

TCM-359V

SERVICE MANUAL



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

Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MT-359V-118

SPECIFICATIONS

Recording system

2-track 1 channel monaural

Frequency range

250 - 6,300 Hz

Speaker

Approx. 3.6 cm (1 $\frac{1}{16}$ in.) dia.

Power output

130 mW (at 10 % harmonic distortion)

Input

Microphone input jack (minijack) sensitivity 0.2 mV for 3 kilohms or lower impedance microphone

Output

Earphone jack (minijack) for 8 - 300 ohms earphone

Variable range of the tape speed

from +30% to -20%

Power requirements

- Two size AA (R6) batteries (not supplied): 3V DC
- AC-E30HG AC power adaptor (not supplied) for use on 120 V AC, 60 Hz
- Sony DCC-E130L car battery cord (not supplied) for use on 12 V car battery.

Dimensions (w/h/d) (incl. projecting parts and controls)

Approx. 114 × 91 × 38 mm
(4 $\frac{1}{2}$ × 3 $\frac{3}{4}$ × 1 $\frac{1}{2}$ in.)

Mass (not incl. batteries)

Approx. 185 g (6.6 oz.)

Design and specifications are subject to change without notice.

CASSETTE-CORDER
SONY®

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
Specifications		1
1. GENERAL		2
2. DISASSEMBLY		2
3. MECHANICAL ADJUSTMENTS		3
4. ELECTRICAL ADJUSTMENTS		4
5. DIAGRAMS		
5-1. Block Diagram		5
5-2. Printed Wiring Boards		7
5-3. Schematic Diagram		11
6. EXPLODED VIEWS		14
7. ELECTRICAL PARTS LIST		18

Flexible Circuit Board Repairing

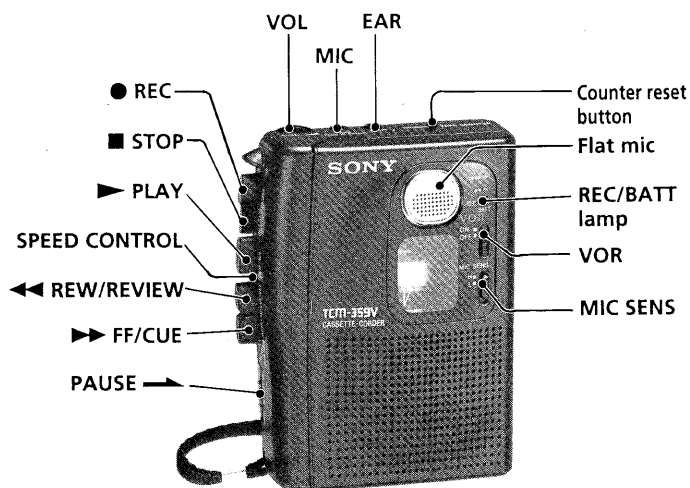
- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

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

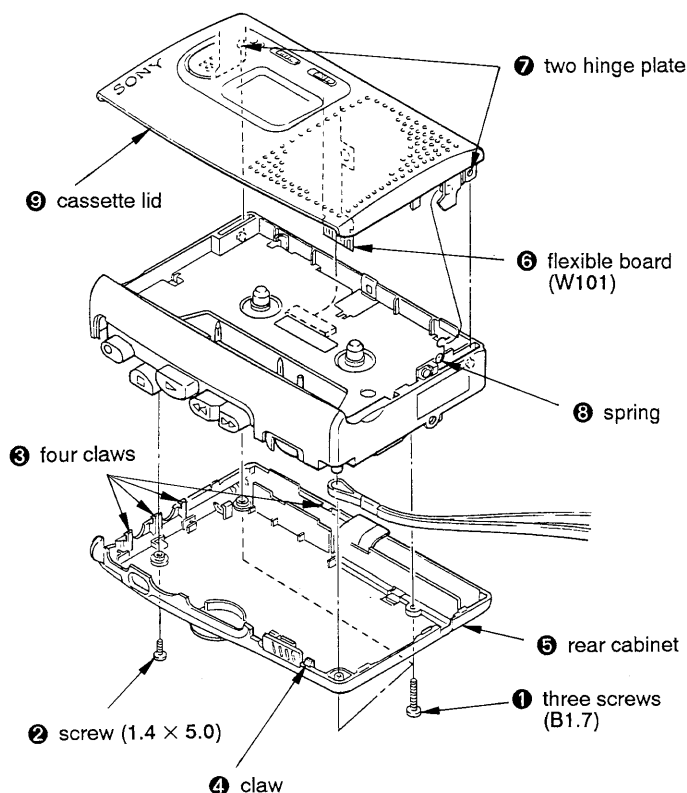
Parts Identification



SECTION 2 DISASSEMBLY

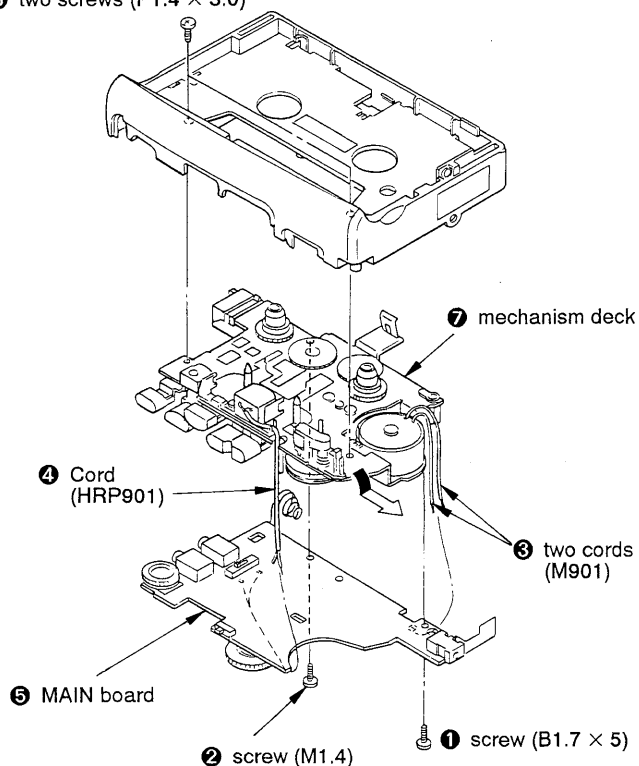
Note: Follow the disassembly procedure in the numerical order given.

REAR CABINET, CASSETTE LID



MAIN BOARD, MECHANISM DECK

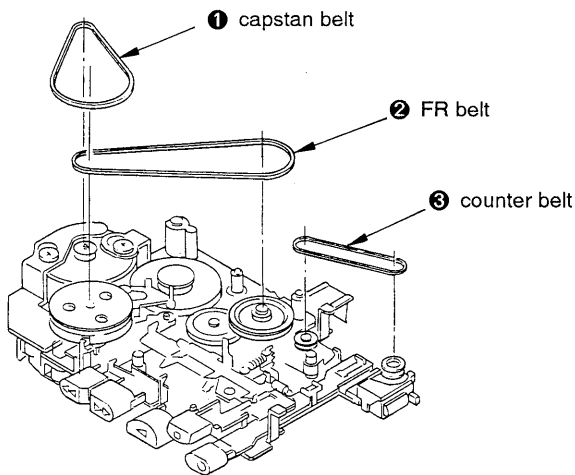
⑥ two screws (P1.4 × 3.0)



SECTION 3

MECHANICAL ADJUSTMENTS

BELT



PRECAUTION

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

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers
2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
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 (2.5 V) unless otherwise noted.

Torque Measurement

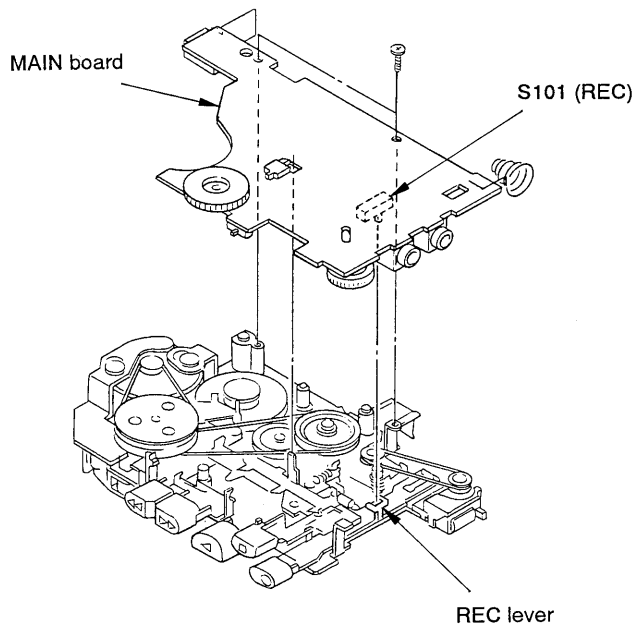
Torque	Torque Meter	Meter Reading
FWD	CQ-102C	more than 20 g•cm (more than 0.28 oz•inch)
Forward Back Tension		0.5 – 3 g•cm (0.007 – 0.04 oz•inch)
FF	CQ-201B	more than 50 g•cm (more than 0.69 oz•inch)
REW		

Tape Tension Measurement

Mode	Tension Meter	Meter Reading
FWD	CQ-403A	more than 50 g (more than 1.76 oz)

INSTALLATION MAIN BOARD

On installation MAIN board, adjust to the S101 and the REC lever.



SECTION 4

ELECTRICAL ADJUSTMENTS

• Test Tape

Type	Signal	Used for
WS-48A	3 kHz, 0 dB	tape speed adjustment
P-4-A063	6.3 kHz, - 10 dB	head azimuth adjustment

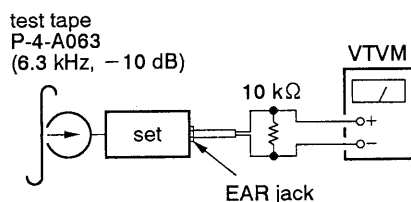
REC/PB Head Azimuth Adjustment

Setting:

VOL (RV101) : mechanical mid
 PAUSE (S601) : off
 MIC Sense : H
 VOR (S104) : off
 SPEED CONTROL (RV602) : mechanical center

Procedure:

1. Mode: playback

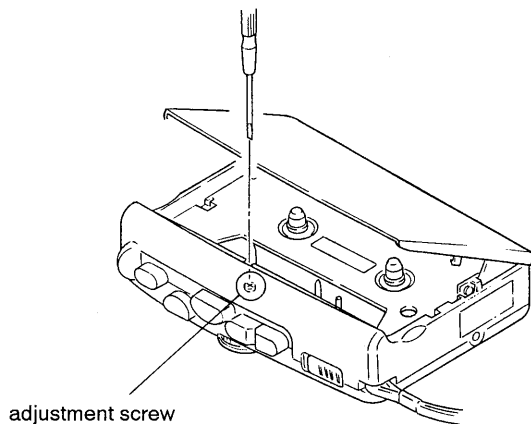


2. Turn the adjustment screw to obtain the maximum reading on VTVM.

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

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

Adjustment Location:



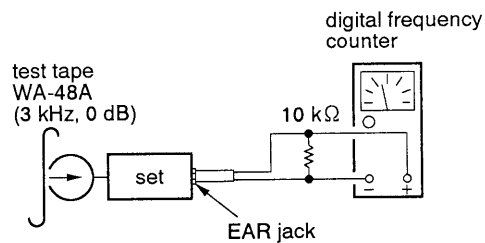
Tape Speed Adjustment

Setting:

SPEED CONTROL (RV602): mechanical center

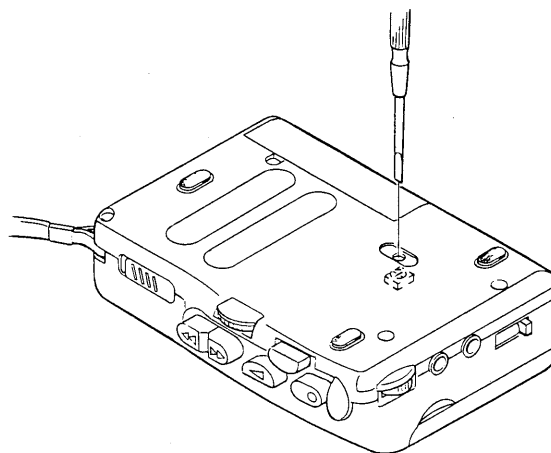
Procedure:

Mode: FWD playback



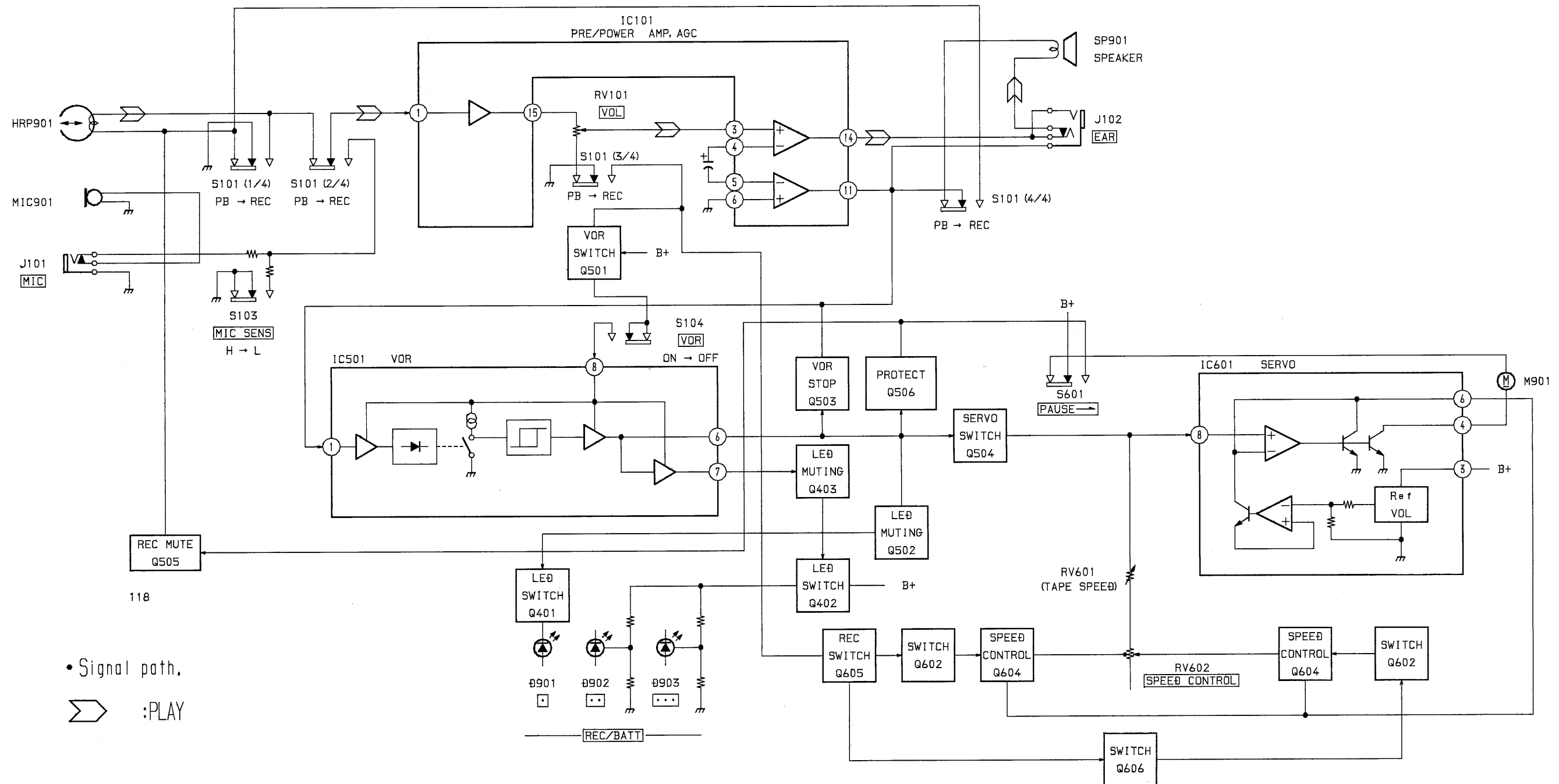
1. Adjust RV601 so that the reading of the frequency counter becomes $3,000 \pm 30$ Hz.

Adjustment Location: MAIN board



SECTION 5 DIAGRAMS

5-1. BLOCK DIAGRAM



118

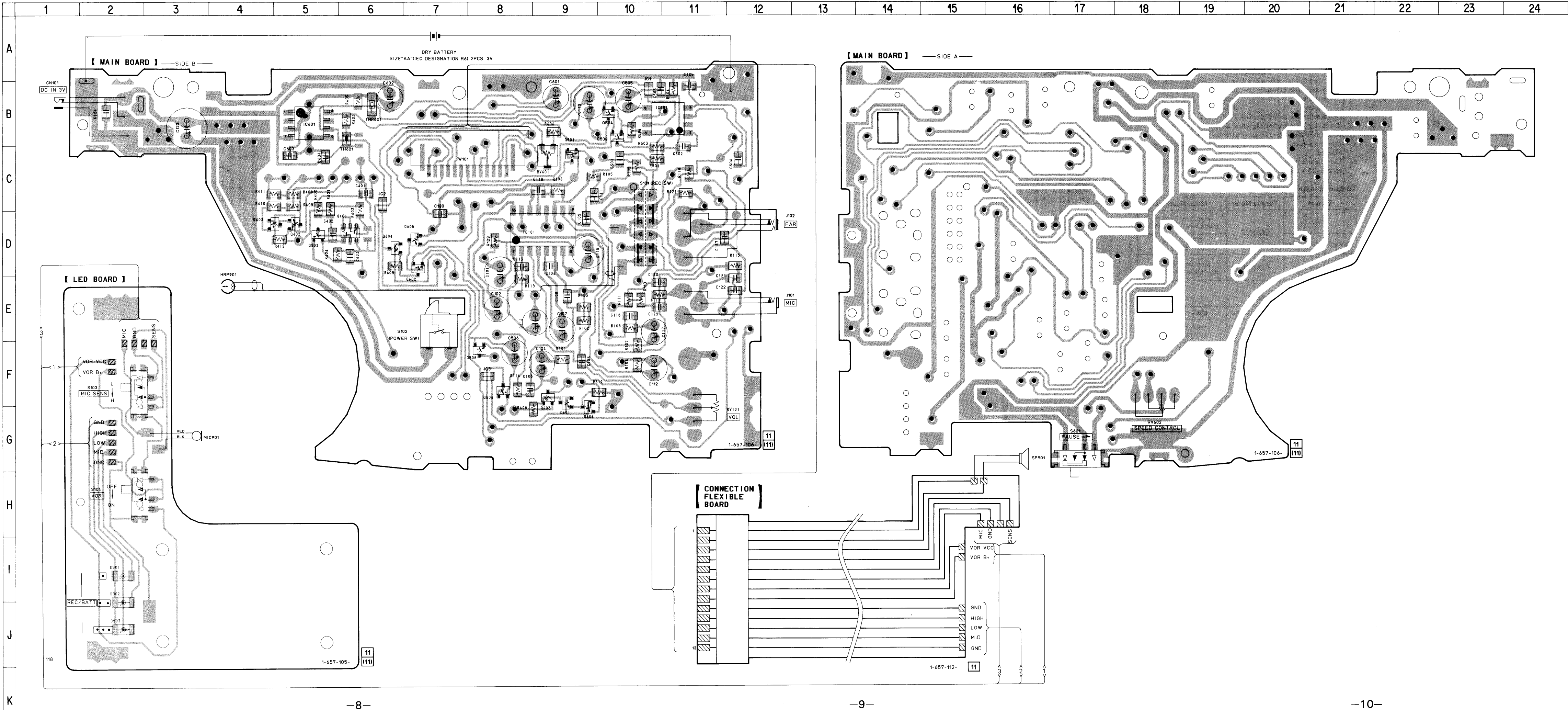
5-2. PRINTED WIRING BOARDS

• Semiconductor Location

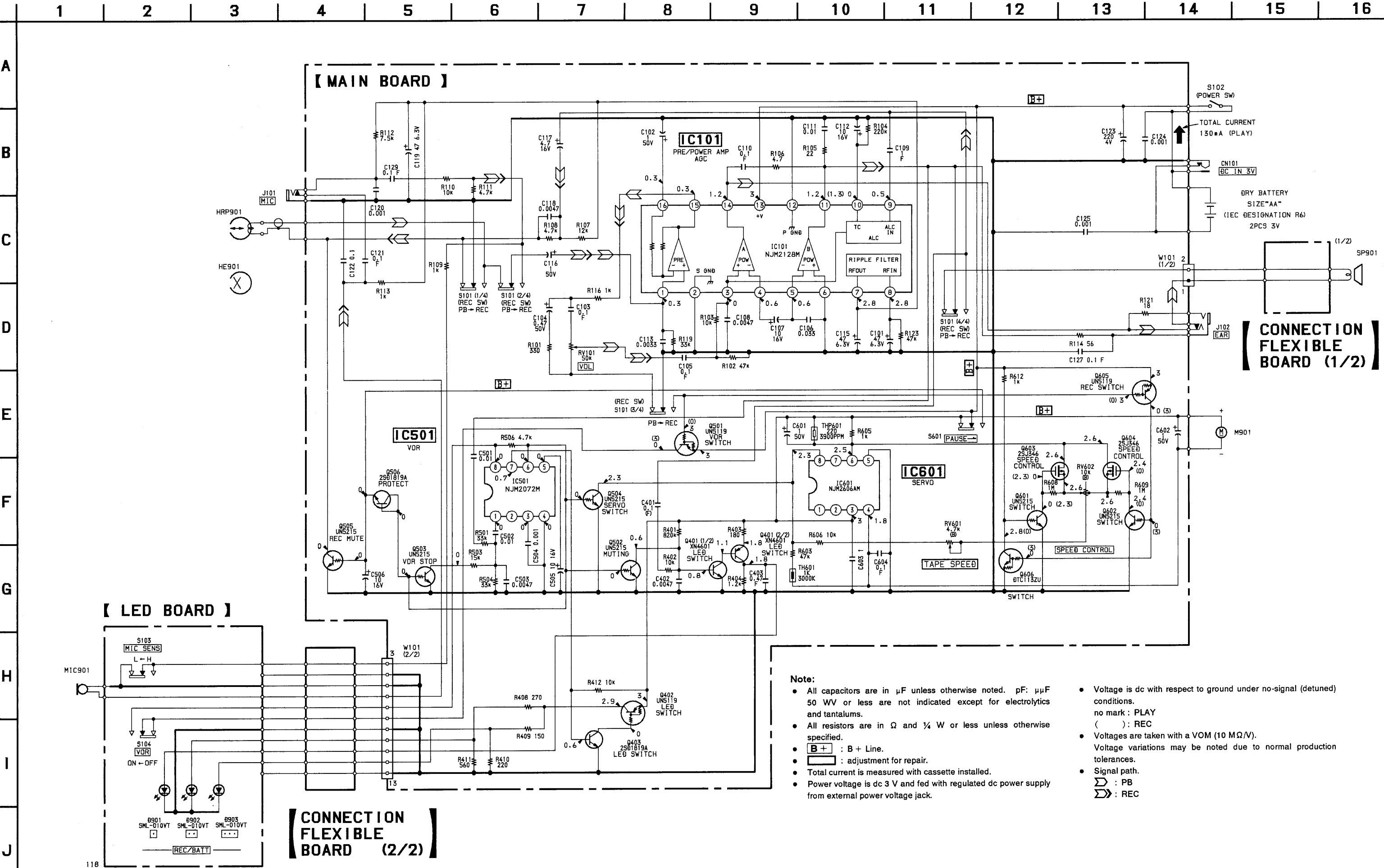
Ref. No.	Location
D901	I-2
D902	J-2
D903	J-2
IC101	D-9
IC501	B-11
IC601	B-5
Q401	D-6
Q402	D-5
Q403	D-5
Q501	C-9
Q502	D-5
Q503	B-10
Q504	B-10
Q505	F-8
Q506	F-8
Q601	F-9
Q602	D-7
Q603	F-9
Q604	D-6
Q605	D-7
Q606	G-9

Note:

- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : Through hole.
- ▨ : Pattern on the side which is seen. (The other layer's pattern are not indicated.)

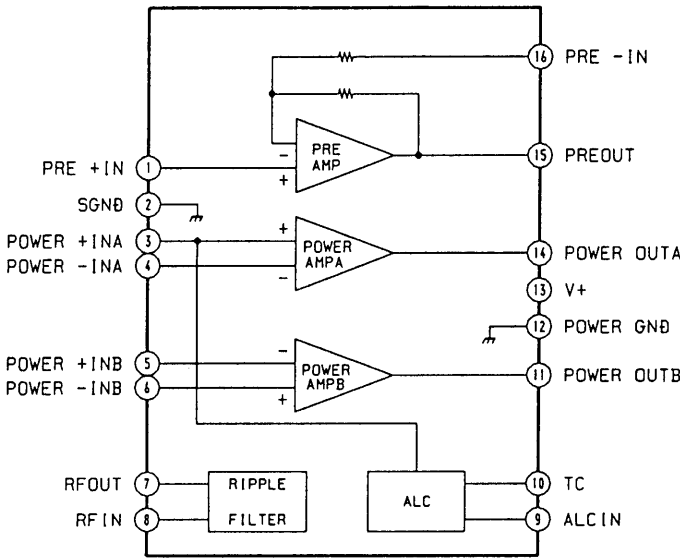


5-3. SCHEMATIC DIAGRAM

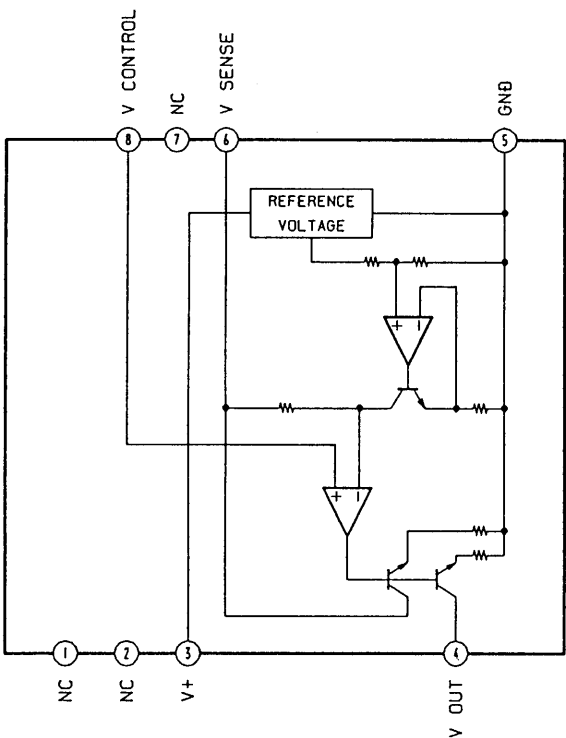


• IC Block Diagrams

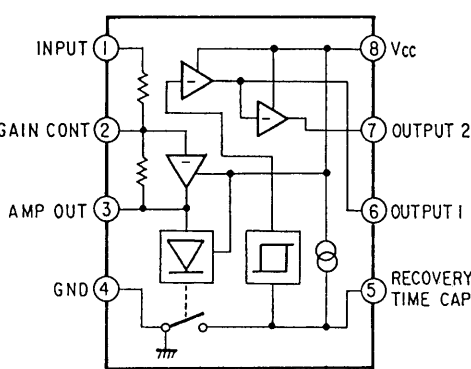
IC101 NJM2128M



IC601 NJM2606AM



IC501 NJM2072M

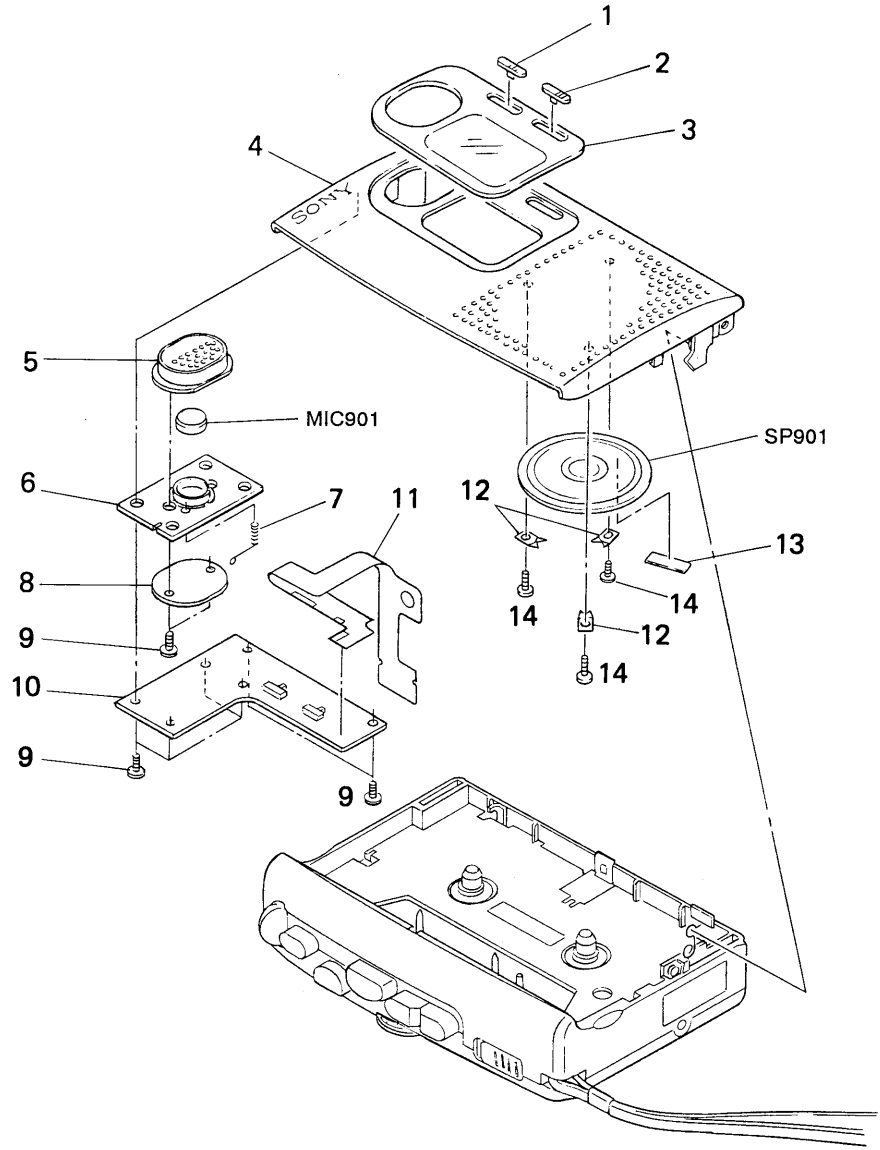


SECTION 6
EXPLODED VIEWS

NOTE:

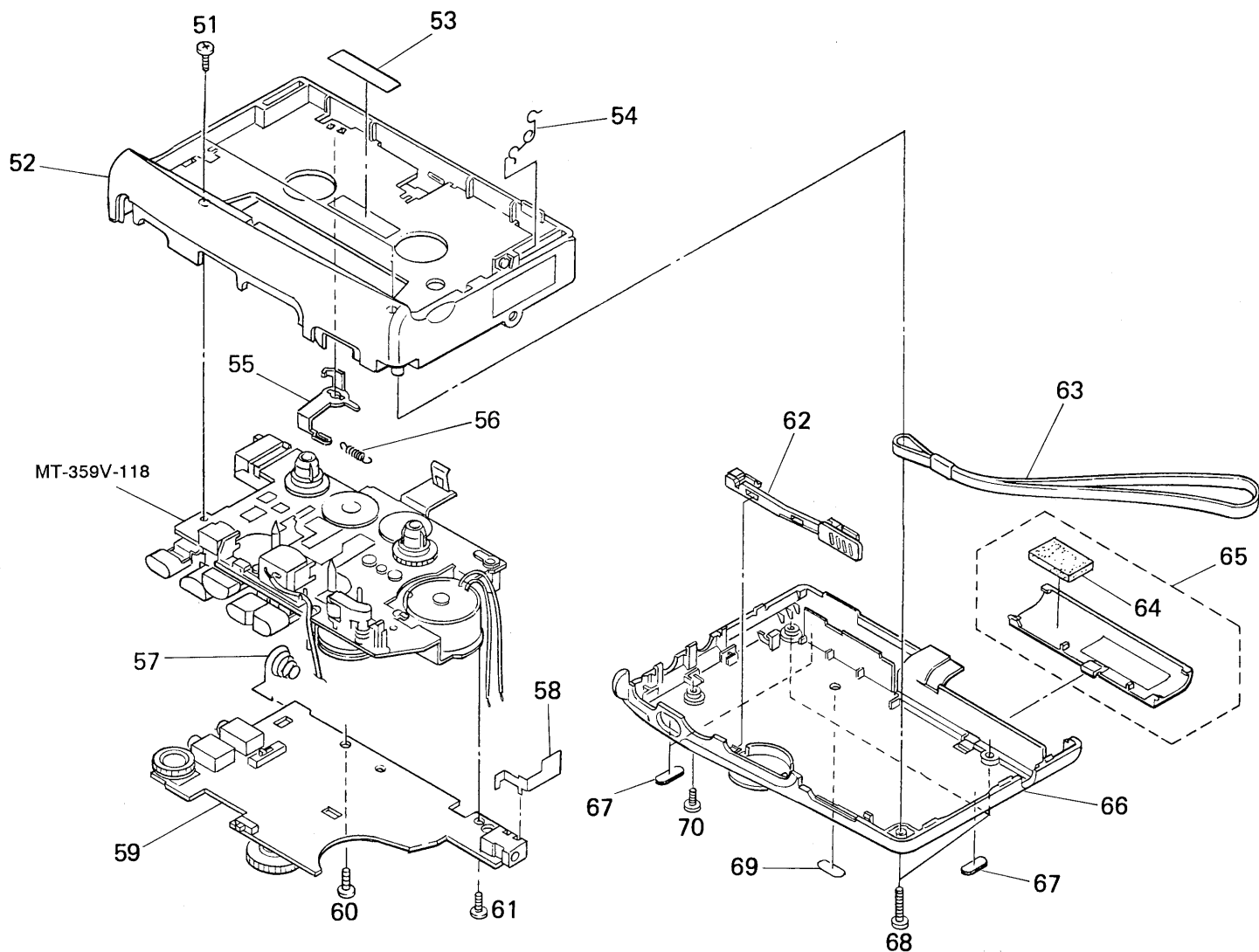
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

(1) CABINET SECTION-1



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	3-924-755-01	KNOB (VOR)		9	3-318-382-51	SCREW (1.7), TAPPING	
2	3-924-755-11	KNOB (VOR)		* 10	1-657-105-11	LED BOARD	
3	3-924-759-01	WINDOW, CASSETTE		* 11	1-657-112-11	CONNECTION FLEXIBLE BOARD	
4	3-924-758-01	LID, CASSETTE		* 12	3-924-757-01	BRACKET	
5	X-3370-419-1	MIC SUB ASSY		13	4-017-441-01	CUSHION (B)	
6	3-924-752-01	CUSHION (MIC)		14	3-318-382-31	SCREW (1.7), TAPPING	
7	3-924-760-01	SPRING, COMPRESSION		MIC901	1-542-124-31	MICROPHONE, ELECTRET CONDENSER	
8	3-924-753-01	RETAINER, MICROPHONE		SP901	1-544-657-11	SPEAKER (3.6CM)	

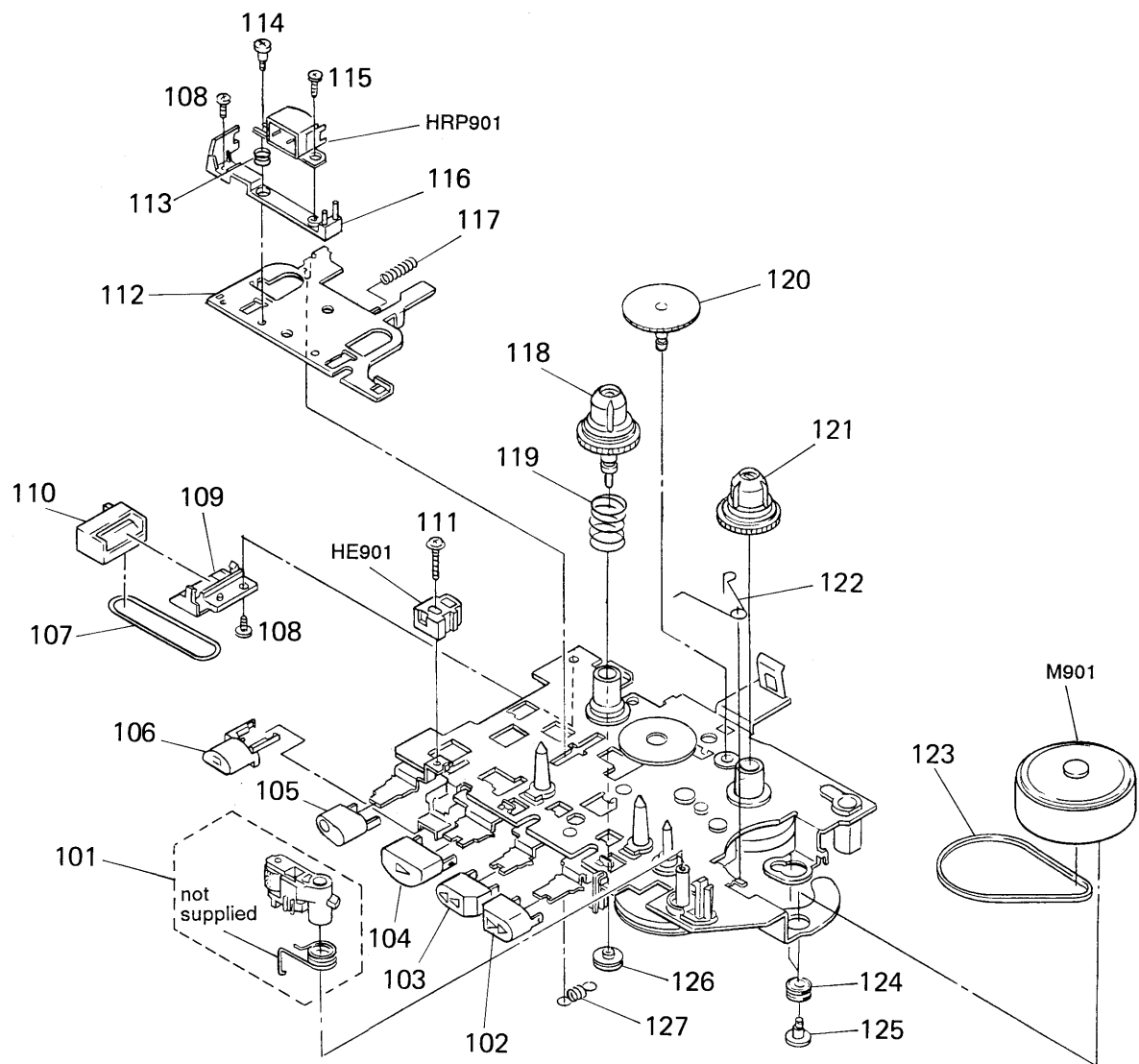
(2) CABINET SECTION-2



Ref. No.	Part No.	Description	Remark
51	3-704-245-42	SCREW (P1.4X3.0)	
52	3-922-965-61	CABINET (FRONT) (US, Canadian, Tourist)	
52	3-922-965-71	CABINET (FRONT) (AEP)	
52	3-922-965-81	CABINET (FRONT) (E)	
53	3-578-101-31	PLATE, ORNAMENTAL	
54	3-924-739-01	SPRING, CASSETTE	
55	3-924-743-01	CLAW, ERASING PROTECTION	
56	3-924-744-01	SPRING, TENSION	
57	3-924-750-01	TERMINAL, MINUS	
58	3-924-741-01	TERMINAL, PLUS	
* 59	A-3016-719-A	MAIN BOARD, COMPLETE	

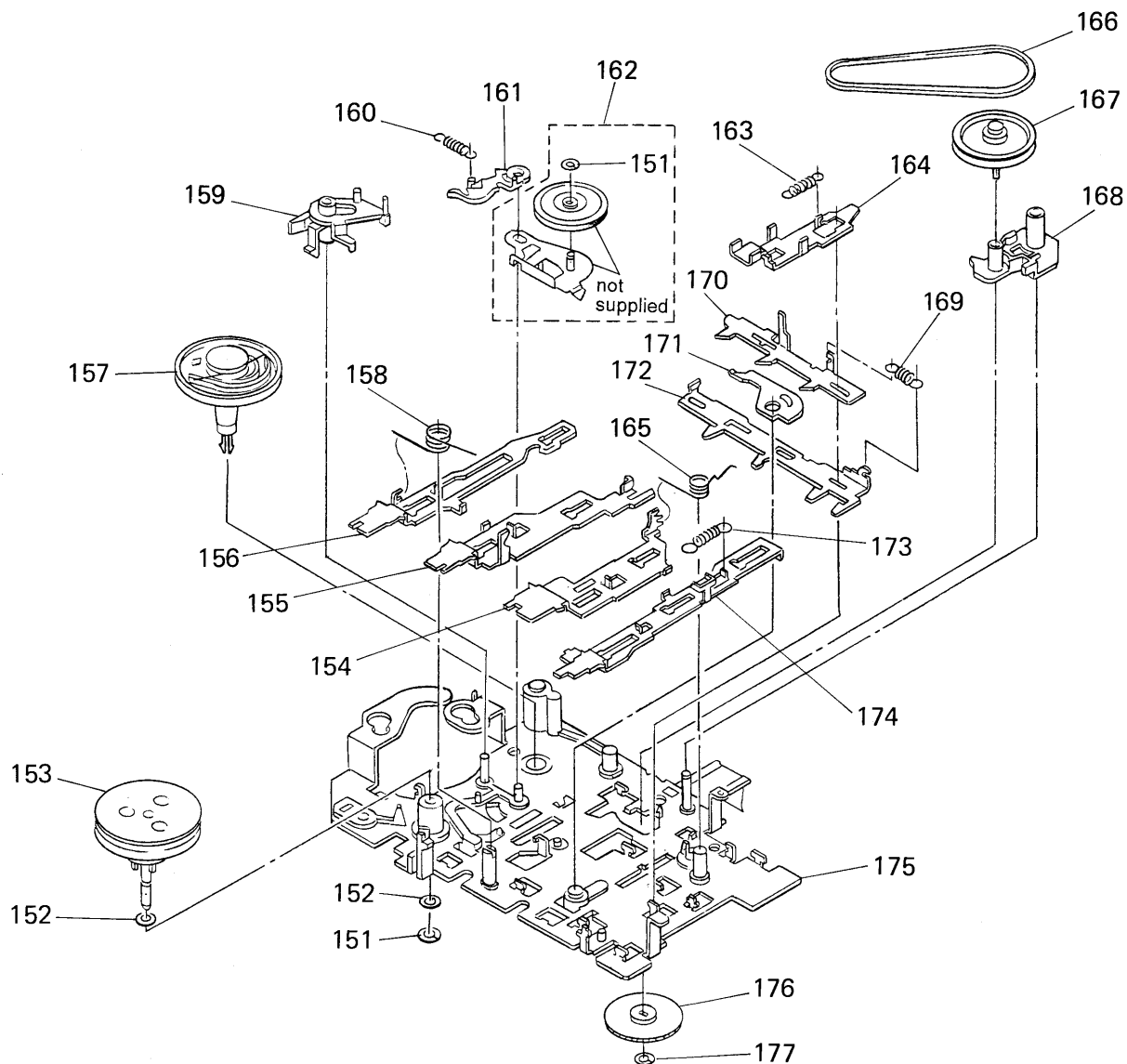
Ref. No.	Part No.	Description	Remark
60	3-345-648-51	SCREW (M1.4), TOOTHED LOCK	
61	3-318-203-71	SCREW (B1.7X5), TAPPING	
62	3-924-747-01	KNOB (PAUSE)	
63	3-924-761-01	STRAP	
* 64	3-927-521-01	CUSHION (BATTERY CASE LID)	
65	A-3042-738-A	LID ASSY, BATTERY CASE	
66	3-924-748-01	CABINET (REAR)	
67	3-925-301-01	FOOT	
68	3-334-565-31	SCREW (B1.7), TAPPING	
69	3-924-762-01	PLATE, BLIND	
70	3-704-197-82	SCREW (1.4X5.0)	

(3) MECHANISM SECTION-1
(MT-359V-118)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	X-3370-386-1	PINCH ROLLER ASSY		116	3-924-645-01	BRACKET (HEAD)	
102	3-925-146-01	BUTTON (FF)		117	3-925-107-01	SPRING (IDLER), COMPRESSION	
103	3-925-147-01	BUTTON (REW)		118	3-924-673-01	GEAR (S REEL)	
104	3-925-148-01	BUTTON (PLAY)		119	3-924-674-01	SPRING (B. T.), COMPRESSION	
105	3-925-145-11	BUTTON (REC)		120	3-924-637-01	GEAR (FF)	
106	3-924-738-01	BUTTON (STOP)		121	3-924-641-01	GEAR (T REEL)	
107	3-924-683-01	BELT (COUNTER)		122	3-924-726-01	SPRING (M GROUND), TORSION	
108	3-704-197-91	SCREW (M1. 4X1. 8), LOCKING		123	3-924-681-01	BELT (CAPSTAN)	
109	3-924-616-01	BRACKET (COUNTER)		124	3-925-109-01	CUSHION (MOTOR)	
110	1-548-582-11	COUNTER, TAPE (SMALL TYPE)		125	3-925-108-01	SCREW (MOTOR)	
111	3-703-925-21	SCREW (M1. 4)		126	3-924-675-01	PULLEY (S REEL)	
112	3-924-625-01	LEVER (HEAD)		127	3-924-644-01	SPRING (POWER TENSION), TENSION	
113	3-924-685-01	SPRING (AZIMUTH), COMPRESSION		HE901	1-500-232-11	HEAD, MAGNETIC (ERASE)	
114	3-375-135-01	SCREW (1. 4), SPECIAL		HRP901	1-500-073-11	HEAD, MAGNETIC (RECORD/PLAYBACK)	
115	3-376-177-01	SCREW (M1. 4X3. 8)		M901	1-698-588-11	MOTOR, DC (CAPSTAN)	

(4) MECHANISM SECTION-2
(MT-359V-118)



Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
151	3-321-483-11	RING, RETAINING		165	3-924-643-01	SPRING (PR), TORSION	
152	3-315-495-31	WASHER		166	3-924-682-01	BELT (FR)	
153	X-3370-384-1	FLYWHEEL ASSY		167	X-3370-385-1	PULLEY (FR) ASSY	
154	3-924-623-01	LEVER (PLAY)		168	3-924-628-01	LEVER (FR)	
155	3-924-621-01	LEVER (REW)		169	3-924-684-01	SPRING (LOCK PLATE), TENSION	
156	3-924-620-01	LEVER (FF)		170	3-924-619-01	LEVER (SW)	
157	X-3370-388-1	TABLE ASSY, FELT		171	3-924-639-01	LEVER (CR)	
158	3-924-642-01	SPRING (FR), TORSION		172	3-924-618-01	LEVER (LOCK)	
159	3-924-629-01	LEVER (DETECTION)		173	3-925-208-01	SPRING (REC), TENSION	
160	3-925-207-01	SPRING (SHUT-OFF), TENSION		174	3-924-624-01	LEVER (REC)	
161	3-924-630-01	LEVER (S-OFF)		175	X-3370-227-1	CHASSIS ASSY	
162	X-3370-387-1	LEVER ASSY, IDLER		176	3-924-613-01	GEAR (FR)	
163	3-924-633-01	SPRING (STOP), TENSION		177	3-308-472-01	WASHER (C)	
164	3-924-622-01	LEVER (STOP)					

SECTION 7

ELECTRICAL PARTS LIST

CONNECTION FLEXIBLE

LED

MAIN

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 and -X mean standardized parts, so they may have some difference 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 PD.
- CAPACITORS
uF: μ F
- COILS
uH: μ H

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
*	1-657-112-11	CONNECTION FLEXIBLE BOARD *****	
*	1-657-105-11	LED BOARD < DIODE > D901 8-719-051-89 DIODE SML-010VT-T87 (REC/BATT) D902 8-719-051-89 DIODE SML-010VT-T87 (REC/BATT) D903 8-719-051-89 DIODE SML-010VT-T87 (REC/BATT) < SWITCH > S103 1-572-922-11 SWITCH, SLIDE (MIC SENS) S104 1-572-922-11 SWITCH, SLIDE (VOR) *****	
*	A-3016-719-A	MAIN BOARD, COMPLETE ***** < CAPACITOR > C101 1-126-154-11 ELECT 47uF 20% 6.3V C102 1-126-160-11 ELECT 1uF 20% 50V C103 1-163-038-91 CERAMIC CHIP 0.1uF 25V C104 1-124-465-00 ELECT 0.47uF 20% 50V C105 1-163-038-91 CERAMIC CHIP 0.1uF 25V C106 1-163-989-11 CERAMIC CHIP 0.033uF 10% 25V C107 1-126-157-11 ELECT 10uF 20% 16V C108 1-163-017-00 CERAMIC CHIP 0.0047uF 10% 50V C109 1-164-346-11 CERAMIC CHIP 1uF 16V C110 1-163-038-91 CERAMIC CHIP 0.1uF 25V C111 1-164-232-11 CERAMIC CHIP 0.01uF 50V C112 1-126-157-11 ELECT 10uF 20% 16V C113 1-164-182-11 CERAMIC CHIP 0.0033uF 10% 50V C115 1-126-154-11 ELECT 47uF 20% 6.3V C116 1-126-160-11 ELECT 1uF 20% 50V C117 1-126-163-11 ELECT 4.7uF 20% 50V C118 1-163-017-00 CERAMIC CHIP 0.0047uF 5% 50V C119 1-126-154-11 ELECT 47uF 20% 6.3V C120 1-163-009-11 CERAMIC CHIP 0.001uF 10% 50V C121 1-163-038-91 CERAMIC CHIP 0.1uF 25V	

Ref. No.	Part No.	Description	Remark
C122	1-163-038-91	CERAMIC CHIP 0.1uF	25V
C123	1-124-434-00	ELECT 220uF	20% 4V
C124	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
C125	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
C127	1-163-038-91	CERAMIC CHIP 0.1uF	25V
C129	1-163-038-91	CERAMIC CHIP 0.1uF	25V
C130	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
C401	1-163-038-91	CERAMIC CHIP 0.1uF	25V
C402	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V
C403	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C501	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C502	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C503	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V
C504	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
C505	1-126-157-11	ELECT 10uF	20% 16V
C506	1-126-157-11	ELECT 10uF	20% 16V
C601	1-126-160-11	ELECT 1uF	20% 50V
C602	1-126-160-11	ELECT 1uF	20% 50V
C603	1-164-346-11	CERAMIC CHIP 1uF	16V
C604	1-163-038-91	CERAMIC CHIP 0.1uF	25V
< CONNECTOR >			
CN101	1-580-919-11	JACK, DC (POLARITY UNIFIED TYPE) (DC IN 3V)	
< IC >			
IC101	8-759-339-54	IC NJM-2128M-TE2	
IC501	8-759-701-51	IC NJM2072M	
IC601	8-759-345-42	IC NJM2606AM-TE2	
< JACK >			
J101	1-766-847-11	JACK (MIC)	
J102	1-766-847-11	JACK (EAR)	
< CONDUCTOR >			
JC1	1-216-295-00	CONDUCTOR, CHIP (2012)	
JC2	1-216-295-00	CONDUCTOR, CHIP (2012)	
JC3	1-216-295-00	CONDUCTOR, CHIP (2012)	
JC4	1-216-295-00	CONDUCTOR, CHIP (2012)	

Ref. No.	Part No.	Description	Remark
< TRANSISTOR >			
Q401	8-729-402-84	TRANSISTOR XN4601	
Q402	8-729-425-22	TRANSISTOR UN5119-TX	
Q403	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q501	8-729-425-22	TRANSISTOR UN5119-TX	
Q502	8-729-420-50	TRANSISTOR UN5215	
Q503	8-729-420-50	TRANSISTOR UN5215	
Q504	8-729-420-50	TRANSISTOR UN5215	
Q505	8-729-420-50	TRANSISTOR UN5215	
Q506	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q601	8-729-420-50	TRANSISTOR UN5215	
Q602	8-729-420-50	TRANSISTOR UN5215	
Q603	8-729-026-30	TRANSISTOR 2SJ346-TE85L	
Q604	8-729-026-30	TRANSISTOR 2SJ346-TE85L	
Q605	8-729-425-22	TRANSISTOR UN5119-TX	
Q606	8-729-924-62	TRANSISTOR DTC113ZU	
< RESISTOR >			
R101	1-216-037-00	METAL CHIP 330 5% 1/10W	
R102	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R103	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R104	1-216-105-91	METAL CHIP 220K 5% 1/10W	
R105	1-216-009-00	METAL CHIP 22 5% 1/10W	
R106	1-216-308-00	METAL CHIP 4.7 5% 1/10W	
R107	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R108	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R109	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R110	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R111	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R112	1-216-070-00	METAL CHIP 7.5K 5% 1/10W	
R113	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R114	1-216-019-00	METAL CHIP 56 5% 1/10W	
R116	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R119	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R121	1-216-609-11	METAL GLAZE 18 0.5% 1/10W	
R123	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R401	1-216-119-00	METAL CHIP 820K 5% 1/10W	
R402	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R403	1-216-031-00	METAL CHIP 180 5% 1/10W	
R404	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R408	1-216-035-00	METAL CHIP 270 5% 1/10W	
R409	1-216-029-00	METAL CHIP 150 5% 1/10W	
R410	1-216-033-00	METAL CHIP 220 5% 1/10W	
R411	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R412	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R501	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R503	1-216-077-00	METAL CHIP 15K 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R504	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R506	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R603	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R605	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R606	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R608	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R609	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R612	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
< VARIABLE RESISTOR >			
RV101	1-223-293-11	RES, VAR, CARBON 50K (VOL)	
RV601	1-223-258-11	RES, ADJ, CERMET 4.7K	
RV602	1-223-928-11	RES, VAR, CARBON (SPEED CONTROL)	
< SWITCH >			
S101	1-572-964-11	SWITCH, SLIDE (REC SW)	
S102	1-572-688-11	SWITCH, PUSH (1 KEY) (POWER SW)	
S601	1-572-922-11	SWITCH, SLIDE (PAUSE ➡)	
< THERMISTOR >			
TH601	1-808-819-11	THERMISTOR, NTC (2125)	
< THERMISTOR(POSITIVE) >			
THP601	1-810-007-11	THERMISTOR, POSITIVE	
< FLAT CABLE >			
* W101	1-750-512-21	CONNECTOR, FPC 13P	

MISCELLANEOUS			

110	1-548-582-11	COUNTER, TAPE (SMALL TYPE)	
HE901	1-500-232-11	HEAD, MAGNETIC (ERASE)	
HRP901	1-500-073-11	HEAD, MAGNETIC (RECORD/PLAYBACK)	
M901	1-698-588-11	MOTOR, DC (CAPSTAN)	
MIC901	1-542-124-31	MICROPHONE, ELECTRET CONDENSER	
SP901	1-544-657-11	SPEAKER (3.6CM)	

ACCESSORIES & PACKING MATERIALS			

3-798-919-11	MANUAL, INSTRUCTION		
	(ENGLISH, FRENCH, SPANISH, SWEDISH)		
	(AEP, UK, E, Tourist)		
3-798-919-21	MANUAL, INSTRUCTION (ENGLISH) (US, Canadian)		
3-798-919-31	MANUAL, INSTRUCTION (FRENCH) (Canadian)		
3-798-919-41	MANUAL, INSTRUCTION		
	(GERMAN, ITALIAN, DUTCH, PORTUGUESE) (AEP, UK)		

Ref. No.	Part No.	Description	Remark
	3-798-919-51	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE) (AEP, UK)	
	3-798-919-61	MANUAL, INSTRUCTION (KOREAN) (E)	
	3-798-919-71	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, POTUGUESE) (AEP, UK)	
*	3-926-504-01	INDIVIDUAL CARTON (Canadian)	
*	3-926-505-01	INDIVIDUAL CARTON (AEP, UK)	
*	3-926-506-01	INDIVIDUAL CARTON (E)	
*	3-926-507-01	INDIVIDUAL CARTON (Tourist)	