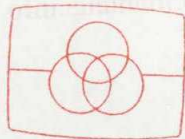


# TCM-82V/84V/85V/86V/89V

## SERVICE MANUAL



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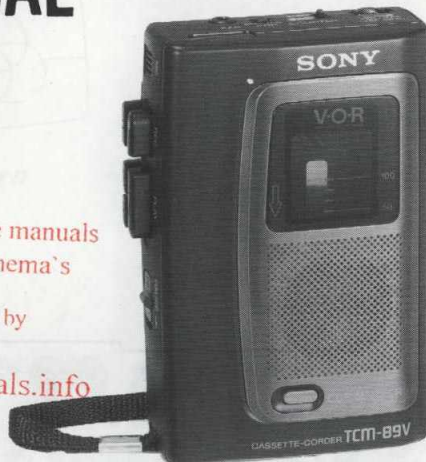


Photo : TCM-89V

*US Model*  
TCM-82V/85V/86V/89V  
*Canadian Model*  
*AEP Model*  
*UK Model*  
TCM-84V/85V  
*E Model*  
TCM-82V/85V

74-2013

Model Name Using Similar Mechanism	TCM-11, 15V, 21, 23V TCM-31, 32V, 33, 34V TCM-35, 37V, 71, 73	
Tape Transport Mechanism Type	TCM-82V/86V	MT-82V-13
	TCM-84V/85V/89V	MT-84V-13

### SPECIFICATIONS

Recording system 2-track 1-channel monaural  
 Frequency response 150-6,000Hz  
 Speaker Approx. 4cm (1 5/8 inches) dia.  
 Power output 130mW (at 10% harmonic distortion)  
 Input Microphone input jack (minijack)  
 sensitivity 0.2mV for 3kΩ or lower impedance microphone  
 Output Earphone jack (minijack) for 8-300 Ω earphone  
 Power requirements 3V DC, two size AA (R6) batteries two NC-AA rechargeable batteries (1.2V) (supplied to TCM-89V)  
 DC IN 3V jack accepts:  
 • Sony AC power adaptor AC-D2M (not supplied), or the AC power adaptor supplied to TCM-85V: Canadian, AEP, UK/86V/89V for use on:

US, Canadian model	120V AC, 60Hz
UK model	240V AC, 50Hz
AEP model	220V AC, 50Hz

• Sony DCC-70 car battery cord (not supplied) for use with 12V car battery

Battery life

Battery	Recording hours
Sony battery SUM-3 (NS)	Approx. 4
Sony alkaline battery AM3 (N)	Approx. 12
NC-AA rechargeable battery (TCM-89V)	Approx. 4

Dimensions TCM-82V/86V :  
 Approx. 136.5×94.8×40.5mm(w/h/d)  
 (5 3/8 × 3 3/4 × 1 5/8 inches)  
 TCM-84V/85V/89V :  
 Approx. 137.2×94.8×40.5mm(w/h/d)  
 (5 1/2 × 3 3/4 × 1 5/8 inches)  
 Weight incl. projecting parts and controls  
 TCM-82V/86V : Approx. 261g (9.2 oz)  
 TCM-84V : Approx. 262g (9.2 oz)  
 TCM-85V/89V :  
 Approx. 265g (9.3 oz) incl. batteries  
 Supplied accessories Battery tube (1), AC power adaptor (1) (TCM-85V : Canadian, AEP, UK/86V/89V only), Battery charge adaptor (1) (TCM-89V only), Rechargeable battery (2) (TCM-89V only)

Design and specifications subject to change without notice.

Note : Use only the recommended AC power adaptor or car battery cord manufactured by Sony. Polarity of the plugs of other manufactures may be different.



Polarity of the Sony plug



CASSETTE-CORDER  
**SONY**®



TABLE OF CONTENTS

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5. EXPLODED VIEWS		10
6. ELECTRICAL PARTS LIST		12

SERVICE NOTE

- Repairing printed resistor  
Cut both sides of the resistor and solder the carbon resistor having same value in place of printed one of the conductor side.  
1/32W carbon resistor is supplied for the replacing part of the printed resistor.

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  
MECHANICAL ADJUSTMENTS

PRECAUTION

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

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

power supply voltage: 3V dc

Torque Measurement

Torque	Meter Reading	Torque Meter
Forward	More than 25 g-cm (More than 0.34 oz-inch)	CQ-102C
Fast Forward and Rewind	More than 60 g-cm (More than 0.83 oz-inch)	CQ-201B
Back Tension	1.5 - 4 g-cm (0.021 - 0.056 oz-inch)	CQ-102C

Tape Tension Measurement

Meter	Meter Reading
CQ-403A	More than 70 g (2.47 oz)

SECTION 3  
ELECTRICAL ADJUSTMENTS

Test tape

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

Tape Speed Adjustment

Setting:

VOL control: mechanical mid

Procedure:

Mode: playback

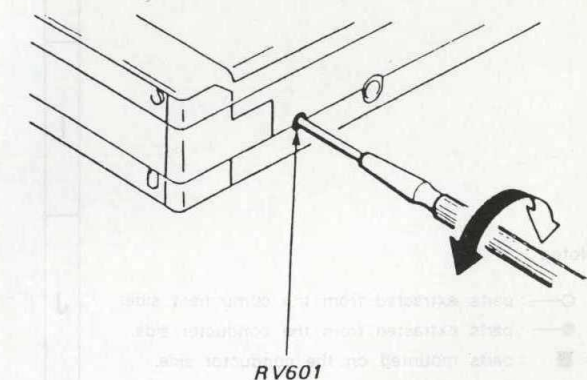


Specification:

Speed checker	Digital frequency counter
-0.5 to +1.5%	2,985 - 3,045 Hz

Frequency difference between the beginning and the end of the tape should be within 1% (30Hz).

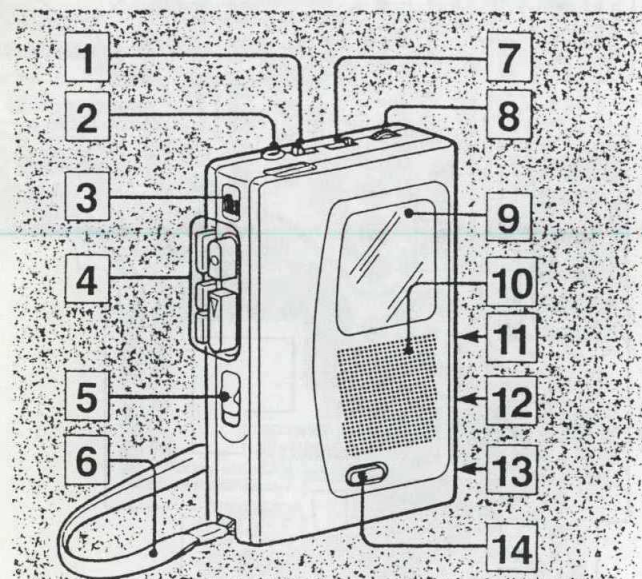
Adjustment Location:



SECTION 1  
GENERAL

This section is extracted from instruction manual.

PARTS IDENTIFICATION



The illustration shows TCM-85V.

- 1 VOR (voice operated recording) ON/OFF switch
- 2 EAR (earphone) jack
- 3 Built-in microphone
- 4 Tape operation buttons  
● REC (record) / ▼ PLAY / ■ STOP / ▼ FF/CUE (fast forward/cue) / ▲ REW/REVIEW (rewind/review)
- 5 PAUSE switch
- 6 Hand strap
- 7 TAPE COUNTER and reset button (TCM-84V/85V/89V)  
For indexing the tape contents. Before recording, push the reset button to set the counter to "000".
- 8 VOLUME/VOR SENS (VOR sensitivity) control  
In the playback mode: functions as volume control  
In the recording mode: functions as VOR sensitivity control
- 9 Cassette holder
- 10 Speaker (front)
- 11 MIC PLUG IN POWER (external microphone) input jack (right side)
- 12 DC IN 3 V (external power input) jack (right side)
- 13 Battery compartment (right side)
- 14 CUE MARKER button (TCM-85V/89V)







### SECTION 5 EXPLODED VIEWS

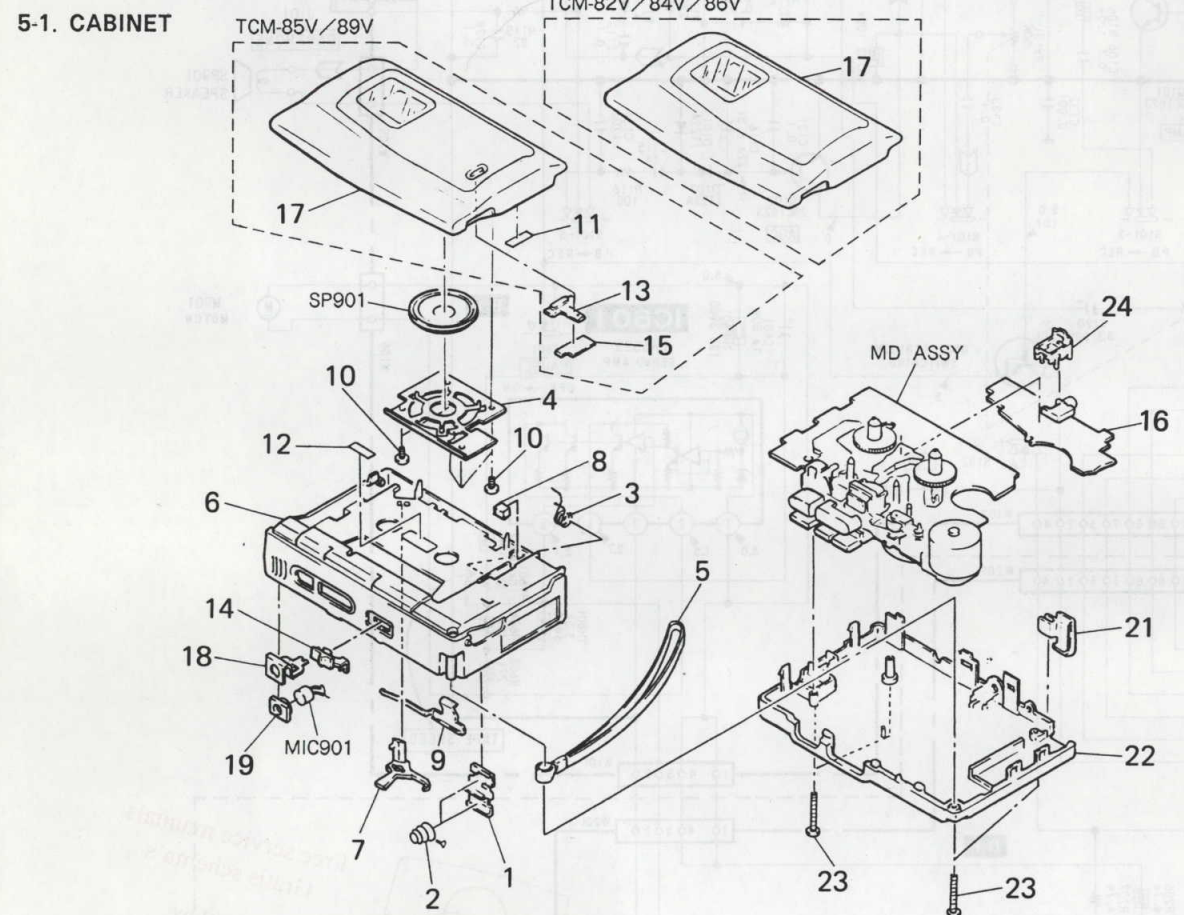
**NOTE:**

- XX, -X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color indication of Appearance Parts Example: KNOB, BALANCE (WHITE)...(RED)

Parts color      Cabinet's color

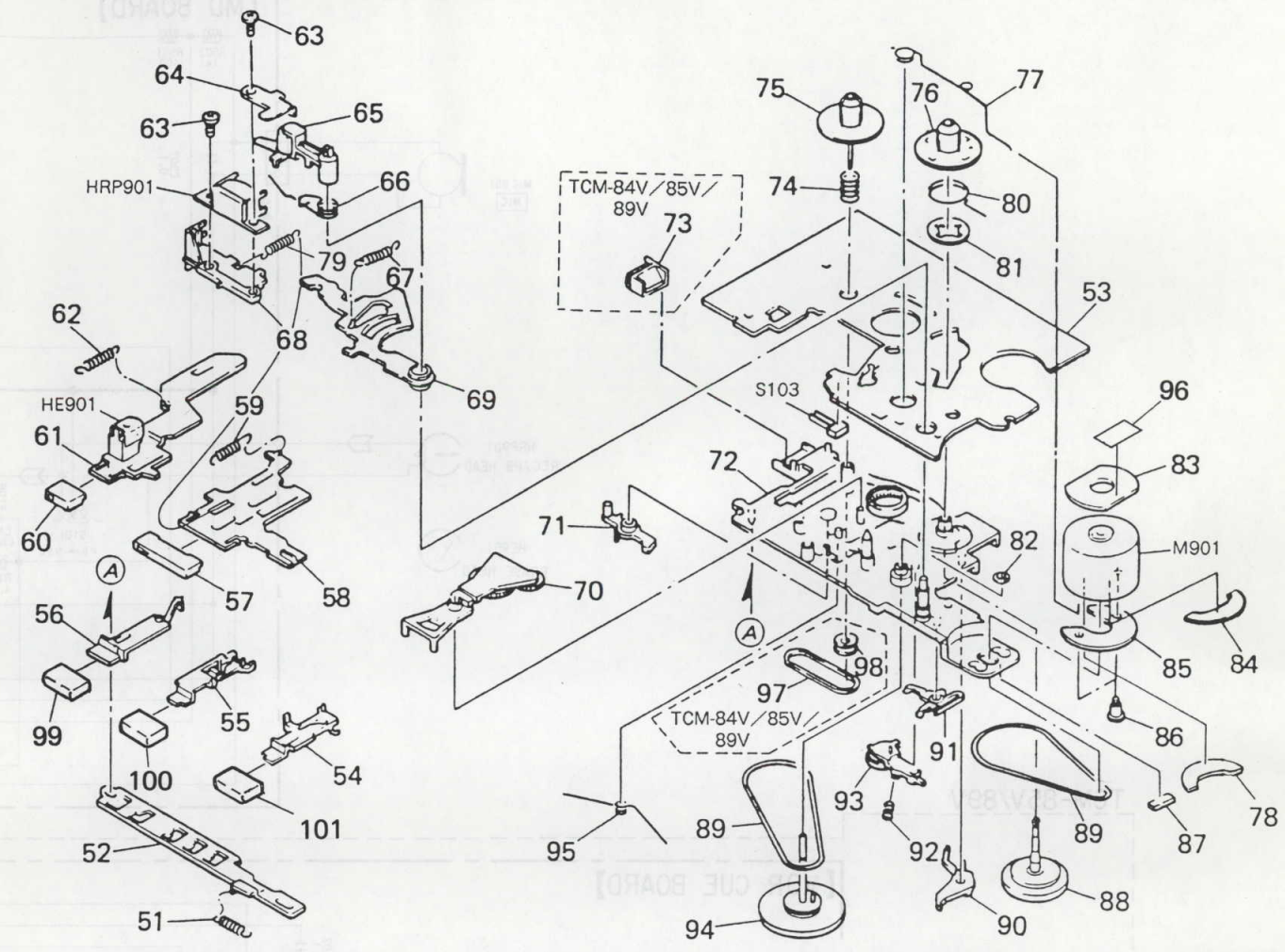
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

(82V) : TCM-82V      (86V) : TCM-86V  
(84V) : TCM-84V      (89V) : TCM-89V  
(85V) : TCM-85V



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	3-352-440-01	HOLDER (BATTERY TERMINAL)		12	3-578-101-11	PLATE, ORNAMENTAL	
2	3-352-439-01	SPRING		13	3-367-098-01	BUTTON, CUE (85V/89V)	
3	3-352-433-01	SPRING		14	3-367-092-01	BUTTON, PAUSE	
4	* 3-367-091-01	RETAINER, SP		15	* 1-639-645-11	CUE SW BOARD (85V/89V)	
5	3-320-982-01	STRAP, HAND		16	* A-3015-757-A	VOR BOARD, COMPLETE (82V/84V/86V)	
6	3-367-100-11	CABINET (FRONT) (82V:US)		16	* A-3016-095-A	VOR CUE BOARD, COMPLETE (85V/89V)	
6	3-367-100-31	CABINET (FRONT) (84V/85V)		17	X-3363-091-1	LID ASSY, CASSETTE (89V)	
6	3-367-100-41	CABINET (FRONT) (89V)		17	X-3363-093-1	LID ASSY, CASSETTE (86V)	
6	3-367-100-51	CABINET (FRONT) (86V)		17	X-3363-094-1	LID ASSY, CASSETTE (85V)	
6	3-367-100-71	CABINET (FRONT) (82V:E/EA)		17	X-3363-095-1	LID ASSY, CASSETTE (84V)	
7	3-320-976-01	CLAW, ERASE SAFETY		17	X-3363-097-1	LID ASSY, CASSETTE (82V)	
8	9-911-841-XX	CUSHION (B)		18	* 3-352-434-01	HOLDER (A), MIC	
9	3-320-977-01	SPRING		19	3-320-975-01	CUSHION (A), MICROPHONE	
10	3-318-382-21	SCREW (1.7X3), TAPPING		21	X-3363-099-1	LID ASSY, BATTERY CASE	
11	3-831-441-XX	CUSHION, CABINET UPPER 10X7X0.3 (85V/89V)		22	3-367-102-01	CABINET (REAR)	
				23	3-335-640-51	SCREW (M2X16)	
				24	3-352-456-01	HOLDER, JACK	
				MIC901	1-542-080-11	MICROPHONE, BUILT-IN	
				SP901	1-544-497-11	SPEAKER	

### 5-2. MD MT-82V-13 : TCM-82V/86V MT-84V-13 : TCM-84V/85V/89V



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-342-031-01	SPRING, TENSION		79	3-352-451-01	SPRING, TENSION (POWER TENSION)	
52	* 3-342-040-01	PLATE, LOCK		80	3-342-024-01	SPRING	
53	* A-3089-459-A	MD BOARD, COMPLETE		81	3-342-055-01	WASHER, T REEL	
54	3-320-993-01	LEVER, FF		82	3-321-483-11	RING, RETAINING	
55	3-320-992-01	LEVER, REW		83	3-342-050-11	RUBBER (A), VIBRATION PROOF	
56	3-320-994-01	LEVER, STOP		84	3-342-075-01	SPACER, MOTOR	
57	3-367-095-01	BUTTON, PLAY		85	3-318-254-11	CUSHION, MOTOR	
58	3-352-449-01	LEVER, PLAY		86	3-342-076-01	SCREW (M2), PRECISION STEP	
59	3-342-029-01	SPRING, TENSION (POWER TENSION)		87	9-911-839-XX	CUSHION (A)	
60	3-367-097-01	BUTTON, REC		88	X-3320-918-1	PLATE ASSY, REEL, TAKE-UP	
61	3-320-995-01	LEVER, REC		89	3-480-136-00	BELT	
62	3-342-032-01	SPRING, TENSION		90	3-342-011-01	LEVER (A), SHUT-OFF	
63	3-352-473-01	SCREW (2), TAPPING		91	3-342-012-01	LEVER (B), SHUT-OFF	
64	* 3-370-052-01	RETAINER, LEVER		92	3-342-034-01	SPRING, COMPRESSION	
65	X-3320-921-1	PINCH ROLLER ASSY		93	X-3320-919-1	ARM ASSY, IDLER	
66	3-352-470-01	SPRING (P), TORSION		94	X-3320-916-1	FLYWHEEL (PA) ASSY	
67	3-342-033-01	SPRING, TENSION		95	3-342-035-01	SPRING (FR)	
68	* 3-352-447-01	BASE (A), HEAD		96	3-831-441-11	CUSHION (B)	
69	3-352-448-01	BASE (B), HEAD		97	3-554-103-00	BELT, DRIVING (84V/85V/89V)	
70	X-3320-920-1	ARM ASSY, FR		98	3-320-999-11	PULLEY (COUNTER) (84V/85V/89V)	
71	3-342-010-01	ARM, CR		99	3-367-096-01	BUTTON, STOP	
72	X-3352-402-1	CHASSIS ASSY, MECHANICAL		100	3-367-094-01	BUTTON, REW	
73	1-548-582-11	COUNTER, TAPE (SMALL TYPE) (84V/85V/89V)		101	3-367-093-01	BUTTON, FF	
74	3-342-030-01	SPRING, COMPRESSION		HE901	8-825-771-21	HEAD, ERASE EBF5-36C	
75	3-342-013-01	GEAR, S REEL		HRP901	1-543-607-21	HEAD, MAGNETIC (REC/PB)	
76	3-342-014-01	GEAR, T REEL		M901	X-3320-925-1	MOTOR ASSY	
77	3-352-453-11	SPRING (GROUND)		S103	1-570-549-21	SWITCH, LEAF	
78	3-352-476-01	SHEET (MOTOR)					

### CUE SW MD

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams and the components used on the set.
- XX, -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

Ref. No.	Part No.	Description	Remark
* 1-639-645-11	CUE SW BOARD (85V/89V)	*****	
< SWITCH >			
S301	1-571-887-21	SWITCH, KEY BOARD (CUE MARKER) (85V/89V)	
*****			
* A-3089-459-A	MD BOARD, COMPLETE	*****	
< CAPACITOR >			
C101	1-126-160-11	ELECT 1uF 20% 50V	
C102	1-126-160-11	ELECT 1uF 20% 50V	
C103	1-163-111-00	CERAMIC CHIP 56PF 5% 50V	
C104	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C105	1-126-157-11	ELECT 10uF 20% 16V	
C106	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C107	1-124-434-00	ELECT 220uF 20% 4V	
C108	1-124-434-00	ELECT 220uF 20% 4V	
C109	1-126-163-11	ELECT 4.7uF 20% 50V	
C110	1-163-007-11	CERAMIC CHIP 680PF 10% 50V	
C111	1-163-034-00	CERAMIC CHIP 0.033uF 50V	
C112	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C113	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C114	1-124-434-00	ELECT 220uF 20% 4V	
C115	1-162-611-00	CERAMIC CHIP 1uF 25V	
C116	1-126-153-11	ELECT 22uF 20% 6.3V	
C118	1-126-163-11	ELECT 4.7uF 20% 50V	
C119	1-163-017-00	CERAMIC CHIP 0.0047uF 5% 50V	
C120	1-126-162-11	ELECT 3.3uF 20% 50V	
C127	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C128	1-163-038-00	CERAMIC CHIP 0.1uF 25V	

### SECTION 6 ELECTRICAL PARTS LIST

**NOTE:**

- 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:  $\mu$ , for example:  
uA.....:  $\mu$ A....., uPA.....:  $\mu$ PA.....  
uPB.....:  $\mu$ PB....., uPC.....:  $\mu$ PC.....  
uPD.....:  $\mu$ PD.....
- CAPACITORS**  
uF:  $\mu$ F
- COILS**  
uH:  $\mu$ H

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

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

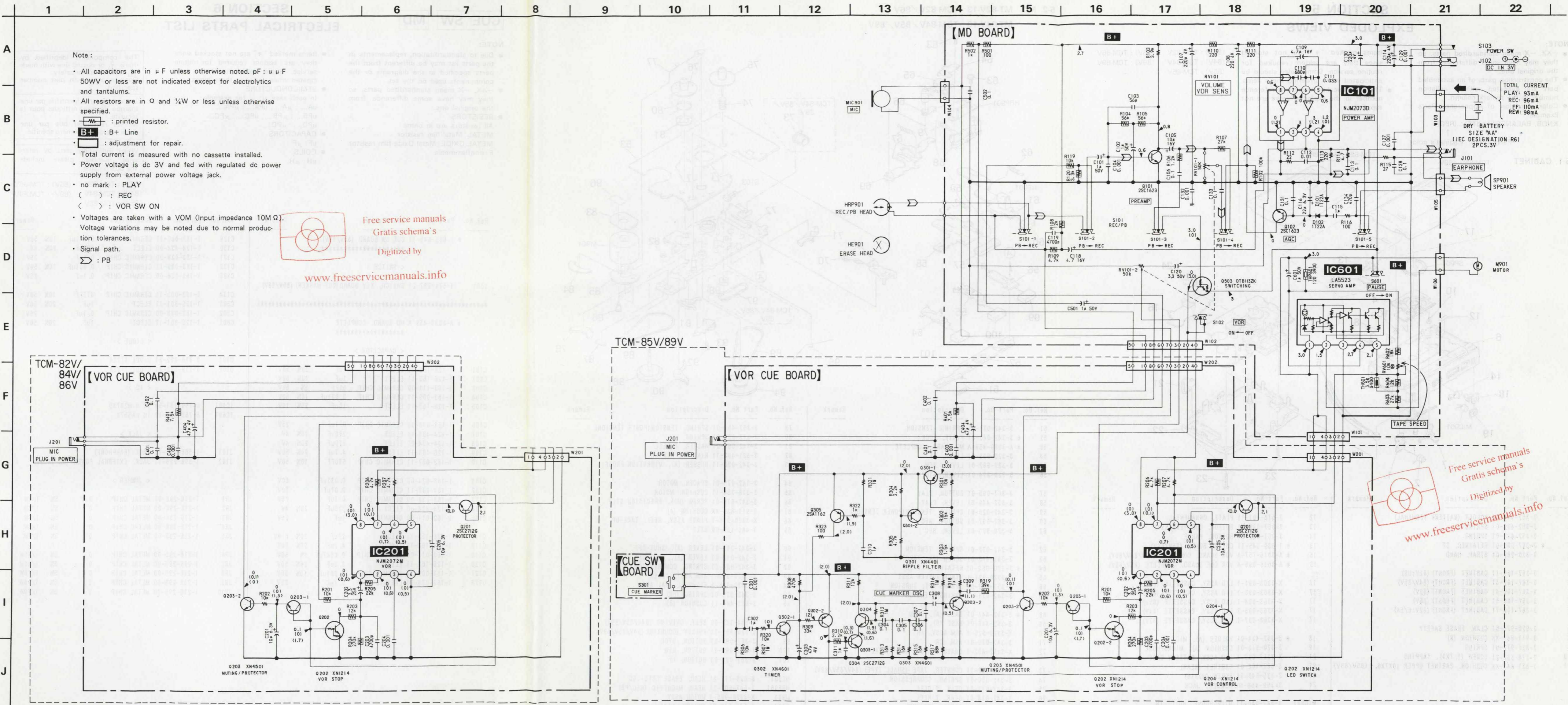
When indicating parts by reference number, please include the board name.

(82V) : TCM-82V      (86V) : TCM-86V  
(84V) : TCM-84V      (89V) : TCM-89V  
(85V) : TCM-85V

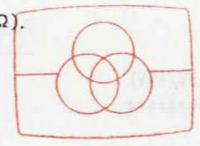
Ref. No.	Part No.	Description	Remark
C129	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C130	1-124-434-00	ELECT 220uF 20% 4V	
C131	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C132	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C133	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C134	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C501	1-126-301-11	ELECT 1uF 20% 50V	
C502	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C601	1-126-301-11	ELECT 1uF 20% 50V	
< DIODE >			
D101	8-719-022-21	DIODE 1T22A	
D102	8-719-022-21	DIODE 1T22A	
< IC >			
IC101	8-759-701-54	IC NJM2073D	
IC601	8-759-801-12	IC LA5523	
< JACK >			
J101	1-566-740-11	JACK (EARPHONE)	
J102	1-568-228-11	JACK, EXTERNAL POWER (DC IN 3V)	
< JUMPER >			
JR1	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR2	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR3	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR4	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR5	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR6	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR7	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR8	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR9	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR10	1-216-295-00	METAL CHIP 0 5% 1/10W	



4-2. SCHEMATIC DIAGRAM



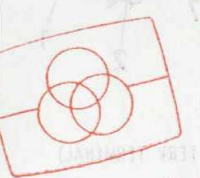
- Note:
- All capacitors are in  $\mu F$  unless otherwise noted. pF:  $\mu \mu F$  50WV or less are not indicated except for electrolytics and tantalums.
  - All resistors are in  $\Omega$  and  $\frac{1}{4}W$  or less unless otherwise specified.
  - : printed resistor.
  - B+**: B+ Line
  - : adjustment for repair.
  - Total current is measured with no cassette installed.
  - Power voltage is dc 3V and fed with regulated dc power supply from external power voltage jack.
  - no mark: PLAY
  - ( ) : REC
  - < > : VOR SW ON
  - Voltages are taken with a VOM (input impedance 10M  $\Omega$ ). Voltage variations may be noted due to normal production tolerances.
  - Signal path.
  - : PB



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TOTAL CURRENT  
 PLAY: 93mA  
 REC: 96mA  
 FF: 110mA  
 REW: 98mA

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



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**MD** **VOR** **VOR CUE**

Ref. No.	Part No.	Description	Remark
JR11	1-216-295-00	METAL CHIP 0	5% 1/10W
JR13	1-216-296-00	METAL CHIP 0	5% 1/8W
JR14	1-216-296-00	METAL CHIP 0	5% 1/8W
JR15	1-216-296-00	METAL CHIP 0	5% 1/8W
JR17	1-216-296-00	METAL CHIP 0	5% 1/8W
JR18	1-216-296-00	METAL CHIP 0	5% 1/8W
JR19	1-216-296-00	METAL CHIP 0	5% 1/8W
JR20	1-216-296-00	METAL CHIP 0	5% 1/8W

< TRANSISTOR >

Q101	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q102	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q503	8-729-904-60	TRANSISTOR DTB1132K	

< RESISTOR >

R102	1-249-441-11	CARBON 100K	5% 1/4W
R103	1-216-212-00	METAL CHIP 3.9K	5% 1/8W
R104	1-249-438-11	CARBON 56K	5% 1/4W
R105	1-249-438-11	CARBON 56K	5% 1/4W
R106	1-249-418-11	CARBON 1.2K	5% 1/4W
R107	1-249-434-11	CARBON 27K	5% 1/4W
R108	1-249-430-11	CARBON 12K	5% 1/4W
R109	1-249-425-11	CARBON 4.7K	5% 1/4W
R110	1-249-409-11	CARBON 220	5% 1/4W
R111	1-249-409-11	CARBON 220	5% 1/4W
R112	1-216-009-00	METAL CHIP 22	5% 1/10W
R113	1-216-033-00	METAL CHIP 220	5% 1/10W
R114	1-216-308-00	METAL CHIP 4.7	5% 1/10W
R115	1-216-011-00	METAL CHIP 27	5% 1/10W
R116	1-216-025-00	METAL CHIP 100	5% 1/10W
R119	1-249-429-11	CARBON 10K	5% 1/4W
R120	1-249-423-11	CARBON 3.3K	5% 1/4W
R501	1-249-405-11	CARBON 100	5% 1/4W
R502	1-249-417-11	CARBON 1K	5% 1/4W
R602	1-249-432-11	CARBON 18K	5% 1/4W
R603	1-249-434-11	CARBON 27K	5% 1/4W
R604	1-249-430-11	CARBON 12K	5% 1/4W

< VARIABLE RESISTOR >

RV101	1-237-772-11	RES. VAR. CARBON 50K/50K (VOLUME/VOR SENS)	
RV601	1-237-278-11	RES. ADJ. CARBON 10K (TAPE SPEED)	

< SWITCH >

S101	1-571-151-11	SWITCH, SLIDE (REC/PB)	
S102	1-571-478-11	SWITCH, SLIDE (VOR)	
S103	1-570-549-21	SWITCH, LEAF (POWER)	
S601	1-570-675-11	SWITCH, SLIDE (PAUSE)	

Ref. No.	Part No.	Description	Remark
		< THERMISTOR >	
TH601	1-808-980-11	THERMISTOR	
THP601	1-808-272-11	THERMISTOR, POSITIVE (120)	

< CONNECTOR >

W101	* 1-568-289-11	PIN, CONNECTOR (PC BOARD) 4P	
W102	* 1-566-669-11	PIN, CONNECTOR (PC BOARD) 8P	
W103	* 1-506-984-11	PIN, CONNECTOR (PC BOARD) 2P	
W104	* 1-506-984-11	PIN, CONNECTOR (PC BOARD) 2P	
W105	* 1-506-984-11	PIN, CONNECTOR (PC BOARD) 2P	
W106	* 1-506-984-11	PIN, CONNECTOR (PC BOARD) 2P	

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\* A-3015-757-A VOR BOARD, COMPLETE (82V/84V/86V)  
\* A-3016-095-A VOR CUE BOARD, COMPLETE (85V/89V)

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\* 3-852-456-01 HOLDER, JACK

< CAPACITOR >

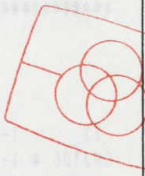
C201	1-126-157-11	ELECT	10uF	20%	16V
C202	1-126-162-11	ELECT	3.3uF	20%	50V
C203	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C204	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C205	1-126-157-11	ELECT	10uF	20%	16V
C301	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (85V/89V)
C302	1-164-346-11	CERAMIC CHIP	1uF		16V (85V/89V)
C303	1-126-154-11	ELECT	47uF	20%	6.3V (85V/89V)
C304	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (85V/89V)
C305	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (85V/89V)
C306	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (85V/89V)
C307	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (85V/89V)
C308	1-164-346-11	CERAMIC CHIP	1uF		16V (85V/89V)
C309	1-164-346-11	CERAMIC CHIP	1uF		16V (85V/89V)
C310	1-164-346-11	CERAMIC CHIP	1uF		16V (85V/89V)
C311	1-164-346-11	CERAMIC CHIP	1uF		16V (85V/89V)
C401	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C402	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C403	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C404	1-126-154-11	ELECT	47uF	20%	6.3V

< IC >

IC201	8-759-701-51	IC NJM2072M	
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< JACK >

J201	1-563-319-21	JACK (MIC/PLUG IN POWER)	
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**VOR CUE**

Ref. No.	Part No.	Description	Remark
< JUMPER >			
JR1	1-216-295-00	METAL CHIP 0 5% 1/10W (85V/89V)	
JR2	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR3	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR4	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR9	1-216-295-00	METAL CHIP 0 5% 1/10W (85V/89V)	
JR10	1-216-296-00	METAL CHIP 0 5% 1/8W (85V/89V)	
JR11	1-216-295-00	METAL CHIP 0 5% 1/10W (85V/89V)	
JR12	1-216-295-00	METAL CHIP 0 5% 1/10W (85V/89V)	

Ref. No.	Part No.	Description	Remark
< TRANSISTOR >			
Q201	8-729-271-22	TRANSISTOR 2SC2712G	
Q202	8-729-420-16	TRANSISTOR XN1214	
Q203	8-729-402-81	TRANSISTOR XN4501	
Q204	8-729-420-16	TRANSISTOR XN1214 (85V/89V)	
Q301	8-729-403-27	TRANSISTOR XN4401 (85V/89V)	
Q302	8-729-402-84	TRANSISTOR XN4601 (85V/89V)	
Q303	8-729-402-84	TRANSISTOR XN4601 (85V/89V)	
Q304	8-729-271-22	TRANSISTOR 2SC2712G (85V/89V)	
Q305	8-729-216-22	TRANSISTOR 2SA1162-G (85V/89V)	

Ref. No.	Part No.	Description	Remark
< RESISTOR >			
R201	1-249-429-11	CARBON 10K 5% 1/4W	
R202	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R203	1-249-430-11	CARBON 12K 5% 1/4W	
R204	1-215-479-00	METAL 270K 1% 1/6W	
R205	1-249-433-11	CARBON 22K 5% 1/4W	
R206	1-249-425-11	CARBON 4.7K 5% 1/4W	
R207	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R301	1-216-073-00	METAL CHIP 10K 5% 1/10W (85V/89V)	
R302	1-216-077-00	METAL CHIP 15K 5% 1/10W (85V/89V)	
R303	1-216-053-00	METAL CHIP 1.5K 5% 1/10W (85V/89V)	
R304	1-216-057-00	METAL CHIP 2.2K 5% 1/10W (85V/89V)	
R305	1-216-065-00	METAL CHIP 4.7K 5% 1/10W (85V/89V)	
R306	1-216-073-00	METAL CHIP 10K 5% 1/10W (85V/89V)	
R307	1-216-121-00	METAL CHIP 1M 5% 1/10W (85V/89V)	
R308	1-216-113-00	METAL CHIP 470K 5% 1/10W (85V/89V)	
R309	1-216-085-00	METAL CHIP 33K 5% 1/10W (85V/89V)	
R310	1-249-421-11	CARBON 2.2K 5% 1/4W (85V/89V)	
R311	1-216-075-00	METAL CHIP 12K 5% 1/10W (85V/89V)	
R312	1-216-121-00	METAL CHIP 1M 5% 1/10W (85V/89V)	
R313	1-216-078-00	METAL GLAZE 16K 5% 1/10W (85V/89V)	
R314	1-216-078-00	METAL GLAZE 16K 5% 1/10W (85V/89V)	
R315	1-216-078-00	METAL GLAZE 16K 5% 1/10W	
R316	1-216-121-00	METAL CHIP 1M 5% 1/10W (85V/89V)	
R317	1-216-093-00	METAL CHIP 68K 5% 1/10W (85V/89V)	
R318	1-216-049-00	METAL CHIP 1K 5% 1/10W (85V/89V)	
R319	1-249-436-11	CARBON 39K 5% 1/4W (85V/89V)	

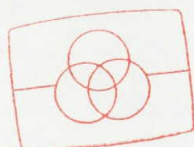
Ref. No.	Part No.	Description	Remark
R320	1-216-073-00	METAL CHIP 10K 5% 1/10W (85V/89V)	
R321	1-216-121-00	METAL CHIP 1M 5% 1/10W (85V/89V)	
R322	1-216-049-00	METAL CHIP 1K 5% 1/10W (85V/89V)	
R323	1-216-025-00	METAL CHIP 100 5% 1/10W (85V/89V)	
R401	1-215-442-00	METAL 7.5K 1% 1/6W	

Ref. No.	Part No.	Description	Remark
< SOCKET >			
W201	* 1-563-317-31	SOCKET, CONNECTOR (PC BOARD) 4P	
W202	* 1-563-318-31	SOCKET, CONNECTOR (PC BOARD) 8P	

Ref. No.	Part No.	Description	Remark
MISCELLANEOUS *****			
73	1-548-582-11	COUNTER, TAPE (SMALL TYPE) (84V/85V/89V)	
CNJ106	* 1-563-470-11	HOUSING, CONNECTOR (2P)	
HE901	8-825-771-21	HEAD, ERASE EBF5-36C	
HRP901	1-543-607-21	HEAD, MAGNETIC (REC/PB)	
M901	X-3320-925-1	MOTOR ASSY	
MIC901	1-542-080-11	MICROPHONE, BUILT-IN	
SP901	1-544-497-11	SPEAKER	

ACCESSORY & PACKING MATERIAL EA: Saudi Arabia  
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△ 1-465-531-11	ADAPTOR, AC (85V:Canadian/86V/89V)
△ 1-465-722-11	ADAPTOR, AC (AC-330) (85V:UK)
△ 1-465-723-11	ADAPTOR, AC (AC-330) (85V:AEP)
1-528-179-11	BATTERY, STORAGE, NI-CD (89V)
1-528-358-11	ADAPTOR, CHARGE (BCA-33) (89V)
3-351-508-01	TUBE, PROTECTION
* 3-367-005-01	CUSHION (UPPER) (82V:US/85V:US)
* 3-367-006-01	CUSHION (LOWER) (82V:US/85V:US)
* 3-368-824-01	CUSHION (UPPER) (86V)
* 3-368-825-01	CUSHION (LOWER) (86V)
* 3-367-010-01	CUSHION (EXCEPT 82V:US/85V:US/86V)
* 3-367-013-01	CARD BOARD (82V:US)
* 3-367-017-01	CARD BOARD (86V)
* 3-367-026-01	CARD BOARD (85V:US)
* 3-367-021-01	CASE, ACCESSORY (85V:AEP/UK)
* 3-367-028-01	CASE, ACCESSORY (85V:Canadian/89V)
* 3-367-015-01	INDIVIDUAL CARTON (82V:E/EA)
* 3-367-024-01	INDIVIDUAL CARTON (84V)
* 3-367-029-01	INDIVIDUAL CARTON (85V:AEP/UK)
* 3-367-031-01	INDIVIDUAL CARTON (89V)
* 3-369-509-01	INDIVIDUAL CARTON (85V:Canadian)
* 3-369-510-01	INDIVIDUAL CARTON (85V:E/EA)
3-570-631-71	BAG, POLYETHYLENE (82V:E, EA/84V)
3-701-623-00	BAG, POLYETHYLENE (89V)
3-753-316-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE) (84V/85V:Canadian, AEP, UK)
3-753-316-21	MANUAL, INSTRUCTION (ENGLISH) (US)
3-753-316-41	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH, ITALIAN) (84V:AEP/85V:AEP)
3-753-316-51	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE) (82V:E, EA/85V:E, EA)



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

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