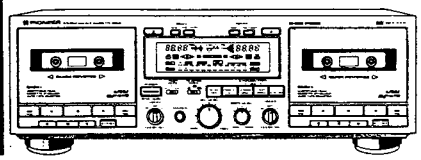
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2194

STEREO DOUBLE CASSETTE DECK

CT-W51
CT-W950R
CT-W960R

CT-W51, CT-W950R AND CT-W960R HAVE THE FOLLOWING:

Type	Model			Power Requirement	Remarks
	CT-W51	CT-W950R	CT-W960R		
KUC	○	–	–	AC120V only	
HEM	–	○	–	AC220V–230V, 230V–240V (switchable)*	
HB	–	○	–	AC220V–230V, 230V–240V (switchable)*	
SD	–	–	○	AC110V, 120V–127V, 220V, 240V (switchable)	

* Change the primary wiring of the power transformer.

- **This manual is applicable to the CT-W51/KUC, CT-W950R/HEM, HB and CT-W960R/SD types.**
- **As to the CT-W950R/HEM, HB and CT-W960R/SD types, refer to page 46.**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

T-W51

CONTENTS

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

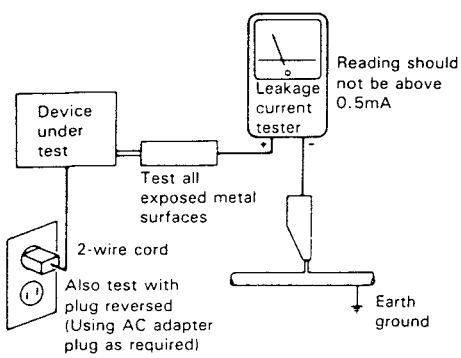
(FOR USA MODEL ONLY)

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'

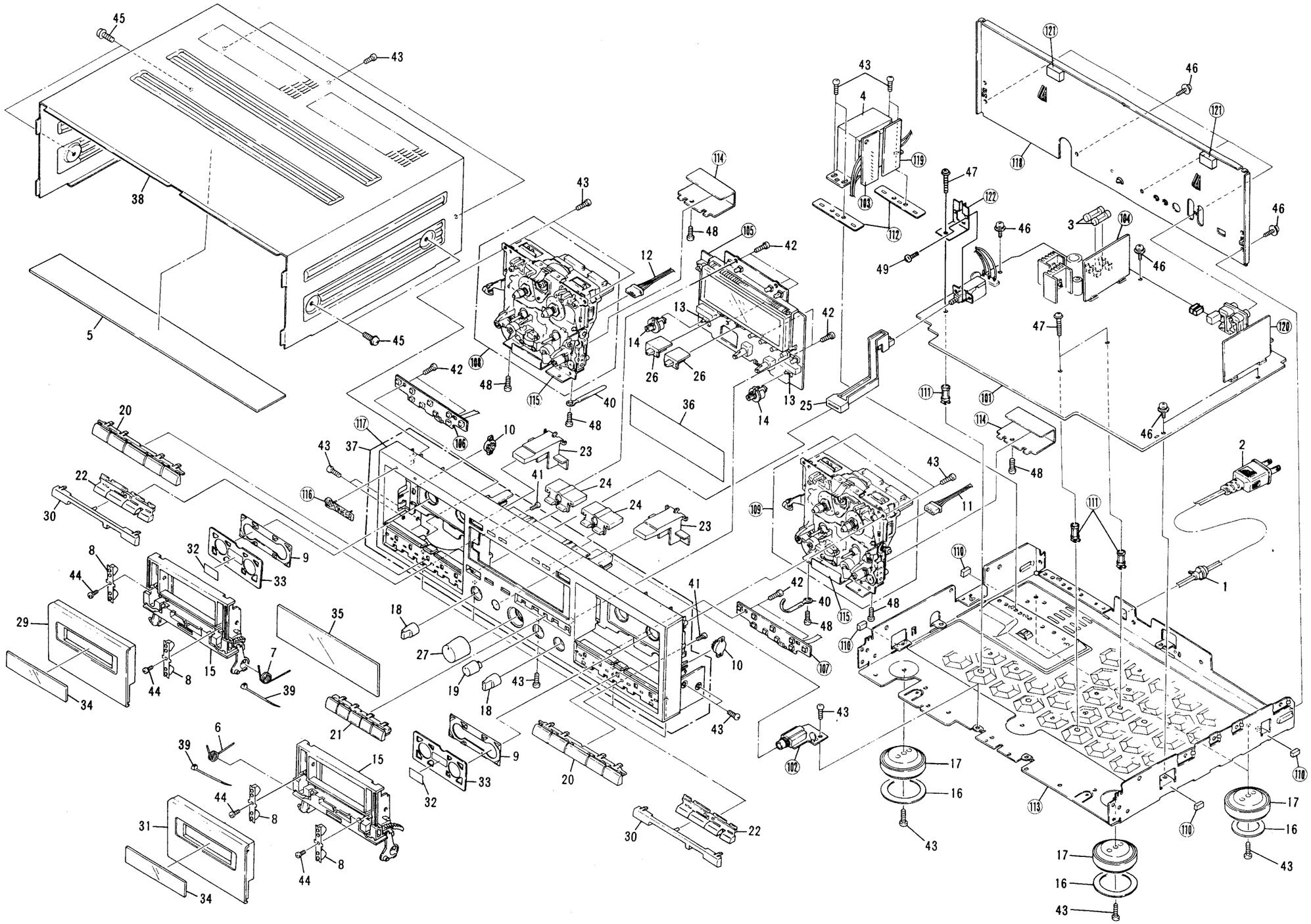
Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which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

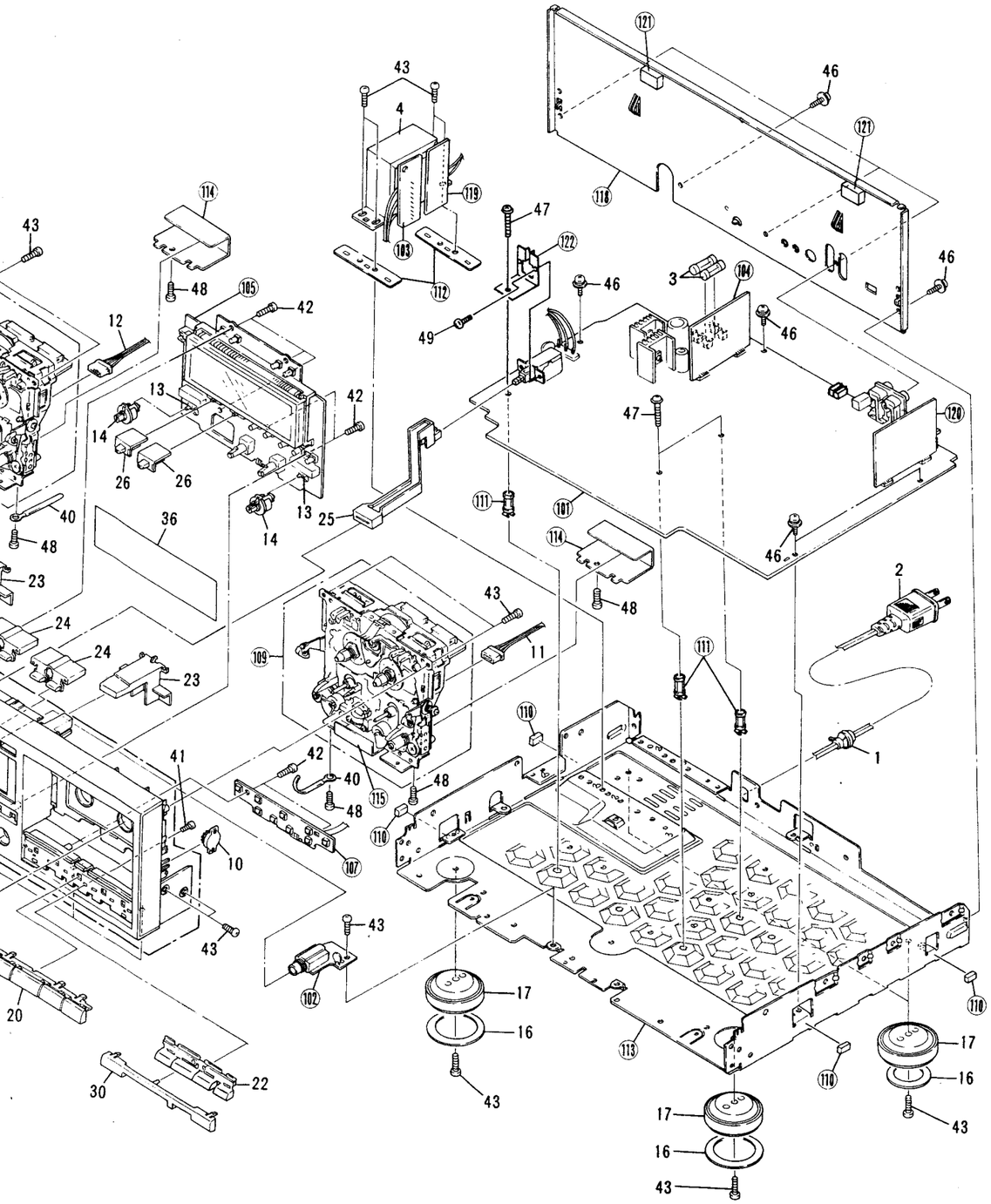
Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts 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





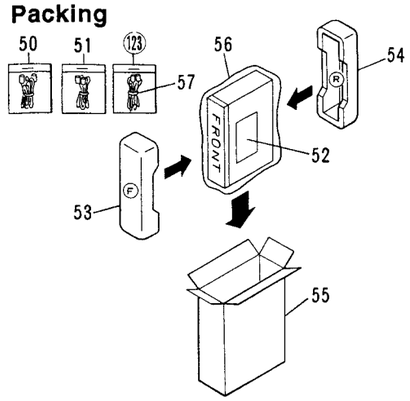
NOTES:

- Parts without part number cannot be supplied.
- The ⚠ 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.

Parts List of Exterior

Mark	No.	Description	Part No.
⚠	1	Strain relief	CM – 22C
⚠	2	AC Power cord	PDG1015
⚠	3	FU1001, FU1002 Fuse (1.5A)	REK1001
⚠	4	Power transformer	RTT1162
	5	Absorb plate (B)	PNB1109
	6	Door spring (L)	RBH1224
	7	Door spring (R)	RBH1225
	8	Half pressure spring	RBK1013
	9	Stabilizer (B)	REB1085
	10	Damper assembly	REC1005
	11	Connector assembly 5P	RKP1323
	12	Connector assembly 5P	RKP1332
	13	SW cap	RNK1522
	14	Rotary SW shaft	RNK1523
	15	Door pocket	RNT1010
	16	Stopper	VEC1061
	17	Insulator	VNK1095
	18	Knob B (DOLBY NR)	RAC1414
	19	VR knob B (COPY LEVEL)	RAC1421
	20	Operation knob A (◀◀, ◀, ■, ▶, ▶▶)	RAC1479
	21	Operation knob C (SYNCHRO COPY)	RAC1423
	22	BLE knob (⊙, ❚❚, ●, AUTO – BLE)	RAC1601
	23	Eject knob	RAC1425
	24	Counter knob	RAC1426
	25	Power knob	RAC1427
	26	Slide knob (TIMER MODE, REVERSE MODE)	RAC1428
	27	VR knob A(REC LEVEL)	RAC1430
	28	.....	
	29	Door cover	RAH1795
	30	BLE mold	RAH1729
	31	Door cover	RAH1796
	32	Remain display paper	REE – 113
	33	Stabilizer panel	RAH1483
	34	Door lens	RAH1553
	35	FL lens	RAH1883
	36	FL filter	RAH1596
	37	Front panel assembly	RXX1411
	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
	46	Screw	IBZ30P060FCC
	47	Screw	IBZ30P150FCU
	48	Screw	BCZ26P050FMC
	49	Screw	PMA30P060FCU
	50	Mini connection cord	PDE – 319
	51	Control cord	RDE1030
	52	Operating instructions (English)	RRB1079
	53	Pad F	RHA1044
	54	Pad R	RHA1045
	55	Packing case	RHG1286
	56	Sheet	RHX – 034
	57	Connection cord	RDE – 010
	101	Main unit	
	102	H.Phone unit	
	103	Trans 2 unit	
	104	REC (1) unit	
	105	Display unit	
	106	Control SW (1) unit	
	107	Control SW (2) unit	
	108	Mechanism unit	
	109	Mechanism unit	
	110	Spacer	
	111	PCB spacer	
	112	Transformer sheet	
	113	Main chassis	
	114	Mechanism shield plate	
	115	Mechanism bracket	
	116	Name plate	
	117	Front panel	
	118	Rear panel	
	119	Trans 1 unit	
	120	REC (2) unit	
	121	UNIT spacer	
	122	SW bracket	
	123	Connection cord assembly	

Packing

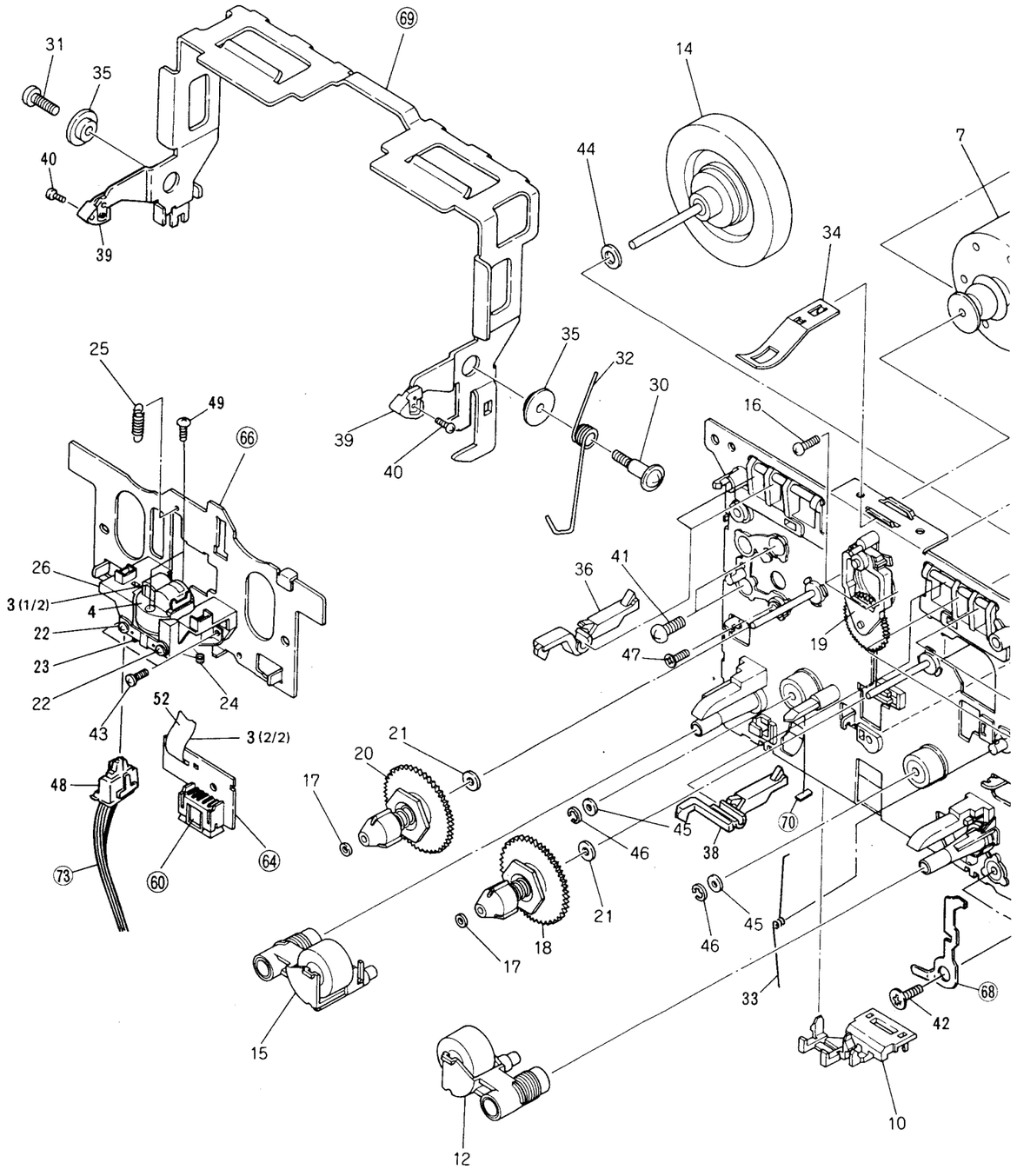


2.2 Parts List of Mechanism Unit (Deck I)

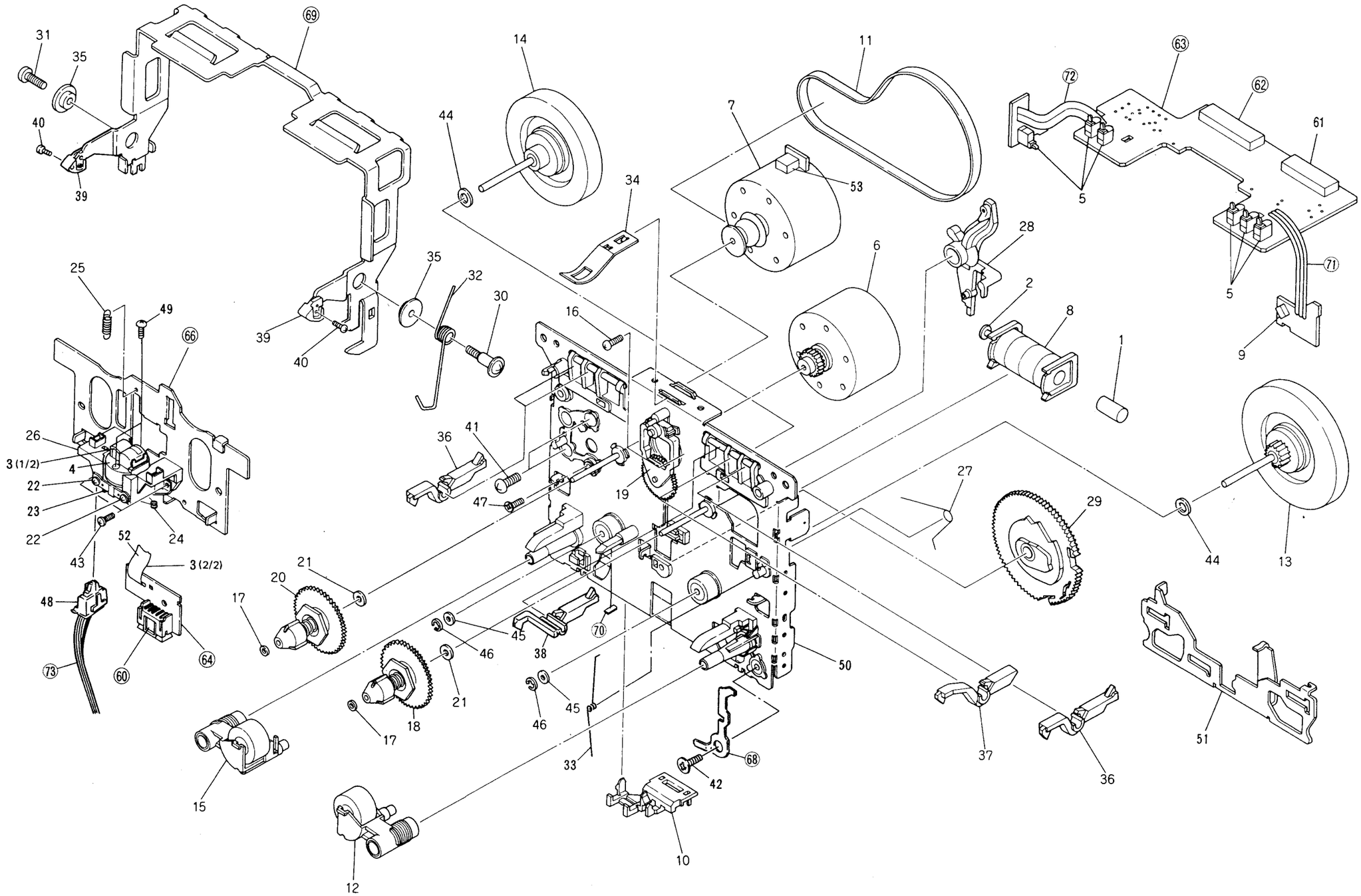
Mark	No.	Description	Part No.
	1	Shaft	RLA1130
	2	Planger	RLA1132
	3	HEAD assembly (R/P)	RXA1373
	4	R/P, E head	RPB1033
	5	Push switch	RSG1018
	6	Reel motor (BLK)	RXM1029
	7	Main motor (BLK)	RXM1030
	8	Solenoid (BLK)	RXP1010
	9	Photo transistor	SPI3534FG
	10	Wire holder	RNK1530
	11	Main belt	REB1157
	12	Pinch roller assembly (DIA 2.5)	RXA1183
	13	Flywheel assembly	RXA1346
	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	Azimuth screw	RBA1080
	23	Azimuth spring	RBK1029
	24	Rotation spring	RBL – 085
	25	Head base spring	RBL1003
	26	Housing head (BLK)	RXA1293
	27	Slide spring	RBH1239
	28	Play arm	RNK1525
	29	Cam gear (3R)	RNK1672
	30	Screw	RBA1078
	31	Screw	RBA1079
	32	Eject lever spring (R)	RBH1233
	33	Eject prevention spring (R)	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)	RNK1537
	39	Hook	RNM – 160
	40	Screw	PCZ20P040FMC
	41	Screw	PMZ26P050FMC
	42	Screw	RBA1048
	43	Screw	RBA1077
	44	Washer	WA26D045D025
	45	Washer	WA26D047D050
	46	Washer	YE15FUC
	47	Screw	PBZ30P080FMC
	48	Quick sensor	SPI – 320 – AB
	49	Screw	PMZ14P050FNI
	50	Chassis base (BLK)	RXA1291

Mark	No.	Description	Part No.
	51	Slide plate	RNE1345
	52	HD FPC (PB)	RNP1232
	53	Holder cushion (L)	RED1027
	60	Connector (5P)	
	61	Connector (8P)	RKP1327
	62	Connector (12P)	
	63	P.C. Board	
	64	Head P.C.B (R/P)	
	65	.....	
	66	Head base	
	67	.....	
	68	Eject prevention arm (R)	
	69	Eject lever (WR)	
	70	Reflection plate	
	71	Jumper wire	
	72	Jumper wire	
	73	Wire	

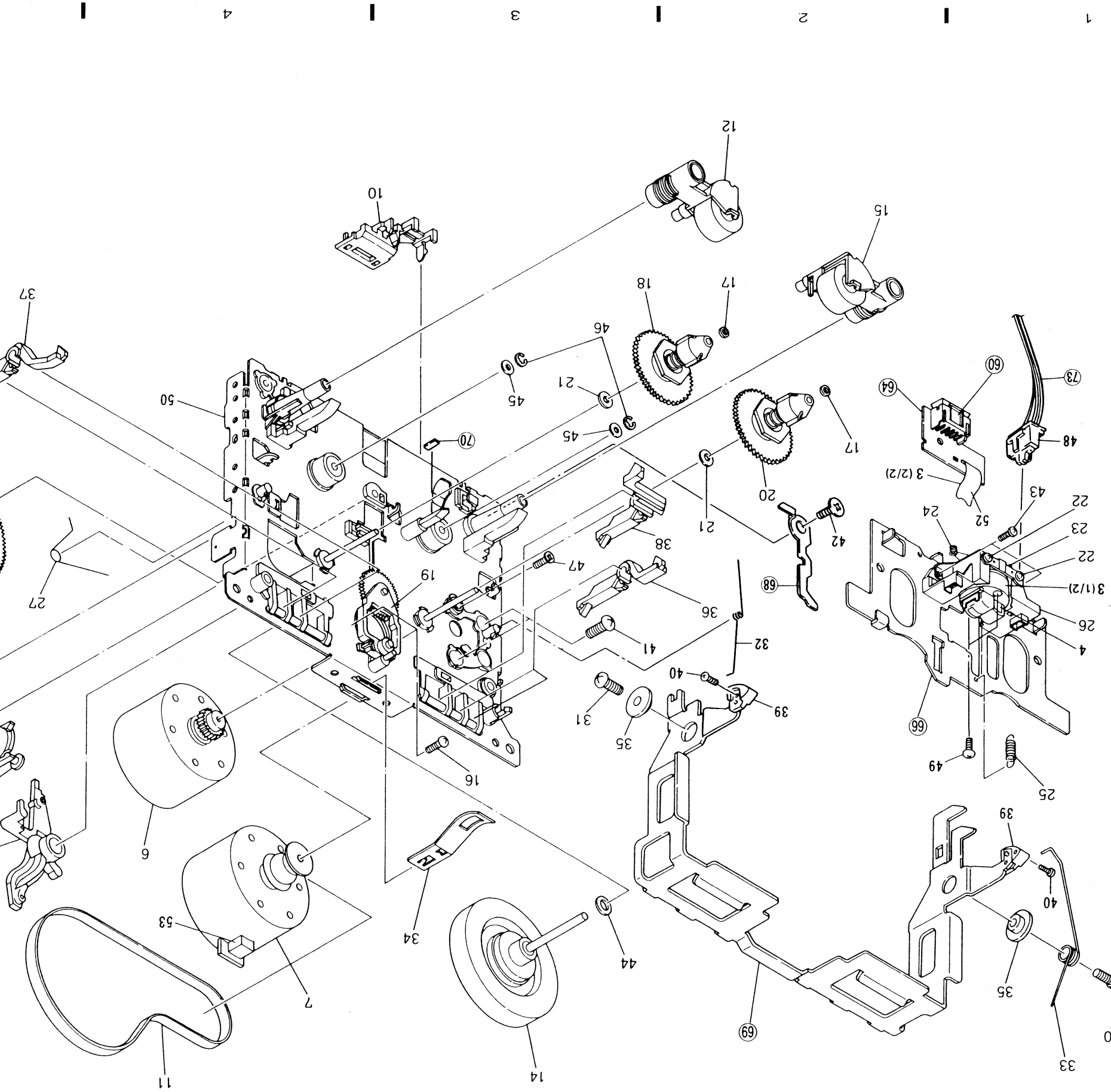
Mechanism Unit (Deck I)



Mechanism Unit (Deck 1)



2.3 MECHANISM UNIT (DECK II)



ORS :

d in Ω, 1/6W, ±5% tolerance unless otherwise noted
M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (M) ; ±20%
e.

TORS :

d in capacity (μF) / voltage (V) unless otherwise noted p ; pF.
n without voltage is 50V except electrolytic capacitor.

GE CURRENT :

DC voltage (V) at no input signal.
DC current at no input signal.

:

al route.
usting point.
mark found on some component parts indicates the
nce of the safety factor of the part. Therefore, when
, be sure to use parts of identical designation.
ed capacitors and resistors have parts numbers.

the basic schematic diagram, but the actual circuit may
e to improvements in design.

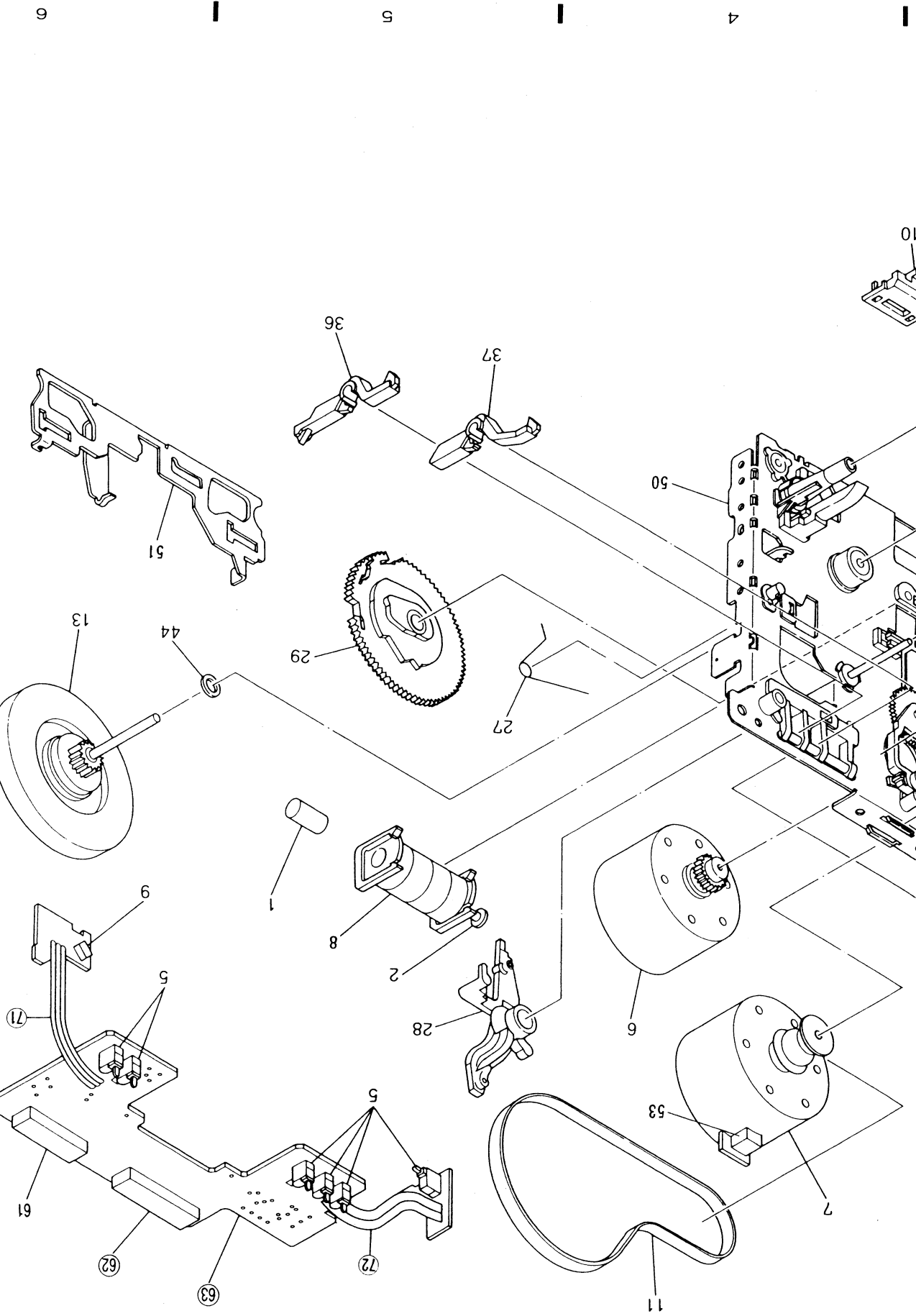
5. SWITCHES (Underline indicates switch position)

POWER SW UNIT
S1201 : ON – OFF

OPERATE 1 UNIT
S1301 : FWD
S1302 : REV
S1303 : STOP
S1304 : REC
S1305 : FF
S1306 : REW
S1307 : PAUSE
S1308 : MUTE
S1309 : I AUTO BLE

OPERATE 2 UNIT
S1401 : FWD
S1402 : REV
S1403 : STOP
S1404 : REC
S1405 : FF
S1406 : REW
S1407 : PAUSE
S1408 : MUTE
S1409 : II AUTO BLE

DISPLAY UNIT
S1501 : CD CYNC
S1502 : PARAREL
S1503 : X2 COPY
S1504 : X1 COPY
S1505 : 2 – COUNTER MODE
S1506 : 2 – COUNTER REST
S1507 : 1 – COUNTER MODE
S1508 : 1 – COUNTER REST
S1509 : SKIP/RELAY
S1510 : REV MODE ⇄ – ⊃ – ↻
S1511 : T.REC – OFF – T.RELAY
S1512 : I DOLBY B – OFF – C
S1513 : II DOLBY B – OFF – C



Parts List of Mechanism Unit (Deck II)

Mark	No.	Description	Part No.
	1	Shaft	RLA1130
	2	Plangar	RLA1132
	3	Head assembly (R/P)	RXA1373
	4	R/P, E head	RPB1033
	5	Push switch	RSG1018
	6	Reel motor (BLK)	RXM1029
	7	Main motor (BLK)	RXM1030
	8	Solenoid (BLK)	RXP1010
	9	Photo transistor	SPI3534FG
	10	Wire holder	RNK1530
	11	Main belt	REB1157
	12	Pinch roller assembly (DIA2.5)	RXA1183
	13	Flywheel assembly	RXA1346
	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	Azimuth screw	RBA1080
	23	Azimuth spring	RBK1029
	24	Rotation spring	RBL – 085
	25	Head base spring	RBL1003
	26	Housing head (BLK)	RXA1293
	27	Slide spring	RBH1239
	28	Play arm	RNK1525
	29	Cam gear (3R)	RNK1672
	30	Screw	RBA1078
	31	Screw	RBA1079
	32	Eject prevention spring (L)	RBH1234
	33	Eject lever spring (L)	RBH1231
	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(L)	RNK1529
	39	Hook	RNM – 160
	40	Screw	PCZ20P040FMC
	41	Screw	PMZ26P050FMC
	42	Screw	RBA1048
	43	Screw	RBA1077
	44	Washer	WA26D045D025
	45	Washer	WA26D047D050
	46	Washer	YE15FUC
	47	Screw	PBZ30P080FMC
	48	Quick sensor	SPI – 320 – AB
	49	Screw	PMZ14P050FNI
	50	Chassis base (BLK)	RXA1291

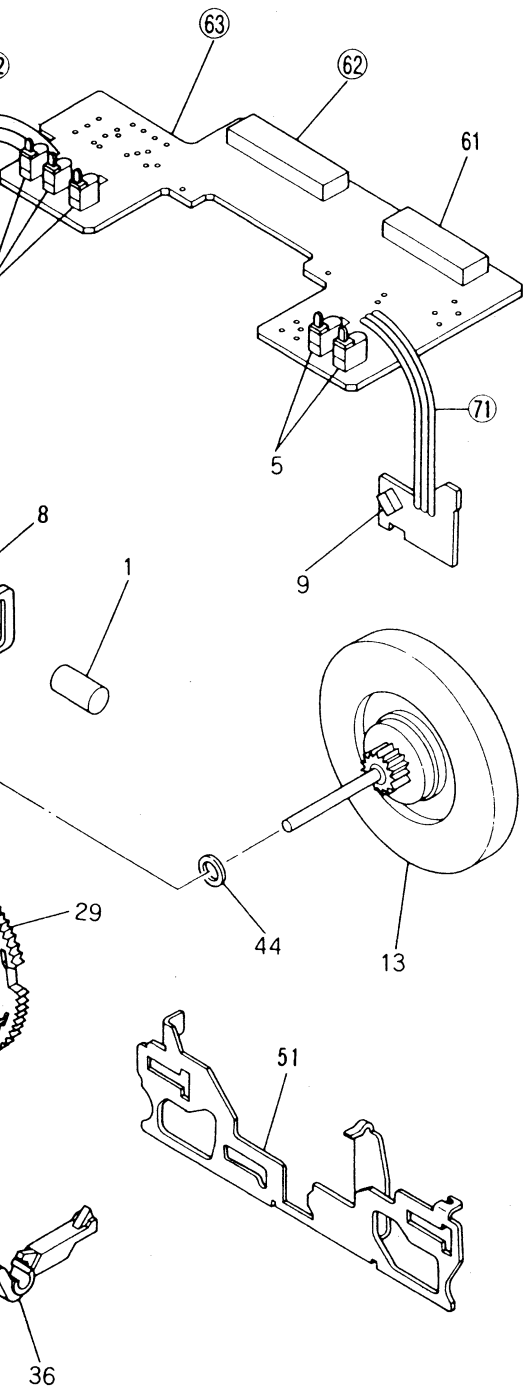
1. RESISTORS :
   Indicated in Ω, 1/6W, ±5% tolerance unless other
   k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (
   tolerance.

2. CAPACITORS :
   Indicated in capacity (μF)/voltage (V) unless otherwise
   Indication without voltage is 50V except electrolytic

3. VOLTAGE CURRENT :
   ; DC voltage (V) at no input signal.
   ⬅mA ; DC current at no input signal.

4. OTHERS :
   ➡ ; Signal route.
   ⊘ ; Adjusting point.
   The ⚠ mark found on some component parts ind
   importance of the safety factor of the part. Theref
   replacing, be sure to use parts of identical designatio
   ※ marked capacitors and resistors have parts number

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



Parts List of Mechanism Unit (Deck II)

Mark	No.	Description	Part No.
A	1	Shaft	RLA1130
	2	Planger	RLA1132
	3	Head assembly (R/P)	RXA1373
	4	R/P, E head	RPB1033
	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 (DIA2.5)	RXA1183
	13	Flywheel assembly	RXA1346
	14	Flywheel assembly	RXA1295
	15	Pinch roller assembly(L)	RXA1296
B	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	Azimuth screw	RBA1080
	23	Azimuth spring	RBK1029
—	24	Rotation spring	RBL – 085
	25	Head base spring	RBL1003
	26	Housing head (BLK)	RXA1293
	27	Slide spring	RBH1239
	28	Play arm	RNK1525
	29	Cam gear (3R)	RNK1672
	30	Screw	RBA1078
C	31	Screw	RBA1079
	32	Eject prevention spring (L)	RBH1234
	33	Eject lever spring (L)	RBH1231
	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(L)	RNK1529
—	39	Hook	RNM – 160
	40	Screw	PCZ20P040FMC
	41	Screw	PMZ26P050FMC
	42	Screw	RBA1048
	43	Screw	RBA1077
	44	Washer	WA26D045D025
	45	Washer	WA26D047D050
D	46	Washer	YE15FUC
	47	Screw	PBZ30P080FMC
	48	Quick sensor	SPI – 320 – AB
	49	Screw	PMZ14P050FNI
	50	Chassis base (BLK)	RXA1291

Mark	No.	Description	Part No.
	51	Slide plate	RNE1345
	52	HD FPC (R/P)	RNP1232
	53	Holder cushion (L)	RED1027
	60	Connector (5P)	
	61	Connector (8P)	RKP1327
	62	Connector (12P)	
	63	P.C. Board	
	64	Head P.C.B (R/P)	
	65	.....	
	66	Head base	
	67	.....	
	68	Eject prevention arm (L)	
	69	Eject lever (WL)	
	70	Reflection plate	
	71	Jumper wire	
	72	Jumper wire	
	73	Wire	

3. SCHEMATIC DIAGRAM

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

1SS254 DTC124ES DTA114ES
2SA1309A DTA114TS DTC114ES
2SC3311A DTC114TS

REC UNIT(I) (1/3) RWX1036

REC UNIT(I) (3/3)

REC UNIT(II) (3/3)

IC801, QB01-Q806 DECK II MECHA CONT

IC851, Q851-Q856 DECK I MECHA CONT

TAPE SPEED ADJ

BIAS OSC 1

BIAS OSC 2

MUSIC SEARCH

H. PHONE AMP

BA15218N 400Hz LPF

400Hz LEVEL ADJ.

10kHz LEVEL ADJ.

10kHz Buffer AMP

MAIN UNIT

SYSTEM CONTROL

DISPLAY UNIT (1/2)

DOLBY SW.

OPERATE1 UNIT

LEADER DET

RESET

KUC ONLY

SD ONLY

CD-DECK SYNCHRO

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

1SS254 DTC124ES DTA114ES
2SA1309A DTA114TS DTC114ES
2SC3311A DTA114TS DTC114TS

MAIN UNIT

DISPLAY UNIT (2/2)

H. PHONE AMP

H. PHONE UNIT

MUSIC SEARCH

BA15218N 400Hz LPF

400Hz LEVEL ADJ.

10kHz LEVEL ADJ.

10kHz Buffer AMP

MA SYSTEM CONTROL

DISPLAY UNIT (1/2)

RAW1076 (HEM, HB)
RAW1080 (KUC, SD)

REC UNIT (I) (3/3)

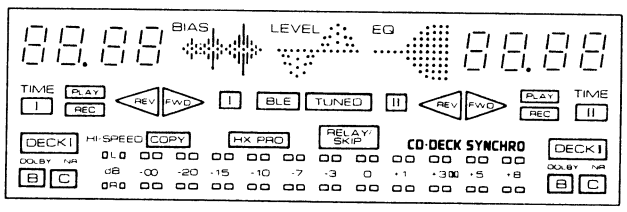
REC UNIT (II) (3/3)

OPERATE1 UNIT

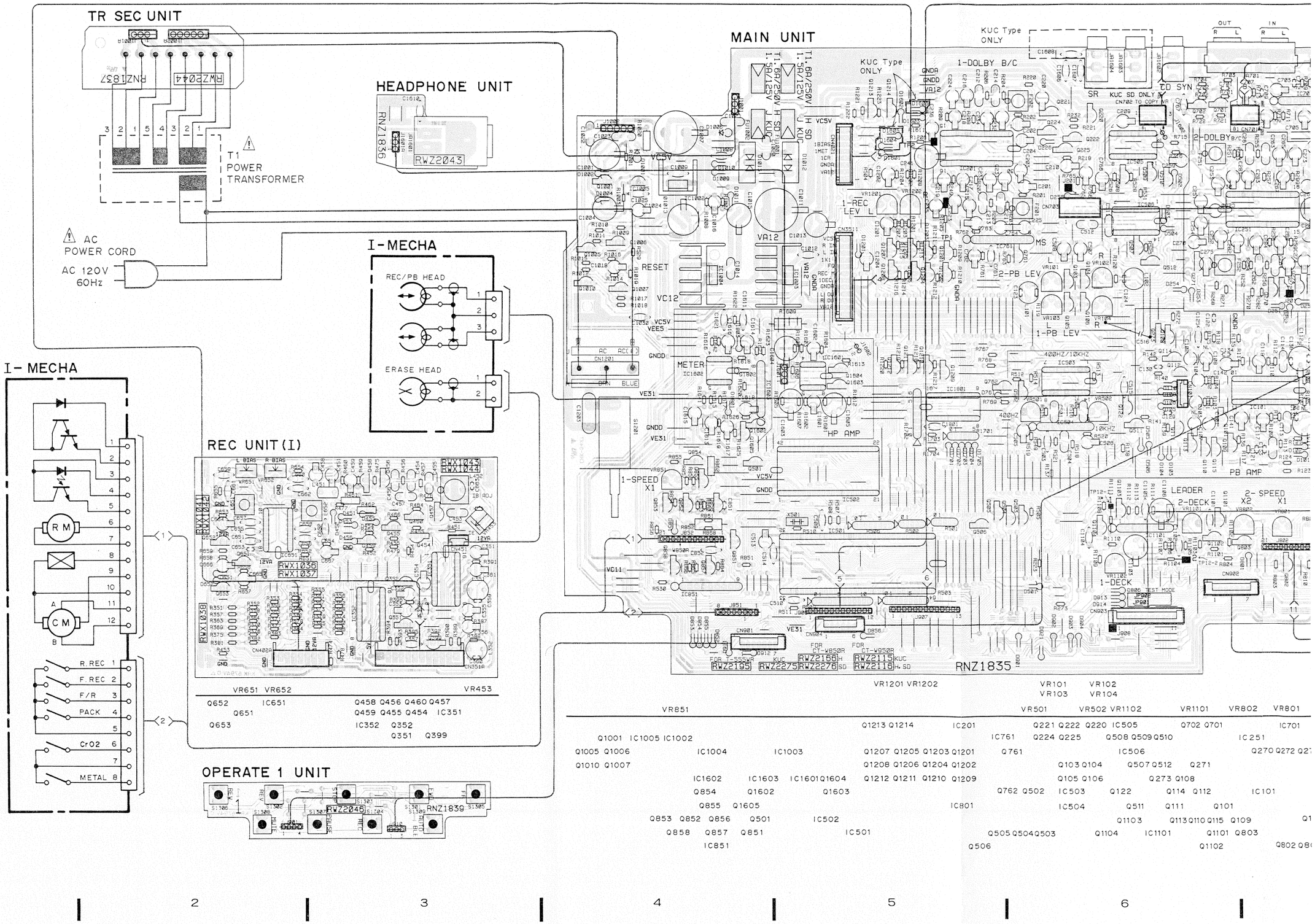
OPERATE2 UNIT

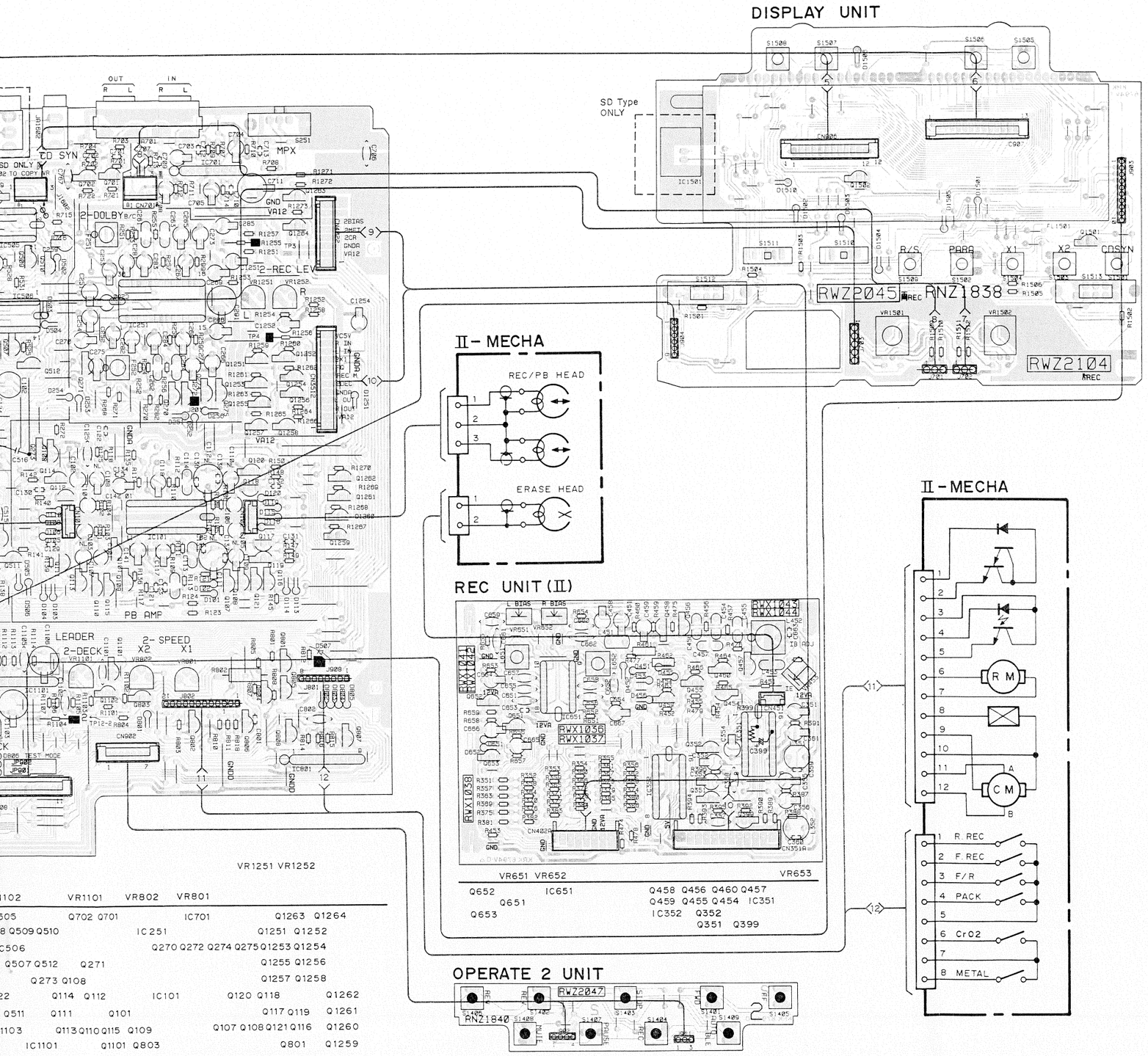
LEADER DET

PLAYBACK SIGNAL
RECORDING SIGNAL



4. P.C. BOARDS CONNECTION DIAGRAM





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
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		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.

OPERATE S UNIT

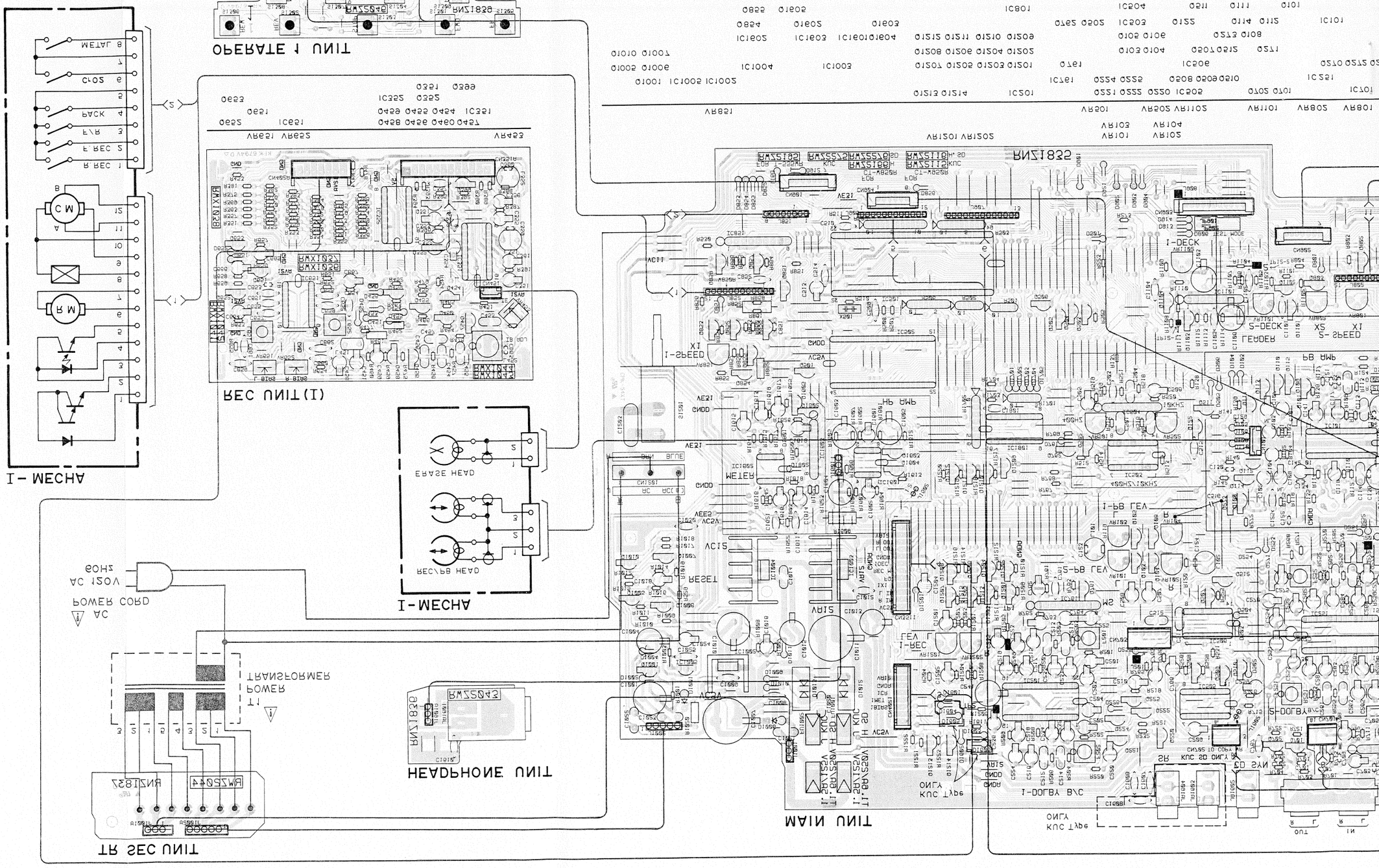
REC UNIT(II)

II-MECHA

II-MECHA

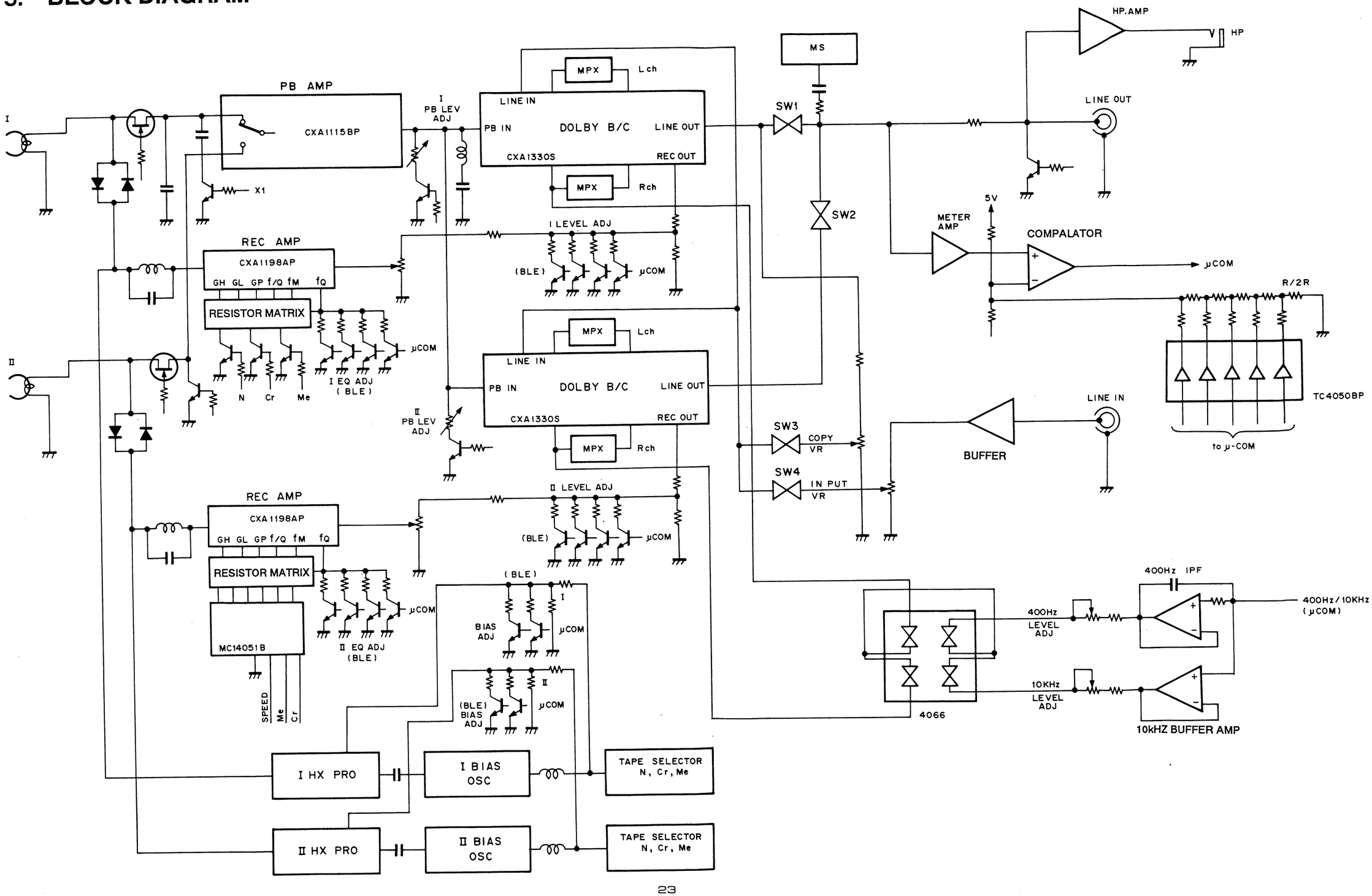
DISPLAY UNIT

4. P.C. BOARDS CONNECTION DIAGRAM



● View from soldering side

5. BLOCK DIAGRAM



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 ⚠ 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 5 6 1 J
47k Ω → 47 × 10³ → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

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

5.62k Ω → 562 × 10¹ → 5621 ····· RN1/4SR 5 6 2 1 F

Mark	No.	Description	Part No.
REC (1) UNIT			
SEMICONDUCTORS			
	IC351	REC EQUALIZER IC	CXA1198AP-A
	IC352	LOGIC IC	MC14051B
	IC651	DOLBY HX PRO IC	UPC1297CA
	Q351, 352	TRANSISTOR	2SC3311A
	Q399	TRANSISTOR	XDC124ES
	Q454, 455	TRANSISTOR	2SC3311A
	Q456-458	TRANSISTOR	2SC3243
	Q459, 460	TRANSISTOR	2SB1238X
	Q651, 652	TRANSISTOR	2SA1309A
	Q653	TRANSISTOR	XDC124ES
	D451	DIODE	1SS254
	D452	DIODE	1SS252
	D453-456	DIODE	1SS254
	D651, 652	DIODE	1SS254
COILS/TRANSFORMERS			
	L351, 352	COIL	RTF1004
	L451	RADIAL INDUCTOR	LFA121K
	L452	COIL	RTD1022
	L651, 652	COIL	RTD1046
CAPACITORS			
	C351, 352	ELECTR. CAPACITOR	CEAS471M10
	C353-356	ELECTR. CAPACITOR	CEAS4R7M50
	C357	CERAMIC CAPACITOR	CKCYF473Z50
	C358	CERAMIC CAPACITOR	CKCYF103Z50
	C359, 360	AXIAL CAPACITOR	CKPUYB221K50
	C361	ELECTR. CAPACITOR	CEAS470M16
	C451	ELECTR. CAPACITOR	CEAS330M35
	C453	CAPACITOR	CQPA682J100
	C454	AUDIO FILM CAPACITOR	CFTXA223J50
	C455	AUDIO FILM CAPACITOR	CFTXA682J50
	C456, 457	AUDIO FILM CAPACITOR	CFTXA332J50
	C458	ELECTR. CAPACITOR	CEAS330M35
	C459	ELECTR. CAPACITOR	CEAS100M50
	C651, 652	AUDIO FILM CAPACITOR	CFTXA103J50
	C653, 654	AXIAL CAPACITOR	CKPUYB821K50
	C655, 656	AUDIO FILM CAPACITOR	CFTXA223J50
	C657, 658	CERAMIC CAPACITOR	CGCYX473K25
	C659, 660	CERAMIC CAPACITOR	CCCSL101K500
	C661, 662	CERAMIC CAPACITOR	RCG1005
	C663	AXIAL CAPACITOR	CKPUYB101K50
	C664	ELECTR. CAPACITOR	CEASR10M50
	C665	ELECTR. CAPACITOR	CEAS100M50
	C666	ELECTR. CAPACITOR	CEAS4R7M50
	C667	ELECTR. CAPACITOR	CEAS100M50
RESISTORS			
	R351-356	CARBONFILM RESISTOR	RD1/6PM□□□J
	R363-368	CARBONFILM RESISTOR	RD1/6PM□□□J
	R375-380	CARBONFILM RESISTOR	RD1/6PM□□□J
	R387-396	CARBONFILM RESISTOR	RD1/6PM□□□J
	R451	CARBONFILM RESISTOR	RD1/2LF□□□J
	R452-457	CARBONFILM RESISTOR	RD1/6PM□□□J
	R459, 460	CARBONFILM RESISTOR	RD1/6PM□□□J
	R461, 462	CARBONFILM RESISTOR	RD1/2LF□□□J
	R463-466	CARBONFILM RESISTOR	RD1/6PM□□□J
	R474-479	CARBONFILM RESISTOR	RD1/6PM□□□J
	R651-659	CARBONFILM RESISTOR	RD1/6PM□□□J
	VR453	VARIABLE RESISTOR	RCP1013
	VR651, 652	VR	VRTB6HS223
OTHERS			
	CN351		S12B-XH-A-1
	CN402		S8B-XH-A-1
REC (2) UNIT			
SEMICONDUCTORS			
	IC351	REC EQUALIZER IC	CXA1198AP-A
	IC352	LOGIC IC	MC14051B
	IC651	DOLBY HX PRO IC	UPC1297CA
	Q351, 352	TRANSISTOR	2SC3311A
	Q399	TRANSISTOR	XDC124ES
	Q454, 455	TRANSISTOR	2SC3311A
	Q456-458	TRANSISTOR	2SC3243
	Q459, 460	TRANSISTOR	2SB1238X
	Q651, 652	TRANSISTOR	2SA1309A
	Q653	TRANSISTOR	XDC124ES
	D451	DIODE	1SS254
	D452	DIODE	1SS252
	D453-456	DIODE	1SS254
	D651, 652	DIODE	1SS254
COILS/TRANSFORMERS			
	L351, 352	COIL	RTF1004
	L451	RADIAL INDUCTOR	LFA121K
	L452	COIL	RTD1022
	L651, 652	COIL	RTD1046
CAPACITORS			
	C351, 352	ELECTR. CAPACITOR	CEAS471M10
	C353-356	ELECTR. CAPACITOR	CEAS4R7M50
	C357	CERAMIC CAPACITOR	CKCYF473Z50
	C358	CERAMIC CAPACITOR	CKCYF103Z50
	C359, 360	AXIAL CAPACITOR	CKPUYB221K50
	C361	ELECTR. CAPACITOR	CEAS470M16
	C451	ELECTR. CAPACITOR	CEAS330M35
	C453	CAPACITOR	CQPA682J100
	C454	AUDIO FILM CAPACITOR	CFTXA223J50
	C455	AUDIO FILM CAPACITOR	CFTXA682J50
	C456, 457	AUDIO FILM CAPACITOR	CFTXA332J50
	C458	ELECTR. CAPACITOR	CEAS330M35
	C459	ELECTR. CAPACITOR	CEAS100M50
	C651, 652	AUDIO FILM CAPACITOR	CFTXA103J50
	C653, 654	AXIAL CAPACITOR	CKPUYB821K50
	C655, 656	AUDIO FILM CAPACITOR	CFTXA223J50
	C657, 658	CERAMIC CAPACITOR	CGCYX473K25
	C659, 660	CERAMIC CAPACITOR	CCCSL101K500
	C661, 662	CERAMIC CAPACITOR	RCG1005
	C663	AXIAL CAPACITOR	CKPUYB101K50
	C664	ELECTR. CAPACITOR	CEASR10M50
	C665	ELECTR. CAPACITOR	CEAS100M50
	C666	ELECTR. CAPACITOR	CEAS4R7M50
	C667	ELECTR. CAPACITOR	CEAS100M50
RESISTORS			
	R351-396	CARBONFILM RESISTOR	RD1/6PM□□□J
	R451	CARBONFILM RESISTOR	RD1/2LF□□□J
	R452-457	CARBONFILM RESISTOR	RD1/6PM□□□J
	R459, 460	CARBONFILM RESISTOR	RD1/6PM□□□J
	R461, 462	CARBONFILM RESISTOR	RD1/2LF□□□J
	R463-466	CARBONFILM RESISTOR	RD1/6PM□□□J
	R474-479	CARBONFILM RESISTOR	RD1/6PM□□□J
	R651-659	CARBONFILM RESISTOR	RD1/6PM□□□J
	VR453	VARIABLE RESISTOR	RCP1013
	VR651, 652	VR	VRTB6HS223
OTHERS			
	CN351		S12B-XH-A-1
	CN402		S8B-XH-A-1
HEADPHONE UNIT			
CAPACITORS			
	C1610	CERAMIC CAPACITOR	CKCYF473Z50
OTHERS			
	JA1601	JACK	RKN1002
TR SEC UNIT			
There is no supply part in this unit.			
OPERATE 1 UNIT			
SWITCHES			
	S1301-1309	SWITCH	RSG1033
OPERATE 2 UNIT			
SWITCHES			
	S1401-1409	SWITCH	RSG1033
MAIN UNIT			
SEMICONDUCTORS			
	IC101	PB-EQ AMP IC	CXA1115BP
	IC201	DOLBY B/C IC	CXA1330S
	IC251	DOLBY B/C IC	CXA1330S
	IC501		PD4296A
	IC502	FL STATIC DRIVER IC	LC7570
	IC503	LOGIC IC	TC4066BP
	IC504	IC	BA15218N
	IC505, 506	LOGIC IC	TC4066BP
	IC701	IC	BA15218N
	IC761	IC	BA335
	IC801	IC	BA6218
	IC851	IC	BA6218
⚠	IC1002	REGULATOR IC	NJM78M05FA
⚠	IC1003, 1004	REGULATOR IC	NJM7812FA
⚠	IC1005	REGULATOR IC	NJM79L05A
	IC1101	DUAL-COMPARATOR IC	M5233L
	IC1601, 1602	OP-AMP IC	BA15218
	IC1603	DUAL-COMPARATOR IC	M5233L
	IC1801	CMOS LOGIC IC	TC4050BP
	Q101, 102	TRANSISTOR	XDC124ES
	Q103-106	DIGITAL TRANSISTOR	DTC114TS
	Q107-109	TRANSISTOR	XDC124ES
	Q110	DIGITAL TRANSISTOR	XDA114ES
	Q111, 112	N-FET	2SK373
	Q113, 114	TRANSISTOR	2SC3311A
	Q115	TRANSISTOR	XDC124ES
	Q116	DIGITAL TRANSISTOR	XDA114ES
	Q117, 118	N-FET	2SK373
	Q119, 120	TRANSISTOR	2SC3311A
	Q121, 122	TRANSISTOR	XDC124ES
	Q220	DIGITAL TRANSISTOR	XDA114ES
	Q221, 222	TRANSISTOR	XDC124ES
	Q224	DIGITAL TRANSISTOR	XDC144ES
	Q225	TRANSISTOR	XDC124ES
	Q270	DIGITAL TRANSISTOR	XDA114ES

Mark	No.	Description	Part No.
	Q271-273	TRANSISTOR	XDC124ES
	Q274	DIGITAL TRANSISTOR	XDC144ES
	Q275	TRANSISTOR	XDC124ES
	Q501-506	TRANSISTOR	XDC124ES
	Q507	DIGITAL TRANSISTOR	XDC114ES
	Q508	DIGITAL TRANSISTOR	DTA114TS
	Q509	TRANSISTOR	XDC124ES
	Q510	TRANSISTOR	2SA1309A
	Q511	TRANSISTOR	XDC124ES
	Q512	DIGITAL TRANSISTOR	XDA114ES
	Q701, 702	TRANSISTOR	2SD1302
	Q761	DIGITAL TRANSISTOR	XDC114ES
	Q762	DIGITAL TRANSISTOR	DTA114TS
	Q801-803	TRANSISTOR	2SD1858X
	Q804	DIGITAL TRANSISTOR	DTA115TS
	Q805	TRANSISTOR	XDC124ES
	Q806	TRANSISTOR	2SC3311A
	Q807	TRANSISTOR	2SC3246
	Q808	DIGITAL TRANSISTOR	DTC114TS
	Q851-853	TRANSISTOR	2SD1858X
	Q854	DIGITAL TRANSISTOR	DTA115TS
	Q855	TRANSISTOR	XDC124ES
	Q856	TRANSISTOR	2SC3311A
	Q857	TRANSISTOR	2SC3246
	Q858	DIGITAL TRANSISTOR	DTC114TS
⚠	Q1001	TRANSISTOR	2SA1283
	Q1005	TRANSISTOR	2SA1309A
	Q1006, 1007	TRANSISTOR	2SC3311A
	Q1010	TRANSISTOR	2SA1309A
	Q1101-1104	TRANSISTOR	2SC3311A
	Q1201-1214	TRANSISTOR	XDC124ES
	Q1251-1264	TRANSISTOR	XDC124ES
	Q1602	DIGITAL TRANSISTOR	DTC114TS
	Q1603, 1604	TRANSISTOR	2SC3311A
	Q1605	DIGITAL TRANSISTOR	DTC114TS
	D101-106	DIODE	1SS254
	D109, 110	DIODE	1SS254
	D113-116	DIODE	1SS254
	D119, 120	DIODE	1SS254
	D226	DIODE	1SS254
	D251-256	DIODE	1SS254
	D501	ZENER DIODE	MTZJ9. 1A
	D502-507	DIODE	1SS254
	D761	ZENER DIODE	MTZJ4. 3B
	D801	DIODE	1SS252
	D802-806	DIODE	1SS254
	D851	DIODE	1SS252
	D852-856	DIODE	1SS254
	D901-904	DIODE	1SS254
	D911-914	DIODE	1SS254
	D921	DIODE	1SS254
⚠	D1001	DIODE	1SR35-100AVL
⚠	D1002	ZENER DIODE	MTZJ33B
	D1004	ZENER DIODE	MTZJ5. 1B
⚠	D1006	DIODE	1SR35-100AVL
	D1009-1011	DIODE	1SS254
⚠	D1012	POWER DIODE	1B2Z1-LC2
⚠	D1013	POWER DIODE	1B2C1-LC2
	D1201	DIODE	1SS254
	D1251	DIODE	1SS254
	D1601-1606	DIODE	1SS254
	D1701-1705	DIODE	1SS254
	D1801-1803	DIODE	1SS254
SWITCHES			
	S251		RSH1022
⚠	S1201	SWITCH	RSA-063
COILS/TRANSFORMERS			
	L101, 102	COIL	RTF1099
	F201, 202	FILTER	ATF-210
	F251, 252	FILTER	ATF-210
CAPACITORS			
	C101, 102	PL. STYRENE CAPACITOR	CQSF102J50
	C103, 104	PL. STYRENE CAPACITOR	CQSF221J50
	C105, 106	PL. STYRENE CAPACITOR	CQSF122J50
	C107-110	ELECTR. CAPACITOR	RCH1007
	C111, 112	ELECTR. CAPACITOR	RCH1008
	C113, 114	AUDIO FILM CAPACITOR	CFTXA103J50
	C117, 118	ELECTR. CAPACITOR	CEYA4R7M50
	C121, 122	AXIAL CAPACITOR	CKPUYB221K50
	C123, 124	AXIAL CAPACITOR	CKPUYB391K50
	C125	CERAMIC CAPACITOR	CKCYF473Z50
	C129-132	AXIAL CERAMIC C.	CCPUSL100J50
	C133, 134	AXIAL CAPACITOR	CKPUYB681K50
	C135-138	AXIAL CAPACITOR	CKPUYB101K50
	C141, 142	ELECTR. CAPACITOR	CEYA470M16
	C201-204	ELECTR. CAPACITOR	CEYA010M50
	C209, 210	ELECTR. CAPACITOR	CEYA4R7M50
	C211-214	AUDIO FILM CAPACITOR	CFTXA222J50
	C215, 216	ELECTR. CAPACITOR	CEYAR22M50
	C217, 218	ELECTR. CAPACITOR	CEYAR33M50
	C219, 220	ELECTR. CAPACITOR	CEYA100M50
	C223, 224	ELECTR. CAPACITOR	CEYAR33M50
	C225	ELECTR. CAPACITOR	CEAS010M50
	C231, 232	ELECTR. CAPACITOR	CEYA100M50
	C233, 234	ELECTR. CAPACITOR	CEYA010M50
	C235, 236	ELECTR. CAPACITOR	CEYA330M16
	C241	ELECTR. CAPACITOR	CEYA101M16
	C251-254	ELECTR. CAPACITOR	CEYA010M50
	C259, 260	ELECTR. CAPACITOR	CEYA4R7M50
	C261-264	AUDIO FILM CAPACITOR	CFTXA222J50
	C265, 266	ELECTR. CAPACITOR	CEYAR22M50
	C267, 268	ELECTR. CAPACITOR	CEYAR33M50
	C269, 270	ELECTR. CAPACITOR	CEYA100M50
	C273, 274	ELECTR. CAPACITOR	CEYAR33M50
	C275	ELECTR. CAPACITOR	CEAS010M50
	C281, 282	ELECTR. CAPACITOR	CEYA100M50
	C283, 284	ELECTR. CAPACITOR	CEYA010M50
	C285, 286	ELECTR. CAPACITOR	CEYA330M16
	C291	ELECTR. CAPACITOR	CEYA101M16

Mark	No.	Description	Part No.
	C501, 502	AUDIO FILM CAPACITOR	CFTXA223J50
	C503	CERAMIC CAPACITOR	CGCYX104K25
	C504	AUDIO FILM CAPACITOR	CFTXA103J50
	C505, 506	ELECTR. CAPACITOR	CEAS010M50
	C507, 508	ELECTR. CAPACITOR	CEAS100M50
	C509, 510	CERAMIC CAPACITOR	CKCYF103Z50
	C511, 512	AUDIO FILM CAPACITOR	CFTXA332J50
	C513	ELECTR. CAPACITOR	CEAS470M16
	C514, 515	CERAMIC CAPACITOR	CKCYF103Z50
	C516	CERAMIC CAPACITOR	CKDYF103Z50
	C701, 702	AXIAL CAPACITOR	CKPUYB101K50
	C703, 704	ELECTR. CAPACITOR	CEYA010M50
	C705	ELECTR. CAPACITOR	CEYA470M16
	C706	CERAMIC CAPACITOR	CKCYF473Z50
	C707, 708	ELECTR. CAPACITOR	CEYA100M50
	C709, 710	AXIAL CAPACITOR	CKPUYB101K50
	C711	ELECTR. CAPACITOR	CEYA470M16
	C712, 713	AXIAL CAPACITOR	CKPUYB101K50
	C761	CERAMIC CAPACITOR	CKCYF473Z50
	C762, 763	ELECTR. CAPACITOR	CEASR10M50
	C764	ELECTR. CAPACITOR	CEASR47M50
	C765, 766	ELECTR. CAPACITOR	CEASR10M50
	C767	CERAMIC CAPACITOR	CKCYF473Z50
	C801	CERAMIC CAPACITOR	CKPUYY103M16
	C802	CERAMIC CAPACITOR	CKCYF473Z50
	C851	CERAMIC CAPACITOR	CKPUYY103M16
	C852	CERAMIC CAPACITOR	CKCYF473Z50
	C1001	ELECTR. CAPACITOR	CEAS471M50
	C1004	ELECTR. CAPACITOR	CEAS330M35
	C1007	ELECTR. CAPACITOR	CEAS472M16
	C1008	CERAMIC CAPACITOR	CKCYF473Z50
	C1009	AUDIO FILM CAPACITOR	CFTXA473J50
	C1010	ELECTR. CAPACITOR	CEAS222M16
	C1011	ELECTR. CAPACITOR	RCH1060
	C1012	CERAMIC CAPACITOR	CFTXA103J50
	C1013	ELECTR. CAPACITOR	CEZA471M16
	C1014	AUDIO FILM CAPACITOR	CFTXA104J50
	C1015	ELECTR. CAPACITOR	CEAS331M16
	C1016	ELECTR. CAPACITOR	CEAS220M50
	C1018	ELECTR. CAPACITOR	CEAS100M50
	C1020-1023	AUDIO FILM CAPACITOR	CFTXA473J50
	C1024	ELECTR. CAPACITOR	CEAS470M16
	C1025	CERAMIC CAPACITOR	CKCYF473Z50
	C1030	CERAMIC CAPACITOR	CKCYF473Z50
	C1101, 1102	CERAMIC CAPACITOR	CKCYF103Z50
	C1103	ELECTR. CAPACITOR	CEAS330M50
	C1104, 1105	CERAMIC CAPACITOR	CKCYF103Z50
	C1106	ELECTR. CAPACITOR	CEAS330M50
	C1201, 1202	ELECTR. CAPACITOR	CEYA010M50
⚠	C1203	CAPACITOR (CERAMIC)	RCG-009
	C1204	ELECTR. CAPACITOR	CEAS4R7M50
	C1251, 1252	ELECTR. CAPACITOR	CEYA010M50
	C1254	ELECTR. CAPACITOR	CEAS4R7M50
	C1601, 1602	ELECTR. CAPACITOR	CEYAR22M50
	C1603, 1604	ELECTR. CAPACITOR	CEYA101M16
	C1605	ELECTR. CAPACITOR	CEYA331M16
	C1606	CERAMIC CAPACITOR	CKCYF103Z50
	C1607, 1608	CERAMIC CAPACITOR	CKCYF473Z50
	C1611	CERAMIC CAPACITOR	CKCYF473Z50
	C1613	ELECTR. CAPACITOR	CEAS331M16
	C1614	ELECTR. CAPACITOR	CEAS330M35
	C1615, 1616	ELECTR. CAPACITOR	CEAS100M50
	C1617, 1618	ELECTR. CAPACITOR	CEASR47M50
	C1621	CERAMIC CAPACITOR	CKCYF473Z50
	C1801	CERAMIC CAPACITOR	CKCYF473Z50

RESISTORS

	R101-114	CARBONFILM RESISTOR	RD1/6PM□□□J
	R117-121	CARBONFILM RESISTOR	RD1/6PM□□□J
	R123-125	CARBONFILM RESISTOR	RD1/6PM□□□J
	R135, 136	CARBONFILM RESISTOR	RD1/6PM□□□J
	R137	METAL OXIDE RESISTOR	RS1LMF□□□J
	R138-142	CARBONFILM RESISTOR	RD1/6PM□□□J
	R145	CARBONFILM RESISTOR	RD1/6PM□□□J
	R147-150	CARBONFILM RESISTOR	RD1/6PM□□□J
	R201-209	CARBONFILM RESISTOR	RD1/6PM□□□J
	R218	CARBONFILM RESISTOR	RD1/6PM□□□J
	R220, 221	CARBONFILM RESISTOR	RD1/6PM□□□J
	R223	CARBONFILM RESISTOR	RD1/2LF□□□J
	R232	CARBONFILM RESISTOR	RD1/6PM□□□J
	R249	CARBONFILM RESISTOR	RD1/6PM□□□J
	R251-259	CARBONFILM RESISTOR	RD1/6PM□□□J
	R268	CARBONFILM RESISTOR	RD1/6PM□□□J
	R270-273	CARBONFILM RESISTOR	RD1/6PM□□□J
	R282	CARBONFILM RESISTOR	RD1/6PM□□□J
	R299	CARBONFILM RESISTOR	RD1/6PM□□□J
	R501, 502	RESISTOR ARRAY(10K)	RA4T□□□J
	R503	RESISTOR ARRAY(68K)	RA8T□□□J
	R504, 505	CARBONFILM RESISTOR	RD1/6PM□□□J
	R506	RESISTOR ARRAY(22K)	RA7T□□□J
	R507, 508	CARBONFILM RESISTOR	RD1/6PM□□□J
	R509	RESISTOR ARRAY(68K)	RA11T□□□J
	R510-516	CARBONFILM RESISTOR	RD1/6PM□□□J
	R518-521	CARBONFILM RESISTOR	RD1/6PM□□□J
	R525, 526	CARBONFILM RESISTOR	RD1/6PM□□□J
	R528-531	CARBONFILM RESISTOR	RD1/6PM□□□J
	R549	CARBONFILM RESISTOR	RD1/6PM□□□J
	R701-704	CARBONFILM RESISTOR	RD1/6PM□□□J
	R707-716	CARBONFILM RESISTOR	RD1/6PM□□□J
	R721, 722	CARBONFILM RESISTOR	RD1/6PM□□□J
	R761-763	CARBONFILM RESISTOR	RD1/6PM□□□J
	R765-769	CARBONFILM RESISTOR	RD1/6PM□□□J
	R801	CARBONFILM RESISTOR	RD1/6PM□□□J
	R802	METAL OXIDE RESISTOR	RS2LMF□□□J
	R803-805	CARBONFILM RESISTOR	RD1/6PM□□□J
	R807, 808	CARBONFILM RESISTOR	RD1/6PM□□□J
	R810-812	CARBONFILM RESISTOR	RD1/6PM□□□J
	R814-816	CARBONFILM RESISTOR	RD1/6PM□□□J
	R818	CARBONFILM RESISTOR	RD1/6PM□□□J

Mark	No.	Description	Part No.
	R851	CARBONFILM RESISTOR	RD1/6PM□□□J
	R852	METAL OXIDE RESISTOR	RS2LMF□□□J
	R853-858	CARBONFILM RESISTOR	RD1/6PM□□□J
	R860, 861	CARBONFILM RESISTOR	RD1/6PM□□□J
	R862	CARBONFILM RESISTOR	RD1/2LF□□□J
	R864-866	CARBONFILM RESISTOR	RD1/6PM□□□J
	R868	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1001	CARBONFILM RESISTOR	RD1/2LF□□□J
	R1003	CARBONFILM RESISTOR	RD1/2LF□□□J
	R1007-1012	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1014-1019	CARBONFILM RESISTOR	RD1/6PM□□□J
⚠	R1020	FUSIBLE RESISTOR	RFA1/4L□□□J
	R1101-1103	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1104	CARBONFILM RESISTOR	RD1/2LF□□□J
	R1105-1110	CARBONFILM RESISTOR	RD1/6PM□□□J
	R1111	CARBONFILM RESISTOR	RD1/2LF□□□J
	R1112-1114	CARBONFILM RESISTOR	RD1/6PM□□□J
	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(22K)	RA5T□□□J
	R1702	LADDER RESISTOR	RCX1020
	R1703, 1704	CARBONFILM RESISTOR	RD1/6PM□□□J
	VR101-104	VR	RCP1046
	VR501, 502	VR	RCP1046
	VR801	VR	VRTG6VS223
	VR802	VR	RCP1054
	VR851	VR	VRTG6VS223
	VR1101, 1102	VR	RCP1046
	VR1201, 1202	VR	RCP1046
	VR1251, 1252	VR	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	VSS1014

Mark	No.	Description	Part No.
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	RCV1057
	VR1502		RCV1071
OTHERS			
	CN906		BTMK12S-1S
	V1501		RAW1080

7. ADJUSTMENTS

7.1 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	II			After checking, play back on deck II.		
5		Double speed PLAY		After playing back for 1 minute.		
6		Normal speed PLAY		VR802	Within ± 10 Hz of the value measured in step 2 (deck I)	
7				After checking.		
8				VR801	3000 Hz ± 5 Hz	

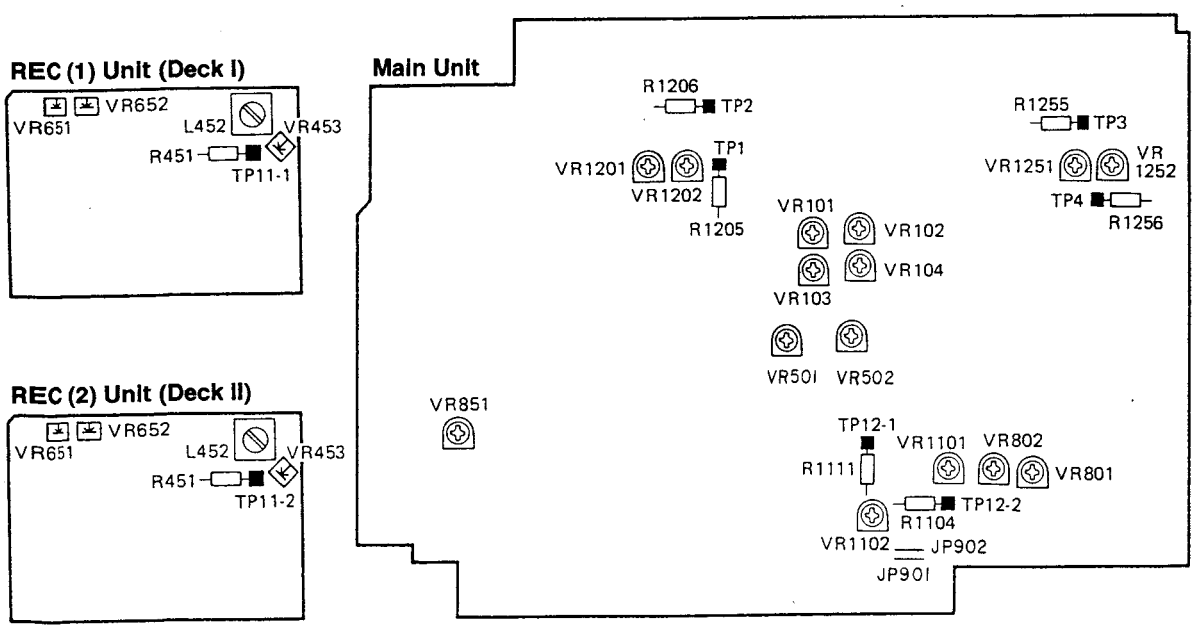


Fig. 7-1 Adjusting points

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 kΩ (or between 47k to 52 kΩ) load resistance to the OUTPUT terminals.
6. Unless otherwise specified, the switches listed below are left in the positions indicated.
   DOLBY NR : OFF
   TAPE SELECTOR : NORM

Test Tapes

STD-331B	: Playback adjustments (See Fig. 7-2)
STD-630	: NORMAL blank tape
STD-620	: CrO_2 blank tape
STD-610	: METAL blank tape

List of Adjustments

Playback sections

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

Recording sections

1. Bias oscillator adjustment.
2. Erase current adjustment.
3. Recording bias adjustment.
4. Recording level adjustment.
5. Level meter check.
6. Leader tape detection operation adjustment.
7. AUTO BLE adjustment.

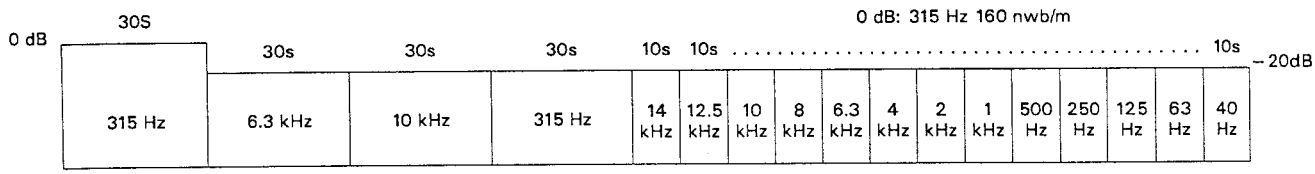


Fig. 7-2 Constants of the test tape STD-331B

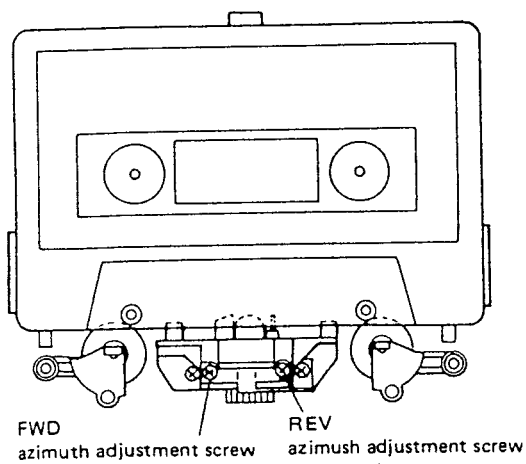


Fig. 7-3 Head azimuth adjustment

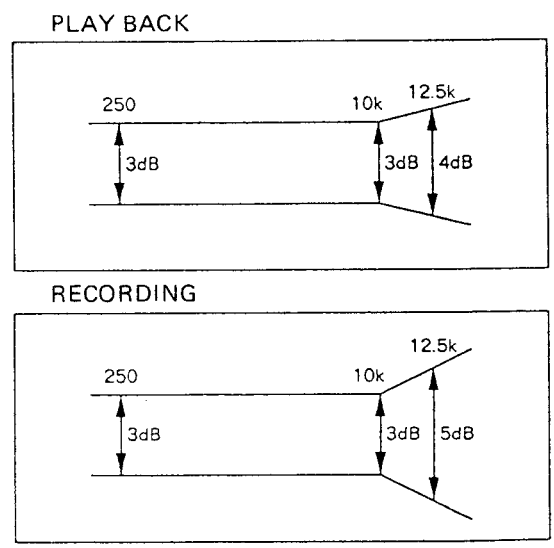


Fig. 7-4 Frequency response zone

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–331B test tape.	Head azimuth adjustment screw. (See Fig. 7–3)	LINE OUT	Maximum playback signal level.	
2.	STOP	Lock the screw with screw lock after completing adjustment.				

2. Playback Level Adjustment

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

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 315 Hz/0 dB section of the STD–331B test tape.	Deck I	VR103 (Lch) VR104 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	–10.7 dBv	
			Deck II	VR101 (Lch) VR102 (Rch)	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 kHz ± 0.3 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	180 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 plyaback level of 6.3 kHz signal becomes +0.5 dB ± 0.5 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-630 test tape.	REC level control volume		TP. 1 (Lch) TP. 2 (Rch)	-11.2 dBv	
3	STOP	Set the DOLBY NR switch to the ON position. (DOLBY B)					
4.	REC/ PLAY	Record the above signal onto the STD-630 test tape, and playback.	Deck I	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-620 test tape, and playback.	Check		TP. 1 (Lch) TP. 2 (Rch)	-11.2 dBv ± 1.5 dB	
7.	STOP	Set the TAPE SELECTOR switch to the METAL position.					
8.	REC/ PLAY	Record the above signal onto the STD-610 test tape, and playback.	Check		TP. 1 (Lch) TP. 2 (Rch)	-11.2 dBv ± 1.5 dB	

5. Level Meter Check

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

6. Leader Tape Detection Operation Adjustment

No.	Mode	Input signal & test tape	Adjustment location		Measuring location		Adjustment value	Remarks
1.	PLAY	No input-load an empty cassette half.	Deck I	VR1102	Deck I	TP. 12-1	$1.0V \pm \frac{0}{0.1}$ V (DC)	
			Deck II	VR1102	Deck II	TP. 12-2		
2.	Check that the leader tape detection operation is correctly performed (inboth FWD and REV directions when in endless reverse mode).							

7. 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 30.)

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 0 dB lights on the level meter.	400 Hz adjustment
3.		Press the NORMAL SPEED key.		VR502	Adjust so that 0 dB lights on the level meter.	10 kHz adjustment

7. RÉGLAGES

7.1 RÉGLAGE MECANIQUE

- 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 (3 kHz)	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			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				Après le contrôle		
8				VR801	3000 Hz±5 Hz	

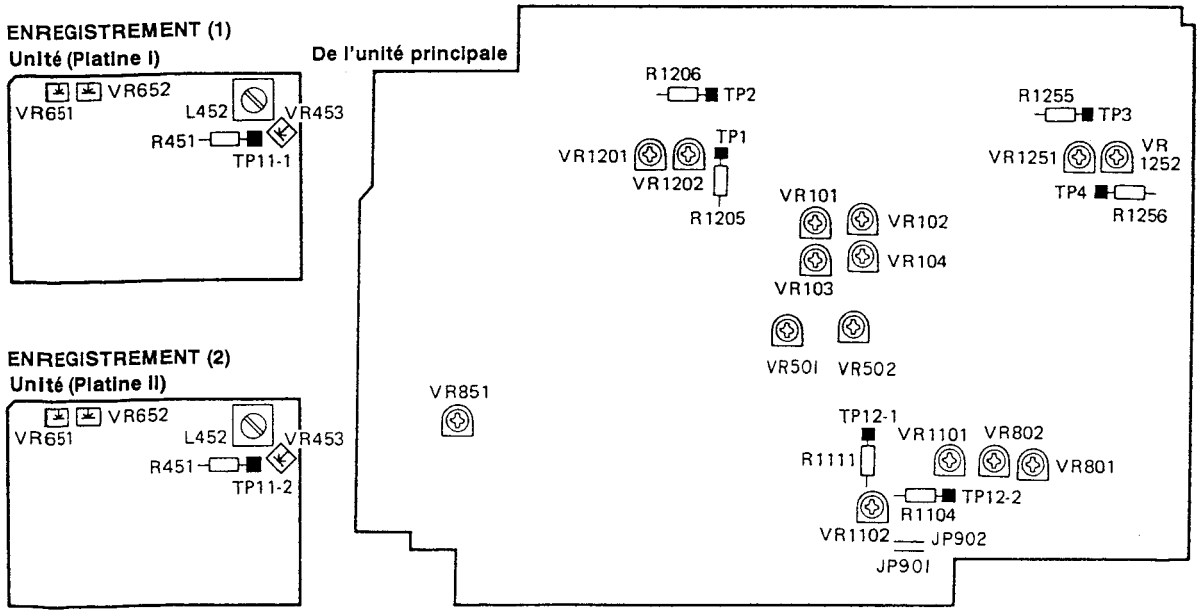


Fig. 8-1 Points de réglage

7.2 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–331B : Réglages de la lecture (Voir fig. 7–2)
STD–630 : Bande vierge de type normal
STD–620 : 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

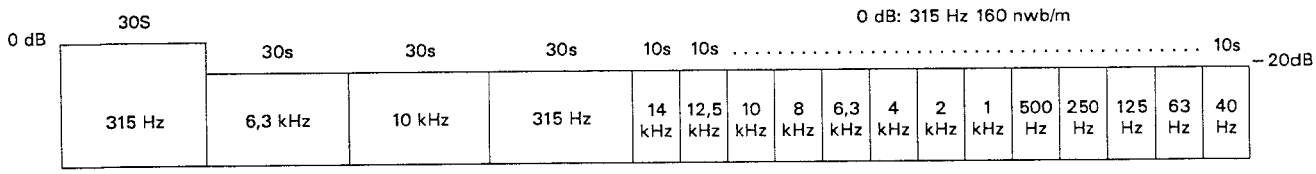


Fig. 7-2 Constantes de la bande d'essai STD-331B

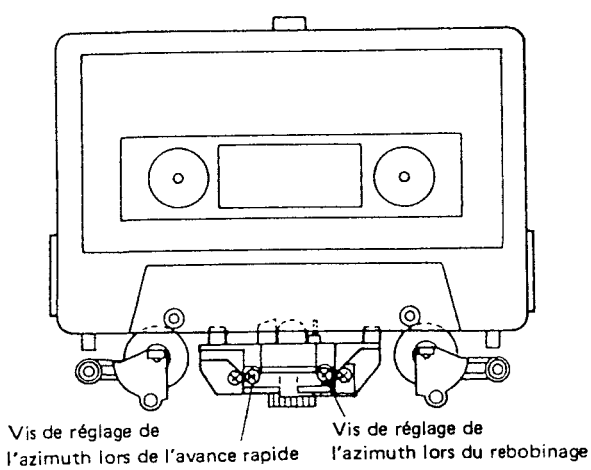


Fig. 7-3 Réglage de l'azimut de la tête

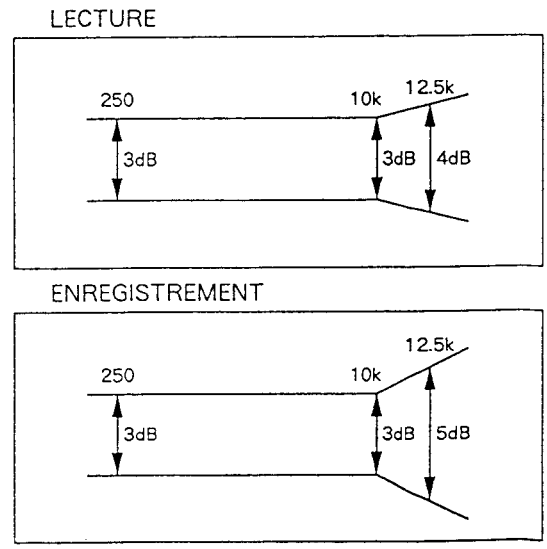


Fig. 7-4 Zone de réponse en fréquence

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–331B.	Vis de réglage de l'azimut de la tête. (Voir fig. 7–3)	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–331B.	Platine I	VR103 (can. G) VR104 (can. D)	TP. 1 (can. G) TP. 2 (can. D)	–10,7 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 kHz ± 0,3 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	180 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 +0,5 dB ± 0,5 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-630.	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-630 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-620 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-610 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 -11,2 dBv ± 2 dB du niveau de sortie du signal.	

6. Réglage du fonctionnement de la détection de bande amorce

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage		Points de mesure		Valeur de réglage	Remarques
1.	PLAY	Pas d'entrée – Charger une moitié de cassette vide.	Platine I	VR1102	Deck I	TP. 12-1	$1{,}0V \pm \frac{0}{0{,}1}$ V (DC)	
			Platine II	VR1102	Deck II	TP. 12-2		
2.	Vérifier que l'opération de détection de bande amorce s'effectue correctement (à la fois dans le sens avant (FWD) et inverse (REV) dans le mode d'inversion sans fin).							

7. 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 34.)

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 0 dB clignote sur l'indicateur de niveau.	Réglage 400 Hz
3.		Appuyer sur la touche NORMAL SPEED.		VR502	Régler afin que 0 dB clignote sur l'indicateur de niveau.	Réglage 10 kHz

7. AJUSTES

7.1 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	Operatión	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 (3 kHz)	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			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				Después de verificar.		
8				VR801	3000 Hz ± 5 Hz	

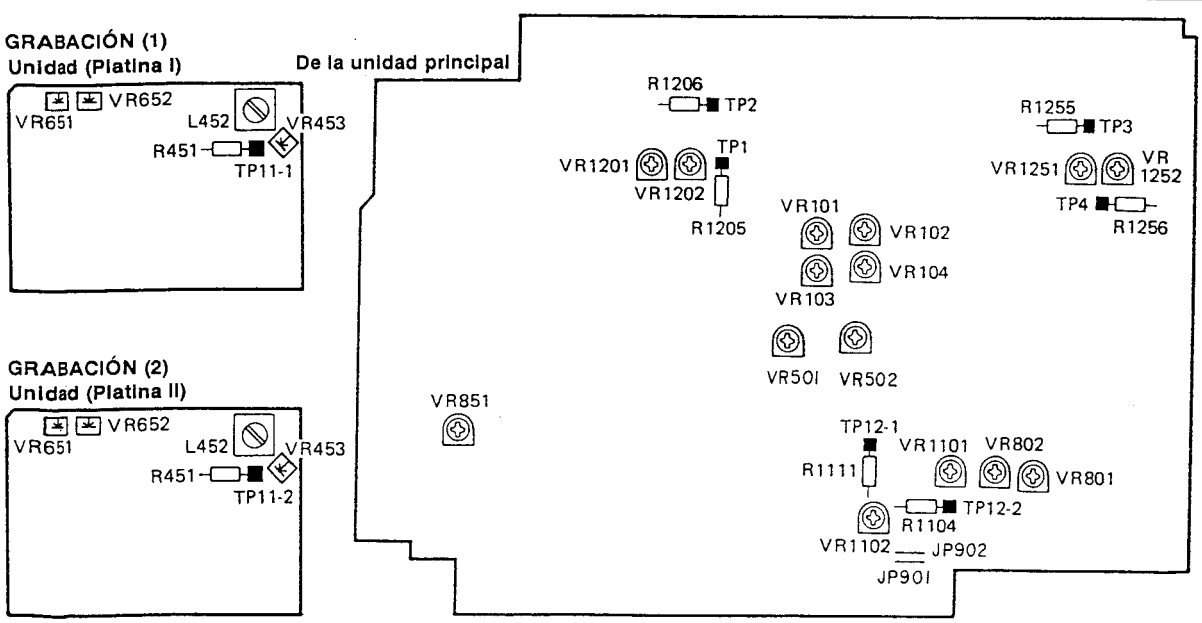


Figura. 8-1 Puntos de ajuste

7.2 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-331B : Ajustes de reproducción (Consulte la figura 7-2)
STD-630 : Cinta virgen NORMAL
STD-620 : Cinta virgen de CrO_2
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 oscillador 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

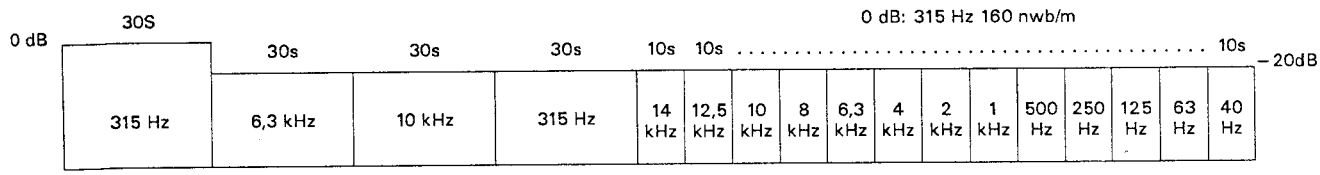


Figura 7-2 Constantes de la cinta de prueba STD-331B

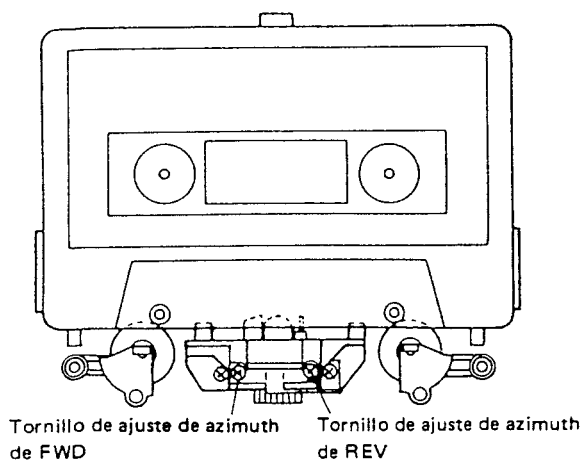


Figura 7-3 Ajuste de azimut de la cabeza

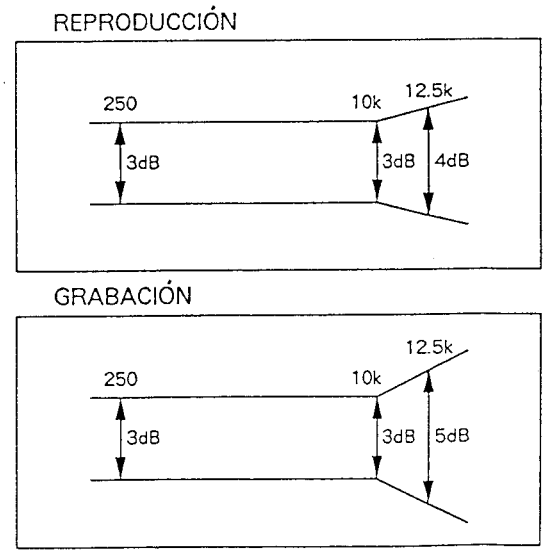


Figura 7-4 Zona permisible de respuesta de frecuencia de reproducción

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.°	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–331B.	Tornillo de ajuste del azimut de la cabeza. (Vea la figura 7–3)	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.°	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–331B.	Platina I	VR103 (Lch) VR104 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	–10,7 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.°	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 kHz ± 0,3 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.°	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	180 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.°	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 reprodúzcala.	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 +0,5 dB ± 0,5 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.°	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–630.	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–630 y reprodúzcala.	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–620 y reprodúzcala.	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–610 y reprodúzcala.	Verifique		TP. 1 (Lch) TP. 2 (Rch)	–11,2 dBv ± 1,5 dB	

5. Verificación del medidor de nivel

N.°	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 –11,2 dBv ± 2 dB.	

6. Ajuste de la operación de detección del extremo incial de la cinta

N.°	Modo	Señal de entrada y cinta de prueba	Punto de ajuste		Punto de medición		Valor de ajuste	Comentarios
1.	PLAY	Sin entrada – Introduzca un casete vacío la mitad.	Platina I	VR1102	Platina I	TP. 12–1	$1{,}0V \pm \frac{0}{0{,}1}$ V (DC)	
			Platina II	VR1102	Platina II	TP. 12–2		
2.	Confirme que la función de detección del extremo inicial de la cinta funcione correctamente (en el modo de inversión sin fin, compruebe tanto en la dirección de avance como en la de retroceso).							

7. 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. (consúltese la página 38.)

N.°	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 0 dB en el medidor de nivel.	Ajuste de 400 Hz
3.		Pulse la tecla NORMAL SPEED.		VR502	Ajuste de modo que parpadee 0 dB en el medidor de nivel.	Ajuste de 10 kHz

8. IC DESCRIPTIONS

8.1 PD4296A PIN FUNCTIONS

Pin No.	Name	Function	I/O	Voltage (V) in "H"	Voltage (V) in "L"
1 to 4 55, 58 to 63	S0 to S10	Segment terminal for display, key scan and level scan S0 to S10 → Display S0 to S9 → Key scan S0 to S4 → Level scan	O	4 to 5	approx. –28
40 to 50	T0 to T10	Grid terminal for display	O	4 to 5	approx. –28
5 to 8	KEYIN0 to KEYIN3	Input port for key scan	I	3.75 to 5	0 to 1
9	POWER OFF	When POWER OFF: "H"	I	3.5 to 5	0 to 1.5
10	REMOCON	Remote control code input port When no remote control code input: "H"	I	3.5 to 5	0 to 1.5
11 12	METER L METER R	Lch level scan input port Rch level scan input port	I	3.75 to 5	0 to 1
13 14	SENSING2 SENSING1	SENSING input port side 2 SENSING input port side 1 H L  When right side reel base is rotating: When right side reel base is stopped, "H" or "L" is constant.	I	3.5 to 5	0 to 1.5
15	SONG	SONG input port When there is a signal input to MS circuit: "H" When no signal input: "L"	I	3.5 to 5	0 to 1.5
16	FROM CD	CD SYNCHRO input port REC/PAUSE by EDGE input in "H". REC (release PAUSE) by EDGE input in "L".	I	3.5 to 5	0 to 1.5
17	REC MUTE1	REC MUTE output terminal side 1. "H": REC MUTE ON	O	4 to 5	0 to 0.5
18	$\overline{\text{LINE MUTE}}$	LINE MUTE output terminal. "L": LINE MUTE ON	O	4 to 5	0 to 0.5
19 20	LEADER1 LEADER2	LEADER TAPE input port side 1 LEADER TAPE input port side 2 TAPE LEADER portion: "H"	I	3.5 to 5	0 to 1.5
21	REC MUTE2	REC MUTE output terminal side 2. "H": REC MUTE ON	O	3.25 to 5	0 to 1
22	BIAS2	BIAS ON output port side 2. "H": BIAS ON	O	3.25 to 5	0 to 1
23	SOL A2	SOLENOID A output port side 2	O	3.25 to 5	0 to 1
24	SOL B2	SOLENOID A low voltage control port side 2. "H": low voltage	O	3.25 to 5	0 to 1
25	RM–R2	REEL MOTOR RIGHT output port side 2	O	3.5 to 5	0 to 1.5
26	RM–L2	REEL MOTOR LEFT output port side 2	O	3.5 to 5	0 to 1.5
27	CPM2	CAPSTAN MOTOR output port side 2	O	3.5 to 5	0 to 1.5
28	RM–PLAY2	REEL MOTOR PLAY TORQUE output port side 2	O	3.5 to 5	0 to 1.5
29	400 Hz/10 kHz OSC	AUTO BLE rectangular wave output terminal	O	4.6 to 5	0 to 0.4

Pin No.	Name	Function	I/O	Voltage (V) in "H"	Voltage (V) in "L"
30 31	X1 X2	Ceramic lock connection terminal for main system clock oscillation		4.6 to 5	0 to 0.4
32	Vss	Ground potential terminal			
35	$\overline{BLK}$	Extension control output terminal. "H": extension output ON	O	4 to 5	0 to 2
36	DATA	Extension output DATA terminal	O	4 to 5	0 to 2
37	CLK	Extension control output terminal	O	4 to 5	0 to 2
38	WR	Extension control output terminal	O	4 to 5	0 to 2
39	$\overline{RESET}$	RESET: "L"	I	3.75 to 5	0 to 1
51	BIAS1	BIAS ON output port side 1. "H": BIAS ON	O	4 to 5	0 to 0.5
52	COPY	COPY output terminal When COPY: "H". Sets analog switch (Pins ⑤ and ⑥ of IC506) to "H" and Pins ⑫ and ⑬ to "L", and selects the signal pass as follows: LINE OUT of DOLBY IC side 1 → COPY VR → LINE IN of DOLBY IC side 2	O	4 to 5	–4 to –5
53	BLE ON	BLE ON output terminal When AUTO BLE: "H" When TEST MODE: "H"	O	4 to 5	–4 to –5
54	OSC FRQ SEL	OSCILLATOR FREQUENCY SELECT output terminal During AUTO BLE (TEST MODE); 400 Hz: "H" 10 kHz: "L"	O	4 to 5	–4 to –5
56	VLOAD	Connected nowhere inside the microprocessor. Open terminal (used when mask option)			
57	VPRE	Power supply terminal for FL display output buffer		–3.5 to –5	

8.2 LC7570 PIN FUNCTIONS

Pin No.	Name	Function	I/O	Voltage (V) in "H"	Voltage (V) in "L"
1	VFL	Pull-down resistor common terminal (pulled down to ground)			
2	WR	Extension control input terminal	I	3.5 to 5	0 to 1.5
3	CLK	Extension control input terminal	I	3.5 to 5	0 to 1.5
4	DATA	Extension input DATA terminal	I	3.5 to 5	0 to 1.5
5	VDD	Power terminal (+5V)			
6	$\overline{BLK}$	Extension control input terminal $\overline{BLK}$= "L" (Vss)... extension output OFF $\overline{BLK}$= "H" (VDD)... extension output ON	I	3.5 to 5	0 to 1.5
7	Vss	Power terminal (GND)			
9 10	2×2 1×1	Double speed control output terminal side 2 Double speed control output terminal side 1 When double speed copy: "H"	O	2.2 to 5	0 to 2.2
11	DOLBY SELECT	DOLBY IC SELECT control output terminal When DOLBY IC side 1 is selected: "H" When decoding side 1 and double speed copying: "H"	O	2.2 to 5	0 to 2.2
12	RECOVERY FAST	RECOVERY FAST/SLOW control output terminal Controls time constant in meter circuit. The falling at level input becomes sooner in "H" level. When LINE MUTE is closed: "H", when fetching the playback signal during AUTO-BLE: "H".	O	2.2 to 5	0 to 2.2
13	TOCD	CD DECK SYNCHRO COPY control output terminal When DECK REC (CD play) mode: "H"	O	2.2 to 5	0 to 2.2
14	DECODE2	ENCODE/DECODE control output port side 2 When PLAY, PLAY/PAUSE, CUE and REVIEW modes in side 2: "H"	O	2.2 to 5	0 to 2.2
15	RM-PLAY1	REEL MOTOR PLAY TORQUE output port side 1	O	2.2 to 5	0 to 2.2
16	CPM1	CAPSTAN MOTOR output port side 1	O	2.2 to 5	0 to 2.2
17	RM-L1	REEL MOTOR LEFT output port side 1	O	2.2 to 5	0 to 2.2
18	RM-R1	REEL MOTOR RIGHT output port side 1	O	2.2 to 5	0 to 2.2
19	SOL B1	SOLENOID A low voltage control port side 1. "H": low voltage	O	2.2 to 5	0 to 2.2
20	SOL A1	SOLENOID A output port side 1	O	2.2 to 5	0 to 2.2
21	DECODE1	ENCODE/DECODE control output port side 1 When PLAY, PLAY/PAUSE, CUE and REVIEW modes in side 1: "H"	O	2.2 to 5	0 to 2.2
22	×2 COPY DSP	When double speed copy:display control output port. When double speed copy: "H" (When double speed copy:lights off the DOLBY B and C displays.)	O	2.2 to 5	0 to 2.2
26 25 24 23	2LEVEL-0 2LEVEL-1 2LEVEL-2 2LEVEL-3	AUTO-BLE LEVEL adjustment DATA output port side 2 When AUTO-BLE is not adjusted: 2LEVEL-3: "H" 2LEVEL-2: "L" 2LEVEL-1: "L" 2LEVEL-0: "L"	O	2.2 to 5	0 to 2.2

Pin No.	Name	Function	I/O	Voltage (V) in "H"	Voltage (V) in "L"
30 29 28 27	2EQ–0 2EQ–1 2EQ–2 2EQ–3	AUTO–BLE EQUALIZER adjustment DATA output port side 2 When AUTO–BLE is not adjusted: 2EQ–3: "L" 2EQ–2: "H" 2EQ–1: "H" 2EQ–0: "H"	O	2.2 to 5	0 to 2.2
32 31	2BIAS–0 2BIAS–1	AUTO–BLE BIAS adjustment DATA output port side 2 When AUTO–BLE is not adjusted: 2BIAS–1: "H" 2BIAS–0: "L"	O	2.2 to 5	0 to 2.2
34 33	1BIAS–0 1BIAS–1	AUTO–BLE BIAS adjustment DATA output port side 1 When AUTO–BLE is not adjusted: 1BIAS–1: "H" 1BIAS–0: "L"	O	2.2 to 5	0 to 2.2
38 37 36 35	1EQ–0 1EQ–1 1EQ–2 1EQ–3	AUTO–BLE EQUALIZER adjustment DATA output port side 1 When AUTO–BLE is not adjusted: 1EQ–3: "L" 1EQ–2: "H" 1EQ–1: "H" 1EQ–0: "H"	O	2.2 to 5	0 to 2.2
42 41 40 39	1LEVEL–0 1LEVEL–1 1LEVEL–2 1LEVEL–3	AUTO–BLE LEVEL adjustment DATA output port side 1 When AUTO–BLE is not adjusted: 1LEVEL–3: "H" 1LEVEL–2: "L" 1LEVEL–1: "L" 1LEVEL–0: "L"	O	2.2 to 5	0 to 2.2

9. FOR CT–W950R/HEM, HB AND CT–W960R/SD TYPES

CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- Parts without part number cannot be supplied.
- The ⚠ 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–W950R/HEM, HB and CT–W960R/SD types are the same as the CT–W51/KUC type with the exception of the following sections.

Mark	Symbol & Description	Part No.				Remarks
		CT–W51/ KUC type	CT–W950R/ HEM type	CT–W950R/ HB type	CT–W960R/ SD type	
	Main unit	Non supply	Non supply	Non supply	Non supply	
	Display unit	Non supply	Non supply	Non supply	Non supply	
⚠	Strain relief	CM–22C	CM–22B	CM–22B	CM–22B	
⚠	AC Power cord	PDG1015	PDG1003	PDG1036	PDG1013	
⚠	FU1001, FU1002 Fuse (1.5A)	REK1001	.....	.....	.....	
⚠	FU1001, FU1002 Fuse (1.6A)	.....	REK–102	REK–102	REK–102	
⚠	Power transformer (AC120V)	RTT1162	.....	.....	.....	
⚠	Power transformer (AC220–230/230–240V)	.....	RTT1163	RTT1163	.....	
⚠	Power transformer (AC110/120–127/220/240V)	.....	.....	.....	RTT1164	
⚠	Voltage selector	.....	.....	.....	PSB1002	
	FL filter	RAH1596	RAH1597	RAH1597	RAH1672	
	FL lens	RAH1883	RAH1594	RAH1594	RAH1567	
	Front panel assembly	RXX1411	RXX1368	RXX1368	RXX1367	
	Packing case	RHG1286	RHG1240	RHG1240	RHG1266	
	Operating instructions (English)	RRB1079	.....	RRB1079	RRB1079	
	Operating instructions (Dutch/Swedish/Spanish/Portuguese)	.....	RRD1096	.....	.....	
	Operating instructions (English/French/German/Italian)	.....	RRE1039	.....	.....	
	Connection cord (Mini)	PDE–319	.....	.....	.....	
	Remote control unit	.....	.....	.....	RPX1008	
	Case (C)	.....	.....	.....	VNK–634	Battery cover

MAIN UNIT

The main units (for CT–W950R/HEM, HB and CT–W960R/SD types) are the same as the main unit (for CT–W51/KUC type) with the exception of the following sections.

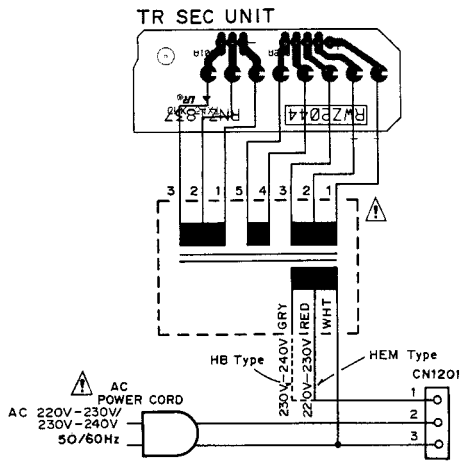
Mark	Symbol & Description	Part No.		Remarks
		CT–W51/ KUC type	CT–W950R/HEM, HB and CT–W960R/ SD types	
	D1604–D1606	1SS254	.....	
	C1608	CKCYF473Z50	.....	
	JA1603, JA1604	RKN1004	.....	

DISPLAY UNIT

The display units (for CT–W950R/HEM, HB and CT–W960R/SD types) are the same as the main unit (for CT–W51/KUC type) with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		CT–W51/ KUC type	CT–W950R/ HEM and HB types	CT–W960R/ SD type	
	V1501 Remote control sensor	RAW1080	RAW1076	RAW1080 HC–177	

POWER supply section for HEM and HB type

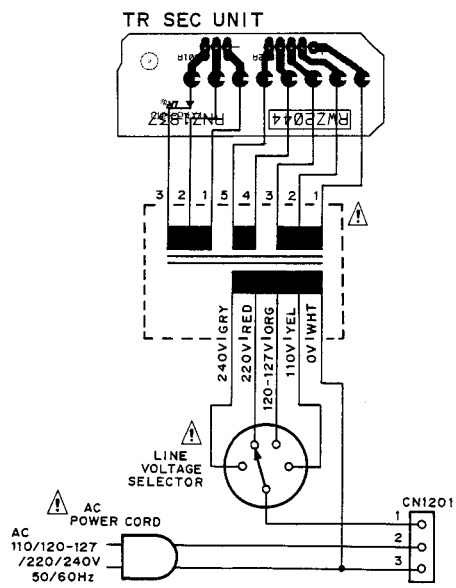


Line Voltage Selection

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 label on the rear panel.

Port NO.	Description	
AXX-193	220V label	—— 220-230
AXX-192	240V label	----- 230-240

POWER supply section for SD type



10. SPECIFICATIONS

System ..... 4 track, 2-channel stereo
Heads ..... "Laser amorphous" 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:
Metal tape ..... 20 to 20,000 Hz
Chrome tape ..... 20 to 19,000 Hz
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% (0 dB)
Input (Sensitivity)
LINE (INPUT) ..... 63 mV (Input impedance 57 kΩ)
Output (Reference level)
LINE (OUTPUT) ..... 316 mV (Output impedance 3.2 kΩ)
Headphone ..... 0.25 mW (Load impedance 8 Ω)

Subfunctions

- Twin AUTO BLE system
- Quick auto reverse
- 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
- SR System remote control available (U.S. and Canadian model)
- TIMER Recording
- TIMER Playback (Automatic relay on)
- 2-mode electronic 4-digit twin tape counter
- Headphone jack
- Wireless remote control operation (CT-W960R)
- 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
Australian models ..... AC 230−240 Volts~, 50/60 Hz
U.K. models ..... 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
CT-W51/CT-W950R 32W
CT-W960R 32W
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) ..... 5.7 kg (12 lb 6 oz.)

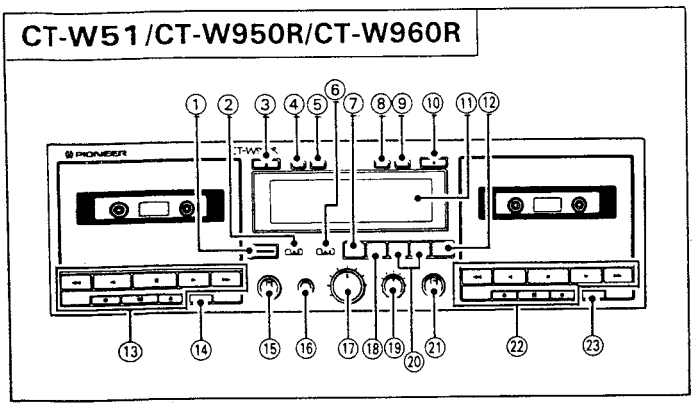
Accessories

Operating instructions 1
Connection cord with pin plugs 2
SR Remote control cord
(U.S. and Canadian models) 1
CD•DECK SYNCHRO control cord 1
Remote control unit (CT-W960R) 1
Dry cell batteries (size AAA/IEC R03) (CT-W960R) 2

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

11. PANEL FACILITIES

CT-W51/CT-W950R/CT-W960R



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
O : Recording mute (CT-W51/CT-W950R/CT-W960R only)
❚❚ : Pause (CT-W51/CT-W950R/CT-W960R only)
● : Recording (CT-W51/CT-W950R/CT-W960R only)
⑭ **DECK I AUTO BLE button (CT-W51/CT-W950R/CT-W960R only)**
⑮ **DECK I Dolby* NR switch (DOLBY NR B/OFF/C)**
⑯ **Headphones jack (PHONES)**
⑰ **Recording level control (REC LEVEL)**
⑱ **Parallel recording button (PARALLEL REC) (CT-W51/CT-W950R/CT-W960R only)**
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
O : Recording mute
❚❚ : Pause
● : Recording
㉓ **DECK II AUTO BLE button**

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