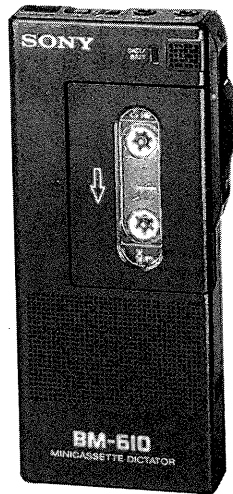


BM-610

SERVICE MANUAL



*US Model
Canadian Model
AEP Model
UK Model
E Model*

Model Name Using Similar Mechanism	NEW Type
Tape Transport Mechanism Type	MB-610

SPECIFICATIONS

Tape	Mini cassette
Recording system	2-track 1-channel monaural
Speaker	Approx. 2.8 cm (1 1/8 inches) dia.
Tape speed	Average 4.16 cm/s (1 11/16 ips)
Frequency response	400 Hz - 3500 Hz
Input	Microphone jack (minijack) (plug-in power) Sensitivity 0.3 mV for low impedance microphone
Output	Earphone jack (minijack) for 8 ohm earphone
Power output	More than 150 mW (at 10% harmonic distortion)
Battery life	Continuous recording hours with the built-in microphone Sony SUM-3 (NS): Approx. 7 hours Sony AM3 (N): Approx. 16 hours
Power requirements	3V DC, two R6 (size AA) batteries
Dimensions	58 x 137 x 21.9 mm (w/h/d) (2 3/8 x 5 1/2 x 7/8 inches) not including projecting parts and controls
Weight	180 g (6.3 oz) including batteries
Accessories supplied	Carrying case (1)

Design and specifications subject to change without notice.

Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

MINI CASSETTE DICTATOR
SONY[®]

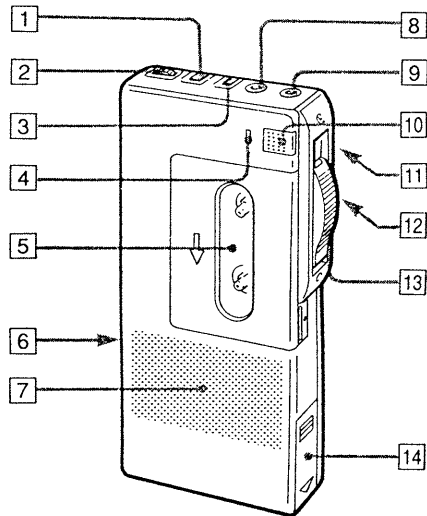
SERVICE NOTE

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SECTION 1 GENERAL

This section is extracted from instruction manual.



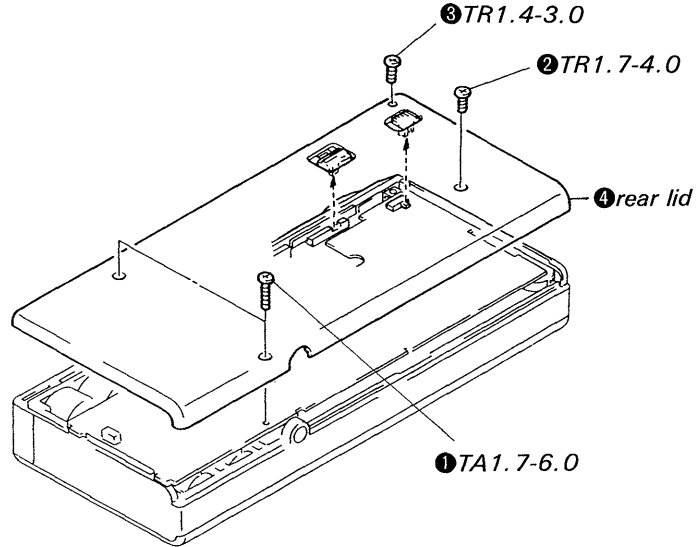
Parts Identification

- 1 FF (fast forward) button
- 2 VOL (volume) control
- 3 E-IDX (electronic indexing) button
- 4 DICT/BATT (dictating/battery) indicator
- 5 Cassette holder
- 6 DC IN 3V (external power input) jack (left side)
- 7 Speaker
- 8 EAR (earphone) jack
- 9 MIC (microphone) jack (Plug-in power)
- 10 Built-in microphone
- 11 MIC SENS (microphone sensitivity) selector: H, L
- 12 Safety LOCK
Slide the lock in the direction of an arrow to lock the function lever.
- 13 Function lever: REW (review), LISTEN, STOP, DICT (dictating)
- 14 Battery compartment

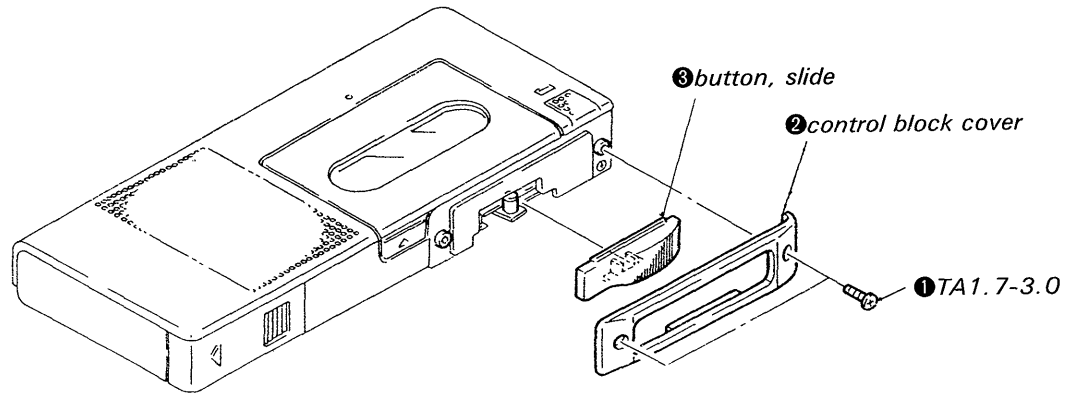
SECTION 2 DISASSEMBLY

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

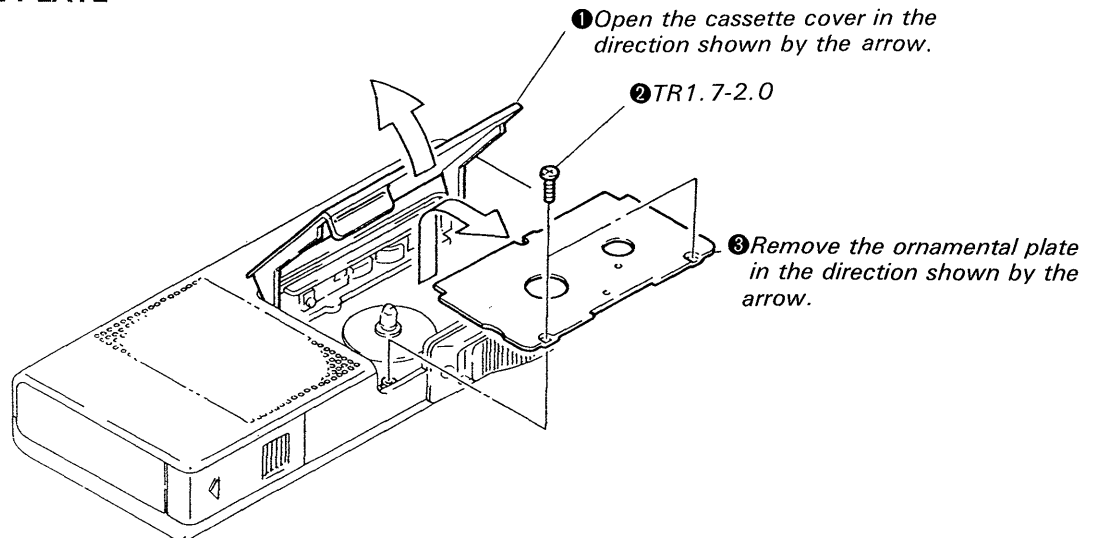
2-1. READ LID



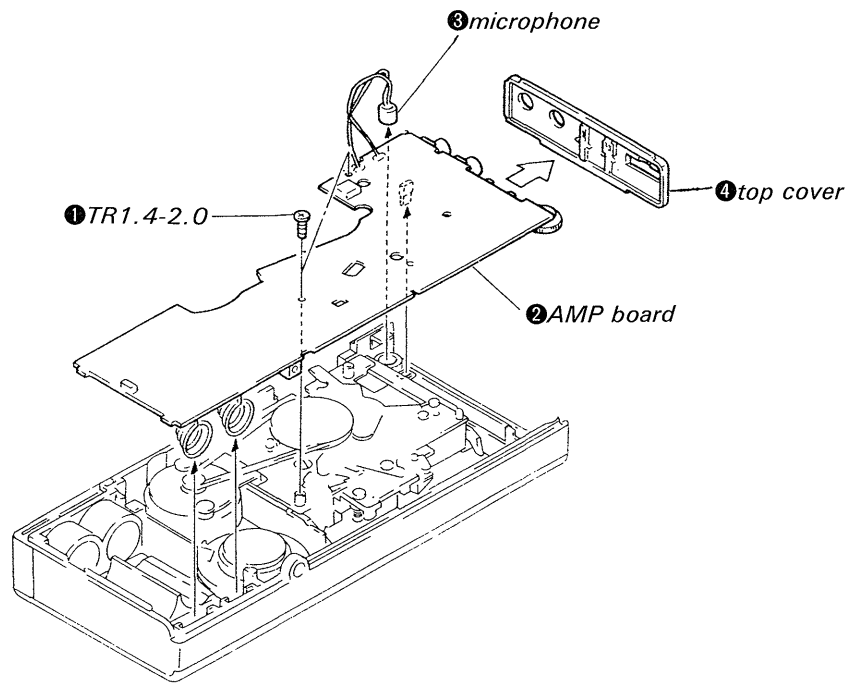
2-2. CONTROL BLOCK COVER



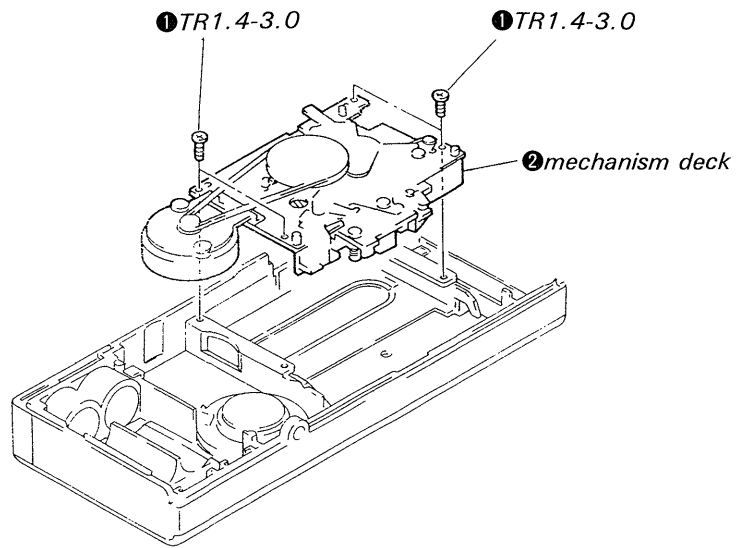
2-3. ORNAMENTAL PLATE



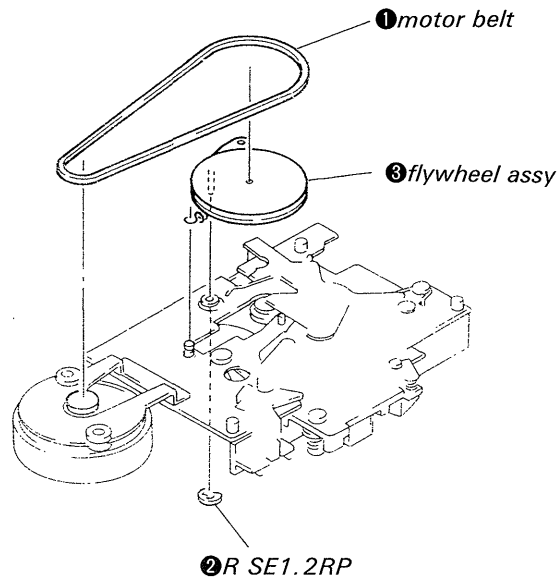
2-4. AMP BOARD



2-5. MECHANISM DECK



2-6. FLYWHEEL ASSY



SECTION 3 ELECTRICAL ADJUSTMENTS

PRECAUTION

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

DICT/LISTEN head	pinch roller
erase head	rubber belts
capstan	idlers
2. Demagnetize the DICT/LISTEN 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 (dc 3V) unless otherwise noted.

Test Tape

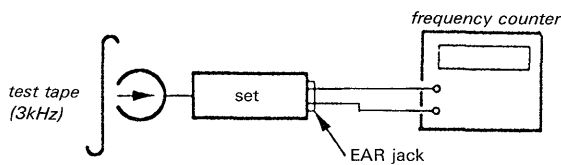
Type	Signal	Used for
MINI CASSETTE (1-550-745-11)	3kHz	Tape Speed Head Azimuth

Tape Speed Adjustment

Setting: VOLUME control: mechanical mid

Procedure:

1. Mode: LISTEN
2. Test tape: Center

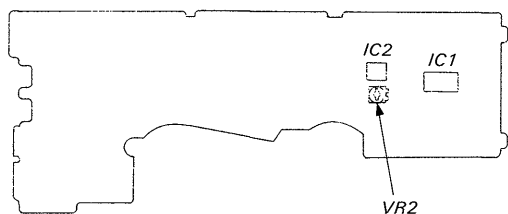


Adjust VR2 so that the reading on the frequency counter is $3,000 \pm 30$ Hz.

Clockwise rotation increases tape speed, or counterclockwise rotation decreases the speed.

Adjustment Location: AMP board

—CONDUCTOR SIDE—

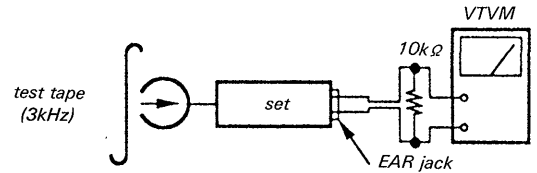


DICT/LISTEN Head Azimuth Adjustment

Setting: VOLUME control: mechanical mid

Procedure:

1. Mode: LISTEN

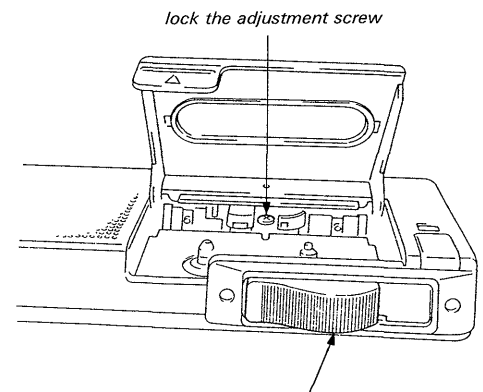
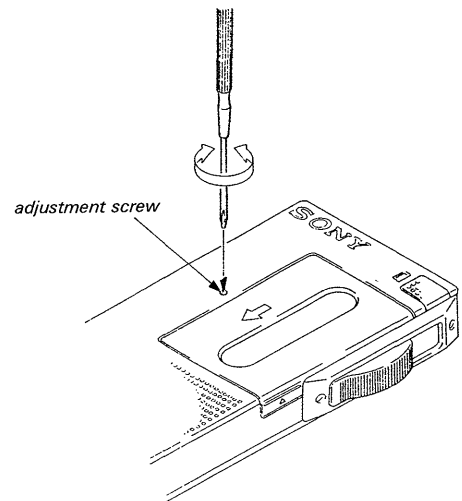


2. Turn the adjustment screw for maximum VTVM reading.

Note: Several peaks may appear, but take the maximum.

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

Adjustment Location:



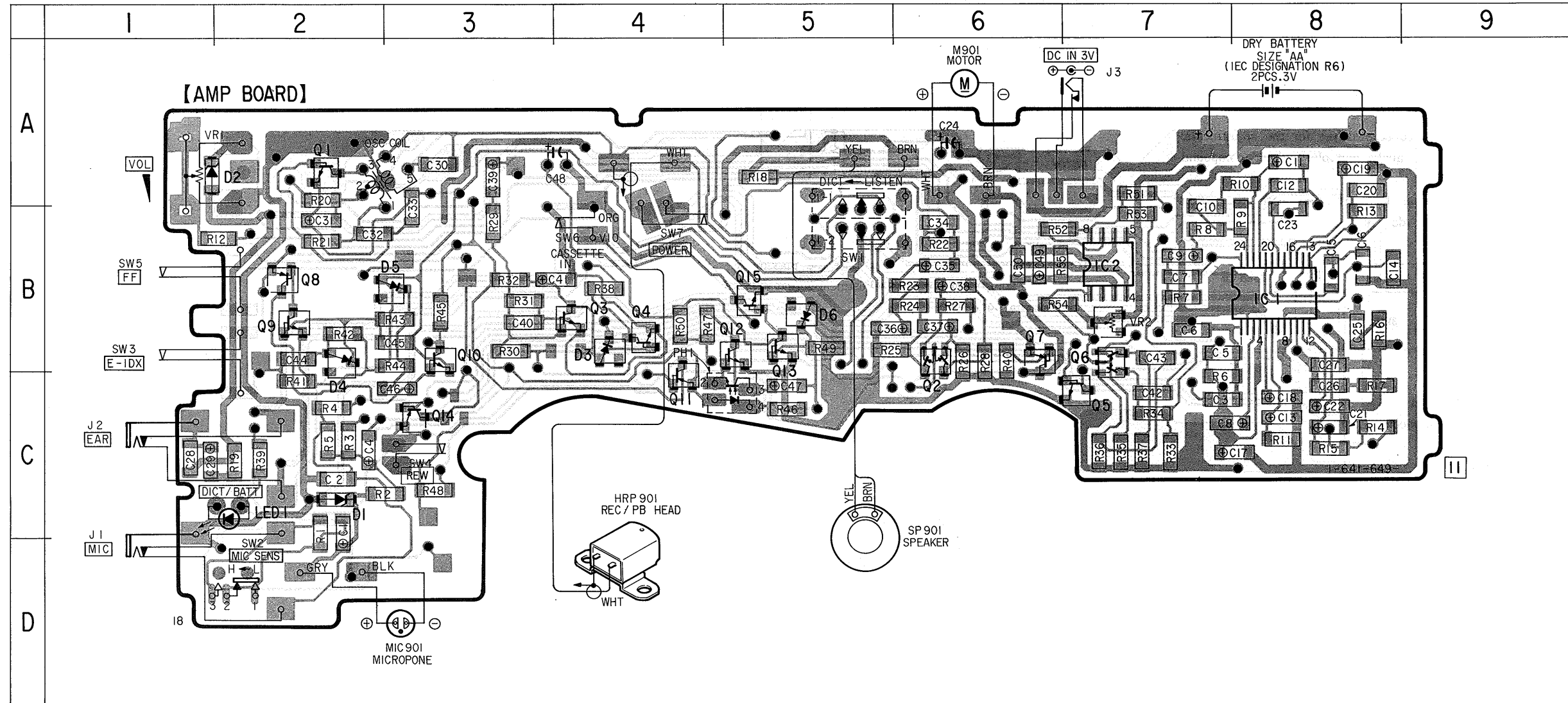
Setting the slide button to DICT position will retract the erase head for easy locking.

SECTION 4 DIAGRAMS

4-1. PRINTED WIRING BOARD

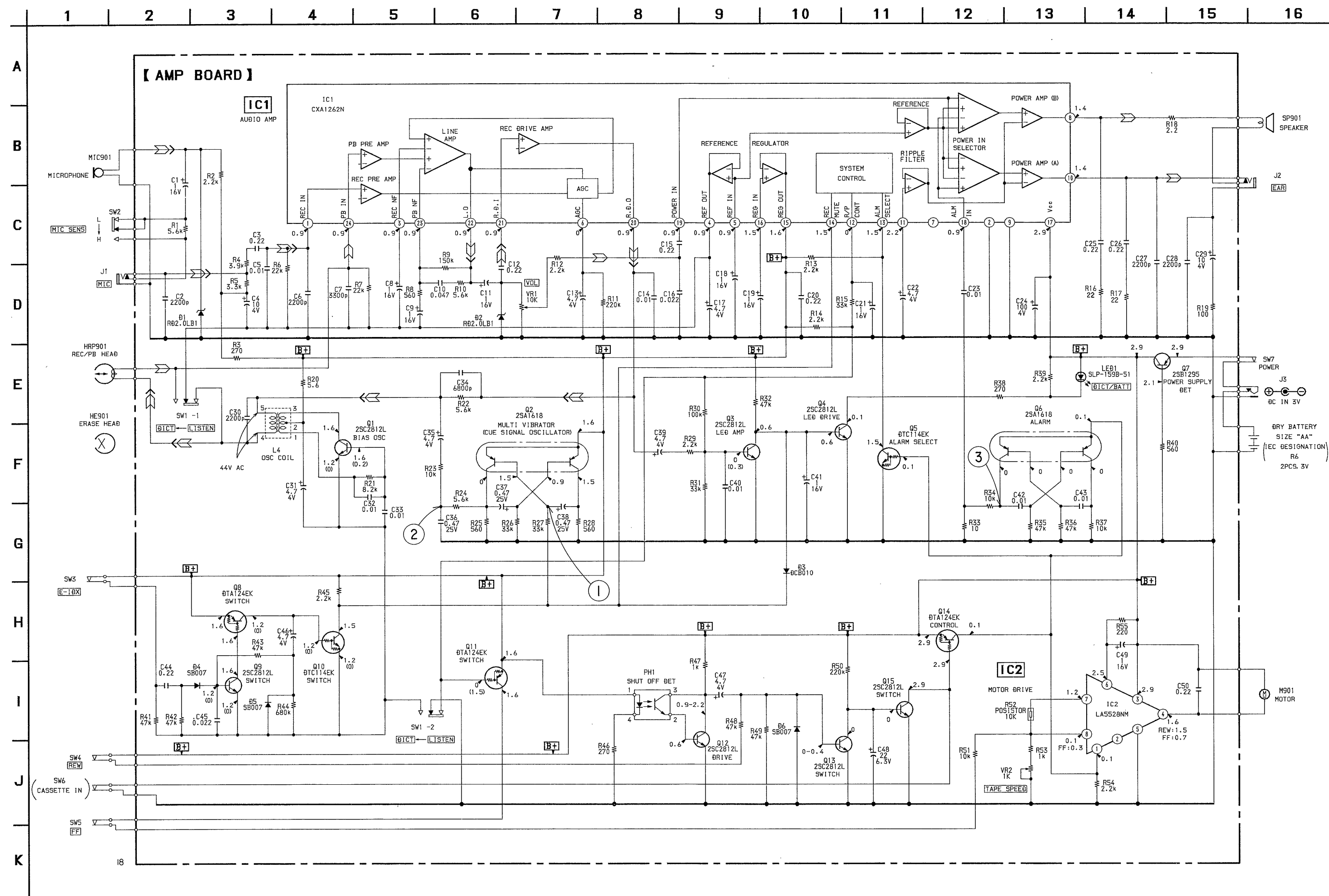
● Semiconductor Location

Ref. No.	Location
D1	C-2
D2	A-1
D3	B-4
D4	B-2
D5	B-3
D6	B-5
LED1	C-2
IC1	B-8
IC2	B-7
Q1	A-2
Q2	B-6
Q3	B-4
Q4	B-4
Q5	C-7
Q6	C-7
Q7	B-6
Q8	B-2
Q9	B-2
Q10	B-3
Q11	C-4
Q12	B-5
Q13	B-5
Q14	C-3
Q15	B-5

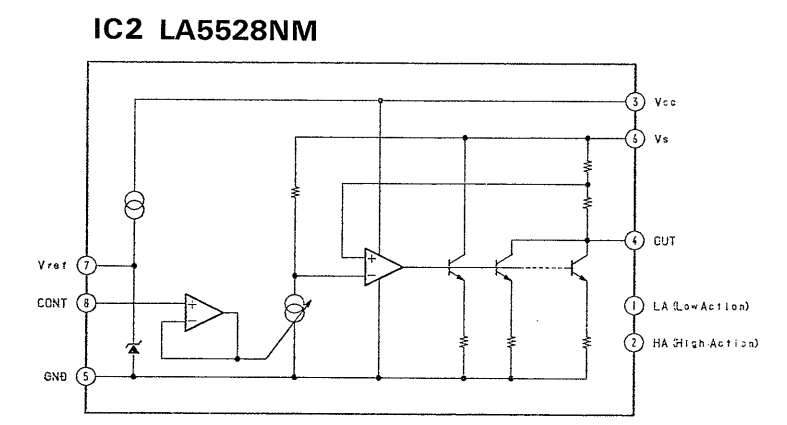


Note:

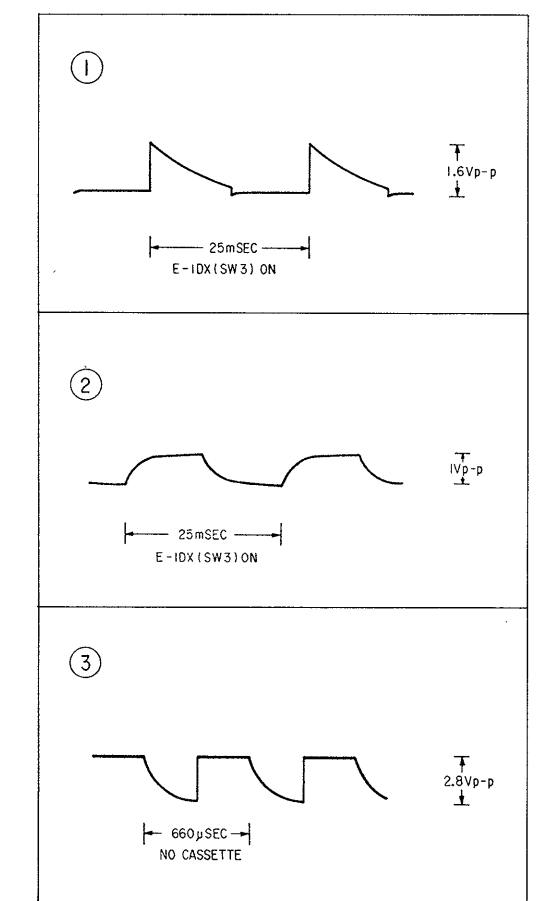
- — : parts extracted from the component side.
- — : parts extracted from the conductor side.
- : Through hole.
- ▨ : Pattern on the side which is seen.
- ⊙ : Pattern of the rear side.



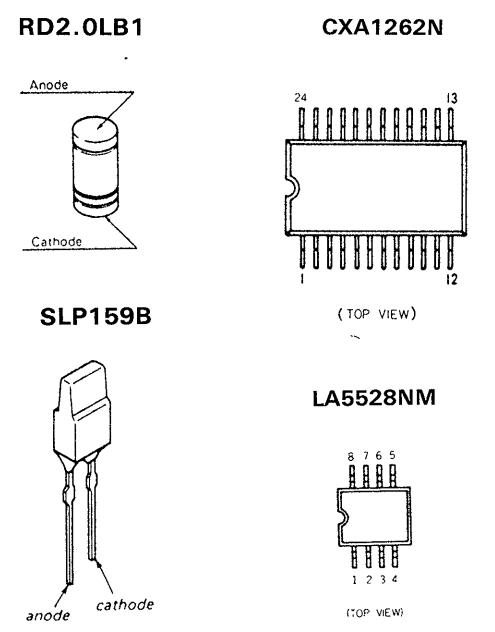
• IC Block Diagram



• Wave Forms



• Semiconductor Lead Layouts



Note:

- All capacitors are in μF unless otherwise noted. pF : $\mu\mu F$. 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4 W$ or less unless otherwise specified.
- [B+] : B+ Line
- [] : adjustment for repair.
- Power voltage is dc 3 V and fed with regulated dc power supply from external power voltage jack.
- Voltage is dc with respect to ground under no-signal (detuned) conditions. no mark : LISTEN () : DICT
- Voltages are taken with a VOM (Input Impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Signal path. Σ : LISTEN \gg : DICT

SECTION 5 EXPLODED VIEWS

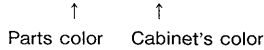
NOTE:

• -XX, -X mean standardized parts, so they may have some differences from the original one.

• Color Indication of Appearance Parts

Example:

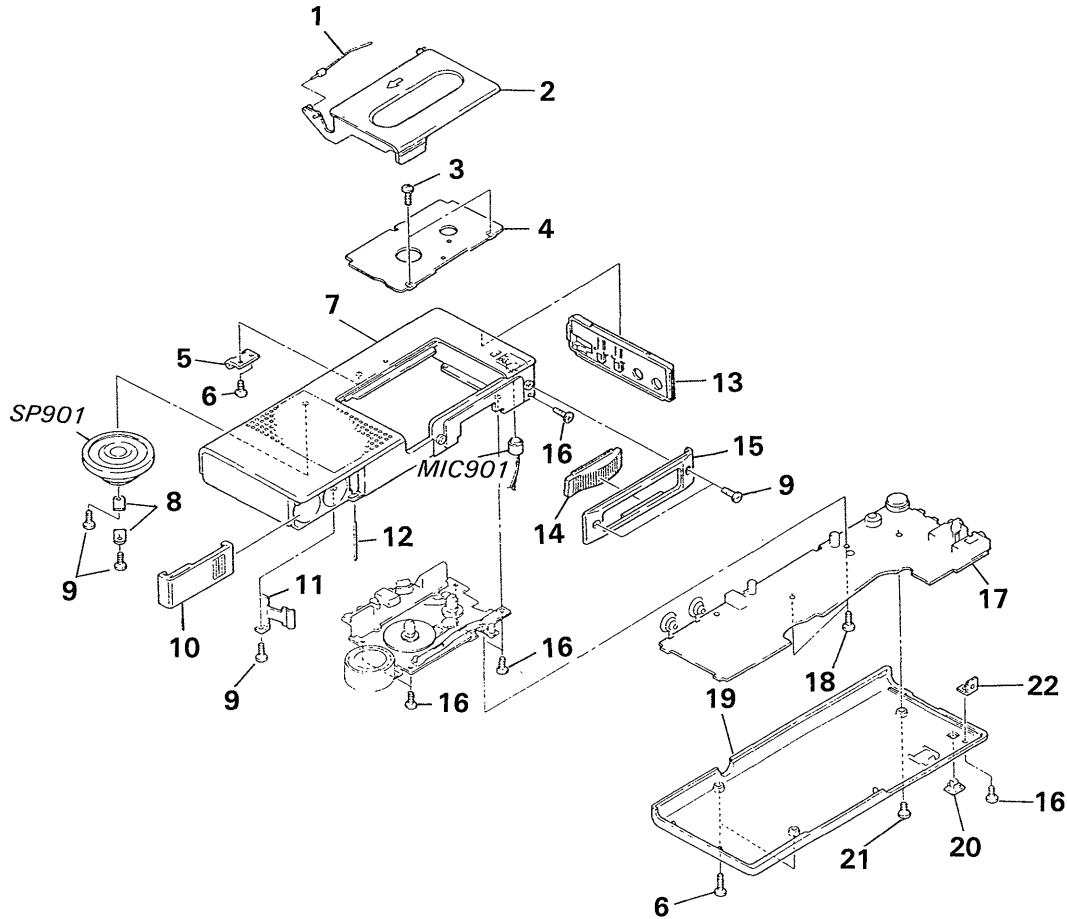
KNOB, BALANCE(WHITE)...(RED)



• Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• The mechanical parts with no reference number in the exploded views are not supplied.

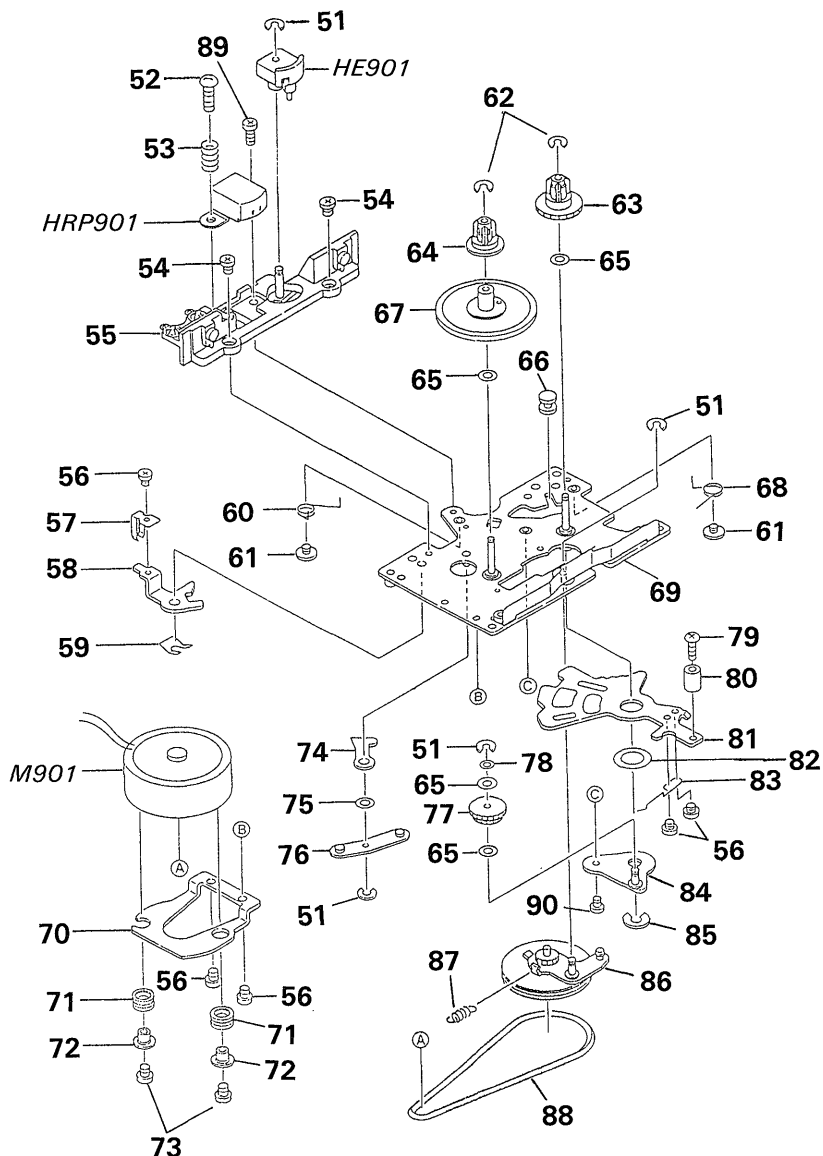
5-1. CASE(MAIN) SECTION



Ref. No.	Part No.	Description	Remark
1	3-373-245-01	SPRING, CASSETTE	
2	X-3363-750-1	COVER ASSY, CASSETTE	
3	3-373-264-01	SCREW (TR1.7-2.0 F1)	
4	3-373-254-01	PLATE, ORNAMENTAL	
5	3-373-260-01	HOLDER, SPRING	
6	3-373-266-01	SCREW (TA1.7-6.0 F2 BLACK)	
7	X-3363-751-1	CASE (MAIN) ASSY	
8	3-373-259-01	RETAINER, SPEAKER	
9	3-373-267-01	SCREW (TA1.7-3.0 F2 BLACK)	
10	X-3363-749-1	LID ASSY, BATTERY CASE	
11	3-373-258-01	SPRING, LEAF	
12	3-373-261-01	SHAFT, BATTERY CASE LID	

Ref. No.	Part No.	Description	Remark
13	3-373-246-01	COVER, TOP	
14	3-373-247-01	BUTTON, SLIDE	
15	3-373-253-01	COVER, CONTROL BLOCK	
16	3-373-263-01	SCREW (TR1.4-3.0 F1 BLACK)	
17	A-3041-646-A	AMP BOARD, COMPLETE	
18	3-373-262-01	SCREW (TR1.4-2.0 F1)	
19	3-373-248-01	LID, REAR	
20	3-373-251-01	KNOB, MICROPHONE SENSE	
21	3-373-265-01	SCREW (TR1.7-4.0 F3 BLACK)	
22	3-373-252-01	STOPPER, REAR LID	
MIC901	1-542-175-11	MICROPHONE, ELECTRET CONDENSER	
SP901	1-544-602-11	SPEAKER	

5-2. MD SECTION (MB610)



Ref. No.	Part No.	Description	Remark
51	3-373-305-01	STOP (R SE1.2RP)	
52	3-373-300-01	SCREW (TA2.0-8.0 F3)	
53	3-373-294-01	SPRING, ADJUSTMENT	
54	3-373-297-01	SCREW (TR1.7-2.2 F1)	
55	X-3363-756-1	HEAD (BASE) ASSY (INCLUDE SW6)	
56	3-373-295-01	SCREW (TR1.7-1.4 F1)	
57	3-373-287-01	SPRING, SWITCH	
58	* 3-373-286-01	LEVER, SWITCH	
59	3-373-285-01	SPRING, BASE RETAINER	
60	3-373-279-01	SPRING, RETURN	
61	3-373-296-01	SCREW (TR1.7-1.4 FD4.8)	
62	3-373-307-01	STOP (R SE1.2 RP BLACK)	
63	3-373-284-01	GEAR, SUPPLY	
64	3-373-276-01	CAP, REEL	
65	3-373-304-01	WASHER (WL1.6X3.2X0.13)	
66	* 3-373-281-01	ROLLER	
67	X-3363-753-1	REEL ASSY, TAKE-UP	
68	3-373-282-01	SPRING, CLICK	
69	* X-3363-755-1	PLATE ASSY, BOTTOM	
70	* 3-373-290-01	HOLDER, MOTOR	
71	* 3-373-288-01	CUSHION, MOTOR	
72	3-373-289-01	COLLAR, MOTOR FITTING	

Ref. No.	Part No.	Description	Remark
73	3-373-299-01	SCREW (TD1.7-4.0 F1)	
74	* 3-373-277-01	LEVER, POWER	
75	3-373-302-01	POLY-SLIDER (WP2.5X0.13)	
76	X-3363-757-1	ARM ASSY, SWITCH	
77	3-373-283-01	GEAR, IDLER	
78	3-373-301-01	POLY-SLIDER (WP1.6X0.25)	
79	3-373-298-01	SCREW (TR1.7-5.0 F1)	
80	3-373-293-01	RETAINER, SLIDE BUTTON	
81	* 3-373-292-01	LEVER, MAIN	
82	3-373-303-01	POLY-SLIDER (WP5.0X0.13)	
83	* 3-373-291-01	SPRING, REW	
84	X-3363-754-1	RETAINER ASSY	
85	3-373-306-01	STOP (R SE2.0 BENDING BE2)	
86	X-3363-752-1	FLYWHEEL ASSY	
87	3-373-278-01	SPRING (B), PRESS	
88	3-373-280-01	BELT, MOTOR	
89	3-373-265-01	SCREW (TR1.7-4.0 F3)	
90	3-373-262-01	SCREW (TR1.4-2.0 F1)	
HE901	1-543-884-11	HEAD, MAGNETIC (ERASE)	
HRP901	1-543-885-11	HEAD, MAGNETIC (REC/PB)	
M901	X-3363-758-1	MOTOR ASSY	

SECTION 6 ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA...,
uPB...: μ PB..., uPC...: μ PC...,
uPD...: μ PB...
- CAPACITORS
uF: μ F
- COILS
uH: μ H
- CND : Canadian

Ref. No.	Part No.	Description	Remark
	A-3041-646-A	AMP BOARD, COMPLETE *****	
		< CAPACITOR >	
C1	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C2	1-163-981-11	CERAMIC CHIP 0.0022uF	20% 16V
C3	1-163-081-00	CERAMIC CHIP 0.22uF	20% 25V
C4	1-135-201-11	TANTALUM CHIP 10uF	20% 4V
C5	1-163-059-00	CERAMIC CHIP 0.01uF	10% 50V
C6	1-163-981-11	CERAMIC CHIP 0.0022uF	20% 16V
C7	1-163-982-00	CERAMIC CHIP 0.0033uF	20% 16V
C8	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C9	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C10	1-164-493-11	CERAMIC CHIP 0.047uF	10% 50V
C11	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C12	1-163-081-00	CERAMIC CHIP 0.22uF	20% 25V
C13	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V
C14	1-163-059-00	CERAMIC CHIP 0.01uF	10% 50V
C15	1-163-081-00	CERAMIC CHIP 0.22uF	20% 25V
C16	1-163-063-00	CERAMIC CHIP 0.022uF	10% 50V
C17	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V
C18	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C19	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C20	1-163-081-00	CERAMIC CHIP 0.22uF	20% 25V
C21	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C22	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V
C23	1-163-059-00	CERAMIC CHIP 0.01uF	10% 50V
C24	1-126-780-11	ELECT 100uF	20% 4V
C25	1-163-081-00	CERAMIC CHIP 0.22uF	20% 25V
C26	1-163-081-00	CERAMIC CHIP 0.22uF	20% 25V
C27	1-163-981-11	CERAMIC CHIP 0.0022uF	20% 16V
C28	1-163-981-11	CERAMIC CHIP 0.0022uF	20% 16V
C29	1-135-201-11	TANTALUM CHIP 10uF	20% 4V
C30	1-163-981-11	CERAMIC CHIP 0.0022uF	20% 16V

Ref. No.	Part No.	Description	Remark
C31	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V
C32	1-163-059-00	CERAMIC CHIP 0.01uF	10% 50V
C33	1-163-059-00	CERAMIC CHIP 0.01uF	10% 50V
C34	1-163-057-00	CERAMIC CHIP 0.0068uF	10% 50V
C35	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V
C36	1-135-145-11	TANTALUM CHIP 0.47uF	10% 35V
C37	1-135-145-11	TANTALUM CHIP 0.47uF	10% 35V
C38	1-135-145-11	TANTALUM CHIP 0.47uF	10% 35V
C39	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V
C40	1-163-059-00	CERAMIC CHIP 0.01uF	10% 50V
C41	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C42	1-163-059-00	CERAMIC CHIP 0.01uF	10% 50V
C43	1-163-059-00	CERAMIC CHIP 0.01uF	10% 50V
C44	1-163-081-00	CERAMIC CHIP 0.22uF	20% 25V
C45	1-163-063-00	CERAMIC CHIP 0.022uF	10% 50V
C46	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V
C47	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V
C48	1-124-638-11	ELECT 22uF	20% 6.3V
C49	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C50	1-163-081-00	CERAMIC CHIP 0.22uF	20% 25V
		< DIODE >	
D1	8-719-023-67	DIODE RD2.0LB1	
D2	8-719-023-67	DIODE RD2.0LB1	
D3	8-719-990-39	DIODE DCB010	
D4	8-719-941-04	DIODE SB007-03CP	
D5	8-719-941-04	DIODE SB007-03CP	
D6	8-719-941-04	DIODE SB007-03CP	
		< IC >	
IC1	8-752-038-28	IC CXA1262N	
IC2	8-759-055-63	IC LA5528NM	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
		< JACK >					
J1	1-569-215-11	JACK (MIC)		R16	1-216-158-00	METAL CHIP 22	5% 1/8W
J2	1-569-215-11	JACK (EAR)		R17	1-216-158-00	METAL CHIP 22	5% 1/8W
J3	1-565-074-11	JACK, OUTER POWER 1P (DC IN 3V)		R18	1-216-134-00	METAL CHIP 2.2	5% 1/8W
		< COIL >		R19	1-216-174-00	METAL CHIP 100	5% 1/8W
L1	1-414-058-11	MICRO INDUCTOR		R20	1-216-144-11	METAL CHIP 5.6	5% 1/8W
		< LED >		R21	1-216-220-00	METAL CHIP 8.2K	5% 1/8W
LED1	8-719-915-54	LED SLP159B		R22	1-216-216-00	METAL CHIP 5.6k	5% 1/8W
		< PHOTO INTERRUPTER >		R23	1-216-222-00	METAL CHIP 10K	5% 1/8W
PH1	1-809-562-11	PHOTO INTERRUPTER		R24	1-216-216-00	METAL CHIP 5.6k	5% 1/8W
		< TRANSISTOR >		R25	1-216-192-00	METAL CHIP 560	5% 1/8W
Q1	8-729-820-79	TRANSISTOR 2SC2812-L5L6		R26	1-216-234-00	METAL CHIP 33K	5% 1/8W
Q2	8-729-232-66	TRANSISTOR 2SA1618Y		R27	1-216-234-00	METAL CHIP 33K	5% 1/8W
Q3	8-729-820-79	TRANSISTOR 2SC2812-L5L6		R28	1-216-192-00	METAL CHIP 560	5% 1/8W
Q4	8-729-820-79	TRANSISTOR 2SC2812-L5L6		R29	1-216-206-00	METAL CHIP 2.2K	5% 1/8W
Q5	8-729-900-53	TRANSISTOR DTC114EK		R30	1-216-246-00	METAL CHIP 100K	5% 1/8W
Q6	8-729-232-66	TRANSISTOR 2SA1618Y		R31	1-216-234-00	METAL CHIP 33K	5% 1/8W
Q7	8-729-807-88	TRANSISTOR 2SB1295-UL7		R32	1-216-238-00	METAL CHIP 47K	5% 1/8W
Q8	8-729-901-05	TRANSISTOR DTA124EK		R33	1-216-150-00	METAL CHIP 10	5% 1/8W
Q9	8-729-820-79	TRANSISTOR 2SC2812-L5L6		R34	1-216-222-00	METAL CHIP 10K	5% 1/8W
Q10	8-729-900-53	TRANSISTOR DTC114EK		R35	1-216-238-00	METAL CHIP 47K	5% 1/8W
Q11	8-729-901-05	TRANSISTOR DTA124EK		R36	1-216-238-00	METAL CHIP 47K	5% 1/8W
Q12	8-729-820-79	TRANSISTOR 2SC2812-L5L6		R37	1-216-222-00	METAL CHIP 10K	5% 1/8W
Q13	8-729-820-79	TRANSISTOR 2SC2812-L5L6		R38	1-216-184-00	METAL CHIP 270	5% 1/8W
Q14	8-729-901-05	TRANSISTOR DTA124EK		R39	1-216-206-00	METAL CHIP 2.2K	5% 1/8W
Q15	8-729-820-79	TRANSISTOR 2SC2812-L5L6		R40	1-216-192-00	METAL CHIP 560	5% 1/8W
		< RESISTOR >		R41	1-216-238-00	METAL CHIP 47K	5% 1/8W
R1	1-216-216-00	METAL CHIP 5.6k	5% 1/8W	R42	1-216-238-00	METAL CHIP 47K	5% 1/8W
R2	1-216-206-00	METAL CHIP 2.2K	5% 1/8W	R43	1-216-238-00	METAL CHIP 47K	5% 1/8W
R3	1-216-184-00	METAL CHIP 270	5% 1/8W	R44	1-216-266-00	METAL CHIP 680K	5% 1/8W
R4	1-216-212-00	METAL CHIP 3.9K	5% 1/8W	R45	1-216-206-00	METAL CHIP 2.2K	5% 1/8W
R5	1-216-210-00	METAL CHIP 3.3K	5% 1/8W	R46	1-216-184-00	METAL CHIP 270	5% 1/8W
R6	1-216-230-00	METAL CHIP 22K	5% 1/8W	R47	1-216-198-00	METAL CHIP 1K	5% 1/8W
R7	1-216-230-00	METAL CHIP 22K	5% 1/8W	R48	1-216-238-00	METAL CHIP 47K	5% 1/8W
R8	1-216-192-00	METAL CHIP 560	5% 1/8W	R49	1-216-238-00	METAL CHIP 47K	5% 1/8W
R9	1-216-250-00	METAL CHIP 150K	5% 1/8W	R50	1-216-254-00	METAL CHIP 220K	5% 1/8W
R10	1-216-216-00	METAL CHIP 5.6k	5% 1/8W	R51	1-216-222-00	METAL CHIP 10K	5% 1/8W
R11	1-216-254-00	METAL CHIP 220K	5% 1/8W	R52	1-809-564-11	THERMISTOR, POSITIVE 10K	
R12	1-216-206-00	METAL CHIP 2.2K	5% 1/8W	R53	1-216-198-00	METAL CHIP 1K	5% 1/8W
R13	1-216-206-00	METAL CHIP 2.2K	5% 1/8W	R54	1-216-206-00	METAL CHIP 2.2K	5% 1/8W
R14	1-216-206-00	METAL CHIP 2.2K	5% 1/8W	R55	1-216-182-00	METAL CHIP 220	5% 1/8W
R15	1-216-234-00	METAL CHIP 33K	5% 1/8W			< SPEAKER >	
				SP901	1-544-602-11	SPEAKER	
						< SWITCH >	
				SW1	1-572-998-11	SWITCH, SLIDE (DICT/LISTEN)	
				SW2	1-571-275-11	SWITCH, SLIDE (MIC SENS)	
				SW3	1-572-997-11	SWITCH, LEAF (E-IDX)	
				SW4	1-692-033-11	SWITCH, LEAF (REW)	

AMP

Ref.No.	Part No.	Description	Remark
SW5	1-572-997-11	SWITCH, LEAF (FF)	
SW6	X-3363-756-1	HEAD (BASE) ASSY (INCLUDE LEAF SWITCH)	
SW7	1-572-996-11	SWITCH, LEAF (POWER)	

< VARIABLE RESISTOR >

VR1	1-230-485-11	RES. VAR. CARBON 10K (VOL)	
VR2	1-241-793-11	RES. VAR. CARBON 1K	

MISCELLANEOUS

HRP901	1-543-885-11	HEAD, MAGNETIC (REC/PB)	
HE901	1-543-884-11	HEAD, MAGNETIC (ERASE)	
M901	X-3363-758-1	MOTOR ASSY	
MIC901	1-542-175-11	MICROPHONE, ELECTRET CONDENSER	

ACCESSORIES & PACKING MATERIALS

- * 3-371-081-01 INDIVIDUAL CARTON
- * 3-371-082-01 CUSHION
- 3-373-275-01 CASE, CARRYING
- 3-753-931-11 MANUAL, INSTRUCTION (ENGLISH, FRENCH,
GERMAN, SPANISH) (CND, AEP, E, UK)
- 3-753-931-21 MANUAL, INSTRUCTION (EIGLISH) (US)