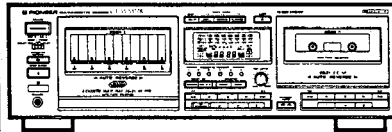


Service Manual

 **PIONEER®**
The Art of Entertainment



ORDER NO.
ARP2182

MULTI-CASSETTE CHANGER

CT-WM77R

MODEL CT-WM77R HAS THE FOLLOWING:

Type	Power Requirement	Remarks
KUC	AC120V only	
SD	AC110V, 120V-127V, 220V, 240V (switchable)	

- This manual is applicable to the KUC and SD types.
- As to the SD type, refer to page 48.

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This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. SAFETY INFORMATION

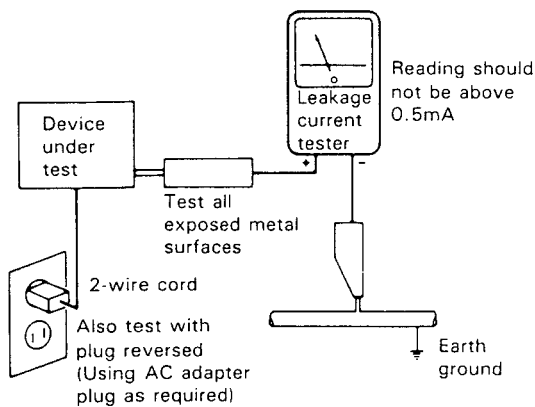
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. DISASSEMBLY

● REMOVAL OF FRONT PANEL ASSEMBLY (INCLUDING MECHANISM II)

1. Remove the bonnet.
2. Remove four screws at right and left and five screws at lower part fastening the panel stay and the chassis. (Refer to Figs. 2-1 and 2-2)
3. Remove a screw fastening the lead cover and remove the lead cover. (Refer to Fig. 2-2)
4. Remove the lead holder fastening the wirings (ban card). (Refer to Fig. 2-2)
5. Disconnect all the wirings from the front panel and remove the front panel assembly (including mechanism II).

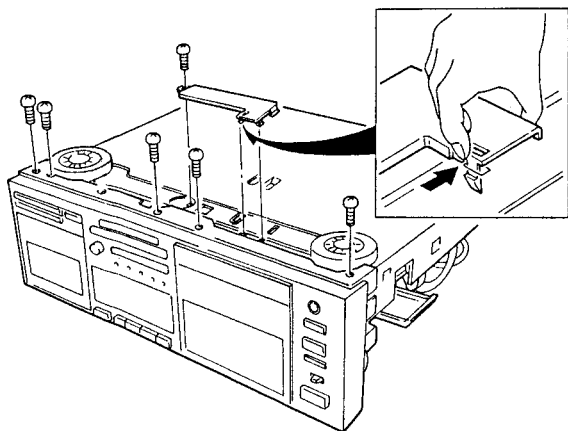


Fig. 2-1

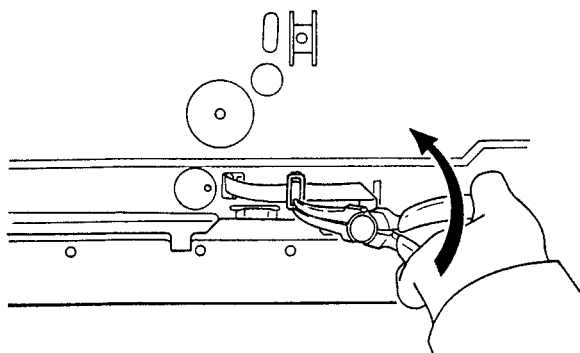


Fig. 2-2

● REMOVAL OF MECHANISM UNIT (MECHANISM II)

1. Remove the bonnet.
2. Remove or move the front panel assembly.
3. Remove three screws from the rear side of mechanism.
4. Remove the screw fastening at the lower part of the front panel assembly.

Note: The mechanism unit can be removed without removing the front panel assembly.

Remove the other blocks in the same procedures as CT-M6R.

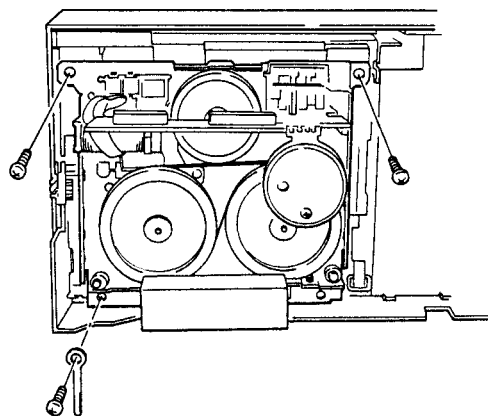


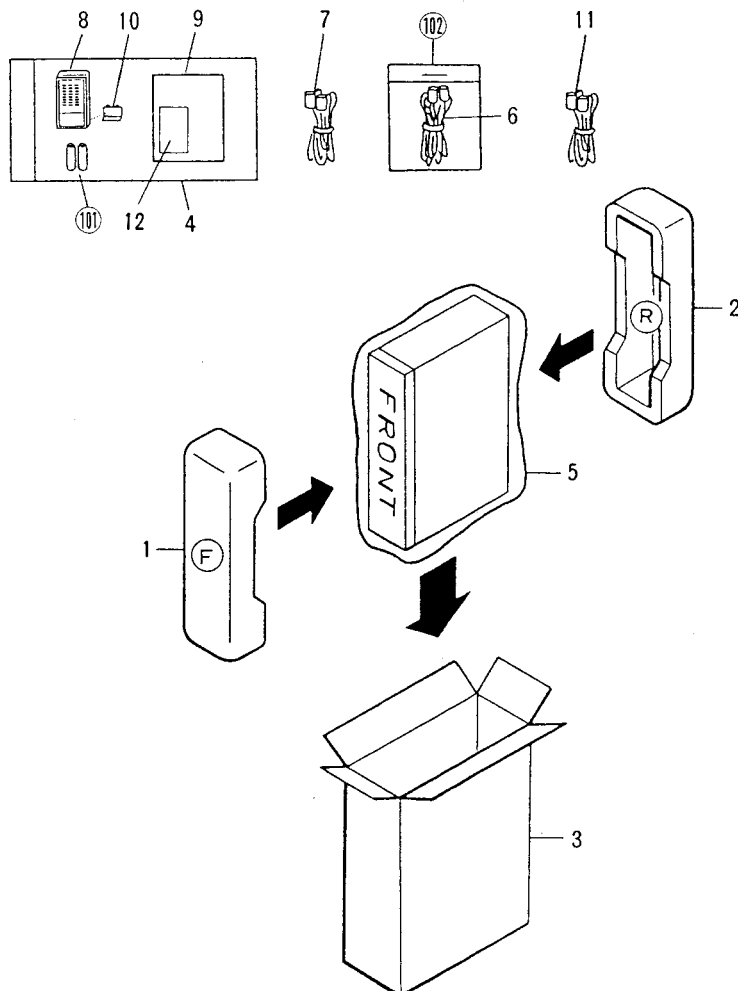
Fig. 2-3

3. PACKING

Parts List

Mark	No.	Part No.	Description
	1	RHA1044	Pad (F)
	2	RHA1045	Pad (R)
	3	RHG1233	Packing case
	4	RHL1001	Plustic bag
	5	RHX - 034	Sheet
	6	PDE - 319	Connection cord (Mini - plug)
	7	RDE1018	Control cord
	8	RPX1044	Remote control unit
	9	RRB1076	Operating instructions (English)
	10	PZN1001	Battery cover
	11	RDE - 010	Connection cord
	12	RRW1065	Title seal
101			Dry cell battery (R03, AAA)
102			Connection cord assembly
		* REE1017	Caution plate
		* RNK1620	Protector (Cassette tray)

* Caution plate and protector are used as a cassette tray protector when shipping.



4. EXPLODED VIEWS AND PARTS LIST

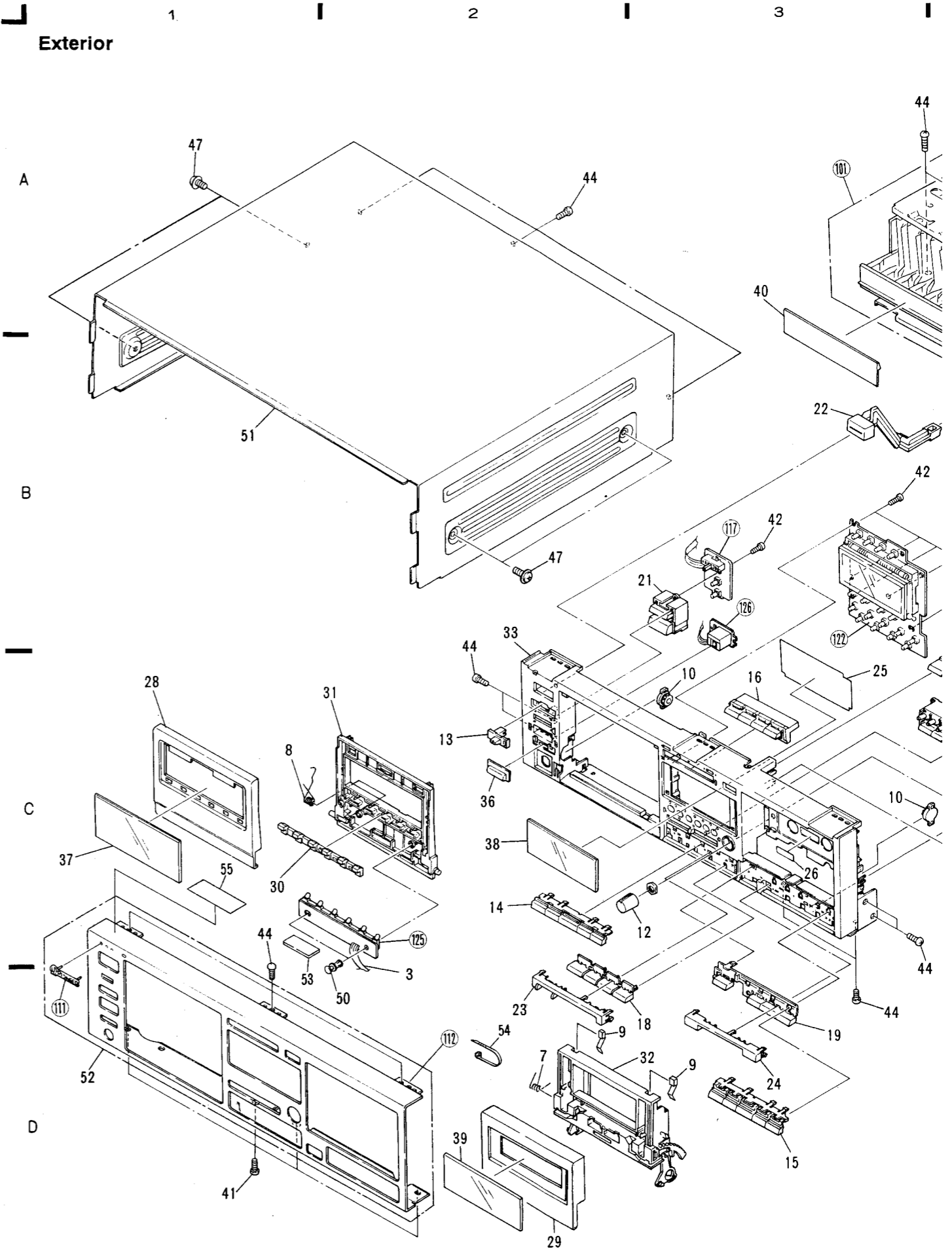
NOTES:

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

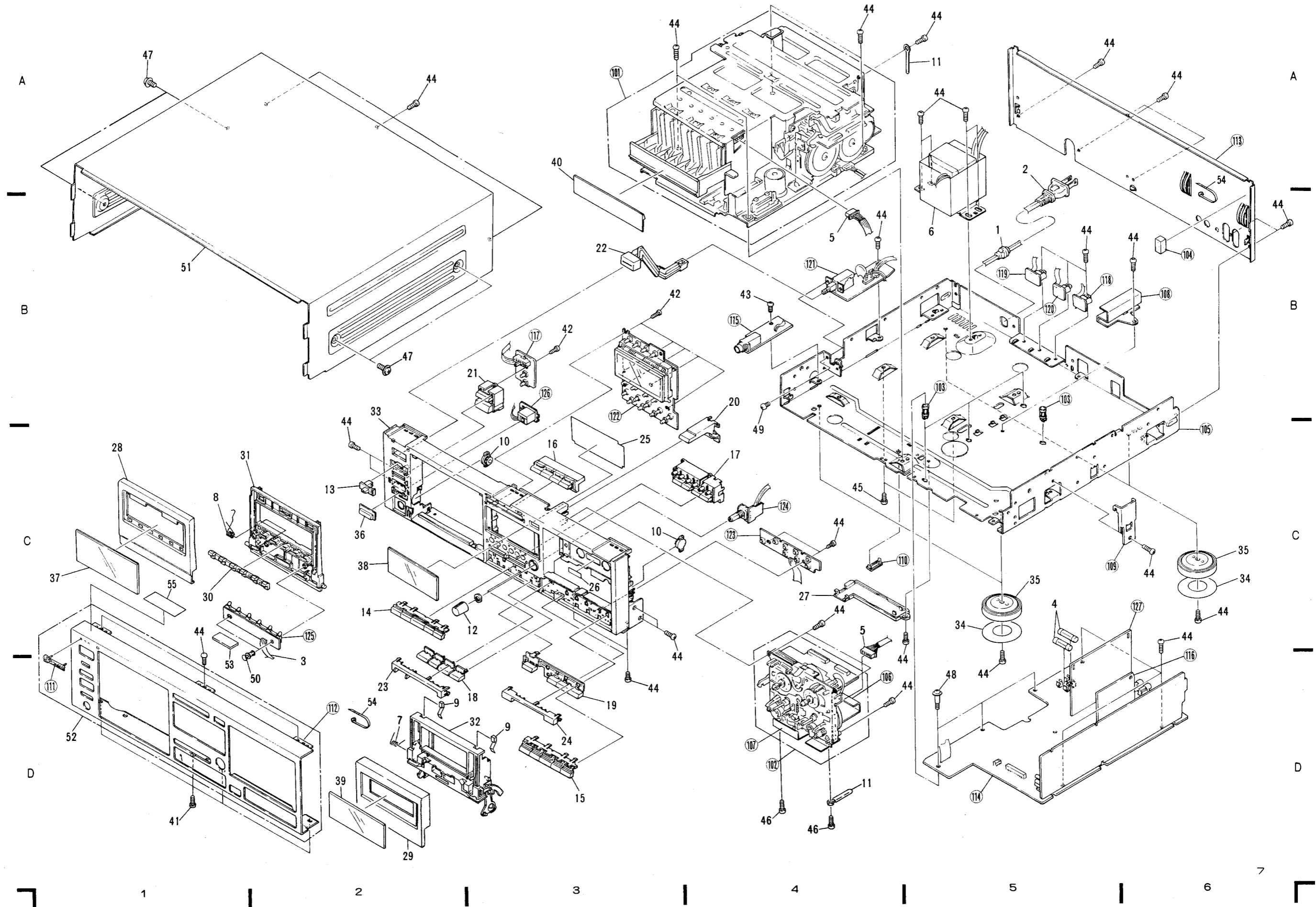
4.1 EXTERIOR

Parts List

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
Δ	1	CM - 22C	Strain relief		41	BBT30P080FZK	Screw
Δ	2	PDG1015	AC Power cord		42	BBZ26P080FZK	Screw
Δ	3	RDD1212	Ban card 7P		43	BBZ30P060FZK	Screw
Δ	4	REK1001	FU501, FU502 Fuse (1.5A)		44	BBZ30P080FMC	Screw
	5	RKP1415	Connector assembly 6P		45	BBZ30P120FMC	Screw
Δ	6	RTT1152	Power transformer		46	BCZ26P050FMC	Screw
	7	RBH1224	Door spring (L)		47	FBT40P080FZK	Screw
	8	RBH1281	Door spring (1)		48	IBZ30P150FCU	Screw
	9	RBK1004	Half pressure spring		49	PMA30P060FMC	Screw
	10	REC1005	Damper assembly		50	RBM - 003	Nylon rivet
	11	RNH - 184	Cord clamber		51	RXX1250	Bonnet
	12	RAC1262	VR knob (B)		52	RXX1355	Front panel assembly
	13	RAC1562	Slide SW knob		53	REB1168	Cushion (CR sponge)
	14	RAC1591	Control button (1)		54	REC - 371	Binder
	15	RAC1592	Control button (2)		55	RRW1069	Caution seal
	16	RAC1593	Tact button (A)		101		Loading unit
	17	RAC1594	Tact button (B)		102		Mechanism unit
	18	RAC1595	REC button (1)		103		PCB spacer
	19	RAC1596	REC button (2)		104		Spacer
	20	RAC1597	Eject button		105		Main chassis
	21	RAC1598	Tact button (C)		106		Mechanism shield plate
	22	RAC1600	Power button		107		Mechanism bracket
	23	RAH1784	REC mold (1)		108		Shield plate (A)
	24	RAH1785	REC mold (2)		109		PCB holder (A)
	25	RAH1788	FL filter		110		Lead holder
	26	REE - 113	Remain display paper		111		Name plate
	27	RNK1695	Lead cover		112		Front panel
	28	RNK1696	Door cover (1)		113		Rear panel
	29	RNK1697	Door cover (2)		114		MAIN unit
	30	RNK1700	LED lens		115		H.PHONE unit
	31	RNK1701	Door (1)		116		M.S. METER unit
	32	RNT1013	Door pocket		117		SW unit
	33	RNT1098	Panel stay		118		TRANSISTOR (A) unit
	34	VEC1061	Stopper		119		TRANSISTOR (B) unit
	35	VNK1095	Insulator		120		TRANSISTOR (C) unit
	36	VNK1566	Sensor acryl		121		POWER SW unit
	37	RAH1783	Door lens (1)		122		SUB (1) unit
	38	RAH1786	FL lens		123		SUB (2) unit
	39	RAH1787	Door lens (2)		124		VOLUME unit
	40	RNK1694	Tray plate		125		DOOR IND unit
					126		REMOTE CONTROL unit
					127		REC (1) unit



Exterior



Replacing, be sure
able.

Description

assembly
(R sponge)

unit

shield plate
bracket
(A)
(A)

unit
R unit

R (A) unit
R (B) unit
R (C) unit

unit
it
it
nit
unit

CONTROL unit
it

4.2 LOADING UNIT

Parts List

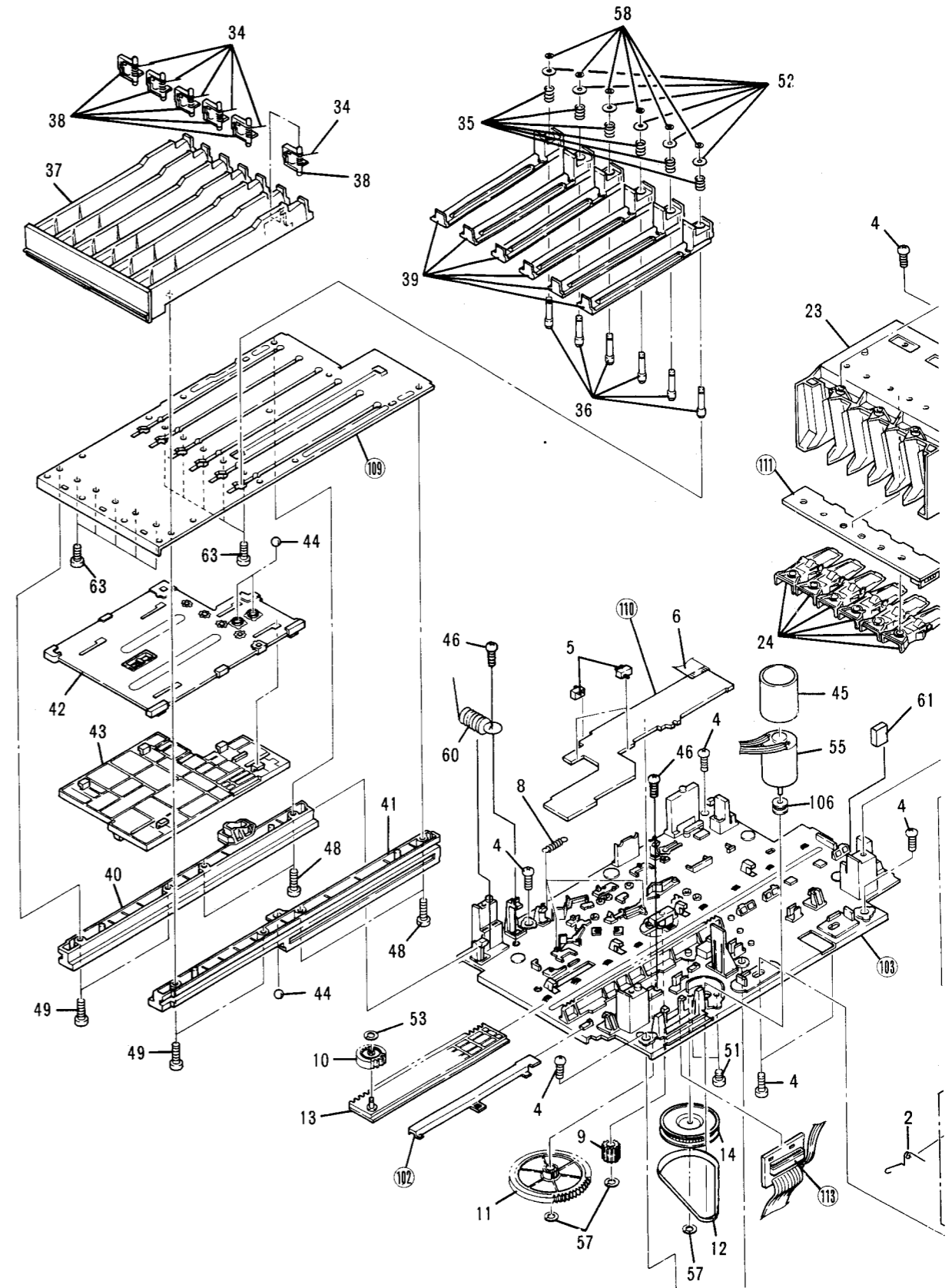
Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	RKP1385	Connector assembly 6P		51	PMZ30P040FMC	Screw
	2	RBH1269	Carrier earth spring		52	WA21D085D025	Washer
	3		.....		53	WT21D050D050	Washer
	4	BBZ30P080FMC	Screw		54	WA26D047D050	Washer
	5	DSG1014	Push switch		55	RXX1307	Motor assembly
	6	RDD1185	Lead card 10p		56	RBH1256	Cassette pressure spring 2
	7	RXA1323	Encoder assembly		57	WT26D047D050	Washer
	8	RBH1243	Switch spring		58	WT17D034D050	Washer
	9	RNK1551	Drive gear (A)		59	BBZ20P040FMC	Screw
	10	RNK1552	Drive gear (B)		60	RBH1261	Earth spring
	11	RNK1553	Interval gear		61	REB1129	Tray stopper
	12	REB1127	O/C belt		62	ABZ30P150FMC	Screw
	13	RNK1606	Rack plate		63	BBZ26P080FZK	Screw
	14	RNK1604	Pulley gear		101		Loading unit
	15	RBH1244	Reset lever spring		102		Load plate
	16	RBH1247	Cassette pressure spring		103		Bottom chassis
	17	RBK1033	Cassette hold spring		104		Upper chassis
	18	REB1120	Drive belt		105		Carrier plate
	19	RED1024	Pressure felt		106	PNW1634	Motor pulley
	20	RLA1137	Guide shaft		107		Lead holder
	21	RLA1140	Loading shaft		108		Carrier assembly
	22	RLA1141	Worm shaft		109		Tray base
	23	RNK1558	Upper holder		110		Bottom unit
	24	RNK1560	Cassette arm		111		Upper unit
	25	RNK1561	Upper rack		112		Carrier unit
	26	RNK1562	Reset lever		113		Connector unit
	27	RNK1573	Carrier slider		114		Switch unit
	28	RNK1576	Loading gear				
	29	RNK1577	Encoder gear				
	30	RNK1578	Selector				
	31	RNK1579	Cassette pressure (A)				
	32	RNK1580	Cassette pressure (B)				
	33	RXA1319	Worm pulley assembly				
	34	RBH1274	Stopper arm spring				
	35	RBH1246	Stopper pin spring				
	36	RLA1138	Stopper pin				
	37	RNK1564	Tray				
	38	RNK1565	Stopper arm				
	39	RNK1567	Cassette holder				
	40	RNK1568	Side rail (L)				
	41	RNK1569	Side rail (R)				
	42	RNK1570	Drive plate (A)				
	43	RNK1571	Drive plate (B)				
	44	PBP-007	Steel ball ϕ 5				
	45	RNE1373	Shield band				
	46	ABZ30P080FMC	Screw				
	47	BPZ20Y060FMC	Screw				
	48	BBZ26P100FMC	Screw				
	49	BBZ26P140FZK	Screw				
	50	BBZ30P060FZK	Screw				

A

B

C

D



1
Loading Unit

A

B

C

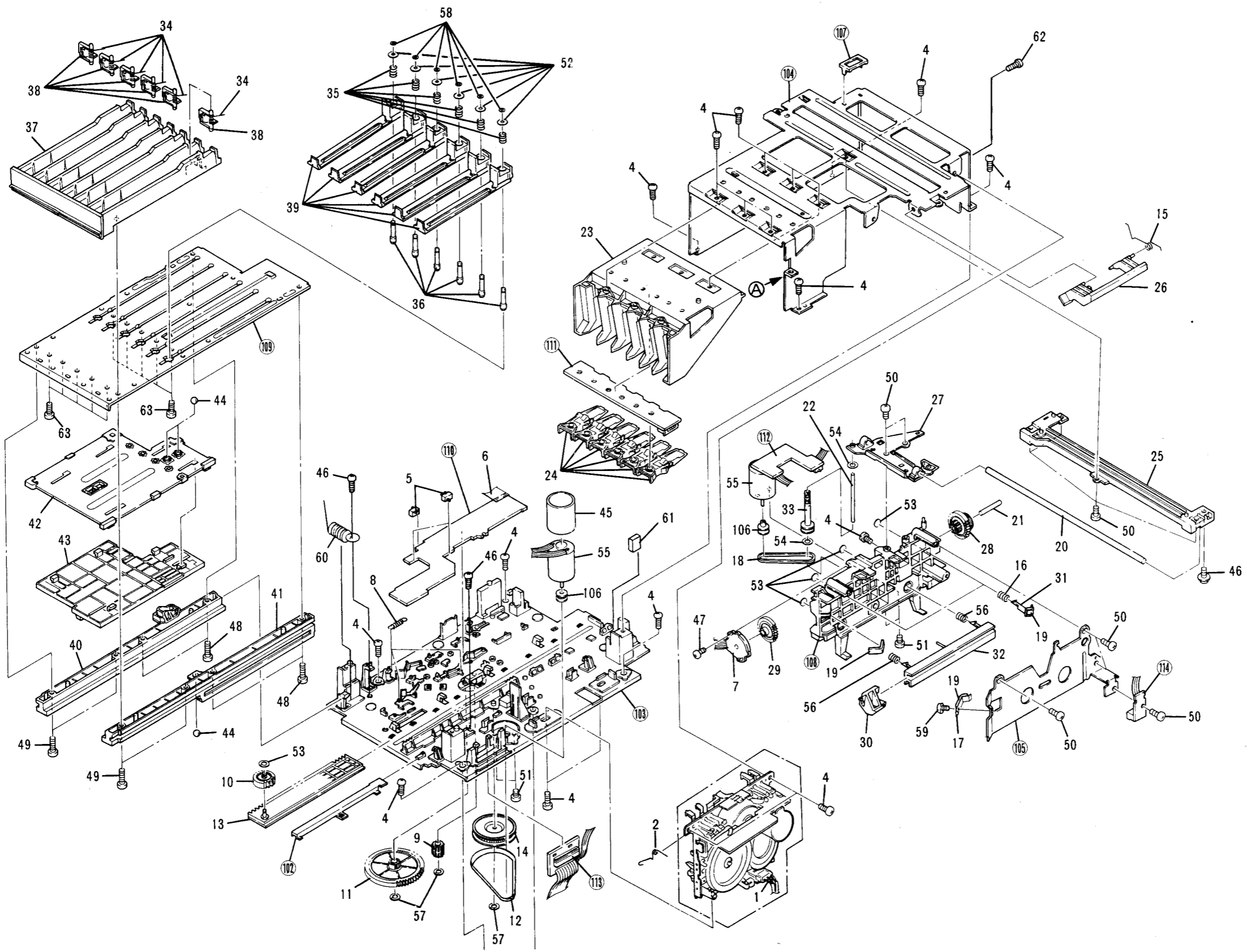
D

A

B

C

D



10

1

2

3

4

5

6

4.3 MECHANISM UNIT (DECK I)

Parts List

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	RLA1130	Shaft	106	RNP1350	P.C. board	
	2	RLA1132	Planger	107	RXA1291	Chassis assembly	
	3	RNP1232	HD FPC (R/P)	108		Head base	
	4	RPB1030	R/P, E head	109	RNE1345	Slide plate	
	5	RSG1018	Push switch	110		Connector (12P)	
	6	RXM1029	Motor assembly	111		.....
	7	RXM1030	Motor assembly (Main)	112		.....
	8	RXP1010	Solenoid	113	RNP1351	Head P.C.B R/P	
	9	SPI33534FG	Photo transistor				
	10	RNK1530	Wire holder				
	11	REB1157	Main belt				
	12	RXA1183	Pinch roller assembly				
	13	RXA1294	Flywheel assembly				
	14	RXA1295	Flywheel assembly				
	15	RXA1296	Pinch roller (L) assembly				
	16	RBA1076	Screw				
	17	RBF - 057	Washer				
	18	RXA1184	TU Reel assembly				
	19	RXA1248	Idler assembly				
	20	RBF1037	Washer				
	21	PMZ14P050FNI	Screw				
	22	RBA1080	Azimuth screw				
	23	RBK1029	Azimuth spring				
	24	RBL - 085	Rotation spring				
	25	RBL1003	Head base spring				
	26	RXA1293	Head housing assembly				
	27	RBH1239	Slide spring				
	28	RNK1525	Play arm				
	29	RNK1672	Cam gear				
	30	RBK1031	Cassette hold spring				
	31	RNK1527	REC detection lever				
	32	RNK1537	Metal detection lever (R)				
	33	RNK1543	Pack detection lever (P)				
	34	PBZ30P080FMC	Screw				
	35	PMZ26P050FMC	Screw				
	36	RBA1077	Screw				
	37	WA26D045D025	Washer				
	38	WA26D047D050	Washer				
	39	YE15FUC	Washer				
	40	RED1027	Holder cushion (L)				
	41	RXA1378	HEAD assembly (R/P)				
101			Triple - conductor jumper wire				
102			Dual - conductor jumper wire				
103			Jumper wire				
104	RKP1401		Connector (6P)				
105	RKP1327		Connector (8P)				

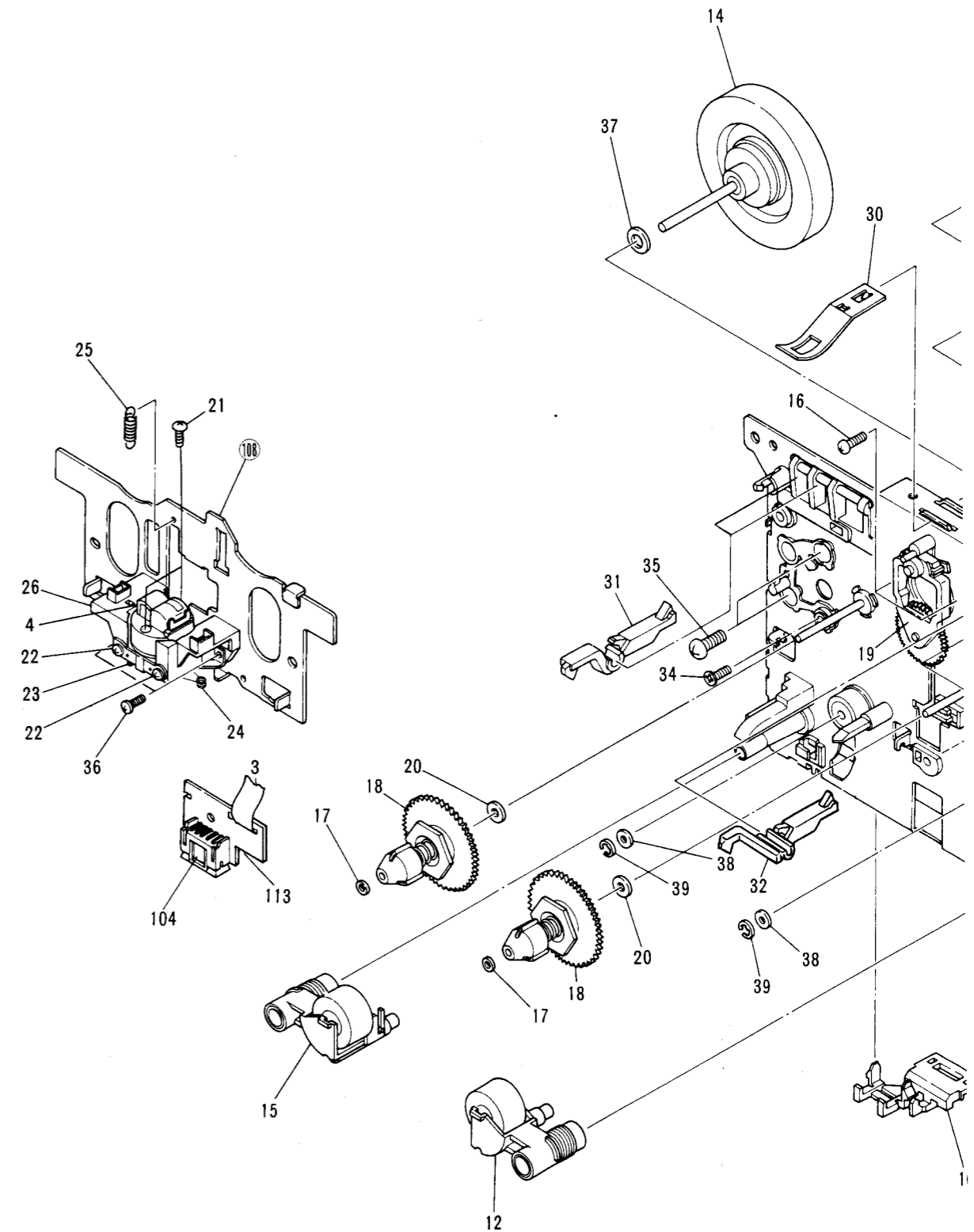
※ The head assembly (R/P) in No. 41 is a component of Nos. 3 and 4 and can be supplied as service.

A

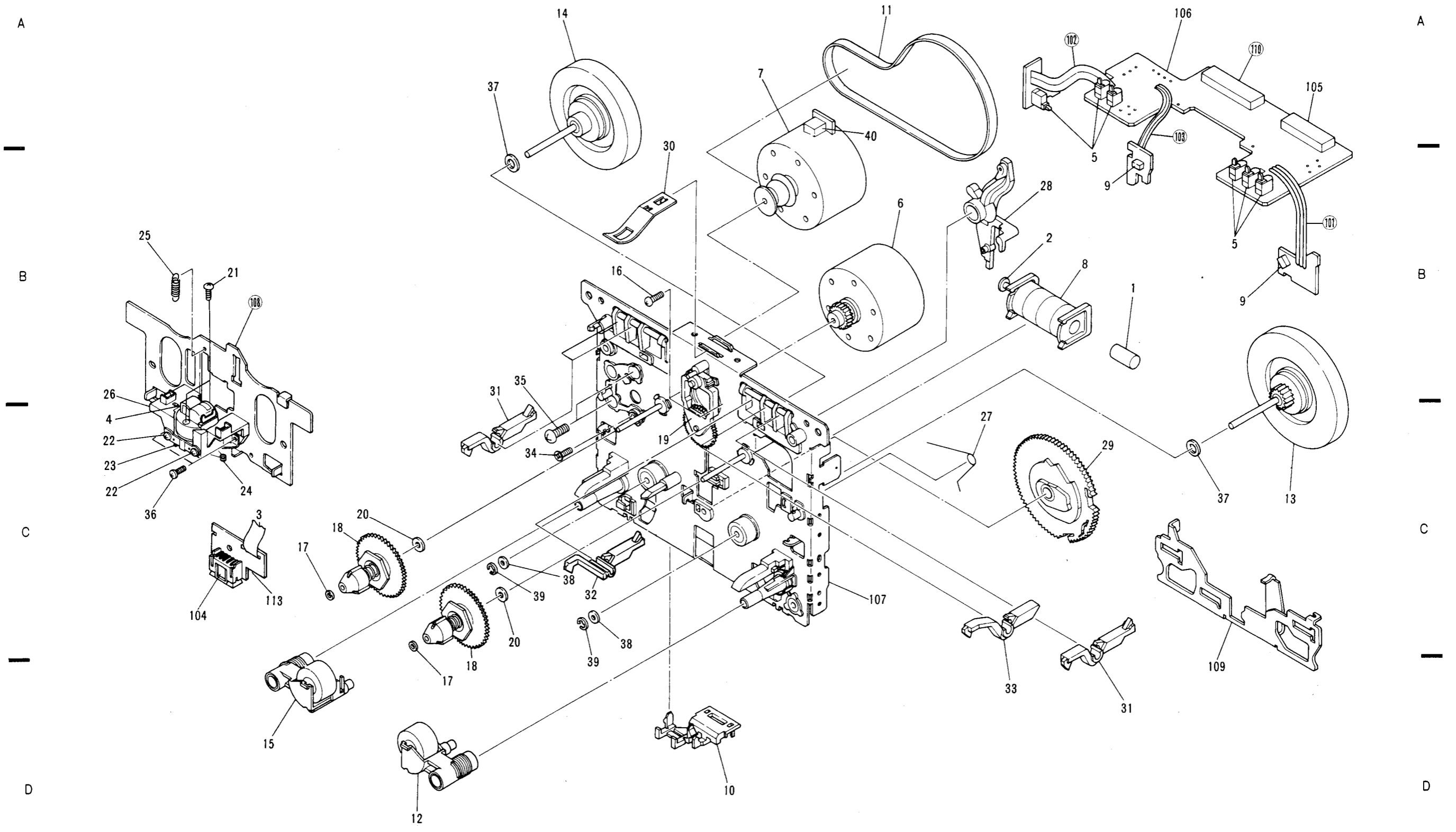
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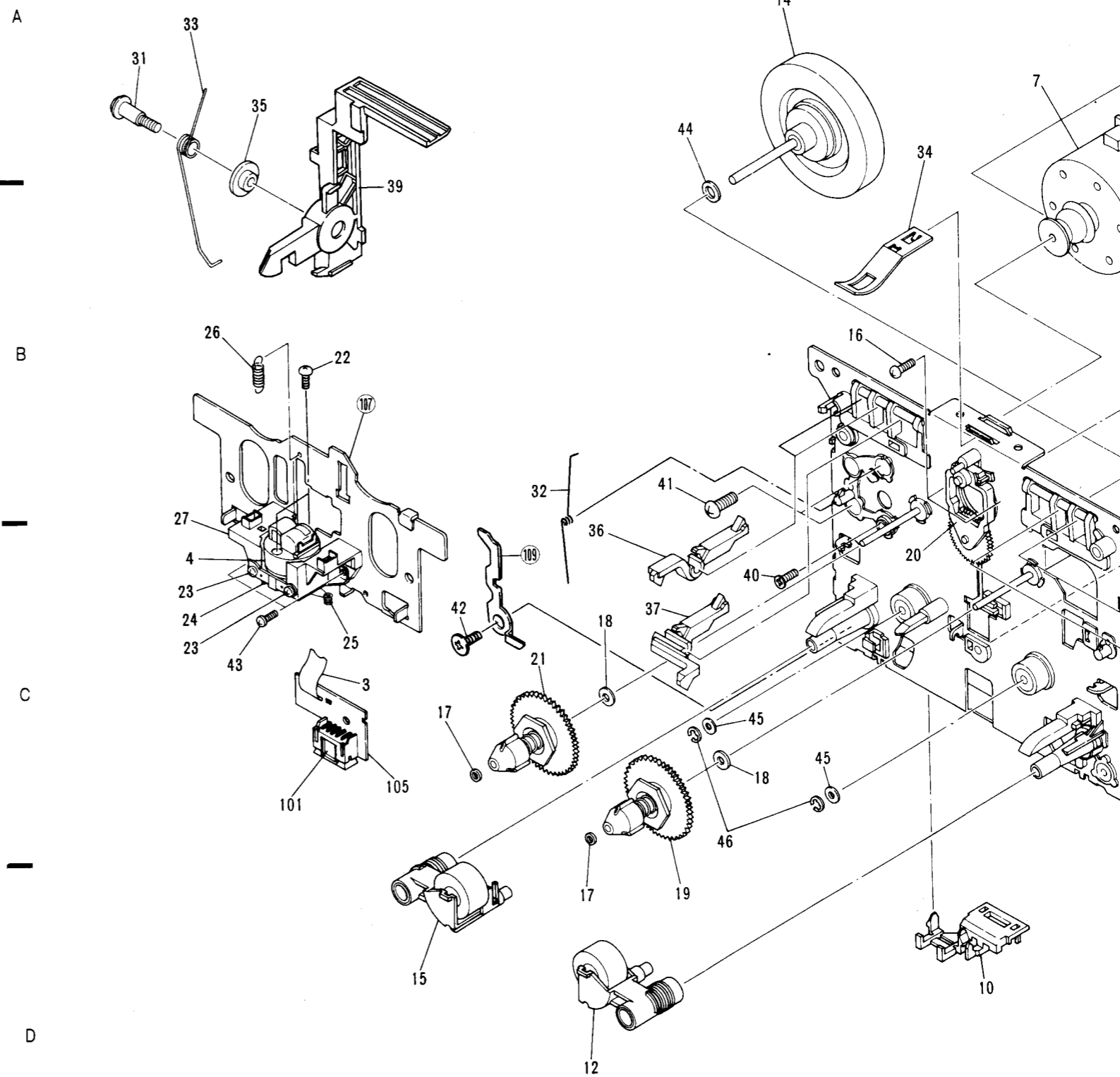
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4.4 MECHANISM UNIT (DECK II)

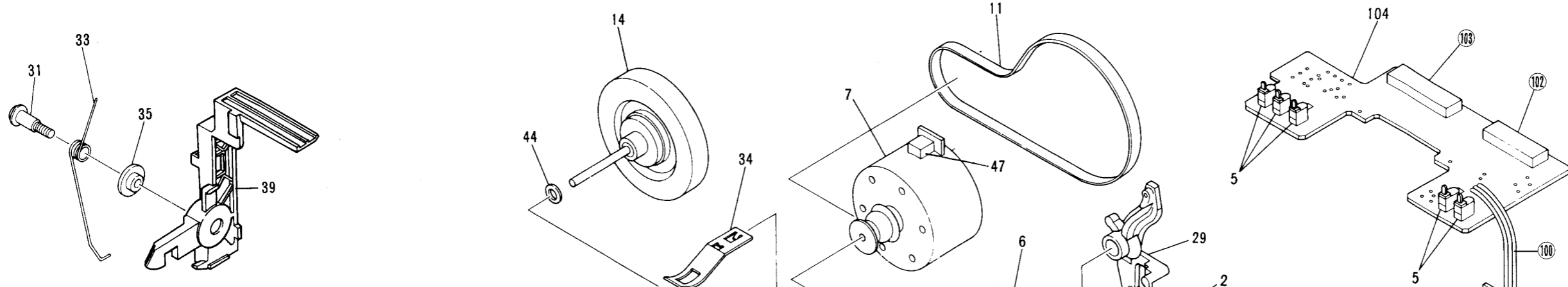
Parts List

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
1	RLA1130		Shaft	100			Tripe - conductor jumper wire
2	RLA1132		Planger	101	RKP1401		Connector (6P)
3	RNP1232		HD FPC (R/P)	102			Connector (7P)
4	RPB1030		R/P, E head	103			Connector (10P)
5	RSG1018		Push switch	104	RNP1279		P.C. board
6	RXM1029		Motor assembly	105	RNP1351		Head P.C.B (R/P)
7	RXM1030		Motor assembly (Main)	106	RXA1291		Chassis assembly
8	RXP1010		Solenoid	107			Head base
9	SPI33534FG		Photo transistor	108	RNE1345		Slide plate
10	RNK1530		Wire holder	109			Eject prevention arm (L)
11	REB1157		Main belt	* The head assembly (R/P) in No. 48 is a component of Nos. 3 and 4 and can be supplied as service.			
12	RXA1183		Pinch roller assembly				
13	RXA1294		Flywheel assembly				
14	RXA1295		Flywheel assembly				
15	RXA1296		Pinch roller assembly (L)				
16	RBA1076		Screw				
17	RBF - 057		Washer				
18	RBF1038		Washer				
19	RXA1184		TU reel assembly				
20	RXA1248		Idler assembly				
21	RXC - 040		Reel assembly				
22	PMZ14P050FNI		Screw				
23	RBA1080		Azimuth screw				
24	RBK1029		Azimuth spring				
25	RBL - 085		Rotation spring				
26	RBL1003		Head base spring				
27	RXA1293		Head housing assembly				
28	RBH1239		Slide spring				
29	RNK1525		Play arm				
30	RNK1672		Cam gear				
31	RBA1078		Screw				
32	RBH1234		Eject prevention spring (L)				
33	RBH1262		Eject lever spring (L)				
34	RBK1031		Cassette hold spring				
35	RLA1146		Lever collar (B)				
36	RNK1527		REC detection lever				
37	RNK1529		Metal detection lever (L)				
38	RNK1543		PACK detection lever (P)				
39	RNK1593		Eject lever (L)				
40	PBZ30P080FMC		Screw				
41	PMZ26P050FMC		Screw				
42	RBA1048		Screw				
43	RBA1077		Screw				
44	WA26D045D025		Washer				
45	WA26D047D050		Washer				
46	YE15FUC		Washer				
47	RED1027		Holder cushion (L)				
48	RXA1378		HEAD assembly (R/P)				



Mechanism Unit (Deck II)

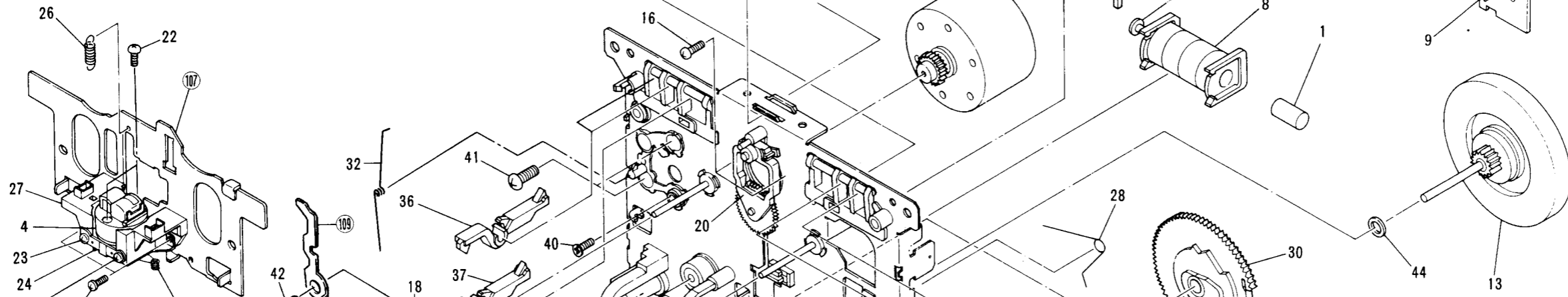
A



A

B

B



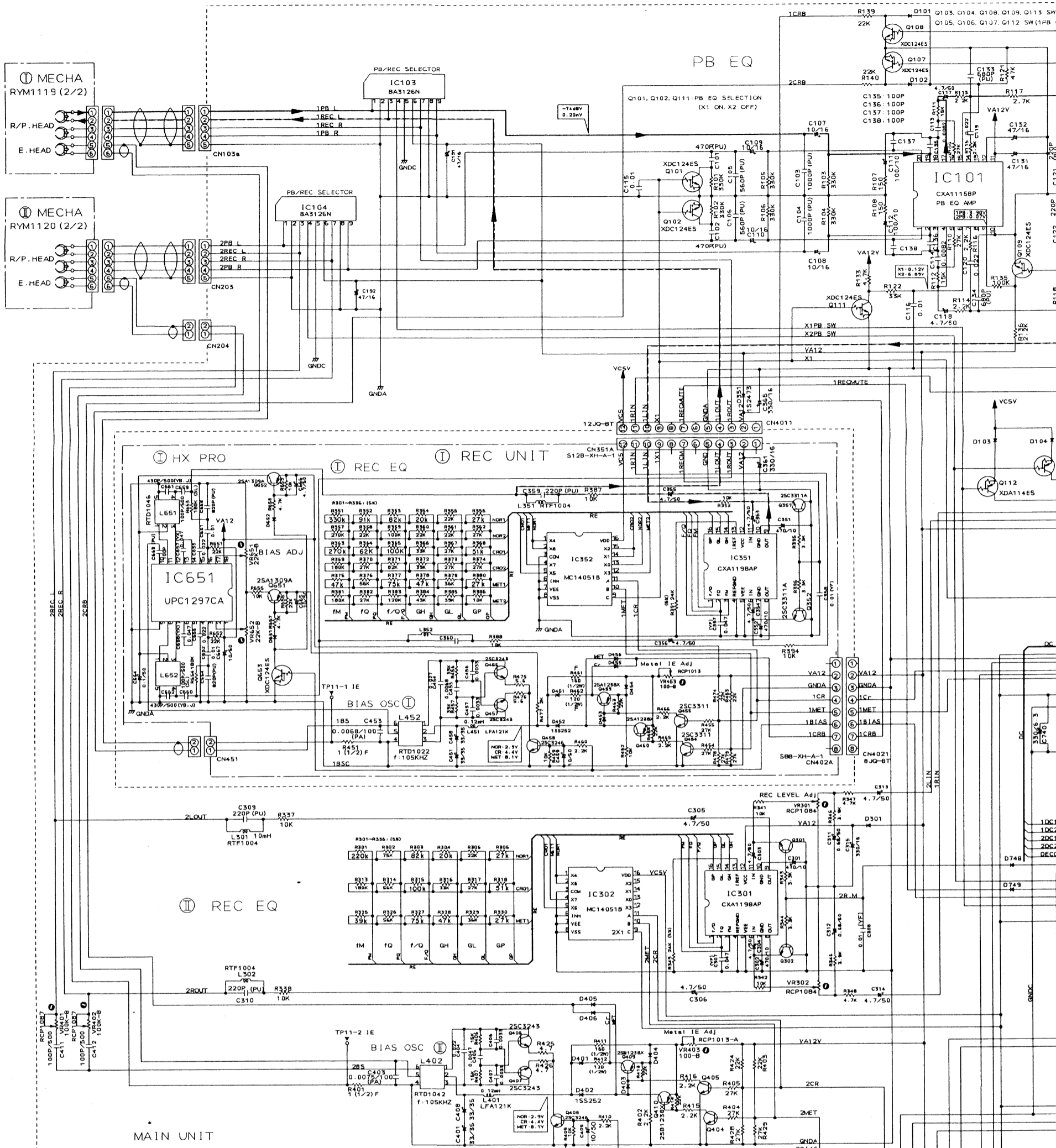
C

C

D

D

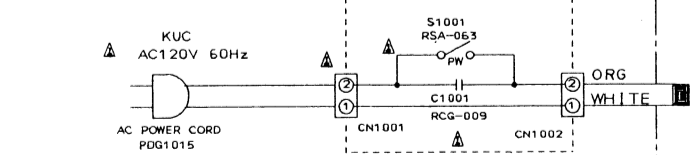
5. SCHEMATIC DIAGRAM



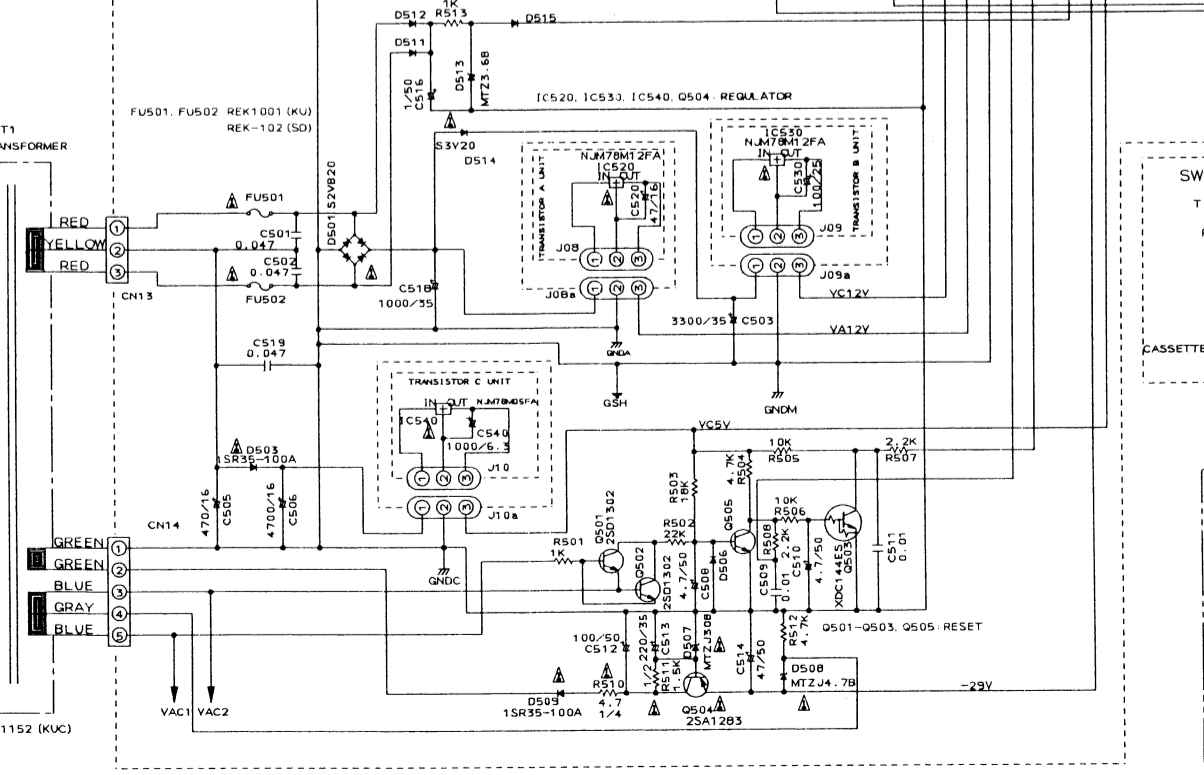
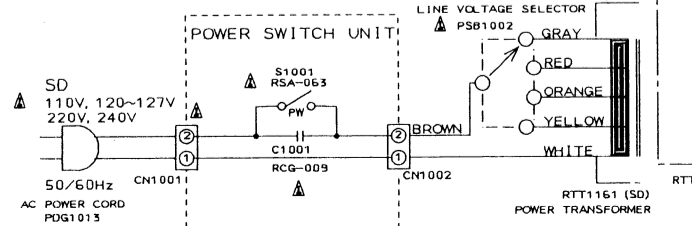
NOTE: If the parts are not identified in the diagram, the followings are used.

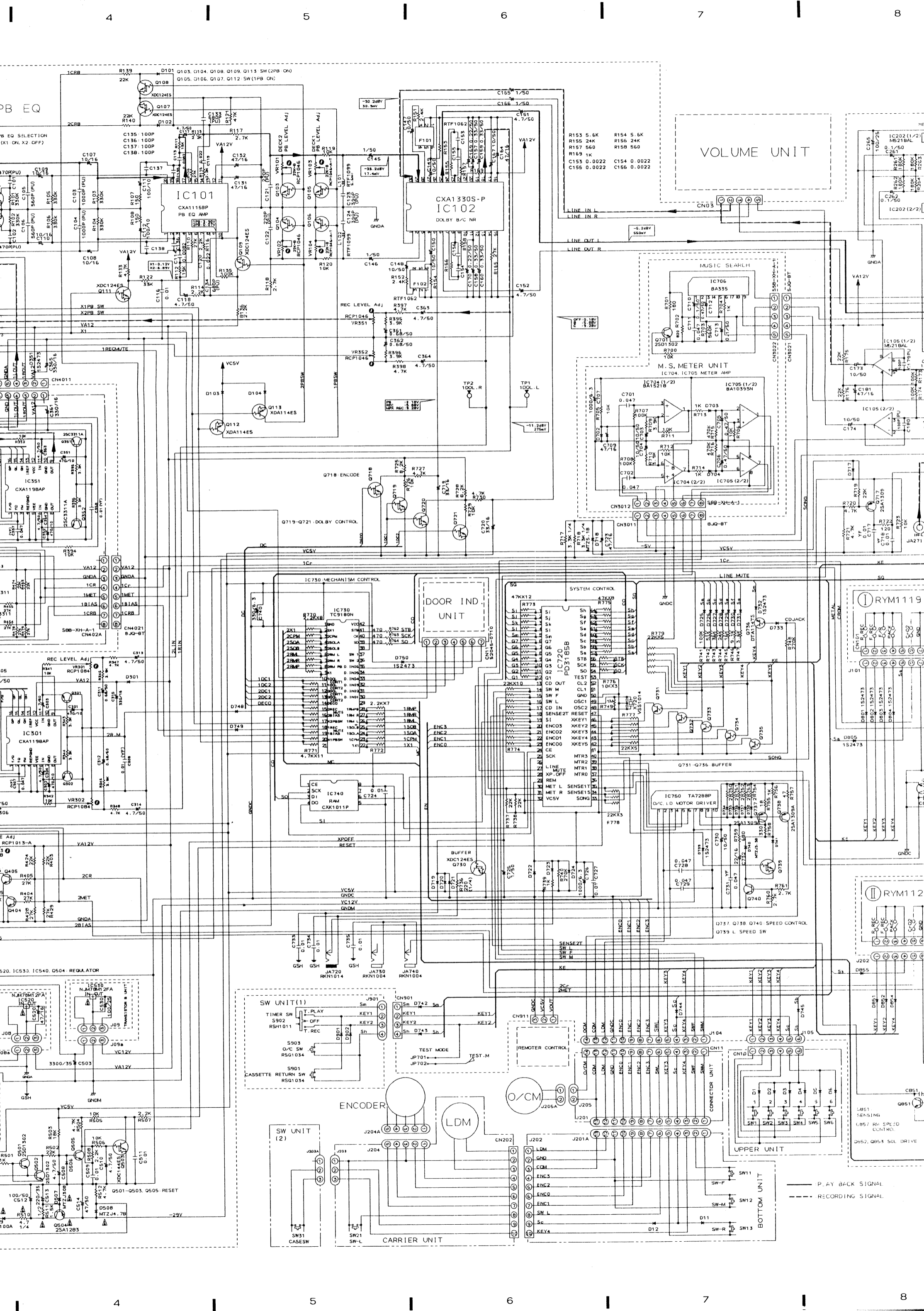
- NPN 2SC1740S
- XDC114ES
- 1SS254
- DTC114TS

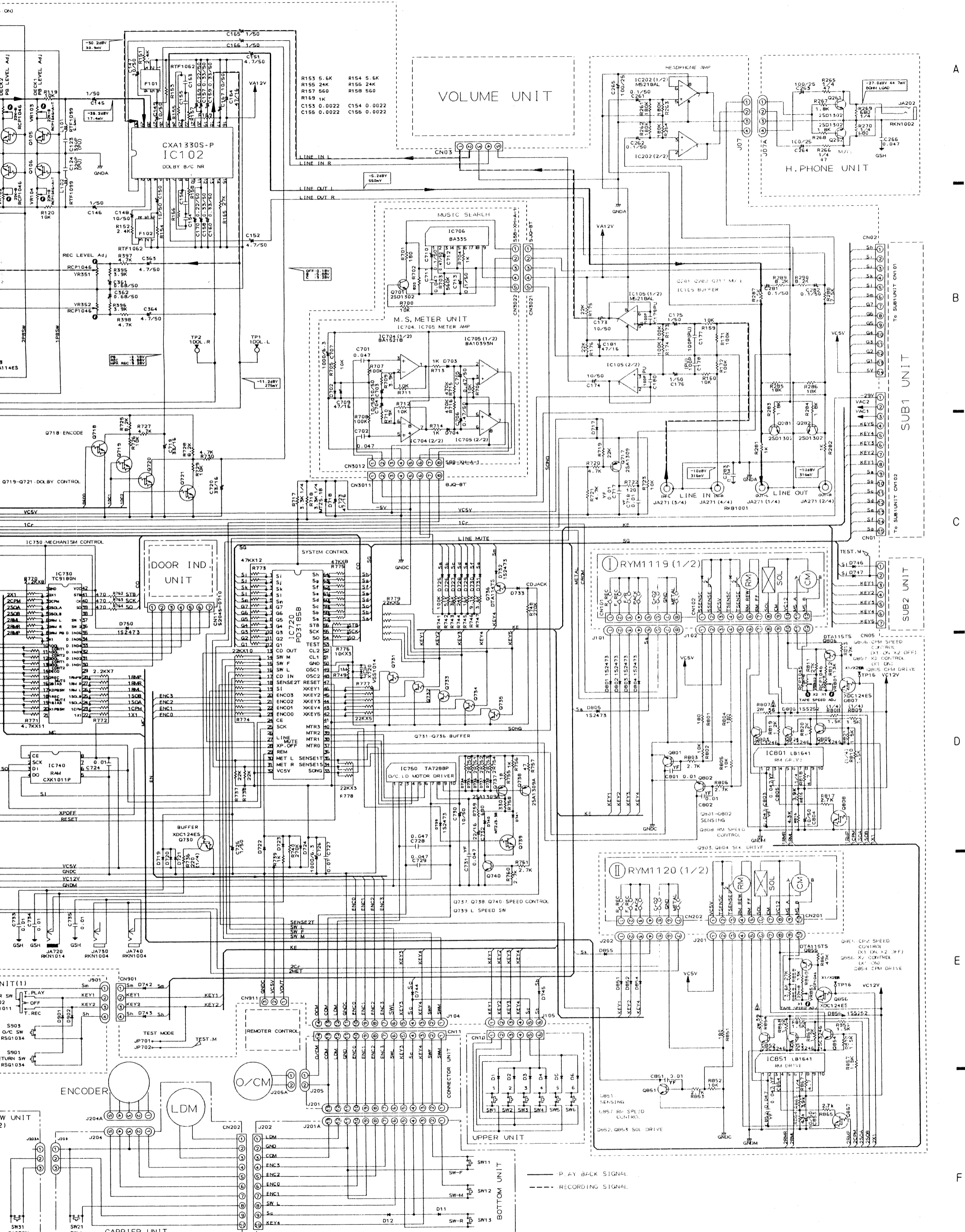
KUC TYPE



SD TYPE







A
B
C
D
E
F

- A
- S903 : CASSETTE RETURN
 - S902 : O/C
 - S901 : TIMER
 - PLAY - OFF - REC
 - SW UNIT
 - S209 : REC
 - S208 : PAUSE
 - S207 : R. MUTE
 - S206 : REV. MODE
 - S205 : F. F
 - S204 : FWD
 - S203 : STOP
 - S202 : REV
 - S201 : REW
 - SUB 2 UNIT
 - S102 : 4
 - S103 : 3
 - S104 : 2
 - S105 : 1
 - S106 : 5
 - S107 : C. MODE
 - S108 : C. RESET
 - S109 : OFF/B/C
 - S110 : DOL. MEMO
 - S111 : F. F
 - S112 : FWD
 - S113 : STOP
 - S114 : REV
 - S115 : REW
 - S116 : 6
 - S117 : REC
 - S118 : PAUSE
- B
- S123 : RELAY
 - S122 : EDIT
 - S121 : NOR. COPY
 - S120 : CD. SYNC
 - S119 : R. MUTE

5. SWITCHES (Underline indicates switch position)
- POWER UNIT
 - S1001 : ON - OFF
 - SUB 1 UNIT
 - S101 : HI - SPEED
 - S102 : 4
 - S103 : 3
 - S104 : 2
 - S105 : 1
 - S106 : 5
 - S107 : C. MODE
 - S108 : C. RESET
 - S109 : OFF/B/C
 - S110 : DOL. MEMO
 - S111 : F. F
 - S112 : FWD
 - S113 : STOP
 - S114 : REV
 - S115 : REW
 - S116 : 6
 - S117 : REC
 - S118 : PAUSE

RESISTORS : Indicated in Ω , 1/4W, 1/6W, $\pm 5\%$ tolerance unless otherwise noted k : k Ω , M : M Ω , (F) : $\pm 1\%$, (G) : $\pm 2\%$, (K) : $\pm 10\%$, (M) : $\pm 20\%$ tolerance.

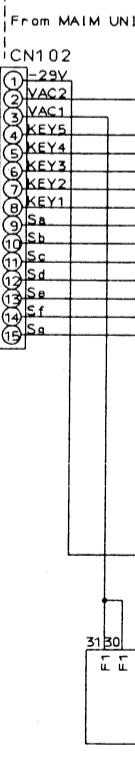
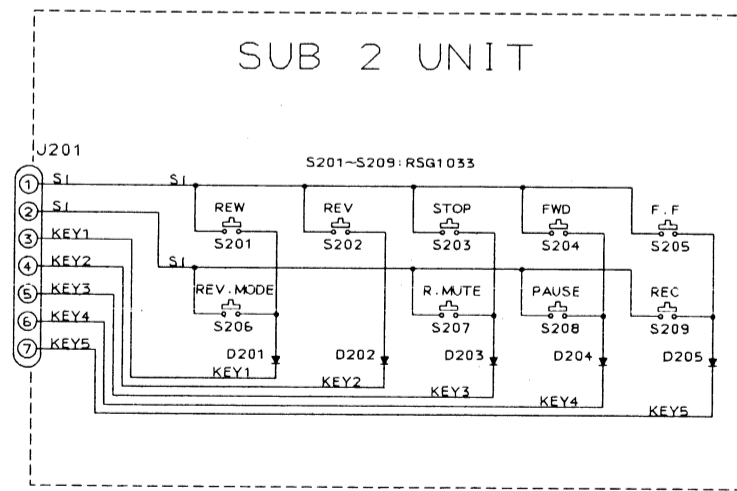
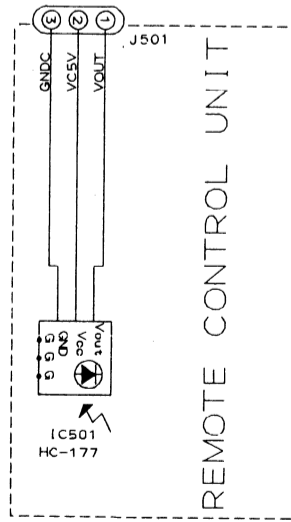
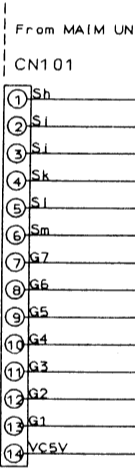
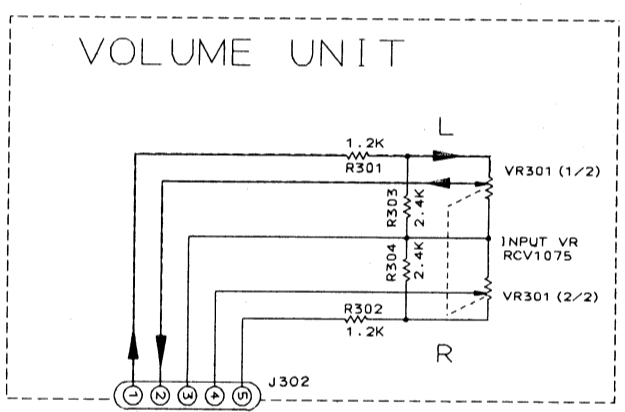
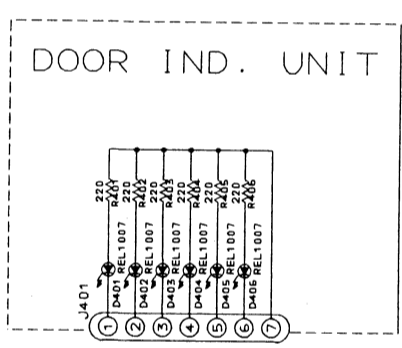
CAPACITORS : Indicated in capacity (μ F) / voltage (V) unless otherwise noted p : pF.

VOLTAGE CURRENT : \square : DC voltage (V) at no input signal. \square mA : DC current at no input signal.

OTHERS : \rightarrow : Signal route. \odot : Adjusting point.

The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation. \otimes marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.



NOTE: If the parts are not identified in the the diagram, the followings are used.

★ 1SS254

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

※ marked capacitors and resistors have parts numbers. replacing, be sure to use parts of identical designation.

The Δ mark found on some component parts indicates that importance of the safety factor of the part. Therefore, when

- ⊙: Adjusting point.
- : Signal route.
- 4. OTHERS:
- mA: DC current at no input signal.
- V: DC voltage (V) at no input signal.
- 3. VOLTAGE CURRENT:

Indication without voltage is 50V except electrolytic capacitor.

p: pF.

Indicated in capacity (μF) / voltage (V) unless otherwise noted.

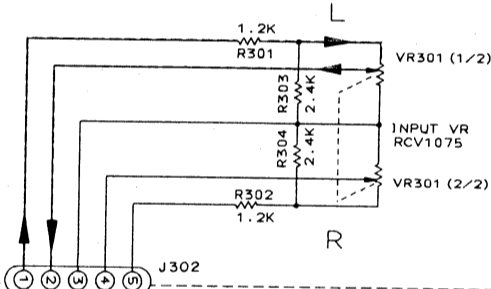
2. CAPACITORS:

Indicated in Ω, 1/4W, 1/6W, ±5% tolerance unless otherwise noted.

k: kΩ, M: MΩ, (F): ±1%, (G): ±2%, (K): ±10% (M): ±20% tolerance.

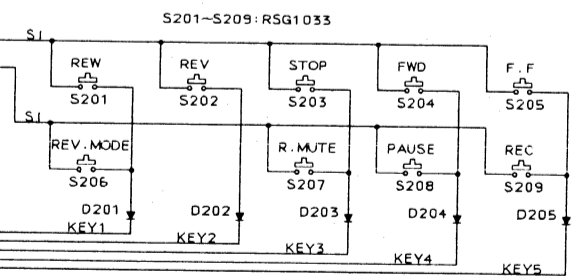
1. RESISTORS:

VOLUME UNIT

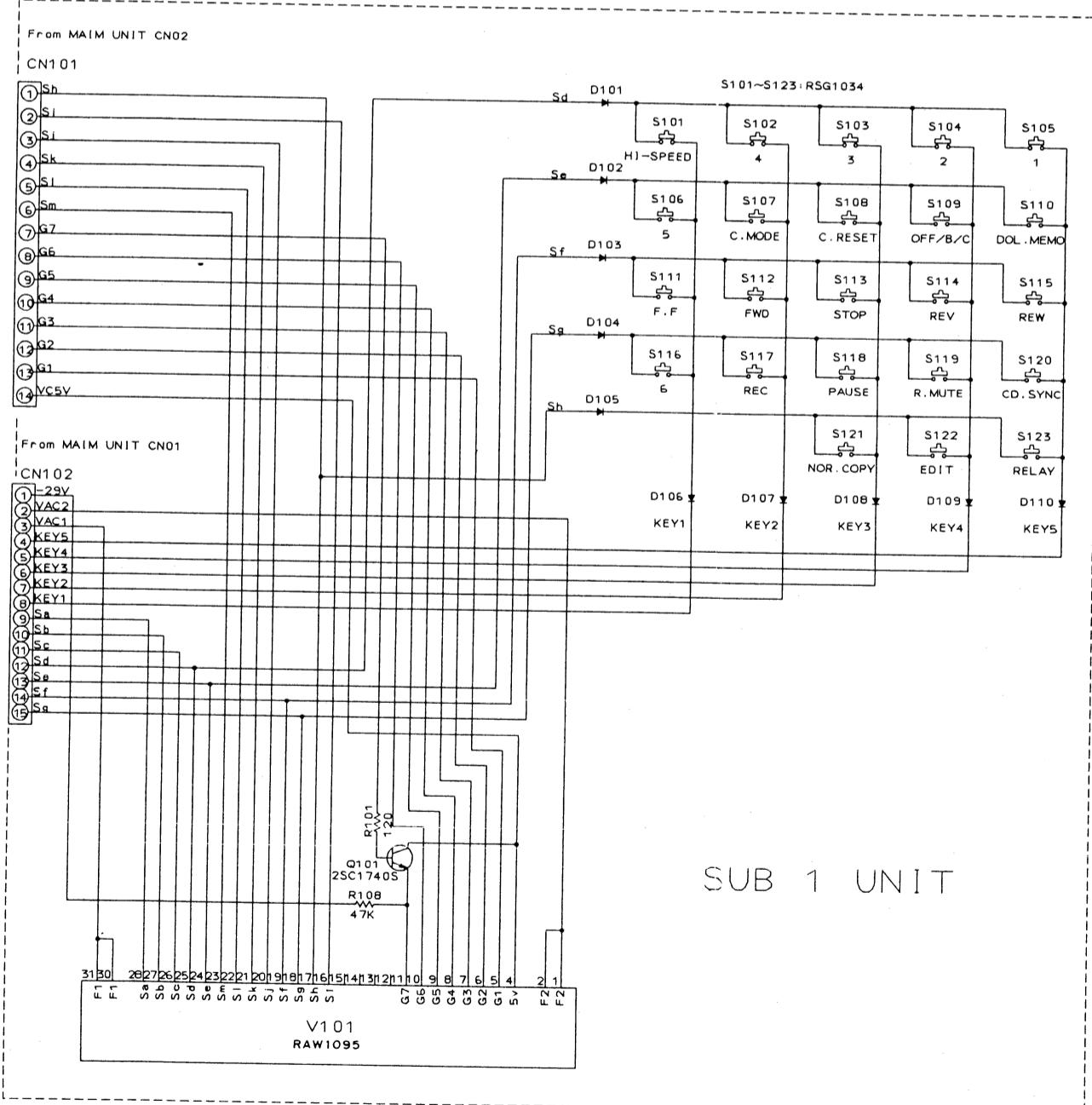


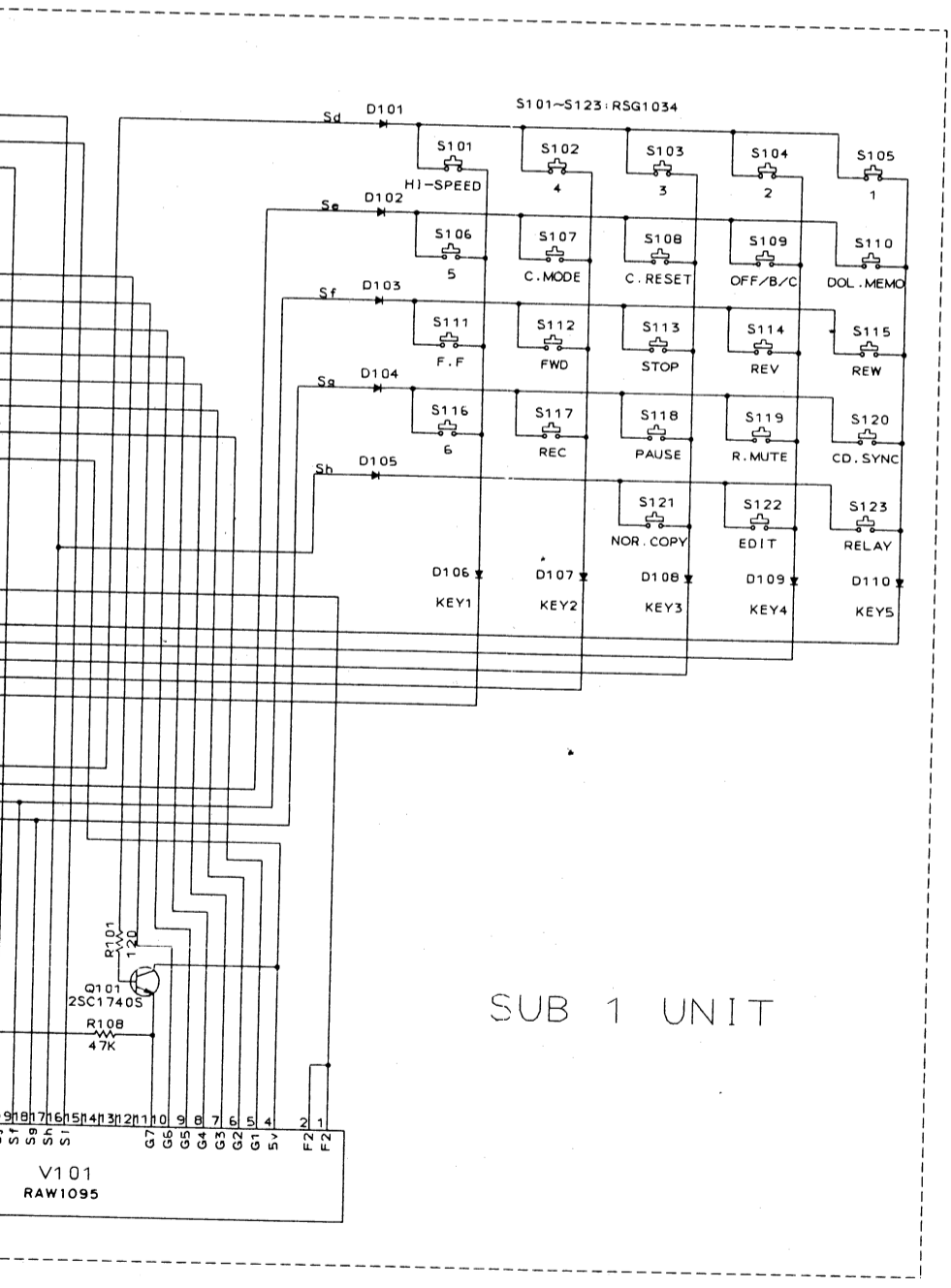
----- RECORDING SIGNAL

SUB 2 UNIT



defined in the the diagram.





B

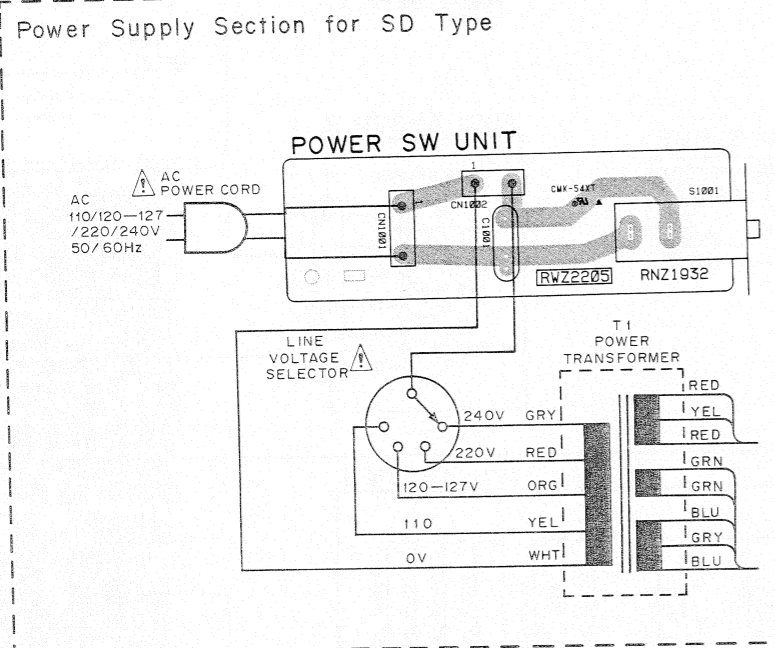
C

D

E

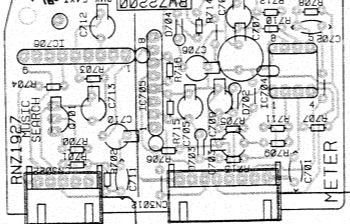
F

A

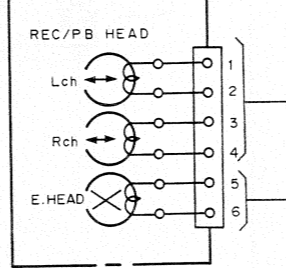


B

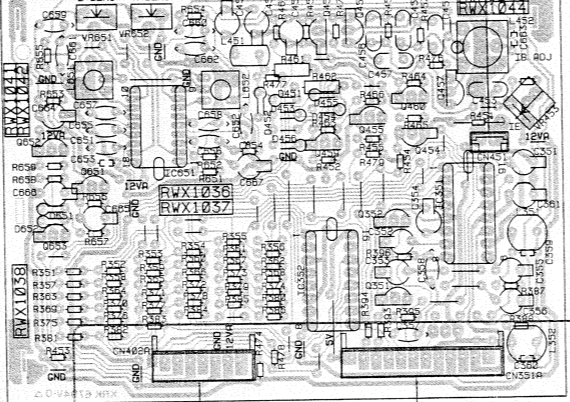
MS METER UNIT



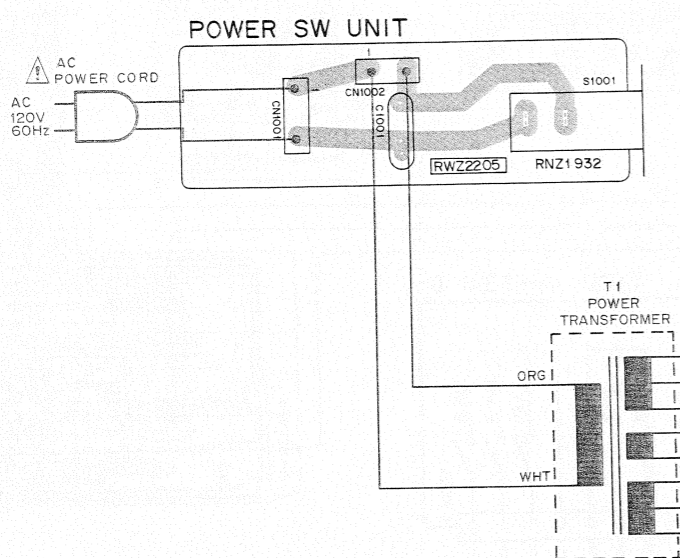
I MECHA UNIT



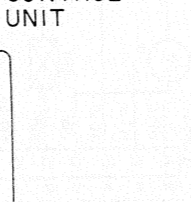
REC (1) UNIT



C



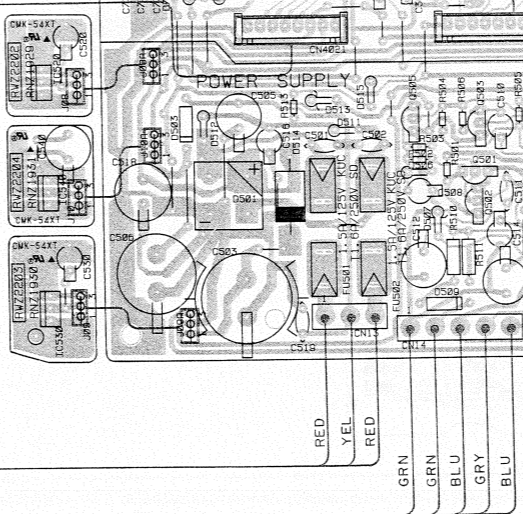
REMOVER CONTROL UNIT



TRANSISTOR A UNIT

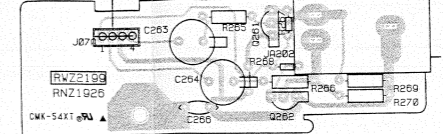
TRANSISTOR C UNIT

TRANSISTOR B UNIT

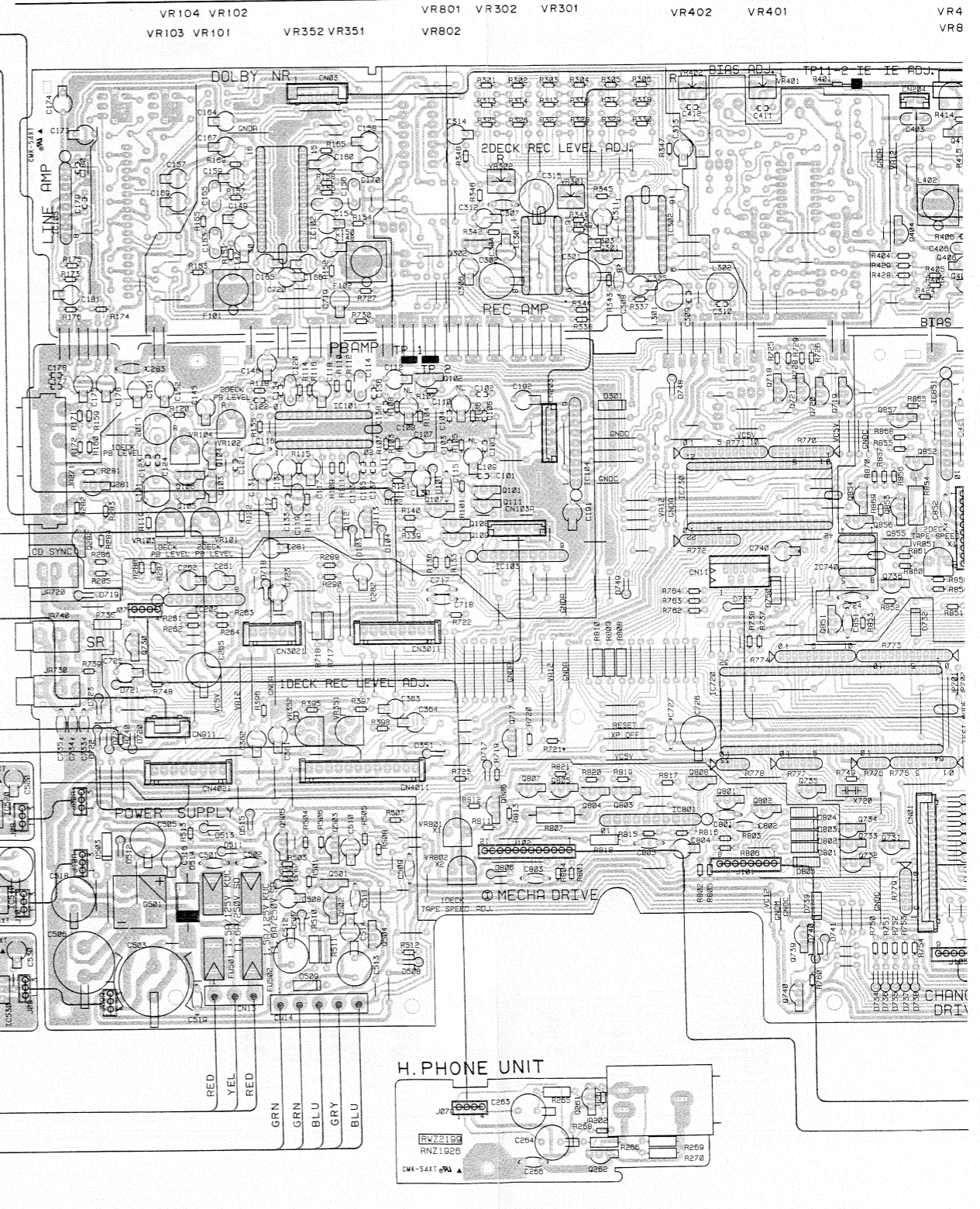


D

H. PHONE UNIT



IC105 IC102 Q302 IC301 Q303 IC302 Q404 Q404
 Q281 Q106 Q104 IC101 Q102 Q101 IC104 Q722 Q721 Q719 Q853
 Q282 Q105 Q103 Q112 Q113 Q107 Q108 Q111 IC104 Q718 Q720 Q854 Q852 IC1
 Q730 IC202 Q109 IC103 Q856 Q853
 Q806 Q807 Q805 Q804 Q803 IC801 Q808 Q801 Q802 Q735 Q732 Q734 IC740 Q855
 Q740 Q739 Q733 Q731 IC702 Q736



1

2

3

4

5

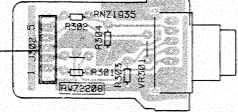
6

6 7 8 9 10 11

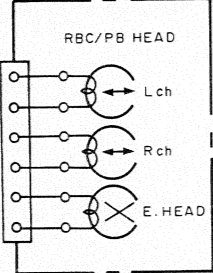
Q410 Q409
 Q404 Q406
 Q405Q407Q408
 Q722 Q721 Q719 0853
 Q718 Q720 0854 0852 IC851
 Q856 Q853
 IC730 IC740 Q855
 Q851 Q736
 IC702
 Q808 Q801 Q802 Q735 Q732 Q734 Q738 Q737
 Q740 Q739 Q733 Q731 IC750

VR402 VR401 VR403 VR851

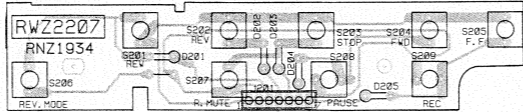
VOLUME UNIT



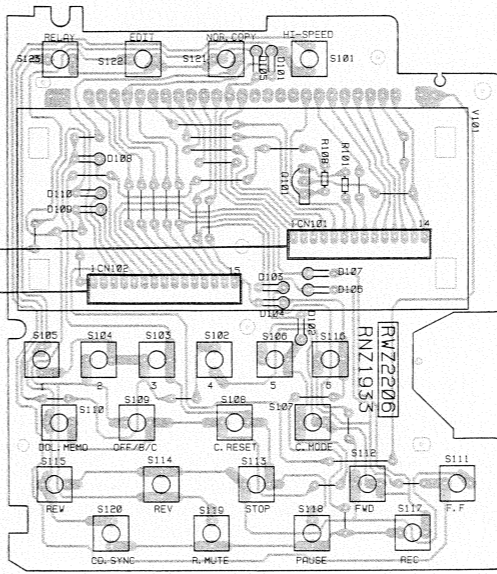
II MECHA UNIT



SUB 2 UNIT

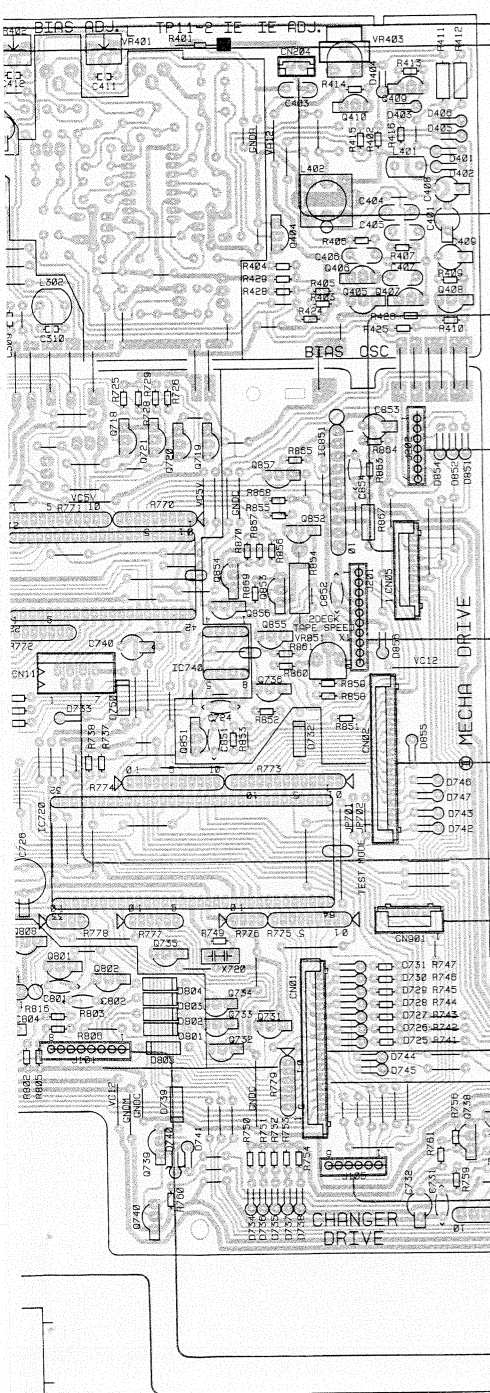


SUB 1 UNIT

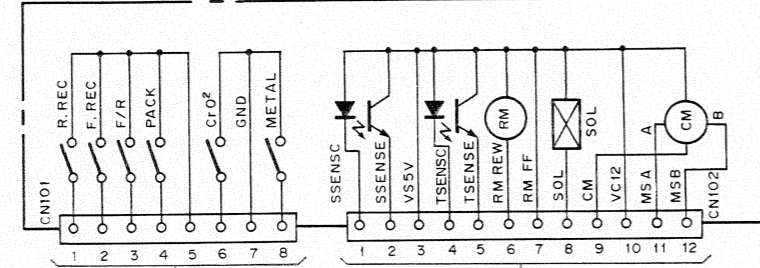


P.C.B. pattern diagram	Corresponding part symbol	Part name	P.C.B. pattern diagram	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styro capacitor
		Zener diode			Electrolytic capacitor (Non polarized)
		LED			Electrolytic capacitor (Noiseless)
		Varactor			Electrolytic capacitor (Polarized)
		Tact switch			Electrolytic capacitor (Polarized)
		Resistor array			Power capacitor
		Resistor			Semi-fixed resistor
		Inductor			Resistor
		Coil			Resonator
		Transformer			Thermistor
		Filter			

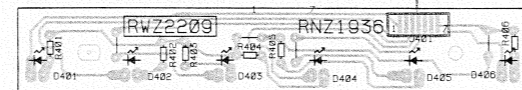
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ⊖ shows negative terminal.
4. The diode marked with ⊕ shows cathode side.
5. The transistor terminal marked with ⊕ shows emitter.



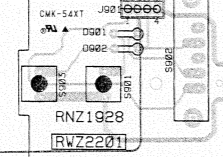
I MECHA UNIT



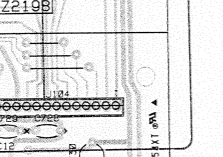
DOOR IND UNIT



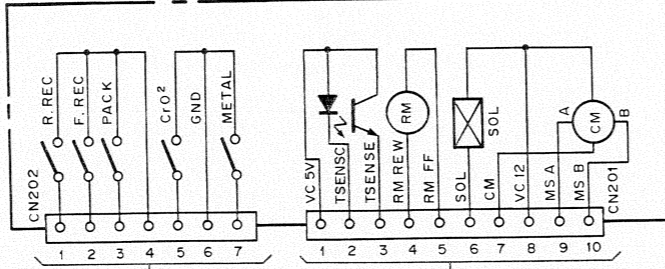
SW UNIT (1)



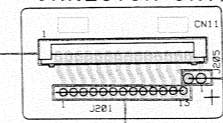
SW UNIT (2)



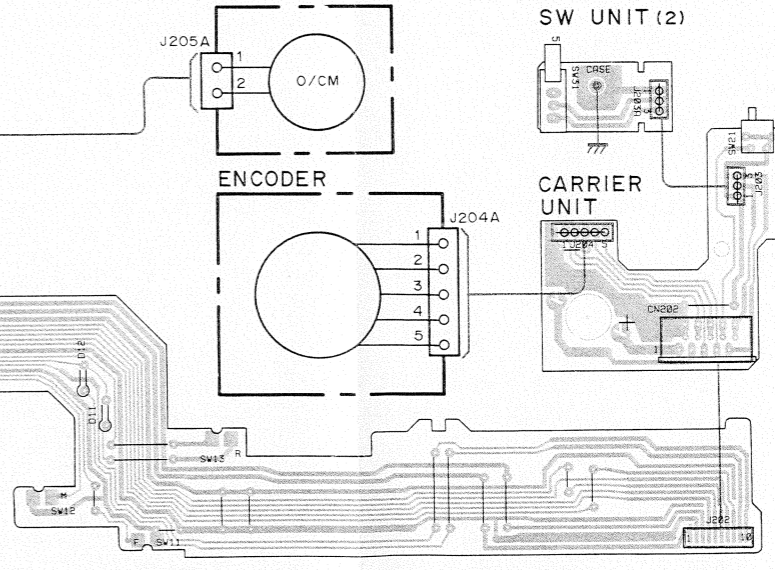
II MECHA UNIT



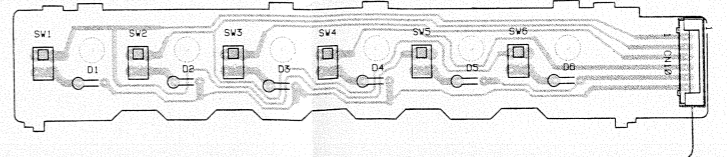
CONNECTOR UNIT



BOTTOM UNIT

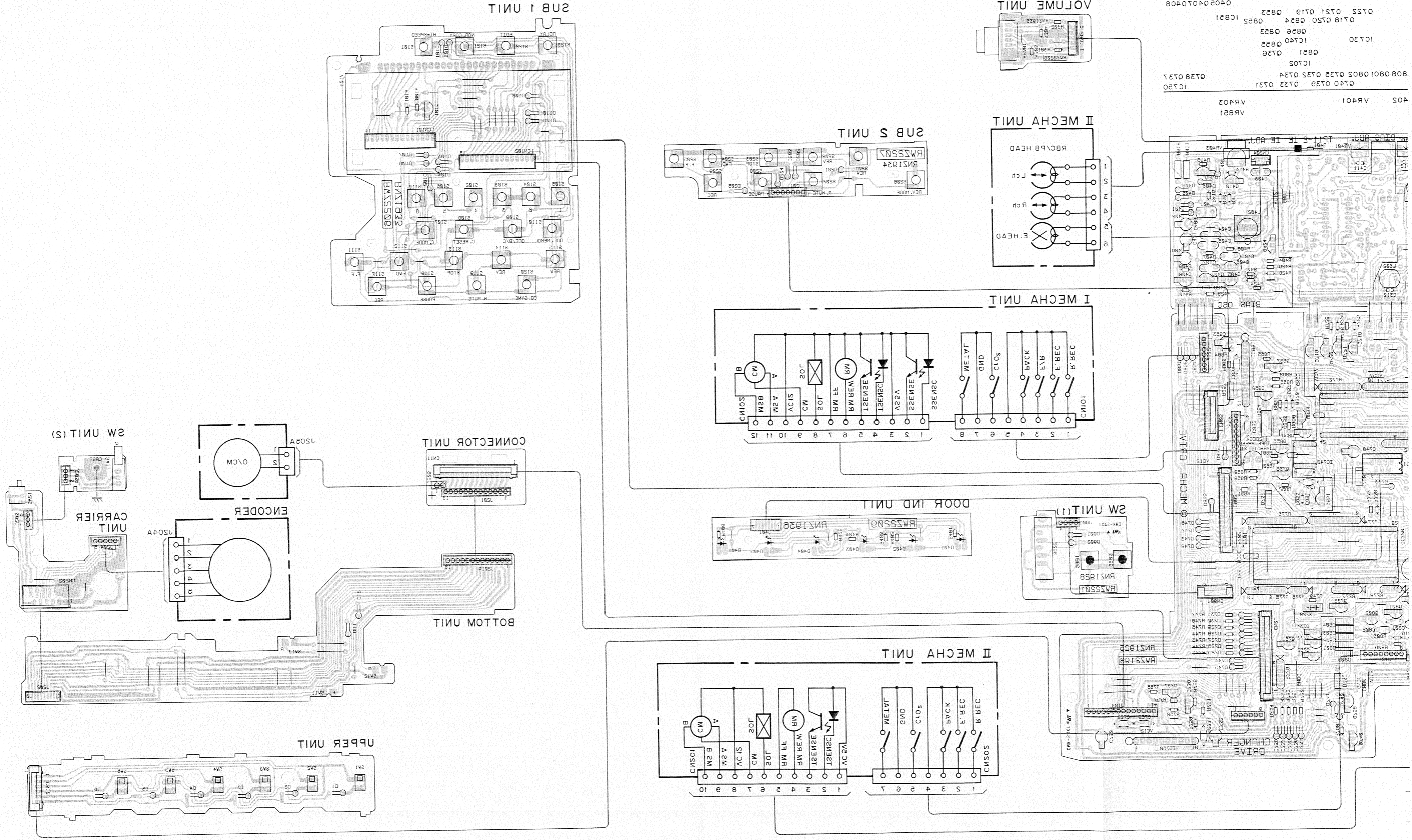


UPPER UNIT



6 7 8 9 10 11 12

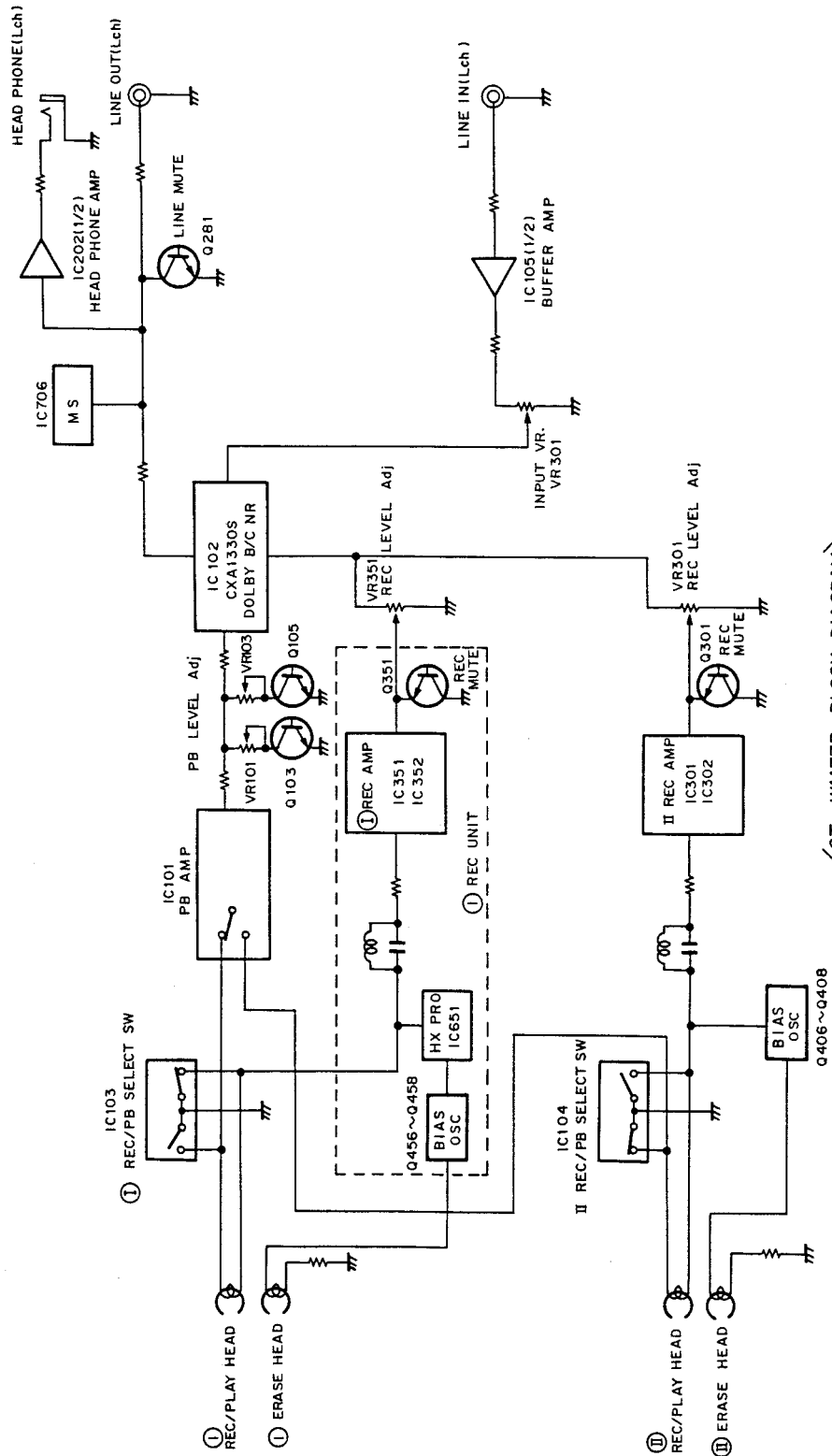
• View from soldering side



A
B
C
D

- IC250 VR401 VR403
- IC250 VR401 VR403 VR403
- 0A10 0A23 0A23 0A21
- 0A20 0A19 0A23 0A23
- IC250
- 0A21 0A23
- IC230
- IC240 0A22
- 0A20 0A23
- 0A18 0A20 0A24
- 0A23 0A21 0A19 0A23
- IC251
- 0A03 0A06 0A08
- 0A04
- 0A10 0A08

7. BLOCK DIAGRAM



〈CT-WM77R BLOCK DIAGRAM〉

8. P.C.B's PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%)

560 Ω \rightarrow $56 \times 10^1 \rightarrow$ 561 RD1/4PS $\begin{matrix} 5 & 6 & 1 \\ \hline \end{matrix}$ J
 47k Ω \rightarrow $47 \times 10^3 \rightarrow$ 473 RD1/4PS $\begin{matrix} 4 & 7 & 3 \\ \hline \end{matrix}$ J
 0.5 Ω \rightarrow OR5 RN2H $\begin{matrix} 0 & R & 5 \\ \hline \end{matrix}$ K
 1 Ω \rightarrow 010 RS1P $\begin{matrix} 0 & 1 & 0 \\ \hline \end{matrix}$ K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω \rightarrow $562 \times 10^1 \rightarrow$ 5621 RN1/4SR $\begin{matrix} 5 & 6 & 2 & 1 \\ \hline \end{matrix}$ F

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
MAIN UNIT							
SEMICONDUCTORS							
	IC101	PB-EQ AMP IC	CXA1115BP		Q740	TRANSISTOR	2SC1740S
	IC102	DOLBY B/C IC	CXA1330S		Q801, 802	TRANSISTOR	2SC1740S
	IC103, 104	IC	BA3126N		Q803-805	TRANSISTOR	2SC3246
	IC105	OP-AMP, IC	M5218AL		Q806	DIGITAL TRANSISTOR	DTA115TS
	IC202	OP-AMP, IC	M5218AL		Q807	TRANSISTOR	XDC124ES
	IC301	REC EQUALIZER IC	CXA1198AP		Q808	DIGITAL TRANSISTOR	XDC114ES
	IC302	LOGIC IC	MC14051B		Q851	TRANSISTOR	2SC1740S
	IC720	CPU	PD3185B		Q852-854	TRANSISTOR	2SC3246
	IC730	IC	TC9180N		Q855	DIGITAL TRANSISTOR	DTA115TS
	IC740	MEMORY IC	CXK1011P		Q856	TRANSISTOR	XDC124ES
	IC750	MOTOR DRIVER IC	TA7288P		Q857	DIGITAL TRANSISTOR	XDC114ES
	IC801		LB1641		D101-104	DIODE	1SS254
	IC851		LB1641		D301	DIODE	1S2473
	Q101, 102	DIGITAL TRANSISTOR	XDC124ES		D351	DIODE	1SS254
	Q103-106	DIGITAL TRANSISTOR	XDC114ES		D401	DIODE	1SS254
	Q107-109	DIGITAL TRANSISTOR	XDC124ES		D402	DIODE	1SS252
	Q111	DIGITAL TRANSISTOR	XDC124ES	Δ	D403-406	DIODE	1SS254
	Q112, 113	DIGITAL TRANSISTOR	XDA114ES	Δ	D501		S2VB20
	Q281, 282	TRANSISTOR	2SD1302		D503	RECTIFIER DIODE	1SR35-100A
	Q301, 302	TRANSISTOR	2SC1740S		D506	DIODE	1SS254
	Q404, 405	TRANSISTOR	2SC1740S	Δ	D507	ZENER DIODE	MTZJ30B
	Q406, 407	TRANSISTOR	2SC3243	Δ	D508	ZENER DIODE	MTZJ4. 7B
	Q408	TRANSISTOR	2SC3246	Δ	D509	RECTIFIER DIODE	1SR35-100A
	Q409, 410	TRANSISTOR	2SB1238X	Δ	D511, 512	DIODE	1SS254
	Q501, 502	TRANSISTOR	2SD1302		D513	ZENER DIODE	MTZ3. 6B
	Q503	DIGITAL TRANSISTOR	XDC144ES	Δ	D514	RECTIFIER DIODE	S3V20
Δ	Q504	TRANSISTOR	2SA1283		D515	DIODE	1SS254
	Q505	TRANSISTOR	2SC1740S		D717	DIODE	1SS254
	Q717	TRANSISTOR	2SA1309A		D718	ZENER DIODE	MTZ5. 1B
	Q718-721	DIGITAL TRANSISTOR	XDC114ES		D719-731	DIODE	1SS254
	Q730	DIGITAL TRANSISTOR	XDC124ES		D732	DIODE	1S2473
	Q731-735	DIGITAL TRANSISTOR	DTC114TS		D733-738	DIODE	1SS254
	Q736	DIGITAL TRANSISTOR	DTA114TS		D739	DIODE	1S2473
	Q737, 738	TRANSISTOR	2SA1309A		D740	ZENER DIODE	MTZJ3. 3B
	Q739	DIGITAL TRANSISTOR	XDC114ES		D741-749	DIODE	1SS254
					D750	DIODE	1S2473
					D801-805	DIODE	1S2473
					D806	DIODE	1SS252

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	D851, 852	DIODE	1SS254		C404	AUDIO FILM CAPACITOR	CFTXA223J50
	D854, 855	DIODE	1SS254		C405	AUDIO FILM CAPACITOR	CFTXA472J50
	D856	DIODE	1SS252		C406, 407	AUDIO FILM CAPACITOR	CFTXA332J50
COILS/TRANSFORMERS					C408	ELECTR. CAPACITOR	CEAS330M35
	L101, 102	COIL	RTF1099		C409	ELECTR. CAPACITOR	CEAS100M50
	L301, 302	COIL	RTF1004		C411, 412	CERAMIC CAPACITOR	CCCSL101K500
	L401	RADIAL INDUCTOR	LFA121K		C501, 502	CERAMIC CAPACITOR	CKCYF473Z50
	L402		RTD1042		C503	ELECTR. CAPACITOR	CEAS332M35
	F101, 102	FILTER	RTF1062		C505	ELECTR. CAPACITOR	CEAS471M16
CAPACITORS					C506	ELECTR. CAPACITOR	CEAS472M16
	C101, 102	AXIAL CAPACITOR	CKPUYB471K50		C508	ELECTR. CAPACITOR	CEAS4R7M50
	C103, 104	CERAMIC CAPACITOR	CKPUYB102K50		C509	CERAMIC CAPACITOR	CKCYF103Z50
	C105, 106	AXIAL CAPACITOR	CKPUYB581K50		C510	ELECTR. CAPACITOR	CEAS4R7M50
	C107-110	ELECTR. CAPACITOR	CEANL100M16		C511	CERAMIC CAPACITOR	CKCYF103Z50
	C111, 112	ELECTR. CAPACITOR	CEAS101M10		C512	ELECTR. CAPACITOR	CEAS101M50
	C113, 114	AUDIO FILM CAPACITOR	CFTXA822J50		C513	ELECTR. CAPACITOR	CEAS221M35
	C115, 116	CERAMIC CAPACITOR	CKCYF103Z50		C514	ELECTR. CAPACITOR	CEAS470M50
	C117, 118	ELECTR. CAPACITOR	CEAS4R7M50		C516	ELECTR. CAPACITOR	CEAS010M50
	C119, 120	AUDIO FILM CAPACITOR	CFTXA223J50		C518	ELECTR. CAPACITOR	CEAS102M35
	C121, 122	AXIAL CAPACITOR	CKPUYB221K50		C519	CERAMIC CAPACITOR	CKCYF473Z50
	C123, 124	AXIAL CAPACITOR	CKPUYB391K50		C717, 718	CERAMIC CAPACITOR	CKCYF103Z50
	C131, 132	ELECTR. CAPACITOR	CEAS470M16		C719, 720	ELECTR. CAPACITOR	CEAS330M16
	C133, 134	AXIAL CAPACITOR	CKPUYB681K50		C723	ELECTR. CAPACITOR	CEAS470M16
	C135-138	AXIAL CAPACITOR	CKPUYB101K50		C724	CERAMIC CAPACITOR	CKCYF103Z50
	C145, 146	ELECTR. CAPACITOR	CEAS010M50		C725	ELECTR. CAPACITOR	CEAS010M50
	C147-150	ELECTR. CAPACITOR	CEAS100M50		C726	ELECTR. CAPACITOR	CEAS102M6R3
	C151, 152	ELECTR. CAPACITOR	CEAS4R7M50		C727	CERAMIC CAPACITOR	CKCYF103Z50
	C153-156	AUDIO FILM CAPACITOR	CFTXA222J50		C728, 729	CERAMIC CAPACITOR	CKCYF473Z50
	C157-160	ELECTR. CAPACITOR	CEASR33M50		C730	ELECTR. CAPACITOR	CEAS100M50
	C164	ELECTR. CAPACITOR	CEAS470M16		C731	CERAMIC CAPACITOR	CKCYF473Z50
	C165, 166	ELECTR. CAPACITOR	CEAS010M50		C732	ELECTR. CAPACITOR	CEAS220M16
	C167	ELECTR. CAPACITOR	CEAS100M50		C733-735	CERAMIC CAPACITOR	CKCYF103Z50
	C169, 170	ELECTR. CAPACITOR	CEASR22M50		C740	ELECTR. CAPACITOR	CEAS331M6R3
	C173, 174	ELECTR. CAPACITOR	CEAS100M50		C801, 802	CERAMIC CAPACITOR	CKCYF103Z50
	C175, 176	ELECTR. CAPACITOR	CEAS010M50		C803	CERAMIC CAPACITOR	CKCYF473Z50
	C177-180	AXIAL CAPACITOR	CKPUYB101K50		C804	ELECTR. CAPACITOR	CEAS100M50
	C181	ELECTR. CAPACITOR	CEAS470M16		C805	CERAMIC CAPACITOR	CKCYF473Z50
	C191, 192	ELECTR. CAPACITOR	CEAS470M16		C851	CERAMIC CAPACITOR	CKCYF103Z50
	C261, 262	ELECTR. CAPACITOR	CEASR10M50		C852	CERAMIC CAPACITOR	CKCYF473Z50
	C265	ELECTR. CAPACITOR	CEAS101M25		C853	ELECTR. CAPACITOR	CEAS100M50
	C281, 282	ELECTR. CAPACITOR	CEASR10M50		C854	CERAMIC CAPACITOR	CKCYF473Z50
	C283	CERAMIC CAPACITOR	CKCYF473Z50	RESISTORS			
	C301, 302	ELECTR. CAPACITOR	CEAS471M10		R101-122	CARBONFILM RESISTOR	RD1/6PM□□□J
	C303-306	ELECTR. CAPACITOR	CEAS4R7M50		R133	CARBONFILM RESISTOR	RD1/6PM□□□J
	C307	CERAMIC CAPACITOR	CKCYF473Z50		R135, 136	CARBONFILM RESISTOR	RD1/6PM□□□J
	C308	CERAMIC CAPACITOR	CKCYF103Z50		R139, 140	CARBONFILM RESISTOR	RD1/6PM□□□J
	C309, 310	AXIAL CAPACITOR	CKPUYB221K50		R151-160	CARBONFILM RESISTOR	RD1/6PM□□□J
	C311, 312	ELECTR. CAPACITOR	CEASR68M50		R165	CARBONFILM RESISTOR	RD1/6PM□□□J
	C313, 314	ELECTR. CAPACITOR	CEAS4R7M50		R169	CARBONFILM RESISTOR	RD1/6PM□□□J
	C315	ELECTR. CAPACITOR	CEAS331M16		R171-176	CARBONFILM RESISTOR	RD1/6PM□□□J
	C361, 362	ELECTR. CAPACITOR	CEASR68M50		R261-264	CARBONFILM RESISTOR	RD1/6PM□□□J
	C363, 364	ELECTR. CAPACITOR	CEAS4R7M50		R281-290	CARBONFILM RESISTOR	RD1/6PM□□□J
	C401	ELECTR. CAPACITOR	CEAS330M35		R301-306	CARBONFILM RESISTOR	RD1/6PM□□□J
	C403	CAPACITOR	CQPA752J100		R313-318	CARBONFILM RESISTOR	RD1/6PM□□□J

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	R325-330	CARBONFILM RESISTOR	RD1/6PM□□□J		CN3021		5JQ-BT
	R337, 338	CARBONFILM RESISTOR	RD1/6PM□□□J		CN4011		12JQ-BT
	R341-349	CARBONFILM RESISTOR	RD1/6PM□□□J		CN4021		8JQ-BT
	R395-398	CARBONFILM RESISTOR	RD1/6PM□□□J		JA271	JACK	RKB1001
	R401	CARBONFILM RESISTOR	RD1/2LF□□□J		JA720	JACK	RKN1014
	R402-407	CARBONFILM RESISTOR	RD1/6PM□□□J		JA730	JACK	RKN1004
	R409, 410	CARBONFILM RESISTOR	RD1/6PM□□□J		JA740	JACK	RKN1004
	R411, 412	CARBONFILM RESISTOR	RD1/2PM□□□J		X720	CERAMIC RESONATOR	VSS1014
	R413-416	CARBONFILM RESISTOR	RD1/6PM□□□J	H. PHONE UNIT			
	R424-426	CARBONFILM RESISTOR	RD1/6PM□□□J	SEMICONDUCTORS			
	R428, 429	CARBONFILM RESISTOR	RD1/6PM□□□J		Q261, 262	TRANSISTOR	2SD1302
	R501-508	CARBONFILM RESISTOR	RD1/6PM□□□J	CAPACITORS			
△	R510	CARBONFILM RESISTOR	RD1/4PM□□□J		C263, 264	ELECTR. CAPACITOR	CEAS101M25
	R511	CARBONFILM RESISTOR	RD1/2PMF□□□J		C266	CERAMIC CAPACITOR	CKCYF473Z50
△	R512, 513	CARBONFILM RESISTOR	RD1/6PM□□□J	RESISTORS			
	R717, 718	CARBONFILM RESISTOR	RD1/4PM□□□J		R265, 266	CARBONFILM RESISTOR	RD1/4PM□□□J
	R719-723	CARBONFILM RESISTOR	RD1/6PM□□□J		R267, 268	CARBONFILM RESISTOR	RD1/6PM□□□J
	R725-730	CARBONFILM RESISTOR	RD1/6PM□□□J		R269, 270	CARBONFILM RESISTOR	RD1/4PM□□□J
	R736	CARBONFILM RESISTOR	RD1/4PM□□□J	OTHERS			
	R737-764	CARBONFILM RESISTOR	RD1/6PM□□□J		JA202	JACK	RKN1002
	R770	RESISTOR ARRAY (10K)	RA8T□□□J	M.S, METER UNIT			
	R771	RESISTOR ARRAY (4.7K)	RA11T□□□J	SEMICONDUCTORS			
	R772	RESISTOR ARRAY (2.2K)	RA7T□□□J		IC704	OP-AMP IC	BA15218
	R773	RESISTOR ARRAY (47K)	RA12T□□□J		IC705	COMPARATOR	BA10393N
	R774	RESISTOR ARRAY (100K)	RA10T□□□J		IC706	IC	BA335
	R775	RESISTOR ARRAY (2.2K)	RA8T□□□J		Q701	TRANSISTOR	2SD1302
	R776	RESISTOR ARRAY 10K	RA3T□□□J		D702-704	DIODE	1SS254
	R777	RESISTOR ARRAY (22K)	RA5T□□□J	CAPACITORS			
	R778	RESISTOR ARRAY (22K)	RA3T□□□J		C701, 702	CERAMIC CAPACITOR	CKCYF473Z50
	R779	RESISTOR ARRAY (22K)	RA5T□□□J		C703, 704	ELECTR. CAPACITOR	CEAS100M50
△	R801-806	CARBONFILM RESISTOR	RD1/6PM□□□J		C705, 706	ELECTR. CAPACITOR	CEASR47M50
	R807	METAL OXIDE RESISTOR	RS2LMF□□□J		C707	ELECTR. CAPACITOR	CEAS102M6R3
	R808-810	CARBONFILM RESISTOR	RD1/4PM□□□J		C709	ELECTR. CAPACITOR	CEAS470M16
	R811-813	CARBONFILM RESISTOR	RD1/6PM□□□J		C710	ELECTR. CAPACITOR	CEASR10M50
	R815-817	CARBONFILM RESISTOR	RD1/6PM□□□J		C711	CERAMIC CAPACITOR	CKCYF473Z50
	R818	CARBONFILM RESISTOR	RD1/4PM□□□J		C712	ELECTR. CAPACITOR	CEASR47M50
	R819-821	CARBONFILM RESISTOR	RD1/6PM□□□J		C713	ELECTR. CAPACITOR	CEASR10M50
	R851-853	CARBONFILM RESISTOR	RD1/6PM□□□J	RESISTORS			
△	R854	METAL OXIDE RESISTOR	RS2LMF□□□J		R700-716	CARBONFILM RESISTOR	RD1/6PM□□□J
	R855-861	CARBONFILM RESISTOR	RD1/6PM□□□J	OTHERS			
	R863-865	CARBONFILM RESISTOR	RD1/6PM□□□J		CN3012		S8B-XH-A-1
	R867	CARBONFILM RESISTOR	RD1/4PM□□□J		CN3022		S5B-XH-A-1
	R868-870	CARBONFILM RESISTOR	RD1/6PM□□□J	SW UNIT (1)			
	VR101-104	VR(22kΩ)	RCP1046	SEMICONDUCTORS			
	VR301, 302	VR(22kΩ)	RCP1084		D901, 902	DIODE	1SS254
	VR351, 352	VR(22kΩ)	RCP1046	SWITCHES			
	VR401, 402	VR(100kΩ)	RCP1087		S901	SWITCH	RSG1034
	VR403	VARIABLE RESISTOR(100Ω)	RCP1013		S902	SWITCH	RSH1011
	VR801	VR(22kΩ)	RCP1046		S903	SWITCH	RSG1034
	VR802	VR(10kΩ)	RCP1045	OTHERS			
	VR851	VR(22kΩ)	RCP1046		CN11		52045-0710
					CN3011		8JQ-BT

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
TRANSISTOR (A) UNIT							
SEMICONDUCTORS							
△		IC520 REGULATOR IC	NJM7812FA			Q456, 457 TRANSISTOR	2SC3243
CAPACITORS						Q458 TRANSISTOR	2SC3246
		C520 ELECTR. CAPACITOR	CEAS470M16			Q459, 460 TRANSISTOR	2SB1238X
TRANSISTOR (B) UNIT						Q651, 652 TRANSISTOR	2SA1309A
SEMICONDUCTORS						Q653 TRANSISTOR	XDC124ES
△		IC530 REGULATOR IC	NJM7812FA			D451 DIODE	1SS254
CAPACITORS						D452 DIODE	1SS252
		C530 ELECTR. CAPACITOR	CEAS101M25			D453-456 DIODE	1SS254
TRANSISTOR (C) UNIT						D651, 652 DIODE	1SS254
SEMICONDUCTORS				COILS/TRANSFORMERS			
△		IC540 REGULATOR IC	NJM78M05FA			L351, 352 COIL	RTF1004
CAPACITORS						L451 RADIAL INDUCTOR	LFA121K
		C540 ELECTR. CAPACITOR	CEAS102M6R3			L452 COIL	RTD1022
POWER SW UNIT						L651, 652 COIL	RTD1046
SWITCHES				CAPACITORS			
△		S1001 SWITCH	RSA-063			C351, 352 ELECTR. CAPACITOR	CEAS471M10
CAPACITORS						C353-356 ELECTR. CAPACITOR	CEAS4R7M50
△		C1001 CAPACITOR(10000PF)	RCG-009			C357 CERAMIC CAPACITOR	CKCYF473Z50
SUB (1) UNIT						C358 CERAMIC CAPACITOR	CKCYF103Z50
SEMICONDUCTORS						C359, 360 AXIAL CAPACITOR	CKPUYB221K50
		Q101 TRANSISTOR	2SC1740S			C361 ELECTR. CAPACITOR	CEAS331M16
		D101-110 DIODE	1SS254			C451 ELECTR. CAPACITOR	CEAS330M35
SWITCHES						C453 CAPACITOR	CQPA682J100
		S101-110 SWITCH	RSG1034			C454 AUDIO FILM CAPACITOR	CFTXA273J50
		S111-123 SWITCH	RSG1034			C455 AUDIO FILM CAPACITOR	CFTXA682J50
RESISTORS						C456, 457 AUDIO FILM CAPACITOR	CFTXA332J50
		R101 CARBONFILM RESISTOR	RD1/6PM□□□J			C458 ELECTR. CAPACITOR	CEAS330M35
		R108 CARBONFILM RESISTOR	RD1/6PM□□□J			C459 ELECTR. CAPACITOR	CEAS100M50
OTHERS						C651, 652 AUDIO FILM CAPACITOR	CFTXA103J50
		V101 FL	RAW1095			C653, 654 AXIAL CAPACITOR	CKPUYB821K50
SUB (2) UNIT						C655, 656 AUDIO FILM CAPACITOR	CFTXA223J50
SEMICONDUCTORS						C657, 658 CERAMIC CAPACITOR	CGCYX473K25
		D201-205 DIODE	1SS254			C659, 660 CERAMIC CAPACITOR	CCCSL101K500
SWITCHES						C661, 662 CERAMIC CAPACITOR (430P)	RCC1005
		S201-209 SWITCH	RSG1033			C663 AXIAL CAPACITOR	CKPUYB101K50
REC (1) UNIT						C664 ELECTR. CAPACITOR	CEASR10M50
SEMICONDUCTORS						C665 ELECTR. CAPACITOR	CEAS100M50
		IC351 REC EQUALIZER IC	CXA1198AP			C666 ELECTR. CAPACITOR	CEAS4R7M50
		IC352 LOGIC IC	MC14051B			C667 ELECTR. CAPACITOR	CEAS100M50
		IC651 DOLBY HX PRO IC	UPC1297CA			RESISTORS	
		Q351, 352 TRANSISTOR	2SC3311A			R351-388 CARBONFILM RESISTOR	RD1/6PM□□□J
		Q454, 455 TRANSISTOR	2SC3311A			R391 CARBONFILM RESISTOR	RD1/6PM□□□J
						R393-396 CARBONFILM RESISTOR	RD1/6PM□□□J
						R451 CARBONFILM RESISTOR	RD1/2LF□□□J
						R452-457 CARBONFILM RESISTOR	RD1/6PM□□□J
						R459, 460 CARBONFILM RESISTOR	RD1/6PM□□□J
						R461, 462 CARBONFILM RESISTOR	RD1/2LF□□□J
						R463-466 CARBONFILM RESISTOR	RD1/6PM□□□J
						R474-479 CARBONFILM RESISTOR	RD1/6PM□□□J
						R651-659 CARBONFILM RESISTOR	RD1/6PM□□□J
						VR453 VARIABLE RESISTOR(100Ω)	RCP1013
						VR651, 652 VR	VRTB6HS223
						OTHERS	
						CN351	S12B-XH-A-1

T-WM77R

Mark	No.	Description	Part No.
	CN402		S8B-XH-A-1
BOTTOM UNIT			
SEMICONDUCTORS			
	D11, 12	DIODE	1SS254
UPPER UNIT			
SEMICONDUCTORS			
	D1-6	DIODE	1SS254
SWITCHES			
	S1-6	PUSH SWITCH	DSG1015
CARRIER UNIT			
SWITCHES			
	S21	PUSH SWITCH	DSG1016
OTHERS			
	CN202		5597-10APB
SW UNIT (2)			
SWITCHES			
	S31		RSK1003
VOLUME UNIT			
RESISTORS			
	R301-304	CARBONFILM RESISTOR	RD1/6PM□□□J
	VR301	VARIABLE RESISTOR(5kA)	RCV1075
DOOR IND UNIT			
SEMICONDUCTORS			
	D401-406	LED	REL1007
RESISTORS			
	R401-406	CARBONFILM RESISTOR	RD1/6PM□□□J
REMOTE CONTROL UNIT			
OTHERS			
		REMOTE SENSOR(IC501)	HC-177
CONNECTOR UNIT			

There is no supply part in this unit.

9. ADJUSTMENTS

9.1 MECHANICAL ADJUSTMENT

- Perform this adjustment in the test mode.
- TEST mode setting.

Short-circuit the JP701 and JP702 for a moment. (Set into TEST mode.)

Mode	Operation	Display
Side I Double speed play	Press the FAST key (side I) in the side I PLAY mode to set to the double speed PLAY mode. (To transfer to the other modes, press the STOP key first.)	C-1
Side II Double speed play	Press the FAST key (side II) in the side II PLAY mode to set to the double speed PLAY mode. (To transfer to the other modes, press the STOP key first.)	C-2

To cancel the TEST mode, press the side I COUNTER RESET key or turn off the power.

1. Tape Speed Adjustment and Check						
No.	Deck	Mode	Test tape	Adjusting points	Specifications/Ratings (playback frequency)	Remarks
1	II	Normal speed PLAY	STD-301 (3 kHz)		After playing back for 1 minute.	
2		Double speed PLAY		check	6000 Hz \pm 600 Hz	
3				VR851	3000 Hz \pm 5 Hz.	
4	I	Normal speed PLAY			After checking, play back deck I.	
5					After playing back for 1 minute.	
6		Double speed PLAY		VR802	Within \pm 10 Hz against the measurement value of the step 2 (deck II).	
7		Normal speed PLAY			VR801		3000 Hz $\pm$ 5 Hz

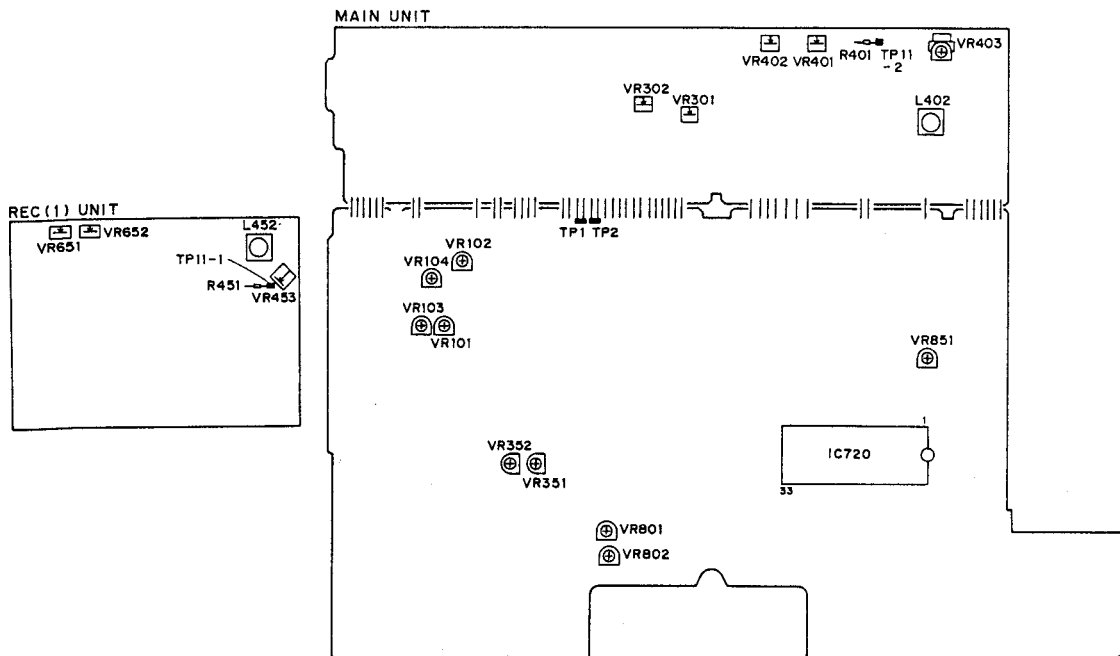


Fig. 9-1 Adjusting points

9.2 ELECTRICAL ADJUSTMENTS

Adjustment Conditions

1. The mechanical adjustments must be completed first.
2. The head must be cleaned and demagnetized.
3. Turn power on allow the deck to warm up for at least a few minutes before commencing any electrical adjustments.
4. The reference signal is 0dBv=1Vrms.
5. Connect a 50 kΩ (or between 47k to 52 kΩ) load resistance to the OUTPUT terminals.
6. Unless otherwise specified, the switches listed below are left in the positions indicated.

DOLBY NR : OFF
 TAPE SELECTOR : NORM

Test Tapes

- STD-331B : Playback adjustments
 (Sec Fig. 9-2)
- STD-630 : NORMAL blank tape
 STD-620 : CrO₂ blank tape
 STD-610 : METAL blank tape

List of Adjustments

Playback sections

1. Head azimuth adjustment.
2. Playback level adjustment.

Recording sections

1. Bias oscillator adjustment.
2. Erase current adjustment.
3. Recording bias adjustment.
4. Recording level adjustment.
5. Level meter check.

NOTE: This unit has an automatic tape selection feature.

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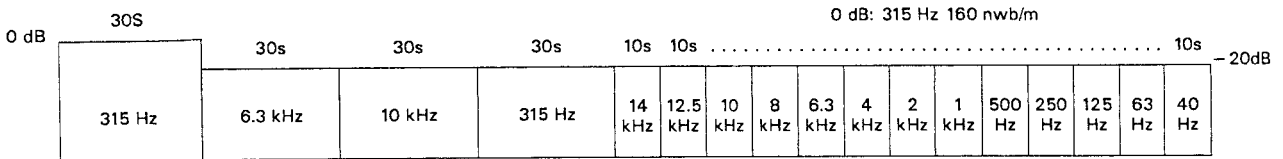


Fig. 9-2 Constants of the test tape STD-331B

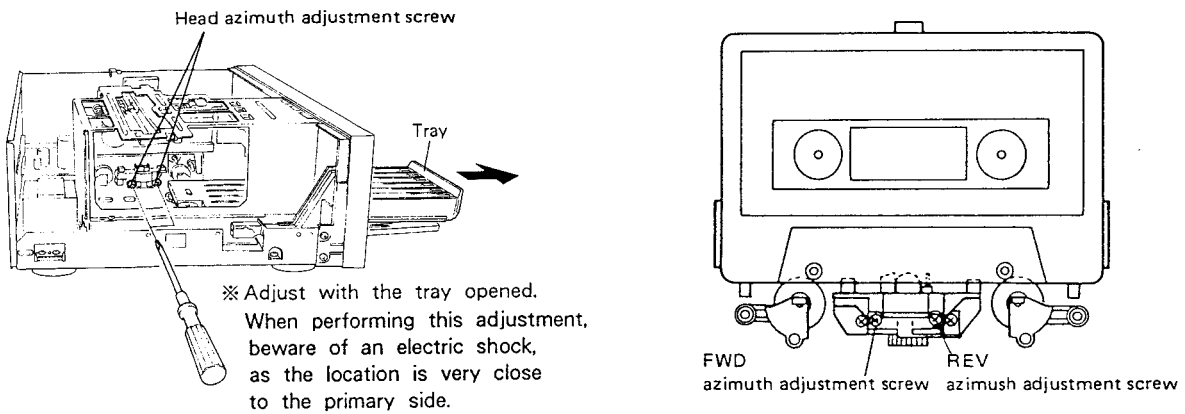


Fig. 9-3 Head azimuth adjustment

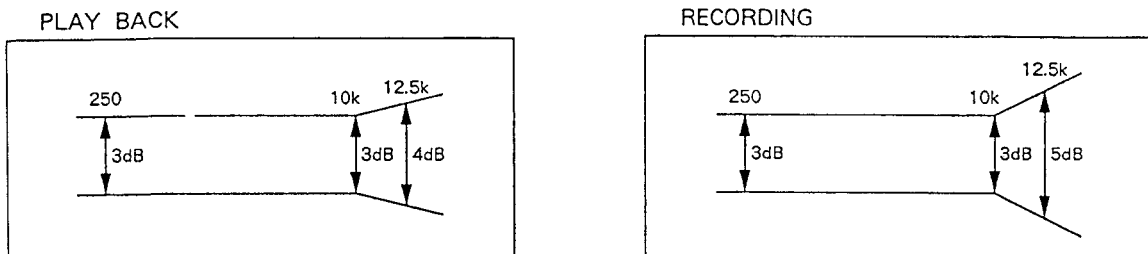


Fig. 9-4 Allowable playback frequency response zone

PLAYBACK SECTION

1. Head Azimuth Adjustment

- Turn VR103, 104 (Deck I) or VR101, 102 (Deck II) to mechanical center positions.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks	
1.	PLAY	Play the 10 kHz/−20 dB section of STD-331B test tape.	Head azimuth adjustment screw. (See Fig. 9-3)	LINE OUT	Maximum playback signal level.		
2.	STOP	Lock the screw with screw lock after completing adjustment.					

2. Playback level Adjustment

- This adjustment determines the DOLBY NR level, and must be performed with great care.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks	
1.	PLAY	Play the 315 Hz/0 dB section of the STD-331B test tape.	Deck I	VR103 (Lch) VR104 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	−10.7 dBv	
			Deck II	VR101 (Lch) VR102 (Rch)			

RECORDING SECTION

1. Bias Oscillator Adjustment

- Adjust the bias oscillator with checks set to recording mode simultaneously. ← (Double R/P only)

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks	
1.	REC	Load the STD-610 test tape with no input signal.	Deck I	L452	TP. 11-1	105 kHz ± 0.3 kHz	

2. Erase Current Adjustment

- Adjust the bias oscillator with decks I and II set to recording mode independently.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks	
1.	REC	Load the STD-610 test tape with no input signal.	Deck I	VR453	TP. 11-1	165 mV AC	
			Deck II	VR403	TP. 11-2		

3. Recording Bias Adjustment

- Adjust the bias oscillator with decks I and II set to recording mode independently.
- After the adjustment, caution should be exercised so as not to become under bias by checking the distortion rate.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks	
1.	STOP	Set the TAPE SELECTOR switch to the NORM position.					
2.	REC	Record the 315 Hz and 6.3 kHz signals at −20 dBv input level and playback.	Deck I	VR651 (Lch) VR652 (Rch)	LINE OUT	Repeatedly record, playback and adjust so that the playback level of 6.3 kHz signal becomes +0.5 dB ± 0.5 dB when compared with the 315 Hz signal.	
			Deck II	VR401 (Lch) VR402 (Rch)			

4. Recording Level Adjustment

- Adjust the bias oscillator with decks I and II set to recording mode independently.

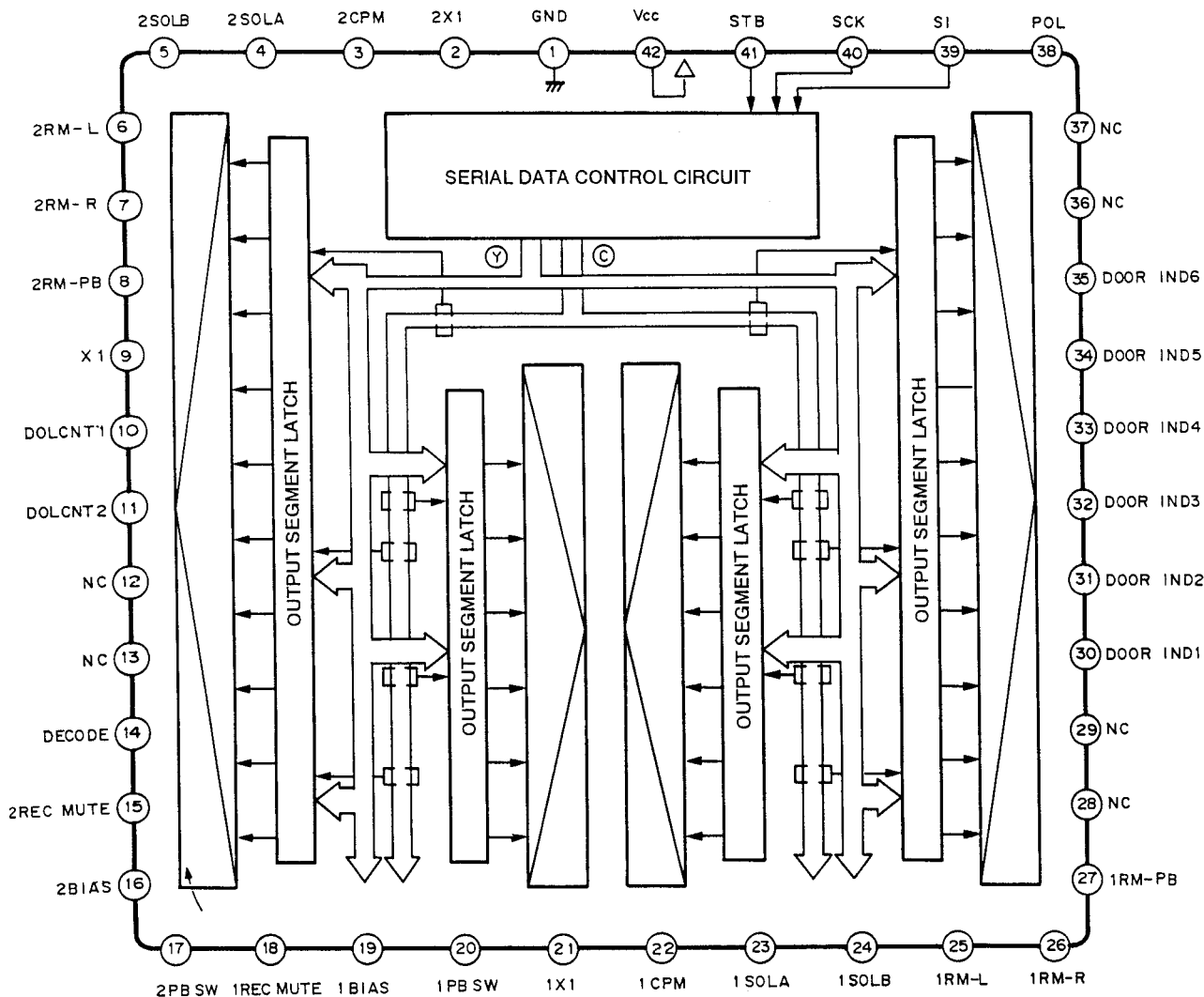
No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	STOP	Set the TAPE SELECTOR switch to the NORM position.				
2.	REC PAUSE	Apply a 315 Hz/0 dBv signal to the line input terminals, load the STD-630 test tape.	Rec Level control volume	TP. 1 (Lch) TP. 2 (Rch)	- 11.2 dBv	
3.	STOP	Set the DOLBY NR switch to the ON position. (DOLBY B)				
4.	REC/ PLAY	Record the above signal onto the STD-630 test tape, and playback.	Deck I	VR351 (Lch) VR352 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	Repeatedly record, playback and adjust so that the playback signal level becomes - 11.2 dB.
			Deck II	VR301 (Lch) VR302 (Rch)		
5.	STOP	Set the TAPE SELECTOR switch to the CrO ₂ position.				
6.	REC/ PLAY	Record the above signal onto the STD-620 test tape, and playback.	Check	TP. 1 (Lch) TP. 2 (Rch)	- 11.2 dBv ± 1.5 dB	
7.	STOP	Set the TAPE SELECTOR switch to the METAL position.				
8.	REC/ PLAY	Record the above signal onto the STD-610 test tape, and playback.	Check	TP. 1 (Lch) TP. 2 (Rch)	- 11.2 dBv ± 1.5 dB	

5. Level Meter Check

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	REC PAUSE	Apply a 315 Hz/- 10 dBv (316 mV) signal to the Line Input terminals.	Rec Level control volume	TP. 1 (Lch) TP. 2 (Rch)		Check that the level meters "0 dB" light up within - 11.2 dBv ± 2 dB of the signal output level.

10. IC DESCRIPTIONS

● TC9180N



T-WM77R

Pin No.	Name	Description
1	GND	GND terminal
2	2×1	×2 speed control mechanism 2. ×2 speed at "L"
3	2CPM	Capstan motor control mechanism 2. ON at "H"
4	2SOLA	Solenoid control mechanism 2. Solenoid ON at "H"
5	2SOLB	Solenoid low voltage control mechanism 2. Low voltage at "H"
6	2RM-L	Reel motor rotating direction control mechanism 2. REV direction ON at "H"
7	2RM-R	Reel motor rotating direction control mechanism 2. FWD direction ON at "H"
8	2RM-PB	Reel motor torque control mechanism 2. Play torque at "H"
9	×1	Amplifier system ×2 speed control. ×2 speed at "L"
10	DOLCNT1	Dolby selecting control
11	DOLCNT2	Dolby selecting control
12	NC	
13	NC	
14	DECODE	Encode/decode selecting control. Decoded at "H"
15	2RECMUTE	Recording mute control mechanism 2. ON at "H"
16	2BIAS	Bias control mechanism 2. ON at "H"
17	2PBSW	REC/PB head selecting control mechanism 2. PB at "L"
18	1RECMUTE	Recording mute control mechanism 1. ON at "H"
19	1BIAS	Bias control mechanism 1. ON at "H"
20	1PBSW	REC/PB head selecting control mechanism 1. PB at "L"
21	NC	
22	1×1	×2 speed control mechanism 1. ×2 speed at "L"
23	1CPM	Capstan motor control mechanism 1. ON at "H"
24	1SOLA	Solenoid control mechanism 1. Solenoid ON at "H"
25	1SOLB	Solenoid low voltage control mechanism 1. Low voltage at "H"
26	1RM-L	Reel motor rotating direction control mechanism 1. REV direction ON at "H"
27	1RM-R	Reel motor rotating direction control mechanism 1. FWD direction ON at "H"
28	1RM-PB	Reel motor torque control mechanism 1. PLAY torque at "H"
29	NC	
30	DOOR IND1	Tray LED display control output
31	DOOR IND2	Tray LED display control output
32	DOOR IND3	Tray LED display control output
33	DOOR IND4	Tray LED display control output
34	DOOR IND5	Tray LED display control output
35	DOOR IND6	Tray LED display control output
36	NC	
37	NC	
38	POL	Output logical control input. Connected to GND
39	SI	Communication data input
40	SCK	Communication clock input
41	STB	Strobe signal input
42	Vcc	Power terminal (+5V)

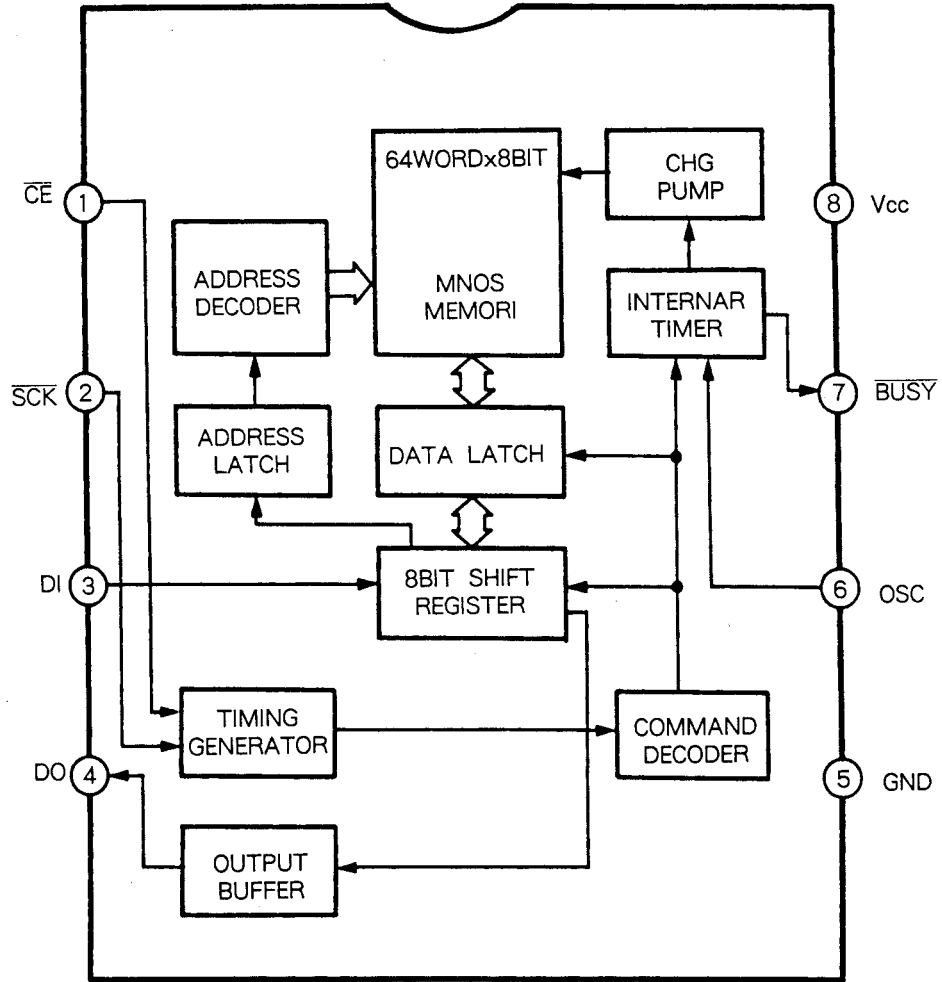
● PD3185B

Pin No.	Name	Description
1	Si	Segment output, key scan output
2	Sj	Segment output, key scan output
3	Sk	Segment output, key scan output
4	Sl	Segment output, key scan output
5	Sm	Segment output, key scan output
6	G7	Grid output
7	G6	Grid output
8	G5	Grid output
9	G4	Grid output
10	G3	Grid output
11	G2	Grid output
12	G1	Grid output
13	CDOUT	CD synchronizing control output
14	SW-M	SW-M input. ON at "L"
15	SW-F	SW-F input. ON at "L"
16	SW-L	SW-L input. ON at "L"
17	CDIN	CD synchronizing control input
18	SENSE2-T	Take-up side sensing pulse input side 2
19	SI	Memory communication data input
20	ENC3	Carrier encoder input
21	ENC2	Carrier encoder input
22	ENC1	Carrier encoder input
23	ENC0	Carrier encoder input
24	\overline{CE}	Chip enable output. Memory selection at "L"
25	SCK	Communication clock with memory
26	NC	
27	$\overline{LINE MUTE}$	Line mute control output. ON at "L"
28	\overline{POFF}	Power off pulse input. Interrupting at "H" to "L"
29	$\overline{REMOCON}$	Remote control pulse input
30	METER-L	Lch meter input
31	METER-R	Rch meter input
32	Vcc	Power terminal (+5V)

T-WM77R

Pin No.	Name	Description
33	SONG	Song detection input. Song existing at "H"
34	SENSE1-S	Supply side sensing pulse input side 1
35	SENSE1-T	Take-up side sensing pulse input side 1
36	NC	
37	MTR0	Changer motor selecting control output. Loading motor at "H"
38	MTR1	Changer motor rotating direction control output
39	MTR2	Changer motor rotating direction control output
40	MTR3	Changer motor speed control output
41	NC	
42	KEY5	Key scan return data input
43	KEY4	Key scan return data input
44	KEY3	Key scan return data input
45	KEY2	Key scan return data input
46	KEY1	Key scan return data input
47	RESET	Reset pulse input. Reset at "H"
48	OSC2	Clock output
49	OSC1	Clock input
50	GND	GND terminal
51	NC	
52	NC	
53	TEST	Connected to +5V
54	SO	Memory and output extension IC communication data output
55	SCK	Output extension IC communication clock output
56	STB	Output expansion IC communication strobe output
57	Sa	Segment output, key scan output, level scan output -20 dB
58	Sb	Segment output, key scan output, level scan output -10 dB
59	Sc	Segment output, key scan output, level scan output -6 dB
60	Sd	Segment output, key scan output, level scan output -3 dB
61	Se	Segment output, key scan output, level scan output 0 dB
62	Sf	Segment output, key scan output, level scan output +3 dB
63	Sg	Segment output, key scan output, level scan output +6 dB
64	Sh	Segment output, key scan output

● CXK1011P

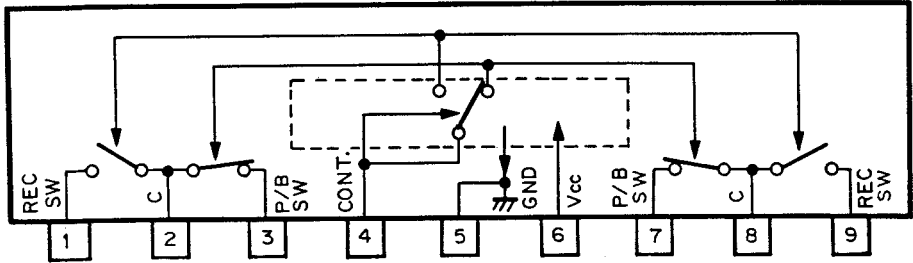


Pin description

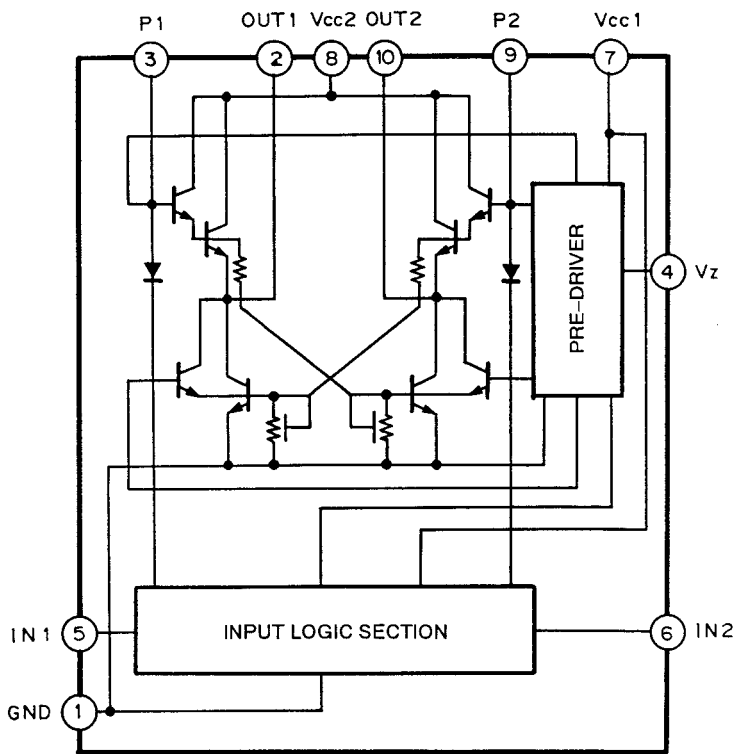
Pin No.	I/O	Symbol	Description
1	I	\overline{CE}	Chip enable input terminal
2	I	SCK	Sync clock input terminal
3	I	DI	Data input terminal
4	O	DO	Data output terminal
5	-	GND	Power terminal (normal: 0V)
6	I	\overline{OSC}	Oscillation terminal (Fixed to release or Vcc when using internal circuit)
7	O	\overline{BUSY}	Busy signal output terminal
8	-	Vcc	Power terminal (normal: +5V)

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● BA3126N

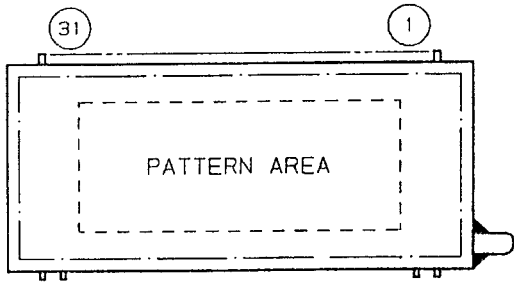


● LB1641



ANODE CONNECTION

	7G	6G	5G	4G	3G	2G	1G
P1	1	2	3	4	5	6	II (S5)
P2	B1	B2	B3	B4	B5	B6	B7
P3	-20	-10	-6	-3	0	+30	+6
P4	B8	B9	B10	B11	B12	B13	B14
P5	S7	B18	B17	B16	B15	(REV.)	-
P6	B	B19	h	h	col	h	-
P7	B	B20	g	g	g	g	RELAY
P8	COPY	-	f	f	f	f	CD SYNC.
P9	I	-	e	e	e	e	II (S6)
P10	▷ (S2)	-	d	d	d	d	▷ (S4)
P11	◁ (S1)	-	c	c	c	c	◁ (S3)
P12	S8	PLAY	b	b	b	b	PLAY
P13	-	REC	a	a	a	a	REC
P14	DOLBY NR	S9	⊙	⊙	E	←	-

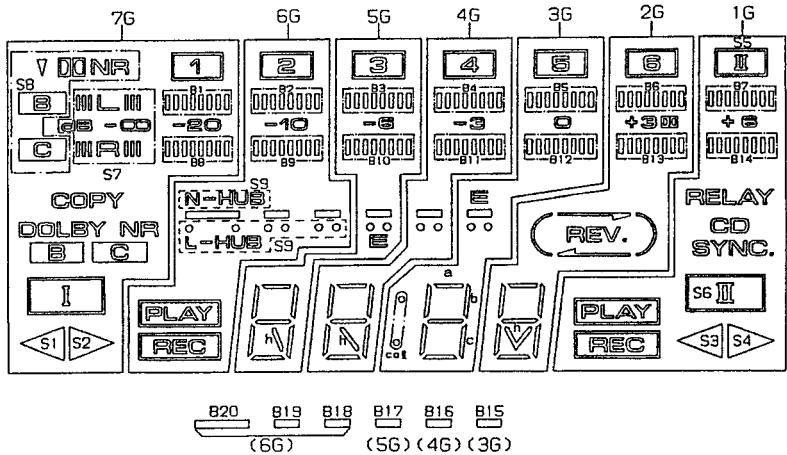


PIN CONNECTION

PIN NO	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F	F	N	P	P	P	P	P	P	P	P	P	N	N	N	N	7	6	5	4	3	2	1	N	F	F	F	F	F	F	F

- NOTE 1) F1, F2 --- Filament
 2) NP ----- No pin
 3) NC ----- No connection
 4) 1G~7G --- Grid

GRID ASSIGNMENT



11. FOR SD TYPE

CONTRAST OF MISCELLANEOUS PARTS

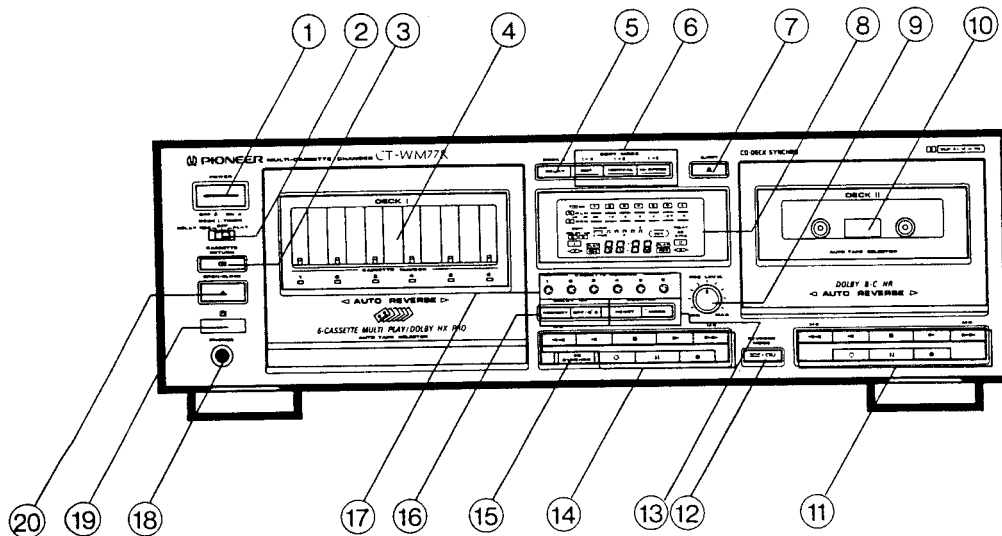
NOTES:

- Parts without part number cannot be supplied.
- The \triangle mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

The CT-WM77R/SD type is the same as the CT-WM77R/KUC type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		CT-WM77R/ KUC type	CT-WM77R/ SD type	
\triangle	Strain relief	CM-22C	CM-22B	
\triangle	AC Power cord	PDG1015	PDG1013	
\triangle	Voltage selector	.....	PSB1002	
\triangle	FU501, FU502 Fuse (1.5A)	REK1001	.....
\triangle	FU501, FU502 Fuse (1.6A)	.....	REK-102	
\triangle	Power transformer (AC120V)	RTT1152	.....
\triangle	Power transformer (AC110/120-127/220/240V)	.....	RTT1161	
	Packing case	RHG1233	RHG1254	
	Operating instructions (Spanish)	.....	RRD1094	

12. PANEL FACILITIES



① POWER switch

When the POWER switch is pressed to turn the cassette deck on, the 6 cassette indicators on the cassette door flash to indicate that the circuits are warming up. After about 10 seconds, the circuits become stable and the cassette deck can be operated.

All the indicators in the display window will light when the power is turned on. The display will be set to its normal state when one of the operation buttons is pressed.

② DECK I TIMER switch

Use this switch to select the timer relay recording or timer relay playback functions.

③ CASSETTE RETURN button

Press this button to return the loaded cassette to the tray.

④ DECK I Cassette door and tray

All of the cassette indicators on the cassette door flash while the cassette deck is warming up. When the cassette door is closed and there are cassettes on the tray, the indicators for the tray slots which contain cassette tapes (including the currently loaded tape) will light. When a cassette is being loaded from the tray, the corresponding indicator flashes.

⑤ RELAY button

Press this button to select relay recording or relay playback. The RELAY indicator lights when relay mode is selected.

⑥ COPY MODE buttons

EDIT (I > II): Press this button to perform tape editing and copying from DECK I to DECK II.

NORMAL (I < II): Press this button to copy a tape from DECK II to DECK I.

HI-SPEED (I < II): Press this button to copy a tape from DECK II to DECK I at twice the normal speed.

⑦ DECK II Eject button (EJECT)

Press this button to open the cassette door of DECK II.

NOTE:

The cassette door cannot be opened while the tape is running (recording, playback, etc.). Press the stop (■) button of DECK II before pressing this button.

⑧ Display window

⑨ REC LEVEL control knob

⑩ DECK II Cassette door

⑪ DECK II Operation buttons

Recording (●):

When this button is pressed, the cassette deck enters recording standby mode. Recording begins when the play (▶) or (◀) button or pause (||) button is pressed.

Pause (||):

Press this button to temporarily pause recording or playback. Press the button again to resume recording or playback. The pause button cannot be used during fast-forward or fast-reverse. If this button is pressed after the recording (●) button is pressed, recording will begin.

Recording mute (○):

When this button is pressed during recording, the cassette deck creates a 4-second blank space on the tape and then enters recording standby mode.

If the button is pressed and held, the deck continues to create a blank space until the button is released.

Fast-forward (▶▶):

If this button is pressed during stop mode, the tape is fast-forwarded in the direction of the arrows (towards the end of side A or the beginning of side B). If it is pressed during playback, the cassette deck skips forward one selection for each press of the button (up to 15 selections), and playback resumes at the beginning of the designated selection.

Forward play (▶):

During stop mode, press this button to begin playback of side A; that is, the side facing outward (forward playback). During recording standby mode, press this button to begin recording on side A.

Stop (■):

Press this button to stop the tape transport.

Reverse play (◀):

Press this button to begin playback of side B; that is, the side facing the rear of the cassette deck (reverse playback). During recording standby mode, press this button to begin recording on side B.

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Fast-reverse (◀◀):

If this button is pressed during stop mode, the tape is fast-forwarded in the direction of the arrows (towards the beginning of side A or the end of side B). If it is pressed during playback, the playback position skips backward by one selection for each press of the button (up to 15 selections), and playback resumes at the beginning of the designated selection.

⑫ REVERSE MODE button

Use this button to choose the tape transport mode.

⏮: One way mode. Tape transport stops after one side of a tape is played or recorded.

When relay mode is selected, after one cassette ends, playback or recording (of one side only) continues on the cassette in the next tape slot, and so on until the cassette in the highest numbered tape slot is reached.

⏮: Reverse mode. During playback, both sides of the tape are played back continuously until the tape has been played back 8 times (16 sides). During recording, both sides of the tape are recorded, and then tape transport stops.

When relay mode is selected, after both sides of one cassette have been recorded or played back once, playback or recording continues on the cassette in the next tape slot, and so on until the cassette in the highest numbered tape slot is reached.

NOTE:

During recording, relay playback and random playback, the auto reverse function will only operate when the tape is moving from the end of side A to the beginning of side B.

The tape cannot move automatically from the end of side B to the beginning of side A during these modes (i.e., the tape will stop at the end of side B even when reverse mode is selected). This indicates that the cassette deck will switch automatically from side A to side B, but will not switch automatically from side B to side A. If, for example, recording is started from the beginning of side B, the tape will stop after only one side is recorded, even though reverse mode is selected.

⑬ COUNTER buttons

MODE: Each time this button is pressed, the multifunction display switches between tape counter display mode and time counter display mode.

RESET: When this button is pressed, the tape counter is reset to 0000 and the time counter is reset to 00:00.

⑭ DECK I Operation buttons

These buttons operate in the same way as the operation buttons of DECK II, with the following exceptions:

Forward play (▶):

If the tray is open when this button is pressed, it will close automatically, the cassette in the lowest numbered slot will be loaded, and side A will be played back.

Reverse play (◀):

If the tray is open when this button is pressed, it will close automatically, the cassette in the lowest numbered slot will be loaded, and side B will be played back.

⑮ CD Deck synchro recording button (CD SYNCHRO)

⑯ DOLBY* NR buttons

DOLBY NR MEMORY button:


Press this button to begin setting the DOLBY NR system, or to check the current DOLBY NR settings.

DOLBY NR OFF/B/C button:

Press this button repeatedly to select the desired type of DOLBY NR. The selected type of DOLBY NR (B or C) is displayed. If no display appears, DOLBY NR OFF is selected.

When playing back Dolby NR-encoded tapes, always select the same position (OFF, B or C) used for recording.

*

- *Dolby noise reduction and HX PRO headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX PRO originated by Bang & Olufsen.*
- *"Dolby", the double-D symbol  and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.*

⑰ CASSETTE NUMBER buttons (1 ~ 6)

Press one of these buttons to select the cassette which will be loaded from the tray into the tape transport mechanism of DECK I.

⑱ PHONES jack

This jack is designed for standard stereo headphones with a 6.3mm diameter plug.

⑲ Remote control sensor window

Receives infrared signals from the remote control unit.

⑳ DECK I OPEN/CLOSE button (▲)

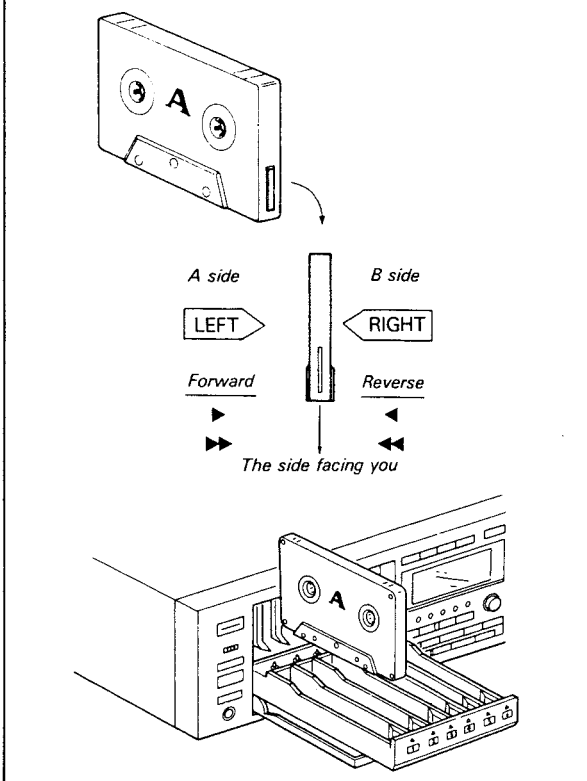
Press this button to open the cassette door. When the door is open, cassette tapes can be placed onto or removed from the tray. If a cassette is loaded in the tape transport mechanism (see page 5), the door can still be opened and tapes can be added or removed. However, DO NOT place a cassette in the tray slot previously occupied by the loaded cassette.

NOTE:

The cassette tray cannot be opened unless the POWER switch is turned OFF.

NOTE:

Please keep the diagram below in mind while operating the cassette deck. This will help you to avoid misoperations.



13. SPECIFICATIONS

System	4-track, 2-channel stereo
Heads	"Hard Permalloy" recording/playback head × 2 "Ferrite" erasing head × 2
Motors	DC servo motor (capstan) × 2 DC motor (reel, open/close, loading) × 4
Wow and flutter	No more than 0.055% (VRMS) No more than ±0.16% (DIN)
Fast winding time	Approximately 90 seconds (C-60 tape)
Frequency response	
-20 dB recording:	
Normal tape	20 to 17,000 Hz, ±6 dB
Chrome tape	20 to 18,000 Hz, ±6 dB
Metal tape	20 to 19,000 Hz, ±6 dB
Signal-to-Noise ratio	
Dolby NR OFF	More than 57 dB
Noise reduction effect	
Dolby NR B type ON	More than 10 dB (at 5 kHz)
Dolby NR C type ON	More than 19 dB (at 5 kHz)
Harmonic distortion	No more than 1.0% (0 dB)
Input (Sensitivity)	
LINE (INPUT)	63 mV (Input impedance 50 kΩ)
Output (Reference level)	
LINE (OUTPUT)	316 mV (Output impedance 5.8 kΩ)
Phones	0.25 mW (Load impedance 8 Ω)
Miscellaneous	
Power requirements	
U.S., Canadian model	AC 120 Volts, 60 Hz
U.S. military and other destination models	AC 110 V/ 120 V ~ 127 V/220 V/240 V (switchable), 50/60 Hz
Power consumption	
U.S., Canadian model	36W
U.S. military and other destination models	38W
Dimensions	420 (W) × 136 (H) × 364 (D) mm 16-9/16(W) × 5-3/8(H) × 14-5/16(D) in
Weight (without package)	8.3 kg (18 lb 5 oz)
Accessories	
Operating instructions	1
Connection cord with pin plugs	2
CD-Deck synchro control cord	1
System remote control cord	1
Remote control unit	1
Dry cell batteries "AAA" [IEC R03 (UM-4)]	2

Subfunctions

- DOLBY NR B/C types
- DOLBY HX PRO (DECK I only)
- DOLBY NR memory
- High-speed and normal-speed tape copying (DECK II → DECK I)
- Edit copying (DECK I → DECK II)
- Relay edit copying (DECK I → DECK II)
- Synchronized copy start
- Blank skip
- Music search over ±15 selections
- CD-Deck synchro recoring capability (DECK I only)
- Tape counter/Time counter
- Tape Remaining Time indicators (6 seg; DECK I only)
- FL peak level meter (7 seg + ∞)
- Automatic space recording mute
- One-touch recording pause
- Automatic tape selector
- Automatic reverse
- Phones jack
- TIMER RELAY Recording/TIMER Playback (DECK I only)
- System remote control compatible
- Relay recording/Relay playback (DECK I only)
- All rewind (DECK I only)
- Cassette random playback (DECK I only)
- Cassette scan playback (DECK I only)

NOTE:

Specifications and design subject to possible modifications without notice due to improvements.