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Service Manual



ORDER NO.
ARP 2009

STEREO CASSETTE DECK

CT-447

CT-447S

MODEL CT-447 AND CT-447-S HAVE FOLLOWING VERSIONS:

Type	Applicable model		Power requirement	Export destination
	CT-447	CT-447-S		
HEM	○		AC 220V, 240V (switchable) *	European continent
HB	○		AC 220V, 240V (switchable) *	United Kingdom
HEWM		○	AC 220V, 240V (switchable) *	European continent

* Change the primary wiring of the power transformer.

- This manual is applicable to the HEM, HB and HEWM types.
- As to the HB and HEWM types, refer to page 40.
- The CT-447-S is the same as the CT-447 except for color.
- Ce manuel pour le service comprend les explications de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.

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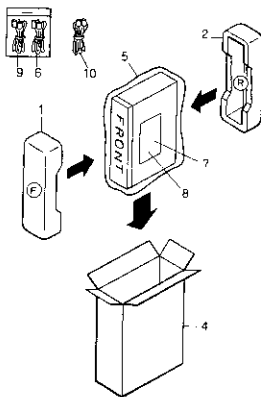
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SEL APR. 1990 Printed in Japan

1. PACKING

Parts List

Mark	No.	Description	Parts No.
	1	Pad (A)	RHA1006
	2	Pad (B)	RHA1007
	3	-----	
	4	Packing case	RHG1197
	5	Sheet	RHX-034
	6	Control code	RDE1018
	7	Operating instructions (English)	RRB1062
	8	Operating instructions (Spanish)	RRD1077
	9	Control code	RDE-010
	10	Control code (MIN)	RDE-319



2. EXPLODED VIEWS AND PARTS LIST

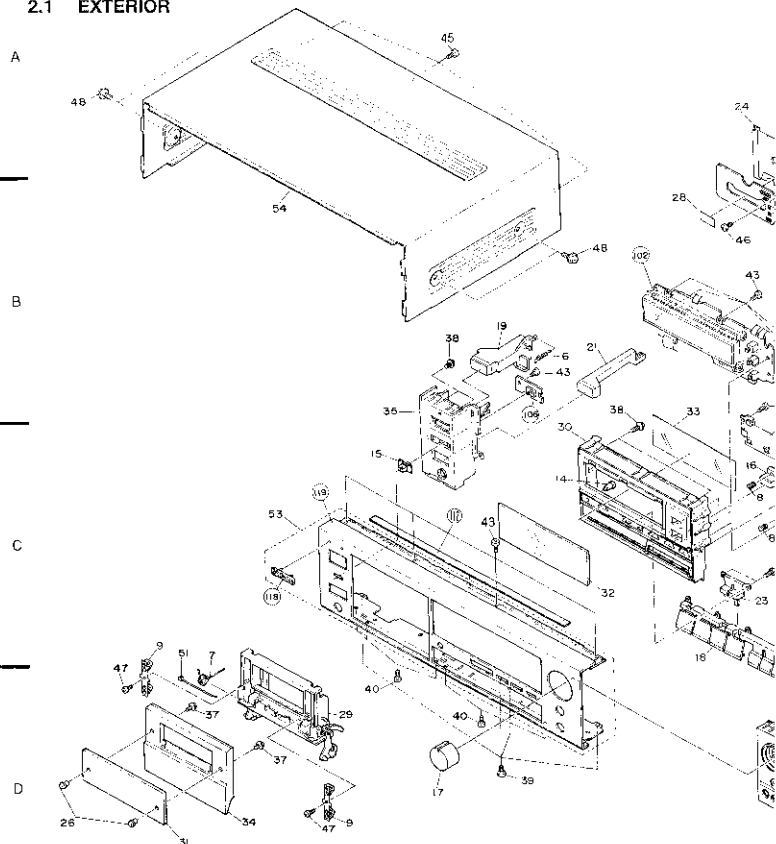
NOTES:

- Parts without part number cannot be supplied.
- 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.

2.1 Parts List of Exterior

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
Δ	1	Strain relief	OM-22B		36	VR escutcheon	RNK1316
Δ	2	Power cord	PDG1063		37	Screw	ABZ20P060FMC
Δ	3	Fuse (FU), F, 1.25A	REK101		38	Screw	ABZ30P080FMC
	4	Power transformer (T1)	RTT1137		39	Screw	BBZ30P080FZK
	5	Connector (3P)	RKP1380		40	Screw	BBZ26P080FZK
	6	Ratchet spring	HBH1008		41	Screw	BBZ90P040FMC
	7	Door spring (L)	RBH1134		42	Screw	IRZ30P080CC
	8	Push spring	RBH1146		43	Screw	BBZ30P080FMC
	9	Half pressure spring	RBH1104		44	Screw	BBZ30P100FZK
	10	Connector (2P)	RKP1381		45	Screw	BBZ30P080FCC
	11	Damper ass'y	REC1009		46	Screw	BCY28P100FZK
	12	Knob (PONES LEVEL)	RAC1416		47	Screw	BPZ20P080FMC
	13	Insulator	VNK1095		48	Screw	FBT40P080FZK
	14	Knob (COUNTER RESET)	TAA11009		49	Screw	IGZ30P150FCU
	15	Knob (A) (TIMER)	TAC-668		50	Screw	FMA30P660FCU
	16	Knob (AUTO BLE, LEVEL ME I EL, WIDE/EXPND)	RAC1216		51	Blinder	HbC-269
	17	Knob (REC LEVEL)	RAC1950		52	Blinder	REC-374
	18	Knob (EJECT)	RAC1352		53	Front panel ass'y	RXX1293
	19	Knob (EJECT)	RAC1361		54	Hexnut	RXX1292
	20	Knob (CD SYNCHRO, DOLBY ON/OFF, B/C TYPE)	RAC1290		55	Stopper	REC1061
	21	Knob (POWER)	RAC1304		56	Screw	BBZ30P080FZK
	22	Knob (REC BALANCE)	RAC1386		101	Main unit	
	23	Knob (COUNTER MODE, BI ANK SEARCH)	RAC1349		102	Display unit	
	24	Cassette plate	RAH1234		103	Control SW unit	
	25	-----			104	VR unit	
	26	Screw	HAT1001		105	Headphone unit	
	27	Stabilizer (B)	REB1038		106	Timer SW unit	
	28	Pleasant display paper	REE-113		107	Transformer 1 unit	
	29	Door pocket	RNT1010		108	Power SW unit	
	30	Button panel	RAH1690		109	Transformer 2 unit	
	31	Door lens	HAH1244		110	Mechanism unit	
	32	Meter lens	RAH1246		111	PCB spacer	
	33	FL filter	TAA11245		112	Bonnet cushion	
	34	Disc panel	RAH1678		113	Main chassis	
	35	Eject mold	RNK1310		114	Headphone bracket	
					115	Mechanism stay	
					116	Side stay	
					117	Center stay	
					118	Name plate	
					119	Front panel	
					120	Rear panel	
					121	Door fulcrum mold	
					122	-----	
					123	Regulator IC unit	
					124	HX unit	

2.1 EXTERIOR



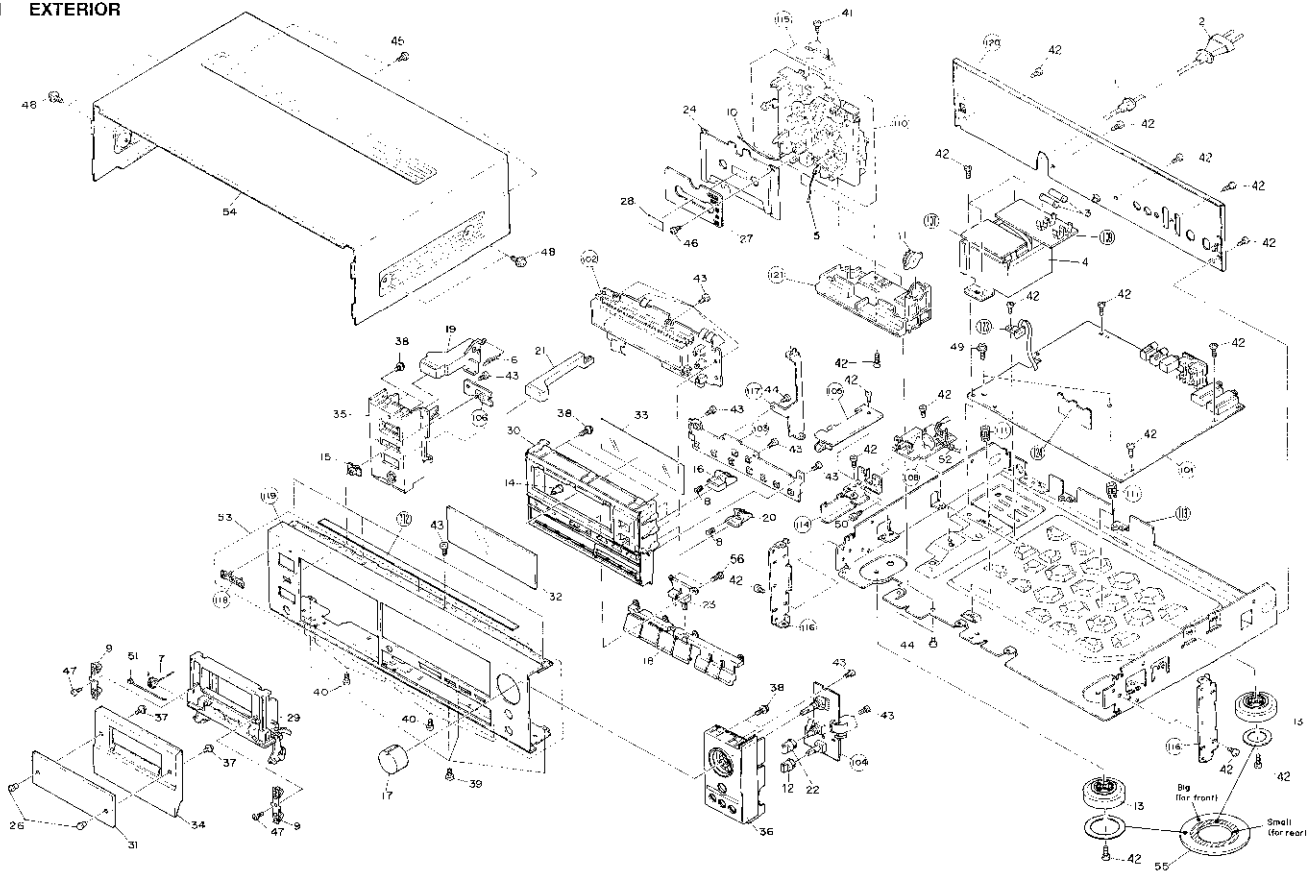
2.1 EXTERIOR

- 10FMC
- 10FMC
- 10FZK
- 10FZK
- 10FMC
- 10FCC
- 10FMC
- 10FMC
- 10FZK
- 10FCC
- 10FZK
- 10FMC
- 10FZK
- 10FCU
- 60FCU

10FZK

A
B
C
D

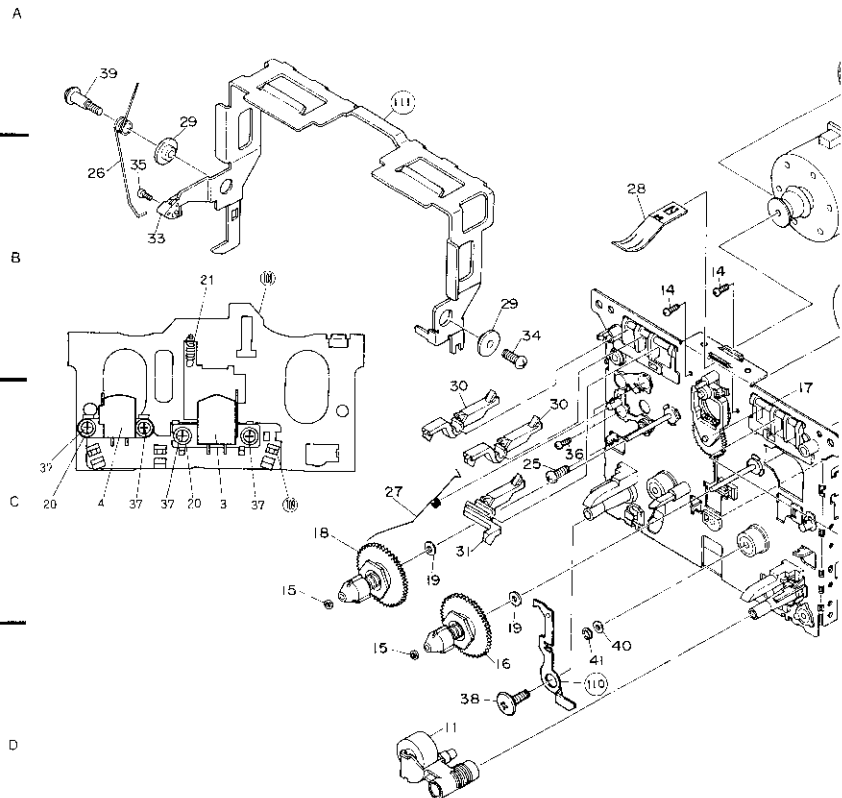
A
B
C
D



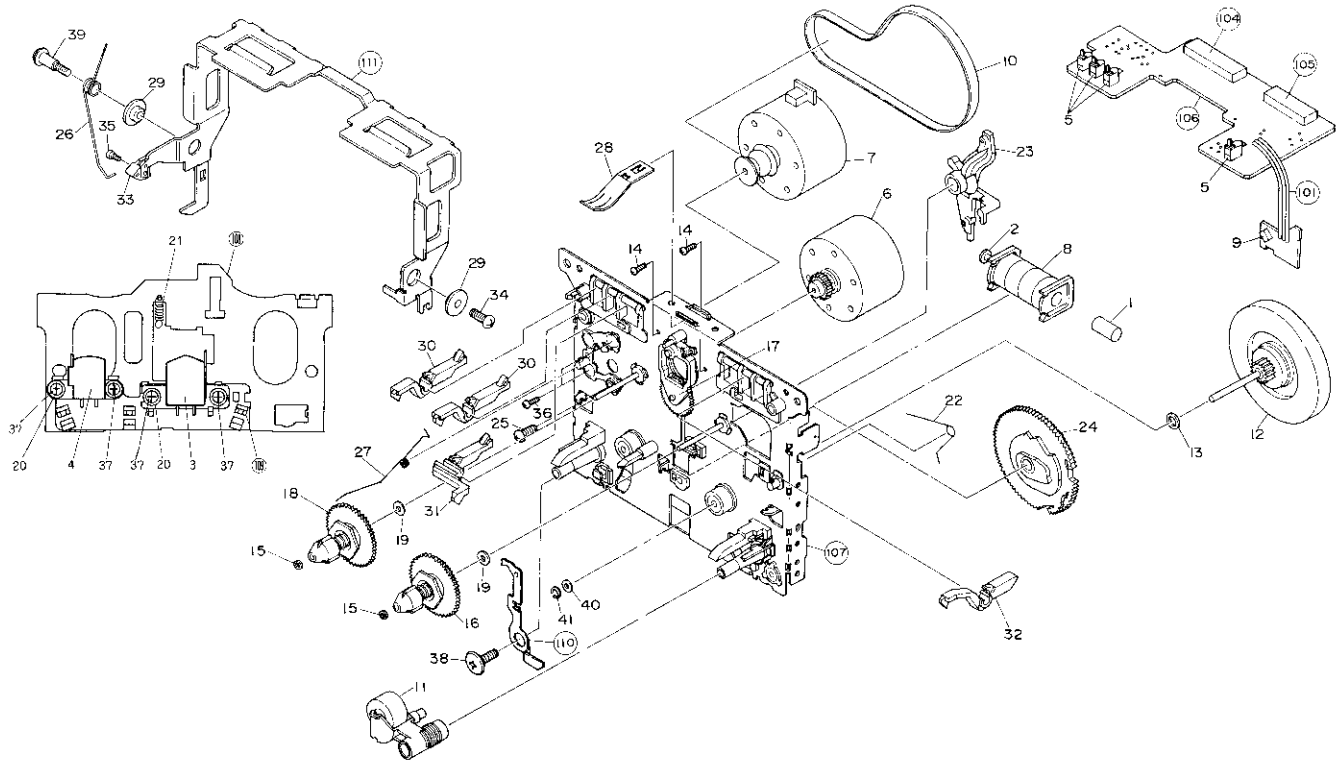
2.2 Parts List of Mechanism Unit

Mark	No.	Description	Parts No.
	1	Fixed core	RLA1130
	2	Plunger	HLA1132
	3	Head (R/P)	RPB-035
	4	Head (F)	RPB*046
	5	Push SW	RSG1018
	6	MTR red BI K	RXM1029
	7	MTR main BLK	RXM1032
	8	Solenoid BLK	RXP1010
	9	Photo-transistor	SP43534FG
	10	Main bolt	REB1134
	11	Finch roller ass'y	PXA1183
	12	FAW ass'y	RXA1346
	13	Washer	WA26D04SD025
	14	Part 2.6 x 6.4 ZN	RBA1075
	15	Washer	RBF-057
	16	Reel base DLX	RXA1184
	17	Idle BLK	RXA1255
	18	Reel base BLK	RXC-040
	19	Washer	WA21D070D013
	20	Azimuth SP	RBH1076
	21	Head base SP	RBL1003
	22	Slide SP	RBH1299
	23	Play arm	RNK1325
	24	Cam gear (3P)	RNK1326
	25	Part TT 2.6 x 5 ZN	RBA1079
	26	Lever (SP/L) (EJECT)	RBH1251
	27	SP cap(L) (EJECT)	RPH1284
	28	Spring (CASE/TTE)	RBK1031
	29	Lever (Color A)	RLA1133
	30	Detector lever (REC)	RNK1327
	31	Metal decler lever (L)	RNK1529
	32	Decler lever (P)	RNK1943
	33	Hook	RNM-160
	34	Screw	PBZ30P080FMC
	35	Screw	PCZ20P040FMC
	36	Screw	PMZ26P050FMC
	37	F lock screw	RBA1031
	38	Screw (7.7)	RBA1048
	39	Screw	RBA1075
	40	Washer	WA26D047D050
	41	Washer	YE15FUC
	101	Jumper (3P)	
	104	Connector (3P)	
	105	Connector (3P)	
	106	P.C. board	
	107	Chassis base BLK	
	108	Head base	
	109	Head spacer	
	110	Arm cap (L) (EJECT)	
	111	Lever (EJECT)	

2.2 MECHANISM UNIT



2.2 MECHANISM UNIT



A

B

C

D

7

1

2

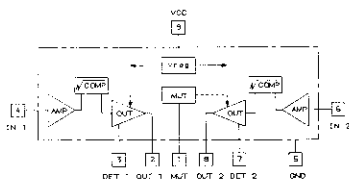
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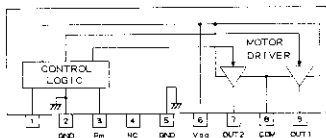
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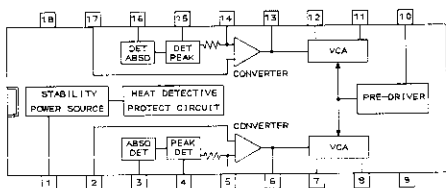
IC502 : BA6138



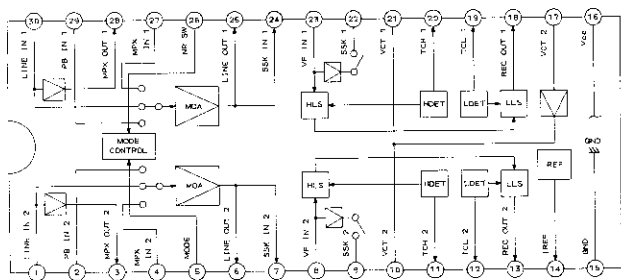
IC901 : BA6218



IC601 : MPC1297CA

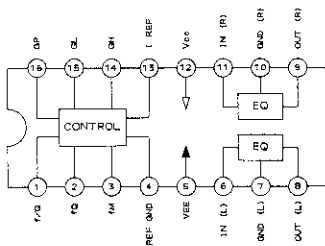


IC201 : CXA1330S



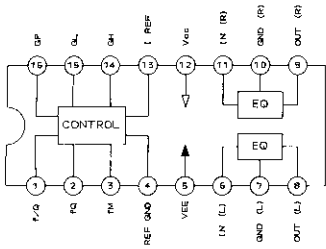
3. IC BLOCK DIAGRAM

IC301 : CXA1198AP-A

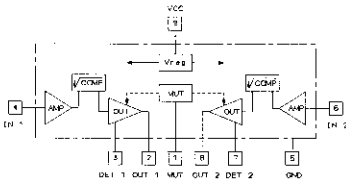


3. IC BLOCK DIAGRAM

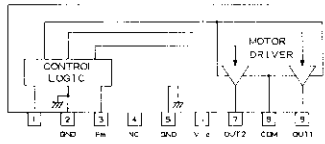
IC301 : CXA1198AP-A



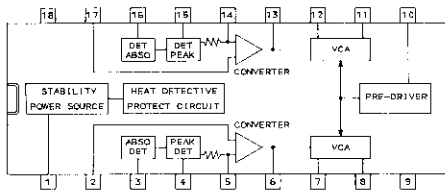
IC502 : BA6138



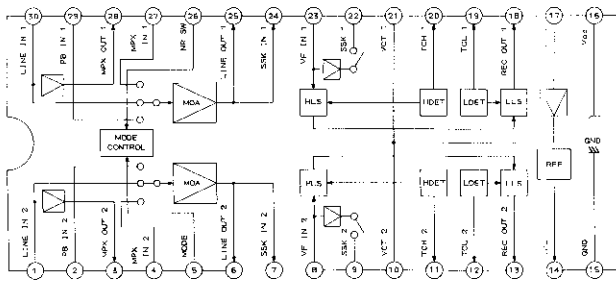
IC901 : BA6218



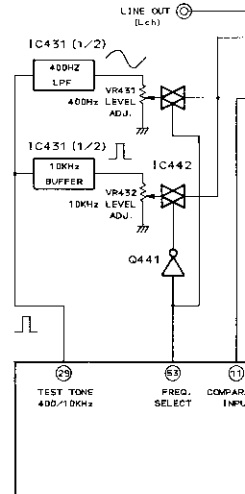
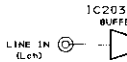
IC601 : MPC1297CA

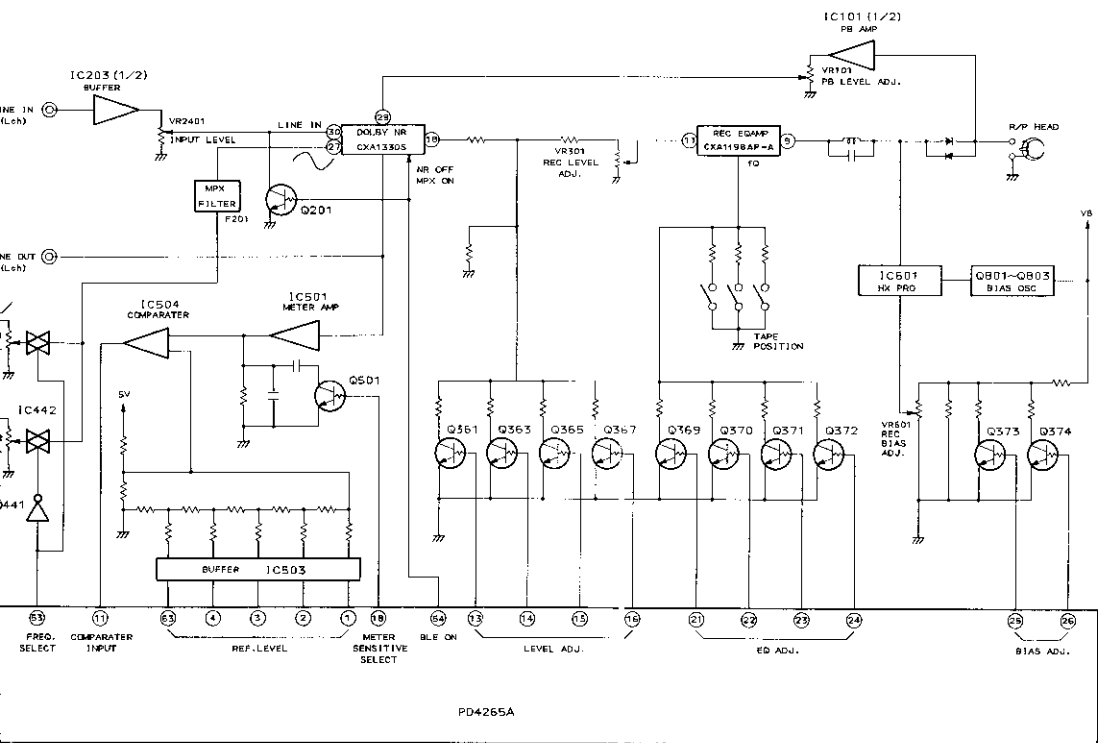


IC201 : CXA1330S

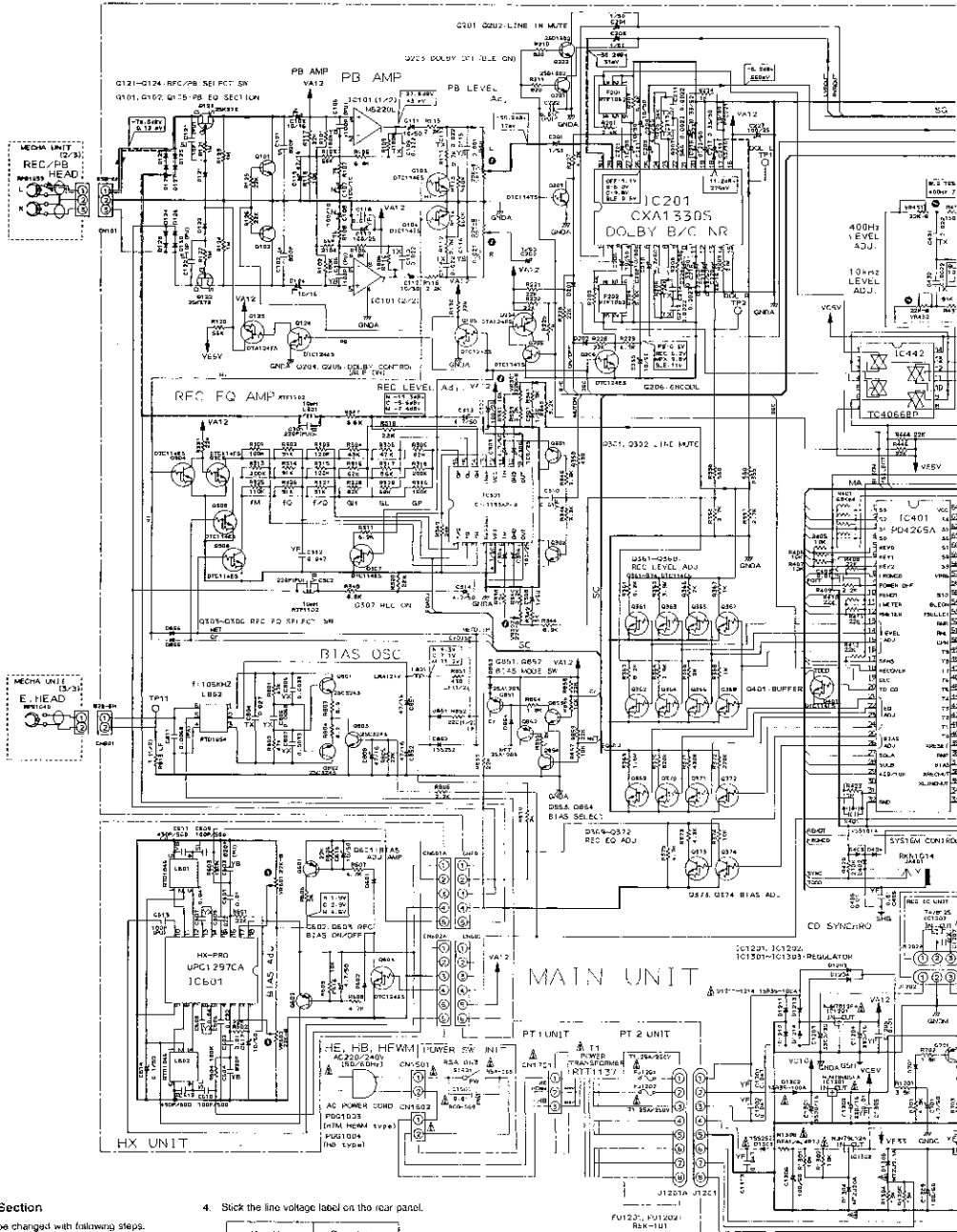


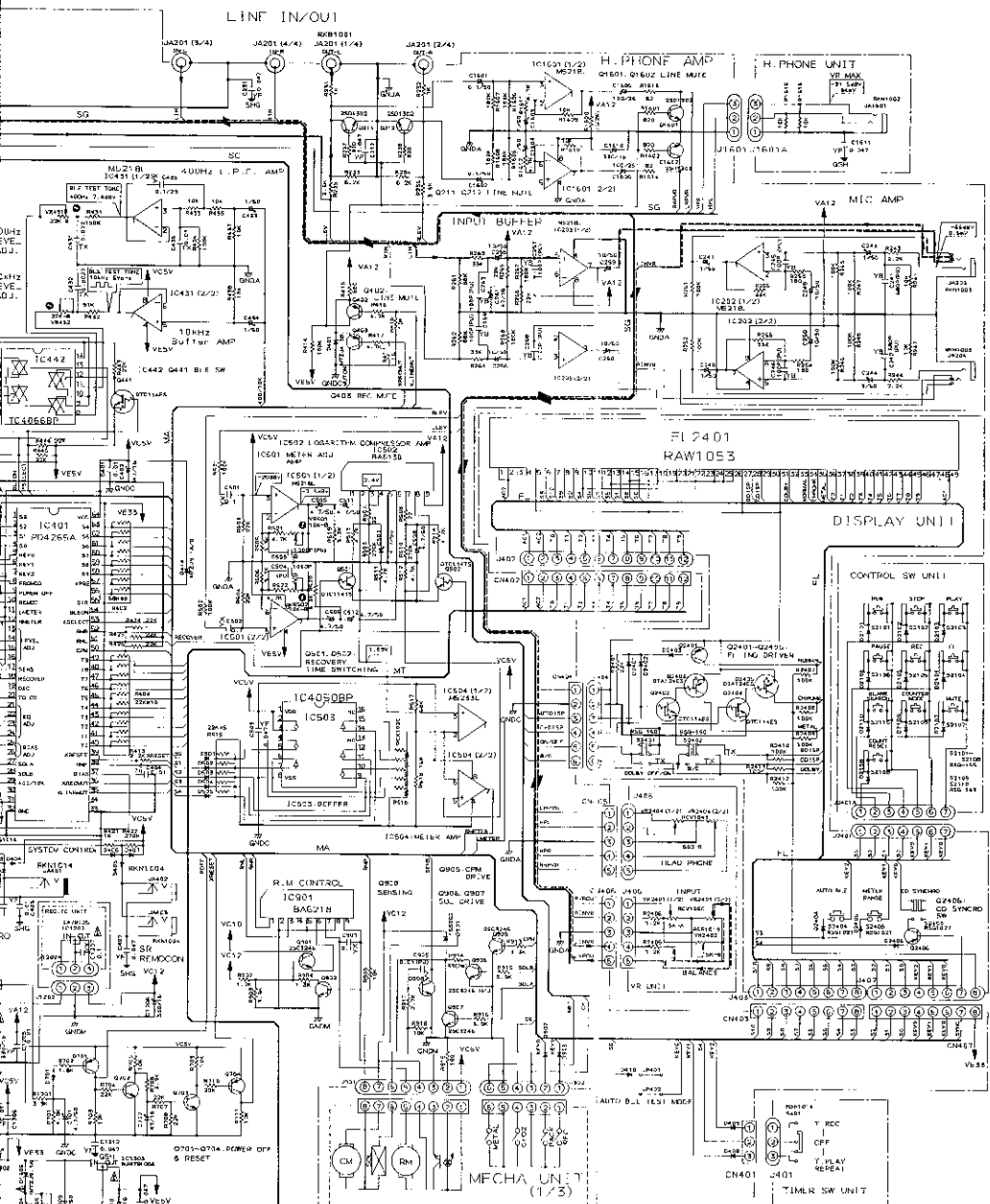
4. BLOCK DIAGRAM





5. SCHEMATIC DIAGRAM





NOTE IF THE PARTS ARE NOT IDENTICAL IN THE TWO SETS USE THE FOLLOWING ONE USED.

- 155204
- 2503511A
- 25A1303A

6. P.C. BOARDS CONNECTION DIAGRAM

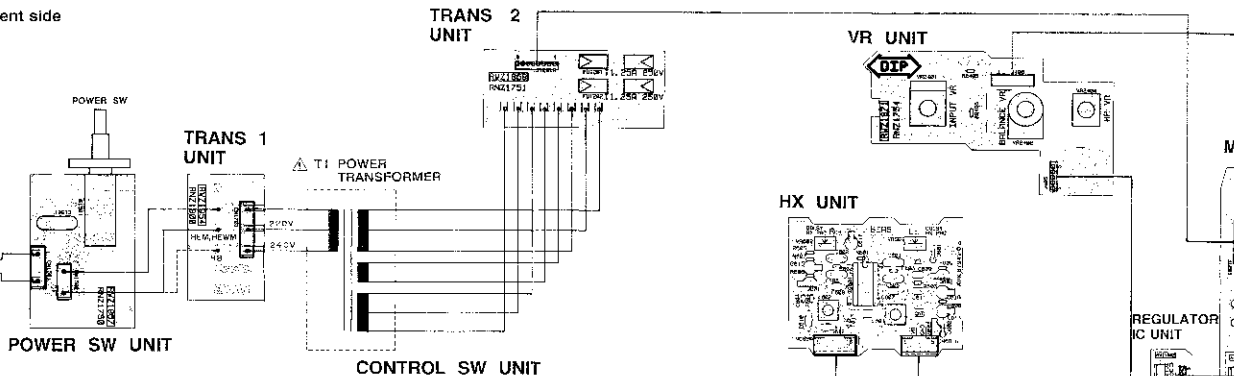
- View from component side

A

HEM, HEWM,
HB type

B

AC220
/ 240V
50/60HZ
AC POWER CORD



C

1. RESISTORS:
Indicated in Ω, 1/4W, 1/8W, ± 5% tolerance unless otherwise noted;
K: ×10, M: ×100, (P): ± 1%, (G): ± 2%, (J): ± 5%, (F): ± 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.

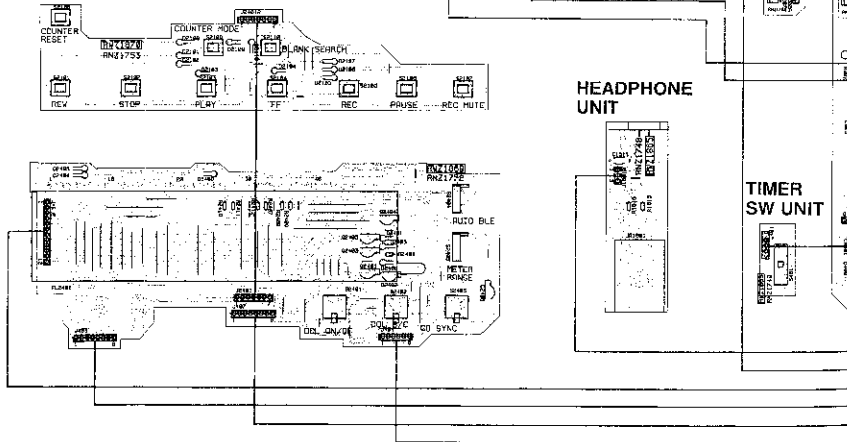
3. VOLTAGE CURRENT:
□: DC voltage (V) at no input signal.

4. OTHERS:
—: PLAYBACK SIGNAL ROUTE;
- - - - -: RECORDING 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.
▶: Test point.

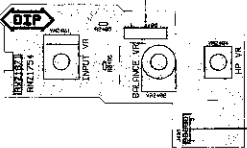
5. SWITCHES (underline indicates switch position)

TIMER SW. UNIT
S401 REC-SEE-PLAY/REPEAT
POWER SW. UNIT
S1501 POWER ON-OFF
DISPLAY UNIT
S4001 DOLBY NR ON-OFF
S4002 DOLBY NR B-C
S2403 CD SYNCHRO
S2404 AUTO BLE
S2405 METER RANGE
CONTROL SW. UNIT
S2101 REW
S2102 STOP
S2103 PLAY
S2104 FF
S2105 REC
S2106 PAUSE
S2107 MUTE
S2108 COUNT
S2109 RESET
S210B COUNTER
MODE
S2110 BLANK SEARCH

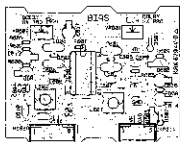
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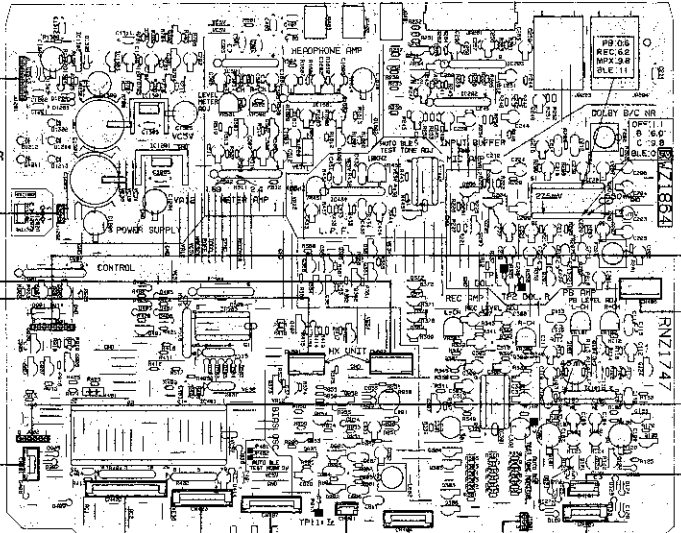
VR UNIT



HX UNIT



MAIN UNIT



REGULATOR IC UNIT



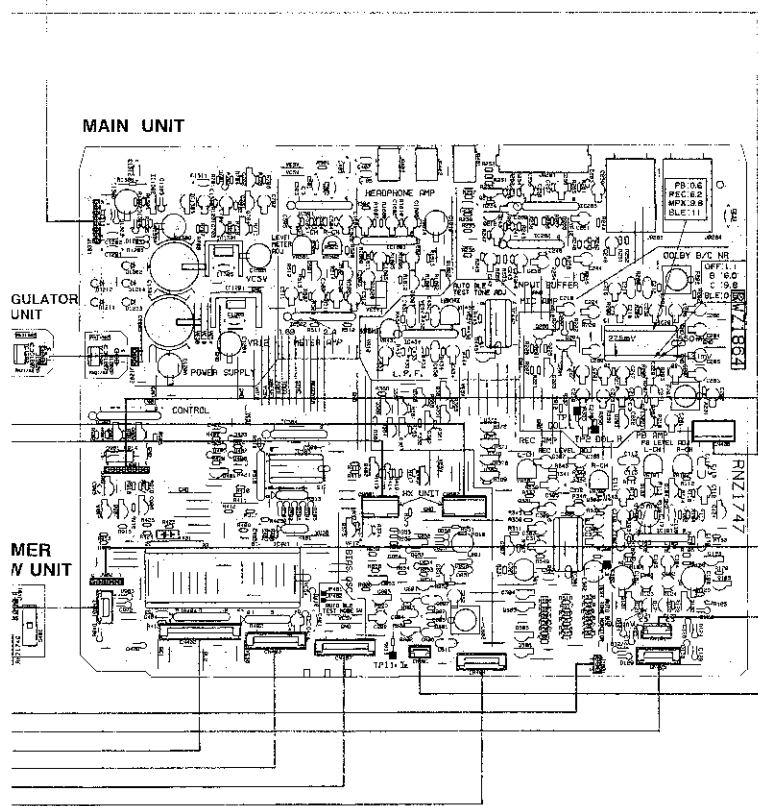
HEADPHONE UNIT



TIMER SW UNIT

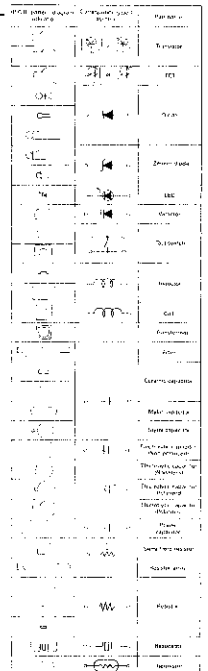
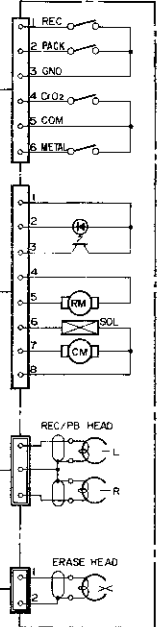


0701		Q211
0702		IC203
IC1303	IC501	Q212
IC1302		
0703		
0704	IC1601	
IC1301		
VR501		
VR502		
	OS01	
	OS02	
	Q1502	IC442
VR432	IC1201	Q206
VR431		Q204
		Q441
		IC201
		Q205
		Q203
	IC904	Q367
	IC504	Q368
	IC901	Q369
	IC902	Q370
VR101	IC503	Q371
VR102	IC908	Q372
VR301	IC909	Q373
VR302	IC905	Q374
	IC906	Q375
	IC907	Q376
	IC401	Q377
		Q378
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		Q500



Q701	IC501	Q211
Q702	IC203	Q212
IC1303	IC1601	IC202
IC1302	IC1301	
Q703		
VR501	IC204	IC201
VR502	IC502	IC201
	IC431	
	Q365	Q201
	Q366	Q202
	Q367	
	Q368	Q372
	Q369	Q371
	Q370	Q370
	Q371	Q369
	Q372	Q103
	Q373	Q104
	Q374	Q124
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	Q497	
	Q498	
	Q499	
	Q500	

MECHANISM UNIT



1. The PCB components are printed on the PCB in the following order:
 2. The components are listed in the order of their location on the PCB.
 3. The components are listed in the order of their location on the PCB.
 4. The components are listed in the order of their location on the PCB.
 5. The components are listed in the order of their location on the PCB.

A

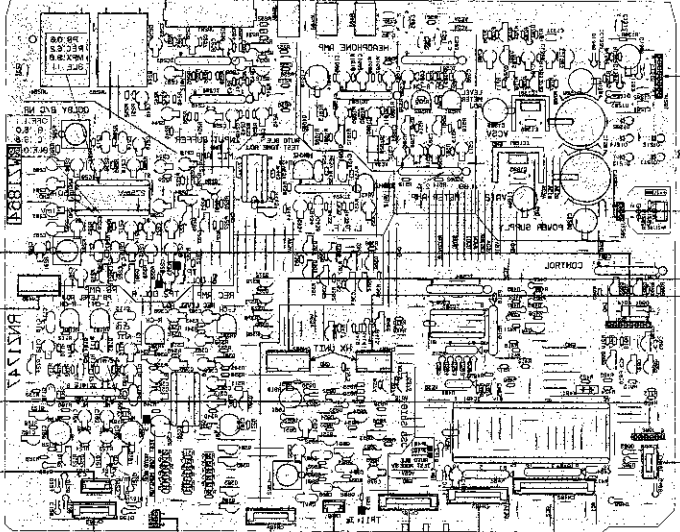
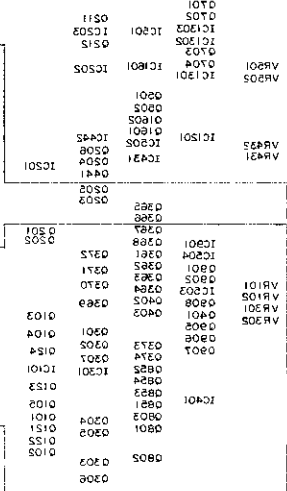
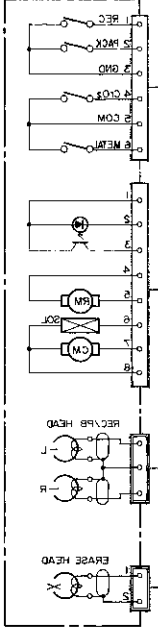
B

C

D

View from soldering side

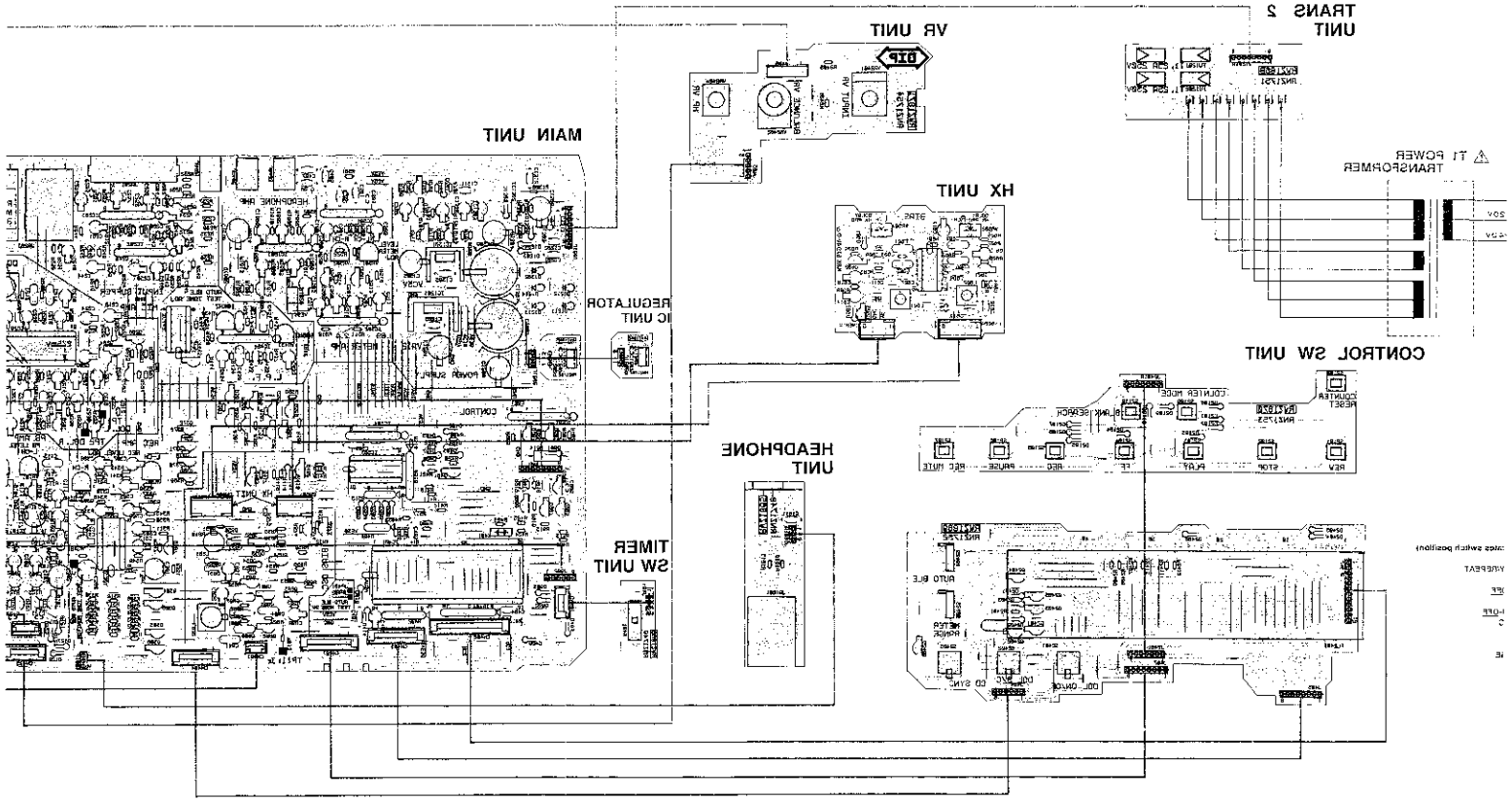
MECHANISM UNIT

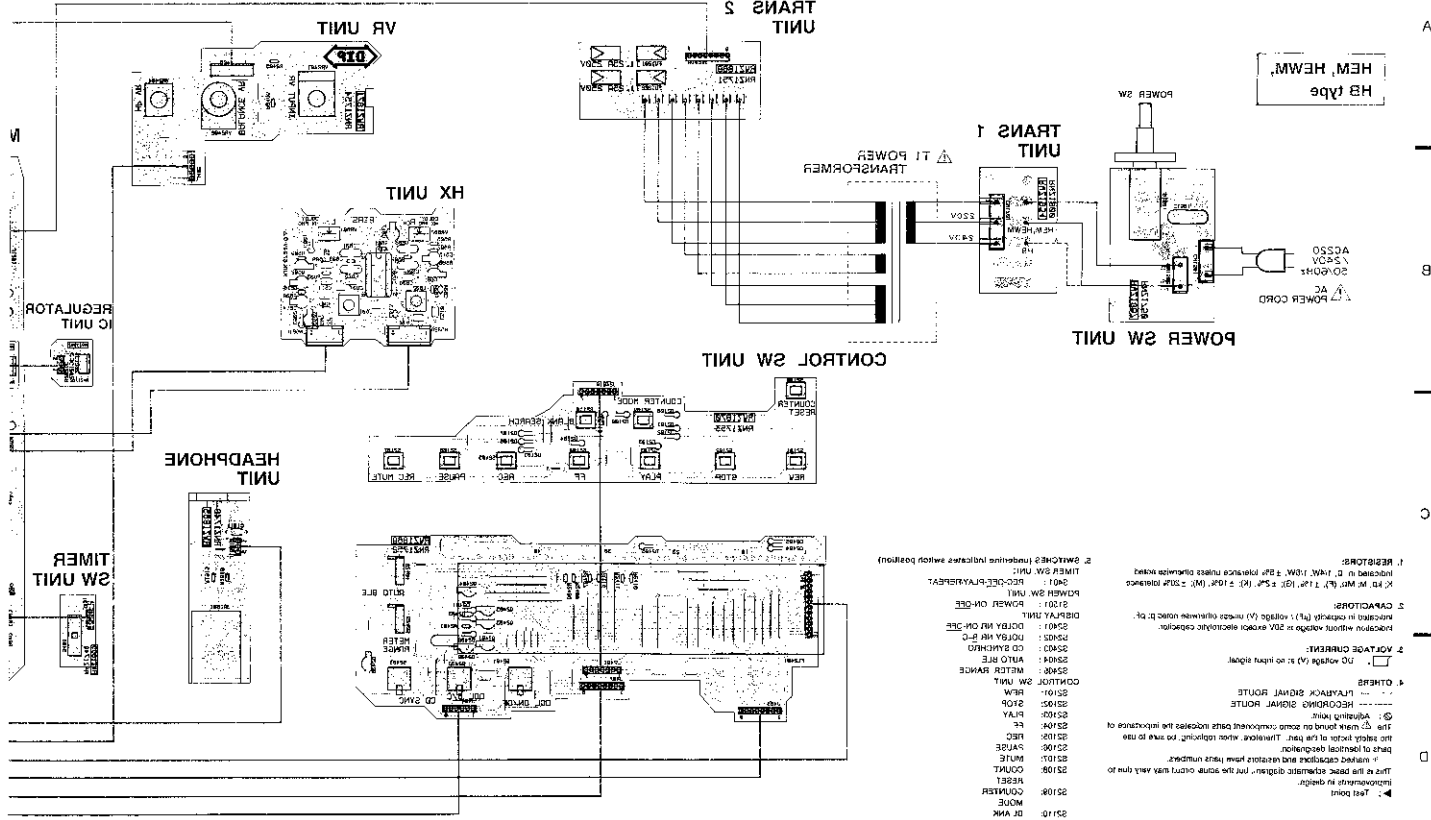


MAIN UNIT

IC UNIT

TIMER SW UNIT





- 1. RESISTORS: Indicated by Ω, 1/4W, 10% tolerance unless otherwise noted.
- 2. CAPACITORS: Indicated by C, 1/4W, 10% tolerance unless otherwise noted.
- 3. VOLTAGE CURRENT: Indicated by V or A, 1/4W, 10% tolerance unless otherwise noted.
- 4. OTHER: Indicated by a symbol in a box.
- 5. SWITCHES: Inductive indicates switch position.

A
B
C
D

7. P.C.B's PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- Parts marked by "⊗" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The 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.
- 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 $\times 10^1$	561.....	RD14PS	⊗	⊗	⊗	J
47k Ω	47 $\times 10^3$	473.....	RD14PS	⊗	⊗	⊗	J
0.5 Ω	0R5.....		RN2H	⊗	⊗	⊗	K
1 Ω	010.....		RS1P	⊗	⊗	⊗	K

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

5.62k Ω	562 $\times 10^1$	5621.....	RN14SR	⊗	⊗	⊗	F
----------------	-------------------	-----------	--------	---	---	---	---

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
HX UNIT				POWER SW. UNIT			
SEMICONDUCTORS				CAPACITOR			
	IC901	DOLBY HX PRO IC	UPC1297CA	Δ	C1501	ELECTR. CAPACITOR (0.01 μ F)	RCG-009
	Q601, Q602	TRANSISTOR	2SA1309A				
	Q603	TRANSISTOR	DTC124ES				
	D601, D602	DIODE	1SS254				
				SWITCH			
				Δ	S1501	POWER SWITCH	RSA-063
COILS				DISPLAY UNIT			
	L601, L602	COIL	RTD1046	SEMICONDUCTORS			
CAPACITORS					Q2401	TRANSISTOR	2SA1309A
	C601, C602	AUDIO FILM CAPACITOR	CFTXA103J50		Q2402	TRANSISTOR	DTC114ES
	C603, C604	AXIAL CERAMIC CAPACITOR	CKPUYB821K50		Q2403	TRANSISTOR	DTA124ES
	C605, C606	AUDIO FILM CAPACITOR	CFTXA223J50		Q2404	TRANSISTOR	DTC114ES
	C607, C608	CERAMIC CAPACITOR	CGCYX473K25		Q2405	TRANSISTOR	DTA124ES
	C609, C610	CERAMIC CAPACITOR	CCCCL101K500		Q2406	TRANSISTOR	2SA1309A
	C611, C612	CERAMIC CAPACITOR (430P, 500V)	RCG1005		D2401-D2406	DIODE	1SS254
	C613	AXIAL CERAMIC CAPACITOR	CKPUYB101K50	RESISTORS			
	C614	ELECTR. CAPACITOR	CEASR10M50	OTHER RESISTORS			
	C615	ELECTR. CAPACITOR	CEAS100M50	RD1/6PM			
	C616	ELECTR. CAPACITOR	CEAS4R7M50	SWITCHES			
	C617	ELECTR. CAPACITOR	CEAS100M50		S2401, S2402	PUSH SWITCH (DOLBY NR ON-OFF, DOLBY NR B-C)	RSG-150
RESISTORS					S2403	PUSH SWITCH (CD SYNCHRO)	RSG1027
	VR601, VR602	SEMI-FIXED (22KB)	VRTB6HS223		S2404, S2405	TACT SWITCH (AUTO BLE, METER RANGE)	RSG1021
	OTHER RESISTORS		RD1/6PM	OTHER			
HEADPHONE UNIT					V2401	FL TUBE	RAW1053
CAPACITOR				CONTROL SW. UNIT			
	C1611	CERAMIC CAPACITOR	CKCYF473Z50	SEMICONDUCTORS			
RESISTORS					D2101-D2110	DIODE	1SS254
	OTHER RESISTORS		RD1/6PM	SWITCHES			
OTHER					S2101-S2108	TACT SWITCH (REW, STOP, PLAY, FF, REC, PAUSE, MUTE, COUNT/RESET)	RSG-155
	JA1601	HEADPHONE JACK	RKN1002		S2109, S2110	TACT SWITCH (COUNTER/MODE, BLANK/SEARCH)	RSG-143
TIMER SW. UNIT							
SWITCH							
	S401	SLIDE SWITCH (1-3) (REC-OFF-PLAY/REPEAT)	RSH1014				

Mark No.	Description	Parts No.
VOLUME UNIT		
RESISTORS		
VR2401 (5KA)		RCV1050
VR2402 (5KB)		RCS1019
VR2404 (500ΩB)		RCV1049
OTHER RESISTORS		
		RD16PM□□□□

REGULATOR IC UNIT

Mark No.	Description	Parts No.
SEMICONDUCTORS		
IC1202 REGULATOR IC		TA7812S
CAPACITOR		
△ C1207 AXIAL CERAMIC CAPACITOR		CFTXA104J50

TRANSFORMER 1 UNIT

There is no supply part in this UNIT.

TRANSFORMER 2 UNIT

There is no supply part in this UNIT.

MAIN UNIT

Mark No.	Description	Parts No.
SEMICONDUCTORS		
IC101 OP-AMP IC		M5220L
IC201 DOLBY-B/C IC		CXA1330S
IC202, IC203 OP-AMP IC		M5218L
IC301 REC-EQ AMP IC		CXA1198AP-A
IC401 U-COM IC		PD4265A
IC431 OP-AMP IC		M5218L
IC442 LOGIC IC		TC4066BP
IC501 OP-AMP IC		M5218L
IC502 LOG-COMPRESS-AMP IC		BA6138
IC503 CMOS LOGIC IC		TC4050BP
IC504 DUAL-COMPARATER IC		M5233L
IC901 IC		BA6218
△ IC1201 REGULATOR IC		NJM7812FA
△ IC1301 REGULATOR IC		NJM78M05FA
△ IC1302 REGULATOR IC		NJM79L12A
△ IC1303 REGULATOR IC		NJM79L05A
IC1801 OP-AMP IC		M5218L
Q101, Q102 TRANSISTOR		Z5C3311A
Q103, Q104 TRANSISTOR		DTC114ES
Q105 TRANSISTOR		DTC124ES
Q121, Q122 N-FET		2SK373
Q123 TRANSISTOR		DTA124ES
Q124 TRANSISTOR		DTC124ES
Q201, Q202 TRANSISTOR		2SD1302
Q203 TRANSISTOR		DTC114TS
Q204 TRANSISTOR		DTA124ES
Q205 TRANSISTOR		DTC114TS
Q206 TRANSISTOR		DTC124ES
Q211, Q212 TRANSISTOR		2SD1302
Q301, Q302 TRANSISTOR		Z5C3311A
Q303-Q307 TRANSISTOR		DTC114ES
Q361-Q374 TRANSISTOR		DTC114ES
Q401 TRANSISTOR		DTC114ES
Q402, Q403 TRANSISTOR		Z5A1309A
Q441 TRANSISTOR		DTC114ES

Mark No.	Description	Parts No.
Q501, Q502 TRANSISTOR		DTC114TS
Q701 TRANSISTOR		Z5A1309A
Q702, Q703 TRANSISTOR		Z5C3311A
Q704 TRANSISTOR		Z5A1309A
Q801-Q803 TRANSISTOR		Z5C3243
Q851, Q852 TRANSISTOR		Z5A1283
Q853, Q854 TRANSISTOR		Z5C3311A
Q901 TRANSISTOR		Z5C3246
Q902 TRANSISTOR		Z5C3311A
Q905-Q907 TRANSISTOR		Z5C3246
Q808 TRANSISTOR		Z5C3311A
Q1302 TRANSISTOR		Z5A1283
Q1601, Q1602 TRANSISTOR		Z5D1302
D121-D130 DIODE		1SS254
D201, D202 DIODE		1SS254
D401 ZENER DIODE		MTZJ4.3B
D402-D410 DIODE		1SS254
D414 ZENER DIODE		MTZJ9.1A
D501-D505 DIODE		1SS254
D701 DIODE		1SS254
D851 DIODE		1SS254
D852 DIODE		1SS252
D853-D856 DIODE		1SS254
D901 DIODE		1SS252
D902, D903 DIODE		1SS254
△ D1203, D1204 DIODE		1SS254
△ D1211-D1214 DIODE		1SR35-100A
△ D1302 DIODE		1SR35-100A
△ D1303 DIODE		1SS252
△ D1304 ZENER DIODE		MTZJ20A
△ D1305 ZENER DIODE		MTZJ9.1A

COILS AND FILTERS

Mark No.	Description	Parts No.
L301, L302 COIL		RTF1102
L801 COIL		LRA121K
L802 COIL		RTD1054
F201, F202 MPX FILTER		RTF1062

CAPACITORS

Mark No.	Description	Parts No.
C101, C102 PP CAPACITOR		COSA821J50
C103, C104 ELECT. CAPACITOR		CEANL100M16
C105, C106 AXIAL CERAMIC CAPACITOR		CKPUYB101K50
C107, C108 ELECT. CAPACITOR		CEANL101M10
C109, C110 AUDIO FILM CAPACITOR		CFTXA223J50
C111, C112 ELECT. CAPACITOR		CEAS100M50
C113, C114 AUDIO FILM CAPACITOR		CFTXA223J50
C115, C116 AXIAL CERAMIC CAPACITOR		CKPUYB102K90
C117 ELECT. CAPACITOR		CEAS101M25
C118 CERAMIC CAPACITOR		CKCYF103Z50
C119 ELECT. CAPACITOR		CEAS470M16
C121, C122 AXIAL CERAMIC CAPACITOR		CCPUSL100J50
C201-C204 ELECT. CAPACITOR		CEAS010M50
C205-C208 ELECT. CAPACITOR		CEAS100M50
C209, C210 ELECT. CAPACITOR		CEAS4R7M50
C211-C214 AUDIO FILM CAPACITOR		CFTXA222J50
C215, C216 ELECT. CAPACITOR		CEASR22M50
C217, C218 ELECT. CAPACITOR		CEASR33M50
C219, C220 ELECT. CAPACITOR		CEAS330M16
C221 ELECT. CAPACITOR		CEAS100M50

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
C222		AXIAL CERAMIC CAPACITOR	CKPUYY103M16	C1205		CERAMIC CAPACITOR	CKCYF103Z50
C223, C224		ELECTR. CAPACITOR	CEASR33M50	C1206		ELECTR. CAPACITOR	CEAS331M16
C227		ELECTR. CAPACITOR	CEAS101M25	C1301		ELECTR. CAPACITOR	CEAS332M16
C229, C230		ELECTR. CAPACITOR	CEAS100M50	C1303		ELECTR. CAPACITOR	CEAS331M16
C231, C232		CERAMIC CAPACITOR	CKCYF473Z50	C1305		CERAMIC CAPACITOR	CKCYF103Z50
C241, C242		AXIAL CERAMIC CAPACITOR	CKPUYB681K50	C1306		ELECTR. CAPACITOR	CEAS101M50
C243, C244		ELECTR. CAPACITOR	CEAS010M50	C1309		ELECTR. CAPACITOR	CEAS101M50
C245, C246		AXIAL CERAMIC CAPACITOR	CKPUYB101K50	C1310		ELECTR. CAPACITOR	CEAS470M16
C247, C248		ELECTR. CAPACITOR	CEAS010M50	C1311-C1313		CERAMIC CAPACITOR	CKCYF473Z50
C249, C250		ELECTR. CAPACITOR	CEAS100M50	C1601, C1602		ELECTR. CAPACITOR	CEASR10M50
C255, C256		ELECTR. CAPACITOR	CEAS100M50	C1803, C1804		ELECTR. CAPACITOR	CEAS010M50
C257, C258		AXIAL CERAMIC CAPACITOR	CKPUYB101K50	C1805, C1806		ELECTR. CAPACITOR	CEAS101M25
C259, C260		ELECTR. CAPACITOR	CEAS100M50	C1810		ELECTR. CAPACITOR	CEAS331M16
C261		ELECTR. CAPACITOR	CEAS470M16	RESISTORS			
C263, C264		AXIAL CERAMIC CAPACITOR	CKPUYB101K50	VR101, VR102		SEMI-FIXED VR (22KB)	VRTB6VS223
C301, C302		AXIAL CERAMIC CAPACITOR	CKPUYB221K50	VR301, VR302		SEMI-FIXED VR (22KB)	VRTB6VS223
C303, C304		ELECTR. CAPACITOR	CEAS4R7M50	VR431, VR432		SEMI-FIXED VR (22KB)	VRTB6VS223
C305, C306		ELECTR. CAPACITOR	CEAS101M25	VR501, VR502		SEMI-FIXED VR (10KB)	VRTB6VS103
C307, C308		ELECTR. CAPACITOR	CEAS010M50	R401		RESISTOR ARRAY	RA4T683J
C309		ELECTR. CAPACITOR	CEAS101M25	R402		RESISTOR ARRAY	RA8T683J
C310		CERAMIC CAPACITOR	CKCYF103Z50	R404		RESISTOR ARRAY	RA10T223J
C312		CERAMIC CAPACITOR	CKCYF473Z50	R515		RESISTOR ARRAY	RA5T223J
C313, C314		ELECTR. CAPACITOR	CEAS4R7M50	R516		LADDER RESISTOR (11K)	RCX1020
C401		CERAMIC CAPACITOR	CKCYF103Z50	R813		CARBON RESISTOR	RD1/2LF101J
C402		ELECTR. CAPACITOR	CEAS470M16	R851		CARBON RESISTOR	RD1/2LF431J
C403-C406		CERAMIC CAPACITOR	CKCYF103Z50	R852		CARBON RESISTOR	RD1/2LF221J
C407		CERAMIC CAPACITOR	CKCYF473Z50	R914		METAL OXIDE	RS2LMF390J
C431		AUDIO FILM CAPACITOR	CFTXA223J50	R1308		FUSIBLE RESISTOR	RFA14L4R7J
C432		AUDIO FILM CAPACITOR	CFTXA222J50	R1620		METAL OXIDE	RS2LMF750J
C433, C434		ELECTR. CAPACITOR	CEAS010M50	OTHER RESISTORS			
C435		CERAMIC CAPACITOR	CGCYX104K25	RD1/6P□□□J			
C436		AUDIO FILM CAPACITOR	CFTXA103J50	OTHERS			
C501, C502		CERAMIC CAPACITOR	CGCYX104K25	CN406		CONNECTOR (5P)	KPC5
C503, C504		AXIAL CERAMIC CAPACITOR	CKPUYB102K50	JA201		JACK (4P)	RKB1001
C505-C508		ELECTR. CAPACITOR	CEAS4R7M50	JA203, JA204		MIC JACK	RKN1003
C509		CERAMIC CAPACITOR	CKCYF473Z50	JA401		MINI JACK	RKN1014
C511, C512		ELECTR. CAPACITOR	CEAS4R7M50	JA402, JA403		REMOTE CONTROL JACK	RKN1004
C701		ELECTR. CAPACITOR	CEAS4R7M50	X401		CERAMIC RESONATOR	VSS1014
C702		ELECTR. CAPACITOR	CEAS470M16				
C804		AUDIO FILM CAPACITOR	CFTXA273J50				
C805		CERAMIC CAPACITOR	CGCYX682K25				
C806, C807		CERAMIC CAPACITOR	CGCYX332K25				
C808		ELECTR. CAPACITOR	CEAS470M16				
C811		PP CAPACITOR	QCPA862J100				
C851, C852		ELECTR. CAPACITOR	CEAS470M16				
C901		CERAMIC CAPACITOR	CGCYX104K25				
C905		AXIAL CERAMIC CAPACITOR	CKPUYY103M16				
C1201, C1202		CERAMIC CAPACITOR	CKCYF473Z50				
C1203		ELECTR. CAPACITOR	CEAS332M35				
C1204		ELECTR. CAPACITOR	CEAS331M16				

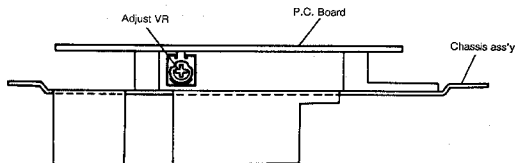
8. ADJUSTMENTS

8.1 MECHANICAL ADJUSTMENT

1. Tape speed adjustment

Mode	Test tape	Adjustment position	Specification rating (playback frequency)
PLAY	Play the STD-301 tape (3kHz)	Variable resistor control	3000Hz \pm 5Hz

Note: Adjust after one minute of playback.



Mechanism unit diagram, top view

Fig. 8-1

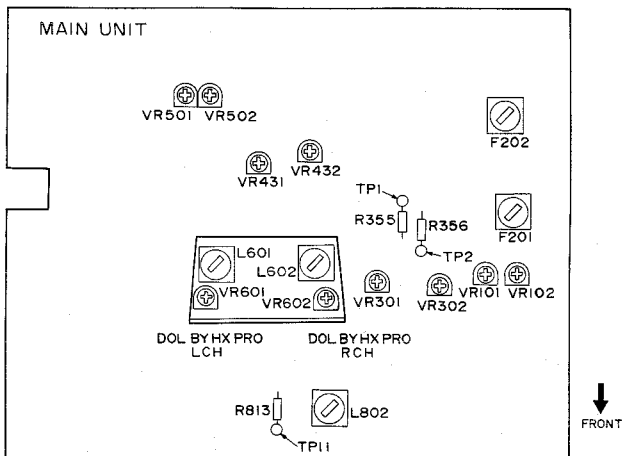


Fig. 8-2

8.2 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 $0dBv = 1Vrms$.
5. Connect a 50 kilo-ohm (or between 47 to 52 kilo-ohm) load resistance to the OUTPUT terminals.
6. Unless otherwise specified, the switches listed below are left in the positions indicated.

DOLBY NR : OFF
 TAPE SELECTOR : NORM

Test Tapes

- STD-331B : Playback adjustments
 (See Fig. 8-3)
 STD-630 : NORMAL blank tape
 STD-620 : CrO₂ blank tape
 STD-610 : METAL blank tape

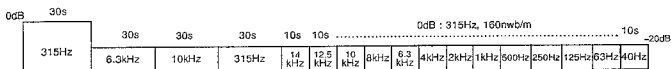


Fig. 8-3 Constants of the test tape STD-331B

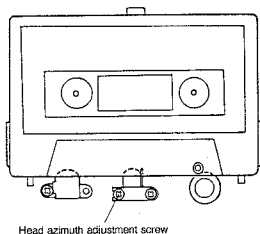


Fig. 8-4 Head azimuth adjustment

List of Adjustments

Playback sections

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

Recording sections

1. Bias oscillator adjustment.
2. Recording bias adjustment.
3. Recording level adjustment.
4. Auto BLE and level meter adjustment.

NOTE: This unit has an automatic tape selection feature.

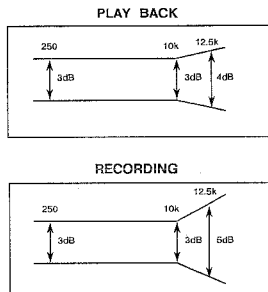


Fig. 8-5 Allowable playback frequency response zone

PLAYBACK SECTION

1. Head Azimuth Adjustment

- Turn VR101, VR102 to mechanical center positions.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 10kHz/20dB section of STD-331B test tape.	Head azimuth adjustment screw. (See Fig. 8.4)	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 STD-331B test tape.	Deck I VR101 (Lch) VR102 (Rch)	TP1. DOL L (Lch) TP2. DOL R (Rch)	-10.7 dBv	

RECORDING SECTION

1. Bias Oscillator Adjustment

- Adjust the bias oscillator with checks set to recording mode simultaneously. (Double R/P only)

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	REC	Load the STD-610 test tape with no input signal.	Deck I L802	TP. 11	105 kHz \pm 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.	STOP	Set the TAPE SELECTOR switch to the NORM position.				
2.	REC	Record the 315 Hz and 6.3 kHz signals at -20 dBv input level and playback.	Deck I VR601 (Lch) VR602 (Rch)	LINE OUT	Repeatedly record, playback and adjust so that the playback level of 6.3 kHz signal becomes +0.5 dB \pm 0.5 dB when compared with the 315 Hz signal.	

3. Recording Level Adjustment

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	STOP	Set the TAPE SELECTOR switch to the NORM position.				
2.	REC PAUSE	Apply a 315Hz/0dBv signal to the line input terminals, load the STD-630 test tape.	Rec Level control volume	TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	-11.2 dBv	
3.	STOP	Set the DOLBY NR switch to the ON position. (DOLBY B)				
4.	REC/ PLAY	Record the above signal onto the STD-620 test tape, and playback.	Deck 1	VR301 (Lch) VR302 (Rch)	TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	Repeatedly record, playback and adjust so that the playback signal level becomes -11.2dB.
5.	STOP	Set the TAPE SELECTOR switch to the CrO ₂ position.				
6.	REC/ PLAY	Record the above signal onto the STD-620 test tape, and playback.	Check		TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	-11.2 dBv ± 1.5dB
7.	STOP	Set the TAPE SELECTOR switch to the METAL position.				
8.	REC/ PLAY	Record the above signal onto the STD-610 test tape, and playback.	Check		TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	-11.2 dBv ± 1.5dB

4. Auto BLE and Level Meter adjustment

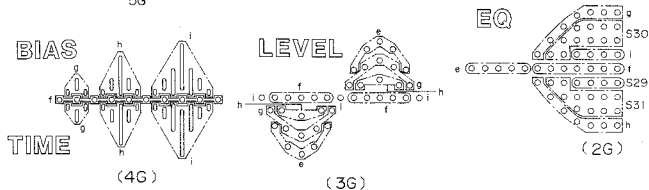
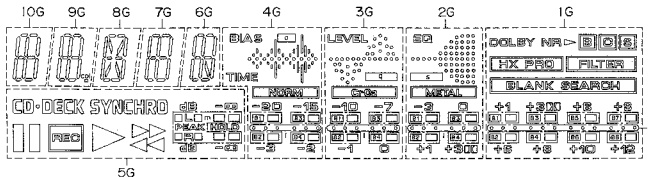
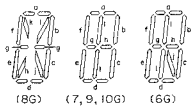
No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	Select test mode by short-circuiting between JP-401 and JP-402. (Instantly)					
2	REW	(TEST 1: 400 Hz)	VR431	LINE OUT (Lch)	-19.5 dBV	*NOTE
			VR501	LEVEL METER	Adjust so that the segment of -10dB will blink.	
			VR431	LINE OUT (Rch)	-19.5 dBV	
			VR502	LEVEL METER	Adjust so that the segment of -10dB will blink.	
3	STOP	(TEST 2: 10 kHz)	VR432	LEVEL METER	Adjust so that the segment of -10dB of channel R will blink.	

***NOTE**

- Instantly shorted between jp401 and 402, it returns to test mode.
- To clear the test mode, push the AUTO BLE switch, or turn the power OFF.
- Adjustment of No. 2 should proceed in turns of above to down items.

9. IC INFORMATION

● GRID ASSIGNMENT



● PIN CONNECTION

49	48	47	46	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
F	F	N	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	10	9	8	7	6	5	4	3	2	1	N	F	F
2	2	P	12	4	11	10	8	5	7	16	6	2	9	1	13	14	15	16	17	18	C	29	30	31	23	24	25	26	27	28	19	20	21	22	G	G	G	G	G	G	G	G	G	G	P	1	1

- Note 1) NP No pin.
 2) F1, F2 Filament
 3) 1G~10G Grid

● ANODE CONNECTION

	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
S1	a	a	a	a	a		B1	B1	B1	B1
S2	b	b	b	b	b	REC	B2	B2	B2	B2
S3	c	c	c	c	c	▶	B3	B3	B3	B3
S4	d	d	d	d	d	◀▶	B4	B4	B4	B4
S5	e	e	e	e	e	▶▶	TIME	e	e	B5
S6	f	f	f	f	f	CD	f	f	f	B6
S7	g	g	g	g	g	◆ DECK	g	g	g	B7
S8	h	h	h	h	h	SYNCHRO	h	h	h	B8
S9	i	i	i	i	i	HOLD	i	i	i	BLANK SEARCH
S10	-	-	j	-	j	dB - ∞ (UP)	-20 -15	-10 -7	-30	+1+3 \square +6+8
S11	-	col	k	-	-	dB - ∞ (DOWN)	-3 -2	-1 -0	+1+3 \square	+6+8+10+12
S12	-	-	-	-	-	-	•••••	•••••	•••••	•••••
S13	-	-	-	-	-	m	-	-	-	-
S14	-	-	-	-	-	-	BIAS	-	-	-
S15	-	-	-	-	-	-	O	-	-	-
S16	-	-	-	-	-	-	-	LEVEL	-	-
S17	-	-	-	-	-	-	-	q	-	-
S18	-	-	-	-	-	-	-	-	EQ	-
S19	-	-	-	-	-	-	-	-	s	-
S20	-	-	-	-	-	-	NORM	-	-	-
S21	-	-	-	-	-	-	-	CrO ₂	-	-
S22	-	-	-	-	-	-	-	-	METAL	-
S23	-	-	-	-	-	-	-	-	-	DOLBY NR ▶
S24	-	-	-	-	-	-	-	-	-	B
S25	-	-	-	-	-	-	-	-	-	C
S26	-	-	-	-	-	-	-	-	-	S
S27	-	-	-	-	-	-	-	-	-	HX PRO
S28	-	-	-	-	-	-	-	-	-	FILTER
S29	-	-	-	-	-	-	-	-	S29	-
S30	-	-	-	-	-	-	-	-	S30	-
S31	-	-	-	-	-	-	-	-	S31	-

10. FOR CT-447/HB AND CT-447-S/HEWM TYPES

NOTES:

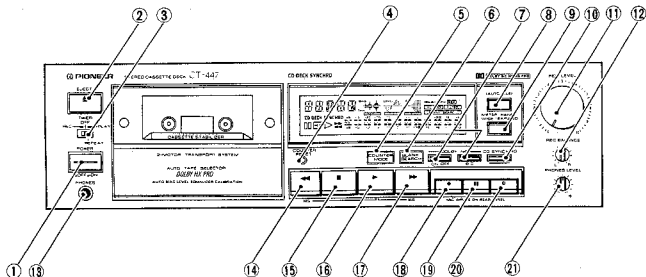
- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊗" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

• Contrast of Miscellaneous Parts

The CT-447/HB and CT-447-S/HEWM types are the same as CT-447/HEM type with the exception of the following sections.

Mark	Symbol & Description	Parts No.			Remarks
		CT-447HEM	CT-447HB	CT-447-S HEWM	
	Knob A (SLIDE SW)	RAC-668	RAC-668	RAC1219	
	Knob (CD SYNCHRO, DOLBY ON/OFF, B/C TYPE)	RAC1230	RAC1230	RAC1308	
	Knob (TACT)	RAC1349	RAC1349	RAC1347	
	Knob (EJECT)	RAC1361	RAC1361	RAC1494	
	Knob (OPERATION)	RAC1362	RAC1362	RAC1495	
	Knob (VR)	RAC1363	RAC1363	RAC1496	
	Button (POWER)	RAC1364	RAC1364	RAC1497	
	Knob (REC BALANCE)	RAC1366	RAC1366	RAC1498	
	Knob (PHONES LEVEL)	RAC1416	RAC1416	RAC1499	
	Door panel	RAH1678	RAH1678	RAH1679	
	Mold (EJECT)	RNK1313	RNK1313	RNK1314	
	VR Escutcheon	RNK1315	RNK1315	RNK1316	
	Operating instructions (Dutch/Swedish/Spanish/Portuguese/French/German/Italian)	RRD1077	-----	RRD1077	
	Packing case	RHG1197	RHG1197	RHG1198	
	Bonnet	RXX1292	RXX1292	RXX1295	
	Front panel ass'y	RXX1293	RXX1293	RXX1294	
Δ	AC power cord	PDG1003	PDG1004	PDG1003	
	Button panel	RAH1680	RAH1680	RAH1681	

11. PANEL FACILITIES



① POWER switch (■ OFF/ ■ ON)

② EJECT button (▲)

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

NOTE:

If the power is turned off while the tape is moving, the cassette door may remain locked. In this case, turn the power on before pressing the EJECT button.

③ 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 position.

④ Tape/Time COUNTER RESET button

Press this button to zero the tape/time counter. Resets the tape/time counter reading to "0000".

⑤ COUNTER MODE button


Used to select the tape/time counter display mode. Each time this button is pressed, one of the following two modes is set in sequence.

⑥ BLANK SEARCH button

To find unrecorded portions on the tape.

⑦ DOLBY* NR switches

Set these switches to B or C 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. To play other tapes, set DOLBY NR switch to OFF. When DOLBY NR switch is set to ON, the MPX filter function operates in synchronization with the Dolby Noise Reduction System. The operation of this filter may cause some high frequencies to be muted when the Dolby NR system is used for recording of FM broadcasts from some tuners.

- 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.

NOTE:

When playing back Dolby NR-encoded tapes, always set this switch to the same position (B or C) used for recording.

⑧ AUTO BLE button

This button allows to automatically set optimum recording bias, level and equalizer for the cassette tape. To use AUTO BLE, set the cassette tape and press this button.

⑨ METER RANGE WIDE/EXPAND button

Switches the display of the level meter range to WIDE/EXPAND.

⑩ CD SYNCHRO button

This button is used to carry out CD-Deck synchro recording from a CD player.

⑪ REC LEVEL control

12 REC BALANCE control

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

13 PHONES jack**14 Rewind button (◀◀)**

To rewind the tape in the direction of the arrows. When this button is pressed during playback of a selection, the same selection will be played again. If pressed in the blank between two selections, the 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.

15 Stop button (■)

To stop all operations.

16 Playback button (▶)

To playback the front side of the tape, that is the side whose label is visible.

17 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.

18 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 loaded with a cassette with broken erasure prevention tabs.

19 Pause button (||)

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

20 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.


To make a blank space longer than 4 seconds, the button can be held depressed for the desired duration. Upon releasing the button, the unit will enter the recording standby mode.

21 PHONES LEVEL control

12. SPECIFICATIONS

System	4 track, 2-channel stereo
Heads	"Hard Permalloy" recording/playback head × 1 "Duble gap ferrite" erasing head × 1
Motor	DC servo capstan motor × 1 DC reel motor × 1
Wow and Flutter	No more than ±0.14% (DIN)
Fast winding Time	Approximately 90 seconds (C-60 tape)
Frequency Response (±6 dB)	
- 20 dB recording:	
Normal tape	20 to 17,000 Hz
Chrome tape	20 to 17,000 Hz
Metal tape	20 to 19,000 Hz
Signal-to-Noise Ratio	
Dolby NR OFF	More than 57 dB
Noise Reduction Effect	
Dolby B-type NR ON	More than 10 dB (at 5 kHz)
Dolby C-type NR ON	More than 19 dB (at 5 kHz)
Harmonic Distortion	No more than 0.7% (0 dB)
Input (Sensitivity)	
LINE (INPUT)	63 mV (input impedance 52 kΩ)
MIC (REAR)	0.4 mV
Output (Reference level)	
LINE (OUTPUT)	316 mV (Output impedance 3.3 kΩ)
PHONES	0.9 mW (load impedance 8Ω, Headphone level control max.)

Subfunctions

- Dolby B-type and C-type NR Systems
- DOLBY HX PRO system
- MPX FILTER (Interlocks with Dolby NR switch)
- Auto tape selector (NORM/CrO₂/METAL)
- Blank search
- Headphones jack with level control
- 4-digit electronic tape/time indicator
(Displays the operation mode in 5 digits)
- Music search up to ± 15 selections
- Automatic space recording mute
- AUTO BLE calibration system
- FL level meter 10 + 1 segments
- Timer Recording/Playback (Automatic repeat ON)
-  System remote control available
- CD-DECK synchro recording capability
- Microphone jacks (Rear panel)

Miscellaneous

Power Requirements

European model a.c. 220 Volts~, 50/60 Hz

U.K. model a.c. 240 Volts~, 50/60 Hz

Power Consumption 20 W

Dimensions 420 (W) × 130 (H) × 272 (D)mm
16-9/16 (W) × 5-1/8 (H) × 10-5/8 (D) in


Weight (without package) 4.3 kg (9 lb 7 oz)

Accessories

Operating instructions 1

Connection cord with pin plugs 2

CD-Deck synchro control cord 1

 System remote control cord 1

NOTE:

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