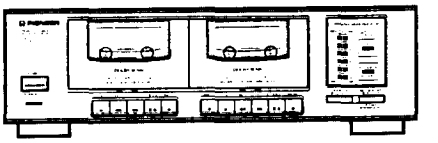
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
RRV1068

STEREO DOUBLE CASSETTE DECK

CT-W103

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	Remarks
	CT-W103		
KUXJ	O	AC120V	
KCXJ	O	AC120V	

CONTENTS

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T – SSF MAR. 1994 Printed in Japan

1. SAFETY INFORMATION

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.

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols -▮▭▮- (fast operating fuse) and/or -▮▭▮- (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODELE CANADIEN SEULEMENT)
Les symboles de fusible -▮▭▮- (fusible de type rapide) et/ou -▮▭▮- (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

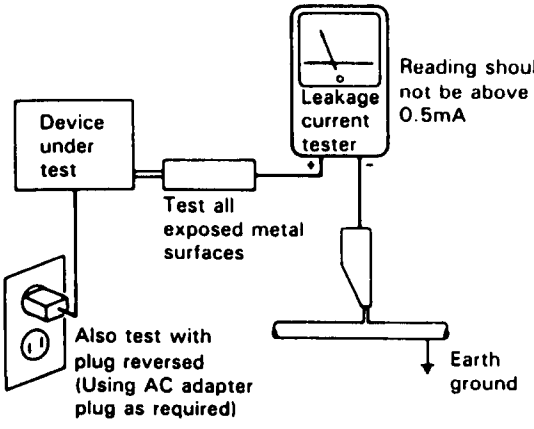
(FOR USA MODEL ONLY)

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.

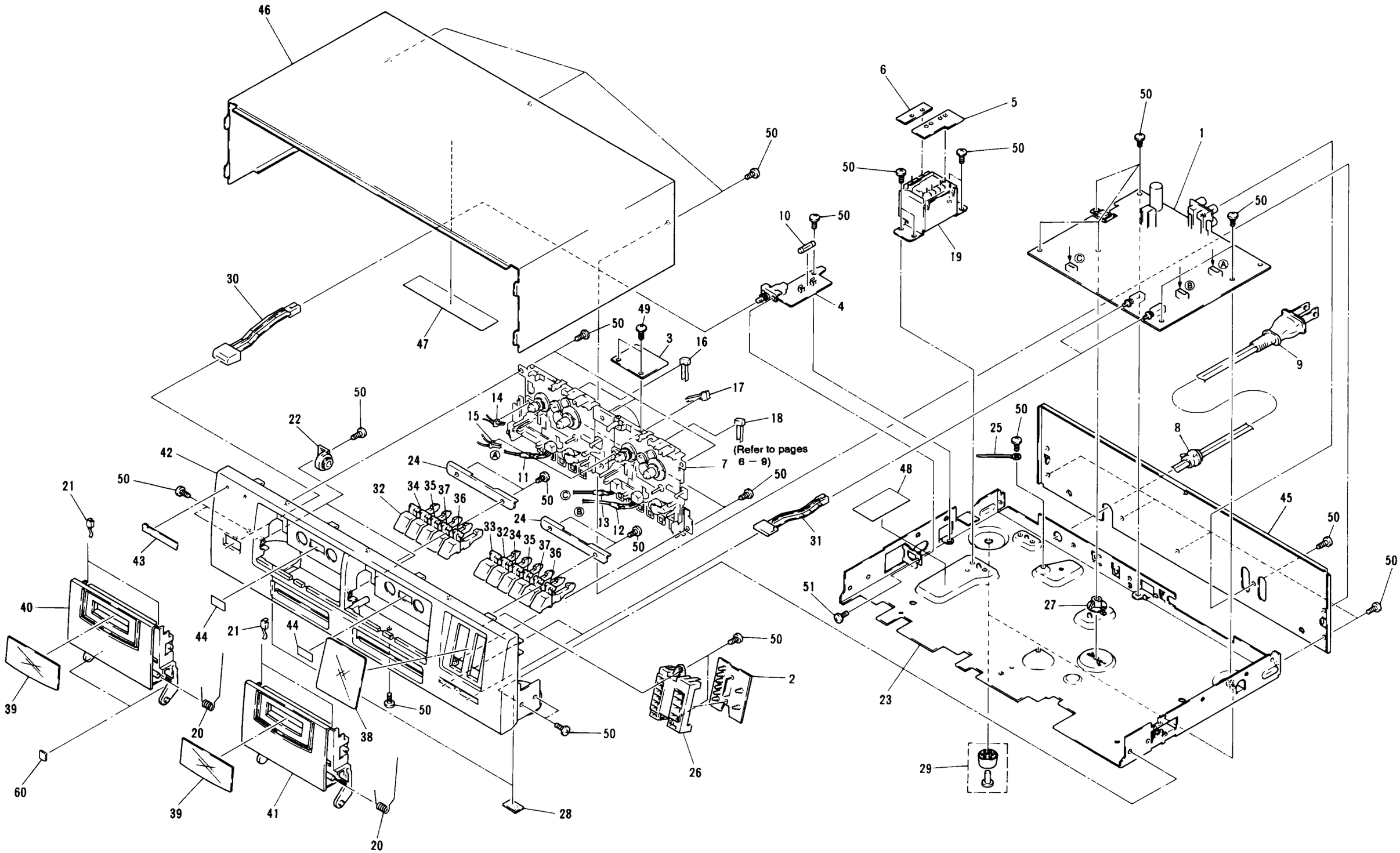
Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts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

1. EXTERIOR AND PACKING

NOTE: Screws adjacent to ▼ mark on the product are used for disassembly.



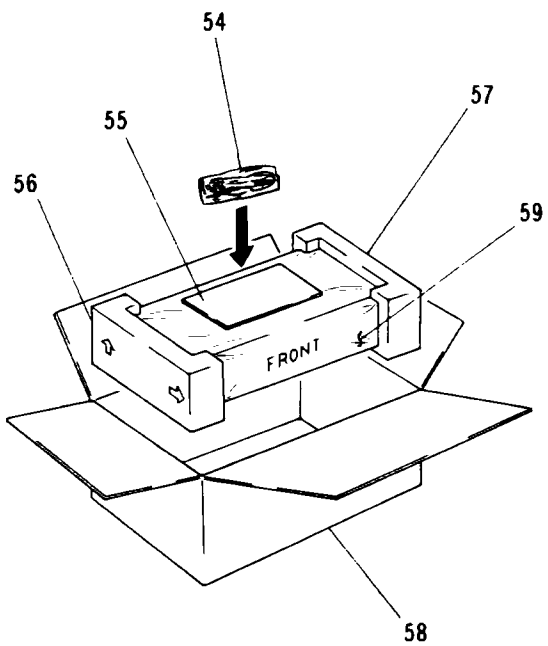
NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- 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

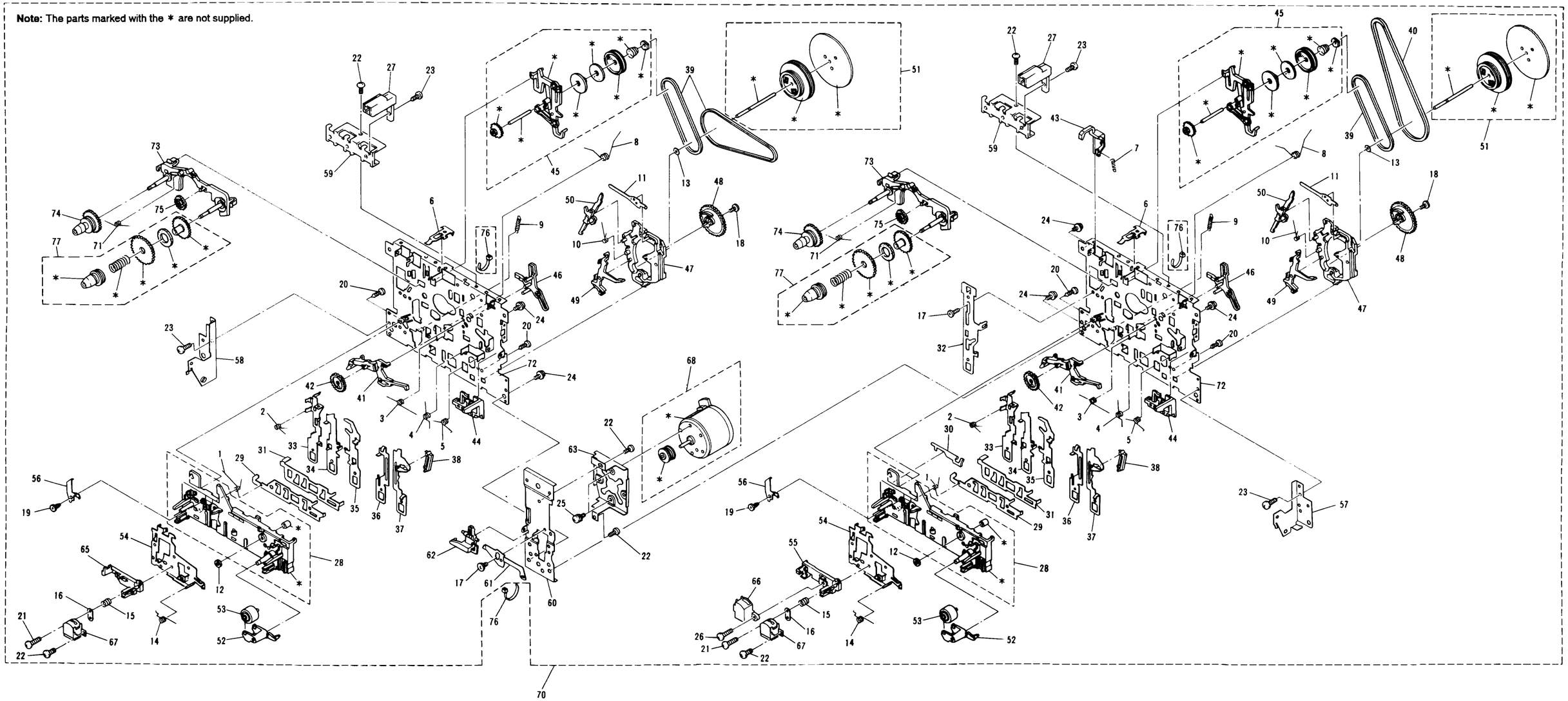
Mark	No.	Description	Part No.
	1	Main Unit	RWZ3226
NSP	2	Sub Unit	RWZ3227
NSP	3	Mechanism Connection Unit	RWZ3228
NSP	4	Power Switch Unit	RWZ3229
NSP	5	Transformer 1 Unit	RWZ3230
NSP	6	Transformer 2 Unit	RWZ3231
	7	Cassette Mechanism Unit	RYM1229
⚠	8	Cord Stopper	CM – 22C
⚠	9	AC Power Cord	PDG1015
⚠	10	Fuse (1A)	REK1057
	11	Connector Assy (3P)	RKP1672
	12	Connector Assy (3P)	RKP1673
	13	Connector Assy (2P)	RKP1681
	14	Leaf Switch (I PLAY)	RSN1025
	15	Leaf Switch (II PLAY)	RSN1025
	16	Leaf Switch (MAIN I)	RSN1025
	17	Leaf Switch (MAIN II)	RSN1025
	18	Leaf Switch (REC)	RSN1025
⚠	19	Power Transformer	RTT1265
	20	Spring R	RBH1305
	21	Spring	RBK1004
	22	Damper Assy	REC1241
NSP	23	Chassis	RNB1101
	24	Bracket	RNE1765
	25	Cord Clamper	RNH – 184
	26	LED Holder	RNK2060
NSP	27	Stud	RNL – 792
	28	Rubber Sheet	AEB1111
	29	Supporting Feet	AXA7010
	30	POWER Knob	RAC1886
	31	MODE Knob	RAC1887
	32	PLAY Knob	RAC1888
	33	REC Knob	RAC1889
	34	REW Knob	RAC1890
	35	FF Knob	RAC1891
	36	PAUSE Knob	RAC1892
	37	STOP Knob	RAC1893
	38	Meter Lens	RAH2387
	39	Door Lens	RAH2388
	40	Door L	RAH2389
	41	Door R	RAH2390
	42	Panel	RAH2391
	43	Name Plate	RAM1007
	44	Indicating Panel	REE – 113
	45	Panel (CT – W103/KUXJ)	RNA1795
	45	Panel (CT – W103/KCXJ)	RNA1796
	46	Bonnet	REA1077
	47	65 Label (CT – W103/KUXJ Only)	ORW1069
NSP	48	Fuse Caution Label	RRW – 111
	49	Screw	BBZ20P060FMC
	50	Screw	BBZ30P080FMC
	51	Screw	PMA30P060FMC
	52	.....	
	53	.....	
	54	Connection Assy	RDE1036
	55	Operating Instructions (English) (CT – W103/KUXJ)	RRB1140
	55	Operating Instructions (English/French) (CT – W103/KCXJ)	RRE1082
	56	Pad L	RHA1056
	57	Pad R	RHA1057
	58	Packing Case (CT – W103/KUXJ)	RHG1590
	58	Packing Case (CT – W103/KCXJ)	RHG1538
	59	Sheet	Z23 – 007
	60	Spacer	REC1244

Packing



2. CASSETTE MECHANISM UNIT

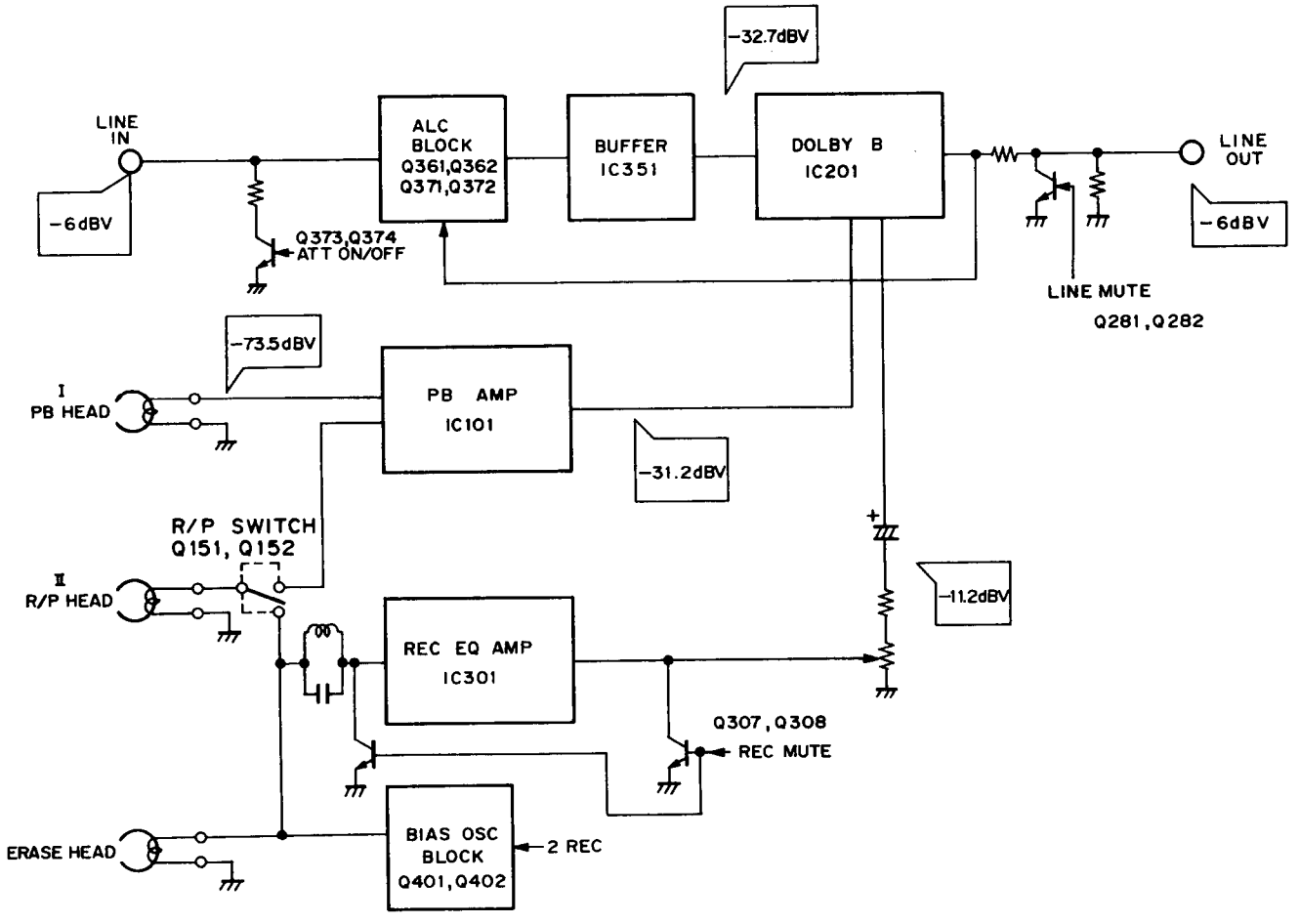
Note: The parts marked with the * are not supplied.



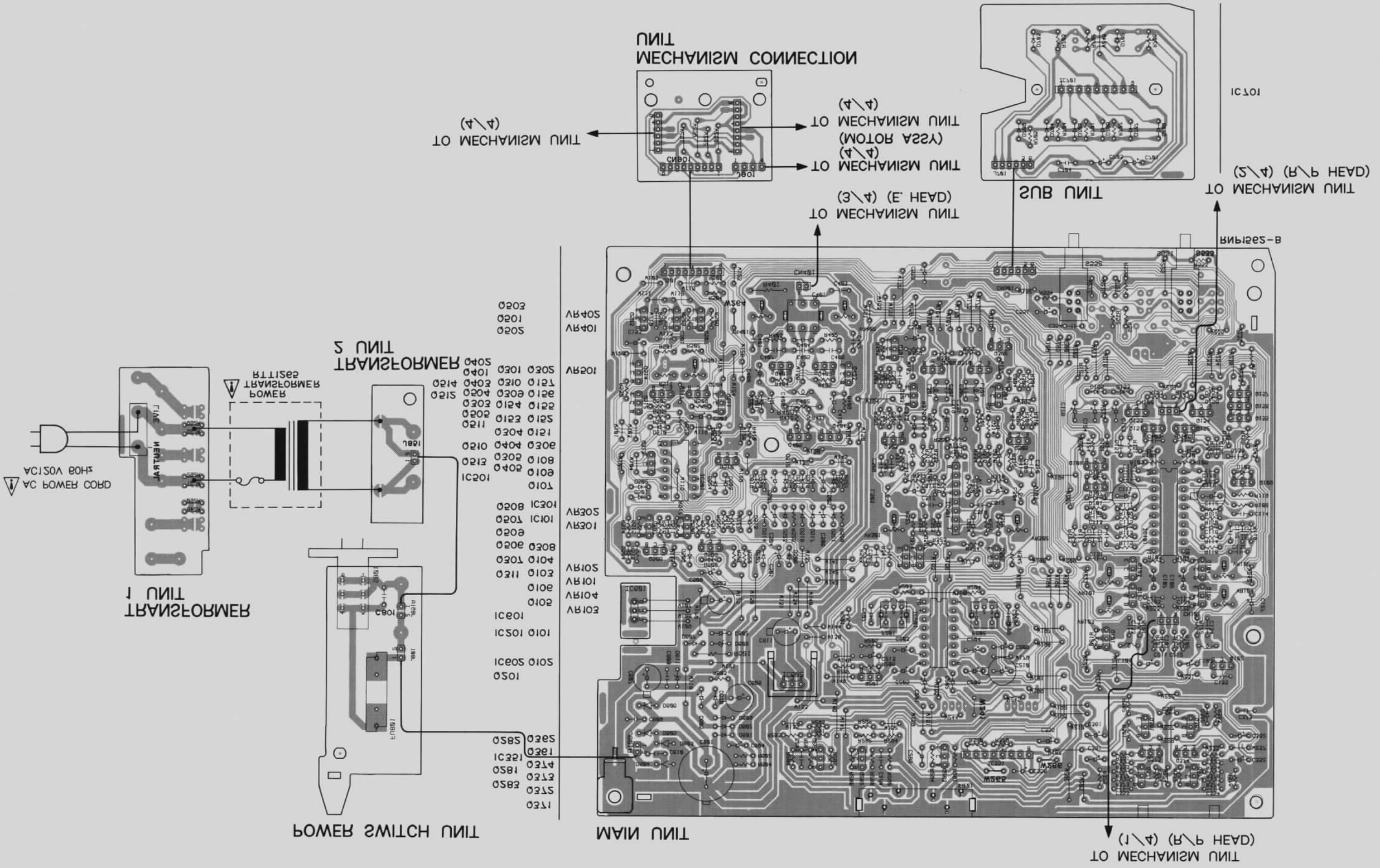
Parts List

Mark	No.	Description	Part No.
	1	Spring	AZB1336
	2	Spring	AZB1337
	3	Spring	AZB1338
	4	Spring	AZB1339
	5	Spring	AZB1340
	6	Cassette Spring	AZB1343
	7	Spring	AZB1344
	8	Spring	AZB1346
	9	Spring	AZB1347
	10	Spring	AZB1348
	11	Plate Spring	AZB1349
	12	Washer	AZB1350
	13	Washer	AZB1351
	14	Spring	AZB1352
	15	Spring	AZB1353
	16	Earth Lug	AZB1354
	17	Screw	AZB1355
	18	Screw	AZB1356
	19	Screw	AZB1357
	20	Screw	AZB1358
	21	Screw	AZB1359
	22	Screw	AZB1360
	23	Screw	AZB1361
	24	Screw	AZB1362
	25	Screw	AZB1363
	26	Screw	AZB1364
	27	Reaf SW (CRO)	RSN1024
	28	Frame Assy	AZN2113
	29	Function Plate	AZN2116
	30	REC Stopper	AZN2117
	31	SW Lever	AZN2118
	32	REC Lever	AZN2119
	33	PLAY Lever	AZN2120
	34	REW Lever	AZN2121
	35	FF Lever	AZN2122
	36	SE Lever	AZN2123
	37	PAUSE Lever	AZN2124
	38	PAUSE Arm	AZN2125
	39	Belt	AZN2126
	40	Belt	AZN2127
	41	P Idler Arm	AZN2128
	42	PL Idler	AZN2129
	43	Inter Lock	AZN2138
	44	Eject Lever	AZN2139
	45	PF FF Idler Assy	AZN2140
	46	Senser	AZN2148
	47	AS Base	AZN2149
	48	Cam Gear	AZN2150
	49	Senser Lever	AZN2151
	50	Control Lever	AZN2152
	51	FW Assy	AZN2153
	52	Pinch Arm	AZN2157
	53	Pinch Roller	AZN2158
	54	Head Base	AZN2159
	55	Head Holder	AZN2160
	56	Switch Plate	AZN2162
	57	Button R Holder	AZN2163
	58	Button L Holder	AZN2164
	59	Plate SW	RNE1790
	60	Connect Plate	AZN2166
	61	Connect Arm	AZN2167
	62	Release Arm	AZN2168
	63	Motor Holder	AZN2246
	64	.....	
	65	Tape Guide	AZN2174
	66	E Head	AZP1025
	67	R/P Head	AZP1036
	68	Motor Assy	AZX1037
	69	.....	
	70	Cassette Mecha	RYM1229
	71	Spring	AZB1342
	72	Chassis	AZN2112
	73	Spindle Base	AZN2130
	74	S Reel	AZN2136
	75	FF Idler	AZN2137
NSP	76	Nylon Binder	Z09 – 057
	77	T Reel Assy	AZN2131

3. BLOCK DIAGRAM

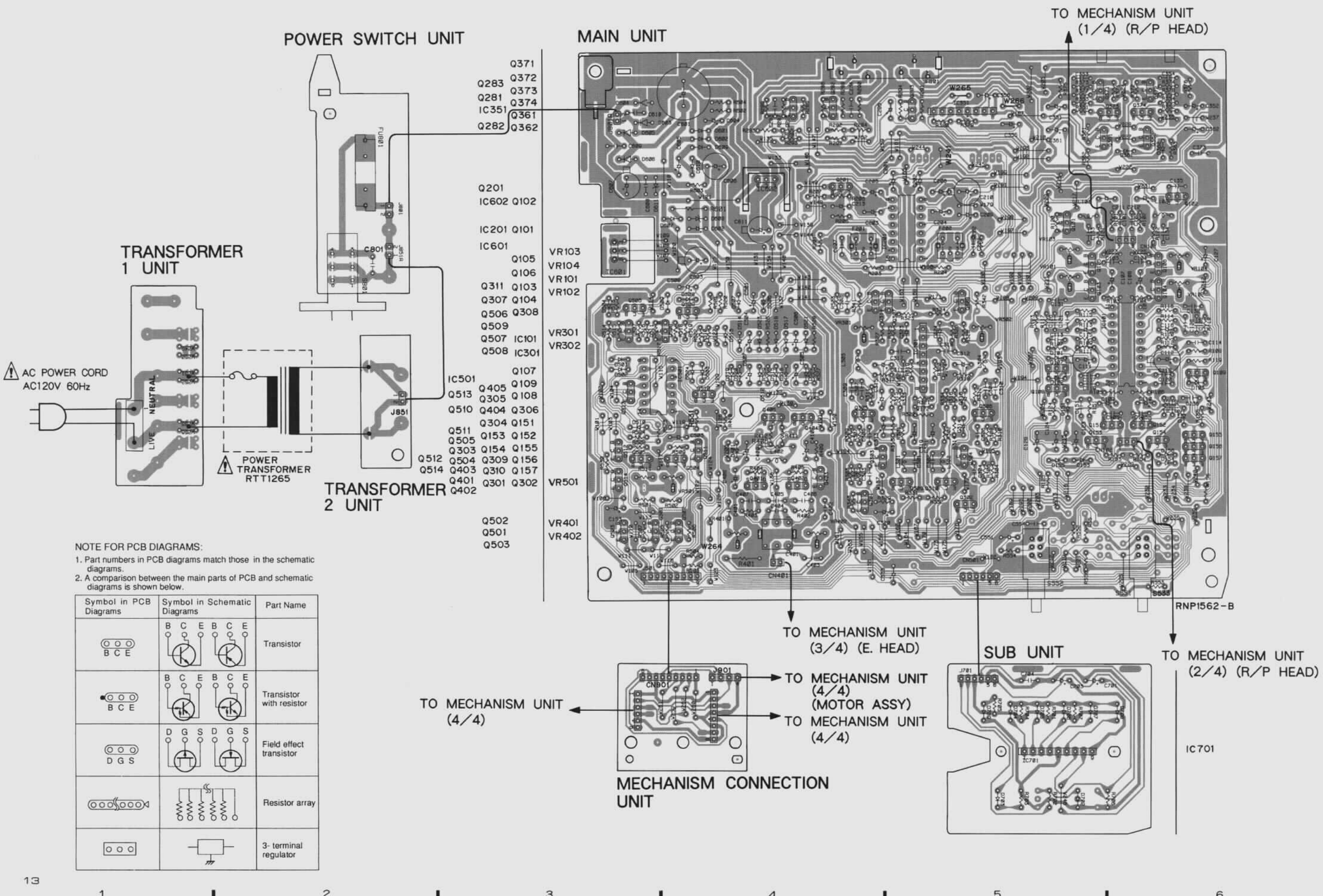


4. PCB CONNECTION DIAGRAM



• This diagram is viewed from the foil side.

• **This diagram is viewed from the mounted parts side.**

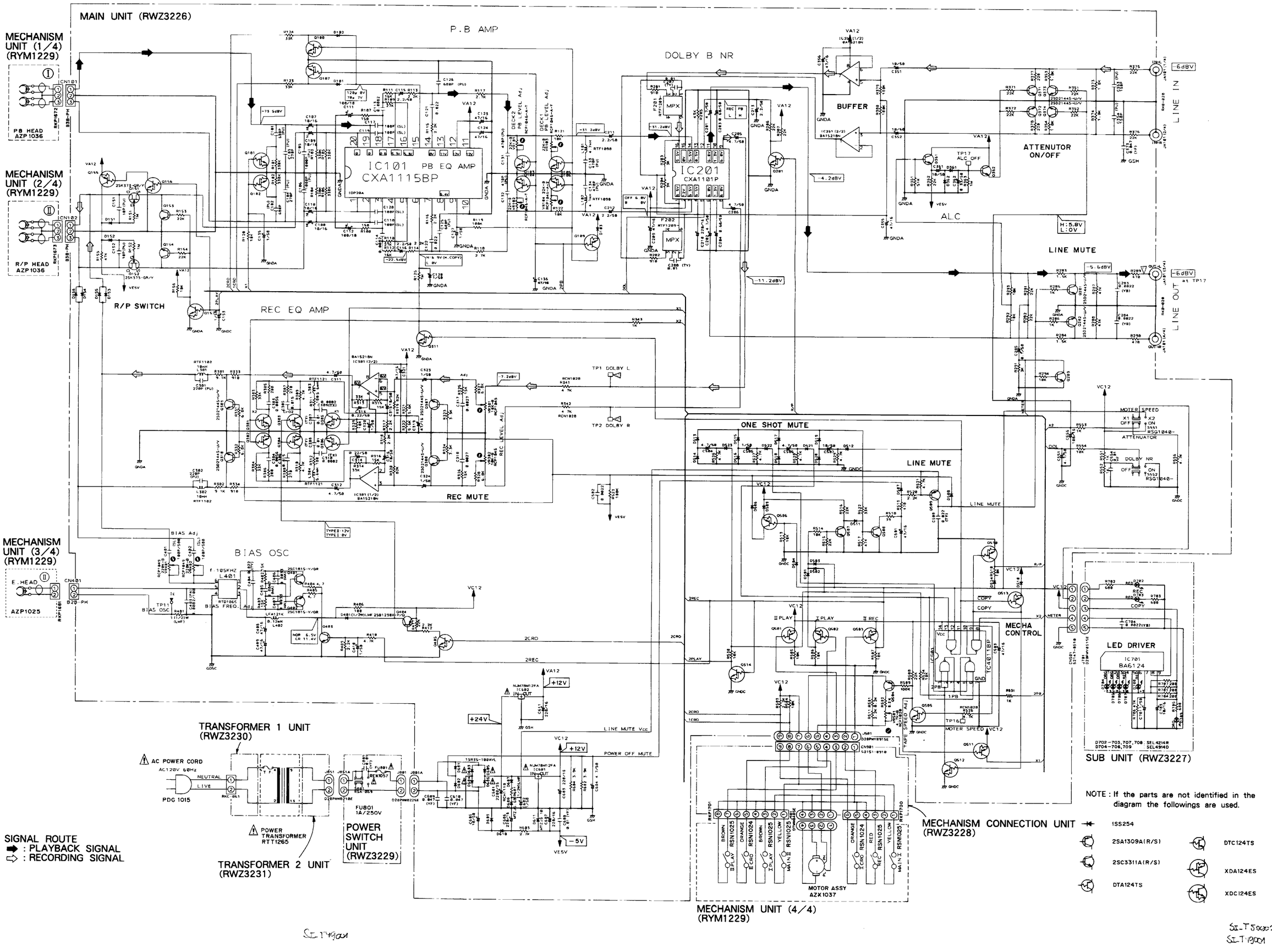


NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3- terminal regulator

5. SCHEMATIC DIAGRAM



SI-T49001

SI-T50002
SI-T19001

6. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- 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.
- 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 ····· RD1/8PM 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 ····· RN1/4PC 5 6 2 1 F

Mark	No.	Description	Part No.
		LIST OF ASSEMBLIES	
NSP		MOTHER UNIT	RWM1699
		├MAIN UNIT	RWZ3226
NSP		├SUB UNIT	RWZ3227
NSP		├MECHANISM CONNECTION UNIT	RWZ3228
NSP		├POWER SWITCH UNIT	RWZ3229
NSP		├TRANSFORMER 1 UNIT	RWZ3230
NSP		└TRANSFORMER 2 UNIT	RWZ3231
		MAIN UNIT	
		SEMICONDUCTORS	
	IC101	PB-EQ AMP IC	CXA1115BP
	IC201	DOLBY B IC	CXA1101P
	IC301, IC351	IC	BA15218N
	IC501	LOGIC IC	TC4011BP
⚠	IC601, IC602	REGULATOR IC	NJM78M12FA
	Q101-Q108	TRANSISTOR	XDC124ES
	Q109	TRANSISTOR	XDA124ES
	Q151, Q152	N-FET	2SK373
	Q153, Q154	TRANSISTOR	2SC3311A
	Q155	TRANSISTOR	XDA124ES
	Q156, Q157	TRANSISTOR	XDC124ES
	Q201	TRANSISTOR	XDC124ES
	Q281, Q282	TRANSISTOR	2SD2144S
	Q283	TRANSISTOR	2SC3311A
	Q301-Q306	TRANSISTOR	XDC124ES
	Q307-Q310	TRANSISTOR	2SD2144S
	Q311	TRANSISTOR	XDC124ES
	Q361, Q362	TRANSISTOR	2SC3311A
	Q371, Q372	TRANSISTOR	2SC3311A
	Q373, Q374	TRANSISTOR	2SD2144S
	Q401, Q402	TRANSISTOR	2SC1815
	Q403	TRANSISTOR	2SC3311A
	Q404	TRANSISTOR	2SB1238X
	Q405	TRANSISTOR	XDC124ES
	Q501-Q503	TRANSISTOR	XDA124ES
	Q504	TRANSISTOR	2SA1309A
	Q505	TRANSISTOR	XDC124ES

Mark	No.	Description	Part No.
	Q506	TRANSISTOR	XDA124ES
	Q507, Q508	TRANSISTOR	2SC3311A
	Q509	TRANSISTOR	2SA1309A
	Q510	TRANSISTOR	XDC124ES
	Q511	TRANSISTOR	XDA124ES
	Q512	TRANSISTOR	XDC124ES
	Q513	TRANSISTOR	XDA124ES
	Q514	TRANSISTOR	XDC124ES
	D101-D103	DIODE	1SS254
	D151-D156	DIODE	1SS254
	D361, D362	DIODE	1SS254
	D401, D501	DIODE	1SS254
	D502-D504	DIODE	1SS254
	D506-D524	DIODE	1SS254
	D601, D602	DIODE	1SS254
⚠	D603-D606	DIODE	1SR35-100AVL
	D607	DIODE	1SS254
	D608	ZENER DIODE	MTZJ5.6B
	D609, D610	DIODE	1SS254
	D611	ZENER DIODE	MTZJ5.1B
		SWITCHES AND RELAYS	
	S551, S552	SWITCH	RSG1040
		COILS AND FILTERS	
	F201, F202	FILTER	RTF1209
	L101, L102	COIL	RTF1098
	L301, L302	COIL	RTF1102
	L303, L304	COIL	RTF1121
	L401	COIL	RTD1065
	L402	RADIAL INDUCTOR	LFA121K
		CAPACITORS	
	C101, C102	AXIAL CAPACITOR	CKPUYB681K50
	C103, C104	AXIAL CAPACITOR	CKPUYB271K50
	C105, C106	CERAMIC CAPACITOR	CKPUYB102K50
	C107-C110	ELECT. CAPACITOR	CEANL100M16
	C111, C112	ELECT. CAPACITOR	CEANL101M10
	C113, C114	PLASTIC FILM CAPACITOR	CQMA822J50
	C115, C116	ELECT. CAPACITOR	CEAS2R2M50
	C117-C120	CERAMIC CAPACITOR	CCCSL101J50

Mark	No.	Description	Part No.
	C121, C122	AUDIO FILM CAPACITOR	CFTYA223J50
	C123, C124	ELECT. CAPACITOR	CEAS470M16
	C125, C126	AXIAL CAPACITOR	CKPUYB681K50
	C127, C128	ELECT. CAPACITOR	CEAS010M50
	C131-C134	AXIAL CAPACITOR	CKPUYB471K50
	C135	ELECT. CAPACITOR	CEAS010M50
	C136	ELECT. CAPACITOR	CEAS470M16
	C151, C152	AXIAL CAPACITOR	CCPUSL100J50
	C153	ELECT. CAPACITOR	CEAS010M50
	C201, C202	ELECT. CAPACITOR	CEAS4R7M50
	C203, C204	ELECT. CAPACITOR	CEASR68M50
	C205, C206	ELECT. CAPACITOR	CEAS4R7M50
	C207, C208	AUDIO FILM CAPACITOR	CFTYA103J50
	C209	ELECT. CAPACITOR	CEAS470M16
	C210	ELECT. CAPACITOR	CEAS221M16
	C211-C213	ELECT. CAPACITOR	CEAS2R2M50
	C283, C284	CERAMIC CAPACITOR	CKCYB222K50
	C285	ELECT. CAPACITOR	CEASR10M50
	C301, C302	AXIAL CAPACITOR	CKPUYB221K50
	C303, C304	CERAMIC CAPACITOR	CGCYX562K25
	C305, C306	CERAMIC CAPACITOR	CGCYX153K25
	C307, C308	AUDIO FILM CAPACITOR	CFTYA103J50
	C309, C310	AUDIO FILM CAPACITOR	CFTXA822J50
	C311, C312	ELECT. CAPACITOR	CEAS4R7M50
	C313, C314	ELECT. CAPACITOR	CEASR22M50
	C315, C316	ELECT. CAPACITOR	CEAS100M50
	C317, C318	CERAMIC CAPACITOR	CGCYX272K25
	C319	ELECT. CAPACITOR	CEAS470M16
	C320	ELECT. CAPACITOR	CEAS010M50
	C321	ELECT. CAPACITOR	CEAS470M16
	C323, C324	ELECT. CAPACITOR	CEAS010M50
	C351, C352	ELECT. CAPACITOR	CEAS100M50
	C353, C354	CERAMIC CAPACITOR	CKPUYB151K50
	C355, C356	ELECT. CAPACITOR	CEAS470M16
	C361	ELECT. CAPACITOR	CEAS100M50
	C362	ELECT. CAPACITOR	CEASR33M50
	C373	CERAMIC CAPACITOR	CKCYF473Z50
	C401, C402	CERAMIC CAPACITOR	CCCSL101K500
	C403	PL. PROPYTENE CAPACIT	CQPA822J100
	C404	AUDIO FILM CAPACITOR	CFTYA223J50
	C405	PLASTIC FILM CAPACITOR	CQMA472J50
	C406, C407	PLASTIC FILM CAPACITOR	CQMA332J50
	C408, C409	ELECT. CAPACITOR	CEAS470M16
	C410	ELECT. CAPACITOR	CEAS010M50
	C501	ELECT. CAPACITOR	CEAS470M16
	C502	CERAMIC CAPACITOR	CKCYB222K50
	C503	ELECT. CAPACITOR	CEAS470M16
	C504	ELECT. CAPACITOR	CEAS4R7M50
	C505	ELECT. CAPACITOR	CEAS010M50
	C506	ELECT. CAPACITOR	CEAS4R7M50
	C507	ELECT. CAPACITOR	CEAS100M50
	C508	AUDIO FILM CAPACITOR	CFTYA223J50
	C551	ELECT. CAPACITOR	CEAS4R7M50
	C554	CERAMIC CAPACITOR	CKCYF103Z50
	C555	ELECT. CAPACITOR	CEAS101M16
	C601	ELECT. CAPACITOR (2200/35V)	RCH1118
	C602	ELECT. CAPACITOR	CEAS010M50

Mark	No.	Description	Part No.
	C603	ELECT. CAPACITOR	CEAS221M16
	C604	ELECT. CAPACITOR	CEAS4R7M50
	C605	ELECT. CAPACITOR	CEAS100M50
	C606, C607	ELECT. CAPACITOR	CEAS221M16
	C608	CERAMIC CAPACITOR	CKCYF103Z50
	C609, C610	CERAMIC CAPACITOR	CKCYF473Z50
	C611	ELECT. CAPACITOR	CEAS221M16
		RESISTORS	
	R341, R342	CARBON FILM RESISTOR (4.7K)	RCN1028
	R401	CARBON FILM RESISTOR	RD1/2LFM010J
	R406	CARBON FILM RESISTOR	RD1/2LMF101J
	R525	CARBON FILM RESISTOR (4.7K)	RCN1028
	R601	CARBON FILM RESISTOR	RD1/2LMF102J
	R502 (Sr. T50002)		RD1/6PM 5 4 2 J
	VR101-VR104	VR(22K)	RCP1046
	VR301, VR302	VR(10K)	RCP1045
	VR401, VR402	VR(220K)	RCP1049
	VR501	VR(4.7K) (Sr. T50002)	RCP1020 -> RCP1045
	OTHER RESISTORS		RD1/6PM□□□J
		OTHERS	
	CN101, CN102	CONNECTOR POST	B3B-PH-K
	CN401	CONNECTOR POST	B2B-PH-K
	CN501	5P JUMPER CONNECTOR	52147-0510
	JA101	JACK	RKB-020
	EARTH PLATE		VNF-091
		SUB UNIT	
		SEMICONDUCTORS	
	IC701	LINEAR IC	BA6124
	D702, D703	LED	SEL4214R
	D704-D706	LED	SEL4914D
	D707, D708	LED	SEL4214R
	D709	LED	SEL4914D
		CAPACITORS	
	C701	ELECT. CAPACITOR	CEAS010M50
	C703	ELECT. CAPACITOR	CEAS100M16
	C704	CERAMIC CAPACITOR	CKCYB222K50
		RESISTORS	
	ALL RESISTOR		RD1/6PM□□□J
		MECHANISM CONNECTION UNIT	
		OTHERS	
	CN901	3P JUMPER CONNECTOR	52151-0910
		POWER SWITCH UNIT	
		SWITCHES AND RELAYS	
⚠	S801	SWITCH	RSA-069
		CAPACITORS	
	C801	CERAMIC CAPACITOR	CKCYF103Z50
		OTHERS	
⚠	TERMINAL		RKC-061
		TRANSFORMER 1 UNIT	
		This unit has no service parts.	
		TRANSFORMER 2 UNIT	
		This unit has no service parts.	

NOTE FOR SCHEMATIC DIAGRAMS (Type 6A)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ▭ or → V :
   DC voltage (V) in STOP mode unless otherwise noted.
   ⇨ mA or → mA :
   DC current in STOP mode unless otherwise noted.
7. **OTHERS:**
   - ⊘ or ⊘ : Adjusting point.
   - ◁ : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SCH-□ ON THE SCHEMATIC DIAGRAM:**
   - SCH-□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)
9. **SWITCHES** (Underline indicates switch position):

MAIN UNIT		
S551	COPY SPEED	NORM – HIGH
S552	DOLBY NR	OFF – ON
POWER SWITCH UNIT		
S801	POWER	

7. ADJUSTMENTS

7.1 MECHANICAL ADJUSTMENT

1. Tape Speed Adjustment and Check					
No.	Deck	Mode	Input signal & test tape	Adjustment location	Adjustment value
–	–	——	Play back STD-301 (3 kHz)	Terminate the test point (TP18) at GND using the short-pin, and press the PLAY buttons of DECKs I and II.	
1	I	Double speed PLAY		Check	6000 Hz ± 600 Hz
2	II				
–	–	——		Remove the short-pin from the test point (TP18) at the beginning of FWD of DECK II.	
3	II	Normal speed PLAY		VR501	3000Hz ± 5Hz

MAIN UNIT

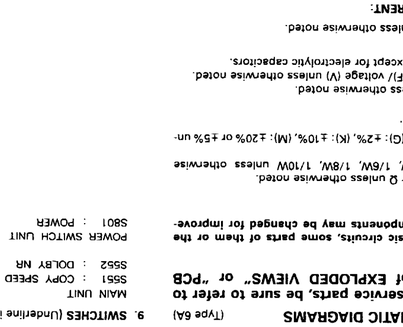


Fig. 7–1 Adjusting points

- Door damping check and adjustment

1. Attach the door spring at position (b) according to fig. 7-2. and stand the front assembly straight up as shown in fig. 7-3.
2. Open the doors of DECK I and DECK II simultaneously, and when one of the doors is fully opend, confirm that the difference between the two doors is within 15 mm.
3. If the specification described in steps 1 and 2 above is not satisfied, change the door spring position as follows and adjust.
   - When the door of DECK I opens slower than the one of DECK II: Change the DECK II door spring to position (a).
   - When the door of DECK I opens faster than the one of DECK II: Change the DECK I door spring to position (a).

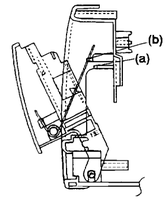


Fig. 7–2

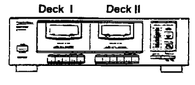


Fig. 7–3

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 10 kΩ load resistance to the OUTPUT terminals.
6. Unless otherwise specified, the switches listed below are left in the positions indicated.
   DOLBY NR : OFF

Test Tapes

STD–331E : Playback adjustments (See Fig. 7–4)
STD–631 or STD–632 : NORMAL blank tape
STD–621 : CrO_2 blank tape

List of Adjustments

Playback sections

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

Recording sections

1. Recording bias adjustment.
2. Recording level adjustment.
3. Level meter check.

NOTE: This unit has an automatic tape selection feature.

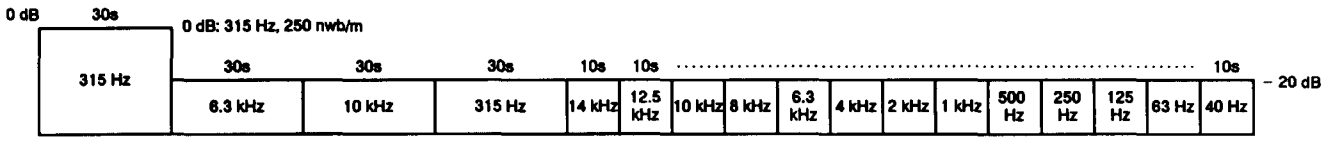
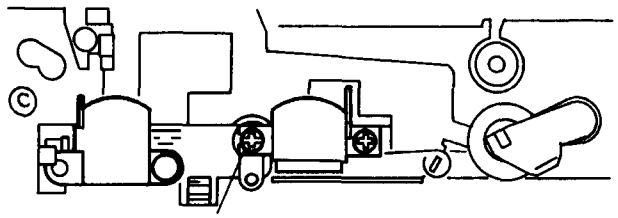


Fig. 7-4 Constants of the test tape STD–331E

Deck II



Deck I

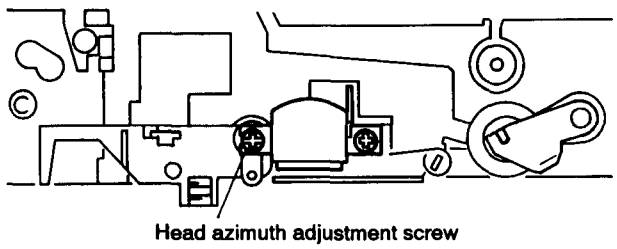


Fig. 7-5 Head azimuth adjustment

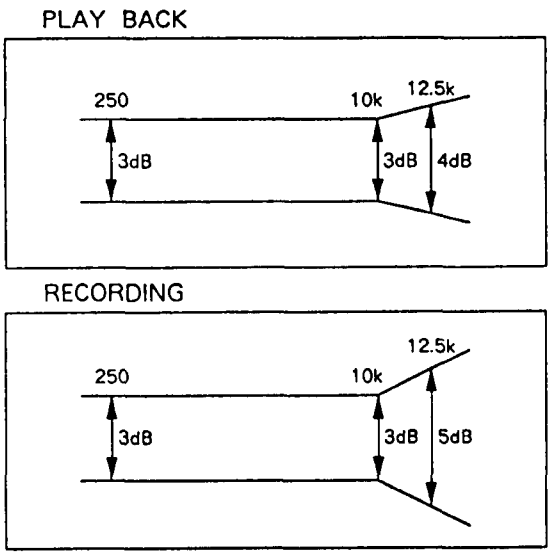


Fig. 7-6 Frequency response zone

PLAYBACK SECTION

1. Head Azimuth Adjustment

- Turn VR101, 102 (Deck II) or VR103, 104 (Deck I) 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. 7-5)	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	VR 103 (Lch) VR 104 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	–10.7 dBV	
			Deck II	VR 101 (Lch) VR 102 (Rch)			

RECORDING SECTION

1. Recording Bias Adjustment

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→ PLAY	Load the STD-631 test tape. Record the 315 Hz and 6.3 kHz signals at –20 dBV input level and playback.	Deck II	VR401 (Lch) VR402 (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.	

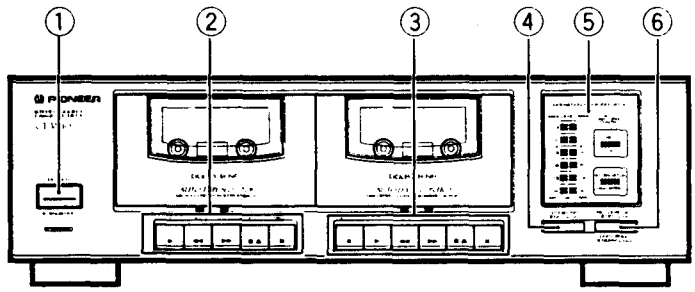
2. Recording Level Adjustment

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	REC/ PAUSE	Apply a 315 Hz signal to the line input terminals, load the STD–631 or STD–632 test tape.	Volume of the output level of the oscillator		TP. 1 (Lch) TP. 2 (Rch)	–11.2 dBV	
2.	REC→ PLAY	Record the above signal onto the STD–631 or STD–632 test tape, and playback.	Deck II	VR301 (Lch) VR302 (Rch)		Repeatedly record, playback and adjust so that the playback signal level becomes –11.2 dBV.	
3.	REC→ PLAY	Record the above signal onto the STD–621 test tape, and playback.	Check			–11.2 dBV ± 1.5 dB	

3. Level Meter Check

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	REC/ PAUSE	Apply a 315 Hz/–6 dBV (0.5V) signal to the Line Input terminals.	Volume of the output level of the oscillator.	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.	

8. PANEL FACILITIES



① POWER (STANDBY/ON) switch

NOTE:

The POWER switch activates the secondary transformer only. Even when the switch is in the STANDBY position, there will be a power flow to the deck's circuits as long as the power cord is connected to a power outlet.

② Deck I operation buttons

► (PLAY)	: Playback
◄◄ (REW)	: Rewind
►► (FF)	: Fast forward
■/⏏ (STOP/EJECT)	: Stop/Eject
II (PAUSE)	: Pause

③ Deck II operation buttons

● (REC)	: Recording
► (PLAY)	: Playback
◄◄ (REW)	: Rewind
►► (FF)	: Fast forward
■/⏏ (STOP/EJECT)	: Stop/Eject
II (PAUSE)	: Pause

④ DOLBY* NR switch (▙ OFF, ▁ ON)

*

- *Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.*
- *"DOLBY" and the double-D symbol DD are trademarks of Dolby Laboratories Licensing Corporation.*

⑤ Function display

⑥ REC LEVEL ATT button (▙ OFF, ▁ ON)/ COPY SPEED button (▙ NORM, ▁ HIGH)

- If the sound is distorted , set this button to ON to attenuate the level and reduce distortion.
- When recording from one tape to another tape, this button can be used to switch between NORMAL SPEED and HIGH SPEED recording.

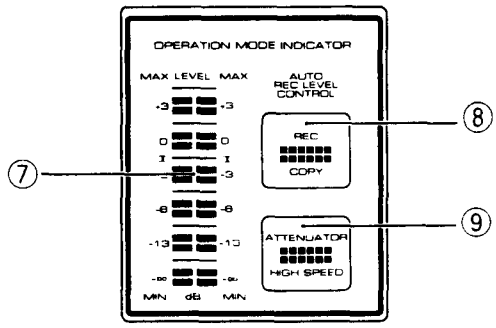
■ Dolby NR System

Dolby NR systems are designed to reduce the amount of tape hiss, mainly in the treble components. During recording, the high-pitched pianissimo sounds which are most characteristic of audible noise are boosted, and during playback, only these boosted sections are attenuated, so that the sound is returned to normal. As a result, the noise is attenuated by an amount equal to the boosting in the treble range. The Dolby NR ON system reduces noise in the treble range, cutting tape hiss and expanding the dynamic range.

NOTE:

When a tape has been recorded using the Dolby NR system, make sure that the DOLBY NR switch is set to the ON position during playback.

Function display



⑦ Level meter

- The DD between the –3 and 0 mark indicates the reference level for the Dolby NR system.

⑧ REC/COPY indicator

Lights up during recording or copying.

⑨ ATTENUATOR/HIGH SPEED indicator

- Lights up during recording when the REC LEVEL ATT switch is set to ON.
- Lights up during High speed copying.

9. SPECIFICATIONS

System ..... 4 track, 2-channel stereo
Heads ..... "Hard Permalloy" recording/playback head x 1
"Hard Permalloy" playback head x 1
"Ferrite" erasing head x 1
Motor ..... DC servo motor x 1
Wow and Flutter ..... 0.15% (WRMS, JIS)
Fast Winding Time ..... Approx. 115 seconds (C-60 tape)

Frequency Response (at –20 dB recording level)
TYPE II (HIGH/CrO_2) tape ..... 30 to 16,000 Hz
TYPE I (Normal) tape ..... 30 to 16,000 Hz
Signal-to-Noise Ratio
Dolby NR OFF ..... More than 56 dB
Noise Reduction Effect
Dolby NR ON ..... More than 10 dB (at 5 kHz)
Harmonic Distortion ..... No more than 1.0%
(at –4 dB: 160 nwb/m)
Input (Sensitivity)
LINE (INPUT) ..... 112 mV (Input impedance 24 kΩ)
Output (Reference level)
LINE (OUTPUT) ..... 0.5 V (Output impedance 1.9 kΩ)

Miscellaneous

Power Requirements
Australian model ..... AC 230 ~ 240 V, 50/60 Hz
U.S. model ..... AC 120 V, 60Hz
Power Consumption ..... 15 W
Dimensions ..... 420 (W) x 130 (H) x 250 (D) mm
Weight ..... 4.2 kg

Accessories

Operating instructions 1
Connection cord with pin plugs 2

Features

- DOLBY NR
- Synchronized copy start
- High-speed and normal-speed copy (Deck I → Deck II)
- Relay playback (Deck II → Deck I)
- 6-segment LED level meter
- Automatic tape selectors
- Automatic recording level control
- REC LEVEL Attenuator

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