

# M-425

## SERVICE MANUAL



*US Model  
Canadian Model  
AEP Model  
UK Model  
E Model*

Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MZ-425-14

### SPECIFICATIONS

#### Tape

**MICROCASSETTE™** (normal position type)

#### Recording system

2-track 1-channel monaural

#### Speaker

Approx. 3.6 cm (1 1/8 in.) dia.

#### Tape speed

2.4 cm/s (1 1/8 ips), 1.2 cm/s (1/2 ips)

#### Frequency range

250 - 4,000 Hz

#### Output

Earphone jack (minijack) for 8 - 300 ohms earphone

#### Power output

160 mW (at 10% harmonic distortion)

#### Battery life (recording)

SONY SUM-3 (NS) 5.5H

SONY ALKALINE AM3 (N) 14H

#### Power requirements

- Two R6 (size AA) batteries: 3 V DC
- Sony AC-E30M AC power adaptor (not supplied):  
220 V AC, 50 Hz (European model)  
120/220 V AC, 50/60 Hz (model for other countries)
- Sony DCC-E130L car battery cord (not supplied): 12 V car battery

#### Dimensions (w/h/d)

Approx. 66.7 x 120.8 x 25 mm incl. projecting parts and controls

#### Mass

Approx. 180 g incl. batteries

#### Supplied accessories (AEP, UK)

Microcassette tape MC-30 (1)

Design and specifications are subject to change without notice.



**MICROCASSETTE™ CORDER**  
**SONY®**

## SERVICING NOTE

### 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.

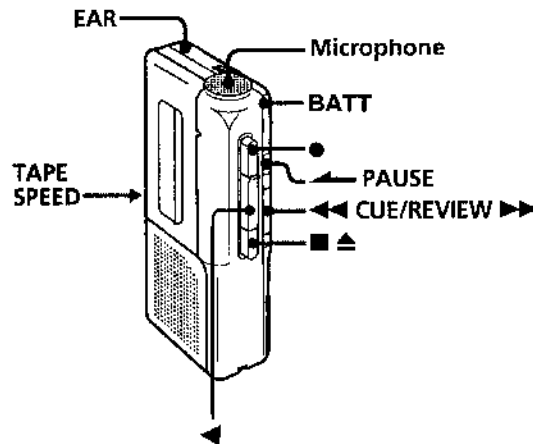
### Notes on chip component replacement

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

## SECTION 1 GENERAL

This section is extracted from instruction manual.

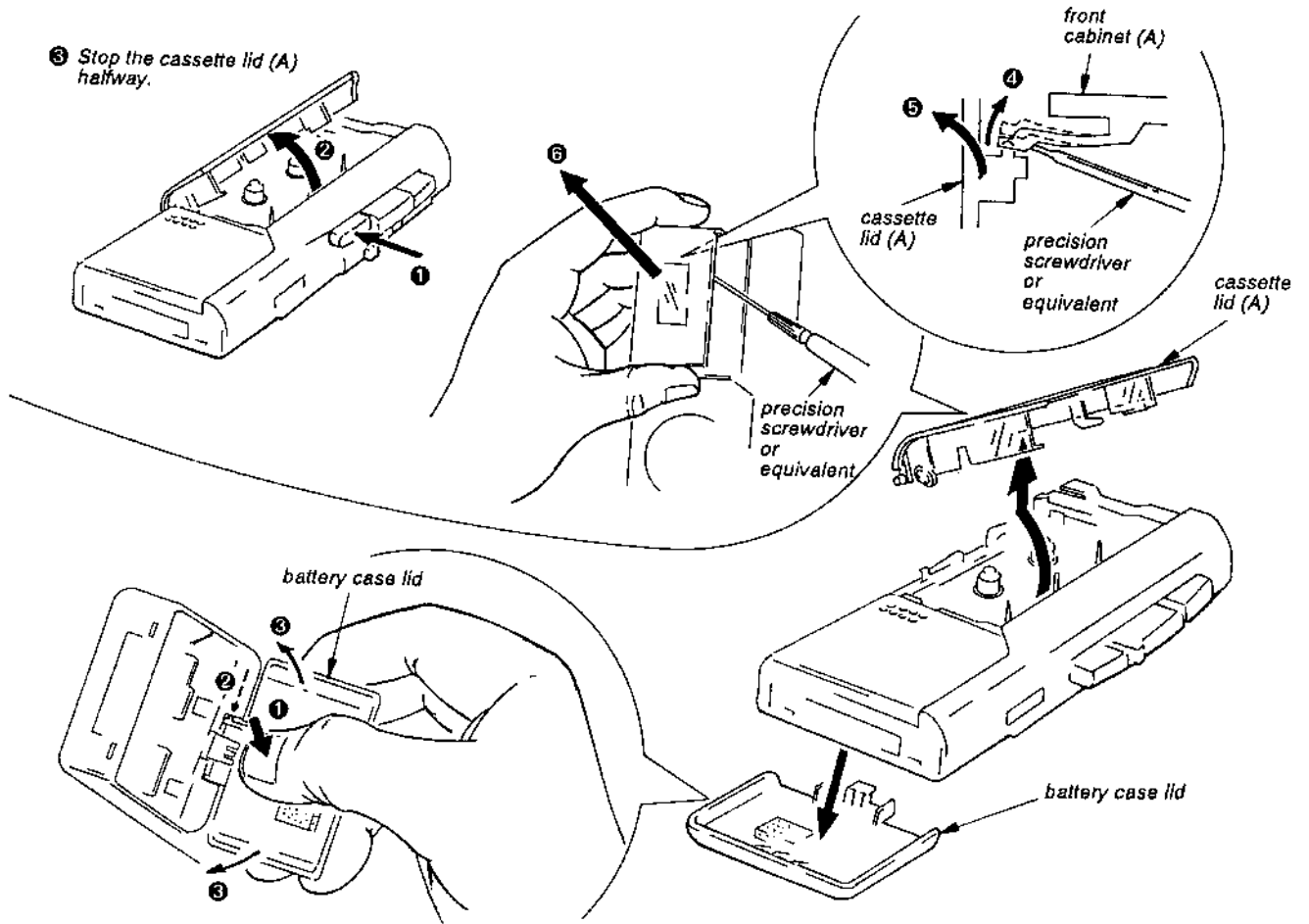
### • Parts Identification



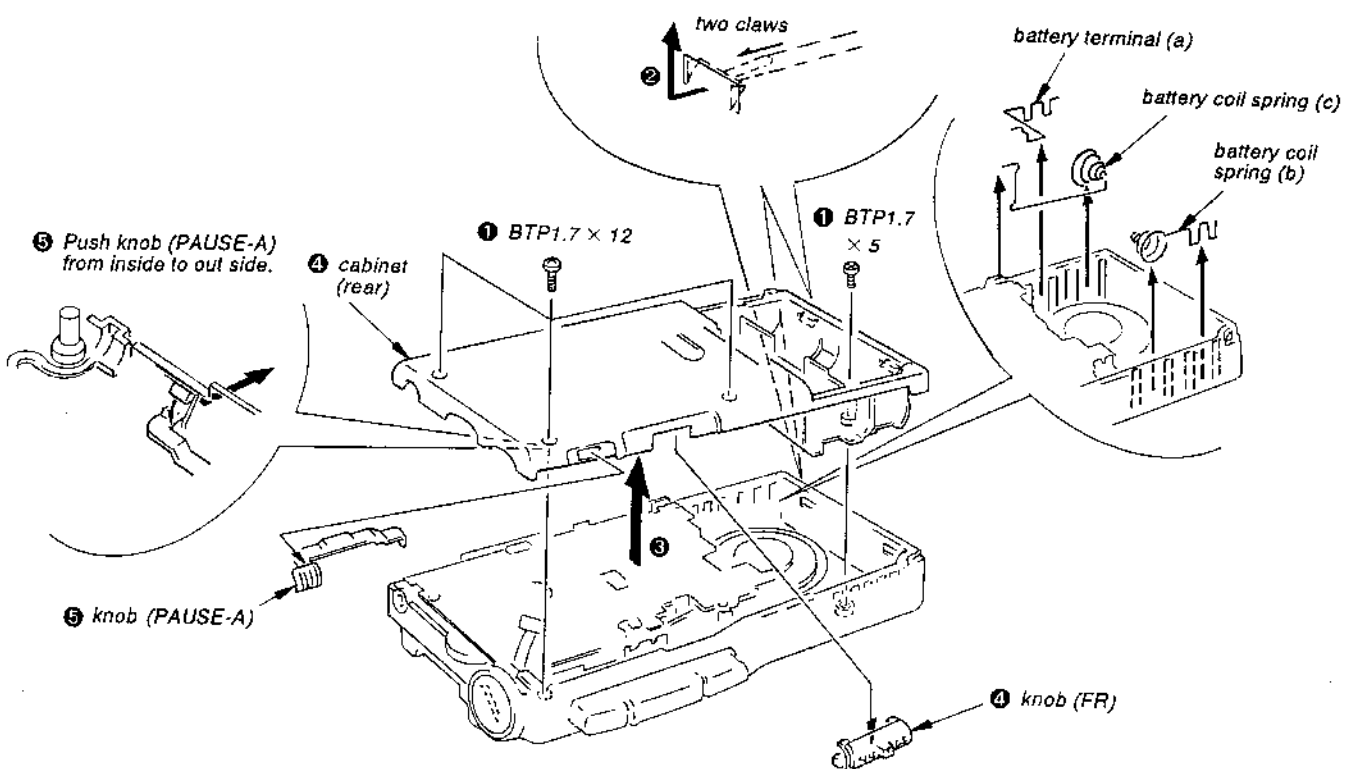
## SECTION 2 DISASSEMBLY

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

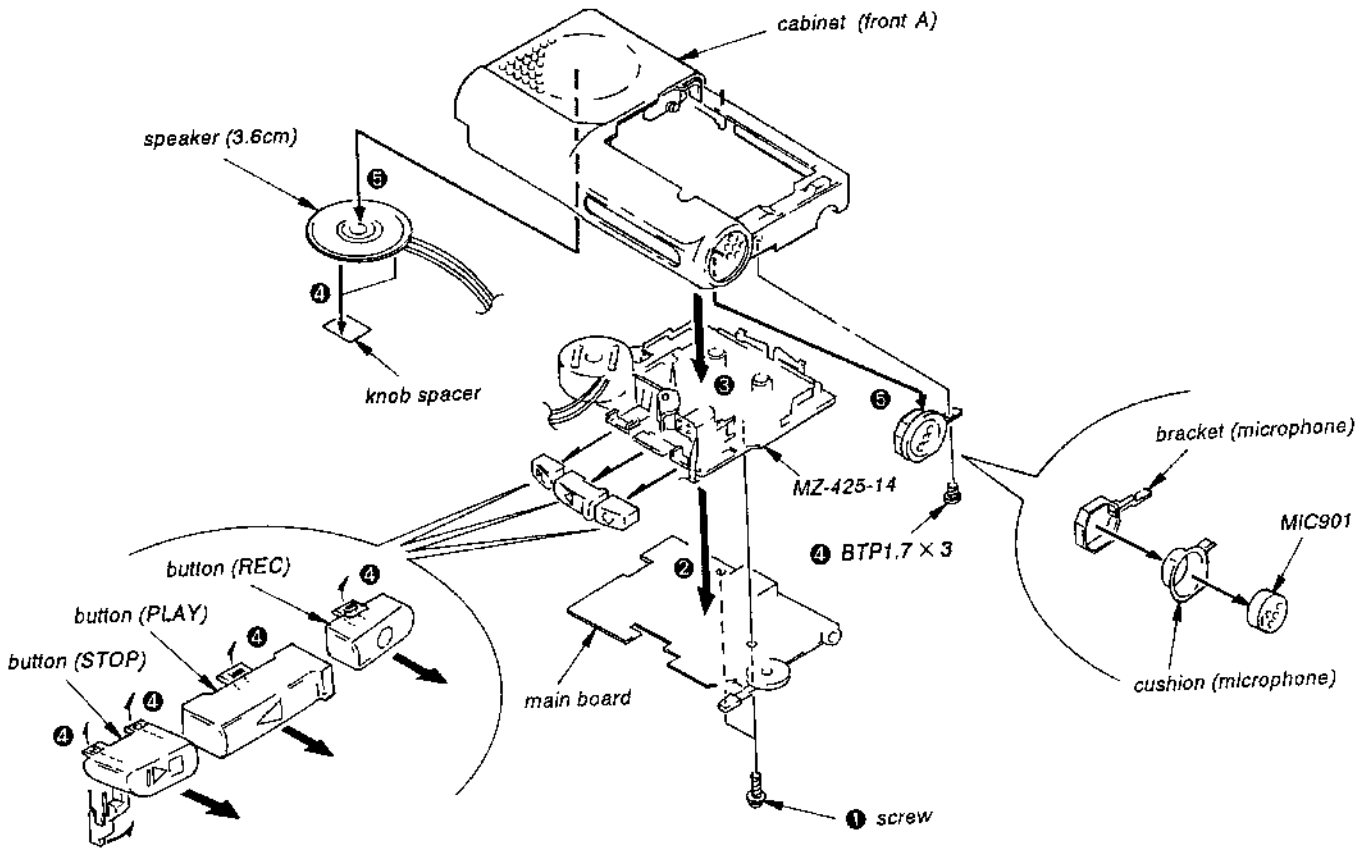
### CASSETTE AND BATTERY LIDS



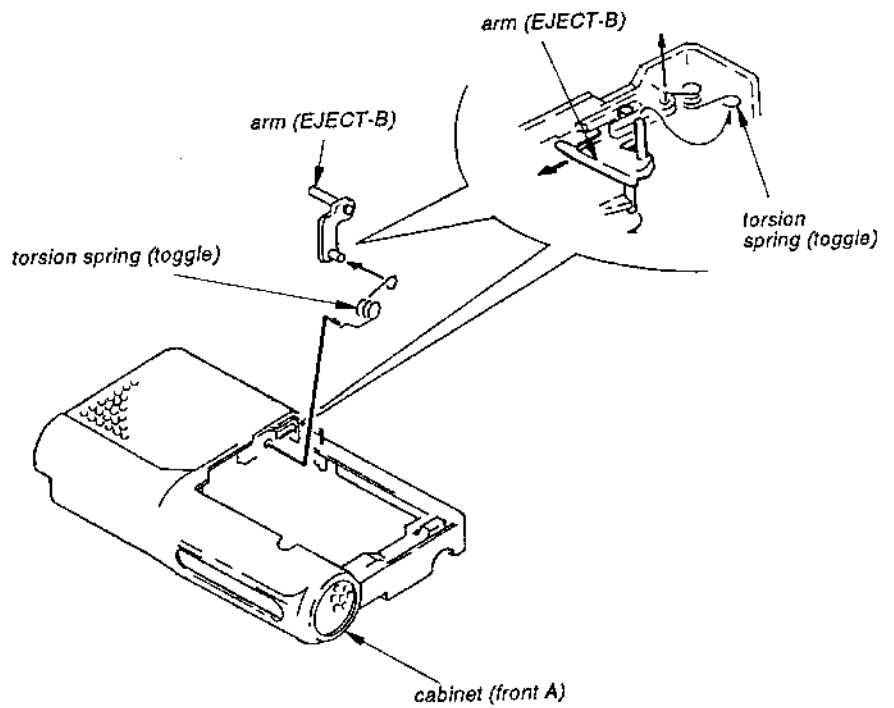
### CABINET



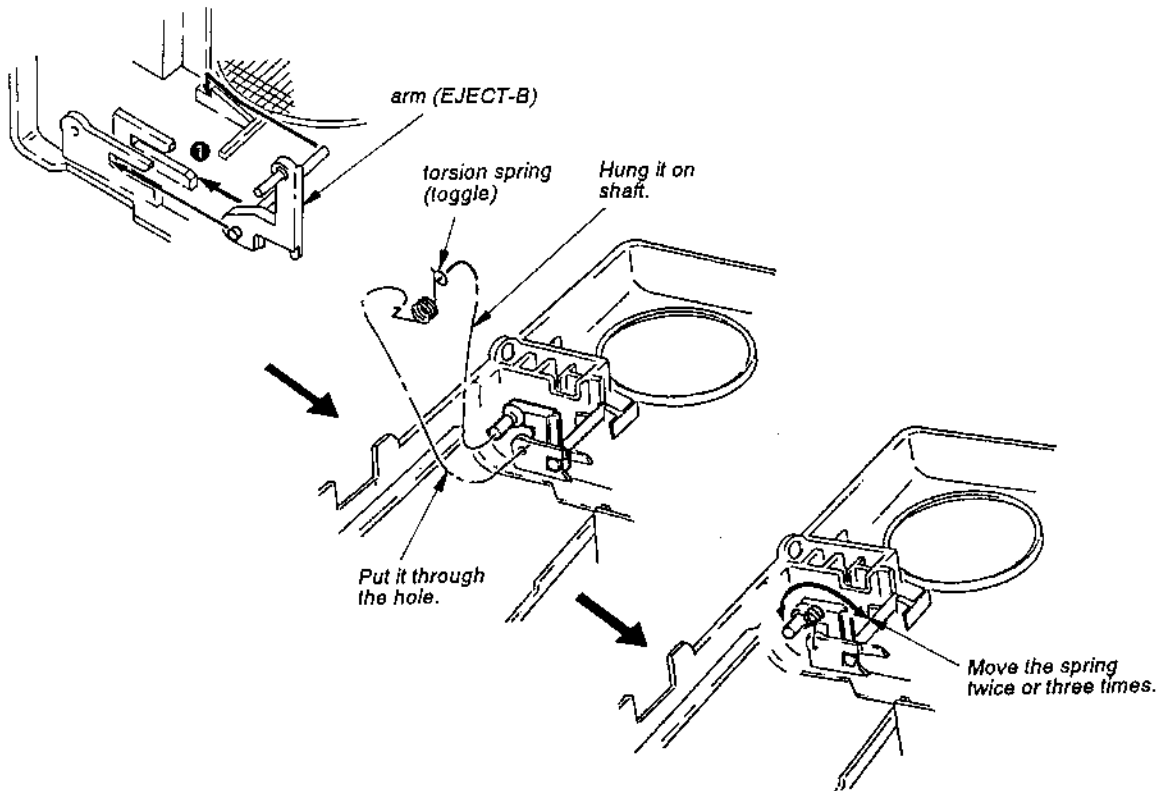
# MECHANISM DECK



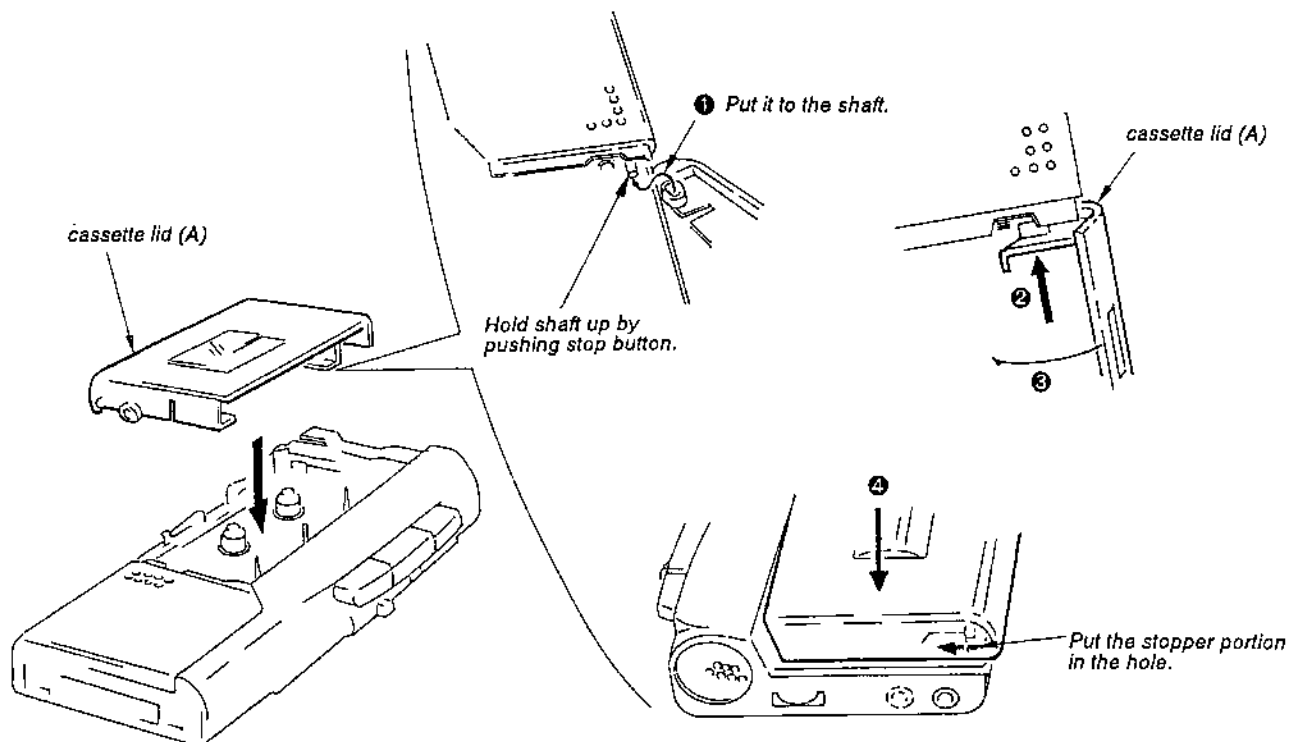
# KNOB



### ARM (EJECT) FITTING



### CASSETTE LID (A) FITTING



## SECTION 3 ADJUSTMENTS

### 2-1. MECHANICAL ADJUSTMENTS AND MEASUREMENT

#### PRECAUTION

- Clean the following parts with a denatured-alcohol-moistened swab:  
record/playback/erase head    pinch roller  
rubber belts                      capstan
- Demagnetize the record/playback head with a head demagnetizer.
- Do not use a magnetized screwdriver for the adjustments.
- The adjustments should be performed with the rated power supply voltage unless otherwise noted.  
Power supply voltage : 3 Vdc  
TAPE SPEED switch : 2.4 cm

#### Torque Measurement

Torqu	Meter Reading	Torqu Meter
Forward	5-13g • cm (0.07 - 0.180oz • inch)	CQ-103M
Fast Forward	5-13g • cm (0.07 - 0.180oz • inch)	CQ-201M
Rewind	more than 15 g • cm (more than 0.21oz • inch)	CQ-201M

#### Tape Tension Measurement

Meter	Meter Reading
CQ-403M	more than 30 g (more than 0.42 oz)

### 2-2. ELECTRICAL ADJUSTMENTS

#### Test Tape

Type	Signal	Used for	Tape Speed (cm/s)
WS-12	3 kHz, - 10 dB	Tape Speed Adjustment	1.2
WS-24			2.4
S-2-A030	3 kHz, - 20 dB	Head Azimuth Adjustment	2.4

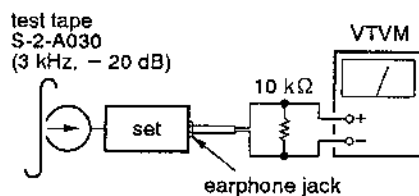
#### Record/Playback Head Azimuth Adjustment

##### setting:

VOLUME control : mechanical mid  
TAPE SPEED switch : 2.4 cm/s

##### Procedure:

- Mode : playback

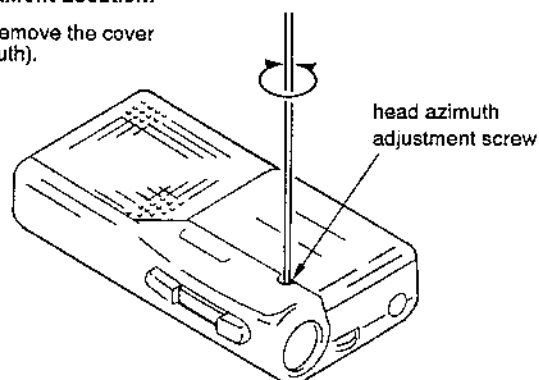


- Turn the adjustment screw to obtain the maximum reading on VTVM.

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

##### Adjustment Location:

First remove the cover (azimuth).



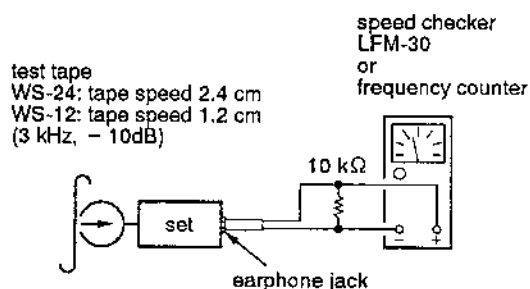
#### Tape Speed adjustment

##### Setting:

VOLUME control : mechanical mid

##### Procedure:

- Reform 2.4 cm/s speed adjustment before 1.2 cm/s speed adjustment mode : playback



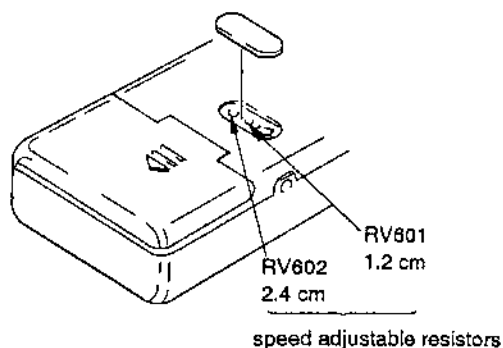
Tape Speed	Speed checker	Frequency counter
2.4 cm/s	± 3%	3,000 ± 90 Hz
1.2 cm/s	± 3%	3,000 ± 90 Hz

Frequency difference between the beginning and the end of the tape should be within 0.5%.

2.4cm/s (15 Hz)

1.2 cm/s (15 Hz)

##### Adjustment Location:

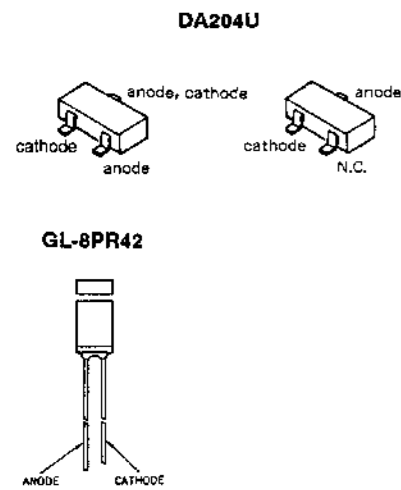


SECTION 4  
DIAGRAMS

• Semiconductor Location

Ref. No.	Location
D101	F-12
D102	F-13
D401	K-5
IC101	H-11
IC801	J-18
Q101	D-10
Q102	E-10
Q103	F-10

• Semiconductor Lead Layouts



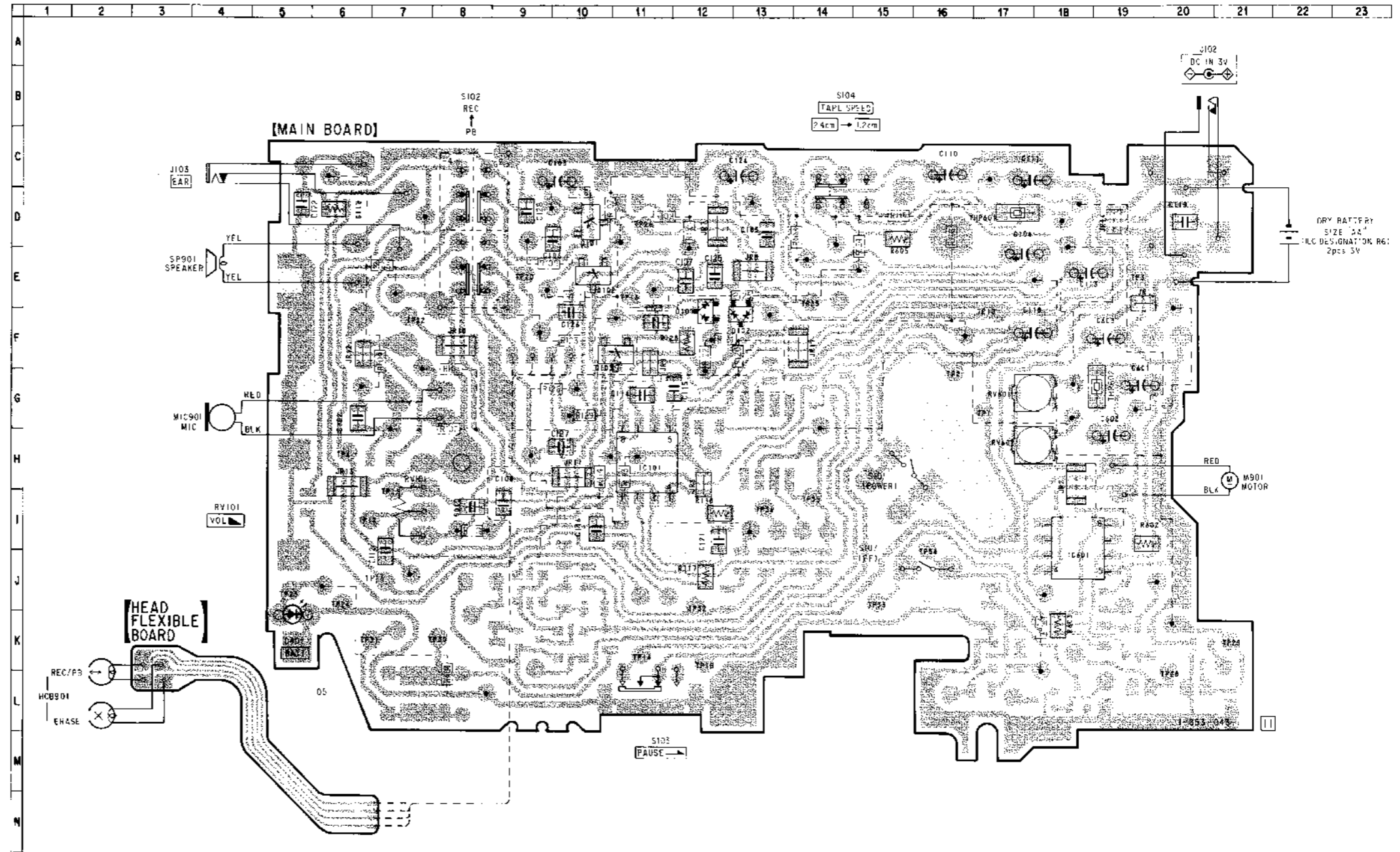
Note on Schematic Diagram:

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\text{F}$
- 50 WV 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 + Line.
- : panel designation.
- : 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 external power voltage jack.
- Voltages are dc with respect to ground under no-signal conditions.  
no mark : PLAY  
( ) : REC
- Voltages are taken with a VOM (10 M $\Omega$ /V).  
Voltage variations may be noted due to normal production tolerances.
- Signal path.  
 : PB  
 : REC

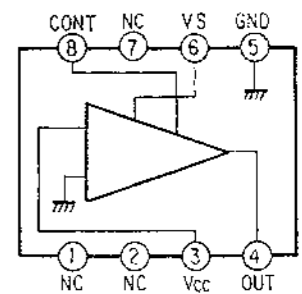
Note on Printed Wiring Board:

- : parts extracted from the component side.
- : Through hole.
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.
- : printed resistor of the rear side.

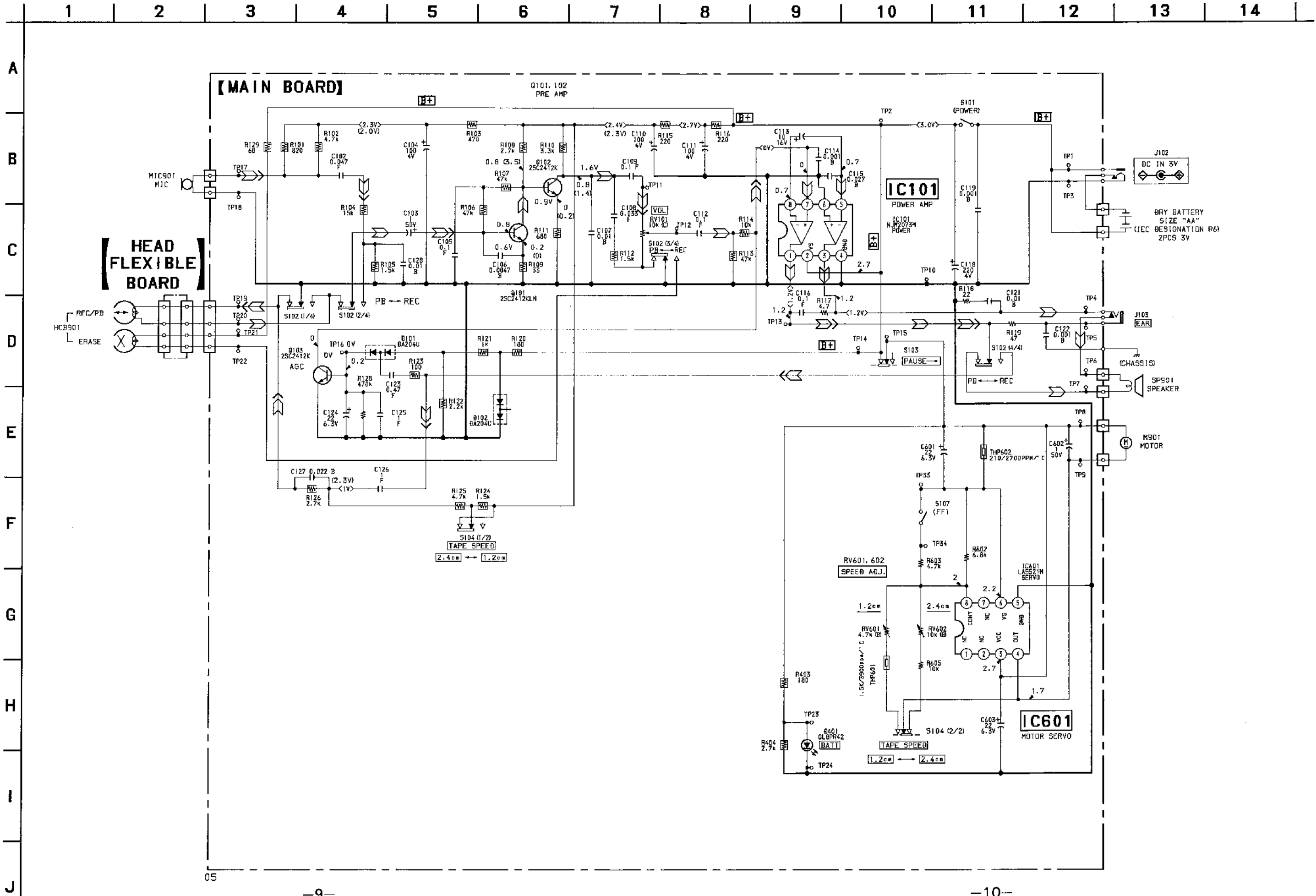
4-1. PRINTED WIRING BOARD



• IC Block Diagram  
LA5521M



4-2. SCHEMATIC DIAGRAM



05

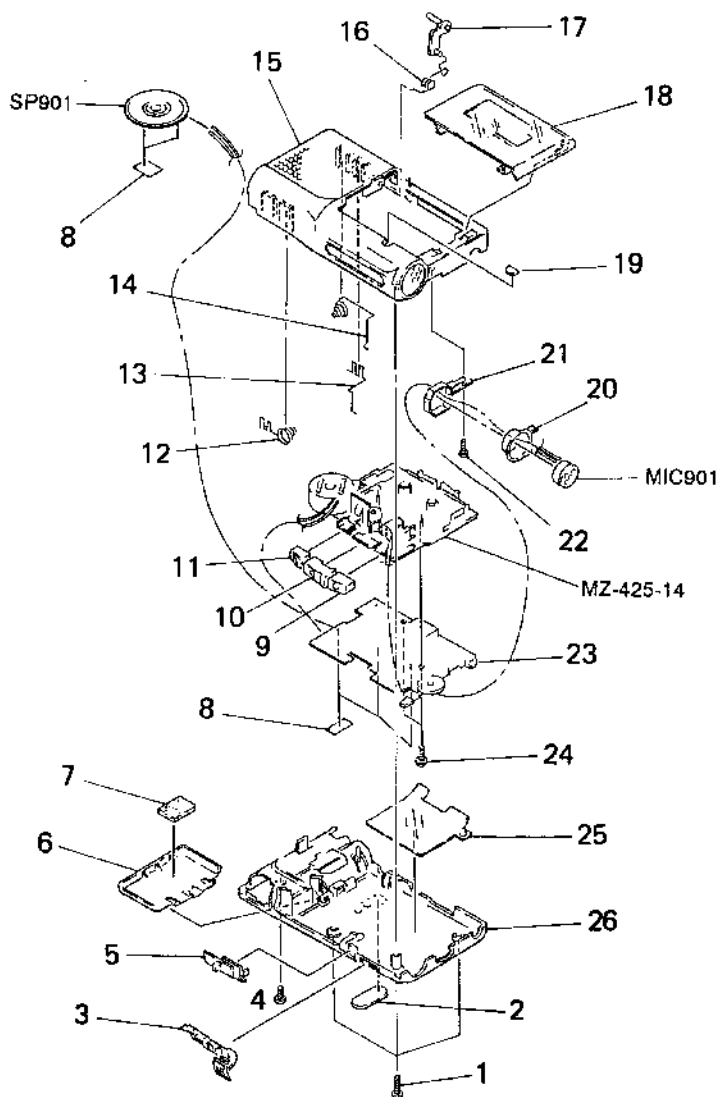


## SECTION 5 EXPLODED VIEWS

**NOTE:**

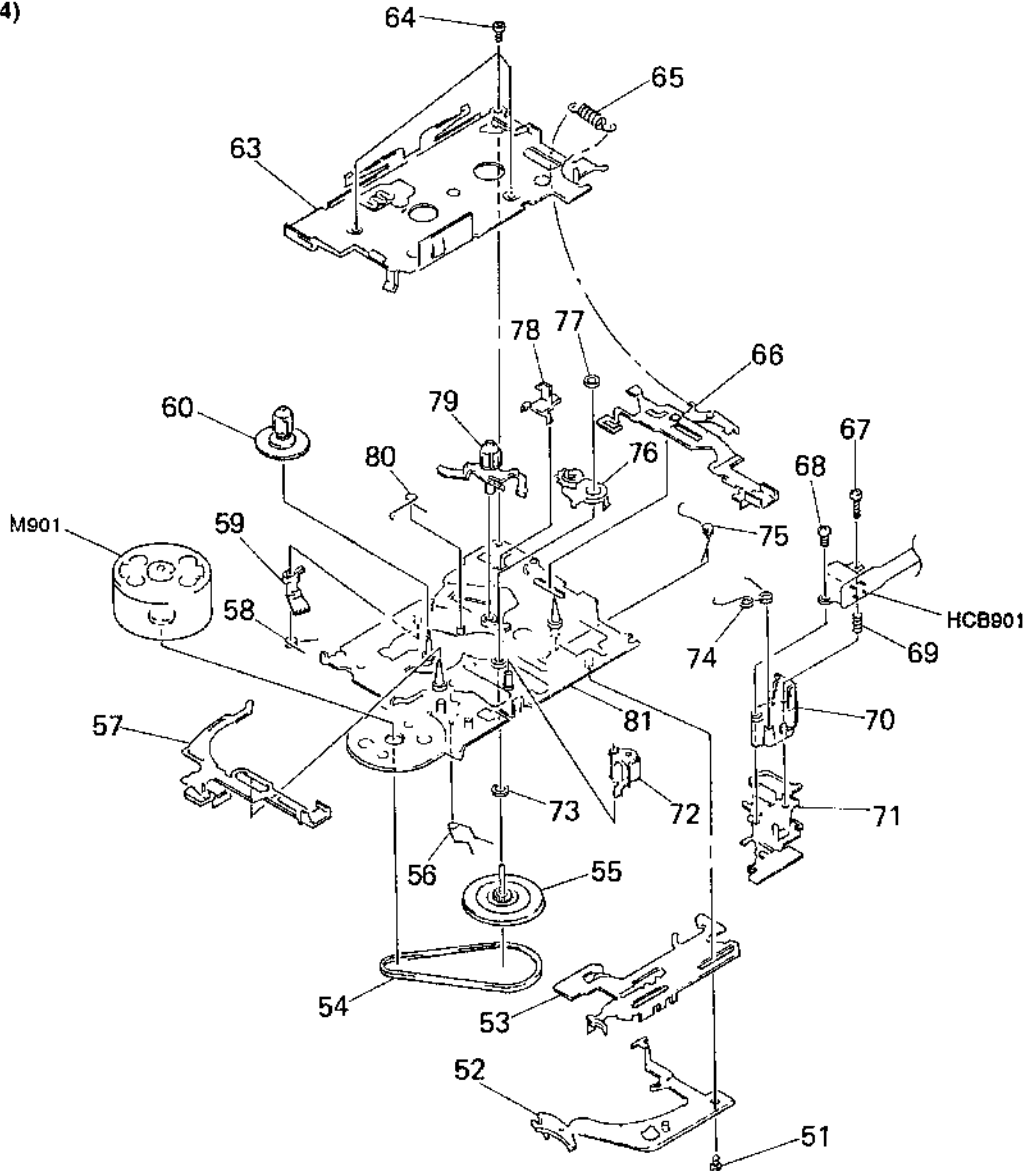
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts  
Example:  
KNOB, BALANCE (WHITE) ... (RED)  
                  ↑                  ↑  
                  Parts Color   Cabiner's Color
- Items marked "\*" are not stocked 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.

**(1) GENERAL SECTION**



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	3-318-203-51	SCREW (B1.7X12), TAPPING		15	X-3368-590-1	CABINET (FRONT) (A4) ASSY	
2	3-358-363-11	PLATE, BLIND		16	3-914-931-01	SPRING (TOGGLE), TORSION	
3	3-914-938-01	KNOB (PAUSE-A)		17	3-914-936-01	ARM (EJECT-B)	
4	3-318-203-72	SCREW (B1.7X5), TAPPING		18	3-914-953-01	LID (A), CASSETTE	
5	3-914-939-01	KNOB (FR)		19	3-914-952-01	COVER (AZIMUTH)	
6	3-914-950-01	LID, BATTERY CASE		* 20	3-914-937-01	CUSHION (MICROPHONE)	
* 7	3-914-930-01	CUSHION (BATTERY CASE LID)		* 21	3-914-949-01	BRACKET (MICROPHONE)	
8	3-831-441-XX	SPACER, KNOB		22	3-318-382-31	SCREW (1.7X3), TAPPING	
9	3-914-948-01	BUTTON (REC)		* 23	A-3016-593-A	MAIN BOARD, COMPLETE	
10	3-914-947-01	BUTTON (PLAY)		24	3-342-156-51	SCREW	
11	3-914-946-01	BUTTON (STOP)		25	3-914-929-01	PAPER, SHIELD	
12	3-914-934-01	SPRING (B), BATTERY COIL		* 26	3-914-958-01	CABINET (REAR)	
13	3-914-933-01	TERMINAL (A), BATTERY		MIC901	1-542-136-11	MICROPHONE, ELECTRET CONDENSER	
14	3-914-932-01	SPRING (C), BATTERY COIL		SP901	1-544-657-12	SPEAKER (3.6CM)	

(2) MECHANISM SECTION  
(MZ-425-14)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-704-243-11	SCREW (P1. 7X2. 0)		69	3-378-792-01	SPRING, COMPRESSION	
* 52	3-914-920-01	PLATE (FR), LOCK		70	3-914-914-01	GUIDE, TAPE	
* 53	3-914-919-01	SLIDER (FR)		* 71	3-914-913-01	LEVER (PLATY)	
54	3-377-420-11	BELT		72	X-3368-585-1	PINCH LEVER ASSY	
55	X-3368-702-1	FLYWHEEL (1. 3) ASSY		73	3-350-945-11	WASHER	
56	3-914-903-01	SPRING (FR), TORSION		74	3-914-902-01	SPRING (P), TORSION	
* 57	X-3368-486-1	LEVER (STOP) ASSY		75	3-914-904-01	SPRING (PFR), TORSION	
58	3-914-906-01	SPRING (S. OFF), TORSION		76	X-3368-584-1	ARM (MIDWAY GEAR) ASSY	
59	3-914-915-01	ARM (S. OFF)		77	3-331-007-21	WASHER	
60	X-3368-582-1	REEL ASSY, T		78	3-914-916-01	ARM (CRAW DETECTION)	
* 63	3-914-923-01	COVER, MD		79	X-3368-587-1	REEL ASSY, S	
64	3-366-892-11	SCREW (M1. 4X1. 4)		80	3-914-907-01	SPRING (MIDWAY GEAR), TORSION	
65	3-914-908-01	SPRING (REC LOCK), TENSION		* 81	X-3368-701-1	CHASSIS (COMP.) ASSY (C), MECH	
* 66	X-3368-583-1	LEVER (REC) ASSY		HCB901	1-500-135-11	HEAD, MAGNETIC (REC/PB/ERASE)	
67	3-703-816-82	SCREW (M1. 4X6), SPECIAL HEAD		M901	1-698-384-11	MOTOR, DC	
68	3-704 245-42	SCREW (P1. 4X3. 0)					

# SECTION 6 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:  $\mu$ , 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

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-3016-593-A	MAIN BOARD, COMPLETE *****				< IC >	
		< CAPACITOR >		IC101	8-759-701-02	IC NJM2073M	
				IC601	8-759-804-43	IC LA5521M	
C102	1-163-035-00	CERAMIC CHIP	0.047uF			< JACK >	
C103	1-104-390-21	ELECT	1uF				
C104	1-104-401-21	ELECT	100uF				
C105	1-163-038-00	CERAMIC CHIP	0.1uF			J102	1-580-372-41 JACK, DC (POLARITY UNIFIED TYPE) (DC IN 3V)
C106	1-163-017-00	CERAMIC CHIP	0.0047uF	5%		J103	1-766-156-11 JACK (EAR)
							< JUMPER RESISTOR >
C107	1-164-232-11	CERAMIC CHIP	0.01uF			JR1	1 216 295 00 METAL GLAZE 0 5% 1/10W
C108	1-163-034-00	CERAMIC CHIP	0.033uF			JR2	1-216-296-00 METAL GLAZE 0 5% 1/8W
C109	1-163-038-00	CERAMIC CHIP	0.1uF			JR3	1-216-295-00 METAL GLAZE 0 5% 1/10W
C110	1-104-401-21	ELECT	100uF	20%		JR6	1-216-295-00 METAL GLAZE 0 5% 1/10W
C111	1-104-401-21	ELECT	100uF	20%		JR7	1-216-296-00 METAL GLAZE 0 5% 1/8W
C112	1-163-038-00	CERAMIC CHIP	0.1uF			JR8	1-216-296-00 METAL GLAZE 0 5% 1/8W
C113	1-104-368-21	ELECT	10uF	20%		JR9	1-216-295-00 METAL GLAZE 0 5% 1/10W
C114	1 163 009 11	CERAMIC CHIP	0.001uF	10%		JR10	1-216-296-00 METAL GLAZE 0 5% 1/8W
C115	1-163-986-00	CERAMIC CHIP	0.027uF	10%		JR11	1-216-296-00 METAL GLAZE 0 5% 1/8W
C116	1-163-038-00	CERAMIC CHIP	0.1uF			JR12	1-216-295-00 METAL GLAZE 0 5% 1/10W
C118	1-104-402-21	ELECT	220uF	20%		JR13	1 216 296 00 METAL GLAZE 0 5% 1/8W
C119	1-163-009-11	CERAMIC CHIP	0.001uF	10%		JR14	1-216-295 00 METAL GLAZE 0 5% 1/10W
C121	1-164-232-11	CERAMIC CHIP	0.01uF			JR17	1-216-296-00 METAL GLAZE 0 5% 1/8W
C122	1-163-009-11	CERAMIC CHIP	0.001uF	10%			
C123	1-164-005-11	CERAMIC CHIP	0.47uF				< TRANSISTOR >
C124	1-104-355-21	ELECT	22uF	20%		Q101	8-729-016-80 TRANSISTOR 2SC2412KLN-T146-R
C125	1-164-346-11	CERAMIC CHIP	1uF			Q102	8-729-920-74 TRANSISTOR 2SC2412K-QR
C126	1-164-346-11	CERAMIC CHIP	1uF			Q103	8-729-920-74 TRANSISTOR 2SC2412K-QR
C127	1 163 037-11	CERAMIC CHIP	0.022uF	10%			< RESISTOR >
C128	1-164-232-11	CERAMIC CHIP	0.01uF				
C601	1-104-355-21	ELECT	22uF	20%		R101	1-249-416-11 CARBON 820 5% 1/4W F
C602	1-104-390-21	ELECT	1uF	20%		R102	1-249-425-11 CARBON 4.7K 5% 1/4W F
C603	1-104-355-21	ELECT	22uF	20%		R103	1-249-413-11 CARBON 470 5% 1/4W F
						R104	1-216-077-00 METAL CHIP 15K 5% 1/10W
						R105	1-216-053-00 METAL CHIP 1.5K 5% 1/10W
		< DIODE >				R106	1-249-437-11 CARBON 47K 5% 1/4W
D101	8-719-941-23	DIODE DA204U				R107	1-249-437-11 CARBON 47K 5% 1/4W
D102	8-719-941-23	DIODE DA204U				R108	1-249-422-11 CARBON 2.7K 5% 1/4W F
D401	8-719-026-62	DIODE GL8PR42 (BATT)				R109	1-249-399-11 CARBON 33 5% 1/4W F

SEE ADDITIONAL INFORMATION

MAIN

Ref. No.	Part No.	Description			Remark
R110	1-249-423-11	CARBON	3.3K	5%	1/4W F
R111	1-249-415-11	CARBON	680	5%	1/4W F
R112	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R113	1-249-437-11	CARBON	47K	5%	1/4W
R114	1-249-429-11	CARBON	10K	5%	1/4W
R115	1-216-033-00	METAL CHIP	220	5%	1/10W
R116	1-216-033-00	METAL CHIP	220	5%	1/10W
R117	1-216-308-00	METAL CHIP	4.7	5%	1/10W
R118	1-216-009-00	METAL CHIP	22	5%	1/10W
R119	1-216-017-00	METAL CHIP	47	5%	1/10W
R120	1-249-408-11	CARBON	180	5%	1/4W F
R121	1-249-417-11	CARBON	1K	5%	1/4W F
R122	1-249-421-11	CARBON	2.2K	5%	1/4W F
R123	1-247-807-31	CARBON	100	5%	1/4W
R124	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R125	1-249-425-11	CARBON	4.7K	5%	1/4W F
R126	1-249-422-11	CARBON	2.7K	5%	1/4W F
R128	1-216-113-00	METAL CHIP	470K	5%	1/10W
R129	1-216-021-00	METAL CHIP	68	5%	1/10W
R403	1-249-408-11	CARBON	180	5%	1/4W F
R404	1-249-422-11	CARBON	2.7K	5%	1/4W F
R602	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R603	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R605	1-216-073-00	METAL CHIP	10K	5%	1/10W

< VARIABLE RESISTOR >

RV101	1-237-731-21	RES, VAR, CARBON 10K (VOL)
RV601	1-238-663-11	RES, ADJ, CARBON 4.7K
RV602	1-223-586-11	RES, ADJ, CARBON 10K

< SWITCH >

S101	1-572-688-11	SWITCH, PUSH (1 KEY) (POWER)
S102	1-692-999-11	SWITCH, SLIDE (REC/PB)
S103	1-571-275-31	SWITCH, SLIDE (PAUSE)
S104	1-571-478-11	SWITCH, SLIDE (TAPE SPED)
S107	1-572-688-11	SWITCH, PUSH (1 KEY) (FF)

< POSITIVE THERMISTOR >

THP601	1-808-956-11	THERMISTOR, POSITIVE
THP602	1-809-757-11	THERMISTOR, POSITIVE

\*\*\*\*\*

MISCELLANEOUS

\*\*\*\*\*

HCB901	1-500-135-11	HEAD, MAGNETIC (REC/PB/ERASE)
M901	1-698-384-11	MOTOR, DC
MIC901	1-542-136-11	MICROPHONE, ELECTRET CONDENSER
SP901	1-544-657-12	SPEAKER (3.6CM)

Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS	
		*****	
	3-758-981-61	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE) (AEP, UK, E)	
	3-758-981-71	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH, ITALIAN) (AEP)	
	3-758-981-81	MANUAL, INSTRUCTION (ENGLISH) (US, Canadian)	
	3-758-981-91	MANUAL, INSTRUCTION (FRENCH) (Canadian)	
*	3-916-680-01	INDIVIDUAL CARTON (AEP, UK)	
*	3-916-682-01	INDIVIDUAL CARTON (E)	
*	3-916-688-11	CUSHION	

# M-425

## SONY. SERVICE MANUAL

US Model  
Canadian Model  
AEP Model  
UK Model  
E Model

### SUPPLEMENT-1

File this supplement with the service manual.

**Subject :**

1. Addition of Instruction Manual for AEP Model
2. Addition of Mexican Model

(ENG-96006)

#### 1. Addition of Instruction Manual for AEP Model

##### • ACCESSORIES & PACKING MATERIALS

Page	Ref. No.	Part No.	Description
14	-	3-810-462-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, DUTCH)

#### 2. Addition of Mexican Model

Mexican model have been added.

There are the same as E model which is not described in this supplement-1. Refer to M-425 original service manual (9-959-543-11) for the other informations.

##### • ACCESSORIES & PACKING MATERIALS

Page	Ref. No.	E model		Mexican model	
		Part No.	Description	Part No.	Description
14	-	3-758-981-61	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE)	3-810-462-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, DUTCH)
	*	3-916-682-01	INDIVIDUAL CARTON	_____	_____
	*	3-916-688-11	CUSHION	_____	_____
	*	_____	_____	3-916-760-01	CUSHION (TOP)
	*	_____	_____	3-916-761-01	CUSHION (BOTTOM)

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

# M-425

**SONY.**

## **SERVICE MANUAL**

*US Model  
Canadian Model  
AEP Model  
UK Model  
E Model*

### **SUPPLEMENT-2**

File this supplement with the service manual.

**Subject: Change of MAIN board (EXCEPT US, Canadian Model)**

• **New/former Discrimination**

	<b>Former Type</b>	<b>New Type</b>
Main Board Part No.	1-653-043-00	1-664-894-00

The New Type Main Board of information, refer to the M-437 service manual (9-923-127-11) previously issued.

# M-425

**SONY.**

## SERVICE MANUAL

*US Model  
Canadian Model  
AEP Model  
UK Model  
E Model*

### SUPPLEMENT-3

File this supplement with the service manual.

**Subject: Addition of East European Model**

#### **Addition of East European Model**

East European model have been added.

There are the same as AEP model which is not described in this supplement-3.

Refer to M-425 original service manual (9-959-543-11) for the other informations.

#### **• ACCESSORIES & PACKING MATERIALS**

Page	AEP model				East European model			
	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
14		3-758-981-61	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE)			3-858-067-35	MANUAL, INSTRUCTION (ENGLISH, GERMAN, SPANISH, PORTUGUESE)	
		3-758-981-71	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH, ITALIAN)			3-858-067-91	MANUAL, INSTRUCTION (RUSSIAN, HUNGARIAN, CZECH, POLISH)	