

WM-DD



US Model
Canadian Model
AEP Model
UK Model
E Model

PHOTO: BLUE TYPE

STEREO CASSETTE PLAYER

SPECIFICATIONS

Power Requirements: 3 V dc
Internal batteries: IEC designation R6 (size AA) x 2
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
US Canadian	120 V ac, 60 Hz	AC-39 available in the U.S.A. and Canada
UK	240 V ac, 50 Hz	AC-37 available in the United Kingdom
AEP	220 V ac, 50 Hz	AC-37 available in European countries
E	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

12 V car battery: Sony DCC-127A* car battery cord

*For connection with the DCC-127A, the optional PC-200 dc plug adaptor is required.

Battery Life (continuous playback hours):

Approx. 9 hours with supplied Sony Eveready AM3 alkaline batteries

For maximum performance we recommend the use of alkaline batteries.

Dimensions: Approx. 79 x 109.2 x 29 mm (w/h/d)
(3 1/8 x 4 5/16 x 1 3/16 inches)
not incl. projecting parts and controls

Weight: Approx. 290 g (10 1/4 oz) incl. batteries, not incl. other accessories

Tape Track: 4-track 2-channel stereo
Fast Winding Time: Approx. 2 min. with Sony Cassette C-60
Frequency Response: 40 – 15,000 Hz (with the TAPE selector set to METAL CrO₂)
40 – 12,000 Hz (with the TAPE selector set to NORM)
Wow and Flutter: ±0.13% (DIN)
0.08% WRMS (NAB)
Power output: 25 mW x 2 (max.)
20 mW x 2 (at 10% harmonic distortion) at dc operation
Output: Headphone jacks (stereo minijack) ... 2 load impedance 8 – 300 ohms

Tape Transport
Mechanism Type

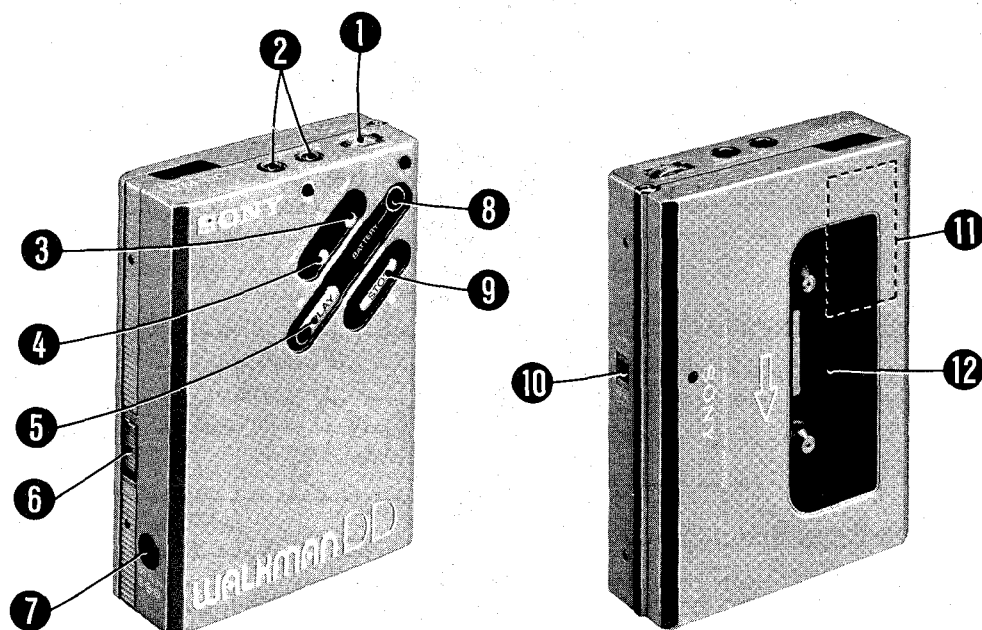
MT-WMDD-24



SONY[®]

SERVICE MANUAL

PARTS IDENTIFICATION



- ① VOLUME control
- ② HEADPHONES jacks (stereo minijacks)
- ③ ►► REW (rewind) button
- ④ ◄◄ FF (fast forward) button
- ⑤ ◄ PLAY (playback) button
- ⑥ Lock button (to secure the cassette panel)
- ⑦ DC IN 3 V (external power input) jack
- ⑧ BATTERY indicator
- ⑨ ■ STOP button
- ⑩ TAPE selector
- ⑪ Battery compartment (inside)
- ⑫ Cassette panel

FEATURE

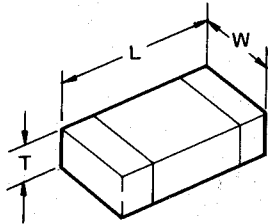
- Capable of selecting NORM or METAL CrO_2 position by type of tape in use.
- DD (Disc Drive) system that has superior anti-rolling effect and low wow and flutter has been employed.
- Auto shut-off mechanism in FWD mode and auto off mechanism in FF, REW modes.

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.

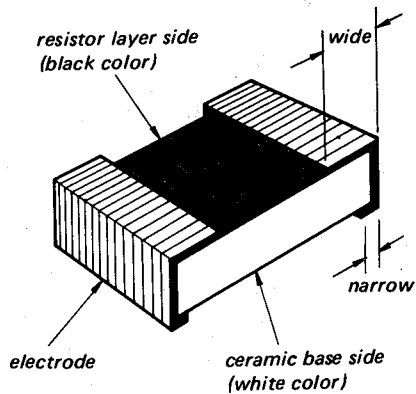
Dimension of transistors and capacitors



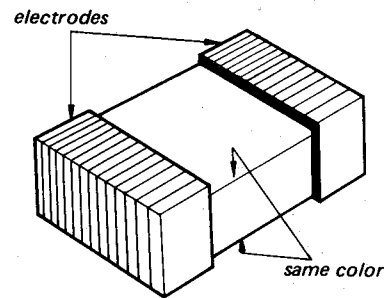
(Unit: mm)

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

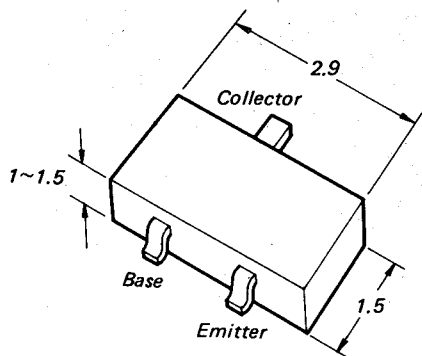
Identification



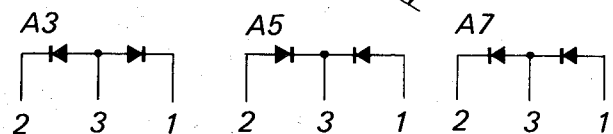
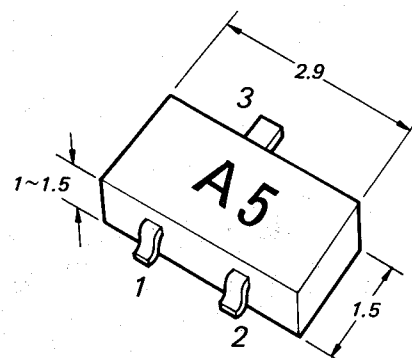
Resistor



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°C (536°F)], a pair of tweezers and braided wire.

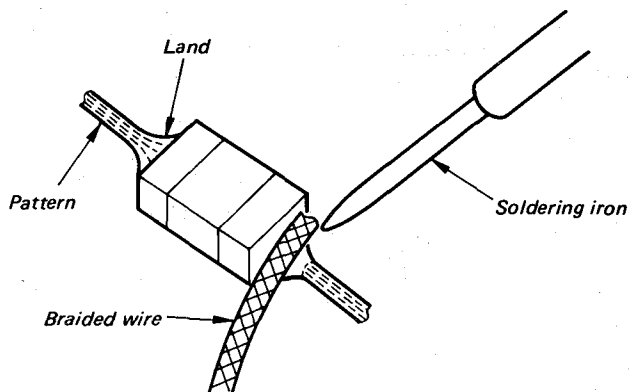
Precautions for replacement

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

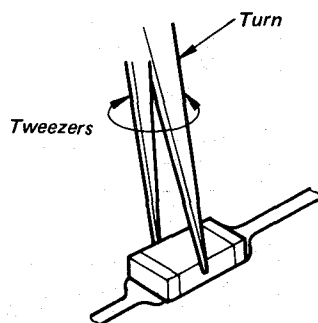
(1) Removing solder at electrode

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.

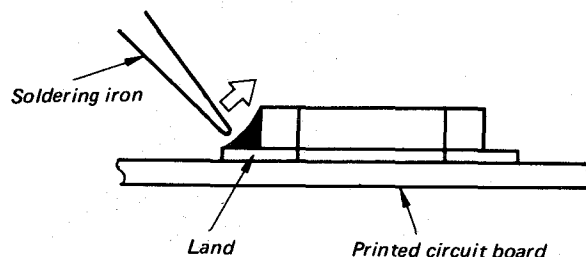
(1) Applying solder to land on one side

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.

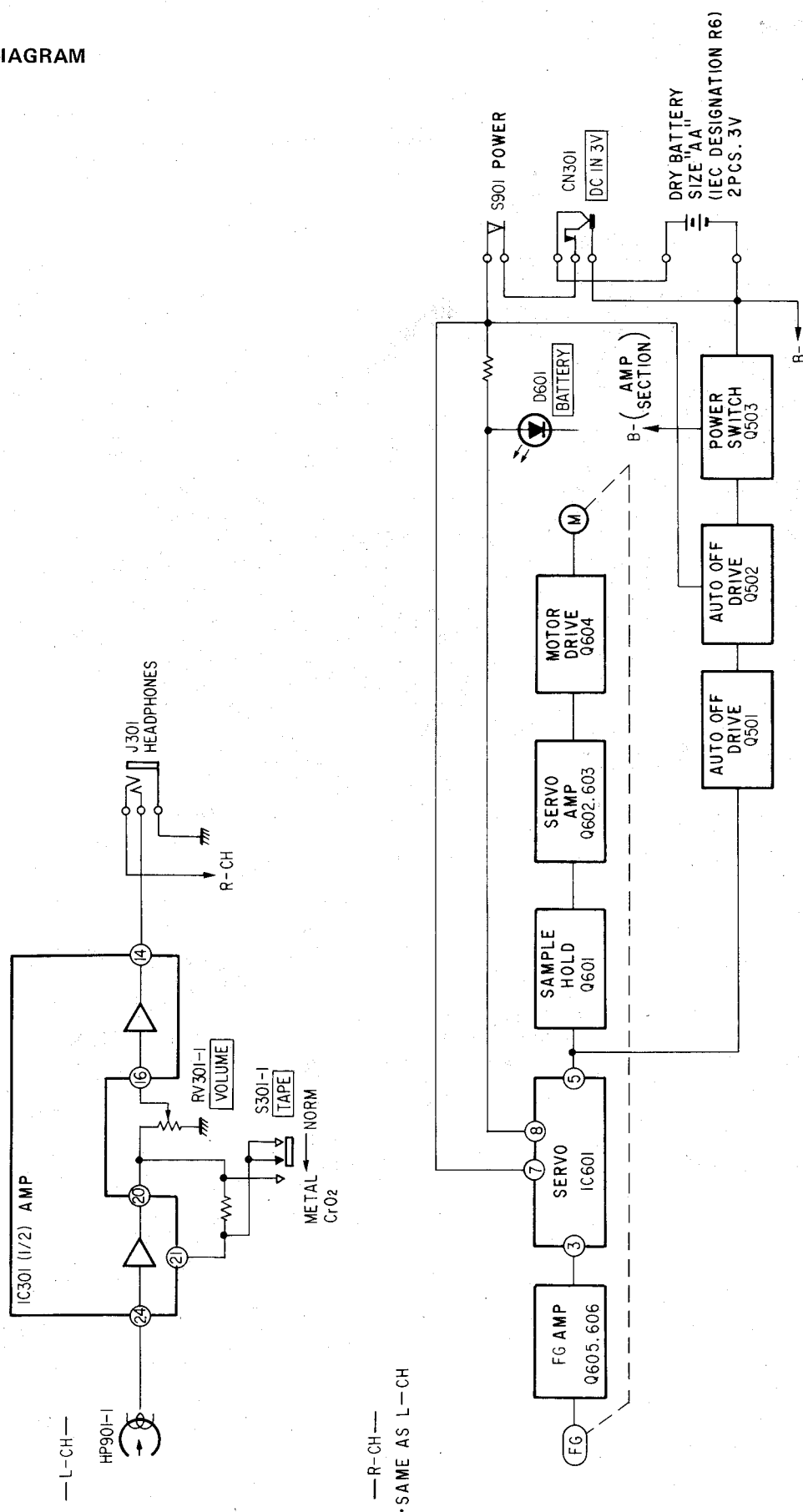


(3) Speedy soldering of electrode on the other side

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

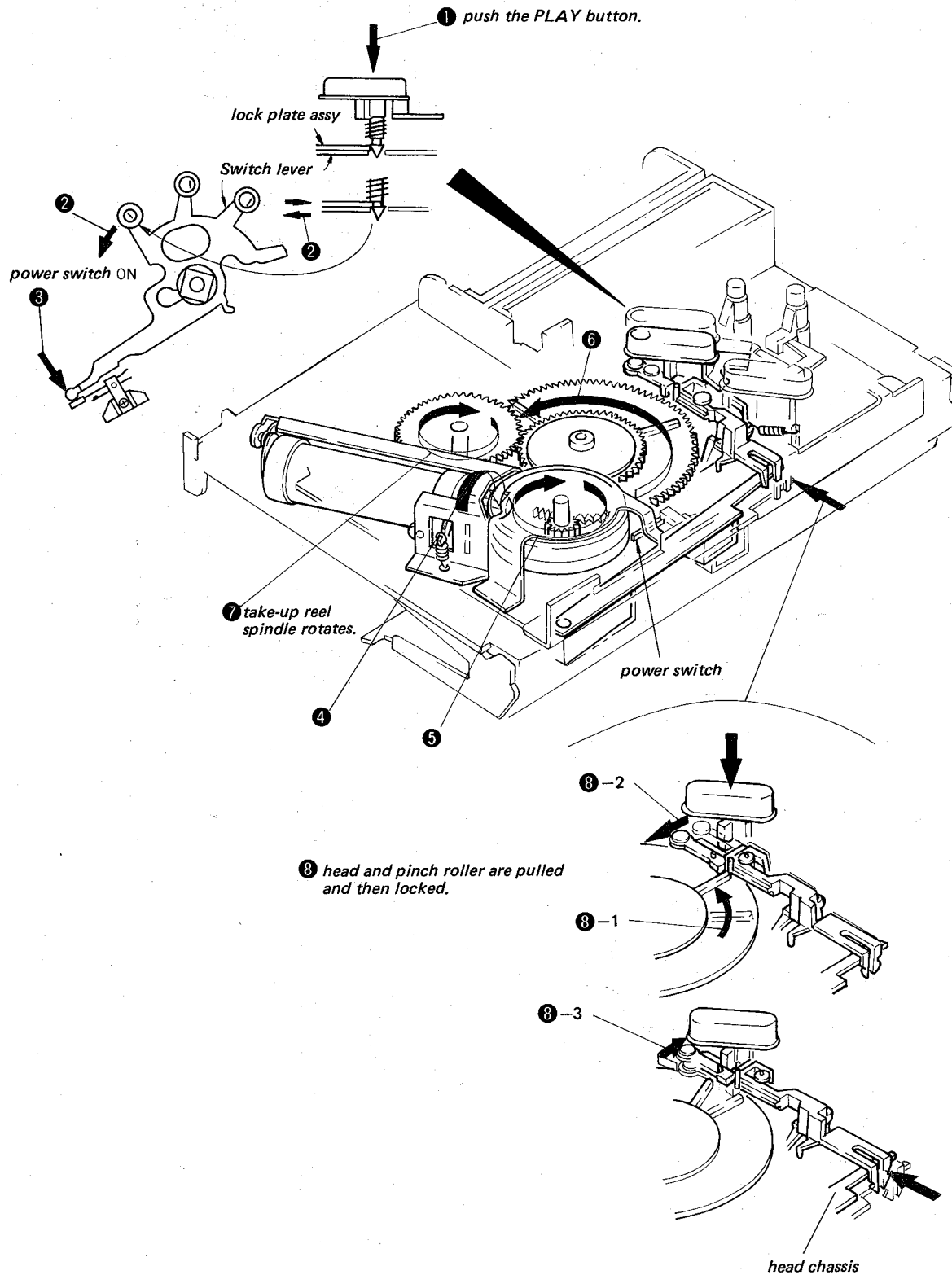
SECTION 1 OUTLINE

1-1. BLOCK DIAGRAM

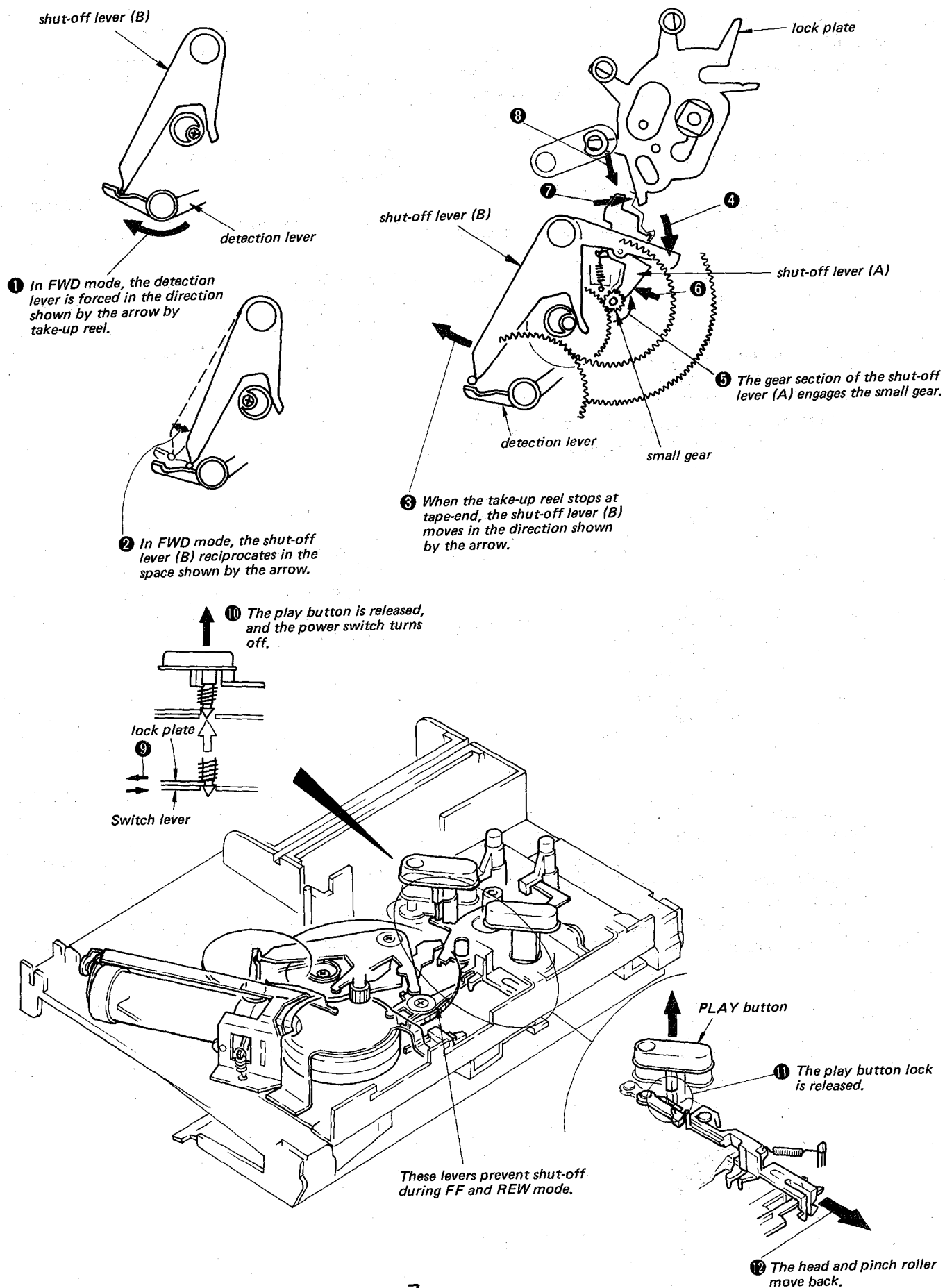


SECTION 2 MECHANICAL OPERATION

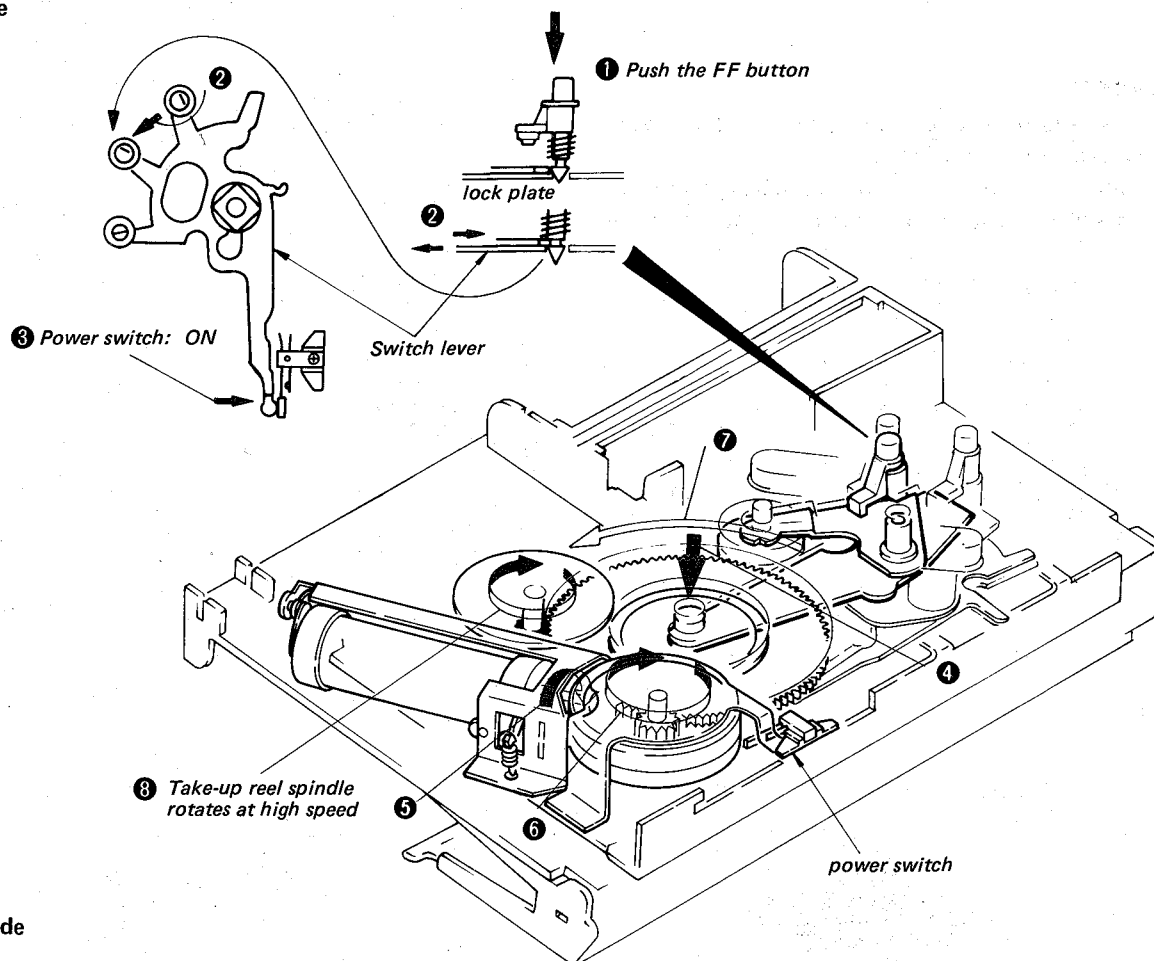
2-1. FWD mode



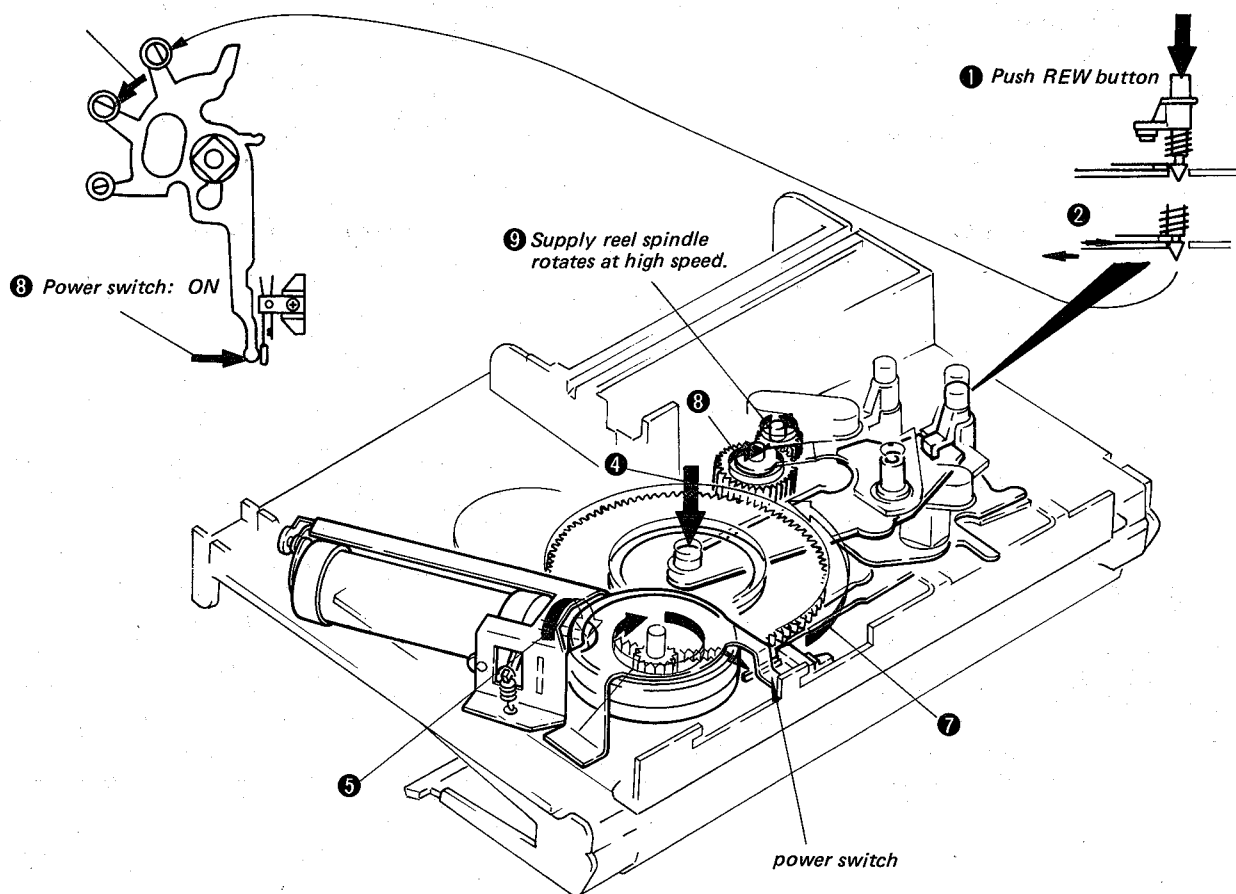
2-2. Auto shut-off operation at FWD mode



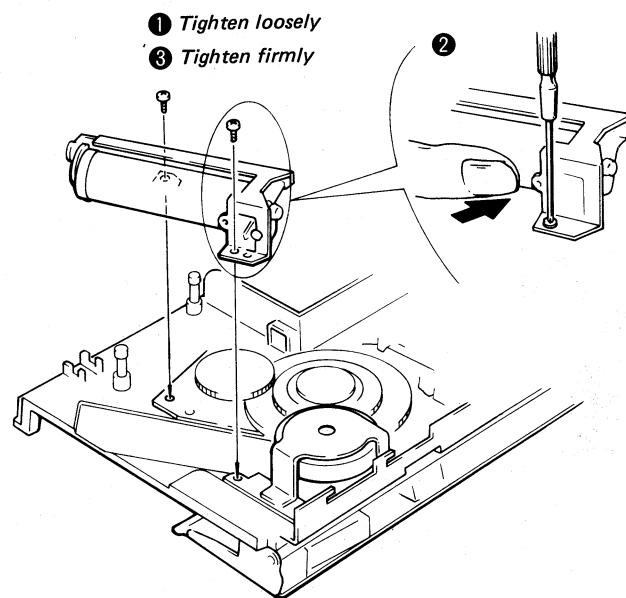
2-3. FF mode



2-4. REW mode



1. Motor section installation



- ① Tighten screw loosely.
- ② Tighten screw while pressing the motor section lightly in the direction of the arrow.
- ③ Tighten the screw.

2. Wow & flutter and motor position

1. Adjust with the thrust screw so that rotor thrust play is within 0.1 mm. (When confirming play, press motor down so that the motor pulley and rotor rubber section do not touch.)
2. Adjust with the adjustment screw so that consumed current satisfies the value below in FWD mode.

Consumed current:

Approx. 5 mA higher current than minimum point, in tightening direction.

Note: If the adjustment screw is loosened too much, adjustment will be impossible. Perform adjustment within 5 turns from the tightened state.

3. Confirm that the wow meter value is 0.08%W·RMS.

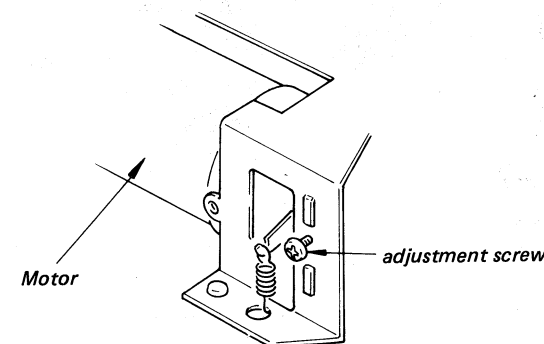
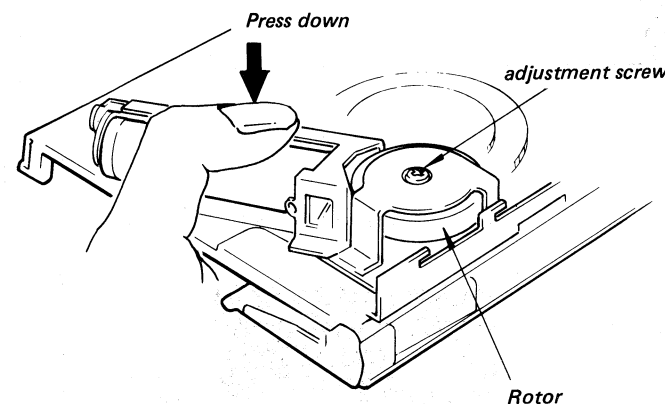
Conditions: — FWD state

— power supply voltage: 2.5 V

— tape: WS-48 (3 kHz, 0 dB)

Use portion near the end.

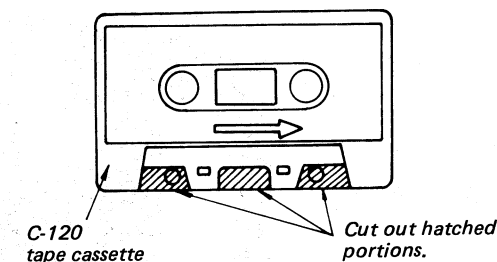
4. At 2 V power supply voltage, confirm normal FWD operation.
5. When ③ and ④ are not satisfied, repeat adjustment again starting with "Motor Section Installation".



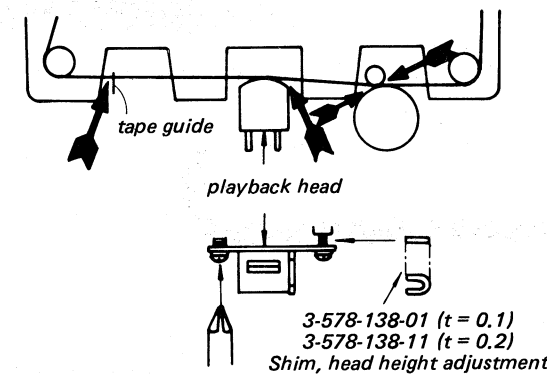
4-2. ELECTRICAL ADJUSTMENTS

Head Height Adjustment

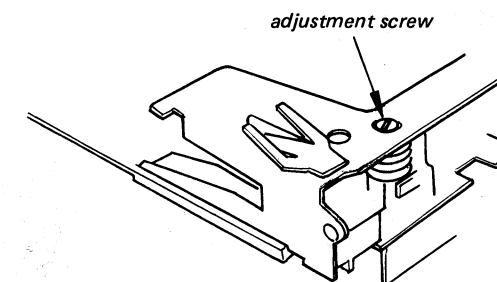
1. Prepare an adjustment cassette as shown below.



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



3. If necessary, adjust the height of the tape-guide by turning the adjustment screw.



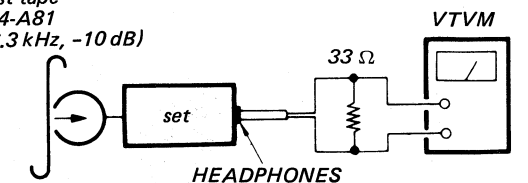
4. Apply locking compound on adjustment screw.

Playback Head Azimuth Adjustment

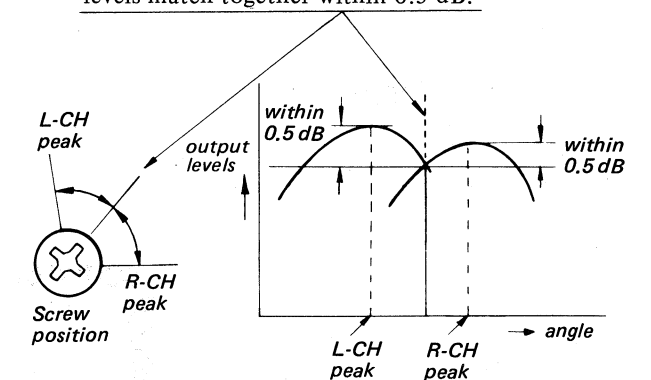
Procedure:

1. Mode: playback

test tape
P-4-A81
(6.3 kHz, -10 dB)

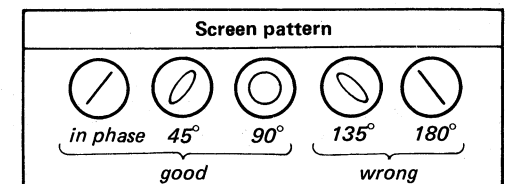
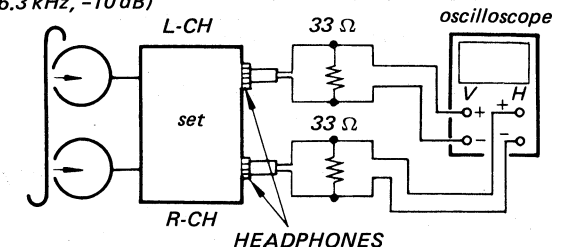


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.

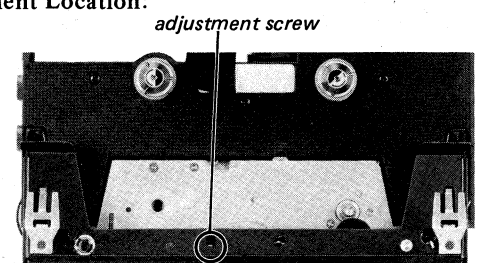


3. Phase Check
Mode: playback

test
P-4-A81
(6.3 kHz, -10 dB)



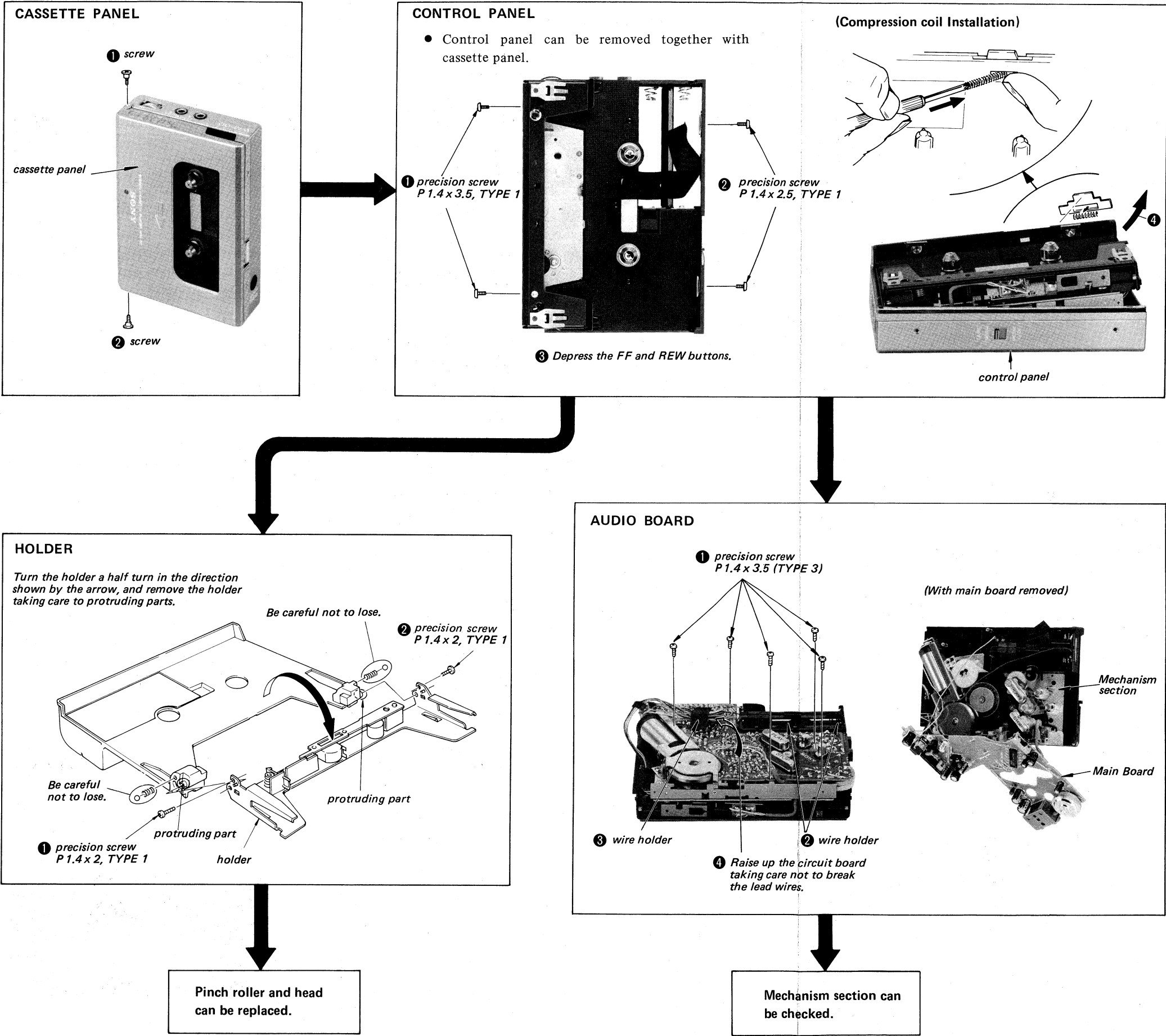
Adjustment Location:



SECTION 3
DISASSEMBLY

WM-DD WM-DD

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



SECTION 4
ADJUSTMENTS

PRECAUTION

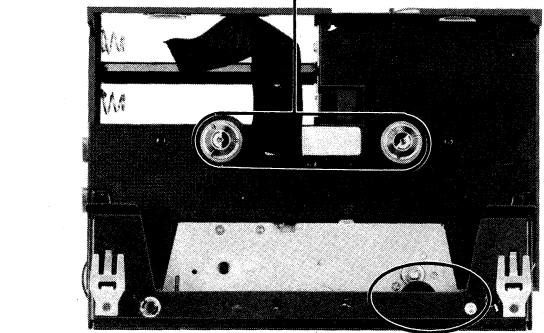
1. Clean the following parts with a denatured-alcohol-moistened swab:
 playback head pinch roller
 capstan rubber belts
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the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

4-1. MECHANICAL ADJUSTMENTS

Torque Measurement

Perform with 2.5 V DC power.

	Torque meter	Meter reading
FWD	CQ-102C	22 – 46 g·cm (0.3 – 0.63 oz·inch)
FF, REW	CQ-201B	More than 65 g·cm (More than 9.04 oz·inch)
Back Tension	CQ-102C	1 – 3.5 g·cm (0.01 – 0.05 oz·inch)
Tape Pulling Force	CQ-403	More than 80 g·cm (More than 11.12 oz·inch)



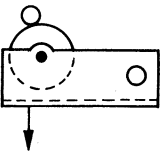
Pinch Roller Pressure Adjustment

— Play back Mode —

1. Pull the spring scale in the direction shown by the arrow.
2. Slowly return the pinch roller and read the spring scale just when the pinch roller starts rotating.

Specification:

170 ± 20 g (5.3 ~ 6.7 oz)



• Only former models can be adjusted.

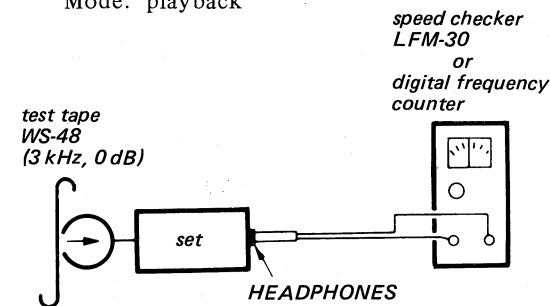
Tape Speed Adjustment

Setting:

VOLUME control: mechanical mid

Procedure:

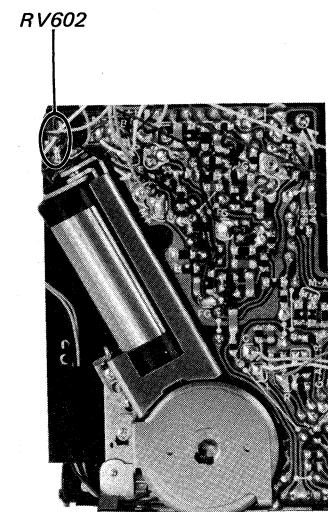
Mode: playback



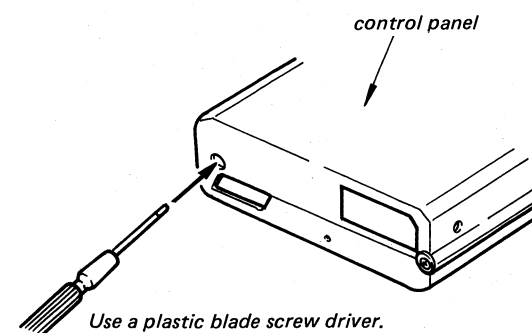
Specification:

Speed checker	Digital frequency counter
±2%	2,940 ~ 3,060 Hz

Adjustment Location:



Adjustment Hole:



Channel Level Adjustment

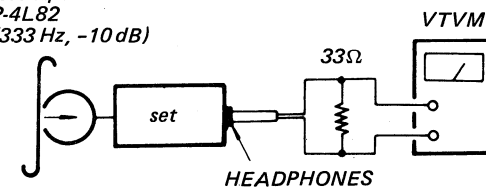
Setting:

VOLUME control: mechanical mid

Procedure:

Made: playback

test tape
P-4L82
(333 Hz, -10 dB)

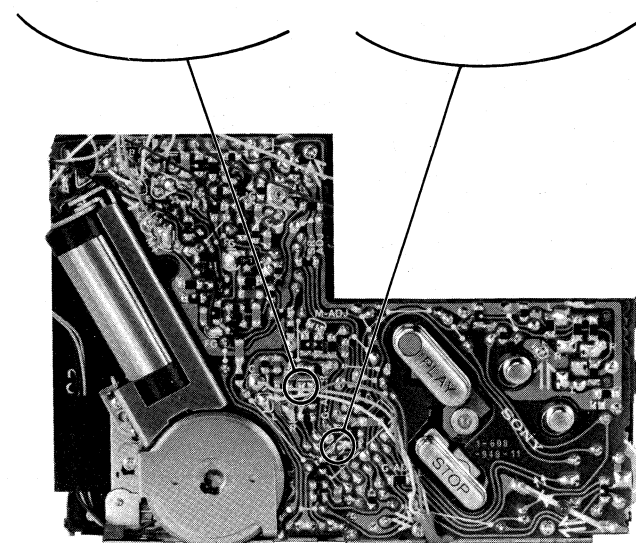
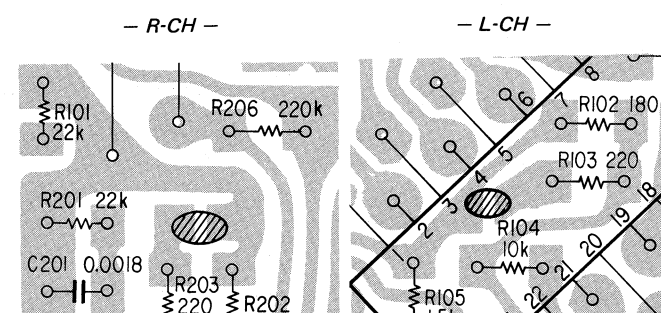


Specification:

Level difference between channels:
less than 2.5 dB

- 1) If necessary, connect the patterns for lower level channel.
- 2) Confirm that the output level of HEADPHONES is fixed when repeating playback and stop.

Adjustment Location:



Muting Level Adjustment

- Replacing IC301, perform this adjustment.

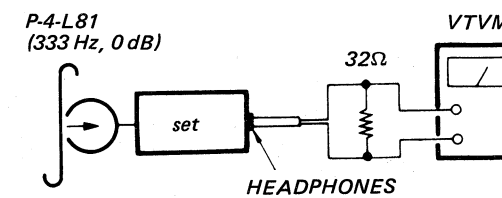
Setting:

Power supply voltage: 1.97 V dc

Procedure:

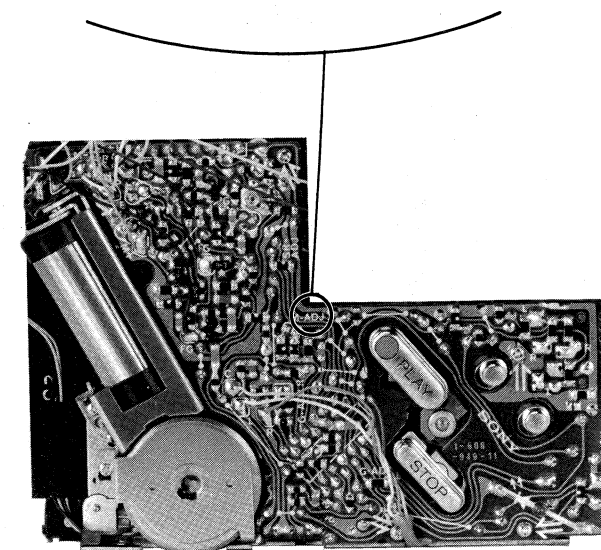
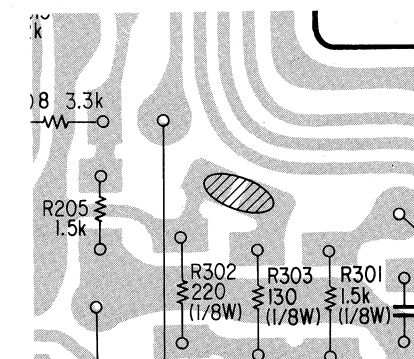
Make sure that the signal is obtained at head-phones terminal.

FWD button: ON



If necessary, bridge the pattern.

Adjustment Location:



Wow and flutter Adjustment

*Refer to wow and flutter adjustment on page 11.

Setting:

Power supply voltage: 2 V

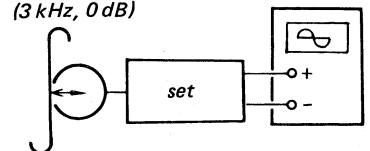
Tape: Adjust by using center portion of tape.

Procedure:

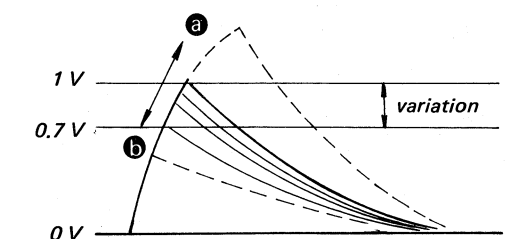
playback mode

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

oscilloscope
(Range: DC, Y-axis:
0.5 cm, X-axis: 0.2 ms/cm)

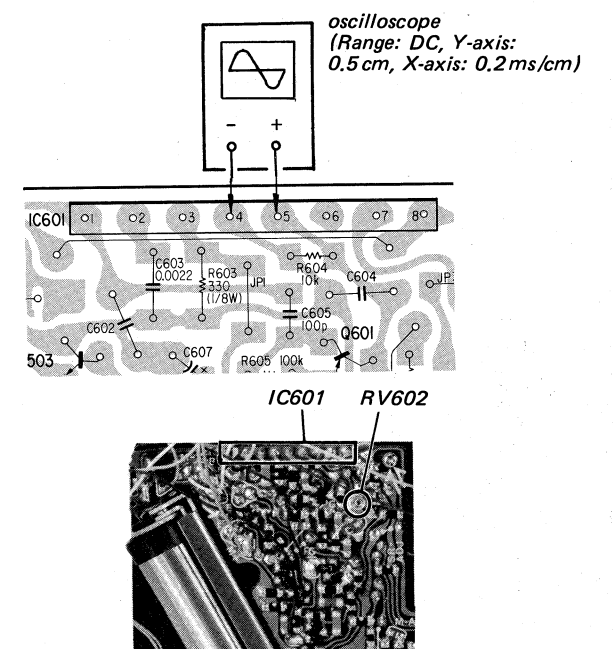


1. Connect the oscilloscope to pins (4) and (5) of IC601.
2. Adjust RV602 for the specified waveform on oscilloscope as shown below.
3. Set peak point of waveform to 0.7 - 1 V.



RV602	peak point of waveform
clockwise	(b)
counterclockwise	(a)

Adjustment Location:

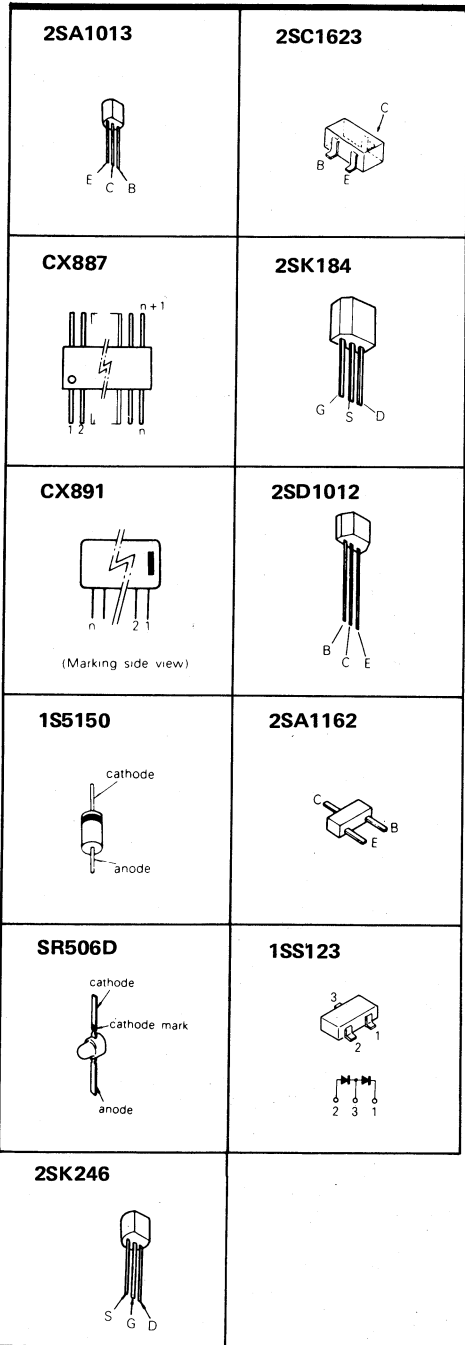


SECTION 5
DIAGRAMS

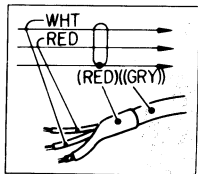
WM-DD WM-DD

5-1. MOUNTING DIAGRAM

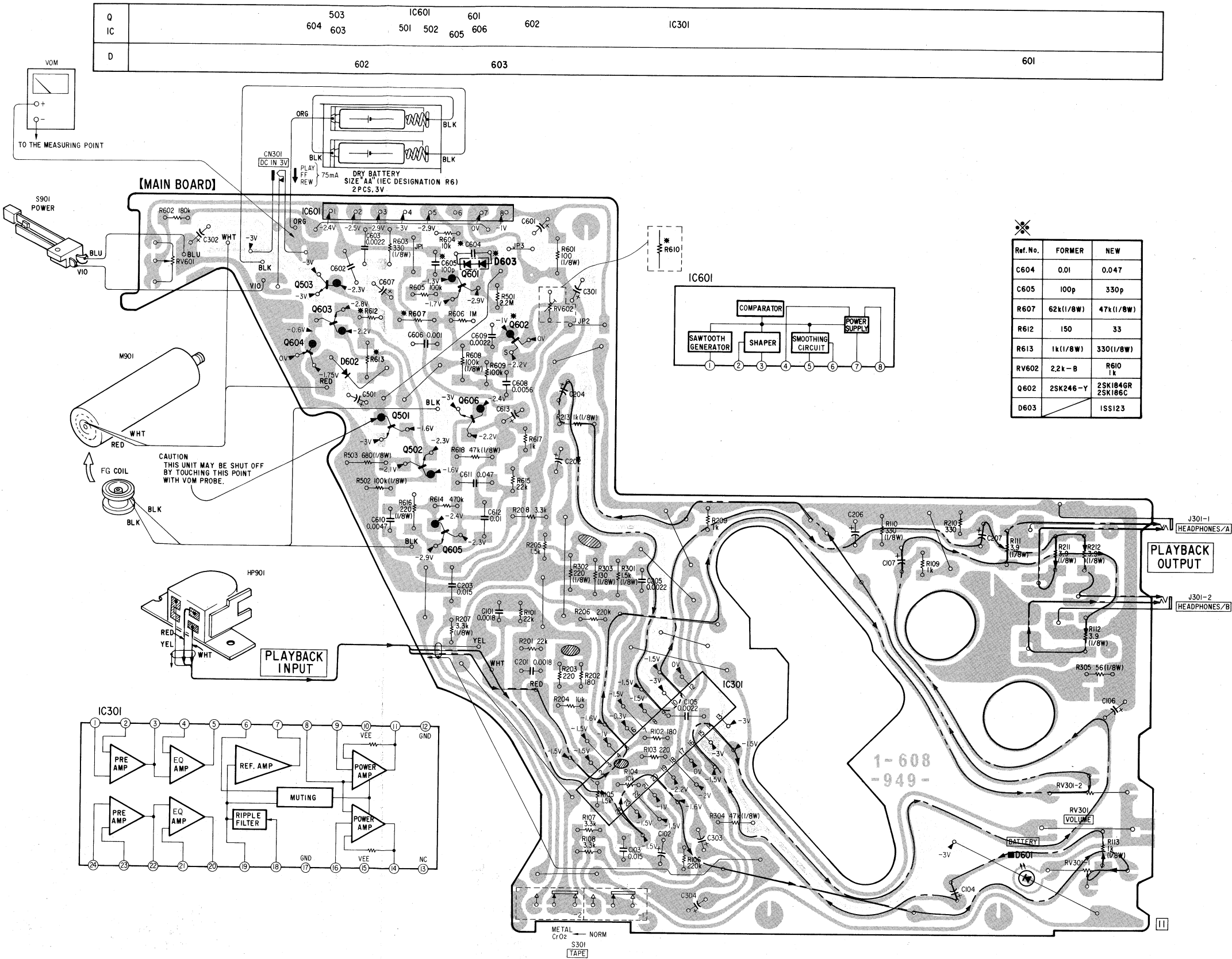
• Semiconductor Lead Layouts



• Color code of sleeving over the end of the jacket.

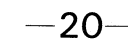
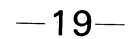


- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : signal path
- : L-CH signal path
- : R-CH signal path

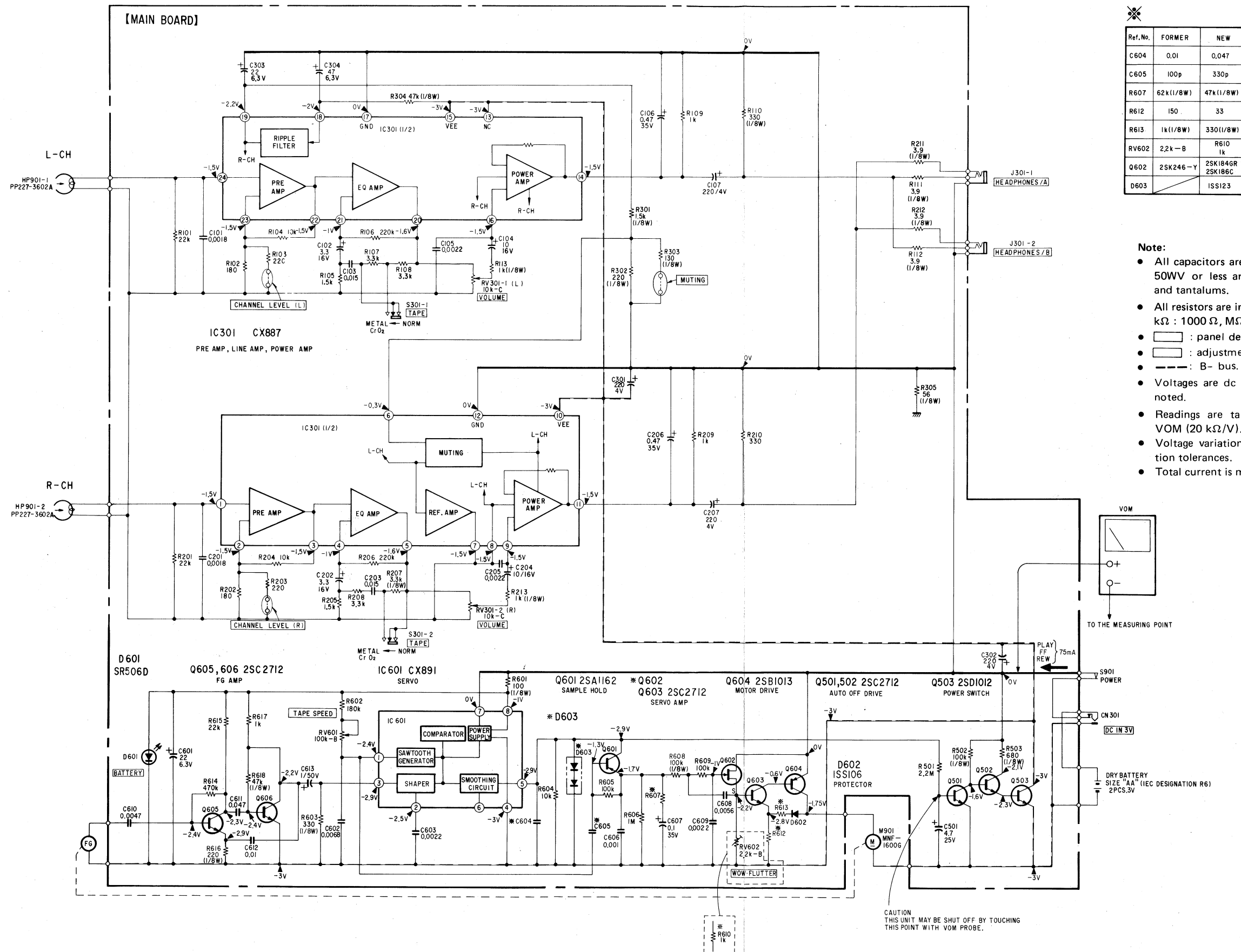


Ref. No.	FORMER	NEW
C604	0.01	0.047
C605	100p	330p
R607	62k(1/8W)	47k(1/8W)
R612	150	33
R613	1k(1/8W)	330(1/8W)
RV602	2.2k-B	R610 1k
Q602	2SK246-Y	2SK184GR 2SK186C
D603		1SS123

WM-DD WM-DD



5-2. SCHEMATIC DIAGRAM



GENERAL SECTION

No.	Part No.	Description
1	3-307-831-00	SCREW, PANEL
2	3-307-833-00	BUTTON, LOCK
3	3-310-906-00	LABEL, MODEL NUMBER
4	3-310-908-00	KNOB, INDICATION, CONTROL
5	3-310-909-00	KNOB, ORNAMENTAL, CONTROL
6	3-310-947-00	SPRING, COMPRESSION
7	3-545-657-11	(FOR BLACK).....BUSH
7	3-545-657-21	(FOR GOLD, SILVER,BLUE, GREEN)...BUSH
7	3-545-657-41	(FOR RED).....BUSH
8	3-578-101-00	PLATE, ORNAMENTAL
9	3-578-109-00	CONTACT
10	3-578-114-00	PANEL, CHASSIS
11	3-578-115-00	LID, BATTERY CASE
12	3-578-232-00	(FOR GOLD, SILVER,BLUE, GREEN)...ORNAMENT, ADJUSTMENT HOLE
12	3-578-232-11	(RED).....ORNAMENT, ADJUSTMENT HOLE
12	3-578-232-21	(BLACK)...ORNAMENT, ADJUSTMENT HOLE
13	3-578-236-00	SPRING
14	3-831-441-XX	SPACER
15	7-627-551-27	SCREW, PRECISION +P 1.4X2.5
15	7-627-551-28	SCREW, PRECISION +P 1.4X2.5
16	7-627-552-47	SCREW, PRECISION +P 1.7X4
17	7-627-850-57	SCREW, PRECISION +P 1.4X3.5
18	9-911-816-01	CLOTH, DRAWER, BATTERY
19	9-911-838-XX	CUSHION, METER
20	X-3310-901-0	(SILVER)....PANEL ASSY, CASSETTE
20	X-3310-911-0	(RED).....PANEL ASSY, CASSETTE
20	X-3310-912-0	(GREEN).....PANEL ASSY, CASSETTE
20	X-3310-913-0	(BLACK).....PANEL ASSY, CASSETTE
20	X-3310-914-0	(BLUE).....PANEL ASSY, CASSETTE
20	X-3310-915-0	(GOLD).....PANEL ASSY, CASSETTE
21	X-3310-923-1	(SILVER)....PANEL ASSY, CONTROL
21	X-3310-924-1	(RED).....PANEL ASSY, CONTROL
21	X-3310-925-1	(GREEN).....PANEL ASSY, CONTROL
21	X-3310-926-1	(BLACK).....PANEL ASSY, CONTROL
21	X-3310-927-1	(BLUE).....PANEL ASSY, CONTROL
21	X-3310-928-1	(GOLD).....PANEL ASSY, CONTROL

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
51	3-310-946-00	CASE, CARRYING
52	3-310-953-00	INDIVIDUAL CARTON
53	3-310-956-00	CUSHION (UPPER)
54	3-310-957-00	CUSHION (LOWER)
55	3-310-961-00	FRAME, INNER
56	3-701-308-00	(BLACK).....LABEL, PRODUCT COLOR
57	3-701-309-00	(SILVER)...LABEL, PRODUCT COLOR
58	3-701-311-00	(RED).....LABEL, PRODUCT COLOR
59	3-701-314-00	(BLUE).....LABEL, PRODUCT COLOR
60	3-701-317-00	(GOLD).....LABEL, PRODUCT COLOR
61	3-701-320-00	(GREEN).....LABEL, COLLOR
62	3-701-625-00	BAG, POLYETHYLENE
63	3-701-999-00	LABEL, SERIAL NUMBER
64	3-773-236-11	MANUAL, INSTRUCTION
65	3-795-510-11	CARD, WARRANTY, INTERNATIONAL
66	8-893-535-00	TAPE, DEMONSTRATION (CD-817)
67	8-951-183-90	MDR-W5 SET
68	X-3307-804-0	BELT ASSY, SHOULDER
69	3-310-965-00	SHEET, PROTECTION

NOTE:

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- 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: pμF.

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

SEMICONDUCTORS

- In each case, U: μ, for example:
UA....: μA...., UPA....: μPA...., UPC....: μPC,
UPD....: μPD....

COILS

- MMH: mH, UH: μH

MECHANISEM SECTION

No.	Part No.	Description
301	3-305-509-00	LEVER (A), SHUTT-OFF
302	3-310-914-00	GEAR, FWD
303	3-310-915-11	GEAR (B), DRIVING
304	3-310-916-00	PLATE (B), HYSTERESIS
305	3-310-920-00	PLATE (C), HYSTERESIS
306	3-310-921-00	SPRING, COMPRESSION
307	3-310-930-00	PLATE, THRUST
308	3-310-932-00	SCREW, STEP
309	3-310-935-00	LEVER, SWITCH
310	3-310-936-00	BRACKET, MOTOR
311	3-310-937-00	PLATE (A), SIDE, MOTOR
312	3-310-938-00	PLATE, SHIELD
313	3-310-939-00	RUBBER, VIBRATION PROOF
314	•;3-310-942-00	RETAINER, MOTOR
315	3-310-948-00	SPRING, TENSION
316	3-310-955-00	STOPPER
317	3-310-958-00	WASHER
318	3-547-625-00	SCREW, THRUST ADJUST
319	3-561-627-00	SPRING, TENSION
320	3-578-121-00	SPRING, COMPRESSION
321	3-578-123-00	SPRING, COMPRESSION
322	3-578-124-00	SPRING, COMPRESSION
323	3-578-126-00	SPRING, TENSION
324	3-578-127-00	SPRING, COMPRESSION
325	3-578-128-00	SPRING, COMPRESSION
326	
327	3-578-138-01	(t=0.1)...SEAM
327	3-578-138-11	(t=0.2)...SEAM
328	3-578-141-00	SPRING
329	3-578-146-00	SPRING
330	•;3-578-149-00	SHAFT, LEVER (A), SHUT-OFF
331	3-578-151-00	SHAFT, GEAR, FWD
332	3-578-154-00	LEVER, DETECTION
333	3-578-157-00	LEVER (B), SHUT-OFF
334	3-578-158-00	GEAR, S
335	3-578-162-00	GEAR, REW
336	3-578-178-00	GEAR, SHUT-OFF
337	3-578-181-00	SPRING
338	3-578-183-00	LEVER, RETURN, S
339	•;3-578-196-00	HOOK, SPRING
340	3-578-199-00	SPRING, COMPRESSION
341	3-578-214-00	SHAFT, GEAR, SHUT-OFF
342	3-578-220-00	SPRING, TENSION
343	3-578-221-00	SPRING, COMPRESSION
344	3-578-224-00	WASHER
345	3-578-224-11	WASHER

MECHANISEM SECTION

No.	Part No.	Description
346	3-578-244-01	GEAR, FF
347	3-578-249-00	SPRING, COMPRESSION (FWD BUTTON)
348	3-578-254-00	RING, RETAINING, E1.2
349	3-578-265-00	WASHER
350	3-578-267-00	SCREW (+P1.4X1.6), PRECISION
351	3-578-276-11	WASHER
352	3-578-277-00	SPRING, TENSION
353	3-578-278-00	SPRING, COMPRESSION
354	3-701-438-01	WASHER
355	7-627-451-87	SCREW, PRECISION +K 1.4X2.2
356	7-627-551-28	SCREW, PRECISION +P 1.4X2.5
357	7-627-553-27	SCREW, PRECISION +P 2X2.5
358	7-627-553-98	SCREW, PRECISION +P 2X8
359	7-627-554-17	SCREW, PRECISION +P 2X3.5
360	7-627-850-17	SCREW, PRECISION +P 1.4X2.5
361	7-627-850-18	SCREW, PRECISION +P 1.4X2.5
362	7-627-850-48	+P 1.4X1.6
363	7-627-850-78	PRECISION SCREW +P 1.4X1.8
364	7-627-851-17	SCREW, PRECISION +P 1.4X4.5
365	7-627-851-27	SCREW, PRECISION +P 1.4X5
366	7-671-112-01	STEEL, BALL
367	3-310-966-00	(NEW)...SPRING, VIBRATION ABSORBING
368	7-627-850-47	(NEW)...SCREW, PRECISION +P1.4x1.6
369	X-3310-903-0	PLATE (B) ASSY, SIDE
370	X-3310-905-0	ROTOR ASSY
371	•;X-3310-906-0	BRACKET ASSY, PANEL
372	X-3310-907-0	STATOR ASSY
373	X-3310-908-0	HOLDER ASSY
374	•;X-3310-909-0	CHASSIS ASSY, SUB
375	X-3310-910-0	CHASSIS ASSY
376	X-3310-921-0	BUTTON ASSY, PLAY
377	•;X-3578-105-0	CHASSIS ASSY, HEAD
378	X-3578-107-0	BUTTON ASSY, STOP
379	X-3578-108-0	BUTTON ASSY, FR
380	•;X-3578-111-0	COVER ASSY, ERASE HEAD
381	X-3578-114-0	PLATE ASSY, LOCK
382	X-3578-115-0	CLAW ASSY, REEL
383	X-3305-419-0	LEVER ASSY, FWD
384	X-3578-126-0	CLAW ASSY, REEL
385	X-3578-132-0	LEVER (A) ASSY, DRIVING
386	X-3578-137-0	PINCH ROLLER ASSY
387	3-310-959-00	SPRING, TENSION

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- 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: μμF.

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

SEMICONDUCTORS

- In each case, U : μ, for example:
UA....: μA...., UPA....: μPA...., UPC....: μPC,
UPD....: μPD....

COILS

- MMH : mH, UH : μH

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
501	▲;1-608-949-00	PC BOARD, MAIN			
502	▲;A-3015-171-A	MOUNTED PCB, AUDIO			
C101	1-163-012-00	CERAMIC CHIP 0.0018MF	10%	50V	
C103	1-163-023-00	CERAMIC CHIP 0.015MF	10%	50V	
C105	1-163-051-91	CERAMIC CHIP 0.0022MF	10%	50V	
C201	1-163-012-00	CERAMIC CHIP 0.0018MF	10%	50V	
C203	1-163-061-91	CERAMIC CHIP 0.015MF	10%	50V	
C205	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V	
C603	1-163-051-91	CERAMIC CHIP 0.0022MF	10%	50V	
C605	1-163-117-91	(FORMER)...CERAMIC CHIP	100PF	5%	50V
C605	1-163-003-91	(NEW).....CERAMIC CHIP	330PF	5%	50V
C606	1-163-009-91	CERAMIC CHIP 0.001MF	10%	50V	
C608	1-163-018-91	CERAMIC CHIP 0.0056MF	10%	50V	
C609	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V	
C610	1-163-017-91	CERAMIC CHIP 0.0047MF	10%	50V	
C611	1-163-075-91	CERAMIC CHIP 0.047MF		50V	
C612	1-163-059-91	CERAMIC CHIP 0.01MF	10%	50V	
CN301	1-507-723-00	JACK, EXTENTION POWER			
D601	8-719-104-37	DIODE SR506D			
D602	8-719-911-06	DIODE 1SS106			
D603	8-719-101-23	(NEW)...DIODE 1SS123			
HP901	8-825-502-20	HEAD (PP221-3602)			
IC301	8-759-600-09	IC CX-887			
IC601	8-759-608-91	IC CX-891			
J301	1-507-727-00	JACK 2P			
JP1	1-216-296-00	CARBON CHIP 0	5%	1/8W	
JP2	1-216-296-00	CARBON CHIP 0	5%	1/8W	
JP3	1-216-295-00	CARBON CHIP 0	5%	1/10W	
M901	X-3310-922-1	MOTOR			
Q501	8-729-103-66	TRANSISTOR 2SC1623			
Q502	8-729-103-66	TRANSISTOR 2SC1623			
Q503	8-729-811-24	TRANSISTOR 2SD1012			
Q601	8-729-216-22	TRANSISTOR 2SA1162			
Q602	8-729-224-61	(FORMER)...TRANSISTOR 2SK246			
Q602	8-729-218-43	(NEW).....TRANSISTOR 2SK184GR			
Q603	8-729-103-66	TRANSISTOR 2SC1623			
Q604	8-729-801-83	TRANSISTOR 2SB1013			
Q605	8-729-103-66	TRANSISTOR 2SC1623			
Q606	8-729-103-66	TRANSISTOR 2SC1623			

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R101	1-216-081-00	CARBON CHIP	22K	5%	1/10W
R102	1-216-031-00	CARBON CHIP	180	5%	1/10W
R103	1-216-033-00	CARBON CHIP	220	5%	1/10W
R104	1-216-073-00	CARBON CHIP	10K	5%	1/10W
R105	1-216-053-00	CARBON CHIP	1.5K	5%	1/10W
R106	1-216-105-00	CARBON CHIP	220K	5%	1/10W
R107	1-216-061-00	CARBON CHIP	3.3K	5%	1/10W
R108	1-216-061-00	CARBON CHIP	3.3K	5%	1/10W
R109	1-216-049-00	CARBON CHIP	1K	5%	1/10W
R110	1-216-186-00	CARBON CHIP	330	5%	1/8W
R111	1-216-140-00	CARBON CHIP	3.9	5%	1/8W
R112	1-216-140-00	CARBON CHIP	3.9	5%	1/8W
R113	1-216-198-91	CARBON CHIP	1K	5%	1/8W
R201	1-216-081-00	CARBON CHIP	22K	5%	1/10W
R202	1-216-031-00	CARBON CHIP	180	5%	1/10W
R203	1-216-033-00	CARBON CHIP	220	5%	1/10W
R204	1-216-073-00	CARBON CHIP	10K	5%	1/10W
R205	1-216-053-00	CARBON CHIP	1.5K	5%	1/10W
R206	1-216-105-00	CARBON CHIP	220K	5%	1/10W
R207	1-216-210-91	CARBON CHIP	3.3K	5%	1/8W
R208	1-216-061-00	CARBON CHIP	3.3K	5%	1/10W
R209	1-216-049-00	CARBON CHIP	1K	5%	1/10W
R210	1-216-037-91	CARBON CHIP	330	5%	1/10W
R211	1-216-140-00	CARBON CHIP	3.9	5%	1/8W
R212	1-216-140-00	CARBON CHIP	3.9	5%	1/8W
R213	1-216-198-91	CARBON CHIP	1K	5%	1/8W
R301	1-216-202-91	CARBON CHIP	1.5K	5%	1/8W
R302	1-216-182-00	CARBON CHIP	220	5%	1/8W
R303	1-216-177-00	CARBON CHIP	130	5%	1/8W
R304	1-216-238-91	CARBON CHIP	47K	5%	1/8W
R305	1-216-168-00	CARBON CHIP	56	5%	1/8W
R501	1-216-129-00	CARBON CHIP	2.2M	5%	1/10W
R502	1-216-246-91	CARBON CHIP	100K	5%	1/8W
R503	1-216-194-00	CARBON CHIP	680	5%	1/8W
R601	1-216-174-91	CARBON CHIP	100	5%	1/8W
R602	1-216-103-00	CARBON CHIP	180K	5%	1/10W
R603	1-216-186-00	CARBON CHIP	330	5%	1/8W
R604	1-216-073-00	CARBON CHIP	10K	5%	1/10W
R605	1-216-097-00	CARBON CHIP	100K	5%	1/10W
R606	1-216-121-00	CARBON CHIP	1M	5%	1/10W
R607	1-216-241-00	(FORMER)...CARBON CHIP	62K	5%	1/8W
R607	1-216-238-91	(NEW).....CARBON CHIP	47K	5%	1/8W
R608	1-216-246-91	CARBON CHIP	100K	5%	1/8W
R609	1-216-097-00	CARBON CHIP	100K	5%	1/10W
R610	1-216-049-91	(NEW).....CARBON CHIP	1K	5%	1/10W

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RESISTORS

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SEMICONDUCTORS

- In each case, U: μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC,
UPD...: μPD...

COILS

- MMH: mH, UH: μH

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R612	1-216-029-00	(FORMER)...CARBON CHIP 150 5% 1/10W
R612	1-216-013-91	(NEW).....CARBON CHIP 33 5% 1/10W
R613	1-216-198-91	(FORMER)...CARBON CHIP 1K 5% 1/8W
R613	1-216-186-91	(NEW).....CARBON CHIP 330 5% 1/8W
R614	1-216-113-00	CARBON CHIP 470K 5% 1/10W
R615	1-216-081-00	CARBON CHIP 22K 5% 1/10W
R616	1-216-182-00	CARBON CHIP 220 5% 1/8W
R617	1-216-049-00	CARBON CHIP 1K 5% 1/10W
R618	1-216-238-91	CARBON CHIP 47K 5% 1/8W
RV301	1-228-598-00	RES, VAR, CARBON 10K/10K
RV601	1-226-784-00	RES, ADJ, METAL GLAZE 100K
RV602	1-228-358-00	(FORMER)...RES, ADJ, METAL GLAZE 2.2K
S301	1-553-280-00	SWITCH, SLIDE
S301	1-553-280-21	SWITCH, SLIDE
S901	1-553-226-00	SWITCH, LEAF

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CAPACITORS:

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

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

SEMICONDUCTORS

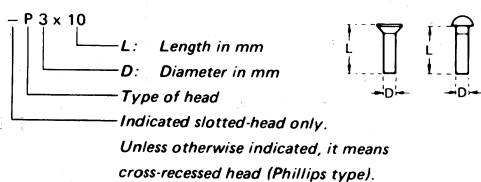
- In each case, U : μ , for example:
UA....: μA ..., UPA....: μPA ..., UPC....: μPC ,
UPD....: μPD ...

COILS

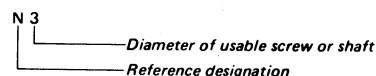
- MMH : mH, UH : μH

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		brazier-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self-tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

ELECTROLYTIC CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one.					
	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	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	—
3300	1-121-661-00	1-123-075-00	1-123-071-00	—	—	—

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. (μF)	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	1-102-820-00	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	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	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				

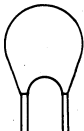
0.001μF = 1,000pF

CERAMIC (SEMICONDUCTOR) CAPACITORS

RATING → : Use the high voltage rated one.					
CAP. (μF)	25 VOLT.	50 VOLT.	CAP. (μF)	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	1-161-010-00	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			

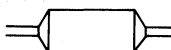
MYLAR CAPACITORS

RATING											
CAP. (μ F)	50 VOLT.	100 VOLT.	200 VOLT.	CAP. (μ F)	50 VOLT.	100 VOLT.	200 VOLT.	CAP. (μ F)	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. (μ F)	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. (μ F)	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					

Sony Corporation
Consumer Products Group
Technical Support Dept.

9-951-040-11
(With MDR-W5)