PIONEER®
The Art of Entertainment

Service Manual

ORDER NO.
ARP2509

STEREO CASSETTE DECK

CT-S510
CT-S410

CT-S510 AND CT-S410 HAVE THE FOLLOWING:

Type	Model		Power Requirement	Remarks
	CT-S510	CT-S410		
KUC	–	○	AC120V only	
HEM	○	○	AC220-230V, 230-240V (switchable) *	
HB	○	○	AC220-230V, 230-240V (switchable) *	

*Change the connection of the power transformer's primary wiring.

- **This manual is applicable to CT-S510/HEM, HB, CT-S410/KUC, HEM and HB types.**
- **For the following: CT-S510/HB, CT-S410/KUC, HEM, and HB types, refer to page 41.**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

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

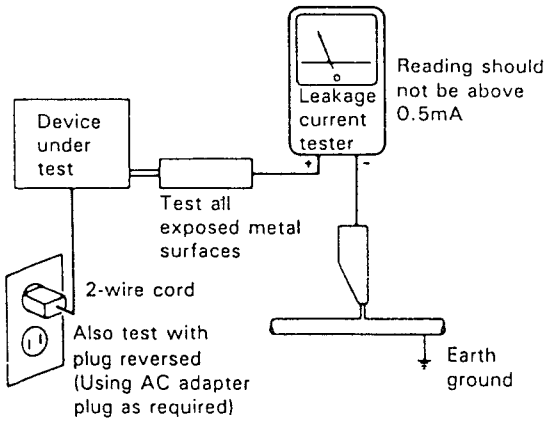
(FOR USA MODEL ONLY)

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. SPECIFICATIONS

System ..... 4 track, 2-channel stereo
Heads ..... Combined "Hard permalloy" recording/playback head × 1
"Ferrite" erasing head × 1
Motor ..... DC servo capstan motor × 1
DC reel motor × 1
Wow and Flutter ..... No more than 0.05% (WRMS, JIS)
No more than ±0.14% (DIN)
Fast Winding Time ..... Approx. 90 seconds (C-60 tape)
Frequency Response (at −20 dB recording level)
TYPE IV (Metal) Tape ..... 20 to 21,000 Hz
TYPE II (CrO_2) Tape ..... 20 to 19,000 Hz
TYPE I (Normal) Tape ..... 20 to 19,000 Hz
Signal-to-Noise Ratio (Dolby NR off) ..... More than 59 dB
Noise Reduction Effect
Dolby B-type NR ON ..... More than 10 dB (at 5 kHz)
Dolby C-type NR ON ..... More than 19 dB (at 5 kHz)
Harmonic Distortion ..... No more than 0.6%
(at −4 dB: 160 nwb/m)
Input (Sensitivity)
LINE (INPUT) ..... 100 mV (Input impedance 50 kΩ)
Output (Reference level)
LINE (OUTPUT) ..... 0.5 V (Output impedance 3.8 kΩ)
Headphone (PHONES) ..... 0.63 mW (Load impedance 8 Ω)

Miscellaneous

Power Requirements
U.S., Canadian models ..... AC 120V, 60 Hz
U.K., model ..... AC 230−240 Volts~, 50/60 Hz
European model ..... AC 220−230 Volts~, 50/60 Hz
Power Consumption 23W
Dimensions ..... 420(W) × 126(H) × 272(D) mm
16-9/16(W) × 4-15/16(H) × 10-11/16(D) in
Weight
[CT-S510] ..... 4.5 kg (9lb 14/16oz.)
[CT-S410] ..... 4.5 kg (9lb 14/16oz.)

Subfunctions

- Dolby B-type and C-type NR Systems
- DOLBY HX PRO system
- MPX FILTER
- Headphones jack
- 4-digit electronic tape/time/remain counter (Displays the operation mode in 5 digits)
- Music search up to ±15 selections
- Automatic space recording mute
- SUPER AUTO BLE tuning system
- FL level meter 9 +1 segments (with peak hold)
- SR System remote control available (CT-S410 only)
- CD•DECK SYNCHRO function
- Timer Recording/Playback (Automatic repeat playback ON)
- SOUND EQ
- Auto tape selector

Accessories

Operating instructions 1
Connection cord with pin plugs 2
Remote control unit (CT-S510 only) 1
Batteries (CT-S510 only) 2
SR Remote control cord (CT-S410 only) 1
CD•DECK SYNCHRO control cord 1

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

3. EXPLODED VIEWS AND PARTS LIST

NOTES:

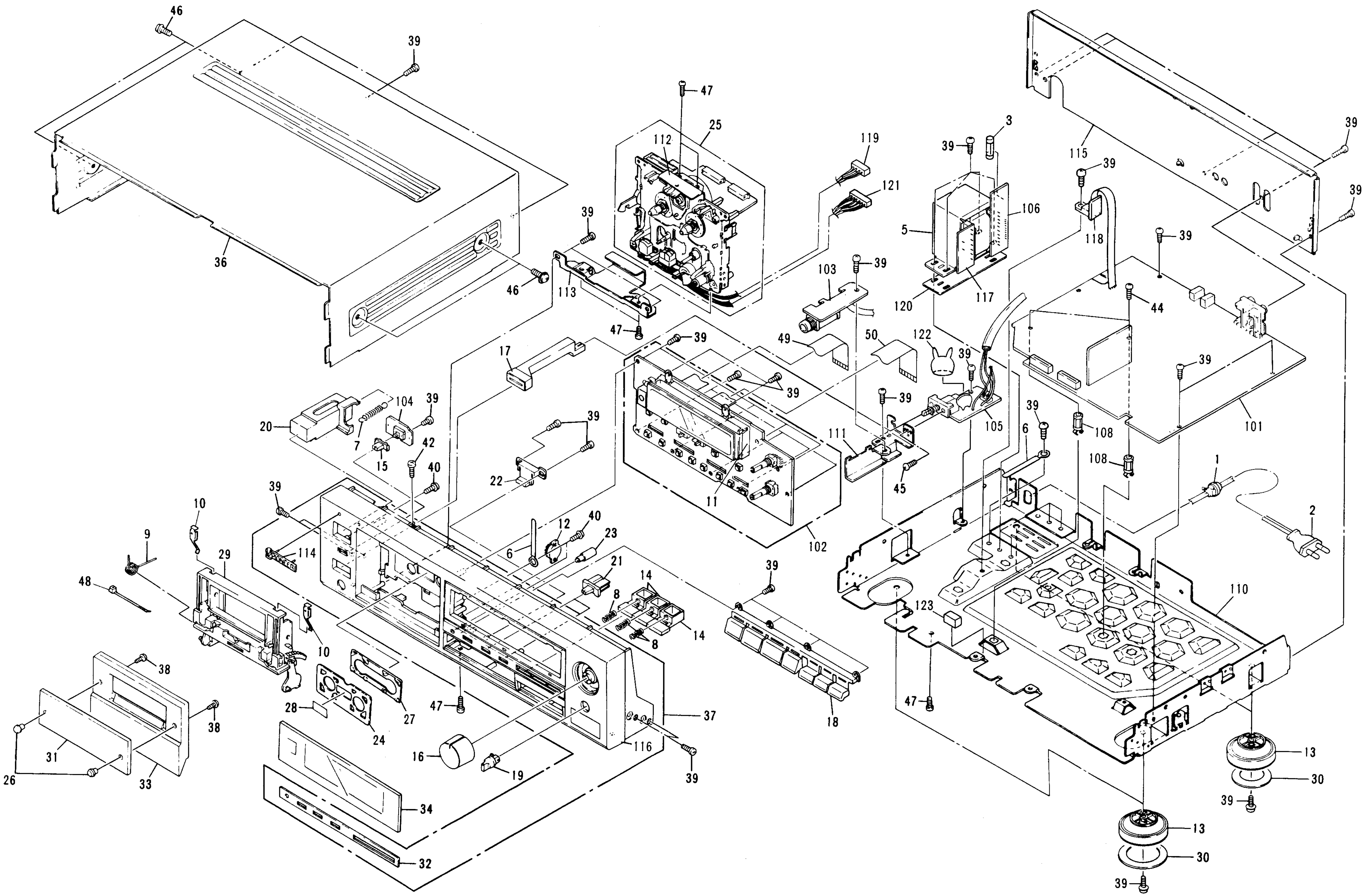
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

3.1 EXTERIOR (For CT-S510/HEM type)

Parts List

Mark	No.	Description	Part No.
⚠	1	Strain relief	CM – 22B
⚠	2	AC power cord	PDG1003
⚠	3	Fuse (1A) (FU803)	REK – 100
	4	.....	
⚠	5	Power transformer (T1)	RTT1195
	6	Cord clamper (KUC only)	RNH – 184
	7	Ratchet spring	RBH1008
	8	Push spring	RBH1146
	9	Door spring (L)	RBH1203
	10	Half pressure spring	RBK1004
	11	FL holder	RNK1499
	12	Damper assembly	REC1013
	13	Insulator	VNK1095
	14	Knob	RAC1604
	15	Slide knob (A)	RAC1236
	16	VR knob	RAC1363
	17	Power button	RAC1364
	18	Operation knob	RAC1682
	19	Headphone knob	RAC1366
	20	Eject konb	RAC1367
	21	Slide knob (B)	RAC1392
	22	Tact knob	RAC1409
	23	Counter reset knob	RAC1400
	24	Stabilizer panel	RAH1483
⊙	25	Mechanism unit	RYM1167
	26	Decoration screw	RAT1001
	27	Stabilizer B	REB1085
	28	Remain display paper	REE – 113
	29	Door pocket	RNT1145
	30	Stopper	VEC1061
	31	Door lens	RAH1244
	32	Dolby name plate	RAH2003
	33	Door panel	RAH1996
	34	FL lens	RAH2030
	35	.....	
	36	Bonnet	RXX1396
	37	Front panel assembly	RXX1466
	38	Screw	ABZ26P050FMC
	39	Screw	BBZ30P080FCC
	40	Screw	ARZ26P060FMC
	41	.....	
	42	Screw	BCZ30P060FMC
	43	.....	
	44	Screw	IBZ30P150FCU
	45	Screw	PMA30P060FMC
	46	Screw	FBT40P080FZK
	47	Screw	BBZ30P060FZK
	48	Binder	REC – 371
	49	Lead card 18P	RDD1258
	50	Lead card 20P	RDD1259
NSP	101	MAIN unit	RWZ2589
NSP	102	DISP unit	RWZ2590
NSP	103	HPHN unit	RWZ2581
NSP	104	TIMS unit	RWZ2582
NSP	105	PWSW unit	RWZ2580
NSP	106	TRN 2 unit	RWZ2586
	107	.....	
NSP	108	PCB spacer	PNY – 404
NSP	109	.....	
NSP	110	Main chassis	RNB1076
NSP	111	Headphone bracket	RNE1178
NSP	112	Mechanism mount plate (U)	RNE1307
NSP	113	Mechanism mount plate (D)	RNE1308
NSP	114	Name plate	PAN1035
NSP	115	Rear panel	RNA1514
NSP	116	Front panel	RNT1131
NSP	117	TRN 1 unit	RWZ2678
NSP	118	Regulator IC unit	RWZ2671
NSP	119	Connector assembly 4P	RKP1111
NSP	120	Trans shield plate	RNE1451
NSP	121	Connector assembly 6P	RKP1506
NSP	122	Capacitor sleeve A	REC – 150
NSP	123	PCB spacer	REB1072

Exterior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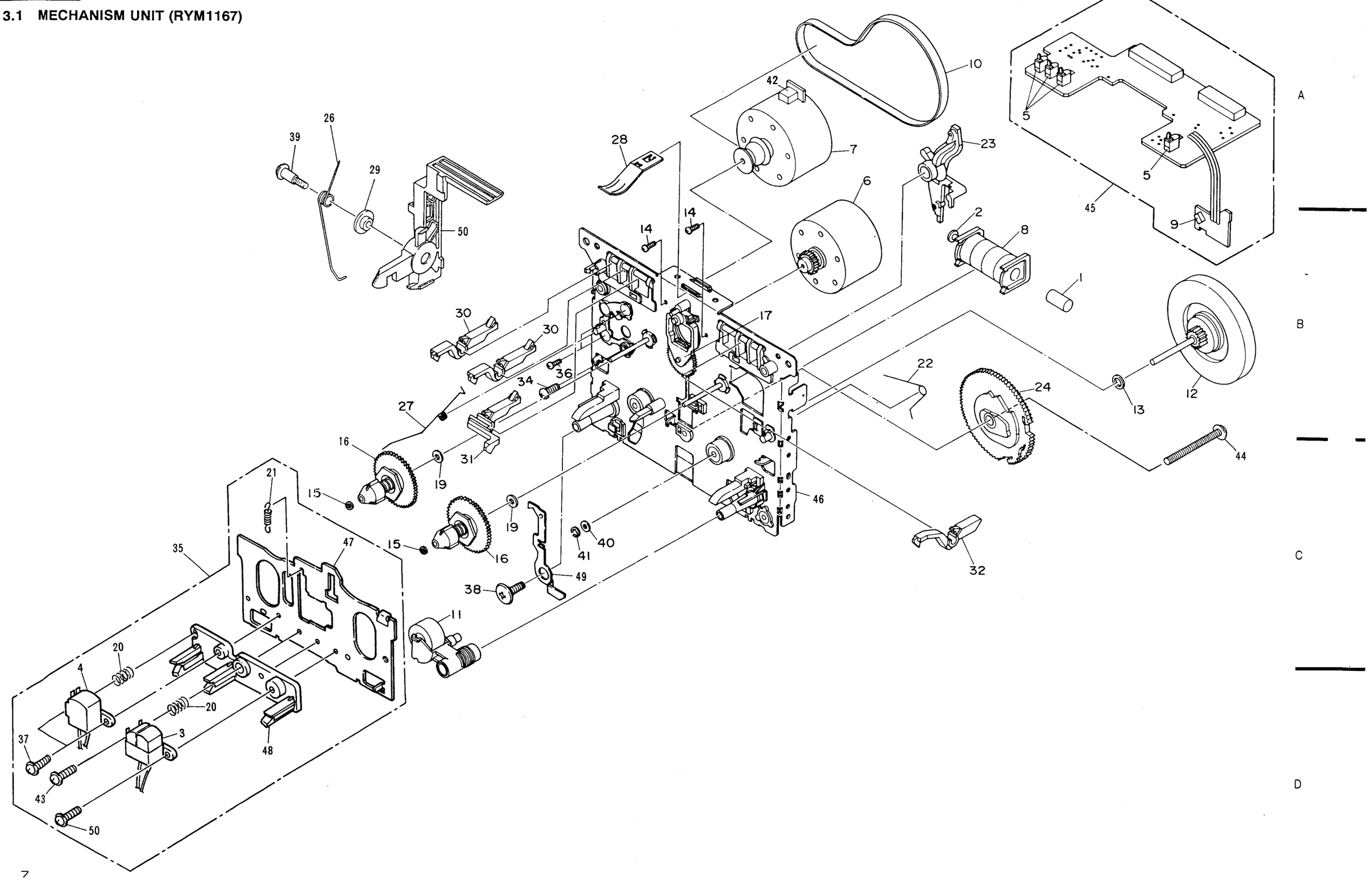
3.1 MECHANISM UNIT (RYM1167)



Parts List

Mark	No.	Description	Part No.
	1	Fixed core	RLA1130
	2	Planger	RLA1132
	3	Head (R/P)	RPB1047
	4	Head (E)	RPB1040
	5	Push SW	RSG1018
	6	MTR reel BLK	RXM1057
	7	MTR main BLK	RXM1058
	8	Solenoid BLK	RXP1010
	9	Photo – transistor	SPI33534FG
	10	Main belt	REB1163
	11	Pinch roller ass'y	RXA1183
	12	F/W ass'y	RXA1346
	13	Washer	WA26D045D025
	14	Pan 2.6 × 6.4 ZN	RBA1076
	15	Washer	RBF – 057
	16	Reel base BLK	RXA1184
	17	Idler BLK	RXA1248
	18	·····	
	19	Washer	RBF1038
	20	Azimuth SP	RBH1076
	21	Head base SP	RBL1003
	22	Slide SP	RBH1239
	23	Play arm	RNK1525
	24	Cam gear (3R)	RNK1672
	25	·····	
	26	Lever SP (L) (EJECT)	RBH1262
	27	Eject prevention spring (L)	RBH1234
	28	Spring (CASSETTE)	RBK1031
	29	Lever (Collar B)	RLA1146
	30	Detector lever (REC)	RNK1527
	31	Metal detector lever (L)	RNK1529
	32	Detector lever (P)	RNK1543
	33	·····	
	34	Screw	RBA1101
	35	Plate HD BLK	RXA1488
	36	Screw	PMA26P050FMC
	37	F lock screw	RBA1031
	38	Screw (7.7)	RBA1048
	39	Screw	RBA1078
	40	Washer	WA26D047D050
	41	Washer	YE15FUC
	42	Holder cushion (L)	RED1027
	43	F lock screw	RBA1102
	44	Screw	RBA1068
	45	PCB control BLK	RXA1487
	46	Chassis base BLK	RXA1345
	47	Head base	RNE1390
	48	Head spacer	RNK1836
	49	Eject prevention arm (L)	RNE1199
	50	Lever (L) (EJECT)	RNK1593
	50	Screw	PMZ20P080FMC

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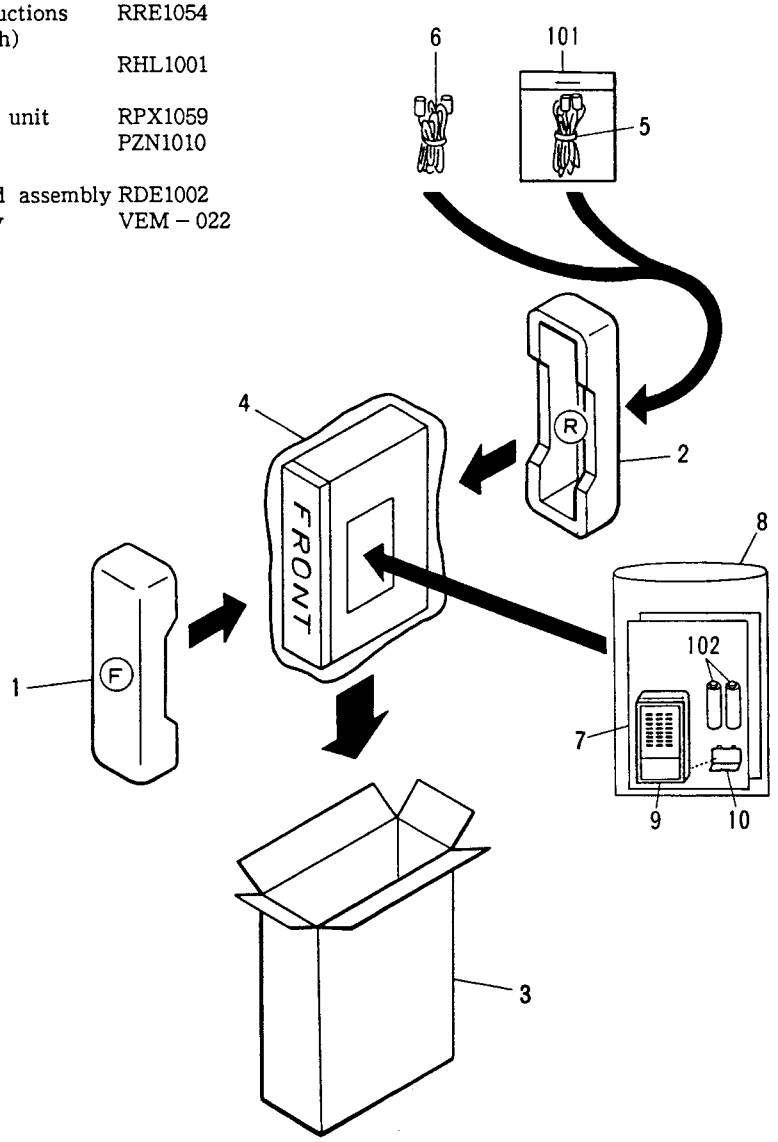
Parts List

Mark	No.	Description	Part No.
	1	Pad (A)	RHA1006
	2	Pad (B)	RHA1007
	3	Packing case	RHG1324
	4	Sheet	RHX – 034
	5	Connection cord	RDE – 010
	6	Control cord	RDE1030
	7	Operating instructions (German/Italian/Dutch/ Swedish/Spanish/Portuguese)	RRD1131
		Operating instructions (English/French)	RRE1054
	8	Vinyl bag	RHL1001
	9	Remote control unit	RPX1059
	10	Battery cover	PZN1010
NSP	101	Connection cord assembly	RDE1002
NSP	102	Dry cell battely (R03, AAA)	VEM – 022



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Parts List

Mark	No.	Description	Part No.
	1	Pad (A)	RHA1006
	2	Pad (B)	RHA1007
	3	Packing case	RHG1324
	4	Sheet	RHX – 034
	5	Connection cord	RDE – 010
	6	Control cord	RDE1030
	7	Operating instructions (German/Italian/Dutch/ Swedish/Spanish/Portuguese)	RRD1131
		Operating instructions (English/French)	RRE1054
	8	Vinyl bag	RHL1001
	9	Remote control unit	RPX1059
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NSP	101	Connection cord assembly	RDE1002
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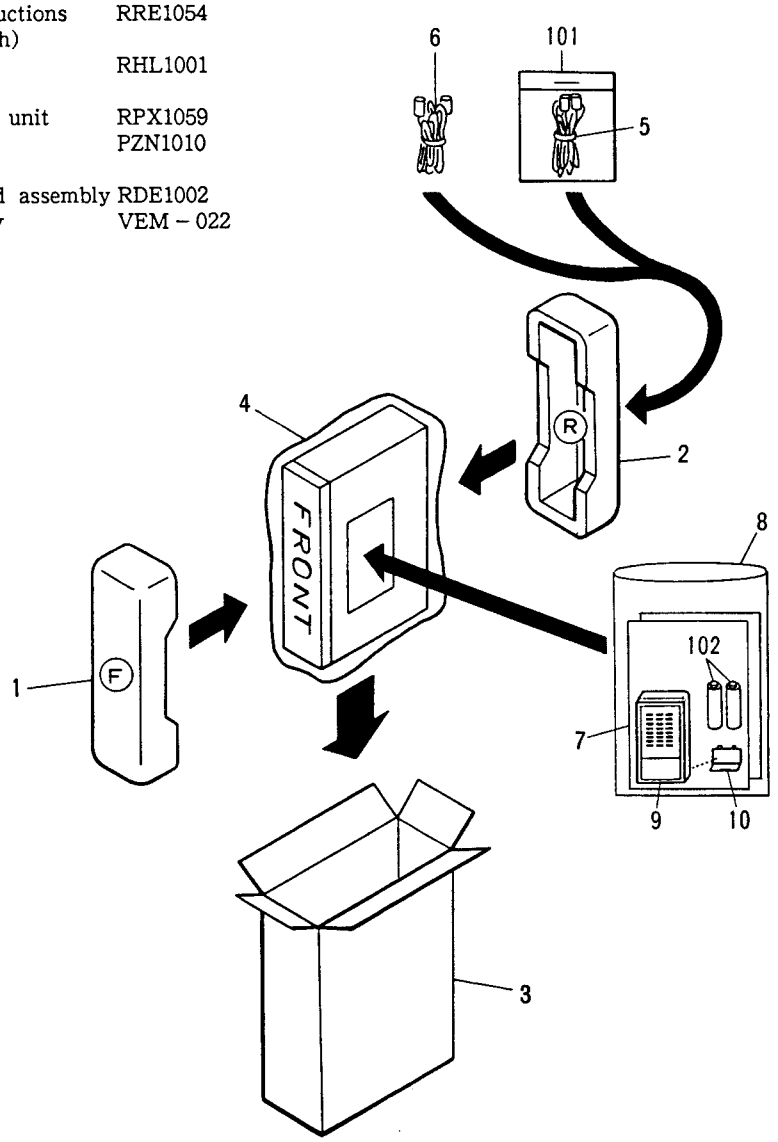
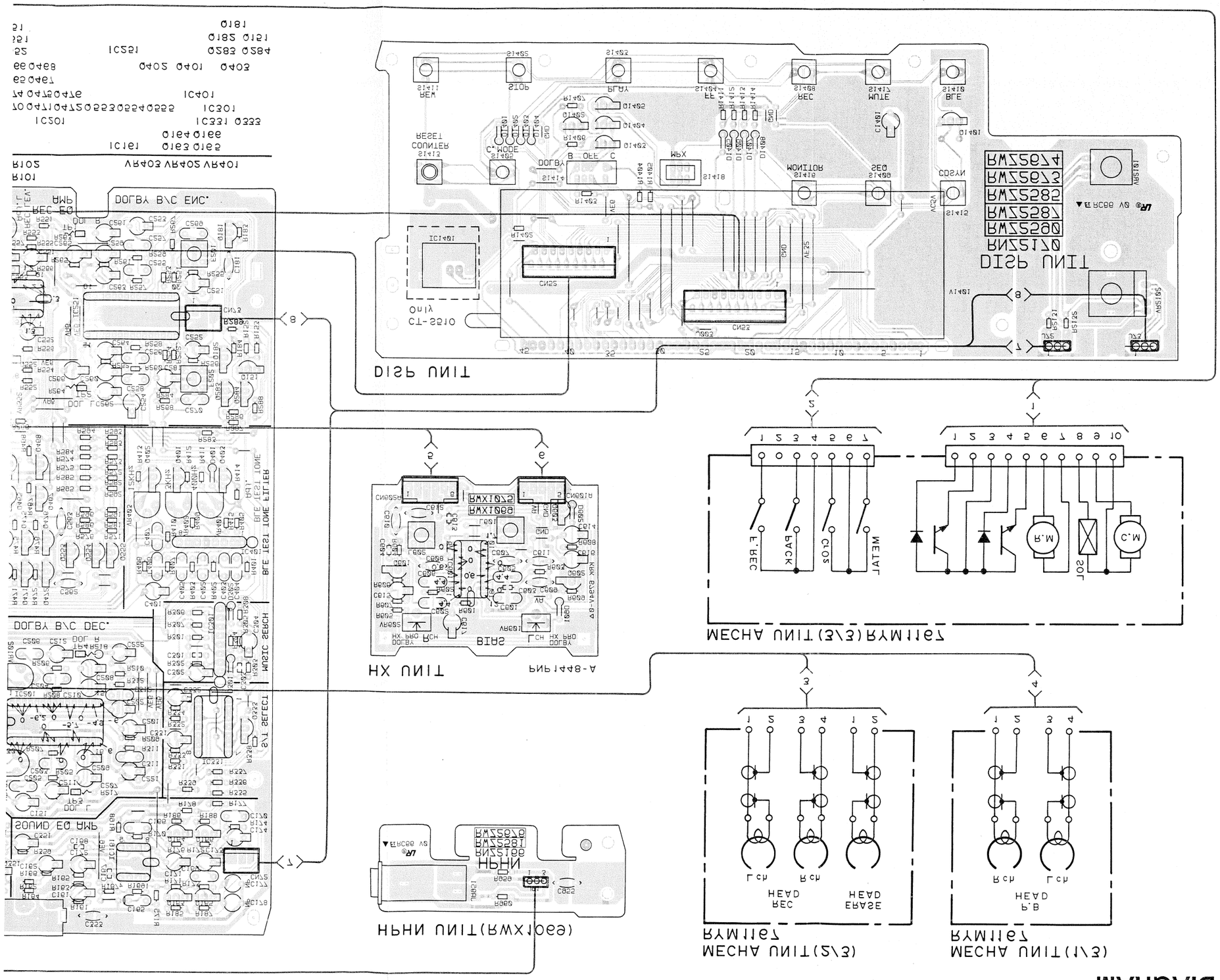
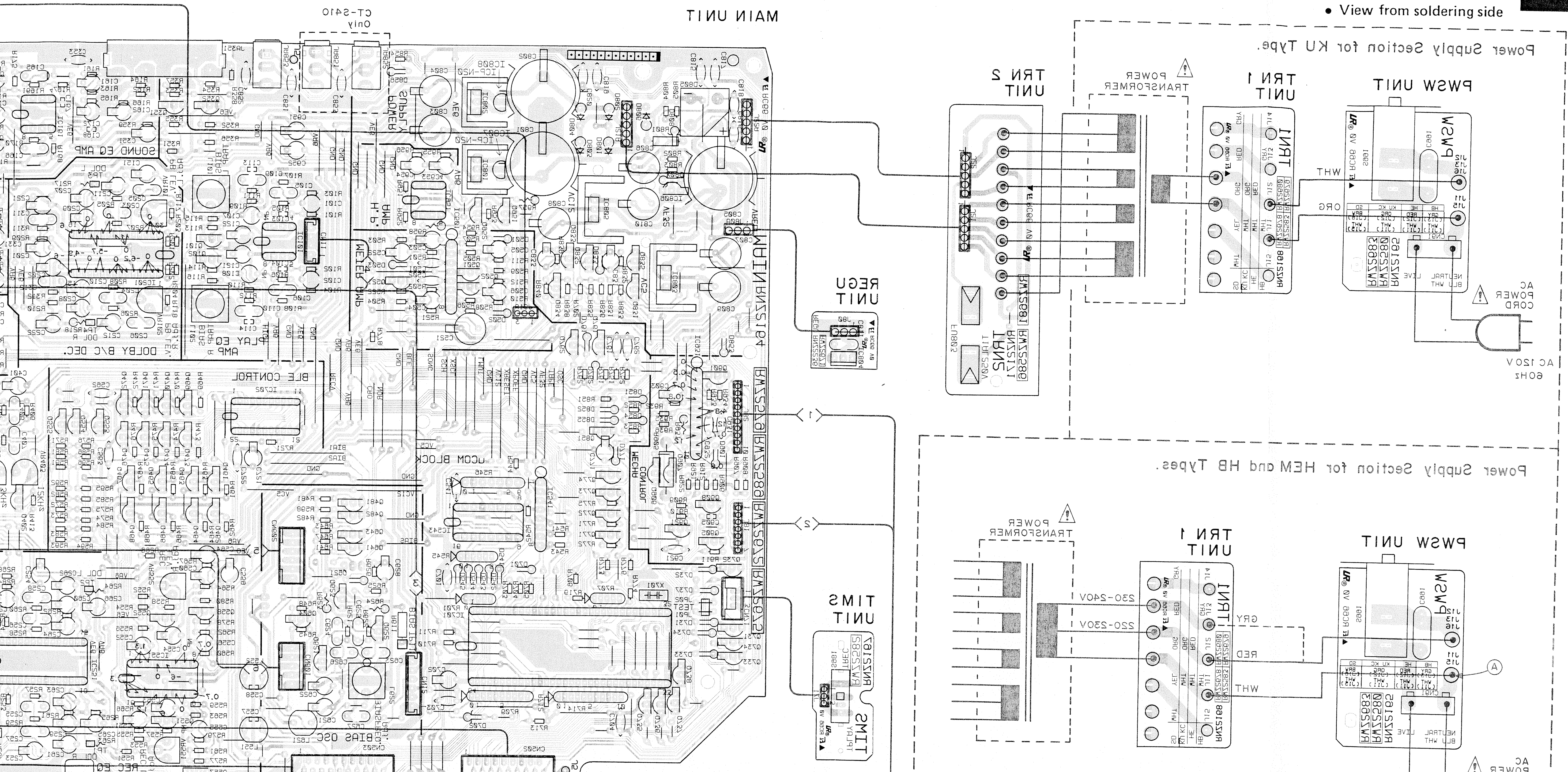


5. PCB CONNECTIONS DIAGRAM



• View from soldering side



VR552 VR101
VR551 VR102
VR403

IC161
Q352 Q351
Q101 IC101
Q102 IC201
Q469 Q470 Q471 Q472 Q553 Q554 Q555
Q473 Q474 Q475 Q476
Q461 Q463 Q465 Q467
Q402 Q462 Q464 Q466 Q468
IC251 Q558 Q552
IC551
Q557 Q551
IC702
Q481
Q482
Q643
Q641
Q642 Q623 Q604
Q621 Q622
IC808 IC802
IC807 IC801
Q834 Q951 Q952 IC951
Q501 IC501 Q521
Q502
IC543 IC541
IC805 IC806
Q832 Q833 IC803 Q835
Q831
Q761 Q762 Q901 IC931
Q851 Q906 Q907 Q908
Q774 Q921 Q905 Q732
Q773 Q731
Q772 Q738 Q734
IC701 Q771 Q736 Q737 Q733
Q735

Line Voltage Selection

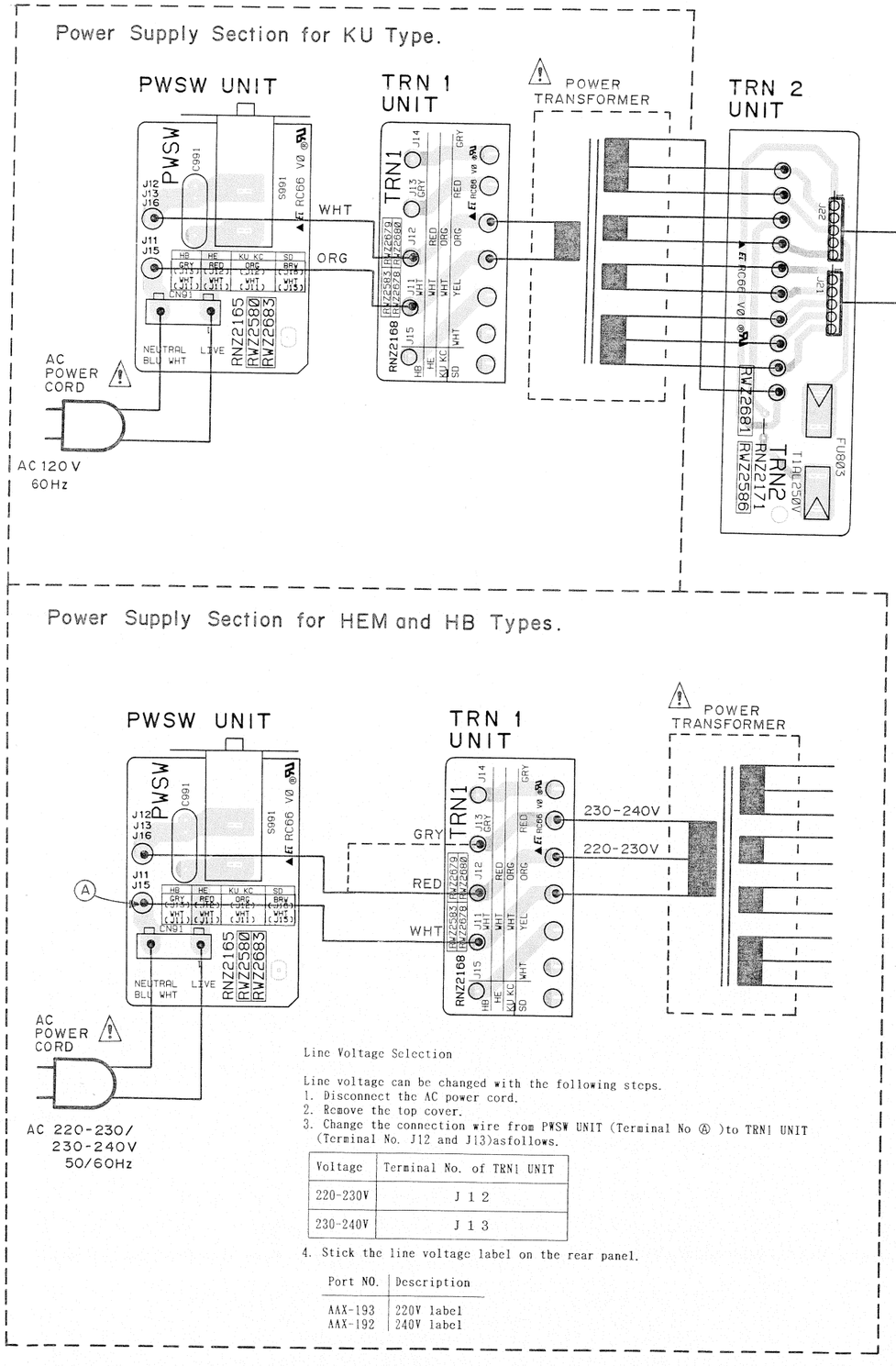
Line voltage can be changed with the following steps.
1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the connection wire from PWSW UNIT (Terminal No Ⓐ) to TRN1 UNIT (Terminal No. J12 and J13) as follows.

Voltage	Terminal No. of TRN1 UNIT
220-230V	J12
230-240V	J13

4. Stick the line voltage label on the rear panel.

Port NO.	Description
AAX-193	220V label
AAX-192	240V label

• View from soldering side



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220-230V	J 1 2
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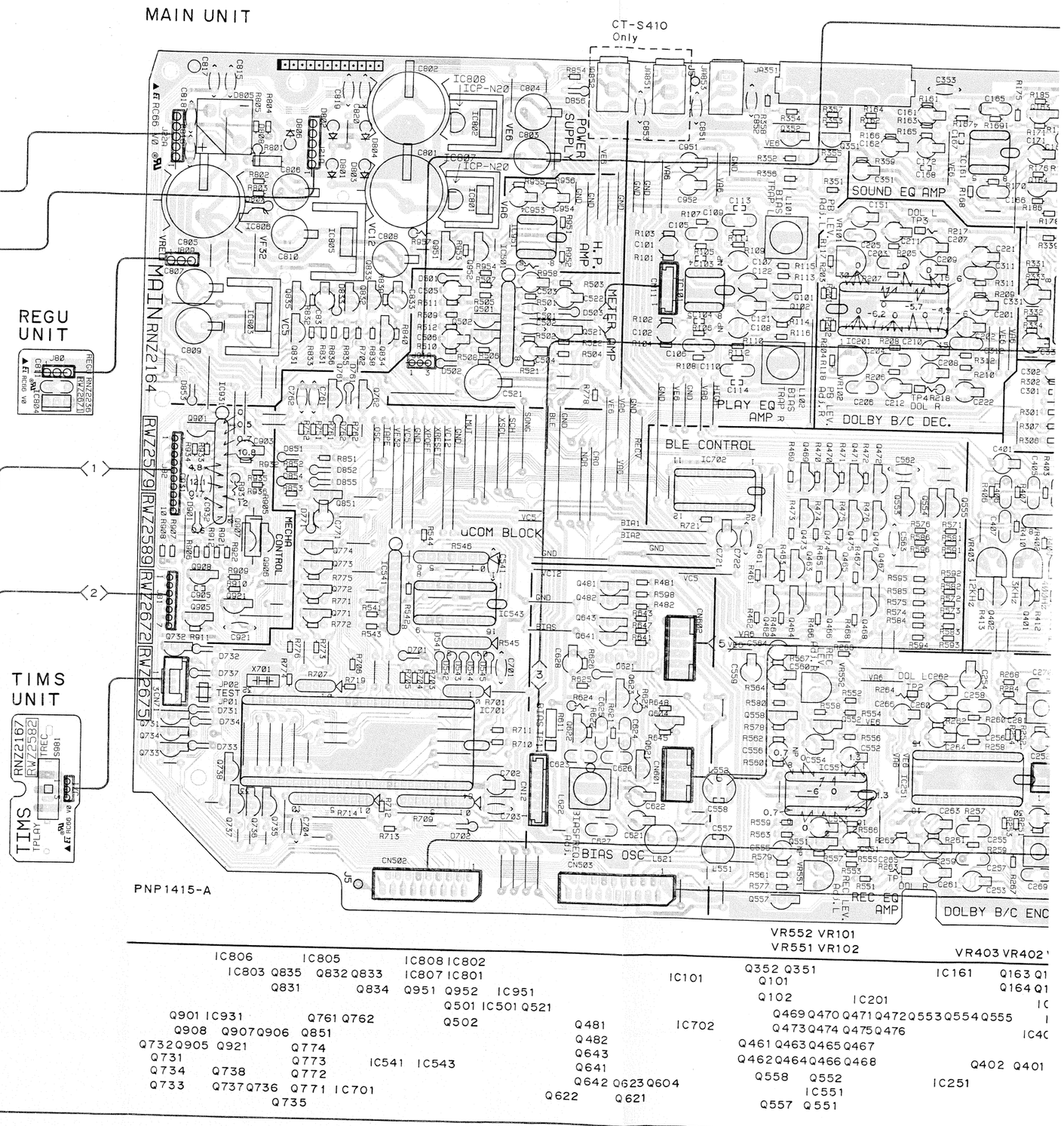
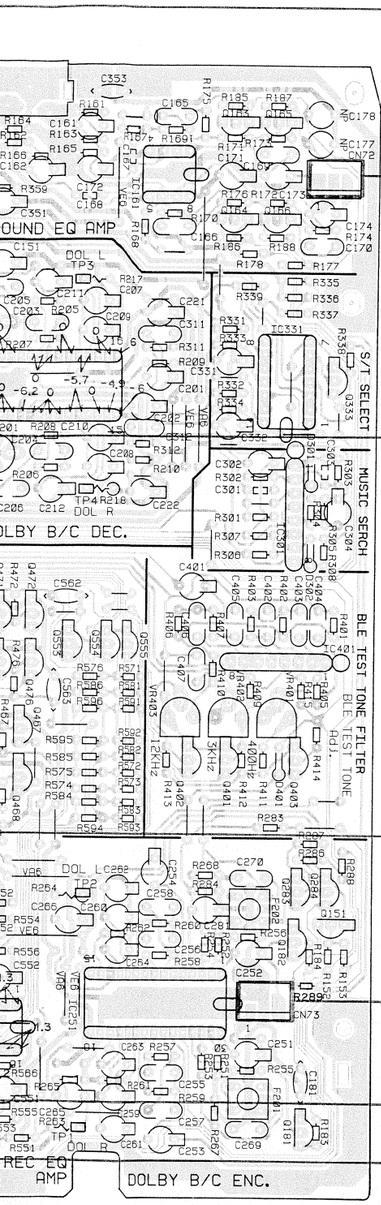
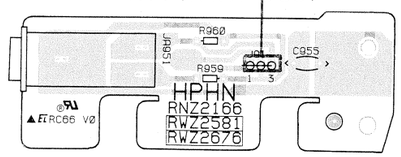
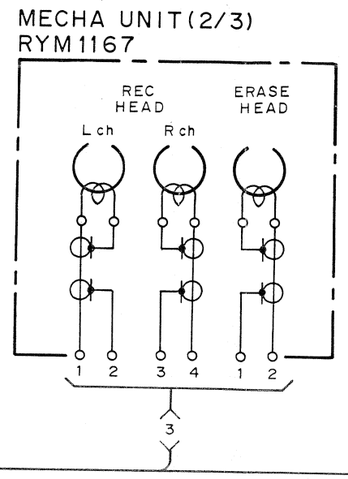
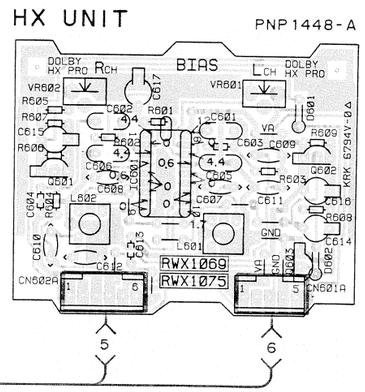
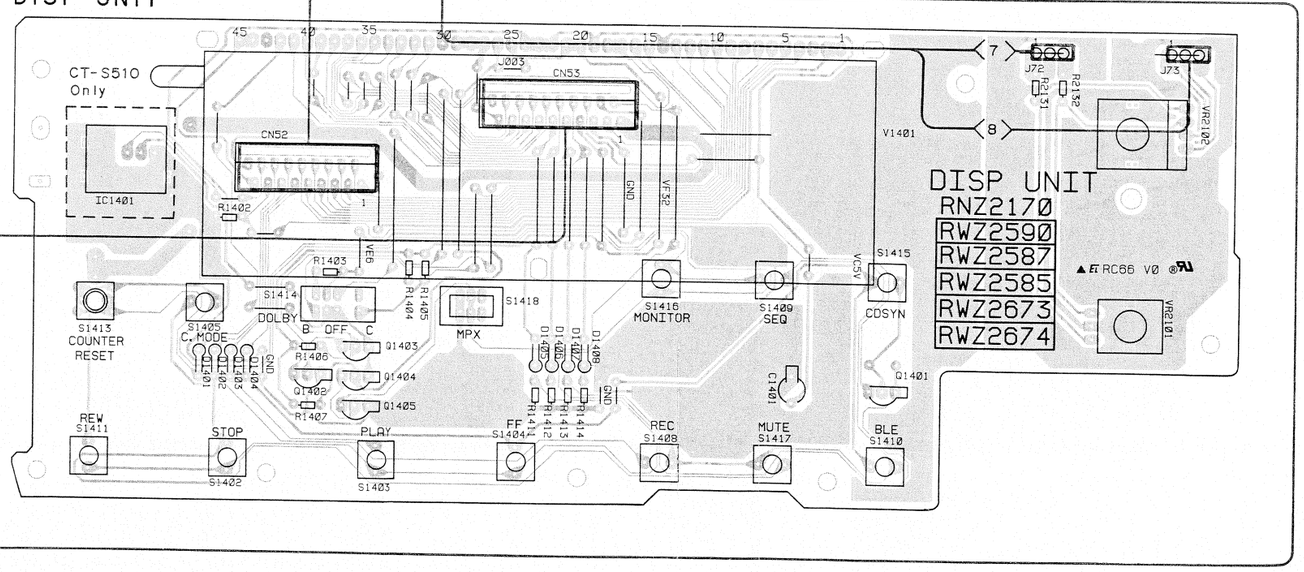








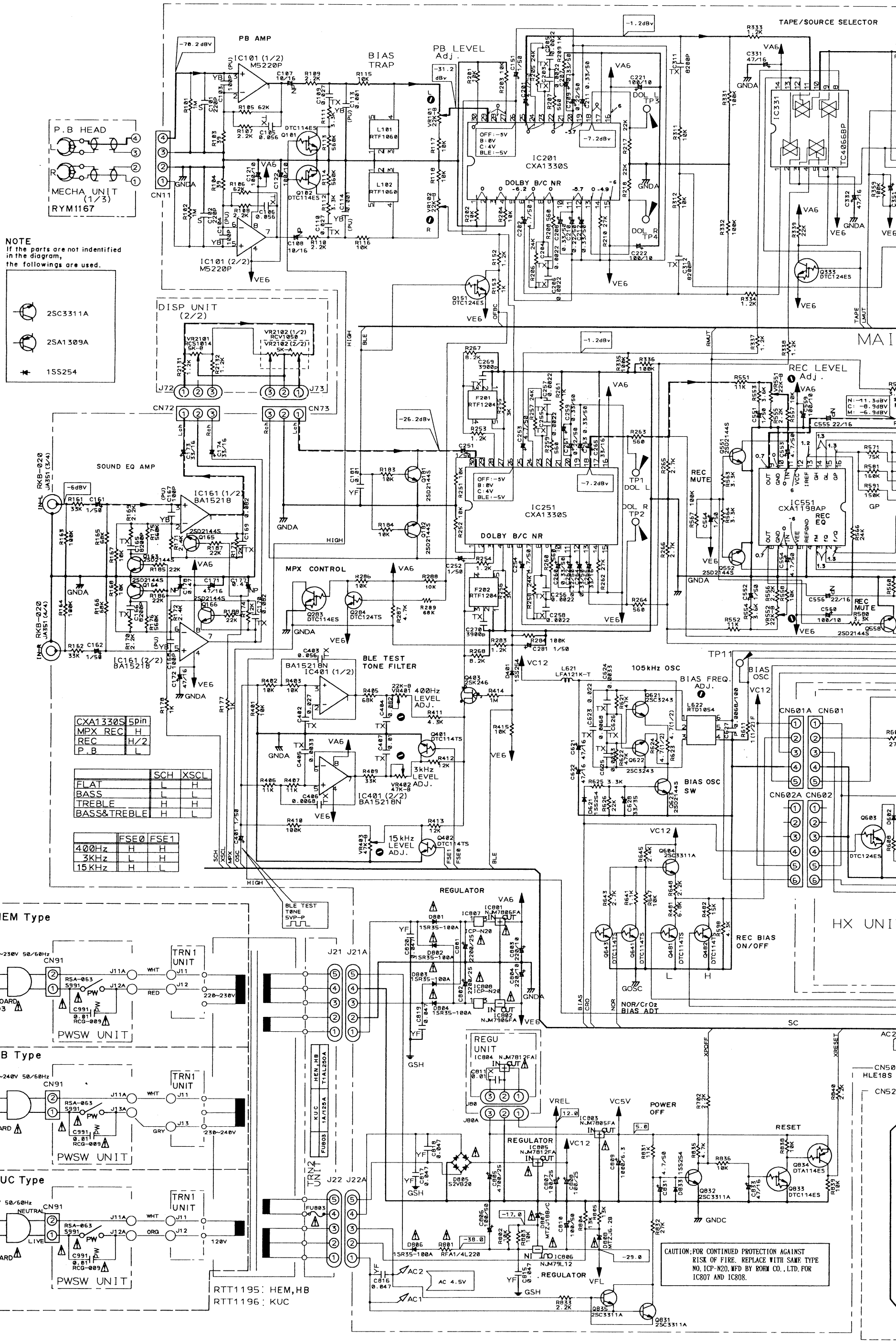




P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (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.

6. SCHEMATIC DIAGRAM



CXA1330S	5pin
MPX REC	H
REC	H/2
P.B	L

	SCH	XSCL
FLAT	L	H
BASS	L	L
TREBLE	H	H
BASS&TREBLE	H	L

	FSE0	FSE1
400Hz	H	H
3KHz	L	H
15KHz	H	L

1. RESISTORS :
Indicated in Ω, 1/4W, 1/6W, 1/8W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10%,(M) : ±20% tolerance.

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

3. VOLTAGE CURRENT :
[ ] ; DC voltage (V) in stop mode.
⬅mA ; DC current in stop mode.

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5. SWIT

TAPE/SOURCE SELECTOR
LINE MUTE
HP AMP
IC951 (1/2) BA15218
IC951 (2/2) BA15218
METER AMP
HPHN UNIT
REEL MOTOR DRIVE
IC931 LB1641
IC301 (1/2) BA15218N
IC301 (2/2) BA15218N
MUSIC SERCH
IC501 (1/2) BA15218N
IC501 (2/2) BA15218N
IC541 (1/2) M5233L
IC541 (2/2) M5233L
A/D CONVERTER METER LEVEL
IC543 TC4050BP
KEY BUFFER
MAIN UNIT
REC LEVEL Adj.
REC EQ AMP
REC MUTE
IC551 CXA1198AP REC EQ
BLE DATA CONVERSION
IC702 NJU3715L
SYSTEM CONTROL
IC701 PD4382A
MECHA UNIT (2/3)
RYM1167
TAPE SELECT
NOR/CrO2 /MET SELECT SW
BLE INITIAL CONDITION
105kHz OSC
BIAS FREQ. ADJ.
BIAS OSC SW
REC BIAS ON/OFF
NOR/CrO2 BIAS ADJ
IC601 UPC1297CA DOLBY HX PRO
HX UNIT
DISP UNIT (1/2)
V1401 RAW1112 /HEM, HB
RAW1113 /KUC
POWER OFF
RESET
IC1401
CT-S510 ONLY
CAUTION;FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. ICP-N20, MFD BY ROHM CO., LTD. FOR IC807 AND IC808.

——— : PLAYBACK SIGNAL
- - - - - : RECORDING SIGNAL
► : MEASUREMENT PO

1. RESISTORS :
Indicated in Ω, 1/4W, 1/6W, 1/8W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%,(M) ; ±20% tolerance.

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

3. VOLTAGE CURRENT :
□ ; DC voltage (V) in stop mode.
←mA ; DC current in stop mode.

4. OTHERS :
→ ; Signal route.
⊘ ; Adjusting point
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.
※ marked capacitors and resistors have parts numbers.

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

5. SWITCHES (The underlined indicates the switch position)

TIMS UNIT
S981 : REC – OFF – PLAY

PWSW UNIT
S991 : ON – OFF

DISP UNIT
S1402 : STOP
S1403 : PLAY
S1404 : FF
S1405 : C. MODE
S1408 : REC
S1409 : SEQ
S1410 : BLE
S1411 : REW
S1413 : RESET
S1414 : DOLBY B – OFF – C
S1415 : CD SYNCRO
S1416 : MONITOR
S1417 : MUTE
S1418 : MPX ON – OFF

HP AMP
HPHN UNIT
METER AMP
REEL MOTOR DRIVE
MECHA CONTROL
A/D CONVERTER METER LEVEL
KEY BUFFER
BLE DATA CONVERSION
SYSTEM CONTROL
TAPE SELECT
BLE INITIAL CONDITION
MECHA UNIT (2/3)
RYM1167
MECHA UNIT (3/3) RYM1167
TIMS UNIT
SR REMOCON
CT-S410 ONLY
CD SYNCHRO
DISP UNIT (1/2)
CT-S510 ONLY

V1401 RAW1112 /HEM, HB
RAW1113 /KUC

:PLAYBACK SIGNAL
:RECORDING SIGNAL
:MEASUREMENT POINT

S1402–S1411
S1416, S1417 : RSG1033
S1413 : RSG1010

7. PCB PARTS LIST

NOTES:

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

LIST OF ASSEMBLIES

⊙	MOTHER UNIT	RWM1498
NSP	├PWSW UNIT	RWZ2580
NSP	├HPHN UNIT	RWZ2581
NSP	├TIMS UNIT	RWZ2582
NSP	├TRN 2 UNIT	RWZ2586
NSP	├TRN 1 UNIT	RWZ2678
NSP	├MAIN UNIT	RWZ2589
⊙	│└HX UNIT	RWX1069
NSP	├DISP UNIT	RWZ2590
NSP	└REGU UNIT	RWZ2671

HX UNIT

SEMICONDUCTORS

	IC601 DOLBY HX PRO IC	UPC1297CA
	Q602 TRANSISTOR	2SA1309A
	Q603 TRANSISTOR	DTC124ES
	D602 DIODE	1SS254

COILS/TRANSFORMERS

	L601, 602	RTD1011

CAPACITORS

	C601, 602 AUDIO FILM CAPACITOR	CFTXA103J50
	C603, 604 AXIAL CAPACITOR	CKPUYB821K50
	C605, 606 AUDIO FILM CAPACITOR	CFTXA223J50
	C607, 608 CERAMIC CAPACITOR	CGCYX223K25
	C609, 610 CERAMIC CAPACITOR	CCCSL101K500
	C611, 612 CERAMIC CAPACITOR	RCG1004
	C613 AXIAL CAPACITOR	CKPUYB101K50
	C614 ELECT. CAPACITOR	CEASR10M50
	C616, 617 ELECT. CAPACITOR	CEAS330M35

RESISTORS

	R601-605 CARBONFILM RESISTOR	RD1/6PM□□□J
	R608, 609 CARBONFILM RESISTOR	RD1/6PM□□□J
	VR601, 602 VR	VRTB6HS473

PWSW UNIT

SWITCHES

⚠	S991 SWITCH	RSA-063

Mark	No.	Description	Part No.

CAPACITORS

⚠	C991 CAPACITOR (CERAMIC)	RCG-009

HPHN UNIT

CAPACITORS

	C955 CERAMIC CAPACITOR	CKCYF473Z50

RESISTORS

	R959, 960 CARBONFILM RESISTOR	RD1/6PM□□□J

OTHERS

	JA951 JACK	RKN1002

TIMS UNIT

SWITCHES

	S981 SWITCH	RSH1014

TRN 1 UNIT

There is no supply part in this unit.

TRN 2 UNIT

There is no supply part in this unit.

MAIN UNIT

SEMICONDUCTORS

	IC101 OP-AMP-IC	M5220P
	IC161 OP-AMP IC	BA15218
	IC201 DOLBY B/C IC	CXA1330S
	IC251 DOLBY B/C IC	CXA1330S
	IC301 IC	BA15218N
	IC331 LOGIC IC	TC4066BP
	IC401 IC	BA15218N
	IC501 IC	BA15218N
	IC541 DUAL-COMPARATOR IC	M5233L
	IC543 CMOS LOGIC IC	TC4050BP
	IC551 REC EQUALIZER IC	CXA1198AP
	IC701 MCU	PD4382A
	IC702 LOGIC IC	NJU3715L
⚠	IC801 REGULATOR IC	NJM7806FA
⚠	IC802 REGULATOR IC	NJM7906FA

Mark	No.	Description	Part No.
⚠	IC803 REGULATOR IC		NJM7805FA
⚠	IC805 REGULATOR IC		NJM7812FA
⚠	IC806 REGULATOR IC		NJM79L12A
⚠	IC807, 808 IC PROTECTOR		ICP-N20
	IC931		LB1641
	IC951 OP-AMP IC		BA15218
	Q101, 102 TRANSISTOR		DTC114ES
	Q151 TRANSISTOR		DTC124ES
	Q163-166 TRANSISTOR		2SD2144S
	Q181, 182 TRANSISTOR		2SD2144S
	Q283 TRANSISTOR		DTC114ES
	Q284 TRANSISTOR		DTC124TS
	Q333 TRANSISTOR		DTC124ES
	Q351, 352 TRANSISTOR		2SD2144S
	Q401, 402 DIGITAL TRANSISTOR		DTC114TS
	Q403 N-FET		2SK246
	Q461-476 DIGITAL TRANSISTOR		DTC114TS
	Q481, 482 DIGITAL TRANSISTOR		DTC114TS
	Q501, 502 DIGITAL TRANSISTOR		DTC114TS
	Q521 DIGITAL TRANSISTOR		DTC114TS
	Q551, 552 TRANSISTOR		2SD2144S
	Q553-555 TRANSISTOR		DTC114ES
	Q557, 558 TRANSISTOR		2SD2144S
	Q604 TRANSISTOR		2SC3311A
	Q621, 622 TRANSISTOR		2SC3243
	Q623 TRANSISTOR		2SD2144S
	Q641 DIGITAL TRANSISTOR		DTC114TS
	Q643 DIGITAL TRANSISTOR		DTC114TS
	Q731-734 DIGITAL TRANSISTOR		DTA114ES
	Q735-738 TRANSISTOR		DTC114ES
	Q761, 762 TRANSISTOR		DTC114ES
	Q771 TRANSISTOR		2SA1309A
	Q772 DIGITAL TRANSISTOR		DTA114ES
	Q773 DIGITAL TRANSISTOR		DTA114TS
	Q774 DIGITAL TRANSISTOR		DTA114ES
	Q831, 832 TRANSISTOR		2SC3311A
	Q833 TRANSISTOR		DTC114ES
	Q834 DIGITAL TRANSISTOR		DTA114ES
	Q835 TRANSISTOR		2SC3311A
	Q851 TRANSISTOR		DTC114ES
	Q901 TRANSISTOR		DTC114ES
	Q905-907 TRANSISTOR		2SD1858X
	Q908 TRANSISTOR		2SC3311A
	Q921 TRANSISTOR		2SC3311A
	Q951, 952 TRANSISTOR		2SD2144S
	D301, 302 DIODE		1SS254
	D401 DIODE		1SS254
	D501-503 DIODE		1SS254
	D541-545 DIODE		1SS254
	D621 DIODE		1SS254
	D701 DIODE		1SS254
	D702 ZENER DIODE		MTZJ9.1A
	D731-734 DIODE		1SS254
	D737 DIODE		1SS254
	D761, 762 DIODE		1SS254

Mark	No.	Description	Part No.
⚠	IC803	REGULATOR IC	NJM7805FA
⚠	IC805	REGULATOR IC	NJM7812FA
⚠	IC806	REGULATOR IC	NJM79L12A
⚠	IC807, 808	IC PROTECTOR	ICP-N20
	IC931		LB1641
	IC951	OP-AMP IC	BA15218
	Q101, 102	TRANSISTOR	DTC114ES
	Q151	TRANSISTOR	DTC124ES
	Q163-166	TRANSISTOR	2SD2144S
	Q181, 182	TRANSISTOR	2SD2144S
	Q283	TRANSISTOR	DTC114ES
	Q284	TRANSISTOR	DTC124TS
	Q333	TRANSISTOR	DTC124ES
	Q351, 352	TRANSISTOR	2SD2144S
	Q401, 402	DIGITAL TRANSISTOR	DTC114TS
	Q403	N-FET	2SK246
	Q461-476	DIGITAL TRANSISTOR	DTC114TS
	Q481, 482	DIGITAL TRANSISTOR	DTC114TS
	Q501, 502	DIGITAL TRANSISTOR	DTC114TS
	Q521	DIGITAL TRANSISTOR	DTC114TS
	Q551, 552	TRANSISTOR	2SD2144S
	Q553-555	TRANSISTOR	DTC114ES
	Q557, 558	TRANSISTOR	2SD2144S
	Q604	TRANSISTOR	2SC3311A
	Q621, 622	TRANSISTOR	2SC3243
	Q623	TRANSISTOR	2SD2144S
	Q641	DIGITAL TRANSISTOR	DTC114TS
	Q643	DIGITAL TRANSISTOR	DTC114TS
	Q731-734	DIGITAL TRANSISTOR	DTA114ES
	Q735-738	TRANSISTOR	DTC114ES
	Q761, 762	TRANSISTOR	DTC114ES
	Q771	TRANSISTOR	2SA1309A
	Q772	DIGITAL TRANSISTOR	DTA114ES
	Q773	DIGITAL TRANSISTOR	DTA114TS
	Q774	DIGITAL TRANSISTOR	DTA114ES
	Q831, 832	TRANSISTOR	2SC3311A
	Q833	TRANSISTOR	DTC114ES
	Q834	DIGITAL TRANSISTOR	DTA114ES
	Q835	TRANSISTOR	2SC3311A
	Q851	TRANSISTOR	DTC114ES
	Q901	TRANSISTOR	DTC114ES
	Q905-907	TRANSISTOR	2SD1858X
	Q908	TRANSISTOR	2SC3311A
	Q921	TRANSISTOR	2SC3311A
	Q951, 952	TRANSISTOR	2SD2144S
	D301, 302	DIODE	1SS254
	D401	DIODE	1SS254
	D501-503	DIODE	1SS254
	D541-545	DIODE	1SS254
	D621	DIODE	1SS254
	D701	DIODE	1SS254
	D702	ZENER DIODE	MTZJ9.1A
	D731-734	DIODE	1SS254
	D737	DIODE	1SS254
	D761, 762	DIODE	1SS254

Mark	No.	Description	Part No.
	D771	DIODE	1SS254
⚠	D801-804	DIODE	1SR35-100AVL
⚠	D805		S2VB20
⚠	D806	DIODE	1SR35-100AVL
⚠	D807	ZENNER DIODE	MTZJ18B
⚠	D808	ZENER DIODE	MTZJ6.2B
	D833	DIODE	1SS254
	D851-856	DIODE	1SS254
	D901	DIODE	1SS254

COILS/TRANSFORMERS

L101, 102	COIL	RTF1060
L551, 552	COIL	RTF1094
L621	RADIAL INDUCTOR	LFA121K
L622		RTD1054
F201, 202	FILTER	RTF1204

CAPACITORS

C101, 102	PL. STYRENE CAPACITOR	CQSA221J50
C103, 104	AXIAL CAPACITOR	CKPUYB101K50
C105, 106	AUDIO FILM CAPACITOR	CFTXA563J50
C107, 108	ELECT. CAPACITOR	CEANP100M16
C109, 110	AUDIO FILM CAPACITOR	CFTXA273J50
C113, 114	CERAMIC CAPACITOR	CKPUYB102K50
C121, 122	ELECT. CAPACITOR	CEAS101M10
C151	ELECT. CAPACITOR	CEAS010M50
C161, 162	ELECTR. CAPACITOR	CEYA010M50
C165, 166	AUDIO FILM CAPACITOR	CFTXA822J50
C167, 168	AXIAL CAPACITOR	CKPUYB101K50
C169, 170	AUDIO FILM CAPACITOR	CFTXA823J50
C171, 172	ELECT. CAPACITOR	CEAS470M16
C173, 174	ELECTR. CAPACITOR	CEYA330M16
C177, 178	ELECT. CAPACITOR	CEANPR47M50
C181	CERAMIC CAPACITOR	CKCYF103Z50
C201, 202	ELECTR. CAPACITOR	CEYA4R7M50
C203-206	AUDIO FILM CAPACITOR	CFTXA222J50
C207, 208	ELECT. CAPACITOR	CEASR33M50
C209, 210	ELECT. CAPACITOR	CEASR22M50
C211, 212	ELECT. CAPACITOR	CEASR33M50
C221, 222	ELECT. CAPACITOR	CEAS101M10
C251, 252	ELECTR. CAPACITOR	CEYA010M50
C253, 254	ELECTR. CAPACITOR	CEYA4R7M50
C255-258	AUDIO FILM CAPACITOR	CFTXA222J50
C259, 260	ELECT. CAPACITOR	CEASR33M50
C261, 262	ELECT. CAPACITOR	CEASR22M50
C263, 264	ELECT. CAPACITOR	CEASR33M50
C265, 266	ELECTR. CAPACITOR	CEYA330M16
C269, 270	AUDIO FILM CAPACITOR	CFTXA392J50
C281	ELECT. CAPACITOR	CEAS010M50
C301	AXIAL CAPACITOR	CKPUYB101K50
C302	ELECT. CAPACITOR	CEASR47M50
C303	AXIAL CAPACITOR	CKPUYB271K50
C304	ELECT. CAPACITOR	CEASR22M50
C311, 312	AUDIO FILM CAPACITOR	CFTXA822J50
C331, 332	ELECT. CAPACITOR	CEAS470M16
C351	ELECT. CAPACITOR	CEAS010M50
C353	CERAMIC CAPACITOR	CKCYF473Z50
C401	ELECT. CAPACITOR	CEAS010M50

Mark	No.	Description	Part No.
	C402	AUDIO FILM CAPACITOR	CFTXA273J50
	C403	AUDIO FILM CAPACITOR	CFTXA563J50
	C404	AUDIO FILM CAPACITOR	CFTXA823J50
	C405	AUDIO FILM CAPACITOR	CFTXA332J50
	C406	AUDIO FILM CAPACITOR	CFTXA682J50
	C407	AUDIO FILM CAPACITOR	CFTXA103J50
	C501, 502	CERAMIC CAPACITOR	CKCYF473Z50
	C503, 504	ELECT. CAPACITOR	CEAS100M50
	C505, 506	ELECT. CAPACITOR	CEASR47M50
	C521	ELECT. CAPACITOR	CEAS331M16
	C522	ELECT. CAPACITOR	CEAS330M35
	C541	CERAMIC CAPACITOR	CKCYF473Z50
	C551, 552	ELECT. CAPACITOR	CEAS010M50
	C553, 554	ELECTR. CAPACITOR	CEYA4R7M50
	C555, 556	ELECT. CAPACITOR	CEANP220M16
	C557, 558	CERAMIC CAPACITOR	CKPUYB102K50
	C559, 560	ELECT. CAPACITOR	CEAS101M10
	C564	ELECT. CAPACITOR	CEAS010M50
	C621, 622	ELECT. CAPACITOR	CEAS470M16
	C623	AUDIO FILM CAPACITOR	CFTXA223J50
	C624, 625	AUDIO FILM CAPACITOR	CFTXA332J50
	C626	AUDIO FILM CAPACITOR	CFTXA682J50
	C627	CAPACITOR	CQPA682J100
	C628	ELECT. CAPACITOR	CEAS330M35
	C701	CERAMIC CAPACITOR	CKCYF103Z50
	C702	ELECT. CAPACITOR	CEAS470M16
	C703, 704	CERAMIC CAPACITOR	CKCYF103Z50
	C721	ELECT. CAPACITOR	CEAS470M16
	C722	CERAMIC CAPACITOR	CKCYF103Z50
	C761, 762	CERAMIC CAPACITOR	CKCYF103Z50
	C771	ELECT. CAPACITOR	CEAS100M50
	C801, 802	ELECT. CAPACITOR	CENA222M25
	C803, 804	ELECT. CAPACITOR	CENA221M10
	C805	ELECT. CAPACITOR	CEAS472M25
	C806	ELECT. CAPACITOR	CEAS101M50
	C807, 808	ELECT. CAPACITOR	CEAS101M25
	C809	ELECT. CAPACITOR	CEAS102M6R3
	C810	ELECT. CAPACITOR	CEAS101M50
	C815-820	CERAMIC CAPACITOR	CKCYF473Z50
	C831	ELECT. CAPACITOR	CEAS4R7M50
	C833	ELECT. CAPACITOR	CEAS470M16
	C851, 852	CERAMIC CAPACITOR	CKCYF103Z50
	C903	ELECT. CAPACITOR	CEAS100M50
	C905	CERAMIC CAPACITOR	CKCYF103Z50
	C921	CERAMIC CAPACITOR	CKCYF103Z50
⚠	C931, 932	CERAMIC CAPACITOR	CKCYF473Z50
	C951, 952	ELECT. CAPACITOR	CEAS010M50
	C953, 954	ELECT. CAPACITOR	CEAS101M10

RESISTORS

R101-118	CARBONFILM RESISTOR	RD1/6PM□□□J
R152, 153	CARBONFILM RESISTOR	RD1/6PM□□□J
R161-178	CARBONFILM RESISTOR	RD1/6PM□□□J
R183-188	CARBONFILM RESISTOR	RD1/6PM□□□J
R201-210	CARBONFILM RESISTOR	RD1/6PM□□□J
R217, 218	CARBONFILM RESISTOR	RCN1023

Description	Part No.
	1SS254
IODE	1SR35-100AVL
	S2VB20
	1SR35-100AVL
R DIODE	MTZJ18B
DIODE	MTZJ6.2B
	1SS254
IODE	1SS254
	1SS254

RMERS

IL	RTF1060
IL	RTF1094
INDUCTOR	LFA121K
	RTD1054
LTER	RTF1204
STYRENE CAPACITOR	CQSA221J50
AL CAPACITOR	CKPUYB101K50
IO FILM CAPACITOR	CFTXA563J50
CT. CAPACITOR	CEANP100M16
IO FILM CAPACITOR	CFTXA273J50
AMIC CAPACITOR	CKPUYB102K50
CT. CAPACITOR	CEAS101M10
CAPACITOR	CEAS010M50
CTR. CAPACITOR	CEYA010M50
IO FILM CAPACITOR	CFTXA822J50
AL CAPACITOR	CKPUYB101K50
IO FILM CAPACITOR	CFTXA823J50
CT. CAPACITOR	CEAS470M16
CTR. CAPACITOR	CEYA330M16
CT. CAPACITOR	CEANPR47M50
CAPACITOR	CKCYF103Z50
TR. CAPACITOR	CEYA4R7M50
O FILM CAPACITOR	CFTXA222J50
T. CAPACITOR	CEASR33M50
T. CAPACITOR	CEASR22M50
T. CAPACITOR	CEASR33M50
T. CAPACITOR	CEAS101M10
TR. CAPACITOR	CEYA010M50
TR. CAPACITOR	CEYA4R7M50
D FILM CAPACITOR	CFTXA222J50
T. CAPACITOR	CEASR33M50
T. CAPACITOR	CEASR22M50
T. CAPACITOR	CEASR33M50
TR. CAPACITOR	CEYA330M16
FILM CAPACITOR	CFTXA392J50
PACITOR	CEAS010M50
ACITOR	CKPUYB101K50
PACITOR	CEASR47M50
ACITOR	CKPUYB271K50
PACITOR	CEASR22M50
FILM CAPACITOR	CFTXA822J50
CAPACITOR	CEAS470M16
PACITOR	CEAS010M50
APACITOR	CKCYF473Z50
PACITOR	CEAS010M50

Mark	No.	Description	Part No.
	C402	AUDIO FILM CAPACITOR	CFTXA273J50
	C403	AUDIO FILM CAPACITOR	CFTXA563J50
	C404	AUDIO FILM CAPACITOR	CFTXA823J50
	C405	AUDIO FILM CAPACITOR	CFTXA332J50
	C406	AUDIO FILM CAPACITOR	CFTXA682J50
	C407	AUDIO FILM CAPACITOR	CFTXA103J50
	C501, 502	CERAMIC CAPACITOR	CKCYF473Z50
	C503, 504	ELECT. CAPACITOR	CEAS100M50
	C505, 506	ELECT. CAPACITOR	CEASR47M50
	C521	ELECT. CAPACITOR	CEAS331M16
	C522	ELECT. CAPACITOR	CEAS330M35
	C541	CERAMIC CAPACITOR	CKCYF473Z50
	C551, 552	ELECT. CAPACITOR	CEAS010M50
	C553, 554	ELECTR. CAPACITOR	CEYA4R7M50
	C555, 556	ELECT. CAPACITOR	CEANP220M16
	C557, 558	CERAMIC CAPACITOR	CKPUYB102K50
	C559, 560	ELECT. CAPACITOR	CEAS101M10
	C564	ELECT. CAPACITOR	CEAS010M50
	C621, 622	ELECT. CAPACITOR	CEAS470M16
	C623	AUDIO FILM CAPACITOR	CFTXA223J50
	C624, 625	AUDIO FILM CAPACITOR	CFTXA332J50
	C626	AUDIO FILM CAPACITOR	CFTXA682J50
	C627	CAPACITOR	CQPA682J100
	C628	ELECT. CAPACITOR	CEAS330M35
	C701	CERAMIC CAPACITOR	CKCYF103Z50
	C702	ELECT. CAPACITOR	CEAS470M16
	C703, 704	CERAMIC CAPACITOR	CKCYF103Z50
	C721	ELECT. CAPACITOR	CEAS470M16
	C722	CERAMIC CAPACITOR	CKCYF103Z50
	C761, 762	CERAMIC CAPACITOR	CKCYF103Z50
	C771	ELECT. CAPACITOR	CEAS100M50
	C801, 802	ELECT. CAPACITOR	CENA222M25
	C803, 804	ELECT. CAPACITOR	CENA221M10
	C805	ELECT. CAPACITOR	CEAS472M25
	C806	ELECT. CAPACITOR	CEAS101M50
	C807, 808	ELECT. CAPACITOR	CEAS101M25
	C809	ELECT. CAPACITOR	CEAS102M6R3
	C810	ELECT. CAPACITOR	CEAS101M50
	C815-820	CERAMIC CAPACITOR	CKCYF473Z50
	C831	ELECT. CAPACITOR	CEAS4R7M50
	C833	ELECT. CAPACITOR	CEAS470M16
	C851, 852	CERAMIC CAPACITOR	CKCYF103Z50
	C903	ELECT. CAPACITOR	CEAS100M50
	C905	CERAMIC CAPACITOR	CKCYF103Z50
	C921	CERAMIC CAPACITOR	CKCYF103Z50
	C931, 932	CERAMIC CAPACITOR	CKCYF473Z50
	C951, 952	ELECT. CAPACITOR	CEAS010M50
	C953, 954	ELECT. CAPACITOR	CEAS101M10

RESISTORS

	R101-118	CARBONFILM RESISTOR	RD1/6PM□□□J
	R152, 153	CARBONFILM RESISTOR	RD1/6PM□□□J
	R161-178	CARBONFILM RESISTOR	RD1/6PM□□□J
	R183-188	CARBONFILM RESISTOR	RD1/6PM□□□J
	R201-210	CARBONFILM RESISTOR	RD1/6PM□□□J
	R217, 218	CARBONFILM RESISTOR	RCN1023
	R251-262	CARBONFILM RESISTOR	RD1/6PM□□□J
	R263, 264	CARBONFILM RESISTOR	RCN1024
	R265-268	CARBONFILM RESISTOR	RD1/6PM□□□J
	R283, 284	CARBONFILM RESISTOR	RD1/6PM□□□J
	R286-289	CARBONFILM RESISTOR	RD1/6PM□□□J
	R301-308	CARBONFILM RESISTOR	RD1/6PM□□□J
	R311, 312	CARBONFILM RESISTOR	RD1/6PM□□□J
	R331-339	CARBONFILM RESISTOR	RD1/6PM□□□J
	R351-359	CARBONFILM RESISTOR	RD1/6PM□□□J
	R401-403	CARBONFILM RESISTOR	RD1/6PM□□□J
	R405-407	CARBONFILM RESISTOR	RD1/6PM□□□J
	R409-415	CARBONFILM RESISTOR	RD1/6PM□□□J
	R461-476	CARBONFILM RESISTOR	RD1/6PM□□□J
	R481, 482	CARBONFILM RESISTOR	RD1/6PM□□□J
	R501-512	CARBONFILM RESISTOR	RD1/6PM□□□J
	R521, 522	CARBONFILM RESISTOR	RD1/6PM□□□J
	R541-544	CARBONFILM RESISTOR	RD1/6PM□□□J
	R545	RESISTOR ARRAY (22K)	RA5T□□□J
	R546	LADDER RESISTOR	RCX1020
	R551-564	CARBONFILM RESISTOR	RD1/6PM□□□J
	R566, 567	CARBONFILM RESISTOR	RD1/6PM□□□J
	R571-586	CARBONFILM RESISTOR	RD1/6PM□□□J
	R591-596	CARBONFILM RESISTOR	RD1/6PM□□□J
	R598	CARBONFILM RESISTOR	RD1/6PM□□□J
	R611	CARBONFILM RESISTOR	RD1/2LF□□□J
	R621, 622	CARBONFILM RESISTOR	RD1/6PM□□□J
	R623, 624	CARBONFILM RESISTOR	RCN1022
	R625, 626	CARBONFILM RESISTOR	RD1/6PM□□□J
	R641	CARBONFILM RESISTOR	RD1/6PM□□□J
	R643	CARBONFILM RESISTOR	RD1/6PM□□□J
	R645	CARBONFILM RESISTOR	RD1/6PM□□□J
	R647, 648	CARBONFILM RESISTOR	RD1/6PM□□□J
	R701	RESISTOR ARRAY (22K)	RA4T□□□J
	R702-706	CARBONFILM RESISTOR	RD1/6PM□□□J
	R707	RESISTOR ARRAY (10K)	RA4T□□□J
	R709	RESISTOR ARRAY(68 K)	RA9T□□□J
	R710-713	CARBONFILM RESISTOR	RD1/6PM□□□J
	R714	RESISTOR ARRAY(100K)	RA10T□□□J
	R719	CARBONFILM RESISTOR	RD1/6PM□□□J
	R721	CARBONFILM RESISTOR	RD1/6PM□□□J
	R751, 752	CARBONFILM RESISTOR	RD1/6PM□□□J
	R761, 762	CARBONFILM RESISTOR	RD1/6PM□□□J
	R771-776	CARBONFILM RESISTOR	RD1/6PM□□□J
	R778	CARBONFILM RESISTOR	RD1/6PM□□□J
⚠	R801	FUSLIBLE RESISTOR	RFA1/4L□□□J
	R802-805	CARBONFILM RESISTOR	RD1/6PM□□□J
	R831-833	CARBONFILM RESISTOR	RD1/6PM□□□J
	R835, 836	CARBONFILM RESISTOR	RD1/6PM□□□J
	R838-840	CARBONFILM RESISTOR	RD1/6PM□□□J
	R851-854	CARBONFILM RESISTOR	RD1/6PM□□□J
	R905	METAL OXIDE RESISTOR	RS2LMF□□□J
	R906-912	CARBONFILM RESISTOR	RD1/6PM□□□J
	R921, 922	CARBONFILM RESISTOR	RD1/6PM□□□J
	R931	CARBONFILM RESISTOR	RCN1022
	R932-936	CARBONFILM RESISTOR	RD1/6PM□□□J

Mark	No.	Description	Part No.
	R951-956	CARBONFILM RESISTOR	RD1/6PM□□□J
	R957, 958	CARBONFILM RESISTOR	RCN1054
	VR101, 102	VR	RCP1046
	VR401	VR	RCP1046
	VR402, 403	VR	RCP1047
	VR551, 552	VR	RCP1046

OTHERS

CN502	CONNECTOR 18P	HLEM18S-1
CN503	CONNECTOR 20P	HLEM20S-1
JA351	JACK	RKB-020
JA853	JACK	RKN1014
X701	CERAMIC RESONATOR	VSS1014

DISP UNIT

SEMICONDUCTORS

Q1401	TRANSISTOR	2SA1309A
Q1402	TRANSISTOR	DTC124ES
Q1403, 1404	DIGITAL TRANSISTOR	DTA114ES
Q1405	DIGITAL TRANSISTOR	DTC114TS
D1401-1408	DIODE (4.19MHz)	1SS254

SWITCHES

S1402-1405	SWITCH	RSG1033
S1408-1411	SWITCH	RSG1033
S1413		RSG1010
S1414	SWITCH	RSH1001
S1415-1417	SWITCH	RSG1033
S1418	SWITCH	RSH1002

CAPACITORS

C1401	ELECT. CAPACITOR	CEAS470M16

RESISTORS

R1402-1407	CARBONFILM RESISTOR	RD1/6PM□□□J
R1411-1414	CARBONFILM RESISTOR	RD1/6PM□□□J
R2131, 2132	CARBONFILM RESISTOR	RD1/6PM□□□J
VR2101	VARIABLE RESISTOR	RCS1014
VR2102	VARIABLE RESISTOR	RCV1050

OTHERS

	FL HOLDER	RNK1499
IC1401	REMOTE SENSOR	HC-177
CN502	CONNECTOR 18P	52492-1820
CN503	CONNECTOR 20P	52492-2020
V1401	FL TUBE	RAW1112

REGU UNIT

SEMICONDUCTORS

⚠	IC804	REGULATOR IC	NJM7812FA

CAPACITORS

C811	AUDIO FILM CAPACITOR	CFTXA103J50

8. TEST MODE

8.1. SETTING THE TEST MODE

The test mode is set by short – circuiting jumper wires JP01 and JP02 (MAIN unit) while the mechanism is in the STOP mode. The FL counter will display "0".

8.2. TEST MODE OPERATIONS

When the test mode is set, the monitor switches to the SOURCE side, and the FL counter displays the "TEST NO.".

1. Checking the SWs

During the test mode, light up the FL as follows according to the position of the various SWs.

To check the CD SYNCHRO key, connect a control cable between the cassette deck and compact disc player, and short – circuit the FR CD terminal (Pin 20) and TO CD terminal (Pin 19) of IC701 (CPU). When the CD SYNCHRO key is pressed in this condition, the CPU outputs a "H" level to the TO CD terminal. If a "L" level is input to the FR CD terminal at this time, the CPU determines that the communication line is operating normally.

SW or KEY Position	Display	Condition
TIMER PLAY	TREBLE	TIMER PLAY (S981) SW ON
TIMER REC	BASS	TIMER REC (S981) SW ON
F. REC	TIME	Recording is possible (Mecha unit)
PACK	REMAIN	Tape is loaded (Mecha unit)
CD SYNCHRO	CD DECK SYNCHRO	CD SYNCHRO (S1415) key ON, communication line OK

2. Others

The TEST NO. is "0" immediately after the setting of the test mode. After this, it is switched as follows by the AUTO – BLE key and SOUND EQ key.
The switching of TEST NO. "1" to "3", and "4" to "7" is cyclical.

NOTE:
Refer to page 32 for details on AUTO – BLE adjustment.

TEST NO.	Input Key	FL Display	LINE MUTE	REC MUTE	BIAS	Adjusting Item and Waveform Observation
1	AUTO BLE	1	ON	ON	OFF	• 400 Hz OSC for AUTO – BLE output level adjustment
2		2	ON	ON	OFF	• 3 kHz OSC for AUTO – BLE output level adjustment
3		3	ON	ON	OFF	• 15 kHz OSC for AUTO – BLE output level adjustment
4	SOUND EQ	4	ON	OFF	ON	• BIAS sweep waveform monitor Observe the bias control terminal of the HX – PRO IC with an oscilloscope.
5		5	ON	OFF	ON	• LEVEL sweep waveform monitor Observe the REC AMP output with a millivoltmeter. The internal OSC generates 400 Hz.
6		6	ON	OFF	ON	• Mid EQ sweep waveform monitor Observe the REC AMP output with a millivoltmeter. The internal OSC generates 3 kHz.
7		7	ON	OFF	ON	• High EQ sweep waveform monitor Observe the REC AMP output with a millivoltmeter. The internal OSC generates 15 kHz.

8.3. RELEASING THE TEST MODE

Release the test mode by pressing the COUNTER RESET key, or turning off the power.

8. MODE D'ESSAI

8.1. REGLAGE DU MODE D'ESSAI

Le mode d'essai se règle avec les cavaliers de court – circuitage JP01 et JP02 quand le mécanisme est en mode STOP. Le compteur FL affichera "0".

8.2. OPERATIONS EN MODE D'ESSAI

Quand le mode d'essai est posé, le moniteur passe á SOURCE et le compteur FL affiche "TEST NO.".

1. Contrôle des interrupteurs

En mode d'essai, activer FL selon la position des différents interrupteurs.

Pour contrôler la touche CD SYNCHRO, raccorder un câble de contrôle entre la platique cassette et le lecteur de disque compact, et court – circuiter la borne FR CD (broche 20) et la borne TO CD (broche 19) de IC701 (CPU). Si la touche CD SYNCHRO est alors pressée, le CPU fournit le niveau "H" à la borne TO CD. Si le niveau "L" est alors entré à la borne FR CD, le CPU considère que la ligne de communication fonctionne normalement.

Position d'interrupteur/touche	Affichage	Etat
TIMER PLAY	TREBLE	Interrupteur TIMER PLAY (S981) sur ON
TIMER REC	BASS	Interrupteur TIMER REC (S981) sur ON
F. REC	TIME	Lecture possible (unité Mecha)
PACK	REMAIN	Chargement de la bande (unité Mecha)
CD SYNCHRO	CD DECK SYNCHRO	Touche CD SYNCHRO (S1415) sur ON, ligne de communication normale

2. Divers

Le TEST NO. est "0" immédiatement après le réglage du mode d'essai. Ensuite, il est commuté comme suit par les touches AUTO – BLE et SOUND EQ.
La commutation de TEST NO. de "1" à "3", et "4" à "7" est cyclique.

NOTE:
Voir la page 36 pour les détails du réglage de AUTO – BLE.

TEST NO.	Touche d'entrée	Affichage FL	LINE MUTE	REC MUTE	BIAS	Item à régler et observation de la forme d'onde
1	AUTO BLE	1	ON	ON	OFF	• 400 Hz OSC pour le réglage du niveau de sortie AUTO – BLE
2		2	ON	ON	OFF	• 3 kHz OSC pour le réglage du niveau de sortie AUTO – BLE
3		3	ON	ON	OFF	• 15 kHz OSC pour le réglage du niveau de sortie AUTO – BLE
4	SOUND EQ	4	ON	OFF	ON	• Moniteur d'onde en dent de scie BIAS Observer la borne de commande de polarisation du HX – PRO IC avec un oscilloscope.
5		5	ON	OFF	ON	• Moniteur d'onde en dent de scie LEVEL Observer la sortie REC AMP avec un millivoltmètre. L'OSC interne produit 400 Hz.
6		6	ON	OFF	ON	• Moniteur d'onde en dent de scie Mid EQ Observer la sortie REC AMP avec un millivoltmètre. L'OSC interne produit 3 kHz.
7		7	ON	OFF	ON	• Moniteur d'onde en dent de scie High EQ Observer la sortie REC AMP avec un millivoltmètre. L'OSC interne produit 15 kHz.

8.3. SORTIE DU MODE D'ESSAI

Quitter le mode d'essai en appuyant sur la touche COUNTER RESET, ou en mettant l'appareil hors tension.

8. MODO DE PRUEBA

8.1. AJUSTE DEL MODO DE PRUEBA

El modo de prueba se ajusta cortocircuitando los puentes JP01 y JP02 mientras el mecanismo se encuentra en el modo STOP. En el contador FL se visualizará "0".

8.2. OPERATIONS EN MODO DE PRUEBA

Cuando se ha ajustado el modo de prueba, el monitor conmuta al lado SOURCE, y en el contador FL se visualiza "TEST NO.".

1. Verificación de los SWs

Durante el modo de prueba, ilumine el FL según se indica a continuación de acuerdo con la posición de los distintos SWs.

Para verificar la tecla CD SYNCHRO, conecte un cable de control entre el magnetófono y el reproductor de discos compactos, y cortocircuite el terminal FR CD (Clavija 20) y el terminal TO CD (Clavija 19) de IC701 (CPU). Cuando se oprime la tecla CD SYNCHRO en esta condicion, la CPU entrega un nivel "H" al terminal TO CD. Si en este momento se introduce un nivel "L" al terminal FR CD, la CPU determina que la línea de comunicación está operando normalmente.

Posición SW o de KEY	Visualización	Condición
TIMER PLAY	TREBLE	TIMER PLAY (S981) SW ON
TIMER REC	BASS	TIMER REC (S981) SW ON
F. REC	TIME	Es posible grabar (Unidad mecá.)
PACK	REMAIN	La cinta está colocada (Unidad mecá.)
CD SYNCHRO	CD DECK SYNCHRO	Tecla CD SYNCHRO (S1415) ON, línea de comunicación OK.

2. Otros

Inmediatamente después de ajustar el modo de prueba, el TEST NO. es "0". A continuación se conmuta, mediante la tecla AUTO – BLE y la tecla SOUND EQ, según se indica a continuación.

La conmutación de TEST NO. de "1" a "3", y de "4" a "7" es cíclica

NOTA:
Consulte las páginas 40 con respecto a los detalles sobre el ajuste AUTO – BLE.

TEST NO.	Tecla de Entrada	Visualización de FL	LINE MUTE	REC MUTE	BIAS	Item de ajuste y observación de forma de onda
1	AUTO BLE	1	ON	ON	OFF	• OSC de 400 Hz para ajuste del nivel de salida de AUTO – BLE.
2		2	ON	ON	OFF	• OSC de 3 kHz para ajuste del nivel de salida de AUTO – BLE.
3		3	ON	ON	OFF	• OSC de 15 kHz para ajuste del nivel de salida de AUTO – BLE.
4	SOUND EQ	4	ON	OFF	ON	• Monitor de forma de onda de barrido BIAS. Observe con un osciloscopio el terminal de control de polarización de HX – PRO IC.
5		5	ON	OFF	ON	• Monitor de la forma de onda de barrido de LEVEL. Observe con un milivoltímetro la salida de REC AMP. El OSC interno genera 400 Hz.
6		6	ON	OFF	ON	• Monitor de forma de onda de barrido EQ media. Observe con un milivoltímetro la salida REC AMP. El OSC interno genera 3 kHz.
7		7	ON	OFF	ON	• Monitor de forma de onda de barrido EQ alta. Observe con un milivoltímetro la salida de REC AMP. El OSC interno genera 15 kHz.

8.3. LIBERACION DEL MODO DE PRUEBA

Libere el modo de prueba oprimiendo la tecla COUNTER RESET, o interrumpiendo la alimentación.

9. ADJUSTMENTS

9.1 MECHANICAL ADJUSTMENT

1. Tape speed Adjustment

Mode	Test tape	Adjustment position	Specification rating (playback frequency)
PLAY	Play the STD-301 tape (3kHz)	Tape speed adjustment hole	3000Hz ± 5Hz

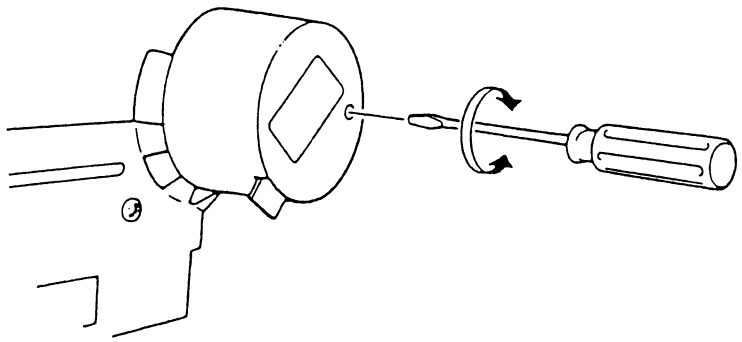


Fig. 9–1 Tape speed adjustment

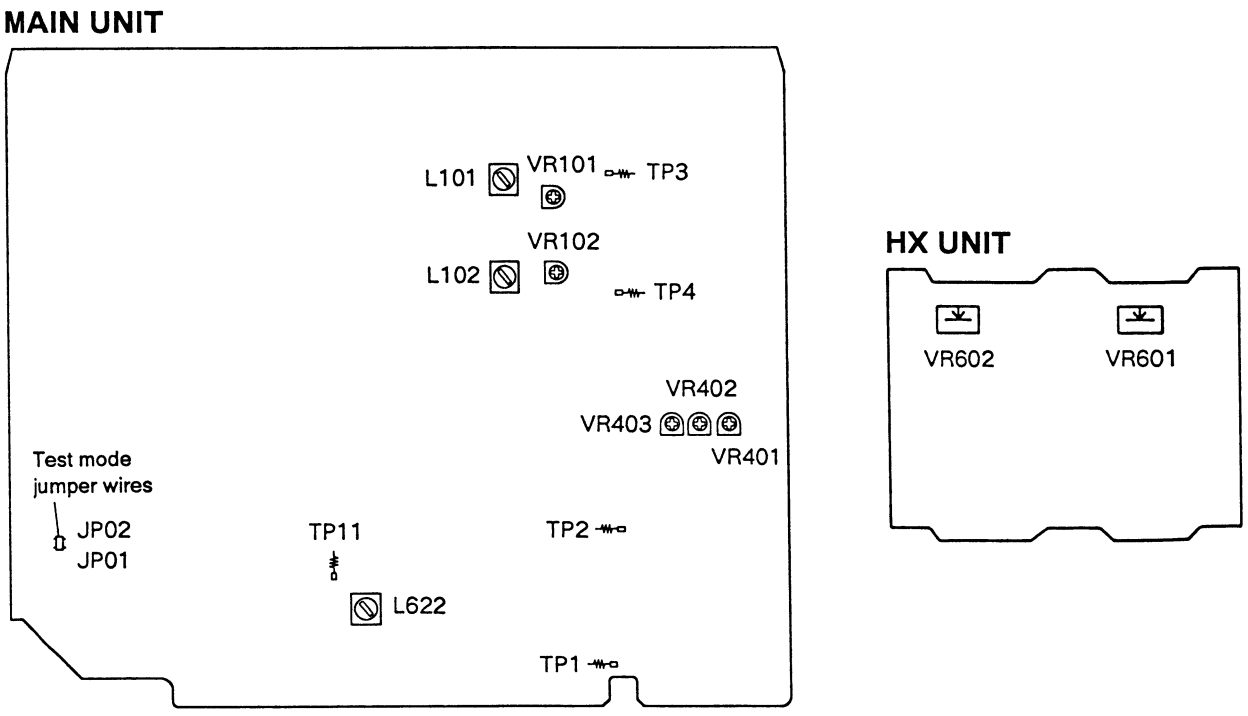


Fig. 9–2 Adjusting points

9.2 ELECTRICAL ADJUSTMENTS

Adjustment Conditions

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

Test Tapes

STD–331E : Playback adjustments (See Fig. 9–3)
STD–631 : NORMAL blank tape
STD–621 : CrO_2 blank tape
STD–610 : METAL blank tape

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

List of Adjustments

Playback sections

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

Recording sections

1. Bias oscillator adjustment.
2. Bias trap adjustment.
3. Recording bias adjustment.
4. Recording level adjustment.
5. AUTO BLE adjustment

NOTE: This unit has an automatic tape selection feature.

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

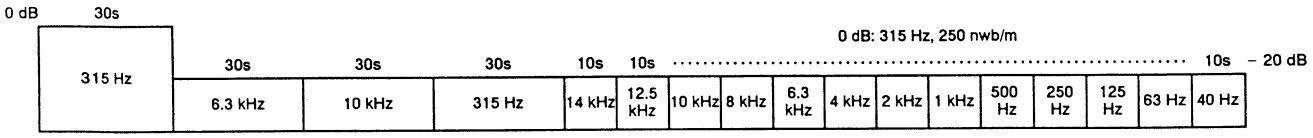


Fig. 9–3 Constants of the test tape STD–331E

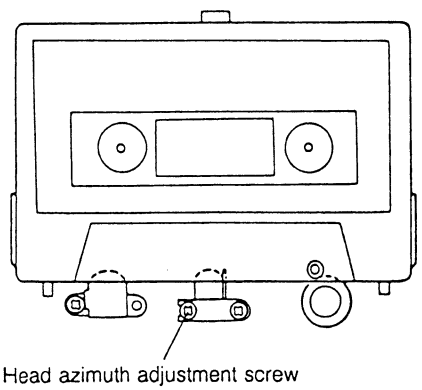


Fig. 9–4 Head azimuth adjustment

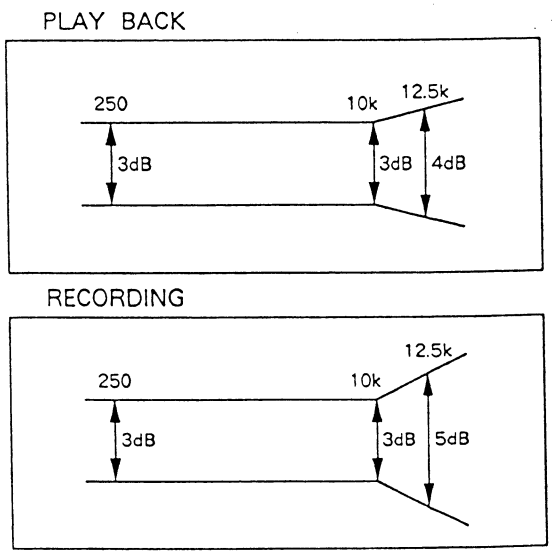


Fig. 9–5 Frequency response zone

PLAYBACK SECTION

1. Head Azimuth Adjustment

- Turn VR101, 102 to mechanical center positions.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 10 kHz/–20 dB section of STD–331E test tape.	Head azimuth adjustment screw. (See Fig. 9–4)	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	VR101 (Lch) VR102 (Rch)	TP. 3 (Lch) TP. 4 (Rch)	–6.7 dBV	This adjustment must be performed accurately for proper Dolby lever setting.

RECORDING SECTION

1. Bias Oscillator Adjustment

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	REC	Load the STD–610 test tape with no input signal.	Deck	L622	TP. 11	105 kHz ± 0.3 kHz	

2. Bias Trap Adjustment

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	REC	Load the STD–610 test tape with no input signal.	Deck	L101 (Lch) L102 (Rch)	LINE OUT	Minimum output	

3. Recording Bias Adjustment

- 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.	REC	Load the STD-631 test tape. Record the 315 Hz and 10 kHz signals at –20 dBV input level and playback.	Deck	VR601 (Lch) VR602 (Rch)	LINE OUT	Repeatedly record, playback and adjust so that the plyaback level of 10 kHz signal becomes 0 dB ± 0.5 dB when compared with the 315 Hz signal.	

4. Recording Level Adjustment

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	REC/ PAUSE	Apply a 315 Hz/ − 4dB signal to the line input terminals, load the STD-631 test tape.	REC level control volume		TP. 1 (Lch) TP. 2 (Rch)	−11.2 dBV	
2.	REC/ PLAY	Record the above signal onto the STD-631 test tape, and playback.	Deck	VR601 (Lch) VR602 (Rch)	TP. 3 (Lch) TP. 4 (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		TP. 3 (Lch) TP. 4 (Rch)	−11.2 dBV ± 1.5 dB	
4.	REC/ PLAY	Record the above signal onto the STD-610 test tape, and playback.	Check		TP. 3 (Lch) TP. 4 (Rch)	−11.2 dBV ± 1.5 dB	

5. AUTO BLE Adjustment

- BLE adjustment should be performed after all other adjustments are completed.
- This adjustment should be performed in the test mode.
- As to setting up the test mode, refer to page 26.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	−	Set to test mode.	−	−	−	
2.		Press the AUTO BLE key on the front panel.	Level meter Rch	VR401	Adjust so that − 3 dB on the level meter flashes.	400 Hz adjustment (FL indication 1) (TEST MODE 1)
3.		Press the AUTO BLE key on the front panel.		VR402	Adjust so that − 3 dB on the level meter flashes.	3 kHz adjustment (FL indication 2) (TEST MODE 2)
4.		Press the AUTO BLE key on the front panel.		VR403	Adjust so that − 3 dB on the level meter flashes.	15 kHz adjustment (FL indication 3) (TEST MODE 3)

9. REGLAGES

9.1 RÉGLAGES MECANIQUES

1. Réglage de la vitesse de défilement de la bande

Mode	Bande d'étalonnage	Position de réglage	Spécifications nominales (fréquence de lecture)
LECTURE	Lire la bande STD–301 (3kHz)	Trou de réglage de vitesse de bande	3000Hz + 5Hz

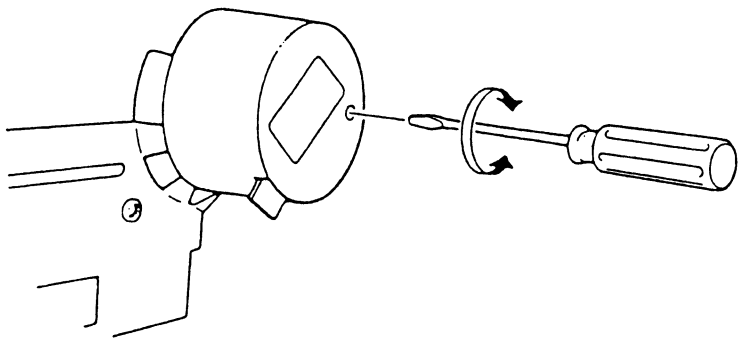
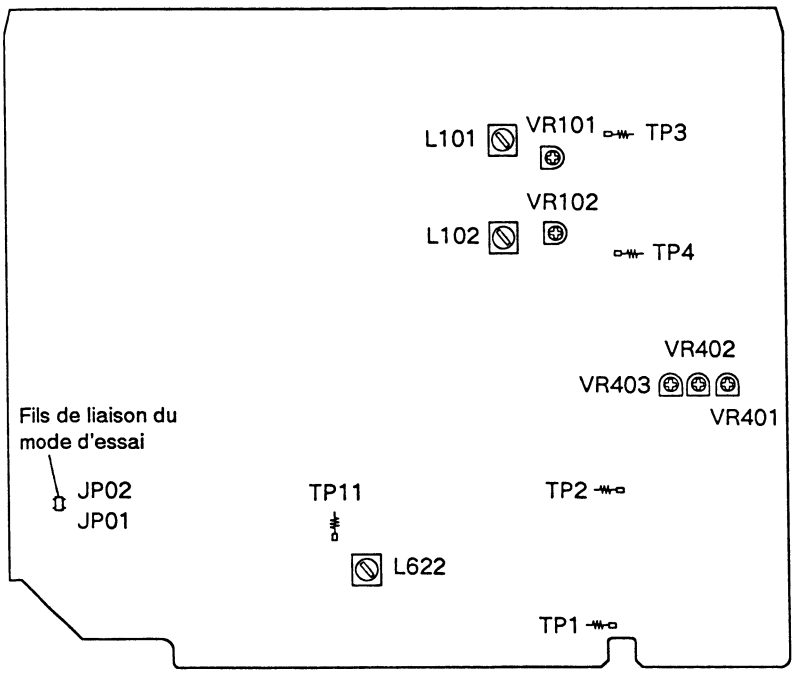


Fig. 9–1 Réglage de la vitesse de défilement de la bande

DE L'UNITÉ PRINCIPALE



UNITE HX

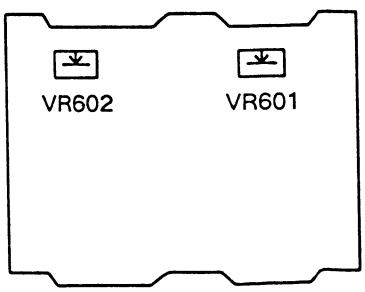


Fig. 9–2 Points de réglage

9.2 REGLAGES ELECTRIQUES

Conditions de réglage

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

Bandes d'essai

STD–331E : Réglages de la lecture (Voir fig. 9–3)
STD–631 : Bande vierge de type normal
STD–621 : Bande vierge de type chrome
STD–610 : Bande vierge de type métal

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

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 circuit réjecteur de polarisation.
3. Réglage de la polarisation d'enregistrement.
4. Réglage du niveau d'enregistrement.
5. Réglage de AUTO BLE

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

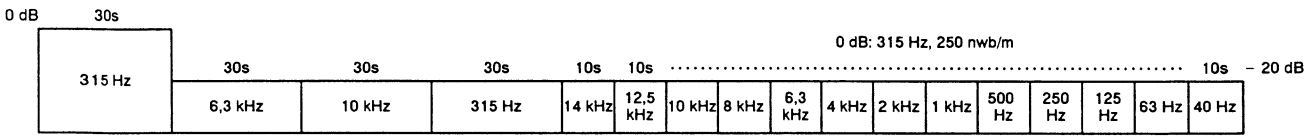


Fig. 9–3 Constantes de la bande d'essai STD–331E

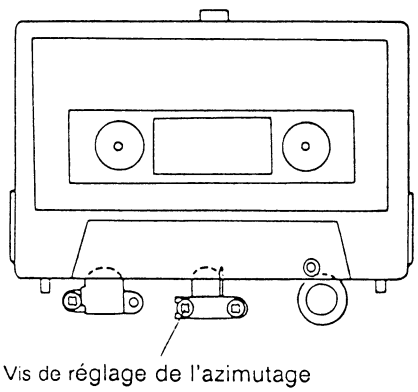


Fig. 9–4 Réglage de l'azimut de la tête

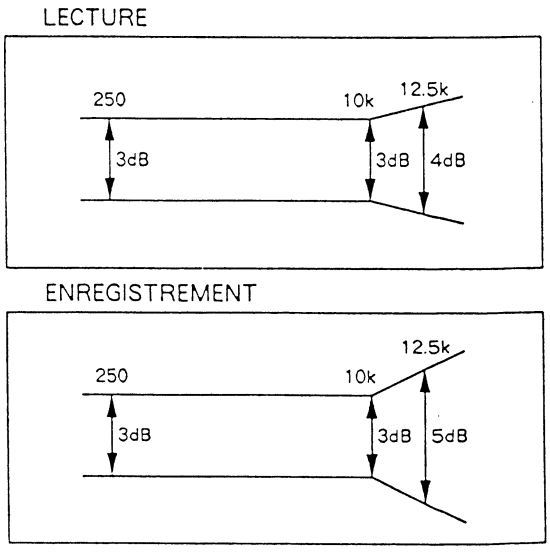


Fig. 9–5 Tolérance de la zone de réponse en fréquence de lecture

SECTION DE LECTURE

1. Réglage de l'azimut de la tête

- Tourner VR101, 102 sur leur position centrale mécanique.

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1.	PLAY	Reproduire la section 10 kHz/–20 dB de la bande d'essai STD–331E.	Vis de réglage de l'azimut de la tête. (Voir fig. 9–4)	Sortie de ligne (LINE OUT)	Niveau du signal de reproduction maximum.	
2.	STOP	Verrouiller la vis avec le verrouillage de vis après avoir terminé le réglage.				

2. Réglage du niveau de lecture

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

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage		Points de mesure	Valeur de réglage	Remarques
1.	PLAY	Reproduire la section 315 Hz/0 dB de la bande d'essai STD–331E.	Platine	VR101 (can. G) VR102 (can. D)	TP. 3 (can. G) TP. 4 (can. D)	–6,7 dBV	Ce réglage doit être effectué avec précision pour un réglage adéquat du niveau Dolby.

SECTION D'ENREGISTREMENT

1. Réglage de l'oscillateur de polarisation

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	L622	TP. 11	105 kHz ± 0,3 kHz	

2. Réglage du circuit réjecteur de polarisation

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	L101 (can.G) L102 (can.D)	Sortie de ligne (LINE OUT)	Sortie minimum	

3. Réglage de la polarisation d'enregistrement

- 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.	REC	Charger la cassette l'essai STD–631. Enregistrer les signaux 315 Hz et 10 kHz à un niveau d'entrée de –20 dBV et les reproduire.	Platine	VR601 (can. G) VR602 (can. D)	Sortie de ligne (LINE OUT)	Enregistrer, reproduire et régler de manière répétée de sorte que le niveau de lecture du signal 10 kHz devienne 0 dB ± 0,5 dB lorsqu'il est comparé avec le signal 315 Hz.	

4. Réglage du niveau d'enregistrement

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/ – 4 dB aux bornes d'entrée de ligne, charger la bande d'essai STD-631.	Volume de la commande de niveau d'enregistrement.		TP. 1 (can. G) TP. 2 (can. D)	–11,2 dBV	
2.	REC/ PLAY	Enregistrer le signal cidessus sur la bande d'essai STD-631 et le reproduire.	Platine	VR601 (can. G) VR602 (can. D)	TP. 3 (can. G) TP. 4 (can. D)	Enregistrer, reproduire et régler de manière répétée de sorte que le niveau du signal devienne –11,2 dBV.	
3.	REC/ PLAY	Enregistrer le signal cidessus sur la bande d'essai STD-621 et le reproduire.	Vérifier		TP. 3 (can. G) TP. 4 (can. D)	–11,2 dBV ± 1,5 dB	
4.	REC/ PLAY	Enregistrer le signal cidessus sur la bande d'essai STD-610 et le reproduire.	Check		TP. 3 (can. G) TP. 4 (can. D)	–11,2 dBV ± 1,5 dB	

5. Réglage de AUTO BLE

- Leréglage BLE doit être effectué après que tous les autres réglages sont complétés.
- Ce réglage doit être effectué dans le mode d'essai.
- Voir la page 27 pour l'implantation du mode d'essai.

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 AUTO BLE du panneau avant.	L'indicateur de niveau can. D	VR401	Régler de sorte que – 3 dB clignote au vu-mètre.	Réglage 400 kHz (Indication FL 1) (Mode déssai 1)
3.		Appuyer sur la touche AUTO BLE du panneau avant.		VR402	Régler de sorte que – 3 dB clignote au vu-mètre.	Réglage 3 kHz (Indication FL 2) (Mode déssai 2)
4.		Appuyer sur la touche AUTO BLE du panneau avant.		VR403	Régler de sorte que – 3 dB clignote au vu-mètre.	Réglage 15 kHz (Indication FL 3) (Mode déssai 3)

9. AJUSTES

9.1 AJUSTE MECANICO

1. Ajuste de la velocidad de la cinta

Mode	Cinta de prueba	Posición de ajuste	Valor de especificación (frecuencia de reproducción)
PLAY	Reproducir la STD-301 (3kHz)	Orificio de ajuste de la velocidad de la cinta	3000Hz + 5Hz

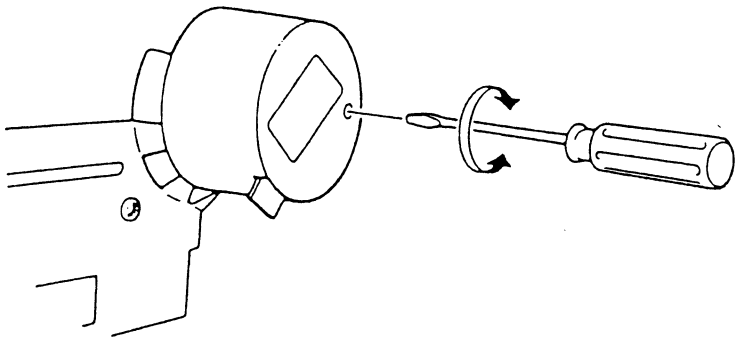
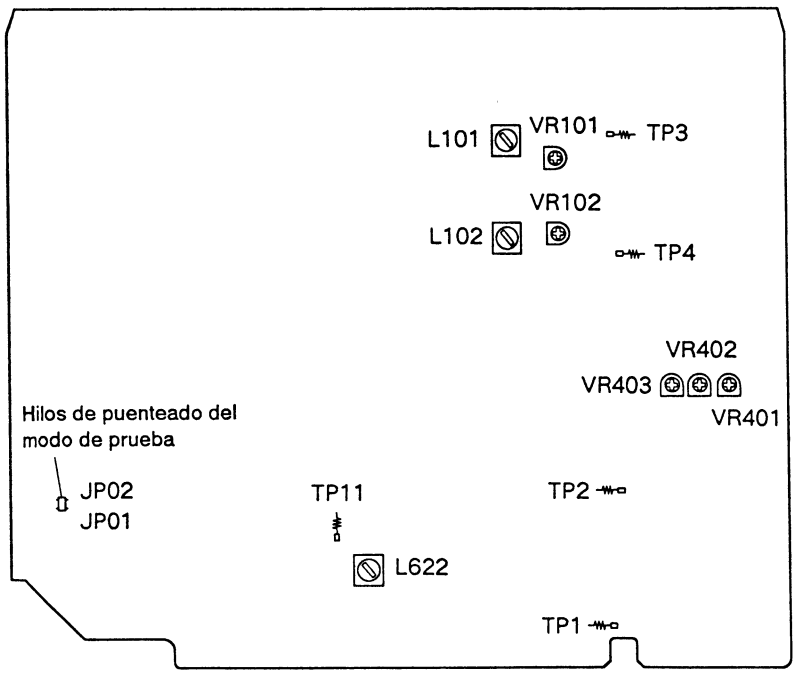


Figura 9–1 Ajuste de la velocidad de la cinta

DE LA UNIDAD PRINCIPAL



UNIDAD HX

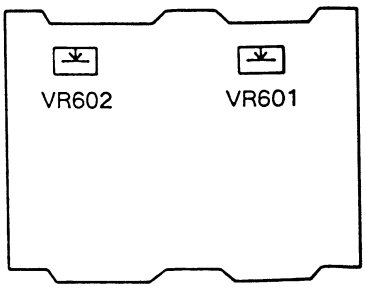


Figura 9–2 Puntos de ajuste

9.2 AJUSTES ELÉCTRICOS

Condiciones de ajuste

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

Cintas de prueba

STD-331E : Ajustes de reproducción (Consulte la figura 9-3)
STD-631 : Cinta virgen NORMAL
STD-621 : Cinta virgen de CrO2
STD-610 : Cinta virgen de METAL

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

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 del eliminador de polarización
3. Ajuste de la polarización de grabación
4. Ajuste del nivel de grabación
5. Ajuste AUTO BLE

NOTA:
Esta unidad posee una función de selección automática de cinta.

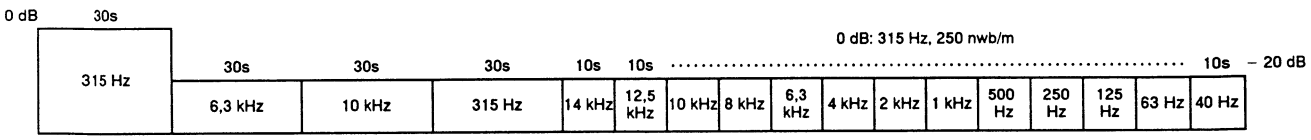


Figura 9-3 Constantes de la cinta de prueba STD-331E

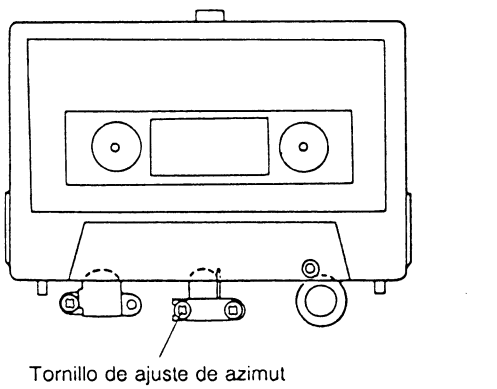


Figura 9-4 Ajuste de azimut de la cabeza

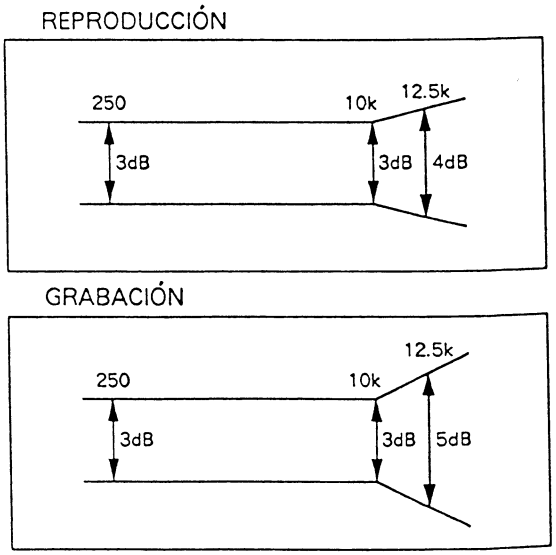


Figura 9-5 Zona permisible de respuesta de frecuencia de reproducción

SECCIÓN DE REPRODUCCIÓN

1. Ajuste del azimut de la cabeza

• Poner VR101, 102 en las posiciones del centro mecánico.

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.	PLAY	Reproduzca la sección de 10 kHz/–20 dB de la cinta de prueba STD–331E.	Tornillo de ajuste del azimut de la cabeza. (Vea la figura 9–4)	LINE OUT	Nivel máximo de la señal de reproducción.	
2.	STOP	Bloquee el tornillo con su cierre una vez finalizado el ajuste.				

2. Ajuste del nivel de reproducción

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

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste		Punto de medición	Valor de ajuste	Comentarios
1.	PLAY	Produzca la parte de 315 Hz/0 dB de la cinta de prueba STD–331E.	Platina	VR101 (Lch) VR102 (Rch)	TP. 3 (Lch) TP. 4 (Rch)	–6,7 dBV	Este ajuste debe efectuarse con precisión para lograr un buen reglaje del nivel Dolby.

SECCIÓN DE GRABACIÓN

1. Ajuste del oscilador de polarización

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste		Punto de medición	Valor de ajuste	Comentarios
1.	REC	Introduzca la cinta de prueba STD–610 sin señal de entrada.	Platina	L622	TP. 11	105 kHz ± 0,3 kHz	

2. Ajuste del eliminador de polarización

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste		Punto de medición	Valor de ajuste	Comentarios
1.	REC	Introduzca la cinta de prueba STD–610 sin señal de entrada.	Platina	L101 (Lch) L102 (Rch)	LINE OUT	Salida mínima	

3. Ajuste de polarización de grabación

• Una vez finalizado el ajuste, compruebe el porcentaje de distorsión para no obtener subpolarización.

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste		Punto de medición	Valor de ajuste	Comentarios
1.	REC	Coloque la cinta de prueba STD–631. Grabe la señal de 315 Hz y 10 kHz a un nivel de entrada de –20 dBV y reprodúzcala.	Platina	VR601 (Lch) VR602 (Rch)	LINE OUT	Grabe, reproduzca y ajuste repetidamente para que el nivel de la señal de reproducción de 10 kHz sea de + 0 dB ± 0,5 dB cuando se compare con la señal de 315 Hz.	

4. Ajuste del nivel de grabación

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste		Punto de medición	Valor de ajuste	Comentarios
1.	REC/ PAUSE	Aplique una señal de 315 Hz/ – 4 dB a los terminales de entrada de línea e introduzca la cinta de prueba STD–631.	Control de nivel de grabación.		TP. 1 (Lch) TP. 2 (Rch)	–11,2 dBV	
2.	REC/ PLAY	Grabe la señal de arriba en la cinta de prueba STD–631 y reprodúzcala.	Platina	VR601 (Lch) VR602 (Rch)	TP. 3 (Lch) TP. 4 (Rch)	Grabe, reproduzca y ajuste repetidamente para que el nivel de la señal de reproducción sea de –11,2 dBV.	
3.	REC/ PLAY	Grabe la señal de arriba en la cinta de prueba STD–621 y reprodúzcala.	Verifique		TP. 3 (Lch) TP. 4 (Rch)	–11,2 dBV ± 1,5 dB	
4.	REC/ PLAY	Grabe la señal de arriba en la cinta de prueba STD–610 y reprodúzcala.	Verifique		TP. 3 (Lch) TP. 4 (Rch)	–11,2 dBV ± 1,5 dB	

5. Ajuste AUTO BLE

- El ajuste BLE debe efectuarse después de haber terminado todos los otros ajustes.
- Este ajuste debe efectuarse en el modo de prueba.
- Con respecto al ajuste del modo de prueba, consulte la página 28.

N.º	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.	–	Establezca el modo de prueba.	–	–	–	
2.		Pulse la tecla AUTO BLE del panel delantero.	En medidor de nivel Rch	VR401	Ajuste en forma tal que– 3 dB se ilumine intermitentemente en el medidor de nivel.	Ajuste de 400 kHz (Indicación de FL 1) (Modo de prueba 1)
3.		Pulse la tecla AUTO BLE del panel delantero.		VR402	Ajuste en forma tal que– 3 dB se ilumine intermitentemente en el medidor de nivel.	Ajuste de 3 kHz (Indicación de FL 2) (Modo de prueba 2)
4.		Pulse la tecla AUTO BLE del panel delantero.		VR403	Ajuste en forma tal que– 3 dB se ilumine intermitentemente en el medidor de nivel.	Ajuste de 15 kHz (Indicación de FL 3) (Modo de prueba 3)

10. FOR CT-S510/HB, CT-S410/KUC, HEM AND HB TYPES

CONTRAST OF MISCELLANEOUS PARTS

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.

CT-S510/HB, CT-S410/KUC, HEM, HB and CT-S510/HEM have the same construction except for the following:

Mark	Symbol & Description	Part No.					Remarks
		CT-S510/ HEM type	CT-S510/ HB type	CT-S410/ KUC type	CT-S410/ HEM type	CT-S410/ HB type	
⊙	Mother unit	RWM1498	RWM1542	RWM1497	RWM1496	RWM1514	
NSP	├ MAIN unit	RWZ2589	RWZ2589	RWZ2579	RWZ2579	RWZ2579	
NSP	├ TRN 1 unit	RWZ2678	RWZ2679	RWZ2583	RWZ2678	RWZ2679	
NSP	├ TRN 2 unit	RWZ2586	RWZ2586	RWZ2584	RWZ2586	RWZ2586	
NSP	└ DISP unit	RWZ2590	RWZ2590	RWZ2587	RWZ2585	RWZ2585	
⚠	Strain relief	CM-22B	CM-22B	CM-22C	CM-22B	CM-22B	
⚠	AC power cord	PDG1003	PDG1036	PDG1015	PDG1003	PDG1036	
⚠	Fuse (1A)	REK-100	REK-100	REK-080	REK-100	REK-100	
⚠	Power transformer (AC220 – 230V/230 – 240V)	RTT1195	RTT1195	.....	RTT1195	RTT1195	
⚠	Power transformer (AC120V)	.....	.....	RTT1196	.....	.....	
	FL lens	RAH2030	RAH2030	RAH1867	RAH1870	RAH1870	
	Front panel assembly	RXX1466	RXX1466	RXX1467	RXX1467	RXX1467	
NSP	Front panel	RNT1131	RNT1131	RNT1132	RNT1132	RNT1132	
NSP	Rear panel	RNA1514	RNA1514	RNA1517	RNA1515	RNA1515	
	Packing case	RHG1324	RHG1324	RHG1326	RHG1325	RHG1325	
	Connection cord (with mini plug)	.....	.....	PDE-319	PDE-319	PDE-319	(Packing)
	Operating instructions (German/Italian/ Dutch/Swedish/Spanish/Portuguese)	RRD1131	.....	.....	RRD1131	.....	
	Vinyl bag	RHL1001	RHL1001	.....	.....	.....	
	Remote control unit	RPX1059	RPX1059	.....	.....	.....	
	Battery cover	PZN1010	PZN1010	.....	.....	.....	
NSP	Dry cell battery (R03, AAA)	VEM-022	VEM-022	.....	.....	.....	
NSP	Capacitor sleeve A	REC – 150	REC – 150	.....	REC – 150	REC – 150	

MAIN UNIT

RWZ2589 and RWZ2579 have the same construction except for the following;

Mark	Symbol & Description	Part No.		Remarks
		RWZ2589	RWZ2579	
	C853	.....	CKCYF473Z50	
	JA851, 852 Jack (Remote control)	.....	RKN1004	

TRN 1 UNIT

Although RWZ2678, RWZ2679 and different in part number, they have the same same service parts.

Although RWZ2678, RWZ2679 and RWZ2583 are different in part number, they have the same service parts.

TRN 2 UNIT

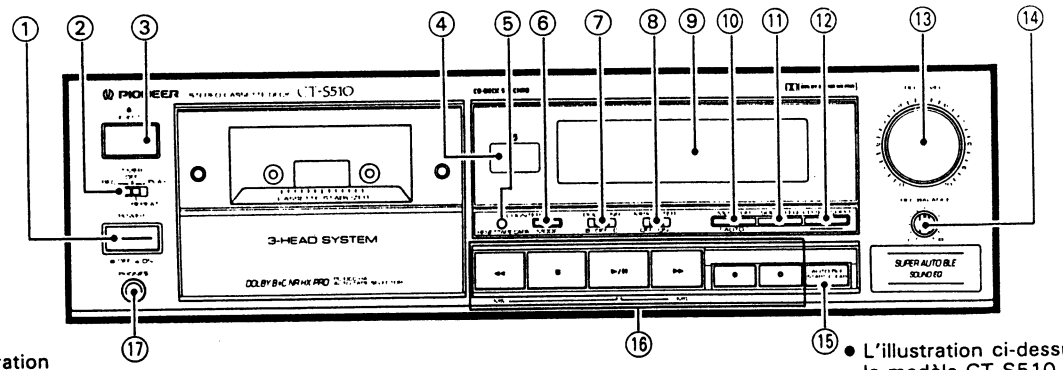
Although RWZ2586 and RWZ2584 are different in part number, they have the same service parts.

DISP UNIT

RWZ2590, RWZ2587 and RWZ2585 have the same construction except for the following;

Mark	Symbol & Description	Part No.			Remarks
		RWZ2590	RWZ2587	RWZ2585	
	V1401 FL tube IC1401 Remote sensor	RAW1112 HC – 177	RAW1113	RAW1112	

11. PANEL FACILITIES



• The illustration shows CT-S510.

• L'illustration ci-dessus représente le modèle CT-S510.

① Power switch (POWER ■ OFF/▬ ON)

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

③ Eject button (EJECT ⏏)

- If the tape is moving (recording, playback, tape winding, etc.), press the stop (■) button before pressing this button.

④ Remote sensor window (CT-S510 only)

⑤ Counter reset/tape capacity selector button (COUNTER RESET/TAPE CAPA)

⑥ Tape counter mode button (COUNTER MODE)

⑦ Dolby* NR switch (DOLBY NR B/OFF/C)

*

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

⑧ MPX FILTER switch (OFF/ON)

⑨ Function display

⑩ Monitor selector button (MONITOR [AUTO])

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

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

⑪ SOUND EQ button

⑫ CD•DECK SYNCHRO recording button (CD SYNCHRO)

⑬ Recording level control (REC LEVEL)

⑭ Recording balance control (REC BALANCE)

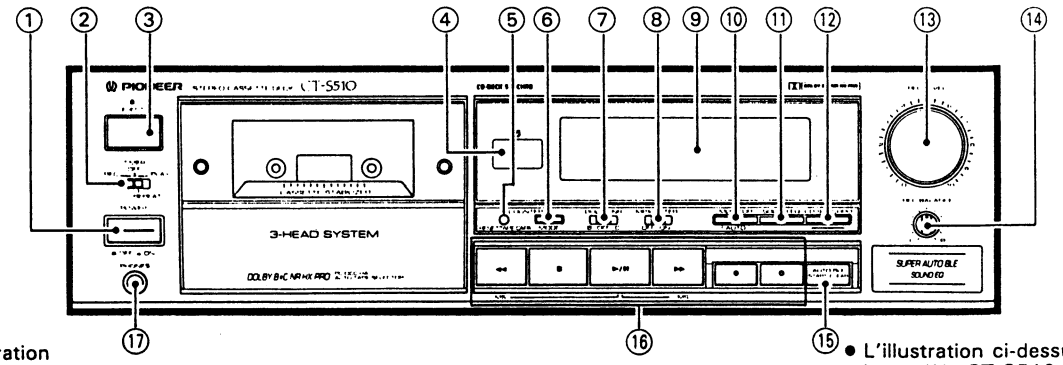
⑮ SUPER AUTO BLE START/CLEAR button

⑯ Operation buttons

◀◀/MS : Rewind/music search
■ : Stop
▶/❚❚ : When pressed during playback, pauses playback. When pressed during pause, resumes play or starts recording.
▶▶/MS : Fast forward/music search
● : Recording
○ : Recording mute

⑰ Headphones jack (PHONES)

11. PANEL FACILITIES



• The illustration shows CT-S510.

• L'illustration ci-dessus représente le modèle CT-S510.

① Power switch (POWER ▟ OFF/▁ ON)

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

③ Eject button (EJECT ⏏)

- If the tape is moving (recording, playback, tape winding, etc.), press the stop (■) button before pressing this button.

④ Remote sensor window (CT-S510 only)

⑤ Counter reset/tape capacity selector button (COUNTER RESET/TAPE CAPA)

⑥ Tape counter mode button (COUNTER MODE)

⑦ Dolby* NR switch (DOLBY NR B/OFF/C)

*

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

⑧ MPX FILTER switch (OFF/ON)

⑨ Function display

⑩ Monitor selector button (MONITOR [AUTO])

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

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

⑪ SOUND EQ button

⑫ CD•DECK SYNCHRO recording button (CD SYNCHRO)

⑬ Recording level control (REC LEVEL)

⑭ Recording balance control (REC BALANCE)

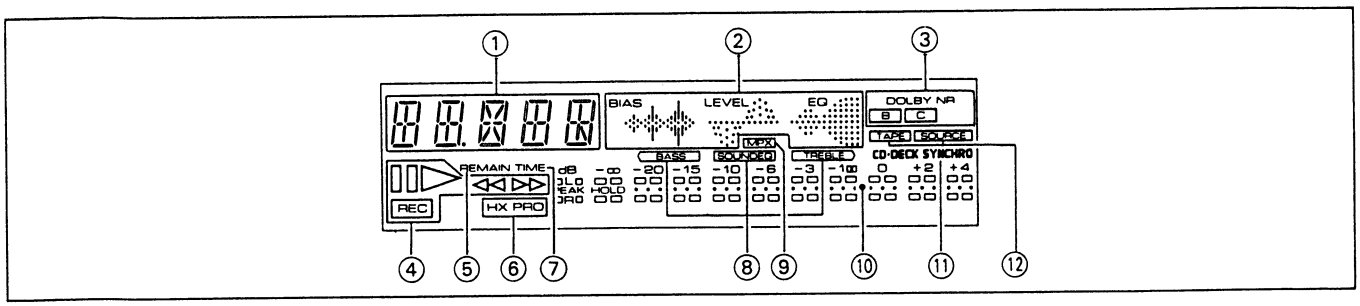
⑮ SUPER AUTO BLE START/CLEAR button

⑯ Operation buttons

◀◀/MS : Rewind/music search
■ : Stop
▶/❚❚ : When pressed during stop, begins playback. When pressed during playback, pauses playback. When pressed during pause, resumes play or starts recording.
▶▶/MS : Fast forward/music search
● : Recording
○ : Recording mute

⑰ Headphones jack (PHONES)

FUNCTION DISPLAY



① Counter indicator

Normally the tape or time counter is displayed number (see "COUNTER MODES").

POWER: Flashes for four seconds after turning the power on.

TIMER : Lights for approximately 10 seconds after starting TIMER PLAY or TIMER REC.
Immediately returns to normal counter mode if any button is pressed while lighted.
Otherwise, returns to normal counter mode after 10 seconds.

During AUTO BLE tuning, indicates STRT, BIAS, LEVEL, EQ, TUNED or Error.

② AUTO BLE indicator

③ DOLBY NR B/C indicator

④ Tape transport mode indicators

▶ : Lights during recording or playback or play/pause mode. Flashes during music search operation.

❚❚ : Lights during pause.

REC : Lights during recording and recording pause (stand-by) modes. Flashes during recording mute.

▶▶ : Lights during fast forward and music search operation.

◀◀ : Lights during fast reverse and music search operation.

⑤ REMAIN counter indicator

Lights up in the remaining time COUNTER mode.

⑥ DOLBY HX PRO indicator

⑦ TIME counter indicator

Lights up in the time counter mode or REMAIN counter mode.

⑧ SOUND EQ indicators

Press the SOUND EQ button to ON to light the indicators. Different parts of the indicator (BASS, SOUND EQ, TREBLE) light with alternate presses of the button.

⑨ MPX indicator

This indicator lights when the MPX filter switch is set to ON (only when DOLBY NR is also set to ON).

⑩ Level meter

The ▯▯ beside the – 1 dB mark indicates the Dolby NR systems reference level.

⑪ CD•DECK SYNCHRO indicator

Lights when synchro recording from a CD player is being carried out.

⑫ Monitor source indicators

TAPE : Recorded sound

SOURCE : Original source sound