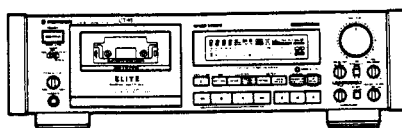


Service Manual

PIONEER®
The Art of Entertainment



ORDER NO.
ARP2227

STEREO CASSETTE DECK

CT-S709

CT-676

CT-676-S

CT-S709, CT-676 AND CT-676-S HAVE THE FOLLOWING:

Type	Model			Power Requirement	Remarks
	CT-S709	CT-676	CT-676-S		
KU/CA	○	—	—	AC120V only	
HEM	—	○	—	AC220V-230V, 230V-240V (switchable) *	
HB	—	○	—	AC220V-230V, 230V-240V (switchable) *	
SD	—	○	—	AC110V, 120V-127V, 220V, 240V (switchable)	
HEWM	—	—	○	AC220V-230V (switchable) *	

* Change the primary wiring of the power transformer.

- This manual is applicable to the CT-S709/KU/CA, CT-676/HEM, HB, SD and CT-676-S/HEWM types.
- As to the CT-676/HEM, HB, SD and CT-676-S/HEWM types, refer to page 43-44.
- Ce manuel pour le service comprend les explications de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.

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CONTENTS

1. SAFETY INFORMATION	2	7. ADJUSTMENTS	26
2. DISASSEMBLY	3	7. RÉGLAGES	31
3. EXPLODED VIEWS, PACKING AND PARTS LIST	4	7. AJUSTES	36
4. P.C. BOARDS CONNECTION DIAGRAM	15	8. FOR CT-676/HEM, HB, SD AND CT-676-S/HEWM TYPES	43
5. SCHEMATIC DIAGRAM	19	9. SPECIFICATIONS	45
6. P.C.B's PARTS LIST	22	10. PANEL FACILITIES	46

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

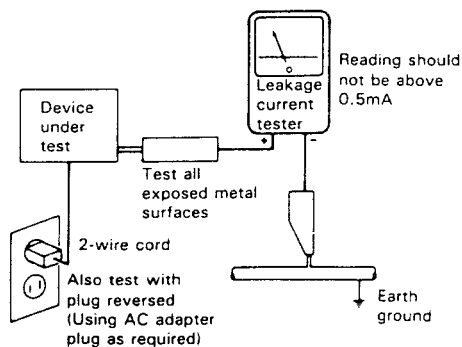
(FOR USA-MODEL ONLY)

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

1. Remove the bonnet.
2. Remove the three screws ① and take out the FL shield plate. (Fig. 2-1)
3. Remove the upper screw ② and lower three screws ②, then take out the front panel. (Fig. 2-1)
4. Turn the power ON. (Fig. 2-1)
5. Open the cassette door by pressing the open/close button. (Fig. 2-1)
6. Remove the cassette cover and cassette door by pressing the two claws. (Fig. 2-1)

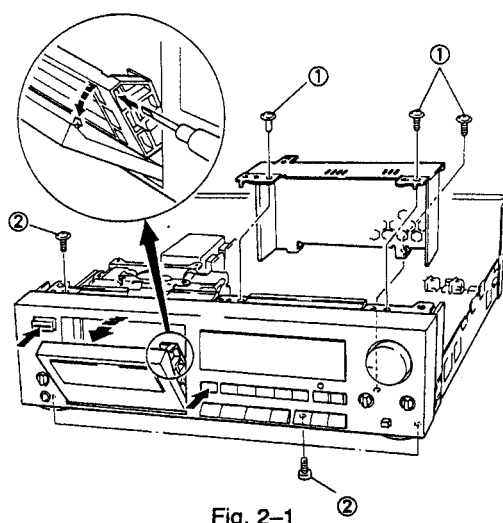


Fig. 2-1

7. Close the cassette door by pressing the close button.
8. Remove the springs at both sides of the cassette cover. Do not touch the end of spring to the cassette mechanism.
9. Remove the hook of the panel stay and take out the cassette door. (Fig. 2-2)
10. Remove the four screws ③ of the panel stay and two screws ④ on the chassis side, then take out the cassette mechanism unit. (Fig. 2-2)

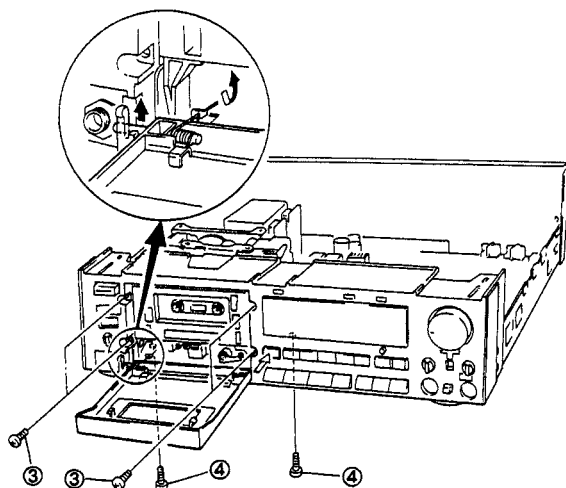


Fig. 2-2

● Removal of door

Pull and remove the door by pushing the claw indicated by the arrow in the figure.

(The claw forms hook shape as in SEC A to A. Do not touch the claw to other parts when pushing.)

The claw is symmetrical in configuration.

● Mounting of door

Open the door and strongly nip the claw and pocket so that the claw is hooked on the pocket.

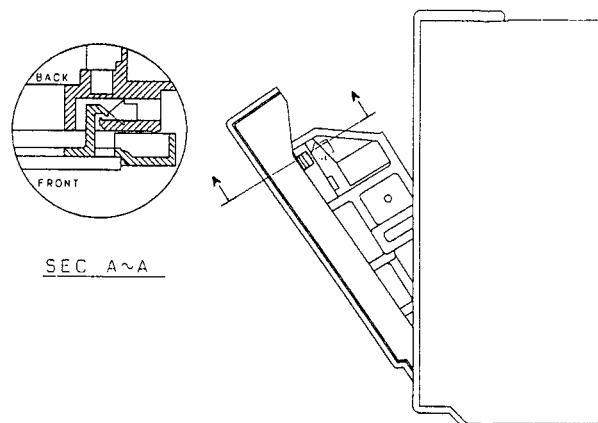


Fig. 2-3

3. EXPLODED VIEWS, PACKING 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.

3.1 PARTS LIST OF EXTERIOR AND PACKING

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
Δ	1	Strain relief	CM - 22C		46	Screw	BBZ30P060FZK
Δ	2	AC Power cord	PDG1015		47	Screw	PMA30P060FCU
Δ	3	FU703 Fuse (1.6A)	REK - 074		48	Pad (F)	RHA1021
Δ	4	FU701, FU702 (500mA)	REK - 077		49	Pad (R)	RHA1022
Δ	5	T1 Power transformer	RTT1159		50	Packing case	RHG1282
	6	Diode	SLF - 401C		51	Sheet	RHX - 034
	7	Absorb plate (B)	PNB1109		52	Control cord	RDE1030
	8	Door spring	RBH1144		53	Connection cord (with mini plug)	PDE - 319
	9	Door spring (L)	RBH1259		54	Connection cord	RDE1002
	10	Door spring (R)	RBH1260		55	Operating instructions	RRB1094
	11	Earth spring	RBL - 059		56	Protector	RED1020
	12	Stablizer (B)	REB1038		57	Jack nut	RBN - 006
	13	Door cushion	REB1167		58	Binder	REC - 371
	14	Spacer	REC1086				
	15	Cord clampler	RNH - 184				
	16	Panel stay	RNT1090		101	HPHN unit	
	17	Counter reset knob	RAA1009		102	PWSW unit	
	18	Power button	RAC1410		103	TIMS unit	
	19	Function knob	RAC1411		104	MAIN unit	
	20	Push knob	RAC1413		105	TRN 2 unit	
	21	Knob (B)	RAC1414		106	SUBB unit	
	22	Mode knob	RAC1552		107	Connector assembly (2P)	
	23	Slide SW knob	RAC1562		108	PCB spacer	
	24	FL filter	RAH1838		109	Rubber spacer (A)	
	25	Door	RAH1846		110	Mechanism sheet (2)	
	26	Side rubber	REB1094		111	Main chassis	
	27	Door sheet	REB1170		112	PS holder	
	28	VR knob assembly	RXA1281		113	FL shield plate	
	29	Stopper	VEC1061		114	Name plate	
	30	Insulator	VNK1095		115	Cassette plate	
	31	Door lens	RLP1026		116	Front panel	
	32	FL lens	RLP1027		117	Rear panel	
	33	Cassette plate assembly	RXX1115		118	Connection cord assembly	
	34	Bonnet	RXX1378		119	TRN 1 unit	
	35	Front panel assembly	RXX1388				
⊙	36	Mechanism unit	RYM1124				
	37	Screw	FBT40P080FZK				
	38	Screw	ABZ26P080FZK				
	39	Screw	BBT30P060FCC				
	40	Screw	BBT30P100FZK				
	41	Screw	BBZ30P100FZK				
	42	Screw	IBZ30P060FCC				
	43	Screw	IBZ30P100FCC				
	44	Screw	IBZ30P080FCC				
	45	Screw	BBZ30P100FCC				

Exterior

A

B

C

D

1

2

3

4

5

6

1

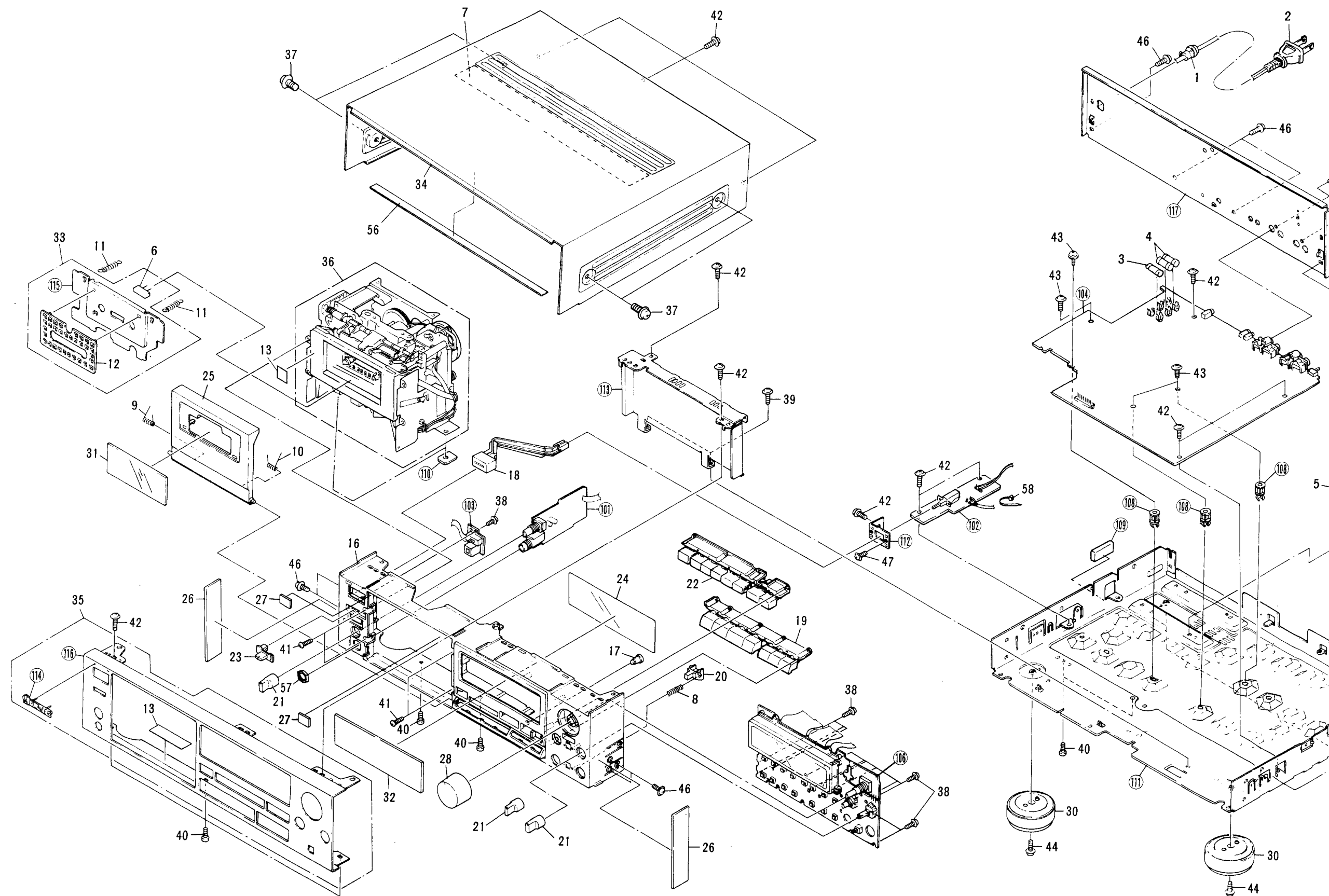
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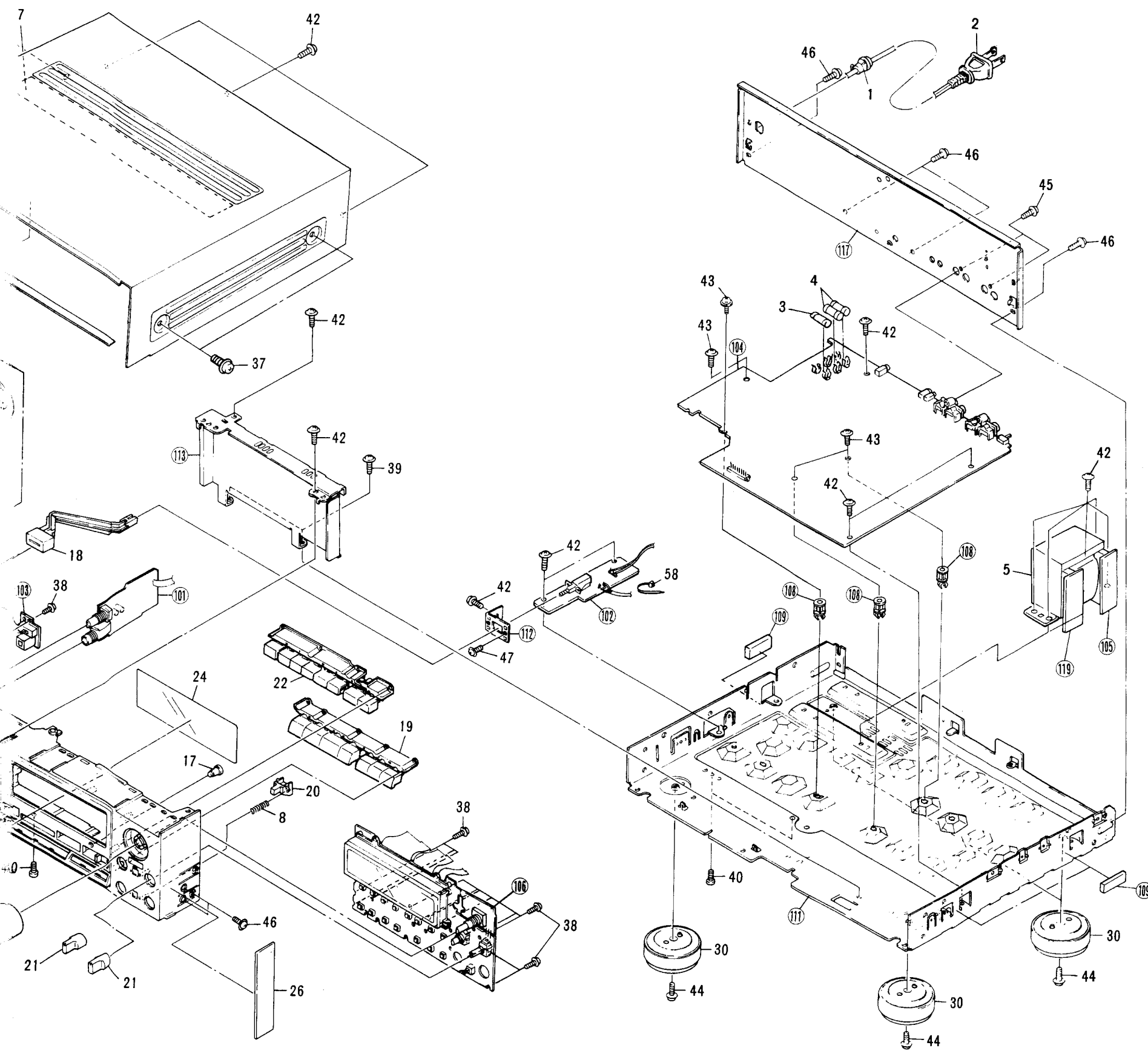
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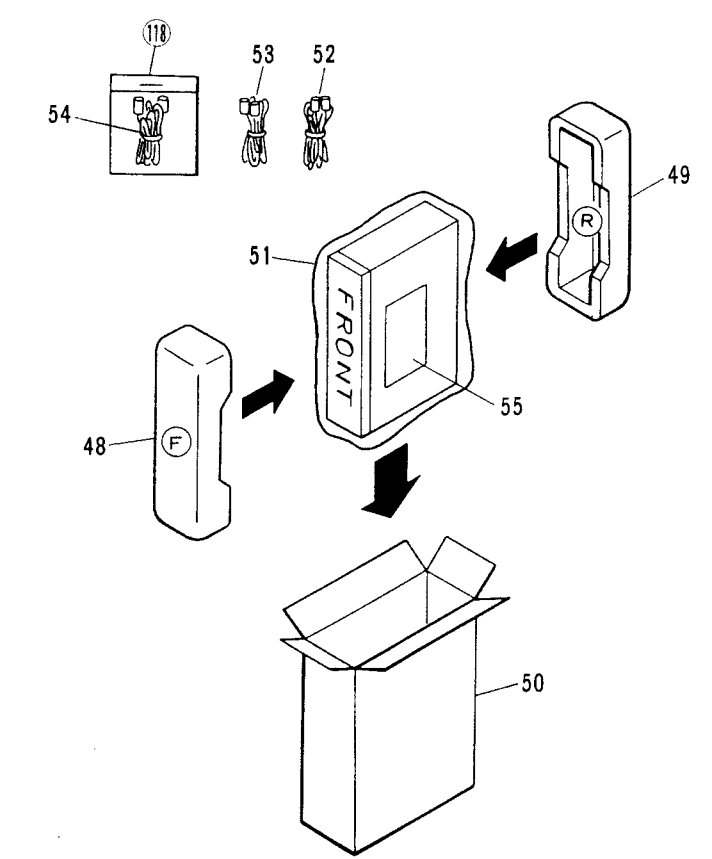
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Packing

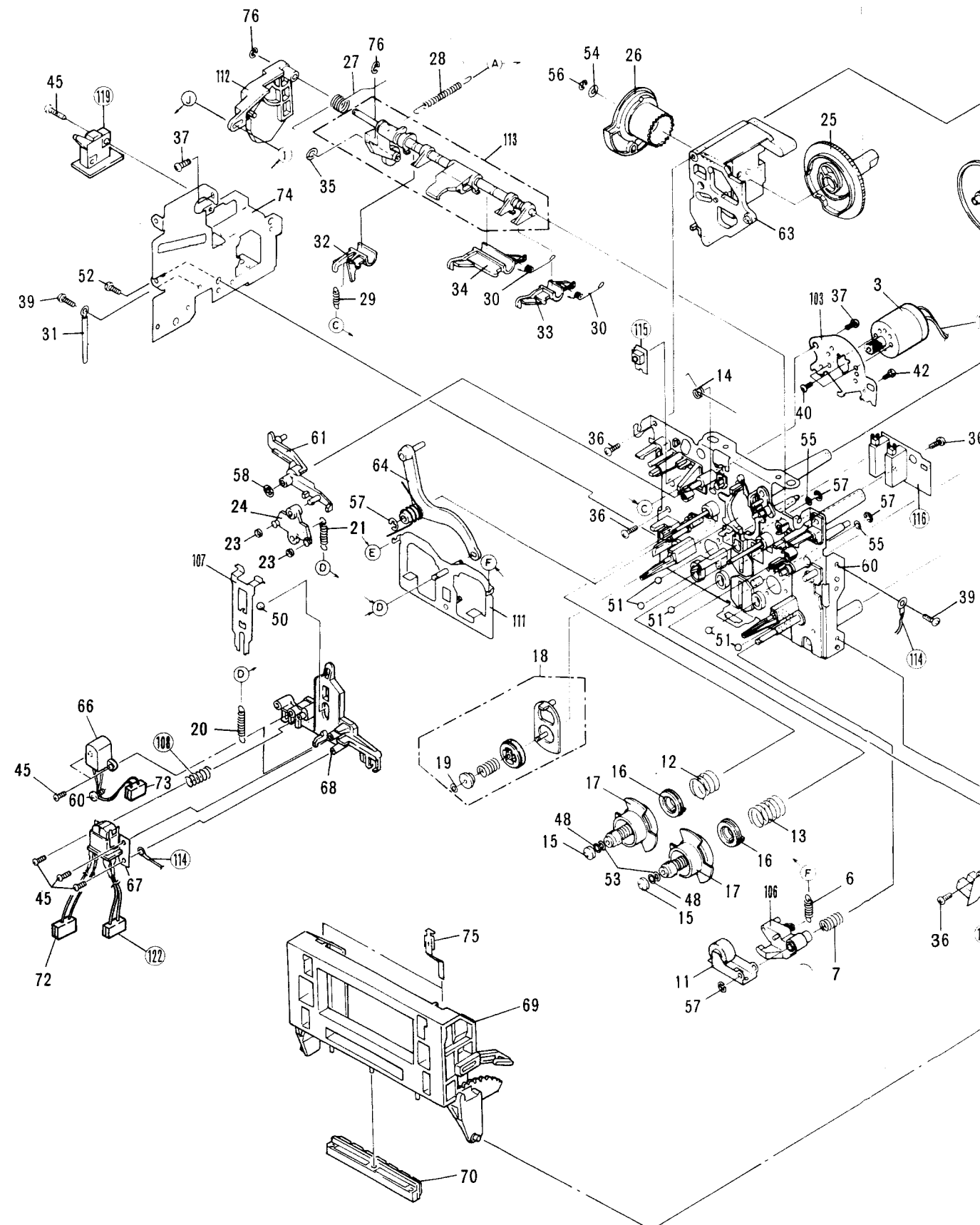


1.2 MECHANISM UNIT

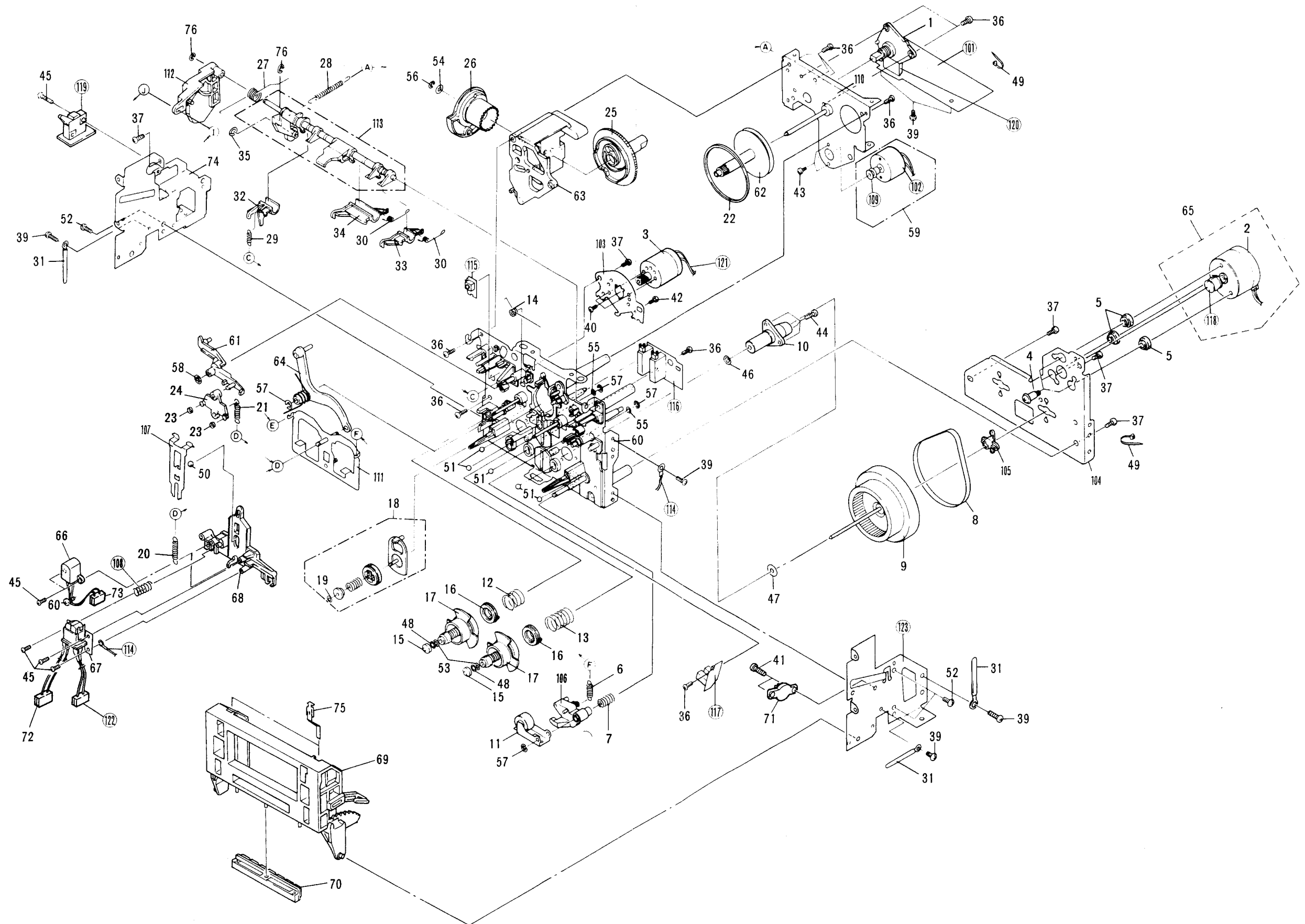
Parts List of Mechanism Unit

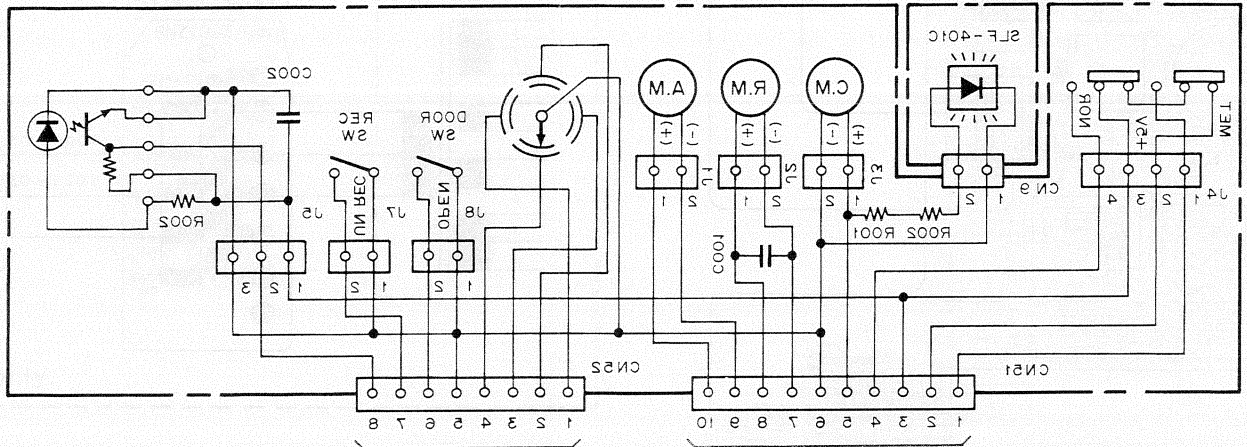
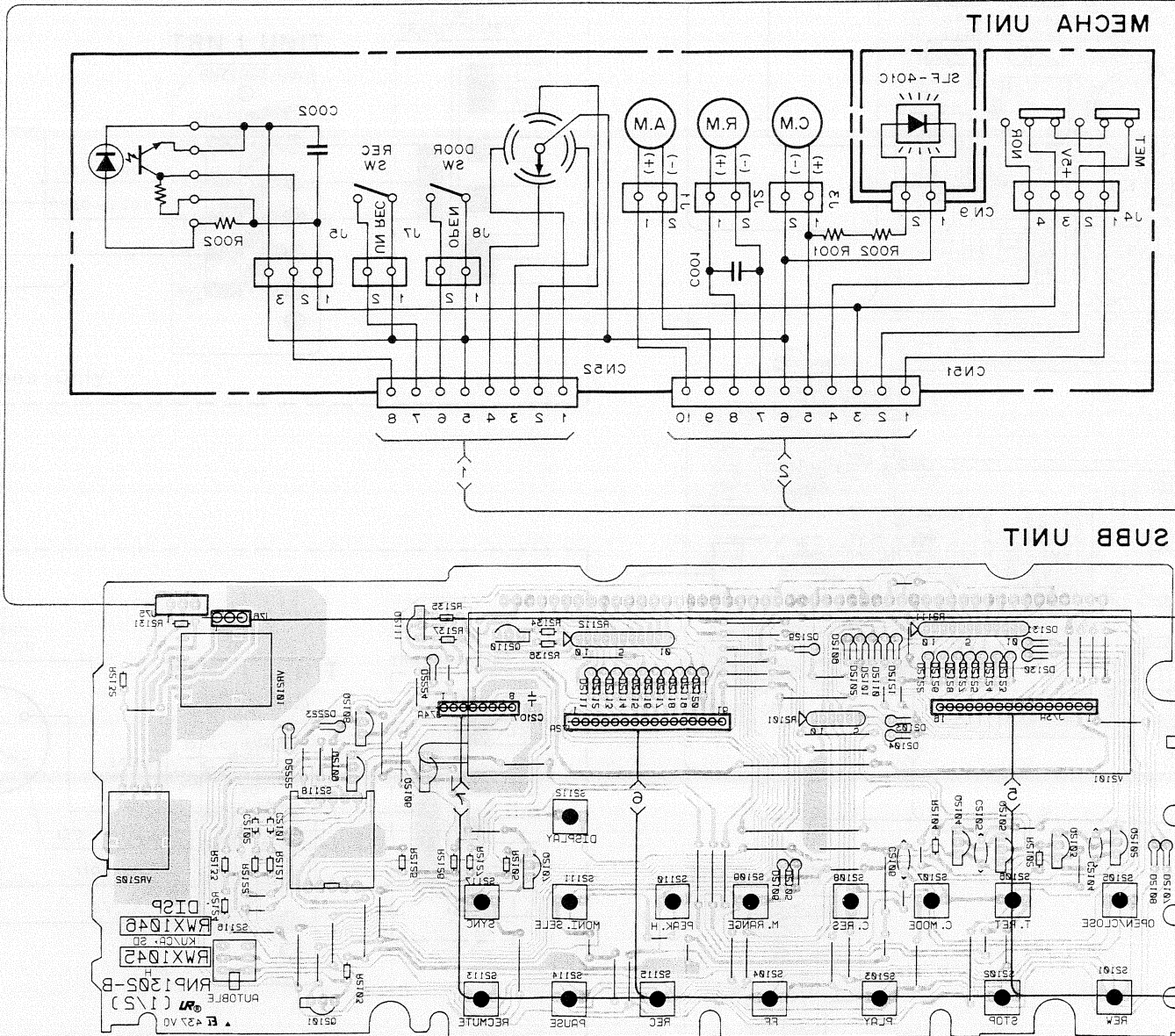
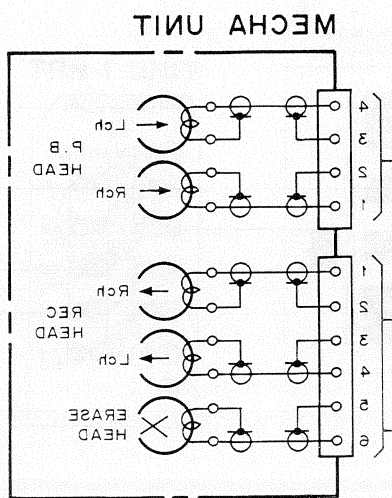
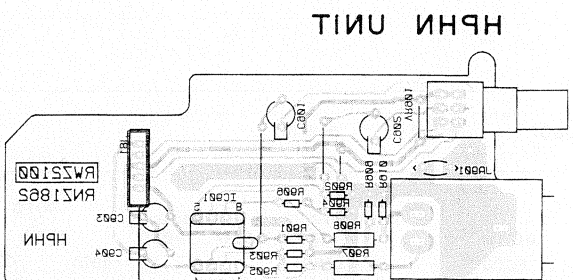
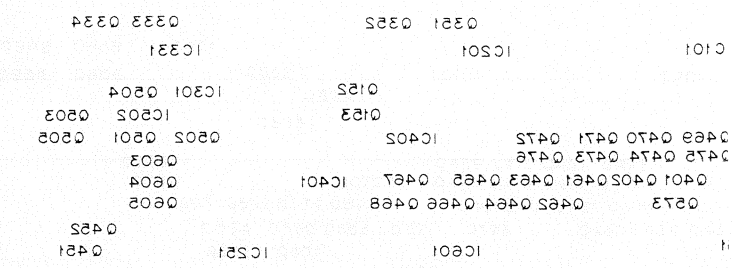
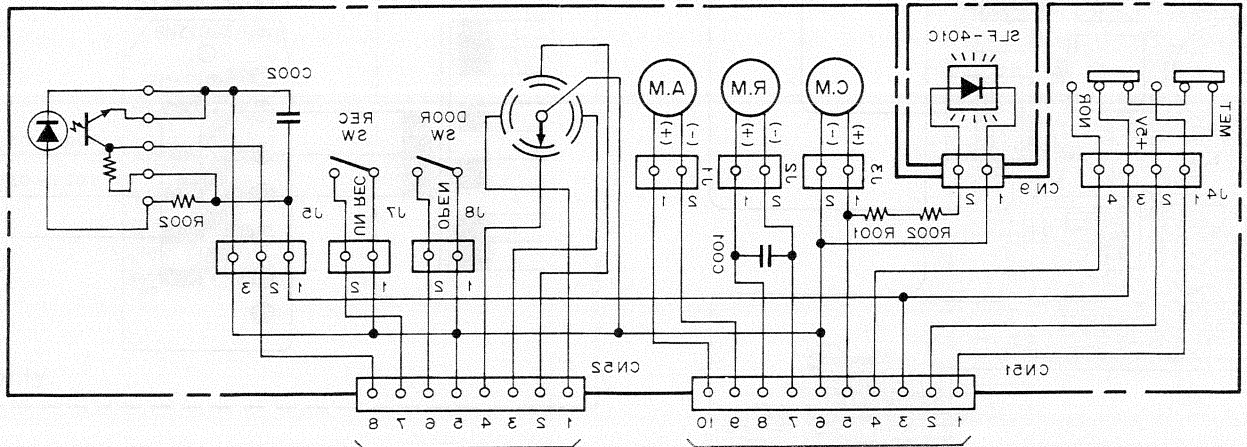
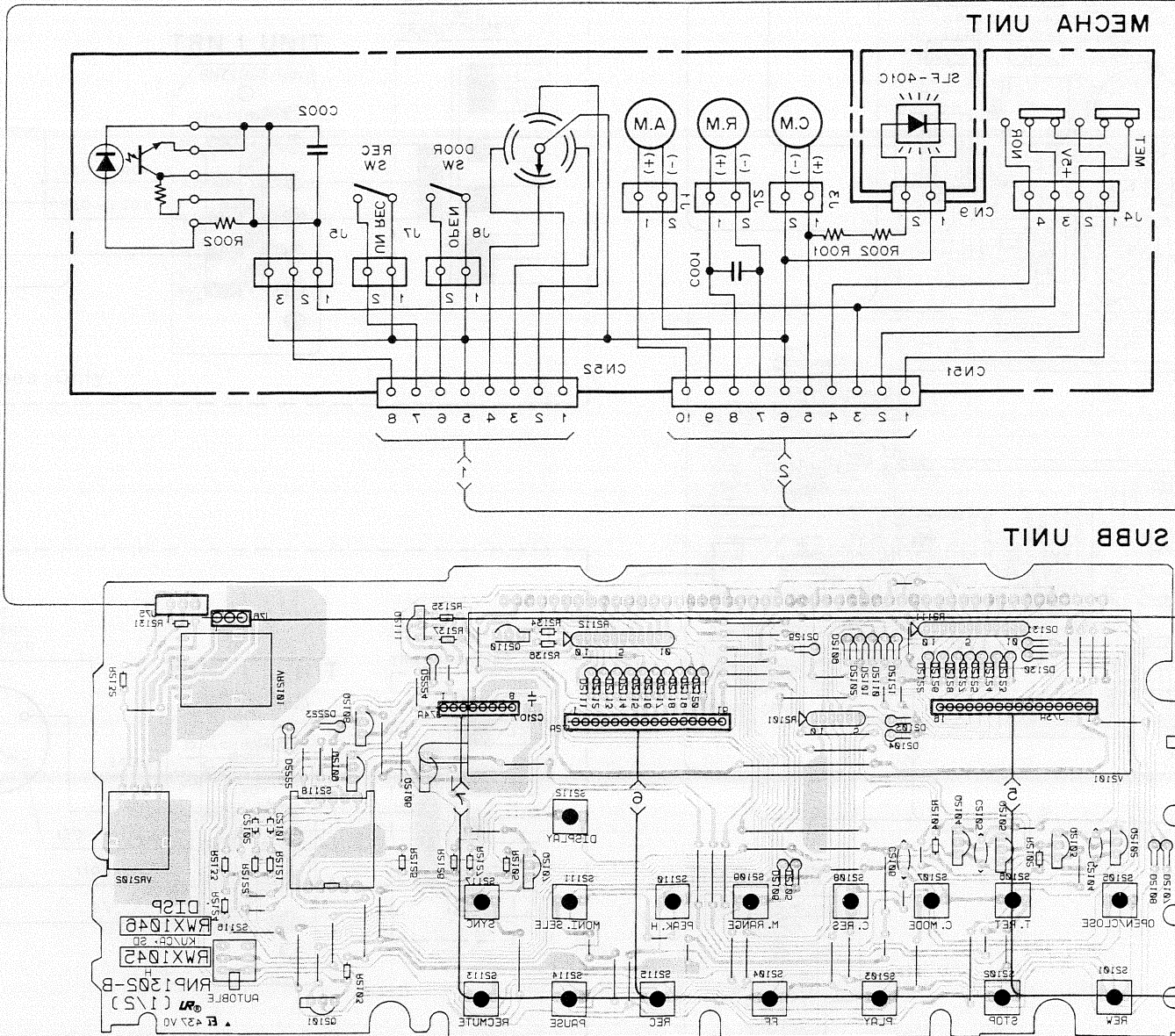
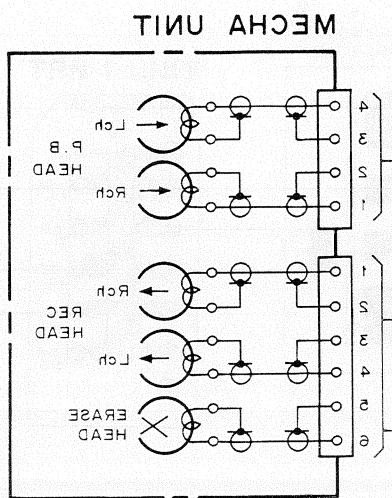
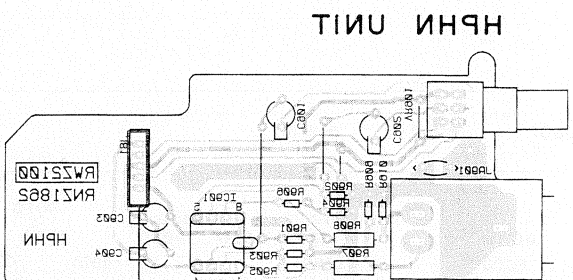
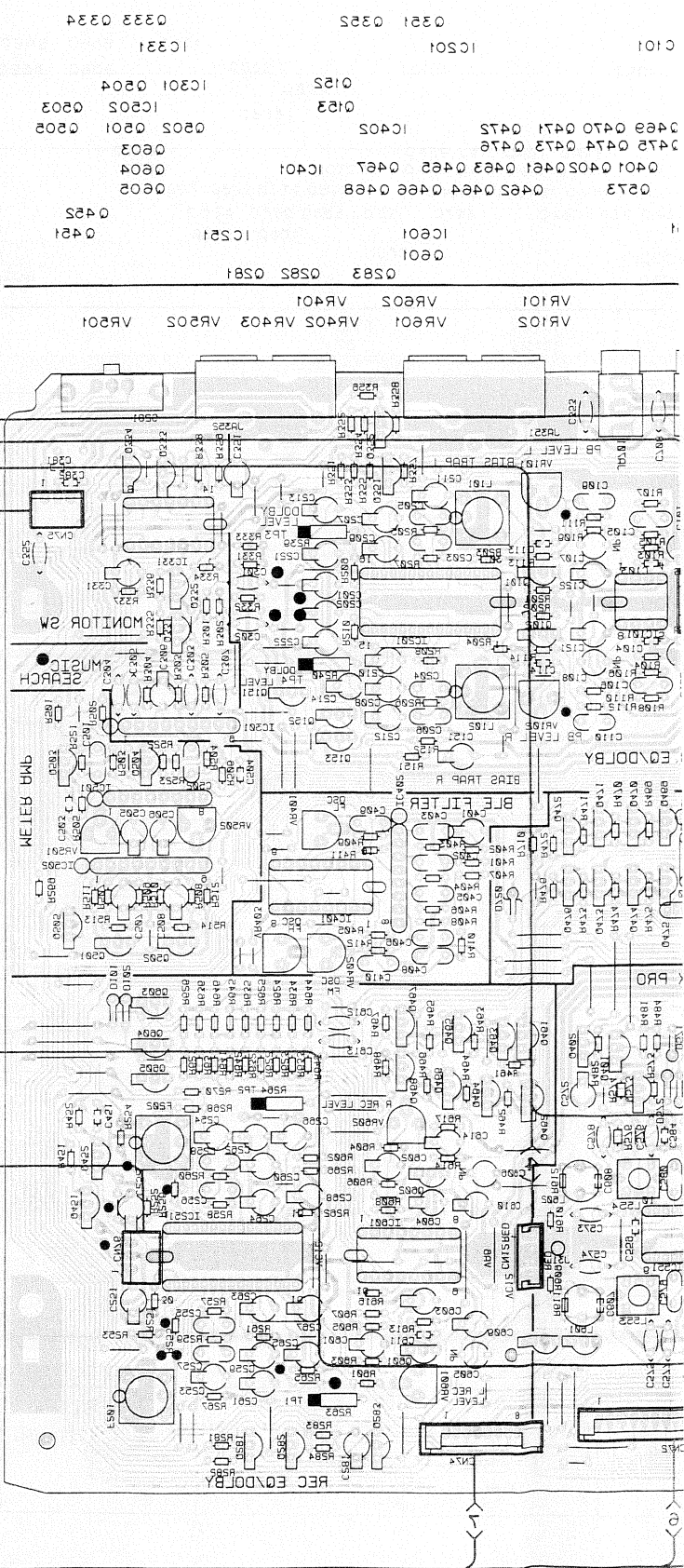
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Rotary encoder	RSX1004		51	Steel ball ($\phi 4$)	REF - 023
	2	Capstan motor	RXM1036		52	Screw	VCT30P060FZK
	3	Reel motor assembly	RXM1018		53	Washer	WA21D040D013
	4	Step screw	RBA - 064		54	Washer	WA26N070W040
	5	Rubber cushion	REB1125		55	Washer	WA32D080D050
	6	Pinch spring	RBL - 028		56	E ring	YE20FUC
	7	Pinch thrust spring	RBL - 030		57	E ring	YE25FUC
	8	Capstan belt	REB1143		58	Washer	YS24FBT
	9	Flywheel assembly	RXA1374		59	Power motor assembly	RXX1055
	10	Metal holder assembly(A)	RXA1342		60	Mechanism chassis assembly	RXA1422
	11	Pinch roller arm (R) assembly	RXB - 876		61	Brake lever	RNK1638
	12	BT spring (A)	RBL - 031		62	Second pulley assembly	RXA1350
	13	BT spring (B)	RBL - 032		63	Gear base assembly	RXA1351
	14	Idler pressure spring	RBL - 033		64	Pinch lever assembly	RXA1360
	15	Reel shaft cap (B)	RNK - 815		65	Capstan motor assembly	RXX1334
	16	BT disc assembly	RXB - 751		66	E head	RPB1002
	17	Reel base assembly	RXB - 874		67	R/P head	RPB1044
	18	Take-up idler assembly	RXB - 875		68	Head base	RNK1727
	19	Washer	RBF - 065		69	Door pocket	RNT1101
	20	Head base spring	RBL - 037		70	Stabilizer	REB1161
	21	Brake spring	RBL - 038		71	Damper assembly	REC1005
	22	Drive belt	REB1169		72	Connector assembly (4P)	RKP1383
	23	Brake shoe	REB - 511		73	Connector assembly (2P)	RKP1384
	24	Brake	RNL - 723		74	Door frame (L)	RNE1442
	25	Cam gear	RNK1640		75	Half pressure spring	RBK1004
	26	Side cam gear assembly	RXA1349		76	E ring	YE30FUC
	27	Eject spring	RBL - 039		77	Pinch return spring	RBH1299
	28	Half pressure spring	RBL - 040		101	Connector unit	
	29	REC arm spring	RBL - 041		102	Power motor	
	30	Detect arm spring	RBL - 042		103	Reel motor mounting plate	RNE1169
	31	Cord clasper	RNH - 184		104	Flywheel holder	RNH - 304
	32	REC detect arm	RNL - 733		105	Thrust holder	RNL - 743
	33	CrO ₂ detect arm	RNL - 734		106	Pressure arm (R)	RNL - 725
	34	Metal detect arm	RNL - 735		107	Head base pressure spring	RBL - 026
	35	Washer	RBF - 057		108	Head adjust spring (C)	
	36	Screw	BBZ26P080FZK		109	First pulley	
	37	Screw	BBZ30P080FZK		110	Gear chassis assembly	RXA1171
	38	Screw	PMB20P060FMC		111	Pinch base assembly	RXB - 878
	39	Screw	BCZ30P060FMC		112	Eject lever	RNL - 738
	40	Screw	BMZ26P030FZK		113	Shift shaft assembly	RXB - 885
	41	Screw	PBZ20P060FMC		114	Earth lead assembly	
	42	Screw	BMZ30P080FZK		115	REC switch unit	
	43	Screw	JGZ20P025FMC		116	Tape selector unit	
	44	Screw	PMA26P050FZK		117	Sensor unit (A)	
	45	Screw	PMZ20P080FZK		118	Motor pulley	
	46	Washer	RBF - 030		119	Door switch unit	
	47	Thrust washer (A)	RBF - 069		120	2.5mm pitch side post (5P)	
	48	Washer	RBF - 076		121	Vinyl wire (2P)	
	49	Binder	REC - 371		122	Connector assembly (4P)	
	50	Steel ball ($\phi 3$)	REF - 022		123	Door frame (R)	

Parts List of Mechanism Unit



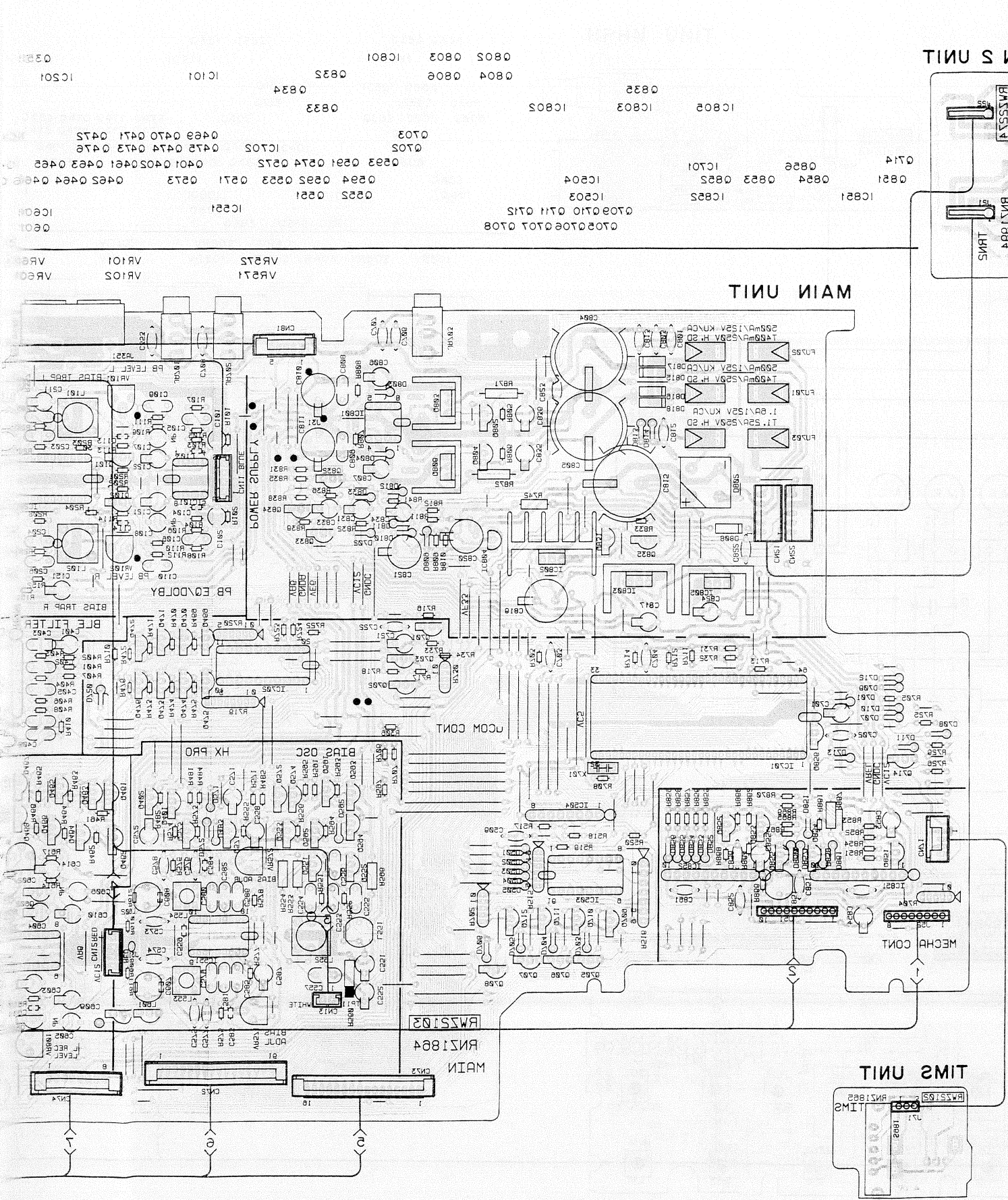
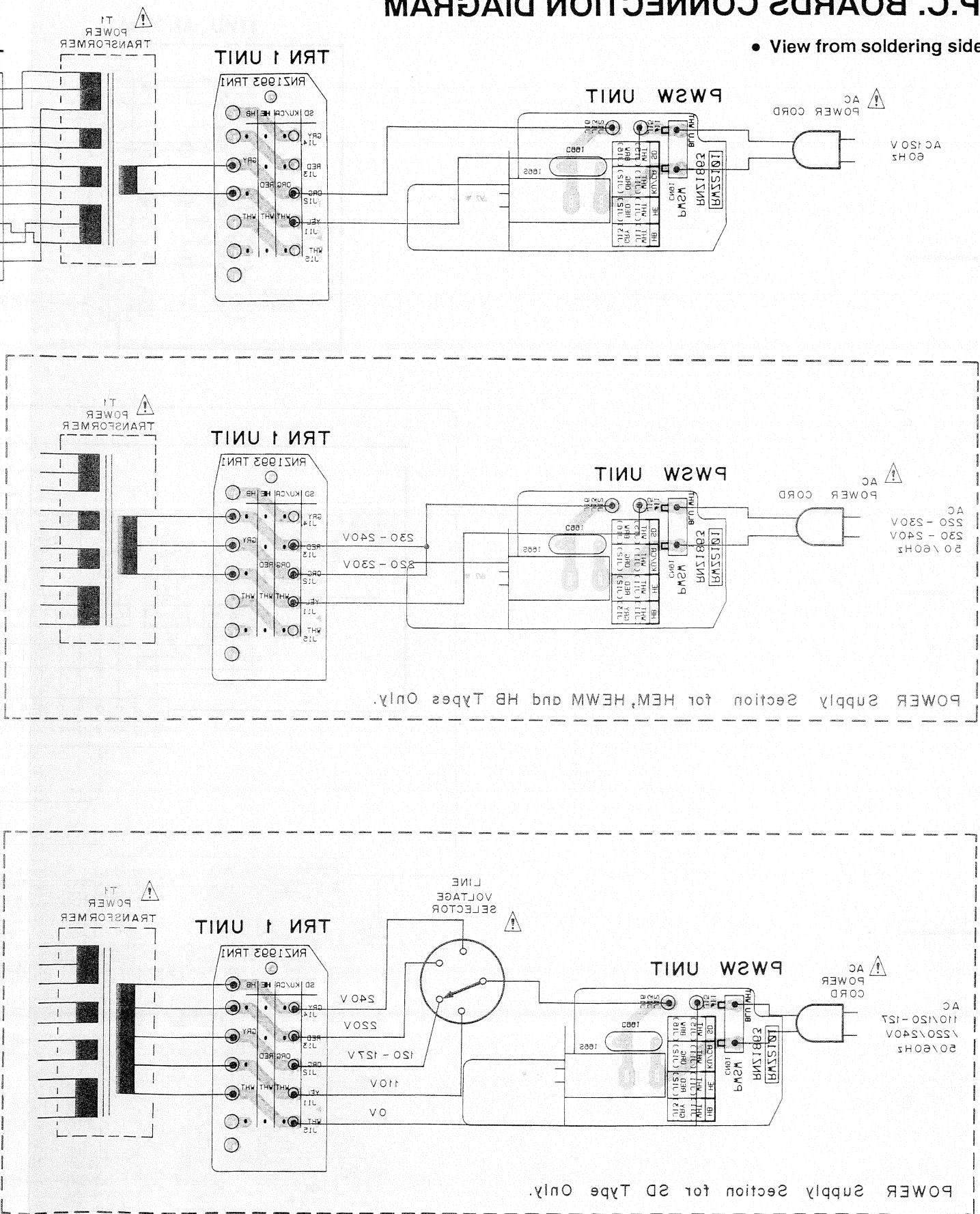
Parts List of Mechanism Unit





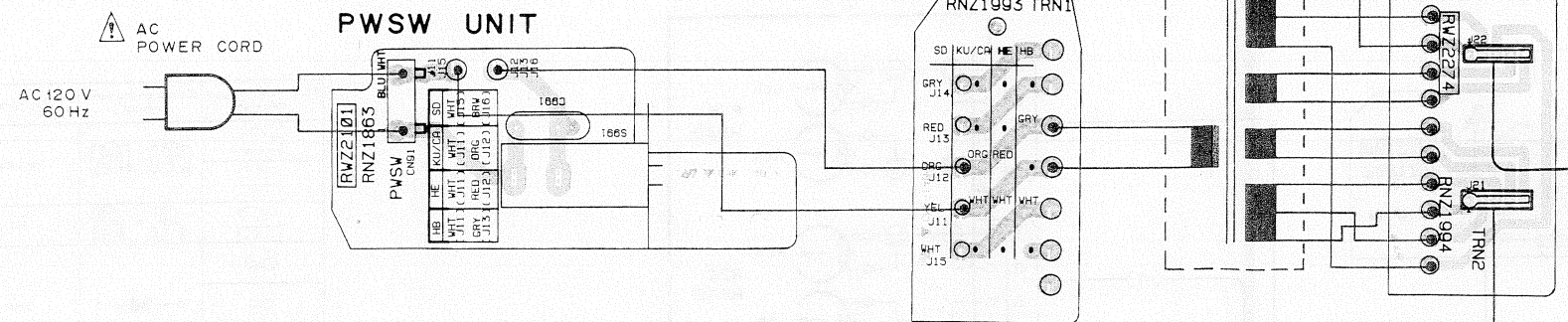
4. P.C. BOARDS CONNECTION DIAGRAM

• View from soldering side

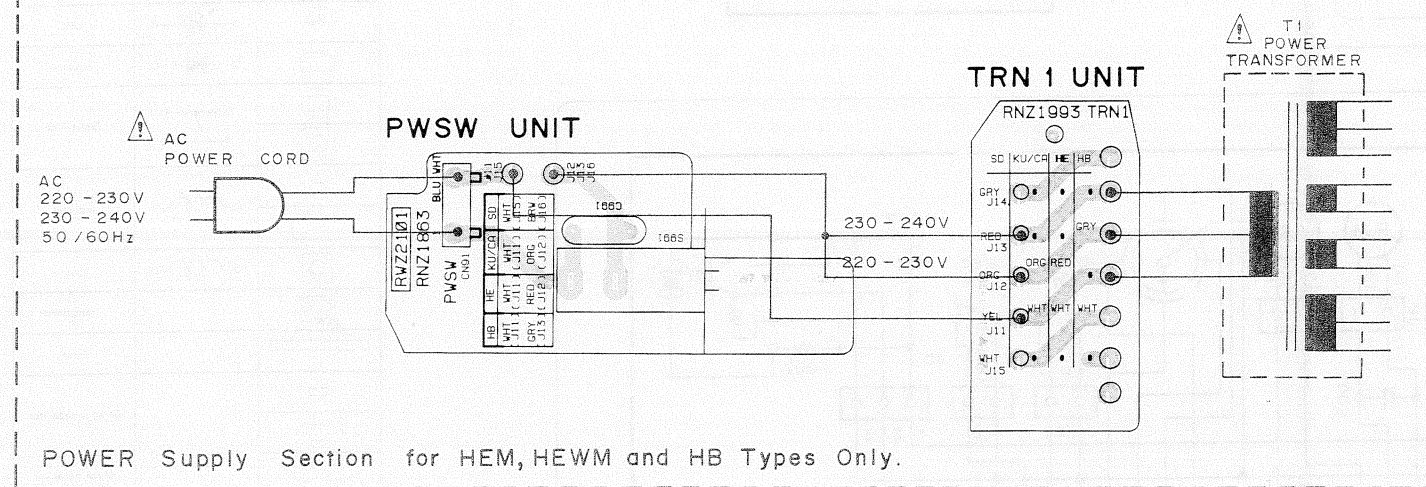


4. P.C. BOARDS CONNECTION DIAGRAM

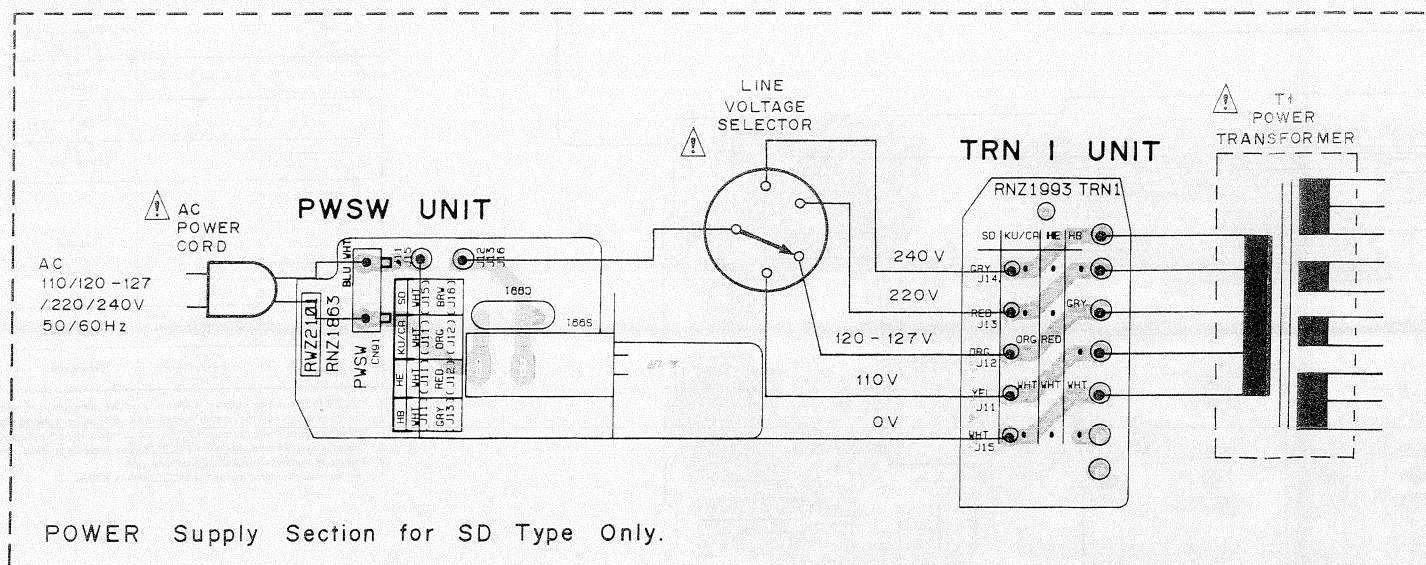
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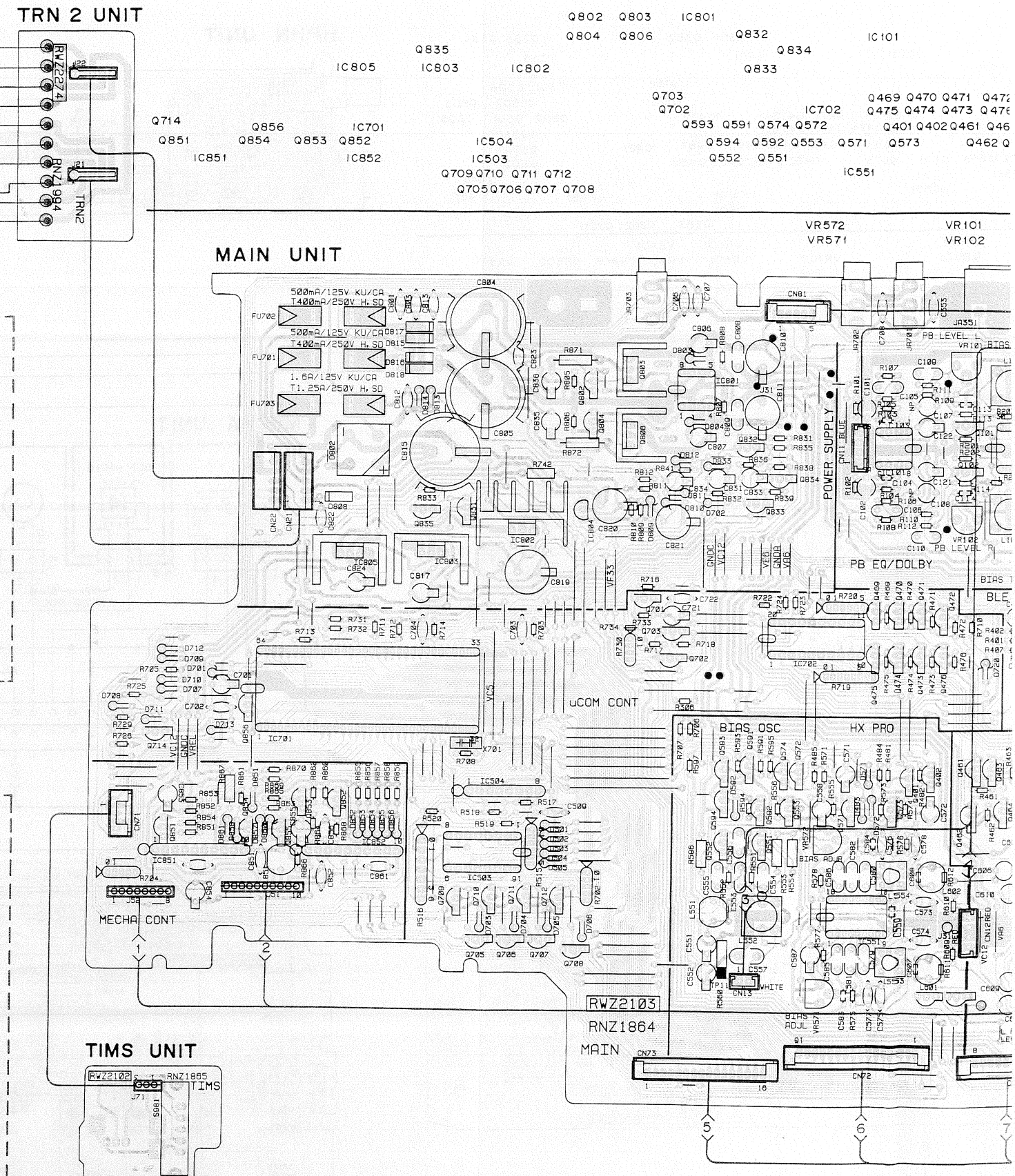
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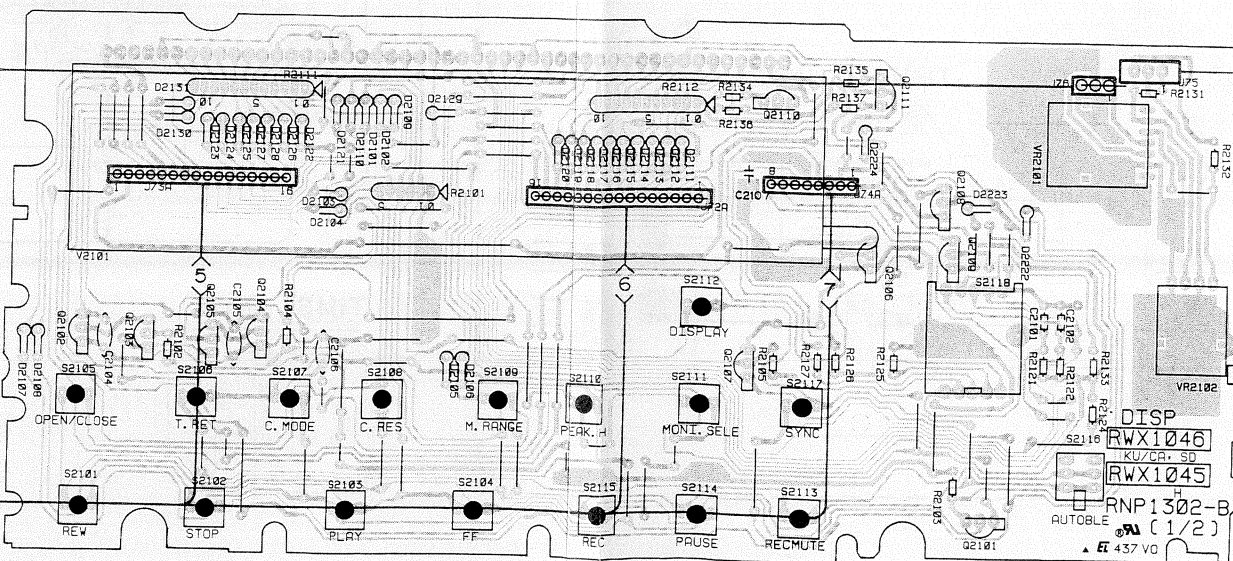


C



D





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

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.

5. SCHEMATIC DIAGRAM

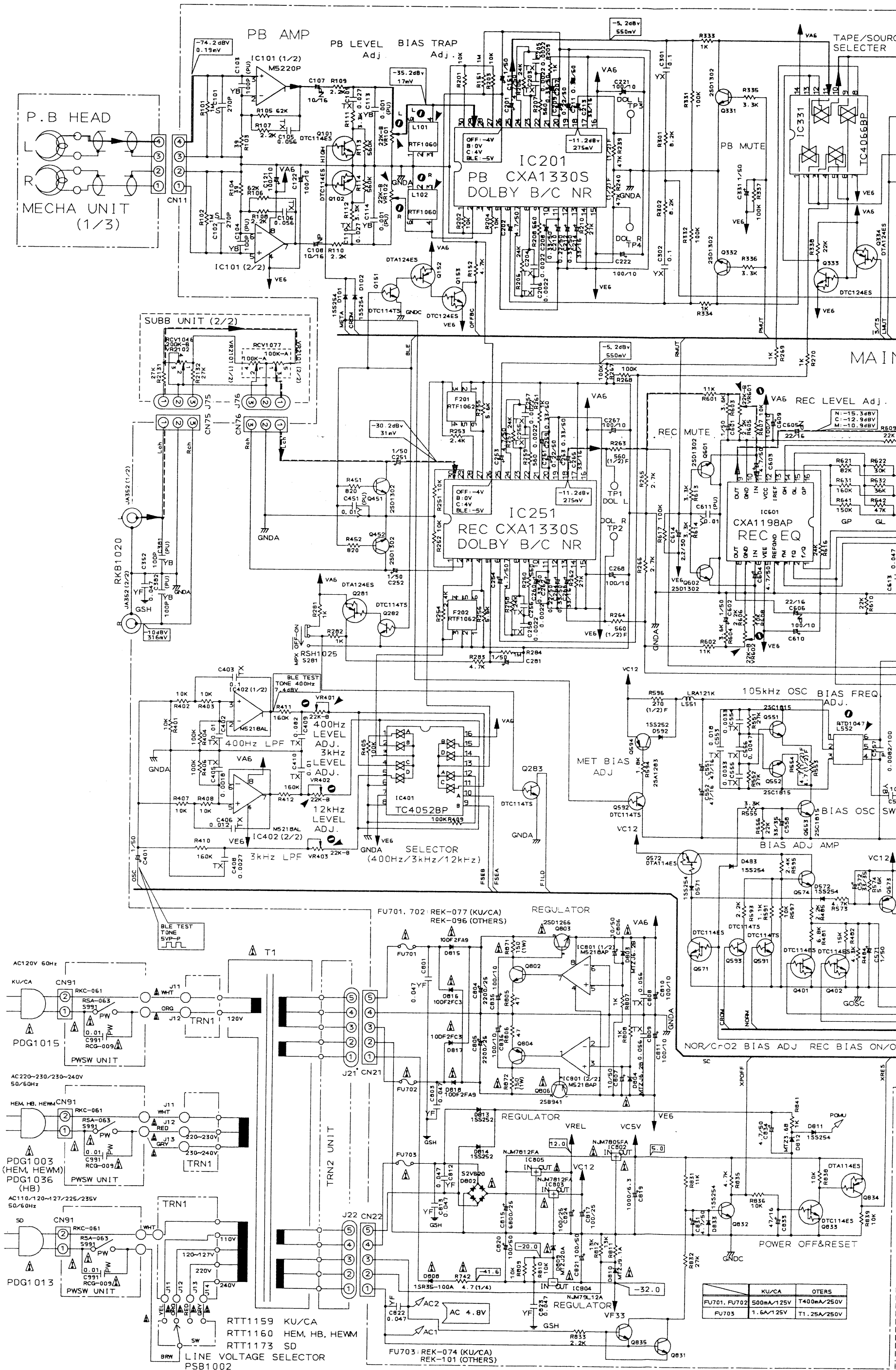
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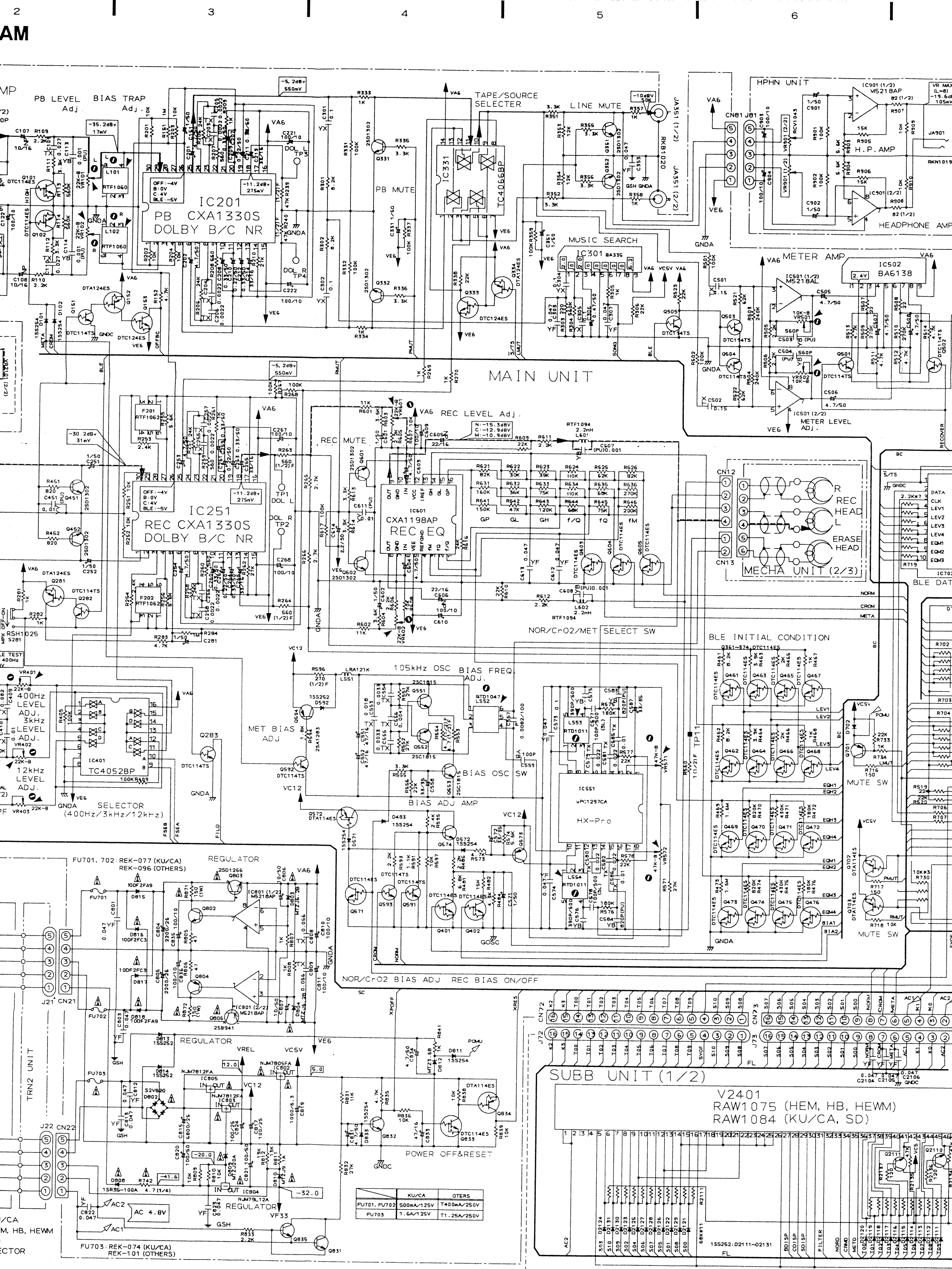
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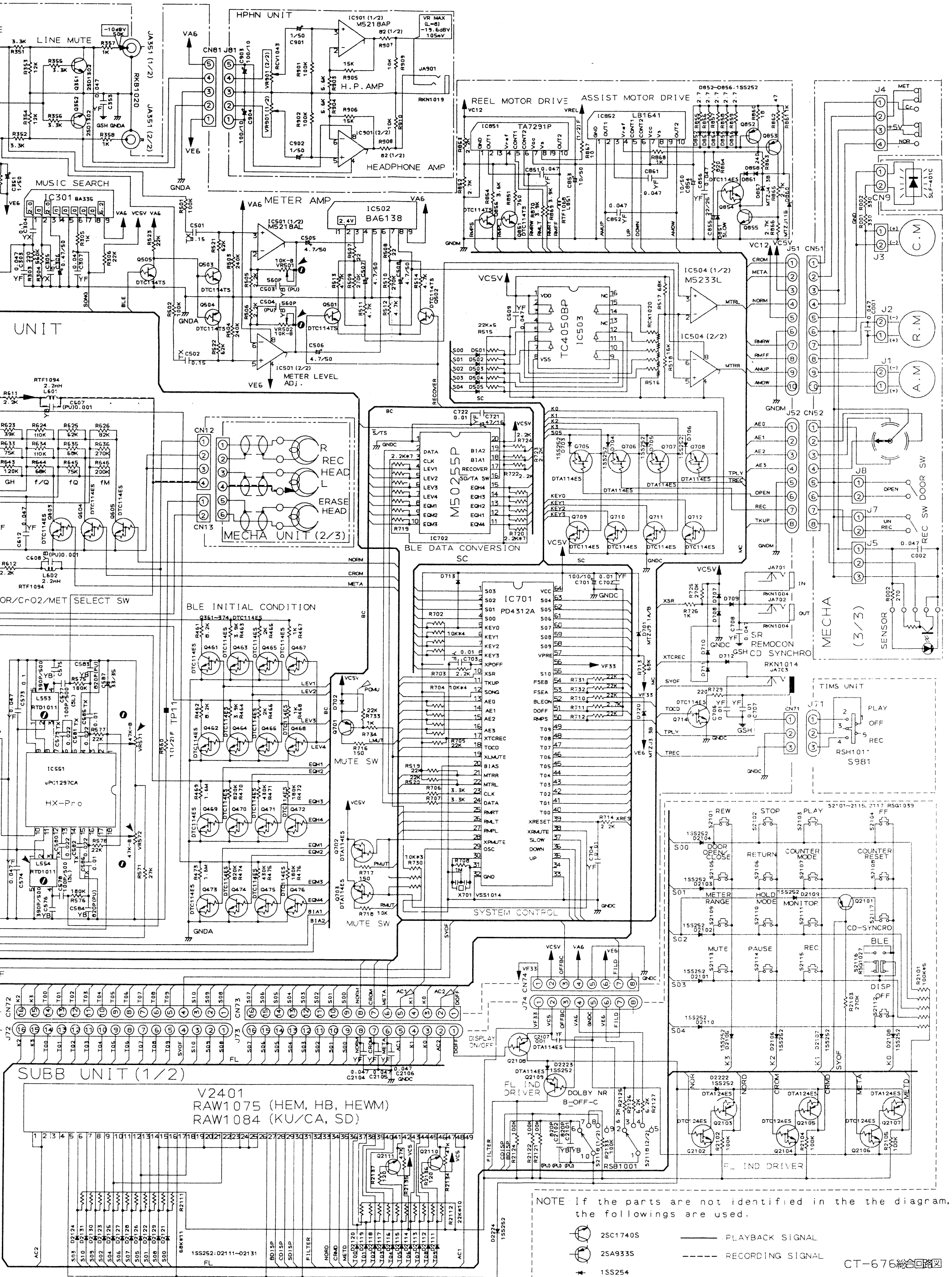
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E

F







CT-S709

6. 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 → 56 × 10¹ → 561 RD1/4PS 561J
47k Ω → 47 × 10³ → 473 RD1/4PS 473J
0.5 Ω → 0R5 RN2H 0R5K
1 Ω → 010 RS1P 010K
Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
5.62k Ω → 562 × 10¹ → 5621 RN1/4SR 5621F

Mark	No.	Description	Part No.
SUBB UNIT			
SEMICONDUCTORS			
	Q2101 TRANSISTOR	2SA933S	
	Q2102 TRANSISTOR	DTC124ES	
	Q2103 TRANSISTOR	DTA124ES	
	Q2104 TRANSISTOR	DTC124ES	
	Q2105 TRANSISTOR	DTA124ES	
	Q2106 TRANSISTOR	DTC124ES	
	Q2107 TRANSISTOR	DTA124ES	
	Q2108, 2109 DIGITAL TRANSISTOR	DTA114ES	
	Q2110, 2111 TRANSISTOR	2SC1740S	
	D2101-2131 DIODE	1SS252	
	D2222-2224 DIODE	1SS252	
SWITCHES			
	S2101-2115	RSG1039	
	S2116 SWITCH	RSG1027	
	S2117	RSG1039	
	S2118	RSB1001	
CAPACITORS			
	C2101, 2102 AXIAL CAPACITOR	CKPUYB821K50	
	C2104-2106 CERAMIC CAPACITOR	CKCYF473Z50	
	C2107 CERAMIC CAPACITOR	CKCYF103Z50	
RESISTORS			
	R2101 RESISTOR ARRAY 100K	RA5T□□□J	
	R2102-2105 CARBONFILM RESISTOR	RD1/6PM□□□J	
	R2111 RESISTOR ARRAY (68K)	RA11T□□□J	
	R2112 RESISTOR ARRAY(100K)	RA10T□□□J	
	R2121, 2122 CARBONFILM RESISTOR	RD1/6PM□□□J	
	R2124-2127 CARBONFILM RESISTOR	RD1/6PM□□□J	
	R2131-2137 CARBONFILM RESISTOR	RD1/6PM□□□J	
	VR2101 VARIABLE RESISTOR(100K)	RCV1077	
	VR2102 VARIABLE RESISTOR(200K)	RCV1046	
OTHERS			
	V2101	RAW1084	

Mark	No.	Description	Part No.
REC SW UNIT			
SWITCHES			
	S3 SWITCH	RSG-143	
TAPE SELECTOR UNIT			
SWITCHES			
	S1, 2	RSH-070	
SENSOR UNIT (A)			
SEMICONDUCTORS			
	D1	GPIA51HR	
CAPACITORS			
	C2 CERAMIC CAPACITOR	CKPUY103N16	
RESISTORS			
	R2 CARBONFILM RESISTOR	RD1/6PM□□□J	
DOOR SW UNIT			
SWITCHES			
	S4	RSK1002	
HPHN UNIT			
SEMICONDUCTORS			
	IC901 OP-AMP, IC	M5218AP	
CAPACITORS			
	C901, 902 ELECTR. CAPACITOR	CEAS010M50	
	C903, 904 ELECTR. CAPACITOR	CEAS101M10	
RESISTORS			
	R901-906 CARBONFILM RESISTOR	RD1/6PM□□□J	
	R907, 908 CARBONFILM RESISTOR	RD1/2LF□□□J	
	R909, 910 CARBONFILM RESISTOR	RD1/6PM□□□J	
	VR901 VARIABLE RESISTOR(20K)	RCV1043	
OTHERS			
	JA901 JACK	RKN1019	

Mark	No.	Description	Part No.
PWSW UNIT			
SWITCHES			
Δ	S991 SWITCH		RSA-063
CAPACITORS			
Δ	C991 CAPACITOR (0.01)		RCG-009
TIMS UNIT			
SWITCHES			
	S981		RSH1011
MAIN UNIT			
SEMICONDUCTORS			
	IC101 OP-AMP-IC		M5220P
	IC201 DOLBY B/C IC		CXA1330S
	IC251 DOLBY B/C IC		CXA1330S
	IC301 IC		BA335
	IC331 LOGIC IC		TC4066BP
	IC401 LOGIC IC		TC4052BP
	IC402 OP-AMP, IC		M5218AL
	IC501 OP-AMP, IC		M5218AL
	IC502		BA6138
	IC503 CMOS LOGIC IC		TC4050BP
	IC504 DUAL-COMPARATOR IC		M5233L
	IC551 DOLBY HX PRO IC		UPC1297CA
	IC601 REC EQUALIZER IC		CXA1198AP
	IC701 MCU		PD4312A
	IC702 OUTPUT EXPANDER IC		M50255P
Δ	IC801 OP-AMP, IC		M5218AP
Δ	IC802 REGULATOR IC		NJM7805FA
Δ	IC803 REGULATOR IC		NJM7812FA
Δ	IC804 REGULATOR IC		NJM79L12A
Δ	IC805 REGULATOR IC		NJM7812FA
	IC851 LINEAR IC		TA7291P
	IC852		LB1641
	Q101, 102 TRANSISTOR		DTC114ES
	Q151 DIGITAL TRANSISTOR		DTC114TS
	Q152 TRANSISTOR		DTA124ES
	Q153 TRANSISTOR		DTC124ES
	Q281 TRANSISTOR		DTA124ES
	Q282, 283 DIGITAL TRANSISTOR		DTC114TS
	Q331, 332 TRANSISTOR		2SD1302
	Q333 TRANSISTOR		DTC124ES
	Q334 TRANSISTOR		DTA124ES
	Q351, 352 TRANSISTOR		2SD1302
	Q401, 402 TRANSISTOR		DTC114ES
	Q451, 452 TRANSISTOR		2SD1302
	Q461-476 TRANSISTOR		DTC114ES
	Q501-505 DIGITAL TRANSISTOR		DTC114TS
	Q551-553 TRANSISTOR		2SC1815
	Q571 TRANSISTOR		DTC114ES
	Q572 DIGITAL TRANSISTOR		DTA114ES
	Q573 TRANSISTOR		2SA933S
	Q574 TRANSISTOR		2SC1740S

5. SWITCHES (Underline indicates switch position)

TIMS UNIT
S981 : PLAY - OFF - REC

PWSW UNIT
S991 : ON - OFF

SUBB UNIT

S2101 : REW

S2102 : STOP

S2103 : PLAY

S2104 : FF

S2105 : DOOR OPEN/CLOSE

S2106 : RETURN

S2107 : COUNTER MODE

S2108 : COUNTER RESET

S2109 : METER RANGE

S2110 : HOLD MODE

S2111 : DISP OFF

S2112 : MONITOR

S2113 : MUTE

S2114 : PAUSE

S2115 : REC

S2116 : BLE

S2117 : CD - SYNCRO

S2118 : DOLBY

B - OFF - C

➡ : Signal route.
 ⊗ : 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.
 ※ marked capacitors and resistors have parts numbers.

1. RESISTORS : Indicated in Ω , 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.

2. CAPACITORS : Indicated in capacity (μ F) / voltage (V) unless otherwise noted p, pF.
Indication without voltage is 50V except electrolytic capacitor.

24

Mark	No.	Description	Part No.
RESISTORS			
	R101-114	CARBONFILM RESISTOR	RD1/6PM□□□J
	R151, 152	CARBONFILM RESISTOR	RD1/6PM□□□J
	R201-210	CARBONFILM RESISTOR	RD1/6PM□□□J
	R239, 240	CARBONFILM RESISTOR	RD1/2LF□□□J
	R251-262	CARBONFILM RESISTOR	RD1/6PM□□□J
	R263, 264	CARBONFILM RESISTOR	RD1/2LF□□□J
	R265-270	CARBONFILM RESISTOR	RD1/6PM□□□J
	R281-284	CARBONFILM RESISTOR	RD1/6PM□□□J
	R301-306	CARBONFILM RESISTOR	RD1/6PM□□□J
	R331-338	CARBONFILM RESISTOR	RD1/6PM□□□J
	R351-359	CARBONFILM RESISTOR	RD1/6PM□□□J
	R401-412	CARBONFILM RESISTOR	RD1/6PM□□□J
	R451, 452	CARBONFILM RESISTOR	RD1/6PM□□□J
	R461-476	CARBONFILM RESISTOR	RD1/6PM□□□J
	R481, 482	CARBONFILM RESISTOR	RD1/6PM□□□J
	R484, 485	CARBONFILM RESISTOR	RD1/6PM□□□J
	R501-514	CARBONFILM RESISTOR	RD1/6PM□□□J
	R515	RESISTOR ARRAY (22K)	RA5T□□□J
	R516	LADDER RESISTOR(11K)	RCX1020
	R517-523	CARBONFILM RESISTOR	RD1/6PM□□□J
	R551, 552	CARBONFILM RESISTOR	RD1/6PM□□□J
	R553, 554	CARBONFILM RESISTOR	RD1/2LF□□□J
	R555, 556	CARBONFILM RESISTOR	RD1/6PM□□□J
	R560	CARBONFILM RESISTOR	RD1/2LF□□□J
	R571	CARBONFILM RESISTOR	RD1/6PM□□□J
	R573-578	CARBONFILM RESISTOR	RD1/6PM□□□J
	R591	CARBONFILM RESISTOR	RD1/6PM□□□J
	R593-595	CARBONFILM RESISTOR	RD1/6PM□□□J
	R596	CARBONFILM RESISTOR	RD1/2LF□□□J
	R597	CARBONFILM RESISTOR	RD1/6PM□□□J
	R601-614	CARBONFILM RESISTOR	RD1/6PM□□□J
	R616, 617	CARBONFILM RESISTOR	RD1/6PM□□□J
	R621-626	CARBONFILM RESISTOR	RD1/6PM□□□J
	R631-636	CARBONFILM RESISTOR	RD1/6PM□□□J
	R641-646	CARBONFILM RESISTOR	RD1/6PM□□□J
	R702	RESISTOR ARRAY (10K)	RA4T□□□J
	R703	CARBONFILM RESISTOR	RD1/6PM□□□J
	R704	RESISTOR ARRAY (10K)	RA4T□□□J
	R705-708	CARBONFILM RESISTOR	RD1/6PM□□□J
	R710-714	CARBONFILM RESISTOR	RD1/6PM□□□J
	R716-718	CARBONFILM RESISTOR	RD1/6PM□□□J
	R719	RESISTOR ARRAY (2. 2K)	RA7T□□□J
	R720	RESISTOR ARRAY (2. 2K)	RA5T□□□J
	R722-726	CARBONFILM RESISTOR	RD1/6PM□□□J
	R729	CARBONFILM RESISTOR	RD1/6PM□□□J
	R730	RESISTOR ARRAY 10K	RA3T□□□J
	R731-734	CARBONFILM RESISTOR	RD1/6PM□□□J
△	R742	FUSIBLE RESISTOR	RFA1/4L□□□J
	R805-812	CARBONFILM RESISTOR	RD1/6PM□□□J
	R831-833	CARBONFILM RESISTOR	RD1/6PM□□□J
	R835, 836	CARBONFILM RESISTOR	RD1/6PM□□□J
	R838, 839	CARBONFILM RESISTOR	RD1/6PM□□□J
	R841	CARBONFILM RESISTOR	RD1/6PM□□□J
	R851-866	CARBONFILM RESISTOR	RD1/6PM□□□J

Mark	No.	Description	Part No.
	R867	CARBONFILM RESISTOR	RD1/2LF□□□J
	R868-870	CARBONFILM RESISTOR	RD1/6PM□□□J
△	R871, 872	METAL OXIDE RESISTOR	RS1LMF□□□J
	VR101, 102	VR(22K)	RCP1046
	VR401-403	VR(22K)	RCP1046
	VR501, 502	VR(10K)	RCP1045
	VR571, 572	VR(47K)	RCP1047
	VR601, 602	VR(22K)	RCP1046
OTHERS			
	JA351, 352	JACK	RKB1020
	JA701, 702	JACK	RKN1004
	JA703	JACK	RKN1014
	X701	CERAMIC RESONATOR	VSS1014

CONNECTOR UNIT

CAPACITORS

C1 CERAMIC CAPACITOR CKCYF473Z50

RESISTORS

R4, 5 CARBONFILM RESISTOR RD1/6PM□□□J

TRN 1 UNIT

There is no supply part in this unit.

TRN 2 UNIT

There is no supply part in this unit.

7. ADJUSTMENTS

7.1 MECHANISM RELATED ADJUSTMENT

1. Tape Speed Adjustment		
Mode	Adjustment Location	Specifications
PLAY	Capstan motor adjustment hole (Refer to Fig. 1.)	Adjust so that the playback frequency is 3000 ± 5 Hz at the beginning of winding of test tape STD-301.
PLAY		Playback test tape STD-301 again and confirm that the above specifications are satisfied.

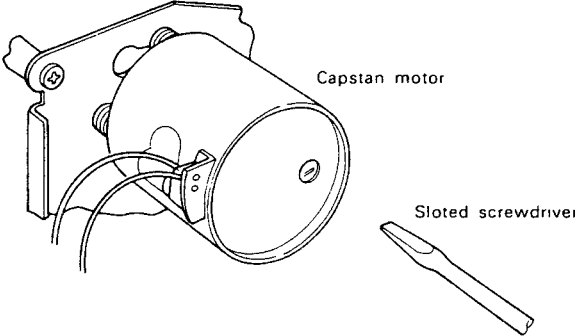


Fig. 1.

7.2 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 0 dBV=1 Vrms.
5. Connect a 50 k Ω (or between 47k to 52 k Ω) 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
(See Fig. 7-1)
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. Bias trap adjustment.
3. Recording bias adjustment.
4. Recording level adjustment.
5. Level meter adjustment and BLE adjustment.

NOTE: This unit has an automatic tape selection feature.

HX Pro headroom extension originated by Bang & Olufsen and manufactured under license from Dolby Laboratories Licensing Corporation.

"DOLBY", the double-D symbol $\square$, and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

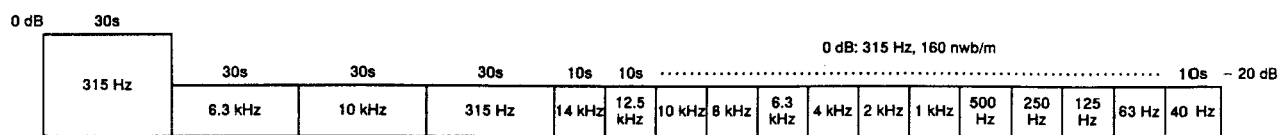


Fig. 7-1 Constants of the test tape STD-331B

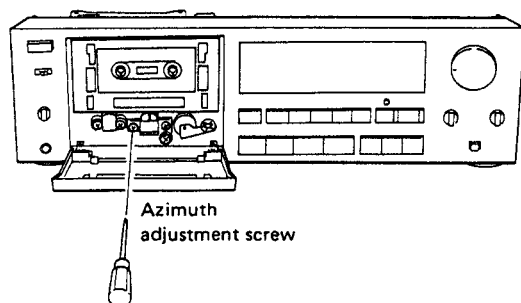


Fig. 7-2 Head azimuth adjustment

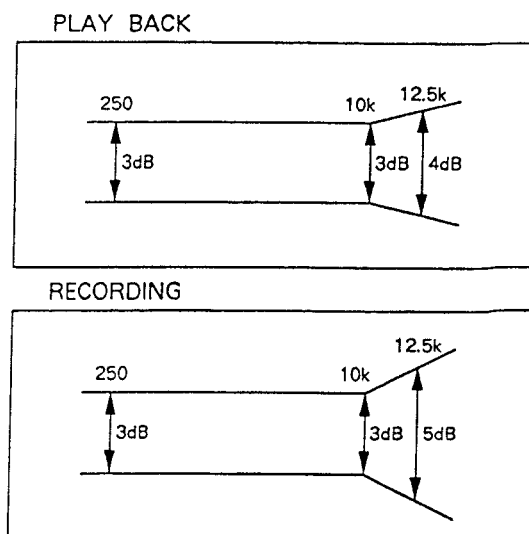


Fig. 7-3 Frequency response zone

PLAYBACK SECTION

1. Head Azimuth Adjustment

- Turn VR101, 102 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. 7-2)	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 VR101 (Lch) VR102 (Rch)	TP. 3 (Lch) TP. 4 (Rch)	-10.7 dBv	This adjustment must be performed accurately for proper Dolby level setting.

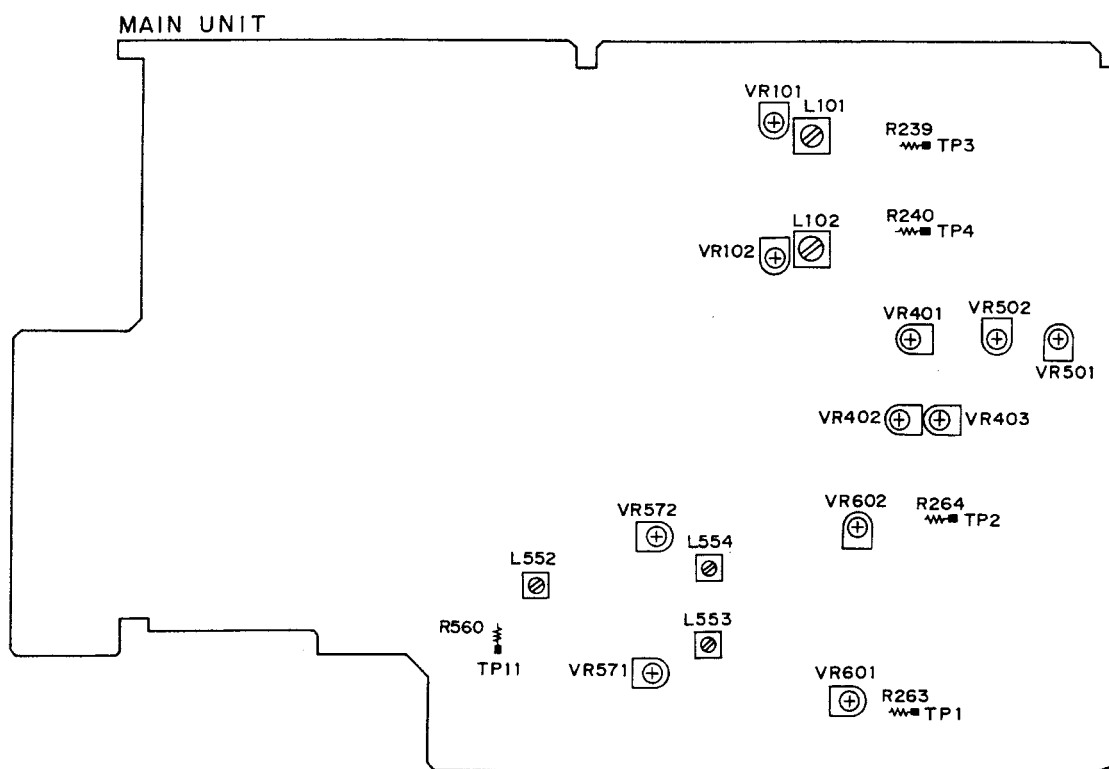


Fig. 7-4 Adjusting points

RECORDING SECTION

1. Bias Oscillator Adjustment

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	L552	TP. 11	105 kHz $\pm$ 300 Hz	

2. Bias Trap Adjustment

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	L101 (Lch) L102 (Rch)	LINE OUT	Minimum output	

3. Recording Bias Adjustment

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	REC/ PAUSE	Apply a 315 Hz/–20 dBv (–20VU meter reading) signal to the line input terminals and insert STD–630.			LINE OUT		
2.		Record and play back the 315 Hz signal and a 10 kHz signal at –20 dBv input level.	Deck	VR571 (L)		Record and play back repeatedly, comparing the 315 Hz and 10 kHz playback levels, and adjust to 0 ± 0.5 dB.	
				VR572 (R)			
3.	Check distortion value after adjustment is completed and confirm that there is no underbias.						

4. Recording Level Adjustment

- Turn ON the DOLBY NR switch.

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	REC/ PAUSE	Apply the 315 Hz/0 dBv signal to the line input, and load STD-630 (NORM).	REC level control volume		TP. 1 (Lch) TP. 2 (Rch)	-11.2 dBv	
2.	REC → PLAY	Record and play back the 315 Hz/0 dBv signal.	Deck	VR601 (Lch)	TP. 3 (Lch) TP. 4 (Rch)	Repeatedly record, playback and adjust so that the playback signal level becomes -11.2 dB.	Recording bias adjustment and recording level adjustment with STD-630 must be performed accurately as reference for BLE adjustment.
		VR602 (Rch)					
3.	REC → PLAY	Record the 315 Hz/0 dBv signal on STD-620 (CrO2), and play it back.	Check			-11.2 dBv ± 1.5 dB	
4.	REC → PLAY	Record the 315 Hz/0 dBv signal on STD-610 (METAL), and play it back.	Check			-11.2 dBv ± 1.5 dB	

5. Level Meter Adjustment and BLE Adjustment

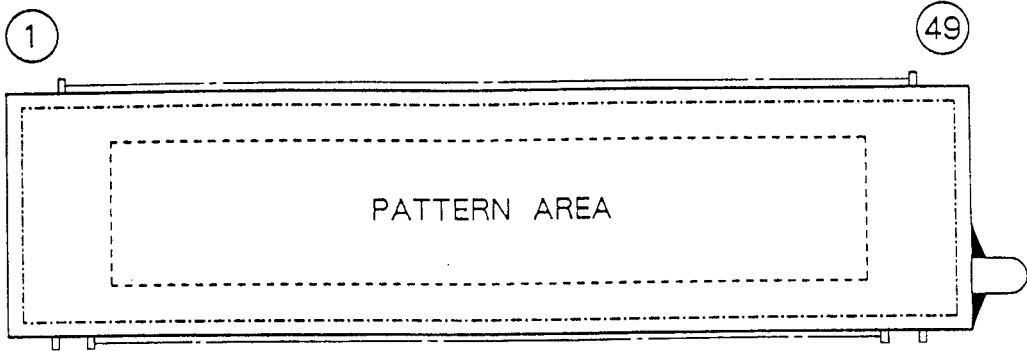
- BLE adjustment should be performed after all other adjustments are completed.
- This adjustment should be performed in the test mode.
- Entering the test mode

Press the MODE (COUNTER), RANGE and Display ON/OFF keys on the front panel simultaneously, with the power ON. The unit enters the test mode and the following occurs:

1. When REC key is pressed, the unit enters the test mode 1. (FL indication "1")
At this time, level meter adjustment is to be performed.
2. When REW key is pressed, the unit enters the test mode 2. (FL indication "2")
At this time, BLE adjustment (400 Hz) is to be performed.
3. When STOP key is pressed, the unit enters the test mode 3. (FL indication "3")
At this time, BLE adjustment (3 kHz) is to be performed.
4. When PLAY key is pressed, the unit enters the test mode 4. (FL indication "4")
At this time, BLE adjustment (12 kHz) is to be performed.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	REC PAUSE	Input the 315 Hz/−10 dBv (316 mV) signal to the LINE INPUT terminal, set to the test mode, and then press the REC key.	REC LEVEL VR	LINE OUT	−10 dBv	Level meter adjustment
			VR501	Level meter Lch	Adjust so that 0 dB of the level meter flashes.	
			VR502	Level meter Rch	Adjust so that 0 dB of the level meter flashes.	
2.	—	REC LEVEL VR MIN or no signal input.	—	—	—	
3.		Press the REW key.	VR401	Level meter Rch	Adjust so that 0 dB of the level meter flashes.	400 Hz adjustment
4.		Press the STOP key.	VR402		Adjust so that 0 dB of the level meter flashes.	3 kHz adjustment
5.		Press the PLAY key.	VR403		Adjust so that 0 dB of the level meter flashes.	12 kHz adjustment
6.	When the RESET key is pressed again, the test mode is released.					

● FL INFORMATION

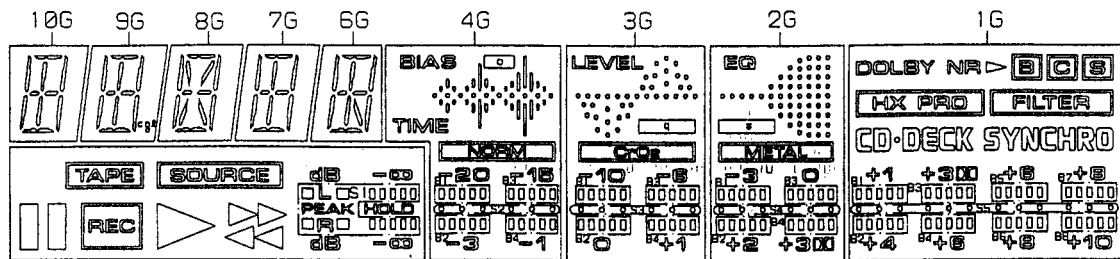


PIN CONNECTION

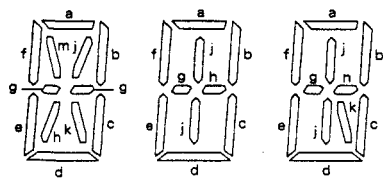
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CONNECTION	F 1	F 1	N P	1 G	2 G	3 G	4 G	5 G	6 G	7 G	8 G	9 G	0 G	P 2	P 2	P 2	P 1	P 2	P 2	P 2	P 2	P 2	P 3	P 1	P 0

PIN NO.	2 4	2 3	2 2	2 1	2 0	1 9	1 8	1 7	1 6	1 5	1 4	1 3	1 2	1 1	1 0	9	8	7	6	5	4	3	2	1
CONNECTION	P 2 9	N C	P 1 8	P 1 7	P 1 6	P 1 5	P 1 4	P 1 3	P 1 2	P 9 1	P 2 9	P 6 8	P 8 7	P 5 7	P 3 0	P 1 4	P 1 2	P 4 2	P 1 P	P 1 P	N P	N P	F 2	F 2

Note: 1) F1, F2 Filament
2) NP..... No pin
3) NC No connection
4) 1G to 10G ... Grid



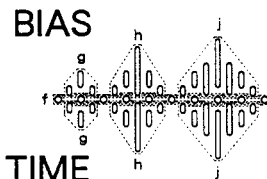
5G



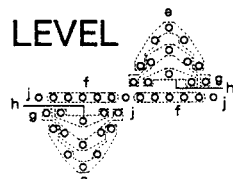
(8G)

(7,9,10G)

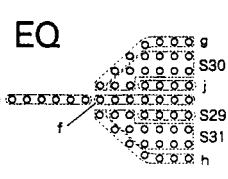
(6G)



(4G)



(3G)



(2G)

ANODE CONNECTION

	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	a	a	a	a	a	II	B1	B1	B1	B1
P2	b	b	b	b	b	REC	B2	B2	B2	B2
P3	c	c	c	c	c	▶	B3	B3	B3	B3
P4	d	d	d	d	d	◀◀	B4	B4	B4	B4
P5	e	e	e	e	e	▶▶	TIME	e	e	B5
P6	f	f	f	f	f	-	f	f	f	B6
P7	g	g	g	g	g	TAPE	g	g	g	B7
P8	h	h	h	h	h	SOURCE	h	h	h	B8
P9	j	j	j	j	j	HOLD	j	j	j	CD-DECK SYNCHRO
P10	-	-	k	-	k	dB -∞ -20 -15	-10 -6	-3 0	+1 +3	+6 +8
P11	-	o (col)	m	-	-	dB -∞ -3 -1	0 +1	+2 +3	+4 +6	+8 +10
P12	-	-	-	-	-	-	S2	S3	S4	S5
P13	-	-	-	-	-	S1	-	-	-	-
P14	-	-	-	-	-	-	BIAS	-	-	-
P15	-	-	-	-	-	-	o	-	-	-
P16	-	-	-	-	-	-	-	LEVEL	-	-
P17	-	-	-	-	-	-	-	q	-	-
P18	-	-	-	-	-	-	-	-	EQ	-
P19	-	-	-	-	-	-	-	-	s	-
P20	-	-	-	-	-	-	NORM	-	-	-
P21	-	-	-	-	-	-	-	CrO2	-	-
P22	-	-	-	-	-	-	-	-	METAL	-
P23	-	-	-	-	-	-	-	-	-	DOLBY NR
P24	-	-	-	-	-	-	-	-	-	B
P25	-	-	-	-	-	-	-	-	-	C
P26	-	-	-	-	-	-	-	-	-	S
P27	-	-	-	-	-	-	-	-	-	HX PRO
P28	-	-	-	-	-	-	-	-	-	FILTER
P29	-	-	-	-	-	-	-	-	S29	-
P30	-	-	-	-	-	-	-	-	S30	-
P31	-	-	-	-	-	-	-	-	S31	-

8. FOR CT-676/HEM, HB, SD AND CT-676-S/HEWM TYPES

CONTRAST OF MISCELLANEOUS PARTS

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.

The CT-676/HEM, HB, SD and CT-676-S/HEWM types are the same as the CT-S709/KU/CA type with the exception of the following sections.

Mark	Symbol & Description	Part No.					Remarks
		CT-S709/ KU/CA type	CT-676/ HEM type	CT-676/ HB type	CT-676/ SD type	CT-676-S/ HEWM type	
	SUBB unit	Non supply	Non supply	Non supply	Non supply	Non supply	
Δ	Strain relief	CM-22C	CM-22B	CM-22B	CM-22B	CM-22B	
Δ	AC Power cord	PDG1015	PDG1003	PDG1036	PDG1013	PDG1003	
Δ	FU701, FU702 Fuse (500mA)	REK-077	.....	.....	.....	.....	
Δ	FU703 Fuse (1.6A)	REK-074	.....	.....	.....	.....	
Δ	FU701, FU702 Fuse (400mA)	.....	REK-096	REK-096	REK-096	REK-096	
Δ	FU703 Fuse (1.25A)	.....	REK-101	REK-101	REK-101	REK-101	
Δ	Power transformer (AC120V)	RTT1159	.....	.....	.....	.....	
Δ	Power transformer (AC220-230/230-240V)	.....	RTT1160	RTT1160	.....	RTT1160	
Δ	Power transformer (AC110/120-127/220/240V)	.....	.....	.....	RTT1173	.....	
Δ	Voltage selector	.....	.....	.....	PSB1002	.....	
	FL filter	RAH1838	RAH1542	RAH1542	RAH1838	RAH1542	
	Power button	RAC1410	RAC1410	RAC1410	RAC1410	RAC1503	
	Function knob	RAC1411	RAC1411	RAC1411	RAC1411	RAC1502	
	Push knob	RAC1413	RAC1413	RAC1413	RAC1413	RAC1505	
	Knob (B)	RAC1414	RAC1414	RAC1414	RAC1414	RAC1492	
	VR knob	.....	.....	.....	.....	RAC1496	
	Mode knob	RAC1552	RAC1552	RAC1552	RAC1552	RAC1611	
	Slide SW knob	RAC1562	RAC1562	RAC1562	RAC1562	RAC1522	
	Door	RAH1846	RAH1846	RAH1846	RAH1846	RAH1847	
	Side rubber	REB1094	REB1094	REB1094	REB1094	REB1128	
	Panel stay	RNT1090	RNT1090	RNT1090	RNT1090	RNT1110	
	VR knob assembly (A)	RXA1281	RXA1281	RXA1281	RXA1281	.....	
	Bonnet	RXX1378	RXX1378	RXX1378	RXX1378	RXX1379	
	Front panel assembly	RXX1388	RXX1387	RXX1387	RXX1387	RXX1389	
	Packing case	RHG1282	RHG1281	RHG1281	RHG1281	RHG1283	
	Operating instructions (English)	RRB1094	.....	RRB1094	RRB1094	.....	
	Operating instructions (French, Italian, Dutch, Swedish, Spanish, Portuguese)	.....	RRD1110	.....	.....	.....	
	Operating instructions (English, German)	.....	RRE1045	.....	.....	RRE1045	

CT-676/HEM, HB, SD, CT-676-S/HEWM

SUBB UNIT

The SUBB units (for CT-676/HEM, HB and CT-676-S/HEWM types) are the same as the SUBB unit (for CT-S709/KU/CA and SD types) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		CT-S709/ KU/CA, SD types	CT-676/HEM, HB and CT-676-S/ HEWM types	
	R2131, R2132 V2101 FL tube	RD1/6PM302J RAW1084	RD1/6PM273J RAW1075	

9. SPECIFICATIONS

System 4 track, 2-channel stereo
Heads

Recording and playback head:

Combined Hard permalloy recording/Hard permalloy playback head × 1

Erasing head: Ferrite head × 1

Motor DC servo capstan motor × 1
DC reel motor × 1
DC assist motor × 1

Wow and Flutter

No more than 0.027% (WRMS)

No more than ±0.065% (DIN)

Fast Winding Time (C-60 tape)

Approximately 90 seconds

Frequency Response (–20 dB recording, ±6 dB)

Metal tape 15 to 21,000 Hz

Chrome tape 15 to 20,000 Hz

Normal tape 15 to 20,000 Hz

Signal-to-Noise Ratio (Dolby NR off)

More than 60 dB

Noise Reduction Effect

Dolby B-type NR ON More than 10 dB (at 5 kHz)

Dolby C-type NR ON More than 19 dB (at 5 kHz)

Harmonic Distortion No more than 0.6% (0 dB)

Input (Sensitivity)

LINE (INPUT)

63 mV (Input impedance 54 kΩ)

Output (Reference level)

LINE (OUTPUT)

316 mV (Output impedance 3.2 kΩ)

Headphone

(Load impedance 8 Ω, PHONES LEVEL control max.)

1.3 mW

Subfunctions

- Super AUTO BLE system
- Dolby HX Pro Headroom Extension system
- Dolby B-type and C-type noise reduction systems
- MPX filter
- Level meter with 2 modes peak hold selection
10 + 1 segments
- Level meter range selection (wide/expanded)
- 4-digit electronic tape counter with mode selection
Normal/Time
- Auto monitor selection (Tape/Source)
- Display off
- Music search (over ±15 selections)
- Automatic Tape Loose Canceller (ATLC)
- Tape return/Return play
- Auto space recording mute
- Auto tape selector
- Playback/recording timer start function
- CD•DECK SYNCHRO recording
- Headphones jack with level control
- Power eject (Open/Close)
- Repeat playback
- System remote control available

Miscellaneous

Power Requirements

U.S., Canadian model AC 120 V, 60 Hz

U.K. model AC 230–240 Volts~, 50/60 Hz

Multi-voltage model AC 110/120–127/220/240 V
(switchable), 50/60 Hz

Power Consumption

	U.S. Canadian	U.K.	Multi-voltage
CT-S709	21 W	—	—

Dimensions

420(W) × 130.5(H) × 323(D) mm

16-9/16(W) × 5-1/8(H) × 12-11/16(D) in

Weight (without package)

5.8 kg (12 lb 13 oz)

Accessories

Operating instructions 1

Connection cord with pin plugs 2

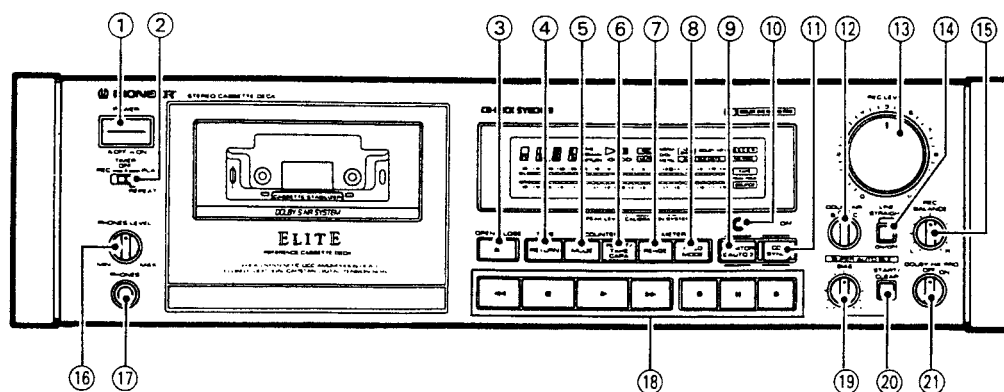
CD•DECK SYNCHRO control cord 1

Remote control cord 1

NOTE:

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

10. PANEL FACILITIES



① Power switch (POWER $\blacksquare$ OFF/ $\blacktriangle$ ON)

② Timer mode/repeat play switch (TIMER REC/OFF/PLAY-REPEAT)

③ Open/close button (OPEN/CLOSE $\blacktriangle$)

Press this button to open or close the cassette door. Whenever inserting or removing a cassette tape, be sure that the power is turned ON.

NOTE:

If the cassette door is closed while the unit is turned OFF, and the power is then turned ON, the cassette door may open and close after pressing one of the operation buttons. This occurs when the microprocessor resets the door mechanism to its initial state and does not indicate any malfunctioning of the unit.

④ Tape return button (TAPE RETURN)

This button is used in the normal tape counter mode to fast forward or rewind the tape to a point near the counter reading "0000."

⑤ Counter mode button (COUNTER MODE)

Each time this button is pressed, one of the two mode (Normal tape counter/Time counter) is set in sequence.

⑥ Counter reset button (COUNTER RESET)

Reset the counter indication to "0000."

⑦ Level meter range selector button (METER RANGE)

Selects wide or expanded range for the level meter.

⑧ Level meter hold mode button (METER HOLD MODE)

Selects the display mode of the peak level.

When press this button so that the HOLD indicator lights up, the level meter holds the maximum level indications of the signal. To erase the maximum level indications, press this button again. When the HOLD indicator goes off, the level meter holds peak indications for about 1.2 second.

⑨ Monitor selector button (MONITOR [AUTO])

Used to monitor the source sound or just recorded sound during recording.

- When the unit is set to record or playback mode, the TAPE indicator light up and the monitor mode is automatically selected.

⑩ Display off button (DISPLAY OFF)

Press this button to turn off the function display.

⑪ CD • DECK SYNCHRO recording button (CD SYNC)

⑫ DOLBY* NR switch

3-position (B/OFF/C)

*

• 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 $\square\square$ and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

⑬ Recording level control (REC LEVEL)

⑮ Recording balance control (REC BALANCE)

⑯ Headphones level control (PHONES LEVEL)

⑰ Headphones jack (PHONES)

⑱ Operation buttons

$\blacktriangleleft$: Rewind/music search

$\blacksquare$: Stop

$\blacktriangleright$: Playback

$\blacktriangleright\blacktriangleright$: Fast forward/music search

$\bullet$: Recording

$\square\square$: Pause

$\circ$: Recording mute

⑳ SUPER AUTO BLE button (START/CLEAR)

ATLC (Automatic Tape Loose Canceler)

With the tape slack prevention function, when the cassette door closes, the take-up reel automatically revolves to eliminate any tape slack.

SUPER AUTO BLE

With commercially available cassette tapes, sensitivity and frequency characteristics might differ slightly from one another, even though the same sound adjustment is set for them. To utilize tape characteristics to the maximum possible and realize an ideal recording which reproduces the source exactly, optimum recording level (sensitivity) and equalizer values must be set accordingly for each tape. In many conventional tape decks, standard values are fixed for standard tapes, thus nullifying the subtle differences between individual tapes. Perfect tuning by ear through use of fine adjustment controllers for bias and sensitivity is difficult and requires a lot of effort.

The AUTO BLE on this unit automatically adjusts bias, level and equalizer by using a microprocessor to set the optimum recording characteristics accordingly for each tape.

Contrast of Super AUTO BLE Tuning System

	CT-S709
BIAS tuning (Freq./Steps)	12 kHz 3-step
LEVEL tuning (Freq./Steps)	400 Hz 16-step
Mid EQ tuning (Freq./Steps)	3 kHz 16-step
Hi EQ tuning (Freq./Steps)	12 kHz 16-step