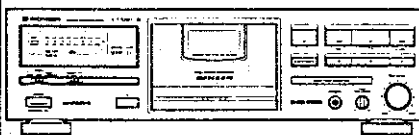


# Service Manual

**PIONEER®**  
The Art of Entertainment



ORDER NO.  
ARP2673

STEREO CASSETTE DECK

# CT-S220

CT-S220 HAS THE FOLLOWING:

Type	Power Requirement	Remarks
HEM	AC220-230V, 230-240V (Switchable) *	
HB	AC220-230V, 230-240V (Switchable) *	
HPW	AC220-230V, 230-240V (Switchable) *	
SD	AC110V, 120 - 127V, 220V, 240V (Switchable)	

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

- This manual is applicable to CT-S220/HEM, HB, HPW and SD.
- For HB, HPW and SD types, refer to page 22.

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**PIONEER ELECTRONIC CORPORATION** 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan  
**PIONEER ELECTRONICS SERVICE INC.** P.O. Box 1760, Long Beach, California 90801 U.S.A.  
**PIONEER ELECTRONICS OF CANADA, INC.** 300 Allstate Parkway Markham, Ontario L3R 0P2 Canada  
**PIONEER ELECTRONIC [EUROPE] N.V.** Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium  
**PIONEER ELECTRONICS AUSTRALIA PTY. LTD.** 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911  
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# 1. EXPLODED VIEWS, PACKING AND PARTS LIST

## 1.1 EXTERIOR AND PACKING

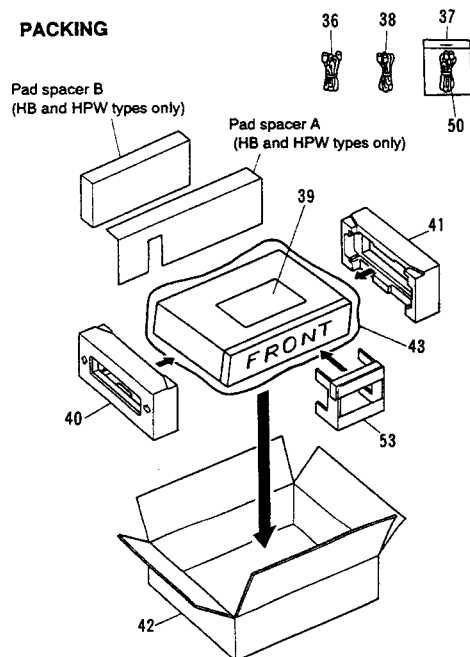
### NOTES:

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

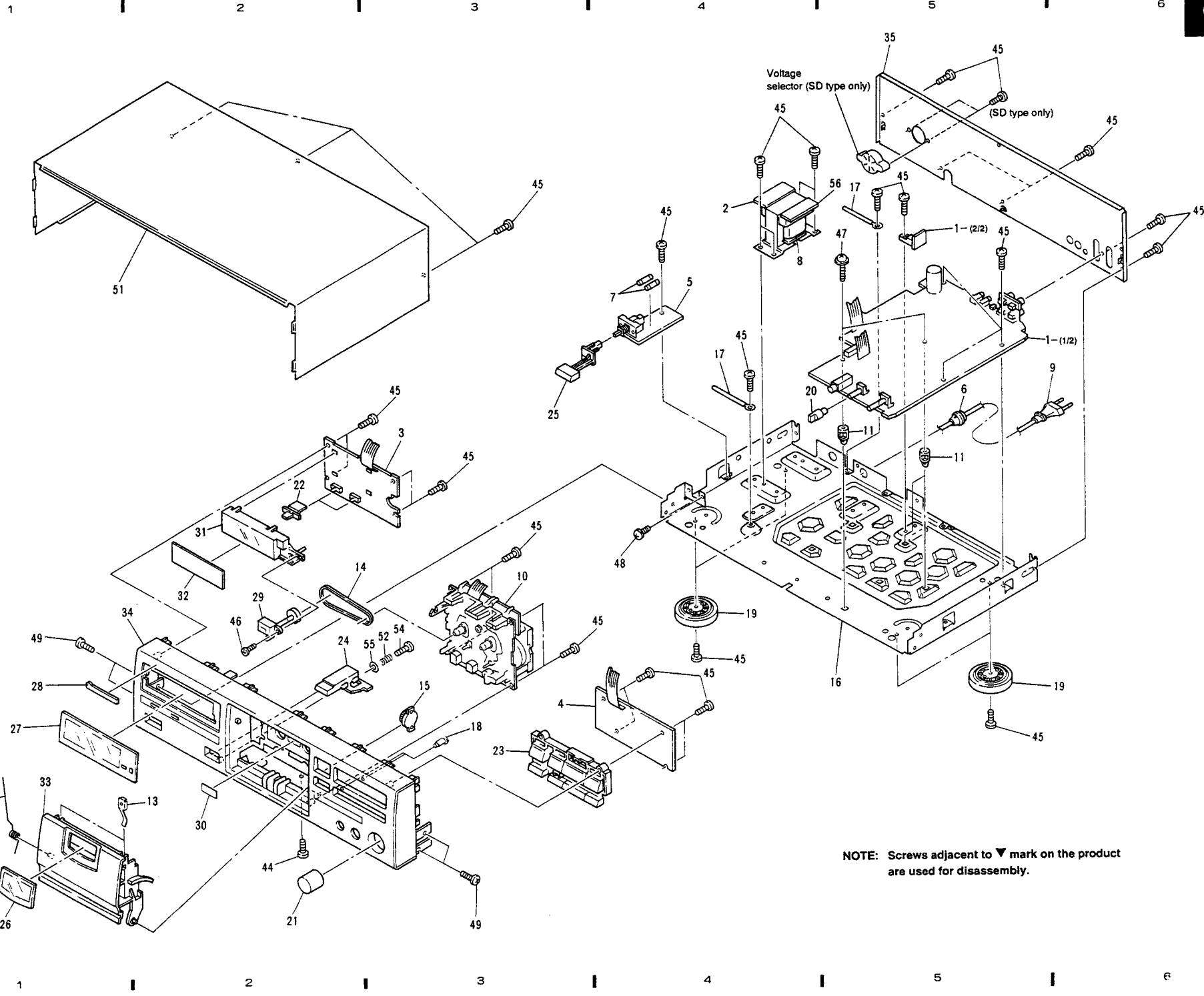
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
NSP	1	MAIN unit	RWZ2792	41	Pad (R)	RHA1112	
	2	TRN2 unit	RWZ2794	42	Packing case	RHG1421	
	3	DISP unit	RWZ2795	43	Sheet	RHX - 034	
NSP	4	OPSW unit	RWZ2796	44	Screw	BBZ30P060FZK	
	5	PFSW unit	RWZ2817	45	Screw	BBZ30P080FMC	
$\Delta$	6	Strain relief	CM - 22B	46	Screw	BPZ20P080FZK	
$\Delta$	7	Fuse FU1001, 1002 (T1.25A)	REK1023	47	Screw	IBZ30P150FCU	
$\Delta$	8	Power transformer	RTT1227	48	Screw	PMA30P060FMC	
$\Delta$	9	AC power cord	RDG1026	49	Screw	ABZ30P080FMC	
⊙	10	Mechanism unit	RYM1194	50	Connection cord	RDE - 010	
NSP	11	PCB spacer	PNY - 404	51	Bonnet	REA1077	
	12	Door spring L	RBH1254	52	Eject spring	RBH1340	
	13	Half pressure spring	RBK1004	53	Spacer A	RHC1044	
	14	Counter belt	REB1152	54	Screw	IPZ26P080FMC	
	15	Damper assembly	REC1005	55	Washer	WA52D080D025	
	NSP	15	TRN1 board	REN2413	56	TRN1 board	RNZ2413
NSP	16	Main chassis	RNB1088				
	17	Cord clamper	RNH - 184				
	18	Indicator lens S	PNW1893				
	19	Insulator	PNW1912				
	20	Balance knob	RAC1705				
	21	VR knob	RAC1707				
	22	Slide knob	RAC1713				
	23	Operation knob	RAC1771				
	24	Eject knob	RAC1772				
	25	Power button	RAC1775				
NSP	26	Door lens	RAH2171				
	27	Meter lens	RAH2172				
	28	PIONEER badge	RAM1007				
	29	Tape counter	RAW1126				
	30	Remain display paper	REE - 113				
	NSP	31	LED holder	RNK1893			
NSP	32	LED panel	RAH2173				
	33	Door pocket	RAH2174				
	34	Front panel	RAH2175				
NSP	35	Rear panel	RNA1645				
	36	Connection cord with mini plug	PDE - 319				
	37	Connection cord assembly	RDE1002				
	38	Control cord	RDE1030				
	39	Operating instructions (English, French, German, Italian, Dutch, Swedish, Spanish, Portuguese)	RRE1067				
	40	Pad (L)	RHA1111				

### PACKING



Exterior

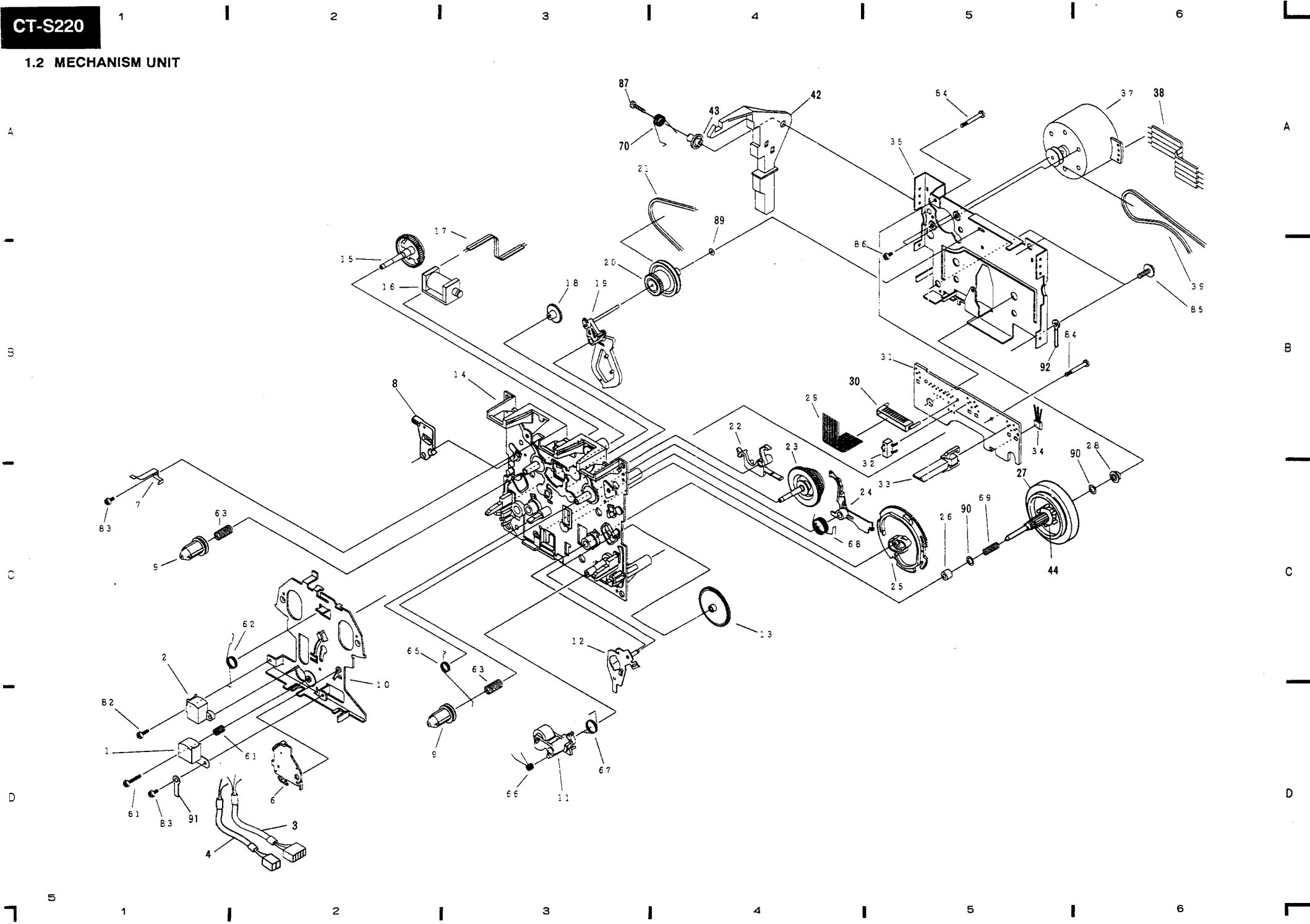
A  
B  
C  
D



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

1 2 3 4 5 6

1.2 MECHANISM UNIT



**Parts List**

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	R/P HEAD	RPB1026		81	SCREW (AZIMUTH)	RBA1096
	2	E HEAD	RPB1027		82	SCREW	RBA1029
	3	WIRE HEAD	RKP1404		83	SCREW	PCZ20P040FMC
	4	WIRE HEAD (E)	RKP1405		84	SCREW	RBA1093
					85	SCREW	RBA1094
	6	ASS'Y ARM ASSIST	RXA1401		86	SCREW	RBA1086
	7	SPRING CASSETTE	RBK1039		87	SCREW	RBA1095
	8	EJECT LOCK	RNK1718		89	WASHER	RBF1046
	9	CAP REEL	RNK1719		90	WASHER	WA26D047D013
	10	CHASSIS HEAD	RNE1439				
	11	ASS'Y PINCH ARM R	RXA1404		91	KEEP WIRE	RNE1456
	12	ARM PLAY R	RNK1868		92	KEEP WIRE	RNH1004
	13	GEAR PLAY	RNK1867				
	14	CHASSIS OS.	RXA1417				
	15	REEL GEAR	RNK1726				
Δ	16	SOLENOID	RXP1020				
	17	WIRE	RDC1006				
	18	GEAR FF	RNK1723				
	19	ASS'Y ARM FR	RXA1412				
	20	ASS'Y PULLEY FR	RXA1413				
	21	BELT FR	REB1158				
	22	ARM BRAKE	RNK1724				
	23	ASS'Y SUB REEL R	RXA1408				
	24	ARM TRIGGER	RNK1722				
	25	GEAR CAM	RNK1725				
	26	SHAFT HOLDER	RNG1049				
	27	ASS'Y FLYWHEEL R	RXA1415				
	28	SHAFT HOLDER	RNG1004				
	29	WIRE	RDD1260				
NSP	30	HOLDER WIRE	RNK1683				
	31	P.C. BOARD	RNP1347				
	32	SWITCH MODE	RSN1020				
	33	SWITCH (LEAF)	RSN1019				
	34	HALL IC.	DNG6851A				
	35	BRACKET FW	RNE1438				
	37	ASS'Y MOTOR	RXM1064				
NSP	38	WIRE	RDD1012				
	39	BELT MAIN	REB1220				
	42	EJECT LEVER L	RNK1831				
	43	COLLAR	RNK1704				
	44	GEAR FW R	RNK1733				
	61	SPRING (AZIMUTH)	RBH1296				
	62	SPRING	RBH1284				
	63	SPRING	RBH1286				
	64	.....					
	65	SPRING	RBH1285				
	66	SPRING	RBH1298				
	67	SPRING	RBH1290				
	68	SPRING	RBH1295				
	69	SPRING	RBH1325				
	70	SPRING	RBH1319				

**2. PCB PARTS LIST**

**NOTES:**

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- 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 × 10<sup>1</sup> → 561 ..... RD1/8PM<sup>5</sup><sup>6</sup><sup>1</sup>J

47k Ω → 47 × 10<sup>4</sup> → 473 ..... RD1/4PS<sup>4</sup><sup>7</sup><sup>3</sup>J

0.5 Ω → 0R5 ..... RN2H<sup>0</sup><sup>R</sup><sup>5</sup>K

1 Ω → 010 ..... RS1P<sup>0</sup><sup>1</sup><sup>0</sup>K

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

5.62k Ω → 562 × 10<sup>1</sup> → 5621 ..... RN1/4PC<sup>5</sup><sup>6</sup><sup>2</sup><sup>1</sup>F

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
------	-----	-------------	----------	------	-----	-------------	----------

**LIST OF ASSEMBLIES**

NSP	MOTHER UNIT	RWM1572
	— MAIN UNIT	RWZ2792
	— TRN2 UNIT	RWZ2794
	— DISP UNIT	RWZ2795
	— OPSW UNIT	RWZ2796
NSP	— PMSW UNIT	RWZ2817

	D931	MTZJ4. 3B
Δ	D1303	MTZJ5. 1B

**COILS AND FILTERS**

L402	LFA121K
L401 (F=105K)	RTD1039
L601, L602 (L=4, 6MHz, Q=25, F=105KHZ)	RTD1046
L301, L302 (10mH)	RTF1102
L321, L322 (5, 6mH)	RTF1121
F201, F202	RTF1209

**MAIN UNIT**

**SEMICONDUCTORS**

IC301, IC501, IC701, IC751	BA15218N
IC201	CXA1330S
IC101	NJM4580LD
Δ IC1201	NJM78M05FA
IC901	PD4335A
IC1101	TA7812S
IC601	UPC1297CA
Q155, Q275, Q373, Q393, Q601, Q602, Q951, Q981, Q984	2SA1309A
Q421, Q431, Q821	2SB1238X
Q131, Q132, Q153, Q154, Q982, Q983	2SC3311A
Q401, Q402	2SD1302
Q831	2SD1858X
Q271, Q272, Q371, Q372, Q391, Q392, Q403	2SD2144S
Q151, Q152	2SK373
Q422, Q432	DTC114TS
Q603	DTC124ES
Q331, Q332, Q341, Q342	XDC114ES
Q156, Q157, Q241, Q273, Q274, Q751, Q822, Q5001	XDC124ES
Δ D1001-D1004, D1201	1SR35-100AVL
D431, D821	1SS252
Δ D1301, D1302	1SS252
D151-D156, D271, D391, D421-D423, D432, D433, D601, D602, D751, D752, D801-D803, D811, D906, D951, D981, D1101, D1102, D1107, D5001, D5002, D6001-D6003.	1SS254

**CAPACITORS**

C609, C610	CCCSL101K500
C151, C152	CCPUSL100J50
C103, C104	CEANL100M16
C173, C174	CEANL220M16
C201-C204, C207, C208, C303, C304, C701, C702	CEAS010M50
C109, C110, C205, C206, C221, C231, C305, C306, C408, C615, C617, C705, C706, C1101, C1301	CEAS100M50
C503, C504	CEAS101M25
C1201	CEAS102M16
C551, C821, C1102, C1202, C1302, C1303, C1104	CEAS221M16
	CEAS332M35
C171, C181, C230, C323, C351, C402, C403, C409, C741, C742, C902, C981, C209, C210, C219, C220, C309, C310, C616	CEAS470M16
C271, C272, C501, C502, C614	CEAS47M50
C215, C216, C307, C308, C754	CEASR10M50
C217, C218, C223, C224	CEASR22M50
	CEASR33M50
C371, C753	CEASR47M50
C281, C282, C601, C602	CFTXA103J50
C211-C214	CFTXA222J50
C404, C605, C606	CFTXA223J50
C301, C302	CFTXA272J50
C405, C406	CFTXA332J50
C407	CFTXA472J50
C107, C108	CFTXA682J50
C321, C322	CGCYX153K25
C341, C342	CGCYX332K25

# CT-S220

Mark	No.	Description	Part No.
C607, C608			CGCYX473K25
C331, C332			CGCYX562K25
C251, C252			CGCYX822K25
C182, C273, C901, C903, C1304, C5001, C5002, C6001			CKCYF103Z50
C255, C505, C1003-C1005			CKCYF473Z50
C105, C106, C613, C703, C704, C751			CKPUYB101K50
C311, C312			CKPUYB221K50
C752			CKPUYB271K50
C101, C102, C811			CKPUYB681K50
C603, C604			CKPUYB821K50
C401			CQPA822J100
C611, C612 (C=430P, V(DC)=500)			RCG1005
<b>RESISTORS</b>			
R910 (R=100K)			RA47104J
R909 (R=1.5K, W=1/10, A=J)			RA7T152J
R301, R302 (R=56, W=1/6, A=J)			RCN1029
R413			RD1/2LF010J
R421, R553			RD1/2LF221J
R411, R1301			RD1/2LF331J
VR101, VR102 (R=10K, W=0.1)			RCP1045
VR301, VR302, VR601, VR602 (R=22K, W=0.1)			RCP1046
VR701 (5K)			RCS1028
VR702 (5K)			RCV1095
OTHER RESISTORS			RD1/6PM□□□□J
<b>OTHERS</b>			
CN801 CONNECTOR(13P)			KPE13
JA5001 MINI JACK			PKN1005
JA701 PIN JACK(4P)			RKB-020
JA501 JACK (HEADPHONE)			RKN1002
JA6001, JA6002 JACK (REMOTE CONTROL)			RKN1004
X901 CERAMIC RESONATOR(4.19MHz)			YSS1014

### TRN2 UNIT

TRN2 unit has no service part.

### DISP UNIT

#### SEMICONDUCTORS

IC3001	IR2E28
D3203, D3204, D3301, D3302	ISS254
D3001-D3008, D3021, D3022, D3201, D3202	SEL6410G
D3009-D3014, D3104	SEL6C10R

#### SWITCHES

S3201, S3301	RSH1041
--------------	---------

#### CAPACITORS

C3001-C3003	CEAS100M50
C3004	CEAS470M16

#### RESISTORS

ALL RESISTORS	RD1/6PM□□□□J
---------------	--------------

Mark	No.	Description	Part No.
<b>OPSW UNIT</b>			
<b>SEMICONDUCTORS</b>			
		D2002-D2008, D2010	ISS254
		D2102	SEL6410G
		D2100	SEL6C10R
<b>SWITCHES</b>			
		S2002-S2008, S2010	RSG1030
<b>RESISTORS</b>			
		ALL RESISTORS	RD1/6PM□□□□J
<b>PWSW UNIT</b>			
<b>SWITCHES</b>			
		S1001	RSA-069
<b>CAPACITORS</b>			
		C1001, C1002	CKCYF473Z50

### Note:

(Type 6)

- When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".
- Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.
- 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.
- CAPACITORS:**  
Unit: p:pF or μF unless otherwise noted.  
Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.  
Rated voltage: 50V except for electrolytic capacitors.
- COILS:**  
Unit: m:mH or μH unless otherwise noted.
- VOLTAGE AND CURRENT:**  
□ : DC voltage (V) in STOP mode unless otherwise noted.  
◊ mA or - mA : DC current in STOP mode unless otherwise noted.
- OTHERS:**
  - : Signal route.
  - ⊙ : Adjusting point.
  - ▼ (Red) : Measurement point.
  - The Δ 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.

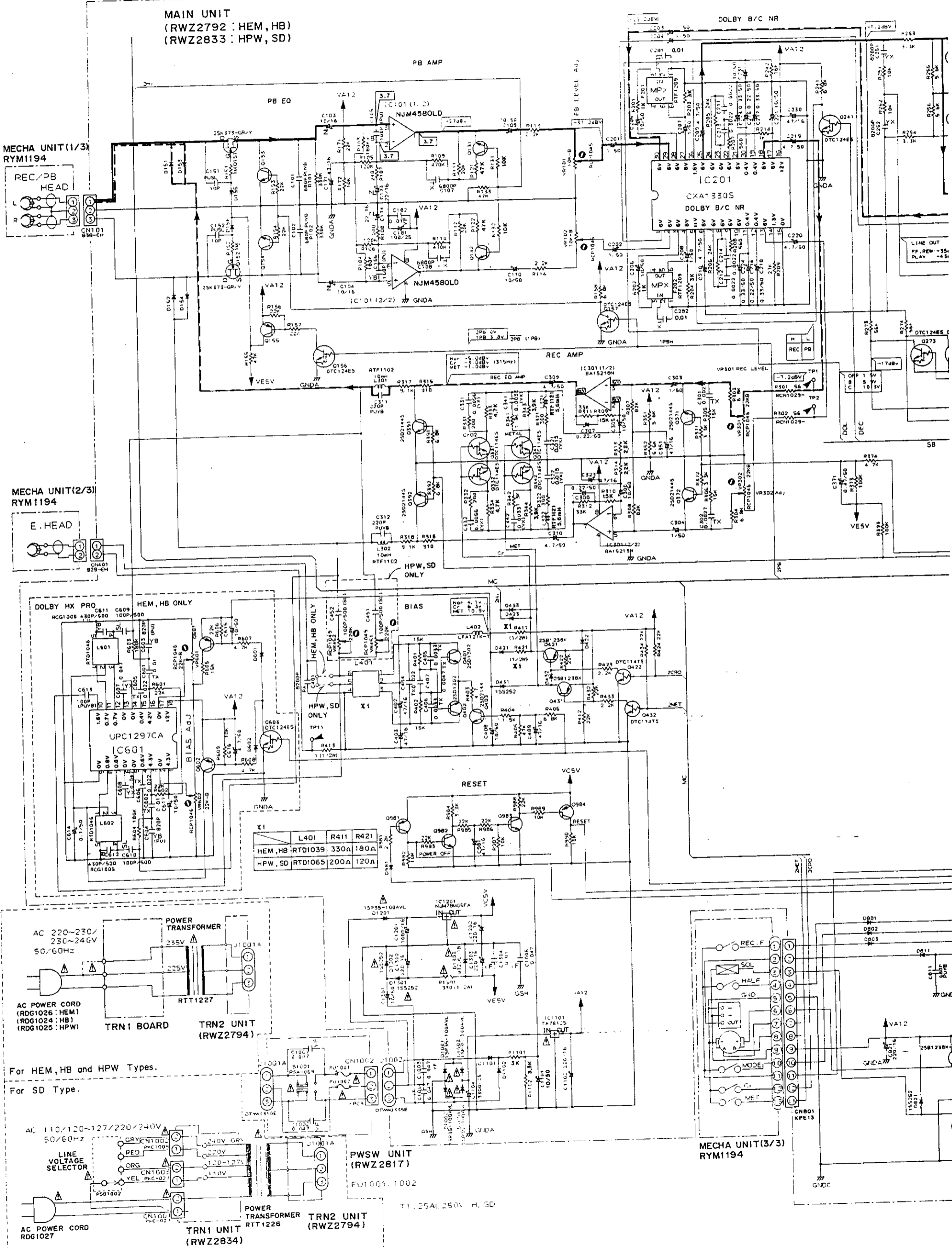
### B. SWITCHES (Underline indicates switch position):

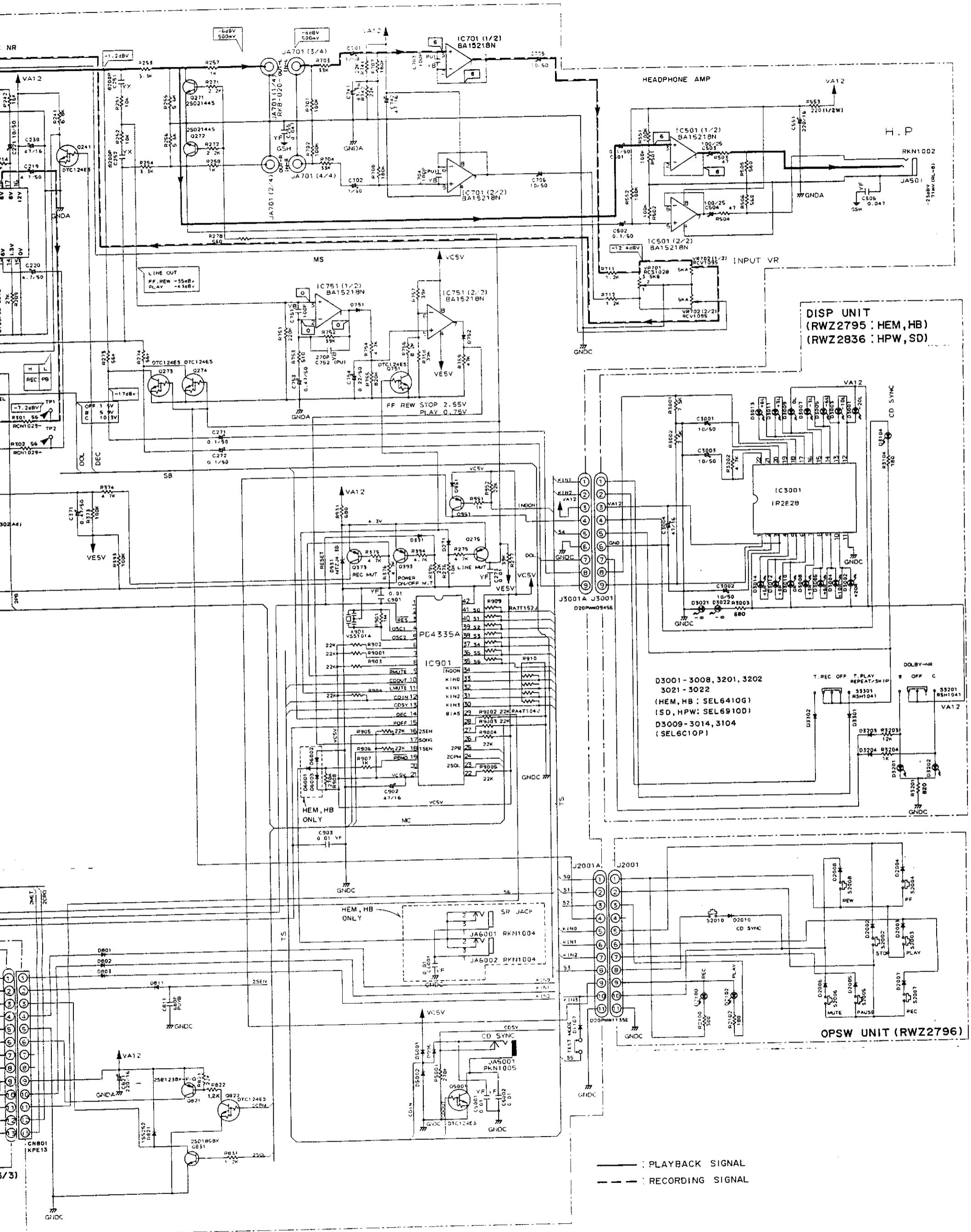
PWSW UNIT  
S1001 : POWER ON - OFF

OPSW UNIT  
S2002 : STOP  
S2003 : PLAY  
S2004 : FF  
S2005 : PAUSE  
S2006 : MUTE  
S2007 : REC  
S2008 : REW  
S2010 : CD SYNC

DISP UNIT  
S3201 : DOLBY - NR B - OFF - C  
S3301 : T, REC OFF  
T, PLAY REPEAT/SKIP

3. SCHEMATIC DIAGRAM





DISP UNIT  
(RWZ2795 : HEM, HB)  
(RWZ2836 : HPW, SD)

D3001-3008, 3201, 3202  
3021-3022  
(HEM, HB : SEL6410G)  
(SD, HPW: SEL6910D)  
D3009-3014, 3104  
(SEL6C10P)

OPSW UNIT (RWZ2796)

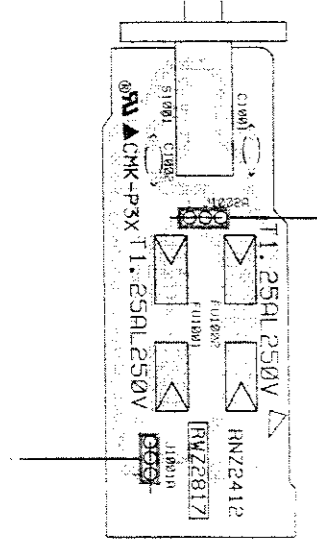
— : PLAYBACK SIGNAL  
- - - : RECORDING SIGNAL



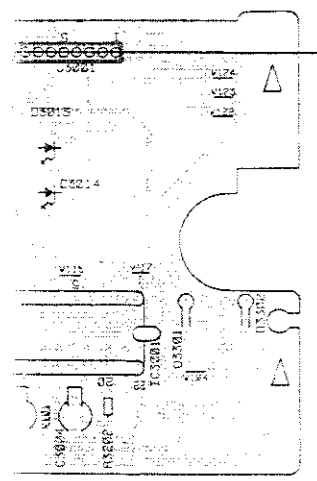


### MAIN UNIT (RWZ 2792 : HEM, HB) (RWZ 2833 : HPW, SD)

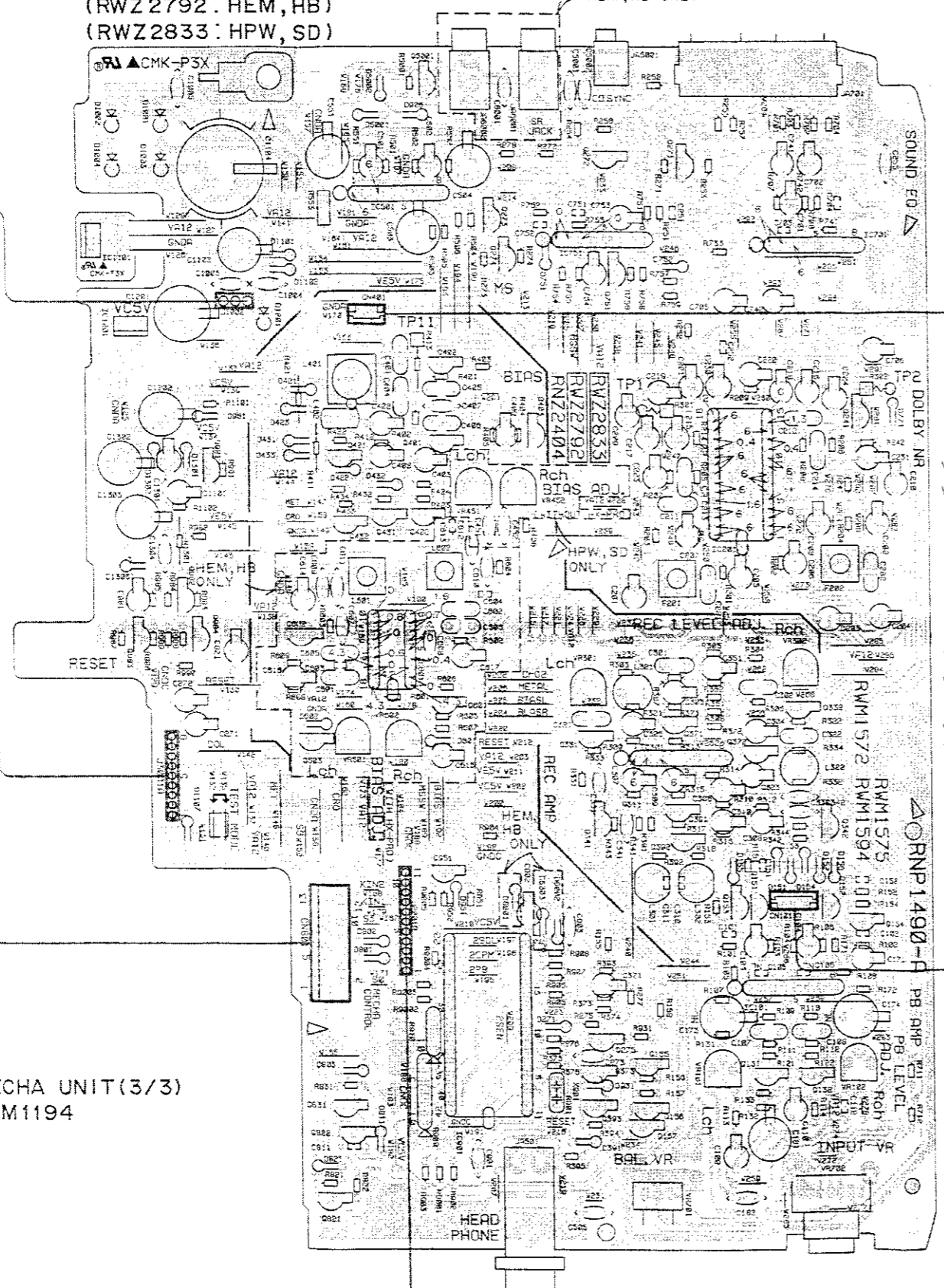
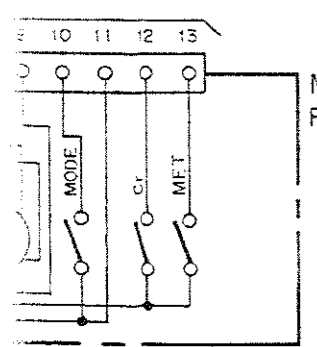
### PWSW UNIT



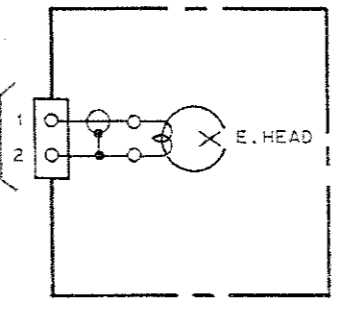
### HPW, SD)



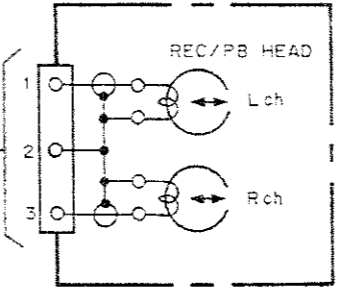
### MECHA UNIT (3/3) RYM1194



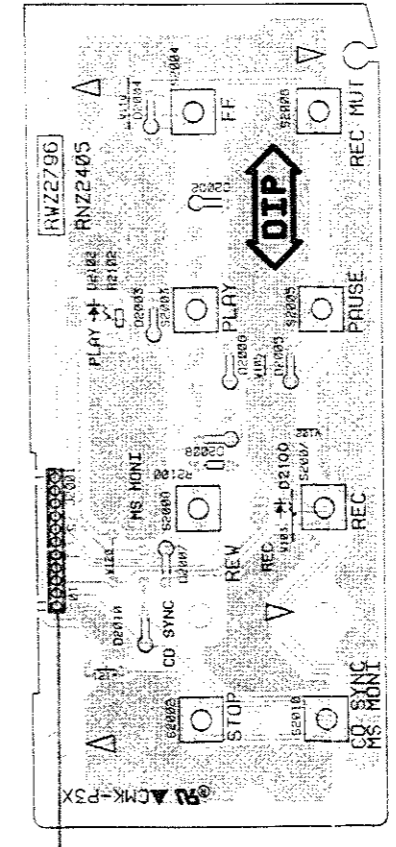
### MECHA UNIT (2/3) RYM1194



### MECHA UNIT (1/3) RYM1194



### OPSW UNIT (RWZ2796)



Q500:	Q272	IC501	Q271
IC110:	Q273	IC751	IC701
	Q274	C751	
IC1201	Q402	Q241	Q403
VR451	Q404	Q421	Q201
VR452	Q981	Q422	Q431
		Q432	
Q982	Q602	Q601	Q332
Q983	Q603	Q331	Q372
VR302	Q301	Q391	Q341
VR301	Q392	Q342	Q392
VR601	Q951	Q153	Q151
VR602		Q152	Q154
IC901	IC101	Q275	Q155
VR102		Q373	Q131
VR101		Q631	Q132
		Q622	Q393
VR702			Q156
VR701		Q821	Q157

P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		Diode
		Zener diode
		LED
		Varistor
		Thermistor
		Inductor
		Coil
		Transformer
		Relay
		Electrolytic capacitor
		Ceramic capacitor
		Silver capacitor
		Electrolytic capacitor (Non-polarized)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Balanced)
		Power capacitor
		Surface resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

- This PCB connection diagram is viewed from the pattern indicated.
- 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.
- The capacitor terminal marked with - shows negative terminal.
- The diode marked with ◯ shows cathode side.
- The transistor terminal marked with ◯ shows emitter.

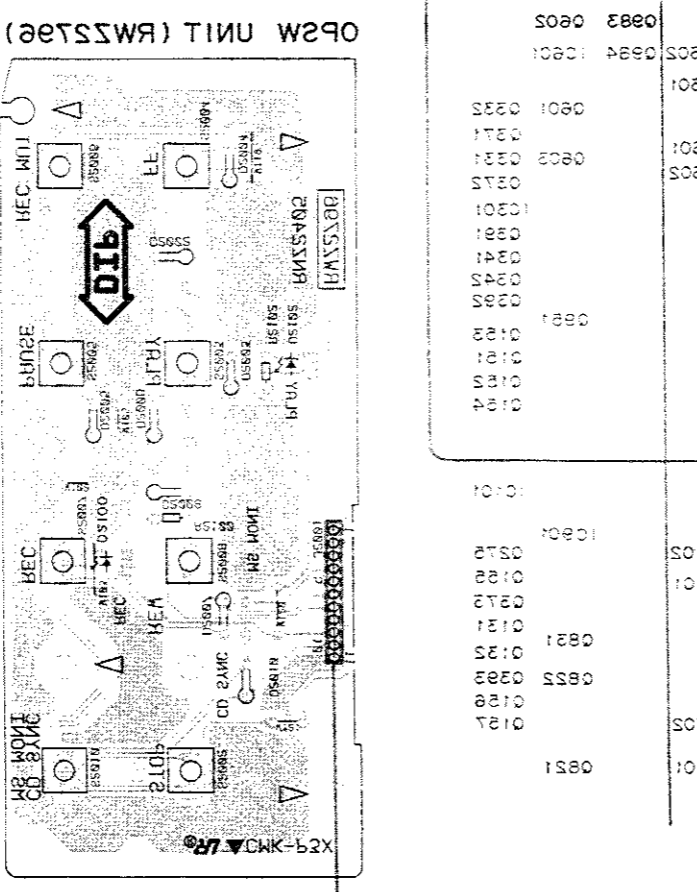
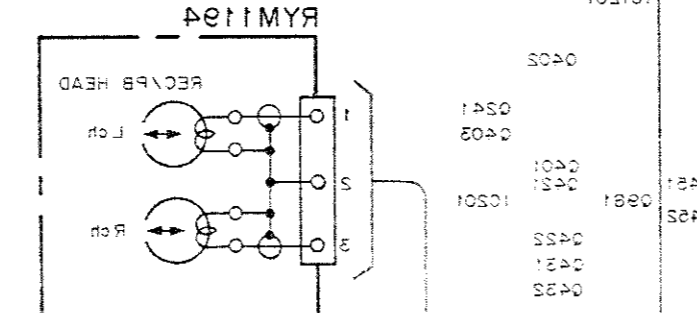
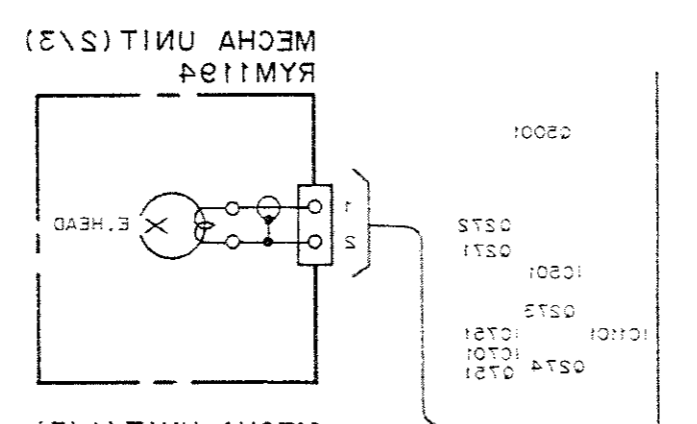
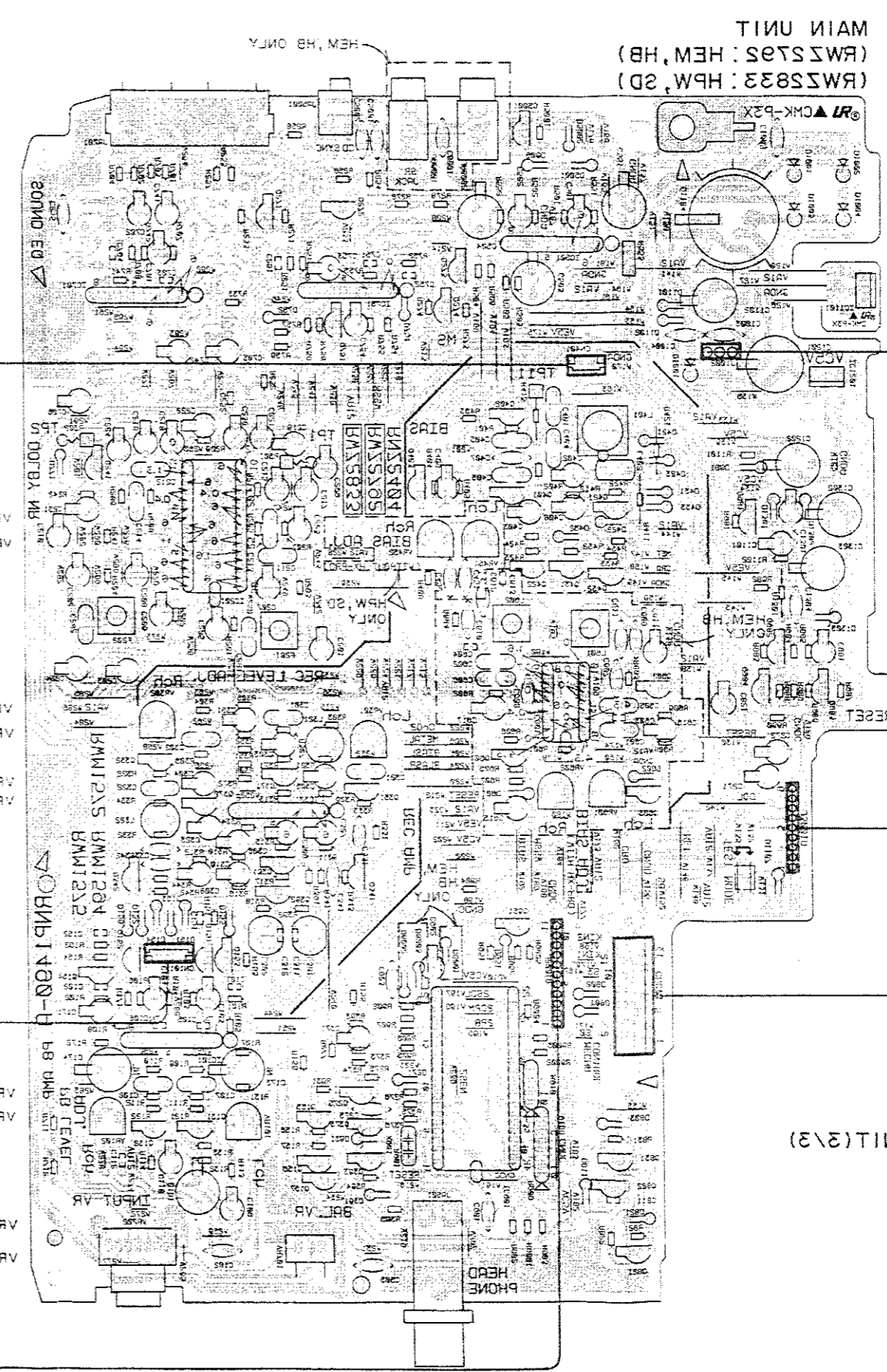
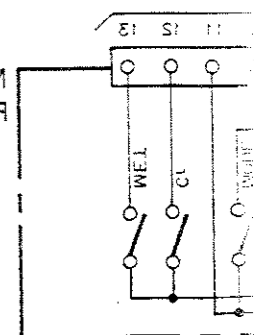
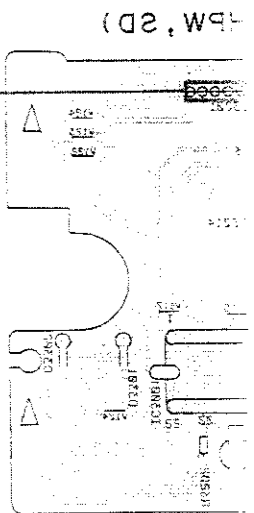
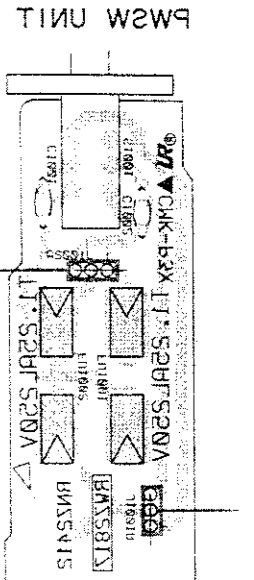
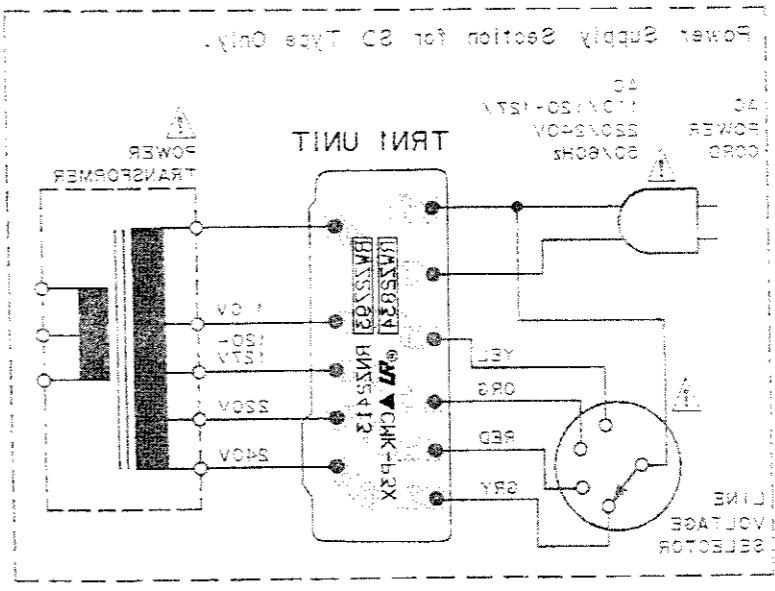
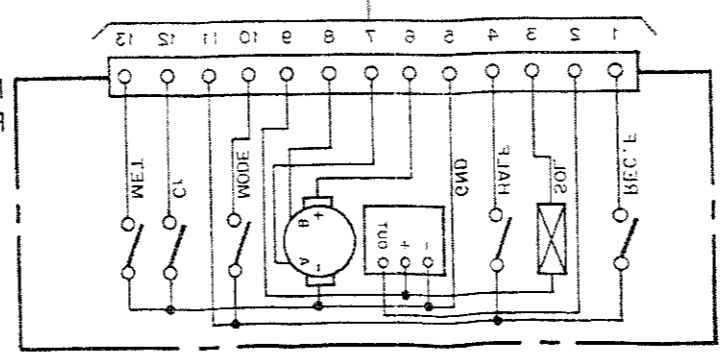
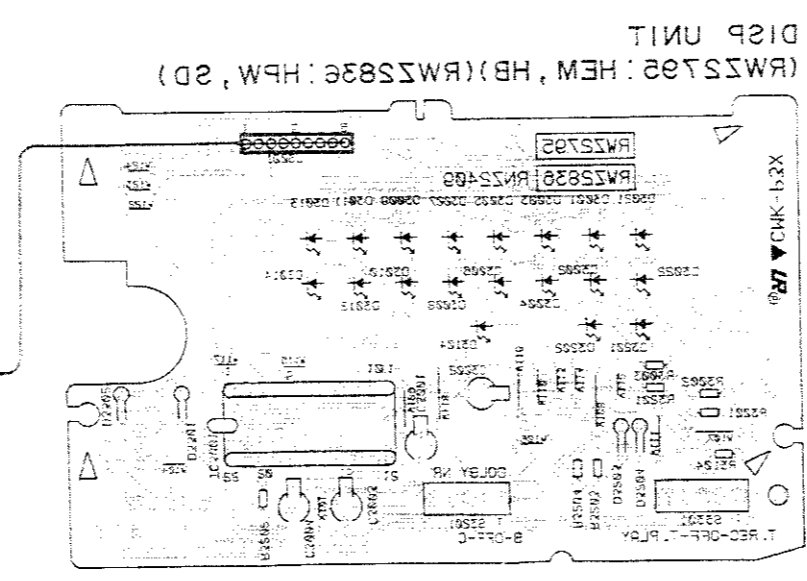
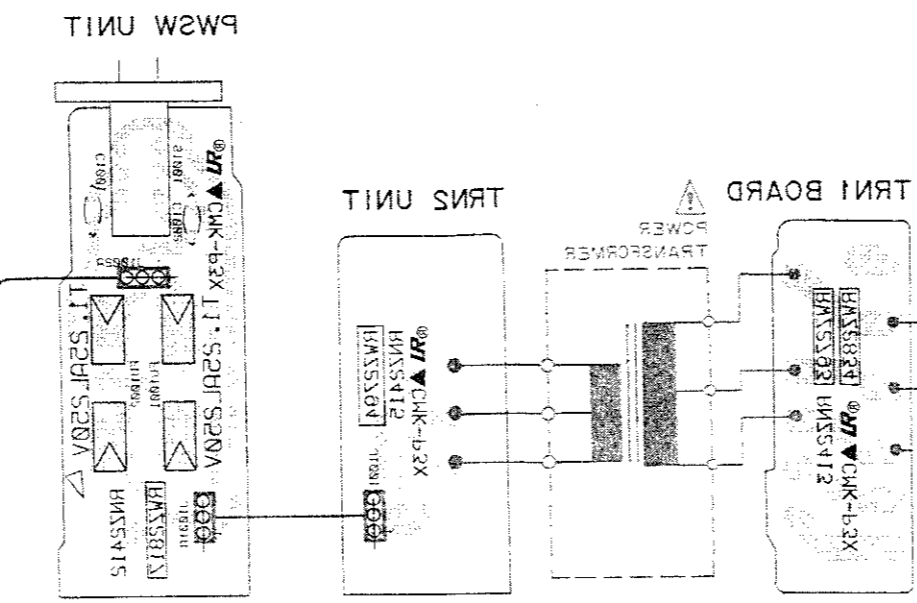
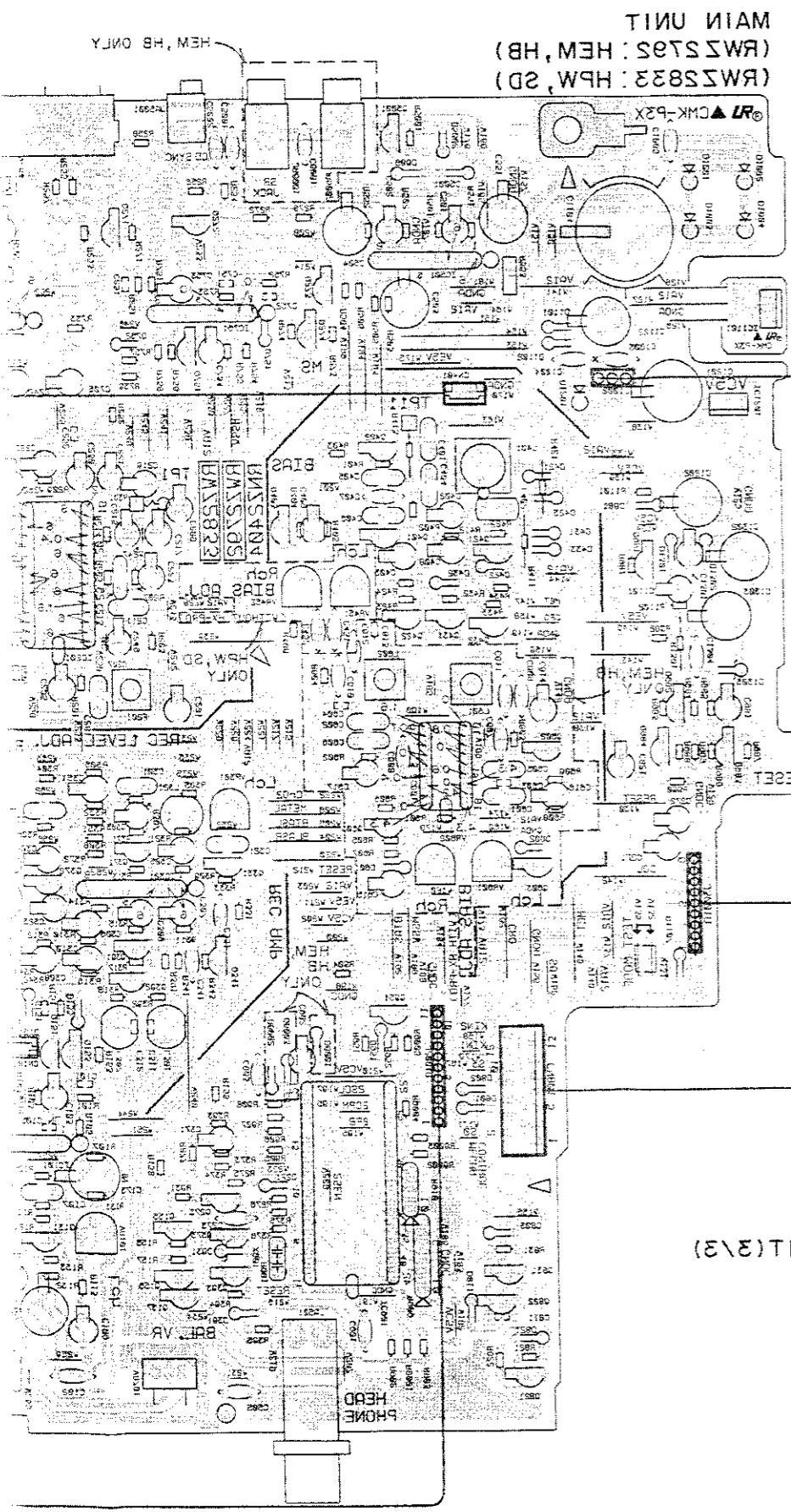


Table with 2 columns: Component ID (e.g., AR301, AR302) and corresponding numerical values.

Vertical text labels: A, B, C, D along the left margin.

# 4. PCB CONNECTION DIAGRAM

• View from soldering side



- Line Voltage Selection
1. Disconnect the AC power cord.
  2. Remove the cover.
  3. Change the connection of TRN 1 BOARD primary pins.

Terminal No. of TRN 1 BOARD	Voltage
①	230V
②	240V

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

Part No.	Description
AWX-193	230V label
AWX-192	240V label

A

B

C

D

## 5. ADJUSTMENTS

### 5.1 MECHANICAL ADJUSTMENT

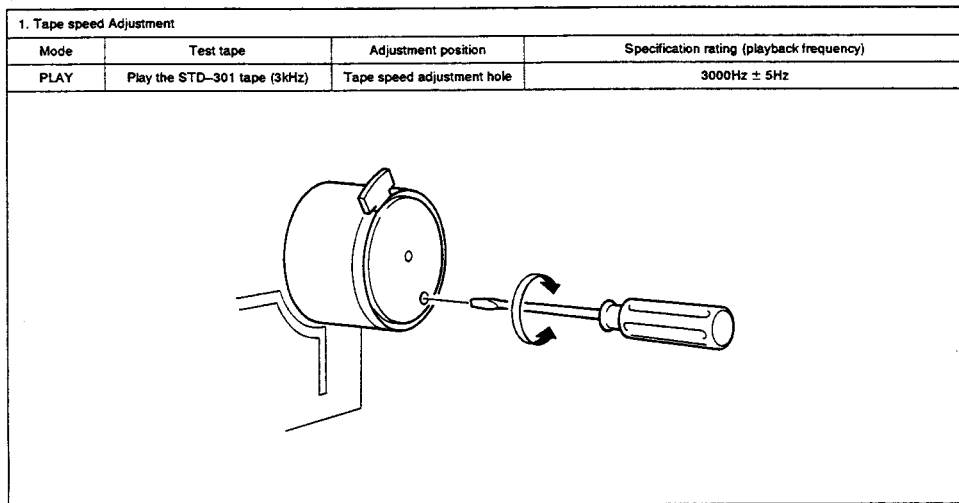


Fig. 5-1 Tape speed adjustment

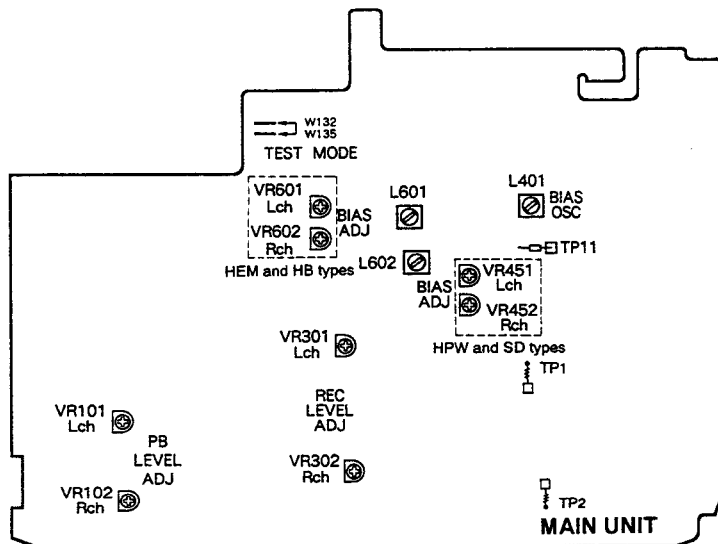


Fig. 5-2 Adjusting points

## 5.2 ELECTRICAL ADJUSTMENTS

### Adjustment Conditions

- The mechanical adjustments must be completed first.
- The head must be cleaned and demagnetized.
- Turn power on allow the deck to warm up for at least a few minutes before commencing any electrical adjustments.
- The reference signal is 0 dBV=1 Vrms.
- Connect a 50 kΩ (or between 47k to 52 kΩ ) load resistance to the OUTPUT terminals.
- 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. 5-3)
- STD-631 : NORMAL blank tape
- STD-621 : CrO<sub>2</sub> 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.

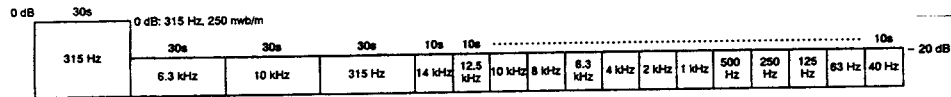
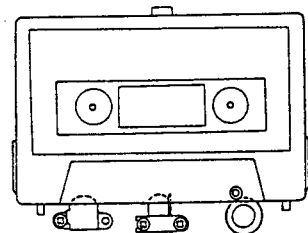


Fig. 5-3 Constants of the test tape STD-331E



Head azimuth adjustment screw

Fig. 5-4 Head azimuth adjustment

### List of Adjustments

#### Playback sections

- Head azimuth adjustment.
- Playback level adjustment.

#### Recording sections

- Bias oscillator adjustment.
- Recording bias adjustment.
- Recording level adjustment.
- Level meter check

NOTE: This unit has an automatic tape selection feature.

## 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. 5-4)	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 (Rich)	TP. 1 (Lch) TP. 2 (Rich)	-6.7 dBV	This adjustment must be performed accurately for proper Dolby level setting.

## RECORDING SECTION

### 1. Bias Oscillator Adjustment (HEM and HB types only)

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	REC	Load the STD-610 test tape with no input signal.	Deck L401	TP. 11	105 kHz ± 0.3 kHz	

### 2. 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 6.3 kHz signals at -20 dBV input level and playback.	Deck *1 VR801 (Lch) VR802 (Rich) *2 VR451 (Lch) VR452 (Rich)	LINE OUT		Repeatedly record, playback and adjust so that the playback level of 6.3 kHz signal becomes +0.5dB ± 0.5 dB when compared with the 315 Hz signal.

Note : \*1 HEM and HB types. \*2 HPW and SD types.

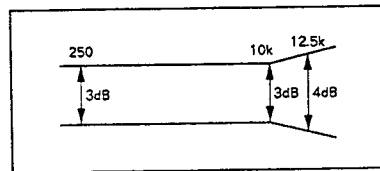
### 3. Recording Level Adjustment

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	REC	Apply a 315 Hz signal to the line input terminals, load the STD-631 test tape.	Volume of the output level of the oscillator		-11.2 dBV	
2.	REC	Record the above signal onto the STD-631 test tape, and playback.	Deck VR301 (Lch) VR302 (Rich)	TP. 1 (Lch) TP. 2 (Rich)		Repeatedly record, playback and adjust so that the playback signal level becomes -11.2dBV.
3.	REC	Record the above signal onto the STD-621 test tape, and playback.	Check		-11.2 dBV ± 1.5 dB	
4.	REC	Record the above signal onto the STD-610 test tape, and playback.	Check		-11.2 dBV ± 1.5 dB	

### 4. Level Meter Check

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.	Volume of the output level of the oscillator	TP. 1 (Lch) TP. 2 (Rich)		Check that the level meters "0 dB" light up within -7.2 dBV ± 2 dB of the signal output level.

### PLAY BACK



### RECORDING

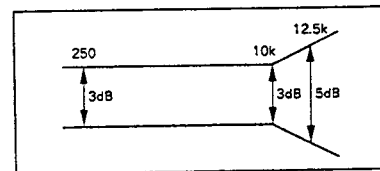


Fig. 5-5 Frequency response zone

## 6. FOR HB, HPW AND SD TYPES

### CONTRAST OF MISCELLANEOUS PARTS

- NOTES:
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
  - The  $\Delta$  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-S220/HB, HPW, SD and HEM have the same construction except for the following:

Mark	Symbol & Description	Part No.				Remarks
		HEM type	HB type	HPW type	SD type	
NSP	MAIN unit	RWZ2792	RWZ2792	RWZ2833	RWZ2833	for Power transformer
	DISP unit	RWZ2795	RWZ2795	RWZ2836	RWZ2836	
NSP	TRN1 unit (* 1)	.....	.....	.....	.....	
NSP	TRN1 board	RNZ2413	RNZ2413	RNZ2413	RNZ2413	
$\Delta$	AC power cord	RDG1026	RDG1024	RDG1025	RDG1027	
$\Delta$	Voltage selector (AC110/120 - 127/220/240V)	.....	.....	.....	PSB1002	
$\Delta$	Power transformer (AC220/240V)	RTT1227	RTT1227	RTT1227	.....	
$\Delta$	Power transformer (AC110/120 - 127/220/240V)	.....	.....	.....	RTT1226	
	Insulator	PNW1912	PNW1912	.....	.....	
	Leg assembly	.....	.....	REC - 369	REC - 369	
NSP	Door pocket	RAH2174	RAH2174	RAH2213	RAH2213	
	Front panel	RAH2175	RAH2175	RAH2214	RAH2214	
	Rear panel	RNA1645	RNA1645	RNA1657	RNA1656	
	Packing case	RHG1421	RHG1426	RHG1426	RHG1427	
	Pad spacer A	.....	RHC1039	RHC1039	.....	
	Pad spacer B	.....	RHC1041	RHC1041	.....	
	Connection cord with mini plug	PDE - 319	PDE - 319	.....	.....	
	Operating instructions (English/French/German/Italian/ Dutch/Swedish/Spanish/ Portuguese)	RRE1067	.....	.....	.....	
	Operating instructions (English/Spanish)	.....	RRE1073	RRE1073	RRE1073	

Note: \* 1 TRN1 unit has no service part.

### MAIN UNIT

RWZ2833 and RWZ2792 have the same construction except for the following:

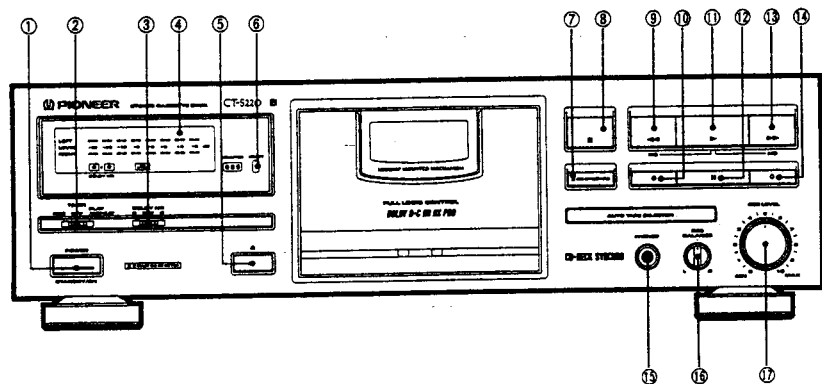
Mark	Symbol & Description	Part No.		Remarks
		RWZ2792	RWZ2833	
	IC601	UPC1297CA	.....	
	Q601, Q602	2SA1309A	.....	
	Q603	DTC124ES	.....	
	D601, D602, D6001 - D6003	1SS254	.....	
	L401	RTD1039	RTD1065	
	L601, L602	RTD1046	.....	
	C451, C452	.....	CCCSL101K500	
	C601, C602	CFTXA103J50	.....	
	C603, C604	CKPUYB821K50	.....	
	C605, C606	CFTXA223J50	.....	
	C607, C608	CGCYX473K25	.....	
	C609, C610	CCCSL101K500	.....	
	C611, C612 (430p)	RCG1005	.....	
	C613	CKPUYB101K50	.....	
	C614	CEASR10M50	.....	
	C615, C617	CEAS100M50	.....	
	C616	CEAS4R7M50	.....	
	C6001	CKCYF103Z50	.....	
	R411	RD1/2LF331J	RD1/2LF181J	
	R421	RD1/2LF221J	RD1/2LF121J	
	R601, R602, R606	RD1/6PM223J	.....	
	R603, R604	RD1/6PM184J	.....	
	R605	RD1/6PM153J	.....	
	R607, R608	RD1/6PM472J	.....	
	R609	RD1/6PM103J	.....	
	R1101	RD1/6PM302J	RD1/6PM332J	
	R1102	RD1/6PM332J	RD1/6PM302J	
	VR451, VR452 (220k)	.....	RCP1049	
	VR601, VR602 (22k)	RCP1046	.....	
	JA6001, JA6002	RKN1004	.....	

### DISP UNIT

RWZ2836 and RWZ2795 have the same construction except for the following:

Mark	Symbol & Description	Part No.		Remarks
		RWZ2795	RWZ2836	
	D3001 - D3008, D3021, D3022, D3201, D3202	SEL6410G	SEL6910D	

## PANEL FACILITIES



### POWER STANDBY/ON switch

THE POWER SWITCH IS SECONDARY CONNECTED AND THEREFORE DOES NOT SEPARATE THE UNIT FROM MAINS POWER IN STANDBY POSITION.

### TIMER mode selector

**OFF:**  
Normally, be sure to leave the switch in this position.

### REC:

For timer recording.

### PLAY/REPEAT:

For timer playback or for repeat playback.

- Recording or playback may suddenly start when turning the power on with this switch in the REC or PLAY/REPEAT position.

### DOLBY\* NR switch

Set this switch to ON, B-TYPE or C-TYPE (CT-S220 only) for recording with the built-in Dolby Noise Reduction Systems and for playback of tapes which have been recorded using the Dolby Noise Reduction Systems.

For other tapes, set the left DOLBY NR switch to OFF.

*Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.*

*"DOLBY" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.*

*For CT-S220 U.K. model*

*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.*

### Function display

### Eject button (⏏)

Press to open the cassette door after you have pressed the stop button (■) and the tape has stopped.

### ⑤ Tape COUNTER RESET button

Resets the tape counter reading to "000".

### ⑦ CD SYNCHRO recording button

### ⑧ Stop button (■)

To stop all operations.

### ⑨ Rewind button (◀)

To rewind the tape in the direction of the arrows.

When this button is pressed once during playback of a selection, the same selection will be played again. If pressed in the blank between two selections, the first selection before the current tape position will be played. The unit will skip one selection in reverse direction for each time the ◀ button is pressed.

### ⑩ Recording button (●)

When the recording (●) button is pressed, the unit is set to recording standby mode.

Press the pause (■) button or playback (▶) button when ready to record.

The unit will not enter the recording standby mode if a cassette with the erasure prevention tabs removed is loaded.

### ⑪ Playback button (▶)

To start playback.

### ⑫ Pause button (■)

To stop tape transport momentarily during recording or playback. Press the button again to resume operation. This can also be done by pressing the playback (▶) button. This button does not work during fast-forward and rewind.

### ⑬ Fast forward button (▶▶)

To fast-forward the tape in the direction of the arrows.

When pressed during playback, the unit will skip one selection in forward direction for each time the ▶▶ button is pressed.

### ⑭ Recording mute button (○)

Press this button during recording to create a blank portion of approx. 4 seconds on the tape. The unit will then enter the recording standby mode.

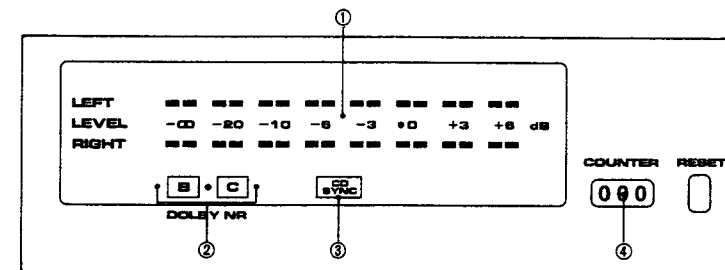
### ⑮ PHONES jack

### ⑯ REC BALANCE control

Balancing the recording level between left (L) and right (R) channels.

### ⑰ REC LEVEL control

## FUNCTION DISPLAY



### ① LEVEL meter

**LEFT:** Left channel.

**RIGHT:** Right channel.

### NOTE:

The ● mark on the meter scale indicates the reference lever for the DOLBY NR System.

### ② DOLBY B/C NR indicator

Indicates the selected Dolby Noise Reduction Systems, B-type or C-type.

### ③ CD SYNC indicator

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

### ④ Tape COUNTER



## 8. SPECIFICATIONS

Systems .....	4 track, 2-channel stereo
Heads .....	"Hard permalloy" recording/playback head × 1 "Ferrite" erasing head × 1
Motor .....	DC servo capstan motor × 1
Wow and Flutter .....	No more than 0.075% (WRMS) No more than ±0.18% (DIN)
Fast Winding Time .....	Approximately 110 seconds (C-60 tape)
Frequency Response (±6 dB)	
-20 dB recording:	
TYPE I (Normal) tape .....	30 to 16,000 Hz
TYPE II (High/CrO <sub>2</sub> ) tape .....	30 to 16,000 Hz
TYPE IV (Metal) tape .....	30 to 16,500 Hz
Signal-to-Noise Ratio (Dolby NR off) .....	More than 56 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 1.0% (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 3.4 kΩ)
Headphone .....	0.6 mW (Load impedance 8 Ω)

### Subfunctions

- Dolby B-type and C-type noise reduction systems
- Dolby HX Pro Headroom Extension system
- Auto tape selector

- Headphones jack
- Music search up to ± 15 selections
- CD - DECK SYNCHRO recording
- Automatic space recording mute
- REC BALANCE control
- 7 + 1 seg LED peak meter
- Timer Recording/Playback
- Repeat playback
- System remote control available

### Miscellaneous

Power Requirements .....	a.c. 220—230 Volts~, 50/60 Hz
Power Consumption .....	16W
Dimensions .....	420 (W) × 125 (H) × 280 (D) mm
Weight (without package) .....	3.5 kg

### Accessories

Operating instructions .....	1
Connection cord with pin plugs .....	2
CD - DECK SYNCHRO control cord .....	1
Remote control cord .....	1

### NOTE:

*Specifications and design subject to possible modifications without notice owing to improvements.*