

TCM-50DV

SERVICE MANUAL

Ver 1.1 2000. 08
With SUPPLEMENT-1
(9-926-919-81)



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

Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MT-50-30

SPECIFICATIONS

Recording system

2-track 1 channel monaural

Tape speed

4.8 cm/s or 2.4 cm/s

Frequency range

250 - 6,300 Hz using normal (TYPE I) cassette (with REC TIME switch at "NORMAL")

Speaker

Approx. 3.6 cm (1 7/16 in.) dia.

Power output

250 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 approx. +25% to -15% (with REC TIME switch at "NORMAL")

Power requirements

3 V DC batteries AA (R6) × 2/External DC 3 V power sources

Battery life (Approx. hours) (EIAJ*)

	Sony alkaline LR6 (SG)	Sony R6P (SR)
Playback	9.5	1.5
Recording	10.5	2

* Measured value by the standard of EIAJ (Electronic Industries Association of Japan). (Using a Sony HF series cassette tape)

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

Approx. 88.7 × 115.3 × 37.2 mm (3 1/2 × 4 5/8 × 1 1/2 in.)

Mass

Approx. 250 g (8.9 oz.)

Supplied accessories

Size AA (R6) batteries (2) (Tourist model only)

Earphone (1) (Tourist model only)

Design and specifications are subject to change without notice.

CASSETTE-CORDER

SONY®



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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.

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.

SECTION 1 SERVICING NOTE

1-1. SERVICE MODE

Mode to allow the mechanical parts to operate with the main board open.

This set uses the photo reflector PH701 to detect the rotation of the idler gear. PH701 is on the main board and so removal of the main board does not allow the set to detect the rotation of the idler gear. This makes motor control impossible which prevents normal operation.

When repairing the set as energized with the main board removed, proceed as follows:

1. Setting

- 1) Remove the cabinet (rear) (refer to the Disassembly) and open the main board.
- 2) Apply a trapezoidal of 10 to 100 Hz (at 1.3 V) from oscillator to TP20. (Connect the ground to TP30.)
- 3) Supply DC 3.0 V to the positive and negative terminals of the battery with a stabilized power supply.

2. FF mode

- 1) Apply a trapezoidal to hall sensor TP20.
- 2) Press the FF key.
- 3) Turn on the S103 (POWER) switch.

3. REW mode

- 1) Apply a trapezoidal to hall sensor TP20.
- 2) Press the REW key.
- 3) Turn on the S103 (POWER) switch.

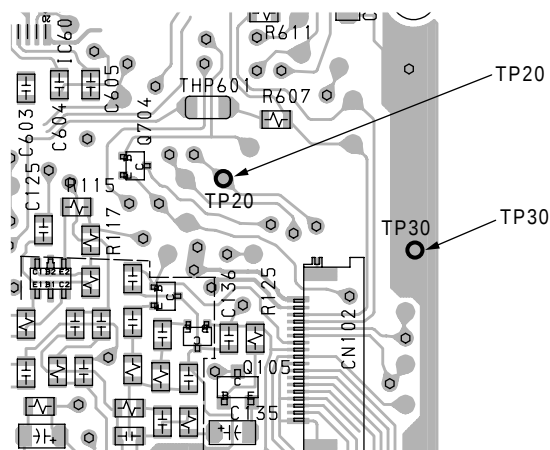
4. PLAY mode

- 1) Apply a trapezoidal to hall sensor TP20.
- 2) Press the PLAY key.
- 3) Change over the S101 (REC/PB) switch to PB side.
- 4) Turn on the S103 (POWER) switch.

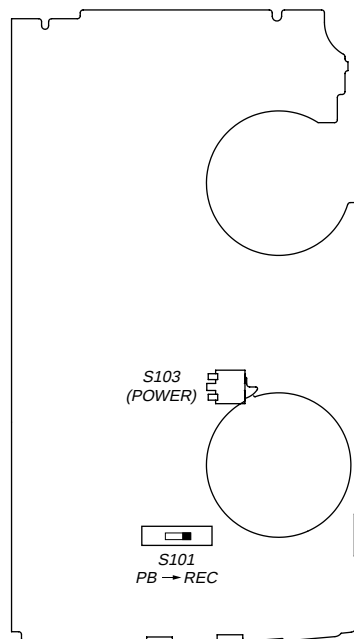
5. REC mode

- 1) Apply a trapezoidal to hall sensor TP20.
- 2) Press the REC key.
- 3) Change over the S101 (REC/PB) switch to REC side.
- 4) Turn on the S103 (POWER) switch.

– main board (conductor side) –



– main board (component side) –

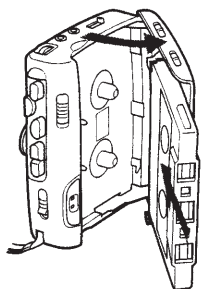


SECTION 2 GENERAL

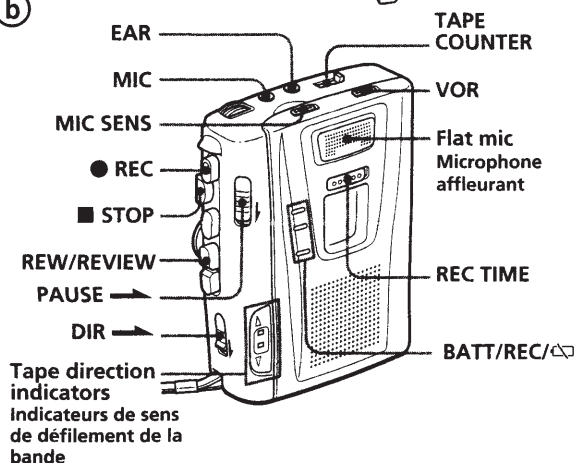
This section is extracted from instruction manual.

B

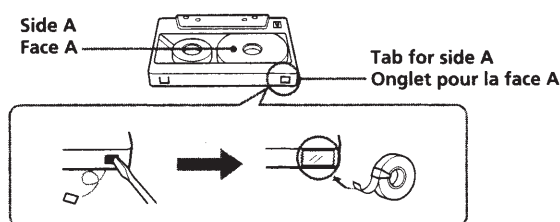
a



b



c



► Operating the Unit

Recording (see Fig. B-a, b)

You can record right away with the built-in microphone. Make sure that nothing is connected to the MIC jack. Place the unit on a hard surface such as a desk with the cassette holder side up so that the flat mic can record effectively.

- 1 Press the counter reset button to reset the tape counter.

Note

The number in the tape counter will increase when playing back the forward side, and decrease when playing back the reverse side.

- 2 Insert a normal (TYPE I) tape with the side to be recorded facing the cassette holder.

- 3 Choose recording sides.

To record on both sides

Slide DIR → so that the FWD indicator turns green.



Recording will start from the side facing the cassette holder window (forward side) and switches automatically to the reverse side at the end of the side (Auto Reverse).

To record on a single side

Slide DIR → so that the REV indicator turns green.



Recording will start from the side facing the unit (reverse side).

- 4 Set REC TIME to the desired mode.
NORMAL (4.8cm/s): for optimum sound. Recommended for normal recordings.
DOUBLE (2.4cm/s): for double recording time (for example, 120 minutes using both sides of a 60-minute cassette). Suitable for recording conferences, dictations, etc. Not recommended to record music.
 - 5 Set VOR to:
ON to start and pause recording automatically to the sound.
OFF to start and stop recording manually.
- Note**
When the sound to be recorded is not loud enough, set the VOR switch to OFF, or the unit may not start recording.
- 6 Set MIC SENS to select the sensitivity of the microphone:
H (high) to record at meetings or in a quiet and/or spacious place.
L (low) to record for dictation or in a noisy place.
 - 7 Press ● REC.
PLAY is pressed simultaneously and recording starts. While the tape runs, the BATT/REC lamp lights and flickers depending on the strength of the sound.

At the end of the reverse side, recording stops and the unit turns off automatically.

To	Press or slide
Stop recording	■ STOP
Pause recording	PAUSE → in the direction of the arrow To release pause recording, release PAUSE →*.
Review the portion just recorded	Press and hold REW/REVIEW during recording. Release the button at the point to start.
Take out a cassette	Press ■ STOP and open the cassette compartment lid by hand.

* PAUSE → will also be automatically released when ■ STOP is pressed (stop-pause-release function).

To monitor sound

Connect an earphone (supplied to "Sony World Model" only) firmly to the EAR jack. Adjust monitoring volume with VOL. The recording level is not affected.

Notes

- Do not use a Hi-position (TYPE II) or metal (TYPE IV) tape. If you do, the sound may be distorted when you play back the tape, or the previous recording may not be erased completely.
- The SPEED CONTROL switch works in the playback mode only. Recording will be made independent of this control.

Notes on recording sides

- When recording on both sides, recording will not be made for a few seconds while the tape is switching sides.
- When you open the cassette holder, the direction of the tape is reset to the forward side.
- The DIR → switch cannot be used during recording.

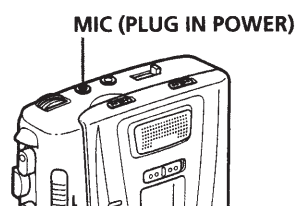
Notes on VOR (Voice Operated Recording)

- When you use the VOR system in a noisy place, the unit will stay in the recording mode. If the sound is too soft, on the contrary, the unit will not start recording. Set MIC SENS to H (high) or L (low) depending on the conditions to pick up necessary sound only.
- The VOR system depends on the environmental conditions. If you cannot get the desired results even after adjusting MIC SENS, set VOR to OFF.

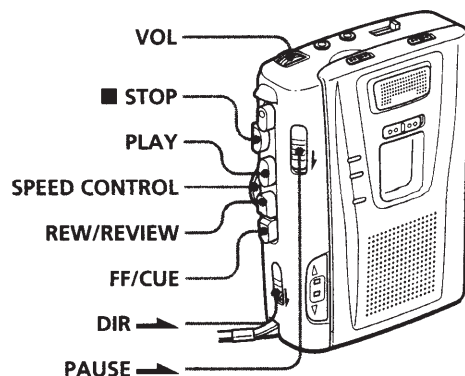
To prevent a tape from being accidentally recorded over (see Fig. B-c)

Break off and remove the cassette tabs. To reuse the tape for recording, cover the tab hole with adhesive tape.

C



D



Recording from Various Sound Sources (see Fig. C)

Connect an earphone (not supplied) to monitor the recorded sound. Set VOR and MIC SENS to suit the recording condition before recording.

Recording with an External Microphone

Connect a microphone to the MIC jack. The MIC jack is distinguished from the earphone jack by a raised dot. Use a microphone of low impedance (less than 3 kilohms) such as ECM-T110 (not supplied). When using a plug-in-power system microphone, the power to the microphone is supplied from this unit.

Note

When recording with an external microphone, the VOR system may not work properly due to difference in sensitivity.

Recording from Another Equipment

Connect another equipment to the MIC jack using the RK-G64HG connecting cord (not supplied). (For "Sony World Model": for Japan, use RK-G64, not supplied.)

Playing a Tape (see Fig. D)

- 1 Insert a cassette with the side to be played facing the cassette holder.
- 2 Set REC TIME to the same position as that used for recording. To play back commercially sold tapes, select NORMAL.
- 3 Press PLAY and then adjust the volume. There is a raised dot beside VOL to show the direction to turn down volume. Playback will start from the forward side and switches automatically to the reverse side at the end of the side (Auto Reverse).
- 4 Adjust the tape playback speed.
Turn SPEED CONTROL to:
SLOW (slow) to play back at a slower speed.
Center position to play back at normal speed.
FAST (fast) to play back at a faster speed.

At the end of the reverse side, playback stops and the unit turns off automatically.
If you plug in headphones (not supplied) to the EAR jack, you will get monaural output from both left and right channels.

To	Press or slide
Stop playback/stop fast forward or rewind	■ STOP
Pause playback	PAUSE ➡ in the direction of the arrow To release pause playback, release PAUSE ➡*.
Playback only the reverse side	DIR ➡ so that the REV indicator turns green and press PLAY
Search forward during playback (CUE)	Press and hold FF/CUE and release it at the point you want
Search backward during playback (REVIEW)	Press and hold REW/REVIEW and release it at the point you want
Fast forward**	FF/CUE during stop
Rewind**	REW/REVIEW during stop
Switch playback side	DIR ➡
Start recording during playback	● REC
Take out a cassette	Press ■ STOP and open the cassette compartment lid by hand.

SECTION 3 DISASSEMBLY

- The equipment can be removed using the following procedure.

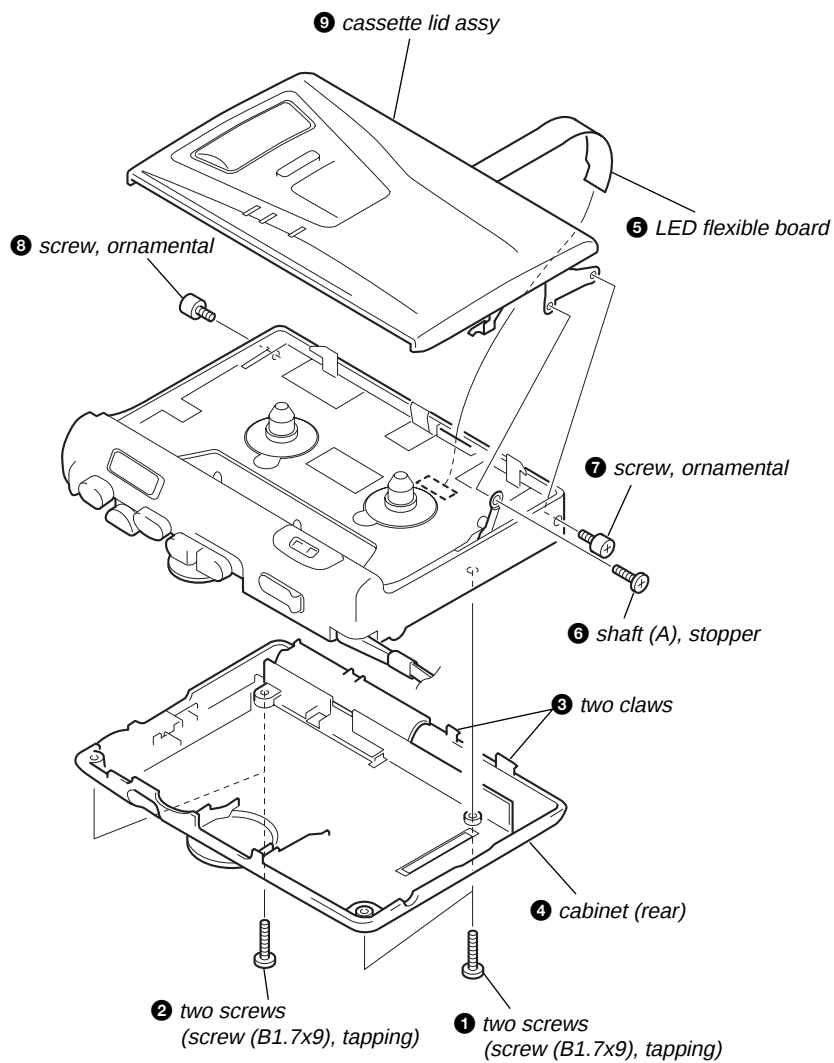
Cabinet (rear),
Cassette Lid Assy

→ Mechanism Deck,
Main board

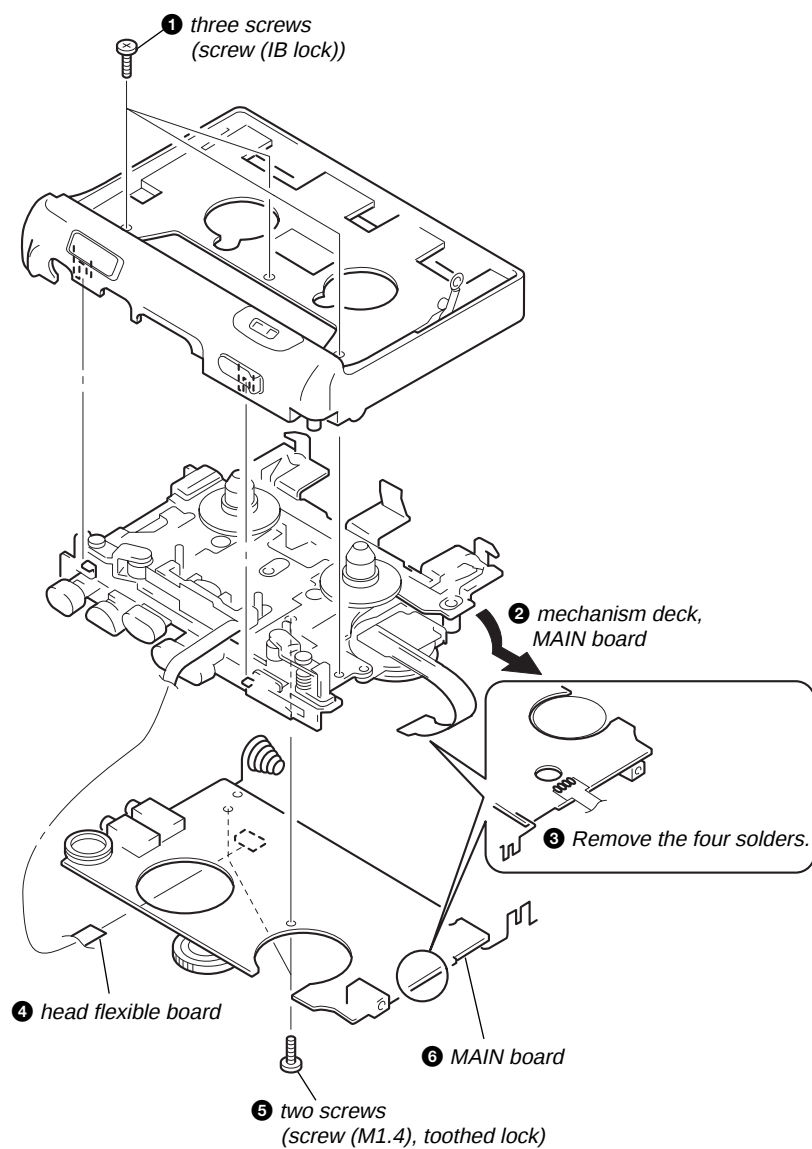
→ Belts
→ Head
→ Motor, DC

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

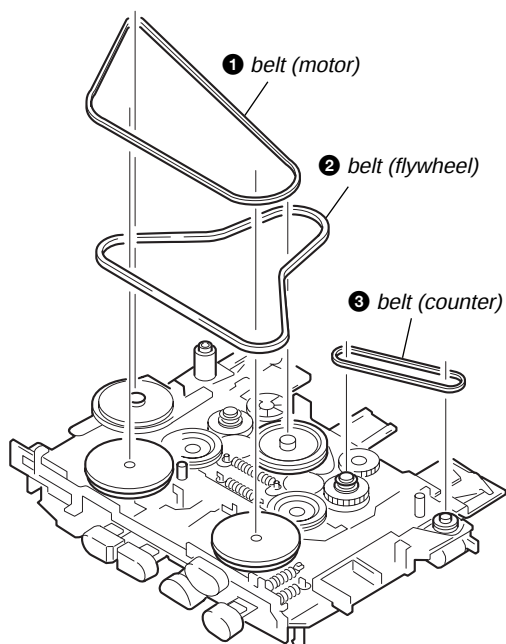
3-1. CABINET (REAR), CASSETTE LID ASSY



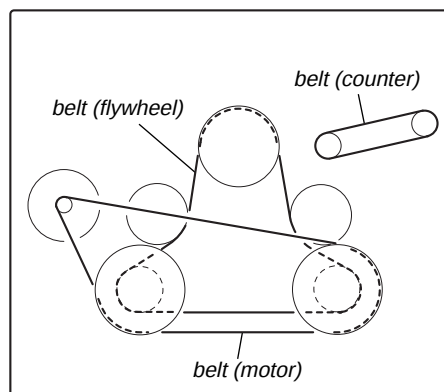
3-2. MACHANISM DECK, MAIN BOARD



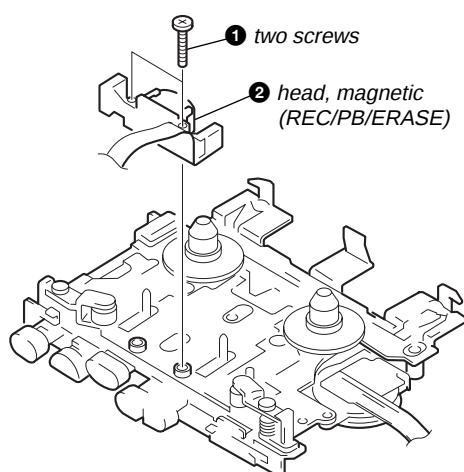
3-3. BELTS



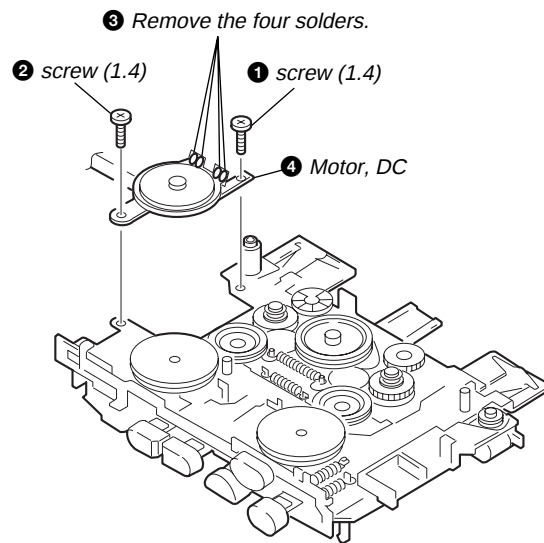
• How to apply the belts



3-4. HEAD

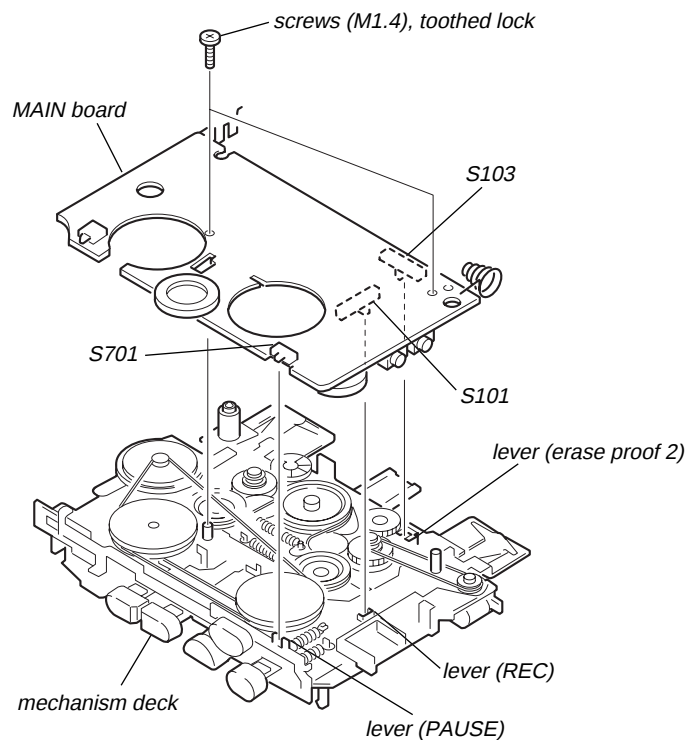


3-5. MOTOR, DC



3-6. NOTE FOR INSTALLATION OF MAIN BOARD

Align the knobs of S101, S103 and S701 on the main board with the claws of the lever (REC) lever (erase proof 2) and lever (REC) of the mechanism deck respectively, and install the main board.



SECTION 4 MECHANICAL ADJUSTMENTS

PRECAUTION

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

record/playback/erase head	pinch roller
capstan	rubber belt
- Demagnetize the record/playback/erase head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
- Do not use a magnetized screwdriver for the adjustments.
- After the adjustments, apply suitable locking compound to the parts adjusted.
- The adjustments should be performed with the rated power supply voltage (1.3 V) unless otherwise noted.

Torque Measurement

Mode	Torque Meter	Meter Reading
FWD	CQ-102C	15 – 25 g • cm (0.21 – 0.35 oz • inch)
FWD back tension		less than 2 g • cm (less than 0.03 oz • inch)
REV	CQ-102RC	15 – 25 g • cm (0.21 – 0.35 oz • inch)
REV back tension		less than 2 g • cm (less than 0.03 oz • inch)
FF, REW	CQ-201B	more than 50 g • cm (more than 0.69 oz • inch)

SECTION 5 ELECTRICAL ADJUSTMENTS

PRECAUTION

- Supplied voltage : DC 3.0 V
- Switch and control position

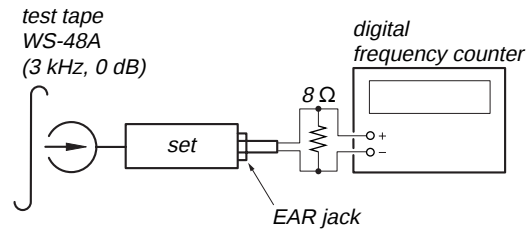
VOL control	: max (10)
MIC SENS switch	: free (L or H)
V•O•R switch	: free (OFF or ON)
SPEED CONTROL control	: mechanical center

Test Tape

Type	Signal	Used for
WS-48A	3 kHz, 0 dB	tape speed adjustment

Tape Speed Adjustment

Procedure :



- REC TIME : NORMAL/FWD ▷
Playback WS-48A (tape center part) and adjust RV601 so that reading on the digital frequency counter becomes 3,000 Hz.
- REC TIME : DOUBLE/FWD ▷
Playback WS-48A (tape center part) and adjust RV602 so that reading on the digital frequency counter becomes 1,500 Hz.

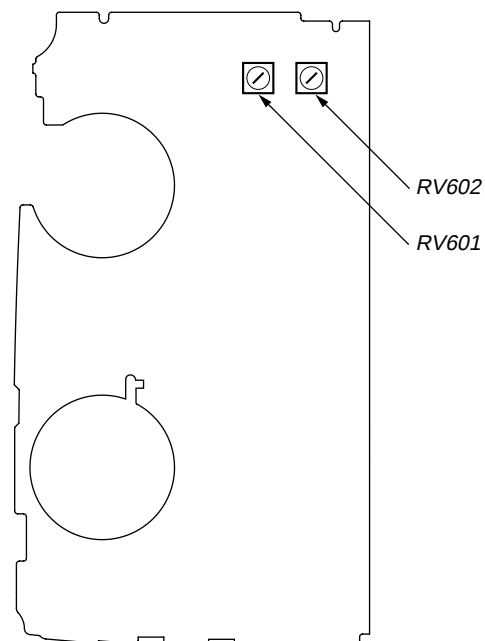
Specification Value :

Digital Frequency Counter Reading	
REC TIME : NORMAL	REC TIME : DOUBLE
2,985 to 3,015 Hz	1,485 to 1,515 Hz

- REC TIME : NORMAL/REV ◁
Playback WS-48A (tape center part) and confirm that the reading on digital frequency counter are between 2,985 to 3,015 Hz.
- REC TIME : DOUBLE/REV ◁
Playback WS-48A (tape center part) and confirm that the reading on digital frequency counter are between 1,435 to 1,515 Hz.

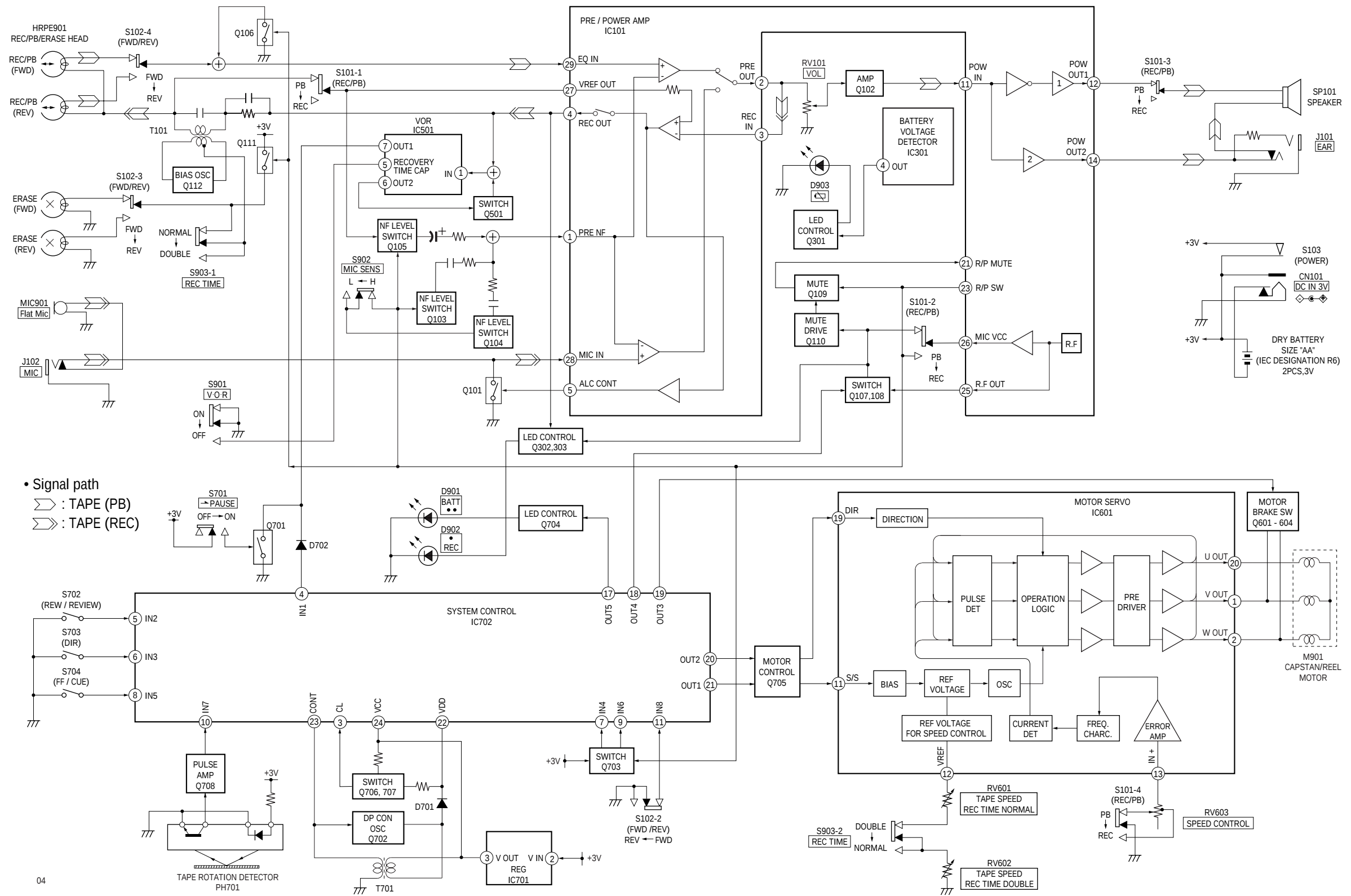
Adjustment Location :

—main board (conductor side)—

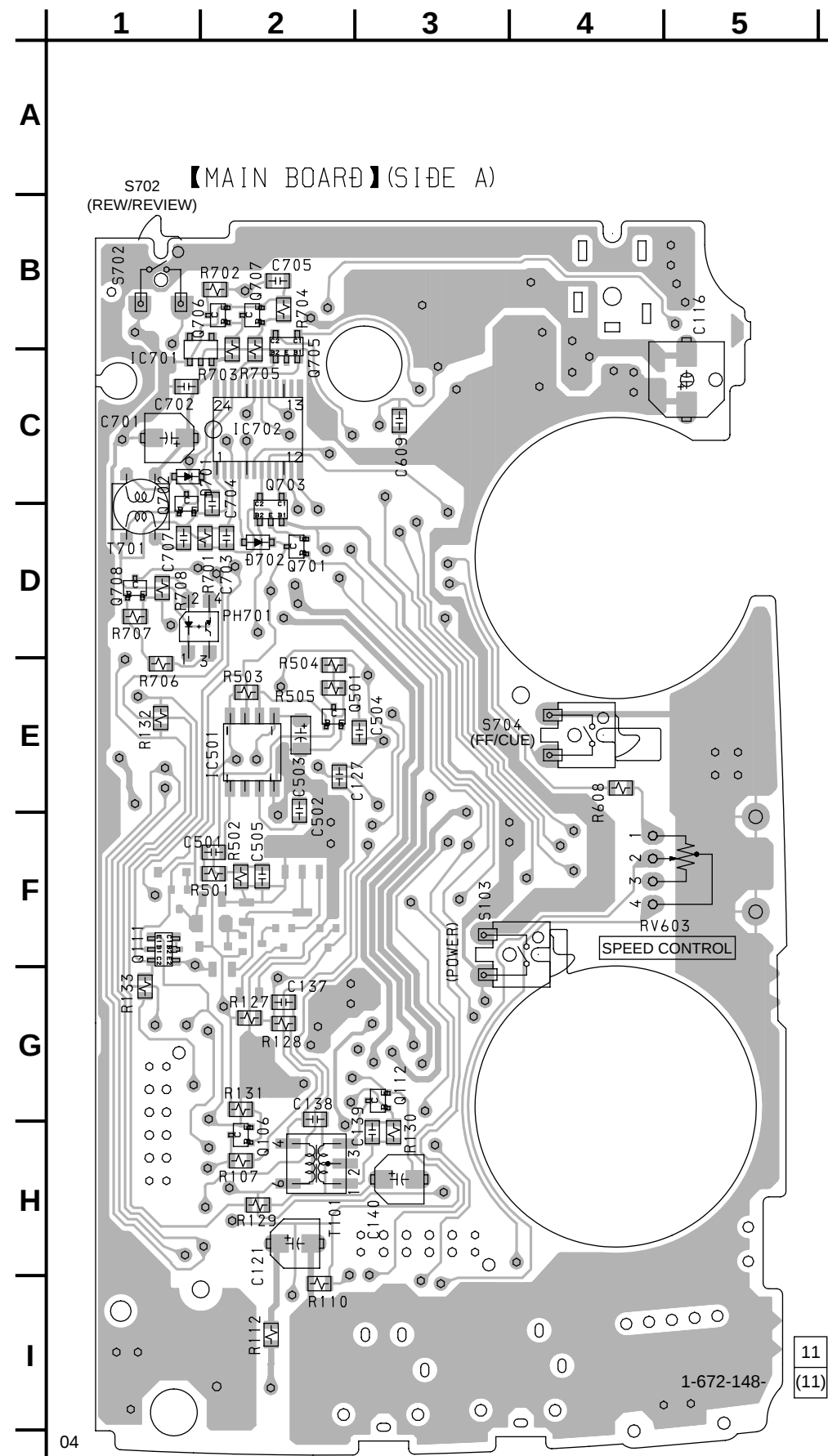


SECTION 6 DIAGRAMS

6-1. BLOCK DIAGRAM

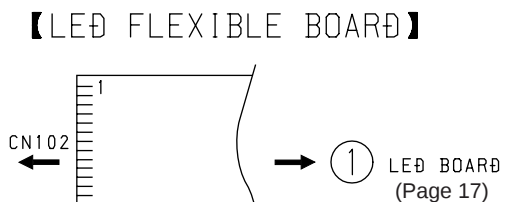
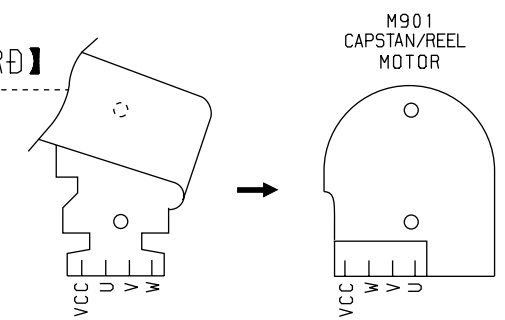
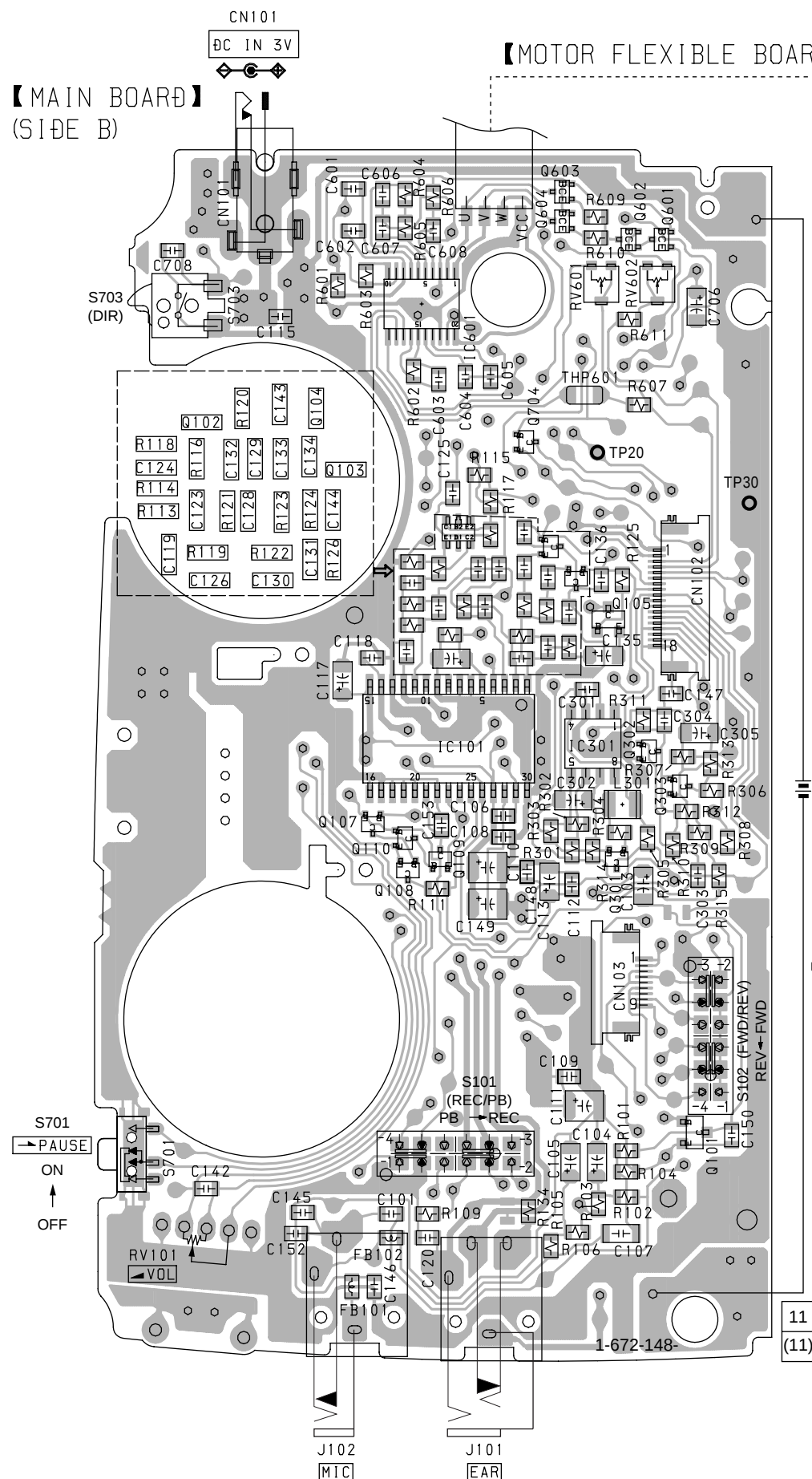


6-2. PRINTED WIRING BOARD — MAIN SECTION —

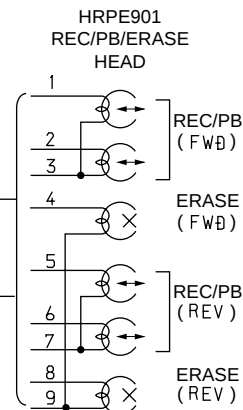


Note on Printed Wiring Boards:

- : parts extracted from the component side.
- : Through hole.
-  : Pattern from the side which enables seeing.



DRY BATTERY
SIZE " AA "
(IEC DESIGNATION R6)
2500mAh



- **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D701	C-1	Q103	D-9	Q501	E-2
D702	D-2	Q104	D-9	Q601	B-10
		Q105	E-10	Q602	B-10
IC101	F-9	Q106	H-2	Q603	B-9
IC301	F-10	Q107	F-8	Q604	B-9
IC501	E-2	Q108	F-8	Q701	D-2
IC601	C-8	Q109	F-9	Q702	D-1
IC701	C-1	Q110	F-8	Q703	D-2
IC702	C-2	Q111	F-1	Q704	D-9
		Q112	G-3	Q705	C-2
PH701	D-1	Q301	F-10	Q706	B-2
		Q302	F-10	Q707	B-2
Q101	H-10	Q303	F-10	Q708	D-1
Q102	D-9				



- All resistors are in Ω and $\frac{1}{4}W$ or less unless otherwise specified.
-  : panel designation.
-  : 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) condition.

no mark : PB

() : REC

[] : FF/REW

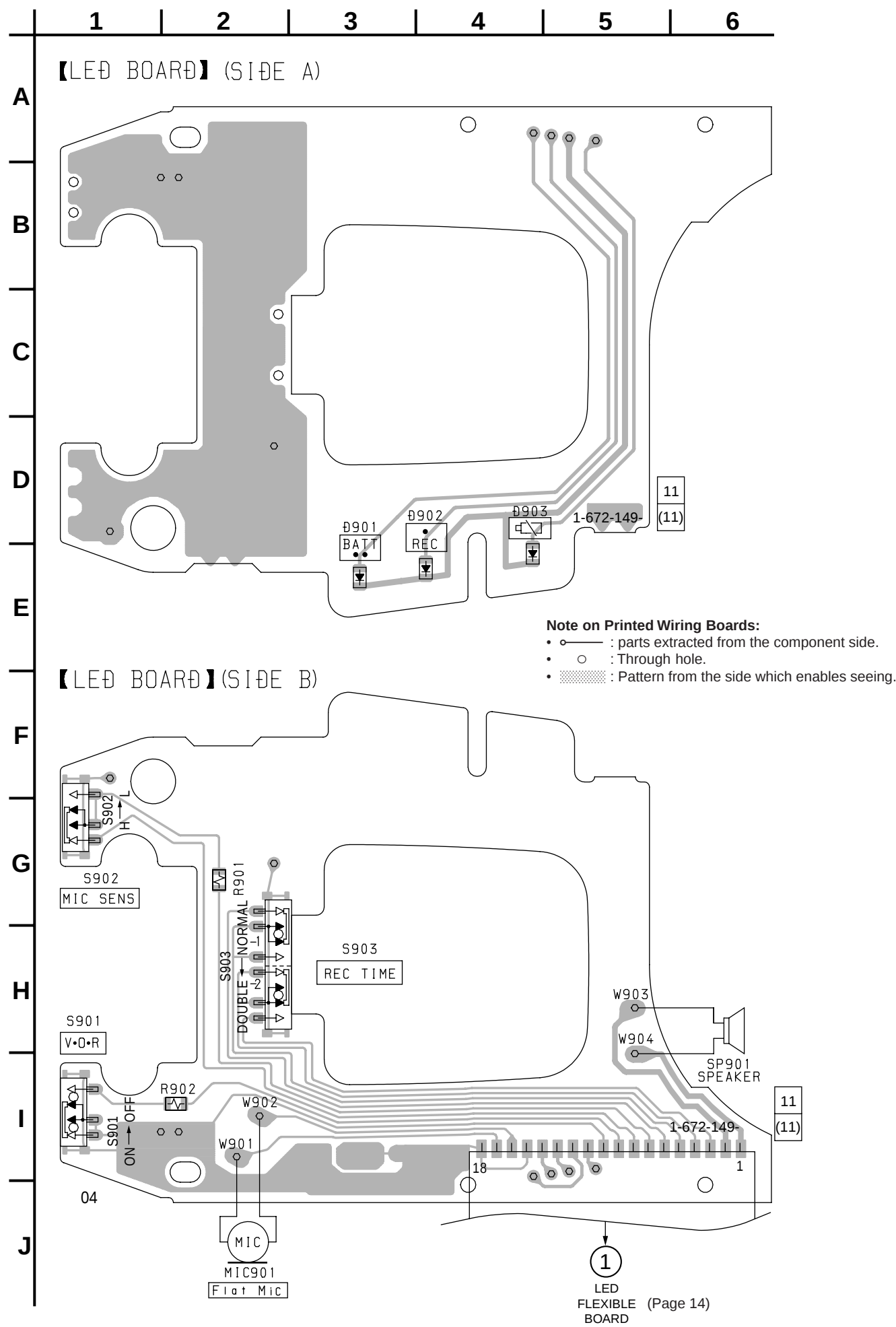
- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.

- Signal path.

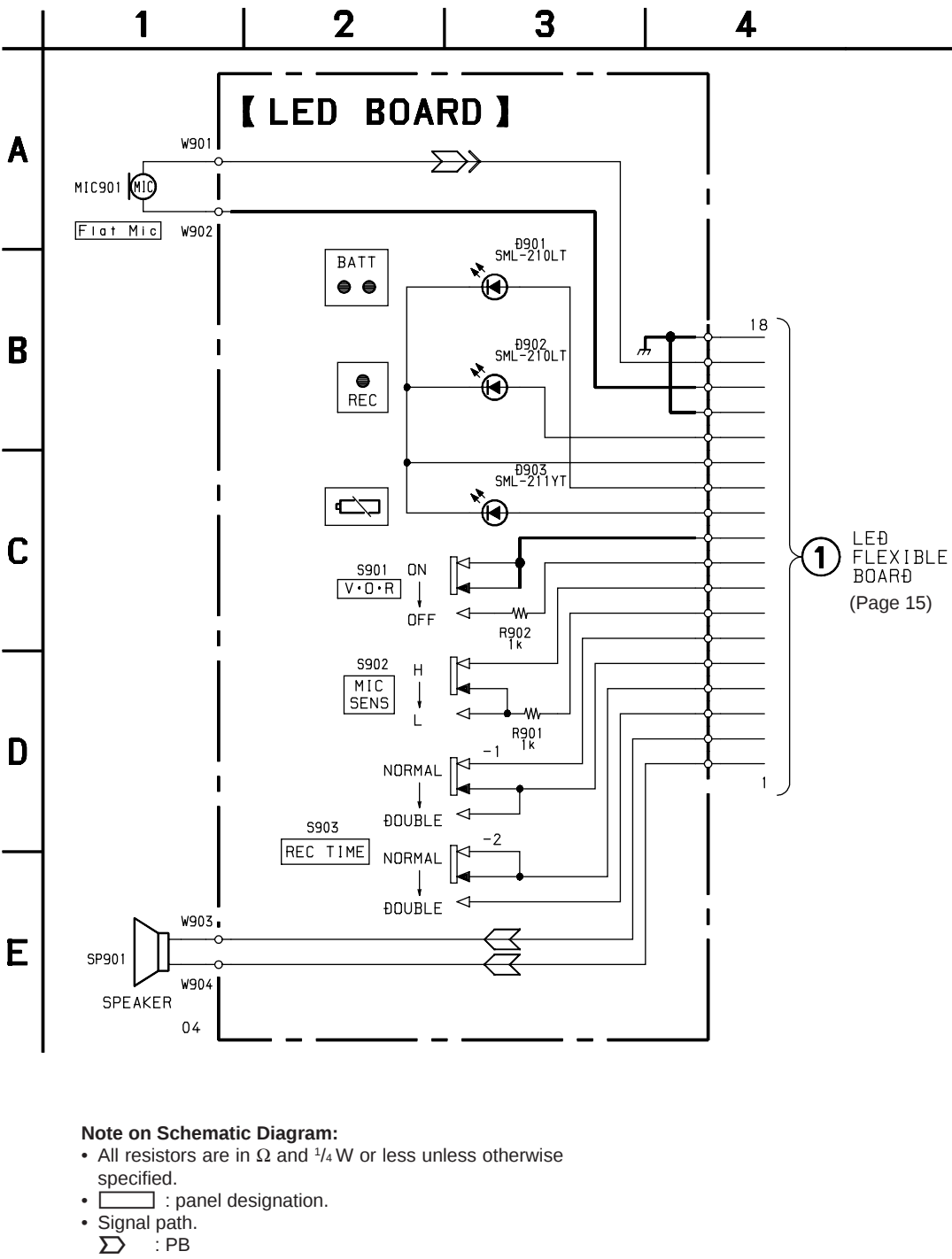
Signal path:
 : PB

: REC

6-4. PRINTED WIRING BOARD — PANEL SECTION —

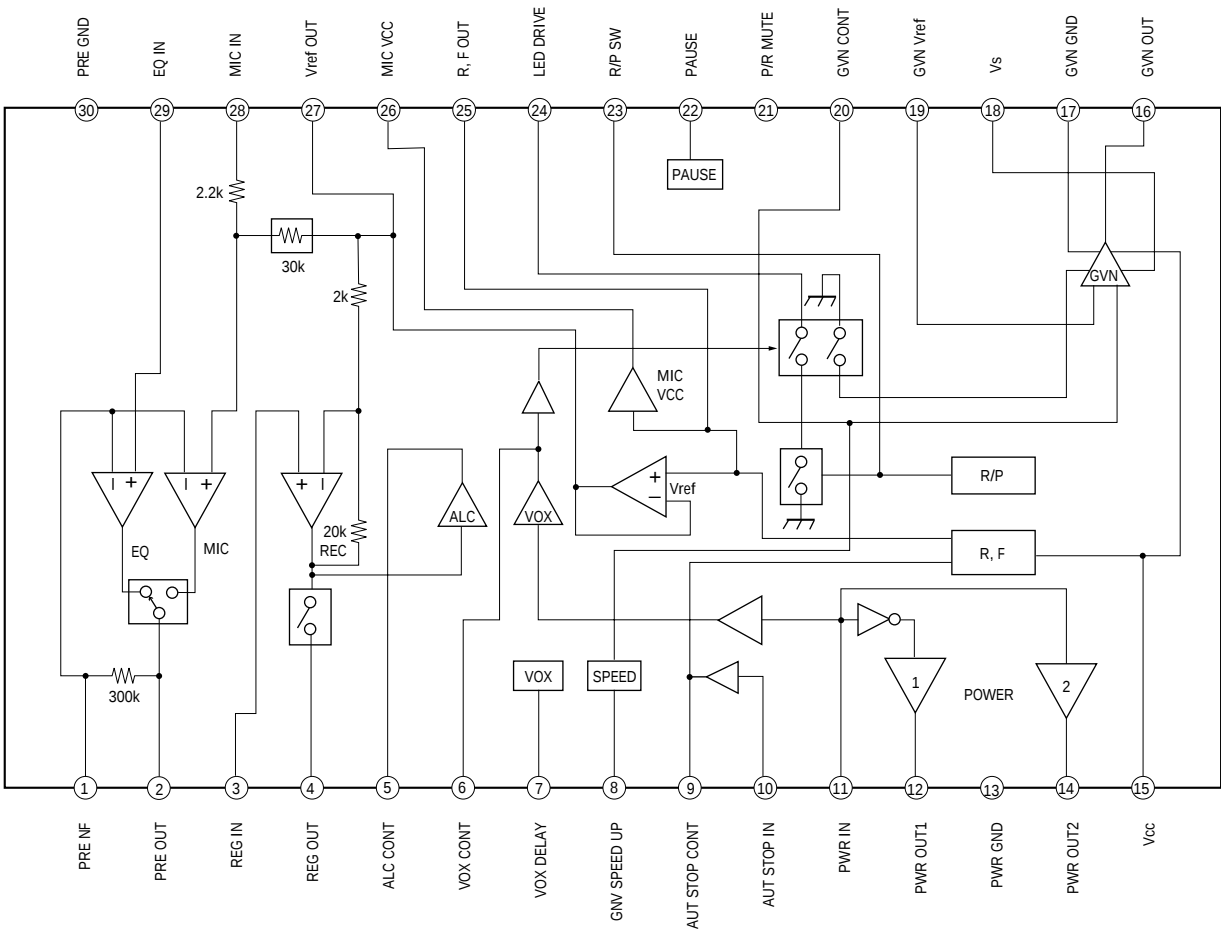


6-5. SCHEMATIC DIAGRAM — PANEL SECTION —

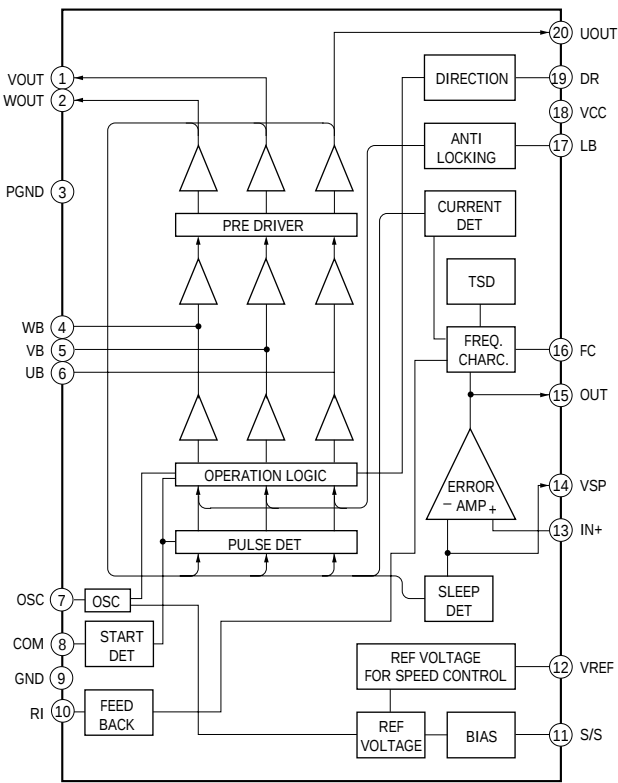


• IC Block Diagrams

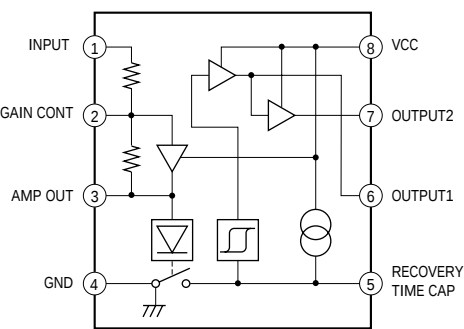
IC101 LA4168ML



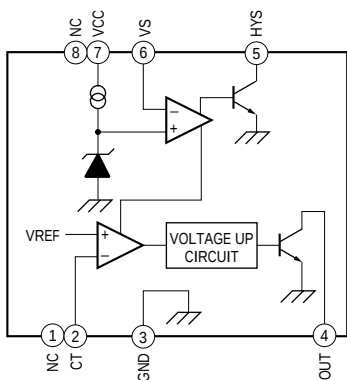
IC601 LB1877V



IC501 NJM2072M



IC301 MM1251M



6-6. IC PIN DESCRIPTION

• IC702 TB2004FN-020 (SYSTEM CONTROL)

Pin No.	Pin Name	I/O	Pin Description
1	GND	—	GND
2	OSC	—	For system clock generation (fosc=3.2 kHz)
3	CL	I	RESET input
4	IN1	I	Pause ON/OFF by PAUSE SW and VOR. “L” : ON, “H” : OFF
5	IN2	I	FWD reset by cassette cover open-close. “L” : ON, “H” : OFF
6	IN3	I	Direction “L” : ON, “H” : OFF
7	IN4	I	REC/PB switch “L” : REC, “H” : PB
8	IN5	I	FF/REW “L” : ON, “H” : OFF
9	IN6	I	POWER ON/OFF “L” : ON, “H” : OFF
10	IN7	I	Photo reflector pulse input for tape end detection.
11	IN8	I	FWD/REV switch “L” : FWD, “H” : REV
12	I/O1	—	Not used.
13	I/O2	—	Not used.
14	OUT8	—	Not used.
15	OUT7	—	Not used.
16	OUT6	—	Not used.
17	OUT5	O	LED ON/OFF “L” : ON, “H” : OFF
18	OUT4	O	Audio mute “L” : ON, “H” : OFF
19	OUT3	O	Motor brake “L” : ON, “H” : OFF
20	OUT2	O	Motor direction “L” : FWD, “H” : REV
21	OUT1	O	Motor ON/OFF “L” : ON, “H” : OFF
22	VDD	—	Power supply for CMOS.
23	CONT	O	Boosting circuit control output
24	VCC	—	Power supply for bipolar.

SECTION 7

EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

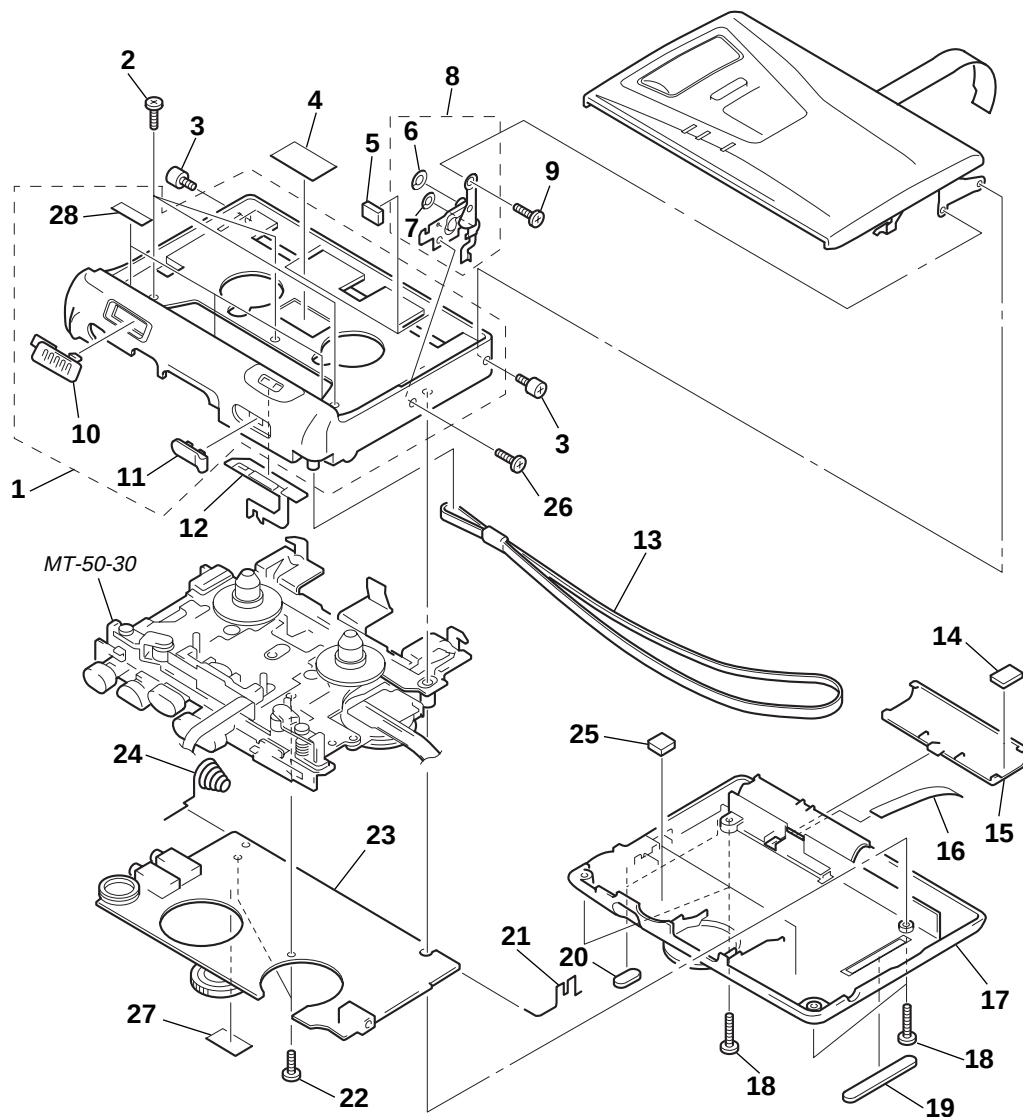
- -XX and -X mean standardized parts, so they may have some difference from the original one.
 - Color Indication of Appearance Parts
- Example :

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

Parts Color Cabinet's Color

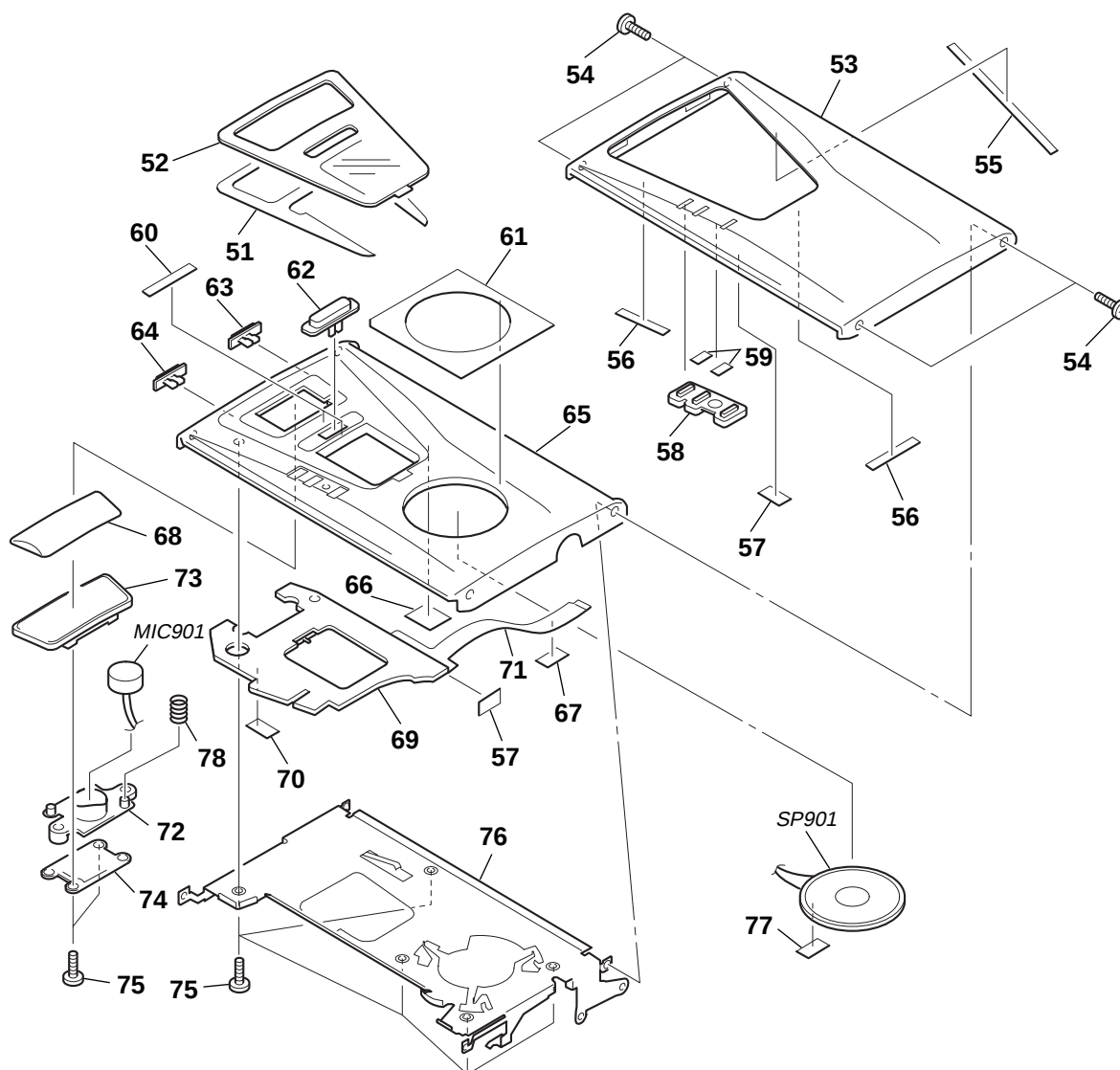
- Accessories and packing materials are given in the last of this parts list.

7-1. CASE SECTION



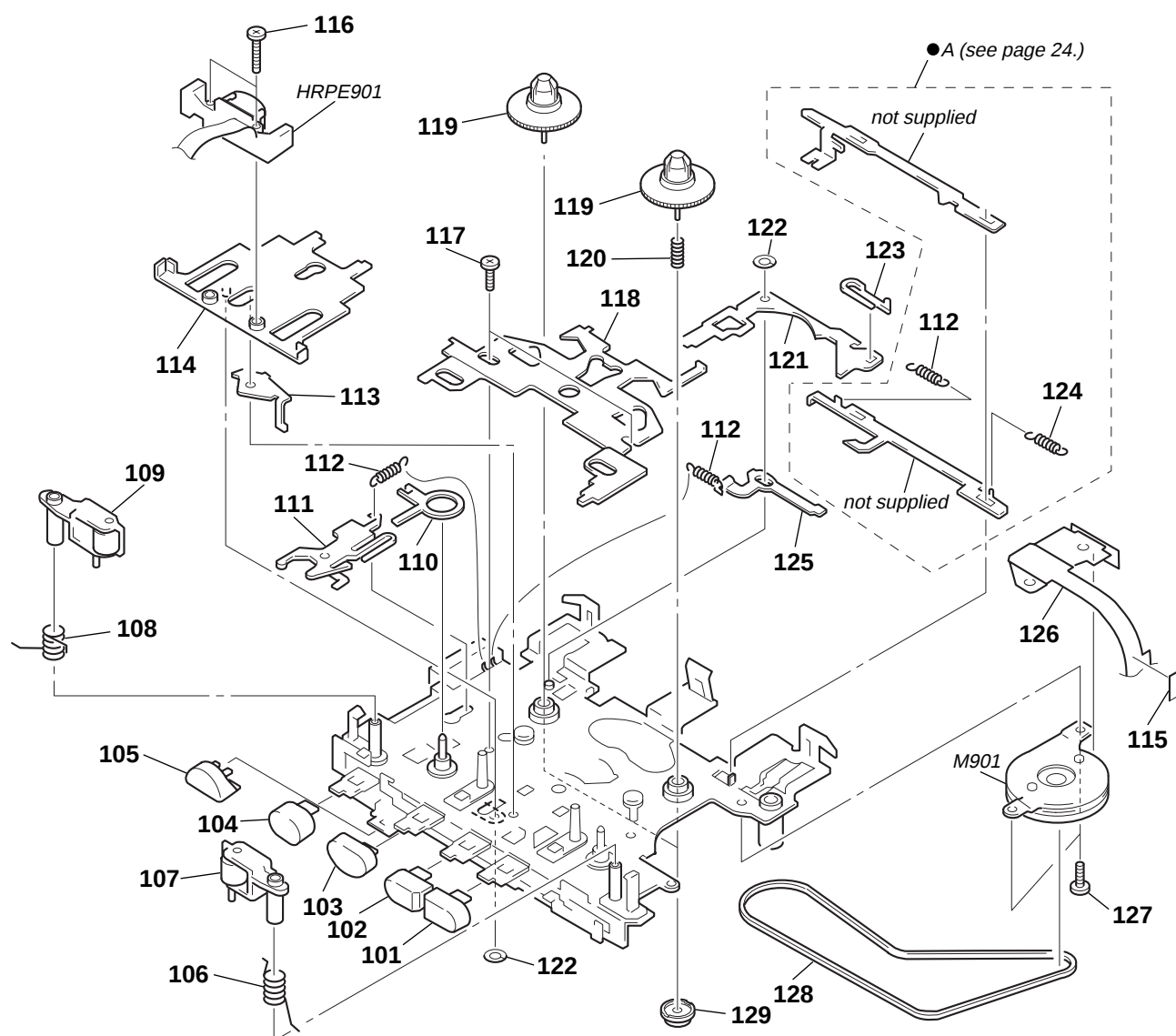
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3376-765-1	CABINET (FRONT) ASSY		15	3-032-434-01	LID, BATTERY CASE	
2	4-969-980-21	SCREW (IB LOCK)		16	3-032-441-01	SHEET (PICK)	
3	3-315-989-11	SCREW, ORNAMENTAL		17	3-032-437-11	CABINET (REAR)	
4	3-925-231-01	REFLECTOR		18	3-318-203-92	SCREW (B1.7X9), TAPPING	
5	3-035-304-11	CUSHION		19	3-032-436-01	FOOT (B), RUBBER	
6	3-676-387-00	POLY-SLIDER (DIA.1.6)		20	3-032-435-01	FOOT (A), RUBBER	
7	3-315-384-31	WASHER, STOPPER		21	3-925-229-01	TERMINAL, PLUS	
* 8	X-3370-480-1	TOGGLE ASSY		22	3-345-648-01	SCREW (M1.4), TOOTHED LOCK	
9	3-311-772-11	SHAFT (A), STOPPER		23	A-3021-163-A	MAIN BOARD, COMPLETE	
10	3-032-431-01	KNOB (PAUSE)		24	3-925-230-01	SPRING, BATTERY COIL	
11	3-032-432-01	KNOB (DIR)		25	3-035-304-01	CUSHION	
12	X-3376-766-1	LEVER ASSY, COVERING INDICATION		26	3-704-245-42	SCREW (1.4)	
13	3-328-319-01	STRAP, HAND		27	4-017-441-01	CUSHION (B)	
14	9-911-815-01	CUSHION		28	3-545-710-01	CUSHION	

7-2. PANAL SECTION



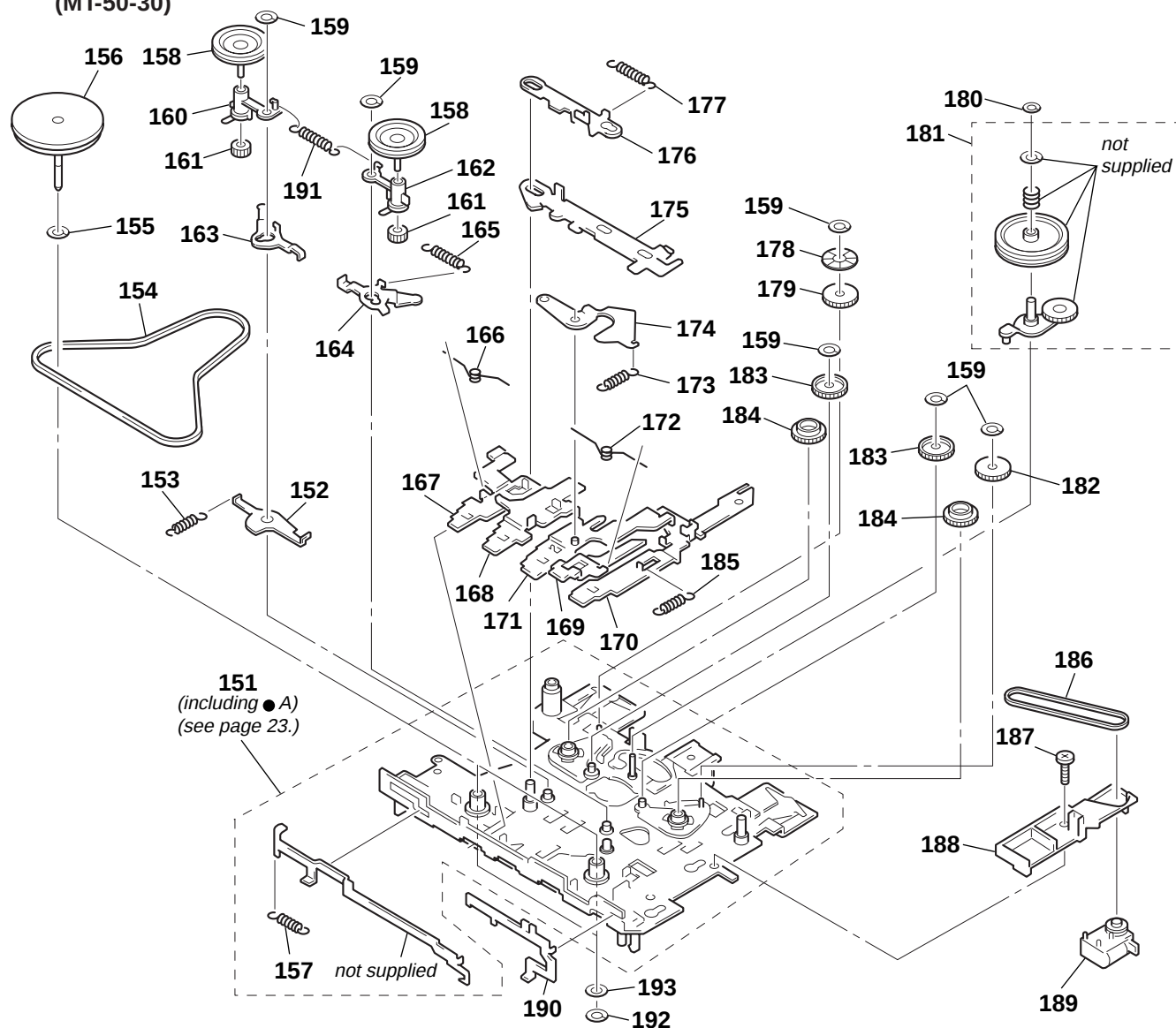
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-032-423-01	SHEET (WINDOW), ADHESIVE		67	4-017-491-01	CUSHION (B)	
52	3-032-421-11	WINDOW (CASSETTE)		68	3-032-424-01	PANEL (MICROPHONE)	
53	3-032-417-11	PANEL (CASSETTE LID)		* 69	1-672-149-11	LED BOARD	
54	3-389-523-22	SCREW (IB LOCK)		70	3-035-305-01	CUSHION	
55	3-032-422-01	SHEET (FRAME), ADHESIVE		71	1-672-139-11	LED FLEXIBLE BOARD	
56	3-035-251-01	SHEET (FRAME B), ADHESIVE		72	3-032-414-01	CUSHION (MICROPHONE)	
57	3-035-729-01	CUSHION		73	3-032-425-01	HOLDER (MICROPHONE)	
58	3-032-427-01	GUIDE, LIGHT		74	3-032-415-01	RETAINER (MICROPHONE)	
59	3-032-946-01	SHEET (LIGHT GUIDE)		75	3-318-382-01	SCREW (1.7X3), TAPPING	
60	3-035-730-01	SHEET		* 76	3-032-430-01	HOLDER (CASSETTE)	
61	3-032-422-01	SHEET (FRAME), ADHESIVE		77	4-017-441-01	CUSHION (B)	
62	3-032-428-01	KNOB (REC TIME)		78	3-032-416-01	GROUND, COMPRESSION SPRING (M)	
63	3-032-420-01	KNOB (V•O•R)		MIC901	1-542-298-11	MICROPHONE, ELECTRET CONDENSER	(Flat Mic)
64	3-032-419-01	KNOB (MIC SENS)		SP901	1-529-188-11	SPEAKER (3.6cm)	
65	3-032-418-01	FRAME (CASSETTE LID)					
66	3-032-439-01	CUSHION (FRAME)					

7-3. MECHANISM DECK SECTION-1 (MT-50-30)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	3-925-247-11	BUTTON, FF/CUE		117	3-365-630-02	SCREW (M1.4)	
102	3-925-246-11	BUTTON, REW/REVIEW		* 118	3-924-535-01	LEVER (FR)	
103	3-925-245-11	BUTTON, PLAY		119	X-3370-375-1	TABLE ASSY, REEL	
104	3-032-787-01	BUTTON, REC		120	3-018-121-01	SPRING (B.T), COMPRESSION	
105	3-925-248-11	BUTTON, STOP		* 121	3-924-536-01	LEVER (OFF)	
106	3-924-596-01	SPRING (PINCH-R), TORSION		122	3-321-483-11	RING, RETAINING	
107	X-3370-380-1	ARM (PINCH-R) ASSY		123	3-924-569-14	PAD (S-OFF)	
108	3-924-595-01	SPRING (PINCH-N), TORSION		124	3-924-602-01	SPRING, TENSION	
109	X-3370-379-1	ARM (PINCH-N) ASSY		* 125	3-924-538-12	LEVER (S-OFF)	
* 110	3-924-572-01	LEVER (DIR)		126	1-657-172-11	MOTOR FLEXIBLE BOARD	
* 111	3-924-575-01	LEVER (DIR-M)		127	3-704-245-42	SCREW (1.4)	
112	3-924-601-01	SPRING, TENSION		128	3-035-367-01	BELT (MOTOR)	
* 113	3-924-534-01	LEVER (C/R)		129	3-924-577-01	PULLEY (COUNTER)	
114	X-3370-378-1	LEVER (HEAD) ASSY		HRPE901	1-500-590-11	HEAD, MAGNETIC (REC/PB/ERASE)	
115	4-017-441-01	CUSHION (B)		M901	1-698-804-21	MOTOR, DC (including PULLEY) (CAPSTAN/REEL)	
116	3-938-133-01	SCREW					

7-4. MECHANISM DECK SECTION-2 (MT-50-30)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	X-3370-373-1	CHASSIS ASSY		173	3-924-604-01	SPRING (PLAY), TENSION	
* 152	3-924-537-01	LEVER (F/R)		* 174	3-924-547-01	ARM (PLAY-SUB)	
153	3-924-605-01	SPRING (FF), TENSION		* 175	3-924-545-01	LEVER (LOCK)	
154	3-924-593-01	BELT (FLYWHEEL)		* 176	3-924-546-01	LEVER (SW)	
155	3-701-437-51	WASHER		177	3-924-606-01	SPRING (LOCK), TENSION	
156	X-3377-138-1	FLYWHEEL ASSY		178	3-924-725-01	REFLECTOR	
157	3-924-602-01	SPRING, TENSION		179	3-924-579-01	GEAR (REF)	
158	3-924-558-01	PULLEY (T)		180	3-348-993-01	WASHER	
159	3-321-483-11	RING, RETAINING		181	X-3370-376-1	LEVER (CENTER) ASSY	
160	3-924-548-01	ARM (T-N)		182	3-924-556-01	GEAR (REW)	
161	3-924-557-01	GEAR (T)		183	3-924-562-01	GEAR (FF)	
162	3-924-549-01	ARM (T-R)		184	3-924-560-01	GEAR (REEL)	
* 163	3-924-539-01	LEVER (REW-F)		185	3-924-600-01	SPRING (REC), TENSION	
* 164	3-924-540-01	LEVER (REW-R)		186	3-032-620-01	BELT (COUNTER)	
165	3-924-603-01	SPRING (F/R), TENSION		187	3-704-245-42	SCREW (1.4)	
166	3-924-597-01	SPRING (F/R), TORSION		188	3-032-438-01	BRACKET (COUNTER)	
* 167	3-924-568-01	LEVER (FF)		189	1-548-582-11	COUNTER, TAPE (SMALL TYPE)	
* 168	3-924-567-01	LEVER (REW)		* 190	3-924-574-01	LEVER (PAUSE)	
* 169	3-924-566-01	LEVER (STOP)		191	3-924-607-01	SPRING (ARM-T), TENSION	
* 170	X-3370-377-1	LEVER (REC) ASSY		192	3-321-483-01	RING, RETAINING	
* 171	3-924-565-01	LEVER (PLAY)		193	3-305-925-00	WASHER	
172	3-924-598-01	SPRING (P/S), TORSION					

SECTION 8 ELECTRICAL PARTS LIST

LED

LED FLEXIBLE

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.

- Abbreviation
CND : Canadian model
JE : Tourist model

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
*	1-672-149-11	LED BOARD					C123	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	
		*****					C124	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
		< DIODE >					C125	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
							C126	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V	
							C127	1-164-346-11	CERAMIC CHIP	1uF		16V	
D901	8-719-059-96	LED SML-210LT-T86 (BATT ●●)					C128	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	
D902	8-719-059-96	LED SML-210LT-T86 (BATT ●/REC)					C129	1-164-346-11	CERAMIC CHIP	1uF		16V	
D903	8-719-057-99	LED SML-211YT-T86 (㏄)					C130	1-163-001-11	CERAMIC CHIP	220PF	10%	50V	
		< RESISTOR >					C131	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V	
							C132	1-164-346-11	CERAMIC CHIP	1uF		16V	
R901	1-216-049-11	RES,CHIP 1K 5% 1/10W					C133	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V	
R902	1-216-049-11	RES,CHIP 1K 5% 1/10W					C134	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V	
		< SWITCH >					C135	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V	
							C136	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
S901	1-572-922-11	SWITCH, SLIDE (V●O●R)					C137	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V	
S902	1-572-922-11	SWITCH, SLIDE (MIC SENS)											
S903	1-571-277-51	SWITCH, SLIDE (REC TIME)					C138	1-163-014-00	CERAMIC CHIP	0.0027uF	10%	50V	
*****							C139	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V	
	1-672-139-11	LED FLEXIBLE BOARD					C140	1-126-607-11	ELECT CHIP	47uF	20%	4V	
		*****					C142	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
*****							C143	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
	A-3021-163-A	MAIN BOARD, COMPLETE					C144	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
		*****					C145	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V	
		< CAPACITOR >					C146	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V	
							C147	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
							C148	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	
C101	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V					C149	1-127-569-11	TANTAL. CHIP 100uF 20% 4V				
C103	1-135-208-11	TANTAL. CHIP 1uF 20% 10V					C150	1-163-001-11	CERAMIC CHIP 220PF 10% 50V				
C104	1-135-151-21	TANTALUM CHIP 4.7uF 20% 4V					C152	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V				
C105	1-135-151-21	TANTALUM CHIP 4.7uF 20% 4V					C153	1-164-346-11	CERAMIC CHIP 1uF 16V				
C106	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V					C301	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V				
C107	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V					C302	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V				
C108	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V					C303	1-164-505-11	CERAMIC CHIP 2.2uF 16V				
C109	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V					C304	1-163-021-11	CERAMIC CHIP 0.01uF 10% 50V				
C110	1-127-569-11	TANTAL. CHIP 100uF 20% 4V					C305	1-104-847-11	TANTAL. CHIP 22uF 20% 4V				
C111	1-127-569-11	TANTAL. CHIP 100uF 20% 4V					C501	1-163-038-00	CERAMIC CHIP 0.1uF 25V				
C112	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V					C502	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V				
C113	1-104-847-11	TANTAL. CHIP 22uF 20% 4V					C503	1-104-847-11	TANTAL. CHIP 22uF 20% 4V				
C115	1-163-038-00	CERAMIC CHIP 0.1uF 25V					C504	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V				
C116	1-126-246-11	ELECT CHIP 220uF 20% 4V					C505	1-163-038-00	CERAMIC CHIP 0.1uF 25V				
C117	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V					C601	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V				
C118	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V					C602	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V				
C119	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V					C603	1-164-505-11	CERAMIC CHIP 2.2uF 16V				
C120	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V					C604	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V				
C121	1-124-778-00	ELECT CHIP 22uF 20% 6.3V					C605	1-163-017-00	CERAMIC CHIP 0.0047uF 5% 50V				
							C606	1-164-344-11	CERAMIC CHIP 0.068uF 10% 25V				

MAIN

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
C607	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V	Q105	8-729-230-72	TRANSISTOR	2SA1362YG		
C608	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V	Q106	8-729-230-63	TRANSISTOR	2SC4116-YG		
C609	1-164-505-11	CERAMIC CHIP	2.2uF		16V	Q107	8-729-402-96	TRANSISTOR	UN5114		
C701	1-124-779-00	ELECT CHIP	10uF	20%	16V	Q108	8-729-402-93	TRANSISTOR	UN5214-TX		
C702	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V	Q109	8-729-402-96	TRANSISTOR	UN5114		
C703	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V	Q110	8-729-420-50	TRANSISTOR	UN5215		
C704	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	Q111	8-729-429-71	TRANSISTOR	XN4314		
C705	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V	Q112	8-729-230-63	TRANSISTOR	2SC4116-YG		
C706	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V	Q301	8-729-402-93	TRANSISTOR	UN5214-TX		
C707	1-163-038-00	CERAMIC CHIP	0.1uF		25V	Q302	8-729-230-63	TRANSISTOR	2SC4116-YG		
C708	1-163-038-00	CERAMIC CHIP	0.1uF		25V	Q303	8-729-230-63	TRANSISTOR	2SC4116-YG		
		< JACK >				Q501	8-729-230-63	TRANSISTOR	2SC4116-YG		
CN101	1-750-061-11	JACK, DC (POLARITY UNIFIED TYPE)			(DC IN 3V)	Q601	8-729-402-96	TRANSISTOR	UN5114		
		< CONNECTOR >				Q602	8-729-402-93	TRANSISTOR	UN5214-TX		
CN102	1-750-341-11	CONNECTOR, FFC/EPC (ZIF) 18P				Q603	8-729-823-86	TRANSISTOR	2SA1745		
CN103	1-750-336-21	CONNECTOR, FFC/FPC (ZIF) 9P				Q604	8-729-823-86	TRANSISTOR	2SA1745		
		< DIODE >				Q701	8-729-402-93	TRANSISTOR	UN5214-TX		
D701	8-719-988-61	DIODE 1SS355TE-17				Q702	8-729-230-63	TRANSISTOR	2SC4116-YG		
D702	8-719-049-09	DIODE 1SS367-T3SONY				Q703	8-729-420-16	TRANSISTOR	XN1214		
		< FERRITE BEAD >				Q704	8-729-402-96	TRANSISTOR	UN5114		
FB101	1-414-235-22	FERRITE BEAD INDUCTOR				Q705	8-729-422-41	TRANSISTOR	XN1114		
FB102	1-414-235-22	FERRITE BEAD INDUCTOR				Q706	8-729-402-93	TRANSISTOR	UN5214-TX		
		< IC >				Q707	8-729-230-63	TRANSISTOR	2SC4116-YG		
IC101	8-759-492-49	IC LA4168ML-TE-L				Q708	8-729-420-24	TRANSISTOR	2SB1218A-QRS		
IC301	8-759-399-49	IC MM1251BFBE						< RESISTOR >			
IC501	8-759-701-51	IC NJM2072M				R101	1-216-065-00	RES,CHIP	4.7K	5%	1/10W
IC601	8-759-566-10	IC LB1877V-TLM				R102	1-216-049-11	RES,CHIP	1K	5%	1/10W
IC701	8-759-280-84	IC S-81211SG-QA-T1				R103	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
IC702	8-759-494-76	IC TB2004FN-020-ER				R104	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< JACK >				R105	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
J101	1-785-791-11	JACK (EAR)				R106	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
J102	1-785-790-11	JACK (MIC (PLUG IN POWER))				R107	1-216-049-11	RES,CHIP	1K	5%	1/10W
		< COIL >				R109	1-216-073-00	METAL CHIP	10K	5%	1/10W
L301	1-412-032-11	INDUCTOR CHIP 100uH				R110	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
		< PHOTO REFLECTOR >				R111	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
PH701	8-749-925-05	PHOTO REFLECTOR NJL5183KA-F20-TE1				R112	1-216-009-00	RES,CHIP	22	5%	1/10W
		< TRANSISTOR >				R113	1-216-065-00	RES,CHIP	4.7K	5%	1/10W
Q101	8-729-800-37	TRANSISTOR 2SD1048-X7				R114	1-216-089-00	RES,CHIP	47K	5%	1/10W
Q102	8-729-402-84	TRANSISTOR XN4601				R115	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
Q103	8-729-420-50	TRANSISTOR UN5215				R116	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
Q104	8-729-420-50	TRANSISTOR UN5215				R117	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
						R118	1-216-049-11	RES,CHIP	1K	5%	1/10W
						R119	1-216-121-00	RES,CHIP	1M	5%	1/10W
						R120	1-216-105-00	RES,CHIP	220K	5%	1/10W
						R121	1-216-073-00	METAL CHIP	10K	5%	1/10W
						R122	1-216-085-00	METAL CHIP	33K	5%	1/10W
						R123	1-216-033-00	METAL CHIP	220	5%	1/10W
						R124	1-216-041-00	METAL CHIP	470	5%	1/10W
						R125	1-216-073-00	METAL CHIP	10K	5%	1/10W
						R126	1-216-025-00	RES,CHIP	100	5%	1/10W
						R127	1-216-073-00	METAL CHIP	10K	5%	1/10W
						R128	1-216-055-00	METAL CHIP	1.8K	5%	1/10W

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description	Remark
R129	1-216-009-00	RES,CHIP	22	5%	1/10W			< SWITCH >	
R130	1-216-061-00	METAL CHIP	3.3K	5%	1/10W				
R131	1-216-065-00	RES,CHIP	4.7K	5%	1/10W	S101	1-771-678-11	SWITCH, SLIDE (REC/PB)	
R132	1-216-009-00	RES,CHIP	22	5%	1/10W	S102	1-572-964-11	SWITCH, SLIDE (FWD/REV)	
R133	1-216-021-00	METAL CHIP	68	5%	1/10W	S103	1-572-288-21	SWITCH, PUSH (POWER)	
						S701	1-572-922-11	SWITCH, SLIDE (PAUSE)	
R134	1-216-009-00	RES,CHIP	22	5%	1/10W	S702	1-572-688-11	SWITCH, PUSH (1 KEY) (REW/REVIEW)	
R301	1-216-105-00	RES,CHIP	220K	5%	1/10W				
R302	1-216-101-00	METAL CHIP	150K	5%	1/10W	S703	1-572-288-21	SWITCH, PUSH (DIR)	
R303	1-216-077-00	METAL CHIP	15K	5%	1/10W	S704	1-762-594-41	SWITCH, PUSH (1 KEY) (FF/CUE)	
R304	1-216-081-00	METAL CHIP	22K	5%	1/10W			< TRANSFORMER >	
R305	1-216-033-00	METAL CHIP	220	5%	1/10W				
R306	1-216-037-00	METAL CHIP	330	5%	1/10W	T101	1-433-286-11	TRANSFORMER, BIAS OSCILLATION	
R307	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	T701	1-450-667-11	TRANSFORMER, DC-DC CONVERTER	
R308	1-216-037-00	METAL CHIP	330	5%	1/10W			< THERMISTOR (POSITIVE) >	
R309	1-216-045-00	METAL CHIP	680	5%	1/10W				
R310	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	THP601	1-810-794-11	THERMISTOR, POSITIVE	
R311	1-216-075-00	METAL CHIP	12K	5%	1/10W	*****			
R312	1-216-081-00	METAL CHIP	22K	5%	1/10W				
R313	1-216-009-00	RES,CHIP	22	5%	1/10W			MISCELLANEOUS	
R314	1-216-021-00	METAL CHIP	68	5%	1/10W			*****	
R315	1-216-073-00	METAL CHIP	10K	5%	1/10W	126	1-657-172-11	MOTOR FLEXIBLE BOARD	
R501	1-216-021-00	METAL CHIP	68	5%	1/10W	189	1-548-582-11	COUNTER, TAPE (SMALL TYPE)	
R502	1-216-097-00	RES,CHIP	100K	5%	1/10W	HRPE901	1-500-590-11	HEAD, MAGNETIC (REC/PB/ERASE)	
R503	1-216-073-00	METAL CHIP	10K	5%	1/10W	M901	1-698-804-21	MOTOR, DC (including PULLEY) (CAPSTAN/REEL)	
R504	1-216-063-00	RES,CHIP	3.9K	5%	1/10W	MIC901	1-542-298-11	MICROPHONE, ELECTRET CONDENSER	(Flat Mic)
R505	1-216-053-00	METAL CHIP	1.5K	5%	1/10W				
R601	1-216-085-00	METAL CHIP	33K	5%	1/10W	SP901	1-529-188-11	SPEAKER (3.6cm)	
R602	1-216-085-00	METAL CHIP	33K	5%	1/10W	*****			
R603	1-216-067-00	METAL CHIP	5.6K	5%	1/10W				
R604	1-216-121-00	RES,CHIP	1M	5%	1/10W			ACCESSORIES & PACKING MATERIALS	

R605	1-216-121-00	RES,CHIP	1M	5%	1/10W				
R606	1-216-121-00	RES,CHIP	1M	5%	1/10W	3-865-282-11	MANUAL, INSTRUCTION (JAPANESE) (JE)		
R607	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	3-865-282-21	MANUAL, INSTRUCTION (ENGLISH,FRENCH)		
R608	1-216-067-00	METAL CHIP	5.6K	5%	1/10W		(US,CND)		
R609	1-216-025-00	RES,CHIP	100	5%	1/10W	3-865-282-31	MANUAL, INSTRUCTION (ENGLISH,SPANISH,		
							PORTUGUESE) (AEP,E)		
R610	1-216-025-00	RES,CHIP	100	5%	1/10W	3-865-282-41	MANUAL, INSTRUCTION (FRENCH,GERMAN,		
R611	1-216-049-11	RES,CHIP	1K	5%	1/10W		DUTCH) (AEP)		
R701	1-216-088-00	METAL CHIP	43K	5%	1/10W	3-865-282-51	MANUAL, INSTRUCTION (SWEDISH,ITALIAN,		
R702	1-216-073-00	METAL CHIP	10K	5%	1/10W		FINNISH) (AEP)		
R703	1-216-073-00	METAL CHIP	10K	5%	1/10W				
R704	1-216-073-00	METAL CHIP	10K	5%	1/10W	3-865-282-61	MANUAL, INSTRUCTION (ENGLISH,CHINESE,		
R705	1-216-073-00	METAL CHIP	10K	5%	1/10W		KOREAN) (JE)		
R706	1-216-073-00	METAL CHIP	10K	5%	1/10W	3-865-282-71	MANUAL, INSTRUCTION (CHINESE,RUSSIAN)		
R707	1-216-089-00	RES,CHIP	47K	5%	1/10W		(JE)		
R708	1-216-035-00	METAL CHIP	270	5%	1/10W	8-952-251-90	HEADPHONE MDR-E122 SET (JE)		
								< VARIABLE RESISTOR >	
RV101	1-223-931-11	RES, VAR, CARBON	10K (VOL)						
RV601	1-238-663-11	RES, ADJ, CARBON	4.7K						
RV602	1-223-584-11	RES, ADJ, CARBON	2.2K						
RV603	1-223-931-11	RES, VAR, CARBON	10K (SPEED CONTROL)						

TCM-50DV

SONY

SERVICE MANUAL

Ver 1.1 2000.08

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

SUPPLEMENT-1

File this supplement with the service manual.

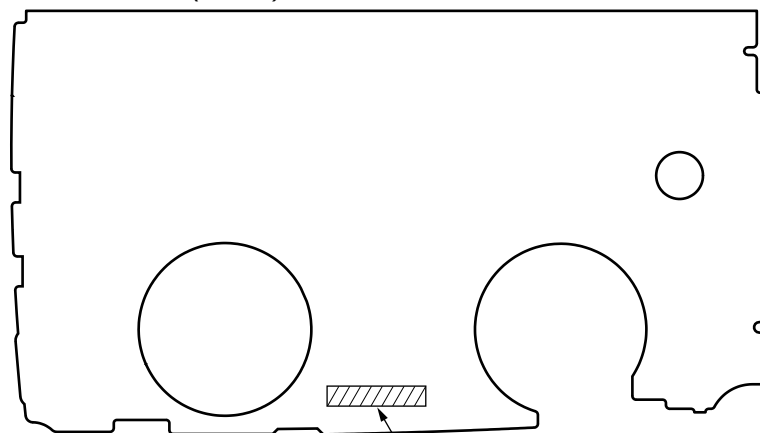
Subject : 1. Change of MAIN board
2. Change of Capstan/Reel Motor

(SPM-00025)

This service manual supplement-1 only describes the differences between the new and former boards. For other information, refer to the provided service manual (9-926-938-00).

To discriminate between the new and former boards, check the part code of the printed wiring board marked on the board.

– MAIN board (side A) –



MAIN board parts No.
Former type:1-672-148-11 or -12
New type:1-672-148-21

Note: When the main board has a suffix number of -12, refer to the schematic diagram/printed circuit diagram/parts list for the main board having a suffix number of -11.

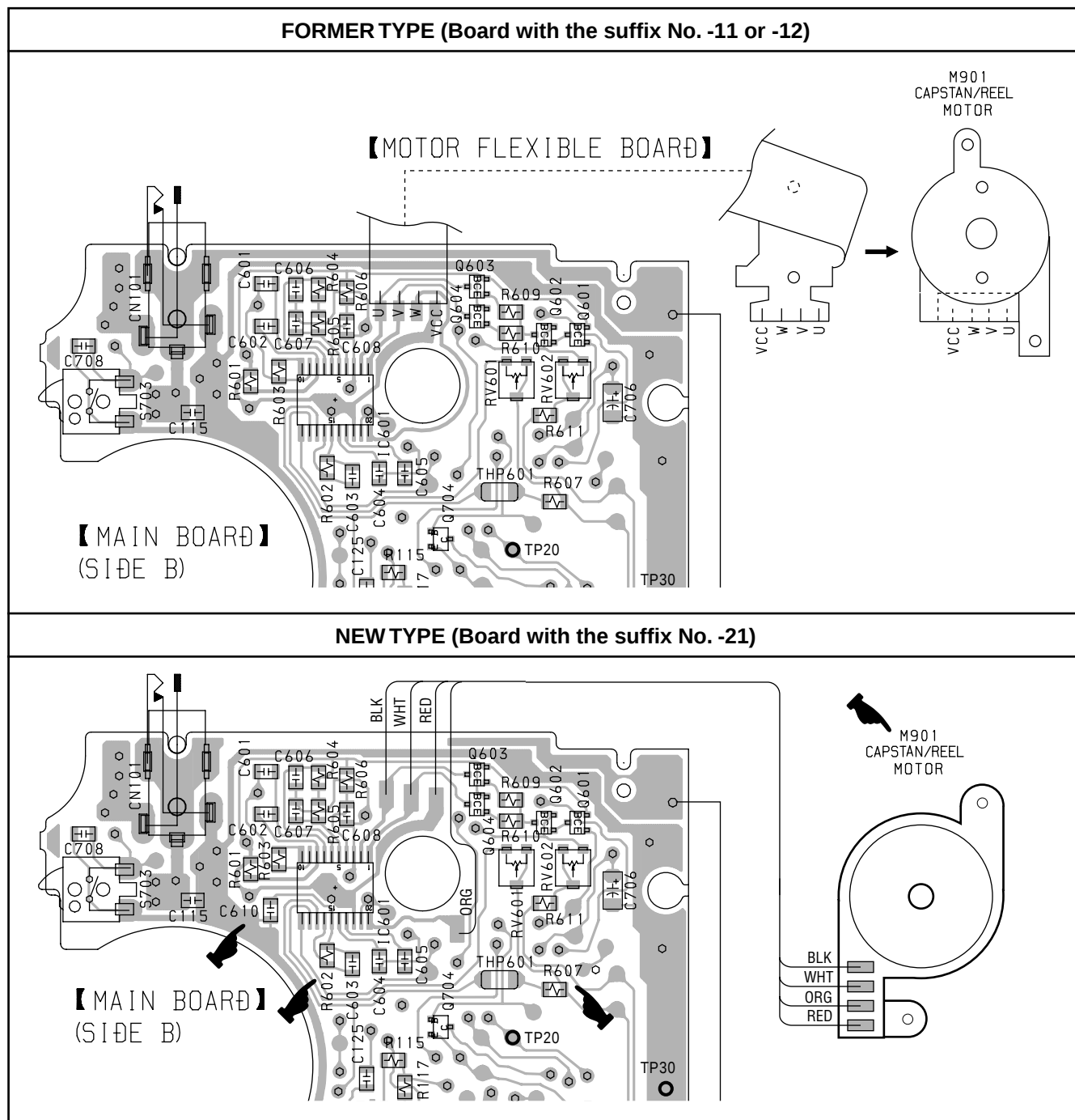
1. Changes to the Board

As the motor is changed, the main board is to be changed from the board with the suffix No.-11 or -12 to the board with No.-21.

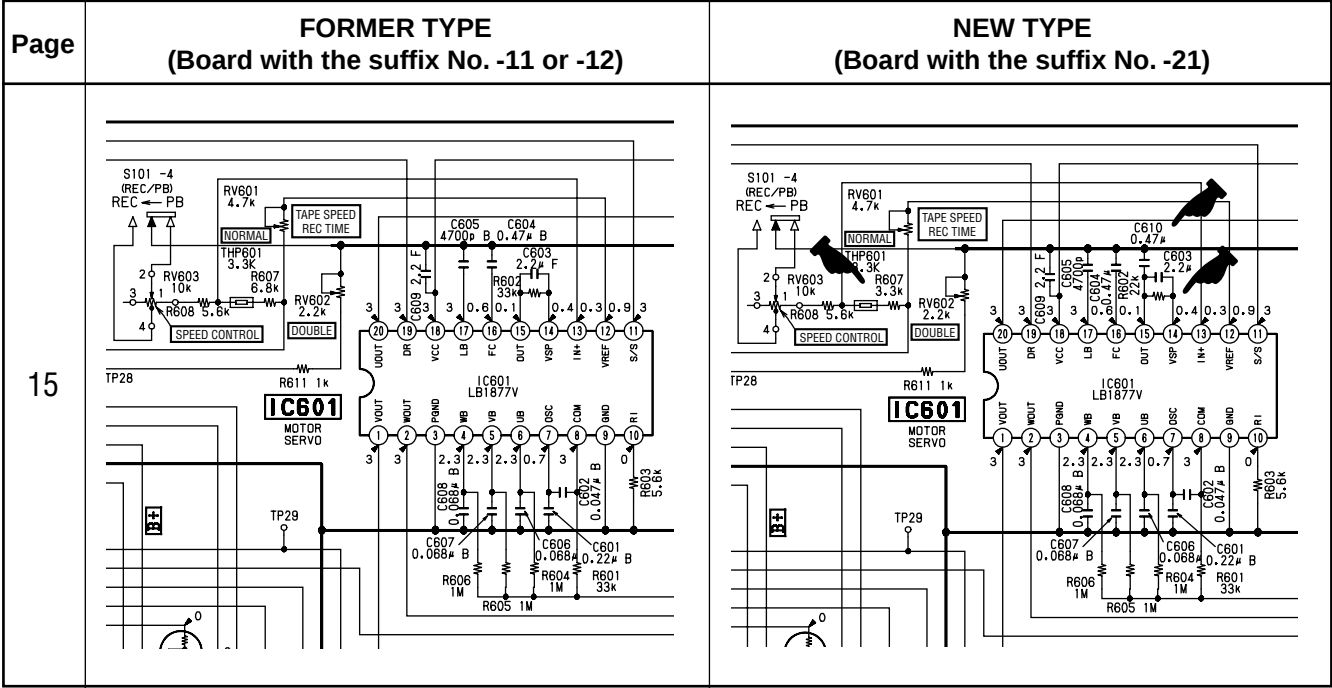
When only replacing the motor or main board by a new part, replace the appropriate components on the main board.

(For details, refer to “2. Replacing the Board/Motor” on page 4.)

1-1. Printed Wiring Board (page 13)



1-3. Schematic Diagram



1-4. Part List

Page	FORMER TYPE (Board with the suffix No. -11 or -12)						NEW TYPE (Board with the suffix No. -21)				
26	<u>Ref. No.</u> C610	<u>Part No.</u>	<u>Description</u> _____			<u>Remark</u>	<u>Part No.</u> 1-107-823-11	<u>Description</u> CERAMIC CHIP	0.47uF	10%	16V
27	R602 R607	1-216-085-00 1-216-069-00	METAL CHIP METAL CHIP	33K 6.8K	5% 5%	1/10W 1/10W	1-216-081-00 1-216-061-00	RES, CHIP RES, CHIP	22K 3.3K	5% 5%	1/10W 1/10W
23	115 126 M901	4-017-441-01 1-657-172-11 1-698-804-21	CUSHION (B) MOTOR FLEXIBLE BOARD MOTOR, DC (including PULLEY) (CAPSTAN/REEL)				_____ _____ 1-763-273-11 MOTOR, DC (including PULLEY) (CAPSTAN/REEL)				

2. Replacing the Board/Motor

When replacing the board or motor only, the following parts are required:

2-1. Replacing the board (when replacing the board with the suffix No. -11 or -12 by that with -21 without changing the motor:)

Page	BEFORE CHANGE							AFTER CHANGE				
	Ref. No.	Part No.	Description	Remark				Part No.	Description	Remark		
26	C610	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V		Remove				
27	R602	1-216-081-00	RES, CHIP	22K	5%	1/10W		1-216-085-00	METAL CHIP	33K	5%	1/10W
	R607	1-216-061-00	RES, CHIP	3.3K	5%	1/10W		1-216-069-00	METAL CHIP	6.8K	5%	1/10W

Note: The new board differs from the former board in the location of the land where the motor flexible board is soldered.
Therefore, the board cannot be used as it is. Remove the motor flexible board and connect the terminals with lead wire.

2-2. Replacing the motor (when replacing by the new motor without changing the board with suffix No. -11 or -12)

Page	BEFORE CHANGE							AFTER CHANGE				
	Ref. No.	Part No.	Description	Remark				Part No.	Description	Remark		
26	C610							1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
27	R602	1-216-085-00	METAL CHIP	33K	5%	1/10W		1-216-081-00	RES, CHIP	22K	5%	1/10W
	R607	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		1-216-061-00	RES, CHIP	3.3K	5%	1/10W

Mounting location of C610:

Note: When connecting between C610 and R602, take care to prevent contact between lead and pattern.

