

TCM-230DV

SERVICE MANUAL

US Model

Ver 1.0 2004.02



Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MT-200DV-175

SPECIFICATIONS

Recording system

2-track 1 channel monaural

Tape speed

4.8 cm/s (1 7/8 ips) or 2.4 cm/s
(1 1/16 ips)

Frequency range

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

Speaker

Approx. 5.0 cm (2 in.) dia.

Power output

350 mW (at 10 % harmonic
distortion)

Input

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

Output

Earphone jack (minijack) for 8 -
300 Ω earphone

Variable range of the tape speed

From approx. +30% to -15% (with
REC TIME/PLAY MODE switch
at "NORMAL")

Power requirements

- 3 V DC batteries R6 (AA) x 2
- External DC 3 V power sources

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

Approx. 86.9 x 116.3 x 36.5 mm
(3 1/2 x 4 5/8 x 1 7/16 in.)

Mass (main unit only)

Approx. 171 g (6.1 oz.)

Supplied accessories

- AC power adaptor (1)
- Battery power adaptor (1)
- Rechargeable batteries
NH-7WMAA (1.2 V, 700 mAh, Ni-MH) (2)

Battery life* (approx. hours)

Batteries	Recording	Playback
Sony alkaline LR6(SG)**	25	16
Sony R6P(SR)	6.5	4
Sony rechargeable batteries NH-7WMAA	10	6

* Measured value by the standard of
JEITA (Japan Electronics and
Information Technology Industries
Association). (Using a Sony HF
series cassette tape on which music
has been recorded is played at
volume setting 7 using speaker)

** When using Sony LR6 (SG) alkaline
dry batteries (produced in Japan)

Note

The battery life may be shorter
depending on the operating condition,
the surrounding temperature and
battery type.

For maximum performance we
recommend that you use alkaline
batteries.

House Current

Connect the AC power adaptor to
DC IN 3V and to the mains. Use the
AC-E30HG AC power adaptor (not
supplied) or the supplied AC power
adaptor (TCM-230DV/210DV only).
Do not use any other AC power
adaptor.



Polarity of
the plug

Notes

- Specifications for AC-E30HG vary
for each area. Check your local
voltage and the shape of the plug
before purchasing.
- Do not touch the AC power adaptor
with wet hands.
- Connect the AC power adaptor to
the easily accessible mains. Should
you notice an abnormality in the AC
power adaptor, disconnect it from
the mains immediately.

Design and specifications are subject
to change without notice.

9-877-567-01

2004B05-1

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Personal Audio Company

Published by Sony Engineering Corporation

CASSETTE-CORDER

SONY®

SECTION 1
SERVICING NOTES

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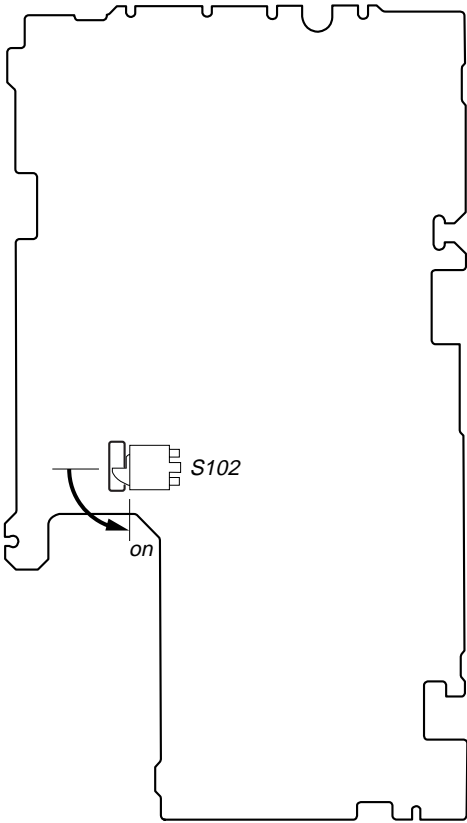
7-2. Mechanism Deck Section-1 (MT-200DV-175) 14

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8. ELECTRICAL PARTS LIST 16

In this set, the S102 (POWER) detects RECORD/PLAYBACK on. It is mounted on the MAIN board, and therefore the RECORD/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 (Component Side) –



UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead. (Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size)

LF : LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40 °C higher than ordinary solder.
Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time. Soldering irons using a temperature regulator should be set to about 350 °C.
Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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.

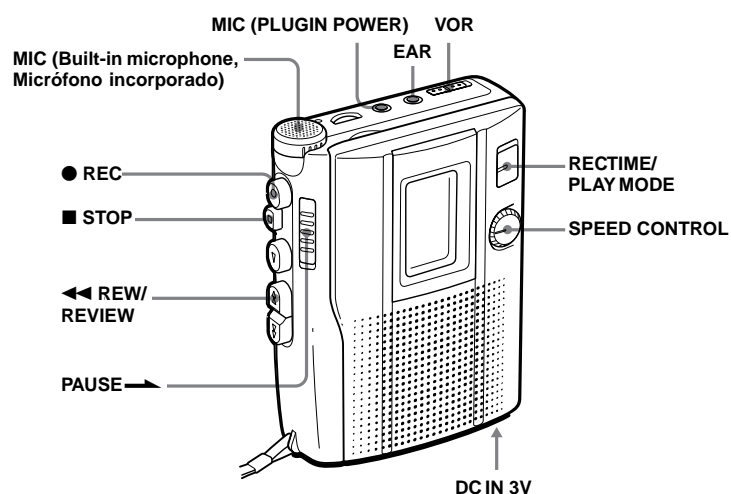
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK **Δ** OR DOTTED LINE WITH MARK **Δ** 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.

SECTION 2 GENERAL

This section is extracted from
instruction manual.

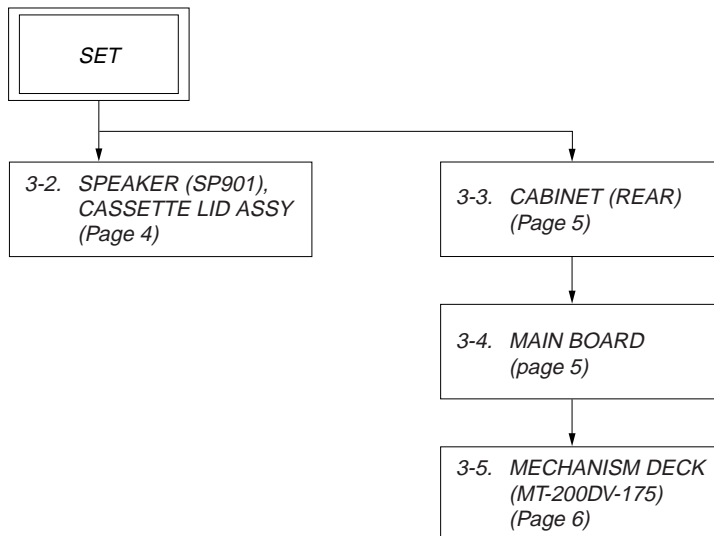
• LOCATION OF CONTROLS



SECTION 3 DISASSEMBLY

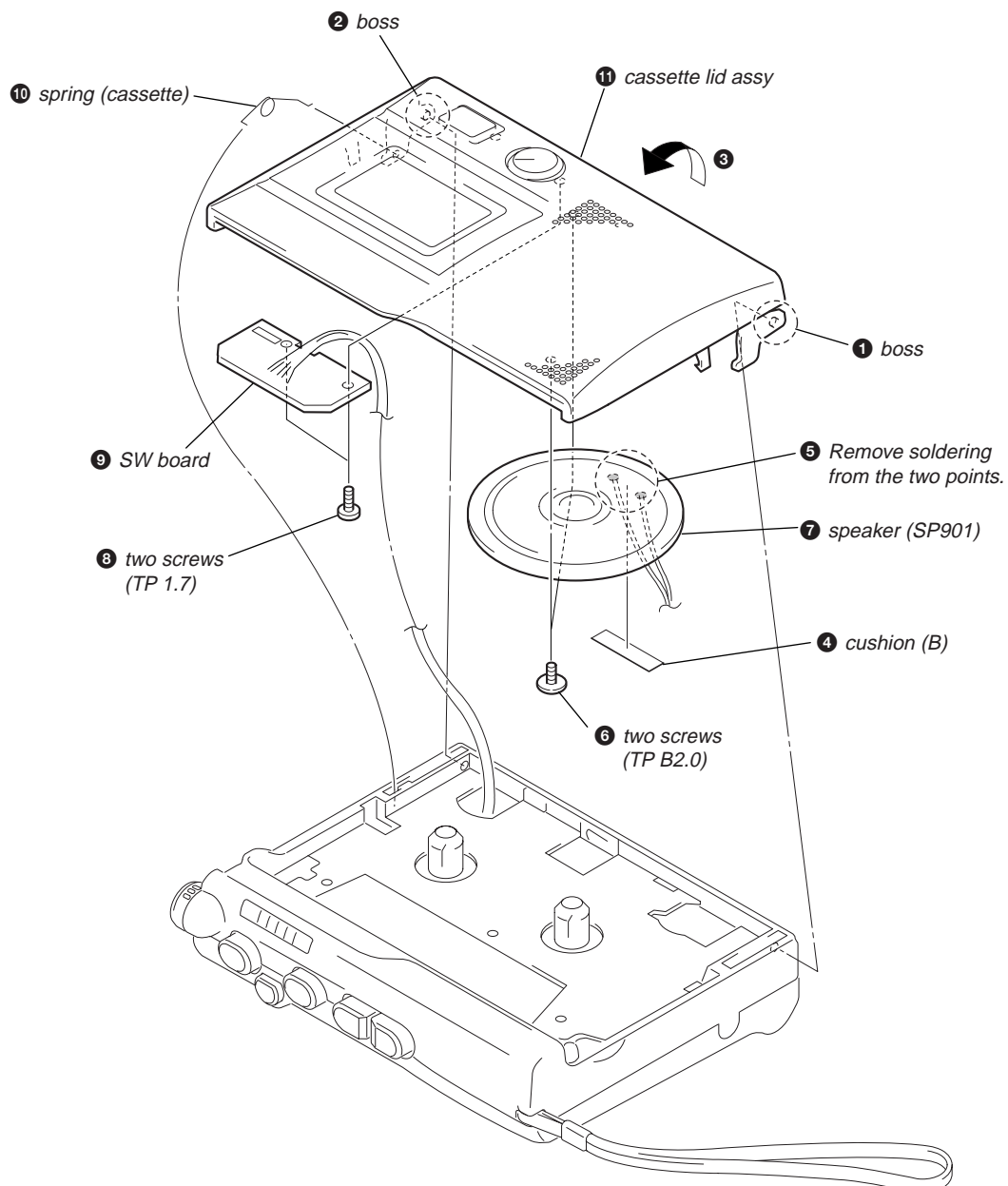
• This set can be disassembled in the order shown below.

3-1. DISASSEMBLY FLOW

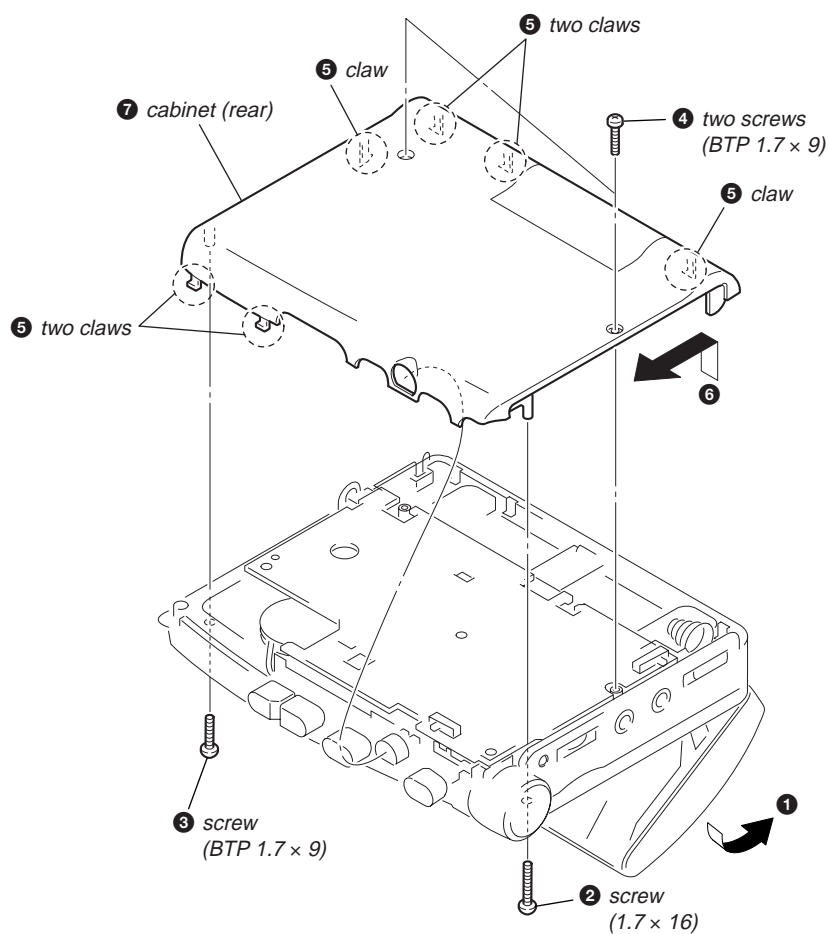


Note: Follow the disassembly procedure in the numerical order given.

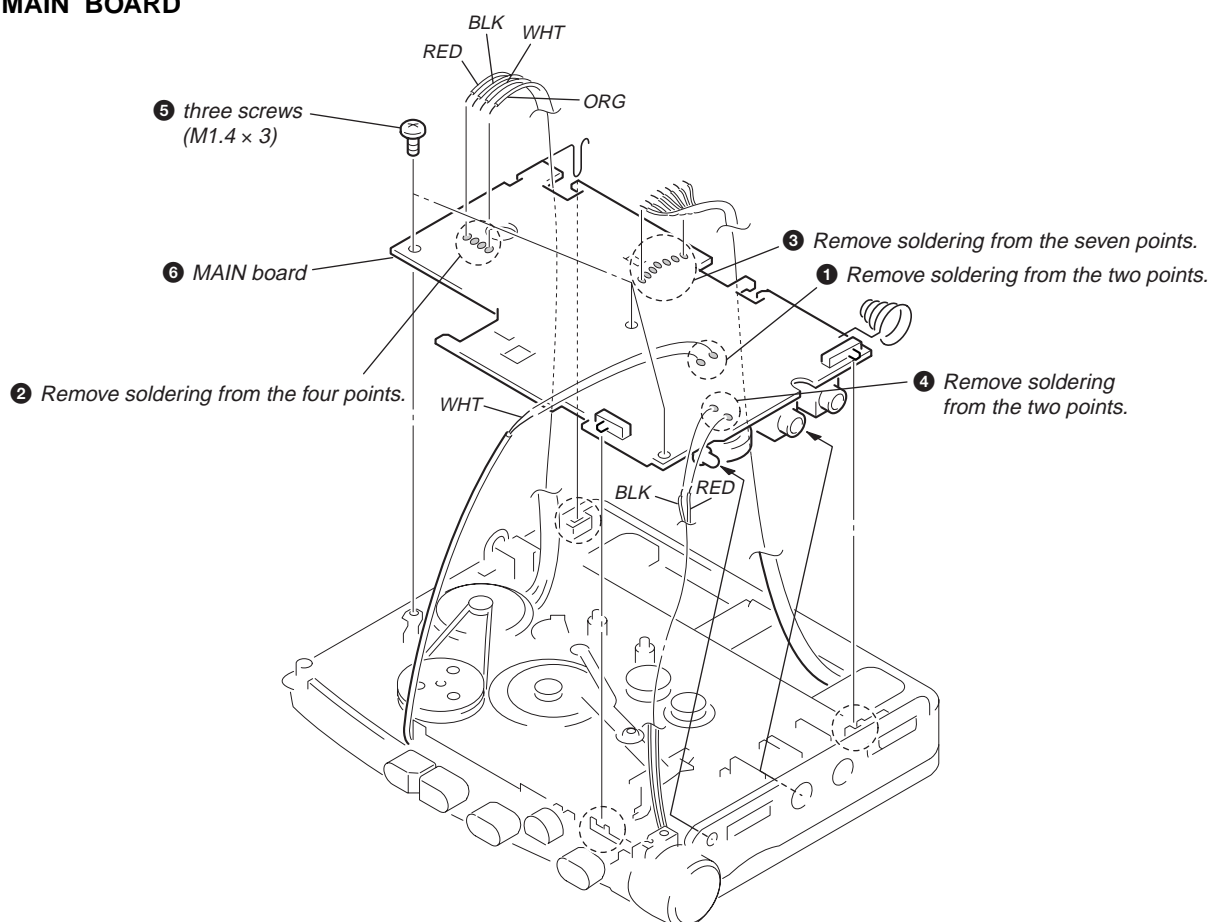
3-2. SPEAKER (SP901), CASSETTE LID ASSY



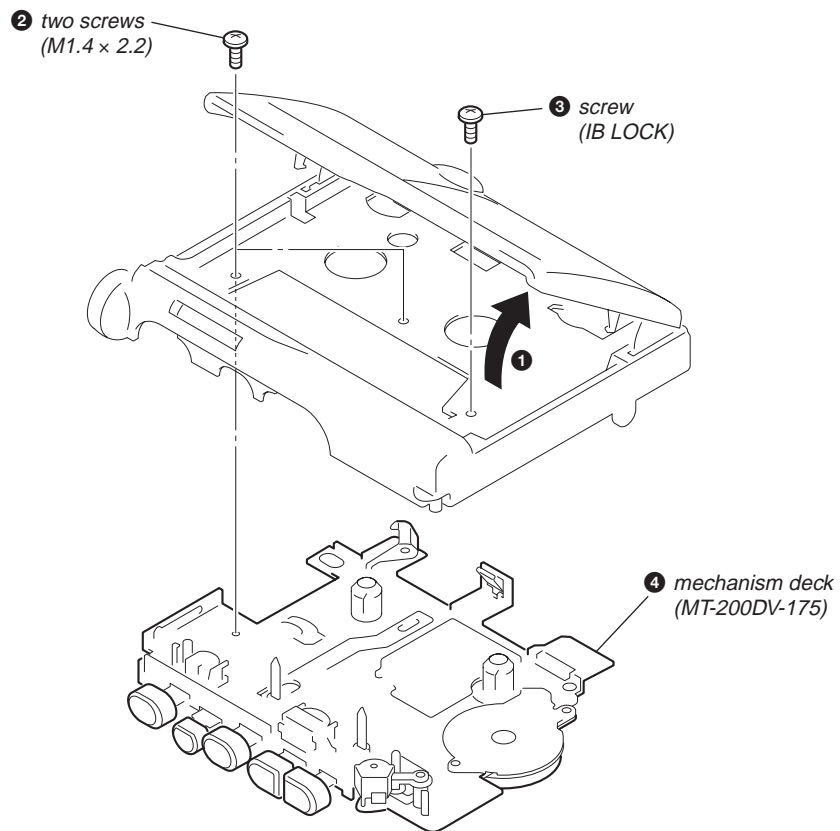
3-3. CABINET (REAR)



3-4. MAIN BOARD



3-5. MECHANISM DECK (MT-200DV-175)



SECTION 4 MECHANICAL ADJUSTMENTS

PRECAUTION

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 (S301) : OFF
SPEED CONTROL (RV603): center click
VOR switch (S501) : OFF

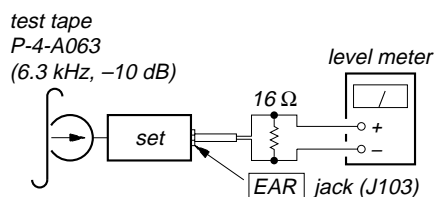
TEST TAPE

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

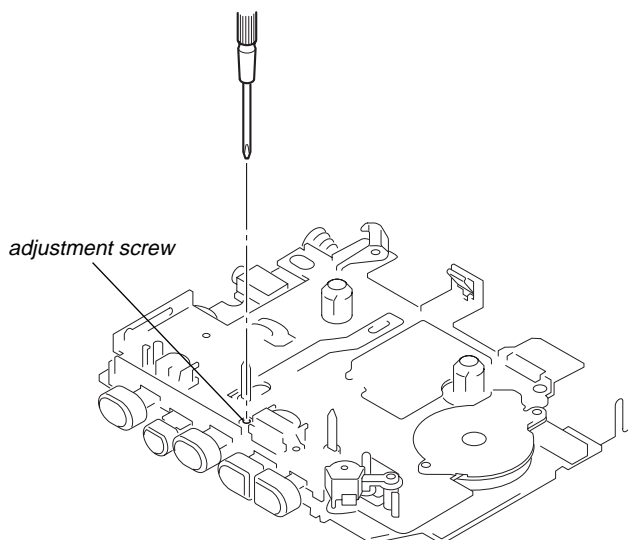
Mode: playback

**Procedure:**

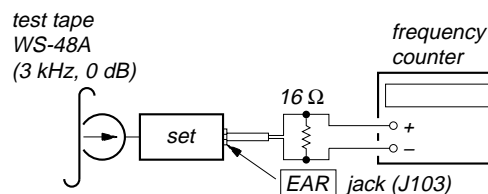
1. Turn the adjustment screw to obtain the maximum reading on level meter.

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

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

Adjustment Location:**TAPE SPEED ADJUSTMENT**

Mode: playback

**Procedure:**

– Normal Speed –

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

Specification values: 3,030 to 3,050 Hz

– Double Speed –

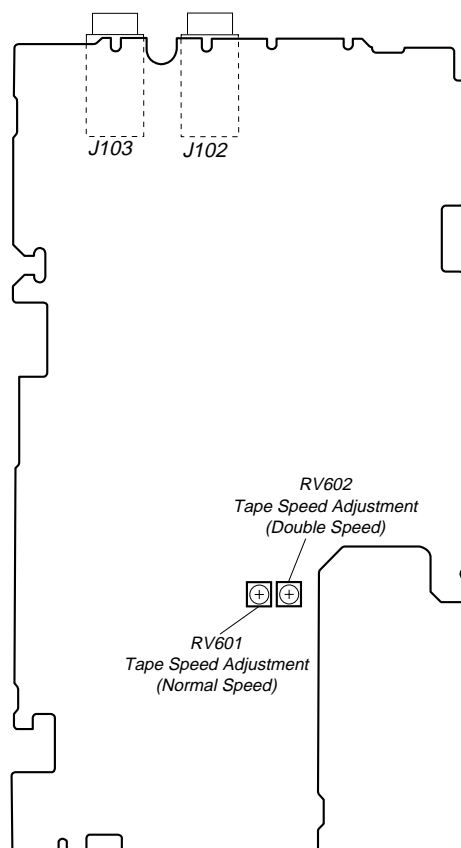
3. Set **REC TIME** switch (S601) to DOUBLE (2.4 cm/s) position.
4. Playback the tape (WS-48A) from the beginning for two minutes, then adjust RV602 so that frequency counter reading becomes 1,540 Hz.

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) –







SECTION 6

DIAGRAMS

6-1. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS







Note on Printed Wiring Boards:

-  : parts extracted from the component side.
 -  : parts extracted from the conductor side.
 -  : Through hole.
 -  : Pattern from the side which enables seeing.
- (The other layers' patterns are not indicated.)

Caution:

Pattern face side:	Parts on the pattern face side seen from
(Conductor Side)	the pattern face are indicated.
Parts face side:	Parts on the parts face side seen from
(Component Side)	the parts face are indicated.

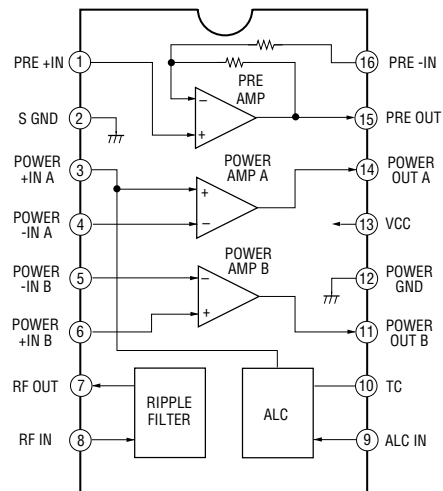
Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: $\mu\mu\text{F}$ 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
-  : panel designation.
-  : B+ Line.
-  : adjustment for repair.
- Total current is measured with no cassette installed.
- Power voltage is dc 3 V and fed with regulated dc power supply from battery terminal.
- Voltages are dc with respect to ground under no-signal conditions.
- no mark : PLAYBACK
- () : RECORD
- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Signal path.
-  : PLAYBACK
-  : RECORD

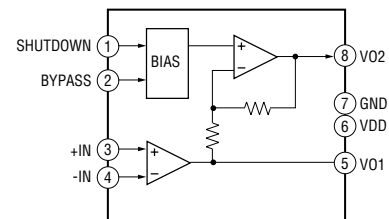
TCM-230DV

• IC Block Diagrams – MAIN Board –

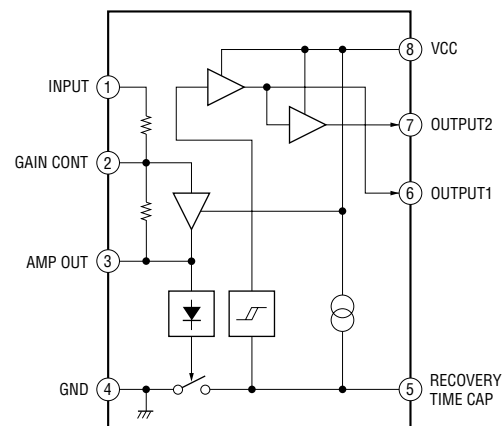
IC101 NJM2128M-TE2



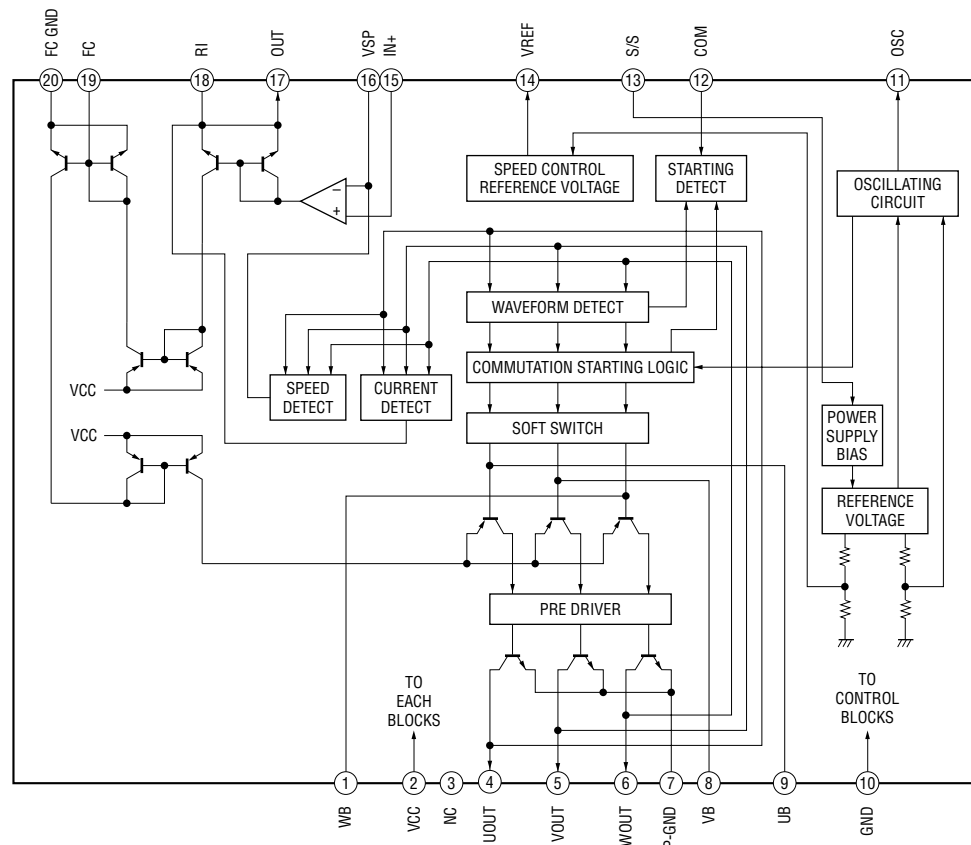
IC102 LM4890MMX



IC501 NJM2072M



IC601 LB1979VL-TLM-E



【MAIN BOARD】(COMPONENT SIDE)

【MAIN BOARD】(CONDUCTOR SIDE)

【SW BOARD】

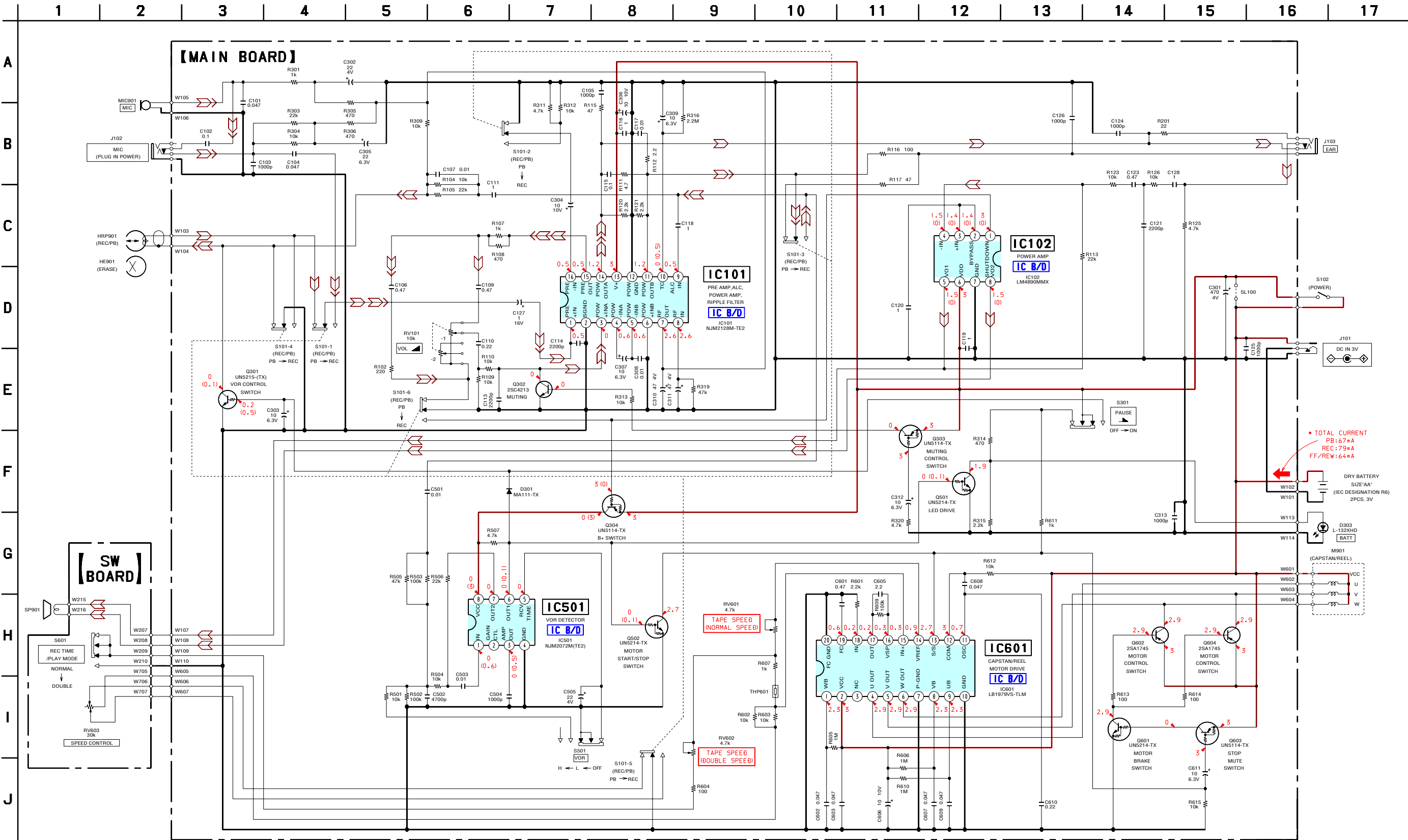
1-686-273- (12)

1-686-271- (11)

SP901

Ref. No.	Location
D301	C-11
D303	A-12
IC101	D-9
IC102	G-8
IC501	F-10
IC601	I-10
Q301	D-11
Q302	D-9
Q303	H-8
Q304	F-10
Q501	C-11
Q502	I-9
Q601	H-9
Q602	I-9
Q603	H-9
Q604	I-9

6-3. SCHEMATIC DIAGRAM • See page 10 for IC Block Diagrams.



SECTION 7

EXPLODED VIEWS

NOTE:

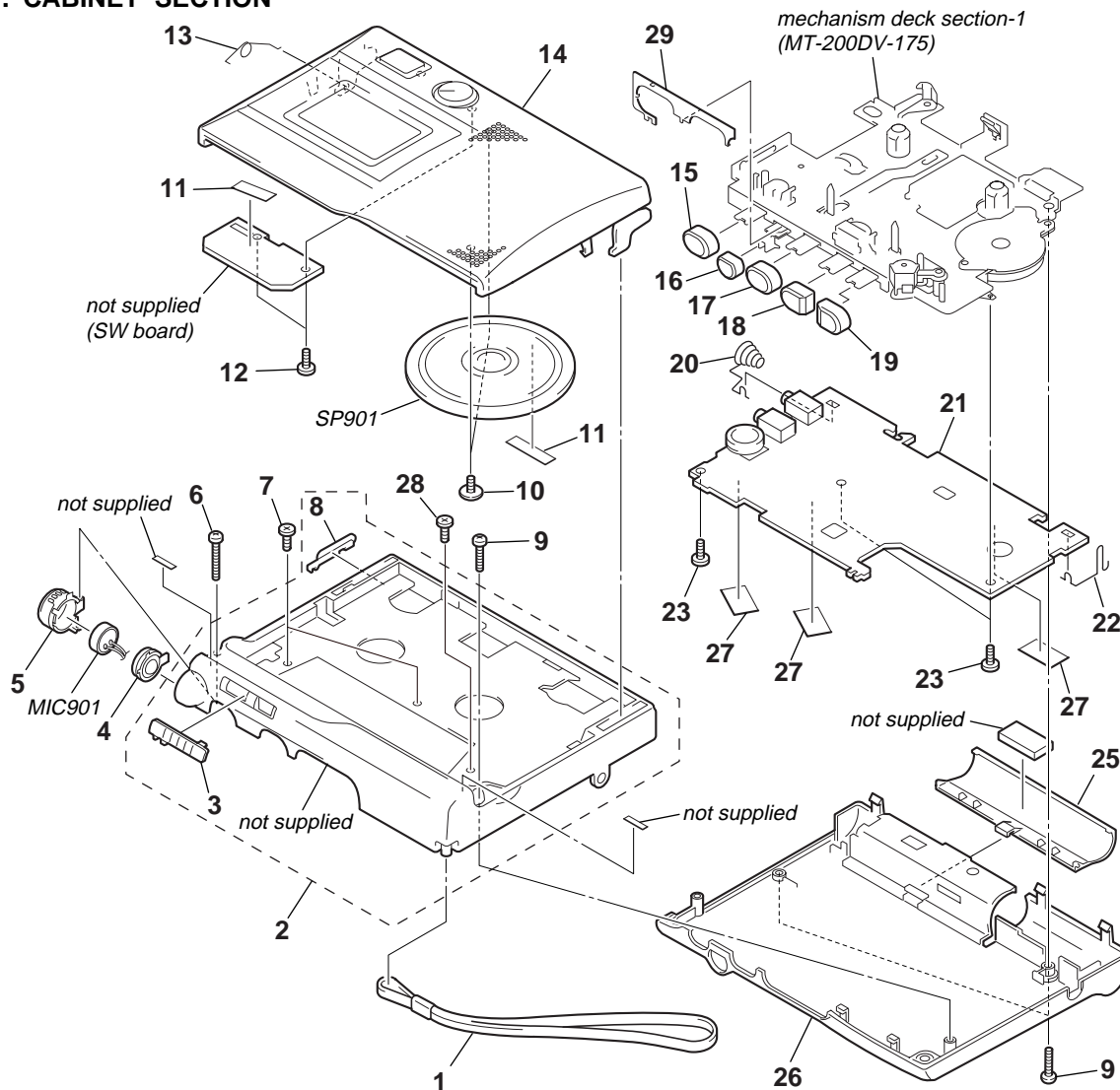
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) . . . (RED)

↑
Parts Color

↑
Cabinet's Color

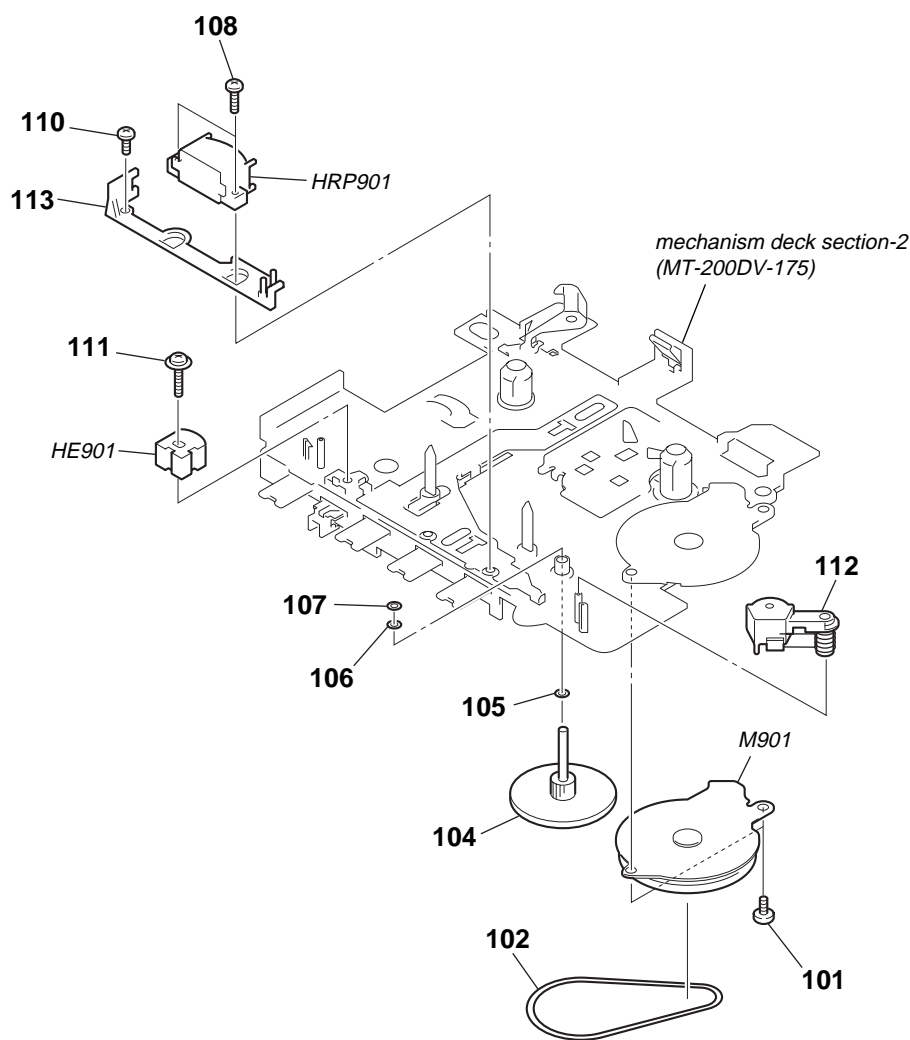
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories are given in the last of the electrical parts list.

7-1. CABINET SECTION



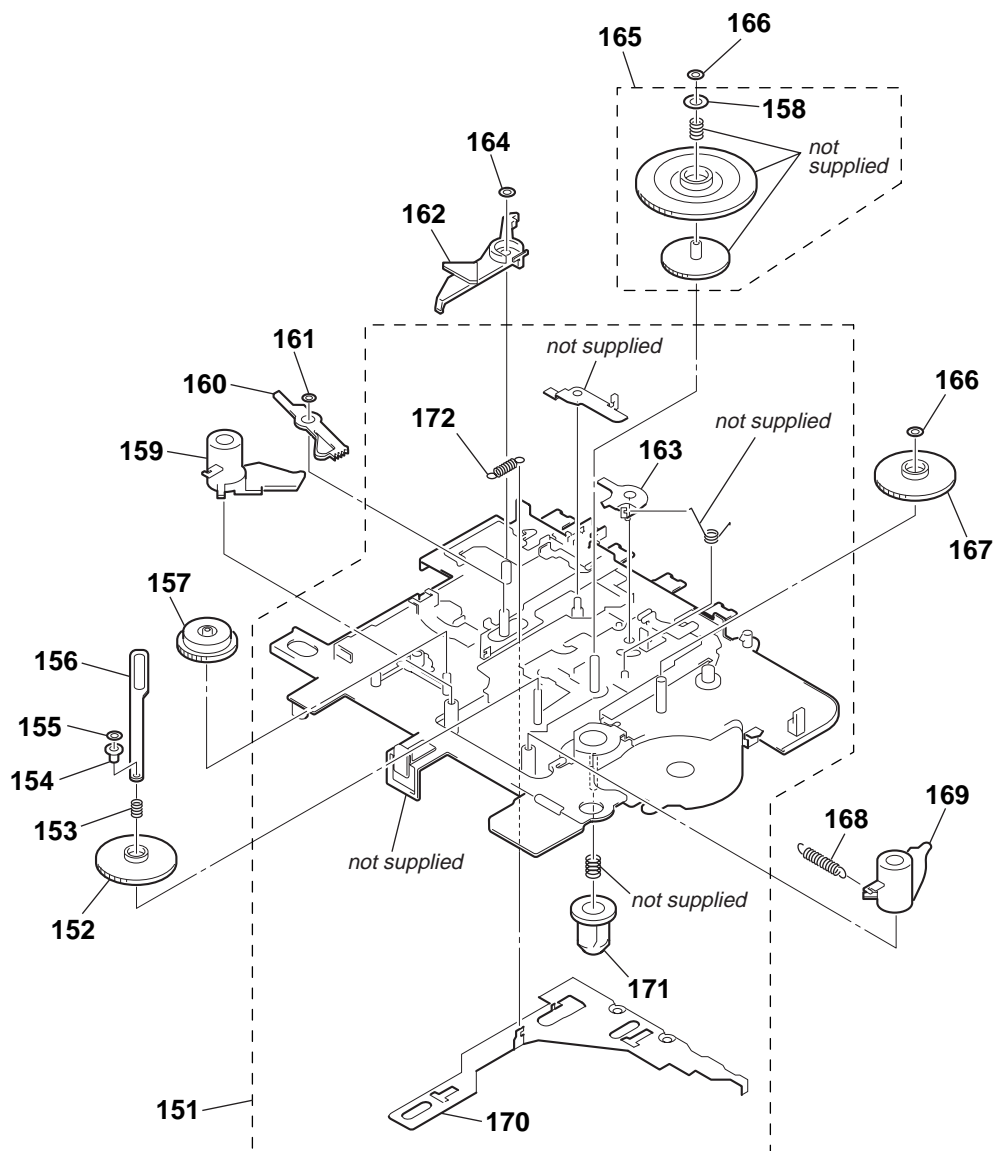
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	3-328-319-01	STRAP, HAND		16	3-235-589-01	BUTTON (STOP) (■)	
2	X-3382-530-2	CABINET (FRONT) ASSY (200)		17	3-234-568-02	BUTTON (PLAY) (▶)	
3	3-245-732-01	KNOB (PAUSE)		18	3-234-570-02	BUTTON (REW) (◀◀)	
4	3-245-735-01	CUSHION, MICROPHONE		19	3-234-569-02	BUTTON (FF) (▶▶)	
5	3-245-734-02	GRILLE, MICROPHONE		20	3-245-751-01	SPRING (-), BATTERY COIL	
6	3-035-255-01	SCREW (1.7X16)		* 21	A-3178-873-A	MAIN BOARD, COMPLETE	
7	3-704-197-42	SCREW (M1.4X2.2), LOCKING		22	3-245-750-01	SPRING (+), BATTERY COIL	
8	3-245-733-01	KNOB (VOR)		23	3-345-648-01	SCREW (M1.4X3)	
9	3-318-203-92	SCREW (B1.7X9), TAPPING		25	3-245-731-02	LID, BATTERY	
10	3-034-792-11	SCREW, TAPPING (B2.0)		26	3-245-730-02	CABINET (REAR)	
11	4-017-441-01	CUSHION (B)		27	3-831-441-99	SPACER, KNOB	
12	3-318-382-05	SCREW (1.7), TAPPING		28	3-939-590-26	SCREW (IB LOCK)	
13	3-245-737-01	SPRING (CASSETTE)		29	3-234-856-03	LEVER (PAUSE)	
14	X-3382-534-2	LID ASSY (200), CASSETTE		MIC901	1-542-502-11	DRIVER, MICROPHONE	
15	3-245-736-02	BUTTON (REC) (●)		SP901	1-825-233-11	SPEAKER (5cm)	

7-2. MECHANISM DECK SECTION-1 (MT-200DV-175)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
101	3-703-816-08	SCREW (M1.4X1.4), SPECIAL HEAD		110	3-703-816-16	SCREW (M1.4X2.5), SPECIAL HEAD	
102	3-234-857-02	BELT (CAP)		111	3-703-925-41	SCREW (M1.4)	
104	X-3379-877-2	FLY ASSY (AR), CAPSTAN		112	X-3379-882-3	PINCH (N) ASSY, ARM	
105	3-386-694-01	WASHER		113	3-234-861-02	GUIDE (ARO), TAPE	
106	3-029-278-01	WASHER		HE901	1-500-515-12	HEAD, MAGNETIC (ERASE)	
107	3-029-275-01	WASHER (STOPPER N)		HRP901	1-500-717-11	HEAD, MAGNETIC (REC/PB)	
108	3-703-816-23	SCREW (M1.4X4.5), SPECIAL HEAD		M901	1-763-772-12	MOTOR, DC (CAPSTAN/REEL)	

7-3. MECHANISM DECK SECTION-2 (MT-200DV-175)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
151	X-3381-206-2	CHASSIS ASSY (ARO)		162	3-225-393-03	LEVER (SHUT/OFF)	
152	3-225-385-03	GEAR (B)		163	X-3381-450-1	LEVER (EASY-N) ASSY	
153	3-229-063-01	SPRING (UD) (R), COMPRESSION		164	3-321-813-71	WASHER, COTTER POLYETHYLENE	
154	3-019-778-03	SLEEVE (MS)		165	X-3379-881-3	CLUTCH ASSY (AR)	
155	3-728-091-01	WASHER, STOPPER		166	3-315-384-31	WASHER, STOPPER	
156	3-225-427-01	WASHER, LEVER		167	3-225-388-04	GEAR (D)	
157	3-225-384-02	GEAR (A)		168	3-225-444-01	SPRING (FR ROTARY), TENSION	
158	3-344-901-01	WASHER, STOPPER		169	3-225-394-04	LEVER (FF ROTARY)	
159	3-225-395-04	LEVER (REW ROTARY)		170	3-234-863-02	BRACKET (ARO), HEAD	
160	X-3380-677-3	LEVER (E DETECTION) ASSY		171	3-019-776-03	GEAR (REEL-S)	
161	3-229-064-01	WASHER, STOPPER		172	3-225-443-01	SPRING (H FITTING), TENSION	

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

- 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.

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-3178-873-A	MAIN BOARD, COMPLETE *****					
		< CAPACITOR >					
C101	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V	C503	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C102	1-107-826-11	CERAMIC CHIP	0.1uF 10% 16V	C504	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C103	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	C505	1-124-430-00	ELECT	22uF 20% 4V
C104	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V	C601	1-117-863-11	CERAMIC CHIP	0.47uF 10% 6.3V
C105	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	C602	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V
C106	1-113-619-11	CERAMIC CHIP	0.47uF 10V	C603	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V
C107	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C605	1-125-838-11	CERAMIC CHIP	2.2uF 10% 6.3V
C109	1-113-619-11	CERAMIC CHIP	0.47uF 10V	C606	1-104-851-11	TANTAL. CHIP	10uF 20% 10V
C110	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V	C607	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V
C111	1-115-156-11	CERAMIC CHIP	1uF 10V	C608	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V
C113	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	C609	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V
C114	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	C610	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V
C115	1-107-826-11	CERAMIC CHIP	0.1uF 10% 16V	C611	1-126-157-11	ELECT	10uF 20% 16V
C116	1-115-156-11	CERAMIC CHIP	1uF 10V			< DIODE >	
C117	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	D301	8-719-404-50	DIODE MA111-TX	
C118	1-115-156-11	CERAMIC CHIP	1uF 10V	D303	8-719-057-27	LED L-132XHD (BATT)	
C119	1-115-156-11	CERAMIC CHIP	1uF 10V			< IC >	
C120	1-115-156-11	CERAMIC CHIP	1uF 10V	IC101	8-759-339-54	IC NJM2128M-TE2	
C121	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	IC102	6-702-440-01	IC LM4890MMX	
C123	1-113-619-11	CERAMIC CHIP	0.47uF 10V	IC501	8-759-701-51	IC NJM2072M	
C124	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	IC601	8-759-638-51	IC LB1979VL-TLM-E	
C125	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V			< JACK >	
C126	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	J101	1-794-615-11	JACK, DC (POLARITY UNIFIED TYPE)	(DC IN 3V)
C127	1-135-177-21	TANTAL. CHIP	1uF 10% 25V	J102	1-766-847-12	JACK (MIC (PLUG IN POWER))	
C128	1-115-156-11	CERAMIC CHIP	1uF 10V	J103	1-766-847-12	JACK (EAR)	
C301	1-126-518-11	ELECT	470uF 20% 4V			< TRANSISTOR >	
C302	1-124-430-00	ELECT	22uF 20% 4V	Q301	8-729-420-50	TRANSISTOR	UN5215
C303	1-126-157-11	ELECT	10uF 20% 16V	Q302	8-729-013-37	TRANSISTOR	2SC4213-AB-TE85L
C304	1-104-851-11	TANTAL. CHIP	10uF 20% 10V	Q303	8-729-402-96	TRANSISTOR	UN5114
C305	1-119-750-11	TANTAL. CHIP	22uF 20% 6.3V	Q304	8-729-402-96	TRANSISTOR	UN5114
C306	1-104-851-11	TANTAL. CHIP	10uF 20% 10V	Q501	8-729-402-93	TRANSISTOR	UN5214
C307	1-126-157-11	ELECT	10uF 20% 16V	Q502	8-729-402-93	TRANSISTOR	UN5214
C308	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	Q601	8-729-402-93	TRANSISTOR	UN5214
C309	1-126-157-11	ELECT	10uF 20% 16V	Q602	8-729-823-86	TRANSISTOR	2SA1745-E
C310	1-124-589-11	ELECT	47uF 20% 16V	Q603	8-729-402-96	TRANSISTOR	UN5114
C311	1-124-589-11	ELECT	47uF 20% 16V	Q604	8-729-823-86	TRANSISTOR	2SA1745-E
C312	1-126-157-11	ELECT	10uF 20% 16V				
C313	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V				
C501	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V				
C502	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V				

MAIN

SW

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< RESISTOR >				< VARIABLE RESISTOR >			
R102	1-216-813-11	METAL CHIP	220 5% 1/10W	RV101	1-225-362-11	RES, VAR, CARBON 10K/10K (VOL ▲)	
R104	1-216-833-11	METAL CHIP	10K 5% 1/10W	RV601	1-241-593-11	RES, ADJ, CERMET 4.7K	
R105	1-216-837-11	METAL CHIP	22K 5% 1/10W	RV602	1-241-593-11	RES, ADJ, CERMET 4.7K	
R107	1-216-821-11	METAL CHIP	1K 5% 1/10W	< SWITCH >			
R108	1-216-817-11	METAL CHIP	470 5% 1/10W	S101	1-786-282-11	SWITCH, SLIDE (REC/PB)	
R109	1-216-833-11	METAL CHIP	10K 5% 1/10W	S102	1-762-302-11	SWITCH, PUSH (1KEY) (POWER)	
R110	1-216-833-11	METAL CHIP	10K 5% 1/10W	S301	1-572-922-11	SWITCH, SLIDE (PAUSE ►)	
R111	1-216-793-11	METAL CHIP	4.7 5% 1/10W	S501	1-692-605-31	SWITCH, SLIDE (VOR)	
R112	1-216-789-11	METAL CHIP	2.2 5% 1/10W	< THERMISTOR (POSITIVE) >			
R113	1-216-837-11	METAL CHIP	22K 5% 1/10W	THP601	1-810-794-11	THERMISTOR, POSITIVE	
R115	1-216-805-11	METAL CHIP	47 5% 1/10W	*****			
R116	1-216-809-11	METAL CHIP	100 5% 1/10W	SW BOARD			
R117	1-216-805-11	METAL CHIP	47 5% 1/10W	*****			
R120	1-216-825-11	METAL CHIP	2.2K 5% 1/10W	< VARIABLE RESISTOR >			
R121	1-216-825-11	METAL CHIP	2.2K 5% 1/10W	RV603	1-227-445-11	RES, VAR, CARBON 30K (SPEED CONTROL)	
R123	1-216-833-11	METAL CHIP	10K 5% 1/10W	< SWITCH >			
R125	1-216-829-11	METAL CHIP	4.7K 5% 1/10W	S601	1-572-922-11	SWITCH, SLIDE (REC TIME/PLAY MODE)	
R126	1-216-833-11	METAL CHIP	10K 5% 1/10W	*****			
R201	1-216-801-11	METAL CHIP	22 5% 1/10W	MISCELLANEOUS			
R301	1-216-821-11	METAL CHIP	1K 5% 1/10W	*****			
R303	1-216-837-11	METAL CHIP	22K 5% 1/10W	HE901	1-500-515-12	HEAD, MAGNETIC (ERASE)	
R304	1-216-833-11	METAL CHIP	10K 5% 1/10W	HRP901	1-500-717-11	HEAD, MAGNETIC (REC/PB)	
R305	1-216-817-11	METAL CHIP	470 5% 1/10W	M901	1-763-772-12	MOTOR, DC (CAPSTAN/REEL)	
R306	1-216-817-11	METAL CHIP	470 5% 1/10W	MIC901	1-542-502-11	DRIVER, MICROPHONE	
R309	1-216-833-11	METAL CHIP	10K 5% 1/10W	SP901	1-825-233-11	SPEAKER (5cm)	
R311	1-216-829-11	METAL CHIP	4.7K 5% 1/10W	*****			
R312	1-216-833-11	METAL CHIP	10K 5% 1/10W	ACCESSORIE			
R313	1-216-833-11	METAL CHIP	10K 5% 1/10W	*****			
R314	1-216-817-11	METAL CHIP	470 5% 1/10W	△	1-477-102-11	ADAPTOR, AC (AC-E300)	
R315	1-216-825-11	METAL CHIP	2.2K 5% 1/10W		1-478-440-11	BATTERY CHARGER	
R316	1-216-861-11	METAL CHIP	2.2M 5% 1/10W		1-756-307-32	BATTERY, NICKEL HYDROGEN (NH-7WMAA)	
R319	1-216-841-11	METAL CHIP	47K 5% 1/10W		3-253-050-12	MANUAL, INSTRUCTION (ENGLISH, SPANISH)	
R320	1-216-829-11	METAL CHIP	4.7K 5% 1/10W				
R501	1-216-833-11	METAL CHIP	10K 5% 1/10W				
R502	1-216-845-11	METAL CHIP	100K 5% 1/10W				
R503	1-216-845-11	METAL CHIP	100K 5% 1/10W				
R504	1-216-833-11	METAL CHIP	10K 5% 1/10W				
R505	1-216-841-11	METAL CHIP	47K 5% 1/10W				
R506	1-216-837-11	METAL CHIP	22K 5% 1/10W				
R507	1-216-829-11	METAL CHIP	4.7K 5% 1/10W				
R601	1-216-825-11	METAL CHIP	2.2K 5% 1/10W				
R602	1-216-833-11	METAL CHIP	10K 5% 1/10W				
R603	1-216-833-11	METAL CHIP	10K 5% 1/10W				
R604	1-216-809-11	METAL CHIP	100 5% 1/10W				
R605	1-216-857-11	METAL CHIP	1M 5% 1/10W				
R606	1-216-857-11	METAL CHIP	1M 5% 1/10W				
R607	1-216-821-11	METAL CHIP	1K 5% 1/10W				
R609	1-216-845-11	METAL CHIP	100K 5% 1/10W				
R610	1-216-857-11	METAL CHIP	1M 5% 1/10W				
R611	1-216-821-11	METAL CHIP	1K 5% 1/10W				
R612	1-216-833-11	METAL CHIP	10K 5% 1/10W				
R613	1-216-809-11	METAL CHIP	100 5% 1/10W				
R614	1-216-809-11	METAL CHIP	100 5% 1/10W				
R615	1-216-833-11	METAL CHIP	10K 5% 1/10W				

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

REVISION HISTORY

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