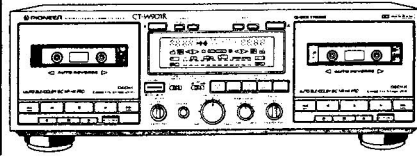


Service Manual

PIONEER
The Art of Entertainment



STEREO DOUBLE CASSETTE DECK

CT-W901R

CT-W951R

CT-W901R AND CT-W951R HAVE THE FOLLOWING:

Type	Model		Power Requirement	Remarks
	CT-W901R	CT-W951R		
KUC	○	—	AC120V only	
HEM	○	—	AC220V-230V, 240V (switchable)*	
HB	○	—	AC220V-230V, 240V (switchable)*	
SD	—	○	AC110V, 120V-127V, 220V, 240V (switchable)	

* Change the primary wiring of the power transformer.

- This manual is applicable to the following: CT-W901R/KUC, HEM and HB; CT-W951R/SD.
- As to the CT-W901R/HEM, HB and CT-W951R/SD types, refer to page 37.
- 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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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

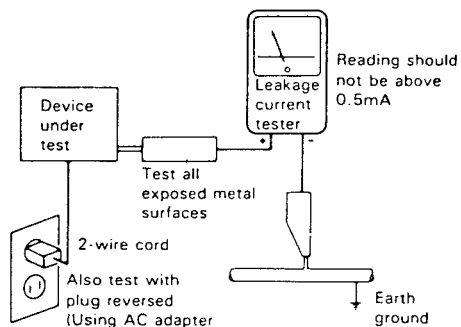
(FOR USA MODEL ONLY)

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. EXPLODED VIEWS, PACKING AND PARTS LIST

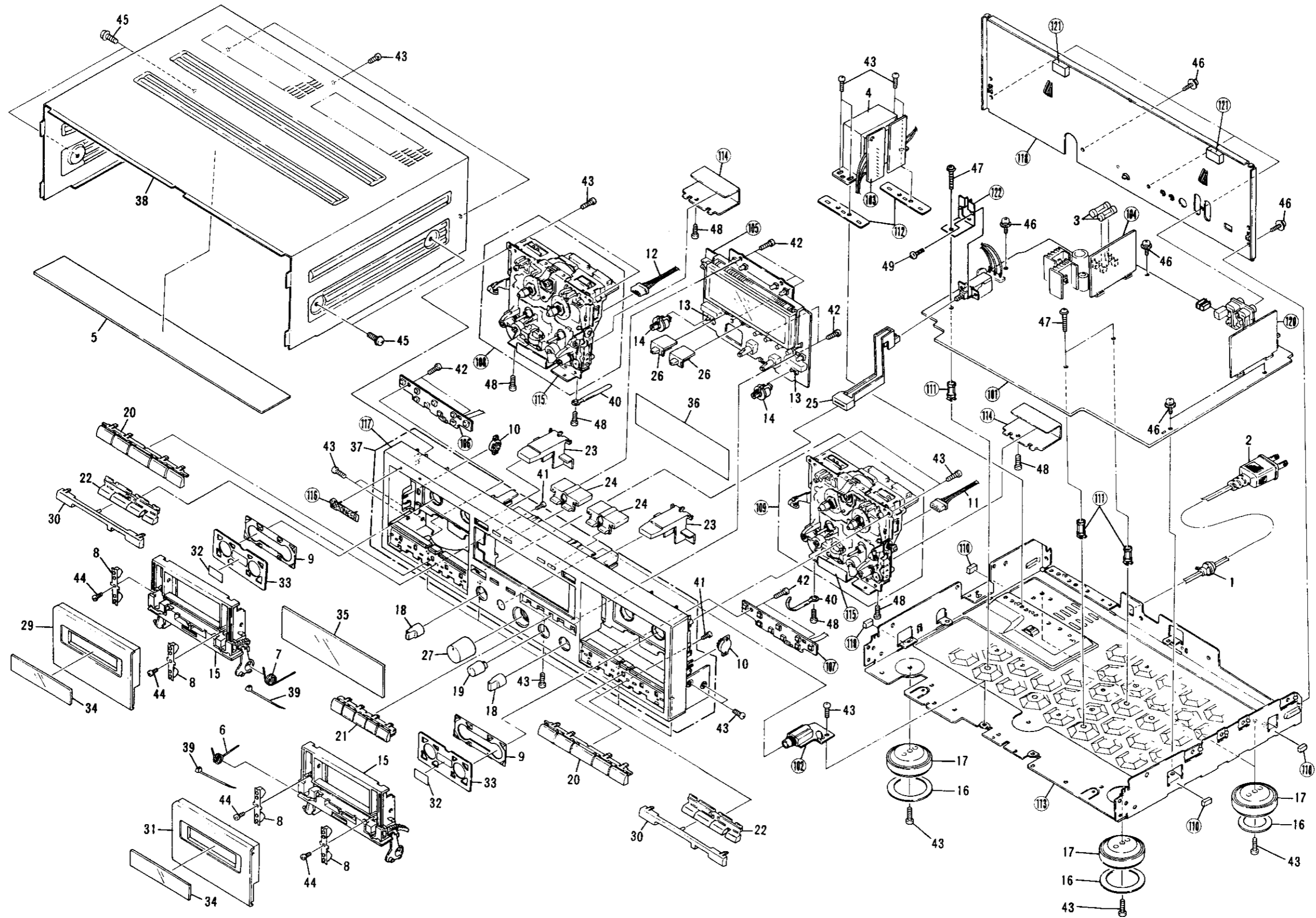
2.1 EXTERIOR

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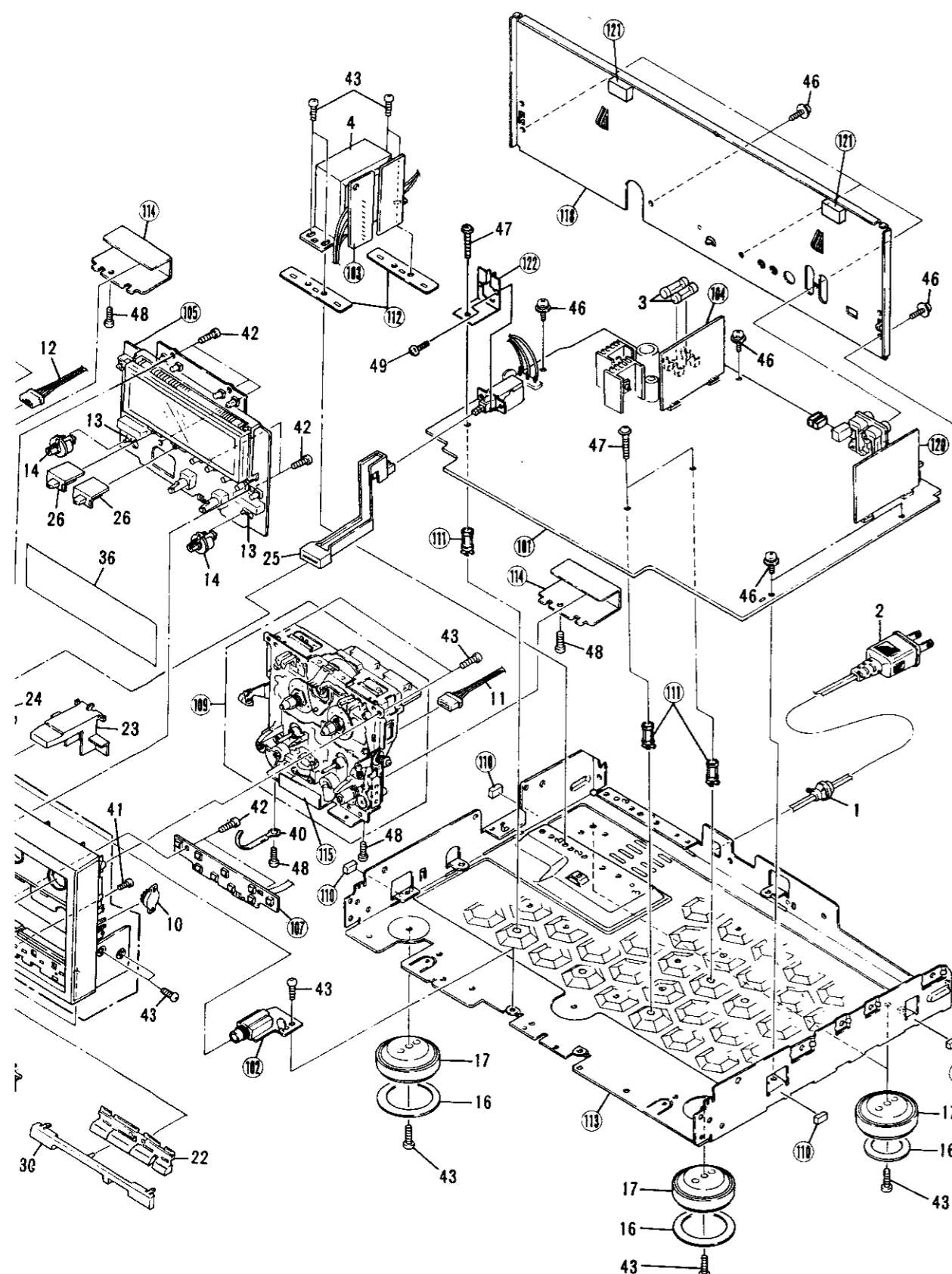
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NOTES:

- The parts with an encircled number are generally unavailable because they are not in our Master Spare Parts List.
- 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.

A

Parts List of Exterior

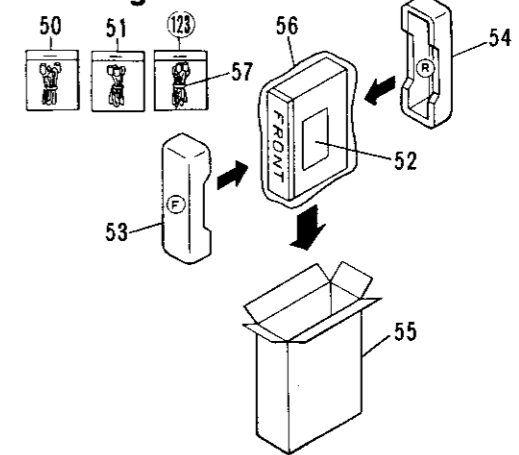
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
Δ	1	Strain relief	CM - 22C		46	Screw	IBZ30P060FCC
Δ	2	AC Power cord	PDG1015		47	Screw	IBZ30P150FCU
Δ	3	FU1001, FU1002 Fuse (1.5A)	REK1001		48	Screw	BCZ26P050FMC
Δ	4	Power transformer	RTT1162		49	Screw	PMA30P060FCU
	5	Absorb plate (B)	PNB1109		50	Mini connection cord	PDE - 319
	6	Door spring (L)	RBH1224		51	Control cord	RDE1030
	7	Door spring (R)	RBH1225		52	Operating instructions (English/French)	RRE1053
	8	Half pressure spring	RBK1013		53	Pad F	RHA1044
	9	Stabilizer (B)	REB1085		54	Pad R	RHA1045
	10	Damper assembly	REC1005		55	Packing case	RHG1323
	11	Connector assembly 5P	RKP1323		56	Sheet	RHX - 034
	12	Connector assembly 5P	RKP1332		57	Connection cord	RDE - 010
	13	SW cap	RNK1522		101	Main unit	RWZ2592
	14	Rotary SW shaft	RNK1523		102	H.Phone unit	RWZ2644
	15	Door pocket	RNT1010		103	TR SEC unit	RWZ2645
	16	Stopper	VEC1061	⊙	104	REC (1) unit	RWX1064
	17	Insulator	VNK1095		105	Display unit	RWZ2641
	18	Knob B (DOLBY NR)	RAC1414		106	Operate (1) unit	RWZ2646
	19	VR knob B (COPY LEVEL)	RAC1421		107	Operate (2) unit	RWZ2647
	20	Operation knob A (◀◀◀▶▶▶)	RAC1479	⊙	108	Mechanism unit (Deck I)	RYM1179
	21	Operation knob C (SYNCHRO COPY)	RAC1423	⊙	109	Mechanism unit (Deck II)	RYM1180
	22	BLE knob (●||●, AUTO - BLE)	RAC1601		110	Spacer	PEB1027
	23	Eject knob	RAC1480		111	PCB spacer	PNY - 404
	24	Counter knob	RAC1426		112	Transformer sheet	REE1014
	25	Power knob	RAC1427		113	Main chassis	RNB1018
	26	Slide knob (TIMER MODE, REVERSE MODE)	RAC1428		114	Mechanism shield plate	RNE1306
	27	VR knob A (REC LEVEL)	RAC1430		115	Mechanism bracket	RNE1332
	28	.....			116	Name plate	PAN1035
	29	Door cover	RAH1999		117	Front panel	RAH2002
	30	BLE mold	RAH1729		118	Rear panel	RNA1523
	31	Door cover	RAH2000		119	.....
	32	Remain display paper	REE - 113	⊙	120	REC (2) unit	RWX1070
	33	Stabilizer panel	RAH1483		121	UNIT spacer	REB1072
	34	Door lens	RAH1553		122	SW bracket	RNE1377
	35	FL lens	RAH1594		123	Connection cord assembly	RDE1002
	36	FL filter	RAH1596				
	37	Front panel assembly	RXX1462				
	38	Bonnet	RXX1297				
	39	Binder	REC - 371				
	40	Cord clamper	RNH - 184				
	41	Screw	BBZ20P060FMC				
	42	Screw	BBZ30P060FZK				
	43	Screw	BBZ30P080FCC				
	44	Screw	BPZ20P060FMC				
	45	Screw	FBT40P080FZK				

B

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Packing



Mechanism unit (DECK I and DECK II)

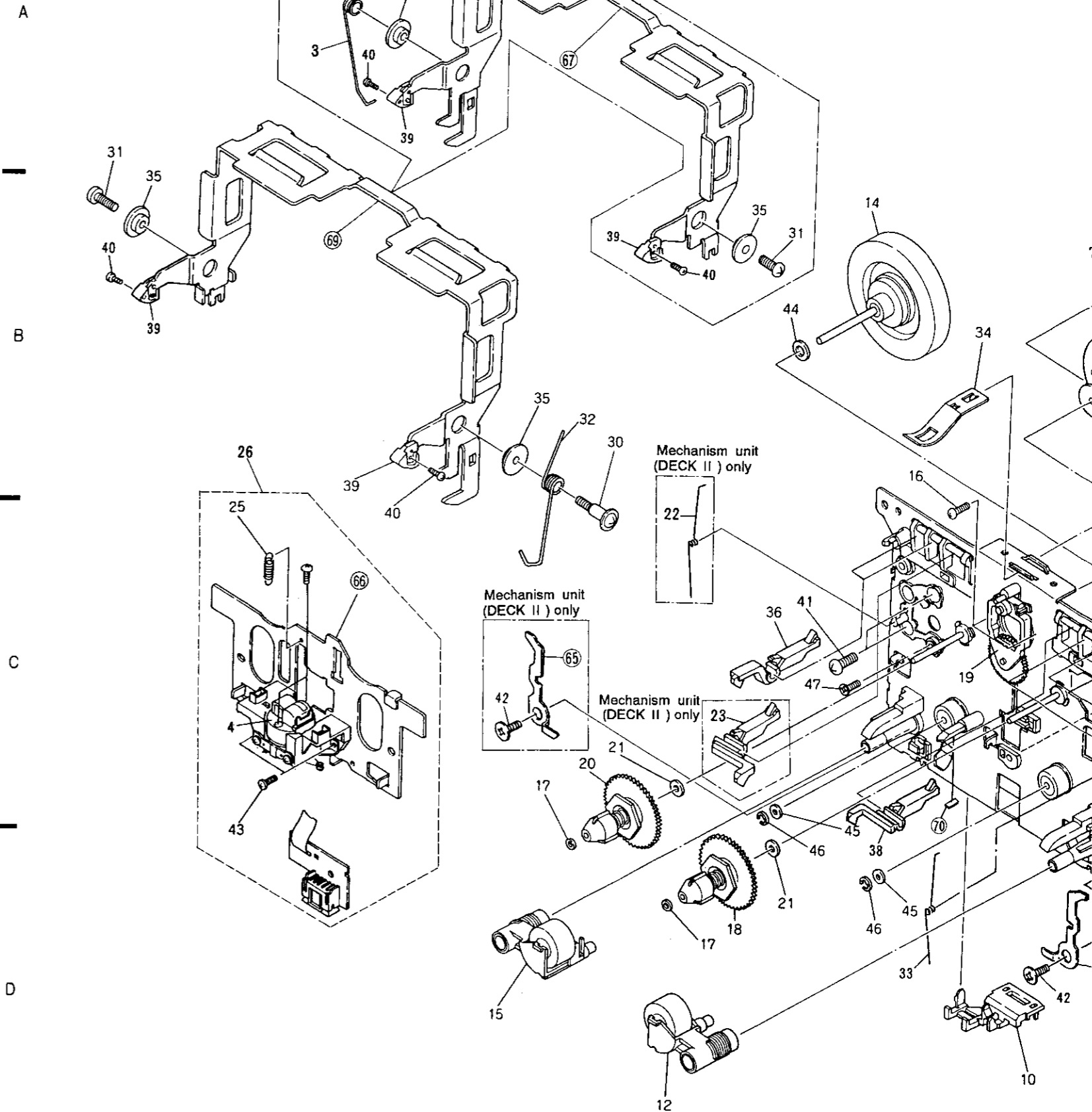
2.2 MECHANISM UNIT (DECK I and II)

Parts List

Mark No.	Description	Part No.
1	Shaft	RLA1130
2	Planger	RLA1132
3	Eject lever spring (L) (DECK II only)	RBH1231
4	R/P, E head	RPB1030
5	Push switch	RSG1018
6	Reel motor (BLK)	RXM1029
7	Main motor (BLK)	RXM1030
8	Solenoid (BLK)	RXP1010
9	Photo transistor	SPI33534FG
10	Wire holder	RNK1530
11	Main belt	REB1157
12	Pinch roller assembly (DIA 2.5)	RXA1183
13	Flywheel assembly	RXA1294
14	Flywheel assembly	RXA1295
15	Pinch roller assembly(L)	RXA1296
16	Screw	RBA1076
17	Washer	RBF - 057
18	Reel base (BLK)	RXA1184
19	Idler (BLK)	RXA1248
20	Reel base (BLK)	RXC - 040
21	Washer	RBF1038
22	Eject prevention spring (L) (DECK II only)	RBH1234
23	Metal detection lever (L) (DECK II only)	RNK1529
24	Screw	RBA1068
25	Head base spring	RBL1003
26	Plate HD BLK	RXA1481
27	Slide spring	RBH1239
28	Play arm	RNK1525
29	Cam gear (3R)	RNK1672
30	Screw	RBA1078
31	Screw	RBA1079
32	Eject lever spring (R) (DECK I only)	RBH1233
33	Eject prevention spring (R) (DECK I only)	RBH1230
34	Cassette hold spring	RBK1031
35	Lever collar (A)	RLA1133
36	REC detection lever	RNK1527
37	PACK detection lever(P)	RNK1543
38	Metal detection lever(R) (DECK I only)	RNK1537
39	Hook	RNM - 160
40	Screw	PCZ20P040FMC
41	Screw	PMA26P050FMC
42	Screw	RBA1048
43	Screw	RBA1077
44	Washer	WA26D045D025
45	Washer	WA26D047D050

Mark No.	Description	Part No.
46	Washer	YE15FUC
47	Screw	RBA1101
48	.....
49	.....
50	Chassis base (BLK)	RXA1480
51	Slide plate	RNE1345
52	.....
53	Holder cushion (L)	RED1027
60	.....
61	.....
62	.....
63	PCB control BLK (DECK I) (DECK II)	RXA1478 RXA1479
64	.....
65	Eject prevention arm (L) (DECK II only)	RNE1263
66	Head base (DECK I)	RNE1343
67	Eject lever (WL) (DECK II only)	RNE1321
68	Eject prevention arm (R) (DECK I only)	RNE1271
69	Eject lever (WR) (DECK I only)	RNE1328

Note 1 : The screw No. 24 is the part to hold the cam gear for servicing, when the hook holding the cam No. 29 is broken.



Mechanism unit (DECK I and DECK II)

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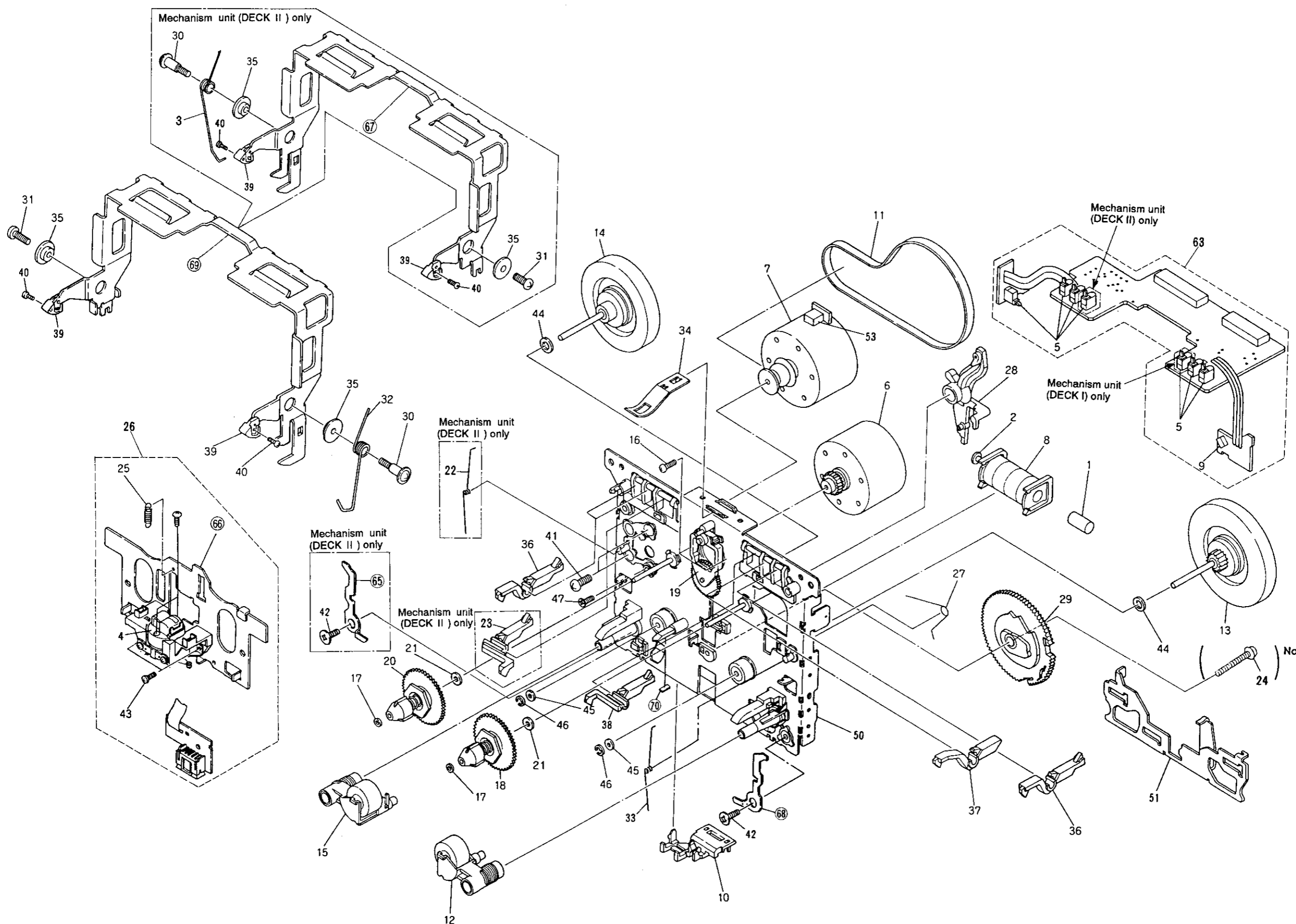
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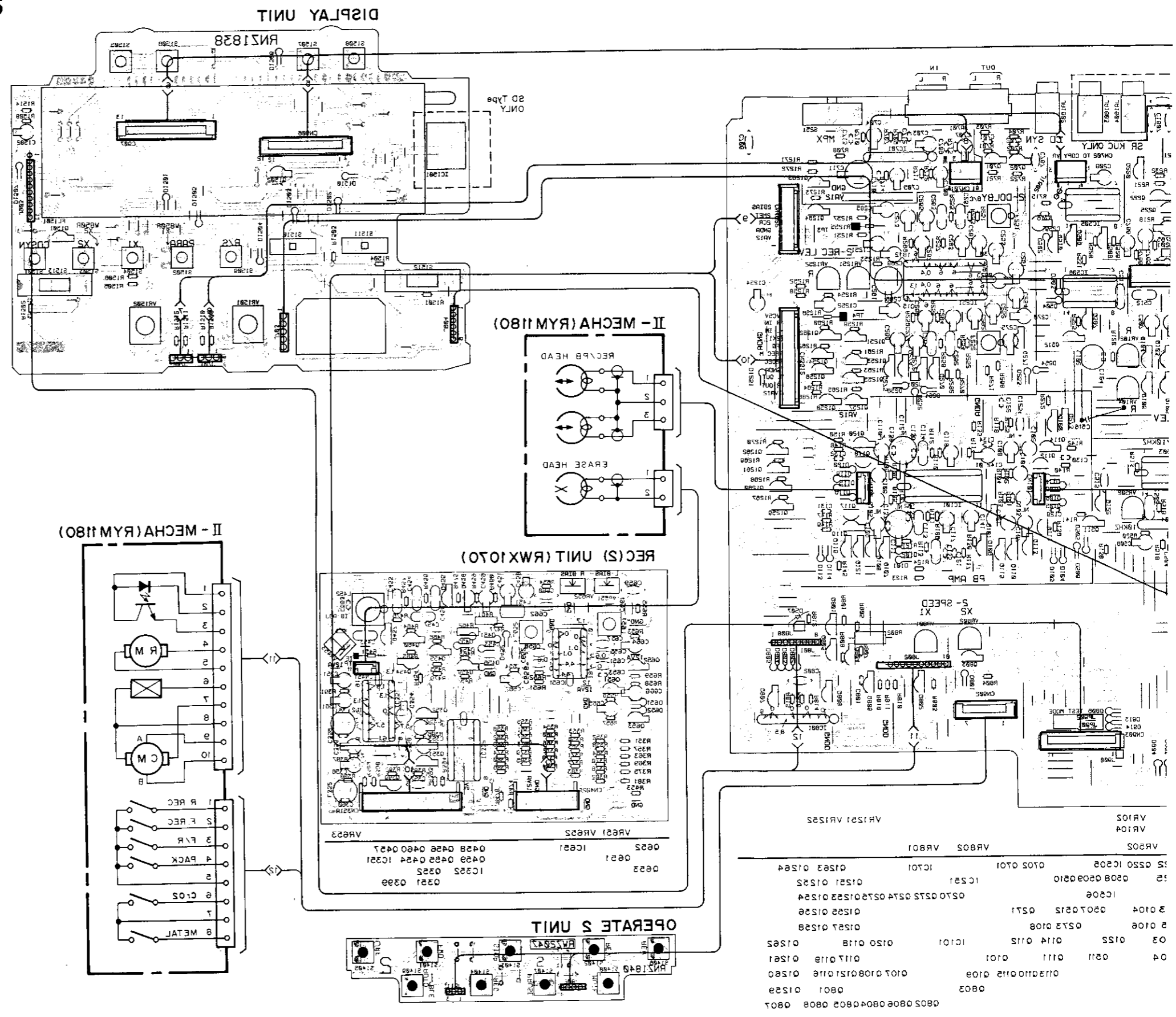
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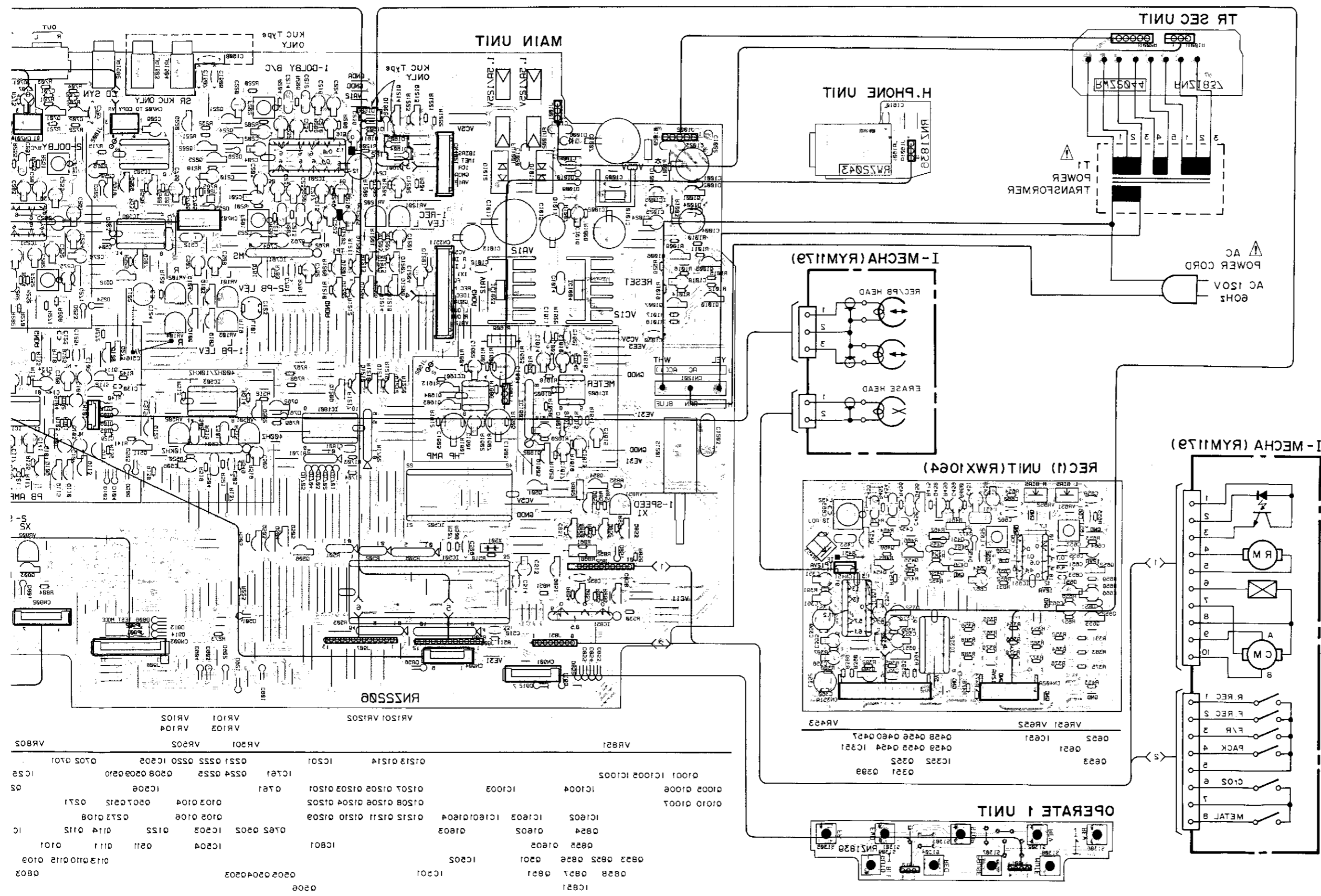
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3. PCB CONNECTION DIAGRAMS

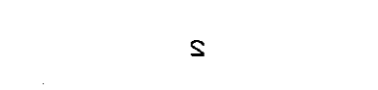
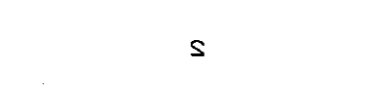
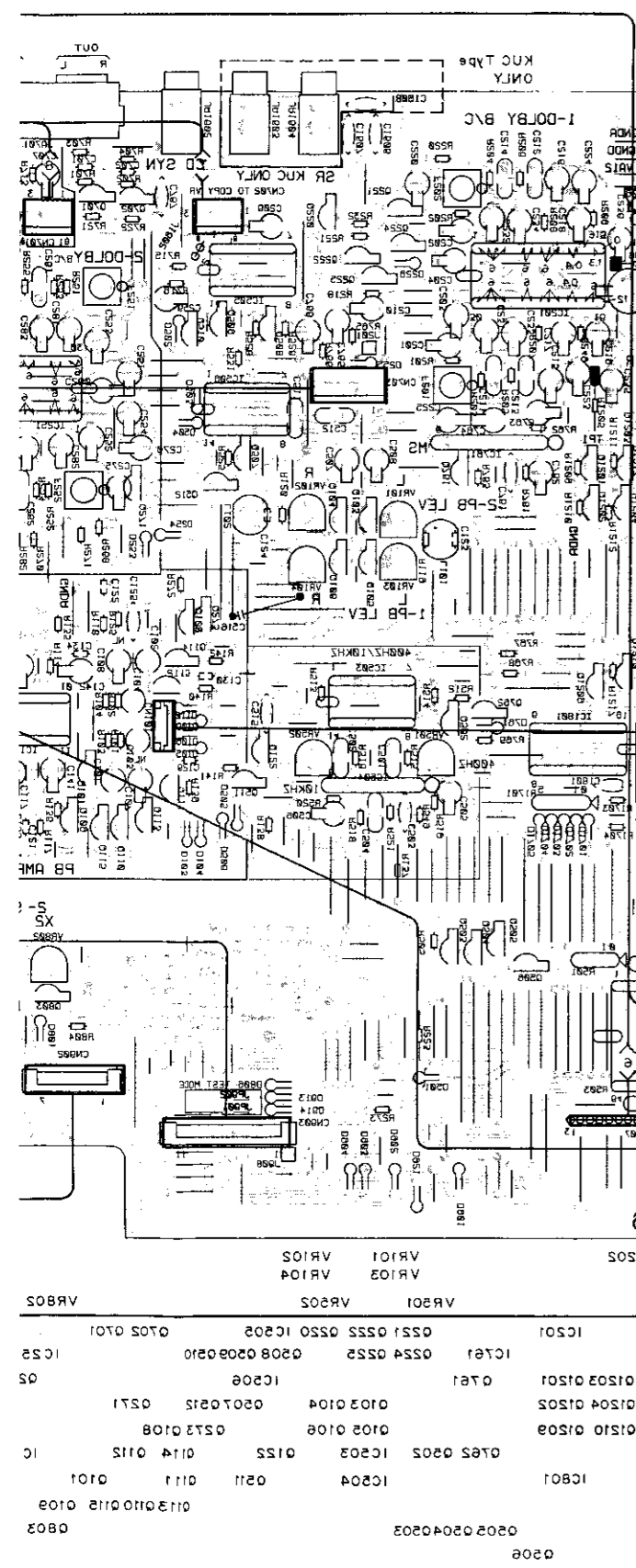


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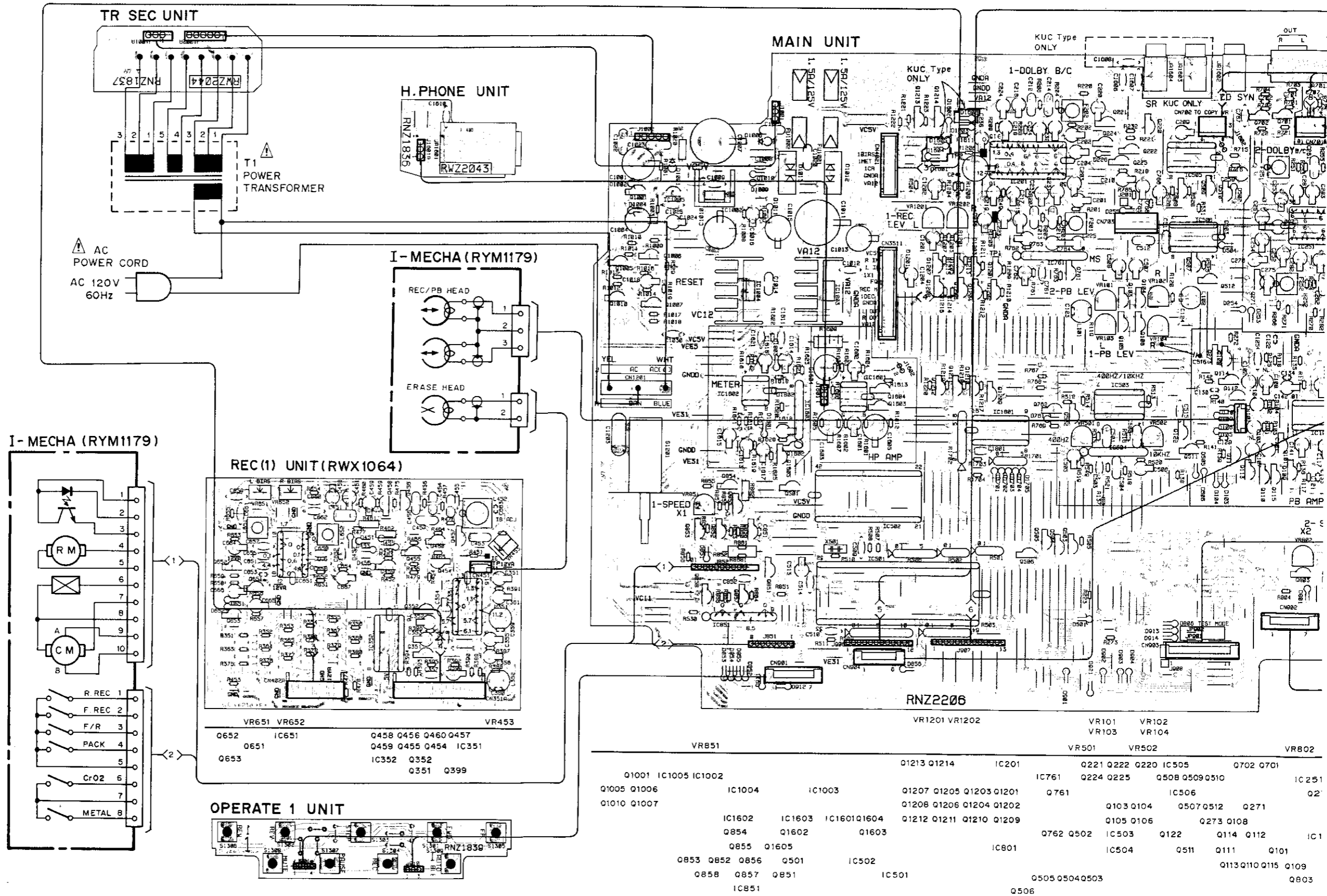
• View from soldering side



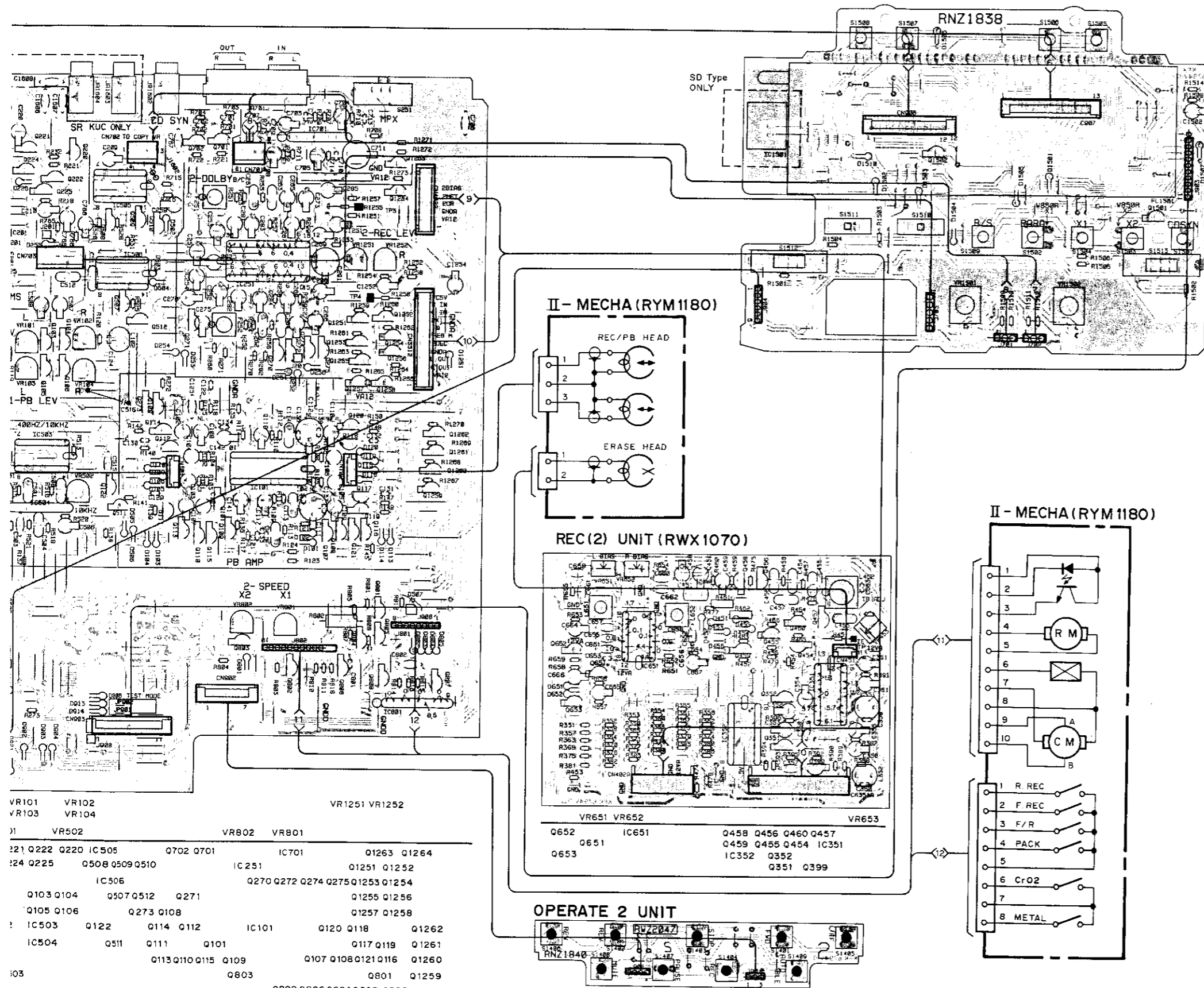
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• View from component side



DISPLAY UNIT



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

1. This PCB 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.

VR101	VR102	VR1251	VR1252
VR103	VR104		
VR502	VR802	VR801	
Q221	Q222	Q220	IC505
Q702	Q701	IC701	Q1263
Q1264	IC506	Q270	Q272
Q274	Q275	Q1253	Q1254
Q103	Q104	Q507	Q512
Q271	Q1255	Q1256	
Q105	Q106	Q273	Q108
Q1257	Q1258		
IC503	Q122	Q114	Q112
IC101	Q120	Q118	Q1262
IC504	Q511	Q111	Q101
Q117	Q119	Q1261	
Q113	Q110	Q115	Q109
Q107	Q108	Q121	Q116
Q1260	Q803	Q801	Q1259
Q802	Q806	Q804	Q805
Q808	Q808	Q807	

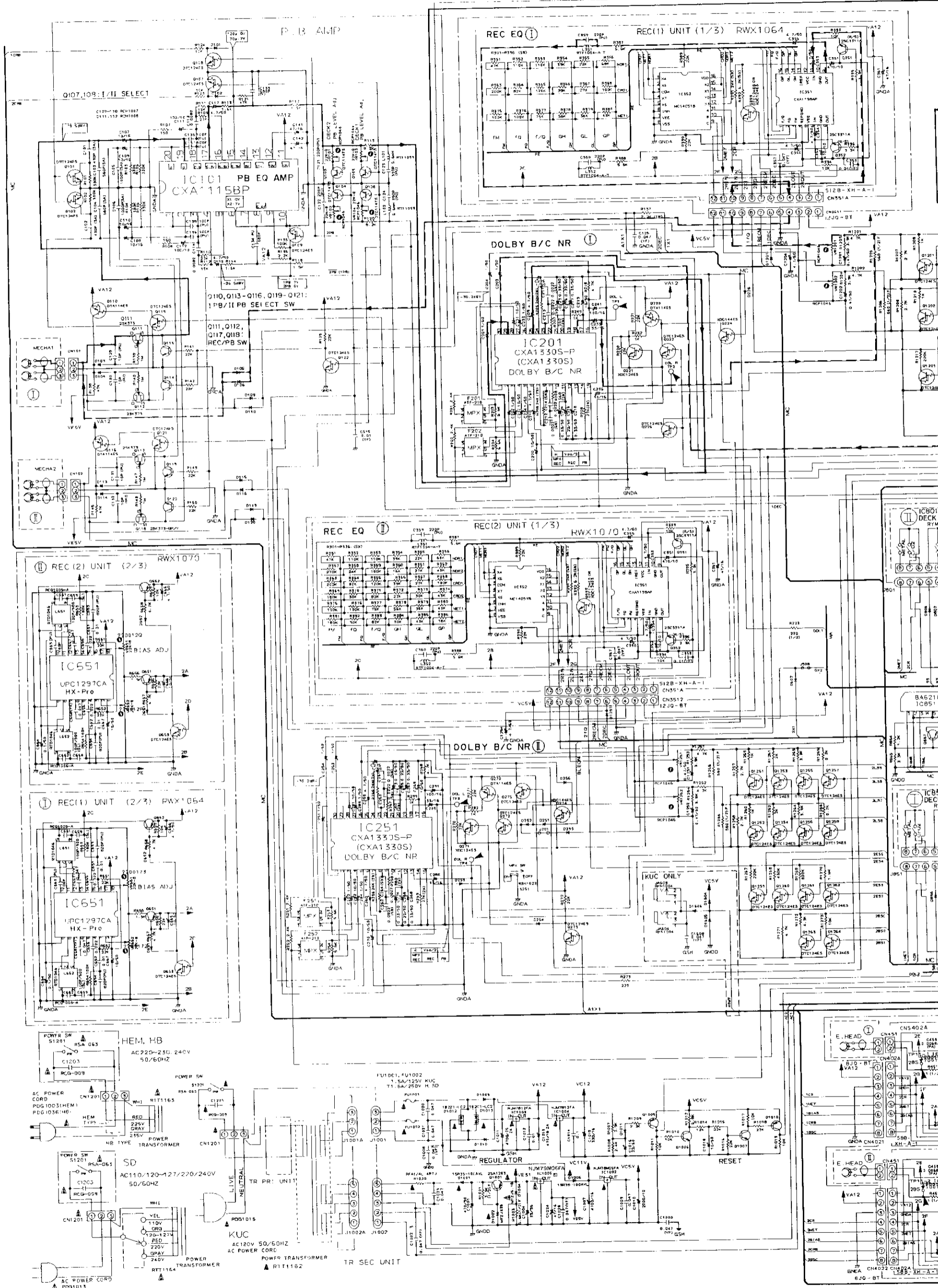
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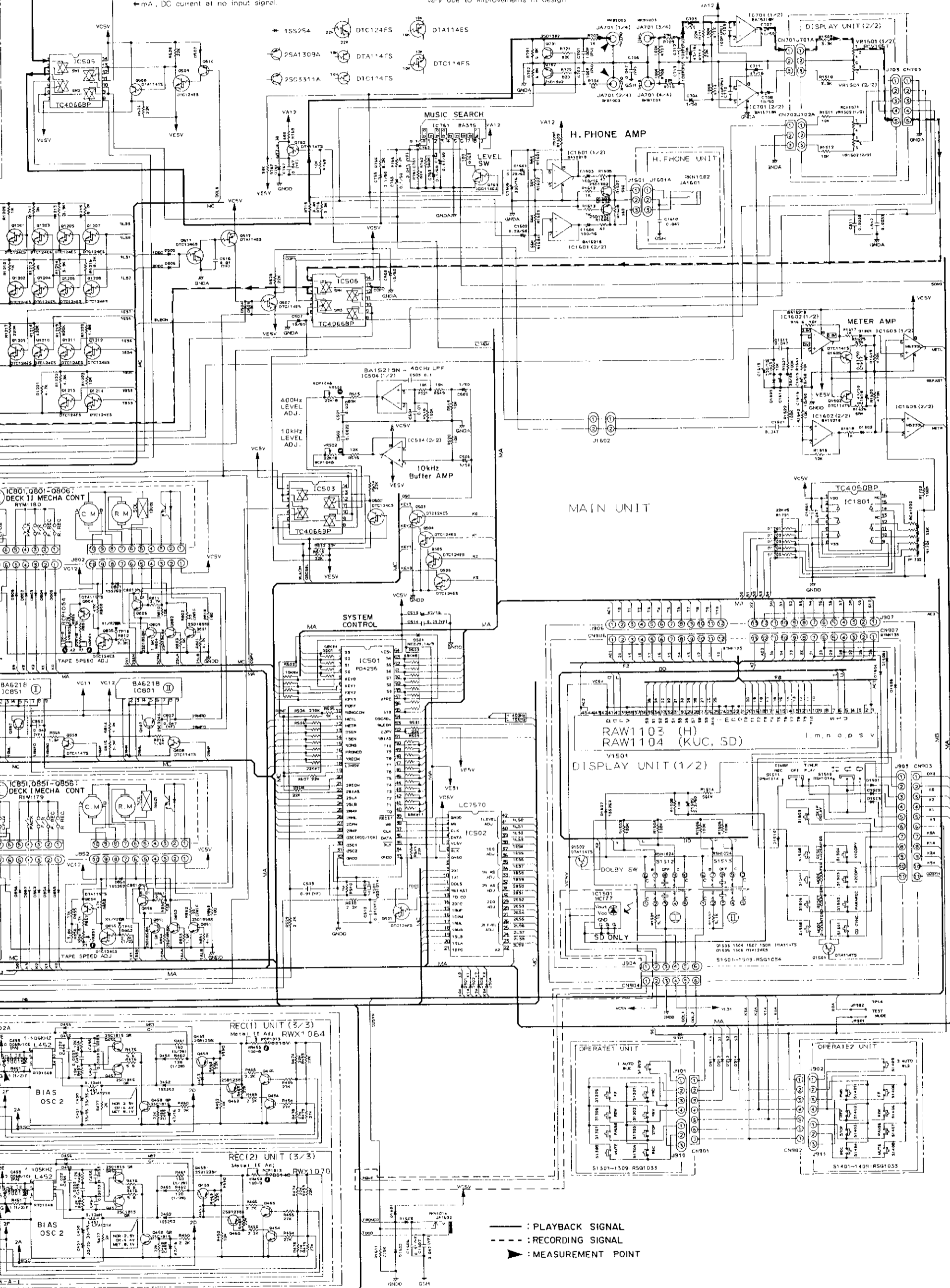
4. SCHEMATIC DIAGRAM



- 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.
- CAPACITORS:**
Indicated in capacity (μF)/voltage (V) unless otherwise noted p, pF.
Indication without voltage is 50V except electrolytic capacitor.
- VOLTAGE CURRENT:**
: DC voltage (V) at no input signal.
mA: DC current (mA) at no input signal.

- OTHERS:**
→: 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.

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



IC201, IC251 (CXA1330S)

Pin No.	Volts	Pin No.	Volts
1	6.0	16	12.0
2	6.0	17	6.0
3	6.0	18	6.0
4	6.0	19	0.4
5		20	0.4
6	6.0	21	6.0
7	6.0	22	6.0
8	6.0	23	6.0
9	6.0	24	6.0
10	6.0	25	6.0
11	0.4	26	
12	0.4	27	6.0
13	6.0	28	6.0
14	1.3	29	6.0
15	0.0	30	6.0

IC351(CXA1198AP)

Pin No.	Volts	Pin No.	Volts
1	1.3	9	6.1
2	1.3	10	5.7
3	1.3	11	5.7
4	0.0	12	11.2
5	0.0	13	1.3
6	5.7	14	1.3
7	5.7	15	1.3
8	6.1	16	1.3

IC651 (uPC1297CA)

Pin No.	Volts	Pin No.	Volts
1	4.4	10	1.7
2	0.0	11	0.0
3	4.4	12	0.0
4	0.6	13	0.0
5	0.1	14	0.1
6	0.0	15	0.6
7	0.0	16	4.4
8	0.0	17	0.0
9	0.0	18	12.0

IC801, IC851 (BA6218)

Pin No.	Volts
1	0.0
2	0.0
3	0.0
4	0.0
5	0.0
6	8.5
7	0.0
8	0.0
9	0.0

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	C514, 515	CERAMIC CAPACITOR	CKCYF103Z50	RESISTORS			
	C516	CERAMIC CAPACITOR	CKDYF103Z50	R101-114	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C701, 702	AXIAL CAPACITOR	CKPUYB101K50	R117-121	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C703, 704	ELECTR. CAPACITOR	CEAS010M50	R123-125	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C705	ELECTR. CAPACITOR	CEAS470M16	R135, 136	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C706	CERAMIC CAPACITOR	CGCYF473Z50	R137	METAL OXIDE RESISTOR	RS1LMF□□□J	
	C707, 708	ELECTR. CAPACITOR	CEAS100M50	R138-142	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C709, 710	AXIAL CAPACITOR	CKPUYB101K50	R145	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C711	ELECTR. CAPACITOR	CEAS470M16	R147-150	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C712, 713	AXIAL CAPACITOR	CKPUYB101K50	R201-209	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C761	CERAMIC CAPACITOR	CGCYF473Z50	R218	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C762, 763	ELECTR. CAPACITOR	CEASR10M50	R220, 221	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C764	ELECTR. CAPACITOR	CEASR47M50	R223	CARBONFILM RESISTOR	RD1/2LF□□□J	
	C765, 766	ELECTR. CAPACITOR	CEASR10M50	R232	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C767	CERAMIC CAPACITOR	CGCYF473Z50	R249	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C801	CERAMIC CAPACITOR	CKPUYY103M16	R251-259	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C802	CERAMIC CAPACITOR	CGCYF473Z50	R268	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C851	CERAMIC CAPACITOR	CKPUYY103M16	R270-273	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C852	CERAMIC CAPACITOR	CGCYF473Z50	R282	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1001	ELECTR. CAPACITOR	CEAS471M50	R299	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1004	ELECTR. CAPACITOR	CEAS330M35	R501, 502	RESISTOR ARRAY	RA4T□□□J	
	C1007	ELECTR. CAPACITOR	CEAS472M16	R503	RESISTOR ARRAY	RA8T□□□J	
	C1008	CERAMIC CAPACITOR	CGCYF473Z50	R504, 505	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1009	AUDIO FILM CAPACITOR	CFTXA473J50	R506	RESISTOR ARRAY	RA7T□□□J	
	C1010	ELECTR. CAPACITOR	CEAS222M16	R507, 508	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1011	ELECTR. CAPACITOR	CEAS472M25	R509	RESISTOR ARRAY	RA11T□□□J	
	C1012	AUDIO FILM CAPACITOR	CFTXA103J50	R510-516	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1013	ELECTR. CAPACITOR	CEAS471M16	R518-521	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1014	AUDIO FILM CAPACITOR	CFTXA104J50	R525, 526	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1015	ELECTR. CAPACITOR	CEAS331M16	R528-531	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1016	ELECTR. CAPACITOR	CEAS220M50	R549	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1018	ELECTR. CAPACITOR	CEAS100M50	R701-704	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1020-1023	AUDIO FILM CAPACITOR	CFTXA473J50	R707-716	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1024	ELECTR. CAPACITOR	CEAS470M16	R721, 722	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1025	CERAMIC CAPACITOR	CGCYF473Z50	R761-763	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1030	CERAMIC CAPACITOR	CGCYF473Z50	R765-769	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1201, 1202	ELECTR. CAPACITOR	CEASR47M50	R801	CARBONFILM RESISTOR	RD1/6PM□□□J	
△	C1203	CAPACITOR (CERAMIC) (0.01 μ)	RCG-009	R802	METAL OXIDE RESISTOR	RS2LMF□□□J	
	C1204	ELECTR. CAPACITOR	CEAS4R7M50	R803-805	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1251, 1252	ELECTR. CAPACITOR	CEASR47M50	R807, 808	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1254	ELECTR. CAPACITOR	CEAS4R7M50	R810-812	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1601, 1602	ELECTR. CAPACITOR	CEASR22M50	R814-816	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1603, 1604	ELECTR. CAPACITOR	CEAS101M16	R818	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1605	ELECTR. CAPACITOR	CEAS331M16	R851	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1606	CERAMIC CAPACITOR	CKCYF103Z50	R852	METAL OXIDE RESISTOR	RS2LMF□□□J	
	C1607, 1608	CERAMIC CAPACITOR	CGCYF473Z50	R853-858	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1611	CERAMIC CAPACITOR	CGCYF473Z50	R860, 861	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1613	ELECTR. CAPACITOR	CEAS331M16	R862	CARBONFILM RESISTOR	RD1/2LF□□□J	
	C1614	ELECTR. CAPACITOR	CEAS330M35	R864-866	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1615, 1616	ELECTR. CAPACITOR	CEAS100M50	R868	CARBONFILM RESISTOR	RD1/6PM□□□J	
	C1617, 1618	ELECTR. CAPACITOR	CEASR47M50	R1001	CARBONFILM RESISTOR	RD1/2LF□□□J	
	C1621	CERAMIC CAPACITOR	CGCYF473Z50	R1003	CARBONFILM RESISTOR	RD1/2LF□□□J	
	C1801	CERAMIC CAPACITOR	CGCYF473Z50	R1007-1012	CARBONFILM RESISTOR	RD1/6PM□□□J	
				R1014-1019	CARBONFILM RESISTOR	RD1/6PM□□□J	
				R1020	FUSIBLE RESISTOR	RFA1/4L□□□J	

Mark	No.	Description	Part No.
	R1201-1204	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1205, 1206	CARBONFILM RESISTOR	RD1/2LF□□□J
	R1207-1223	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1251-1254	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1255, 1256	CARBONFILM RESISTOR	RD1/2LF□□□J
	R1257-1273	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1601-1608	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1609	METAL OXIDE RESISTOR	RS2LMF□□□J
	R1611-1613	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1615-1623	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1625, 1626	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1641, 1642	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1701	RESISTOR ARRAY	RA5T□□□J
	R1702	LADDER RESISTOR (11K)	RCX1020
	R1703, 1704	CARBONFILM RESISTOR	RD1/6PM□□□J
	VR101-104	VR(22K)	RCP1046
	VR501, 502	VR(22K)	RCP1046
	VR801	VR	VRTG6VS223
	VR802	VR(10K)	RCP1054
	VR851	VR	VRTG6VS223
	VR1201, 1202	VR(22K)	RCP1046
	VR1251, 1252	VR(22K)	RCP1046
OTHERS			
	CN3511, 3512		12JQ-BT
	CN4021, 4022		8JQ-BT
	JA701	4P PIN JACK	RKB1003
	JA1602	JACK	RKN1014
	JA1603, 1604	JACK	RKN1004
	X501	CERAMIC RESONATOR(4.19MHz)	VSS1014
DISPLAY UNIT			
SEMICONDUCTORS			
	Q1501, 1502	DIGITAL TRANSISTOR	DTA114TS
	D1501-1506	DIODE	1SS254
	D1507	DIODE	1SS252
	D1510	DIODE	1SS254
SWITCHES			
	S1501-1509	SWITCH	RSG1034
	S1510, 1511	SWITCH	RSH1014
	S1512, 1513		RSH1024
CAPACITORS			
	C1502	ELECTR. CAPACITOR	CEAS2R2M50
RESISTORS			
	R1501-1506	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1508-1512	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1514	CARBONFILM RESISTOR	RD1/6PM□□□J
	VR1501	VARIABLE RESISTOR(5KA)	RCV1057
	VR1502	(5KA)	RCV1071
OTHERS			
	CN906		BTMK12S-1S
	CN907		BTMK13S-1S
	V1501		RAW1104

TR SEC UNIT

There is no supply part in this unit.

H. PHONE UNIT

CAPACITORS

C1610 CERAMIC CAPACITOR CGCYF473Z50

OTHERS

JA1601 JACK RKN1002

OPERATE (1) UNIT

SWITCHES

S1301-1309 SWITCH RSG1033

OPERATE (2) UNIT

SWITCHES

S1401-1409 SWITCH RSG1033

6. ADJUSTMENTS

6.1 MECHANICAL ADJUSTMENT

- This adjustment should be performed in the test mode.
- Entering the test mode.

Short JP901 and JP902 briefly. (The unit enters the TEST MODE.)

Mode	Operation	Display
Side I Double speed play	Double speed PLAY is selected while the FAST key (Side I or II) is held down during PLAY mode of side I. (Before selecting another mode, press the STOP key first.)	C-03
Side II Double speed play	Double speed PLAY is selected while the FAST key (Side I or II) is held down during PLAY mode of Side II. (Before selecting another mode, press the STOP key first.)	C-04

To release the TEST MODE, press the side I COUNTER RESET key or turn off the unit.

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

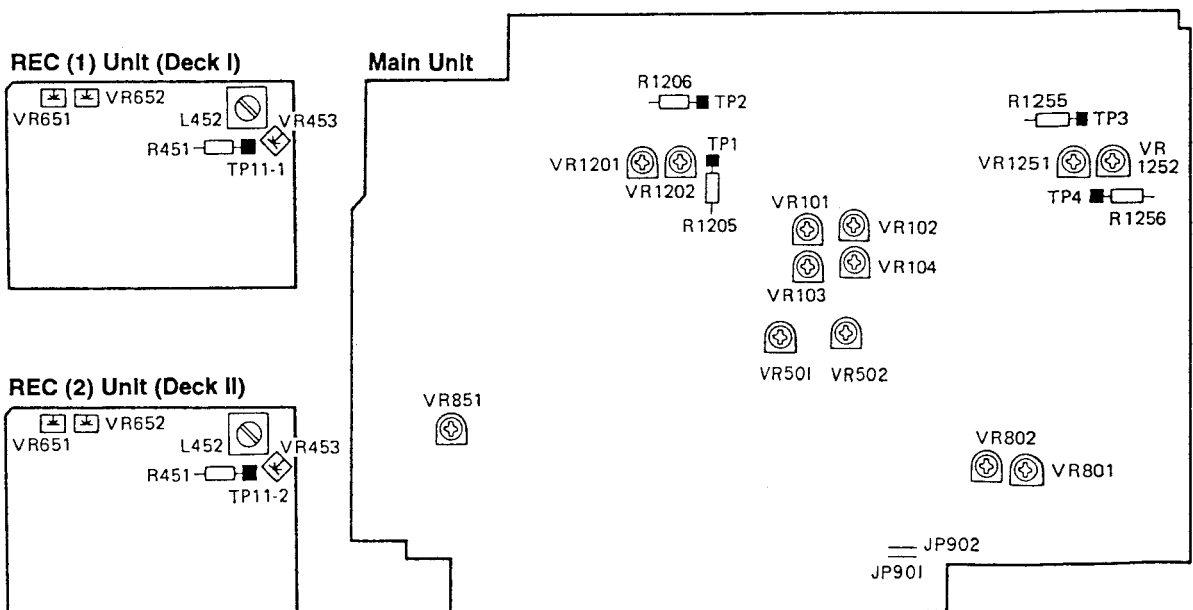


Fig. 6-1 Adjusting Points

6.2 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 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-331E : Playback adjustments
 (See Fig. 6-2)
- STD-631 : NORMAL blank tape
 STD-621 : CrO₂ blank tape
 STD-610 : METAL blank tape

*As the reference recording level is 250 nwb/m for STD-331E, the recording level will be higher by 4 dB for STD-331B (160 nwb/m). When adjusting, pay carefull attention to the type of tape used.

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.
6. Leader tape detection operation adjustment.
7. AUTO BLE adjustment.

NOTE: This unit has an automatic tape selection feature.

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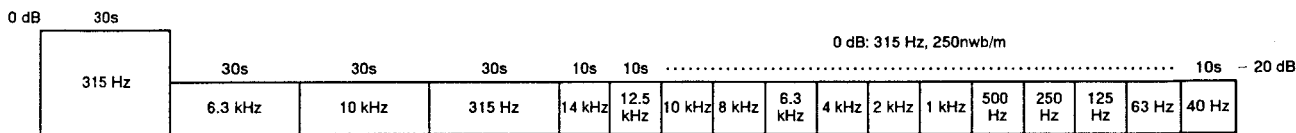


Fig. 6-2 Constants of the test tape STD-331E

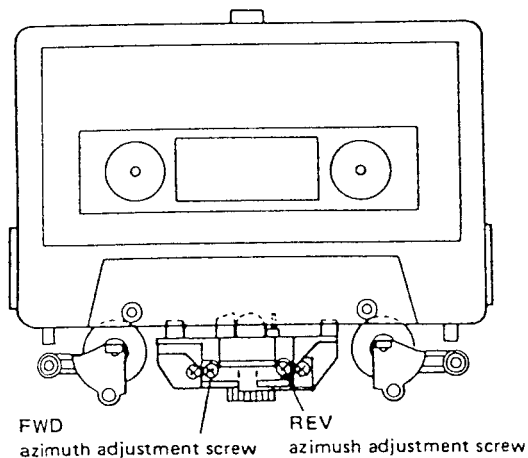


Fig. 6-3 Head azimuth adjustment

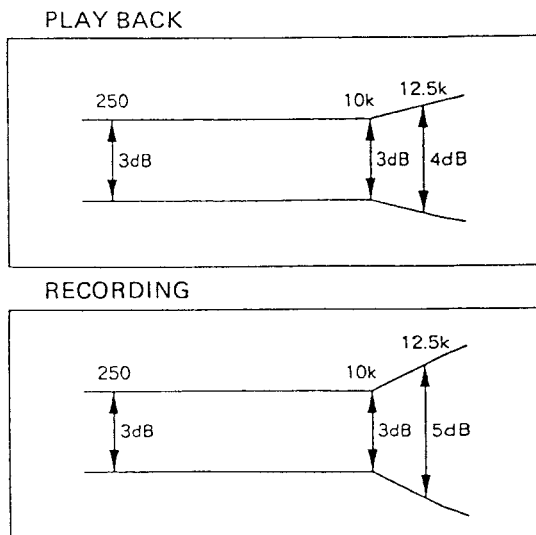


Fig. 6-4 Frequency response zone

PLAYBACK SECTION

1. Head Azimuth Adjustment

- Turn VR101, 102 (Deck I) or VR103, 104 (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-331E test tape.	Head azimuth adjustment screw. (See Fig. 6-3)	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-331E test tape.	Deck I	VR103 (Lch) VR104 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	-6.7 dBV	
			Deck II	VR101 (Lch) VR102 (Rch)	TP. 3 (Lch) TP. 4 (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	$105\text{kHz} \pm \begin{matrix} 3 \\ 0.5 \end{matrix} \text{kHz}$	
			Deck II	L452	TP. 11-2		

2. Erase Current Adjustment

- Adjust the bias oscillator with decks I and II set to recording mode independently. ← (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	VR453	TP. 11-1	170 mV AC	
			Deck II	VR453	TP. 11-2		

3. Recording Bias Adjustment

- Adjust the bias oscillator with decks I and II set to recording mode independently. ← (Double R/P only)
- 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 $1.0 \text{ dB} \pm 0.5 \text{ dB}$ when compared with the 315 Hz signal.	
			Deck II	VR651 (Lch) VR652 (Rch)			

4. Recording Level Adjustment

- Adjust the bias oscillator with decks I and II set to recording mode independently. ← (Double R/P only)

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-631 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-631 test tape, and playback.	Deck I	VR1201 (Lch) VR1202 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	Repeatedly record, playback and adjust so that the playback signal level becomes -11.2 dB.
			Deck II	VR1251 (Lch) VR1252 (Rch)		
5.	STOP	Set the TAPE SELECTOR switch to the CrO2 position.				
6.	REC/ PLAY	Record the above signal onto the STD-621 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 (318 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 -7.2 dB ± 2 dB of the signal output level.	

6. AUTO BLE Adjustment

- BLE adjustment must be performed after all other adjustments are completed.
- This adjustment should be performed in the test mode.
- Entering the test mode. (Refer to page 25.)

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.		Set to the test mode.	-	-	-	
2.	-	Press the PARALLEL REC key on the front panel.	Level meter	VR501	Adjust so that -3 dB lights on the level meter.	400 Hz adjustment
3.		Press the NORMAL SPEED key.		VR502	Adjust so that -3 dB lights on the level meter.	10 kHz adjustment

6. REGLAGE

6.1 RÉGLAGES MECANIQUES

- Ce réglage doit être effectué dans le mode d'essai.
- Passage au mode d'essai.

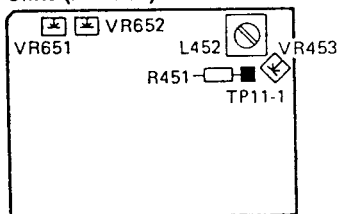
Court-circuiter brièvement JP901 et JP902. (L'appareil passe dans le MODE D'ESSAI).

Mode	Opération	Indication
Lecture (PLAY) double vitesse pour le côté I	La lecture double vitesse est sélectionnée lorsque la touche FAST (côté I ou II) est maintenue enfoncée pendant le mode lecture (PLAY) du côté I. (Avant de sélectionner un autre mode, appuyer tout d'abord sur la touche STOP).	C-03
Lecture (PLAY) double vitesse pour le côté II	La lecture double vitesse est sélectionnée lorsque la touche FAST (côté I ou II) est maintenue enfoncée pendant le mode lecture (PLAY) du côté II. (Avant de sélectionner un autre mode, appuyer tout d'abord sur la touche STOP).	C-04

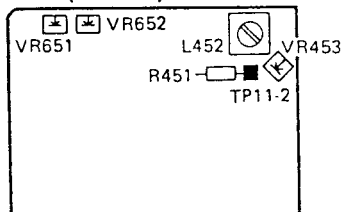
Pour sortir du MODE D'ESSAI, appuyer sur la touche COUNTER RESET du côté I ou mettre l'appareil hors circuit.

1. Réglage et vérification de la vitesse de defilement de la bande							
No.	Platine	Mode	Bande test	Points de réglage	Spécifications/valeurs (fréquence de lecture)	Remarques	
1	I	Lecture à vitesse normale	STD-301	Après reproduction pendant 1 minute.			
2		Lecture à vitesse double		Vérifier	6000 Hz ± 600 Hz		
3		Lecture à vitesse normale		VR851	3000 Hz ± 5 Hz		
4	II	Lecture à vitesse normale	(3 kHz)	Après le contrôle, reproduire sur la Platine II.			
5		Lecture à vitesse double		Après reproduction pendant 1 minute.			
6		Lecture à vitesse normale		VR802	Dans la limite de +/- 10 Hz de la valeur mesurée à l'étape 2 (Platine I).		
7		Lecture à vitesse normale		Après le contrôle			
8				VR801	3000 Hz ± 5 Hz		

ENREGISTREMENT (1) Unité (Platine I)



ENREGISTREMENT (2) Unité (Platine II)



De l'unité principale

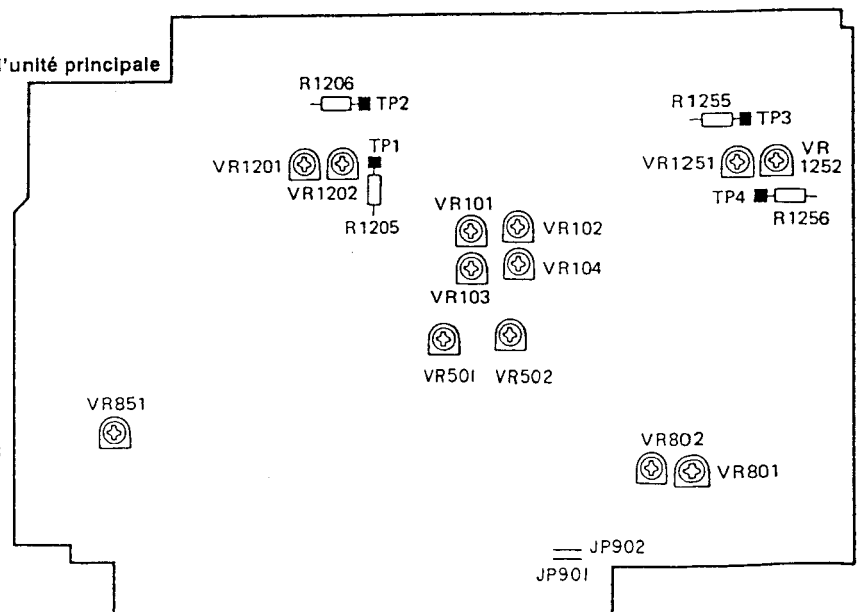


Fig. 6-1 Points de réglage

6.2 REGLAGES ELECTRIQUES

Conditions de réglage

1. Les réglages mécaniques doivent tout d'abord être terminés.
2. Les têtes doivent être nettoyées et démagnétisées.
3. Mettre la platine sous tension et la laisser chauffer pendant au moins quelques minutes avant de commencer les réglages électriques.
4. Le signal de référence est de 0 dBV=1 Vrms.
5. Connecter une résistance de charge de 50 kΩ (tolérance 47k à 52 kΩ) aux bornes de sortie (OUTPUT).
6. Sauf indication contraire, les commutateurs ci-dessous doivent être laissés sur les positions indiquées.

DOLBY NR : OFF

Sélecteur de bande : NORM

(TAPE SELECTOR)

Bandes d'essai

STD-331E : Réglages de la lecture
(Voir fig. 6-2)

STD-631 : Bande vierge de type normal

STD-621 : Bande vierge de type chrome

STD-610 : Bande vierge de type métal

Liste des réglages

Sections de lecture

1. Réglage de l'azimut de la tête.
2. Réglage du niveau de lecture.

Sections d'enregistrement

1. Réglage de l'oscillateur de polarisation.
2. Réglage du courant d'effacement.
3. Réglage de la polarisation d'enregistrement.
4. Réglage du niveau d'enregistrement.
5. Vérification de l'indicateur de niveau.
6. Réglage du fonctionnement de la détection de bande amorce.
7. Réglage de AUTO BLE

REMARQUE:

Cette unité est dotée d'une sélection automatique de bande.

* Le niveau d'enregistrement de référence étant de 250 nwb/m pour le STD-331E, le niveau d'enregistrement sera supérieur de 4 dB pour le STD-331B (160 nwb/m). Pour le réglage, tenir compte du type de bande utilisé.

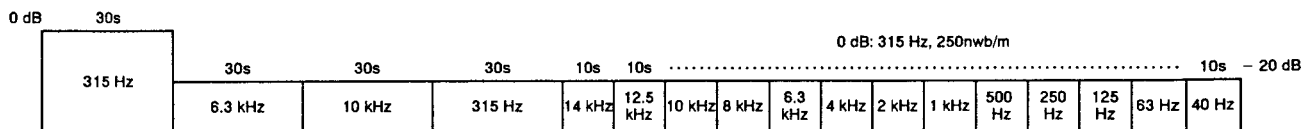


Fig. 6-2 Constantes de la bande d'essai STD-331E

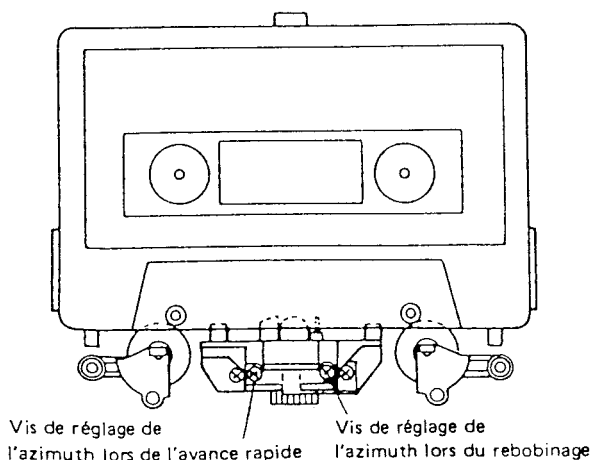


Fig. 6-3 Réglage de l'azimut de la tête

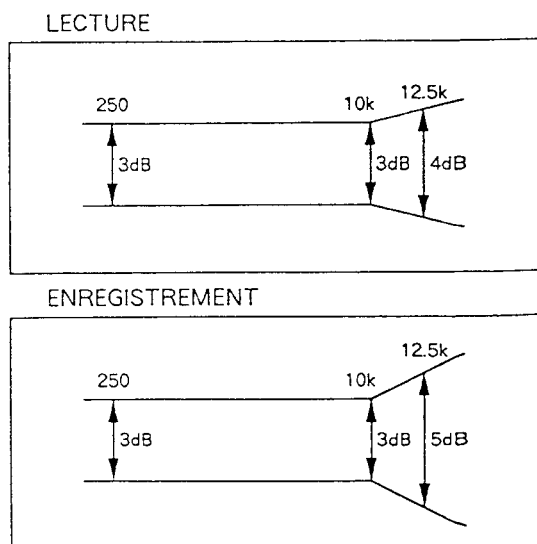


Fig. 6-4 Zone de réponse en fréquence

SECTION DE LECTURE

1. Réglage de l'azimut de la tête

- Tourner VR 101, 102 (Platine I) ou VR103, 104 (Platine II) sur leur position centrale mécanique.

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1.	PLAY	Reproduire la section 10 kHz/-20 dB de la bande d'essai STD-331E.	Vis de réglage de l'azimut de la tête. (Voir fig. 6-3)	Sortie de ligne (LINE OUT)	Niveau du signal de reproduction maximum.	
2.	STOP	Verrouiller la vis avec le verrouillage de vis après avoir terminé le réglage.				

2. Réglage du niveau de lecture

- Ce réglage détermine le niveau DOLBY NR et il doit être effectué très soigneusement.

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques	
1.	PLAY	Reproduire la section 315 Hz/0 dB de la bande d'essai STD-331E.	Platine I	VR103 (can. G) VR104 (can. D)	TP. 1 (can. G) TP. 2 (can. D)	-8.7 dBV	
			Platine II	VR101 (can. G) VR102 (can. D)	TP. 3 (can. G) TP. 4 (can. D)		

SECTION D'ENREGISTREMENT

1. Réglage de l'oscillateur de polarisation

- Régler l'oscillateur de polarisation, les platines étant réglées simultanément dans le mode d'enregistrement. ← (Enr/lec double seulement)

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques	
1.	REC	Charger la bande d'essai STD-610 et n'introduire aucun signal.	Platine I	L452	TP. 11-1	$105\text{kHz} \pm \begin{matrix} 3 \\ 0.5 \end{matrix} \text{kHz}$	
			Platine II	L452	TP. 11-2		

2. Réglage du courant d'effacement

- Régler l'oscillateur de polarisation, les platines I et II étant réglées indépendamment dans le mode d'enregistrement. ← (Enr/lec double seulement)

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques	
1.	REC	Charger la bande d'essai STD-610 et n'introduire aucun signal.	Platine I	VR453	TP. 11-1	170 mV AC	
			Platine II	VR453	TP. 11-2		

3. Réglage de la polarisation d'enregistrement

- Régler l'oscillateur de polarisation, les platines I et II étant réglées indépendamment dans le mode d'enregistrement. ← (Enr/lec double seulement)
- Après le réglage, des précautions doivent être prises pour éviter une sous-polarisation en vérifiant le taux de distorsion.

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques	
1.	STOP	Régler le sélecteur de bande (TAPE SELECTOR) sur la position NORM.					
2.	REC	Enregistrer les signaux 315 Hz et 6,3 kHz à un niveau d'entrée de -20 dBV et les reproduire.	Platine I	VR651 (can. G) VR652 (can. D)	Sortie de ligne (LINE OUT)	Enregistrer, reproduire et régler de manière répétée de sorte que le niveau de lecture du signal 6,3 kHz devienne $1.0 \text{ dB} \pm 0.5 \text{ dB}$ lorsqu'il est comparé avec le signal 315 Hz.	
			Platine II	VR651 (can. G) VR652 (can. D)			

4. Réglage du niveau d'enregistrement

- Régler l'oscillateur de polarisation, les platines I et II étant réglées indépendamment dans le mode d'enregistrement. ← (Enr/lec double seulement)

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1.	STOP	Régler le sélecteur de bande (TAPE SELECTOR) sur la position NORM.				
2.	REC/ PAUSE	Appliquer un signal de 315 Hz/0 dBV aux bornes d'entrée de ligne, charger la bande d'essai STD-831.	Volume de la commande de niveau d'enregistrement.	TP. 1 (can. G) TP. 2 (can. D)	-11,2 dBV	
3.	STOP	Régler le commutateur DOLBY NR sur la position ON. (DOLBY B)				
4.	REC/ PLAY	Enregistrer le signal cidessus sur la bande d'essai STD-831 et le reproduire.	Platine I	VR1201 (can. G) VR1202 (can. D)	TP. 1 (can. G) TP. 2 (can. D)	Enregistrer, reproduire et régler de manière répétée de sorte que le niveau du signal devienne -11,2 dB.
			Platine II	VR1251 (can. G) VR1252 (can. D)		
5.	STOP	Régler le sélecteur de bande (TAPE SELECTOR) sur la position CrO2.				
6.	REC/ PLAY	Enregistrer le signal cidessus sur la bande d'essai STD-821 et le reproduire.	Vérifier	TP. 1 (can. G) TP. 2 (can. D)	-11,2 dBV + 1,5 dB	
7.	STOP	Régler le sélecteur de bande (TAPE SELECTOR) sur la position METAL.				
8.	REC/ PLAY	Enregistrer le signal cidessus sur la bande d'essai STD-810 et le reproduire.	Vérifier	TP. 1 (can. G) TP. 2 (can. D)	-11,2 dBV + 1,5 dB	

5. Vérification de l'indicateur de niveau

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1.	REC/ PAUSE	Appliquer un signal de 315 Hz/-10 dBV (316 mV) aux bornes d'entrée de ligne.	Volume de la commande de niveau d'enregistrement	TP. 1 (can. G) TP. 2 (can. D)	Vérifier que les indicateurs de niveau "0 dB" s'allument dans la limite de -7,2 dB ± 2 dB du niveau de sortie du signal.	

6. Réglage de AUTO BLE

- Le réglage de BLE doit être effectués que tous les autres réglages ont été complétés.
- Ce réglage doit être effectué dans le mode d'essai.
- Passage au mode d'essai. (Se reporter page 29.)

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1.		Régler dans le mode d'essai.	-	-	-	
2.		Appuyer sur la touche PARALLEL REC du panneau avant.	Indicateur de niveau.	VR501	Régler afin que -3 dB clignote sur l'indicateur de niveau.	Réglage 400 Hz
3.		Appuyer sur la touche NORMAL SPEED.		VR502	Régler afin que -3 dB clignote sur l'indicateur de niveau.	Réglage 10 kHz

6. AJUSTE

6.1 AJUSTE MECANICO

- Este ajuste debe efectuarse en el modo de prueba.
- Cómo poner el modo de prueba

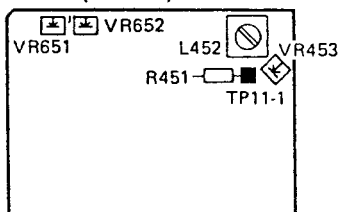
Cortocircuite JP901 y JP902 durante un corto tiempo. (La unidad se pondrá en el MODO DE PRUEBA).

Mode	Operación	Indicación
Reproducción a doble velocidad para el lado I	La reproducción a doble velocidad se selecciona al mantener pulsada la tecla FAST (lado I o II) durante la reproducción del lado I. (Antes de seleccionar otro modo, pulse primero la tecla STOP).	C-03
Reproducción a doble velocidad para el lado II	La reproducción a doble velocidad se selecciona al mantener pulsada la tecla FAST (lado I o II) durante la reproducción del lado II. (Antes de seleccionar otro modo, pulse primero la tecla STOP).	C-04

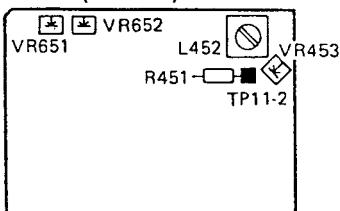
Para cancelar el modo de prueba, pulse la tecla COUNTER RESET del lado I o desconecte la alimentación de la unidad.

1. Ajuste y verificación de la velocidad de cinta						
No.	Platina	Modo	Cinta de prueba	Puntos de ajuste	Especificaciones/valores nominales (frecuencia de reproducción)	Comentarios
1	I	PLAY (velocidad normal)	STD-301	Después de reproducir durante 1 minuto.		
2		PLAY (velocidad doble)		Verificar	6000 Hz ± 600 Hz	
3		PLAY (velocidad normal)		VR851	3000 Hz ± 5 Hz	
4	II	PLAY (velocidad normal)	(3 kHz)	Después de verificar, reproduzca en la platina II.		
5		PLAY (velocidad doble)		Después de reproducir durante 1 minuto.		
6		PLAY (velocidad normal)		VR802	Dentro de +/- 10 Hz del valor medido en el paso 2 (platina I).	
7		PLAY (velocidad normal)		Después de verificar.		
8				VR801	3000 Hz ± 5 Hz	

GRABACIÓN (1) Unidad (Platina I)



GRABACIÓN (2) Unidad (Platina II)



De la unidad principal

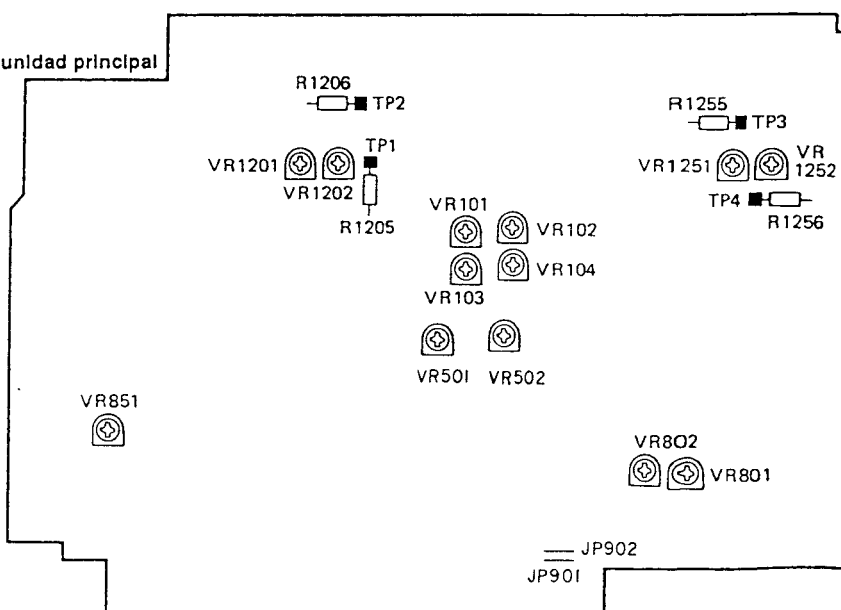


Figura 6-1 Puntos de ajuste

6.2 AJUSTES ELÉCTRICOS

Condiciones de ajuste

1. Los ajustes mecánicos deben haberse completado primero.
2. La cabeza debe estar limpia y desmagnetizada.
3. Encienda la alimentación para permitir que la platina se caliente durante unos pocos minutos por lo menos antes de realizar cualquier ajuste eléctrico.
4. La señal de referencia es de 0 dBV=1 Vrms.
5. Conecte una resistencia de 50 kΩ (o entre 47k y 52 kΩ) en los terminales OUTPUT.
6. A menos que se especifique lo contrario, los conmutadores indicados más abajo deben dejarse en las posiciones indicadas.

DOLBY NR : OFF
 TAPE SELECTOR : NORM

Cintas de prueba

- STD-331E : Ajustes de reproducción
 (Consulte la figura 6-2)
- STD-631 : Cinta virgen NORMAL
- STD-621 : Cinta virgen de CrO₂
- STD-610 : Cinta virgen de METAL

Lista de ajustes

Secciones de reproducción

1. Ajuste de azimut de la cabeza
2. Ajuste del nivel de reproducción

Secciones de grabación

1. Ajuste del oscilador de polarización
2. Ajuste de la corriente de borrado
3. Ajuste de la polarización de grabación
4. Ajuste del nivel de grabación
5. Verificación del medidor de nivel
6. Ajuste de la operación de detección del extremo inicial de cinta
7. Ajuste BLE automático

NOTA:

Esta unidad posee una función de selección automática de cinta.

* Como el nivel de grabación de referencia es igual a 250 nwb/m para el STD-331E, el nivel de grabación será 4 dB mayor para el STD-331B (160 nwb/m). Al realizar el ajuste, preste suma atención al tipo de cintá que se está utilizando.

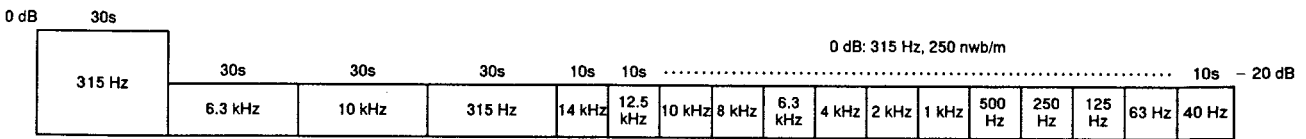


Figura 6-2 Constantes de la cinta de prueba STD-331E

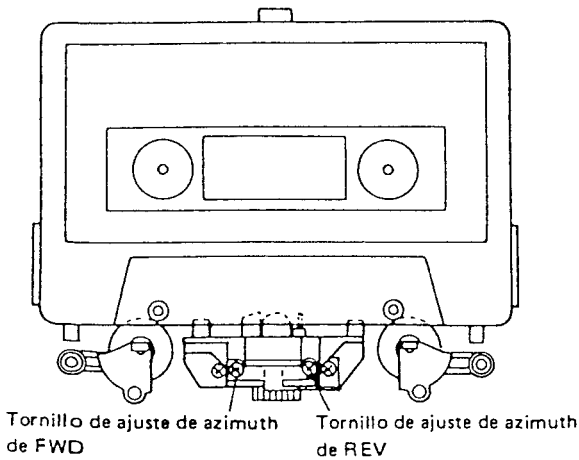
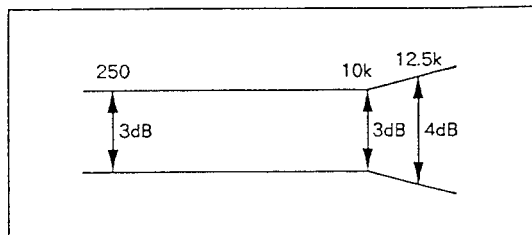


Figura 6-3 Ajuste de azimut de la cabeza

REPRODUCCION



GRABACIÓN

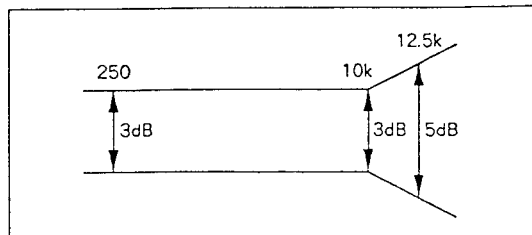


Figura 6-4 Zona de respuesta de frecuencia

SECCIÓN DE REPRODUCCIÓN

1. Ajuste del azimut de la cabeza

- Poner VR101, 102 (platina I) o VR103, 104 (platina II) en las posiciones del centro mecánico.

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.	PLAY	Reproduzca la sección de 10 kHz/-20 dB de la cinta de prueba STD-331E.	Tornillo de ajuste del azimut de la cabeza. (Vea la figura 6-3)	LINE OUT	Nivel máximo de la señal de reproducción.	
2.	STOP	Bloquee el tornillo con su cierre una vez finalizado el ajuste.				

2. Ajuste del nivel de reproducción

- Este ajuste determina el nivel DOLBY NR y debe realizarse con mucho cuidado.

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios	
1.	PLAY	Produzca la parte de 315 Hz/0 dB de la cinta de prueba STD-331E.	Platina I	VR103 (Lch) VR104 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	-6.7 dBV	
			Platina II	VR101 (Lch) VR102 (Rch)	TP. 3 (Lch) TP. 4 (Rch)		

SECCIÓN DE GRABACIÓN

1. Ajuste del oscilador de polarización

Ajuste el oscilador de polarización con los platinas puestas simultáneamente en el modo de grabación. (Doble G/R sólo)

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios	
1.	REC	Introduzca la cinta de prueba STD-610 sin señal de entrada.	Platina I	L452	TP. 11-1	$105\text{kHz} \pm 0.5\text{ kHz}$	
			Platina II	L452	TP. 11-2		

2. Ajuste de la corriente de borrado

- Ajuste el oscilador de polarización con las platinas I y II puestas independientemente en el modo de grabación. → (Doble G/R sólo)

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios	
1.	REC	Introduzca la cinta de prueba STD-610 sin señal de entrada.	Platina I	VR453	TP. 11-1	170 mV AC	
			Platina II	VR453	TP. 11-2		

3. Ajuste de polarización de grabación

- Ajuste el oscilador de polarización estando las platinas I y II ajustadas independientemente para el modo de grabación. → (Doble G/R sólo)
- Una vez finalizado el ajuste, compruebe el porcentaje de distorsión para no obtener subpolarización.

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.	STOP	Ponga el conmutador TAPE SELECTOR en la posición NORM.				
2.	REC	Grabe la señal de 315 Hz y 6,3 kHz a un nivel de entrada de -20 dBV y reproduzca.	Platina I VR651 (Lch) VR652 (Rch)	LINE OUT	Grabe, reproduzca y ajuste repetidamente para que el nivel de la señal de reproducción de 6,3 kHz sea de $1.0\text{ dB} \pm 0.5\text{ dB}$ cuando se compare con la señal de 315 Hz.	
			Platina II VR651 (Lch) VR652 (Rch)			

4. Ajuste del nivel de grabación

- Ajuste el oscilador de polarización con las platinas I y II puestas independientemente en el modo de grabación. → (Doble G/R sólo)

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.	STOP	Ponga el conmutador TAPE SELECTOR en la posición NORM.				
2.	REC/ PAUSE	Aplique una señal de 315 Hz/0 dBV a los terminales de entrada de línea e introduzca la cinta de prueba STD-831.	Control de nivel de grabación.	TP. 1 (Lch) TP. 2 (Rch)	-11,2 dBV	
3.	STOP	Ponga el conmutador DOLBY NR en la posición ON. (DOLBY B)				
4.	REC/ PLAY	Grabe la señal de arriba en la cinta de prueba STD-831 y reproduzca.	Platina I	VR1201 (Lch) VR1202 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	Grabe, reproduzca y ajuste repetidamente para que el nivel de la señal de reproducción sea de -11,2 dB.
			Platina II	VR1251 (Lch) VR1252 (Rch)		
5.	STOP	Ponga el conmutador TAPE SELECTOR en la posición CrO2.				
6.	REC/ PLAY	Grabe la señal de arriba en la cinta de prueba STD-821 y reproduzca.	Verifique	TP. 1 (Lch) TP. 2 (Rch)	-11,2 dBV ± 1,5 dB	
7.	STOP	Ponga el conmutador TAPE SELECTOR en la posición METAL.				
8.	REC/ PLAY	Grabe la señal de arriba en la cinta de prueba STD-810 y reproduzca.	Verifique	TP. 1 (Lch) TP. 2 (Rch)	-11,2 dBV ± 1,5 dB	

5. Verificación del medidor de nivel

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.	REC/ PAUSE	Aplique una señal de 315 Hz/-10 dBV (316 mV) a los terminales de entrada de línea.	Control de nivel de grabación	TP. 1 (Lch) TP. 2 (Rch)	Verifique si se encienden los medidores de nivel "0 dB" cuando el nivel de salida de la señal sea -7,2 dB ± 2 dB.	

6. Ajuste BLE Automático

- El ajuste BLE debe efectuarse después de haber terminado todos los otros ajustes.
- Este ajuste debe efectuarse en el modo de prueba.
- Cómo poner el modo de prueba. (consultese la página 33.)

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.		Ponga el modo de prueba.	-	-	-	
2.		Pulse la tecla PARALLEL REC del panel delantero.	Medidor de nivel	VR501	Ajuste de modo que parpadee -3 dB en el medidor de nivel.	Ajuste de 400 Hz
3.		Pulse la tecla NORMAL SPEED.		VR502	Ajuste de modo que parpadee -3 dB en el medidor de nivel.	Ajuste de 10 kHz

7. FOR CT-W901R/HEM, HB AND CT-W951R/SD TYPES

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.

CT-W901R/HEM, HB, CT-W951R/SD and CT-W901R/KUC have the same construction except for the following:

Mark	Symbol & Description	Part No.				Remarks
		CT-W901R/ KUC	CT-W901R/ HEM	CT-W901R/ HB	CT-W951R/ SD	
⊙	Mother unit	RWM1509	RWM1508	RWM1508	RWM1508	
	└ Main unit	Non supply	Non supply	Non supply	Non supply	
⊙	Sub unit	RWM1512	RWM1510	RWM1510	RWM1511	
	└ Display unit	Non supply	Non supply	Non supply	Non supply	
\triangle	AC power cord	PDG1015	PDG1003	PDG1036	PDG1013	
\triangle	Strain relief	CM-22C	CM-22B	CM-22B	CM-22B	
\triangle	Voltage selector	.....	.....	.....	PSB1002	
	(AC110/120-127/220/240V)					
\triangle	FU1001, 1002 (1.5A/125V) Fuse	REK1001	.....	.....	.....
\triangle	FU1001, 1002 (T1.6A/250V) Fuse	.....	REK-102	REK-102	REK-102	
\triangle	Power transformer (AC120V)	RTT1162	.....	.....	.....
\triangle	Power transformer	.....	RTT1163	RTT1163	.....
	(AC220-230/240V)					
\triangle	Power transformer	.....	.....	.....	RTT1164	
	(AC110/120-127/220/240V)					
	Front panel assembly	RXX1462	RXX1461	RXX1461	RXX1478	
	FL filter	RAH1596	RAH1597	RAH1597	RAH1672	
	FL lens	RAH1594	RAH1594	RAH1594	RAH1567	
	Packing case	RHG1323	RHG1322	RHG1322	RHG1335	
	Connection cord (Mini)	PDE-319	.....	.....	.....
	Operating instructions (Spanish)	.....	.....	.....	RRD1123	
	Operating instructions	.....	RRD1121	.....	.....
	(German/Italian/Dutch/Swedish/ Spanish/Portuguese)					
	Remote control unit (CU-T015)	.....	.....	.....	RPX1057	
	Polyethylene bag	.....	.....	.....	RHL1001	for remote control
	Battery cover	.....	.....	.....	PZN1010	for remote control

MAIN UNIT

Main unit of CT-W901R/HEM, HB, CT-W951/SD and main unit of CT-W901R/KUC have the same construction except for the following:

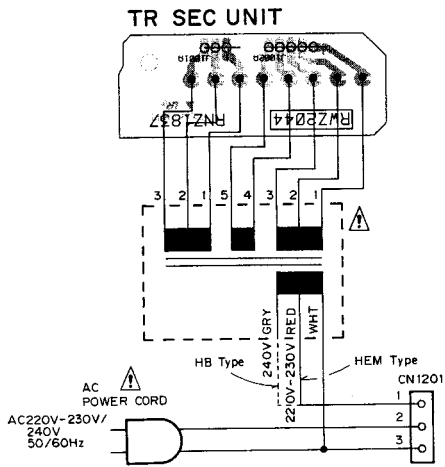
Mark	Symbol & Description	Part No.		Remarks
		CT-W901R/KUC	CT-W901R/HEM, HB and CT-W951R/SD	
	D1604-1606	1SS254	.....
	C1608	CGCYF473Z50	.....
	JA1603, 1604	RKN1004	.....

DISPLAY UNIT

Display unit of CT-W901R/HEM, HB, CT-W951R/SD and display unit of CT-W901R/KUC have the same construction except for the following:

Mark	Symbol & Description	Part No.			Remarks
		CT-W901R/KUC	CT-W901R/HEM and HB	CT-W951R/SD	
V1501 IC1501		RAW1104	RAW1103	RAW1104 HC-177	Remote control sensor

POWER supply section for HEM and HB type



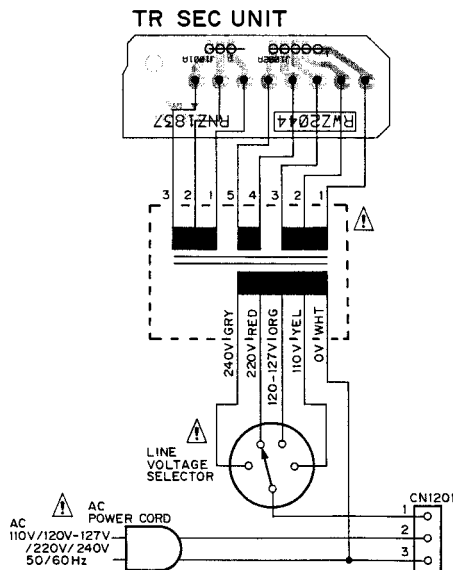
Line Voltage Selection

Line voltage can be changed with the following steps

1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the connection of the power transformer primary taps.
4. Stick the line voltage level on the rear panel.

Port NO.	Discription		
AXX-193	220V level	—————	220-230V
AXX-192	240V level	- - - - -	240V


POWER supply section for SD type



8. SPECIFICATIONS

System	4 track, 2-channel stereo
Heads	"Hard Permalloy" recording/playback head × 2 "Ferrite" erasing head × 2
Motor	DC servo capstan motor × 2 DC reel motor × 2
Wow and Flutter	No more than 0.055% (WRMS) (JIS) No more than ±0.16% (DIN)
Fast Winding Time	Approximately 90 seconds (C-60 tape)
Frequency Response	
-20 dB recording:	
TYPE IV (Metal) tape	20 to 20,000 Hz
TYPE II (Chrome) tape	20 to 19,000 Hz
TYPE I (Normal) tape	20 to 18,000 Hz
Signal-to-Noise Ratio	
Dolby NR OFF	More than 57 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 0.7% (at -4 dB; 160 nwb/m)
Input (Sensitivity)	
LINE (INPUT)	100 mV (Input impedance 57 kΩ)
Output (Reference level)	
LINE (OUTPUT)	0.5 V (Output impedance 3.2 kΩ)
Headphone	0.63 mW (Load impedance 8 Ω)

Subfunctions

- Twin AUTO BLE system
- Double recording/playback reverse
- DOLBY HX PRO recording function
- DOLBY B/C types NR
- Relay recording
- Parallel recording
- Music search over ±15 selections
- High-speed and normal-speed copy (DECK I→DECK II)
- Relay playback/blank skip
- CD•DECK SYNCHRO recording capability
- Peak level meter with peak-hold function
- Automatic space recording mute
- Automatic tape selector
-  System remote control available
(U.S. and Canadian models only)
- TIMER Recording
- TIMER Playback (Automatic relay on)
- 2-mode electronic 4-digit twin tape counter
- Headphone jack
- Wireless remote control operation (CT-W951R only)
- Copy level control (normal speed copy)
- Dolby NR type convertible copy (normal speed copy)

Miscellaneous

Power Requirements

U.S., Canadian models	AC 120V, 60 Hz
U.K. model	AC 230—240 Volts~, 50/60 Hz
European models	AC 220—230 Volts~, 50/60 Hz
Multi-voltage models	AC 110V/120V—127V/220V/240V (switchable), 50/60 Hz


Power Consumption

Dimensions	420(W) × 135(H) × 318.5(D) mm 16-9/16(W) × 5-5/16(H) × 12-7/16(D) in
------------------	-------------------------------------------------------------------------

Weight (without package)

(Except for multi-voltage models)	5.7 kg (12 lb 6 oz.)
(Multi-voltage models)	5.9 kg (13 lb)

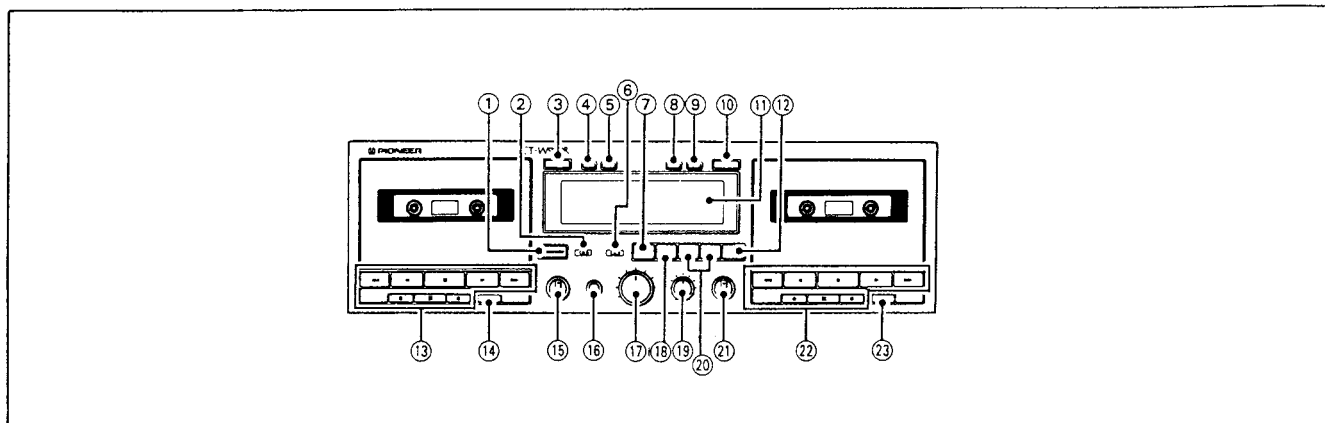
Accessories

Operating instructions	1
Connection cord with pin plugs	2
 Remote control cord (U.S. and Canadian models only)	1
CD•DECK SYNCHRO control cord	1
Remote control unit (CT-W951R only)	1
Dry cell batteries (size AAA/IEC R03) (CT-W951R only)	2

NOTE:

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

9. PANEL FACILITIES



- ① Power switch (POWER OFF/ ON)
- ② Timer mode switch (TIMER MODE REC/OFF/PLAY)
- ③ DECK I eject button ()
Stop a tape running before opening the door.
- ④ DECK I counter reset button (RESET)
- ⑤ DECK I counter mode button (TIME/COUNT)
- ⑥ Reverse mode switch (REVERSE MODE)
- ⑦ Relay/skip button (RELAY/SKIP)
- ⑧ DECK II counter reset button (RESET)
- ⑨ DECK II counter mode button (TIME/COUNT)
- ⑩ DECK II eject button ()
Stop a tape running before opening the door.
- ⑪ Function display
- ⑫ CD•DECK SYNCHRO recording button (CD SYNCHRO)
- ⑬ DECK I operation buttons
 - /MS: Fast reverse/music search
 - : Reverse playback
 - : Stop
 - : Forward playback
 - /MS: Fast forward/music search
 - : Recording mute
 - : Pause
 - : Recording
- ⑭ DECK I AUTO BLE button
- ⑮ DECK I Dolby* NR switch (DOLBY NR 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 and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.*
- ⑯ Headphones jack (PHONES)
- ⑰ Recording level control (REC LEVEL)
- ⑱ Parallel recording button (PARALLEL REC)
- ⑲ Copying level control (COPY LEVEL)
- ⑳ Synchro copy buttons (SYNCHRO COPY)
 - NORMAL SPEED: Normal speed copy
 - HIGH SPEED : Double speed copy
- ㉑ DECK II Dolby* NR switch (DOLBY NR B/OFF/C)

- ㉒ DECK II operation buttons
 - /MS: Fast reverse/music search
 - : Reverse playback
 - : Stop
 - : Forward playback
 - /MS: Fast forward/music search
 - : Recording mute
 - : Pause
 - : Recording
- ㉓ DECK II AUTO BLE button

FEATURES OF 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. It is especially difficult with a 2-head deck where the recording sound cannot be monitored.

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.