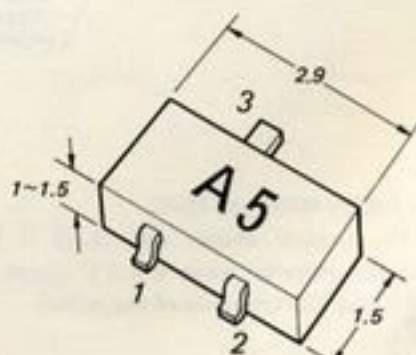
Resistor



Laminated Ceramic Capacitor



Transistor



Diode



### Replacing chip components

All chip components should be connected and disconnected, using a tapered soldering iron [temperature of the iron tip: less than  $280^{\circ}\text{C}$  ( $536^{\circ}\text{F}$ )], a pair of tweezers and braided wire.

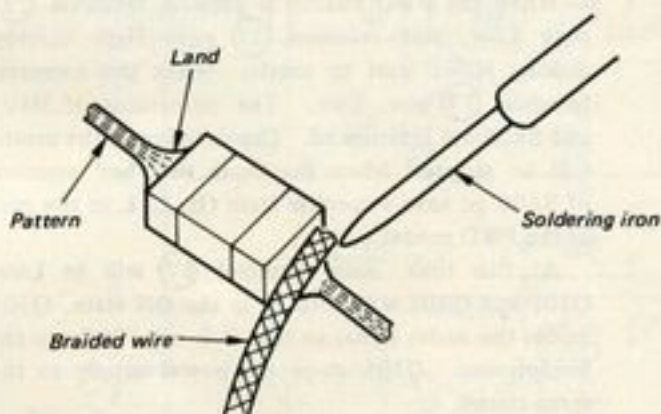
#### Precautions for replacement

1. Do not disconnect the chip component forcefully. Otherwise, the pattern may peel off.
2. Never re-use a disconnected chip component. Dispose of all old chip components.
3. To protect the chip component, heating time for attaching the component should be within 3 seconds.

#### ○ Removing chip components

##### (1) Removing solder at electrode

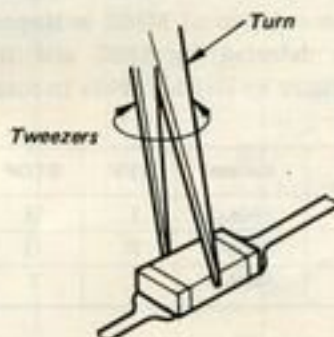
Remove the solder at the electrode, using a thin braided wire. Do not remove the solder of the part (chip component) attached adjacent to the electrode.



##### (2) Disconnecting chip components

Turn the tweezers with the soldering iron alternately applied to both electrodes, and the chip component will be disconnected. Take careful precautions while disconnecting, because if the chip component is forcefully removed the land may peel off.

Never re-use a disconnected chip component.



##### (3) Smoothing the soldered surface

After disconnecting the chip component, remove the solder by using a braided wire to smooth the land surface.

#### ○ Connecting chip components

The value of chip components is not displayed on the main body. Take due precautions to avoid mixing new chip components with other ones.

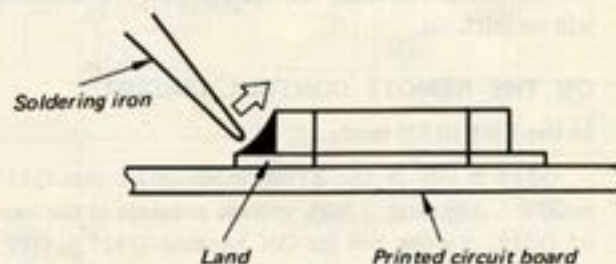
##### (1) Applying solder to land on one side

Apply a thin layer of solder to the land on one side where the chip component is to be connected. Too much solder may cause bridging.



##### (2) Speedy soldering

Hold the chip component at the desired position, using tweezers, and apply the soldering iron in the arrow-marked direction. To protect the chip component, heating time should be within 3 seconds.



##### (3) Speedy soldering of electrode on the other side

Solder the electrode on the other side in the same way as in (2) above.



## 1-4. CIRCUIT DESCRIPTION

### THE ROLE OF Q312

This circuit is for ensuring that the AUTO PLAY function is carried out properly when the FF or the REW button is kept pressed at tape end. The following operations will be made.

PH301 and PH302 are the diodes for detecting the rotation of the reel tables. These diodes repetitively turn ON and turn OFF Q309 when the reel tables are rotating. When the reel tables stop rotating, Q309 goes OFF and consequently, C312 gets charged via R323. This causes Q310 to turn ON.

When Q310 goes ON, either terminal ⑦ of CP801 goes LOW and consequently the AUTO PLAY operations will be initiated. At this time, CP801 will not accept the tape end detection signal if the FF or the REW button is kept pressed.

When Q310 goes ON, R325 will be grounded thus starting the charging of C317. When C317 gets charged Q312 goes ON. When Q312 goes ON, Q304, 306 - 308 all go OFF and Q310 also gets turned OFF. When Q310 goes OFF, Q312 also goes OFF. When Q312 goes OFF, Q304, 306 - 308 all go ON again and turn Q310 ON again.

After Q310 goes ON, Q312 will also be turned ON after some delay and the above operations will be repeated. These operations will continue as long as the FF or the REW button is kept pressed and when the button is released, the AUTO PLAY operations will be initiated.

### ON THE REMOTE CONTROL CIRCUIT

In the FWD/REV mode:

Q316 is ON in the STOP mode and hence Q317 is OFF. Although a high voltage presents at the base of Q318, it does not go ON because Q317 is OFF. Now, if the ► (FWD) button is pressed, Q316 is OFF and Q317 is ON and hence Q318 is ON. When Q318 goes ON, terminal ③ of the system control IC goes LOW and the set is in FWD mode.

Q302, 313, 314 go ON in the FWD mode and hence the base of Q318 will be grounded turning it OFF, but the FWD state will be continued to be maintained.

Next, when the ► button is pressed again, Q316, 317 go ON. At this time, Q319 goes ON because the collector voltage of Q306 will be input to the collector of Q319.

When Q319 goes ON, it makes terminal ⑦ of the system control IC go LOW and consequently the mode will change from the current mode to its opposite mode (FWD → REV or REV → FWD).

Thus, when this terminal is made LOW during the FWD mode or the REV mode, the mode will change to the opposite mode.

In the STOP mode:

In the FWD and REV modes, Q320 is in the ON state. When the STOP button is pressed, Q320 is turned OFF and Q321 is turned ON. As a result, terminal ④ of the system control IC is made LOW and the STOP mode is initiated. At this time, Q320 and Q316 are turned ON again.

When the ► button is pressed next, the FWD mode is initiated.

When the ► button is pressed in the STOP mode, this machine always go into the FWD mode.

Q315 is used for decreasing the impedance in FWD or REV mode.

### ON THE SYSTEM CONTROL CIRCUIT

This circuit identifies the button that was pressed and carries out the operations corresponding to that button. The operations of this circuit will be explained below taking the example of the FWD mode.

When the FWD button is pressed, terminal ②③ goes Low, and terminal ②② goes High thereby making M801 start to rotate. When this happens, terminal ①⑦ goes Low. The operations of M801 and S806 are interlinked. The rotation of the motor will be stopped when the three switches' position of S806 go into a specific state (H, L, L in the case of the FWD mode).

At this time, since terminal ①⑦ will be Low, Q301 and Q305 will both be in the ON state. Q301 mutes the audio signal so that it is not output to the headphones. Q305 stops the power supply to the servo circuit.

M801 stops rotating and 5 ms passed after then, and terminal ①⑦ goes High. This cause M901 to start rotating and reel table.

If the REV button is pressed in the FWD mode, terminal ②③ goes High and terminal ②② goes Low thereby making M801 rotate in the opposite direction. Thereafter, all other operations is identical to that in the FWD mode.

The motor M802 is made to rotate in the FF/REW modes. The operations of M802 and S807 are interlinked. The rotation of M802 is stopped when the position is detected by S807 and the FF/REW mode is initiated by starting M901 to rotate.

#### FWD/REV

CP801 terminal No.	Switch	REV	STOP	FWD
⑧	S806-1	L	H	H
⑨	S806-2	H	H	L
⑩	S806-3	L	L	L

#### FF/REW

CP801 terminal No.	Switch	REW	STOP	FF
⑪	S807-1	H	L	L
⑫	S807-2	L	L	H





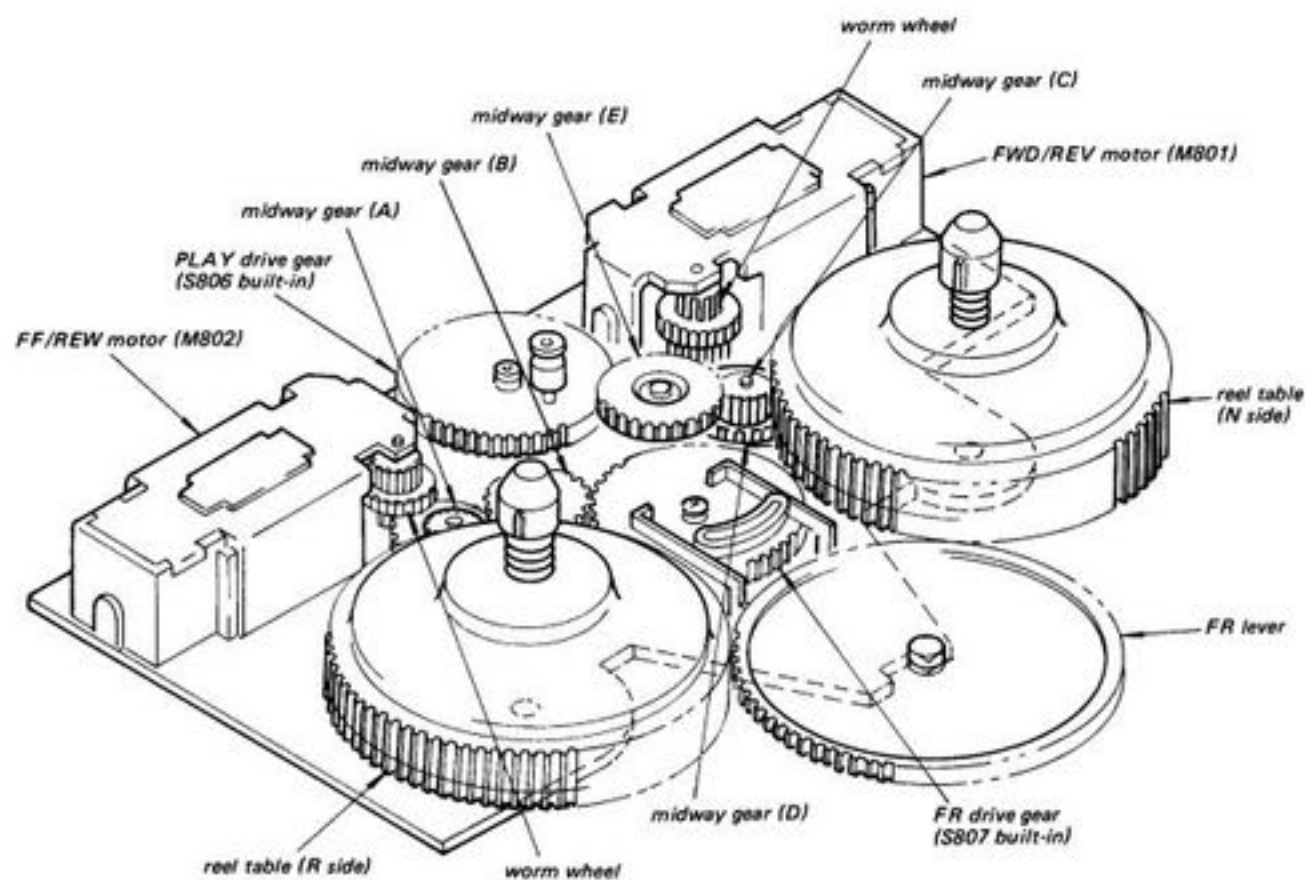




## MEMO

## 1-5. MECHANICAL OPERATION DESCRIPTION

On this set, mode switching is performed by driving the FWD/REV motor (M801) or FF/REW motor (M802) by the system control unit.



Control Chassis

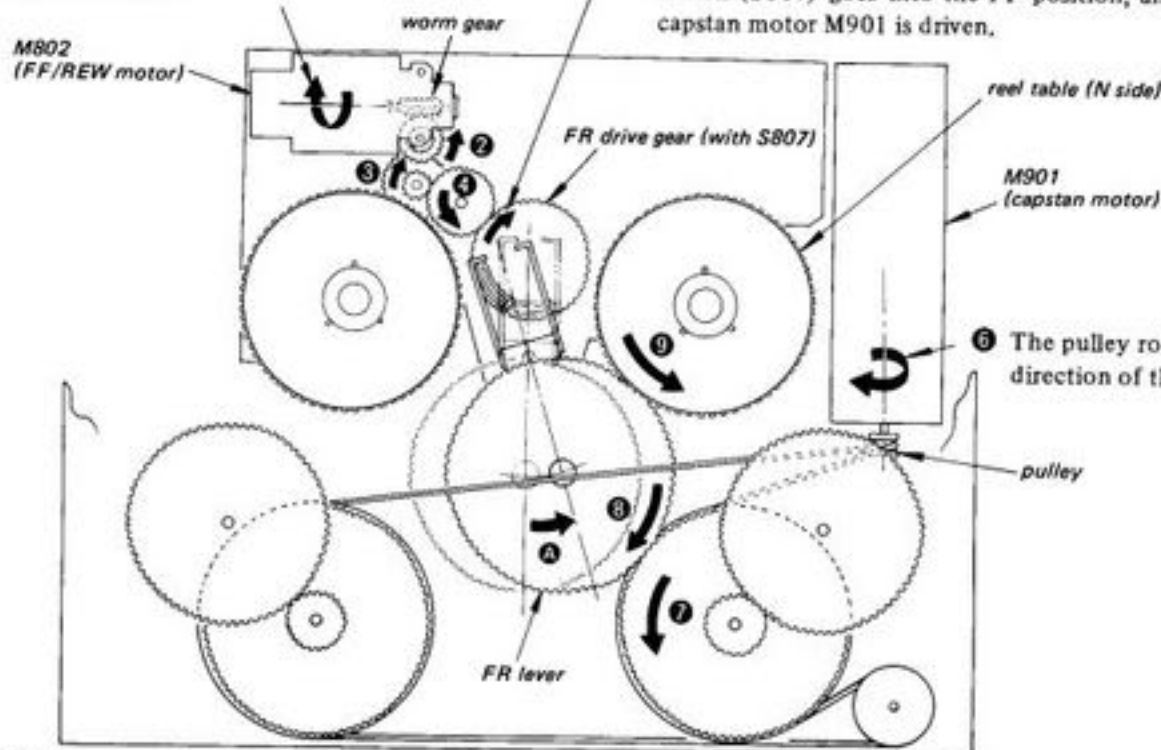


## FF MODE

The operation is in numerical order.

- 1 When the FF button is pressed, the motor (M802) is rotated in the direction of the arrow by the system control unit.

- 5 When the FR drive gear rotates in the direction of the arrow, the FR lever swings in the direction of arrow A, and at the same time the built-in switch (S807) goes into the FF position, and the capstan motor M901 is driven.

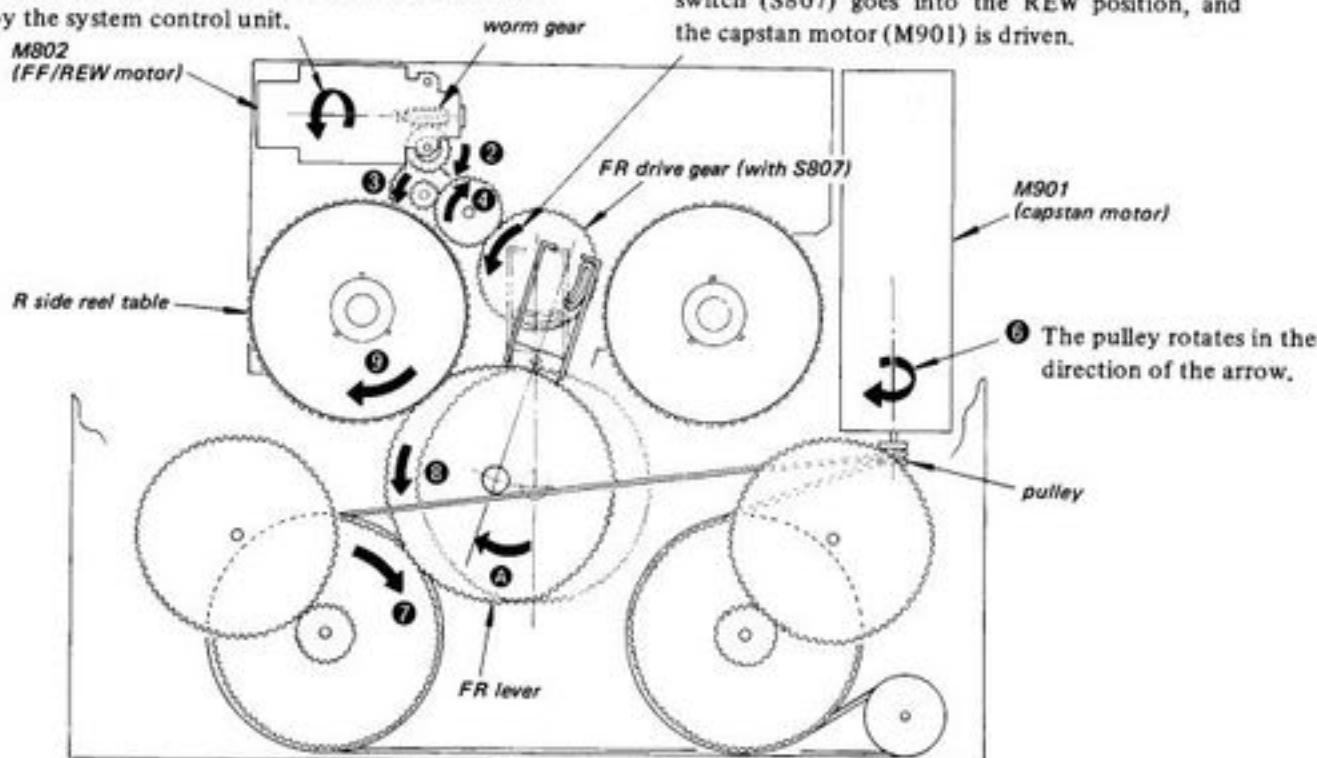


## REW MODE

The operation is in numerical order.

- 1 When the REW button is pressed, the motor (M802) is rotated in the direction of the arrow by the system control unit.

- 5 When the FR drive gear rotates in the direction of the arrow, the FR lever swings in the direction of arrow A, and at the same time the built-in switch (S807) goes into the REW position, and the capstan motor (M901) is driven.

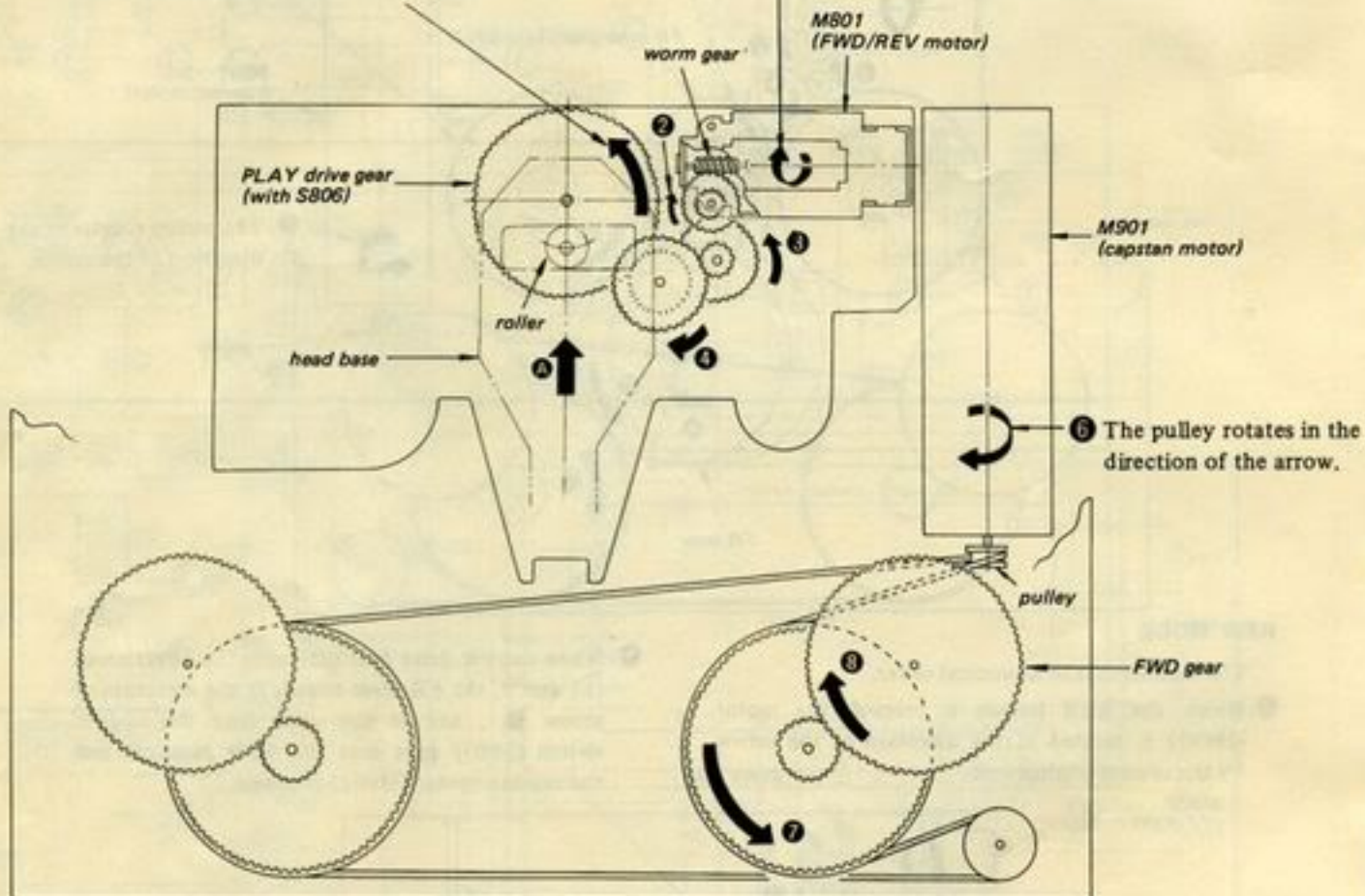


## FWD MODE

The operation is in numerical order.

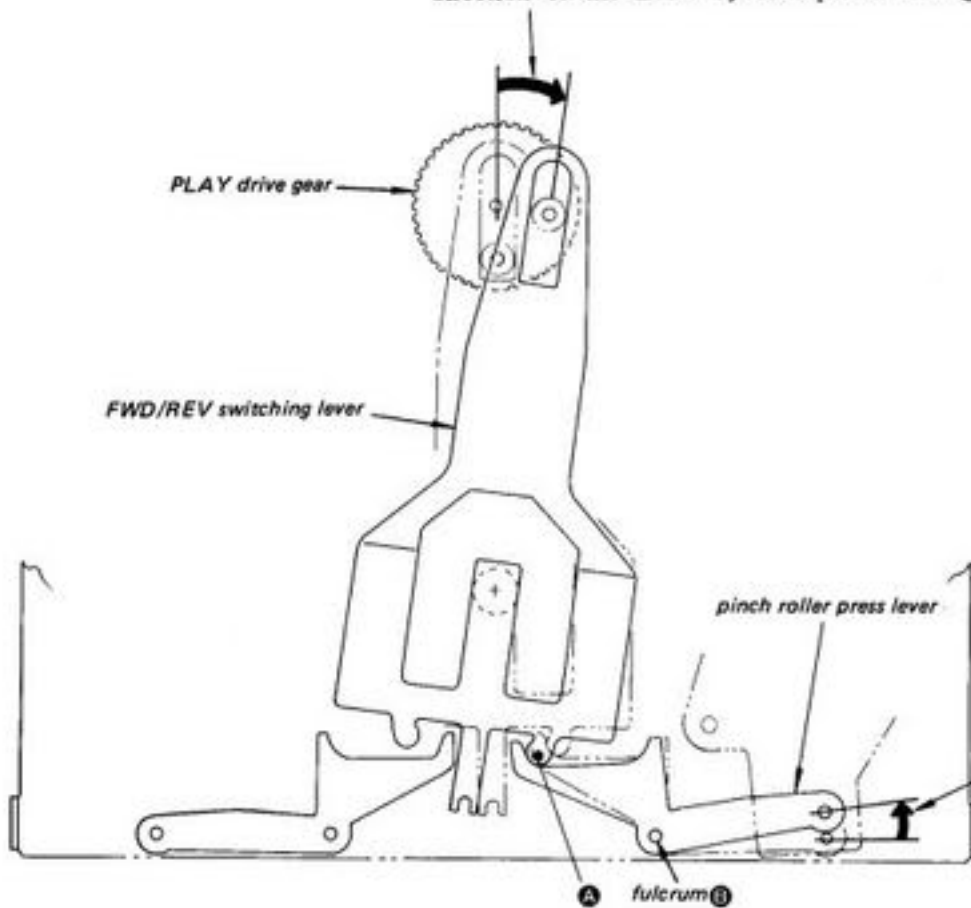
- ⑤ When the PLAY drive gear rotates in the direction of the arrow, the roller moves the head base in the direction of arrow ④. At the same time, the built-in switch (S806) goes into the FWD position, and the capstan motor (M901) is driven.

- ① When the FWD button is pressed, the motor (M801) is rotated in the direction of the arrow by the system control unit.

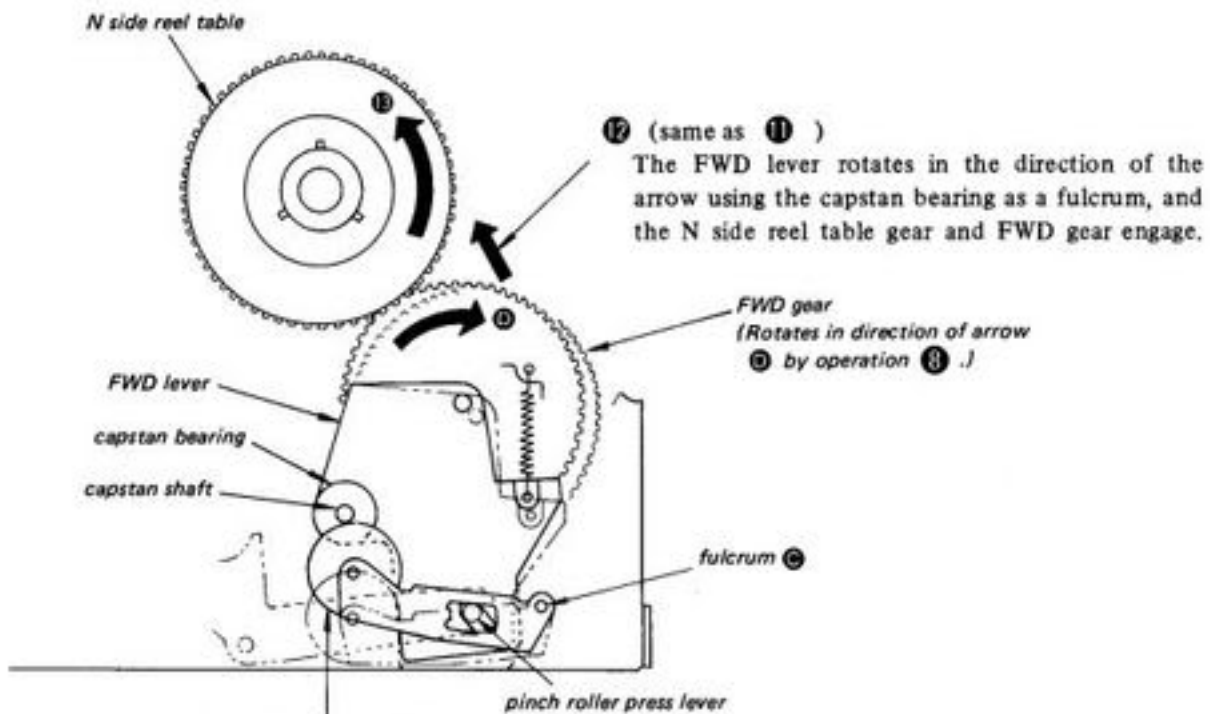




- ⑨ The FWD/REV switching lever is rotated in the direction of the arrow by the operation in ⑤.



- ⑩ The pinch roller press lever rotates in the direction of arrow by section ④ using fulcrum ③ as its axis.



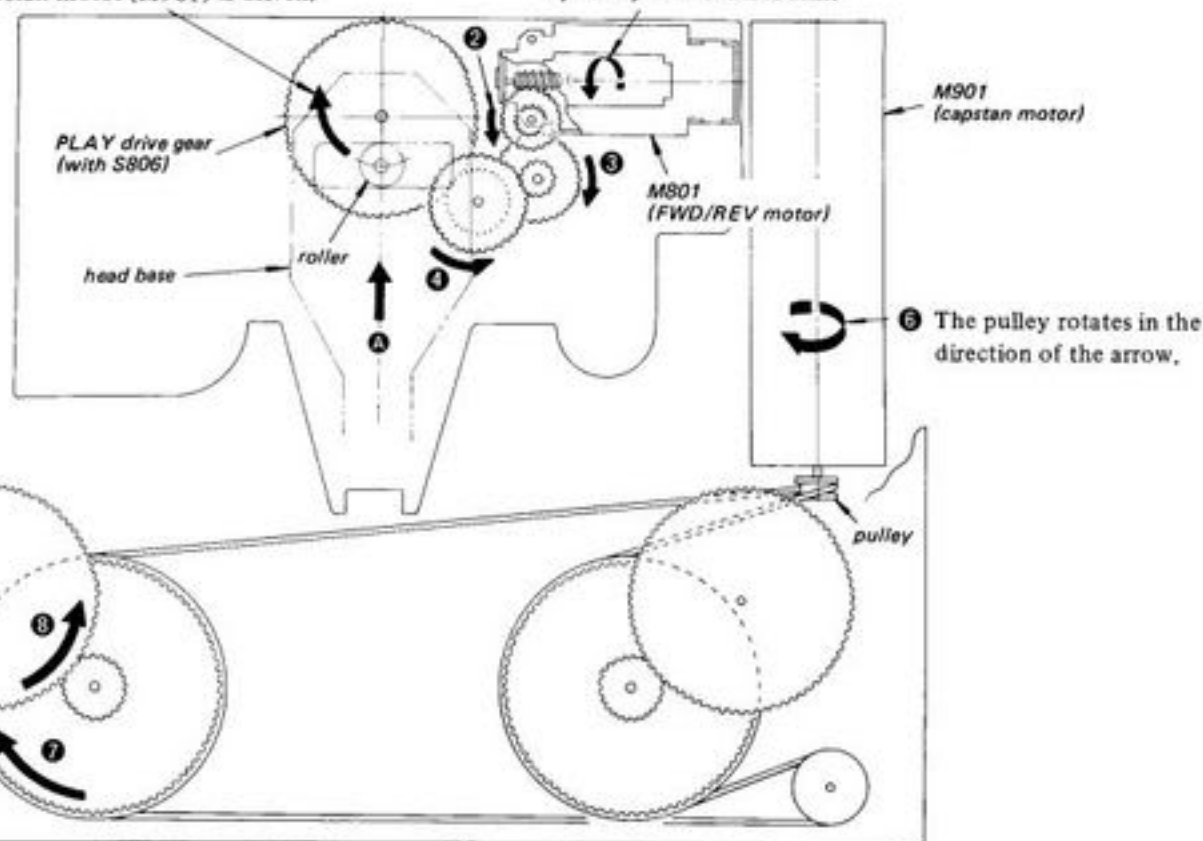
- ⑪ The pinch roller presses against the capstan shaft using fulcrum ③ as its axis.

## REV MODE

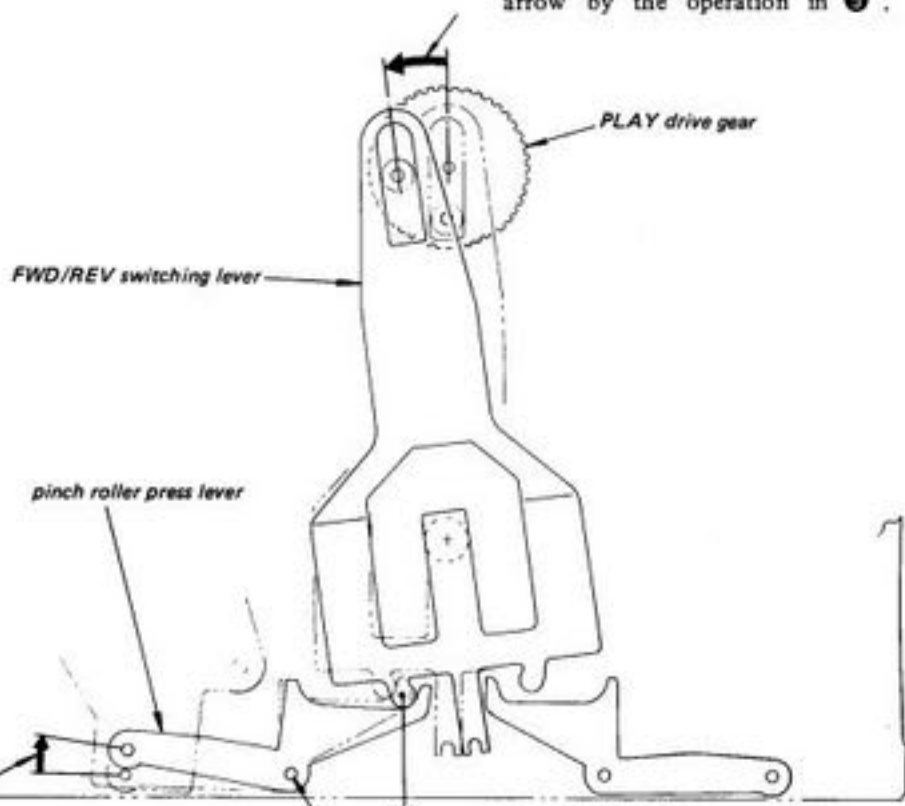
The operation is in numerical order.

- ③ The PLAY drive gear rotates in the direction of the arrow, and the roller moves the head base in the direction of arrow **A**. At the same time, the built-in switch (S806) goes into REV position, and the capstan motor (M901) is driven.

- ① When the REV button is pressed, the motor (M801) is rotated in the direction of the arrow by the system control unit.



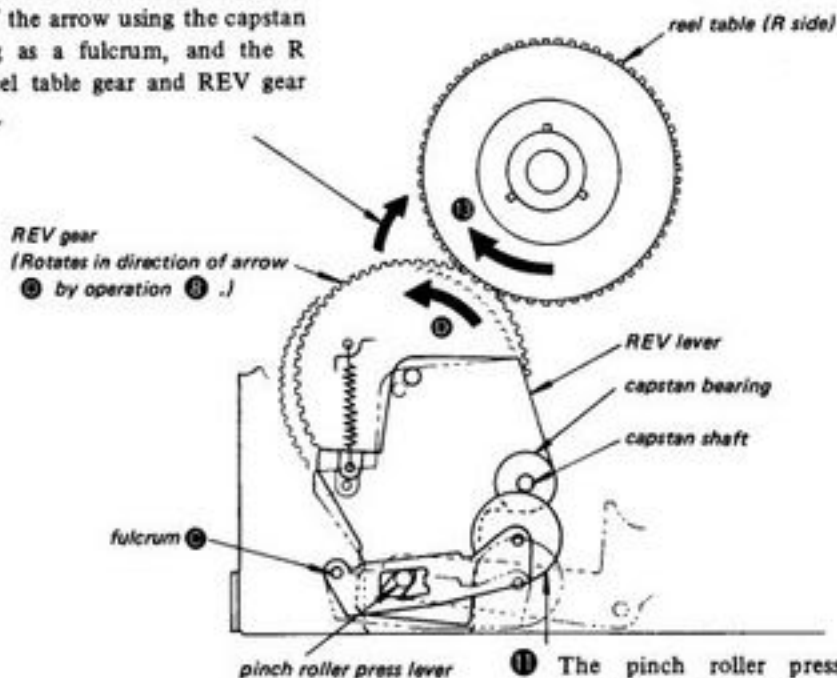
- ⑨ The FWD/REV switching lever is rotated in the direction of the arrow by the operation in ⑧.



- ⑩ The pinch roller press lever rotates in the direction of the arrow using fulcrum ⑩ as its axis.

- ⑪ (same as ⑩)

The REV lever rotates in the direction of the arrow using the capstan bearing as a fulcrum, and the R side reel table gear and REV gear engage.



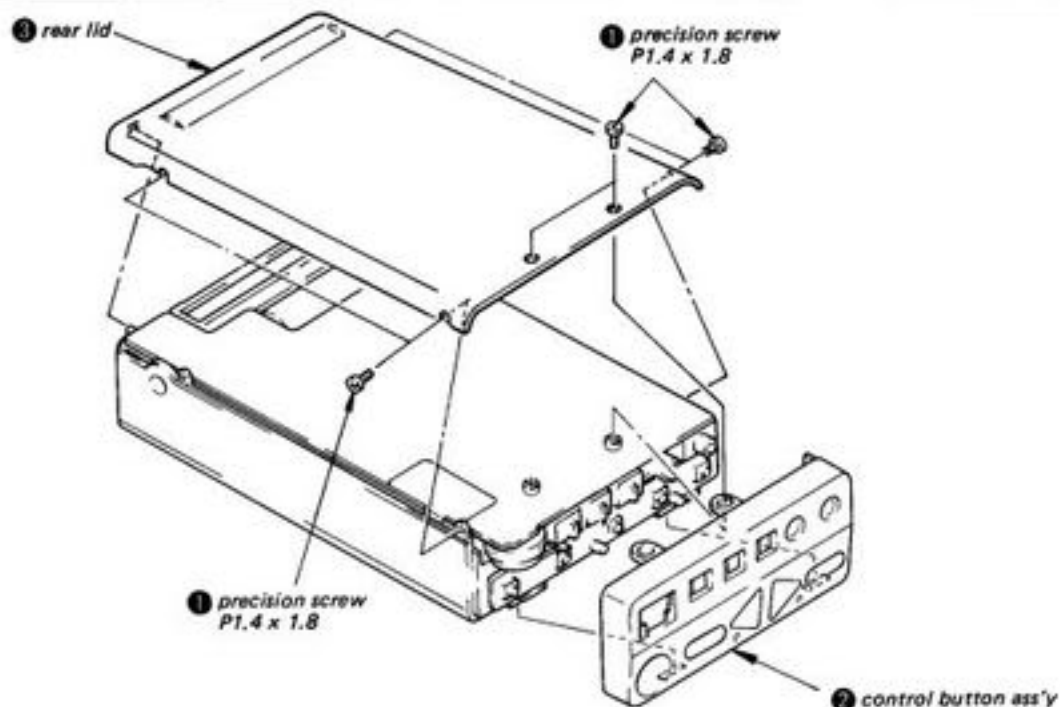
- ⑪ The pinch roller presses against the capstan shaft using fulcrum ⑪ as its axis.



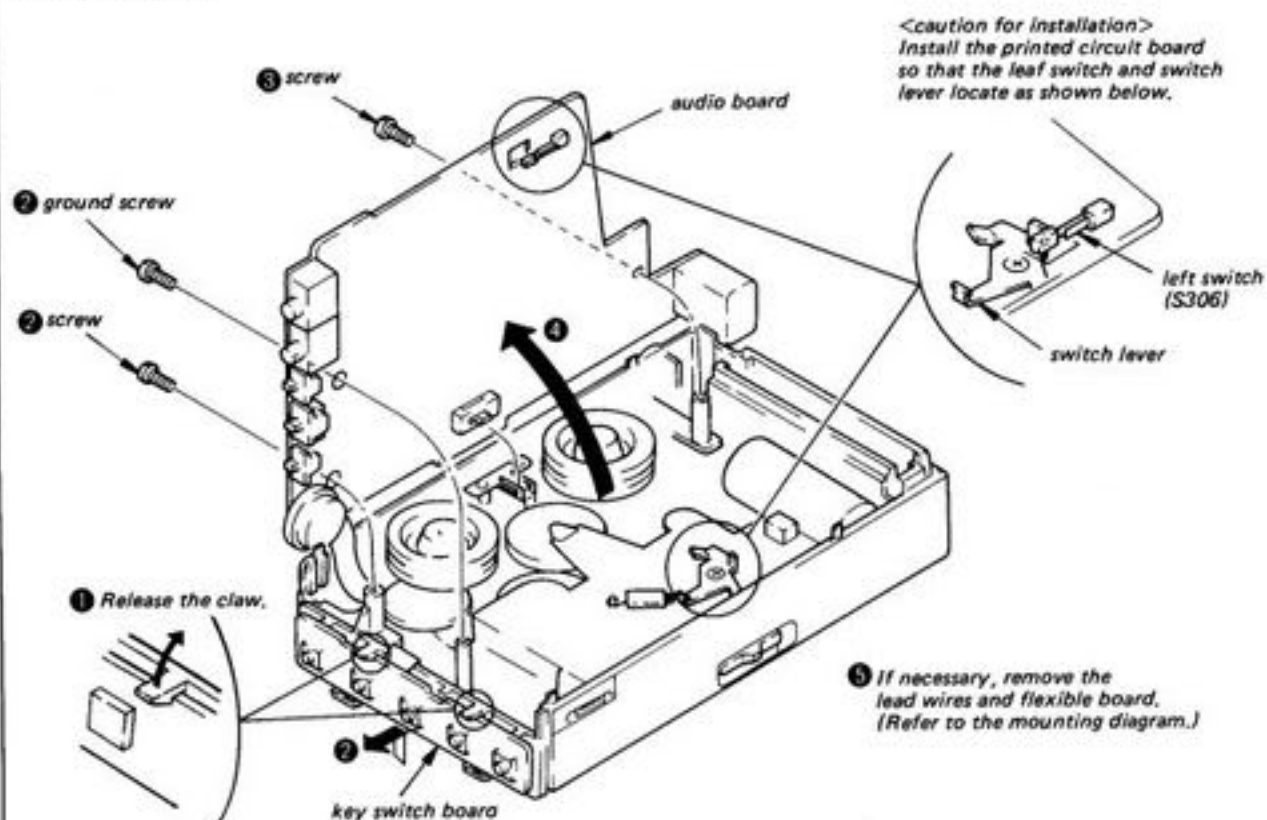
## SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

### REAR LID

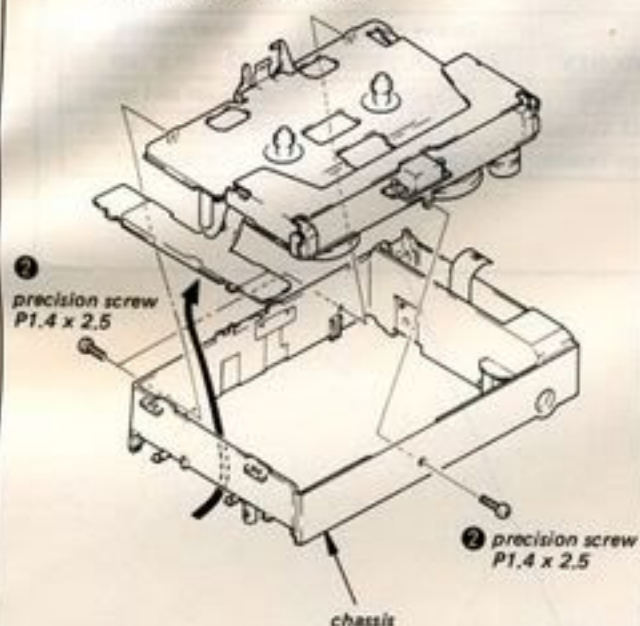


### AUDIO BOARD



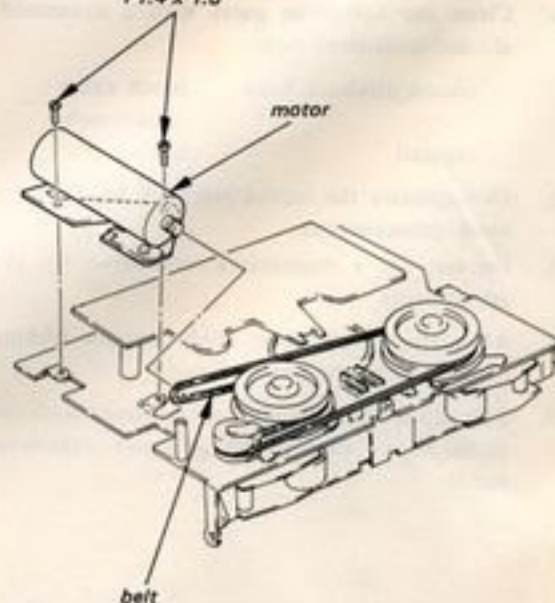
## CHASSIS

1 Remove the audio board.



## MOTOR REMOVAL AND BELT INSTALLATION

precision screw  
P1.4 x 1.6

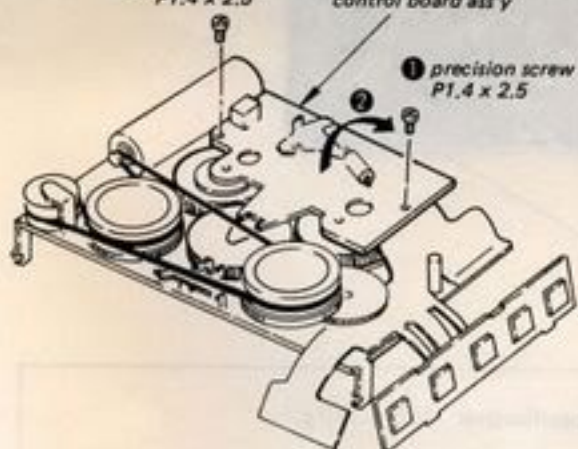


## CONTROL BOARD

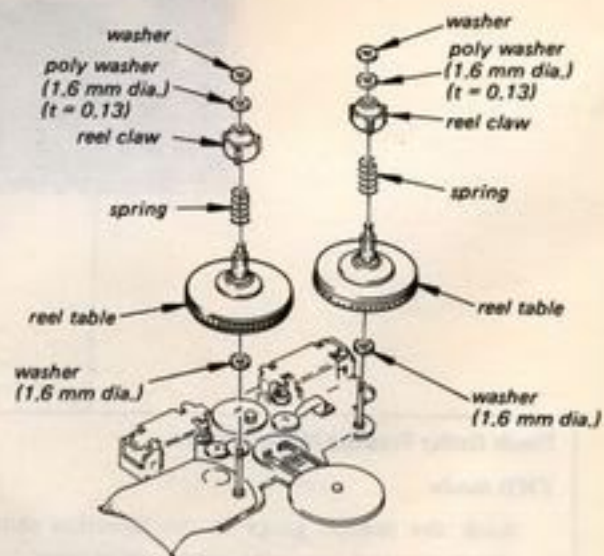
1 precision screw  
P1.4 x 2.5

control board ass'y

1 precision screw  
P1.4 x 2.5



## REEL TABLE



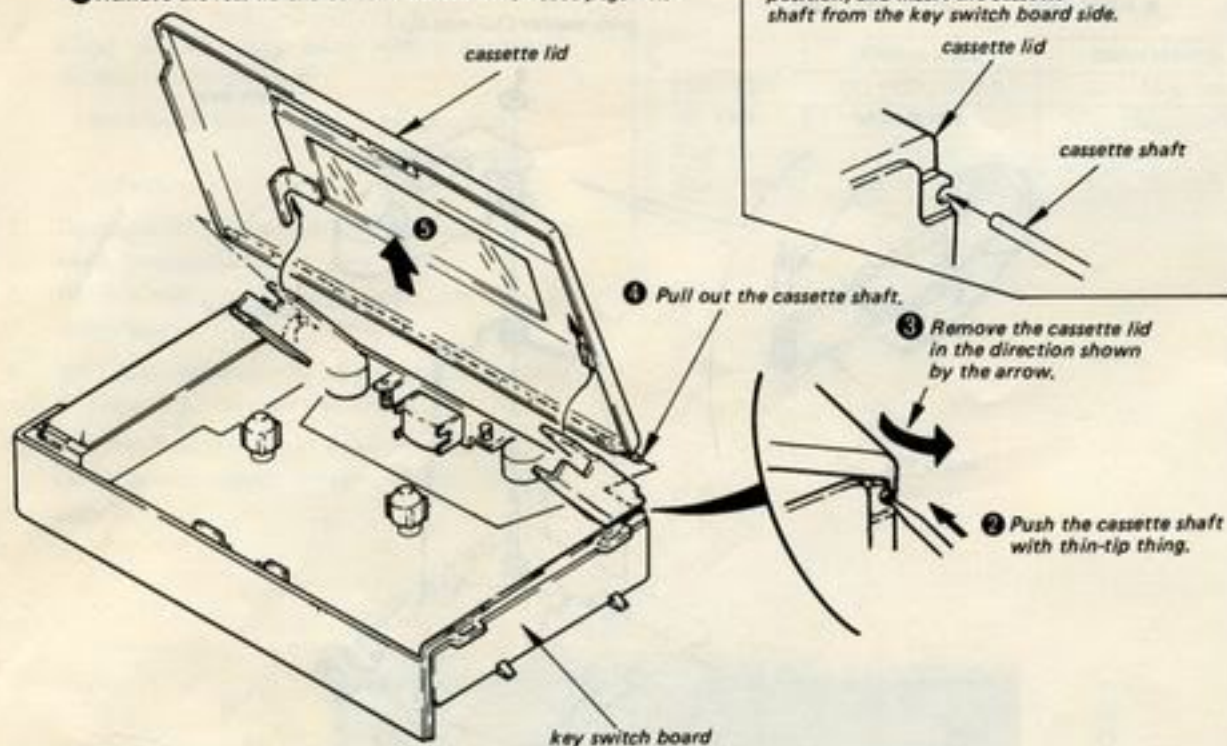


SECTION 3  
ADJUSTMENTS

## CASSETTE LID

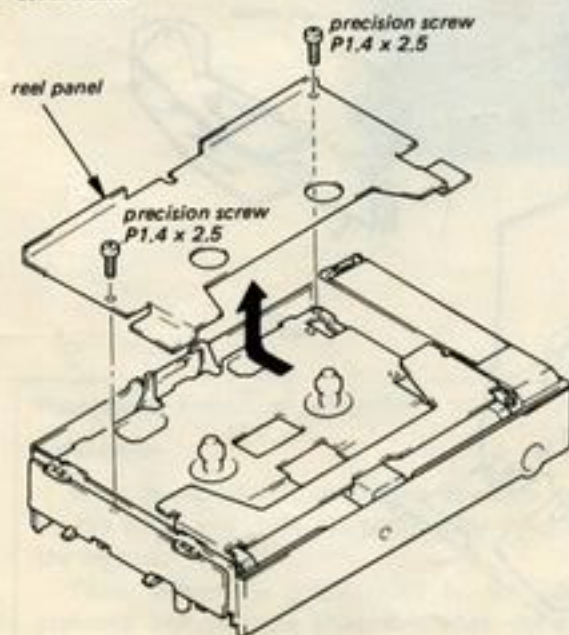
- ① Remove the rear lid and control button ass'y. (See page 18.)

<caution for installation>  
Set the cassette lid in the installing position, and insert the cassette shaft from the key switch board side.

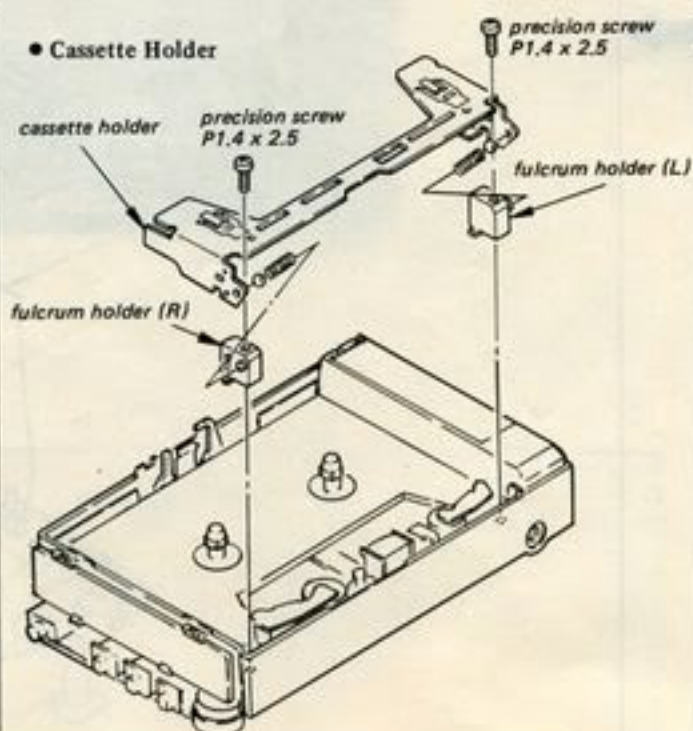


## REEL PANEL/CASSETTE HOLDER

## • Reel Panel



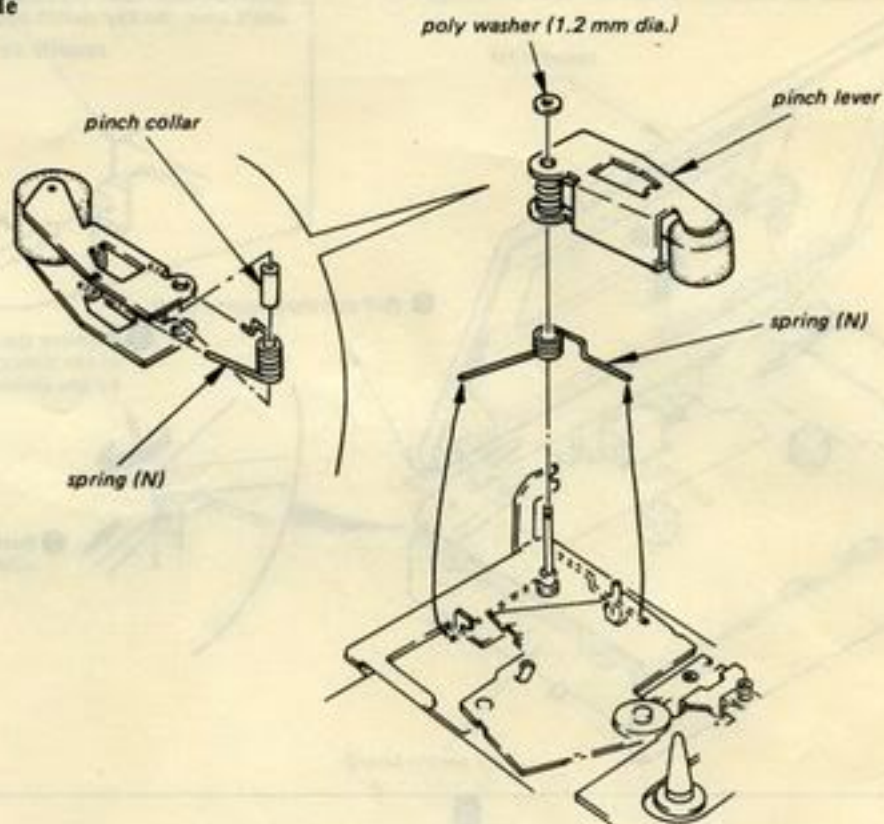
## • Cassette Holder



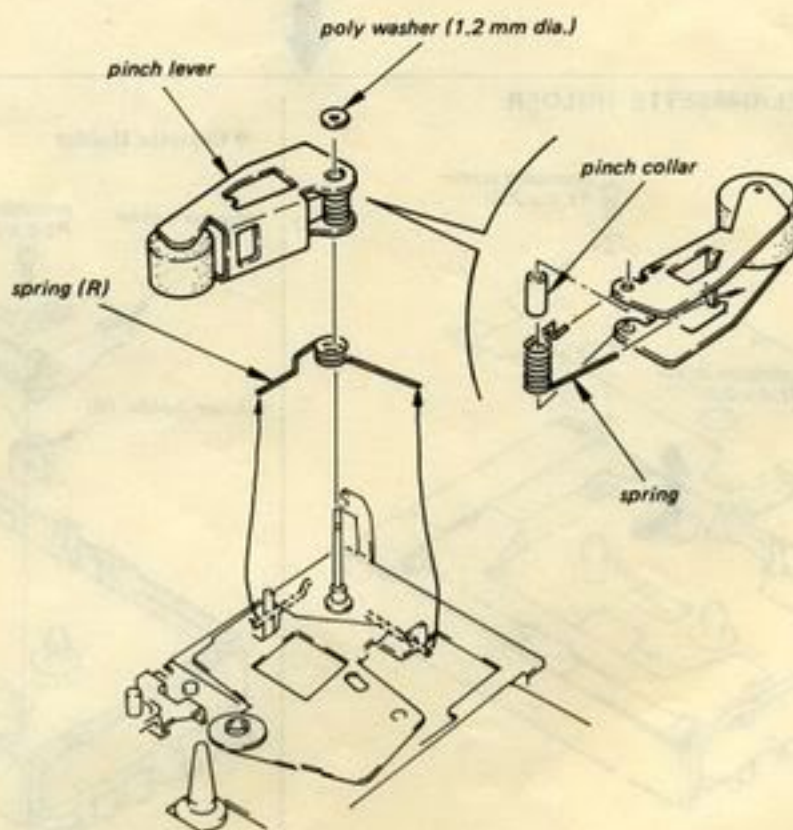


## PINCH ROLLER

## • FWD Side



## • REVERSE Side



## SECTION 3 ADJUSTMENTS

### 3-1. MECHANICAL ADJUSTMENTS

#### PRECAUTION

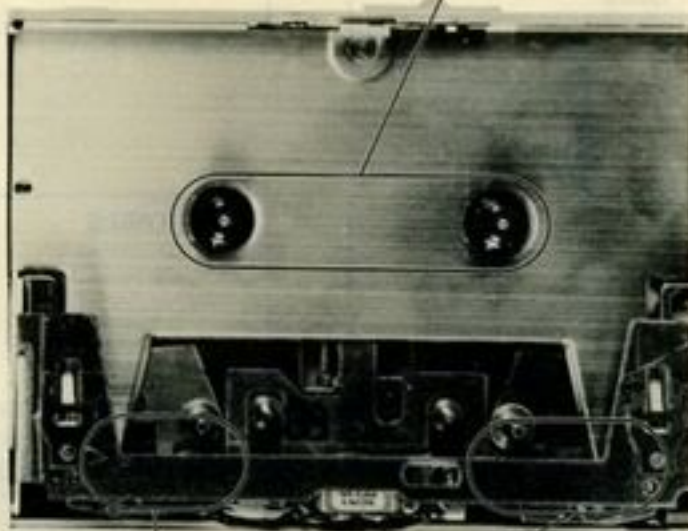
1. Clean the following parts with a denatured-alcohol-moistened swab:
 

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

#### Torque Measurement

Power voltage: DC 2,5 V

	Torque meter	Meter reading
FWD, REV	CQ-102B, 102RB	22 – 36 g · cm
FF, REW	CQ-201B	55 g · cm and more
Back Tension	CQ-102C	less than 3 – 5 g · cm
Tape Tension	CQ-403, 403R	60 g and more



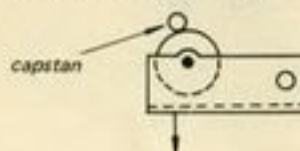
#### Pinch Roller Pressure Measurement

##### FWD mode

Hook the tension gauge in the direction shown by the arrow and move the pinch roller away from the capstan.

Then, return the pinch roller to the capstan gradually and read the scale, just when the pinch roller starts to rotate again.

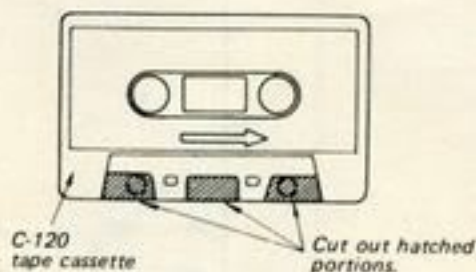
Specification: 150 – 190 g



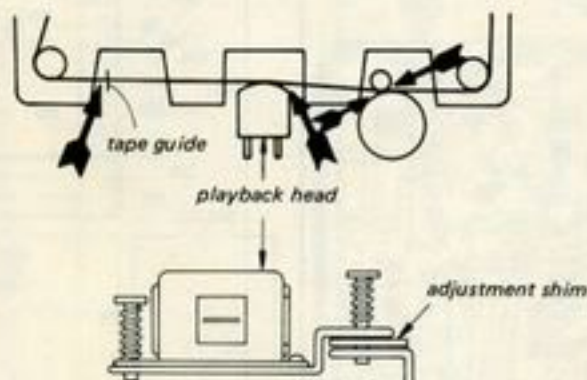


### Head Height Adjustment

1. Prepare 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.



Shim, head height adjustment

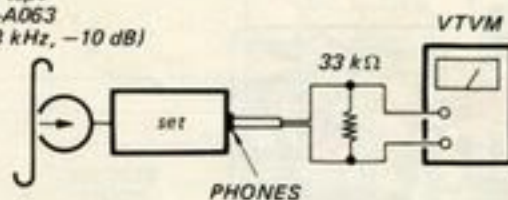
Part No.	t
3-310-031-01	0.2
3-310-031-11	0.4
3-310-031-21	0.8
3-310-031-31	1.0

### Playback Head Azimuth Adjustment

#### Procedure:

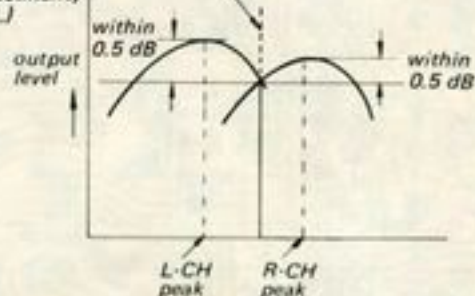
1. Mode: REV

test tape  
P-4-A063  
(6.3 kHz, -10 dB)



2. Turn the adjustment screw (A) for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.

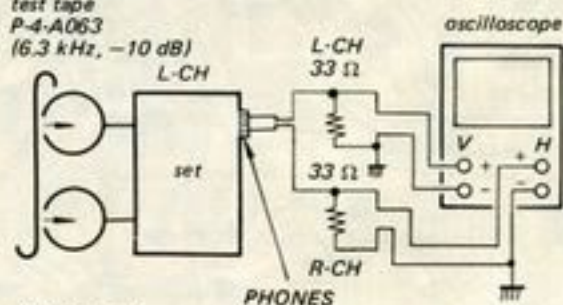
(After this adjustment, perform step 4.)



3. Phase Check

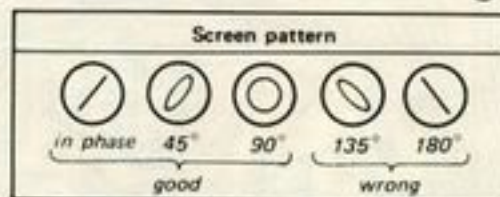
Mode: playback

test tape  
P-4-A063  
(6.3 kHz, -10 dB)



4. FWD mode

Repeat step 1-3. (with adjustment screw (B))



Adjustment Location:





## 3-2. ELECTRICAL ADJUSTMENTS

## Tape Speed Adjustment

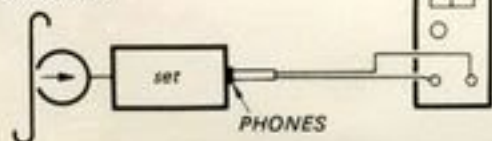
## Setting:

VOLUME knob: mechanical mid.

## Procedure:

FWD mode:

test tape  
WS-48  
(3 kHz, 0 dB)



## Specification:

Speed checker	Digital frequency counter
$\pm 1\%$	2,970 to 3,030 Hz

Adjustment Location: Audio board



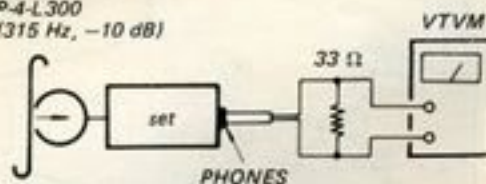
RV601

## Dolby Level Adjustment

## Procedure:

FWD mode

test tape  
P-4-L300  
(315 Hz, -10 dB)



## Specification:

PHONES level: -20 to -18 dB

- 1) If the level does not obtain the specification, adjust RV101, 201.
- 2) If the levels are different in FWD and REV, take the midium.

Adjustment Location: Audio board



RV101

RV201

## Muting Adjustment

### Setting:

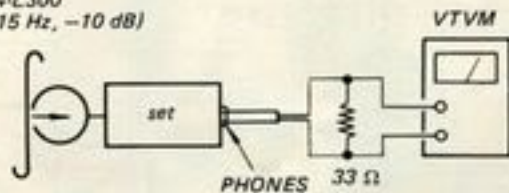
Power voltage: 1.9 V

Connect the portion marked by (A) .

### Procedure:

Playback mode

P-4-L300  
(315 Hz, -10 dB)



If the output does not appear in the headphones, unsolder the portion (A) .

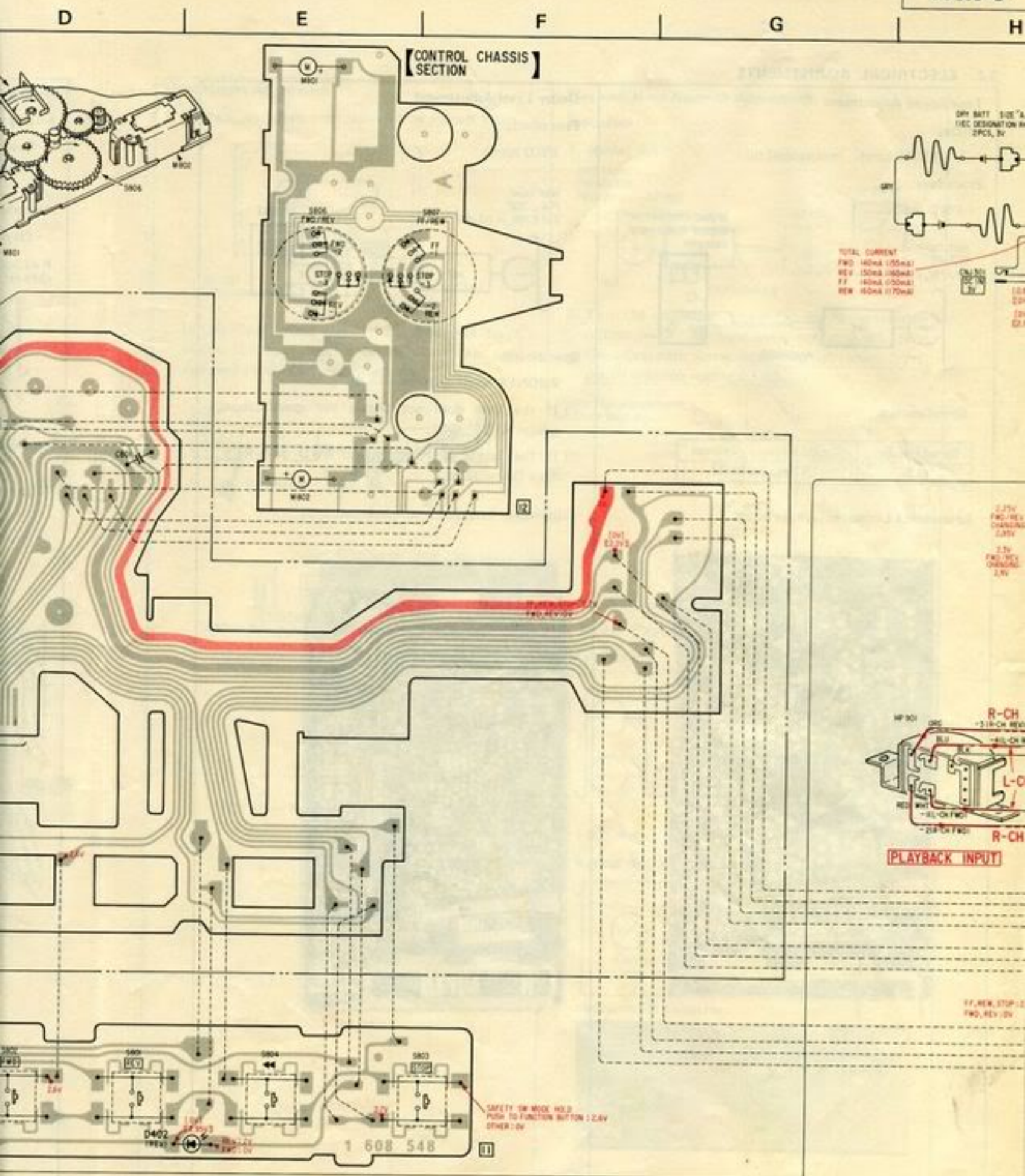
Adjustment Location: Audio board









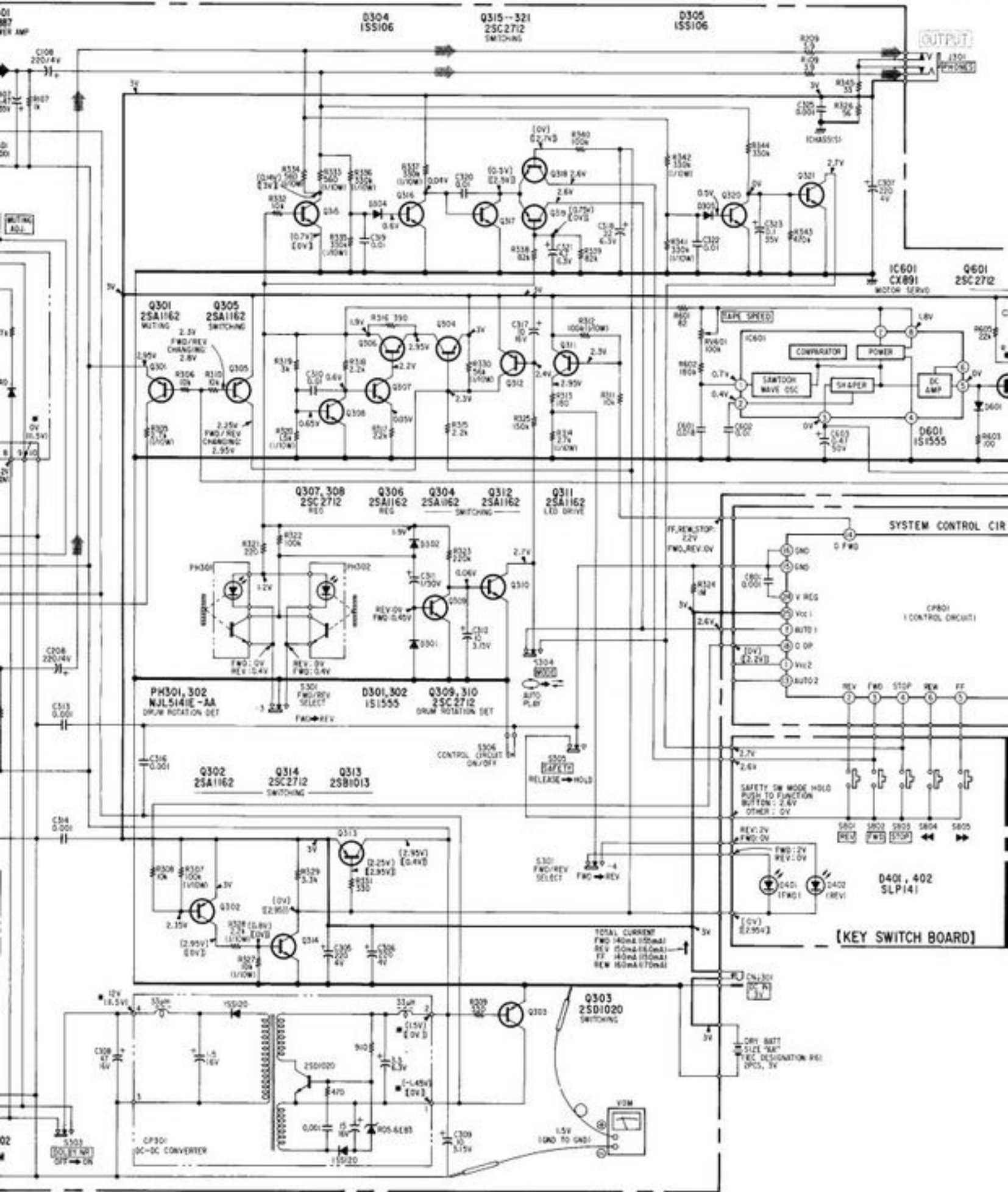


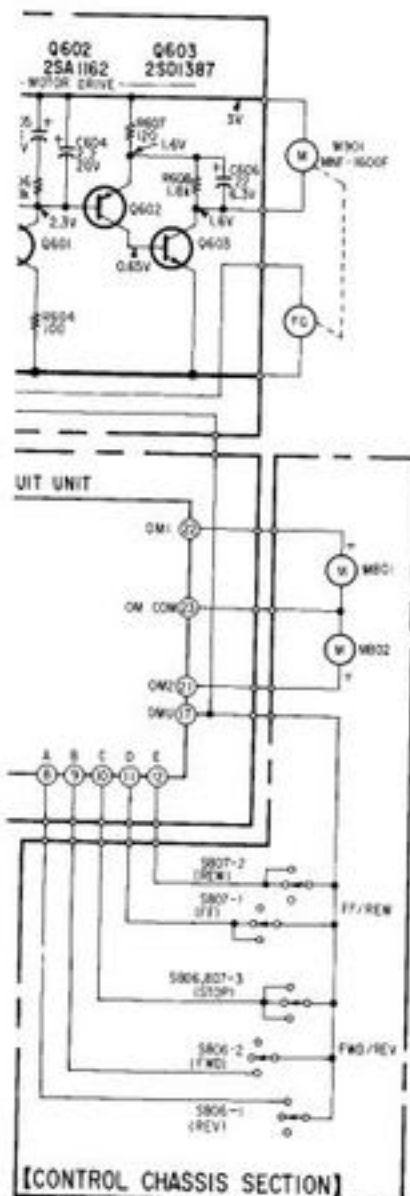






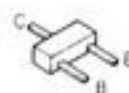




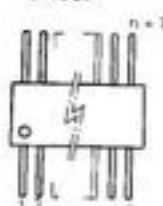


## Semiconductor Lead Layouts

2SA812  
2SC2712  
2SA1162



CX887



1S1555  
1T22A  
1T22AM  
1SS106



2SB1013  
2SD1387



CX891



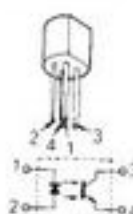
SLP114B



2SD1020



NJL5141E



## Note:

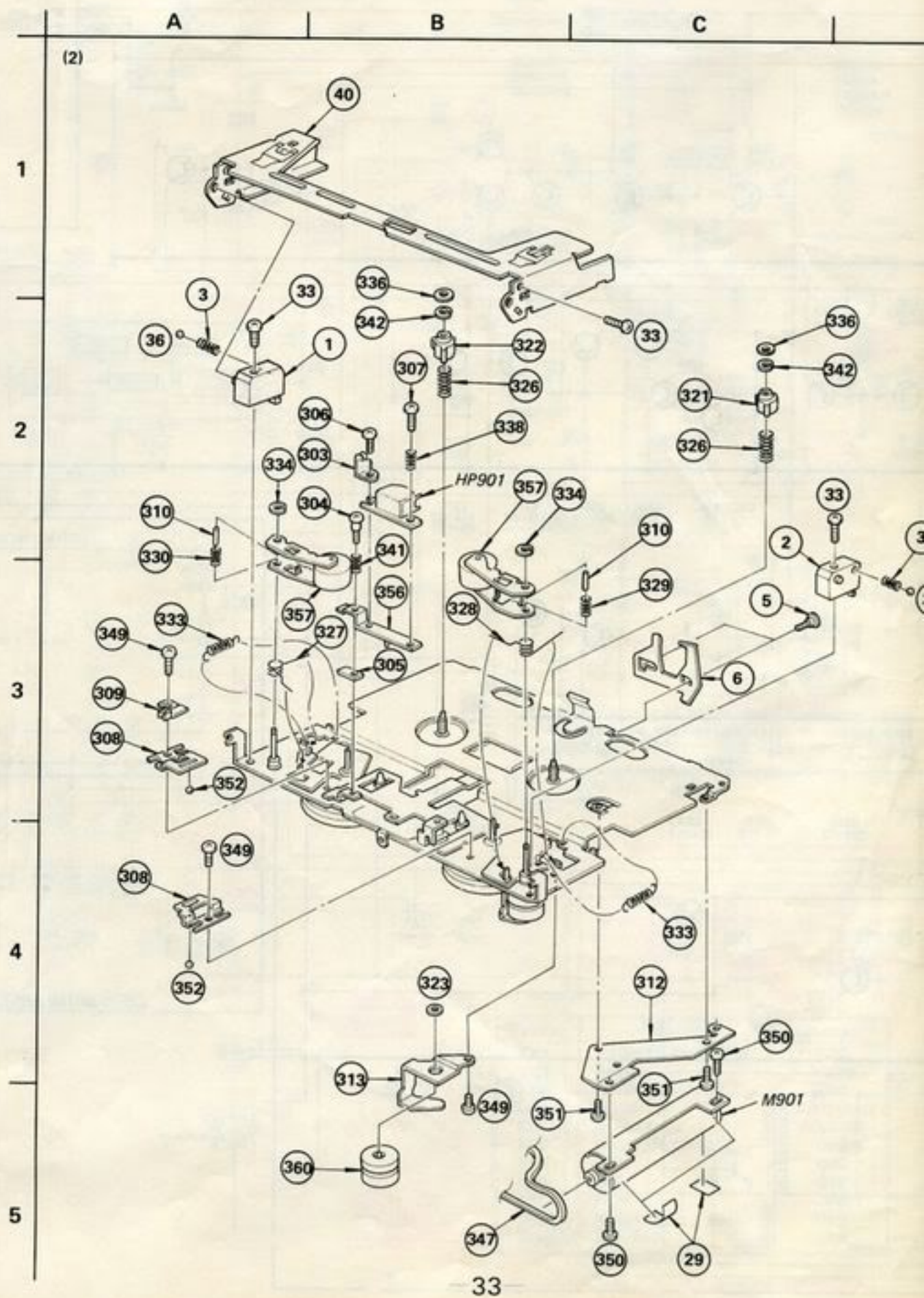
- : signal path
- All capacitors are in  $\mu F$  unless otherwise noted.  $pF$  :  $\mu\mu F$   
50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms,  $\frac{1}{2}$  W unless otherwise noted.  
k $\Omega$  : 1000  $\Omega$ , M $\Omega$  : 1000 k $\Omega$
- : adjustment for repair.
- : B+ bus.
- Readings are taken under no-signal conditions with a VOM (50 k $\Omega/V$ ).  
no mark : FWD mode  
( ) : DOLBY ON  
[ ] : FWD, REV, FF, REW mode  
[ ] : STOP mode  
• Readings are taken with VOM (A) shown by illustration.
- Switches

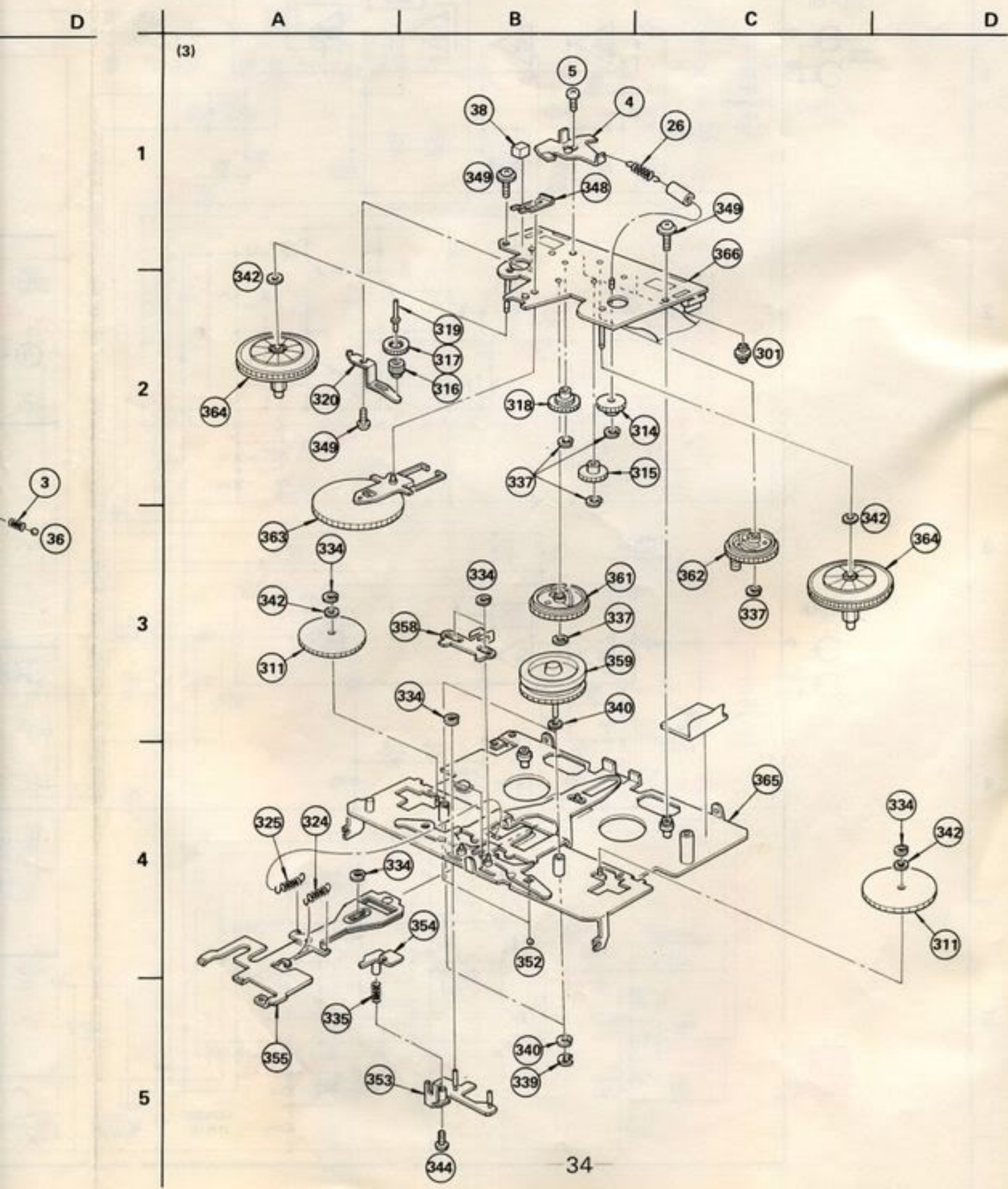
Ref. No.	Switch	Position
S301	FWD/REV SELECTOR	FWD
S302	TAPE	NORM
S303	DOLBY NR	OFF
S304	MODE	AUTO PLAY
S305	SAFETY	RELEASE
S306	CONTROL CIRCUIT	OFF
S801	REV	OFF
S802	FWD	OFF
S803	STOP	OFF
S804	◀ (REW)	OFF
S805	▶ (FF)	OFF

Note: Voltages are measured with a VOM (50k $\Omega/V$ ).











## GENERAL SECTION

No.	Part No.	Description
1	3-310-091-00	RETAINER (R), FULCRUM
2	3-310-092-00	RETAINER (N), FULCRUM
3	3-310-093-00	SPRING, COMPRESSION
4	3-310-094-00	PLATE, RELEASE, E.E
5	3-310-095-00	SCREW, EE
6	3-310-096-00	PLATE, LOCK, EE
7	3-310-097-00	TERMINAL, BATTERY
8	3-310-098-00	SHEET, KNOB
9	3-310-099-00	BRACKET, PANEL
10	3-310-100-00	PLATE, SHIELD, HEAD
11	3-310-101-01	(SILVER).....KNOB, CONTROL
11	3-310-101-11	(EXCLUDING US:BLACK)...KNOB, CONTROL
12	3-310-104-01	(SILVER).....KNOB, CONTROL
12	3-310-104-11	(EXCLUDING US:BLACK)...KNOB, CONTROL
13	3-310-105-01	(SILVER).....KNOB, TAPE SELECTION
13	3-310-105-11	(EXCLUDING US:BLACK)...KNOB, TAPE SELECTION
14	3-310-106-01	SCREW, PC BOARD
15	3-310-107-00	SCREW, GROUND
17	3-310-113-00	SPRING
18	3-310-116-00	SHAFT, CASSETTE
19	3-310-117-01	(SILVER).....LID, BATTERY CASE
19	3-310-117-11	(EXCLUDING US:BLACK)...LID, BATTERY CASE
21	3-310-118-00	KNOB, LOCK
22	3-310-119-01	(SILVER).....ORNAMENT, AZIMUTH ADJUSTMENT
22	3-310-119-11	(EXCLUDING US:BLACK)...ORNAMENT, AZIMUTH ADJUSTMENT
24	3-310-125-00	PANEL, REEL
25	3-310-133-01	(SILVER).....CHASSIS
25	3-310-133-11	(EXCLUDING US:BLACK)...CHASSIS
26	3-536-767-XX	SPRING, TENSION
27	3-578-104-00	SPRING, COMPRESSION
28	3-578-232-00	(SILVER).....ORNAMENT, ADJUSTMENT HOLE
28	3-578-232-21	(EXCLUDING US:BLACK)...ORNAMENT, ADJUSTMENT HOLE
29	3-831-441-XX	CUSHION
30	3-880-990-00	SCREW (1.7X3), FLAT, (+) SPECIAL
31	7-627-551-28	SCREW, PRECISION +P 1.4X2.5
32	7-627-850-07	SCREW, PRECISION +P 1.4X2
33	7-627-850-17	SCREW, PRECISION +P 1.4X2.5
34	7-627-551-87	(SILVER).....SCREW, PRECISION +P 1.4X1.8
34	7-627-555-88	(EXCLUDING US:BLACK)...PRECISION SCREW +P 1.4X1.8
36	7-671-112-01	STEEL, BALL
37	9-911-816-01	RIBBON, BATTERY
38	9-911-841-XX	CUSHION, RUBBER

## NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (▲-▲▲-▲▲-XX or ▲-▲▲-▲-XX) may be different from those used in the set.

## CAPACITORS:

- All capacitors are in  $\mu F$ . Common capacitors are omitted. Refer to the following lists for their part numbers.
- MF:  $\mu F$ , PF:  $\mu F$ .

## RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.

- F: nonflammable

## COILS

- MH: mH, UH:  $\mu H$

## GENERAL SECTION

No.	Part No.	Description
39	X-3310-022-0	(SILVER).....KNOB ASSY, OPEN
39	X-3310-025-0	(EXCLUDING US:BLACK)...KNOB ASSY, OPEN
40	X-3310-023-0	HOLDER ASSY, CASSETTE
50	X-3310-030-1	(SILVER).....CABINET ASSY, REAR
50	X-3310-031-1	(EXCLUDING US:BLACK)...CABINET ASSY, REAR
51	X-3310-032-1	(EXCLUDING US:SILVER)...CASSETTE LID ASSY
51	X-3310-033-1	(EXCLUDING US:BLACK)...CASSETTE LID ASSY
51	X-3310-035-1	(US:SILVER).....CASSETTE LID ASSY
52	X-3310-028-1	(SILVER).....DIRECTION BUTTON ASSY
52	X-3310-029-1	(EXCLUDING US:BLACK)...DIRECTION BUTTON ASSY

## ACCESSORY &amp; PACKING MATERIAL

No.	Part No.	Description
100	3-310-002-00	CUSHION (UPPER)
101	3-310-003-00	INDIVIDUAL CARTON
102	3-310-005-00	CUSHION (LOWER)
103	3-310-134-00	CASE, CARRYING
104	3-701-308-00	LABEL, PRODUCT COLOR
105	3-701-309-00	LABEL, PRODUCT COLOR
106	3-310-135-01	(SILVER).....LABEL, MODEL NUMBER
106	3-310-135-11	(EXCLUDING US:BLACK)...LABEL, MODEL NUMBER
107	3-701-625-00	BAG, POLYETHYLENE
108	3-701-999-00	LABEL, SERIAL NUMBER
109	3-795-110-11	CARD, WARRANTY, INTERNATIONAL
110	3-773-183-11	MANUAL, INSTRUCTION
111	X-3310-027-0	BELT, CARRYING
112	8-951-183-91	HEADPHONE (MDR-W5)
113	8-893-530-00	TAPE DEMONSTRATION (CD-818)
114	1-528-052-31	BATTERY
115	3-310-148-00	FRAME, INNER

## SEMICONDUCTORS

- In each case, U:  $\mu$ , for example:  
 UA...:  $\mu A$ ..., UPA...:  $\mu P A$ ..., UPC...:  $\mu P C$ ...,  
 UPD...:  $\mu P D$ ...



## MECHANISM SECTION

No.	Part No.	Description
301	3-308-502-00	WHEEL, WORM
303	3-310-029-00	CLAMP (A), LEAD
304	3-310-030-00	SCREW
305	3-310-031-01	SEAM (T=0.2)
305	3-310-031-11	SEAM (T=0.4)
305	3-310-031-21	SEAM (T=0.8)
305	3-310-031-31	SEAM (T=1.0)
306	3-310-034-00	SCREW (M2X1.6), PRECISION
307	3-310-035-00	SCREW, ADJUSTMENT, AZIMUTH
308	3-310-036-00	SPRING
309	3-310-037-00	CLAMP (B), LEAD
310	3-310-038-00	COLLAR, PINCH
311	3-310-043-00	GEAR, FWD
312	▲;3-310-044-00	BRACKET, MOTOR
313	▲;3-310-049-00	RETAINER, THRUST
314	3-310-055-00	GEAR (A), MIDWAY
315	3-310-056-00	GEAR (B), MIDWAY
316	3-310-057-00	GEAR (C), MIDWAY
317	3-310-058-00	GEAR (D), MIDWAY
318	3-310-059-00	GEAR (E), MIDWAY
319	3-310-060-00	SHAFT, GEAR (C), MIDWAY
320	3-310-064-00	SPRING
321	3-310-076-00	CLAW (N), REEL
322	3-310-077-00	CLAW (R), REEL
323	3-310-082-01	SPACER (T=0.13)
323	3-310-082-11	SPACER (T=0.25)
324	3-310-083-00	SPRING, TENSION
325	3-310-084-00	SPRING, TENSION
326	3-310-085-00	SPRING, COMPRESSION
327	3-310-086-00	SPRING (R)
328	3-310-087-00	SPRING (N)
329	3-310-088-00	SPRING (N)
330	3-310-089-00	SPRING (R)
331	3-310-102-00	BASE, PHOTO REFLECTOR
332	▲;3-310-103-00	PLATE, SHIELD, BELT
333	3-559-402-00	SPRING, TENSION
334	3-570-615-00	POLY-WASHER (DIA.1.2)
335	3-578-121-00	SPRING, COMPRESSION
336	3-578-242-00	WASHER
337	3-578-265-11	WASHER, STOPPER
338	3-310-136-00	SPRING, COMPRESSION
339	3-590-768-00	RING (A), E
340	3-590-770-00	POLY-SLIDER (A)
341	3-669-452-00	SPRING, COMPRESSION

## MECHANISM SECTION

No.	Part No.	Description
342	3-701-436-01	WASHER, 1.6
343	3-703-502-21	SCREW
344	3-703-502-71	SCREW
345	3-831-441-XX	SPACER
346	3-884-241-00	SHEET (C), ADHESIVE
347	3-310-050-00	BELT
348	▲;3-310-137-00	SPRING
349	7-627-850-17	SCREW, PRECISION +P 1.4X2.5
350	7-627-850-37	SCREW, PRECISION +P 1.4X1.4
351	7-627-850-47	SCREW, PRECISION +P 1.4X1.6
352	7-671-153-01	STENLESS BOWL
353	▲;X-3310-005-0	PLATE ASSY, ADJUSTMENT, AZIMUTH
354	▲;X-3310-006-0	PLATE (F) ASSY, ADJUSTMENT
355	▲;X-3310-007-0	CHASSIS ASSY, HEAD
356	X-3310-008-0	BRACKET ASSY, HEAD
357	X-3310-009-0	PINCH LEVER ASSY
358	▲;X-3310-010-0	SLIDER ASSY, SWITCH
359	X-3310-011-0	FLYWHEEL ASSY
360	X-3310-012-0	PULLEY ASSY, MIDWAY
361	X-3310-013-0	GEAR ASSY, DRIVING, FR
362	X-3310-014-0	GEAR ASSY, DRIVING, PLAY
363	X-3310-015-0	LEVER ASSY, FR
364	X-3310-016-0	TABLE ASSY, REEL
365	▲;X-3310-018-0	CHASSIS ASSY, MECHANICAL
366	▲;X-3310-019-0	CHASSIS ASSY, CONTROL

## NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (▲-▲▲▲-▲▲▲-XX or ▲-▲▲▲▲-▲▲▲-X) may be different from those used in the set.

## CAPACITORS:

- All capacitors are in  $\mu\text{F}$ . Common capacitors are omitted. Refer to the following lists for their part numbers.  
MF: $\mu\text{F}$ , PF: $\mu\text{F}$ .

## RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.

- F : nonflammable

## COILS

- MMH : mH, UH :  $\mu\text{H}$

## SEMICONDUCTORS

- In each case, U :  $\mu$ , for example:  
UA---:  $\mu\text{A}$ ---, UPA---:  $\mu\text{PA}$ ---, UPC---:  $\mu\text{PC}$ ,  
UPD---:  $\mu\text{PD}$ ---

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
501	1-216-296-00	CARBON 0 5% 1/8W
502	1-464-231-00	CIRCUIT UNIT, SYSTEM CONTROL (2)
503	1-464-231-00	PC BOARD ASSY, AUDIO
C101	1-163-010-91	CHIP COMPONENT 0.0012MF 10% 50V
C104	1-163-047-91	CHIP COMPONENT 0.001MF 10% 50V
C106	1-163-009-91	CHIP COMPONENT 0.001MF 10% 50V
C108	1-123-827-00	ELECT 220MF 20% 4V
C201	1-163-010-91	CHIP COMPONENT 0.0012MF 10% 50V
C204	1-163-047-91	CHIP COMPONENT 0.001MF 10% 50V
C206	1-163-047-91	CHIP COMPONENT 0.001MF 10% 50V
C208	1-123-827-00	ELECT 220MF 20% 4V
C301	1-163-047-91	CHIP COMPONENT 0.001MF 10% 50V
C305	1-123-827-00	ELECT 220MF 20% 4V
C306	1-123-827-00	ELECT 220MF 20% 4V
C307	1-123-827-00	ELECT 220MF 20% 4V
C308	1-123-821-41	ELECT 47MF 20% 16V
C310	1-163-021-00	CHIP COMPONENT 0.01MF 10% 50V
C313	1-163-009-91	CHIP COMPONENT 0.001MF 10% 50V
C314	1-163-009-91	CHIP COMPONENT 0.001MF 10% 50V
C315	1-163-009-91	CHIP COMPONENT 0.001MF 10% 50V
C316	1-163-047-91	CHIP COMPONENT 0.001MF 10% 50V
C319	1-163-021-00	CHIP COMPONENT 0.01MF 10% 50V
C320	1-163-021-00	CHIP COMPONENT 0.01MF 10% 50V
C322	1-163-021-00	CHIP COMPONENT 0.01MF 10% 50V
C325	1-163-009-91	CHIP COMPONENT 0.001MF 10% 50V
C602	1-163-021-00	CHIP COMPONENT 0.01MF 10% 50V
CNJ301	1-507-723-00	JACK, EXTENSION POWER
CP101	1-464-205-00	CIRCUIT UNIT, AGC
CP201	1-464-205-00	CIRCUIT UNIT, AGC
CP301	1-464-207-00	CONVERTER UNIT, DC-DC
D101	8-719-422-21	DIODE 1T22AM
D102	8-719-422-21	DIODE 1T22AM
D201	8-719-422-21	DIODE 1T22AM
D202	8-719-422-21	DIODE 1T22AM
D301	8-719-815-55	DIODE 1S1555
D302	8-719-815-55	DIODE 1S1555
D303	8-719-815-55	DIODE 1S1555
D304	8-719-901-06	DIODE 1S1506
D305	8-719-901-06	DIODE 1S1506
D401	8-719-991-14	DIODE SLP1148
D402	8-719-991-14	DIODE SLP1148
D601	8-719-815-55	DIODE 1S1555
HP901	8-825-537-10	HEAD, PLAYBACK (PP238-3604)
IC301	8-759-600-09	IC CX-887
IC601	8-759-608-91	IC CX-891

## NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

## CAPACITORS:

- All capacitors are in  $\mu$ F. Common capacitors are omitted. Refer to the following lists for their part numbers.
- MF:  $\mu$ F, PF:  $\mu$ F.

## RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.

- F: nonflammable

## COILS

- MMH: mH, UH:  $\mu$ H

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
J301	1-507-787-00	JACK
M801	8-835-067-01	MOTOR, DC (DNR-5300A)
M802	8-835-067-01	MOTOR, DC (DNR-5300A)
M901	8-835-008-11	MOTOR, DC (MNF-1600F)
PH301	8-719-751-42	DIODE NJL5141E-AA
PH302	8-719-751-42	DIODE NJL5141E-AA
Q301	8-729-216-22	TRANSISTOR 2SA1162
Q302	8-729-216-22	TRANSISTOR 2SA1162
Q303	8-729-102-03	TRANSISTOR 2SD1020
Q304	8-729-216-22	TRANSISTOR 2SA1162
Q305	8-729-216-22	TRANSISTOR 2SA1162
Q306	8-729-216-22	TRANSISTOR 2SA1162
Q307	8-729-271-12	TRANSISTOR 2SC2712
Q308	8-729-271-12	TRANSISTOR 2SC2712
Q309	8-729-271-12	TRANSISTOR 2SC2712
Q310	8-729-271-12	TRANSISTOR 2SC2712
Q311	8-729-216-22	TRANSISTOR 2SA1162
Q312	8-729-216-22	TRANSISTOR 2SA1162
Q313	8-729-801-83	TRANSISTOR 2SB1013
Q314	8-729-271-12	TRANSISTOR 2SC2712
Q315	8-729-271-12	TRANSISTOR 2SC2712
Q316	8-729-271-12	TRANSISTOR 2SC2712
Q317	8-729-271-12	TRANSISTOR 2SC2712
Q318	8-729-271-12	TRANSISTOR 2SC2712
Q319	8-729-271-12	TRANSISTOR 2SC2712
Q320	8-729-271-12	TRANSISTOR 2SC2712
Q321	8-729-271-12	TRANSISTOR 2SC2712
Q601	8-729-271-12	TRANSISTOR 2SC2712
Q602	8-729-216-22	TRANSISTOR 2SA1162
Q603	8-729-801-92	TRANSISTOR 2SD1387
R101	1-216-083-00	CARBON CHIP 27K 5% 1/10W
R102	1-216-035-00	CARBON CHIP 270 5% 1/10W
R104	1-216-246-91	CARBON CHIP 100K 5% 1/8W
R106	1-216-206-91	CARBON CHIP 2.2K 5% 1/8W
R109	1-216-140-00	CARBON CHIP 3.9 5% 1/8W
R111	1-216-097-00	CARBON CHIP 100K 5% 1/10W
R112	1-216-114-91	CARBON CHIP 510K 5% 1/10W
R113	1-216-051-00	CARBON CHIP 1.2K 5% 1/10W
R114	1-216-043-00	CARBON CHIP 560 5% 1/10W
R115	1-216-077-00	CARBON CHIP 15K 5% 1/10W
R116	1-216-087-00	CARBON CHIP 39K 5% 1/10W
R117	1-216-073-00	CARBON CHIP 10K 5% 1/10W
R201	1-216-083-00	CARBON CHIP 27K 5% 1/10W
R202	1-216-035-00	CARBON CHIP 270 5% 1/10W
R204	1-216-246-91	CARBON CHIP 100K 5% 1/8W

## SEMICONDUCTORS

- In each case, U:  $\mu$ , for example:  
 UA...:  $\mu$ A..., UPA...:  $\mu$ PA..., UPC...:  $\mu$ PC,  
 UPD...:  $\mu$ PD...

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
R206	1-216-206-91	CARBON CHIP 2.2K 5% 1/8W
R209	1-216-140-00	CARBON CHIP 3.9 5% 1/8W
R211	1-216-246-91	CARBON CHIP 100K 5% 1/8W
R212	1-216-114-91	CARBON CHIP 510K 5% 1/10W
R213	1-216-051-00	CARBON CHIP 1.2K 5% 1/10W
R214	1-216-043-00	CARBON CHIP 560 5% 1/10W
R215	1-216-077-00	CARBON CHIP 15K 5% 1/10W
R301	1-216-212-91	CARBON CHIP 3.9K 5% 1/8W
R302	1-216-206-91	CARBON CHIP 2.2K 5% 1/8W
R303	1-216-182-00	CARBON CHIP 220 5% 1/8W
R304	1-216-238-91	CARBON CHIP 47K 5% 1/8W
R305	1-216-059-00	CARBON CHIP 2.7K 5% 1/10W
R307	1-216-097-00	CARBON CHIP 100K 5% 1/10W
R309	1-216-186-00	CARBON CHIP 330 5% 1/8W
R312	1-216-097-00	CARBON CHIP 100K 5% 1/10W
R314	1-216-059-00	CARBON CHIP 2.7K 5% 1/10W
R315	1-216-206-91	CARBON CHIP 2.2K 5% 1/8W
R316	1-216-188-91	CARBON CHIP 390 5% 1/8W
R317	1-216-206-91	CARBON CHIP 2.2K 5% 1/8W
R318	1-216-206-91	CARBON CHIP 2.2K 5% 1/8W
R320	1-216-053-00	CARBON CHIP 1.5K 5% 1/10W
R321	1-216-178-00	CARBON CHIP 150 5% 1/8W
R322	1-216-246-91	CARBON CHIP 100K 5% 1/8W
R326	1-216-168-91	CARBON CHIP 56 5% 1/8W
R327	1-216-073-00	CARBON CHIP 10K 5% 1/10W
R330	1-216-091-00	CARBON CHIP 56K 5% 1/10W
R331	1-216-186-00	CARBON CHIP 330 5% 1/8W
R333	1-216-043-00	CARBON CHIP 560 5% 1/10W
R334	1-216-043-00	CARBON CHIP 560 5% 1/10W
R335	1-216-109-00	CARBON CHIP 330K 5% 1/10W
R336	1-216-109-00	CARBON CHIP 330K 5% 1/10W
R337	1-216-109-00	CARBON CHIP 330K 5% 1/10W
R338	1-216-244-91	CARBON CHIP 82K 5% 1/8W
R339	1-216-244-91	CARBON CHIP 82K 5% 1/8W
R340	1-216-246-91	CARBON CHIP 100K 5% 1/8W
R341	1-216-109-00	CARBON CHIP 330K 5% 1/10W
R342	1-216-109-00	CARBON CHIP 330K 5% 1/10W
R345	1-216-162-91	CARBON CHIP 33 5% 1/8W
R601	1-216-172-00	CARBON CHIP 82 5% 1/8W
RV101	1-226-753-00	RES. ADJ. SOLID 47K
RV201	1-226-753-00	RES. ADJ. SOLID 47K
RV301	1-228-169-00	RES. VAR. CARBON 10K/10K
RV601	1-226-784-00	RES. ADJ. METAL GLAZE 100K

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
S301	1-554-029-00	SWITCH, SLIDE
S302	1-554-078-00	SWITCH, SLIDE
S303	1-553-197-00	SWITCH, SLIDE
S304	1-553-197-00	SWITCH, SLIDE
S305	1-553-197-00	SWITCH, SLIDE
S306	1-553-817-00	SWITCH, LEAF
S801	1-554-232-00	SWITCH, KEY BOARD
S802	1-554-232-00	SWITCH, KEY BOARD
S803	1-554-232-00	SWITCH, KEY BOARD
S804	1-554-232-00	SWITCH, KEY BOARD
S805	1-554-232-00	SWITCH, KEY BOARD

## NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

## CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers.
- MF: μF, PF: pF.

## RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F: nonflammable

## COILS

- MMH: mH, LH: μH

## SEMICONDUCTORS

- In each case, U: u, for example:  
UA---: uA---, UPA---: uPA---, UPC---: uPC,  
UPD---: uPD---



## ELECTROLYTIC CAPACITORS

CAP. (μF)	RATING					
	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	→	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-121-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-121-067-00	1-121-984-00	→
3300	1-121-661-00	1-121-071-00	1-121-071-00	→	→	→

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	→	→	→	→
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	→	1-123-028-00
3.3	1-121-995-00	→	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	→	→
47	1-123-251-00	1-121-919-00	→	→
100	1-123-084-00	→	→	→

## CERAMIC CAPACITORS

RATING							
CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-829-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.012	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.017	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

## CERAMIC (SEMICONDUCTOR) CAPACITORS

RATING					
CAP. (pF)	25 VOLT.	50 VOLT.	CAP. (pF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015	→	1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018	→	1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022	→	1-161-043-00	0.039	1-161-019-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

## MYLAR CAPACITORS

RATING											
CAP. (μF)	50 VOLT.	100 VOLT.	200 VOLT.	CAP. (μF)	50 VOLT.	100 VOLT.	200 VOLT.	CAP. (μF)	50 VOLT.	100 VOLT.	200 VOLT.
	PART No.	PART No.	PART No.		PART No.	PART No.	PART No.		PART No.	PART No.	PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	—	—
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	—	—
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	—	—
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	—	—
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				



## TANTALUM CAPACITORS

RATING							
→ : Use the high voltage rated one.							
CAP. (μF)	3.15 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	25 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.01					→	→	1-131-396-00
0.015					→	→	1-131-397-00
0.022					→	→	1-131-398-00
0.033					→	→	1-131-399-00
0.047					→	→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	→	→	→	→	1-131-412-00	→	1-131-406-00
0.68	→	→	→	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	→	→	1-131-418-00	→	1-131-413-00	→	1-131-408-00
1.5	→	1-131-421-00	→	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	→	1-131-419-00	→	1-131-414-00	1-131-355-00	1-131-349-00
3.3	→	1-131-422-00	→	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	→	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	→	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	→
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00				
68	1-131-394-00	1-131-388-00	→	→			
100	1-131-395-00	→	→	→			



## TANTALUM CAPACITORS

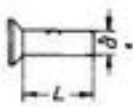
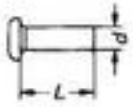
RATING						
CAP. (μF)	3 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			→	→	1-131-262-00	1-131-278-00
0.33			→	→	1-131-263-00	1-131-279-00
0.47			1-131-169-00	→	1-131-264-00	1-131-280-00
0.68			→	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	→	1-131-266-00	1-131-282-00
1.5		1-131-250-00	→	→	1-131-267-00	1-131-283-00
2.2		→	→	1-131-259-00	1-131-268-00	1-131-284-00
3.3		→	1-131-255-00	→	1-131-269-00	→
4.7		1-131-251-00	1-131-171-00	→	1-131-270-00	→
6.8		→	→	1-131-260-00	1-131-271-00	→
10		→	1-131-256-00	→	1-131-272-00	→
15		1-131-252-00	→	1-131-261-00		
22		→	1-131-257-00	→		
33	1-131-176-00	1-131-253-00	1-131-173-00	→		
47	1-131-288-00	1-131-174-00	→	→		
100	1-131-177-00	→	→	→		



## 1/8 WATT CARBON RESISTOR

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
2.0	—	13	1-246-821-00	91	1-246-831-00	620	1-246-841-00	4.3k	1-246-851-00	30k	1-246-861-00	200k	1-246-871-00
2.2	1-246-751-00	15	1-246-761-00	100	1-246-771-00	680	1-246-781-00	4.7k	1-246-791-00	33k	1-246-801-00	220k	1-246-811-00
2.4	—	16	1-246-822-00	110	1-246-832-00	750	1-246-842-00	5.1k	1-246-852-00	36k	1-246-862-00	240k	1-247-054-00
2.7	1-246-752-00	18	1-246-762-00	120	1-246-772-00	820	1-246-782-00	5.6k	1-246-792-00	39k	1-246-802-00	270k	1-247-046-00
3.0	—	20	1-246-823-00	130	1-246-833-33	910	1-246-843-00	6.2k	1-246-853-00	43k	1-246-863-00	300k	1-247-055-00
3.3	1-246-753-00	22	1-246-763-00	150	1-246-773-00	1.0k	1-246-783-00	6.8k	1-246-793-00	47k	1-246-803-00	330k	1-247-047-00
3.6	—	24	1-246-824-00	160	1-246-834-00	1.1k	1-246-844-00	7.5k	1-246-854-00	51k	1-246-864-00	360k	1-247-056-00
3.9	1-246-754-00	27	1-246-764-00	180	1-246-774-00	1.2k	1-246-784-00	8.2k	1-246-794-00	56k	1-246-804-00	390k	1-247-048-00
4.3	—	30	1-246-825-00	200	1-246-835-00	1.3k	1-246-845-00	9.1k	1-246-855-00	62k	1-246-865-00	430k	1-247-057-00
4.7	1-246-755-00	33	1-246-765-00	220	1-246-775-00	1.5k	1-246-785-00	10k	1-246-795-00	68k	1-246-805-00	470k	1-247-049-00
5.1	—	36	1-246-826-00	240	1-246-836-00	1.6k	1-246-846-00	11k	1-246-856-00	75k	1-246-866-00	510k	1-247-058-00
5.6	1-246-756-00	39	1-246-766-00	270	1-246-776-00	1.8k	1-246-786-00	12k	1-246-796-00	82k	1-246-806-00	560k	1-247-050-00
6.2	—	43	1-246-827-00	300	1-246-837-00	2.0k	1-246-847-00	13k	1-246-857-00	91k	1-246-867-00	620k	1-247-059-00
6.8	1-246-757-00	47	1-246-767-00	330	1-246-777-00	2.2k	1-246-787-00	15k	1-246-797-00	100k	1-246-807-00	680k	1-247-051-00
7.5	1-246-818-00	51	1-246-828-00	360	1-246-838-00	2.4k	1-246-848-00	16k	1-246-858-00	110k	1-246-868-00	750k	1-247-060-00
8.2	1-246-758-00	56	1-246-768-00	390	1-246-778-00	2.7k	1-246-788-00	18k	1-246-798-00	120k	1-246-808-00	820k	1-247-052-00
9.1	1-246-819-00	62	1-246-829-00	430	1-246-839-00	3.0k	1-246-849-00	20k	1-246-859-00	130k	1-246-869-00	910k	1-247-061-00
10	1-246-759-00	68	1-246-769-00	470	1-246-779-00	3.3k	1-246-789-00	22k	1-246-799-00	150k	1-246-809-00	1 M	1-247-053-00
11	1-246-820-00	75	1-246-830-00	510	1-246-840-00	3.6k	1-246-850-00	24k	1-246-860-00	160k	1-246-870-00		
12	1-246-760-00	82	1-246-770-00	560	1-246-780-00	3.9k	1-246-790-00	27k	1-246-800-00	180k	1-246-810-00		

## DIMENSIONS AND PART NO. OF PRECISION SCREWS

<div> <div>⊕ K (Flat-countersunk-head screw)</div>  </div>				<div> <div>⊕ P (Pan-head screw)</div>  </div>			
Type	Size (mm) (d × L)	Part No.		Type	Size (mm) (d × L)	Part No.	
		Black	Silver			Black	Silver
Type 1	K1.4 × 1.6	7-627-451-08	7-627-451-07	Type 1	P1.4 × 1.4		7-627-551-47
	K1.4 × 1.8				P1.4 × 1.6	7-627-551-08	7-627-551-07
	K1.4 × 2	7-627-451-38	7-627-451-37		P1.4 × 1.8		
	K1.4 × 2.2				P1.4 × 2	7-627-551-18	7-627-551-17
	K1.4 × 2.5	7-627-451-18	7-627-451-17		P1.4 × 2.2		
	K1.4 × 2.8				P1.4 × 2.5	7-627-551-28	7-627-551-27
	K1.4 × 3	7-627-451-28	7-627-451-27		P1.4 × 2.8	7-627-551-88	
	K1.4 × 3.5		7-627-451-47		P1.4 × 3	7-627-551-58	7-627-551-57
	K1.4 × 4				P1.4 × 3.5	7-627-551-68	7-627-551-67
	K1.4 × 4.5				P1.4 × 4	7-627-551-78	7-627-551-77
	K1.4 × 5	7-627-451-78	7-627-451-77		P1.4 × 4.5		
	K1.7 × 1.8				P1.4 × 5	7-627-551-38	7-627-551-37
	K1.7 × 2				P1.7 × 1.6	7-627-552-18	
	K1.7 × 2.2				P1.7 × 1.8		
	K1.7 × 2.5				P1.7 × 2	7-627-552-28	7-627-552-27
Type 2	K1.7 × 2.8				P1.7 × 2.2		
	K1.7 × 3				P1.7 × 2.5	7-627-552-08	7-627-552-07
	K1.7 × 3.5				P1.7 × 2.8		
	K1.7 × 4	7-627-450-78			P1.7 × 3	7-627-552-38	7-627-552-37
	K1.7 × 4.5				P1.7 × 3.5	7-627-552-78	
	K1.7 × 5				P1.7 × 4	7-627-552-48	7-627-552-47
	K1.7 × 5.5				P1.7 × 4.5		7-627-552-67
	K1.7 × 6				P1.7 × 5	7-627-552-58	7-627-552-57
	K2 × 2	7-627-452-08	7-627-452-07		P1.7 × 5.5		
	K2 × 2.2				P1.7 × 6		
	K2 × 2.5				P2 × 1.8		
	K2 × 2.8				P2 × 2	7-627-553-18	7-627-553-17
	K2 × 3	7-627-452-18	7-627-452-17		P2 × 2.2		7-627-554-07
	K2 × 3.5				P2 × 2.5	7-627-553-28	7-627-553-27
	K2 × 4	7-627-452-28			P2 × 2.8		
	K2 × 4.5				P2 × 3	7-627-553-38	7-627-553-37
	K2 × 5	7-627-452-38			P2 × 3.5		7-627-554-17
	K2 × 5.5				P2 × 4	7-627-553-48	7-627-553-47
Type 3	K2 × 6				P2 × 4.5	7-627-553-58	7-627-553-57
	K2 × 7				P2 × 5		7-627-553-67
	K2 × 8				P2 × 5.5		
					P2 × 6		
					P2 × 7	7-627-553-88	7-627-553-87
					P2 × 8	7-627-553-98	7-627-553-97
					P2 × 10	7-627-553-78	7-627-553-77
					P1.4 × 1.4		7-627-850-37
					P1.4 × 1.6		7-627-850-47
					P1.4 × 1.8		7-627-850-77
					P1.4 × 2	7-627-850-08	7-627-850-07
					P1.4 × 2.2		
					P1.4 × 2.5	7-627-850-18	7-627-850-17
					P1.4 × 2.8		
					P1.4 × 3	7-627-850-28	7-627-850-27
					P1.4 × 3.5	7-627-850-58	7-627-850-57
					P1.4 × 4	7-627-850-68	7-627-850-67
					P1.4 × 4.5		7-627-851-17
					P1.4 × 5		7-627-851-27

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