

# TCM-4TR

## SERVICE MANUAL

US Model

Ver 1.2 2001. 12  
with SUPPLEMENT-1  
(9-923-361-31)



Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MT-4TR-118

### SPECIFICATIONS

**Recording system**

2-track 1 channel monaural

**Playback system**

4-track 1 channel monaural

**Frequency range**

250 - 6,300 Hz

**Speaker**

Approx. 3.6 cm (1 7/16 in.) dia.

**Power output**

270 mW (at 10% harmonic distortion)

**Input**

Microphone input jack (minijack) sensitivity 0.21 mV  
for 3 kilohms or lower impedance microphone

**Output**

Earphone jack (minijack) for 8 - 300 ohms impedance  
earphone

**Variable range of the tape speed**

from +100% to -50% (at 4.8cm/s tape speed)

from +100% to 0% (at 2.4cm/s tape speed)

**Power requirements**

3V DC

Two R6 (size AA) batteries

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

Approx. 90.9 × 113.0 × 39.5 mm  
(3 5/8 × 4 1/2 × 1 1/2 in.)

**Mass**

Approx. 200 g (7.1 oz.) not incl. batteries

Approx. 240 g (8.5 oz.) incl. batteries and cassette

**Supplied accessories**

Earphone (1)

Design and specifications are subject to change without notice.

CASSETTE-CORDER

SONY®

9-923-361-32  
2001L0200-1  
© 2001.12

Sony Corporation  
Personal Audio Company  
Published by Sony Engineering Corporation

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.

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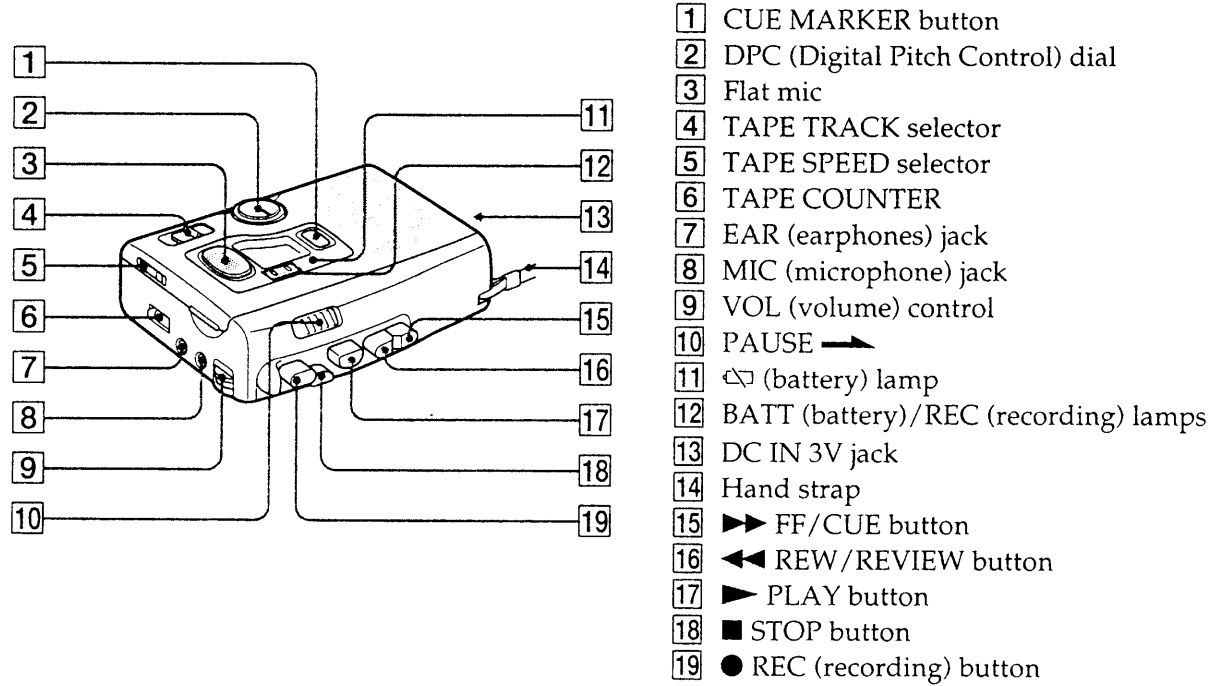
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SECTION 1  
GENERAL

This section is extracted from  
instruction manual.

Location of parts and  
controls



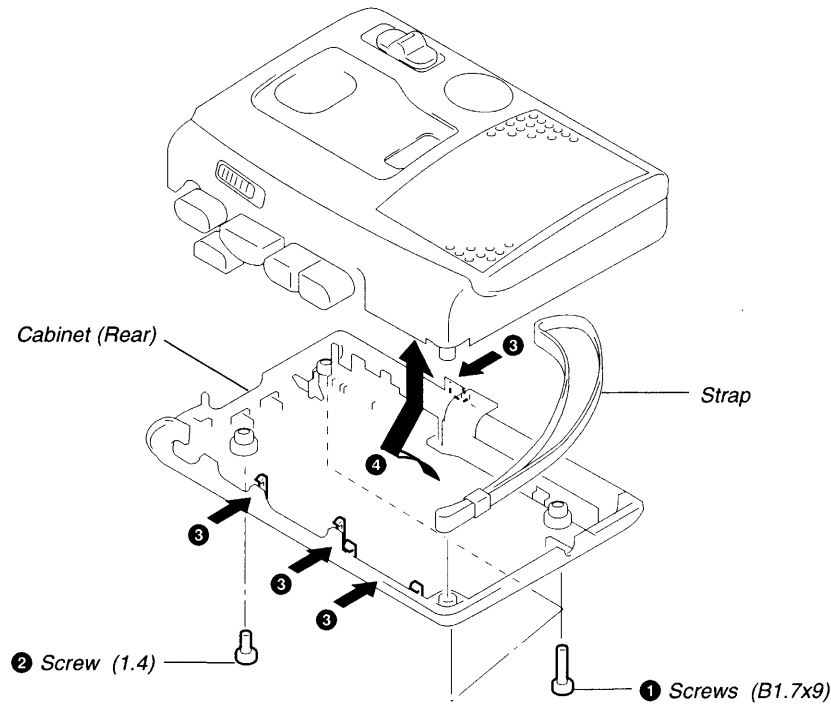
## SECTION 2 DISASSEMBLY

- The equipment can be removed using the following procedure.

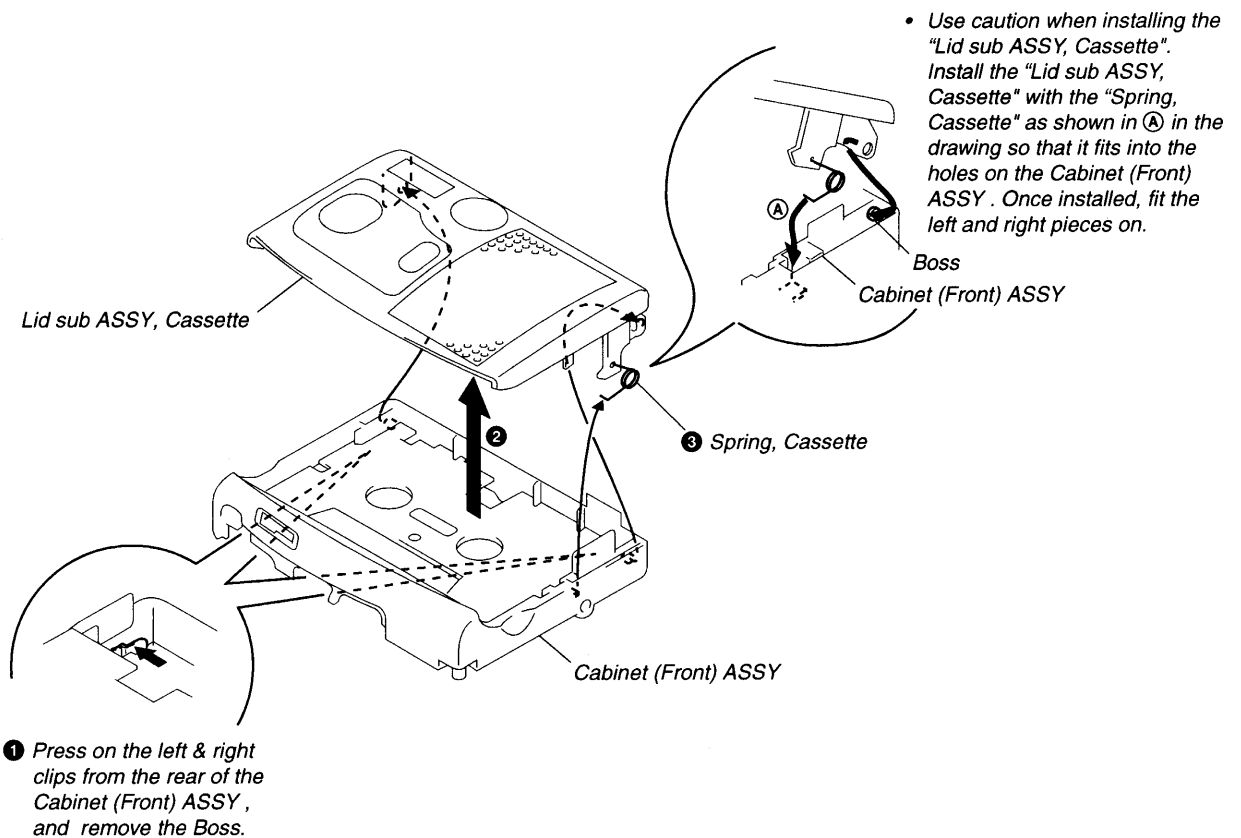
Set → Cabinet (Rear) → Lid sub ASSY, Cassette → Main board, Mechanism deck  
 ↳ DPC board, SP901, Microphone ASSY

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

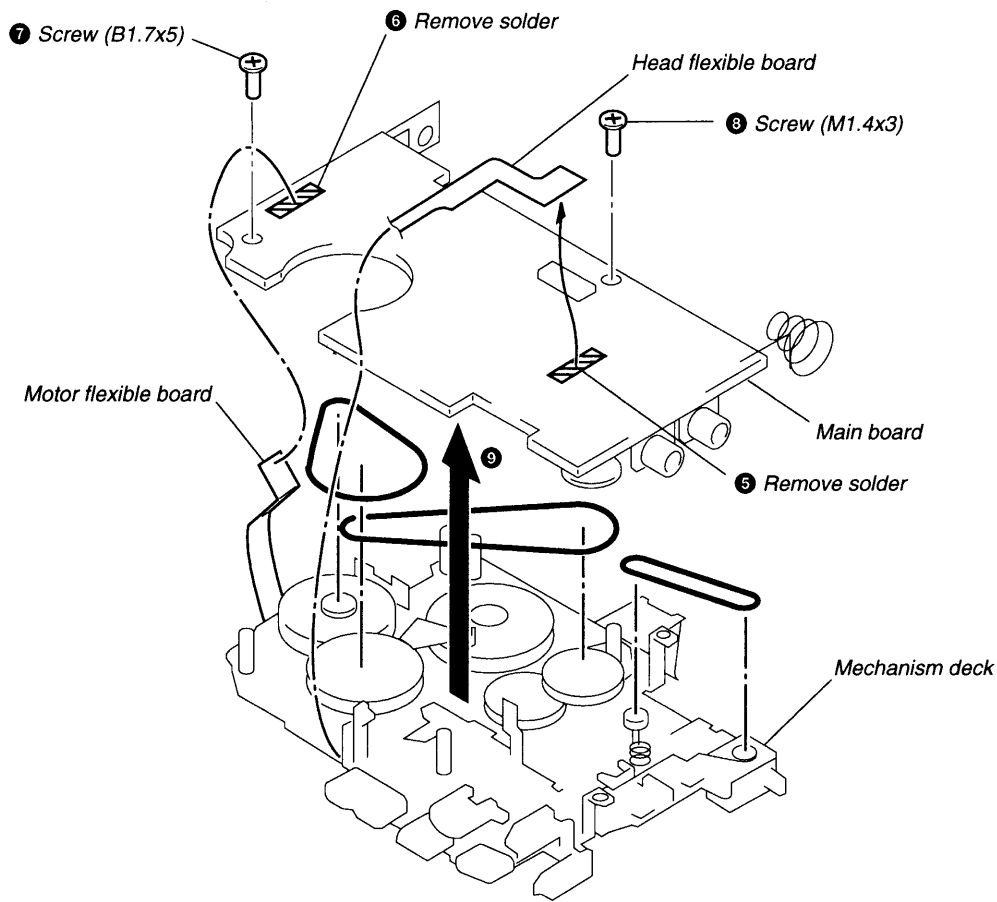
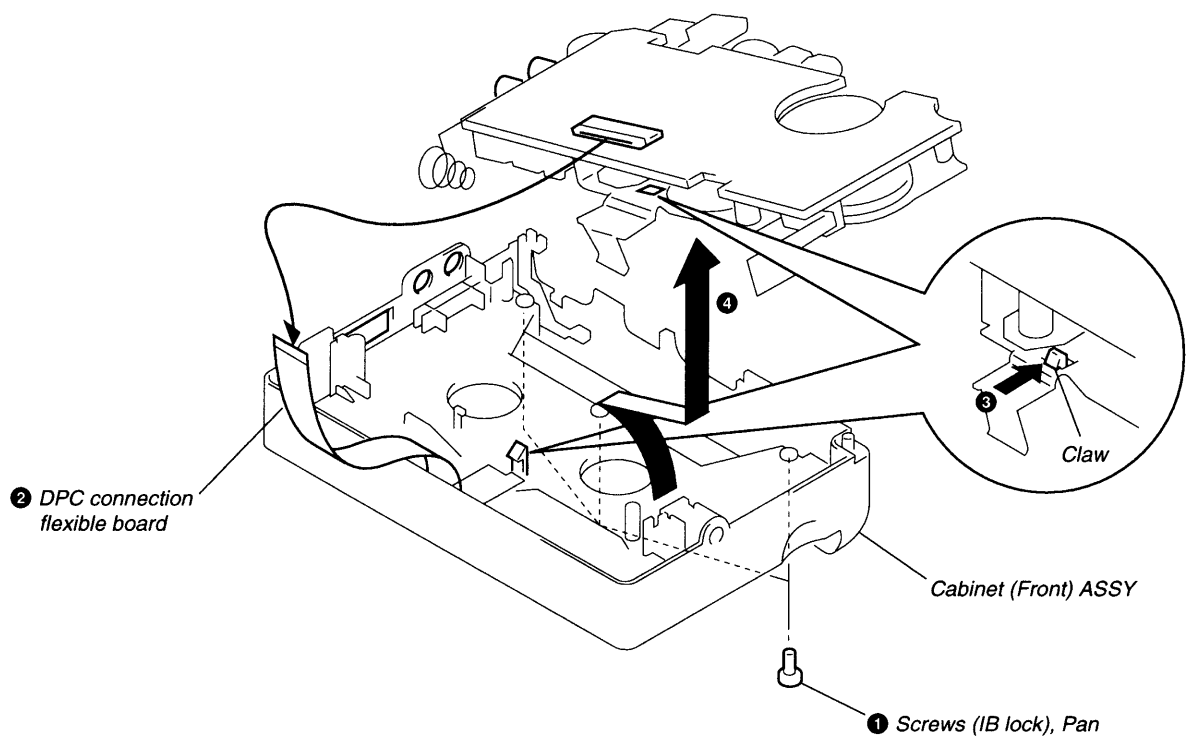
### 2-1. CABINET (REAR)



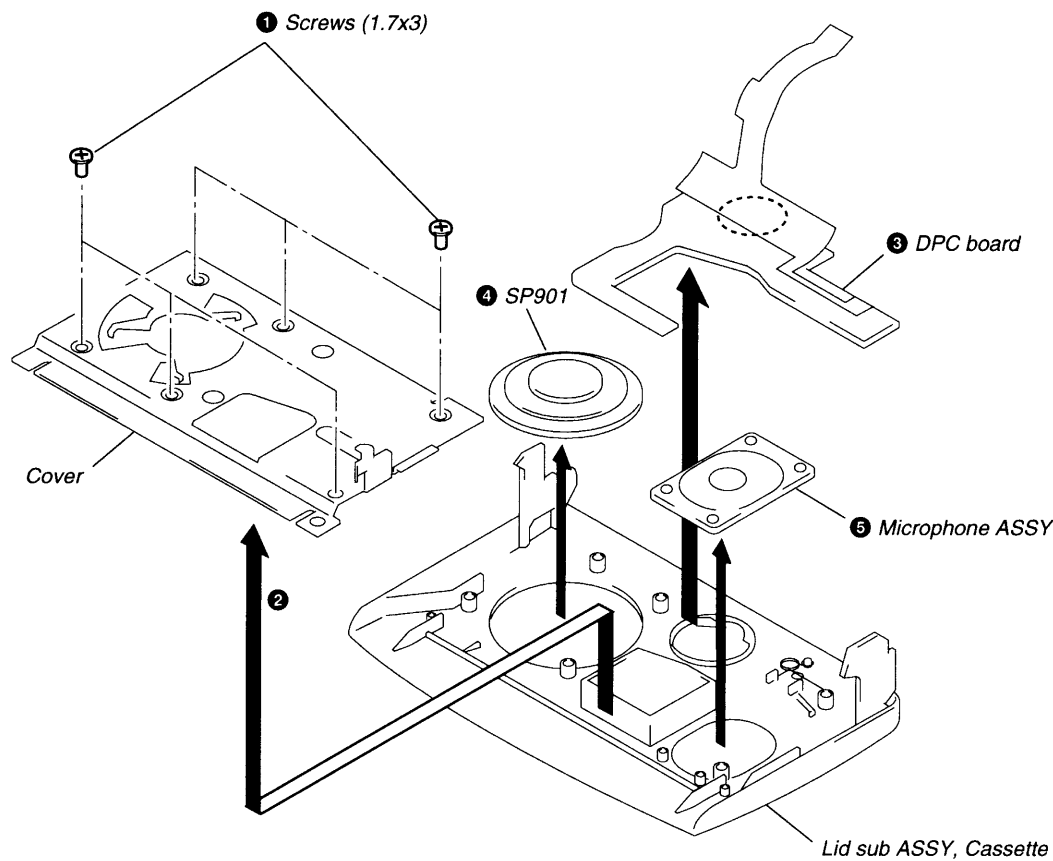
### 2-2. LID SUB ASSY, CASSETTE



2-3. MAIN BOARD, MECHANISM DECK



2-4. DPC BOARD, SP901, MICROPHONE ASSY



## SECTION 3 ADJUSTMENTS

### 3-1. MECHANICAL ADJUSTMENTS

#### PRECAUTION

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

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

#### Torque Measurement

Mode	Torque Meter	Meter Reading
Forward	CQ-102C	22 – 42 g • cm (0.31 – 0.58 oz • inch)
Forward Back Tension	CQ-102C	1.0 – 4.5 g • cm (0.014 – 0.062 oz • inch)
Fast Forward and Rewind	CQ-201B	more than 50 g • cm (0.7 oz • inch)

#### Tape Tension Measurement

Mode	Tension Meter	Meter Reading
Forward	CQ-403A	more than 50g ( 1.77oz)

### 3-2. ELECTRICAL ADJUSTMENTS

#### • Standard Level

Input signal level	MIC	– 60dB
Output signal level	EAR (EARPHONE)	10kΩ, –10dB

#### • Test Tape

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

$$0\text{dB} = 0.775\text{V}$$

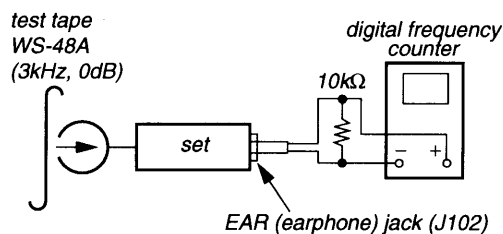
#### Setting :

VOL Control (RV101) : mechanical mid  
 PAUSE (S602) : OFF  
 TAPE SPEED (S601) : 4.8cm/s  
 DPC (RV601) : normal (center click)

#### Tape speed Adjustment

##### Procedure :

- Short circuit between BP403 terminal on the main board.
- Mode : playback (2.4cm/s)  
Set to 2.4cm/s with the tape speed switch (S601)



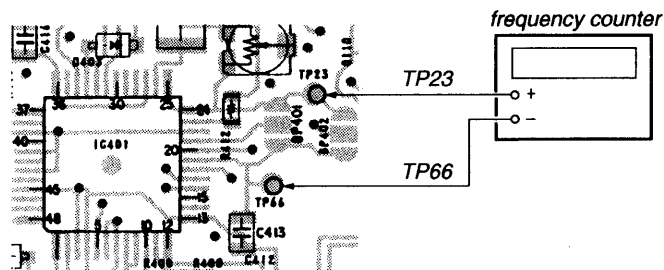
- Turn the speed/pitch (DPC) control volume knob (RV601) fully in anticlockwise (fast) direction.
- Adjust RV605 so that the reading of the frequency counter becomes 3,030Hz (standard value : 3,000 – 3,060Hz).
- Turn the speed/pitch (DPC) control volume knob (RV601) to the center (normal) position.
- Adjust RV603 so that the reading of the frequency counter becomes 1,510Hz (standard value : 1,507 – 1,515Hz).
- Set to 4.8cm/s with the tape speed switch (S601).
- Turn the speed/pitch (DPC) control volume knob (RV601) fully in anticlockwise (fast) direction.
- Adjust RV604 so that the reading of the frequency counter becomes 6,060Hz (standard value : 6,000 – 6,120Hz).
- Turn the speed/pitch (DPC) control volume knob (RV601) fully in clockwise (slow) direction.
- Adjust RV606 so that the reading of the frequency counter becomes 3,020Hz (standard value : 3,015 – 3,030Hz).
- Open the short circuit to release BP403 terminal.

**Adjustment Location :** Main board (See page 7)

## FX Oscillator frequency Adjustment

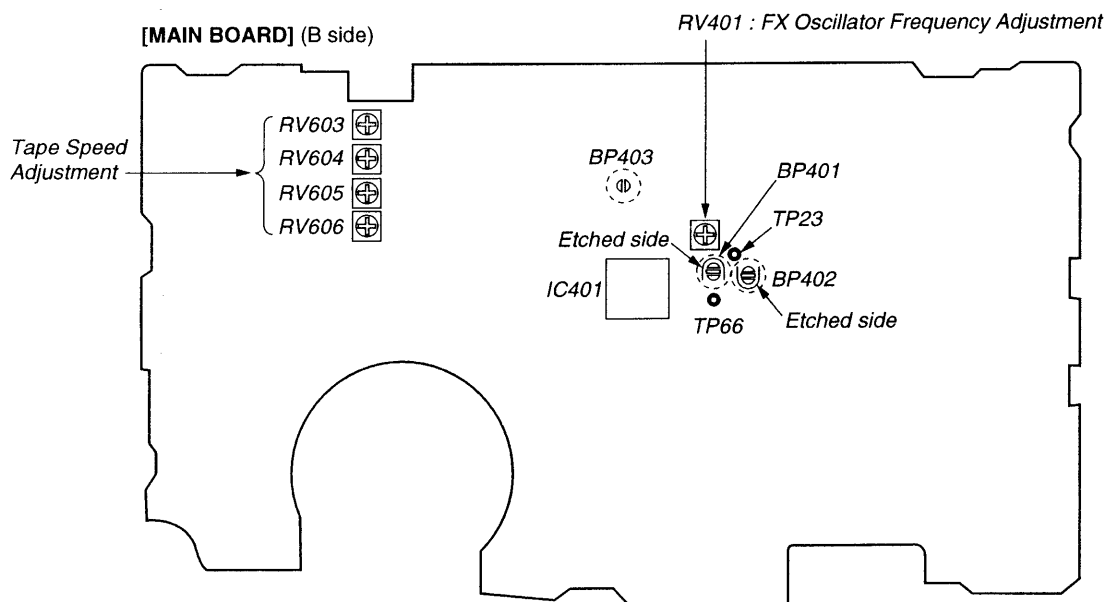
Setting :

[MAIN BOARD] (SIDE B)



1. Short circuit between BP403 terminal on the main board.
2. Respectively short BP401 (non-etched side) and short BP402 (non-etched side) to reset the unit and set to play status.
3. Connect the frequency counter to TP23 and TP66.
4. Check that the frequency counter at TP23 shows approximately 220Hz (RV601 : center click).
5. Adjust RV401 so the difference in TP23 and TP66 frequencies is  $-2\text{Hz}$ . ( $\text{TP66} - \text{TP23} = 2\text{Hz}$ )
6. Open the short circuit to release BP403 terminal.
7. Open the respectively short to release BP401 (etched side) and release BP402 (etched side).

Adjustment Location : Main board (B side)



## SECTION 4 DIAGRAMS

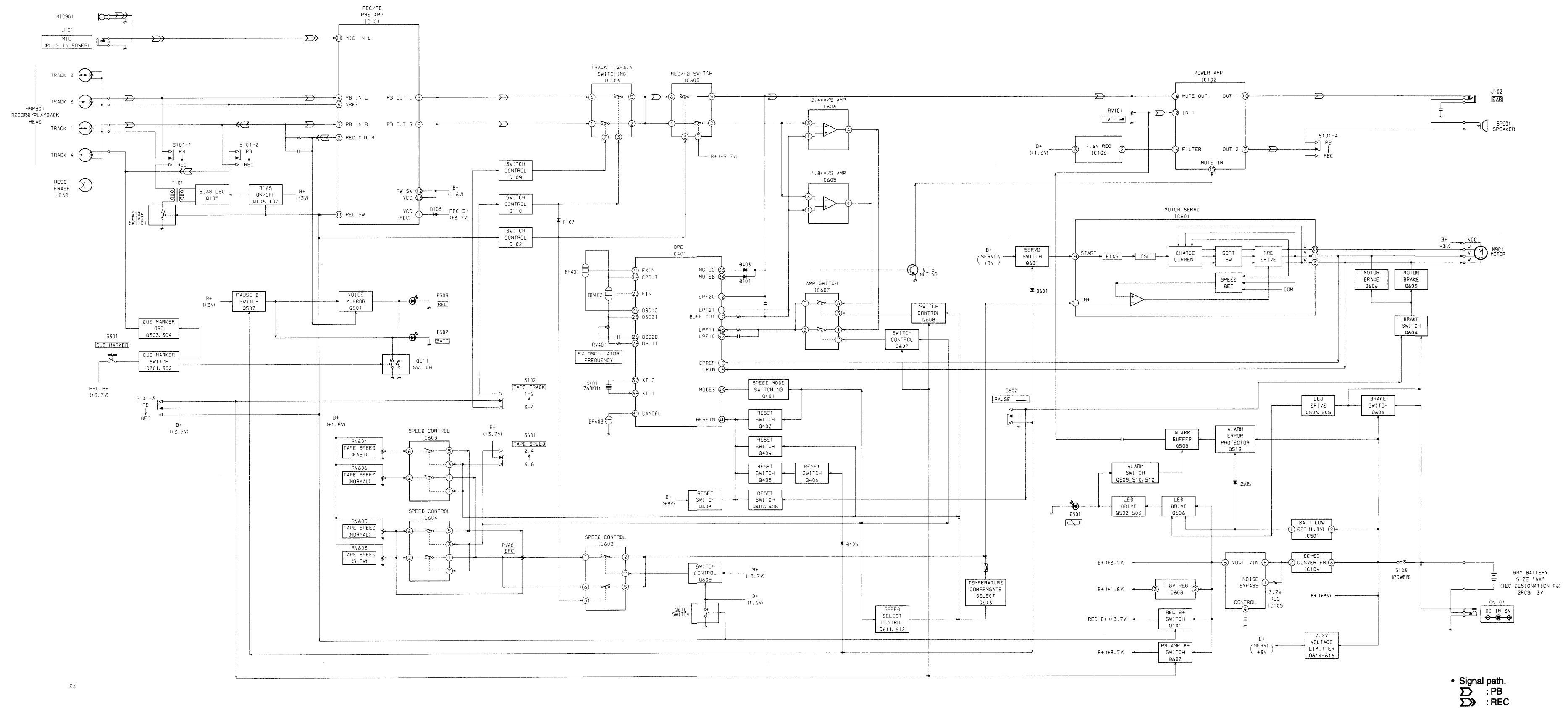
### 4-1. EXPLANATION OF IC TERMINALS

IC401 FHA012

Pin No.	Pin name	I/O	Description																																		
1	AIN	I	Analog audio A/D converter input.																																		
2	CHA	O	Capacitor connect terminal for AIN sample and hold.																																		
3	AVSS1	–	Power supply for analog (Ground).																																		
4	AVSS2	–	Power supply for analog (Ground).																																		
5	CV	O	Center voltage terminal for internal A/D converter.																																		
6	AVDD1	–	Power supply for analog (+3.6V).																																		
7	AVDD2	–	Power supply for analog (+3.6V).																																		
8	AOUT	O	Analog audio D/A converter output.																																		
9	BUFIN	I	Buffer amp input terminal for analog audio D/A output.																																		
10	BUFOUT	O	Buffer amp output terminal for analog audio D/A output.																																		
11	LPF2I	I	LPF2 IN+ for analog audio D/A output.																																		
12	LPF2O	O	LPF2 OUT for analog audio D/A output.																																		
13	AVSS3	–	Power supply for analog (Ground).																																		
14	KEY	I	Key input terminal of analog voltage mode.																																		
15	DAOUT	O	Key shift point display output.																																		
16	AVDD3	–	Power supply for analog (+3.6V).																																		
17	CPREF	I	Comparator reference input for frequency comparator.																																		
18	CPIN	I	Comparator input for frequency comparator.																																		
19	CPOUT	O	Comparator output for frequency comparator.																																		
20	FIN	I	Auto mode comparator pulse input.																																		
21	FXIN	I	Auto reference oscillator frequency input.																																		
22	VSS1	–	Power supply for digital (Ground).																																		
23	OSC1 I	I	FX oscillator circuit.																																		
24	OSC1 O	O	FX oscillator circuit.																																		
25	OSC2 I	I	FX oscillator circuit.																																		
26	OSC2 O	O	FX oscillator circuit.																																		
27	VDD1	–	Power supply for digital (+3.6V).																																		
28	MIN	I	Input terminal for MICOM interface mode.																																		
29	UP	I	UP input terminal for switch pulse mode.																																		
30	DOWN	I	Down input terminal for switch pulse mode.																																		
31	CANSEL	I	Key shift cancel. “L” : cancel																																		
32	CHECK	O	Key shift check terminal.																																		
33	MUTEC	O	Mute C signal output.																																		
34	MUTEB	O	Mute B signal output.																																		
35	MUTEA	O	Mute A signal output.																																		
36	VDD2	–	Power supply for digital (+3.6V).																																		
37	XTL O	O	X TAL oscillator connect terminal (768kHz).																																		
38	XTL I	I	X TAL oscillator connect terminal (768kHz).																																		
39	VSS2	–	Power supply for digital (Ground).																																		
40	RESETN	I	Initial reset input. “L” : reset																																		
41	MOD0	I	<table><tr><td>MOD0</td><td>MOD1</td><td>MOD2</td><td>MOD3</td><td colspan="2">MODE</td></tr><tr><td>H</td><td>L</td><td>L</td><td>L</td><td colspan="2">Switch pulse</td></tr><tr><td>L</td><td>H</td><td>L</td><td>H</td><td rowspan="2">AUTO</td><td>AUTO-1</td></tr><tr><td>L</td><td>H</td><td>L</td><td>L</td><td>AUTO-2</td></tr><tr><td>L</td><td>L</td><td>H</td><td>L</td><td rowspan="2">MANUAL</td><td>Micon interface</td></tr><tr><td>L</td><td>L</td><td>L</td><td>L</td><td>Analog voltage</td></tr></table>	MOD0	MOD1	MOD2	MOD3	MODE		H	L	L	L	Switch pulse		L	H	L	H	AUTO	AUTO-1	L	H	L	L	AUTO-2	L	L	H	L	MANUAL	Micon interface	L	L	L	L	Analog voltage
MOD0	MOD1	MOD2	MOD3	MODE																																	
H	L	L	L	Switch pulse																																	
L	H	L	H	AUTO	AUTO-1																																
L	H	L	L		AUTO-2																																
L	L	H	L	MANUAL	Micon interface																																
L	L	L	L		Analog voltage																																
42	MOD1	I																																			
43	MOD2	I																																			
44	MOD3	I																																			
45	AVSS4	–	Power supply for analog (Ground).																																		
46	LPF1I	I	LPF1 +IN for analog audio D/A output.																																		
47	LPF1O	O	LPF1 output for analog audio D/A output.																																		
48	AVDD4	–	Power supply for analog (+3.6V).																																		



## 4-2. BLOCK DIAGRAM



4-3. PRINTED WIRING BOARDS

● Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D101	G-14	Q107	E-4
D102	F-20	Q109	C-20
D103	F-22	Q110	D-20
D401	E-18	Q115	C-20
D402	E-18	Q301	F-5
D403	D-18	Q302	F-4
D404	D-18	Q303	F-4
D405	E-16	Q304	E-5
D406	E-8	Q401	E-7
D501	J-29	Q402	D-6
D502	J-27	Q403	D-7
D503	J-28	Q404	E-16
D504	B-16	Q405	E-16
D505	C-7	Q406	E-16
D601	E-14	Q407	E-7
D602	E-10	Q708	E-8
D603	C-9	Q501	C-7
D604	C-5	Q502	C-17
D605	C-6	Q503	C-18
D606	C-5	Q504	B-18
D607	C-5	Q505	C-17
D608	C-5	Q506	B-18
D609	C-5	Q507	C-7
		Q508	C-17
		Q509	D-16
IC101	F-21	Q510	D-17
IC102	C-21	Q511	C-6
IC103	F-19	Q512	D-16
IC104	G-14	Q513	C-16
IC105	F-14	Q601	D-14
IC106	D-20		
IC401	E-18	Q602	C-20
IC501	C-17	Q603	F-14
IC601	D-14	Q604	E-14
IC602	E-16	Q605	E-14
		Q606	E-13
IC603	D-16		
IC604	C-16	Q607	H-17
IC605	G-18	Q608	H-17
IC606	G-18	Q609	D-10
IC607	G-19	Q610	D-10
		Q611	C-8
IC608	C-14	Q612	C-8
IC609	F-17	Q613	E-11
		Q614	G-5
Q101	G-3	Q615	G-20
Q102	E-20	Q616	G-5
Q104	E-3		
Q105	C-3		
Q106	E-4		

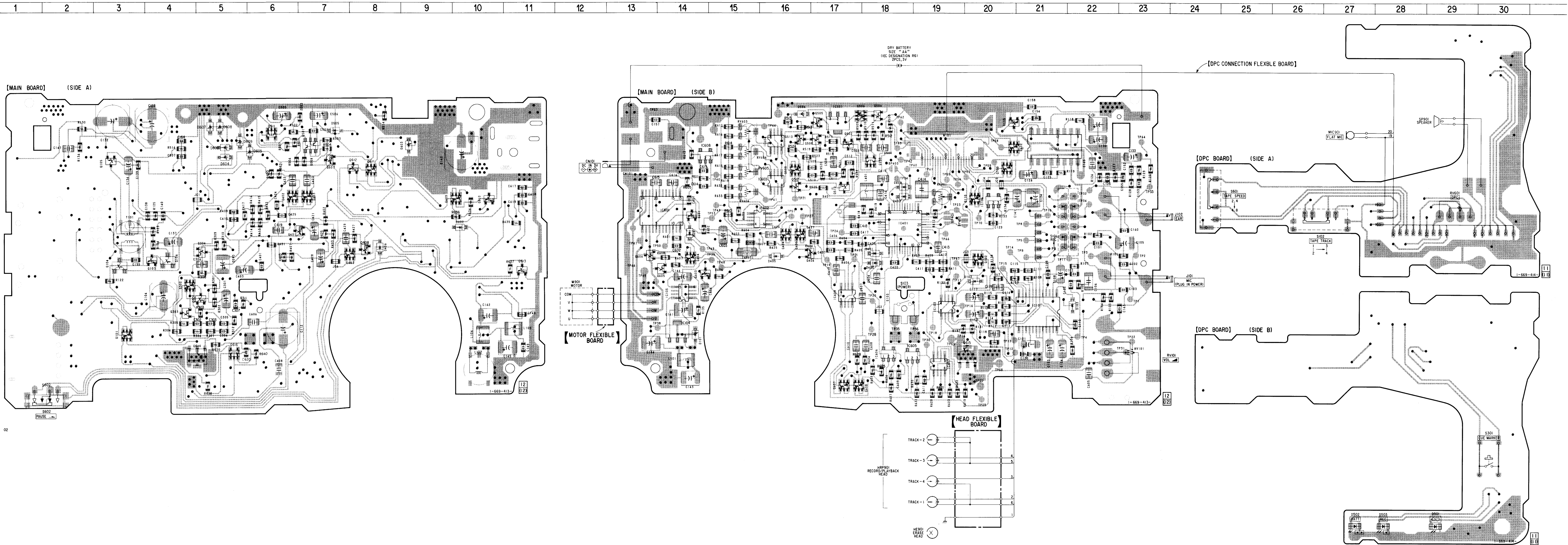
Note:

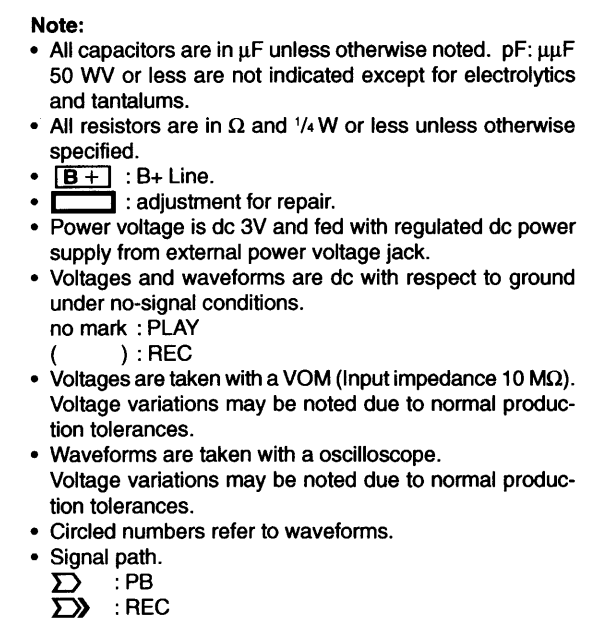
- : parts extracted from the component side.
- : Through hole.
- The printed wiring board which has four layers structure but inner two layer's patterns are omitted.
- : Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)

Caution:

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

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





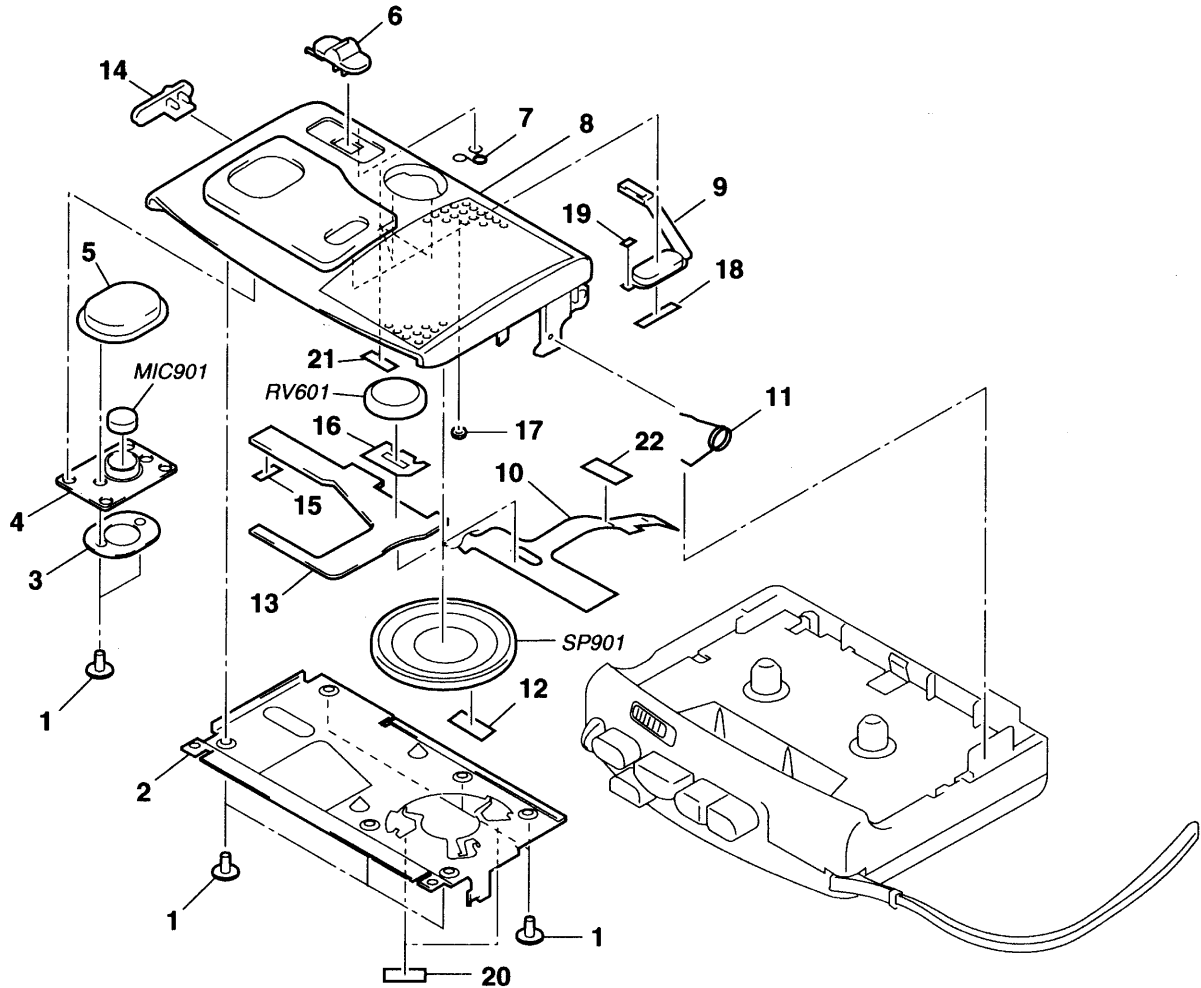


## SECTION 5 EXPLODED VIEWS

### NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- 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 and packing materials are given in the last of this parts list.

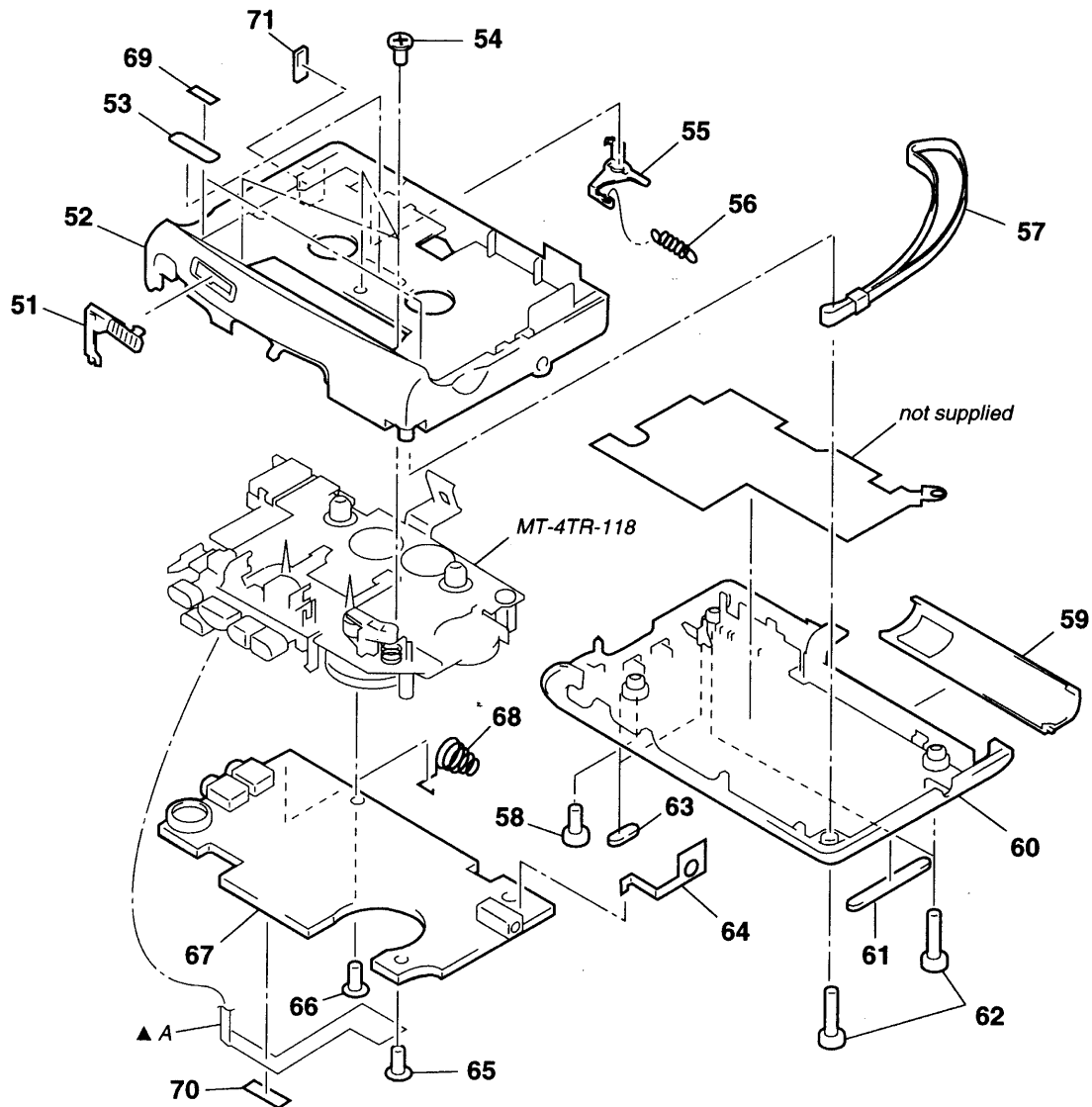
### 5-1. CASSETTE LID SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	3-318-382-01	SCREW (1.7X3), TAPPING		14	3-023-024-01	KNOB (SPEED)	
2	3-023-020-01	COVER		15	3-026-618-01	LUMILER (SPEED)	
* 3	3-936-428-01	RETAINER (MIC)		16	3-026-658-01	BLIND PLATE (DPC)	
* 4	3-936-417-01	CUSHION (MIC)		17	3-026-657-01	SHEET (POSITON SET)	
5	X-3372-332-1	COVER ASSY, MICROPHONE		18	3-026-617-01	CUSHION (CUE MARKER)	
6	3-023-023-01	KNOB (TRACK)		19	3-026-656-01	CUSHION (CUE MARKER) B	
7	3-023-026-01	SPRING (TRACK KNOB)		20	3-026-619-01	LUMILER (SPEAKER)	
8	A-3050-595-A	LID SUB ASSY, CASSETTE		21	3-831-441-99	CUSHION	
9	3-023-025-01	KNOB (CUE MARKER)		22	3-559-407-01	CUSHION STOPPER	
10	1-669-415-11	DPC CONNECTION FLEXIBLE BOARD		MIC901	1-542-124-31	MICROPHONE, ELECTRET CONDENSER (FLAT MIC)	
11	3-027-321-01	SPRING, CASSETTE		RV601	1-225-422-11	RES, VAR, CARBON 100K (DPC)	
12	4-017-441-01	CUSHION (B)		SP901	1-505-383-11	SPEAKER (3.6cm)	
* 13	1-669-414-11	DPC BOARD					

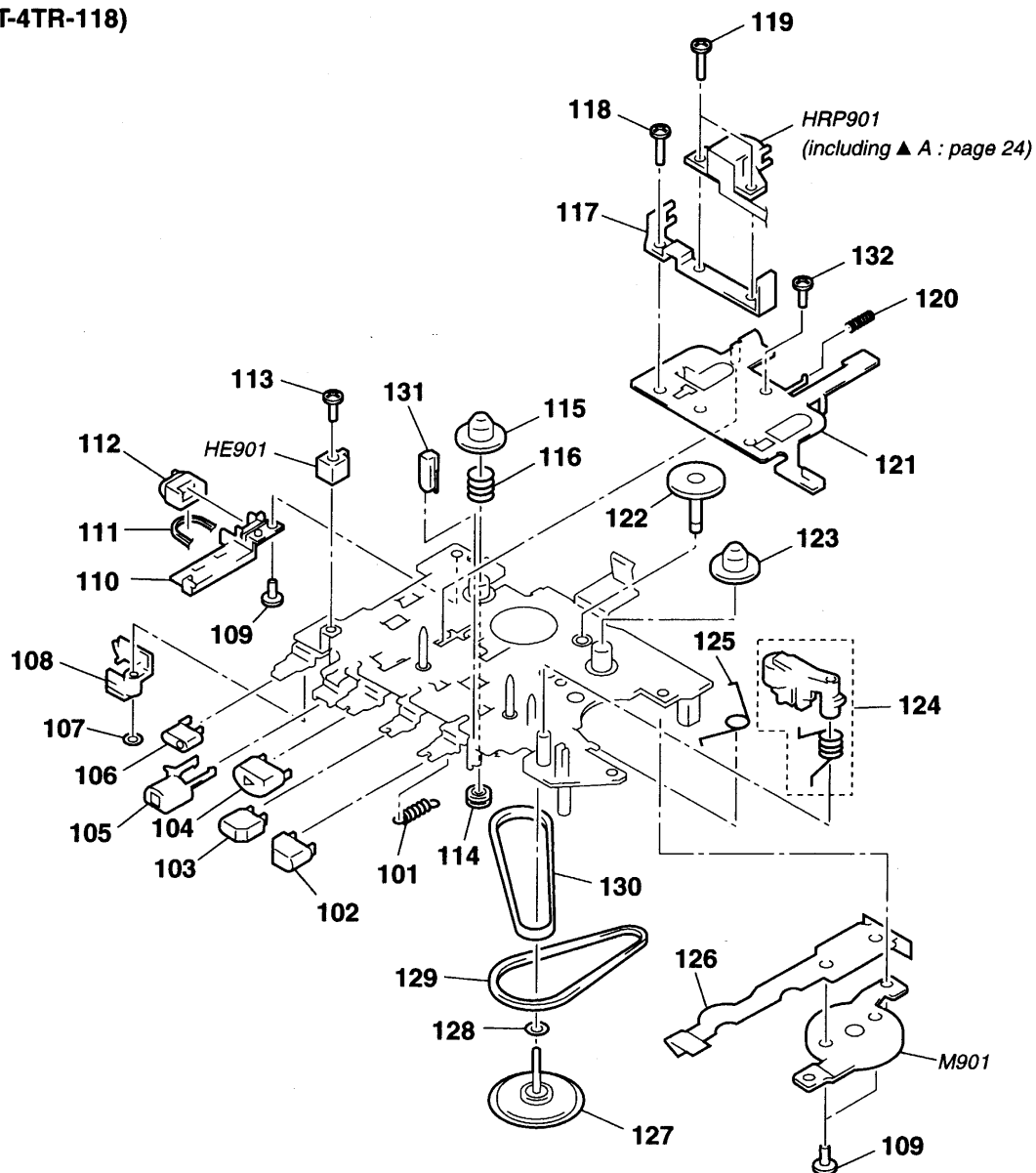
## 5-2. CABINET SECTION

▲ A : Head Flexible board (including HRP901)



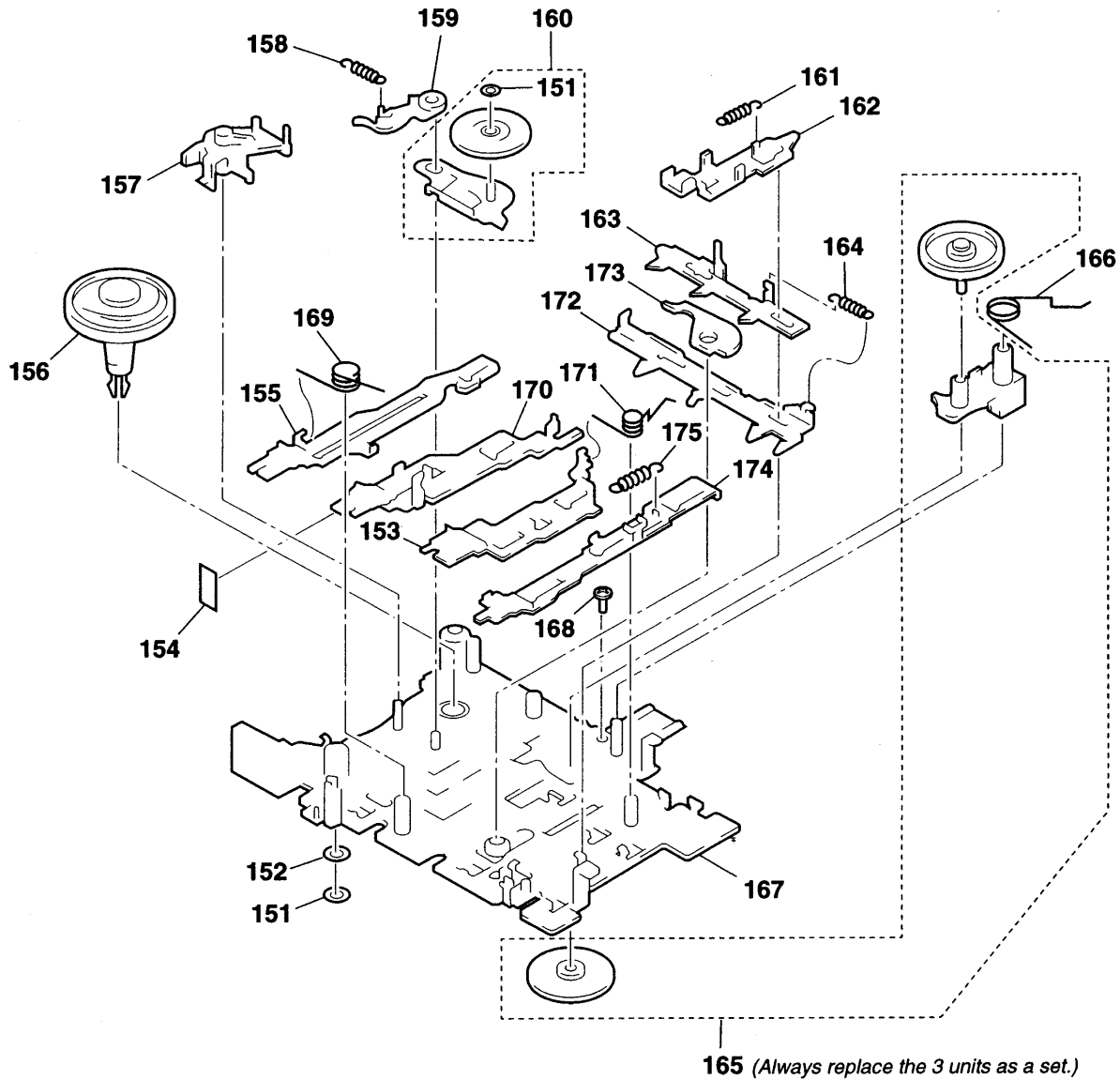
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-936-406-11	BUTTON (PAUSE)		62	3-318-203-92	SCREW (B1.7X9), TAPPING	
52	3-007-910-31	CABINET (FRONT)		63	3-007-921-01	FOOT (A)	
53	3-578-101-31	PLATE, ORNAMENTAL		64	3-008-612-01	TERMINAL, PLUS	
54	4-969-980-21	SCREW (IB LOCK), PAN		65	3-318-203-71	SCREW (B1.7X5), TAPPING	
55	3-936-423-01	CLAW, ERASING PREVENTION		66	3-345-648-01	SCREW (M1.4X3)	
56	3-924-744-01	SPRING (CLAW DETECTION), TENSION		* 67	A-3021-064-A	MAIN BOARD COMPLETE	
57	3-924-761-01	STRAP		68	3-924-750-01	TERMINAL, MINUS	
58	3-704-197-82	SCREW (1.4)		69	3-025-731-01	SPACER (A)	
59	A-3050-587-A	LID ASSY, BATTERY CASE		70	3-025-733-01	SPACER (C)	
60	3-007-909-31	CABINET (REAR)		71	3-559-407-01	CUSHION, STOPPER	
61	3-007-922-01	FOOT (B)					

**5-3. MECHANISM DECK SECTION-1**  
**(MT-4TR-118)**



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	3-924-644-01	SPRING (POWER TENSION),TENSION		119	3-703-816-81	SCREW (M1.4X6.0), SPECIAL HEAD	
102	3-925-146-01	BUTTON (FF)		120	3-925-107-01	SPRING (IDLER), COMPRESSION	
103	3-925-147-01	BUTTON (REW)		121	3-924-625-01	LEVER (HEAD)	
104	3-925-148-01	BUTTON (PLAY)		122	3-924-637-01	GEAR (FF)	
105	3-936-409-01	BUTTON (STOP)		123	3-924-641-01	GEAR (T REEL)	
106	3-925-145-11	BUTTON (REC)		124	X-3370-386-1	PINCH ROLLER ASSY	
107	3-578-242-11	WASHER		125	3-936-582-01	SPRING (GROUND), TORSION	
108	3-936-405-01	LEVER (RELEASE)		126	1-649-600-11	MOTOR FLEXIBLE BOARD	
109	4-969-980-21	SCREW (IB LOCK), PAN		127	X-3372-171-1	FLYWHEEL ASSY	
110	3-936-422-01	BRACKET (COUNTER)		128	3-701-437-51	WASHER	
111	3-924-683-01	BELT (COUNTER)		129	3-924-682-01	BELT (FR)	
112	1-548-582-11	COUNTER, TAPE (SMALL TYPE)		130	3-924-681-01	BELT (CAPSTAN)	
113	3-936-922-01	SCREW (EBF)		131	3-022-178-01	CLIP (FLEXIBLE)	
114	3-924-675-01	PULLEY (COUNTER)		132	3-348-160-11	SCREW (M1.4X1.6),PRECISION PAN	
115	3-924-673-01	GEAR (S REEL)		HE901	1-543-525-11	HEAD, MAGNETIC (ERASE)	
116	3-924-674-01	SPRING (B.T), COMPRESSION		HRP901	1-500-523-11	HEAD,MAGNETIC(RECORD/PLAYBACK)	
117	3-022-177-01	BRACKET (HEAD)		M901	1-698-875-11	MOTOR, DC (including PULLEY)	
118	3-704-197-91	SCREW (IB LOCK)					

**5-4. MECHANISM DECK SECTION-2**  
(MT-4TR-118)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	3-321-483-11	RING, RETAINING		164	3-924-684-01	SPRING (LOCK PLATE), TENSION	
152	3-701-437-51	WASHER		165	X-3374-599-1	PULLEY (FR) SUB ASSY (Always replace the 3 units as a set.)	
153	3-924-623-01	LEVER (PLAY)		166	3-024-378-01	SPRING (FR LEVER), TORSION	
154	3-831-441-99	SPACER		167	X-3372-157-1	CHASSIS ASSY	
155	3-924-620-01	LEVER (FF)		168	3-376-407-01	SCREW (M1.4)	
156	X-3370-388-1	TABLE ASSY, FELT		169	3-924-642-01	SPRING (FR), TORSION	
157	3-924-629-01	LEVER (DETECTION)		170	3-924-621-01	LEVER (REW)	
158	3-925-207-01	SPRING (S.OFF), TENSION		171	3-924-643-01	SPRING (PR), TORSION	
159	3-924-630-01	LEVER (S.OFF)		172	3-924-618-01	LEVER (LOCK)	
160	X-3370-387-1	LEVER ASSY, IDLER		173	3-924-639-01	LEVER (CR)	
161	3-924-633-01	SPRING (STOP), TENSION		174	3-924-624-11	LEVER (REC)	
162	3-924-622-01	LEVER (STOP)		175	3-925-208-01	SPRING (REC), TENSION	
163	3-924-619-01	LEVER (SW)					

SECTION 6  
ELECTRICAL PARTS LIST

DPC      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, -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
*	1-669-414-11	DPC BOARD *****		C122	1-164-490-11	CERAMIC CHIP 0.068uF	16V
		< DIODE >		C123	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V
D501	8-719-057-99	LED SML-211YT-T86 (㊦)		C124	1-135-180-21	TANTALUM CHIP 3.3uF	20% 6.3V
D502	8-719-059-96	LED SML-210LT-T86 (BATT)		C125	1-162-960-11	CERAMIC CHIP 220PF	10% 50V
D503	8-719-059-96	LED SML-210LT-T86 (REC)					
		< VARIABLE RESISTOR >		C126	1-135-149-21	TANTALUM CHIP 2.2uF	20% 10V
RV601	1-225-422-11	RES, VAR, CARBON 100K (DPC)		C128	1-126-246-11	ELECT CHIP 220uF	20% 4V
		< SWITCH >		C129	1-164-156-11	CERAMIC CHIP 0.1uF	25V
S102	1-771-354-21	SWITCH, SLIDE (TAPE TRACK)		C130	1-135-149-21	TANTALUM CHIP 2.2uF	20% 10V
S301	1-692-111-11	SWITCH, KEY BOARD (CUE MARKER)		C131	1-104-752-11	TANTAL. CHIP 33uF	20% 6.3V
S601	1-771-353-21	SWITCH, SLIDE (TAPE SPEED)					
*****				C132	1-126-246-11	ELECT CHIP 220uF	20% 4V
*	A-3021-064-A	MAIN BOARD COMPLETE *****		C133	1-135-201-11	TANTALUM CHIP 10uF	20% 4V
		< CAPACITOR >		C134	1-104-908-11	TANTAL. CHIP 47uF	20% 4V
C101	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C135	1-164-674-11	CERAMIC CHIP 1800PF	5% 16V
C102	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C136	1-104-847-11	TANTAL. CHIP 22uF	20% 4V
C103	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V				
C104	1-126-209-11	ELECT CHIP 100uF	20% 4V	C137	1-104-847-11	TANTAL. CHIP 22uF	20% 4V
C105	1-104-908-11	TANTAL. CHIP 47uF	20% 4V	C138	1-164-172-11	CERAMIC CHIP 0.0056uF	10% 25V
				C139	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V
C106	1-163-077-00	CERAMIC CHIP 0.1uF	10% 25V	C140	1-162-966-11	CERAMIC CHIP 0.0022uF	10% 50V
C107	1-164-172-11	CERAMIC CHIP 0.0056uF	10% 25V	C141	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C108	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V				
C109	1-162-963-11	CERAMIC CHIP 680PF	10% 50V	C142	1-126-246-11	ELECT CHIP 220uF	20% 4V
C110	1-162-963-11	CERAMIC CHIP 680PF	10% 50V	C143	1-104-752-11	TANTAL. CHIP 33uF	20% 6.3V
				C144	1-104-752-11	TANTAL. CHIP 33uF	20% 6.3V
C111	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C145	1-104-752-11	TANTAL. CHIP 33uF	20% 6.3V
C112	1-126-246-11	ELECT CHIP 220uF	20% 4V	C146	1-135-201-11	TANTALUM CHIP 10uF	20% 4V
C113	1-164-172-11	CERAMIC CHIP 0.0056uF	10% 25V				
C114	1-164-172-11	CERAMIC CHIP 0.0056uF	10% 25V	C147	1-164-346-11	CERAMIC CHIP 1uF	16V
C115	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C148	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
				C149	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C116	1-135-219-11	TANTAL. CHIP 15uF	20% 2.5V	C152	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C117	1-135-219-11	TANTAL. CHIP 15uF	20% 2.5V	C153	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C118	1-164-346-11	CERAMIC CHIP 1uF	16V				
C119	1-164-346-11	CERAMIC CHIP 1uF	16V	C154	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C120	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C155	1-164-156-11	CERAMIC CHIP 0.1uF	25V
				C156	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C121	1-135-091-00	TANTALUM CHIP 1uF	20% 16V	C157	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
				C158	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
				C160	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
				C161	1-104-752-11	TANTAL. CHIP 33uF	20% 6.3V
				C162	1-104-752-11	TANTAL. CHIP 33uF	20% 6.3V
				C163	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
				C164	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
				C165	1-164-222-11	CERAMIC CHIP 0.22uF	25V
				C301	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V
				C302	1-164-156-11	CERAMIC CHIP 0.1uF	25V
				C303	1-164-156-11	CERAMIC CHIP 0.1uF	25V



MAIN

Ref. No.	Part No.	Description	Remark		
C304	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C305	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C306	1-164-346-11	CERAMIC CHIP	1uF		16V
C307	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C401	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C402	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C403	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C404	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C405	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C406	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C407	1-162-979-11	CERAMIC CHIP	0.0027uF	10%	50V
C408	1-164-346-11	CERAMIC CHIP	1uF		16V
C409	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C410	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C411	1-164-490-11	CERAMIC CHIP	0.068uF		16V
C412	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C413	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C414	1-104-563-11	FILM CHIP	0.1uF	5%	16V
C415	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C416	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C417	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C418	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C419	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C420	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C421	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C422	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C423	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C424	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C425	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C426	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C427	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C428	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C429	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C501	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C502	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C503	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C504	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C505	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C506	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C507	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C508	1-164-346-11	CERAMIC CHIP	1uF		16V
C509	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C510	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C511	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C512	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C601	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C602	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C603	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C604	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C605	1-164-346-11	CERAMIC CHIP	1uF		16V
C606	1-164-346-11	CERAMIC CHIP	1uF		16V
C607	1-164-346-11	CERAMIC CHIP	1uF		16V
C608	1-164-346-11	CERAMIC CHIP	1uF		16V
C609	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C610	1-164-346-11	CERAMIC CHIP	1uF		16V
C611	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C612	1-164-346-11	CERAMIC CHIP	1uF		16V

Ref. No.	Part No.	Description	Remark		
C613	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C614	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C615	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C616	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C617	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C618	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C619	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C620	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
< CONNECTOR >					
CN101	1-750-061-11	JACK,DC(POLARITY UNIFIED TYPE)(DC IN 3V)			
< DIODE >					
D101	8-719-049-09	DIODE	1SS367-T3SONY		
D102	8-719-404-49	DIODE	MA111		
D103	8-719-404-49	DIODE	MA111		
D401	8-719-404-49	DIODE	MA111		
D402	8-719-404-49	DIODE	MA111		
D403	8-719-404-49	DIODE	MA111		
D404	8-719-404-49	DIODE	MA111		
D405	8-719-404-49	DIODE	MA111		
D406	8-719-404-49	DIODE	MA111		
D504	8-719-049-09	DIODE	1SS367-T3SONY		
D505	8-719-404-49	DIODE	MA111		
D601	8-719-404-49	DIODE	MA111		
D602	8-719-404-49	DIODE	MA111		
D603	8-719-049-09	DIODE	1SS367-T3SONY		
D604	8-719-049-09	DIODE	1SS367-T3SONY		
D605	8-719-049-09	DIODE	1SS367-T3SONY		
D606	8-719-049-09	DIODE	1SS367-T3SONY		
D607	8-719-049-09	DIODE	1SS367-T3SONY		
D608	8-719-049-09	DIODE	1SS367-T3SONY		
D609	8-719-049-09	DIODE	1SS367-T3SONY		
< IC >					
IC101	8-759-062-63	IC	TA8155FN		
IC102	8-759-910-71	IC	BA5208AF		
IC103	8-759-184-64	IC	TC4W66FU		
IC104	8-759-092-54	IC	RH5RH501A		
IC105	8-759-527-31	IC	NJM2370R		
IC106	8-759-280-84	IC	S-81211SG-QA-T1		
IC401	8-759-493-89	IC	FHA012		
IC501	8-759-177-44	IC	S-80715AN-DC-T1		
IC601	8-759-275-47	IC	LB1674V-TLM		
IC602	8-759-184-64	IC	TC4W66FU		
IC603	8-759-184-64	IC	TC4W66FU		
IC604	8-759-184-64	IC	TC4W66FU		
IC605	8-759-710-79	IC	NJM2107F		
IC606	8-759-710-79	IC	NJM2107F		
IC607	8-759-184-64	IC	TC4W66FU		
IC608	8-759-280-84	IC	S-81211SG-QA-T1		
IC609	8-759-184-64	IC	TC4W66FU		
< JACK >					
J101	1-563-319-21	JACK (MIC (PLUG IN POWER) )			
J102	1-563-319-21	JACK (EAR)			

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
< JUMPER RESISTOR >							Q608	8-729-030-46	TRANSISTOR	XP4314-TX			
JC1	1-216-864-11	METAL CHIP	0	5%	1/16W		Q609	8-729-030-46	TRANSISTOR	XP4314-TX			
JC2	1-216-864-11	METAL CHIP	0	5%	1/16W		Q610	8-729-402-93	TRANSISTOR	UN5214-TX			
JC3	1-216-864-11	METAL CHIP	0	5%	1/16W		Q611	8-729-030-46	TRANSISTOR	XP4314-TX			
JC4	1-216-864-11	METAL CHIP	0	5%	1/16W		Q612	8-729-402-93	TRANSISTOR	UN5214-TX			
JC5	1-216-864-11	METAL CHIP	0	5%	1/16W		Q613	8-729-402-93	TRANSISTOR	UN5214-TX			
JC6	1-216-864-11	METAL CHIP	0	5%	1/16W		Q614	8-729-903-96	TRANSISTOR	2SB1188-T101-R			
							Q615	8-729-903-96	TRANSISTOR	2SB1188-T101-R			
< COIL >							Q616	8-729-429-44	TRANSISTOR	XP1501			
< RESISTOR >													
L101	1-412-030-11	INDUCTOR CHIP	22uH				R101	1-216-821-11	METAL CHIP	1K	5%	1/16W	
L102	1-414-222-11	INDUCTOR	120uH				R102	1-216-815-11	METAL CHIP	330	5%	1/16W	
L103	1-412-030-11	INDUCTOR CHIP	22uH				R103	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
L104	1-412-030-11	INDUCTOR CHIP	22uH				R104	1-216-815-11	METAL CHIP	330	5%	1/16W	
L401	1-412-030-11	INDUCTOR CHIP	22uH				R105	1-216-821-11	METAL CHIP	1K	5%	1/16W	
< TRANSISTOR >							R106	1-216-849-11	METAL CHIP	220K	5%	1/16W	
Q101	8-729-030-46	TRANSISTOR	XP4314-TX				R107	1-216-833-11	METAL CHIP	10K	5%	1/16W	
Q102	8-729-030-46	TRANSISTOR	XP4314-TX				R108	1-216-854-11	METAL CHIP	560K	5%	1/16W	
Q104	8-729-141-75	TRANSISTOR	2SD596DV345				R109	1-216-854-11	METAL CHIP	560K	5%	1/16W	
Q105	8-729-230-63	TRANSISTOR	2SC4116-YG				R110	1-216-838-11	METAL CHIP	27K	5%	1/16W	
Q106	8-729-800-71	TRANSISTOR	2SB815B7-TB				R111	1-216-838-11	METAL CHIP	27K	5%	1/16W	
Q107	8-729-402-93	TRANSISTOR	UN5214-TX				R112	1-216-838-11	METAL CHIP	27K	5%	1/16W	
Q109	8-729-030-46	TRANSISTOR	XP4314-TX				R113	1-216-838-11	METAL CHIP	27K	5%	1/16W	
Q110	8-729-030-46	TRANSISTOR	XP4314-TX				R114	1-218-482-11	RES,CHIP	430	5%	1/16W	
Q115	8-729-402-93	TRANSISTOR	UN5214-TX				R115	1-218-482-11	RES,CHIP	430	5%	1/16W	
Q301	8-729-230-63	TRANSISTOR	2SC4116-YG				R116	1-216-821-11	METAL CHIP	1K	5%	1/16W	
Q302	8-729-030-46	TRANSISTOR	XP4314-TX				R117	1-216-821-11	METAL CHIP	1K	5%	1/16W	
Q303	8-729-230-63	TRANSISTOR	2SC4116-YG				R118	1-216-818-11	METAL CHIP	560	5%	1/16W	
Q304	8-729-230-63	TRANSISTOR	2SC4116-YG				R119	1-216-818-11	METAL CHIP	560	5%	1/16W	
Q401	8-729-402-93	TRANSISTOR	UN5214-TX				R120	1-216-797-11	METAL CHIP	10	5%	1/16W	
Q402	8-729-030-46	TRANSISTOR	XP4314-TX				R122	1-216-821-11	METAL CHIP	1K	5%	1/16W	
Q403	8-729-030-46	TRANSISTOR	XP4314-TX				R123	1-218-446-11	METAL CHIP	1	5%	1/16W	
Q404	8-729-030-46	TRANSISTOR	XP4314-TX				R124	1-216-809-11	METAL CHIP	100	5%	1/16W	
Q405	8-729-030-46	TRANSISTOR	XP4314-TX				R125	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
Q406	8-729-402-96	TRANSISTOR	UN5114				R126	1-218-446-11	METAL CHIP	1	5%	1/16W	
Q407	8-729-030-46	TRANSISTOR	XP4314-TX				R127	1-216-793-11	RES,CHIP	4.7	5%	1/16W	
Q408	8-729-402-96	TRANSISTOR	UN5114				R128	1-218-446-11	METAL CHIP	1	5%	1/16W	
Q501	8-729-402-84	TRANSISTOR	XN4601				R129	1-216-793-11	RES,CHIP	4.7	5%	1/16W	
Q502	8-729-402-96	TRANSISTOR	UN5114				R130	1-216-809-11	METAL CHIP	100	5%	1/16W	
Q503	8-729-429-44	TRANSISTOR	XP1501				R131	1-216-845-11	METAL CHIP	100K	5%	1/16W	
Q504	8-729-230-63	TRANSISTOR	2SC4116-YG				R132	1-216-845-11	METAL CHIP	100K	5%	1/16W	
Q505	8-729-402-93	TRANSISTOR	UN5214-TX				R133	1-216-835-11	METAL CHIP	15K	5%	1/16W	
Q506	8-729-427-19	TRANSISTOR	XP4114-TXE				R134	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
Q507	8-729-402-96	TRANSISTOR	UN5114				R135	1-216-845-11	METAL CHIP	100K	5%	1/16W	
Q508	8-729-230-63	TRANSISTOR	2SC4116-YG				R136	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
Q509	8-729-030-46	TRANSISTOR	XP4314-TX				R137	1-216-845-11	METAL CHIP	100K	5%	1/16W	
Q510	8-729-230-63	TRANSISTOR	2SC4116-YG				R138	1-216-845-11	METAL CHIP	100K	5%	1/16W	
Q511	8-729-426-31	TRANSISTOR	XP1214				R301	1-216-809-11	METAL CHIP	100	5%	1/16W	
Q512	8-729-230-63	TRANSISTOR	2SC4116-YG				R302	1-216-853-11	METAL CHIP	470K	5%	1/16W	
Q513	8-729-402-96	TRANSISTOR	UN5114				R303	1-216-861-11	METAL CHIP	2.2M	5%	1/16W	
Q601	8-729-402-96	TRANSISTOR	UN5114				R304	1-216-834-11	METAL CHIP	12K	5%	1/16W	
Q602	8-729-030-46	TRANSISTOR	XP4314-TX				R305	1-216-857-11	METAL CHIP	1M	5%	1/16W	
Q603	8-729-402-96	TRANSISTOR	UN5114				R306	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
Q604	8-729-030-46	TRANSISTOR	XP4314-TX				R307	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
Q605	8-729-823-86	TRANSISTOR	2SA1745				R308	1-216-843-11	METAL CHIP	68K	5%	1/16W	
Q606	8-729-823-86	TRANSISTOR	2SA1745				R309	1-216-857-11	METAL CHIP	1M	5%	1/16W	
Q607	8-729-030-46	TRANSISTOR	XP4314-TX				R310	1-216-821-11	METAL CHIP	1K	5%	1/16W	

MAIN

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R311	1-216-845-11	METAL CHIP	100K	5%	1/16W	R606	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R312	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	R607	1-216-809-11	METAL CHIP	100	5%	1/16W
R401	1-216-845-11	METAL CHIP	100K	5%	1/16W	R608	1-216-809-11	METAL CHIP	100	5%	1/16W
						R609	1-216-845-11	METAL CHIP	100K	5%	1/16W
R402	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	R610	1-216-845-11	METAL CHIP	100K	5%	1/16W
R403	1-216-833-11	METAL CHIP	10K	5%	1/16W						
R404	1-216-833-11	METAL CHIP	10K	5%	1/16W	R611	1-216-835-11	METAL CHIP	15K	5%	1/16W
R405	1-216-833-11	METAL CHIP	10K	5%	1/16W	R612	1-216-833-11	METAL CHIP	10K	5%	1/16W
R406	1-216-833-11	METAL CHIP	10K	5%	1/16W	R613	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
						R614	1-216-809-11	METAL CHIP	100	5%	1/16W
R407	1-216-855-11	METAL CHIP	680K	5%	1/16W	R615	1-216-821-11	METAL CHIP	1K	5%	1/16W
R408	1-216-821-11	METAL CHIP	1K	5%	1/16W						
R409	1-216-821-11	METAL CHIP	1K	5%	1/16W	R616	1-216-818-11	METAL CHIP	560	5%	1/16W
R410	1-216-855-11	METAL CHIP	680K	5%	1/16W	R617	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R411	1-216-833-11	METAL CHIP	10K	5%	1/16W	R618	1-216-821-11	METAL CHIP	1K	5%	1/16W
						R619	1-216-845-11	METAL CHIP	100K	5%	1/16W
R412	1-216-833-11	METAL CHIP	10K	5%	1/16W	R620	1-216-833-11	METAL CHIP	10K	5%	1/16W
R413	1-216-845-11	METAL CHIP	100K	5%	1/16W						
R414	1-216-833-11	METAL CHIP	10K	5%	1/16W	R621	1-216-845-11	METAL CHIP	100K	5%	1/16W
R415	1-216-845-11	METAL CHIP	100K	5%	1/16W	R622	1-216-845-11	METAL CHIP	100K	5%	1/16W
R416	1-216-833-11	METAL CHIP	10K	5%	1/16W	R623	1-216-845-11	METAL CHIP	100K	5%	1/16W
						R624	1-216-833-11	METAL CHIP	10K	5%	1/16W
R417	1-216-845-11	METAL CHIP	100K	5%	1/16W	R625	1-216-845-11	METAL CHIP	100K	5%	1/16W
R418	1-216-830-11	METAL CHIP	5.6K	5%	1/16W						
R419	1-216-857-11	METAL CHIP	1M	5%	1/16W	R626	1-216-838-11	METAL CHIP	27K	5%	1/16W
R420	1-216-833-11	METAL CHIP	10K	5%	1/16W	R627	1-216-833-11	METAL CHIP	10K	5%	1/16W
R421	1-216-833-11	METAL CHIP	10K	5%	1/16W	R628	1-216-833-11	METAL CHIP	10K	5%	1/16W
						R629	1-216-845-11	METAL CHIP	100K	5%	1/16W
R422	1-216-845-11	METAL CHIP	100K	5%	1/16W	R630	1-216-838-11	METAL CHIP	27K	5%	1/16W
R423	1-216-837-11	METAL CHIP	22K	5%	1/16W						
R424	1-216-833-11	METAL CHIP	10K	5%	1/16W	R631	1-216-833-11	METAL CHIP	10K	5%	1/16W
R425	1-216-833-11	METAL CHIP	10K	5%	1/16W	R632	1-216-815-11	METAL CHIP	330	5%	1/16W
R427	1-216-833-11	METAL CHIP	10K	5%	1/16W	R633	1-216-815-11	METAL CHIP	330	5%	1/16W
						R634	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R501	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R635	1-216-821-11	METAL CHIP	1K	5%	1/16W
R502	1-216-833-11	METAL CHIP	10K	5%	1/16W						
R503	1-216-856-11	METAL CHIP	820K	5%	1/16W	R636	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R504	1-216-845-11	METAL CHIP	100K	5%	1/16W	R637	1-216-833-11	METAL CHIP	10K	5%	1/16W
R505	1-216-816-11	METAL CHIP	390	5%	1/16W	R638	1-216-833-11	METAL CHIP	10K	5%	1/16W
						R639	1-216-839-11	METAL CHIP	33K	5%	1/16W
R506	1-216-817-11	METAL CHIP	470	5%	1/16W	R640	1-216-834-11	METAL CHIP	12K	5%	1/16W
R507	1-216-821-11	METAL CHIP	1K	5%	1/16W						
R508	1-216-820-11	METAL CHIP	820	5%	1/16W			< VARIABLE RESISTOR >			
R509	1-216-861-11	METAL CHIP	2.2M	5%	1/16W						
R510	1-216-837-11	METAL CHIP	22K	5%	1/16W	RV101	1-225-609-11	RES, VAR, CARBON 50K (VOL ▲)			
						RV401	1-241-596-11	RES, ADJ, METAL GRAZE 47K (FX OSCILLATOR FREQUENCY)			
R511	1-216-837-11	METAL CHIP	22K	5%	1/16W						
R512	1-216-861-11	METAL CHIP	2.2M	5%	1/16W	RV603	1-223-583-11	RES, ADJ, CARBON 1K (TAPE SPEED)			
R513	1-216-845-11	METAL CHIP	100K	5%	1/16W	RV604	1-223-583-11	RES, ADJ, CARBON 1K (TAPE SPEED)			
R514	1-216-837-11	METAL CHIP	22K	5%	1/16W	RV605	1-223-583-11	RES, ADJ, CARBON 1K (TAPE SPEED)			
R515	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	RV606	1-223-583-11	RES, ADJ, CARBON 1K (TAPE SPEED)			
R516	1-216-855-11	METAL CHIP	680K	5%	1/16W			< SWITCH >			
R517	1-216-821-11	METAL CHIP	1K	5%	1/16W						
R518	1-216-857-11	METAL CHIP	1M	5%	1/16W	S101	1-572-964-11	SWITCH, SLIDE (REC/PB)			
R519	1-216-843-11	METAL CHIP	68K	5%	1/16W	S103	1-771-092-21	SWITCH, PUSH (1 KEY) (POWER)			
R520	1-216-833-11	METAL CHIP	10K	5%	1/16W	S602	1-572-922-11	SWITCH, SLIDE (PAUSE ►)			
R521	1-216-833-11	METAL CHIP	10K	5%	1/16W			< TRANSFORMER >			
R522	1-216-857-11	METAL CHIP	1M	5%	1/16W						
R523	1-216-834-11	METAL CHIP	12K	5%	1/16W	T101	1-427-653-21	TRANSFORMER, BIAS OSCILLATION			
R524	1-216-833-11	METAL CHIP	10K	5%	1/16W						
R525	1-216-833-11	METAL CHIP	10K	5%	1/16W			< THERMISTOR >			
R601	1-216-839-11	METAL CHIP	33K	5%	1/16W	TH601	1-801-414-11	THERMISTOR			
R602	1-216-839-11	METAL CHIP	33K	5%	1/16W	THP601	1-801-744-21	THERMISTOR, POSITIVE			
R603	1-216-828-11	METAL CHIP	3.9K	5%	1/16W						
R604	1-220-371-11	METAL CHIP	4.3K	5%	1/16W						
R605	1-216-813-11	METAL CHIP	220	5%	1/16W						

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
W101	1-573-360-11	CONNECTOR, FFC/FPC 20P	
		< VIBRATOR >	
X401	1-760-227-11	VIBRATOR, CERAMIC (768kHz)	
*****			
		MISCELLANEOUS	
		*****	
10	1-669-415-11	DPC CONNECTION FLEXIBLE BOARD	
112	1-548-582-11	COUNTER, TAPE (SMALL TYPE)	
126	1-649-600-11	MOTOR FLEXIBLE BOARD	
HE901	1-543-525-11	HEAD, MAGNETIC (ERASE)	
HRP901	1-500-523-11	HEAD,MAGNETIC(RECORD/PLAYBACK)	
M901	1-698-875-11	MOTOR, DC (including PULLEY)	
MIC901	1-542-124-31	MICROPHONE, ELECTRET CONDENSER	(FLAT MIC)
SP901	1-505-383-11	SPEAKER (3.6cm)	
*****			
		ACCESSORIES & PACKING MATERIALS	
		*****	
X-3375-945-1		MANUAL, INSTRUCTION (SOUND : JAPANES)	
X-3375-946-2		MANUAL, INSTRUCTION (SOUND : ENGLISH,	
		SPANISH)	
3-862-269-11		MANUAL, INSTRUCTION (ENGLISH, FRENCH)	
8-952-251-90		HEADPHONE MDR-E122 SET	



# TCM-4TR

SONY

US Model

## SERVICE MANUAL

1999. 01

### SUPPLEMENT - 1

File this Supplement with the Service Manual.

**Subject :**

- CHANGE OF ELECTRICAL ADJUSTMENTS
- CHANGE OF PRINTED WIRING BOARDS
- CHANGE OF PARTS LIST

(ECN-MT800366)

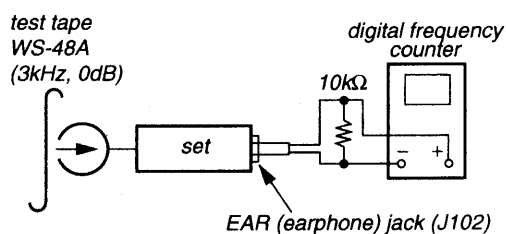
#### • CHANGE OF ELECTRICAL ADJUSTMENTS

(Service Manual See page 6)

##### Tape speed Adjustment

###### Procedure :

1. Short circuit between BP403 terminal on the main board.
2. Mode : playback (2.4cm/s)  
Set to 2.4cm/s with the tape speed switch (S601)



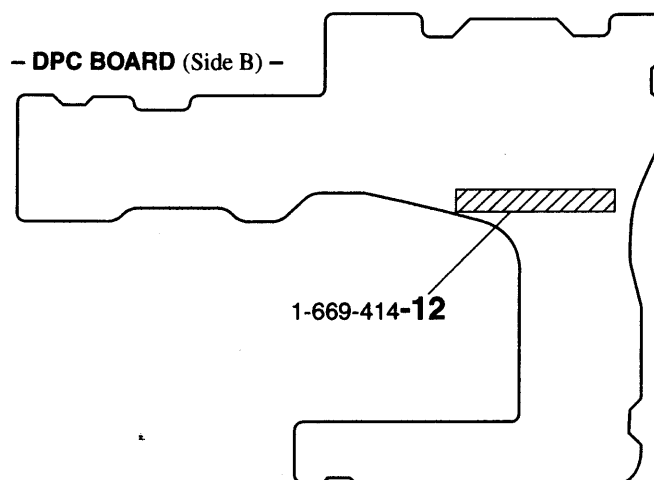
3. Turn the speed/pitch (DPC) control volume knob (RV601) fully in anticlockwise (fast) direction.
4. Adjust RV605 so that the reading of the frequency counter becomes 3,030Hz (standard value : 3,000 – 3,060Hz).
5. Turn the speed/pitch (DPC) control volume knob (RV601) to the center (normal) position.
6. Adjust RV603 so that the reading of the frequency counter becomes 1,510Hz (standard value : 1,507 – 1,515Hz).
7. Set to 4.8cm/s with the tape speed switch (S601).
8. Turn the speed/pitch (DPC) control volume knob (RV601) fully in anticlockwise (fast) direction.
9. Adjust RV604 so that the reading of the frequency counter becomes 6,060Hz (standard value : 6,000 – 6,120Hz).
10. Turn the speed/pitch (DPC) control volume knob (RV601) to the center (normal) position.
11. Adjust RV606 so that the reading of the frequency counter becomes 3,020Hz (standard value : 3,015 – 3,030Hz).
12. Turn the speed/pitch (DPC) control volume knob (RV601) fully in clockwise (slow) direction.
13. Confirm the frequency counter reading should be within standard value.  
(standerd value : 1500 - 1530 Hz)
14. Open the short circuit to release BP403 terminal.

- **CHANGE OF PRINTED WIRNG BOARDS**

The DPC board have been changed.

Printed wiring board and schematic diagram of new type, and changed parts list are described in this Supplement-1.  
Refer to original service manual (9-923-361-31) previously issued for the other information.

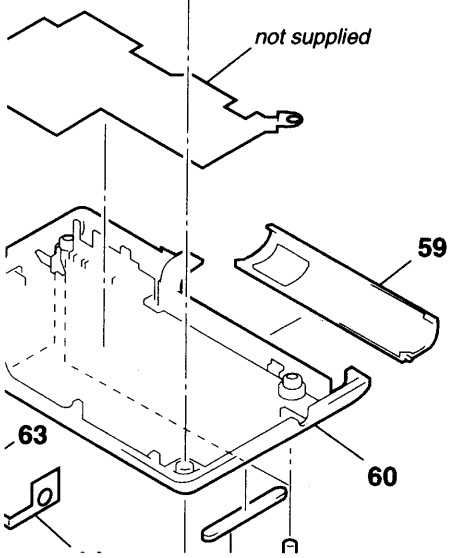
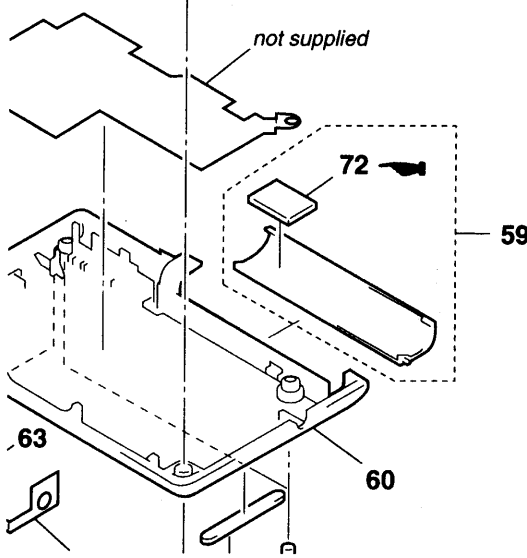
**NEW TYPE IDENTIFICATION**



● CHANGED PARTS LIST

EXPLODED VIEWS (Service Manual See page 24, 26)

●  : Indicates added portion

Ref. No.	Before Change		After Change		Remark
	Part No.	Description	Part No.	Description	
					
72			3-016-376-01	SHEET, CUSHION	Added
160	X-3370-387-1	LEVER ASSY, IDLER	X-3376-678-1	SUB LEVER ASSY, IDLER	Changed

ELECTRICAL PARTS LIST (Service Manual See page 28–31)

MAIN

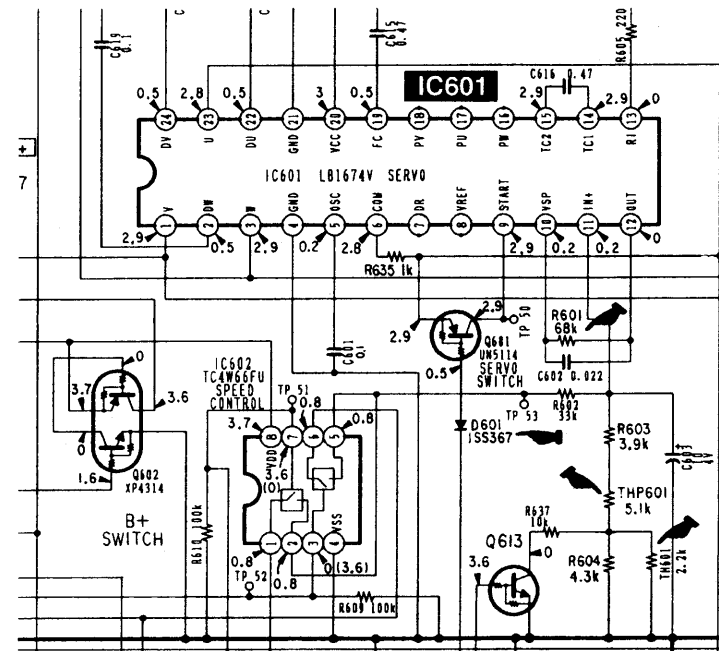
Ref. No.	Before Change		After Change		Remark
	Part No.	Description	Part No.	Description	
D601	8-719-404-49	DIODE MA111	8-719-049-09	DIODE ISS367-T3SONY	Changed
Q510	8-729-230-63	TRANSISTER 2SC4116-YG	8-729-402-32	TRANSISTER 2SD1819A-R	Changed
R601	1-216-839-11	METAL CHIP 33K 5% 1/16W	1-216-843-11	METAL CHIP 68K 5% 1/16W	Changed
TH601	1-801-414-11	THERMISTOR	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	Changed
THP601	1-801-744-21	THERMISTOR,POSITIVE	1-216-066-00	METAL CHIP 5.1K 5% 1/16W	Changed



● **CHANGE OF SCHEMATIC DIAGRAM**

(Service Manual See page 19, 20) (Location H - L, 18 - 21)

●  : Changed portion



• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D101	G-14	Q107	E-4
D102	F-20	Q109	C-20
D103	F-22	Q110	D-20
D401	E-18	Q115	C-20
D402	E-18	Q301	F-5
D403	D-18	Q302	F-4
D404	D-18	Q303	F-4
D405	E-16	Q304	E-5
D406	E-8	Q401	E-7
D501	J-29	Q402	D-6
D502	J-27	Q403	D-7
D503	J-28	Q404	E-16
D504	B-16	Q405	E-16
D505	C-7	Q406	E-16
D601	E-14	Q407	E-7
D602	E-10	Q708	E-8
D603	C-9	Q501	C-7
D604	C-5	Q502	C-17
D605	C-6	Q503	C-18
D606	C-5	Q504	B-18
D607	C-5	Q505	C-17
D608	C-5	Q506	B-18
D609	C-5	Q507	C-7
		Q508	C-17
		Q509	D-16
IC101	F-21	Q510	D-17
IC102	C-21	Q511	C-6
IC103	F-19	Q512	D-16
IC104	G-14	Q513	C-16
IC105	F-14	Q601	D-14
IC106	D-20	Q602	C-20
IC401	E-18	Q603	F-14
IC501	C-17	Q604	E-14
IC601	D-14	Q605	E-14
IC602	E-16	Q606	E-13
IC603	D-16	Q607	H-17
IC604	C-16	Q608	H-17
IC605	G-18	Q609	D-10
IC606	G-18	Q610	D-10
IC607	G-19	Q611	C-8
IC608	C-14	Q612	C-8
IC609	F-17	Q613	E-11
		Q614	G-5
		Q615	G-20
		Q616	G-5
Q101	G-3		
Q102	E-20		
Q104	E-3		
Q105	C-3		
Q106	E-4		

Note:

- : parts extracted from the component side.
- : Through hole.
- The printed wiring board which has four layers structure but inner two layer's patterns are omitted.
- ▨ : Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)

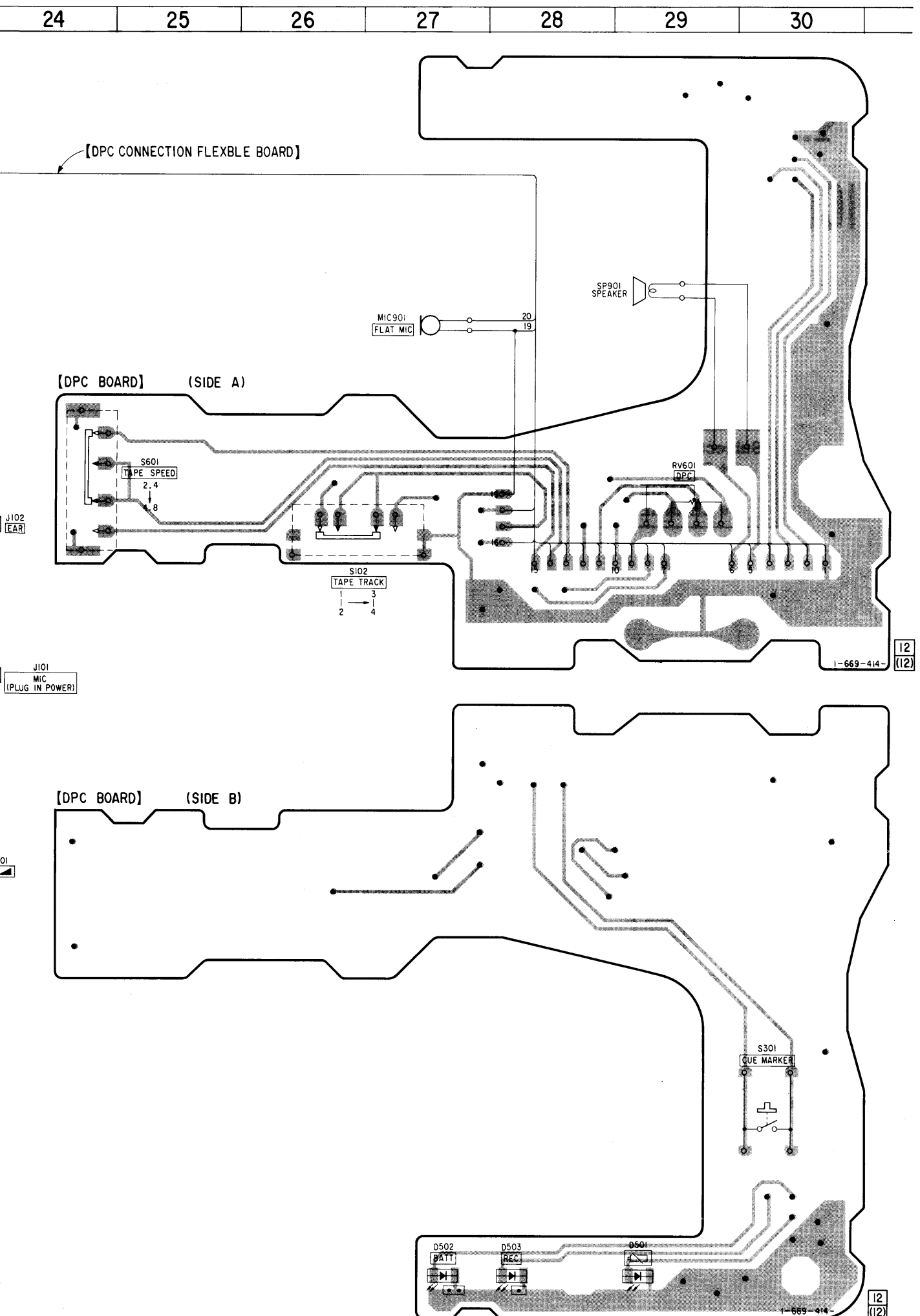
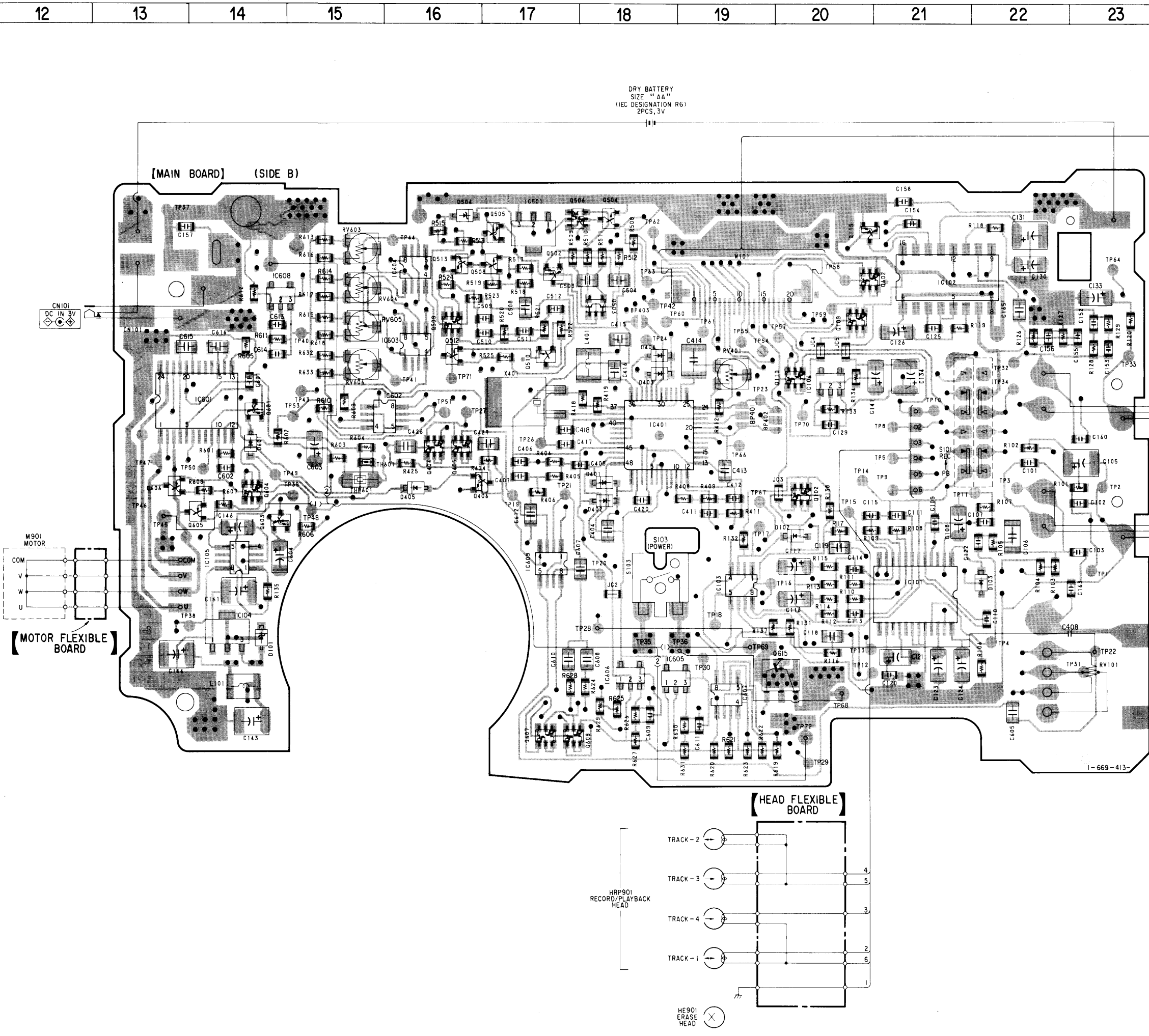
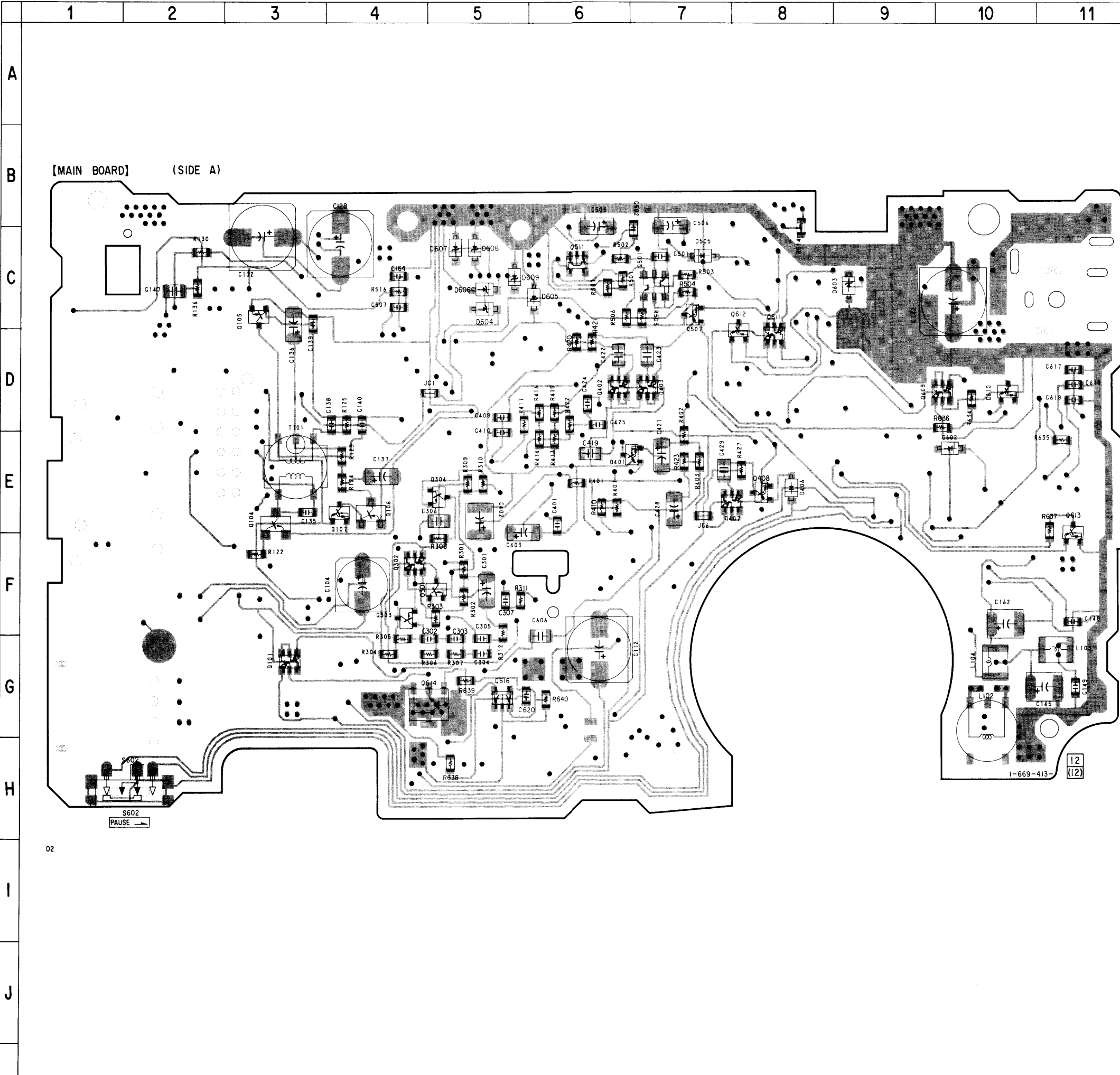
Caution:

Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.

(Conductor Side B)

Parts face side: Parts on the parts face side seen from the parts face are indicated.

(Component Side A)





## REVISION HISTORY

Clicking the version allows you to jump to the revised page.

Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

[illegible]