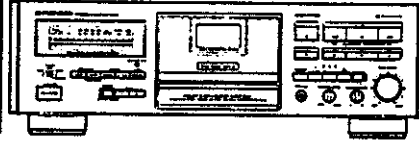


# Service Manual

**PIONEER®**  
The Art of Entertainment



ORDER NO.  
ARP2758

STEREO CASSETTE DECK

# CT-95

## CT-S920S

## CT-S920S-G

CT-95, CT-S920S AND CT-S920S-G HAVE THE FOLLOWING:

Type	Model			Power Requirement	Remarks
	CT-95	CT-S920S	CT-S920S-G		
HEM	○	○	○	AC220 - 230V, 240V (switchable) *	
SD	○	-	-	AC110V, 120 - 127V, 220V, 240V (switchable)	

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

- This manual is applicable to the following: CT-95/HEM and SD; CT-S920S/HEM; CT-S920S-G/HEM.
- For the following: CT-95/SD; CT-S920S/HEM; CT-S920S-G/HEM, refer to page 37.
- CT-S920S-G is the same as CT-S920S except for color.

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# 1. EXPLODED VIEWS AND PARTS LIST

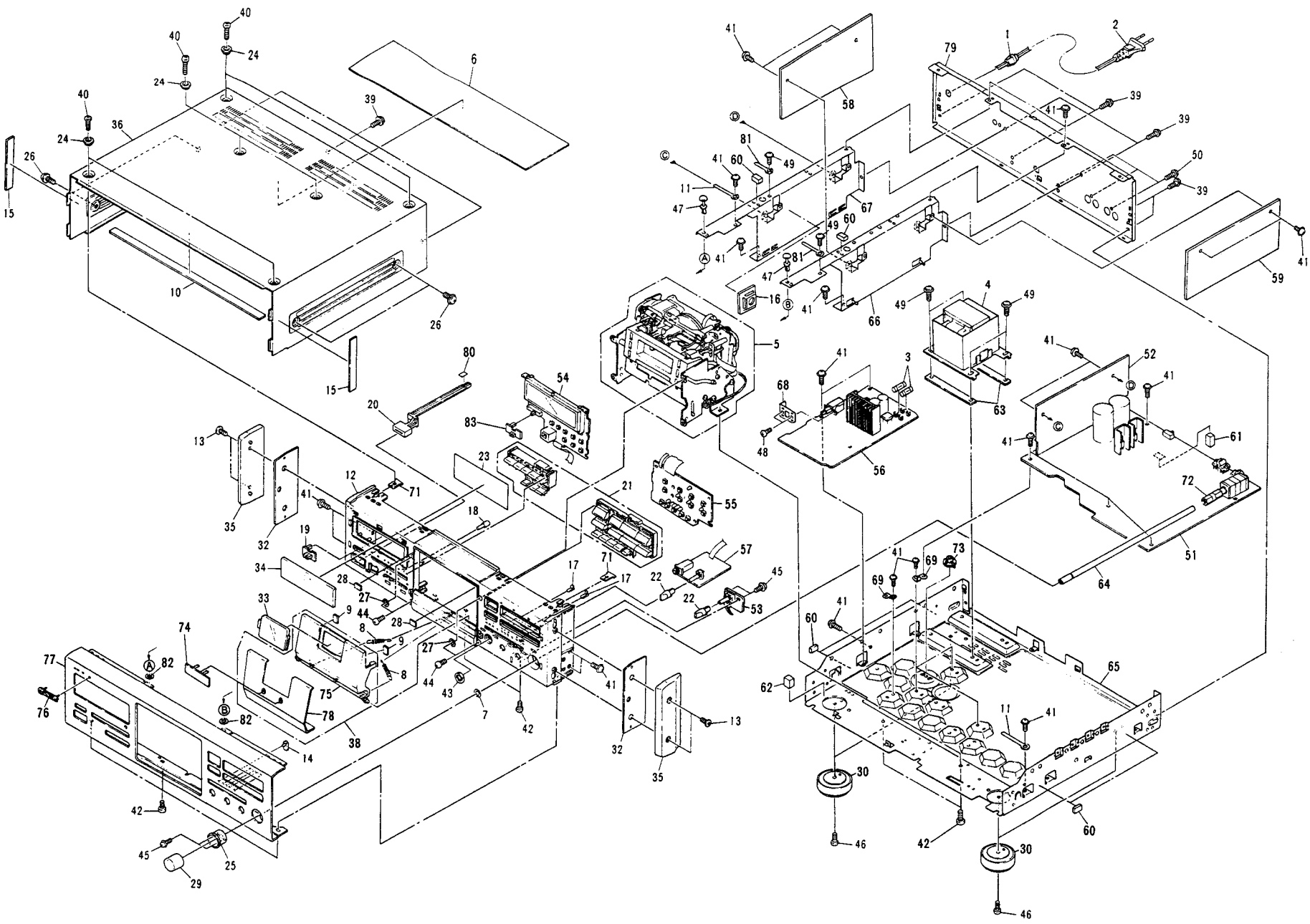
## 1.1 EXTERIOR

### NOTES:

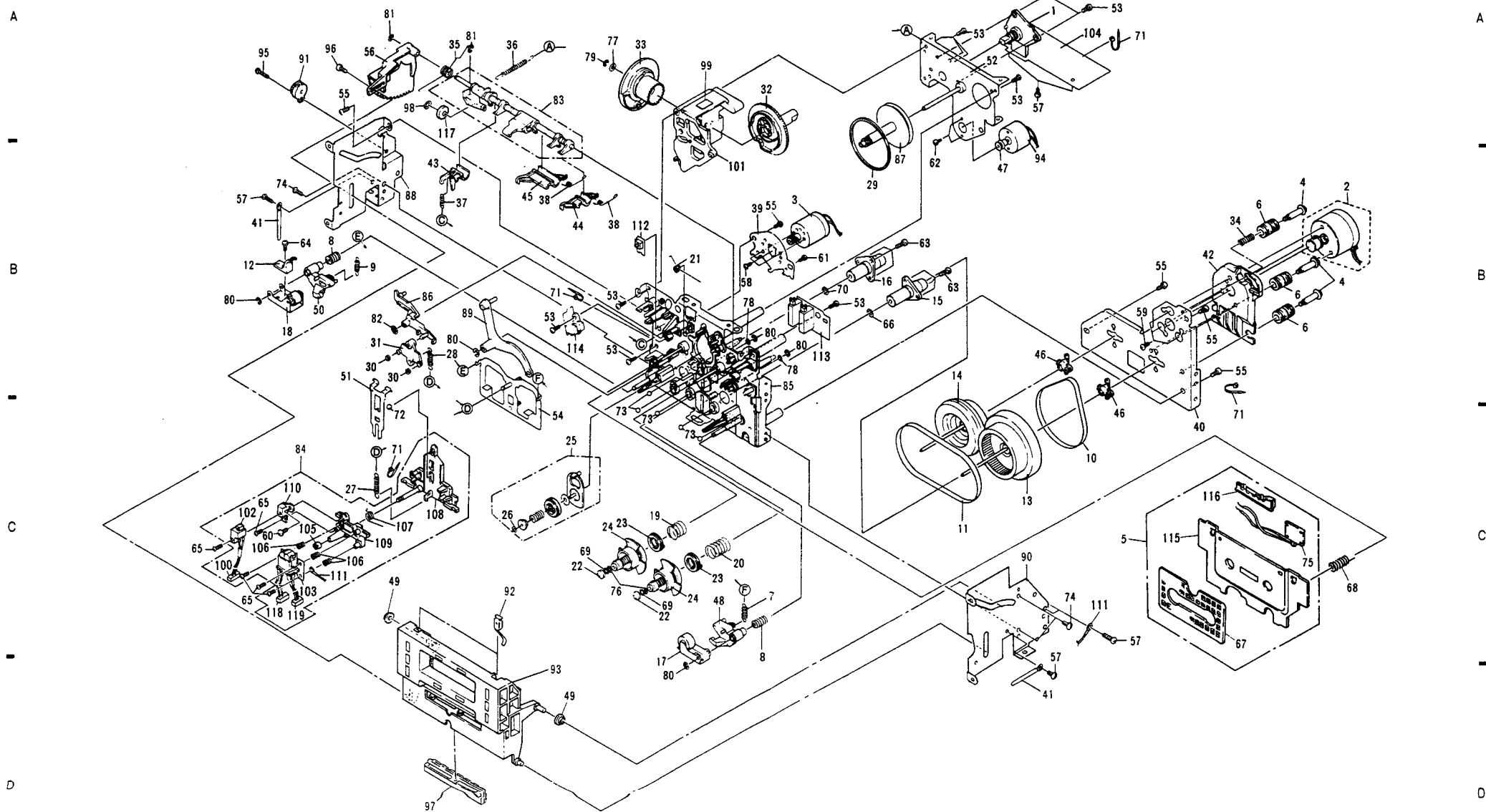
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "O" 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.
$\Delta$	1	Strain relief	CM - 22B		41	Screw	IBZ30P080FCC
$\Delta$	2	AC power cord	ADG1036		42	Screw	BBT30P100FZK
$\Delta$	3	FU601, FU602 Fuse (T2A)	REK - 103		43	Nut	RBN - 006
$\Delta$	4	T1 Power transformer	RTT1201		44	Screw	BBZ30P080FZK
O	5	Mechanism unit	RYM1185		45	Screw	BBZ26P080FZK
	6	Absorb plate (B)	PNB1109		46	Screw	IBZ30P150FCC
	7	Washer	REB1019		47	Nylon rivet	RBM - 003
	8	Door coil spring	REH1306		48	Screw	PMA30P060FCU
	9	Door cushion	REB1174		49	Screw	IBZ40P080FCC
	10	Protector	RED1020		50	Screw	IBZ30P100FCC
	11	Cord clamber	RNH - 184		51	Main unit	RWX1081
	12	Panel stay	RNT1176		52	Control unit	RWZ2984
	13	Screw	ABA1131		53	BAL. VR unit	RWZ2985
	14	LED lens	AMR1160		54	FL unit	RWZ2986
	15	Side spacer	PNM1150		55	Operation unit	RWZ2987
NSP	16	Holder	PNW1021	NSP	56	Bias unit	RWZ2988
	17	lens S	PNW1893	NSP	57	Headphone unit	RWZ2989
	18	Counter reset knob	RAA1009	NSP	58	Encode unit	RWZ2743
	19	Side SW knob	RAC1540	NSP	59	Decode unit	RWZ2744
	20	Power button	RAC1657	NSP	60	Rubber spacer (A)	REB1057
	21	Control knob	RAC1658	NSP	61	Rubber spacer	REB1192
	22	Balance knob	RAC1662	NSP	62	Rubber spacer	REB1187
	23	FL filter	RAH1936	NSP	63	Transformer sheet	REE1004
	24	collar	RAT1002	NSP	64	VR shaft	RLA1169
	25	VR ring	RAT1012	NSP	65	Main chassis	RNB1042
	26	Screw	RBA1088	NSP	66	Center stay	RNC1068
	27	Washer	REC1180	NSP	67	Center stay	RNC1069
	28	Door sheet	REB1191	NSP	68	PS holder	RNE1185
	29	VR knob assembly A	RXA1439	NSP	69	PCB base	RNE1221
	30	Leg assembly	AMR1159		70	.....	
	31	.....		NSP	71	Bonnet bracket	RNE1470
	32	Side spacer	PEB1197	NSP	72	Joint	RNK1333
	33	Door lens	RAH1927	NSP	73	PCB stud	RNL - 792
	34	FL lens	RAH2019		74	Badge	RAN1006
	35	Side panel	RAH1931	NSP	75	Door	RNK1756
	36	Bonnet	RXX1427		76	Badge	RAN1011
	37	.....			77	Front panel	RAH2280
	38	Door assembly	REA1002	NSP	78	Door panel	RAH2133
	39	Screw	IBZ30P060FCC	NSP	79	Rear panel	RNA1718
	40	Screw	RBA1098		80	Acetate tape	REH1020
				NSP	81	Cord clamber	DNF1128
				NSP	82	Washer	RBF1017
				NSP	83	Slide SW knob	RAC1540



1.2 MECHANISM UNIT



### Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Rotary encoder	RSX1004	51	Head base set spring	RBL - 026	
	2	Capstan motor assembly	RXM1016	52	Gear chassis assembly	RXA1171	
	3	Reel motor assembly	RXM1018	53	Screw	BBZ26P080FZK	
	4	Step screw	RBA1074	54	Pinch base assembly	RXB - 878	
	5	Cassette plate assembly	RXX1064	55	Screw	BBZ30P080FZK	
	6	Insulator	REB1099	56	Eject lever	RNK1763	
	7	Pinch spring	RBL - 028	57	Screw	BCZ30P060FMC	
	8	Pinch thrust spring	RBL - 030	58	Screw	BMZ26P030FZK	
	9	Sub - pinch spring	RBL - 098	59	Screw	BMZ26P040FMC	
	10	Capstan belt	REB - 501	60	Screw	BMZ26P060FZK	
	11	Capstan belt (A)	REB - 509	61	Screw	BMZ30P080FZK	
	12	Tape guide	RNK1823	62	Screw	PMZ30P040FMC	
	13	Flywheel assembly	RXA1374	63	Screw	PMA26P050FZK	
	14	Sub - flywheel assembly	RXA1375	64	Screw	PMA26P060FZK	
	15	Metal holder assembly (A)	RXA1426	65	Screw	PMZ20P080FZK	
	16	Metal holder assembly (B)	RXA1343	66	Washer	RBF - 030	
	17	Pinch roller arm (R) assembly	RXB - 876	67	Stabilizer B	REB1038	
	18	Pinch roller arm (A) assembly	RXB - 877	68	Earth spring	RBL - 069	
	19	BT spring (A)	RBL - 031	69	Washer	RBF - 076	
	20	BT spring (B)	RBL - 032	70	Washer	RBF1040	
	21	Idler pressure spring	RBL - 033	71	Binder	REC - 371	
	22	Reel shaft cap (B)	RNK - 815	72	Steel ball (3mm)	REF - 022	
	23	BT disk assembly	RXB - 751	73	Steel ball (4mm)	REF - 023	
	24	Reel base assembly	RXB - 874	74	Screw	VCT30P060FZK	
	25	Take - up idler assembly	RXB - 875	75	LED (D3)	SLF - 401C	
	26	Washer	RBF - 065	76	Washer	WA21D040D013	
	27	Head base spring	RBL - 037	77	Washer	WA26N070W040	
	28	Brake spring	RBL - 038	78	Washer	WA32D080D050	
	29	Drive belt	REB1182	79	E ring	YE20FUC	
	30	Brake shoe	REB - 511	80	E ring	YE25FUC	
	31	Brake	RNL - 723	81	E ring	YE30FUC	
	32	Cam gear	RNK1640	82	Snap ring	YS24FBT	
	33	Side cam gear	RNK1765	83	Shift saft assembly	RXB - 885	
	34	Insulator spring	RBH1226	84	Head base assembly	REA1020	
	35	Eject spring	RBL - 039	85	Mechanism chassis assembly	RXA1366	
	36	Half set arm spring	RBL - 040	86	Brake lever	RNK1638	
	37	REC functioning spring	RBL - 041	87	Second pulley assembly	RXA1350	
	38	Detection functioning spring	RBL - 042	88	Door frame (L)	RNE1475	
	39	Reel motor mounting plate	RNE1604	89	Finch lever assembly	RXA1360	
	40	Flywheel holder	RNH - 304	90	Door flame (R)	RNE1476	
	41	Cord clamper	RNH - 184	91	Damper assembly	VXA1153	
	42	Motor bracket	RNK1497	92	Half pressure spring	RBK1004	
	43	REC detector arm	RNL - 733	93	Door pocket	RNK1865	
	44	Chrom detector arm	RNL - 734	94	Loading motor	VXM1034	
	45	Metal detector arm	RNL - 735	95	Screw	PBZ20P060FMC	
	46	Thrust holder	RNL - 743	96	Screw	BBZ20P060FMC	
	47	Motor pulley	PNW1634	97	Stabilizer	REB1161	
	48	Pressure arm (R)	RNL - 725	98	Washer	RBF - 057	
	49	Collar	RNL - 742	99	Tape (B)	REH1003	
	50	Pressure arm (L)	RNL - 726	100	Connector assembly (2P)	RKP1553	

Mark	No.	Description	Part No.
NSP	101	Gear base assembly	RXB - 882
NSP	102	E head	RPB1046
NSP	103	R & P head	RPB1049
NSP	104	Connector unit	RWZ2459
NSP	105	Adjustment nut	RBA1047
NSP	106	Head adjustment spring C	RBL - 034
NSP	107	Hight spring	RBL - 036
NSP	108	Head base	RNG - 334
NSP	109	Sub-head base	RNG - 335
NSP	110	E head base	RNG1033
NSP	111	Earth lead assembly	RDF - 001
NSP	112	REC switch unit	RWZ2457
NSP	113	Tape selector unit	RWZ2458
NSP	114	Sensor unit (B)	RWZ2460
NSP	115	Cassette plate	RAH1306
NSP	116	Lead wire holder	RNL - 793
NSP	117	Shif roller	RNL - 731
NSP	118	Connector assembly (4P)	RKP1559
NSP	119	Connector assembly (4P)	RKP1517

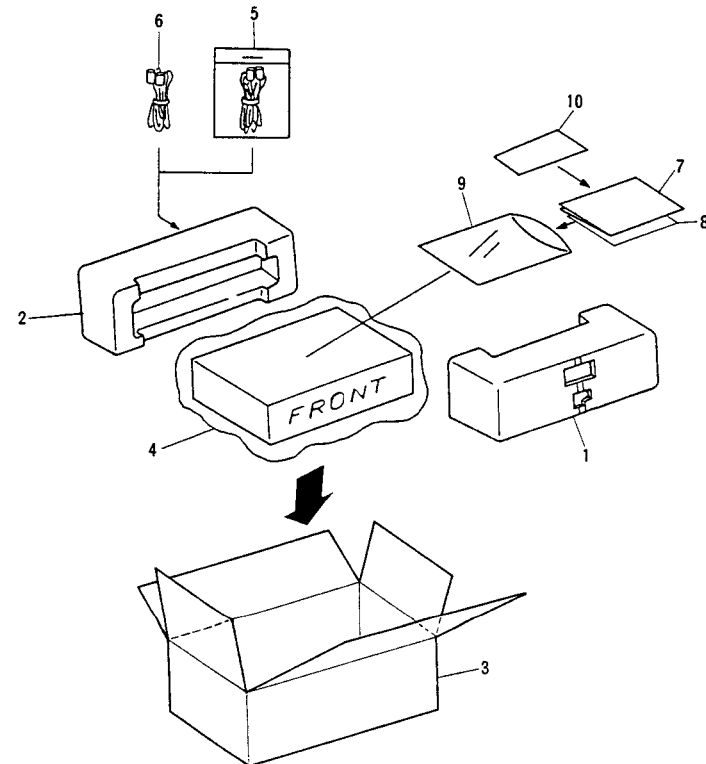
## 2. PACKING AND PARTS LIST

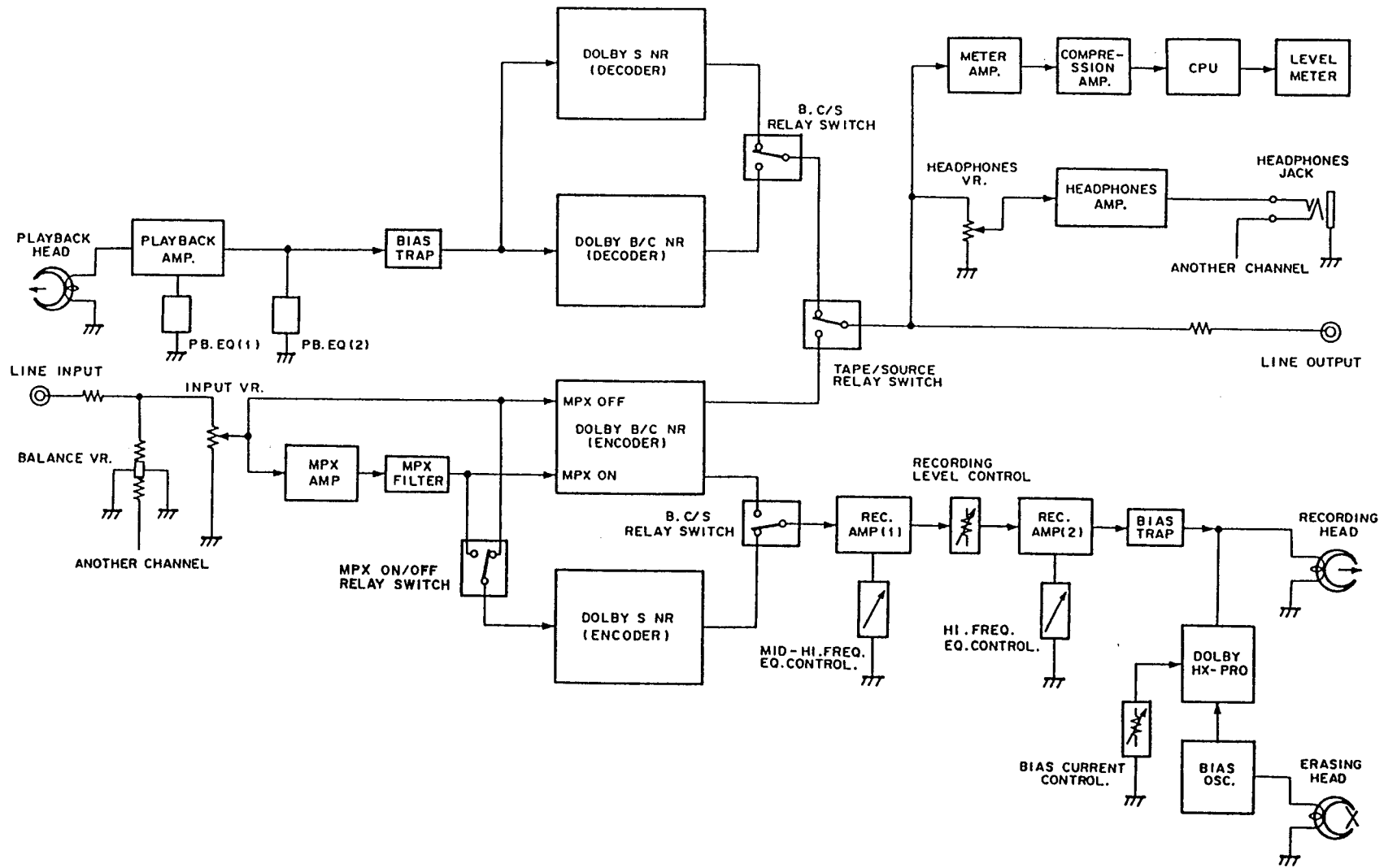
### NOTES:

- 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.
	1	Pad (F)	RHA1073
	2	Pad (R)	RHA1074
	3	Packing case	RHG1489
	4	Sheet	RHX1007
	5	Connection cord assembly	RDE1013
	6	Control cord	RDE1030
	7	Operating instructions (German/Italian/Dutch/ Swedish/Spanish/Portuguese)	RRD1138
	8	Operating instructions (English/French)	RRE1078
	9	Plastic bag	Z21 - 038
NSP	10	Warranty card	ARW - 088





### 3. BLOCK DIAGRAM



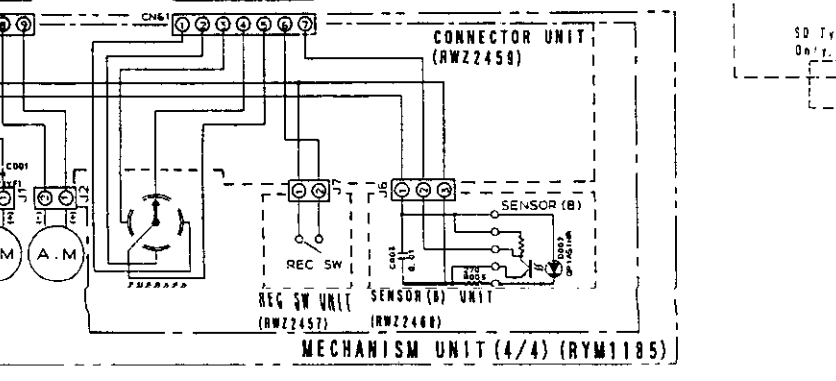
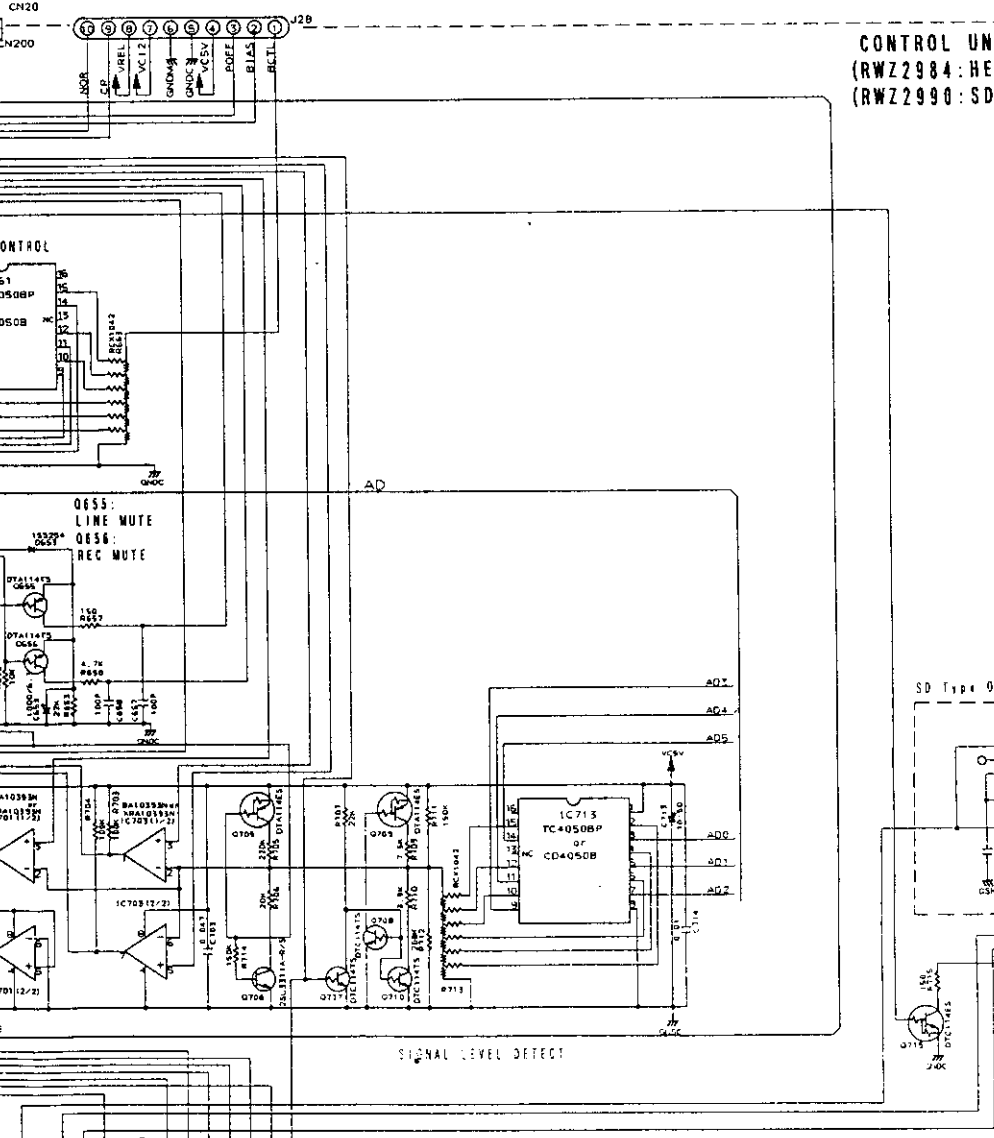
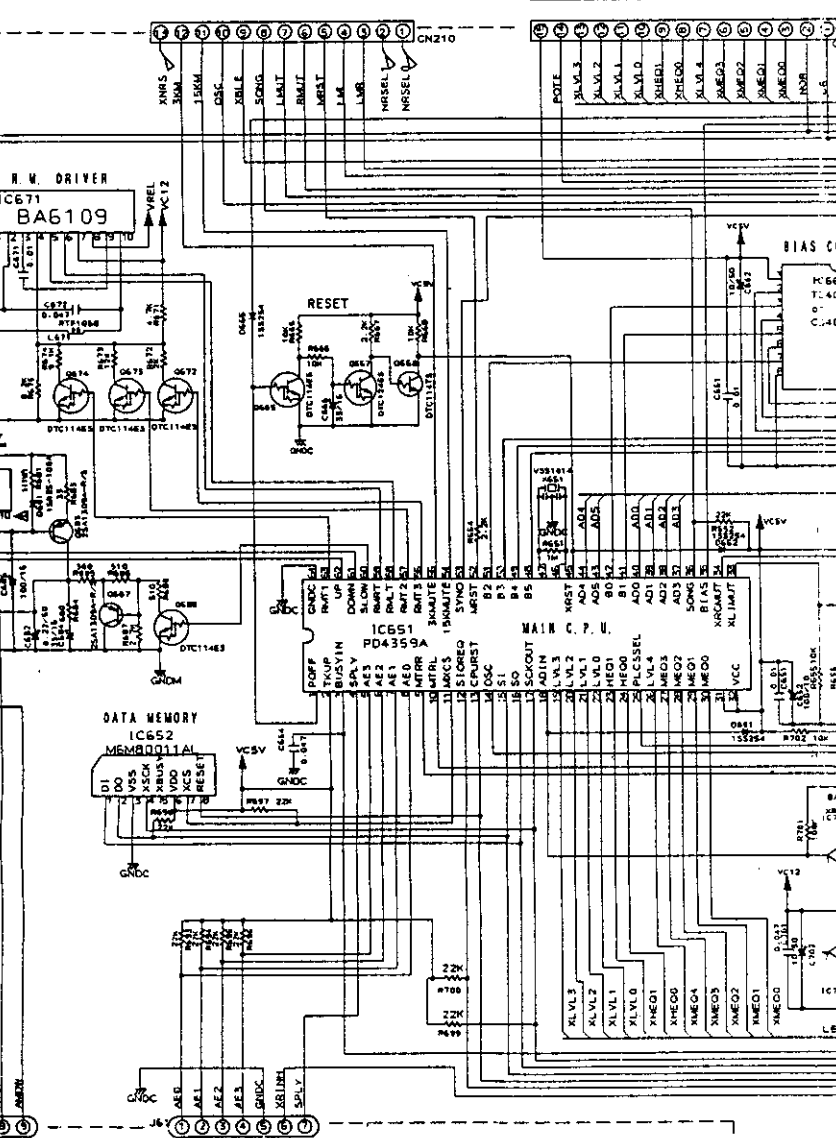
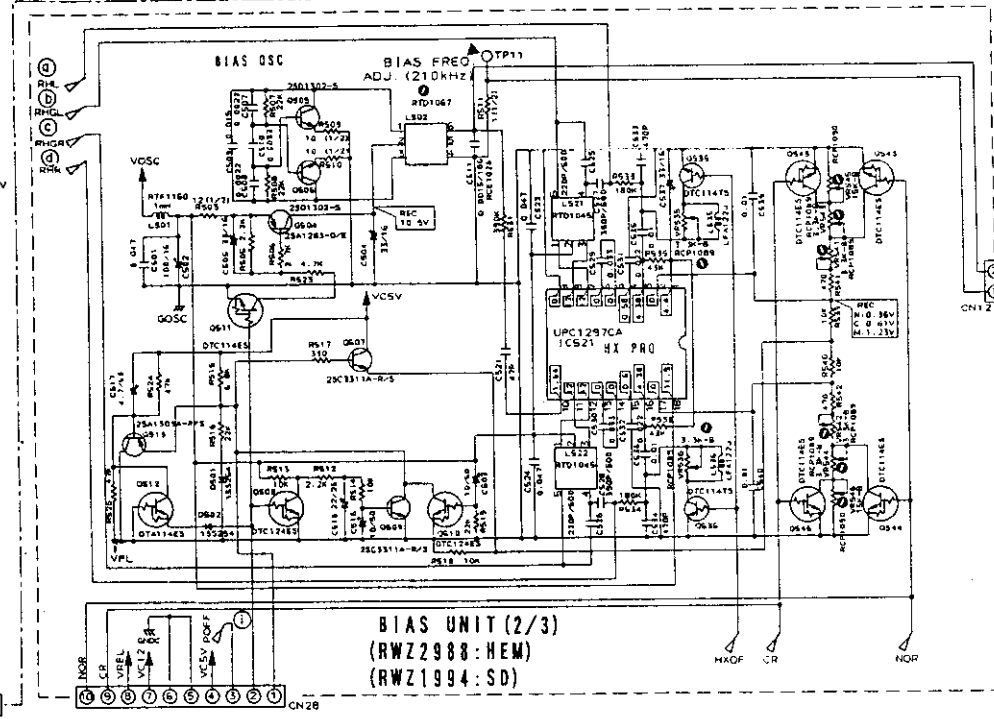
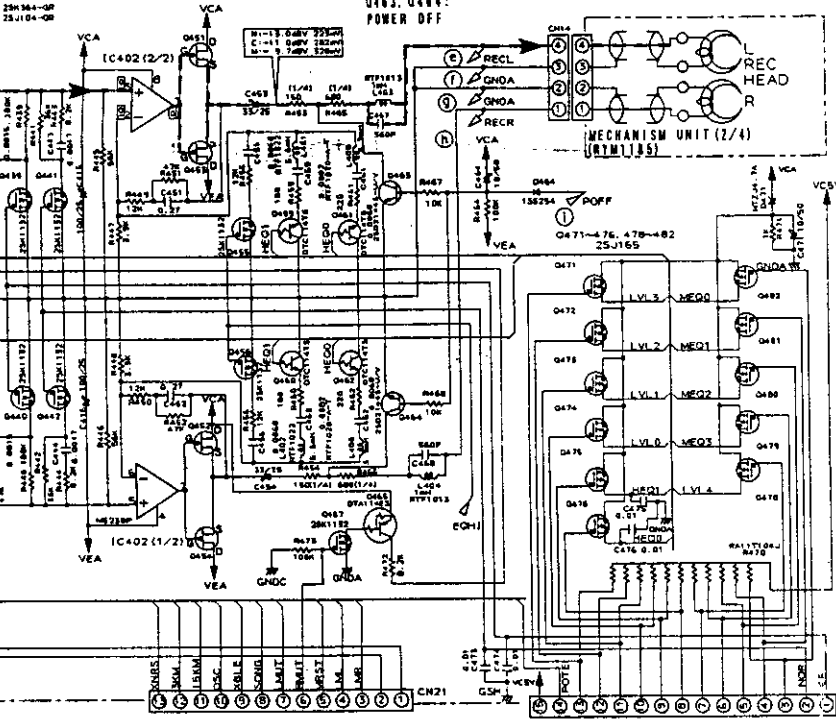
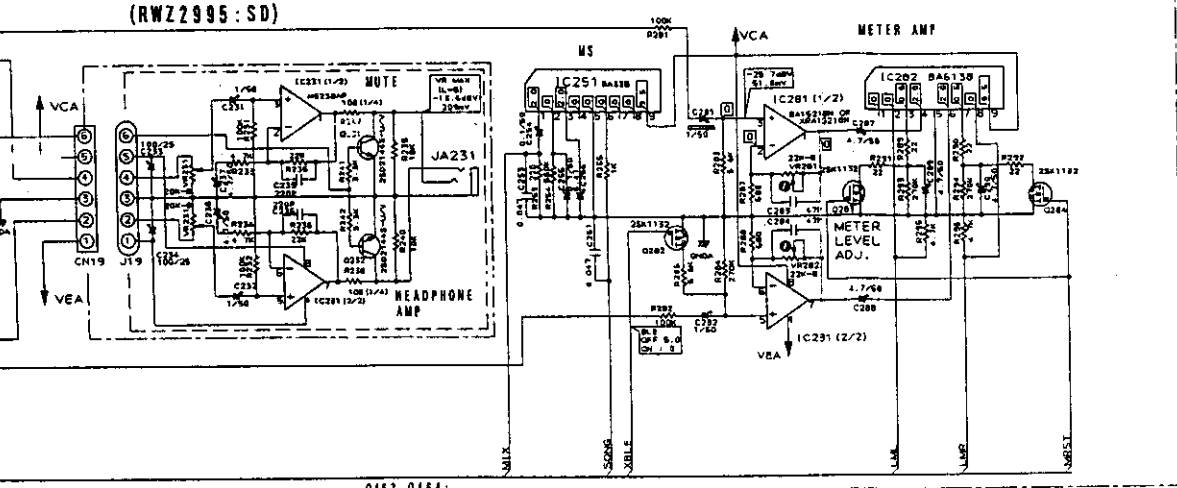


UNIT (B)

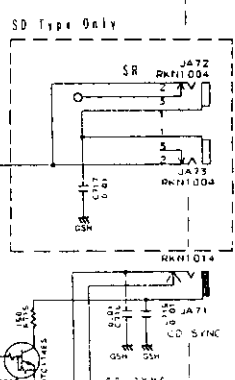
HEADPHONE UNIT  
(RWZ2989:HEM)  
(RWZ2995:SD)

MAIN UNIT  
(RWX1081)

Note:HEM indicates CT-95/HEM.  
SD indicates CT-95/SD.



CONTROL UNIT  
(RWZ2984:HEM)  
(RWZ2990:SD)



TO FL UNIT J29 (SCH-3)  
--- : PLAYBACK SIGNAL ROUTE  
- - - : RECORDING SIGNAL ROUTE

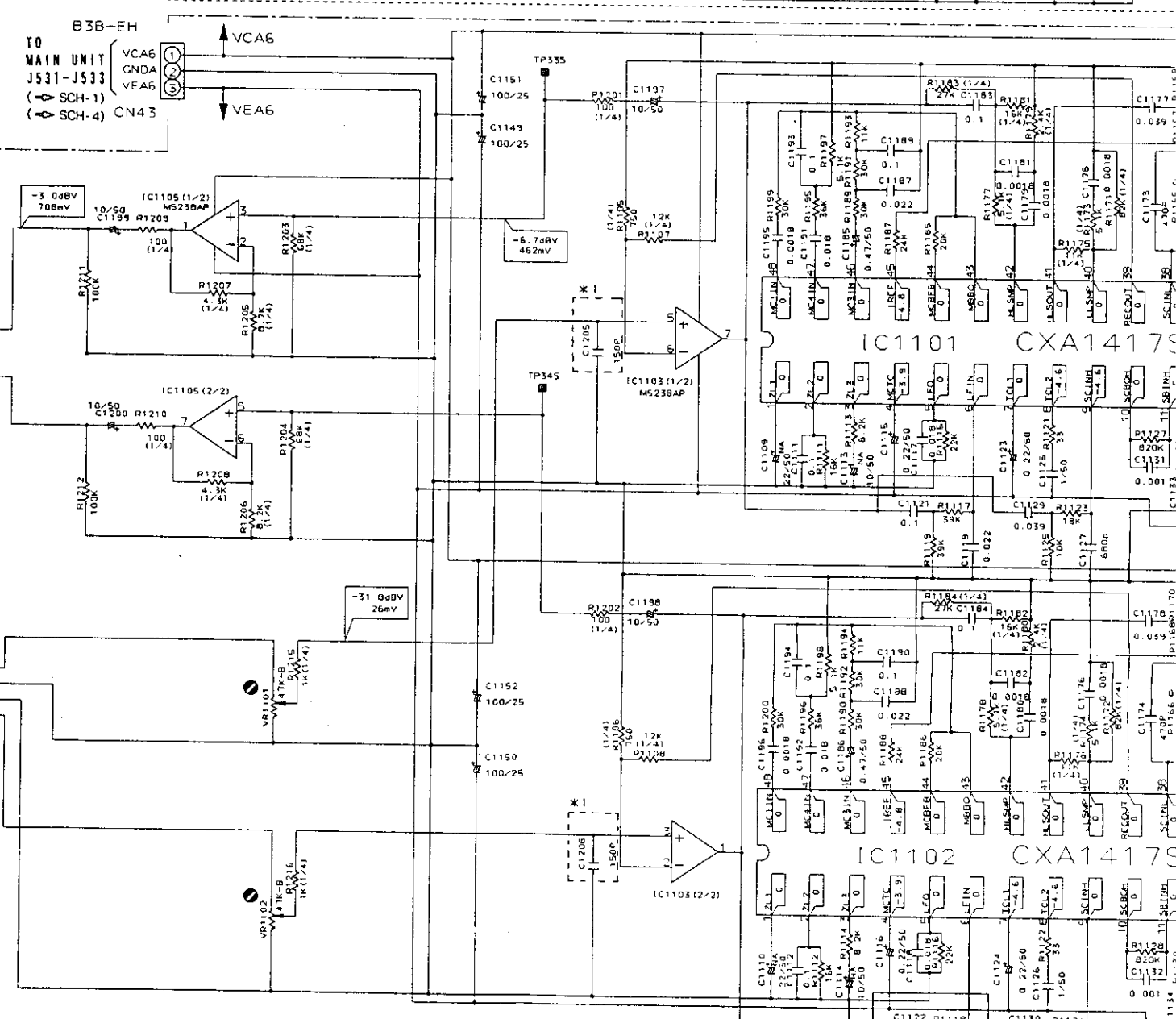
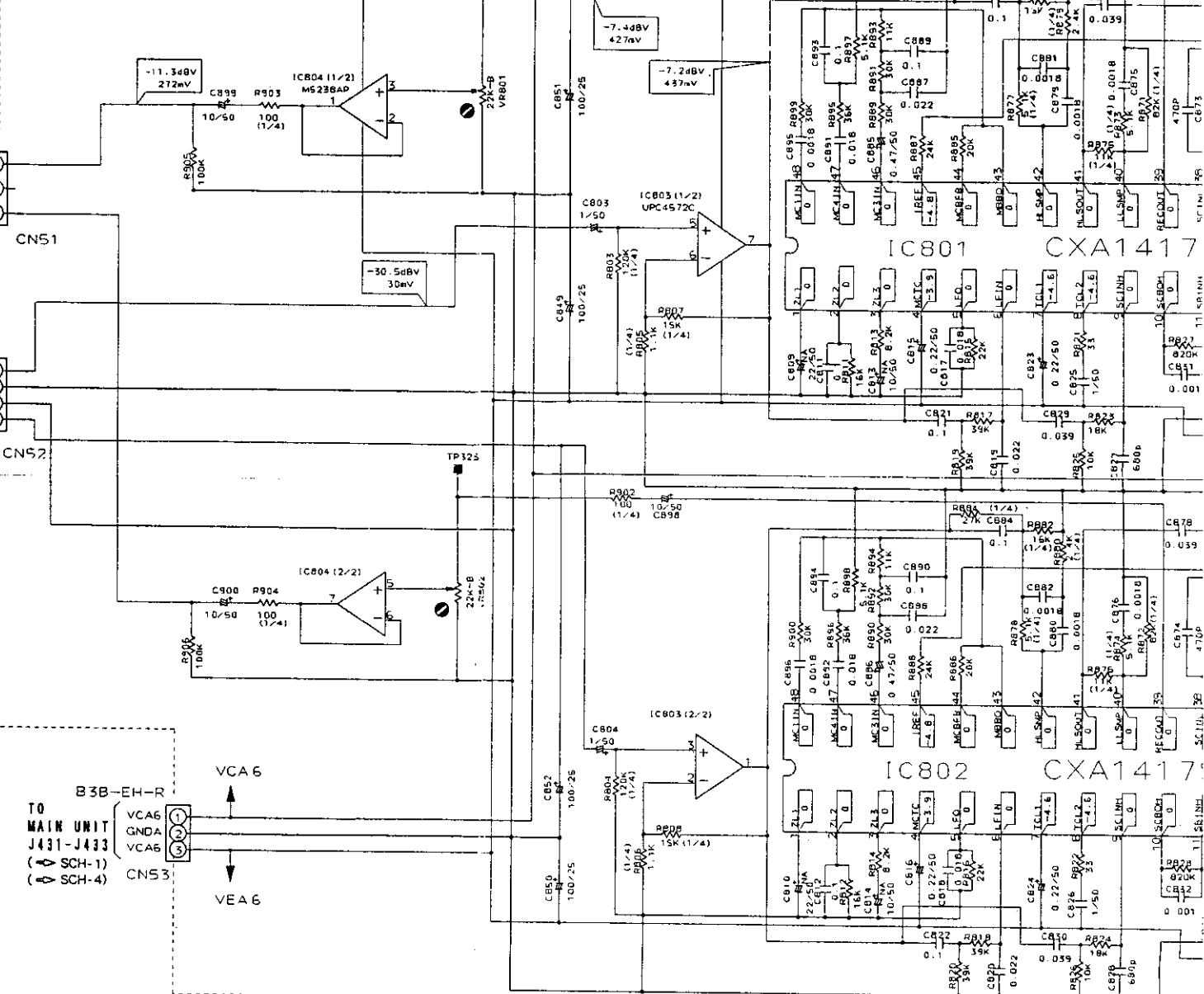
MAIN, HEADPHONE, BIAS,  
CONTROL, BAL. VR,  
REC SWITCH, TAPE SELECTOR,  
CONNECTOR UNIT AND  
SENSOR UNIT (B)

SCH-1

2. ENCODE AND DECODE UNIT

DOLBY S UNIT (RWM1558:CT-95)  
(RWM1573:CT-S920S/-G)

ENCODE UNIT  
(RWZ2743:CT-95)  
(RWZ2797:CT-S920S/-G)

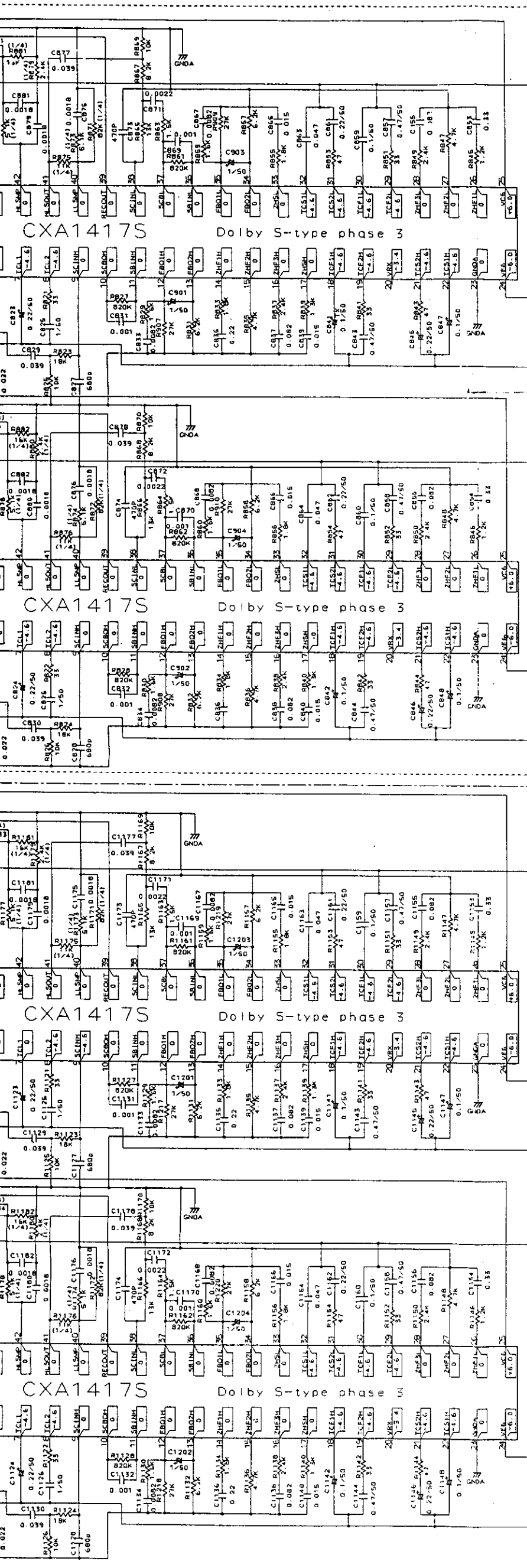


DECODE UNIT  
(RWZ2744:CT-95)  
(RWZ2798:CT-S920S/-G)

\* 1:CT-S920S,CT-S920-G Only.

SCH-2

ENCODE,DECODE UNIT



Note: CT-95 indicates CT-95/HEM and CT-95/SD.  
 CT-S920S/-G indicates CT-S920S/HEM and  
 CT-S920S-G/HEM.

Note: (Type 6)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:  
 Unit: k: kΩ, M: MΩ, or Ω unless otherwise noted.  
 Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.  
 Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.

4. CAPACITORS:  
 Unit: p: pF or μF unless otherwise noted.  
 Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.  
 Rated voltage: 50V except for electrolytic capacitors.

5. COILS:  
 Unit: m: mH or μH unless otherwise noted.

6. VOLTAGE AND CURRENT:  
 □ : DC voltage (V) in STOP mode unless otherwise noted.  
 ⊖ mA or - mA: DC current in STOP mode unless otherwise noted.

7. 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.

8. SWITCHES (Underline indicates switch position):

- BIAS UNIT  
 S641 : POWER
- FL UNIT  
 S721 : BLE (FLT) S/C  
 S722 : METER RANGE  
 S723 : RESET  
 S724 : BIAS DOWN  
 S725 : PEAK MODE  
 S726 : COUNTER MODE  
 S727 : BIAS UP  
 S728 : TAPE RETURN  
 S729 : DISPLAY OFF  
 S735 : PLAY - OFF - REC

- OPERATION UNIT  
 S781 : LINE STRAIGHT  
 S782 : DOLBY - NR SELECT  
 S783 : HX PRO  
 S784 : MONITOR  
 S785 : REC/MUTE  
 S786 : PAUSE  
 S787 : REC  
 S788 : OPEN/CLOSE  
 S789 : FF  
 S790 : PLAY  
 S791 : REW  
 S792 : STOP  
 S793 : CD CYNC

9. For SCH - □ on the schematic diagram.  
 • SCH - □ indicates the drawing number of the schematic diagram.  
 (SCH stands for schematic diagram,)

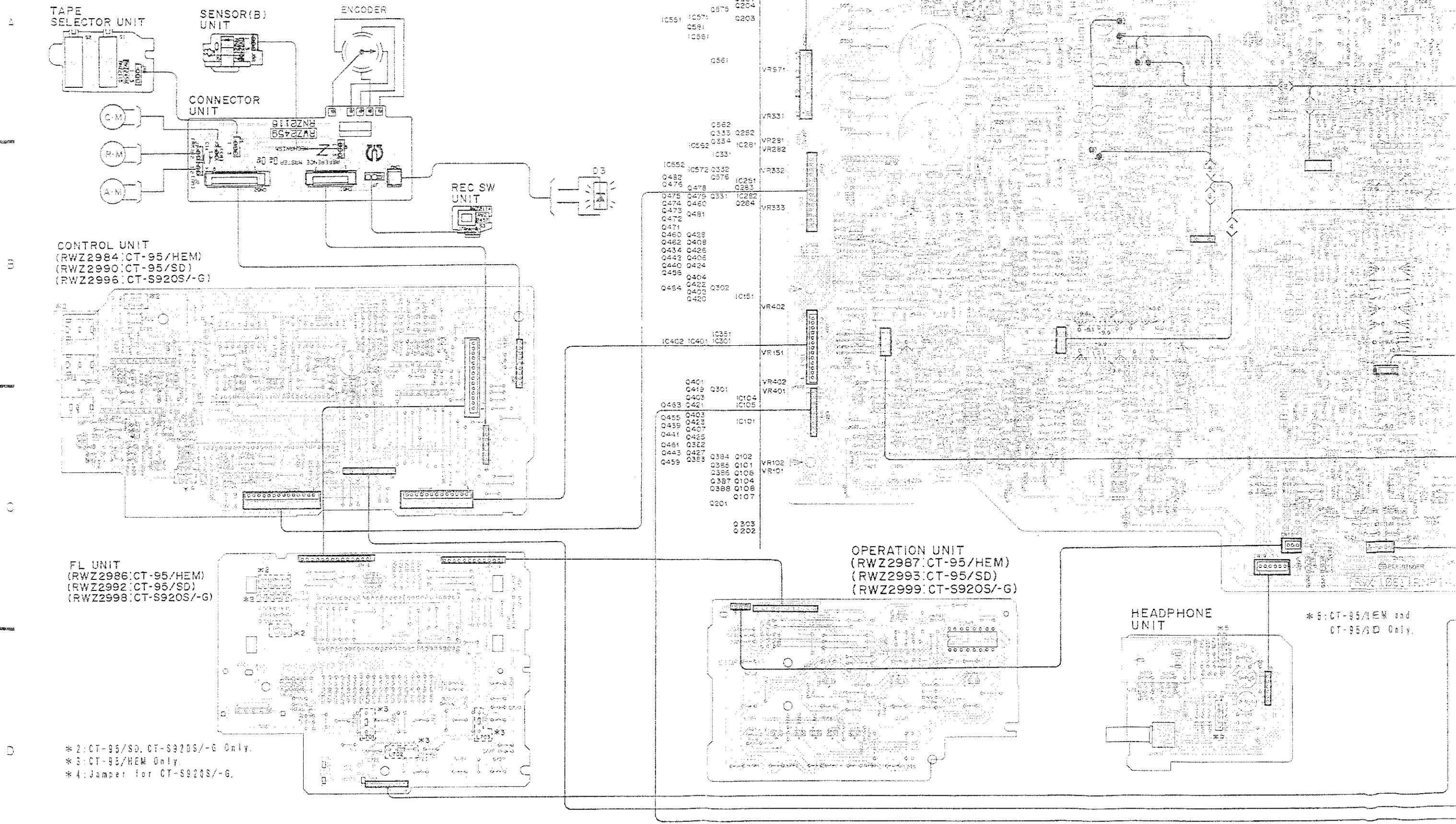
SCH-2

ENCODE, DECODE UNIT

SCH-2

• View from component side

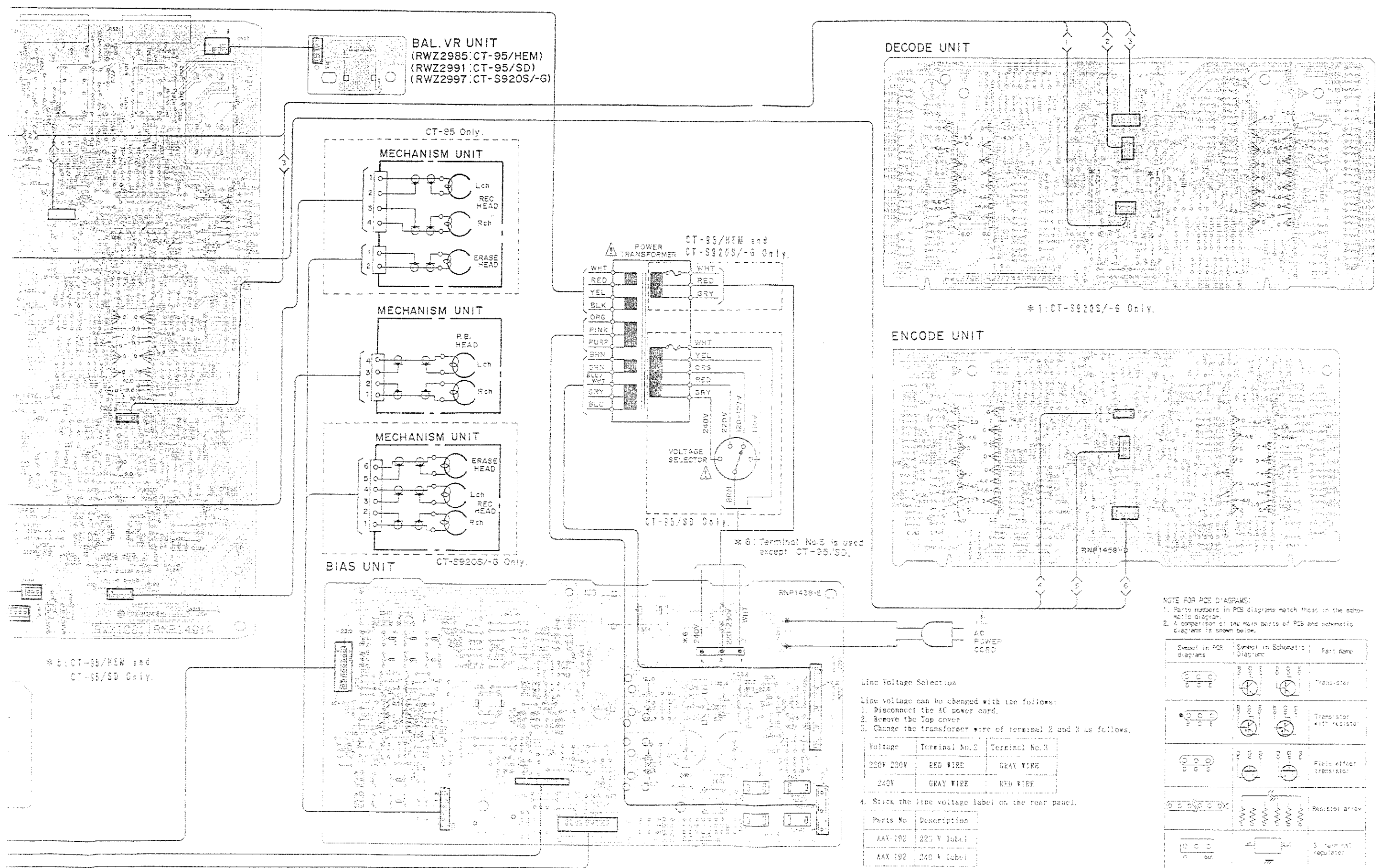
MAIN UNIT (RWX1081)



\* 2: CT-95/SD, CT-S920S/-G Only.  
 \* 3: CT-95/HEM Only.  
 \* 4: Jumper for CT-S920S/-G.

\* 6: CT-95/HEM and CT-95/SD Only.

Note: CT-S920S/-G indicates CT-S920S/HEM and CT-S920S-G/HEM.



\* 5: CT-95/HEM and CT-95/SD Only.

**NOTE FOR PCB DIAGRAM:**  
1. Parts numbers in PCB diagrams match those in the schematic diagram.  
2. A comparison of the main parts of PCB and schematic diagram is shown below.

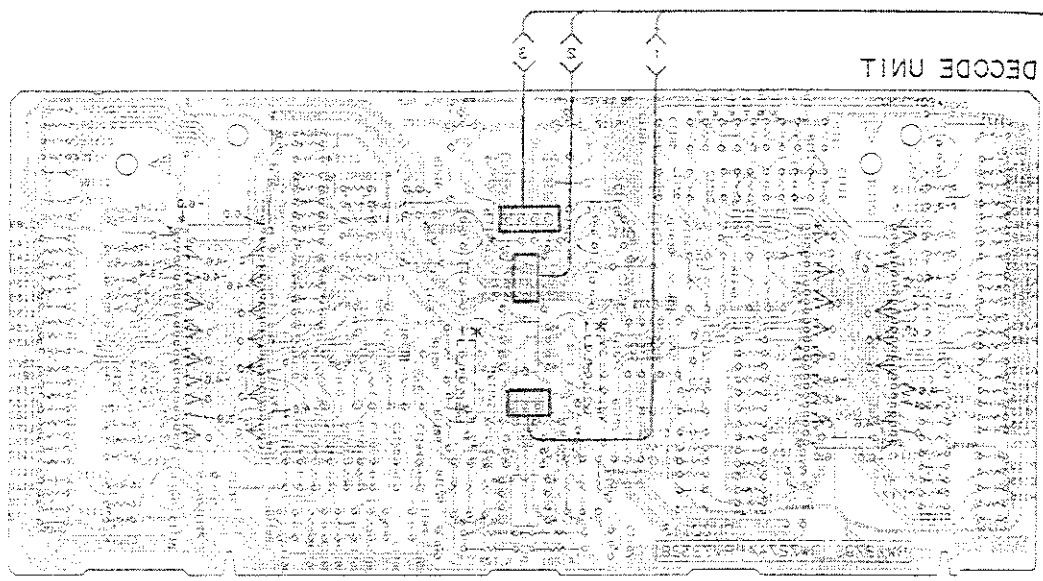
Symbol in PCB diagram	Symbol in Schematic Diagram	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

**Line Voltage Selection**  
Line voltage can be changed with the follows:  
1. Disconnect the AC power cord.  
2. Remove the Top cover.  
3. Change the transformer wire of terminal 2 and 3 as follows.

Voltage	Terminal No.2	Terminal No.3
220V 200V	RED WIRE	GRAY WIRE
240V	GRAY WIRE	RED WIRE

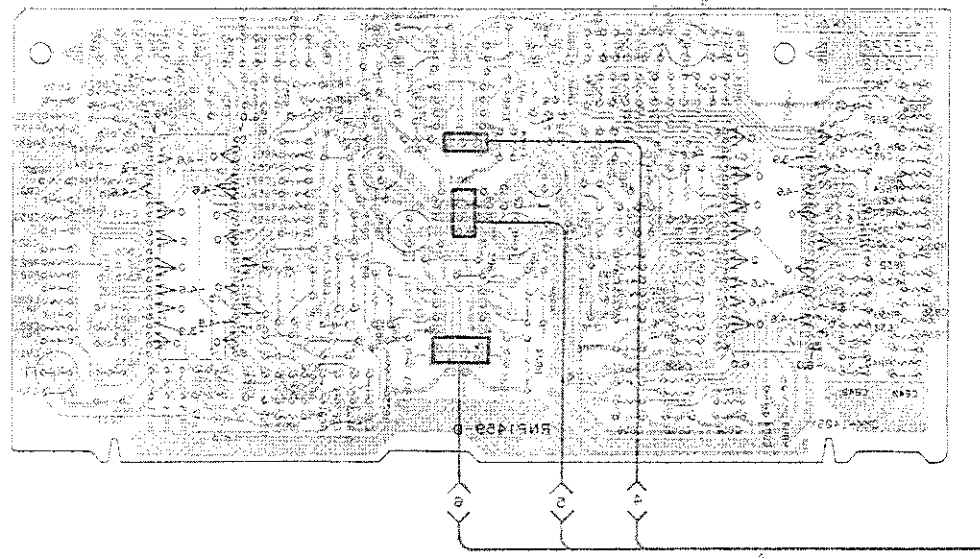
4. Stick the line voltage label on the rear panel.

Parts No	Description
AAV-198	220 V label
AAV-192	240 V label



DECODE UNIT

\* 1: CT-2502-6 Only



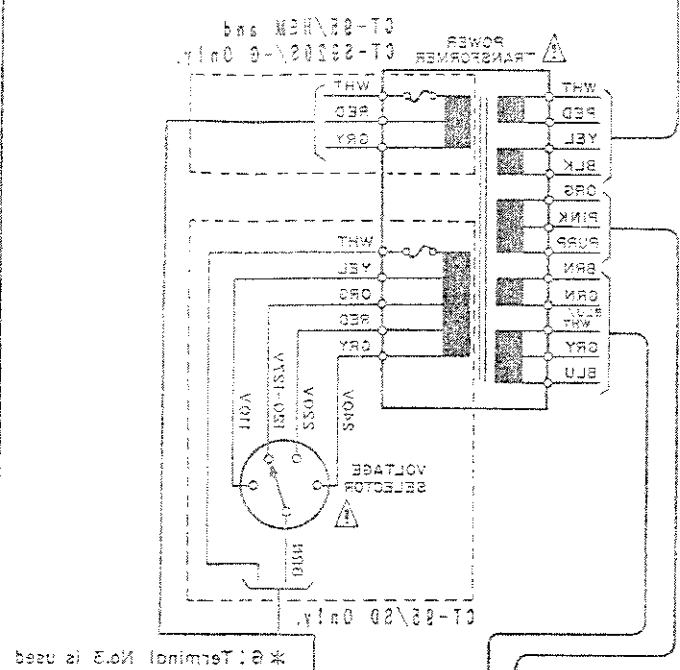
ENCODE UNIT

- Line Voltage Selection
- Line voltage can be changed with the follows:
1. Disconnect the AC power cord.
  2. Remove the top cover.
  3. Change the transformer wire of terminal 3 and 3 as follows.

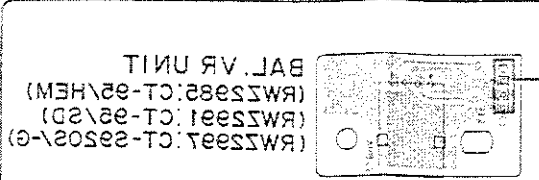
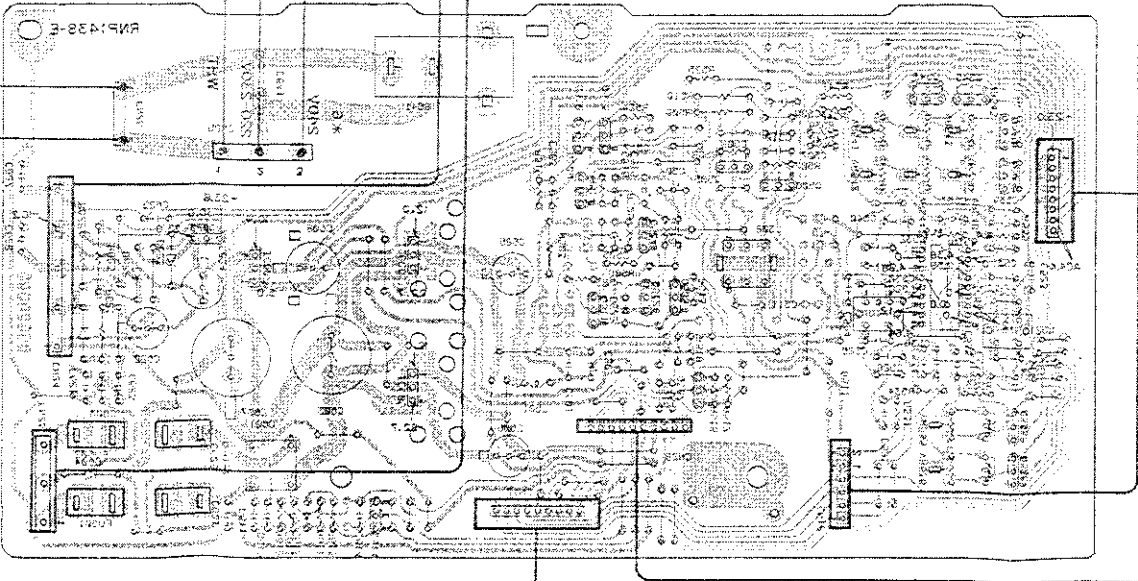
Terminal No. 3	Terminal No. 3
200V-230V	RED WIRE
	GRAY WIRE
240V	GRAY WIRE
	RED WIRE

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

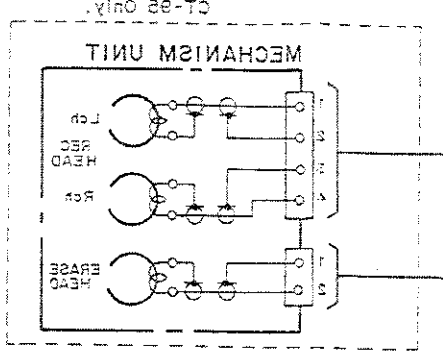
Parts No	Description
AAX-193	230 V label
AAX-193	240 V label



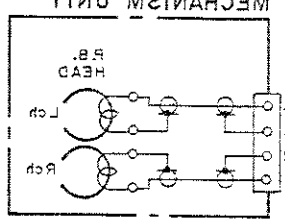
\* 2: Terminal No. 3 is used except CT-2502-6 only.



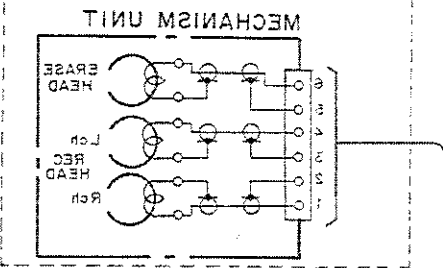
BAL. VR UNIT  
(RW2501:CT-2502-6)  
(RW2502:CT-2502-6)  
(RW2503:CT-2502-6)



MECHANISM UNIT  
CT-25 Only

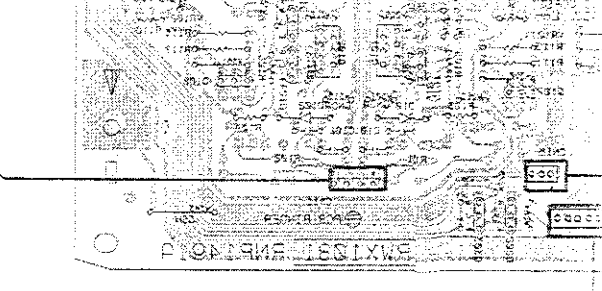
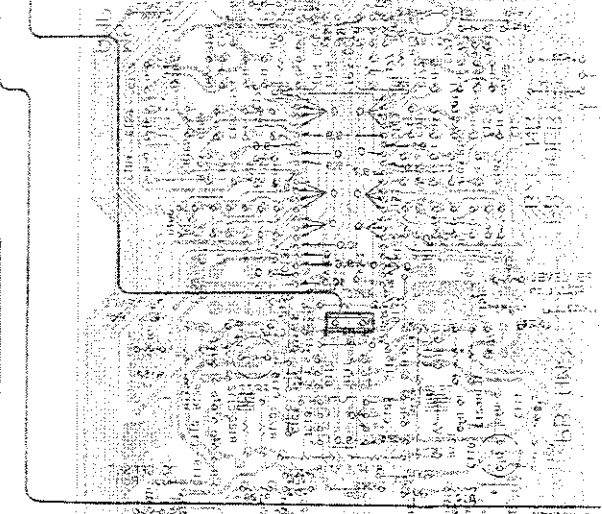
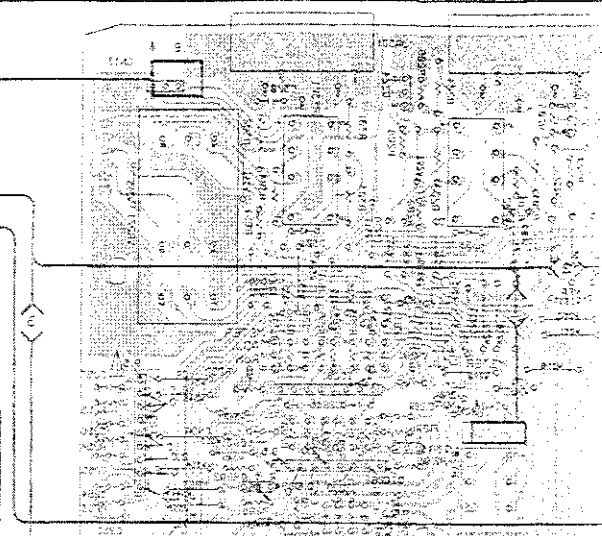


MECHANISM UNIT



MECHANISM UNIT  
CT-2502-6 Only

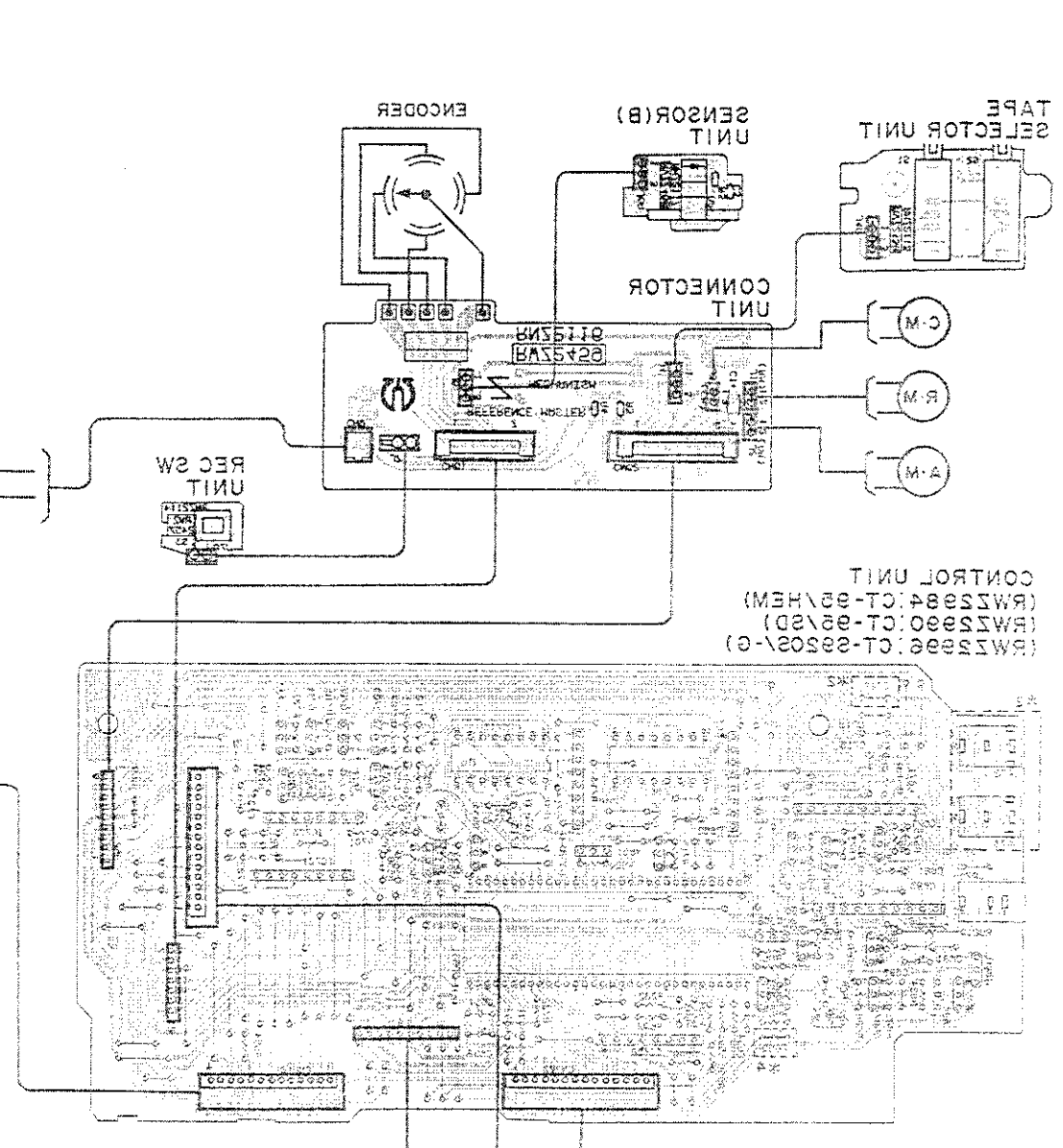
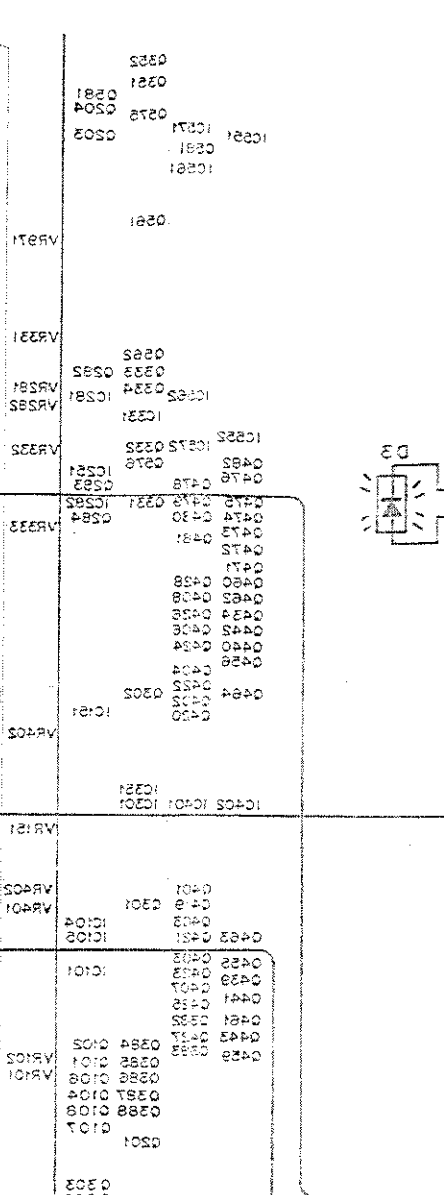
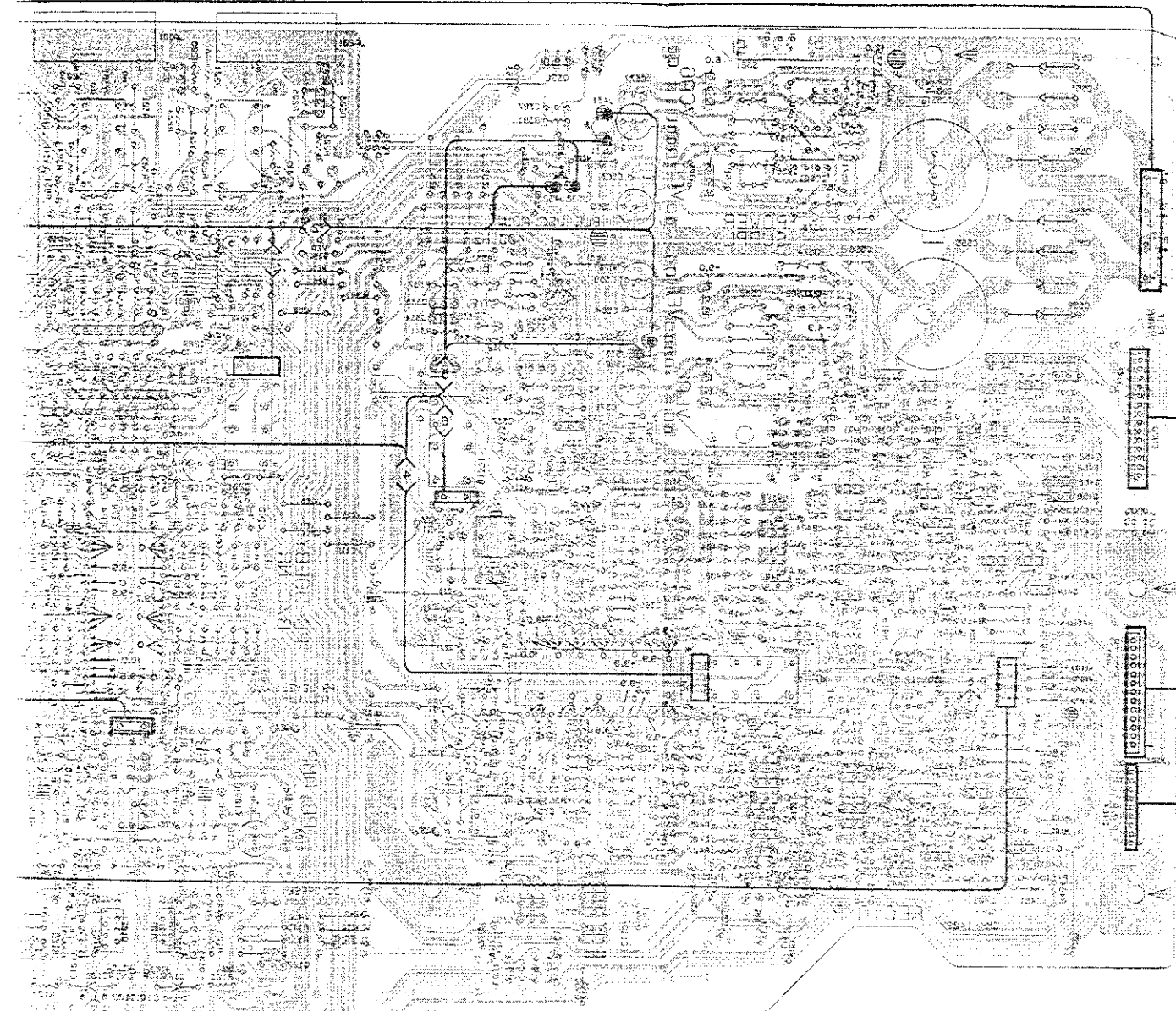
BIAS UNIT



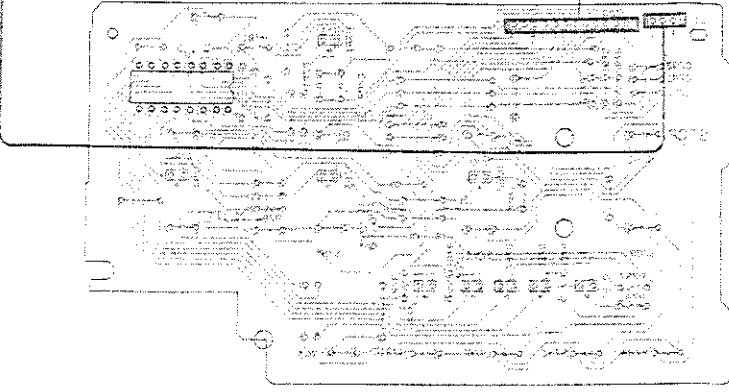
CT-15/20 Only  
\* 2: CT-15/HEM and

This diagram is viewed from the foil side

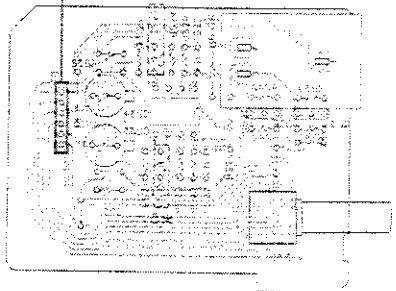
MAIN UNIT (RW181)



OPERATION UNIT (RW2887-CT-88\HEM) (RW2883-CT-88\SD) (RW2888-CT-8802\G)

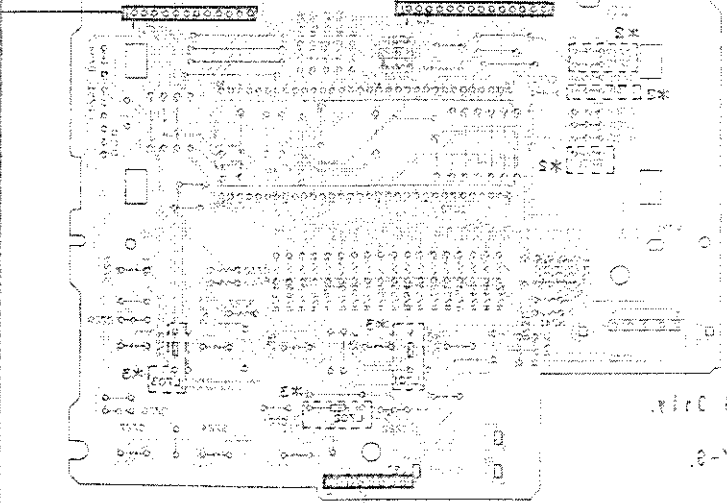


HEADPHONE UNIT



CT-88\SD Only \* 8-CT-88\HEM and

FL UNIT (RW2888-CT-88\HEM) (RW2883-CT-88\SD) (RW2888-CT-8802\G)



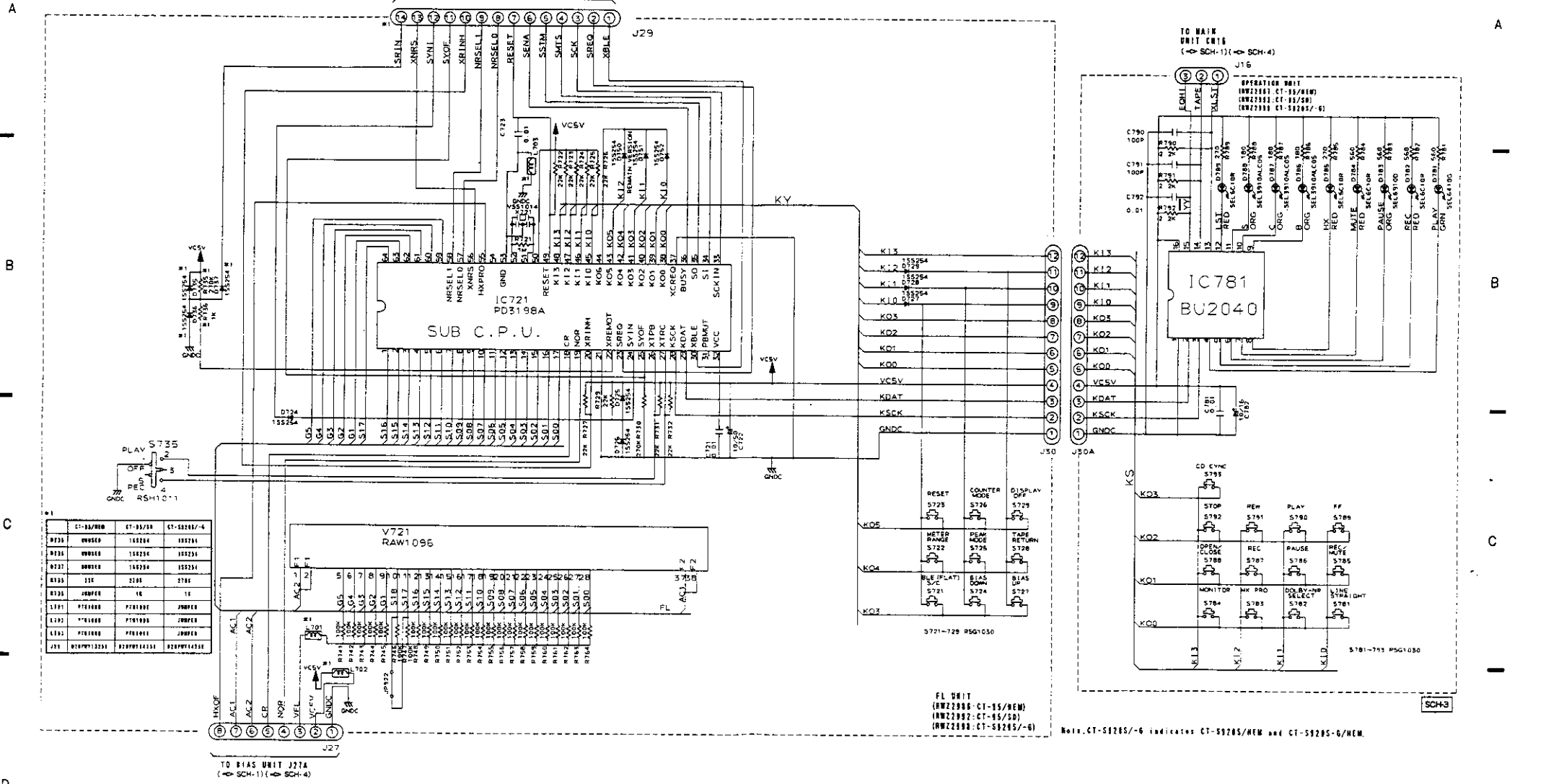
\* 4-lamp for CT-8802\G \* 3-CT-88\HEM Only \* 3-CT-88\SD, CT-8802\G Only

Note: CT-8802\G indicates CT-8802\HEM and CT-8802\G\HEM

A  
B  
C  
D

3. FL AND OPERATION UNIT

CT-95, CT-S920S, CT-S920S-G



SCH-3

FL OPERATION UNIT

FLOPERATION UNIT

SCH-3



## 5. PCB PARTS LIST

### 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 "O" 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  $\Omega$   $\rightarrow$  56  $\times 10^1 \rightarrow$  561 ..... RD1/8PM  $\begin{matrix} 5 & 6 & 1 \\ \hline \end{matrix}$  J

47k  $\Omega$   $\rightarrow$  47  $\times 10^3 \rightarrow$  473 ..... RD1/4PS  $\begin{matrix} 4 & 7 & 3 \\ \hline \end{matrix}$  J

0.5  $\Omega$   $\rightarrow$  OR5 ..... RN2H  $\begin{matrix} 0 & R & 5 \\ \hline \end{matrix}$  K

1  $\Omega$   $\rightarrow$  010 ..... RS1P  $\begin{matrix} 0 & 1 & 0 \\ \hline \end{matrix}$  K

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

5.62k  $\Omega \rightarrow$  562  $\times 10^1 \rightarrow$  5621 ..... RNI/4PC  $\begin{matrix} 5 & 6 & 2 & 1 \\ \hline \end{matrix}$  F

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
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### LIST OF ASSEMBLIES

		MAIN UNIT	RWX1081
NSP		SUB UNIT	RWM1629
		- CONTROL UNIT	RWZ2984
		- BAL. VR UNIT	RWZ2985
		- FL UNIT	RWZ2986
		- OPERATION UNIT	RWZ2987
NSP		- BIAS UNIT	RWZ2988
NSP		- HEADPHONE UNIT	RWZ2989
		DOLBY S UNIT	RWM1558
NSP		- ENCODE UNIT	RWZ2743
NSP		- DECODE UNIT	RWZ2744
		RELAY UNIT	RWM1454
NSP		- REC SWITCH UNIT	RWZ2457
NSP		- TAPE SELECTOR UNIT	RWZ2458
NSP		- CONNECTOR UNIT	RWZ2459
NSP		- SENSOR UNIT (B)	RWZ2460

	Q453, Q454	2SJ104
	Q471-Q475, Q478-Q482	2SJ165
	Q111, Q112, Q282-Q284, Q331-Q334, Q351, Q386, Q388, Q439-Q442, Q455, Q456, Q467	2SK1132
	Q451, Q452	2SK364
	Q101, Q102	2SK389
	Q384, Q387, Q465	DTA114ES
	Q383, Q385	DTC114ES
	Q201, Q202, Q303, Q382, Q401-Q408, Q419-Q428, Q459-Q462	DTC114TS
	D201, D202, D301, D351, D352	1SS254
$\Delta$	D464	1SS254
$\Delta$	D551-D558	31DF2-PCS
$\Delta$	D101, D102	HZ3CLL
$\Delta$	D573, D574	HZ5BLL
	D471	MTZJ4.7A

SWITCHES		
	S381	RS11040

### MAIN UNIT

SEMICONDUCTORS		
	IC331	BA15218
	IC281	BA15218N
	IC251	BA335
	IC282	BA6138
	IC151, IC351	CK20188
$\Delta$	IC551, IC552	ICP-N20
	IC401, IC402	M5238P
	IC101, IC561, IC562	NJM2114D
$\Delta$	IC571	NJM79M12FA
$\Delta$	IC572	NJM79M12FA
	IC301	UPC4572C
	Q581	2SA1309A
$\Delta$	Q562, Q576	2SB942
	Q103-Q110	2SC2240
$\Delta$	Q561, Q575	2SD1267
	Q203, Q204, Q301, Q302, Q433, Q434, Q463, Q464	2SD2144S

RELAYS		
	RY201, RY202, RY301, RY351, RY352	RSR1016

COILS		
	L851	LFA121K
	L403, L404 (L=1mH(252KHz), Q=40)	RTF1013
	L405, L406 (L=3.9mH(252KHz), Q=30)	RTF1020
	L401, L402 (L=5.6mH(252KHz), Q=30)	RTF1022
	L151, L152	RTF1175
	F301, F302	RTF1062

CAPACITORS		
	C283, C284	CCPUSL470J50
	C211, C281, C282, C334, C463	CEAS010M50
	C464, C471	CEAS100M50
	C855	CEAS101M10
	C581	CEAS220M50
	C387	CEAS330M16
	C287-C290	CEAS4R7M50
	C251, C252, C254, C255	CEASR10M50
	C256	CEASR47M50

Mark No.	Description	Part No.	Mark No.	Description	Part No.
C119, C120		CFTXA104J50	R453, R454 (150Ω)	RDR1/4PM151J	
C407, C408		CFTXA122J50	R129, R130 (1.8K)	RDR1/4PM182J	
C437, C438		CFTXA152J50	R203, R204 (220Ω)	RDR1/4PM221J	
C151-C154, C355-C358		CFTXA222J50	R119, R120, R127, R128 (2.2K)	RDR1/4PM222J	
C405, C406		CFTXA272J50	R131, R132 (22K)	RDR1/4PM223J	
C113, C114, C155, C156, C359, C360		CFTXA392J50	R313, R314 (2.4K)	RDR1/4PM242J	
C403, C404, C443, C444		CFTXA472J50	R301, R302 (30K)	RDR1/4PM303J	
C173, C174, C377, C378		CFTXA562J50	R101, R102 (330K)	RDR1/4PM334J	
C335, C455, C456, C461, C462		CFTXA682J50	R561, R562 (3.9K)	RDR1/4PM392J	
C459, C460		CFTXA822J50	R411, R412, R563, R564, R577, R578 (4.7K)	RDR1/4PM472J	
C175, C176, C379, C380, C401, C402, C413, C414		CFTYA103J50	R117, R118 (51Ω)	RDR1/4PM510J	
C161, C162, C365, C366		CFTYA153J50	R353, R354, R417, R418 (560Ω)	RDR1/4PM561J	
C159, C160, C363, C364		CFTYA154J50	R121, R122 (62K)	RDR1/4PM623J	
C165, C166, C369, C370		CFTYA224J50	R465, R466 (680Ω)	RDR1/4PM681J	
C115, C116		CFTYA273J50	VR151, VR152 (4.7K)	RCP1020	
C451, C452		CFTYA274J50	VR331, VR332 (10K)	RCP1045	
C253, C257		CFTYA473J50	VR281, VR282, VR401, VR402 (22K)	RCP1046	
C157, C158, C361, C362		CFTYA474J50	VR333 (47K)	RCP1047	
C103, C104, C169, C170, C373, C374, C557, C558, C563, C564, C577, C578		CFTYA563J50	VR101, VR102 (470Ω)	RCP1109	
C167, C168, C331, C371, C372		CFTYA683J50	VR971 (20KA)	RCV1019	
C551, C552		CXCFY103Z50	OTHER RESISTORS	RD1/6PM□□□J	
C300		CXCFY473Z50	<b>OTHERS</b>	RKB1020	
C473-C476		CQMA104J50	JA201, JA301 PIN JACK (2P)	RKP1434	
C332		CQMA123J50	J41, J52 CONNECTOR ASSY (4P)	TXC-P13P-A1	
C333, C336		CQMA182J50	CN21 CONNECTOR	TXC-P15P-A1	
C337			CN20 CONNECTOR	RKC-056	
C303, C304			TERMINAL	1BZ30P100FCC	
C467, C468			SCREW		
C101, C102					
C117, C118, C179, C180, C385, C386, C415, C416 (C=101, V(DC)= 25)					
C47, C448 (C=221, V(DC)=25)					
C565, C566, C579, C580 (C=101, V(AC)=25)					
C555 (C=3300UF, VDC=50, A=20)					
C556 (C=3300UF, VDC=50, A=20)					
C163, C164, C171, C172, C301, C302, C367, C368, C375, C376, C571, C572 (C=1, V(DC)= 50)					
C353, C354, C435, C436, C561, C562, C575, C576 (C=10, V(DC)=50)					
C109-C112, C177, C178, C181, C182, C381-C384, C389-C392 (C=22, V(DC)=50)					
C453, C454, C573, C574 (C=33, V(DC)=25)					
<b>RESISTORS</b>					
R470 (100K)		RA11T104J	C831, C832, C869, C870	CFTXA102J50	
R409, R410 (100K)		RCN1043	C875, C876, C879-C882, C895, C896	CFTXA182J50	
R111, R112 (100Ω)		RDR1/4PM101J	C871, C872	CFTXA222J50	
R133, R134, R201, R202, R315, R316, R575, R576 (1K)		RDR1/4PM102J	C873, C874	CFTXA471J50	
R151, R152, R431, R432, R571, R572 (10K)		RDR1/4PM103J	C827, C828	CFTXA681J50	
R115, R116, R303, R304 (100K)		RDR1/4PM104J	C833, C834, C867, C868	CFTXA822J50	
R355, R356 (12K)		RDR1/4PM123J	C811, C812, C821, C822, C859, C860, C883, C884, C889, C890, C893, C894	CFTYA104J50	
R150, R350 (130K)		RDR1/4PM134J	C825, C826	CFTYA105J50	
			C839, C840, C865, C866	CFTYA153J50	
			C817, C818, C891, C892	CFTYA183J50	
			C819, C820, C887, C888	CFTYA223J50	
			C835, C836, C861, C862	CFTYA224J50	
			C853, C854	CFTYA334J50	
			C829, C830, C877, C878	CFTYA393J50	
			C863, C864	CFTYA473J50	

Mark No.	Description	Part No.	Mark No.	Description	Part No.
C843, C844, C857, C858		CFTYA474J50	C843, C844, C857, C858	CFTYA474J50	
C837, C838, C855, C856		CFTYA823J50	C849-C852 (C=100, V(DC)=25)	RCH1057	
C803, C804, C901-C904 (C=1, V(DC)=50)		RCH1079	C897-C900 (C=10, V(DC)=50)	RCH1080	
<b>RESISTORS</b>					
R901-R904 (100Ω)		RDR1/4PM101J	R805, R806 (1.1K)	RDR1/4PM112J	
R805, R806 (1.1K)		RDR1/4PM112J	R875, R876 (11K)	RDR1/4PM113J	
R875, R876 (11K)		RDR1/4PM113J	R803, R804 (120K)	RDR1/4PM124J	
R803, R804 (120K)		RDR1/4PM124J	R807, R808 (15K)	RDR1/4PM153J	
R807, R808 (15K)		RDR1/4PM153J	R881, R882 (16K)	RDR1/4PM163J	
R881, R882 (16K)		RDR1/4PM163J	R879, R880 (2.4K)	RDR1/4PM242J	
R879, R880 (2.4K)		RDR1/4PM242J	R883, R884 (27K)	RDR1/4PM273J	
R883, R884 (27K)		RDR1/4PM273J	R873, R874, R877, R878 (5.1K)	RDR1/4PM512J	
R873, R874, R877, R878 (5.1K)		RDR1/4PM512J	R871, R872 (82K)	RDR1/4PM823J	
R871, R872 (82K)		RDR1/4PM823J	VR801, VR802 (22K)	RCP1103	
VR801, VR802 (22K)		RCP1103	OTHER RESISTORS	RD1/6PM□□□J	
OTHER RESISTORS		RD1/6PM□□□J			
<b>DECODE UNIT</b>					
<b>SEMICONDUCTORS</b>					
IC1101, IC1102		CXA1417S-P	IC1105	M5238AP	
IC1105		M5238AP	IC1103	M5238P	
IC1103		M5238P			
<b>CAPACITORS</b>					
C1141, C1142, C1147, C1148		CEASR10M50	C1115, C1116, C1123, C1124, C1145, C1146	CEASR22M50	
C1115, C1116, C1123, C1124, C1145, C1146		CEASR22M50	C1185, C1186	CEASR47M50	
C1185, C1186		CEASR47M50	C1113, C1114	CENA100M50	
C1113, C1114		CENA100M50	C1109, C1110	CENA220M50	
C1109, C1110		CENA220M50			
C1131, C1132, C1169, C1170		CFTXA102J50	C1171, C1172	CFTXA222J50	
C1175, C1176, C1179-C1182, C1195, C1196		CFTXA182J50	C1173, C1174	CFTXA471J50	
C1171, C1172		CFTXA222J50	C1127, C1128	CFTXA681J50	
C1173, C1174		CFTXA471J50			
C1127, C1128		CFTXA681J50			
C1133, C1134, C1167, C1168		CFTXA822J50			
C1111, C1112, C1121, C1122, C1159, C1160, C1183, C1184, C1189, C1190, C1193, C1194		CFTYA104J50			
C1125, C1126		CFTYA105J50			
C1139, C1140, C1165, C1166		CFTYA153J50			
C1117, C1118, C1191, C1192		CFTYA183J50			
C1119, C1120, C1187, C1188		CFTYA223J50			
C1135, C1136, C1161, C1162		CFTYA224J50			
C1153, C1154		CFTYA334J50			
C1129, C1130, C1177, C1178		CFTYA393J50			
C1163, C1164		CFTYA473J50			
C1143, C1144, C1157, C1158		CFTYA474J50			
C1137, C1138, C1155, C1156		CFTYA823J50			
C1149-C1152 (C=100, V(DC)=25)		RCH1057			
C1201-C1204 (C=1, V(DC)=50)		RCH1079			
C1197-C1200 (C=10, V(DC)=50)		RCH1080			
<b>RESISTORS</b>					
R1201, R1202, R1209, R1210 (100Ω)		RDR1/4PM101J			
R1215, R1216 (1K)		RDR1/4PM102J			
R1175, R1176 (11K)		RDR1/4PM113J			
R1107, R1108 (12K)		RDR1/4PM123J			
R1181, R1182 (16K)		RDR1/4PM163J			
R1179, R1180 (2.4K)		RDR1/4PM242J			
R1183, R1184 (27K)		RDR1/4PM273J			
R1207, R1208 (4.3K)		RDR1/4PM432J			
R1173, R1174, R1177, R1178 (5.1K)		RDR1/4PM512J			
R1203, R1204 (68K)		RDR1/4PM683J			
R1105, R1106 (750Ω)		RDR1/4PM751J			
R1205, R1206 (8.2K)		RDR1/4PM822J			
R1171, R1172 (82K)		RDR1/4PM823J			
VR1101, VR1102 (47K)		RCP1104			
OTHER RESISTORS		RD1/6PM□□□J			
<b>CONTROL UNIT</b>					
<b>SEMICONDUCTORS</b>					
IC701, IC703		BA10393N	IC671, IC681	M6M80011AL	
IC652		BA6109	IC651	PD4359A	
IC651		TC4050BP	IC661, IC713		
Q681-Q683, Q687		ZSA1309A			
Q706		ZSC3311A			
Q705, Q709		DTA114ES			
Q655, Q656		DTA114TS			
Q665, Q672-Q674, Q688, Q715		DTIC114ES			
Q668, Q707, Q708, Q710		DTIC114TS			
Q667		DTIC124ES			
D681		1SR35-100A			
D651-D653, D665		1SS254			
<b>COILS</b>					
L671 (L=0.15mH, Q=30)		RTF1068			
<b>CAPACITORS</b>					
C681		CEANP4R7M25			
C662, C691, C702, C713		CEAS100M50			
C652		CEAS101M10			
C685		CEAS101M16			
C653		CEAS102M6R3			
C666, C684		CEAS330M16			
C682		CEASR22M50			
C651, C661, C671, C683, C714-C716		CXCFY103Z50			
C672, C701, C703		CXCFY473Z50			
C657, C658		CXCFY101K50			
<b>RESISTORS</b>					
R663, R713 (10K/20K)		RXC1042			
R711		RN1/6PQ1503F			
R706		RN1/6PQ2002F			
R712		RN1/6PQ2003F			
R705		RN1/6PQ2203F			
R710		RN1/6PQ3901F			
R709		RN1/6PQ7501F			
R681 (1Ω)		RS1LMF010J			
OTHER RESISTORS		RD1/6PM□□□J			
<b>OTHERS</b>					
JA71 MINI JACK		RKN1014			
CN210 CONNECTOR		TXC-P13X-A1			

Mark	No.	Description	Part No.
		CN200 CONNECTOR X651 CERAMIC RESONATOR(4.19MHz)	TXC-PI5X-A1 YSS1014
<b>BAL.VR UNIT</b>			
<b>RESISTORS</b>			
	VR973 (200K $\Omega$ )		RCV1078
<b>FL UNIT</b>			
<b>SEMICONDUCTORS</b>			
	IC721 D724-D729, D750-D752		PD3198A ISS254
<b>SWITCHES</b>			
	S721-S729 S735		RSG1030 RSH1011
<b>COILS</b>			
	L701-L703		PTH1008
<b>CAPACITORS</b>			
	C722 C721, C723		CEAS100M50 CKCYF103Z50
<b>RESISTORS</b>			
	ALL RESISTORS		RD1/6PM□□□J
<b>OTHERS</b>			
	V721 FL INDICATOR TUBE X721 CERAMIC RESONATOR (4.19MHz)		RAW1096 YSS1014
<b>OPERATION UNIT</b>			
<b>SEMICONDUCTORS</b>			
	IC781 D781 D786-D788 D783 D782, D784, D785, D789		BU2040 SEL6410G SEL6910A SEL6910D SEL6C10R
<b>SWITCHES</b>			
	S781-S793		RSG1030
<b>CAPACITORS</b>			
	C782 C781 C790, C791 C792		CEJA100M16 CKCYF103Z50 CKPUBY101K50 CKPUY103N16
<b>RESISTORS</b>			
	ALL RESISTORS		RD1/6PM□□□J
<b>BIAS UNIT</b>			
<b>SEMICONDUCTORS</b>			
	$\Delta$ IC607 $\Delta$ IC605, IC606 IC521 Q504 $\Delta$ Q623		NJM7805FA NJM7812FA UPC1297CA 2SA1283 2SA1283
	Q513, Q614 Q507, Q509 Q505, Q506 Q512 Q511, Q543-Q546		2SA1309A 2SC3311A 2SD1302 DTA114ES DTC114ES

Mark	No.	Description	Part No.
	Q535, Q536 Q508, Q510 $\Delta$ D604, D621 $\Delta$ D501, D502, D611-D613 $\Delta$ D623		DTC114TS DTC124ES 1SR35-100A 1SS254 MTZJ24D
	D622 $\Delta$ D601		MTZJ6. 8B S2VB20
<b>SWITCHES</b>			
	$\Delta$ S641		RSA-063
<b>COILS</b>			
	L535, L536 L521, L522 (F=210KHz) L502 L501 (1mH)		LFA122J RTD1045 RTD1067 RTF1160
<b>CAPACITORS</b>			
	C521 C525, C526 C503, C516 C502, C606, C626 C624		CCCCH470J50 CCCSL221K500 CEAS100M50 CEAS101M16 CEAS101M25
	C622 C608 C515 C504, C505, C537 C517, C611		CEAS101M50 CEAS102M6R3 CEAS220M25 CEAS330M16 CEAS4R7M50
	C607 C535, C536 C509 C507, C508 C531, C532		CEAS682M16 CFTXA103J50 CFTXA153J50 CFTXA222J50 CFTXA223J50
	C510 C529, C530 C539, C540, C614 C501, C523, C524, C601-C603, C621, C623, C625, C627, C628 C533, C534		CFTXA332J50 CFTXA333J50 CKCYF103Z50 CKCYF473Z50 CKPUBY471K50
	C511 (C=1500PF, A=J, YDC=100) C527, C528 (C=390P, Y(DC)=500) C605 (C=6800UF, YDC=25, A=20) $\Delta$ C641		RCE1026 RCG1004 RCH1032 VCG-044
<b>RESISTORS</b>			
	R511 R503 R509, R510 R622 $\Delta$ R621 (47 $\Omega$ )		RD1/2LF010J RD1/2LF120J RD1/2PMF100J RD1/2PMF562J RFA1/4L470J
	R516 R515 R623 (1.5K) YR545, YR546 (15K) OTHER RESISTORS		RN1/6PQ2202F RN1/6PQ6801F RS1LMF152J RCP1090 RD1/6PM□□□J
<b>OTHERS</b>			
	$\Delta$ TERMINAL		RKC-061

Mark	No.	Description	Part No.
<b>HEADPHONE UNIT</b>			
<b>SEMICONDUCTORS</b>			
	IC231 Q231, Q232		MS238AP 2SD2144S
<b>CAPACITORS</b>			
	C231, C232 C237, C238 C235, C236 C233, C234 (C=101, V(DC)=25)		CEYA010M50 CEYA4R7M50 CKPUBY221K50 PCH1076
<b>RESISTORS</b>			
	R237, R238 (100 $\Omega$ ) VR231 (20KB) OTHER RESISTORS		RDR1/4PM101J PCS1002 RD1/6PM□□□J
<b>OTHERS</b>			
	JA231 HEADPHONE JACK		RKN1002
<b>REC SWITCH UNIT</b>			
<b>SWITCHES</b>			
	S3		RSG-143
<b>TAPE SELECTOR UNIT</b>			
<b>SWITCHES</b>			
	S1, 2		RSH-070
<b>CONNECTOR UNIT</b>			
<b>CAPACITORS</b>			
	C1		CKCYF473Z50
<b>RESISTORS</b>			
	ALL RESISTORS		RD1/6PM□□□J
<b>OTHERS</b>			
	CN61 CONNECTOR (7P) CN62 CONNECTOR (9P)		SBRK07S SBRK09S
<b>SENSOR UNIT (B)</b>			
<b>SEMICONDUCTORS</b>			
	D2		GPIA51HR
<b>CAPACITORS</b>			
	C3		CKPUY103N16
<b>RESISTORS</b>			
	ALL RESISTORS		RD1/6PM□□□J

## 6. ADJUSTMENTS

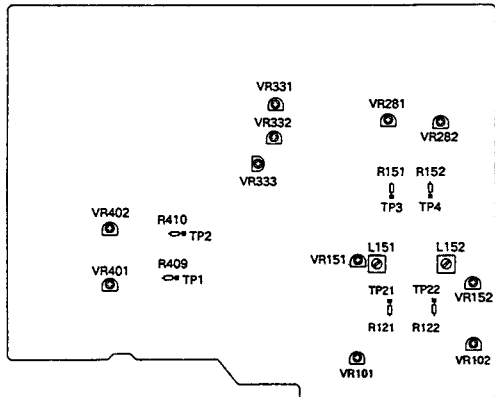
### 6.1 MECHANICAL ADJUSTMENT

1. Tape speed Adjustment

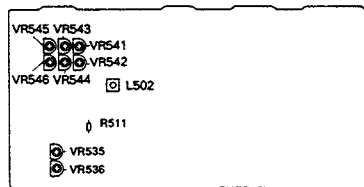
Mode	Test tape	Adjustment position	Specification rating (playback frequency)
PLAY	Play the STD-301 tape (3kHz)	Tape speed adjustment hole	3015Hz ± 5Hz

Fig. 6-1 Tape speed adjustment

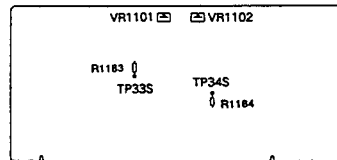
#### MAIN UNIT



#### BIAS UNIT



#### DECODE UNIT



#### ENCODE UNIT

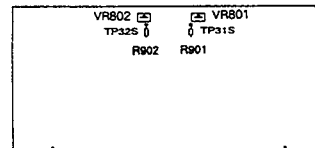


Fig. 6-2 Adjusting points

### 6.2 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. 6-3)  
 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 careful attention to the type of tape used.

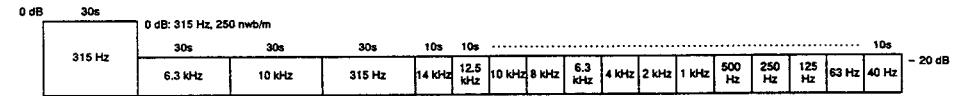


Fig. 6-3 Constants of the test tape STD-331E

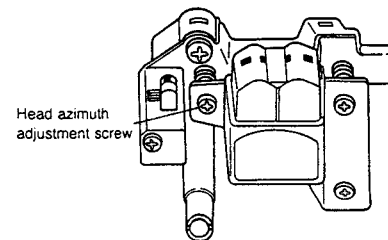


Fig. 6-4 Head azimuth adjustment

#### List of Adjustments

##### Playback sections

- Head azimuth adjustment.
- Playback level adjustment.
- DC balance adjustment.

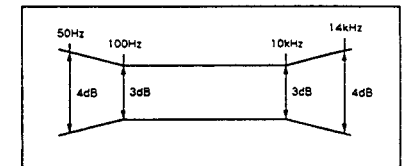
##### Recording sections

- Bias oscillator adjustment.
- Bias trap adjustment.
- DOLBY-S encoder adjustment.
- Recording bias adjustment.
- Recording level adjustment.
- Level meter check.
- AUTO BLE adjustment.

NOTE: This unit has an automatic tape selection feature.

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.

#### PLAY BACK



#### RECORDING

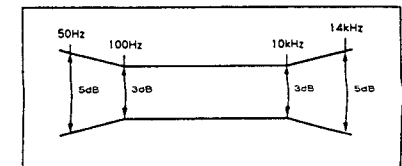


Fig. 6-5 Frequency response zone

## PLAYBACK SECTION

### 1. Head Azimuth Adjustment

- Turn VR151, 152 to mechanical center positions.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 10 kHz/-20 dB section of STD-331E test tape.	Head azimuth adjustment screw. (See Fig. 6-4)	LINE OUT	Maximum playback signal level.	
2.	STOP	Lock the screw with screw lock after completing adjustment.				

Note: The left and right phase difference for the 12.5 kHz tone should be within 75 degrees. (That for the 10 kHz tone should be within 60 degrees.)

### 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.	Set the DOLBY NR switch to the S position.					
2.	PLAY	Play the 315 Hz/0 dB section of the STD-331E test tape.	DOLBY S VR1101 (Lch) VR1102 (Rch)	TP. 33S (Lch) TP. 34S (Lch)	-8.5 dBV	
3.	Set the DOLBY NR switch to the OFF position.					
4.	PLAY	Play the 315 Hz/0 dB section of the STD-331E test tape.	Deck VR151 (Lch) VR152 (Rch)	TP. 3 (Lch) TP. 4 (Lch)	-11.0 dBV	

### 3. DC Balance Adjustment

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	-	-	VR101(Lch) VR102(Rch)	TP. 21(Lch) TP. 22(Rch)	0V ± 0.2V	

## RECORDING SECTION

### 1. Bias Oscillator Adjustment

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	REC/ PLAY	Load the STD-610 test tape with no input signal.	Deck L502	TP. 11	210kHz ± 800 Hz	

### 2. Bias Trap Adjustment

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	REC/ PLAY	Load the STD-610 test tape with no input signal.	Deck L151 (Lch) L152 (Rch)	TP. 3 (Lch) TP. 4 (Rch)	Minimum output	

### 3. DOLBY-S Encoder Adjustment

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	Set the DOLBY NR switch to the OFF position.					
2.	REC/ PAUSE	Apply a 315 Hz/-10 dBV signal to the line input terminals.	REC level control volume	TP. 1 (Lch) TP. 2 (Rch)	-15.2 dBV	
3.	Set the DOLBY NR Switch to the S position.					
4.	REC/ PAUSE	Apply a 315 Hz/-10 dBV signal to the line input terminals.	VR801 (Lch) VR802 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	-14.5 dBV	

### 4. Recording Bias Adjustment

- After the adjustment, Caution should be exercised so as not to become under bias by checking the distortion rate.
- Set the DOLBY NR switch to the OFF position and DOLBY HX PRO switch to the ON position.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks	
1.	REC/ PLAY	Record the 315 Hz and 10kHz signals at -26 dBV input level onto the STD - 631 test tape, and Playback.	NOR. VR541 (Lch) VR542 (Rch)	LINE OUT	Repeatedly record, playback and adjust so that the playback level of 10 kHz signal becomes 0 dB ± 0.5dB when compared with the 315Hz signal.		
2.		Record the above signal onto the STD-621 test tape, and playback.	CrO2 VR543 (Lch) VR544 (Rch)				0 dB ± 0.5 dB
3.		Record the above signal onto the STD-610 test tape, and playback.	MET. VR545 (Lch) VR546 (Rch)				0 dB ± 0.5 dB
4.	Set the DOLBY HX PRO switch to the OFF position.						
5.	REC → PLAY	Record and playback the 315 Hz signal and a 10kHz signal at -26 dBV input level.	NOR VR535 (Lch) VR536 (Rch)	LINE OUT	Turn the control fully counterclockwise, and gradually turn to the right to adjust to 0 dB ± 0.5 dB compared when HX-Pro is ON.	Turn control clockwise past the peak to assure proper overbias value.	
6.	Set the DOLBY NR switch to the S position.						
7.		Record the 315 Hz and 10kHz signals at -26 dBV input level onto the STD - 631 test tape, and Playback.	NOR. VR541 (Lch) VR542 (Rch)	LINE OUT	Repeatedly record, playback and adjust so that the playback level of 10 kHz signal becomes 0 dB ± 1.0dB when compared with the 315Hz signal.		
8.		Record the above signal onto the STD-621 test tape, and playback.	CrO2 VR543 (Lch) VR544 (Rch)				0 dB ± 1.0 dB
9.		Record the above signal onto the STD-610 test tape, and playback.	MET. VR545 (Lch) VR546 (Rch)				0 dB ± 1.0 dB

Note : Adjust in the order of NOR → CrO2 → METAL. After completing all adjustments, note that the adjustment values for CrO2 and METAL will be altered if NOR is re-adjusted, and that for METAL will be altered if CrO2 is re-adjusted.

### 5. Recording Level Adjustment

- Set the DOLBY NR switch to the OFF position.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks	
1.	REC PAUSE	Apply a 315 Hz/ -4 dBV signal to the line input terminals, load the STD-631 test tape.	REC level control volume	TP. 3 (Lch) TP. 4 (Rch)	-15.2 dBV		
2.	REC/ PLAY	Record the above signal onto the STD - 631 test tape, and playback.	Deck VR401 (Lch) VR402 (Rch)	TP. 3 (Lch) TP. 4 (Rch)	Repeatedly record, playback and adjust so that the playback signal level becomes -15.2 dB.		
3.	REC/ PLAY	Record the above signal onto the STD - 621 test tape, and playback.	Check				-15.2 dBV ± 1 dB
4.	REC/ PLAY	Record the above signal onto the STD - 610 test tape, and playback.	Check				-15.2 dBV ± 1 dB
5.	STOP	Set the DOLBY NR switch to the S position.					
6.	REC/ PLAY	Record the above signal onto the STD - 631 test tape, and playback.	Check	LINE OUT	0 dB ± 0.5 dB for paragraph 2. (* 1)		

\* 1: If this confirmation value cannot be obtained, perform "Playback Level Adjustment" and "DOLBY - S Encoder Adjustment" once again.

6. Level Meter Adjustment

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	REC PAUSE	Apply a 315 Hz/-8 dBV (501 mV) signal to the line input terminals.	VR281 (Lch) VR282 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	Adjust that the level meters "0 dB" light up within -11.2 dBV ± 0.5 dB of the signal output level.	

Note: Rotate from the left to the right, and adjust so that it lights up. Be sure to adjust properly as it will serve as the reference level for BLE.

7. AUTO BLE Adjustment

- BLE Adjustment must be performed after all other adjustments are completed.
- This adjustment should be performed in the test mode.

Entering the test mode  
Press the COUNTER, METER and MONITOR (AUTO) keys on the front panel simultaneously, with the power ON. The unit enters the test mode and oscillates a 400 Hz signal.  
Thereafter, each time the START/CLEAR key is pressed, the oscillation frequency changes as follows: 3 kHz oscillation → 15 kHz oscillation → 400Hz oscillation

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks	
1.		REC LEVEL VR MIN or no signal input.	-	-	-		
2.		Press the three keys COUNTER, METER and MONITOR (AUTO) on the front panel simultaneously.	VR331	Level meter Rch	Adjust so that 0 dB on the level meter lights.	400 Hz adjustment	
3.		Press the START/CLEAR key once.	VR332		Adjust so that 0 dB on the level meter lights.	3 kHz adjustment	
4.		Press the START/CLEAR key once.	VR333		Adjust so that -3 dB on the level meter lights.	15 kHz adjustment	
5.		When the RESET (COUNTER) key is pressed again, the test mode is released.					

6. FOR CT-95/SD, CT-S920S/HEM AND CT-S920S-G/HEM

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.
- 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	$\begin{matrix} 5 & 6 & 1 \\   &   &   \end{matrix}$
47k Ω	→ 47 × 10 <sup>3</sup>	→ 473	.....	RD1/4PS	$\begin{matrix} 4 & 7 & 3 \\   &   &   \end{matrix}$
0.5 Ω	→ 0R5	.....	.....	RN2H	$\begin{matrix} 0 & R & 5 \\   &   &   \end{matrix}$
1 Ω	→ 010	.....	.....	RS1P	$\begin{matrix} 0 & 1 & 0 \\   &   &   \end{matrix}$

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

5.62k Ω	→ 562 × 10 <sup>3</sup>	→ 5621	.....	RN1/4PC	$\begin{matrix} 5 & 6 & 2 & 1 \\   &   &   &   \end{matrix}$
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CT-95/SD, CT-S920S/HEM, CT-S920S-G/HEM and CT-95/HEM have the same construction except for the following:

Mark	Symbol & Description	Part No.				Remarks
		CT-95/HEM	CT-95/SD	CT-S920S/HEM	CT-S920S-G/HEM	
	Main unit	RWX1081	RWX1081	RWX1081	RWX1081	
	Control unit	RWZ2884	RWZ2880	RWZ2886	RWZ2886	
	BAL VR unit	RWZ2985	RWZ2991	RWZ2987	RWZ2987	
	FL unit	RWZ2988	RWZ2992	RWZ2998	RWZ2998	
	Operation unit	RWZ2887	RWZ2983	RWZ2899	RWZ2899	
NSP	Bias unit	RWZ2988	RWZ2984	RWZ3000	RWZ3000	
NSP	Headphone unit	RWZ2989	RWZ2985	RWZ3001	RWZ3001	
NSP	Encode unit	RWZ2743	RWZ2743	RWZ2797	RWZ2797	
NSP	Decode unit	RWZ2744	RWZ2744	RWZ2798	RWZ2798	
$\Delta$	AC power cord	ADG1036	PDG1013	ADG1036	ADG1036	
$\Delta$	T1 Power transformer (AC220 - 230/240V)	RTT1201	.....	RTT1202	RTT1202	
$\Delta$	T1 Power transformer (AC110/120 - 127/220/240V)	.....	RTT1236	.....	.....	
$\Delta$	Voltage selector (AC110/120 - 127/220/240V)	.....	PSB1002	.....	.....	Screw BBZ30P080FCC
⊙	Mechanism unit	RYM1185	RYM1185	RYM1216	RYM1216	
	FL filter	RAH1836	RAH2274	RAH1836	RAH1836	
	Front panel	RAH2280	RAH2303	RAH2281	RAH2282	
	Screw	ABA1131	ABA1131	.....	.....	
	Side spacer	PEB1187	PEB1187	.....	.....	
	Side plate spacer	PNM1150	PNM1150	.....	.....	
	Side SW knob	RAC1540	RAC1540	RAC1562	RAC1540	
	Power button	RAC1657	RAC1657	RAC1703	RAC1657	
	Operation button	RAC1658	RAC1658	RAC1704	RAC1658	
	Balance knob	RAC1662	RAC1662	RAC1705	RAC1662	
	VR knob assembly A	RXA1563	RXA1563	.....	.....	
	VR knob	.....	.....	RAC1707	RAC1708	
NSP	Side panel	RAH1931	RAH1931	.....	.....	
	Door	RNK1756	RNK1756	.....	.....	
	Door	.....	.....	RAH2275	RAH2132	
	VR ring	RAT1012	RAT1012	RAT1011	RAT1012	
	Screw	RBA1088	RBA1088	FBT40P080FZK	RBA1088	
	Screw	RBA1088	RBA1088	.....	.....	
	Collar	RAT1002	RAT1002	.....	.....	
	Door assembly	REA1002	REA1002	.....	.....	
	Panel stay	RNT1176	RNT1176	RNT1177	RNT1178	
	Bonnet	RXX1427	RXX1427	RXX1516	RXX1506	

Mark	Symbol & Description	Part No.				Remarks
		CT-95/ HEM	CT-95/ SD	CT-S920S/ HEM	CT-S920S-G/ HEM	
NSP	Badge	RAN1011	RAN1011	.....	RAN1011	
	Name plate	.....	.....	VAM1032	.....	
	Rear panel	RNA1718	RNA1719	RNA1720	RNA1721	
	Door panel	RAH2133	RAH2133	.....	.....	
NSP	Door badge	RAN1006	RAN1006	.....	.....	
NSP	Transformer sheet	REE1004	REE1004	.....	.....	
NSP	Main chassis	RNB1042	RNB1042	RNB1059	RNB1059	
NSP	Center stay	RNC1088	RNC1088	RNC1058	RNC1058	
NSP	Center stay	RNC1089	RNC1089	RNC1059	RNC1059	
NSP	PS holder	RNE1185	RNE1185	.....	.....	
NSP	Bonnet bracket	RNE1470	RNE1470	.....	.....	
	Packing case	RHG1489	RHG1490	RHG1491	RHG1492	
	Pad (F)	RHA1073	RHA1073	RHA1119	RHA1119	
	Pad (R)	RHA1074	RHA1074	RHA1118	RHA1118	
	Connection cord with mini plug	.....	PDE - 319	PDE - 319	PDE - 319	
	Connection cord assembly	RDE1013	RDE1013	RDE1002	RDE1002	
	Operating instruction (German/Italian/Dutch/Swedish/ Spanish/Portuguese)	RRD1138	.....	RRD1138	RRD1138	

**CONTROL UNIT**

RWZ2990, RWZ2996 and RWZ2984 have the same construction except for the following:

Mark	Symbol & Description	Part No.			Remarks
		RWZ2984	RWZ2990	RWZ2996	
	D685	1SS254	1SS254	.....	
	C717	.....	CKCYF103Z50	CKCYF103Z50	
	CN200 connector	TXC - P15X - A1	TXC - P15X - A1	TXC - P14X - A1	
	JA72, JA73 Remote control jack	.....	RKN1004	RKN1004	

**BAL. VR UNIT**

Although RWZ2991, RWZ2997 and RWZ2985 are different in part number, they consist of the same components.

**FL UNIT**

RWZ2992, RWZ2998 and RWZ2986 have the same construction except for the following:

Mark	Symbol & Description	Part No.			Remarks
		RWZ2986	RWZ2992	RWZ2998	
	D735 - D737	.....	1SS254	1SS254	
	L701 - D703	PTH1008	PTH1008	.....	
	R735	RD1/6PM223J	RD1/6PM274J	RD1/6PM274J	
	R736	.....	RD1/6PM102J	RD1/6PM102J	

**OPERATION UNIT**

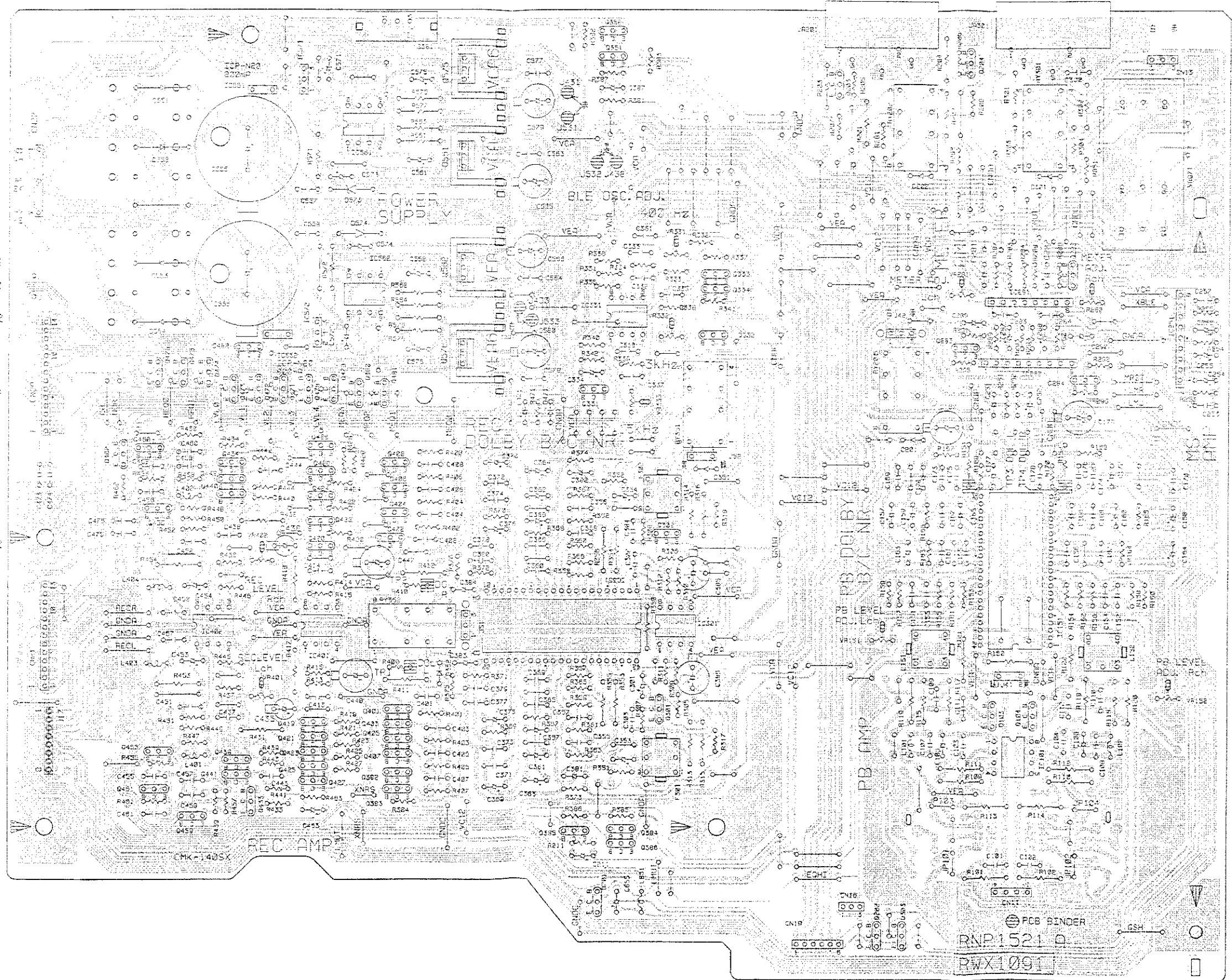
Although RWZ2993, RWZ2999 and RWZ2987 are different in part number, they consist of the same components.

PCB DIAGRAM

View from component side

MAIN UNIT (RWZ1091)

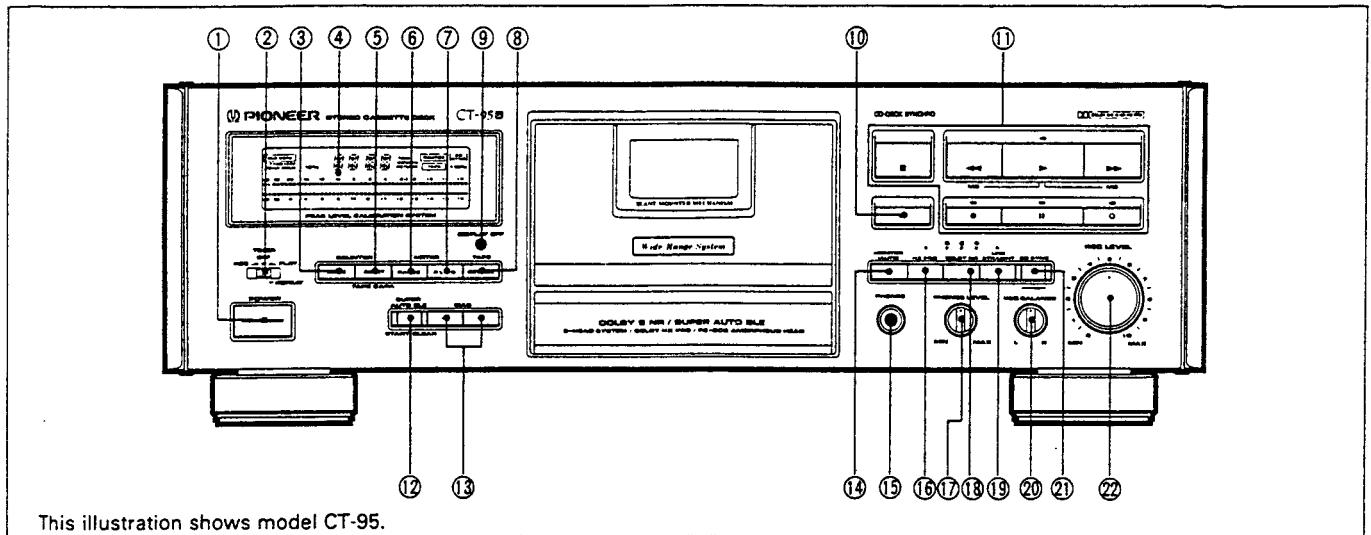
- Q352
- Q351 Q204
- IC571 Q575 Q203
- IC551
- IC556
- Q561
- VR331
- Q333 Q282
- Q562 IC281
- Q334
- IC331
- IC572 Q332 Q253
- Q482 Q476 Q572 IC282
- Q474 Q475 Q476 Q471 Q334 Q284
- Q479
- VR335
- Q482 Q451
- Q460 Q428
- Q434 Q406
- Q442 Q426
- Q440 Q406
- Q440 Q424
- Q455 Q404
- Q422 Q302
- Q402
- Q420
- VR402
- IC151
- IC402 IC401 IC351
- IC301
- VR151
- VR152
- VR401
- Q401 Q301 Q103
- Q419 Q104
- Q403
- Q421
- Q405
- Q439 Q423
- Q441 Q407
- Q461 Q425
- Q433 Q382
- Q459 Q427 Q384
- Q383 Q385
- Q386
- Q201 Q202
- Q203







## 8. PANEL FACILITIES



This illustration shows model CT-95.

- ① Power switch (POWER)**  
 After pressing the switch, the WAIT message will appear in the counter display and the level meter scale will flash for about four seconds (the time necessary for circuitry to stabilize). During the time the display is flashing, no operating buttons will respond, with the exception of the cassette door open/close button (▲). To close the cassette door, do it while the power is turned on.
- ② TIMER mode/repeat play switch (TIMER REC/OFF/PLAY-REPEAT)**  
**REC:** Set to this position to perform timer recording.  
**OFF:** Set to this position under ordinary conditions, (when not using the timer or repeat functions).  
**PLAY-REPEAT:** Set to this position to perform timer playback. When the switch is set to this position during normal playback, repeat playback of a single tape can be performed.
- ③ Counter mode button (COUNTER MODE)**  
 Each time this button is pressed, one of the three modes (Normal tape counter/Timer counter/Remaining time counter) is set in sequence.
- ④ Function display**
- ⑤ Counter reset/tape capacity selector button (COUNTER RESET/TAPE CAPA)**  
 Reset the counter indication to "0000" in the normal tape counter or the time counter mode.  
 To indicate the correct time value in the remaining time counter mode, this button must be set in accordance with the tape used.
- ⑥ Level meter mode selector button (METER MODE)**  
 Switches between wide range, expanded range, and bias display.
- ⑦ Level meter PLCS mode button (METER PLCS)**  
 Selects the display mode of the peak level.  
 When press this button so that the PEAK HOLD indicator lights up, the level meter holds the maximum level indications of the signal. To erase the maximum level indications, press this button again. When the PEAK HOLD indicator goes off, the level meter holds peak indications for about 1.2 second.  
**[For METER PLCS Button]**  
 In addition to the peak level display noted above, the button can also be used with the peak level calibration system to adjust tape recording levels.
- ⑧ Tape return button (TAPE RETURN)**  
 This button is used in the normal tape counter mode to fast forward or rewind the tape to a point near the counter reading "0000".
- ⑨ Display off button (DISPLAY OFF)**  
 Press this button to turn off the function display.
- ⑩ Open/Close button (▲)**  
 Press this button to open or close the cassette door. Whenever inserting or removing a cassette tape, be sure that the power is turned on.  
**NOTE:**  
 If the cassette door is closed while the unit is turned off, and the power is then turned on, the cassette door may open and close after pressing one of the operation buttons. This occurs when the microprocessor resets the door mechanism to its initial state and does not indicate any malfunctioning of the unit.
- ⑪ Operation buttons**  
 ■ : Stop  
 ◀◀ : Rewind/music search  
 ▶▶ : Playback  
 ▶▶▶ : Fast forward/music search  
 ● : Recording  
 || : Pause  
 ○ : Recording mute
- ⑫ SUPER AUTO BLE START/CLEAR button**
- ⑬ Recording bias buttons (BIAS -/+)**  
 When desired, these buttons can be used to manually adjust the recording bias after performing AUTO BLE tuning.  
 - : Changes tone by reducing recording bias  
 + : Changes tone by increasing recording bias
- ⑭ Monitor selector button (MONITOR [AUT])**  
 Used to monitor the source sound or adjust recorded sound during recording.  
 ● When the unit is set to record or playback mode, the TAPE indicator lights up and monitor mode is automatically selected.
- ⑮ Headphones jack (PHONES)**
- ⑯ DOLBY\* HX PRO ON/OFF button/indicator**  
 Press to turn the Dolby HX PRO system on and off.
- ⑰ Headphones level control (PHONES LEVEL)**
- ⑱ DOLBY\* NR button (OFF/B/C/S)**  
 Press to select the Dolby NR system in the following order. The selected indicator lights up on the display.  
 — OFF — B — C — S —  
 (indicator will go off)

- \*  
 • 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.

# CT-95, CT-S920S, CT-S920S-G

- ① LINE STRAIGHT button/indicator
- ② Recording balance control (REC BALANCE)
- ③ CD · DECK SYNCHRO recording button (CD SYNC)
- ④ Recording level control (REC LEVEL)

## 9. SPECIFICATIONS

System	4 track, 2-channel stereo
Heads	
Recording/playback head:	
Laser amorphous playback head and Laser amorphous recording head combination	× 1
Erasing head: Ferrite head with sendust guard	× 1
Motor	DC servo capstan motor × 1 DC reel motor × 1 DC auxiliary motor × 1
Wow and Flutter	No more than 0.022% (WRMS) No more than ±0.052% (DIN)
Fast Winding Time	Approximately 75 seconds (C-60 tape)
Frequency Response	
-20 dB recording:	
[CT-95]	
TYPE IV (Metal) tape	10 to 30,000 Hz (±6 dB)
TYPE II (HIGH/CrO <sub>2</sub> ) tape	10 to 21,000 Hz (±6 dB)
TYPE I (Normal) tape	10 to 21,000 Hz (±6 dB)
[CT-S920S]	
TYPE IV (Metal) tape	10 to 25,000 Hz (±6 dB)
TYPE II (HIGH/CrO <sub>2</sub> ) tape	10 to 21,000 Hz (±6 dB)
TYPE I (Normal) tape	10 to 21,000 Hz (±6 dB)
Signal-to-Noise Ratio (Dolby NR off)	
[CT-95]	More than 64 dB
[CT-S920S]	More than 63 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)
Dolby S-type NR ON	More than 22 dB (at 5 kHz)
Harmonic Distortion	No more than 0.6% (-4 dB)
Input (Sensitivity)	
LINE (INPUT)	95 mV (Input impedance 47 kΩ)
Output (Reference level)	
LINE (OUTPUT)	0.5 V (Output impedance 1.8 kΩ)
Headphone	5.5 mW (Load impedance 8 Ω, PHONES LEVEL control max.)

### Subfunctions

- SUPER AUTO BLE system
- Bias control
- Dolby HX Pro Headroom Extension system (on/off possible)
- Dolby S-type noise reduction system
- Dolby B-type and C-type noise reduction systems
- MPX filter
- Level meter with 2 modes peak hold selection (16 + 1 segments)
- Level meter range selection (wide/expanded)
- Peak level calibration system
- 4-digit electronic tape counter with mode selection
- Auto monitor selection (Tape/Source)
- Display off
- Music search (over ±15 selections)
- Automatic Tape Loose Canceller (ATLC)
- Tape return/Return play
- Auto space recording mute
- Auto tape selector
- Line straight
- Playback/recording timer start function
- CD · DECK SYNCHRO recording
- Headphones jack with level control
- Power eject (Open/Close)
- Repeat playback
- System remote control available (Except for CT-95 European model)
- Last memory

### Miscellaneous

Power Requirements	
European model	AC 220—230 Volts~, 50/60 Hz
U.K. model	230—240 Volts~, 50/60 Hz
U.S. and Canadian model	AC 120 V, 60 Hz
Multivoltage model	AC 110/120—127/220/240 V (switchable), 50/60 Hz
Power Consumption	
[CT-95]	29 W
[CT-S920S]	27 W
Dimensions	440 (W) × 144 (H) × 375 (D) mm 17-1/3 (W) × 5-5/8 (H) × 14-3/4 (D) in.
Weight (without package)	
[CT-95]	8.6 kg (18 lb. 15 oz.)
[CT-S920S]	8.0 kg (17 lb. 10 oz.)

### 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 modification; without notice, due to improvements.