

TCM-929/939

SERVICE MANUAL

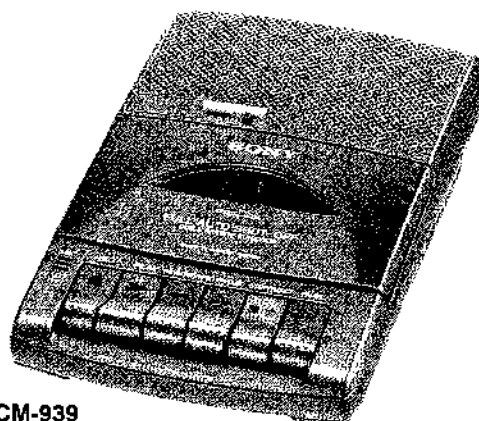


Photo: TCM-939

US Model
TCM-929
Canadian Model
AEP Model
UK Model
E Model
Australian Model
TCM-939

Model Name Using Similar Mechanism	TCM-919
Tape Transport Mechanism Type	MT-929

SPECIFICATIONS

Recording system

2-track 1 channel monaural

Frequency range

150 - 8,000 Hz

Speaker

Approx. 6.6 cm (2 $\frac{1}{4}$ in.) dia.

Power output

400 mW (at 10 % harmonic distortion)

Input

Microphone input jack (minijack) sensitivity 0.775 mV for low impedance microphone

Output

Earphone jack (minijack) for 8 - 300 ohms earphone

Power requirements

- Four size AA (R6) batteries (not supplied): 6V DC
- DC IN 6 V jack accepts:
Supplied AC power adaptor suitable in the country where the unit is to be used.

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

Approx. 144 × 60 × 237 mm
(5 $\frac{3}{4}$ × 2 $\frac{3}{8}$ × 9 $\frac{3}{8}$ in.)

Mass (not incl. batteries)

Approx. 675 g (23.9 oz.)

Supplied accessories

AC power adaptor (1)
(US, Canadian and European model only)

Design and specifications are subject to change without notice.

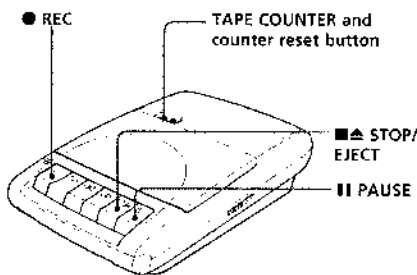
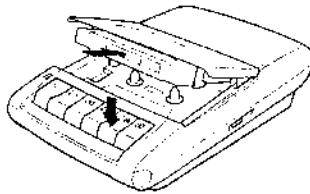
CASSETTE CORDER
SONY®

SECTION 1 GENERAL

This section is extracted from instruction manual.

Recording

You can record right away with the built-in microphone. Make sure that nothing is connected to the MIC jack.



- 1 Press the counter reset button to reset the TAPE COUNTER.
- 2 Press ■▲ STOP/EJECT to open the cassette holder.
- 3 Insert a TYPE I (normal) tape with the side to start recording facing upward, and close the cassette holder.
- 4 Press ● REC.
▶ PLAY is depressed automatically.

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

To	Press
Stop recording	■▲ STOP/EJECT
Pause recording	PAUSE Press the button again to resume recording.

Notes

- You cannot monitor the recording sound.
- For recording, we recommend the use of TYPE I (normal) tapes only. Do not use TYPE II (CrO₂) and TYPE IV (metal) tapes.

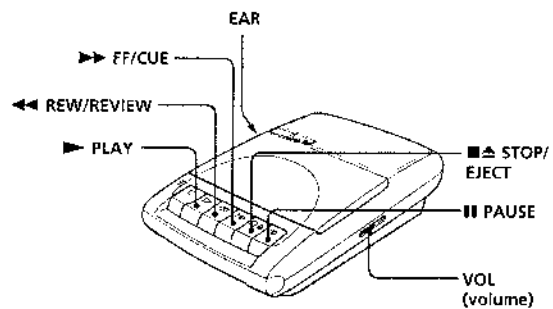
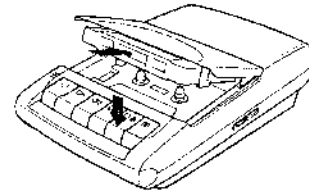
Recording with an External Microphone

MIC (PLUG IN POWER)



Connect a microphone of low impedance (not supplied) to the MIC jack. The built-in microphone is automatically disconnected. When using a plug-in-power system microphone, the power to the microphone is supplied from this unit.

Playing a Tape



- 1 Press ■▲ STOP/EJECT to open the cassette holder.
- 2 Insert a TYPE I (normal) tape with the side to start play facing upward, and close the cassette holder.
- 3 Press ▶ PLAY then adjust the volume.

At the end of the tape, playback stops and the unit turns off automatically.

To	Press or slide
Stop playback/stop fast forward or rewind	■▲ STOP/EJECT
Pause playback	PAUSE Press the button again to resume 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

At the end of the tape

All the locked buttons will be automatically released (Full auto shut-off mechanism).

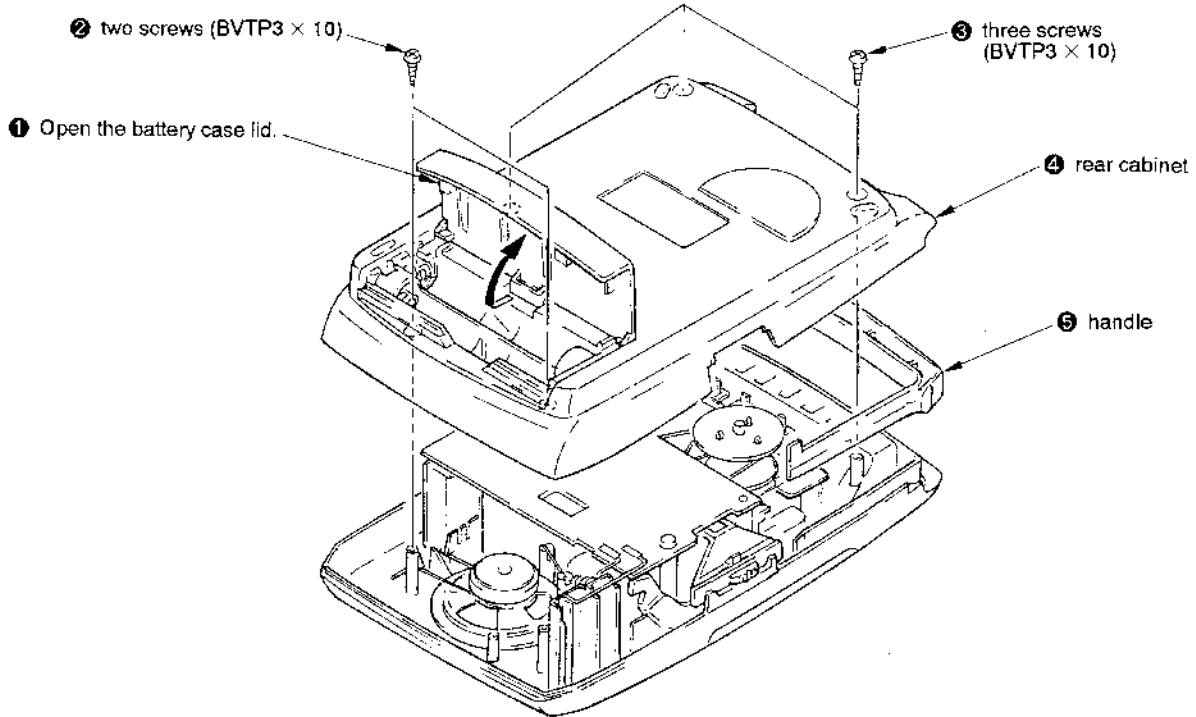
To listen with an earphone

Connect an earphone (not supplied) to the EAR jack of the unit. The built-in speaker will be automatically disconnected.

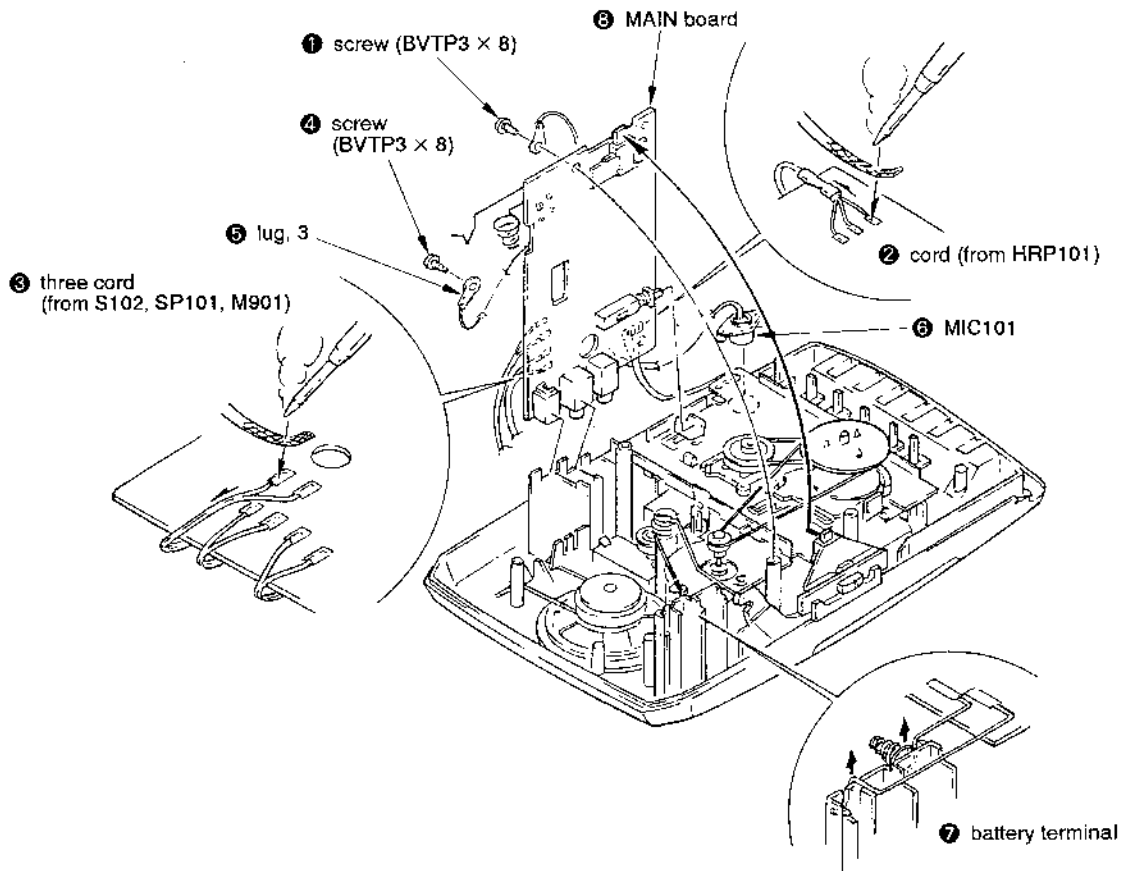
SECTION 2 DISASSEMBLY

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

REAR CABINET



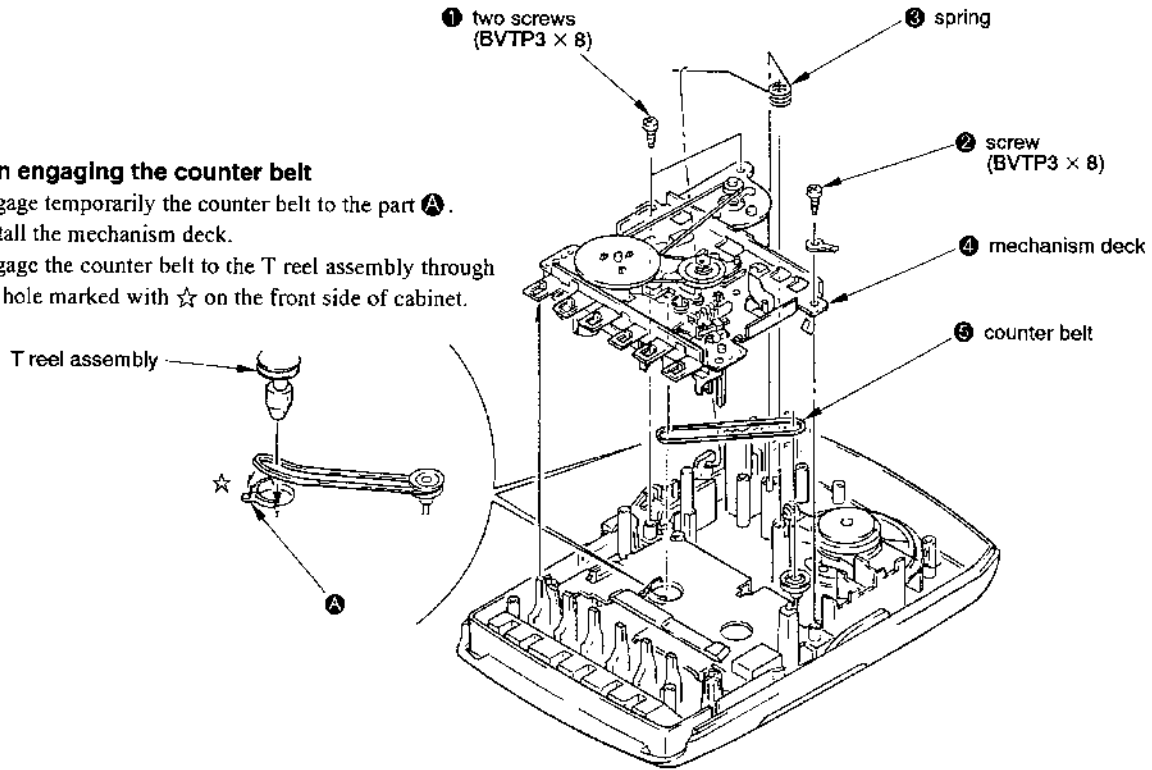
MAIN BOARD



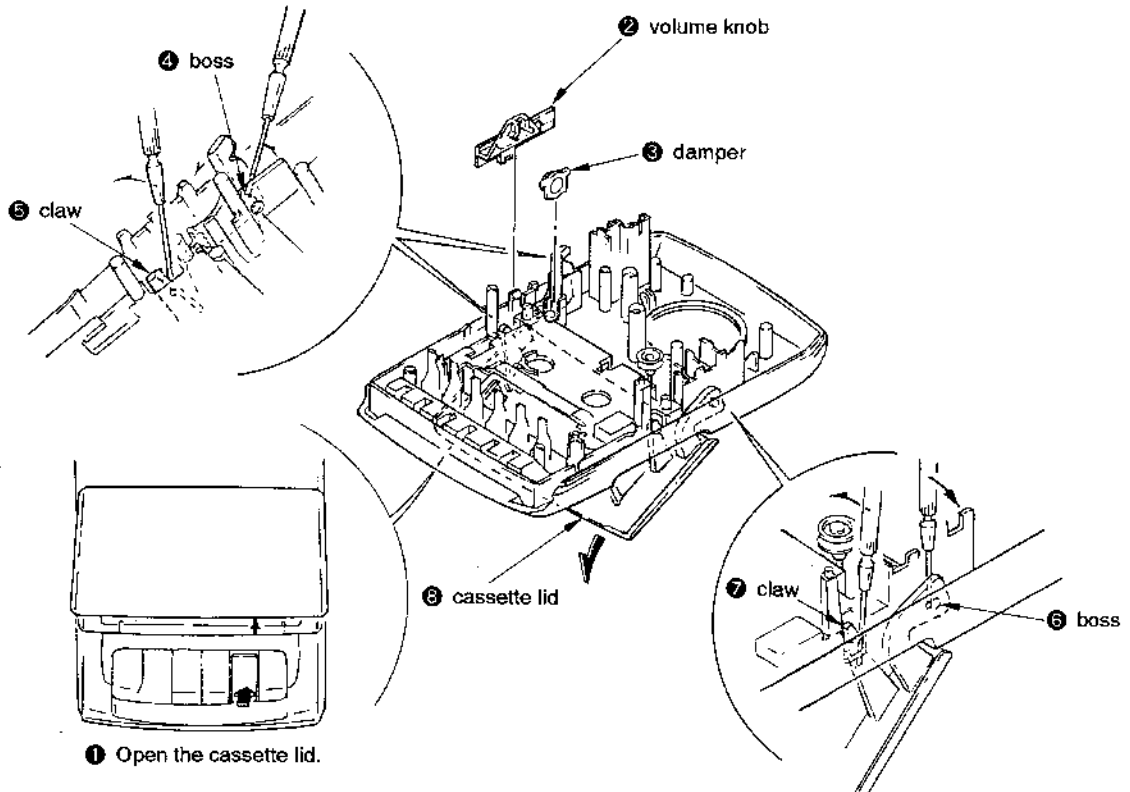
MECHANISM DECK

Note on engaging the counter belt

1. Engage temporarily the counter belt to the part **A**.
2. Install the mechanism deck.
3. Engage the counter belt to the T reel assembly through the hole marked with ☆ on the front side of cabinet.



CASSETTE LID



SECTION 3 ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENT

PRECAUTION

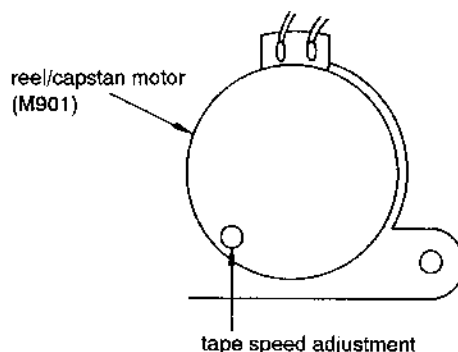
1. Clean the following parts with a denatured-alcohol-moistened swab:

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

Torque Measurement

Torque	Torque meter	Meter reading
FWD	CQ-102C	27 to 70 g*cm (0.37 to 0.98 oz*inch)
FWD Back tension	CQ-102C	1.5 to 5.5 g*cm (0.02 to 0.07 oz*inch)
FP, REW	CQ-201B	80 to 156 g*cm (1.12 to 2.1 oz*inch)

Adjustment Location: Reel/Capstan Motor (M901)



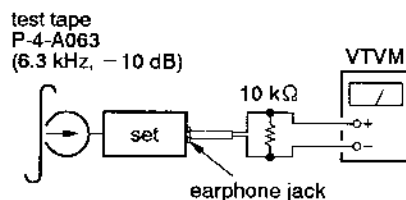
Record/Playback Head Azimuth Adjustment

Setting:

VOL control: mechanical mid.

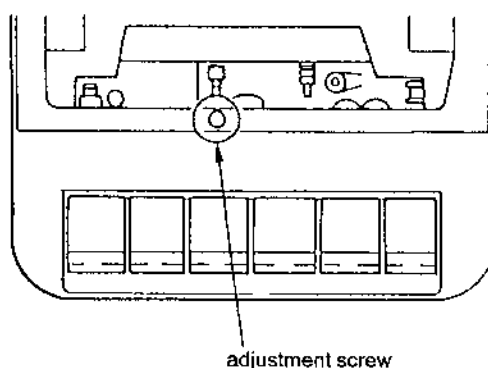
Adjustment Procedure:

1. Mode: Playback



2. Turn the adjustment screw for maximum VTVM reading.
- Note:** Serval peaks may appear, but take the the maximum.
3. After the adjustment, lock the screws with locking compound.

Adjustment Location: Record/Playback Head



3-2. ELECTRICAL ADJUSTMENTS

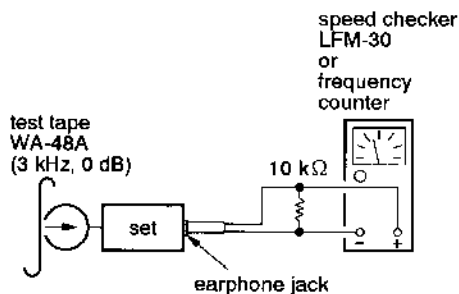
Tape Speed Adjustment

Setting:

VOL control: mechanical mid.

Adjustment Procedure:

1. Mode: Playback



Specification:

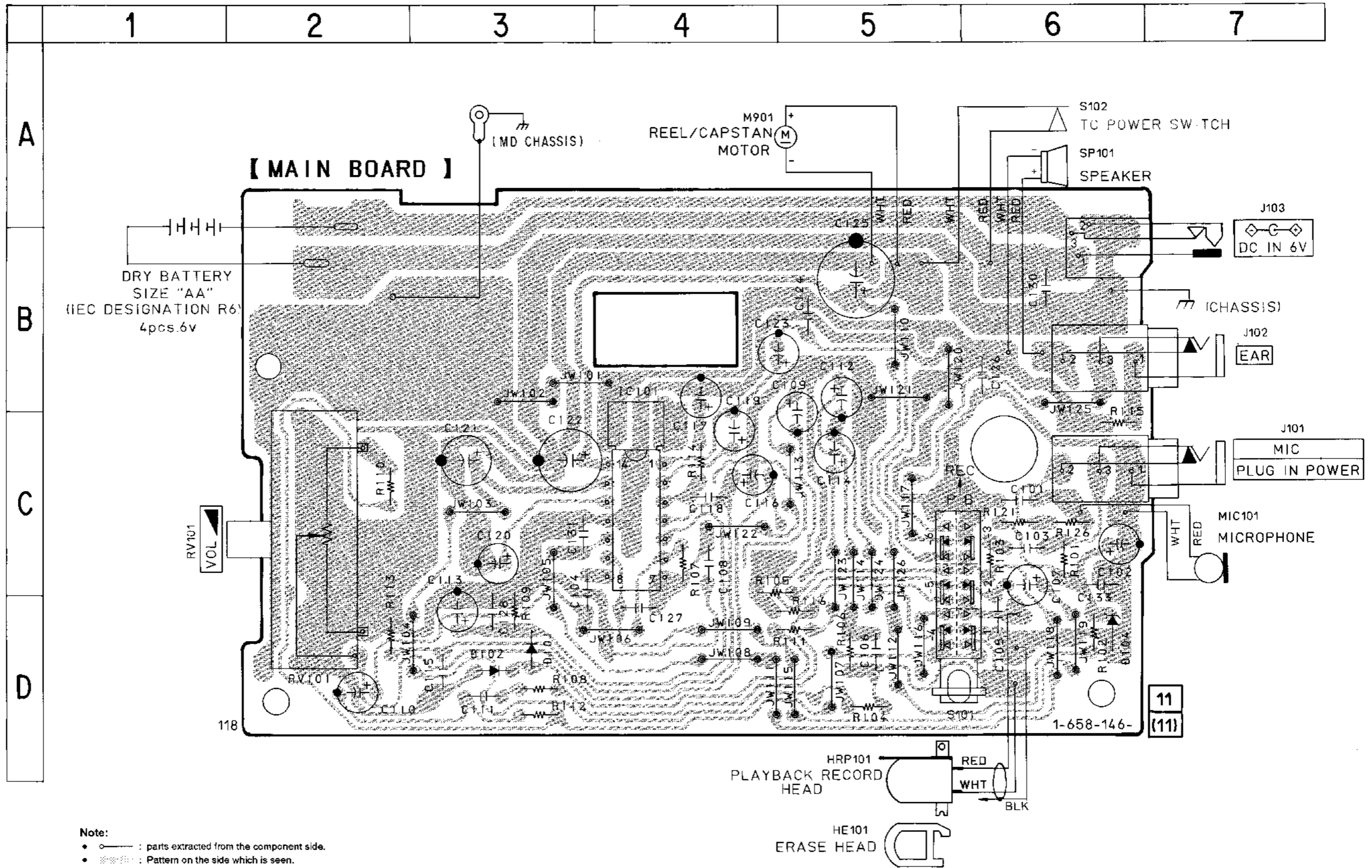
Speed checker	Frequency counter
± 3%	2,910 to 3,090 Hz

SECTION 4
DIAGRAMS

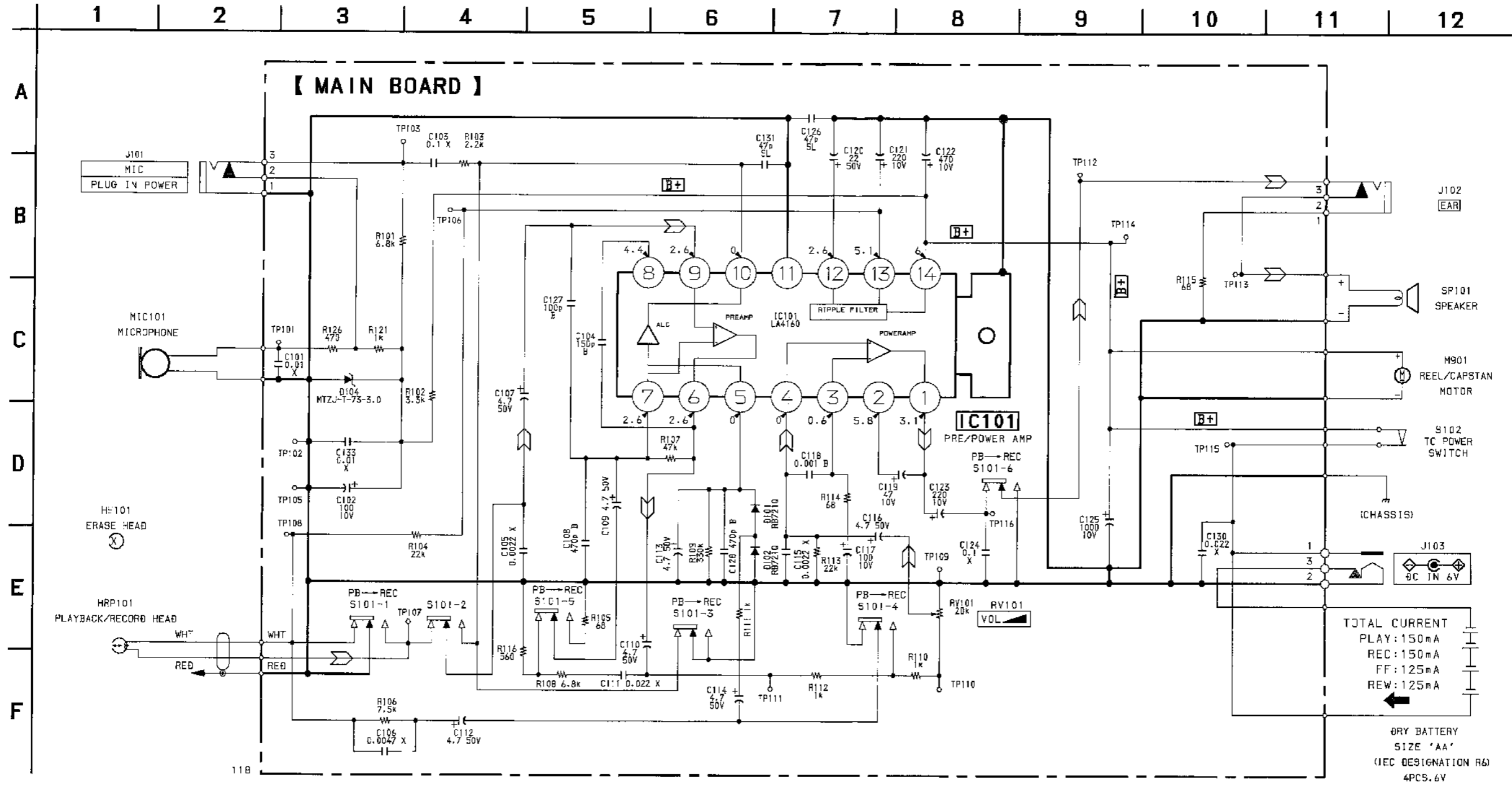
4-1. PRINTED WIRING BOARD

• Semiconductor Location

Ref. No.	Location
D101	D-3
D102	D-3
D104	D-6
IC101	C-4



4-2. SCHEMATIC DIAGRAM



- Note:**
- All capacitors are in μF unless otherwise noted. pF: μF 50 WV or less are not indicated except for electrolytics and tantalums.
 - All resistors are in Ω and $\frac{1}{4}$ W or less unless otherwise specified.
 - **B+** : B+ Line.
 - Power voltage is dc 6 V and fed with regulated dc power supply from external power voltage jack.
 - Voltages are dc with respect to ground under no-signal conditions.
no mark : **PLAY**
 - Voltages are taken with a VOM (10 M Ω /V).
Voltage variations may be noted due to normal production tolerances.
 - Signal path.
 ∇ : PB

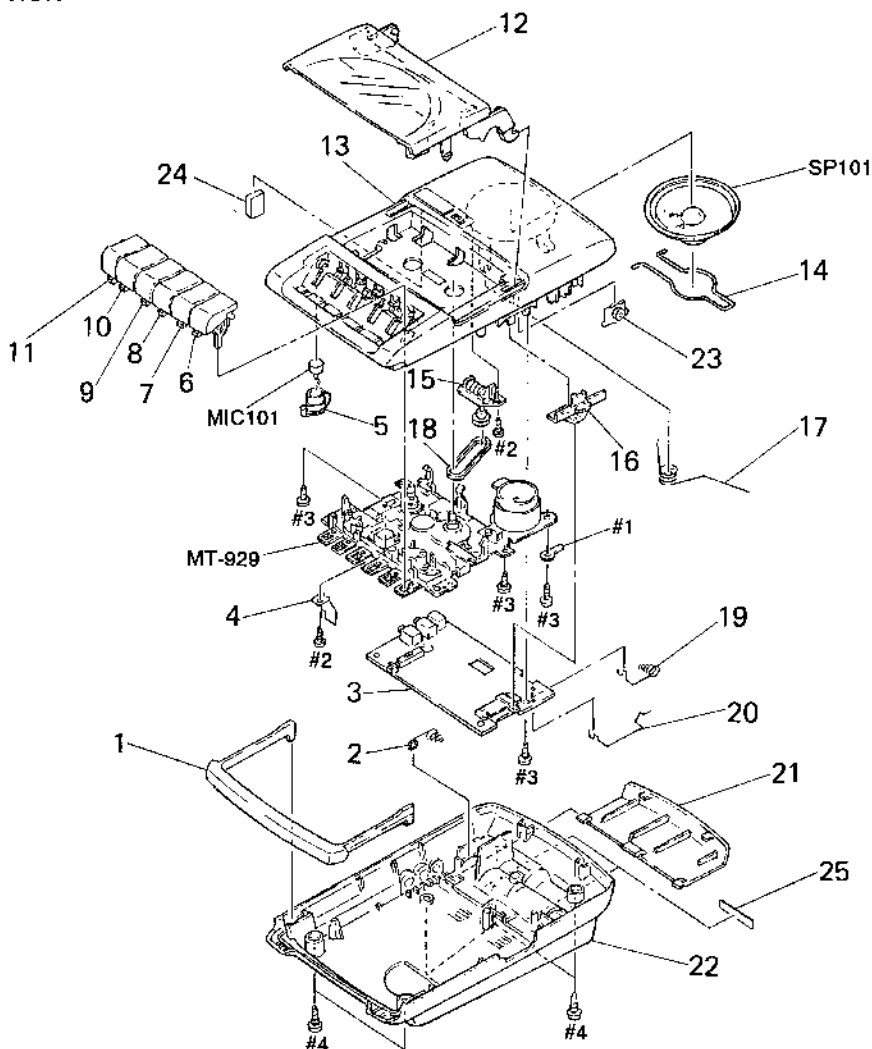
SECTION 5

EXPLODED VIEWS

NOTE:

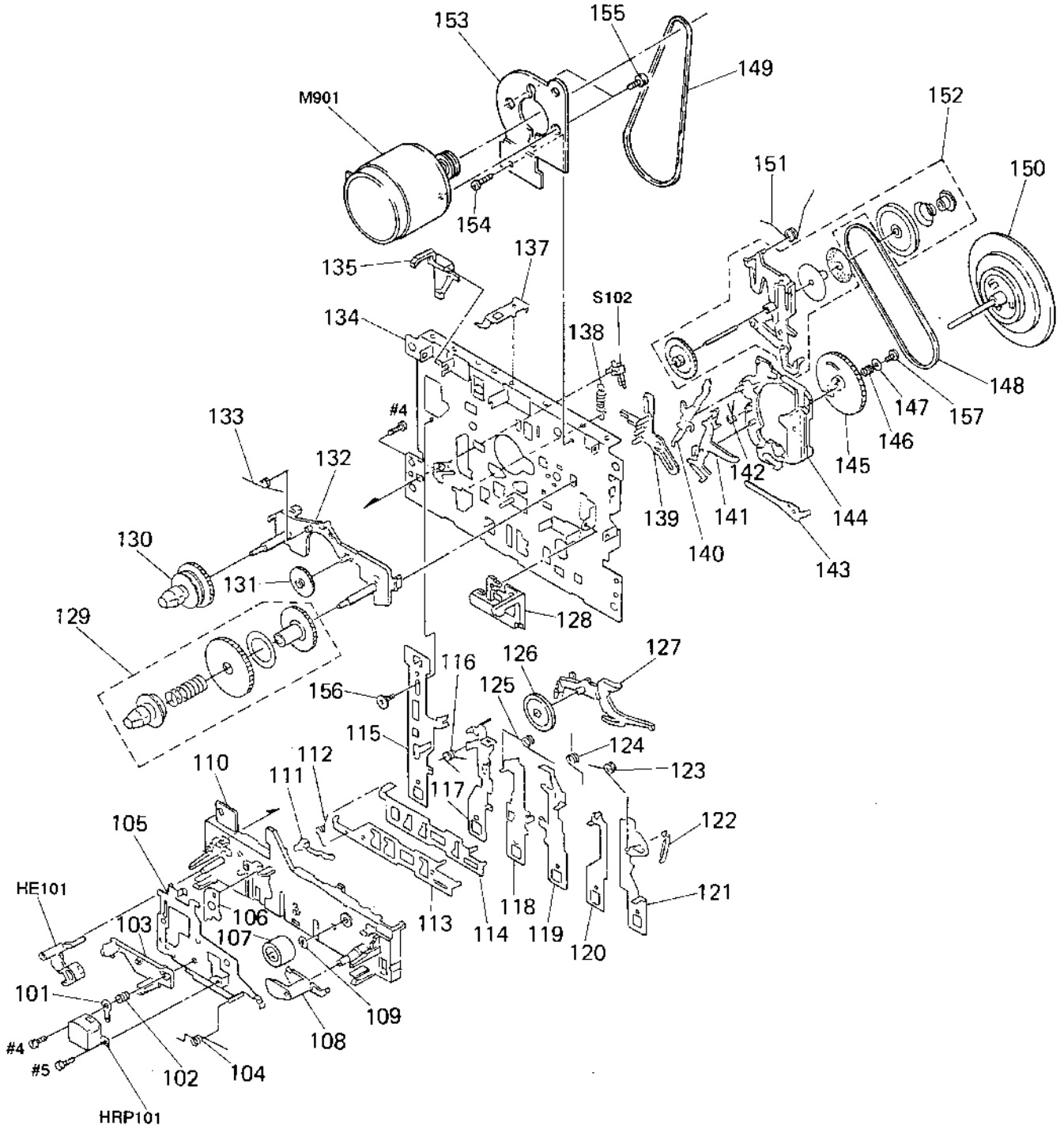
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) ... (RED)
 ↑ ↑
 Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.
- Model name abbreviation
929: TCM-929
939: TCM-939

(1) CABINET SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	3-928-051-01	HANDLE		15	1-251-348 11	COUNTER, TAPE	
2	3-927-954-01	TERMINAL (+, -), BATTERY		16	3-927-968-01	KNOB (VOL)	
* 3	A-3061-174-A	MAIN BOARD, COMPLETE		17	3-927-960-01	SPRING (CASSETTE)	
4	3-927-955-01	LEVER, REC		18	3-927-957-01	BELT, COUNTER	
* 5	3-348-316-01	CUSHION, MICROPHONE		19	3-927-958-01	TERMINAL (-), BATTERY	
6	3-927-963-01	BUTTON (PAUSE)		20	3-927-959-01	TERMINAL (+), BATTERY	
7	3-927-964-01	BUTTON (STOP)		21	3-927-961-01	LID, BATTERY CASE	
8	3-927-965-01	BUTTON (FF)		22	3-927-970-01	CABINET (REAR) (929)	
9	3-927-966-01	BUTTON (REW)		22	3-927-970-11	CABINET (REAR) (939:Canadian)	
10	3-927-967-01	BUTTON (PLAY)		22	3-927-970-21	CABINET (REAR) (939:AEP, UK, E. Australian)	
11	3-927-962-01	BUTTON (REC)		23	3-928-052-01	DAMPER	
12	3-927-969-01	LID, CASSETTE (929)		24	3-930-739-01	PLATE REINFORCE	
12	X-3370-892-1	LID ASSY, CASSETTE (939)		25	3-930-740-01	CUSHION	
13	3-927-971-01	CABINET (FRONT)		MIC101	8-814-186-00	MICROPHONE, ELECTRET CONDENSER	
14	3-927-956-01	SPRING (SPEAKER)		SP101	1 504 970 11	SPEAKER (6.6CM)	

(2) MECHANISM DECK SECTION
(MT-929)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	3-363-230-01	LUG		131	3-362-965-01	IDLER, FF	
102	3-362-985-01	SPRING		132	3-362-961-01	SPINDLE (BASE)	
103	3-362-986-01	HOLDER, HEAD		133	3-372-120-01	SPRING	
104	3-362-983-01	SPRING		* 134	3-362-941-01	CHASSIS	
* 105	3-362-984-01	HEAD (BASE)		135	3-385-825-01	INTERLOCK	
106	3-385-832-01	LINK, CR		137	3-362-967-01	SPRING, CASSETTE	
107	3-362-982-01	PINCH ROLLER		138	3-362-971-01	SPRING	
108	3-362-981-01	PINCH ARM		139	3-362-972-01	SENSOR	
109	3-362-980-01	WASHER		140	3-362-976-01	LEVER, CONTROL	
110	3-385-819-01	FRAME ASSY		141	3-362-975-01	LEVER, SENSOR	
111	3-385-831-01	ARM, CR		142	3-362-977-01	SPRING	
112	3-385-821-01	SPRING		143	3-362-978-01	SPRING, PLATE	
113	3-385-820-01	PLATE, FUNCTION		144	3-362-973-01	AS (BASE)	
114	3-385-822-01	LEVER, SW		145	X-3363-315-1	GEAR, CAM ASSY	
* 115	3-362-947-01	LEVER, REC		146	3-369-962-01	SPRING, COMPRESSION	
116	3-362-954-01	SPRING		147	3-369-961-01	WASHER	
* 117	3-362-948-01	LEVER, PLAY		148	3-385-829-01	BELT	
* 118	3-362-949-01	LEVER, REW		149	3-928-053-01	BELT (Y TYPE)	
* 119	3-362-950-01	LEVER, FF		150	3-385-827-01	FW ASSY	
120	3-385-824-01	LEVER, SE		151	3-362-970-01	SPRING	
* 121	3-362-952-01	LEVER, PAUSE		152	3-385-826-01	IDLER ASSY, PF	
122	3-362-953-01	ARM, PAUSE		* 153	3-385-828-01	HOLDER, MOTOR	
123	3-362-957-01	SPRING		154	3-363-229-01	SCREW	
124	3-362-956-01	SPRING		155	3-385-830-01	SCREW	
125	3-362-955-01	SPRING		156	3-362-958-01	SCREW	
126	3-362-960-01	PULLEY, IDLER		157	3-365-352-01	SCREW	
127	3-362-959-01	ARM, IDLER		HE101	1-500-009-11	HEAD, MAGNETIC (ERASE)	
128	3-362-968-01	LEVER, EJECT		HRP101	1-543-410-11	HEAD, MAGNETIC (REC/PB)	
129	3-362-962-01	REEL ASSY, T		M901	X-3366-071-1	MOTOR ASSY (REEL/CAPSTAN)	
130	X-3363-611-1	REEL, S ASSY		S102	1-572-538-11	SWITCH, LEAF (TC POWER)	

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 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
- Model name abbreviation
929: TCM-929
939: TCM-939

- 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.

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-3061-174-A	MAIN BOARD, COMPLETE *****				< DIODE >	
		< CAPACITOR >		D101	8-719-049-26	DIODE RB721Q	
C101	1-161-051-00	CERAMIC 0.01uF	10% 25V	D102	8-719-049-26	DIODE RB721Q	
C102	1-126-933-11	ELECT 100uF	20% 10V	D104	8-719-982-51	DIODE MTZJ-T-73-3.0	
C103	1-161-772-11	CERAMIC 0.1uF	20% 16V			< IC >	
C104	1-102-108-00	CERAMIC 150PF	10% 50V	IC101	8-759-821-14	IC LA4180	
C105	1-161-043-00	CERAMIC 2200PF	10% 50V			< JACK >	
C106	1-161-047-00	CERAMIC 0.0047uF	10% 50V	J101	1-566-740-11	JACK (MIC, PLUG IN POWER)	
C107	1-126-963-11	ELECT 4.7uF	20% 50V	J102	1-566-740-11	JACK (EAR)	
C108	1-102-114-00	CERAMIC 470PF	10% 50V	J103	1-568-907-31	JACK, DC (POLARITY UNIFEID TYPE) (DC IN 6V)	
C109	1-126-963-11	ELECT 4.7uF	20% 50V			< RESISTOR >	
C110	1-126-963-11	ELECT 4.7uF	20% 50V	R101	1-249-427-11	CARBON 6.8K 5% 1/4W	
C111	1-161-055-00	CERAMIC 0.022uF	10% 50V	R102	1-249-423-11	CARBON 3.3K 5% 1/4W	
C112	1-126-963-11	ELECT 4.7uF	20% 50V	R103	1-247-839-31	CARBON 2.2K 5% 1/4W	
C113	1-126-963-11	ELECT 4.7uF	20% 50V	R104	1-249-433-11	CARBON 22K 5% 1/4W	
C114	1-126-963-11	ELECT 4.7uF	20% 50V	R105	1-249-403-11	CARBON 68 5% 1/4W	
C115	1-161-043-51	CERAMIC 2200PF	10% 50V	R106	1-247-852-11	CARBON 7.5K 5% 1/4W	
C116	1-126-963-11	ELECT 4.7uF	20% 50V	R107	1-249-437-11	CARBON 47K 5% 1/4W	
C117	1-126-933-11	ELECT 100uF	20% 10V	R108	1-249-427-11	CARBON 6.8K 5% 1/4W	
C118	1-102-074-00	CERAMIC 0.001uF	10% 50V	R109	1-247-891-00	CARBON 330K 5% 1/4W	
C119	1-126-967-11	ELECT 47uF	20% 10V	R110	1-249-417-11	CARBON 1K 5% 1/4W	
C120	1-128-551-11	ELECT 22uF	20% 25V	R111	1-249-417-11	CARBON 1K 5% 1/4W	
C121	1-126-923-11	ELECT 220uF	20% 10V	R112	1-249-417-11	CARBON 1K 5% 1/4W	
C122	1-126-925-11	ELECT 470uF	20% 10V	R113	1-249-433-11	CARBON 22K 5% 1/4W	
C123	1-126-923-11	ELECT 220uF	20% 10V	R114	1-249-403-11	CARBON 68 5% 1/4W	
C124	1-161-772-11	CERAMIC 0.1uF	10% 25V	R115	1-249-403-11	CARBON 68 5% 1/4W	
C125	1-126-926-11	ELECT 1000uF	20% 10V	R116	1-247-825-31	CARBON 560 5% 1/4W	
C126	1-101-880-00	CERAMIC 47PF	10% 50V	R121	1-249-417-11	CARBON 1K 5% 1/4W	
C127	1-102-106-00	CERAMIC 100PF	10% 50V	R126	1-247-823-31	CARBON 470 5% 1/4W	
C128	1-102-114-00	CERAMIC 470PF	10% 50V			< VARIABLE RESISTOR >	
C130	1-161-055-00	CERAMIC 0.022uF	10% 50V	RV101	1-223-955-11	RES, VAR, SLIDE (VOL)	
C131	1-101-880-00	CERAMIC 47PF	10% 50V				
C133	1-161-051-00	CERAMIC 0.01uF	10% 25V				

REVISED

MAIN

Ref. No. Part No. Description Remark

< SWITCH >

S101 1-762-546-11 SWITCH, SLIDE (PB/REC SWITCH)

MISCELLANEOUS

15 1-251-348-11 COUNTER, TAPE
HE101 1-500-009-11 HEAD, MAGNETIC (ERASE)
HRP101 1-543-410-11 HEAD, MAGNETIC (REC/PB)
M001 X-3366-071-1 MOTOR ASSY (REEL/CAPSTAN)
MIC101 8-814-186-00 MICROPHONE, ELECTRET CONDENSER

SP101 1-504-970-11 SPEAKER (6.6CM)
S102 1-572-538-11 SWITCH, LEAF (TC POWER)

ACCESSORIES & PACKING MATERIALS

- △ 1-466-977-11 ADAPTOR, AC (AC-E616) (929)
- △ 1-466-978-11 ADAPTOR, AC (AC-E616) (939:UK)
- △ 1-466-979-11 ADAPTOR, AC (AC-E616) (939:AEP)

- △ 1-467-198-11 ADAPTOR, AC (AC-E616) (939:Canadian)
- △ 1-467-894-11 ADAPTOR, AC (939:Australian)
- 3-800-701-11 MANUAL, INSTRUCTION (ENGLISH) (929)
- 3-800-730-11 MANUAL, INSTRUCTION (ENGLISH, FRENCH,
SPANISH) (939)
- 3-800-730-21 MANUAL, INSTRUCTION (GERMAN, DUTCH,
SWEDISH) (939:AEP)
- 3-800-730-31 MANUAL, INSTRUCTION (ITALIAN, POTUGUESE)
(939:AEP, E)
- 3-930-070-01 INDIVIDUAL CARTON (929)
- 3-930-071-01 INDIVIDUAL CARTON (939: Canadian)
- 3-930-072-01 INDIVIDUAL CARTON (939: AEP, UK)
- 3-930-074-01 INDIVIDUAL CARTON (939: Australian)
- 3-930-075-01 INDIVIDUAL CARTON (939: E)

HARDWARE LIST

- #1 7-623-508-01 LUG, 3
- #2 7-685-104-19 SCREW +P 2X6 TYPE2 NON-SLIT
- #3 7-685-646-79 SCREW +BVTP 3X8 TYPE2 N-S
- #4 7-685-647-79 SCREW +BVTP 3X10 TYPE2 N-S
- #5 7-621-255-25 SCREW +PTT 2X4 (S)

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
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9-960-332-11
(Including 9-960-332-81)

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