

# Service Manual

ORDER NO.  
ARP2163

STEREO CASSETTE DECK

# CT-449 HEM, HB

# CT-449-S HEWM

MODEL CT-449 AND CT-449-S HAVE FOLLOWING VERSIONS:

Type	Applicable model		Power requirement	Export destination
	CT-449	CT-449-S		
HEM	○	—	AC220V, 240V (switchable)*	European continent
HB	○	—	AC220V, 240V (switchable)*	United Kingdom
HEWM	—	○	AC220V, 240V (switchable)*	European continent

\*Change the primary wiring of the power transformer.

- Refer to the service manual ARP2009, CT-447.
- This manual is applicable to the CT-449/HEM, HB and CT-449-S/HEWM types.

# 1. CONTRAST OF MISCELLANEOUS PARTS

**NOTES:**

- Parts without part number cannot be supplied.
- 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.

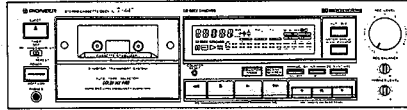
The CT-449/HB, CT-449-S/HEWM and CT-449/HEM types are the same as the CT-447/HEM type with exception of the following sections.

Mark	Symbol & Description	Part No.				Remarks
		CT-447 /HEM type	CT-449 /HB type	CT-449-S /HEWM type	CT-449 /HEM type	
$\Delta$	AC power cord	PDG1003	PDG1036	PDG1003	PDG1003	
	Slide SW knob (A)	RAC-668	.....	RAC1219	.....	
	Slide SW knob (B)	.....	RAC-669	.....	RAC-669	
	Tape select knob	RAC1230	RAC1230	RAC1308	RAC1230	
	Tact knob	RAC1349	RAC1349	RAC1347	RAC1349	
	Eject knob	RAC1361	RAC1361	RAC1494	RAC1361	
	Control knob	RAC1362	RAC1362	RAC1495	RAC1362	
	VR knob	RAC1363	RAC1363	RAC1496	RAC1363	
	Power button	RAC1364	RAC1364	RAC1497	RAC1364	
	Headphone knob	RAC1366	RAC1366	RAC1498	RAC1366	
	Door panel	RAH1678	RAH1811	RAH1819	RAH1811	
	Button panel	RAH1680	RAH1680	RAH1681	RAH1680	
	Eject mold	RNK1313	RNK1313	RNK1314	RNK1313	
	VR escutcheon	RNK1315	RNK1315	RNK1316	RNK1315	
	Bonnet	RXX1292	RXX1396	RXX1397	RXX1396	
	Front panel assembly	RXX1293	RXX1394	RXX1395	RXX1394	
	Packing case	RHG1197	RHG1250	RHG1263	RHG1250	
	Connection cord assembly	RDE1005	RDE1002	RDE1002	RDE1002	
	Control cord	RDE1018	RDE1030	RDE1030	RDE1030	
	Operating instructions (English)	RRB1062	.....	.....	.....	
	Operating instructions (Spanish, French, German, Italian Dutch, Portuguese, Swedish)	RRD1077	.....	.....	.....	
	Operating instructions (English)	.....	RRB1083	RRB1083	RRB1083	
	Operating instructions (Spanish, French, German, Italian Dutch, Portuguese, Swedish)	.....	.....	RRD1091	RRD1091	

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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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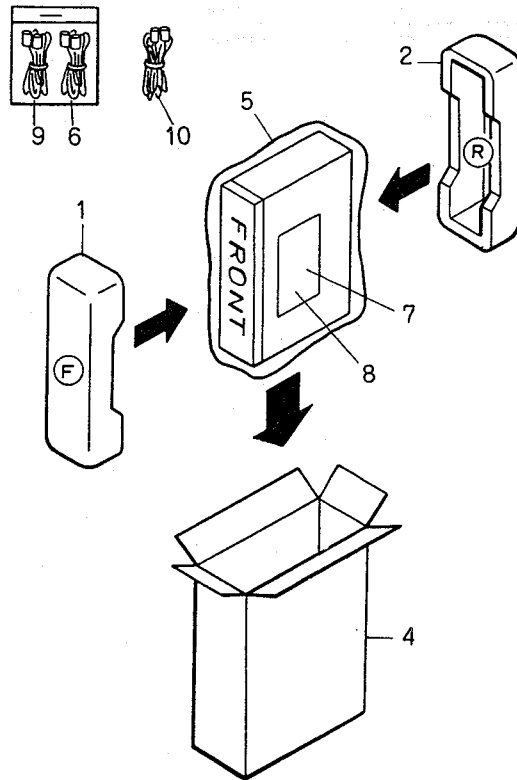
**PIONEER ELECTRONIC CORPORATION** 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan  
**PIONEER ELECTRONICS SERVICE INC.** P.O. Box 1760, Long Beach, California 90801 U.S.A.  
**PIONEER ELECTRONICS OF CANADA, INC.** 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada  
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# 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 (MINI)	RDE-319



## 2. EXPLODED VIEWS AND PARTS LIST

### NOTES:

- Parts without part number cannot be supplied.
- 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.

### 2.1 Parts List of Exterior

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
$\Delta$	1	Strain relief	CM-22B		36	VR escutcheon	RNK1315
$\Delta$	2	Power cord	PDG1003		37	Screw	ABZ26P050FMC
$\Delta$	3	Fuse (FU1, FU2, 1.25A)	REK-101		38	Screw	ABZ30P080FMC
$\Delta$	4	Power transformer (T1)	RTT1137		39	Screw	BBT30P060FZK
	5	Connector (3P)	RKP1360		40	Screw	BBZ26P080FZK
	6	Ratchet spring	RBH1008		41	Screw	BBZ30P040FMC
	7	Door spring (L)	RBH1134		42	Screw	IBZ30P080FCC
	8	Push spring	RBH1146		43	Screw	BBZ30P080FMC
	9	Half pressure spring	RBK1004		44	Screw	BBZ30P100FZK
	10	Connector (2P)	RKP1361		45	Screw	BBZ30P080FCC
	11	Damper ass'y	REC1005		46	Screw	BCT26P100FZK
	12	Knob (PHONES LEVEL)	RAC1416		47	Screw	BPZ20P060FMC
	13	Insulator	VNK1095		48	Screw	FBT40P080FZK
	14	Knob (COUNTER RESET)	RAA1009		49	Screw	IBZ30P150FCU
	15	Knob (A) (TIMER)	RAC-668		50	Screw	PMA30P060FCU
	16	Knob (AUTO BLE, LEVEL METER, WIDE/EXPND)	RAC1218		51	Binder	REC-265
	17	Knob (REC LEVEL)	RAC1363		52	Binder	REC-371
	18	Knob (◀, ■, ▶, ►, ●, II, ○)	RAC1362		53	Front panel ass'y	RXX1293
	19	Knob (EJECT)	RAC1361		54	Bonnet	RXX1292
	20	Knob (CD SYNCHRO, DOLBY ON/OFF, B/C TYPE)	RAC1230		55	Stopper	VEC1061
	21	Knob (POWER)	RAC1364		56	Screw	BBZ30P060FZK
	22	Knob (REC BALANCE)	RAC1366		101	Main unit	
	23	Knob (COUNTER MODE, BLANK SEARCH)	RAC1349		102	Display unit	
	24	Cassette plate	RAH1234		103	Control SW unit	
	25	-----			104	VR unit	
	26	Screw	RAT1001		105	Headphone unit	
	27	Stabilizer (B)	REB1038		106	Timer SW unit	
	28	Remain display paper	REE-113		107	Transformer 1 unit	
	29	Door pocket	RNT1010		108	Power SW unit	
	30	Button panel	RAH1680		109	Transformer 2 unit	
	31	Door lens	RAH1244		110	Mechanism unit	
	32	Meter lens	RAH1246		111	PCB spacer	
	33	FL filter	RAH1245		112	Bonnet cushion	
	34	Door panel	RAH1678		113	Main chassis	
	35	Eject mold	RNK1313		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

A

A

B

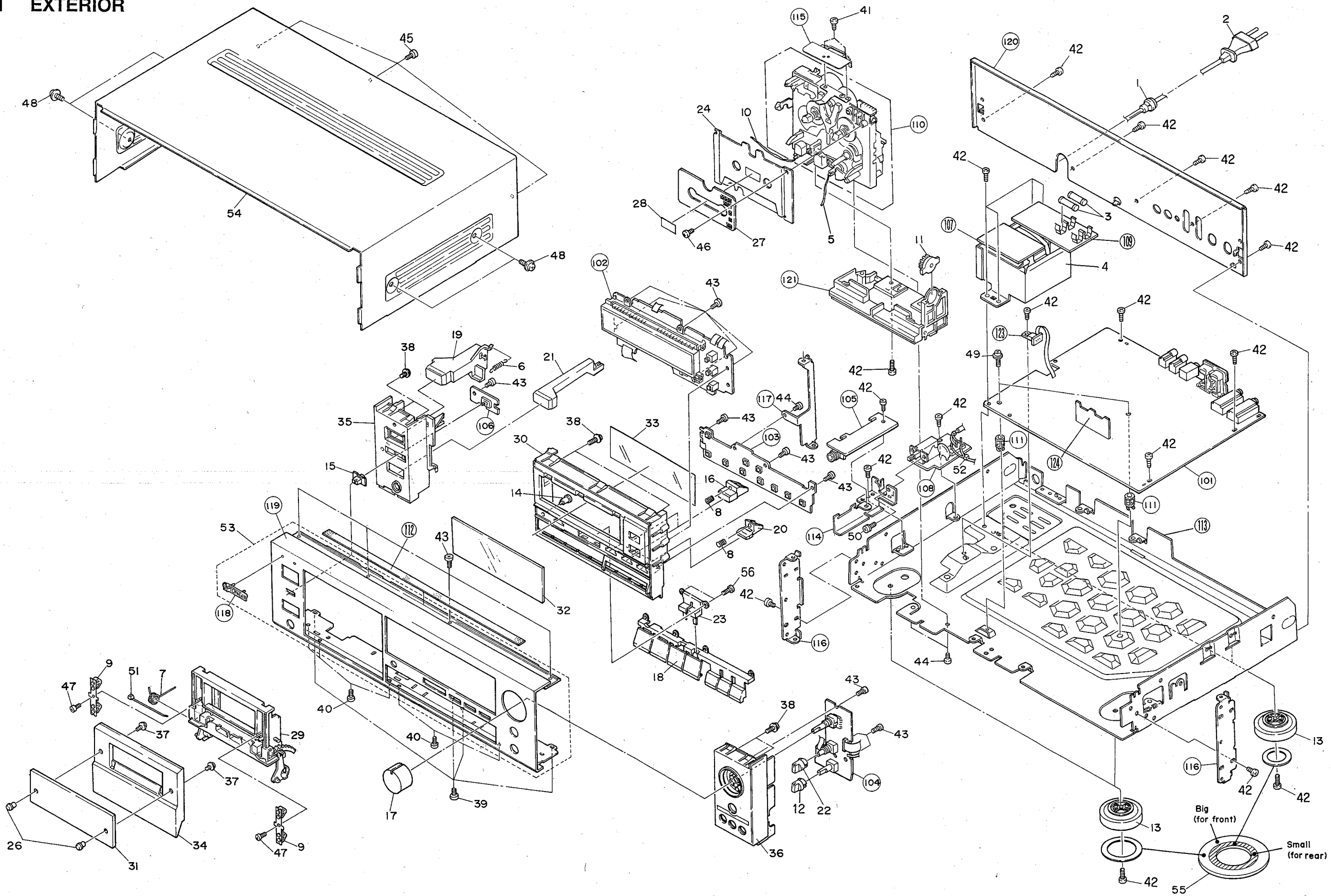
B

C

C

D

D



Big (for front)  
Small (for rear)

## 2.2 Parts List of Mechanism Unit

<u>Mark</u>	<u>No.</u>	<u>Description</u>	<u>Parts No.</u>
	1	Fixed core	RLA1130
	2	Plunger	RLA1132
	3	Head (R/P)	RPB1039
	4	Head (E)	RPB1040
	5	Push SW	RSG1018
	6	MTR reel BLK	RXM1029
	7	MTR main BLK	RXM1032
	8	Solenoid BLK	RXP1010
	9	Photo-transistor	SPI33534FG
	10	Main belt	REB1134
	11	Pinch roller ass'y	RXA1183
	12	F/W ass'y	RXA1346
	13	Washer	WA26D045D025
	14	Pan 2.6 x 6.4 ZN	RBA1076
	15	Washer	RBFB-057
	16	Reel base BLK	RXA1184
	17	Idle BLK	RXA1248
	18	Reel base BLK	RXC-040
	19	Washer	WA21D070D013
	20	Azimuth SP	RBH1076
	21	Head base SP	RBL1003
	22	Slide SP	RBH1239
	23	Play arm	RNK1525
	24	Cam gear (3R)	RNK1526
	25	Pan TT 2.6 x 5 ZN	RBA1079
	26	Lever SP(L) (EJECT)	RBH1231
	27	SP cap(L) (EJECT)	RBH1234
	28	Spring (CASSETTE)	RBK1031
	29	Lever (Color A)	RLA1133
	30	Detector lever (REC)	RNK1527
	31	Metal dector lever (L)	RNK1529
	32	Dector lever (P)	RNK1543
	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	RBA1078
	40	Washer	WA26D047D050
	41	Washer	YE15FUC
	101	Jumper (3P)	
	104	Connector (8P)	
	105	Connector (6P)	
	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

A

A

B

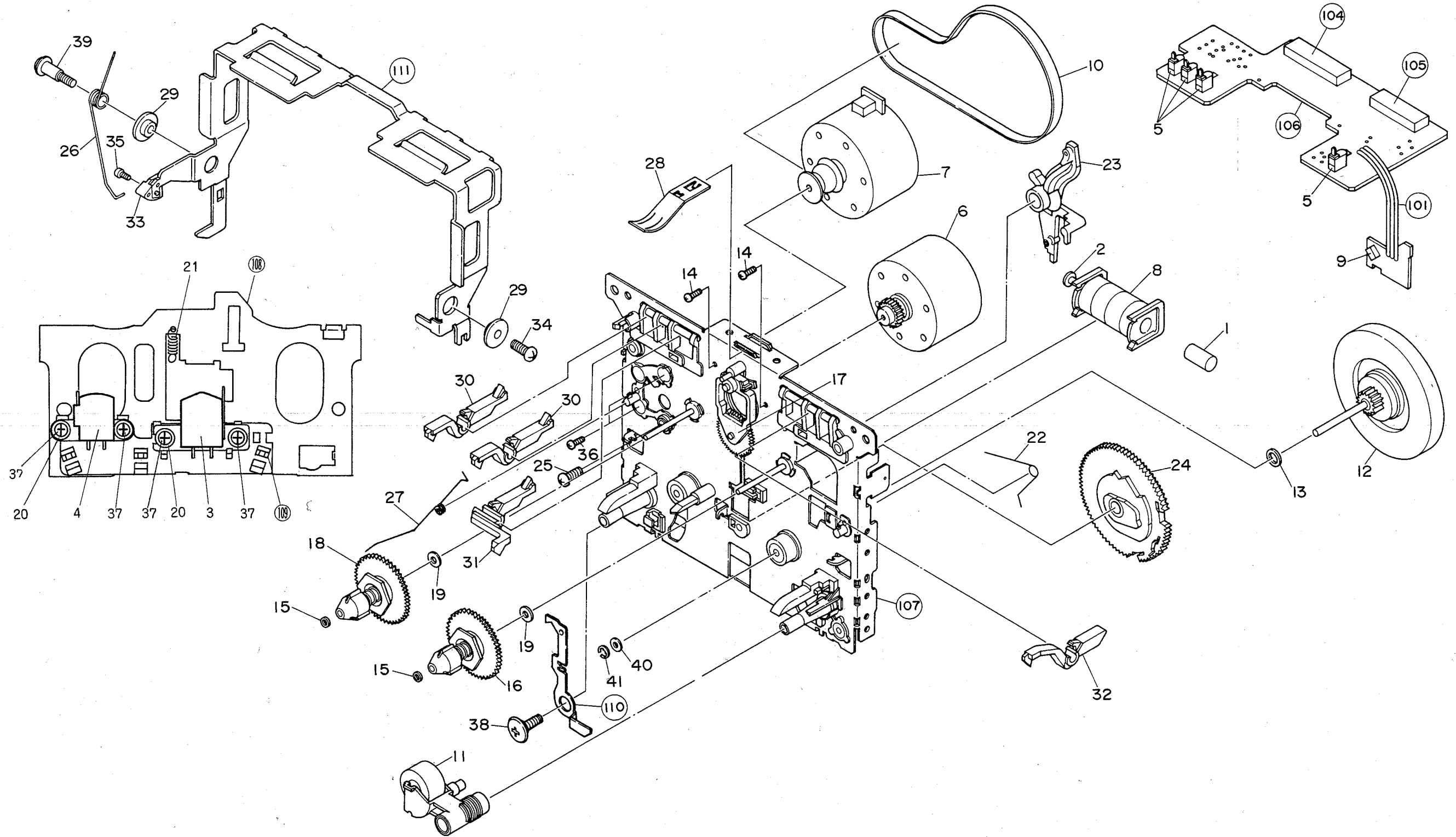
B

C

C

D

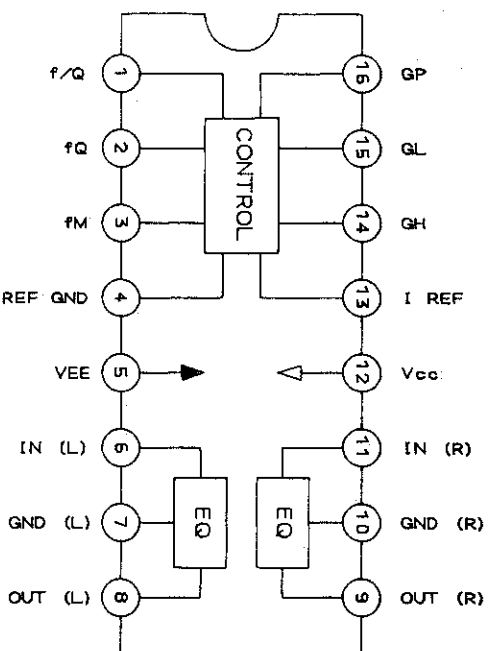
D



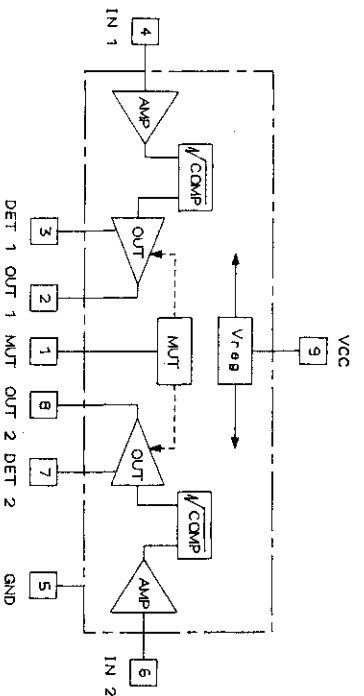


### 3. IC BLOCK DIAGRAM

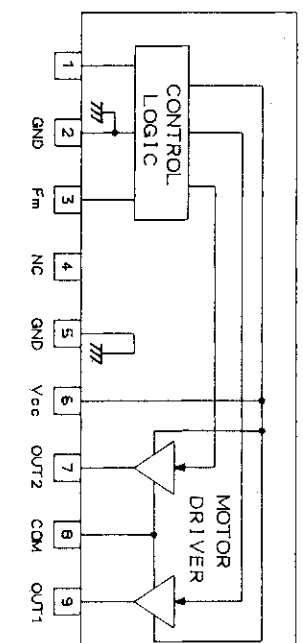
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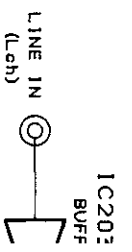
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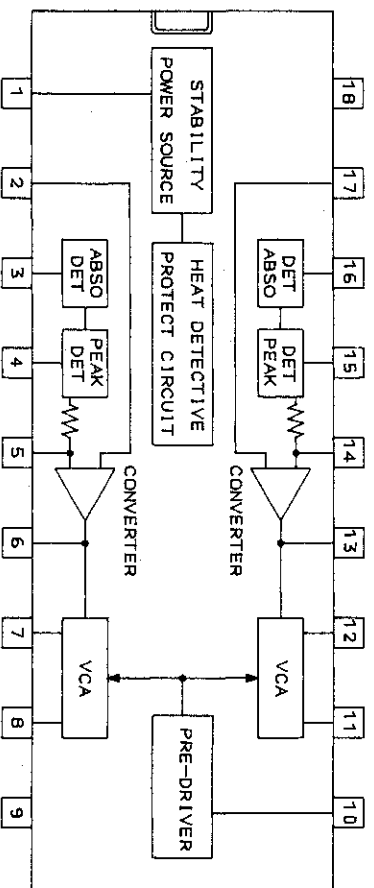
IC901 : BA6218



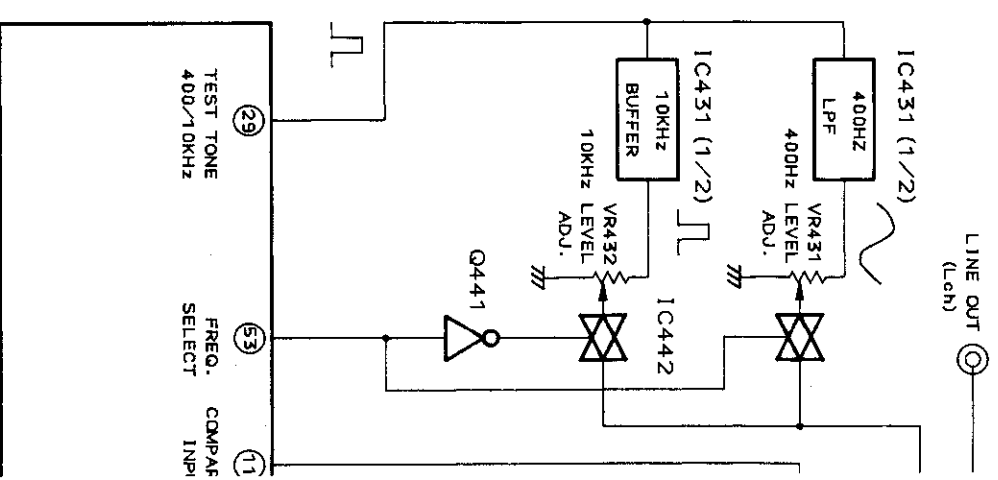
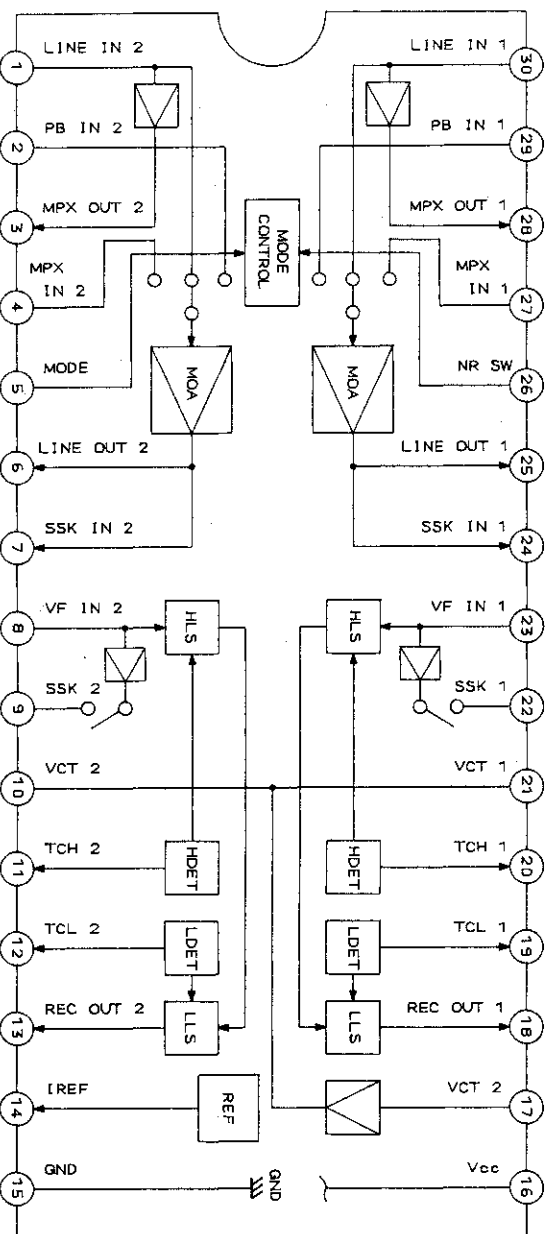
### 4. BLOCK DIAGRAM

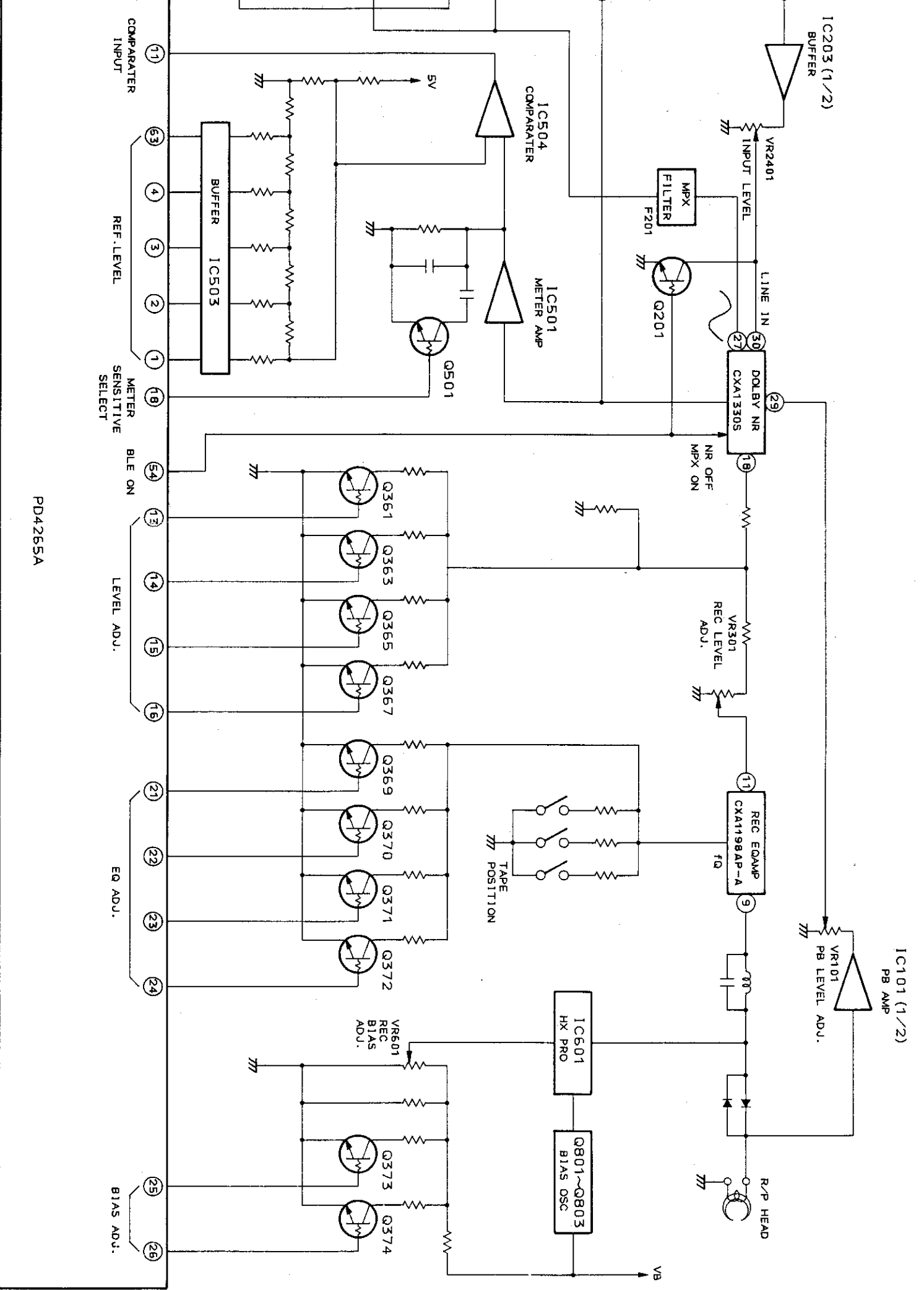


IC601 : MPC1297CA

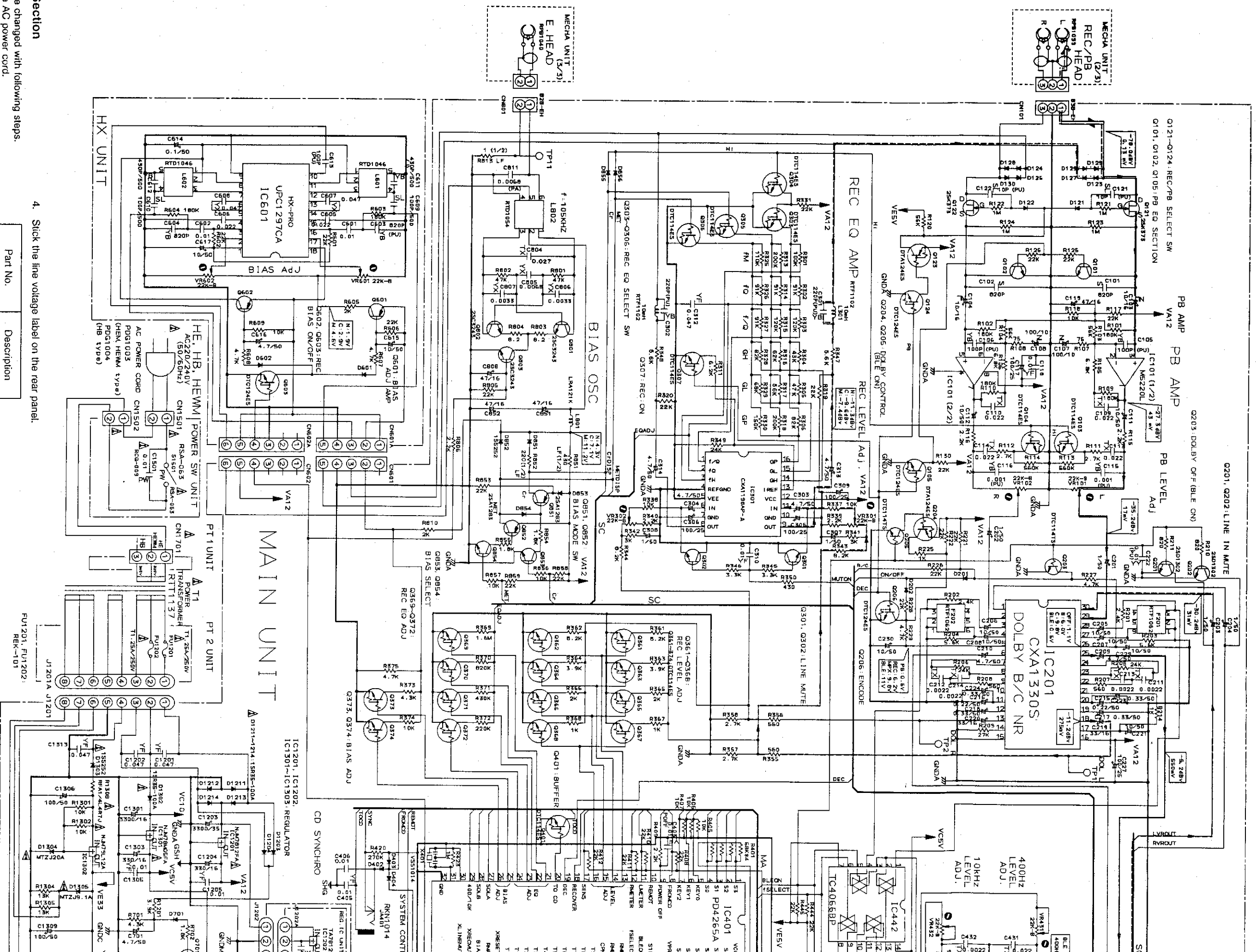


IC201 : CXA1330S





5. SCHEMATIC DIAGRAM



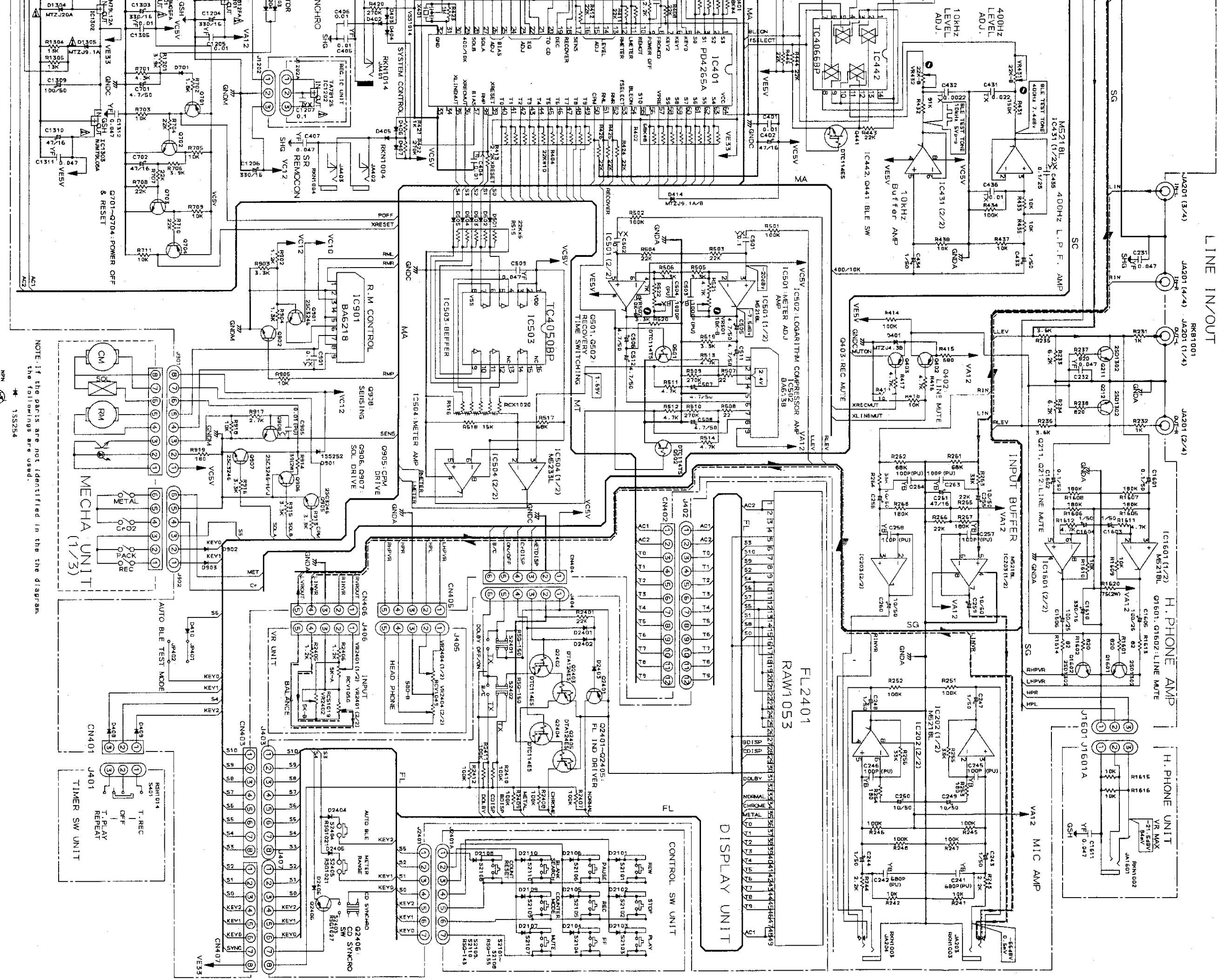
Line Voltage Section

1. Disconnect the AC power cord.
2. Remove the Bonnet case.
3. Change the connection of the TRANSFORMER 1 UNIT

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

Part No.	Description
AAK-193	220V label
AAK-192	240V label

HEM, HEWM 220V  
HB 240 V



LINE IN/OUT

H. PHONE AMP

H. PHONE UNIT

MIC AMP

FL2401  
RAW1053

DISPLAY UNIT

CONTROL SW UNIT

MECHA UNIT  
(1/3)

TIMER SW UNIT

NOTE: If the parts are not identified in the the diagram, the following are used.

- NPN 1SS254
- NPN ZSC3311A
- PNP ZSA1309A

# 6. P.C. BOARDS CONNECTION DIAGRAM

• View from component side

A

HEM, HEWM,  
HB type

B

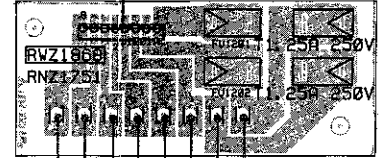
AC220  
/240V  
50/60Hz  
AC POWER CORD

C

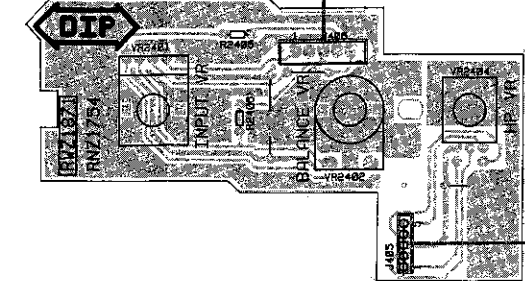
1. RESISTORS:  
Indicated in  $\Omega$ , 1/4W, 1/6W,  $\pm 5\%$  tolerance unless otherwise noted  
K; k $\Omega$ , M; M $\Omega$ , (F);  $\pm 1\%$ , (G);  $\pm 2\%$ , (K);  $\pm 10\%$ , (M);  $\pm 20\%$  tolerance.
2. CAPACITORS:  
Indicated in capacity ( $\mu$ F) / voltage (V) unless otherwise noted 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  $\Delta$  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.  
\* 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-OFF-PLAY/REPEAT
- POWER SW. UNIT  
S1501 : POWER ON-OFF
- DISPLAY UNIT  
S2401 : DOLBY NR ON-OFF  
S2402 : 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  
S2108 : PAUSE  
S2107 : MUTE  
S2108 : COUNT  
S2108 : RESET  
S2109 : COUNTER  
S2109 : MODE  
S2110 : BLANK SEARCH

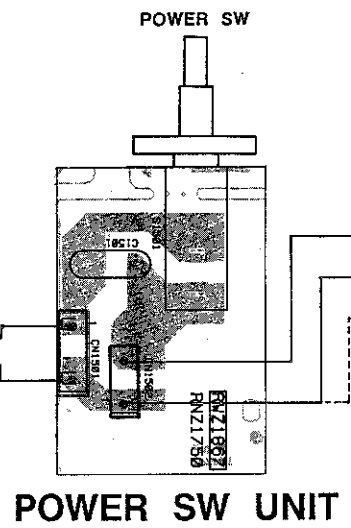
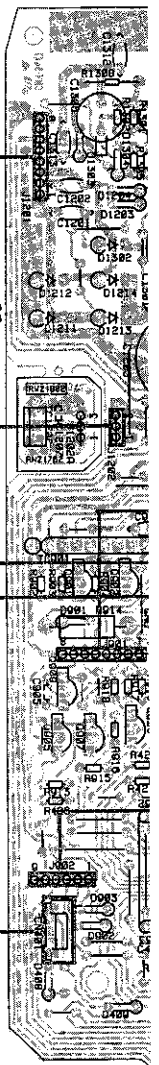
TRANS. 2  
UNIT



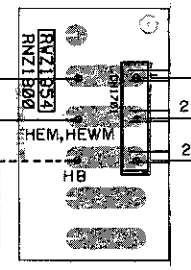
VR UNIT



MAIN U

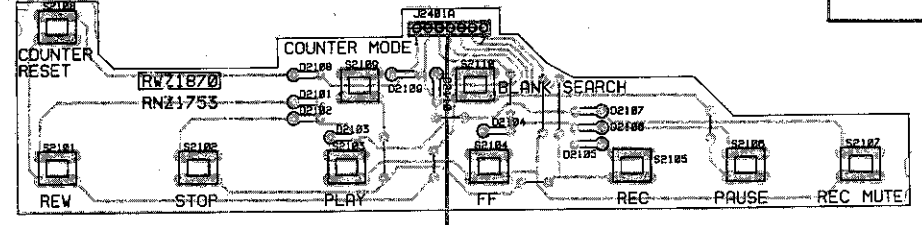


TRANS 1  
UNIT

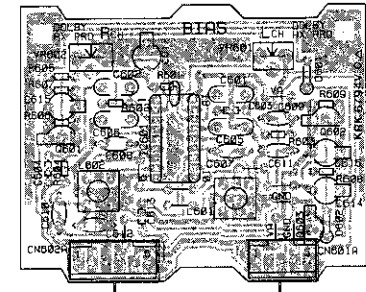


T1 POWER TRANSFORMER

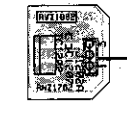
CONTROL SW UNIT



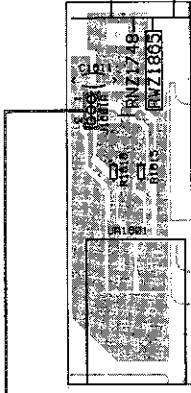
HX UNIT



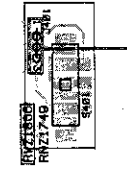
REGULATOR IC UNIT



HEADPHONE UNIT

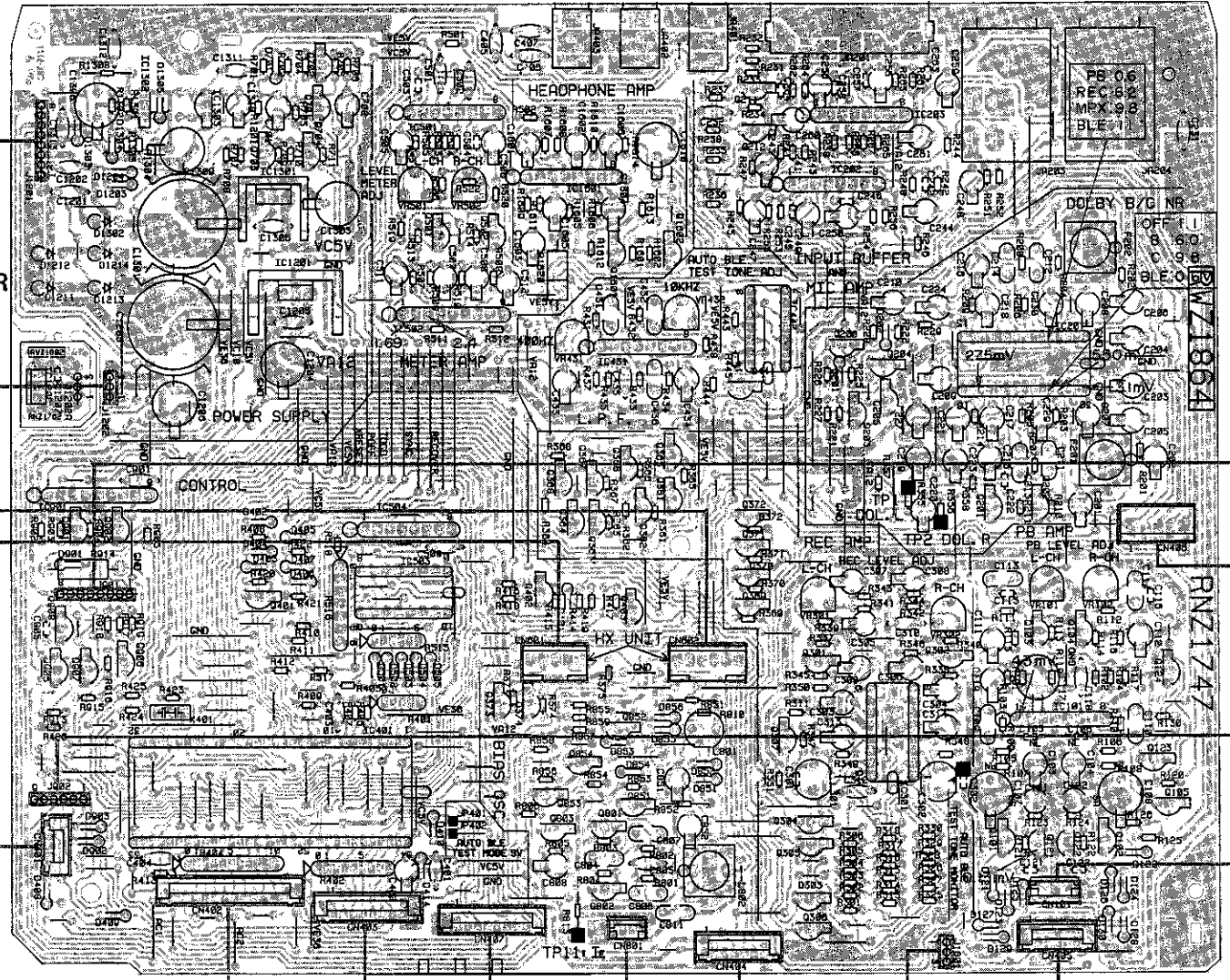


TIMER SW UNIT



A

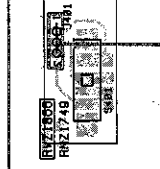
MAIN UNIT



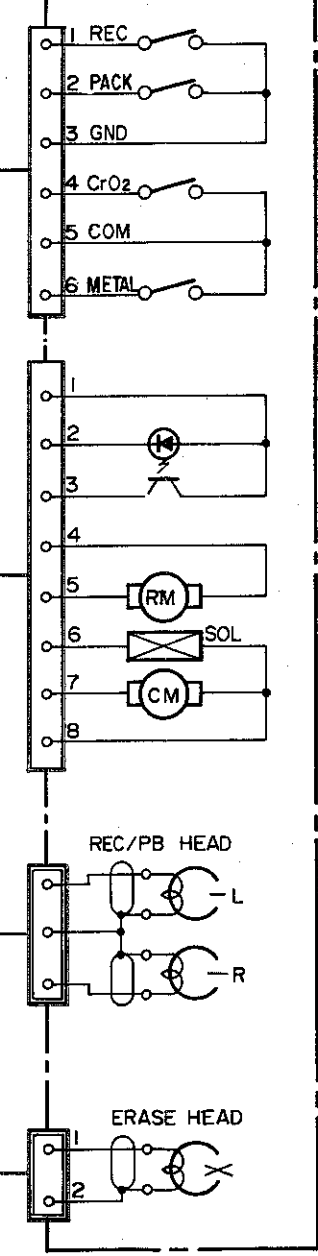
REGULATOR IC UNIT



TIMER SW UNIT



MECHANISM UNIT



Q701	Q211	
Q702	IC203	
IC1303	Q212	
IC1302		
Q703		
Q704	IC1601	IC202
IC1301		
	Q501	
	Q502	
	Q1602	
	Q1601	IC442
	IC502	Q206
	IC431	Q204
		Q441
		Q205
		Q203
		Q201
		Q202
	Q365	
	Q366	
	Q367	
	Q368	
	Q361	Q372
	Q362	Q371
	Q363	Q370
	Q364	Q369
	Q402	
	Q403	
		Q103
		Q104
		Q124
		IC101
		Q123
		Q105
		Q101
		Q121
		Q122
		Q102
		Q303
		Q306
		Q304
		Q305
		Q802
		Q801
		Q803
		Q851
		Q853
		Q854
		Q852
		Q374
		Q373
		Q907
		Q906
		Q905
		Q401
		Q908
		Q402
		Q369
		Q370
		Q371
		Q372
		Q201
		Q202

P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zener diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styro capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

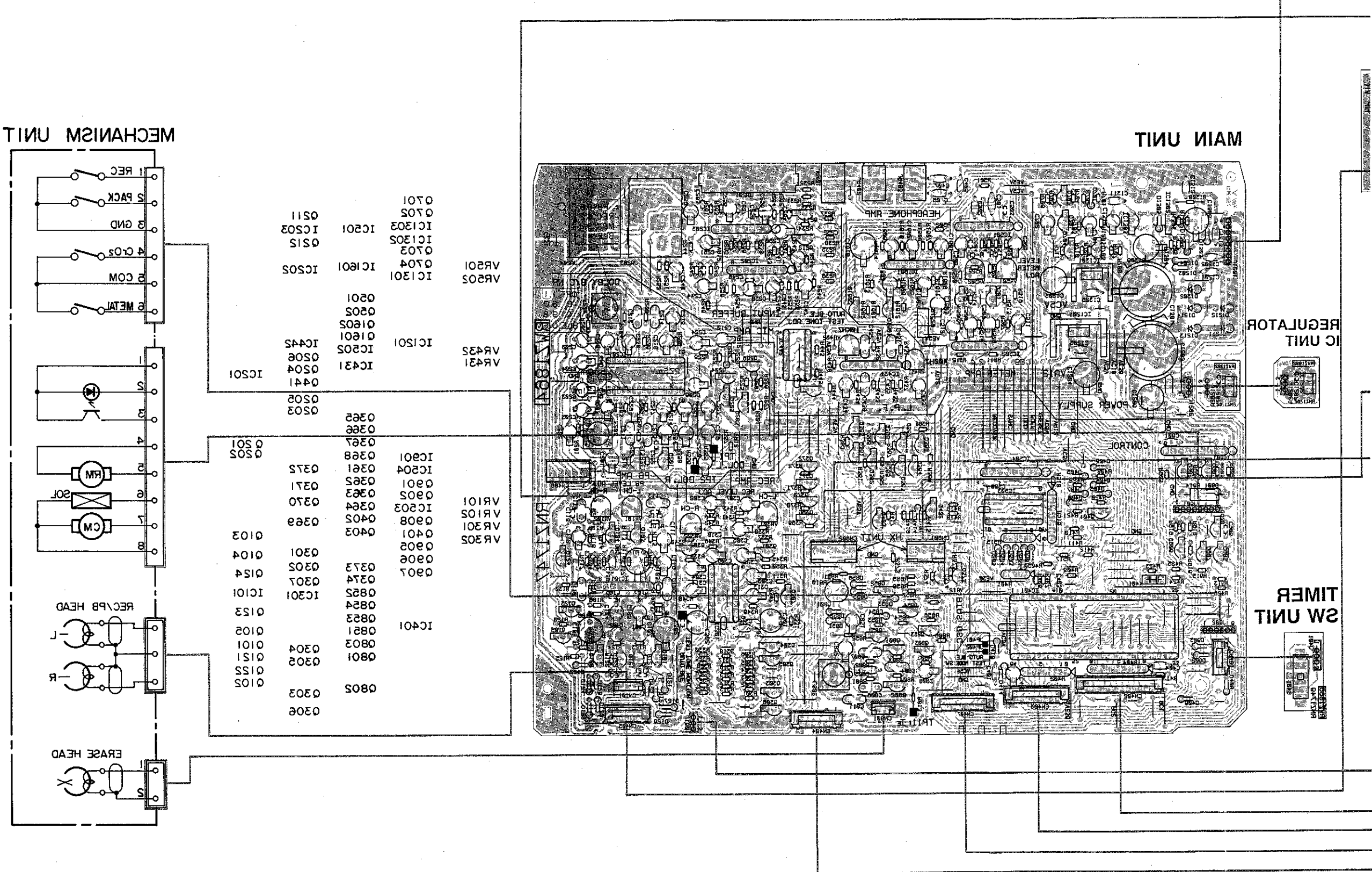
B

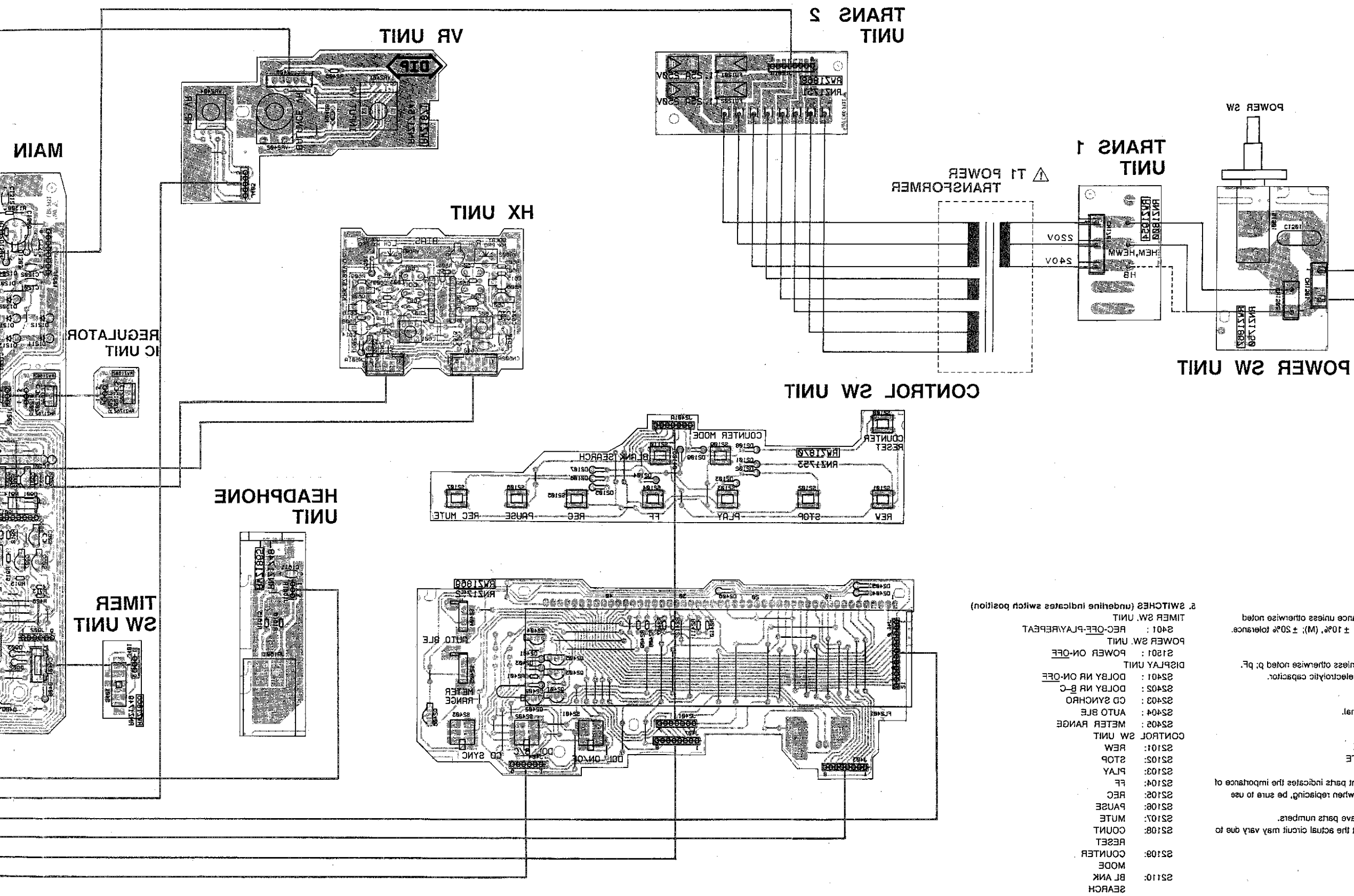
C

D

1. This P.C.B. connection diagram is viewed from the parts mounted side.  
 2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.  
 3. The capacitor terminal marked with shows negative terminal.  
 4. The diode marked with shows cathode side.  
 5. The transistor terminal marked with shows emitter.

● View from soldering side





HB type  
HEM, HEWM

AC POWER CORD  
200V±5  
1.540V  
ACSSO

- ▶ : Test point
- Improvements in design.
- This is the basic schematic diagram, but the actual circuit may vary due to parts of identical designation.
- \* marked capacitors and resistors have parts numbers.
- The  $\Delta$  mark found on some component parts indicates the impedance of the electrolytic factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- ⊙ : Adjusting point.
- RECORDING SIGNAL ROUTE
- PLAYBACK SIGNAL ROUTE
- 4 OTHERS
- 3 VOLTAGE CURRENT:  
□ : DC voltage (V) at an input signal.  
○ : Indication without voltage is 50V except electrolytic capacitor.  
Indicated in capacity (pF) \ voltage (V) unless otherwise noted p; pF.
- 5 CAPACITORS:  
K: k $\mu$ M; M: M $\mu$ F;  $\pm$  1% (G);  $\pm$  5% (K);  $\pm$  10% (M);  $\pm$  20% tolerance.
- 1 RESISTORS:  
Indicated in  $\Omega$ , 1k $\Omega$ , 10k $\Omega$ , 100k $\Omega$ , 1M $\Omega$ ,  $\pm$  5% tolerance unless otherwise noted.

- 2110: BLANK SEARCH
- 2109: COUNTER MODE
- 2108: COUNTER RESET
- 2107: COUNT
- 2106: MUTE
- 2105: PAUSE
- 2104: REC
- 2103: PLAY
- 2102: STOP
- 2101: REW
- CONTROL SW UNIT
- 2505: METER RANGE
- 2504: AUTO BLE
- 2503: CD SYNCHRO
- 2502: DOLBY NR B-C
- 2501: DOLBY NR ON-OFF
- DISPLAY UNIT
- 2120: POWER ON-OFF
- POWER SW UNIT
- 2401: REC-OFF-PLAY/REPEAT
- TIMER SW UNIT
- 2 SWITCHES (underline 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  $\Delta$  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.
- 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 $\Omega$	56 $\times 10^1$	561.....	RD1/4PS $\square$ $\square$ $\square$ J
47k $\Omega$	47 $\times 10^3$	473.....	RD1/4PS $\square$ $\square$ $\square$ J
0.5 $\Omega$	0R5.....		RN2H $\square$ $\square$ $\square$ K
1 $\Omega$	010.....		RS1P $\square$ $\square$ $\square$ K

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

5.62k $\Omega$	562 $\times 10^1$	5621.....	RN1/4SR $\square$ $\square$ $\square$ F
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Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
<b>HX UNIT</b>			<b>POWER SW. UNIT</b>		
<b>SEMICONDUCTORS</b>			<b>CAPACITOR</b>		
IC601	DOLBY HX PRO IC	UPC1297CA	$\Delta$ C1501	ELECTR. CAPACITOR (0.01 $\mu$ F)	RCG-009
Q601, Q602	TRANSISTOR	2SA1309A	<b>SWITCH</b>		
Q603	TRANSISTOR	DTC124ES	$\Delta$ S1501	POWER SWITCH	RSA-063
D601, D602	DIODE	1SS254	<b>DISPLAY UNIT</b>		
<b>COILS</b>			<b>SEMICONDUCTORS</b>		
L601, L602	COIL	RTD1046	Q2401	TRANSISTOR	2SA1309A
<b>CAPACITORS</b>			Q2402	TRANSISTOR	DTC114ES
C601, C602	AUDIO FILM CAPACITOR	CFTXA103J50	Q2403	TRANSISTOR	DTA124ES
C603, C604	AXIAL CERAMIC CAPACITOR	CKPUYB821K50	Q2404	TRANSISTOR	DTC114ES
C605, C606	AUDIO FILM CAPACITOR	CFTXA223J50	Q2405	TRANSISTOR	DTA124ES
C607, C608	CERAMIC CAPACITOR	CGCYX473K25	Q2406	TRANSISTOR	2SA1309A
C609, C610	CERAMIC CAPACITOR	CCCSSL101K500	D2401-D2406	DIODE	1SS254
C611, C612	CERAMIC CAPACITOR (430P, 500V)	RCG1005	<b>RESISTORS</b>		
C613	AXIAL CERAMIC CAPACITOR	CKPUYB101K50	<b>OTHER RESISTORS</b>		
C614	ELECTR. CAPACITOR	CEASR10M50	RD1/6PM $\square$ $\square$ $\square$ J		
C615	ELECTR. CAPACITOR	CEAS100M50	<b>SWITCHES</b>		
C616	ELECTR. CAPACITOR	CEAS4R7M50	S2401, S2402	PUSH SWITCH (DOLBY NR ON-OFF, DOLBY NR B-C)	RSG-150
C617	ELECTR. CAPACITOR	CEAS100M50	S2403	PUSH SWITCH (CD SYNCHRO)	RSG1027
<b>RESISTORS</b>			S2404, S2405	TACT SWITCH (AUTO BLE, METER RANGE)	RSG1021
VR601, VR602	SEMI-FIXED (22KB)	VRTB6HS223	<b>OTHER</b>		
<b>OTHER RESISTORS</b>			V2401		
RD1/6PM $\square$ $\square$ $\square$ J			FL TUBE		
RAW1053			<b>CONTROL SW. UNIT</b>		
<b>HEADPHONE UNIT</b>			<b>SEMICONDUCTORS</b>		
<b>CAPACITOR</b>			D2101-D2110		
C1611	CERAMIC CAPACITOR	CKCYF473Z50	DIODE		
<b>RESISTORS</b>			1SS254		
<b>OTHER RESISTORS</b>			<b>SWITCHES</b>		
RD1/6PM $\square$ $\square$ $\square$ J			S2101-S2108		
<b>OTHER</b>			TACT SWITCH (REW, STOP, PLAY, FF, REC, PAUSE, MUTE, COUNT/RESET)		
JA1601	HEADPHONE JACK	RKN1002	S2109, S2110		
<b>TIMER SW. UNIT</b>			TACT SWITCH (COUNTER/MODE, BLANK/SEARCH)		
<b>SWITCH</b>			RSG-143		
S401	SLIDE SWITCH (1-3) (REC-OFF-PLAY/REPEAT)	RSH1014			

Mark	No.	Description	Parts No.
<b>VOLUME UNIT</b>			
<b>RESISTORS</b>			
	VR2401	(5KA)	RCV1050
	VR2402	(5KB)	RCS1019
	VR2404	(500ΩB)	RCV1049
	OTHER RESISTORS		RD1/6PM□□□□

**REGULATOR IC UNIT**

Mark	No.	Description	Parts No.
<b>SEMICONDUCTORS</b>			
	IC1202	REGULATOR IC	TA7812S
<b>CAPACITOR</b>			
△	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.
<b>SEMICONDUCTORS</b>			
	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
	IC1601	OP-AMP IC	M5218L
	Q101, Q102	TRANSISTOR	2SC3311A
	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	2SC3311A
	Q303-Q307	TRANSISTOR	DTC114ES
	Q361-Q374	TRANSISTOR	DTC114ES
	Q401	TRANSISTOR	DTC114ES
	Q402, Q403	TRANSISTOR	2SA1309A
	Q441	TRANSISTOR	DTC114ES

Mark	No.	Description	Parts No.
	Q501, Q502	TRANSISTOR	DTC114TS
	Q701	TRANSISTOR	2SA1309A
	Q702, Q703	TRANSISTOR	2SC3311A
	Q704	TRANSISTOR	2SA1309A
	Q801-Q803	TRANSISTOR	2SC3243
	Q851, Q852	TRANSISTOR	2SA1283
	Q853, Q854	TRANSISTOR	2SC3311A
	Q901	TRANSISTOR	2SC3246
	Q902	TRANSISTOR	2SC3311A
	Q905-Q907	TRANSISTOR	2SC3246
	Q908	TRANSISTOR	2SC3311A
	Q1302	TRANSISTOR	2SA1283
	Q1601, Q1602	TRANSISTOR	2SD1302
	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	CQSA821J50
	C103, C104	ELECTR. CAPACITOR	CEANL100M16
	C105, C106	AXIAL CERAMIC CAPACITOR	CKPUYB101K50
	C107, C108	ELECTR. CAPACITOR	CEANL101M10
	C109, C110	AUDIO FILM CAPACITOR	CFTXA223J50
	C111, C112	ELECTR. CAPACITOR	CEAS100M50
	C113, C114	AUDIO FILM CAPACITOR	CFTXA223J50
	C115, C116	AXIAL CERAMIC CAPACITOR	CKPUYB102K50
	C117	ELECTR. CAPACITOR	CEAS101M25
	C118	CERAMIC CAPACITOR	CKCYF103Z50
	C119	ELECTR. CAPACITOR	CEAS470M16
	C121, C122	AXIAL CERAMIC CAPACITOR	CCPUSL100J50
	C201-C204	ELECTR. CAPACITOR	CEAS010M50
	C205-C208	ELECTR. CAPACITOR	CEAS100M50
	C209, C210	ELECTR. CAPACITOR	CEAS4R7M50
	C211-C214	AUDIO FILM CAPACITOR	CFTXA222J50
	C215, C216	ELECTR. CAPACITOR	CEASR22M50
	C217, C218	ELECTR. CAPACITOR	CEASR33M50
	C219, C220	ELECTR. CAPACITOR	CEAS330M16
	C221	ELECTR. CAPACITOR	CEAS100M50

Mark	No.	Description	Parts No.
	C222	AXIAL CERAMIC CAPACITOR	CKPUYY103M16
	C223, C224	ELECTR. CAPACITOR	CEASR33M50
	C227	ELECTR. CAPACITOR	CEAS101M25
	C229, C230	ELECTR. CAPACITOR	CEAS100M50
	C231, C232	CERAMIC CAPACITOR	CKCYF473Z50
	C241, C242	AXIAL CERAMIC CAPACITOR	CKPUYB681K50
	C243, C244	ELECTR. CAPACITOR	CEAS010M50
	C245, C246	AXIAL CERAMIC CAPACITOR	CKPUYB101K50
	C247, C248	ELECTR. CAPACITOR	CEAS010M50
	C249, C250	ELECTR. CAPACITOR	CEAS100M50
	C255, C256	ELECTR. CAPACITOR	CEAS100M50
	C257, C258	AXIAL CERAMIC CAPACITOR	CKPUYB101K50
	C259, C260	ELECTR. CAPACITOR	CEAS100M50
	C261	ELECTR. CAPACITOR	CEAS470M16
	C263, C264	AXIAL CERAMIC CAPACITOR	CKPUYB101K50
	C301, C302	AXIAL CERAMIC CAPACITOR	CKPUYB221K50
	C303, C304	ELECTR. CAPACITOR	CEAS4R7M50
	C305, C306	ELECTR. CAPACITOR	CEAS101M25
	C307, C308	ELECTR. CAPACITOR	CEAS010M50
	C309	ELECTR. CAPACITOR	CEAS101M25
	C310	CERAMIC CAPACITOR	CKCYF103Z50
	C312	CERAMIC CAPACITOR	CKCYF473Z50
	C313, C314	ELECTR. CAPACITOR	CEAS4R7M50
	C401	CERAMIC CAPACITOR	CKCYF103Z50
	C402	ELECTR. CAPACITOR	CEAS470M16
	C403-C406	CERAMIC CAPACITOR	CKCYF103Z50
	C407	CERAMIC CAPACITOR	CKCYF473Z50
	C431	AUDIO FILM CAPACITOR	CFTXA223J50
	C432	AUDIO FILM CAPACITOR	CFTXA222J50
	C433, C434	ELECTR. CAPACITOR	CEAS010M50
	C435	CERAMIC CAPACITOR	CGCYX104K25
	C436	AUDIO FILM CAPACITOR	CFTXA103J50
	C501, C502	CERAMIC CAPACITOR	CGCYX104K25
	C503, C504	AXIAL CERAMIC CAPACITOR	CKPUYB102K50
	C505-C508	ELECTR. CAPACITOR	CEAS4R7M50
	C509	CERAMIC CAPACITOR	CKCYF473Z50
	C511, C512	ELECTR. CAPACITOR	CEAS4R7M50
	C701	ELECTR. CAPACITOR	CEAS4R7M50
	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	CQPA682J100
	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

Mark	No.	Description	Parts No.
	C1205	CERAMIC CAPACITOR	CKCYF103Z50
	C1206	ELECTR. CAPACITOR	CEAS331M16
	C1301	ELECTR. CAPACITOR	CEAS332M16
	C1303	ELECTR. CAPACITOR	CEAS331M16
	C1305	CERAMIC CAPACITOR	CKCYF103Z50
	C1306	ELECTR. CAPACITOR	CEAS101M50
	C1309	ELECTR. CAPACITOR	CEAS101M50
	C1310	ELECTR. CAPACITOR	CEAS470M16
	C1311-C1313	CERAMIC CAPACITOR	CKCYF473Z50
	C1601, C1602	ELECTR. CAPACITOR	CEASR10M50
	C1603, C1604	ELECTR. CAPACITOR	CEAS010M50
	C1605, C1606	ELECTR. CAPACITOR	CEAS101M25
	C1610	ELECTR. CAPACITOR	CEAS331M16

**RESISTORS**

VR101, VR102	SEMI-FIXED VR (22KB)	VRTB6VS223
VR301, VR302	SEMI-FIXED VR (22KB)	VRTB6VS223
VR431, VR432	SEMI-FIXED VR (22KB)	VRTB6VS223
VR501, VR502	SEMI-FIXED VR (10KB)	VRTB6VS103
R401	RESISTOR ARRAY	RA4T683J
R402	RESISTOR ARRAY	RA8T683J
R404	RESISTOR ARRAY	RA10T223J
R515	RESISTOR ARRAY	RA5T223J
R516	LADDER RESISTOR (11K)	RCX1020
R813	CARBON RESISTOR	RD1/2LF010J
R851	CARBON RESISTOR	RD1/2LF431J
R852	CARBON RESISTOR	RD1/2LF221J
R914	METAL OXIDE	RS2LMF390J
△ R1308	FUSIBLE RESISTOR	RFA1/4L4R7J
R1620	METAL OXIDE	RS2LMF750J

**OTHER RESISTORS**

RD1/6PM□□□□

**OTHERS**

CN406	CONNECTOR (5P)	KPC5
JA201	JACK (4P)	RKB1001
JA203, JA204	MIC JACK	RKN1003
JA401	MINI JACK	RKN1014
JA402, JA403	REMOTE CONTROL JACK	RKN1004
X401	CERAMIC RESONATOR	VSS1014

# 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.

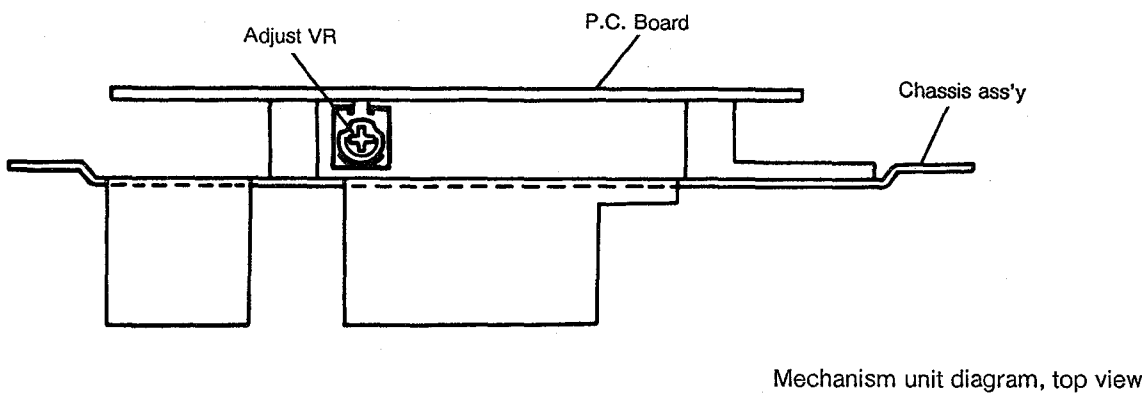


Fig. 8-1

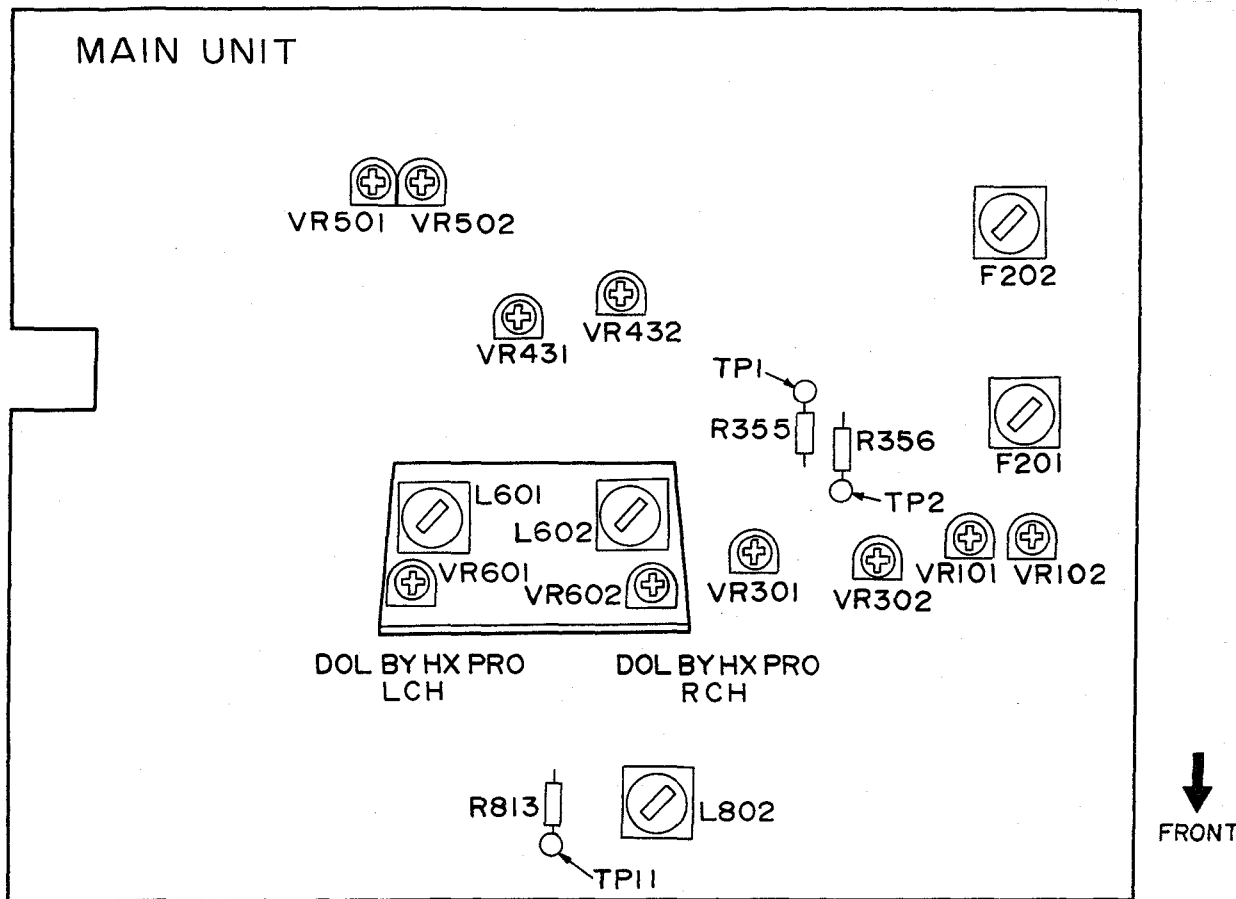


Fig. 8-2

## 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 : CrO<sub>2</sub> blank tape
- STD-610 : METAL blank tape

### 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.

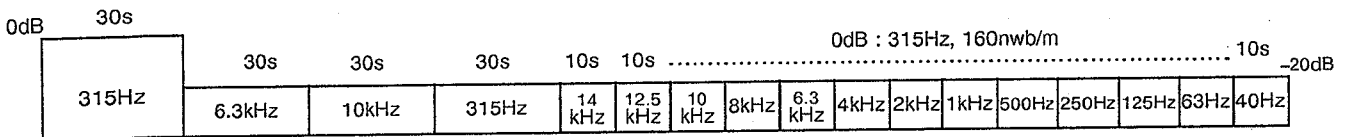


Fig. 8-3 Constants of the test tape STD-331B

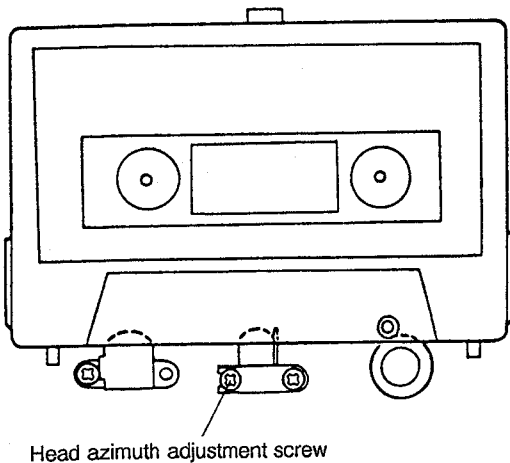
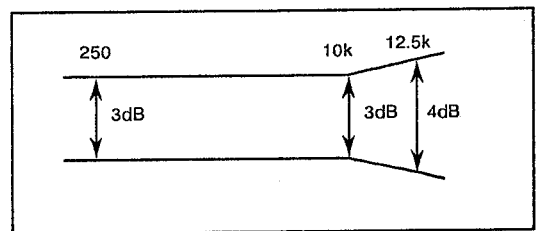


Fig. 8-4 Head azimuth adjustment

### PLAY BACK



### RECORDING

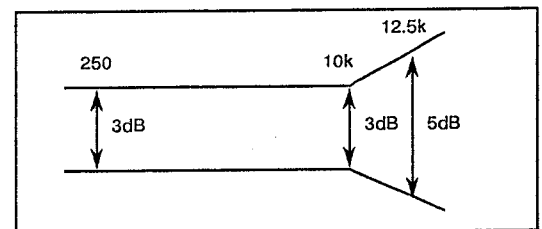


Fig. 8-5 Allowable playback frequency response zone

**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-630 test tape, and playback.	Deck I 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 <sub>2</sub> 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.

# 8. RÉGLAGE

## 8.1 RÉGLAGES MÉCANIQUES

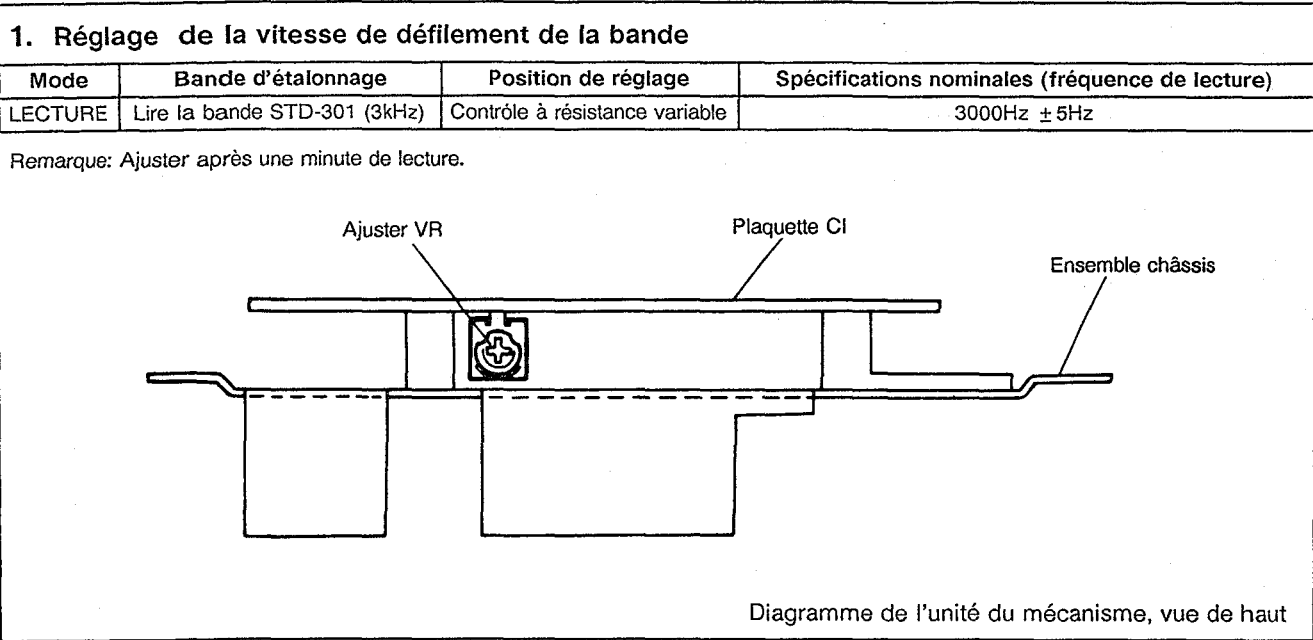


Fig. 8-1

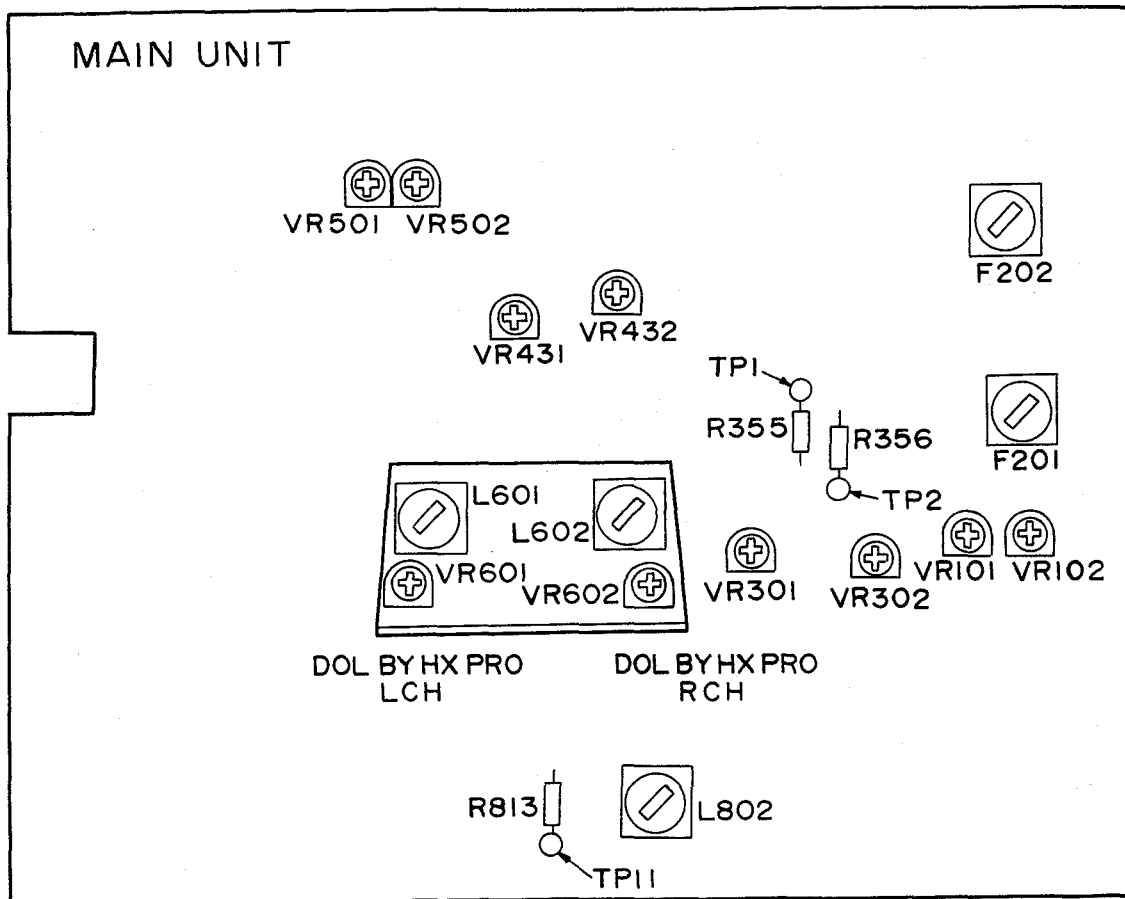


Fig. 8-2



## 8.2 REGLAGES ELECTRIQUES

### Conditions de réglage

1. Les réglages mécaniques doivent tout d'abord être terminés.
2. Les têtes doivent être nettoyées et démagnétisées.
3. Mettre la platine sous tension et la laisser chauffer pendant au moins quelques minutes avant de commencer les réglages électriques.
4. Le signal de référence est de  $\text{dBv} = 1 \text{ Vrms}$ .
5. Connecter une résistance de charge de 50 kohms (tolérance 47 à 52 kohms) aux bornes de sortie (OUTPUT).
6. Sauf indication contraire, les commutateurs ci-dessous doivent être laissés sur les positions indiquées.

DOLBY NR : OFF  
 Sélecteur de bande : NORM  
 (TAPE SELECTOR)

### Bandes d'essai

- STD-331B : Réglages de la lecture  
 (Voir fig. 8-3)
- STD-630 : Bande vierge de type normal
- STD-620 : Bande vierge de type chrome
- STD-610 : Bande vierge de type métal

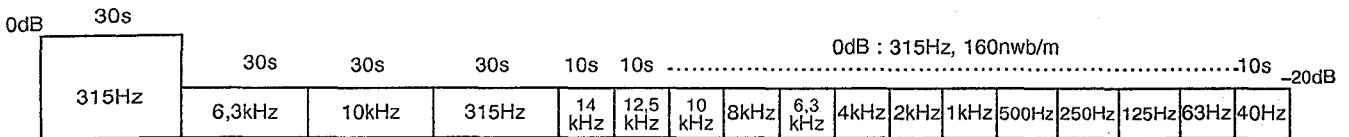


Fig. 8-3 Constantes de la bande d'essai STD-331B

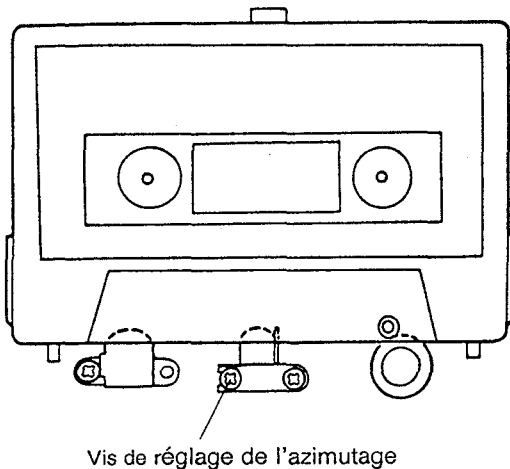


Fig. 8-4 Réglage de l'azimut de la tête

### Liste des réglages

#### Sections de lecture

1. Réglage de l'azimut de la tête.
2. Réglage du niveau de lecture.

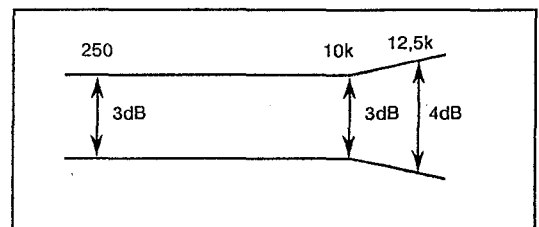
#### Sections d'enregistrement

1. Réglage de l'oscillateur de polarisation.
2. Réglage de la polarisation d'enregistrement.
3. Réglage du niveau d'enregistrement.
4. Réglage du décibel-mètre et d'Auto BLE.

#### REMARQUE:

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

### LECTURE



### ENREGISTREMENT

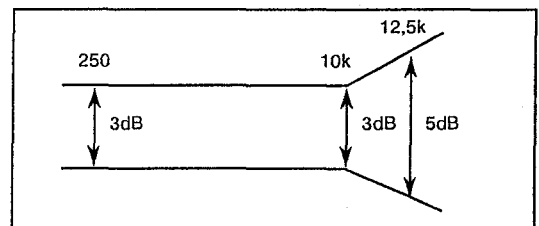


Fig. 8-5 Tolérance de la zone de réponse en fréquence de lecture

## SECTION DE LECTURE

## 1. Réglage de l'azimut de la tête

- Tourner VR101, VR102 sur leur position centrale mécanique.

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1.	PLAY	Reproduire la section 10 kHz/-20 dB de la bande d'essai STD-331B.	Vis de réglage de l'azimut de la tête. (Voir fig. 8-4)	Sortie de ligne (LINE OUT)	Niveau du signal de reproduction maximum.	
2.	STOP	Verrouiller la vis avec le verrouillage de vis après avoir terminé le réglage.				

## 2. Réglage du niveau de lecture

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

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1.	PLAY	Reproduire la section 315Hz/0dB de la bande d'essai STD-331B.	Platine I VR101(can. G) VR102(can. D)	TP. 1 DOL. L (can. G) TP. 2 DOL. R (can. D)	-10.7 dBv	

## SECTION D'ENREGISTREMENT

## 1. Réglage de l'oscillateur de polarisation

- Régler l'oscillateur de polarisation, les platines étant réglées simultanément dans le mode d'enregistrement (Enr/lec double soulévent)

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1.	REC	Charger la bande d'essai STD-610 et n'introduire aucun signal.	Platine I L802	TP. 11	105 kHz $\pm$ 0.3 kHz	

## 2. Réglage de la polarisation d'enregistrement

- Après le réglage, des précautions doivent être prises pour éviter une sous-polarisation en vérifiant le taux de distorsion.

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1.	STOP	Régler le sélecteur de bande (TAPE SELECTOR) sur la position NORM.				
2.	REC	Enregistrer les signaux 315 Hz et 6.3 kHz à un niveau d'entrée de -20 dBv et les reproduire.	Platine I VR601(can. G) VR602(can. D)	Sortie de ligne (LINE OUT)	Enregistrer, reproduire et régler de manière répétée de sorte que le niveau de lecture du signal 6.3 kHz devienne +0.5dB $\pm$ 0.5dB lorsqu'il est comparé avec le signal 315 Hz.	

### 3. Réglage du niveau d'enregistrement

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1.	STOP	Régler le sélecteur de bande (TAPE SELECTOR) sur la position NORM.				
2.	REC PAUSE	Appliquer un signal de 315 Hz/0 dBv aux bornes d'entrée de ligne, charger la bande d'essai STD-630.	Volume de la commande de niveau d'enregistrement.	TP. 1 DOL. L (can.G) TP. 2 DOL. R (can.D)	-11.2 dBv	
3.	STOP	Régler le commutateur DOLBY NR sur la position ON. (DOLBY B)				
4.	REC/ PLAY	Enregistrer le signal cidessus sur la bande d'essai STD-630 et le reproduire.	Platine I VR301(can.G) VR302(can.D)	TP. 1 DOL. L (can. G) TP. 2 DOL. R(can. D)	Enregistrer, reproduire et régler de manière répétée de sorte que le niveau du signal devienne -11.2dB.	
5.	STOP	Régler le sélecteur de bande (TAPE SELECTOR) sur la position CrO <sub>2</sub> .				
6.	REC/ PLAY	Enregistrer le signal cidessus sur la bande d'essai STD-620 et le reproduire.	Vérifier	TP. 1 DOL. L (can. G) TP. 2 DOL.R (can. D)	-11.2 dBv ± 1.5dB	
7.	STOP	Régler le sélecteur de bande (TAPE SELECTOR) sur la position METAL.				
8.	REC/ PLAY	Enregistrer le signal cidessus sur la bande d'essai STD-610 et le reproduire.	Vérifier	TP. 1 DOL. L (can. G) TP. 2 DOL. R(can.D)	-11.2 dBv ± 1.5dB	

### 4. Réglage de BLE automatique et de l'indicateur de niveau

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1	Sélectionner le mode d'essai en court-circuitant JP-401 et JP-402. (Immédiatement)					
2	REW	(Rembobinage) (TEST 1 : 400Hz)	VR431	Sortie de ligne (Lch) (Can. G)	-19.5 dBV	*Remarque
			VR501	Indicateur de niveau	Régler de sorte que le segment de -10 dB clignote.	
			VR431	Sortie de ligne (Rch) (Can. D)	-19.5 dBV	
			VR502	Indicateur de niveau	Régler de sorte que le segment de -10 dB clignote.	
3	STOP	(Arrêt) (TEST 2 : 10kHz)	VR432	Indicateur de niveau	Régler de sorte que le segment de -10 dB du canal R clignote.	

**\*Remarque**

- Immédiatement court-circuité entre JP401 et 402, le réglage revient sur le mode de test.
- Pour annuler le mode de test, appuyer sur AUTO BLE ou mettre l'appareil hors tension (OFF).
- Le réglage du n° 2 doit être effectué dans l'ordre des éléments de haut en bas.

# 8. AJUSTE

## 8.1 AJUSTE MECANICO

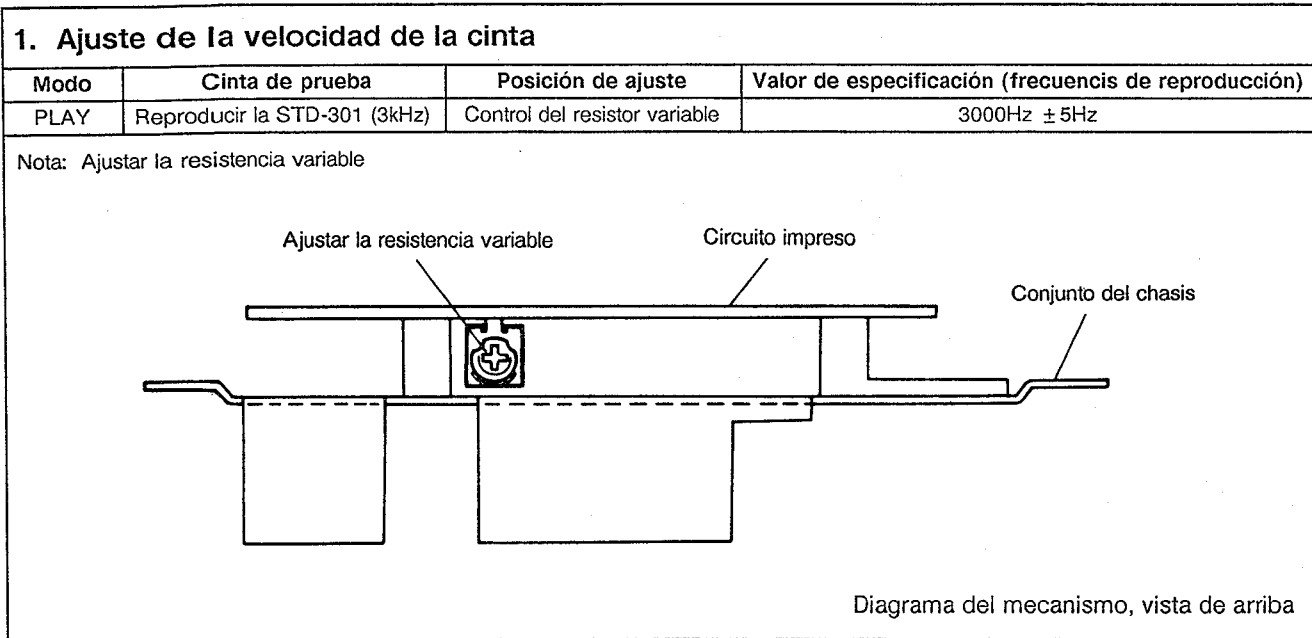


Fig. 8-1

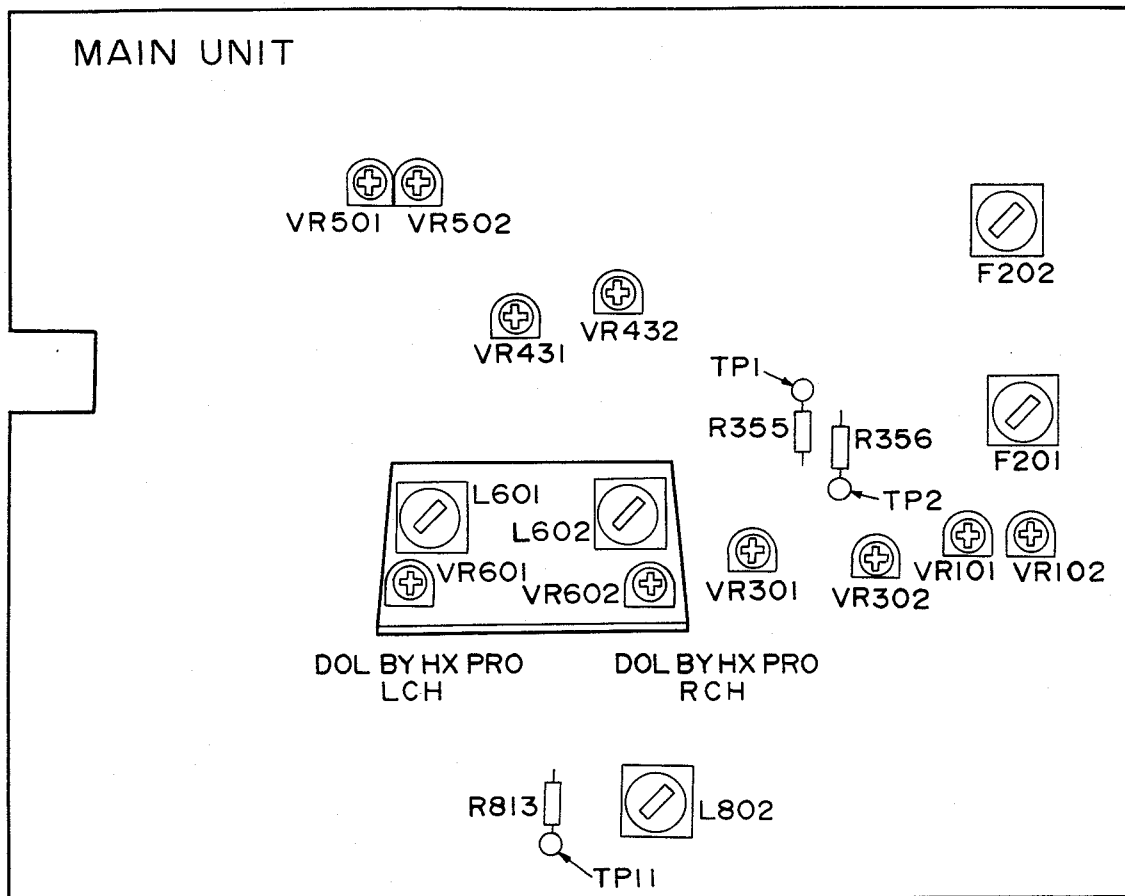


Fig. 8-2

## 8.2 AJUSTES ELÉCTRICOS

### Condiciones de ajuste

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

### Cintas de prueba

- STD-331 B : Ajustes de reproducción  
(Consulte la figura 8-3)
- STD-630 : Cinta virgen NORMAL
- STD-620 : Cinta virgen de CrO<sub>2</sub>
- STD-610 : Cinta virgen de METAL

### Lista de ajustes

#### Secciones de reproducción

1. Ajuste de azimut de la cabeza
2. Ajuste del nivel de reproducción

#### Secciones de grabación

1. Ajuste del oscilador de polarización
2. Ajuste de la polarización de grabación
3. Ajuste del nivel de grabación
4. Auto BLE y ajuste del medidor de nivel

#### NOTA:

Esta unidad posee una función de selección automática de cinta.

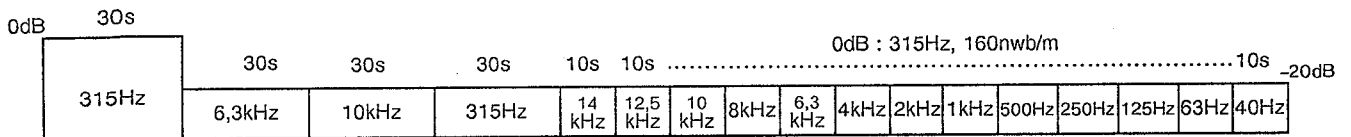


Figura 8-3 Constantes de la cinta de prueba STD-331B

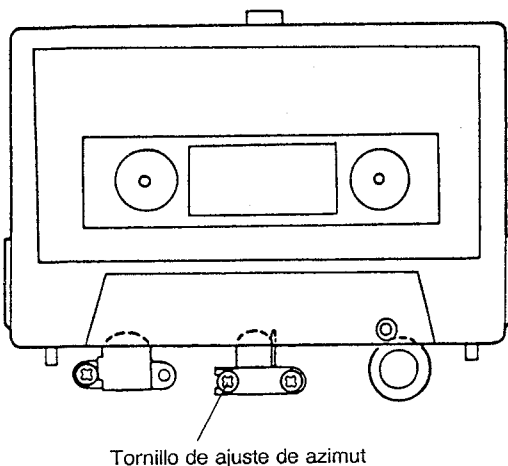
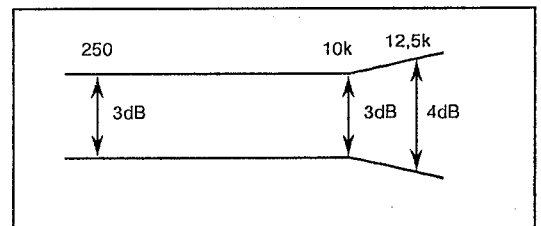


Figura 8-4 Ajuste de azimut de la cabeza

### REPRODUCCIÓN



### GRABACIÓN

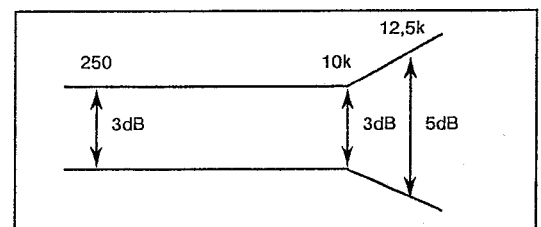


Figura 8-5 Zona permitida de respuesta de frecuencia de reproducción

## SECCIÓN DE REPRODUCCIÓN

### 1. Ajuste del azimut de la cabeza

- Poner VR101, VR102 en las posiciones del centro mecánico.

Nº	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.	PLAY	Reproduzca la sección de 10 kHz/-20 dB de la cinta de prueba STD-331B.	Tornillo de ajuste del azimut de la cabeza. (Vea la figura 8-4)	LINE OUT	Nivel máximo de la señal de reproducción.	
2.	STOP	Bloquee el tornillo con su cierre una vez finalizado el ajuste.				

### 2. Ajuste del nivel de reproducción

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

Nº	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.	PLAY	Produzca la parte de 315 Hz/0 dB de la cinta de prueba STD-331B.	Platina I VR 101 (Lch) VR 102 (Rch)	TP1. DOL. L (Lch) TP2. DOL. R (Rch)	-10.7 dBv	

## SECCIÓN DE GRABACIÓN

### 1. Ajuste del oscilador de polarización

- Ajuste el oscilador de polarización con los platinas pues tas simultáneamente en el mode de grabación. (Doble G/R Sólo)

Nº	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.	REC	Introduzca la cinta de prueba STD-610 sin señal de entrada.	Platina I L802	TP.11	105 kHz $\pm$ 0.3 kHz	

### 2. Ajuste de polarización de grabación

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

Nº	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.	STOP	Ponga el conmutador TAPE SELECTOR en la posición NORM.				
2.	REC	Grabe la señal de 315 Hz y 6.3 kHz a un nivel de entrada de -20 dBv y reproduzca.	Platina I VR 601 (Lch) VR 602 (Rch)	LINE OUT	Grabe, reproduzca y ajuste repetidamente para que el nivel de la señal de reproducción de 6.3 kHz sea de +0.5dB $\pm$ 0.5dB cuando se compare con la señal de 315 Hz.	

**3. Ajuste del nivel de grabación**

Nº	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.	STOP	Ponga el conmutador TAPE SELECTOR en la posición NORM.				
2.	REC/PAUSE	Aplique una señal de 315 Hz/0 dBv a los terminales de entrada de línea e introduzca la cinta de prueba STD-630.	Control de nivel de grabación.	TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	-11.2 dBv	
3.	STOP	Ponga el conmutador DOLBY NR en la posición ON. (DOLBY B)				
4.	REC/PLAY	Grabe la señal de arriba en la cinta de prueba STD-630 y reproduzca.	Platina I	VR301 (Lch) VR302 (Rch)	TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	Grabe, reproduzca y ajuste repetidamente para que el nivel de la señal de reproducción sea de -11.2dB.
5.	STOP	Ponga el conmutador TAPE SELECTOR en la posición CrO <sub>2</sub> .				
6.	REC/PLAY	Grabe la señal de arriba en la cinta de prueba STD-620 y reproduzca.	Verifique	TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	-11.2 dBv ± 1.5dB	
7.	STOP	Ponga el conmutador TAPE SELECTOR en la posición METAL.				
8.	REC/PLAY	Grabe la señal de arriba en la cinta de prueba STD-610 y reproduzca.	Verifique	TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	-11.2 dBv ± 1.5dB	

**4. Verificación del medidor de nivel**

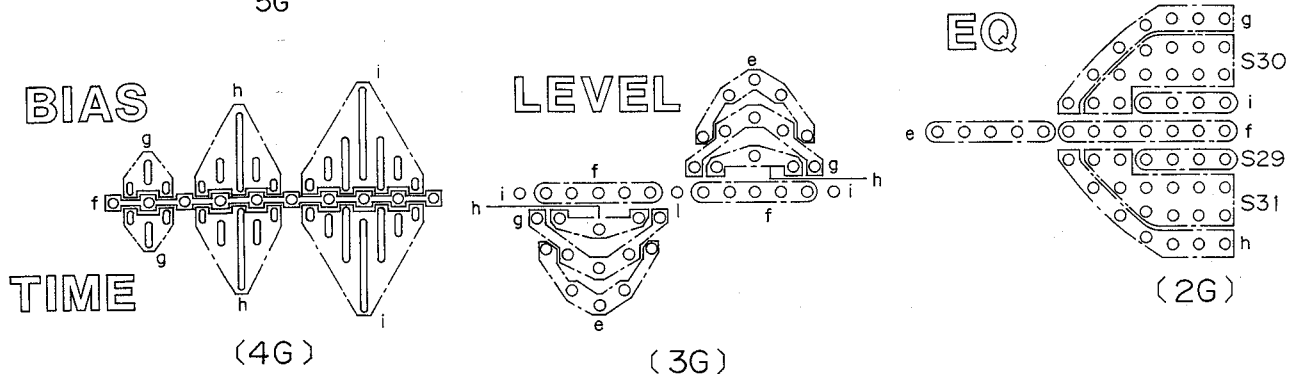
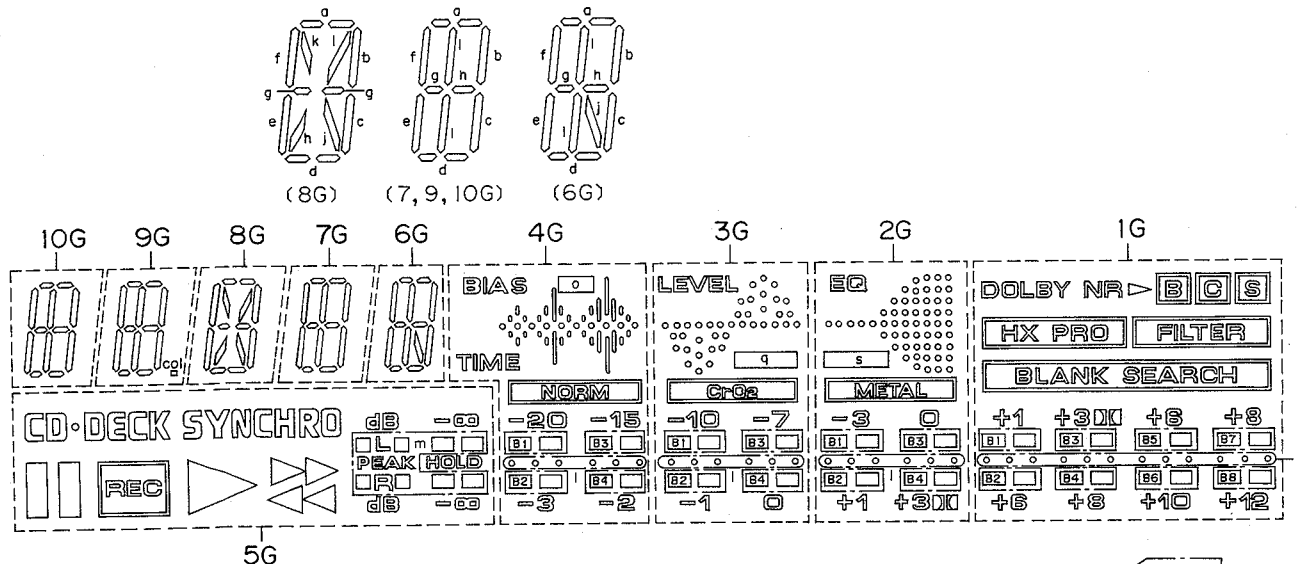
Nº	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1	Seleccione el modo de prueba poniendo JP-401 y JP-402 en cortocircuito. (Instantáneamente)					
2	REW	(TEST 1: 400Hz)	VR431	LINE OUT (Lch)	-19.5 dBV	*NOTAS
			VR501	LEVEL METER	Ajuste de modo que el segmento de -10 dB destelle intermitentemente.	
			VR431	LINE OUT (Rch)	-19.5 dBV	
			VR502	LEVEL METER	Ajuste de modo que el segmento de -10 dB destelle intermitentemente.	
3	STOP	(TEST 2: 10kHz)	VR432	LEVEL METER	Ajuste de modo que el segmento de -10 dB del canal R destelle intermitentemente.	

**\*NOTAS**

- Cortocircuitando instantáneamente entre JP401 y 402, se pone en el modo de prueba.
- Para cancelar el modo de prueba, presionan el interruptor AUTO BLE, o desconectar la alimentación.
- Efectuar el ajuste del No. 2 ordenadamente desde el primer punto.

# 9. IC INFORMATION

## ● GRID ASSIGNMENT



## ● PIN CONNECTION

49	48	47	46	45	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	N	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	N	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	P	12	4	11	10	3	5	7	8	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	1	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 <input type="checkbox"/> +6+8
S11	-	col	k	-	-	dB - ∞ (DOWN)	-3 -2	-1 -0	+1+3 <input type="checkbox"/>	+6+8+10+12
S12	-	-	-	-	-	-	•••••	•••••	•••••	•••••~•••••
S13	-	-	-	-	-	m	-	-	-	-
S14	-	-	-	-	-	-	BIAS	-	-	-
S15	-	-	-	-	-	-	<input type="checkbox"/> O	-	-	-
S16	-	-	-	-	-	-	-	LEVEL	-	-
S17	-	-	-	-	-	-	-	<input type="checkbox"/> q	-	-
S18	-	-	-	-	-	-	-	-	EQ	-
S19	-	-	-	-	-	-	-	-	<input type="checkbox"/> s	-
S20	-	-	-	-	-	-	<input type="checkbox"/> NORM	-	-	-
S21	-	-	-	-	-	-	-	<input type="checkbox"/> CrO <sub>2</sub>	-	-
S22	-	-	-	-	-	-	-	-	<input type="checkbox"/> METAL	-
S23	-	-	-	-	-	-	-	-	-	DOLBY NR ▶
S24	-	-	-	-	-	-	-	-	-	<input type="checkbox"/> B
S25	-	-	-	-	-	-	-	-	-	<input type="checkbox"/> C
S26	-	-	-	-	-	-	-	-	-	<input type="checkbox"/> S
S27	-	-	-	-	-	-	-	-	-	<input type="checkbox"/> HX PRO
S28	-	-	-	-	-	-	-	-	-	<input type="checkbox"/> FILTER
S29	-	-	-	-	-	-	-	-	S29	-
S30	-	-	-	-	-	-	-	-	S30	-
S31	-	-	-	-	-	-	-	-	S31	-

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

### NOTES:

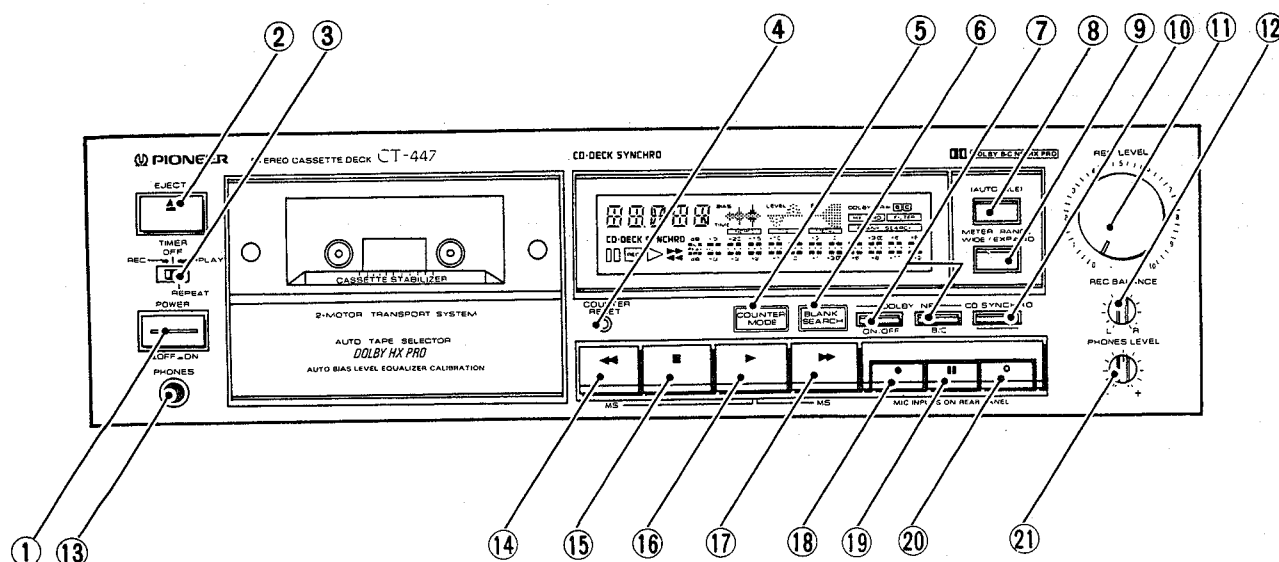
- Parts without part number cannot be supplied.
- The  $\triangle$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery 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	
$\triangle$	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**

② **REC BALANCE control**

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

③ **PHONES jack**

④ **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.

⑤ **Stop button (■)**

To stop all operations.

⑥ **Playback button (▶)**

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

⑦ **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.

⑧ **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.

⑨ **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.

⑩ **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.

⑪ **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/CrO<sub>2</sub>/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.*