

TCM-20DV/21DV/ 22DV/23DV

SERVICE MANUAL

Ver 1.1 2000.11
With SUPPLEMENT-1
(9-927-668-81)



Photo: TCM-20DV

US Model
TCM-20DV/21DV/22DV/23DV

Canadian Model
TCM-20DV/22DV

AEP Model
TCM-20DV/21DV

E Model
TCM-20DV/23DV

Chinese Model
TCM-20DV

Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MT-20DV-118

SPECIFICATIONS

Supplied accessories

The instructions in this manual are for 4 models.
The TCM-20DV is the model used for illustration purposes.

TCM-	23DV	22DV	21DV	20DV
AC power adaptor (1)	—	○	—	—
Battery charger adaptor (1)	—	○	—	—
Rechargeable batteries (2) (NC-AA, 1.2V, 700mAh, Ni-Cd)	—	○	—	—
Cassette tape C-90 (1)	—	—	○	—
Battery LR6 (2)	—	—	○	—
Monaural microphone (1)	—	—	○	—
Super-directional microphone (1)	○	—	—	—
Carrying pouch (1)	—	—	○	—
Hand strap (1) (attached to the unit)	○	○	○	○

Battery life (Approx. hours) (EIAJ*)

	Playback	Recording
Sony alkaline LR6 (SG)	11	11
Sony R6P (SR)	3	3
Sony rechargeable battery (NC-AA) fully charged (TCM- 22DV only)	3	3

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

Note

The battery life may shorten depending on the operation of the unit.

For maximum performance we recommend that you use alkaline batteries.

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. +30% to -15% (with REC TIME switch at "NORMAL")

Power requirements

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

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

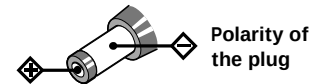
Approx. 112 × 36.6 × 90.3 mm
(4 1/2 × 1 1/2 × 3 3/4 in.)

Mass

Approx. 175 g (6.2 oz.)

House Current (see Fig. A-Ⓢ)

Connect the AC power adaptor to DC IN 3V and to a wall outlet. The AC power adaptor is supplied only with the TCM-22DV. For other models, use the AC-E30HG AC power adaptor (not supplied). Do not use any other AC power adaptor.



Note

Specifications for AC-E30HG vary for each area. Check your local voltage and the shape of the plug before purchasing.

Design and specifications are subject to change without notice.

CASSETTE-CORDER

SONY®

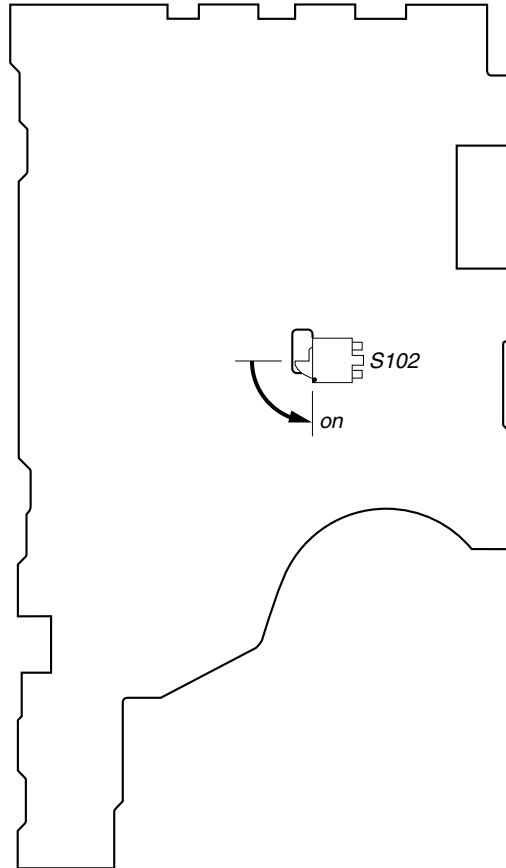
SECTION 1 SERVICING NOTES

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In this set, the S102 (POWER) detects REC/PLAYBACK on. It is mounted on the MAIN board, and therefore the REC/PLAYBACK on cannot be detected with the MAIN board removed. When making an operation check and voltage check of mechanical deck with the MAIN board removed, fix the S102 at turn on.

– MAIN BOARD (Conductor Side) –



SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK $\triangle$ OR DOTTED LINE WITH MARK $\triangle$ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE $\triangle$ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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.

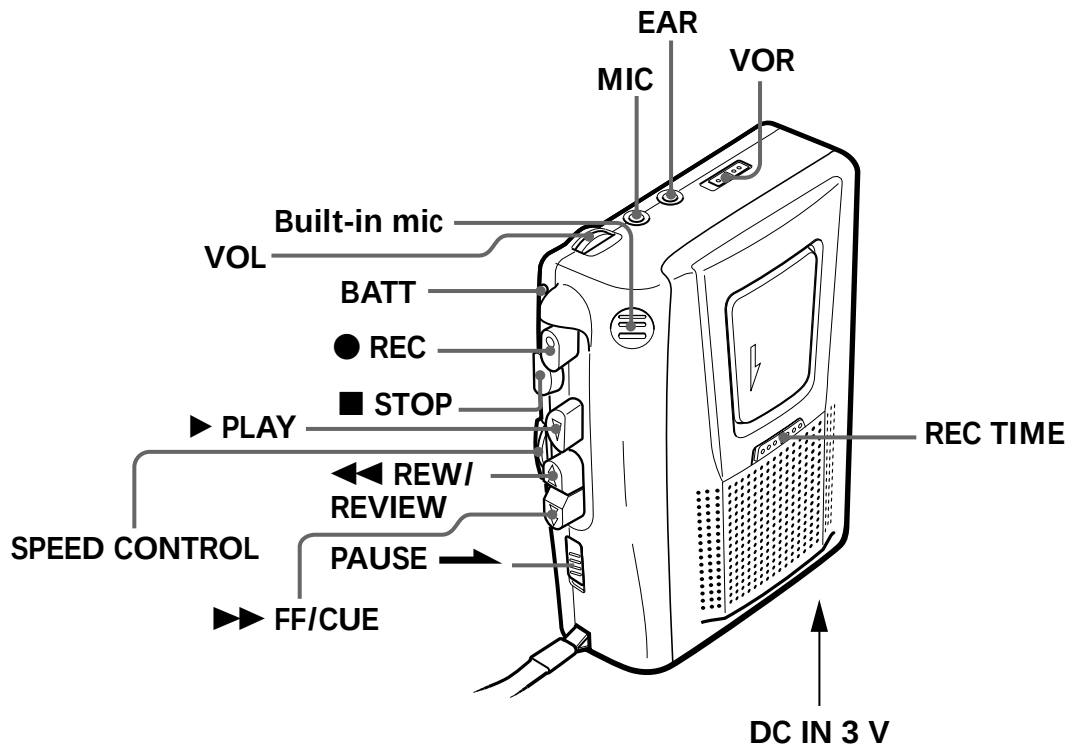
Notes on chip component replacement

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

SECTION 2 GENERAL

This section is extracted from instruction manual.

• Location of Controls



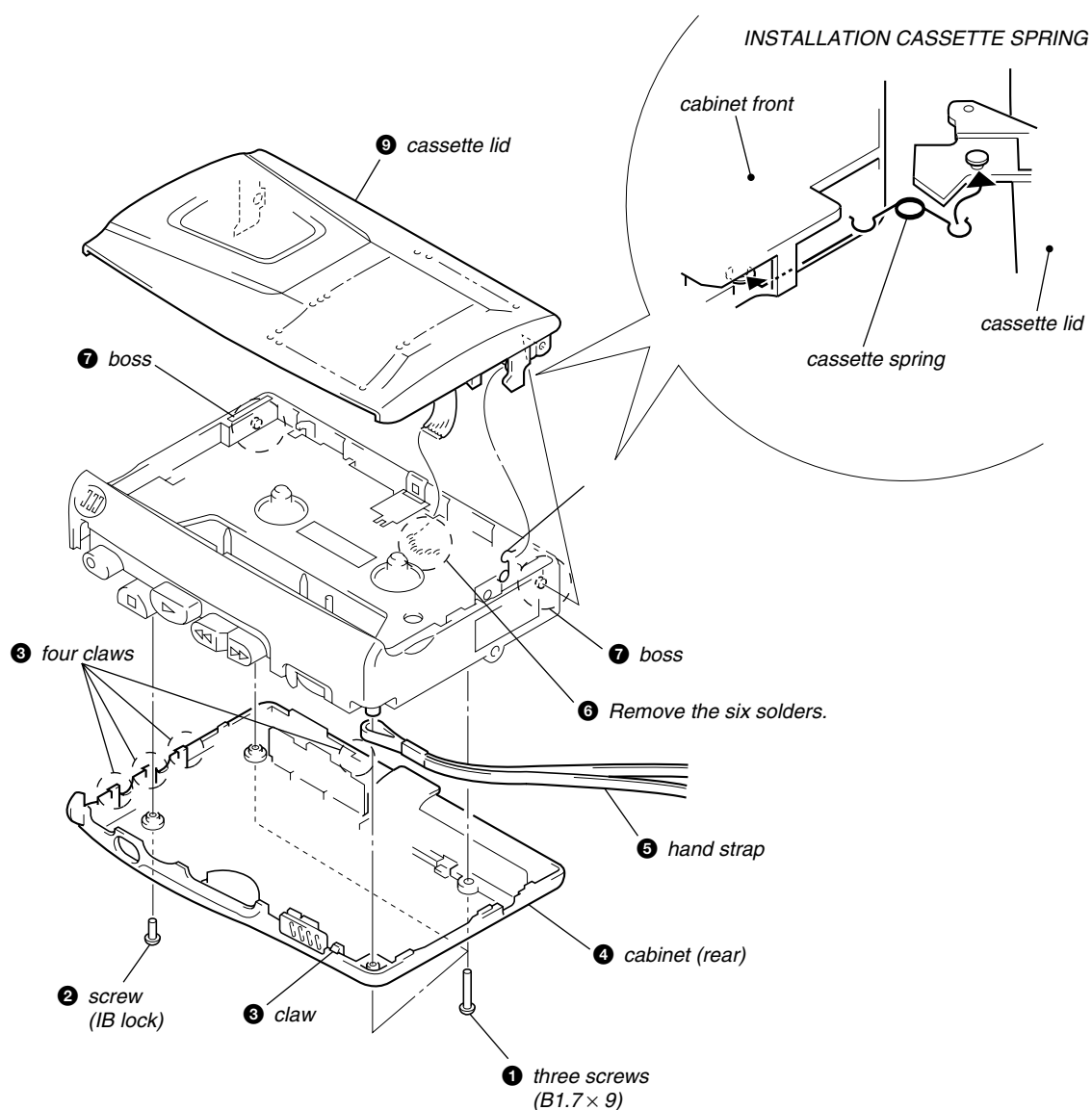
SECTION 3 DISASSEMBLY

- This set can be disassembled in the order shown below.

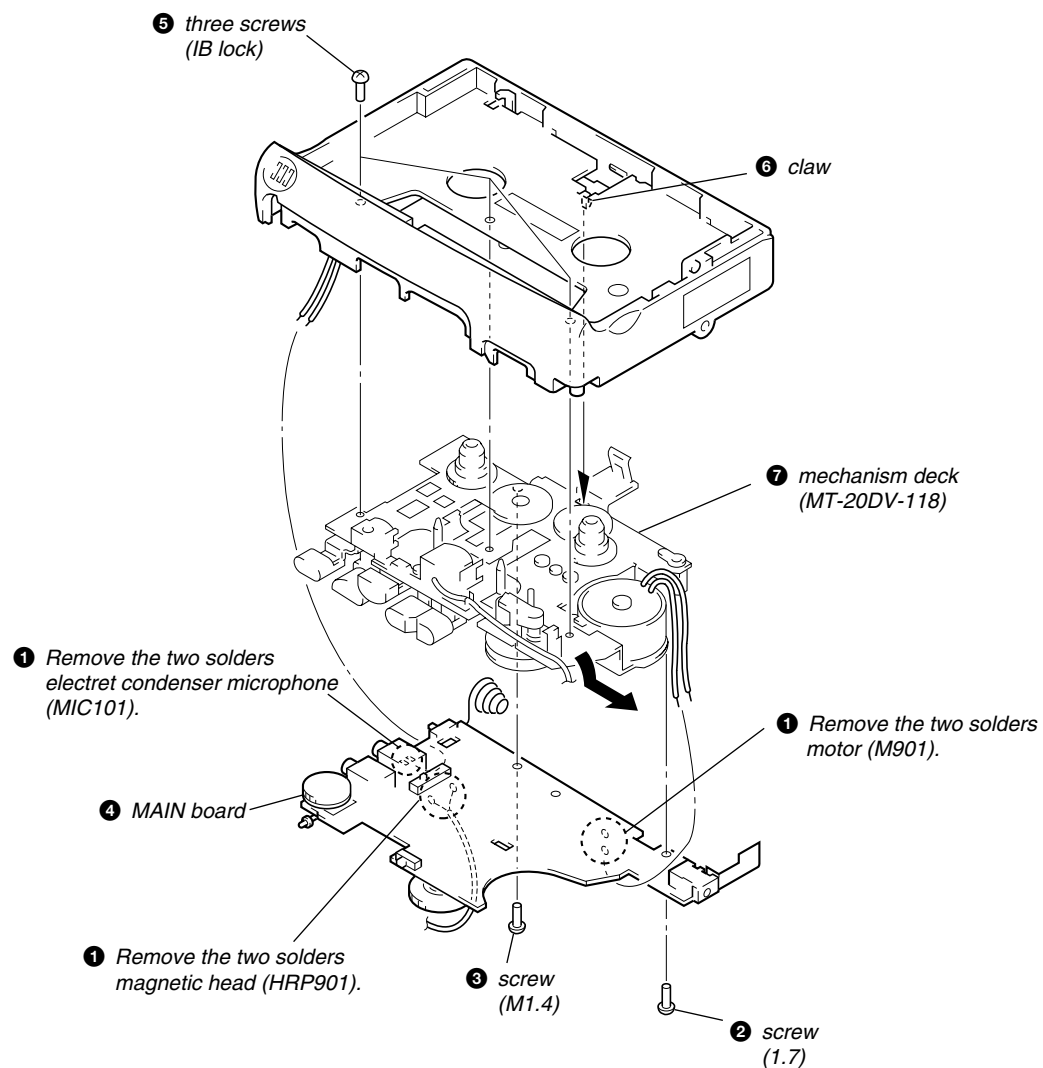
SET ➡ CABINET (REAR), CASSETTE LID ➡ MAIN BOARD, MECHANISM DECK (MT-20DV-118) ➡ BELT

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

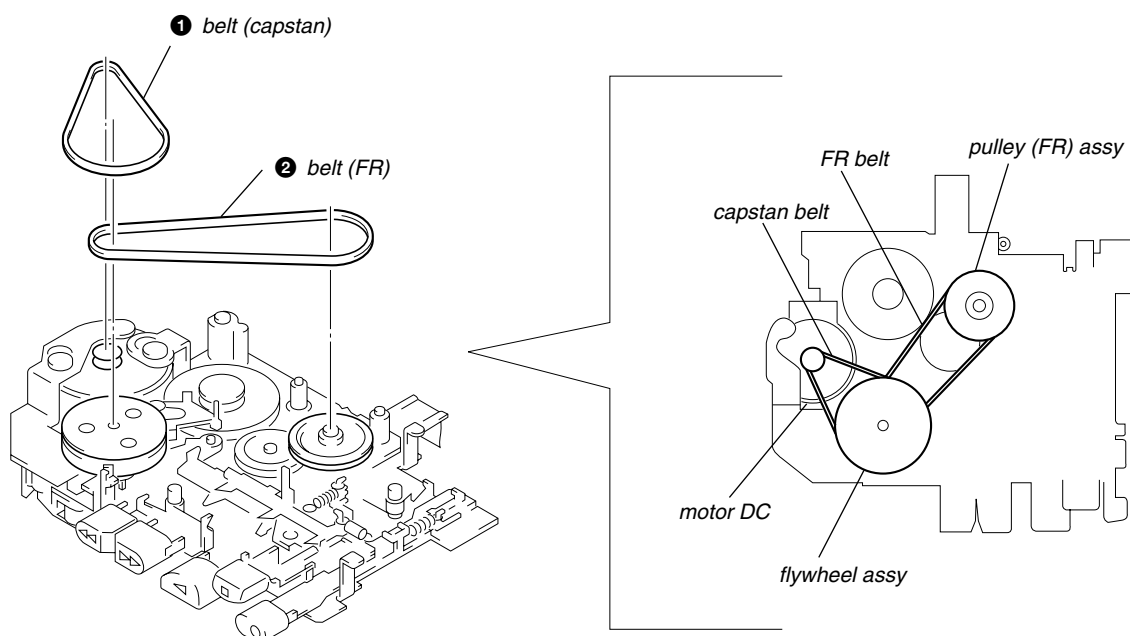
CABINET (REAR), CASSETTE LID



MAIN BOARD, MECHANISM DECK (MT-20DV-118)

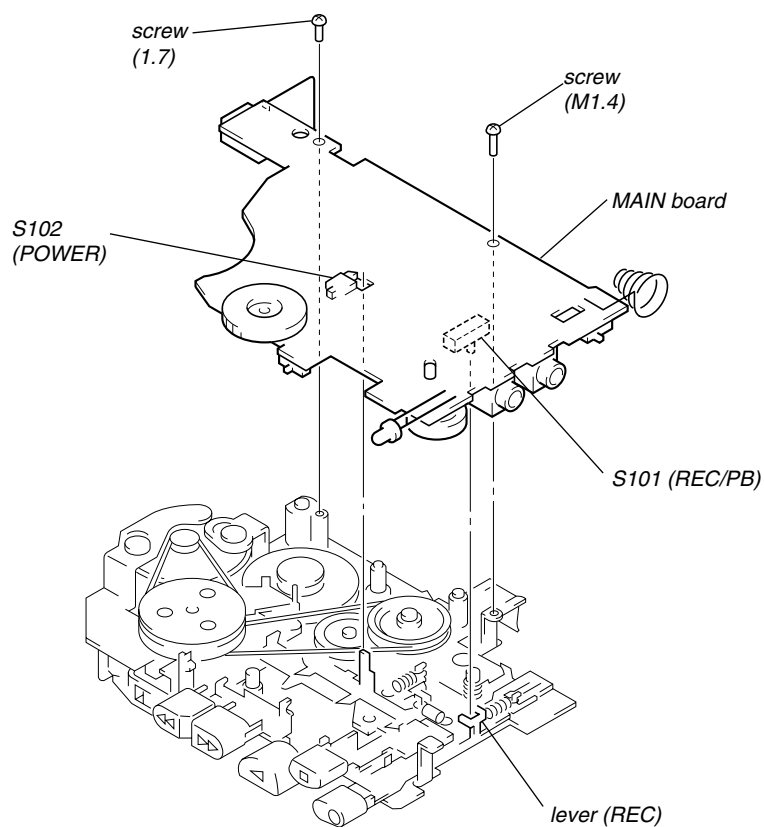


BELT



INSTALLATION MAIN BOARD

On installation MAIN board, adjust to the S101 and the S102.



SECTION 4

MECHANICAL ADJUSTMENTS

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

record/playback head	pinch roller
erase head	rubber belt
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

Mode	Torque Meter	Meter Reading
FWD	CQ-102C	2.16 - 4.7 mN•m (22 - 48 g•cm) (0.31 - 0.67 oz•inch)
FWD Back Tension		0.05 - 0.29 mN•m (0.5 - 3 g•cm) (0.007 - 0.04 oz•inch)
FF	CQ-201B	4.90 mN•m (more than 50 g•cm)
REW		(more than 0.69 oz•inch)

Tape Tension Measurement

Mode	Torque Meter	Meter Reading
FWD	CQ-403C	4.90 mN•m (more than 50 g) (more than 1.76 oz)

SECTION 5 ELECTRICAL ADJUSTMENTS

Setting:

- Supplied voltage: 2.5 V
- Switch and control position
VOL  control (RV101) : mechanical center
PAUSE  switch (S105) : OFF
SPEED CONTROL (RV602): center click
VOR switch (S104) : OFF

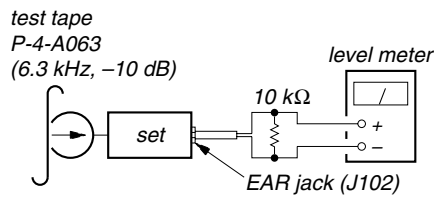
Test Tape

Type	Signal	Used for
P-4-A063	6.3 kHz, -10 dB	Head Azimuth Adjustment
WS-48A	3 kHz, 0 dB	Tape Speed Adjustment

0 dB=0.775 V

Record/Playback Head Azimuth Adjustment

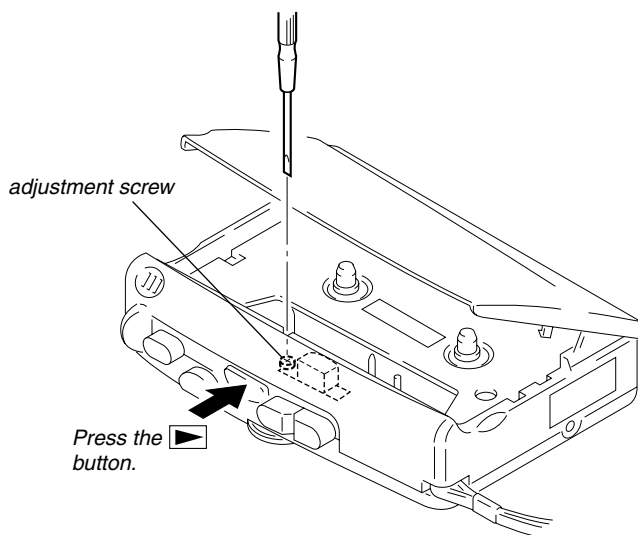
Mode: playback



Procedure:

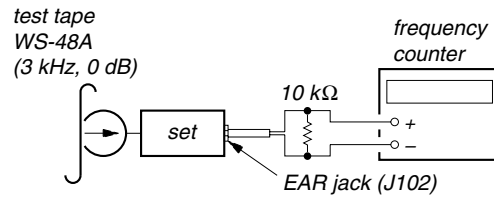
- Turn the adjustment screw to obtain the maximum reading on level meter.
Note: Several peaks may appear, but take the maximum.
- After the adjustment, lock the adjustment screw with suitable locking compound.

Adjustment Location:



Tape Speed Adjustment

Mode: playback



Procedure:

– Normal Speed –

- Set **REC TIME** switch (S601) to NORMAL (4.8 cm/s) position, and playback the tape (WS-48A) .
- Adjust RV601 so that frequency counter reading becomes 3,040 Hz.

Specification values: 3,030 to 3,050 Hz

– Double Speed –

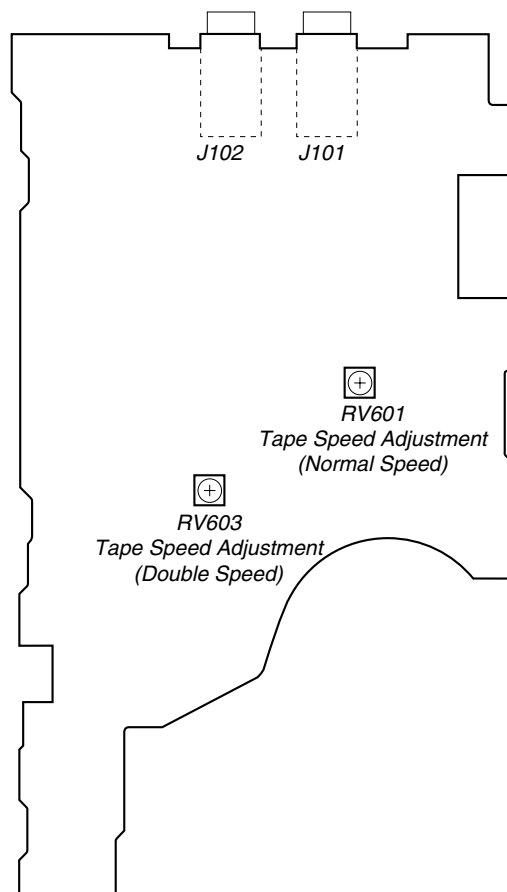
- Set **REC TIME** switch (S601) to DOUBLE (2.4 cm/s) position.
- Playback the tape from the beginning for two minutes, then adjust RV603 so that frequency counter reading becomes 1,540 Hz.

Specification values: 1,535 to 1,545 Hz

Confirm that deflection of the frequency counter reading between the beginning and the end of tape is within 1% (NORMAL: approx. 30.4 Hz, DOUBLE: approx. 15.4 Hz) .

Adjustment Location:

– MAIN BOARD (Conductor Side) –



• SIGNAL PATH
 ▷ : PLAY
 ▷ : RECORD

J101 MIC (PLUG IN POWER)

MIC101 MIC

Q101 AGC CONTROL

S101 (REC/PB) PB

REC

S101 (4/6)

HRP901 (REC/PB)

HE901 (ERASE)

S101 (1/6)

VREF

MIC AMP, REC/PB EQ AMP IC101 (1/3)

MIC IN

EQ IN

PRE OUT

PRE NF

ALC CONT

ALC

REC OUT

REC IN

REC B+

Q104 PB EQ SWITCH

RV101 VOL

Q102 BUFFER

S101 (2/6) (REC/PB) PB

REC

POWER AMP, VOR CONTROL, REGULATOR IC101 (2/3)

POW IN

POW OUT 1

POW OUT 2

VOR DELAY

VOX

S104 VOR

H L OFF

REC B+

Q105 VOR OFF SWITCH

Q111 VOR ON SWITCH

REC B+

R/P SW

REC/PB

LED DRIVE

PAUSE

PAUSE

S105 PAUSE

OFF ON

D101 BATT

POWER ON B+

Q106 REC/PB MONITOR LEVEL SWITCHING

PB B+

Q112 SWITCHING

PB B+

MUTE

MUTE

MUTE SWITCH Q109, 110

REC B+

PB B+

S101 (5/6) (REC/PB) PB

PB B+

REC B+

VREF

REFERENCE VOLTAGE MUTE SWITCH Q107, 108

REGULATOR

REFERENCE VOLTAGE GENERATOR

RIPPLE FILTER

VCC

POWER ON B+

BATTERY B+

S102 (POWER)

CN101 DC IN 3V

DRY BATTERY SIZE "AA" (IEC DESIGNATION R6) 2PCS. 3V

POWER ON B+

THP601

S601-2 REC TIME

DOUBLE NORMAL

POWER ON B+

RV601 TAPE SPEED (NORMAL SPEED)

RV602 SPEED CONTROL

THP602

RV601

S601-1 REC TIME

DOUBLE NORMAL

RV603 TAPE SPEED (DOUBLE SPEED)

GVN VREF

GVN CONT

GVN OUT

MOTOR DRIVER

VCC B+

M901 (CAPSTAN/REEL)

VS

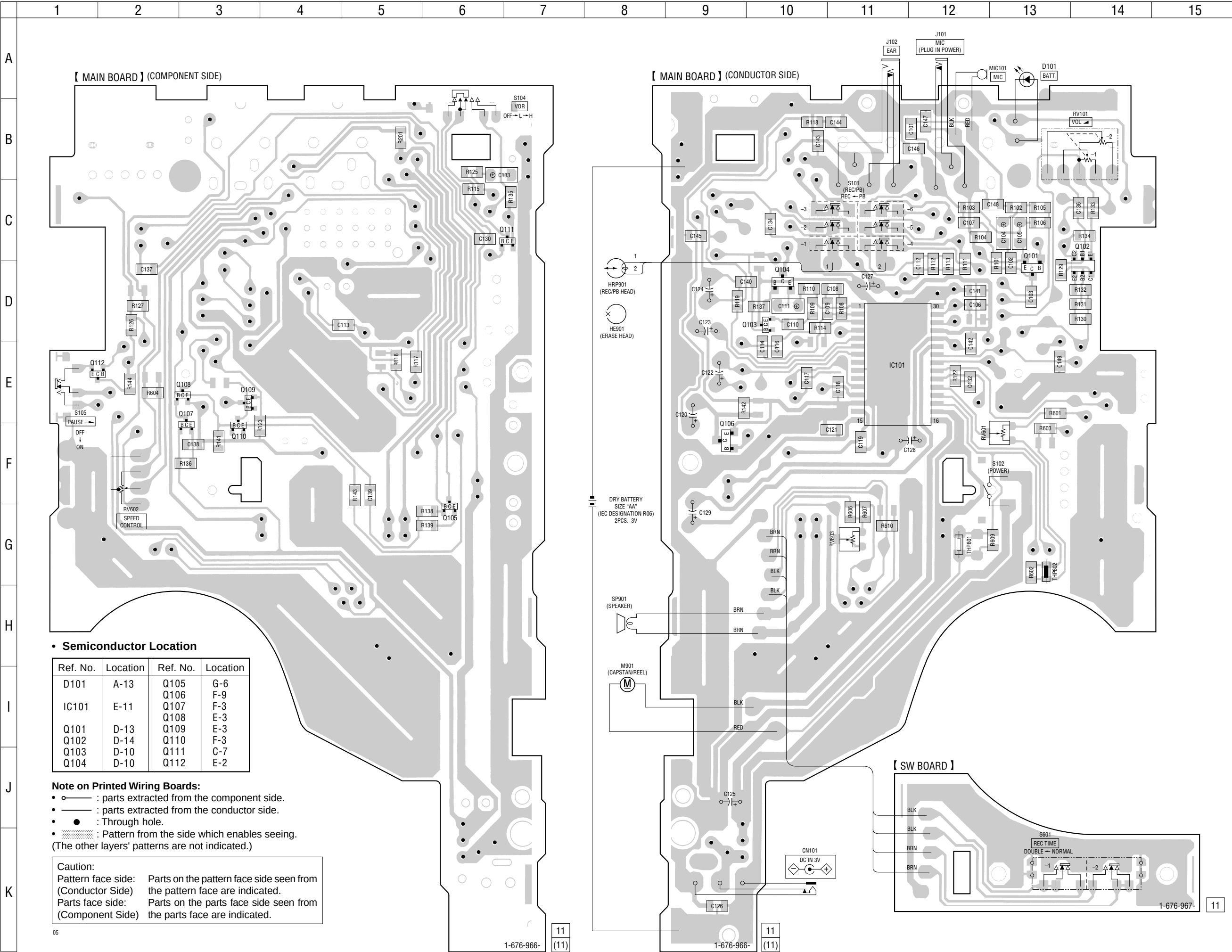
18

19

20

16

6-2. PRINTED WIRING BOARDS

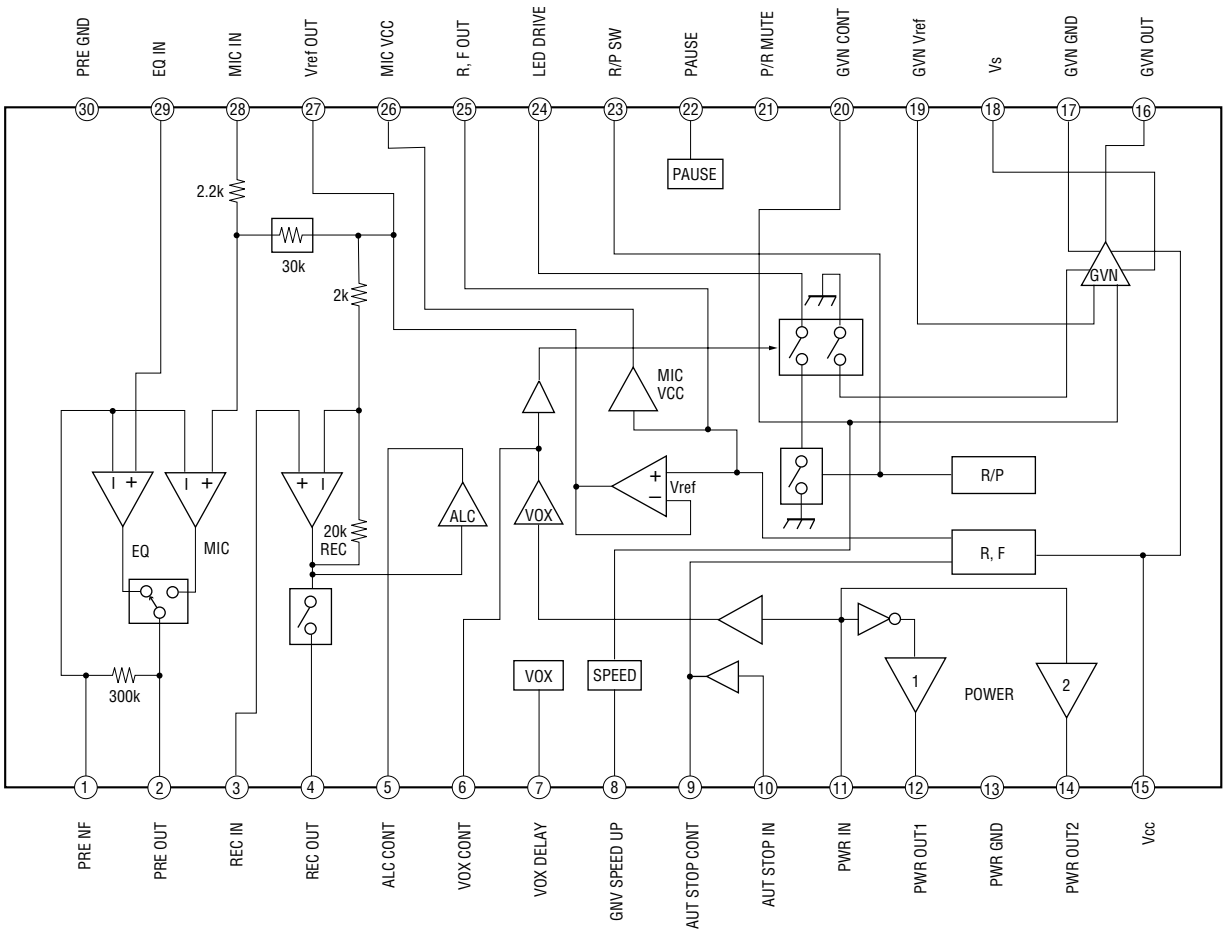




- Voltages are dc with respect to ground under no-signal conditions.
no mark : PLAY
< : RECORD
- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Signal path.
 : PLAY
 : RECORD

• IC Block Diagram

IC101 LA4168ML-TE-L



SECTION 7
EXPLODED VIEWS

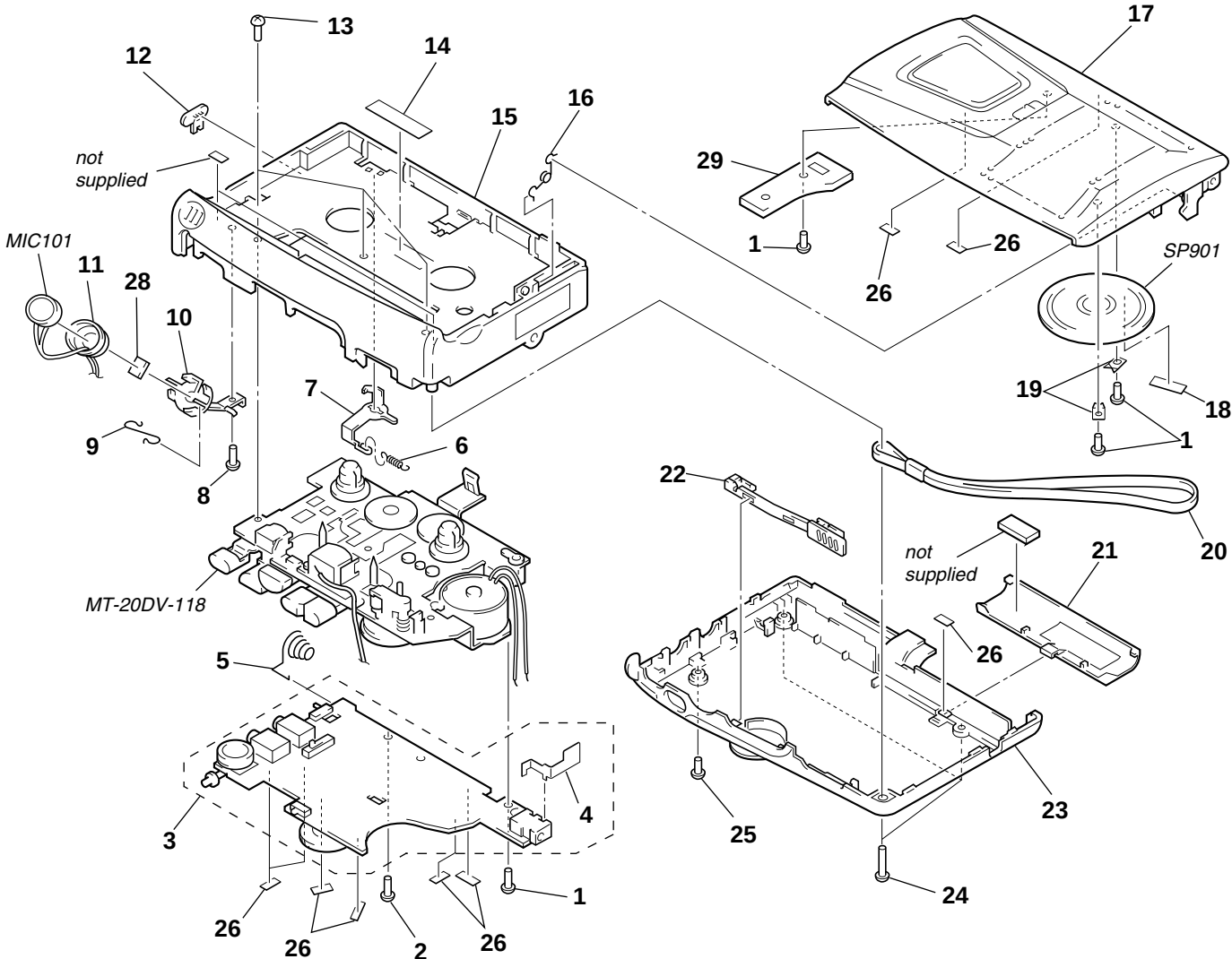
NOTE:

- -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

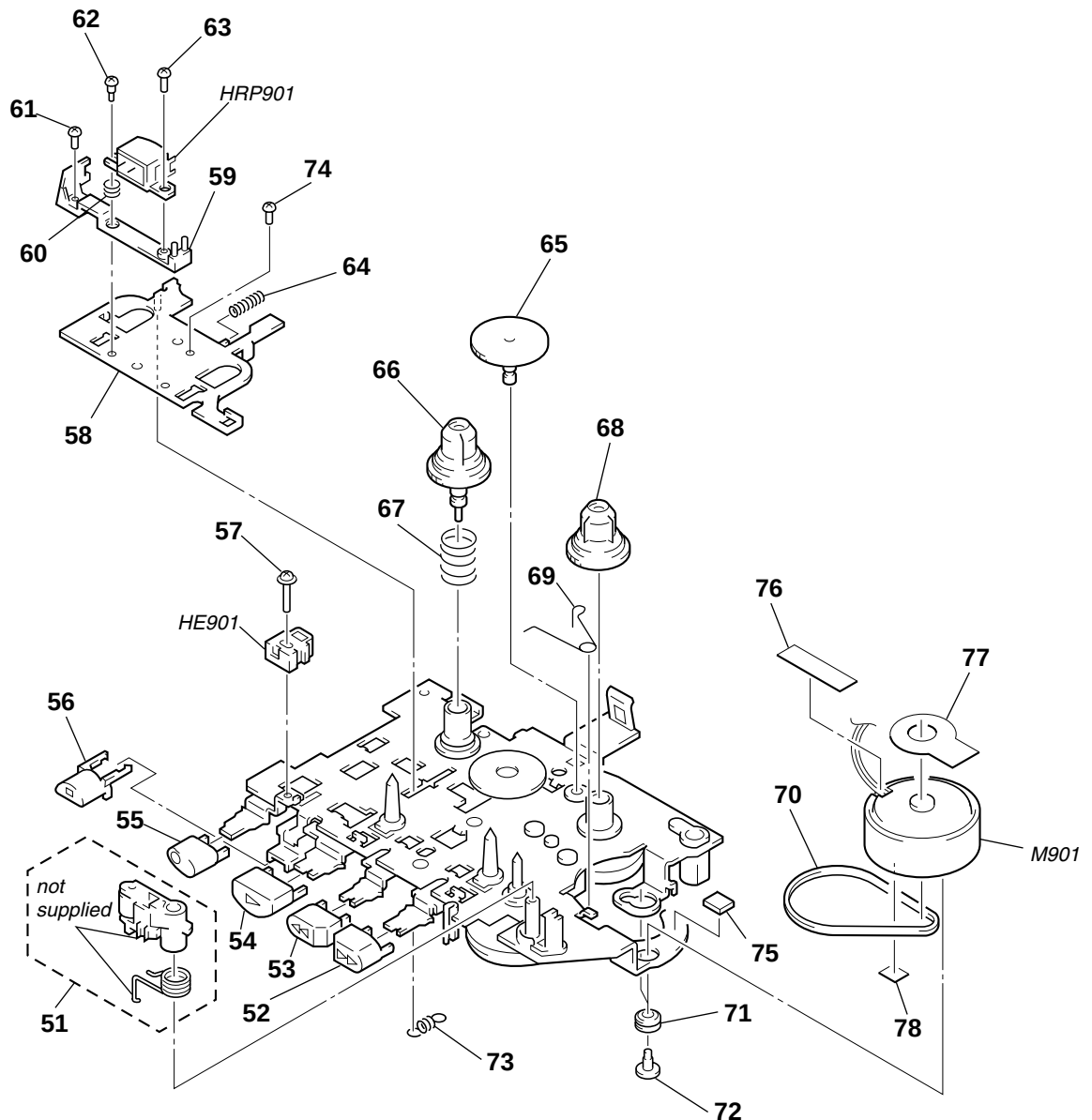
- Abbreviation
1E: No indication of country of origin

(1) CABINET SECTION



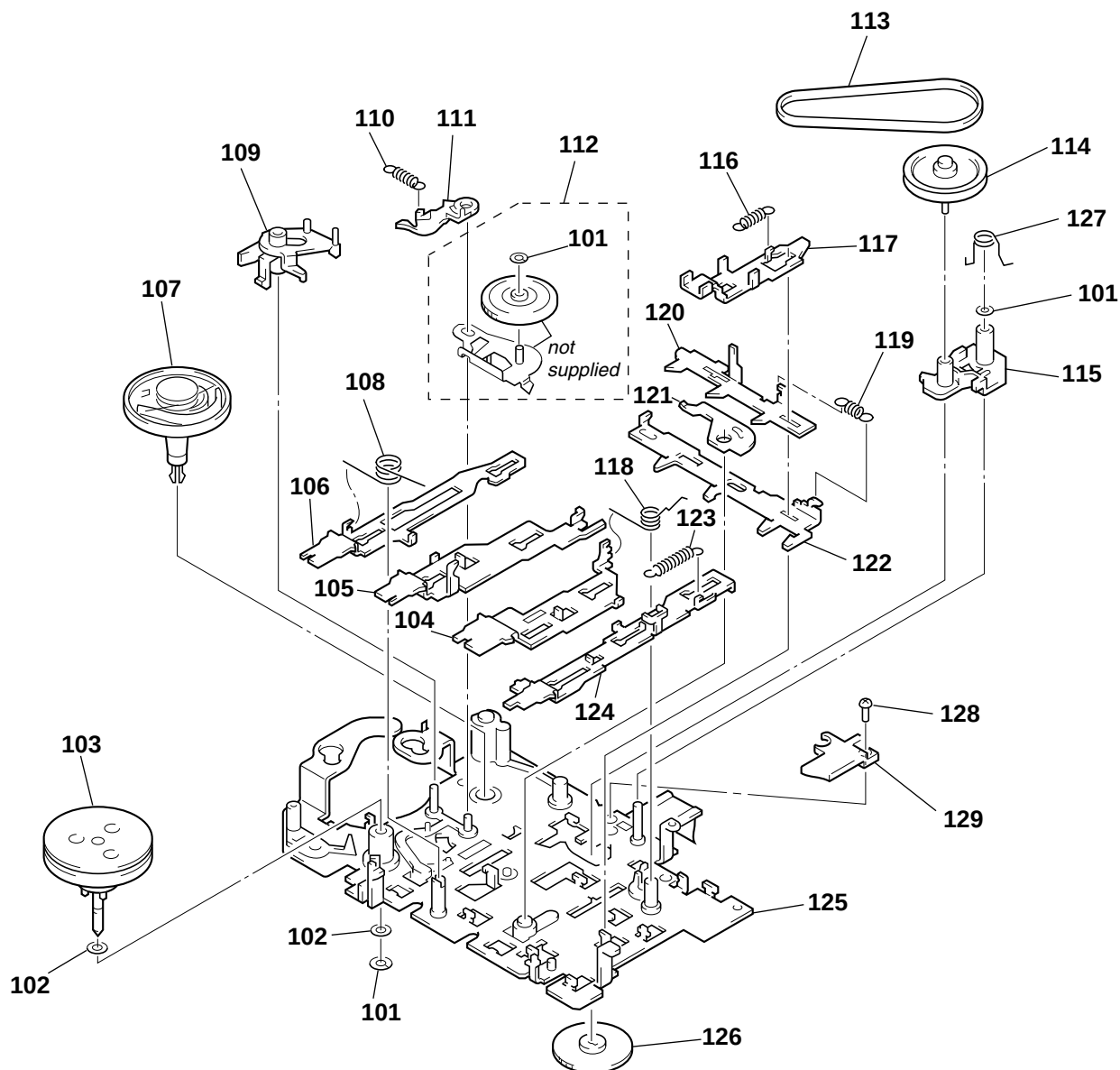
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	3-318-382-31	SCREW (1.7), TAPPING		16	3-924-739-01	SPRING, CASSETTE	
2	3-345-648-01	SCREW (M1.4), TOOTHED LOCK		17	X-4952-666-1	LID ASSY, CASSETTE	
* 3	A-3021-314-A	MAIN BOARD, COMPLETE		18	4-017-441-01	CUSHION (B)	
4	3-924-741-01	TERMINAL, PLUS		* 19	3-924-757-01	BRACKET (SPEAKER)	
5	3-936-973-01	TERMINAL, MINUS		20	3-328-319-01	STRAP, HAND	
6	3-924-744-01	SPRING (CLAW DETECTION), TENSION		21	3-924-749-21	LID, BATTERY CASE	
7	3-924-743-01	CLAW, ERASING PROTECTION		22	3-924-747-21	KNOB (PAUSE)	
8	3-334-565-41	SCREW (B1.7), TAPPING		23	3-019-597-11	CABINET (REAR)	
9	3-924-745-01	BAR, GROUND		24	3-318-203-92	SCREW (B1.7X9), TAPPING	
10	3-924-740-01	HOLDER, MICROPHONE		25	3-366-890-51	SCREW (IB LOCK)	
11	3-924-763-01	CUSHION (MICROPHONE)		26	3-831-441-99	CUSHION	
12	3-924-742-21	KNOB (VOR)		28	3-831-441-11	CUSHION, CABINET UPPER 10X7X0.5	
13	3-939-590-26	SCREW (IB LOCK)		* 29	1-676-967-11	SW BOARD	
14	3-578-101-31	PLATE, ORNAMENTAL		SP901	1-505-838-11	SPEAKER (3.6cm)	
15	3-019-364-33	CABINET (FRONT) (20DV: 1E/23DV: 1E)		MIC101	1-542-136-11	MICROPHONE, ELECTRET CONDENSER	
15	3-019-364-43	CABINET (FRONT) (20DV: 1E/23DV: 1E)					

(2) MECHANISM DECK SECTION-1
(MT-20DV-118)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-3377-250-1	LEVER, (2) ASSY, PINCH		67	3-924-674-01	SPRING (B. T), COMPRESSION	
52	3-925-146-01	BUTTON (FF) (▶▶)		68	3-924-641-01	GEAR (T REEL)	
53	3-925-147-01	BUTTON (REW) (◀◀)		69	3-924-726-01	SPRING (M GROUND), TORSION	
54	3-925-148-01	BUTTON (PLAY) (▶)		70	3-907-943-01	BELT (CAPSTAN)	
55	3-925-145-01	BUTTON (REC) (●)		71	3-925-109-01	CUSHION (MOTOR)	
56	3-924-738-01	BUTTON (STOP) (■)		72	3-925-108-01	SCREW (MOTOR)	
57	3-703-925-21	SCREW (M1.4)		73	3-924-644-01	SPRING (POWER TENSION), TENSION	
58	3-924-625-01	LEVER (HEAD)		74	3-348-160-11	SCREW (M1.4X1.6), PRECISION PAN	
59	3-924-645-01	BRACKET (HEAD)		75	3-927-754-11	CUSHION (M)	
60	3-924-685-01	SPRING (AZIMUTH), COMPRESSION		76	3-831-441-99	CUSHION	
61	3-704-197-91	SCREW (M1.4X1.8), LOCKING		77	3-030-766-12	SHEET (MOTOR)	
62	3-375-135-01	SCREW (1.4), SPECIAL		78	3-561-685-01	SHEET (C), INSULATING	
63	3-376-177-01	SCREW (M1.4X3.8)		HE901	1-500-515-11	HEAD, MAGNETIC (ERASE)	
64	3-925-107-01	SPRING (IDLER), COMPRESSION		HRP901	1-500-073-51	HEAD, MAGNETIC (RECORD/PLAYBACK)	
65	3-924-637-01	GEAR (FF)		M901	1-763-453-21	MOTOR, DC (CAPSTAN/REEL) (WITH PULLEY)	
66	3-924-673-01	GEAR (S REEL)					

(3) MECHANISM DECK SECTION-2
(MT-20DV-118)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	3-321-483-11	RING, RETAINING (0.25)		116	3-924-633-01	SPRING (STOP), TENSION	
102	3-315-495-31	WASHER		117	3-924-622-01	LEVER (STOP)	
103	X-3370-384-1	FLYWHEEL ASSY		118	3-924-643-01	SPRING (PR), TORSION	
104	3-924-623-01	LEVER (PLAY)		119	3-924-684-01	SPRING (LOCK PLATE), TENSION	
105	3-924-621-01	LEVER (REW)		120	3-924-619-01	LEVER (SW)	
106	3-924-620-01	LEVER (FF)		121	3-924-639-01	LEVER (CR)	
107	X-3370-388-1	TABLE ASSY, FELT		122	3-924-618-01	LEVER (LOCK)	
108	3-924-642-01	SPRING (FR), TORSION		123	3-925-208-01	SPRING (REC), TENSION	
109	3-924-629-01	LEVER (DETECTION)		124	3-924-624-01	LEVER (REC)	
110	3-925-207-01	SPRING (S. OFF), TENSION		125	X-3372-155-1	CHASSIS ASSY	
111	3-924-630-01	LEVER (S.OFF)		126	3-924-613-01	GEAR (FR)	
112	X-3370-387-1	LEVER ASSY, IDLER		127	3-024-378-01	SPRING (FR LEVER), TORSION	
113	3-924-682-01	BELT (FR)		128	3-939-590-26	SCREW (IB LOCK)	
114	X-3370-385-1	PULLEY (FR) ASSY		129	3-029-566-12	STOPPER (FF)	
115	3-924-628-01	LEVER (FR)					

SECTION 8 ELECTRICAL PARTS LIST

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
- Abbreviation
1E: No indication of country of origin

- 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

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.

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

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
*	A-3021-314-A	MAIN BOARD, COMPLETE					C142	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
		*****					C143	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
	3-924-741-01	TERMINAL, PLUS					C144	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
		< CAPACITOR >					C145	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C101	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V		C146	1-163-251-11	CERAMIC CHIP	100PF	5%	50V	
C102	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V		C147	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C103	1-109-982-11	CERAMIC CHIP	1uF	10%	10V		C148	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V	
C104	1-135-201-11	TANTALUM CHIP	10uF	20%	4V		C149	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C105	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	< CONNECTOR >							
C106	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	CN101	1-580-919-11	JACK, DC (POLARITY UNIFIED TYPE)	(DC IN 3V)				
C107	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V								
C108	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V			< DIODE >					
C109	1-163-001-11	CERAMIC CHIP	220PF	10%	50V	D101	8-719-057-27	LED L-132XHD (BATT)					
C110	1-109-982-11	CERAMIC CHIP	1uF	10%	10V				< IC >				
C111	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V	IC101	8-759-492-49	IC LA4168ML-TE-L					
C112	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V				< JACK >				
C113	1-164-005-11	CERAMIC CHIP	0.47uF		25V	J101	1-766-847-12	JACK (MIC PLUG IN POWER)					
C114	1-164-346-11	CERAMIC CHIP	1uF		16V				J102	1-766-847-12	JACK (EAR)		
C116	1-164-346-11	CERAMIC CHIP	1uF		16V			< TRANSISTOR >					
C117	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	Q101	8-729-800-37	TRANSISTOR	2SD1048-X7				
C118	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V				Q102	8-729-402-84	TRANSISTOR	XN4601	
C119	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V	Q103	8-729-420-50	TRANSISTOR	UN5215				
C120	1-126-153-11	ELECT	22uF	20%	6.3V	Q104	8-729-230-72	TRANSISTOR	2SA1362YG				
C121	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	Q105	8-729-230-63	TRANSISTOR	2SC4116-YG				
C122	1-126-153-11	ELECT	22uF	20%	6.3V	Q106	8-729-800-37	TRANSISTOR	2SD1048-X7				
C123	1-124-257-00	ELECT	2.2uF	20%	50V	Q107	8-729-420-53	TRANSISTOR	UN5115				
C124	1-124-259-11	ELECT	4.7uF	20%	16V	Q108	8-729-402-93	TRANSISTOR	UN5214-TX				
C125	1-124-434-00	ELECT	220uF	20%	4V	Q109	8-729-420-53	TRANSISTOR	UN5115				
C126	1-164-346-11	CERAMIC CHIP	1uF		16V	Q110	8-729-420-50	TRANSISTOR	UN5215				
C127	1-124-434-00	ELECT	220uF	20%	4V	Q111	8-729-402-93	TRANSISTOR	UN5214-TX				
C128	1-124-433-00	ELECT	100uF	20%	4V	Q112	8-729-420-50	TRANSISTOR	UN5215				
C129	1-126-153-11	ELECT	22uF	20%	6.3V			< RESISTOR >					
C130	1-163-038-00	CERAMIC CHIP	0.1uF		25V	R101	1-216-065-00	RES-CHIP	4.7K	5%	1/10W		
C132	1-164-346-11	CERAMIC CHIP	1uF		16V	R102	1-216-053-00	METAL CHIP	1.5K	5%	1/10W		
C133	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V	R103	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		
C134	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V	R104	1-216-073-00	METAL CHIP	10K	5%	1/10W		
C136	1-164-346-11	CERAMIC CHIP	1uF		16V								
C137	1-164-346-11	CERAMIC CHIP	1uF		16V								
C138	1-164-346-11	CERAMIC CHIP	1uF		16V								
C139	1-164-505-11	CERAMIC CHIP	2.2uF		16V								
C140	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V								
C141	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V								

TCM-20DV/21DV/22DV/23DV

MAIN

SW

Ref. No.	Part No.	Description			Remark
R105	1-216-049-11	RES-CHIP	1K	5%	1/10W
R106	1-216-049-11	RES-CHIP	1K	5%	1/10W
R108	1-216-085-00	METAL CHIP	33K	5%	1/10W
R109	1-216-037-00	METAL CHIP	330	5%	1/10W
R110	1-216-037-00	METAL CHIP	330	5%	1/10W
R111	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R112	1-216-073-00	METAL CHIP	10K	5%	1/10W
R113	1-216-089-00	RES-CHIP	47K	5%	1/10W
R114	1-216-081-00	METAL CHIP	22K	5%	1/10W
R115	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R116	1-216-089-00	RES-CHIP	47K	5%	1/10W
R117	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R118	1-216-009-00	RES-CHIP	22	5%	1/10W
R119	1-216-121-00	RES-CHIP	1M	5%	1/10W
R122	1-216-081-00	METAL CHIP	22K	5%	1/10W
R123	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R125	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R126	1-216-033-00	METAL CHIP	220	5%	1/10W
R127	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R129	1-216-097-00	RES-CHIP	100K	5%	1/10W
R130	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R131	1-216-077-00	RES-CHIP	15K	5%	1/10W
R132	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R133	1-216-045-00	METAL CHIP	680	5%	1/10W
R134	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R135	1-216-105-00	RES-CHIP	220K	5%	1/10W
R136	1-216-097-00	RES-CHIP	100K	5%	1/10W
R137	1-216-073-00	METAL CHIP	10K	5%	1/10W
R138	1-216-097-00	RES-CHIP	100K	5%	1/10W
R139	1-216-105-00	RES-CHIP	220K	5%	1/10W
R141	1-216-073-00	METAL CHIP	10K	5%	1/10W
R142	1-216-025-00	RES-CHIP	100	5%	1/10W
R143	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R144	1-216-017-00	RES-CHIP	47	5%	1/10W
R201	1-216-009-00	RES-CHIP	22	5%	1/10W
R601	1-216-081-00	METAL CHIP	22K	5%	1/10W
R602	1-216-049-11	RES-CHIP	1K	5%	1/10W
R603	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R604	1-216-077-00	RES-CHIP	15K	5%	1/10W
R606	1-216-097-00	RES-CHIP	100K	5%	1/10W
R607	1-216-081-00	METAL CHIP	22K	5%	1/10W
R609	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R610	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
< VARIABLE RESISTOR >					
RV101	1-227-166-11	RES, VAR, CARBON (VOL ▲)			
RV601	1-223-583-11	RES, ADJ, CARBON 1K			
RV602	1-225-598-11	RES, VAR, CARBON 2K (SPEED CONTROL)			
RV603	1-223-587-11	RES, ADJ, CARBON 22K			
< SWITCH >					
S101	1-771-321-11	SWITCH, SLIDE (REC/PB)			
S102	1-572-688-11	SWITCH, PUSH (1 KEY) (POWER)			
S104	1-692-605-31	SWITCH, SLIDE (VOR)			
S105	1-572-922-11	SWITCH, SLIDE (PAUSE ►)			

Ref. No.	Part No.	Description	Remark
< THERMISTOR >			
THP601	1-810-007-11	THERMISTOR, POSITIVE	
THP602	1-809-350-21	THERMISTOR, NTC (2125)	

*	1-676-967-11	SW BOARD	*****
< SWITCH >			
S601	1-571-277-51	SWITCH, SLIDE (REC TIME)	*****

MISCELLANEOUS			

HE901	1-500-515-11	HEAD, MAGNETIC (ERASE)	
HRP901	1-500-073-51	HEAD, MAGNETIC (RECORD/PLAYBACK)	
M901	1-763-453-21	MOTOR, DC (CAPSTAN/REEL) (WITH PULLEY)	
MIC101	1-542-136-11	MICROPHONE, ELECTRET CONDENSER (MIC)	
SP901	1-505-838-11	SPEAKER (3.6cm)	

ACCESSORIES & PACKING MATERIALS			

△	1-528-405-31	ADAPTOR, BATTERY CHARGE	(BCA-35E) (22DV)
	1-542-307-11	MICROPHONE (ECM-J2SL)	(21DV)
△	1-693-073-21	ADAPTOR, AC (AC-E350)	(22DV)
	1-756-035-31	BATTERY PACK (NC-WMAA)	(22DV)
	3-044-622-01	POUCH, CARRYING	(21DV)
	3-868-083-11	MANUAL, INSTRUCTION	(ENGLISH, FRENCH, SPANISH) (US, Canadian)
	3-868-083-21	MANUAL, INSTRUCTION	(ENGLISH, SPANISH, PORTUGUESE) (E)
	3-868-083-31	MANUAL, INSTRUCTION	(GERMAN, ITALIAN, HUNGARIAN) (21DV: E)
	3-868-083-41	MANUAL, INSTRUCTION	(FRENCH, GERMAN, ITALIAN) (20DV: E)
	3-868-083-51	MANUAL, INSTRUCTION	(DUTCH, SWEDISH, FINNISH) (20DV: E)
	3-868-083-61	MANUAL, INSTRUCTION (POLISH, CZECH,	SLOVAKIAN) (20DV: EE/21DV: E)
	3-868-083-71	MANUAL, INSTRUCTION (ENGLISH, CHINESE)	(20DV: 1E/23DV: 1E)
	3-868-083-81	MANUAL, INSTRUCTION (ENGLISH, CHINESE)	(20DV: CHINESE)
	3-868-083-91	MANUAL, INSTRUCTION	(ENGLISH, RUSSIAN, HUNGARIAN) (20DV: EE)
	8-814-296-90	MICROPHONE, CONDENSER ECM-TC60	(23DV)

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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TCM-20DV/21DV/22DV/23DV

SONY®

SERVICE MANUAL

2000. 11

US Model

TCM-20DV/21DV/22DV/23DV

Canadian Model

TCM-20DV/22DV

AEP Model

TCM-20DV/21DV

E Model

TCM-20DV/23DV

Chinese Model

TCM-20DV

SUPPLEMENT-1

File this supplement with the service manual.

Subject:

- 1. Change of Parts**
- 2. Addition of Taiwan Model (TCM-20DV)**

(ECN-MTA00415)

- Taiwan Model has been added in TCM-20DV.
This is the same as TCM-20DV/21DV/22DV/23DV models which is not described in this supplement-1.
Refer to TCM-20DV/21DV/22DV/23DV original service manual (9-927-668-00) for other information.

1. Change of Parts

• PRINTED WIRING BOARD

🖱️ : Indicates changed portion.

Page	Before Change	After Change
12	Location F-H, 10-13	

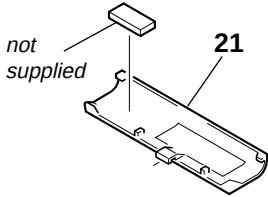
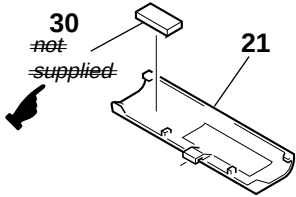
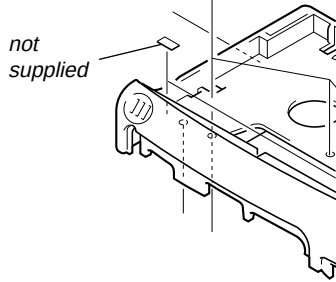
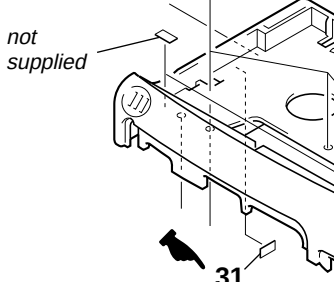
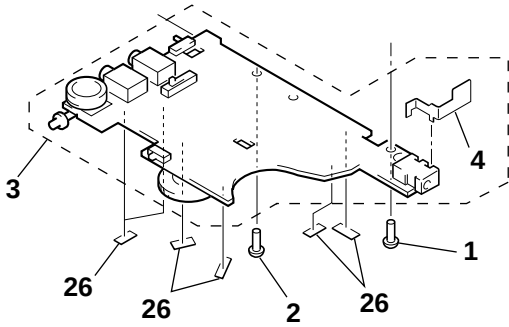
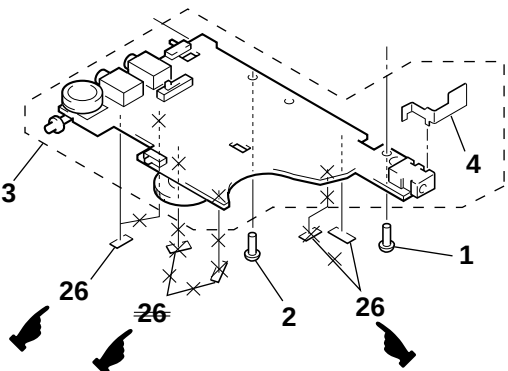
• SCHEMATIC DIAGRAM

🖱️ : Indicates changed portion.

Page	Before Change	After Change
14	Location B-D, 9-10	

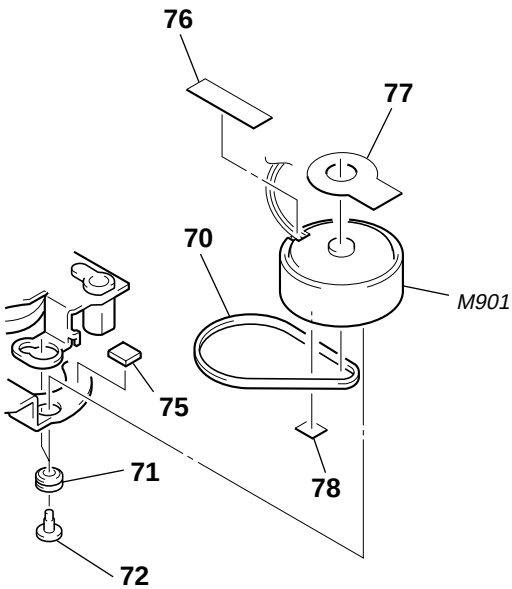
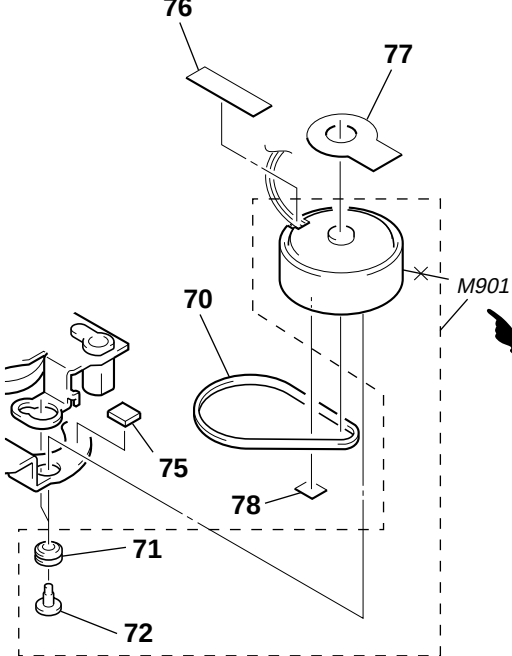
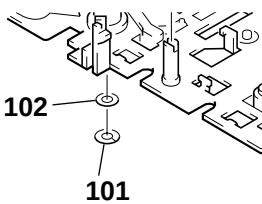
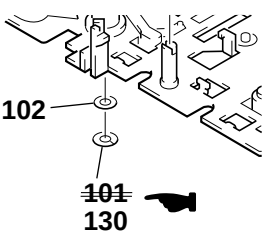
• **EXPLODED VIEW**

 : Indicates changed portion.

Page	Before Change				After Change			
16	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	2	3-345-648-01	SCREW (M1.4), TOOTHED LOCK		2	3-345-648-51	SCREW (M1.4), TOOTHED LOCK	
	13	3-939-590-26	SCREW (IB LOCK)		13	3-704-197-33	SCREW (IB LOCK)	
	15	3-019-364-33	CABINET (FRONT) (EXCEPT 20DV: 1E/23DV: 1E)		15	3-019-363-11	CABINET (FRONT) (EXCEPT 1E)	
	15	3-019-364-43	CABINET (FRONT) (20DV: 1E/23DV: 1E)		15	3-019-363-21	CABINET (FRONT) (1E)	
	24	3-318-203-92	SCREW (B1.7X9), TAPPING		24	3-334-565-11	SCREW (B1.7X10), TAPPING	
					30	3-927-521-01	CUSHION (BATTERY CASE LID)	
					31	3-220-168-01	SPACER	
								
								
								

• Abbreviation

1E: No Indication of country of origin

Page	Before Change				After Change			
17	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	52	3-925-146-01	BUTTON (FF) (▶▶)		52	3-925-146-11	BUTTON (FF) (▶▶)	
	54	3-925-148-01	BUTTON (PLAY) (▶)		54	3-925-148-11	BUTTON (PLAY) (▶)	
	55	3-925-145-01	BUTTON (REC) (●)		55	3-925-145-21	BUTTON (REC) (●)	
	73	3-924-644-01	SPRING (POWER TENSION), TENSION		73	3-224-846-01	SPRING (2), TENSION	
								
18	102	3-315-495-31	WASHER		102	3-701-437-51	WASHER	
	103	X-3370-384-1	FLYWHEEL ASSY		103	X-3376-786-2	WHEEL ASSY, FLY	
	108	3-924-642-01	SPRING (FR), TORSION		108	3-924-642-03	SPRING (FR), TORSION	
	118	3-924-643-01	SPRING (PR), TORSION		118	3-221-229-01	SPRING (PR4), TORSION	
	127	3-024-378-01	SPRING (FR LEVER), TORSION		127	3-024-378-21	SPRING (FR LEVER), TORSION	
								

• ELECTRICAL PARTS LIST

Page	Before Change						After Change					
	Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
20	R610	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	R611	1-216-057-00	METAL CHIP	2.2K	5%	1/10W

2. Addition of Taiwan Model (TCM-20DV)

• ACCESSORIES & PACKING MATERIALS

Page	Before Change						After Change					
	Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
20	*****						*****					
	ACCESSORIES & PACKING MATERIALS						ACCESSORIES & PACKING MATERIALS					
	*****						*****					
	3-868-083-71		MANUAL, INSTRUCTION				3-868-083-71		MANUAL, INSTRUCTION			
			(ENGLISH, CHINESE) (20DV: 1E/23DV: 1E)						(ENGLISH, CHINESE)			
									(20DV: 1E, TW/23DV: 1E)			

- Abbreviation
TW: Taiwan Model
1E : No Indication of country of origin

