

M-527V

SERVICE MANUAL



*US Model
Canadian Model
AEP Model
E Model
UK Model
Tourist 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 1/2 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

Microcassette tape MC-30 (1) (AEP, UK)

R6 (size AA) batteries (2) (Tourist)

Carrying case (1) (tourist)

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.

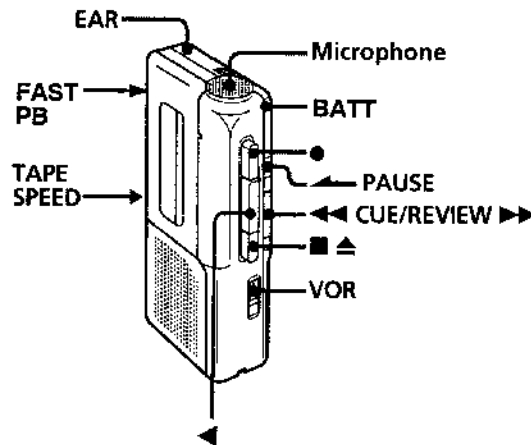
Notes on chip component replacement

- 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.

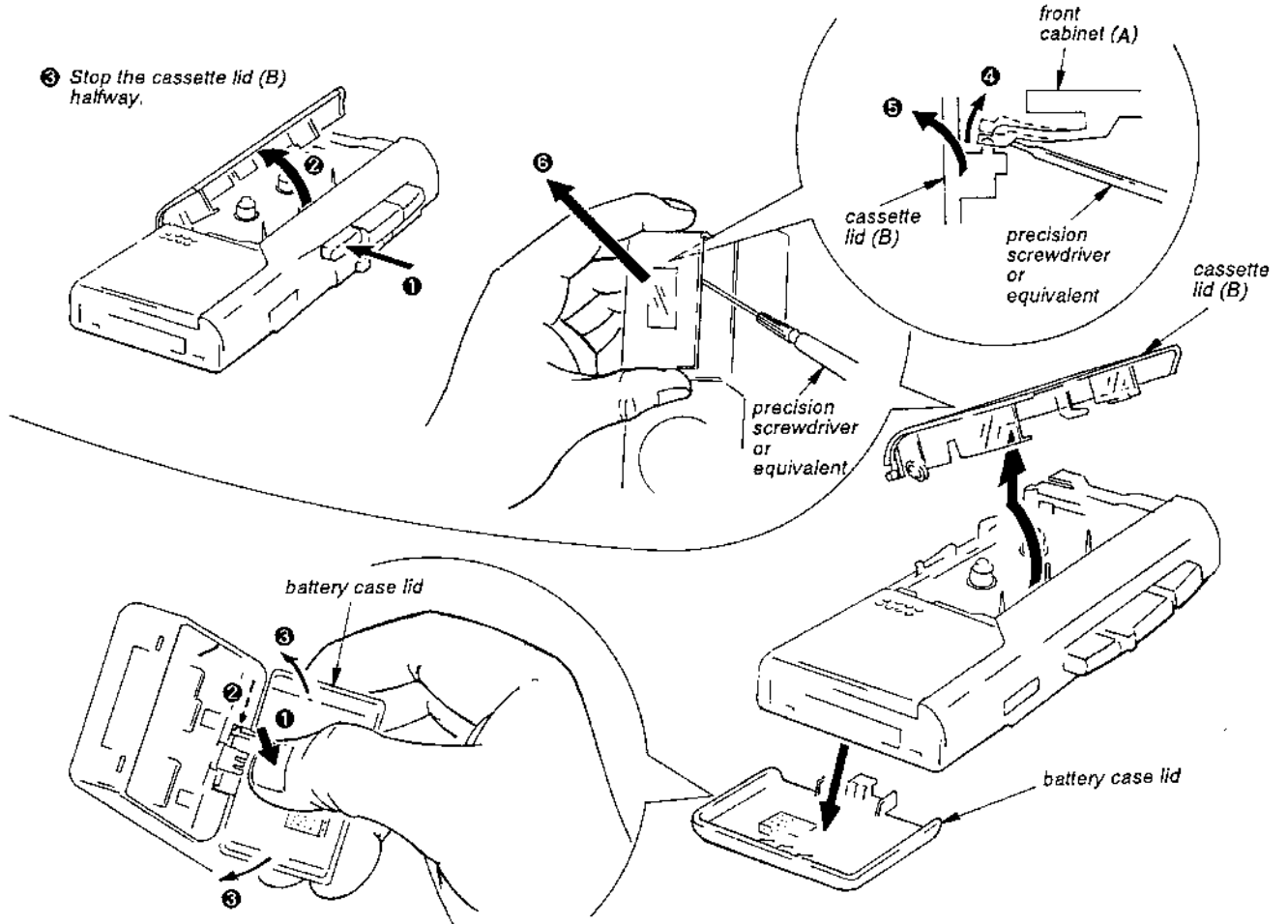
• Parts Identification



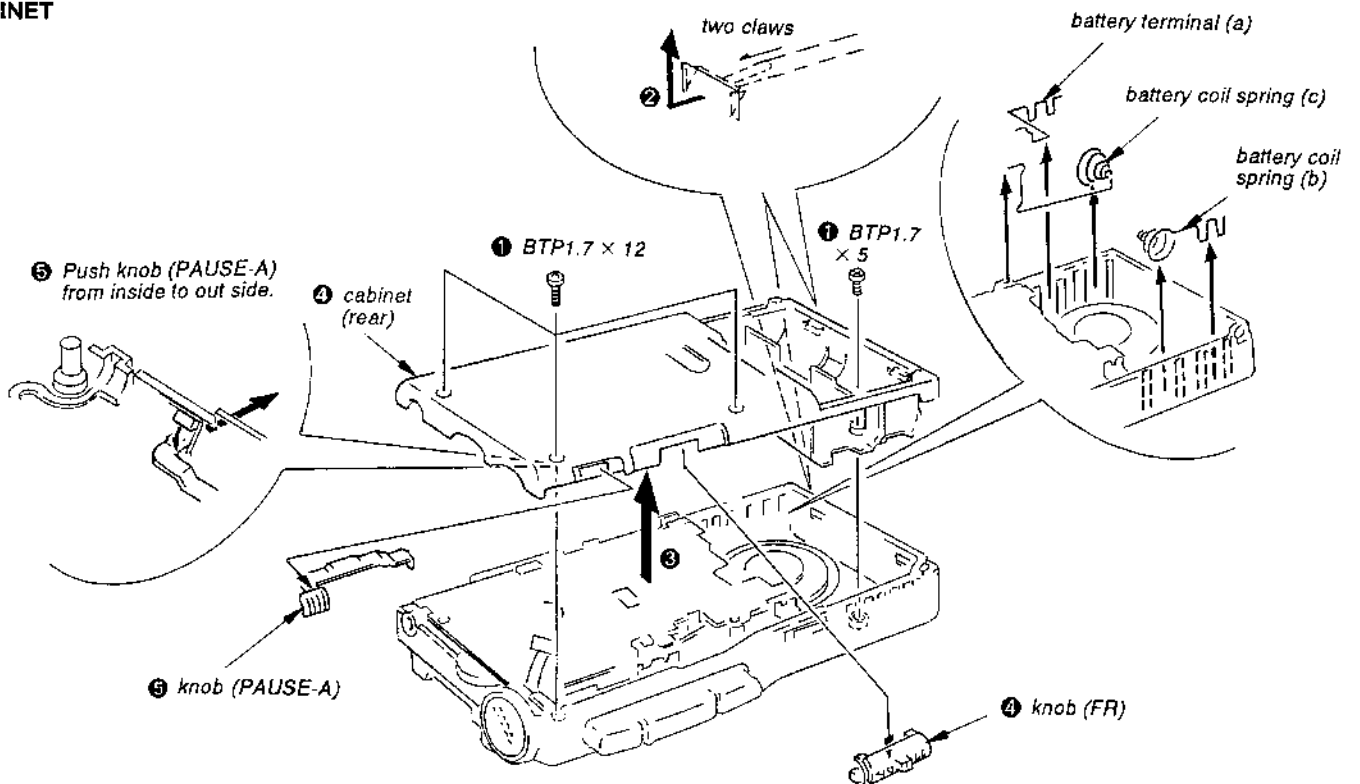
SECTION 2 DISASSEMBLY

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

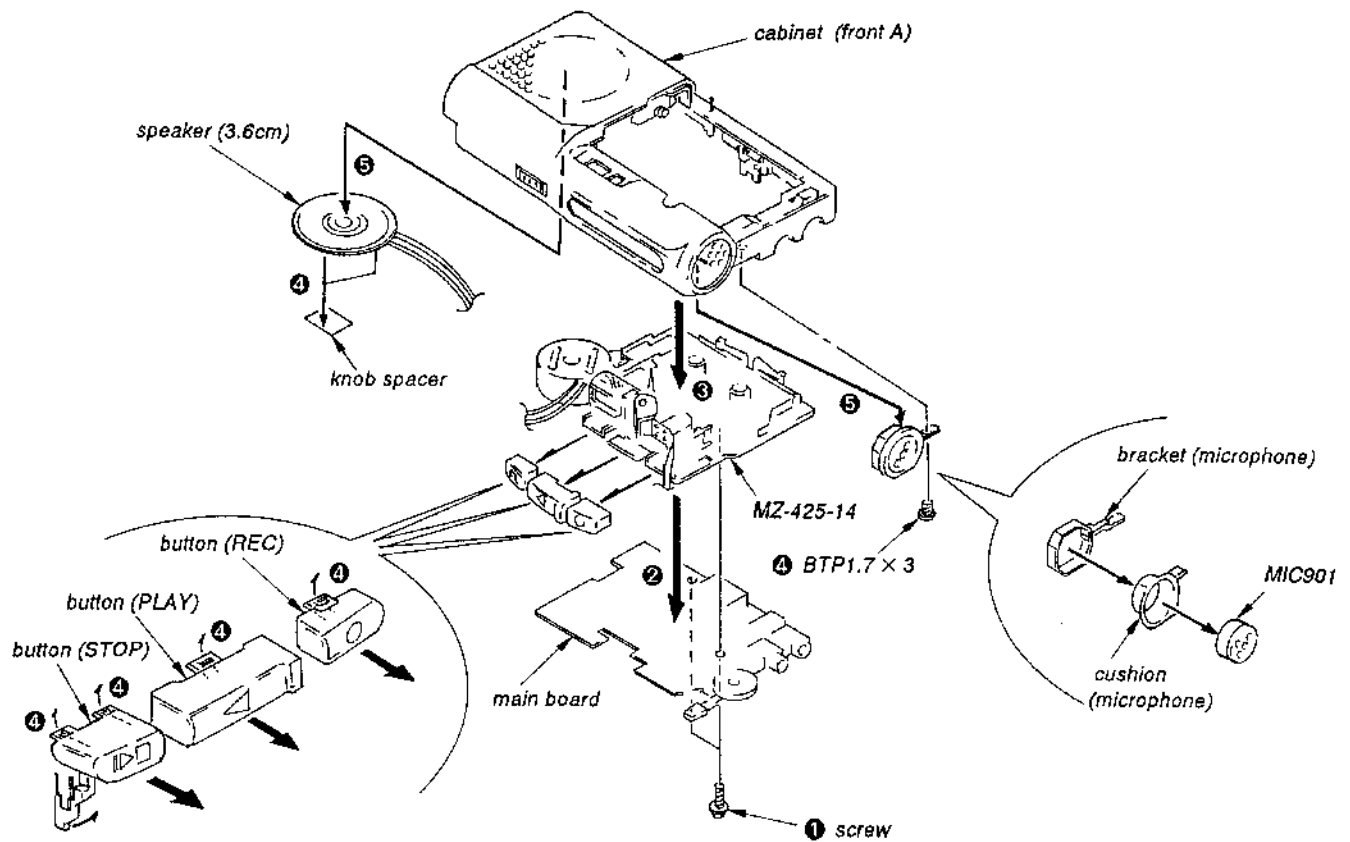
CASSETTE AND BATTERY LIDS



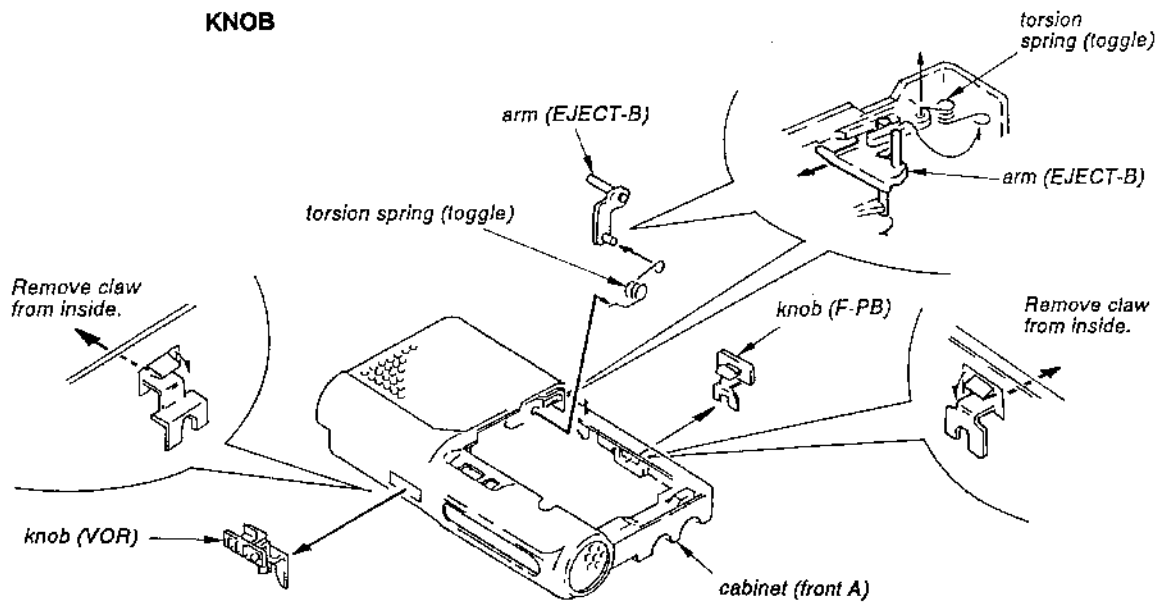
CABINET



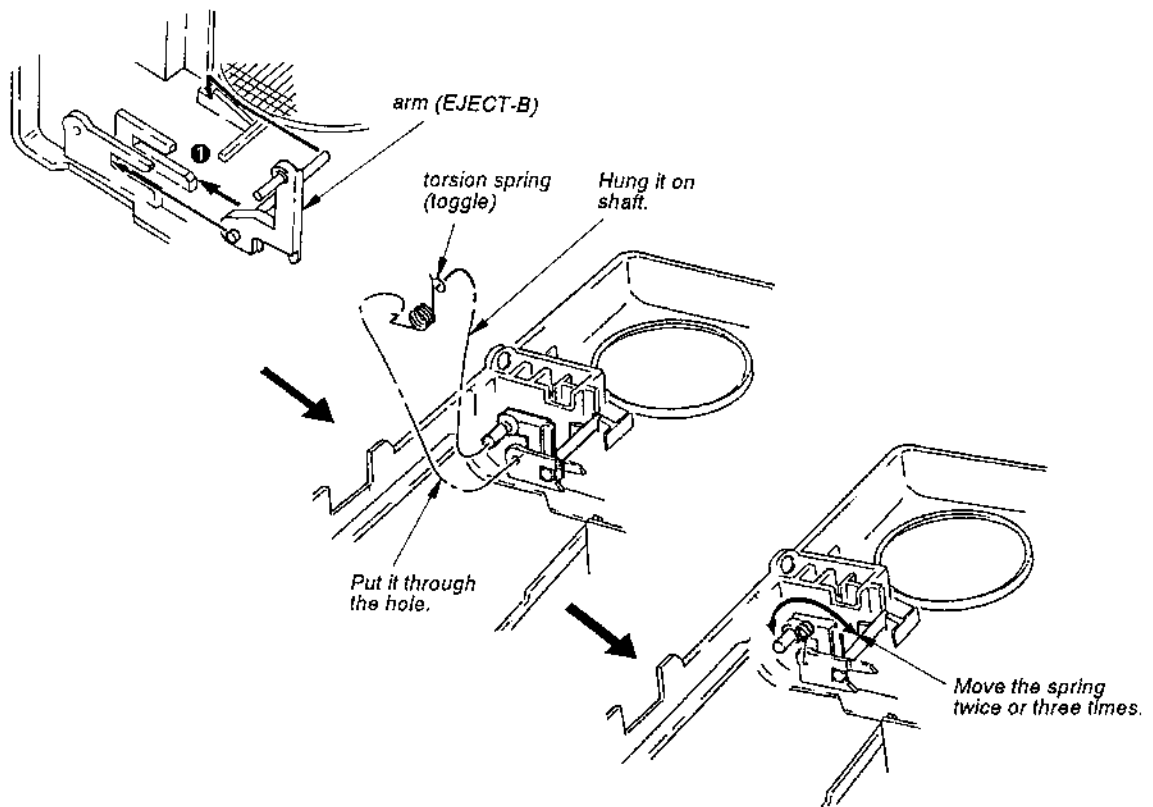
MECHANISM DECK



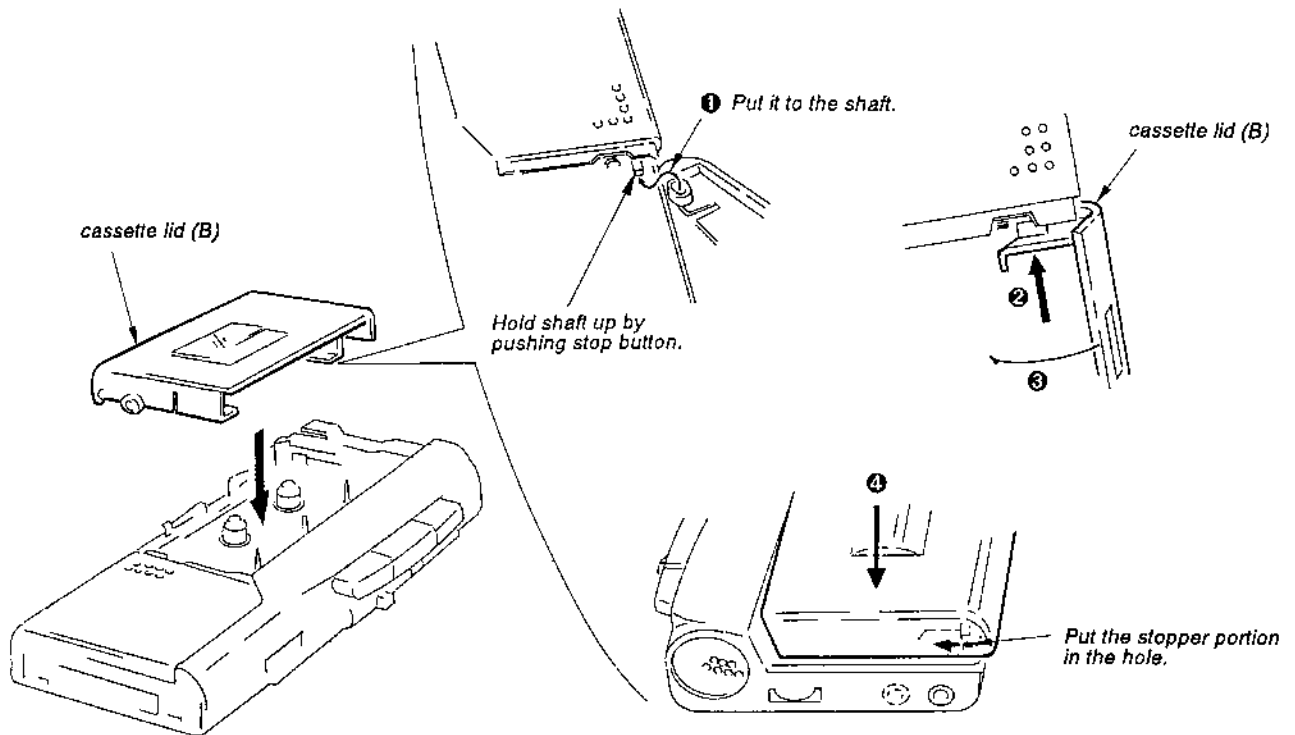
KNOB



ARM (EJECT) FITTING



CASSETTE LID (B) FITTING



SECTION 3 ADJUSTMENTS

2-1. MECHANICAL ADJUSTMENTS AND MEASUREMENT

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
 - record/playback/erase head
 - pinch roller
 - rubber belts
 - capstan
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. 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

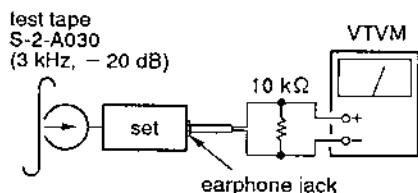
Record/Playback Head Azimuth Adjustment

setting:

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

Procedure:

1. Mode : playback

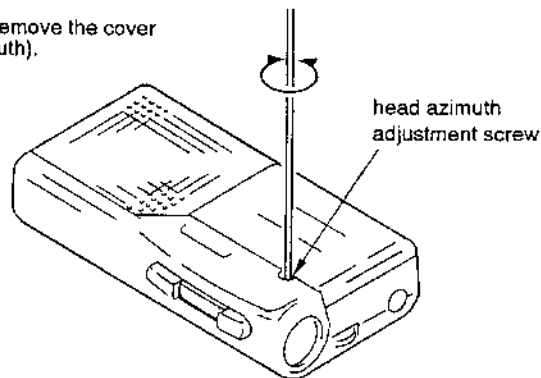


2. Turn the adjustment screw to obtain the maximum reading on VTVM.

Note: Several peaks may appear, but the maximum.

Adjustment Location:

First remove the cover (azimuth).



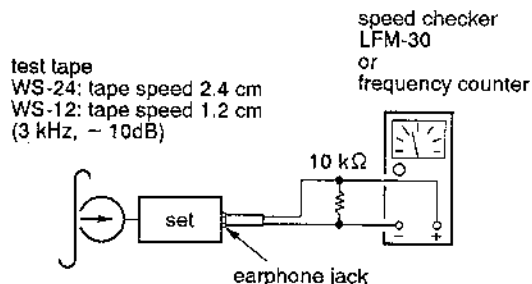
Tape Speed adjustment

Setting:

- VOLUME control : mechanical mid
- VOR switch : OFF

Procedure:

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



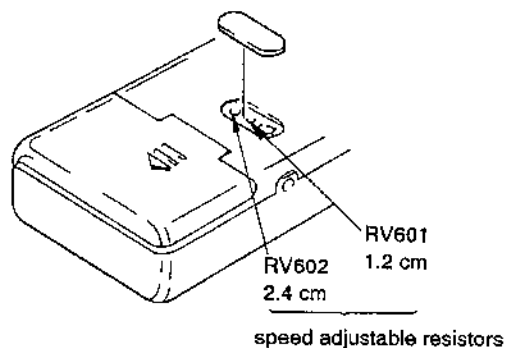
Tape Speed	Speed checker	Frequency counter
2.4 cm/s	± 3%	3,000 ± 90 Hz
1.2 cm/s	± 3%	3,000 ± 90 Hz

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:



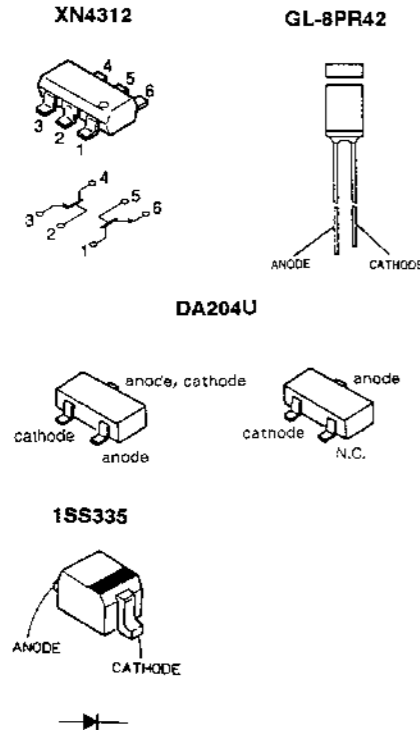
SECTION 4
DIAGRAMS

• Semiconductor Location

Ref. No.	Location
D101	F-12
D102	F-12
D103	D-11
D401	K-5
IC101	H-11
IC601	J-18
IC701	H-13
Q101	D-10
Q102	E-10
Q103	F-10
Q601	K-19
Q701	G-14
Q703	J-18
Q704	L-17

4-1. PRINTED WIRING BOARD

• Semiconductor Lead Layouts

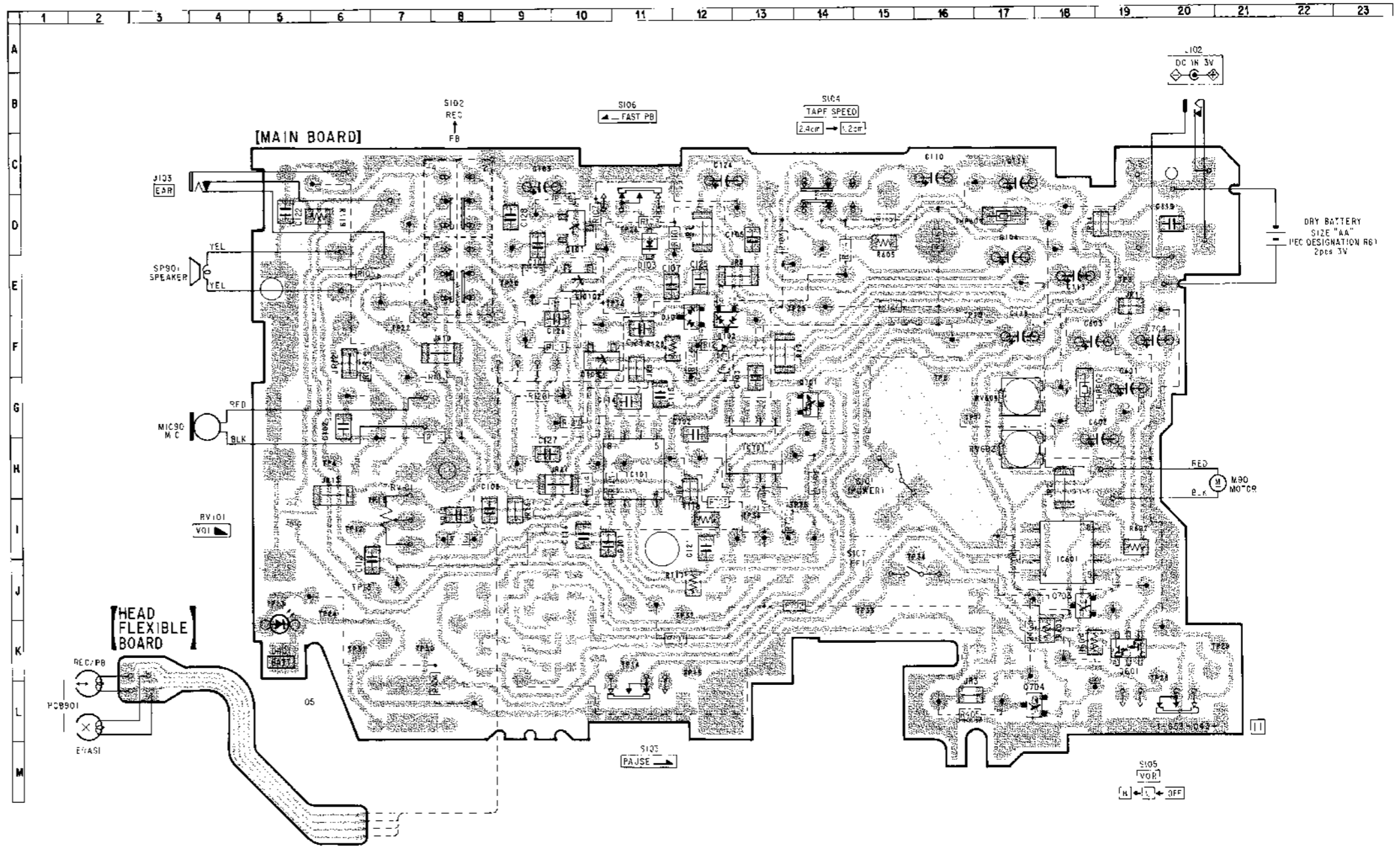


Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μpF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}$ W or less unless otherwise specified.
- : 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 Ω/V). Voltage variations may be noted due to normal production tolerances.
- Signal path.
 - : PB
 - : REC

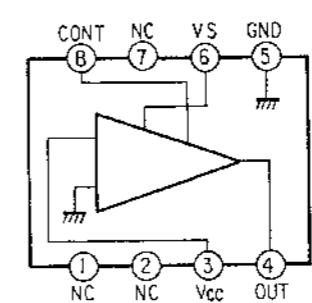
Note on Printed Wiring Board:

- : 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.

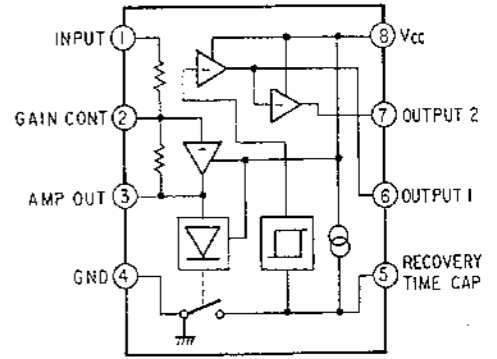


• IC Block Diagrams

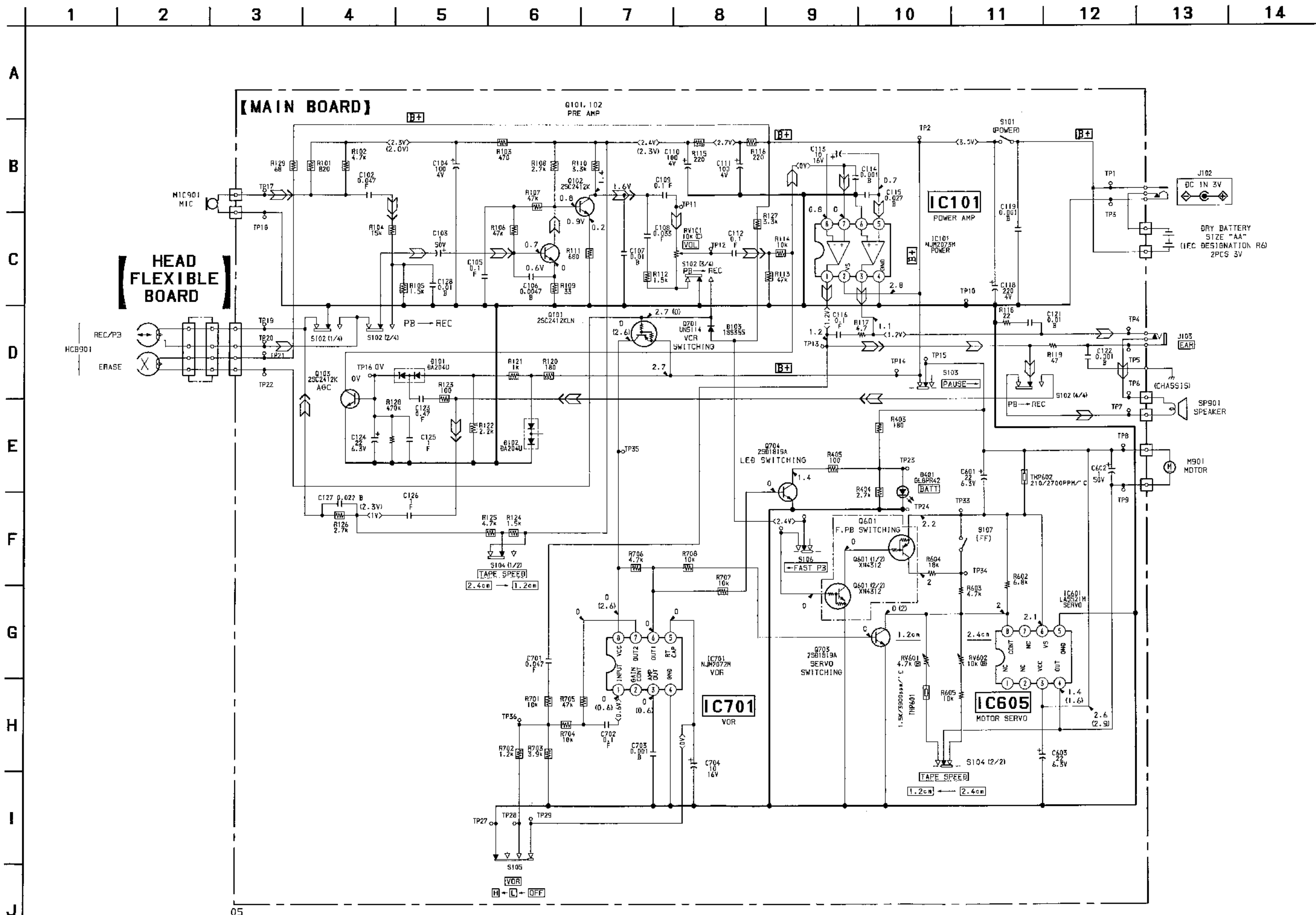
LA5521M



NJM2072M



4-2. SCHEMATIC DIAGRAM



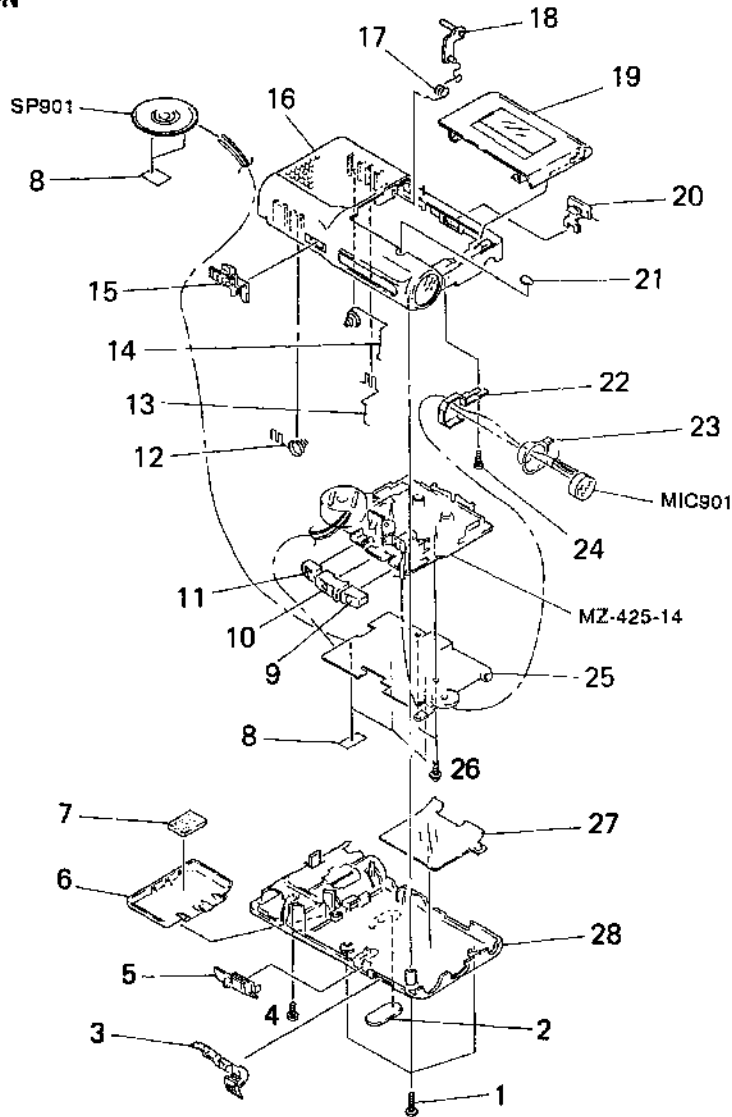
05

SECTION 5 EXPLODED VIEWS

NOTE:

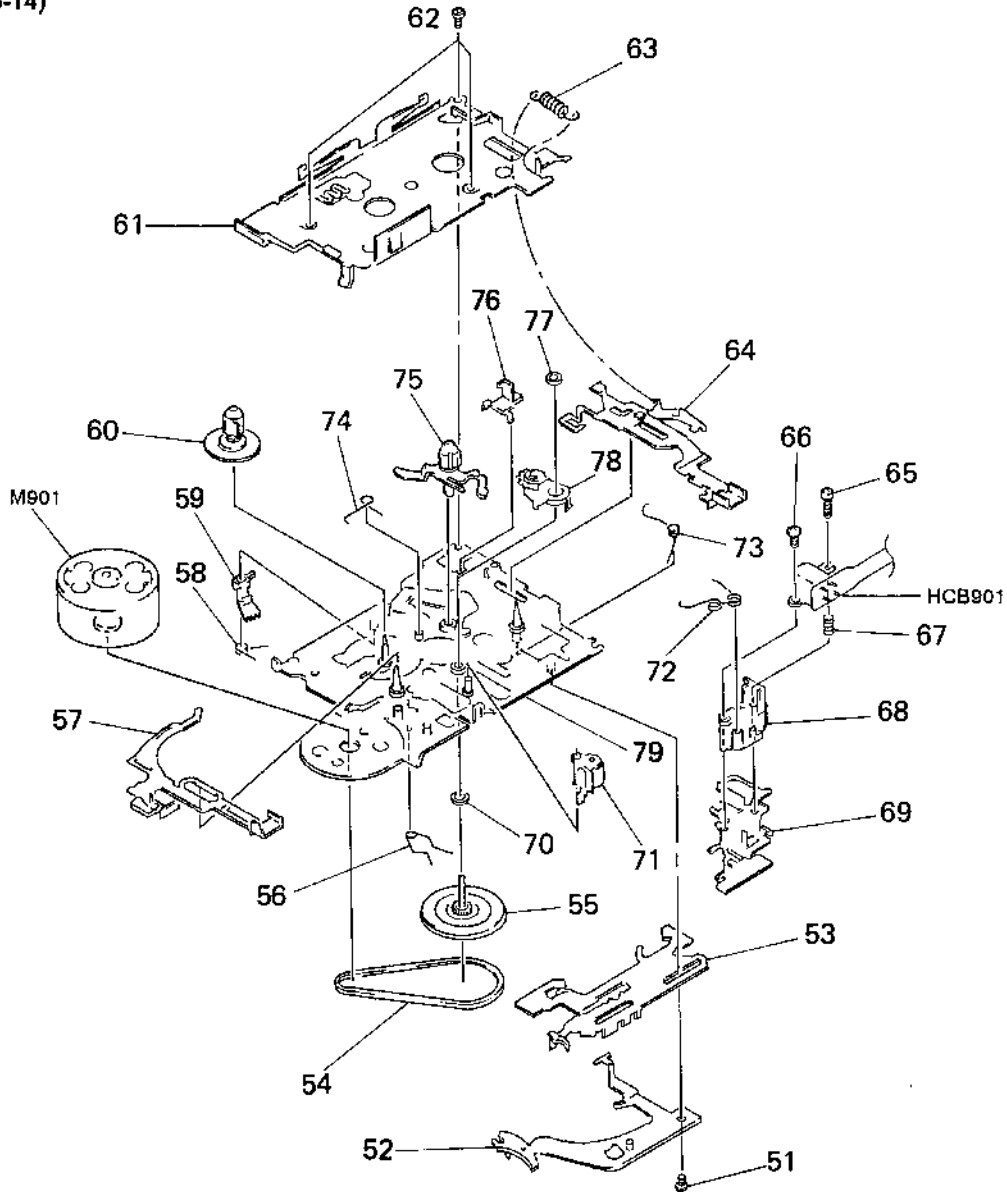
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) . . . (RED)
 ^ ↑
 Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some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

(1) GENERAL SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	3-318-203-51	SCREW (BL. 7X12), TAPPING		16	X-3368-573-1	CABINET (FRONT) (A3) ASSY	
2	3-358-363-11	PLATE, BLIND		17	3-914-931-01	SPRING (TOGGLE), TORSION	
3	3-914-938-01	KNOB (PAUSE-A)		18	3-914-936-01	ARM (EJECT-B)	
4	3-318-203-72	SCREW (BL. 7X5), TAPPING		19	X-3368-570-1	LID (B0) ASSY, CASSETTE	
5	3-914-939-01	KNOB (FR)		20	3-914-878-01	KNOB (F-PB)	
6	3-914-950-01	LID, BATTERY CASE		21	3-914-952-01	COVER (AZIMUTH)	
7	3-914-930-01	CUSHION (BATTERY CASE LID)		* 22	3-914-949-01	BRACKET (MICROPHONE)	
8	3-831-441-XX	SPACER, KNOB		* 23	3-914-937-01	CUSHION (MICROPHONE)	
9	3-914-948-21	BUTTON (REC)		24	3-318-382-31	SCREW (1.7X3), TAPPING	
10	3-914-947-01	BUTTON (PLAY)		* 25	A-3016-S91-A	MAIN BOARD, COMPLETE	
11	3-914-946-01	BUTTON (STOP)		26	3-342-156-51	SCREW	
12	3-914-934-01	SPRING (B), BATTERY COIL		27	3-914-929-01	PAPER, SHIELD	
13	3-914-933-01	TERMINAL (A), BATTERY		28	3-914-958-11	CABINET (REAR)	
14	3-914-932-01	SPRING (C), BATTERY COIL		MIC901	1-542-136-11	MICROPHONE, ELECTRET CONDENSER	
15	3-914-878-01	KNOB (VOR)		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)		67	3-378-792-01	SPRING, COMPRESSION	
+ 52	3-914-920-01	PLATE (FR), LOCK		68	3-914-914-01	GUIDE, TAPE	
* 53	3-914-919-01	SLIDER (FR)		* 69	3-914-913-01	LEVER (PLAY)	
54	3-377-420-11	BELT		70	3-350-945-11	WASHER	
55	X-3368-702-1	FLYWHEEL (1.3) ASSY		71	X-3368-585-1	PINCH LEVER ASSY	
56	3-914-903-01	SPRING (FR), TORSION		72	3-914-902-01	SPRING (P), TORSION	
+ 57	X-3368-486-1	LEVER (STOP) ASSY		73	3-914-904-01	SPRING (PFR), TORSION	
58	3-914-906-01	SPRING (S.OFF), TORSION		74	3-914-907-01	SPRING (MIDWAY GEAR), TORSION	
59	3-914-915-01	ARM (S.OFF)		75	X-3368-587-1	REEL ASSY, S	
60	X-3368-582-1	REEL ASSY, T		76	3-914-916 01	ARM (CKAW DETECTION)	
* 61	3-914-923-01	COVER, MD		77	3-331-007-21	WASHER	
62	3-366-892-11	SCREW (M1.4X1.4)		78	X-3368-584-1	ARM (MIDWAY GEAR) ASSY	
63	3-914-908-01	SPRING (REC LOCK), TENSION		* 79	X-3368-701-1	CHASSIS (COMP.) ASSY (C), MECH	
* 64	X-3368-583-1	LEVER (REC) ASSY		HCB901	1-500-135-11	HEAD, MAGNETIC (REC/PB/ERASE)	
65	3-703-816-82	SCREW (M1.4X6.0), SPECIAL HEAD		M901	1-698-384-11	MOTOR, DC	
66	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: μ , for example:
uA.: μ A. uPA.: μ PA.
uPB.: μ PB. uPC.: μ PC. uPD.: μ PD.
- CAPACITORS
uF: μ F
- COILS
uH: μ H

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark	
*	A-3016-591-A	MAIN BOARD, COMPLETE *****						
		< CAPACITOR >				< DIODE >		
C102	1-163-035-00	CERAMIC CHIP	0.047uF	50V	D101	8-719-941-23	DIODE DA204U	
C103	1-104-390-21	ELECT	1uF	20%	50V	D102	8-719-941-23	DIODE DA204U
C104	1-104-401-21	ELECT	100uF	20%	4V	D103	8-719-988-62	DIODE 1SS355
C105	1-163-038-00	CERAMIC CHIP	0.1uF	25V	D401	8-719-026-62	DIODE GL8PR42 (BATT)	
C106	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V		< IC >	
C107	1-164-232-11	CERAMIC CHIP	0.01uF	50V	IC101	8-759-701-02	IC NJM2073M	
C108	1-163-034-00	CERAMIC CHIP	0.033uF	50V	IC601	8-759-804-43	IC LA5521M	
C109	1-163-038-00	CERAMIC CHIP	0.1uF	25V	IC701	8-759-701-51	IC NJM2072M	
C110	1-104-401-21	ELECT	100uF	20%	4V		< JACK >	
C111	1-104-401-21	ELECT	100uF	20%	4V	J102	1-580-372-41	JACK, DC (POLARITY UNIFIED TYPE) (DC IN 3V)
C112	1-163-038-00	CERAMIC CHIP	0.1uF	25V	J103	1-766-156-11	JACK (EAR)	
C113	1-104-368-21	ELECT	10uF	20%	16V		< JUMPER RESISTOR >	
C114	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	JR1	1-216-295-00	METAL GLAZE 0 5% 1/10W
C115	1-163-986-00	CERAMIC CHIP	0.027uF	10%	25V	JR2	1-216-296-00	METAL GLAZE 0 5% 1/8W
C116	1-163-038-00	CERAMIC CHIP	0.1uF	25V	JR3	1-216-295-00	METAL GLAZE 0 5% 1/10W	
C118	1-104-402-21	ELECT	220uF	20%	4V	JR6	1-216-295-00	METAL GLAZE 0 5% 1/10W
C119	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	JR7	1-216-296-00	METAL GLAZE 0 5% 1/8W
C121	1-164-232-11	CERAMIC CHIP	0.01uF	50V	JR8	1-216-296-00	METAL GLAZE 0 5% 1/8W	
C122	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	JR9	1-216-295-00	METAL GLAZE 0 5% 1/10W
C123	1-164-005-11	CERAMIC CHIP	0.47uF	25V	JR10	1-216-296-00	METAL GLAZE 0 5% 1/8W	
C124	1-104-355-21	ELECT	22uF	20%	6.3V	JR11	1-216-296-00	METAL GLAZE 0 5% 1/8W
C125	1-164-346-11	CERAMIC CHIP	1uF	16V	JR12	1-216-295-00	METAL GLAZE 0 5% 1/10W	
C126	1-164-346-11	CERAMIC CHIP	1uF	16V	JR13	1-216-296-00	METAL GLAZE 0 5% 1/8W	
C127	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	JR14	1-216-295-00	METAL GLAZE 0 5% 1/10W
C128	1-164-232-11	CERAMIC CHIP	0.01uF	50V	JR16	1-216-295-00	METAL GLAZE 0 5% 1/10W	
C601	1-104-355-21	ELECT	22uF	20%	6.3V	JR17	1-216-296-00	METAL GLAZE 0 5% 1/8W
C602	1-104-390-21	ELECT	1uF	20%	50V		< TRANSISTOR >	
C603	1-104-355-21	ELECT	22uF	20%	6.3V	Q101	8-729-016-80	TRANSISTOR 2SC2412KLN-T146-R
C701	1-163-035-00	CERAMIC CHIP	0.047uF	50V	Q102	8-729-920-74	TRANSISTOR 2SC2412K-QR	
C702	1-163-038-00	CERAMIC CHIP	0.1uF	25V	Q103	8-729-920-74	TRANSISTOR 2SC2412K-QR	
C703	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	Q601	8-729-420-20	TRANSISTOR XN4312
C704	1-104-368-21	ELECT	10uF	20%	16V	Q701	8-729-402-96	TRANSISTOR UN5114

MAIN

Ref. No.	Part No.	Description	Remark
Q703	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q704	8-729-402-32	TRANSISTOR 2SD1819A-R	
< RESISTOR >			
R101	1-249-416-11	CARBON 820 5%	1/4W F
R102	1-249-425-11	CARBON 4.7K 5%	1/4W F
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
R106	1-249-437-11	CARBON 47K 5%	1/4W
R107	1-249-437-11	CARBON 47K 5%	1/4W
R108	1-249-422-11	CARBON 2.7K 5%	1/4W F
R109	1-249-399-11	CARBON 33 5%	1/4W F
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
R127	1-249-423-11	CARBON 3.3K 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
R405	1-247-807-31	CARBON 100 5%	1/4W
R602	1-216-069-00	METAL CHIP 6.8K 5%	1/10W
R603	1-216-065-00	METAL CHIP 4.7K 5%	1/10W
R604	1-216-079-00	METAL CHIP 18K 5%	1/10W
R605	1-216-073-00	METAL CHIP 10K 5%	1/10W
R701	1-249-429-11	CARBON 10K 5%	1/4W
R702	1-216-051-00	METAL CHIP 1.2K 5%	1/10W
R703	1-216-063-00	METAL CHIP 3.9K 5%	1/10W
R704	1-249-429-11	CARBON 10K 5%	1/4W
R705	1-249-437-11	CARBON 47K 5%	1/4W
R706	1-249-425-11	CARBON 4.7K 5%	1/4W F
R707	1-249-429-11	CARBON 10K 5%	1/4W
R708	1-249-429-11	CARBON 10K 5%	1/4W

Ref. No.	Part No.	Description	Remark
< 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 SPPED)	
S105	1-571-506-41	SWITCH. SLIDE (VOR)	
S106	1-571-275-31	SWITCH. SLIDE (FAST PB)	
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)	

ACCESSORIES & PACKING MATERIALS			

3-758-981-51	MANUAL. INSTRUCTION		(JAPANESE, ENGLISH) (Tourist)
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)		
3-914-895-01	CASE, CARRYING (Tourist)		
*	3-916-688-11	CUSHION (EXCEPT Tourist)	
*	3-916-690-01	INDIVIDUAL CARTON (Canadian)	
*	3-916-692-01	INDIVIDUAL CARTON (AEP, UK)	
*	3-916-693-01	INDIVIDUAL CARTON (E)	
*	3-917-709-01	INDIVIDUAL CARTON (Tourist)	