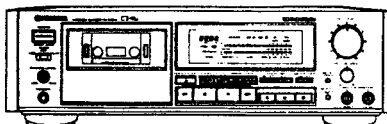


Service Manual

PIONEER
The future of sound and vision.



The above illustration shows the model CT-91a.

ORDER NO.
ARP1731

STEREO CASSETTE DECK

CT-737 MARK II

CT-737 MARK IIS

CT-737 MARK II AND CT-737 MARK II S HAVE TWO VERSIONS :

Type	Applicable model		Power requirement	Export destination
	CT-737 MARK II	CT-737 MARK II S		
HEM	○	○	AC220V, 240V (switchable) *	European continent
HB	○	—	AC220V, 240V (switchable) *	United Kingdom

*Change the primary wiring of the power transformer.

- This manual is applicable to the HEM and HB types.
- For the CT-737 MARK II/HB and CT-737 MARK IIS/HEM types, refer to page 43.
- The CT-737 MARK IIS is the same as the CT-737 MARK II except for the color.
- Ce manuel pour le service comprend les explications en français de réglage.
- 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
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911
 © PIONEER ELECTRONIC CORPORATION 1989

SA APR. 1989 Printed in Japan

1. SPECIFICATIONS

Systems	4 track, 2-channel stereo
Heads	Recording and playback head
Hard permalloy recording/playback combination head	× 1
Erasing head: (Ferrite head)	× 1
Motors	DC servo capstan motor × 1
DC reel motor	× 1
DC auxiliary motor	× 1
Wow & flutter	0,028% (WRMS)
± 0,07% (DIN)	
Fast winding time	Approximately 80 seconds
(C-60 tape)	
Frequency response (-20 dB recording)	
Metal tape	15 Hz to 22,000 Hz
Chrome tape	15 Hz to 21,000 Hz
Normal tape	15 Hz to 21,000 Hz
Signal-to-noise ratio	
DOLBY NR OFF	More than 60 dB
Noise reduction effect	
DOLBY B-type NR ON	More than 10 dB (at 5 kHz)
DOLBY C-type NR ON	More than 19 dB (at 5 kHz)
Harmonic distortion	No more than 0.6% (0 dB)
Input	LINE: 58 mV
(Input impedance: 56 k Ω)	
Output	LINE: 318 mV
(Output impedance: 5.2 k Ω)	
Headphones: 0.8 mW	
(Load impedance 8 Ω VR Max.)	

Subfunctions

- 2-mode Counter (4-digit electronic counter)
- Meter Range Selection (wide/expanded range)
- Auto Monitor Function (TAPE/SOURCE auto selection)
- Power Eject (OPEN/CLOSE)
- Music Search (over ± 15 selections)
- Tape Return/Return Play
- Headphones jack (with volume control)
- Bias control
- Rec calibration level control
- MPX Filter
- Auto Space Recording Mute
- Auto Tape Selector
- Playback/Recording timer start function
- Dolby B-type and C-type Noise Reduction Systems
- Dolby HX Pro system
- FL Level Meter Peak-hold function (15 + 1 segments)

Miscellaneous

Power requirements	AC 220Volts~, 50/60 Hz
Power consumption	22W
Dimensions	457(W) × 133.5(H) × 372(D) mm
Weight (without package)	7.3 kg

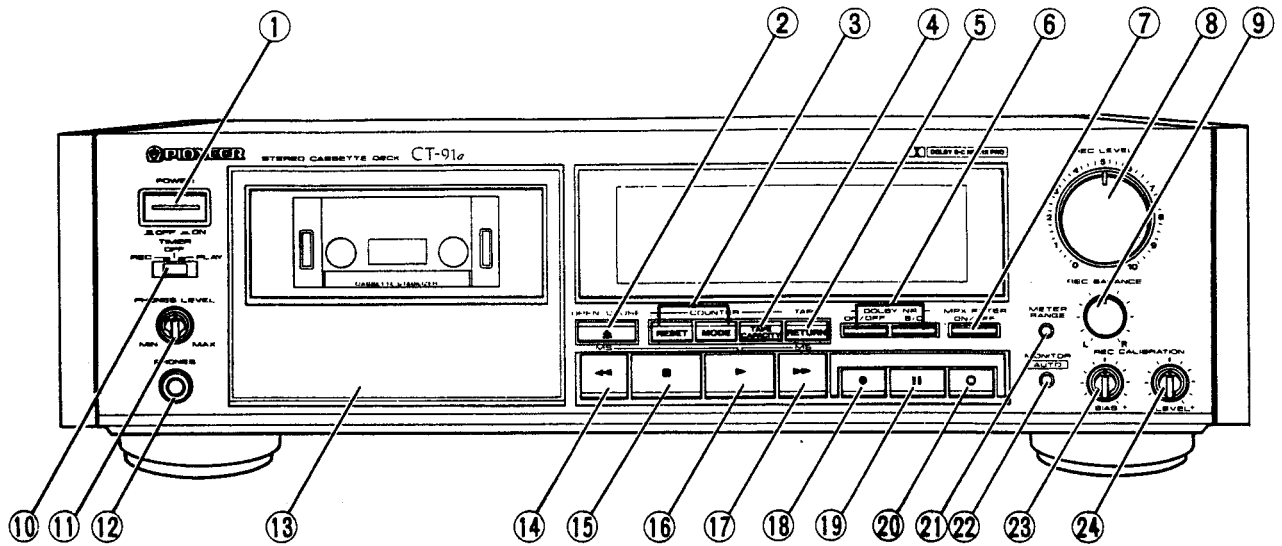
Accessories

Operating instructions	1
Connecting cords	2

NOTE:

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

2. PANEL FACILITIES



The above illustration shows the model CT-91a.

① POWER switch

Turns the power on and off.

After the power is turned on, the dotted lines in the level meter flash for approximately 4 seconds until the circuits of the unit have stabilized. The unit will not operate during this time.

② Cassette door OPEN/CLOSE button

NOTE:

If the cassette door is closed while the unit is turned OFF, and the power is then turned ON, the cassette door may open and close after pressing one of the operation buttons. This occurs when the microprocessor resets the door mechanism to its initial state and does not indicate any malfunctioning of the unit.

③ COUNTER selectors

RESET:

Resets the counter indication to "0000".

MODE:

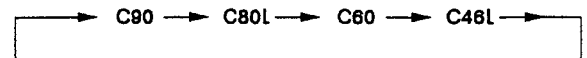
Each time this button is pressed, one of the following three modes is set in sequence.

- Normal tape counter
- Time counter (displays the elapsed playback or recording time)
- Remaining time counter (displays the remaining time of the tape). CT-91a, CT-939 only.
- Two modes for CT-737.

④ TAPE CAPACITY selector

(Not provided in the model CT-737)

To indicate the correct time value in the remaining time counter mode, this selector must be set in accordance with the tape used.



⑤ TAPE RETURN button

This button is used in the tape counter mode to fast forward or rewind the tape to a point near the counter reading "0000".

⑥ DOLBY * NR selectors


ON/OFF:

Used to turn the Dolby NR Systems circuits ON or OFF.

B/C:

With the ON/OFF switch in the ON position, Dolby B-type NR or C-type NR can be selected with this switch.

*

- *Dolby noise reduction and HX Pro headroom extension system 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.*

⑦ MPX FILTER switch

Set this switch to ON when recording FM broadcasts with one of the Dolby NR systems.

⑧ REC LEVEL control

⑨ REC BALANCE control

⑩ TIMER mode selector

REC:

Set to this position for timer recording.

PLAY:

Set to this position for timer playback.

OFF:

When the timer is not to be used, set the selector to this position. (Normally leave the selector in this position.)

⑪ PHONES LEVEL control

Used for adjusting the volume when listening with headphones.

⑫ PHONES jack

For connection of standard stereo headphones.

⑬ Cassette door

Open and close this door by pressing the OPEN/CLOSE button for insertion or removal of the tape.

⑭ Rewind (◀◀) button

Press this button to rewind the tape. Also, this button is used for music search during playback.

⑮ Stop (■) button

⑯ Play (▶) button

⑰ Fast forward (▶▶) button

Press this button to fast forward the tape. Also, this button is used for music search during playback.

⑱ Recording (●) button

When this button is pressed, the unit is set to one-touch recording pause (recording standby mode).

⑲ Pause (||) button

The tape transport can be momentarily stopped by pressing this button during recording or playback. Press the button again to restart operation. The button does not operate during fast forward or rewind.

⑳ Record muting (○) button

Press this button to create an unrecorded space during recording.

㉑ METER RANGE selector

Selects wide or expanded range for the level meter.

㉒ MONITOR selector

For monitoring the sound during recording, this switch can be used to switch between source sound and just recorded sound.

Normally, however, the unit will automatically select tape playback sound after playback has started or the just recorded sound after recording has started.

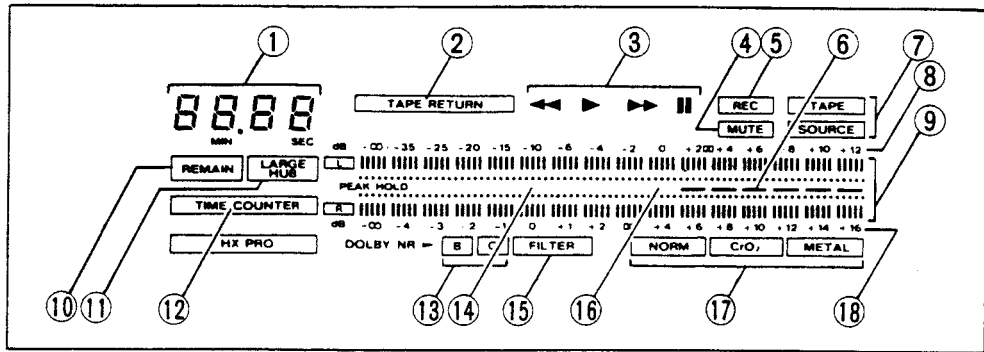
㉓ REC CALIBRATION BIAS control

It is possible to adjust the bias according to the tape used and the source to be recorded.

㉔ REC CALIBRATION LEVEL control

The AUTO TAPE SELECTOR of this unit matches the recording characteristics with the tape used. Proper adjustment of the REC CALIBRATION LEVEL control permits optimum use of the given tape characteristics for even better recording results.

OPERATING DISPLAY



① Counter

- The counter has three display modes.
- If the cassette door is open, the message "OPEN" is displayed.
- During music search the number of selections is displayed.

② TAPE RETURN

Lights up during tape return operation.

③ Tape transport modes

- ◀◀: Lights up when rewinding the tape.
- ▶: Lights up during playback, playback pause, recording pause and recording. Flashes during music search.
- ▶▶: Lights up when fast forwarding the tape.
- ||: Lights up in the pause mode.

④ MUTE

Flashes and lights during recording mute operation.

⑤ REC

Lights up during recording.

⑥ Warning zone

Changes according to the type of tape used and to the selected meter range.

⑦ Monitor source

TAPE : Recorded sound
SOURCE: Original source sound

⑧ Scale for wide range

⑨ Level

- L : Left channel
- R : Right channel

The □□ marks indicate the reference level for the Dolby NR Systems.

⑩ REMAIN (Not provided in the model CT-737)

Lights up when the remaining time counter mode is selected.

⑪ LARGE HUB (Not provided in the model CT-737)

Lights up when the TAPE CAPACITY selector is pressed in the remaining time counter mode, and the Large Hub mode is set.

⑫ TIME COUNTER

Lights up in the time counter mode.

⑬ DOLBY B-type NR/C-type NR

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

⑭ 0 dB position for expanded range

⑮ MPX FILTER

Lights up when the MPX FILTER switch is pressed while the Dolby NR Systems are ON.

⑯ 0 dB position for wide range

⑰ Tape type

The unit will automatically detect and display the tape type (NORMAL/CrO₂/METAL) of the cassette inserted. When no tape is inserted, METAL is displayed.

⑱ Scale for expanded range

3. EXPLODED VIEWS AND PARTS LIST

3.1 EXTERIOR

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.

Parts List of Exterior

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
Δ	1	CM-22B	Strain relief		36	RXX1207	Front panel assembly
Δ	2	PDG1003	AC Power cord		37	RXX1113	Door assembly
Δ	3	REK-099	Fuse (FU401, FU402/800mA)		38	BBZ40P080FCC	Screw
Δ	4	REK-102	Fuse (FU403/1.6A)		39	BBZ30P060FCC	Screw
Δ	5	RTT1052	Power transformer (T1)		40	IBZ30P080FCC	Screw
	6	SLF-401C	Diode (D11)		41	BBT30P080FZK	Screw
	7	DBK-106	Mounting plate		42	.....	.....
	8	PNB1109	Absorber B		43	FBT40P080FZK	Screw
	9	RBL-059	Cassette plate spring		44	BBZ26P080FZK	Screw
	10		.....		101		Tape mechanism unit
	11	REB-223	Cover cushion (D)		102		P.C.B stud
	12	REB1038	Stablizer B		103		Power transformer sheet
	13	REB1057	Rubber spacer (A)		104		Tape mechanism sheet
	14	REE1010	Label		105		Main chassis
	15	AMR1159	Leg assembly		106		Panel stay
	16	RAC1337	Headphone knob (PHONES LEVEL, REC CALIBRATION)		107		PC support
	17	RAC-668	Slide SW knob A (TIMER)		108		Monitor button
	18	RAC1203	Power button (POWER)		109		Monitor button mold
	19	RAC1204	Push button (DOLBY, MPX)		110		Front panel
	20	RAC1232	Counter button (COUNTER)		111		Cassette panel
	21	RAC1206	Button (◀, ■, ▶, ▶▶, ●, ■, ○)		112		Rear panel
	22	RAC1262	VR knob B (REC BALANCE)		113		Headphone unit
	23	RAH1184	FL filter		114		Input VR unit
	24	RAP1003	Under escutcheon		115		Main unit
	25	RNK1284	Door		116		Timer unit
	26	RNK1301	Button holder		117		Power switch unit
	27	RXA1158	VR knob assembly (A)		118		FL unit
	28	RXA1160	Monitor button assembly (METER RANGE, MONITOR)		119		Switch unit
	29	RAH1197	Door lens		120		PB Dolby unit
	30	RAH1198	FL panel		121		REC Dolby unit
	31	RAH1200	Side panel (L)		122		CAL VR unit
	32	RAH1201	Side panel (R)		123		P.C.B base
	33	RAH1314	Door panel		124		P.C.B holder (H15)
	34	RXX1115	Cassette plate assembly		125		Name plate
	35	RXX1092	Bonnet				

Exterior

* Disassemble the mechanism unit, remove the bonnet and front panel first.

A

B

C

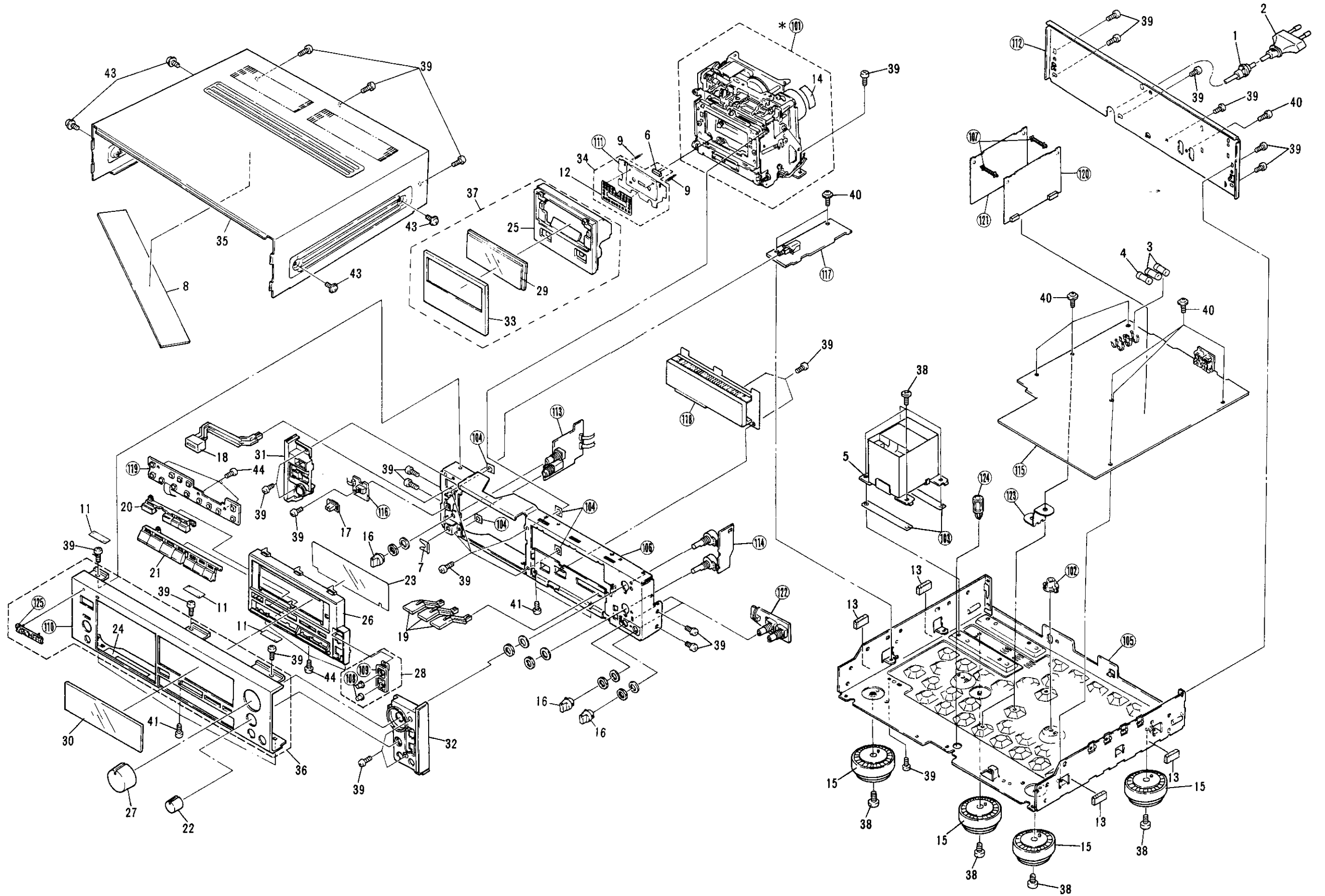
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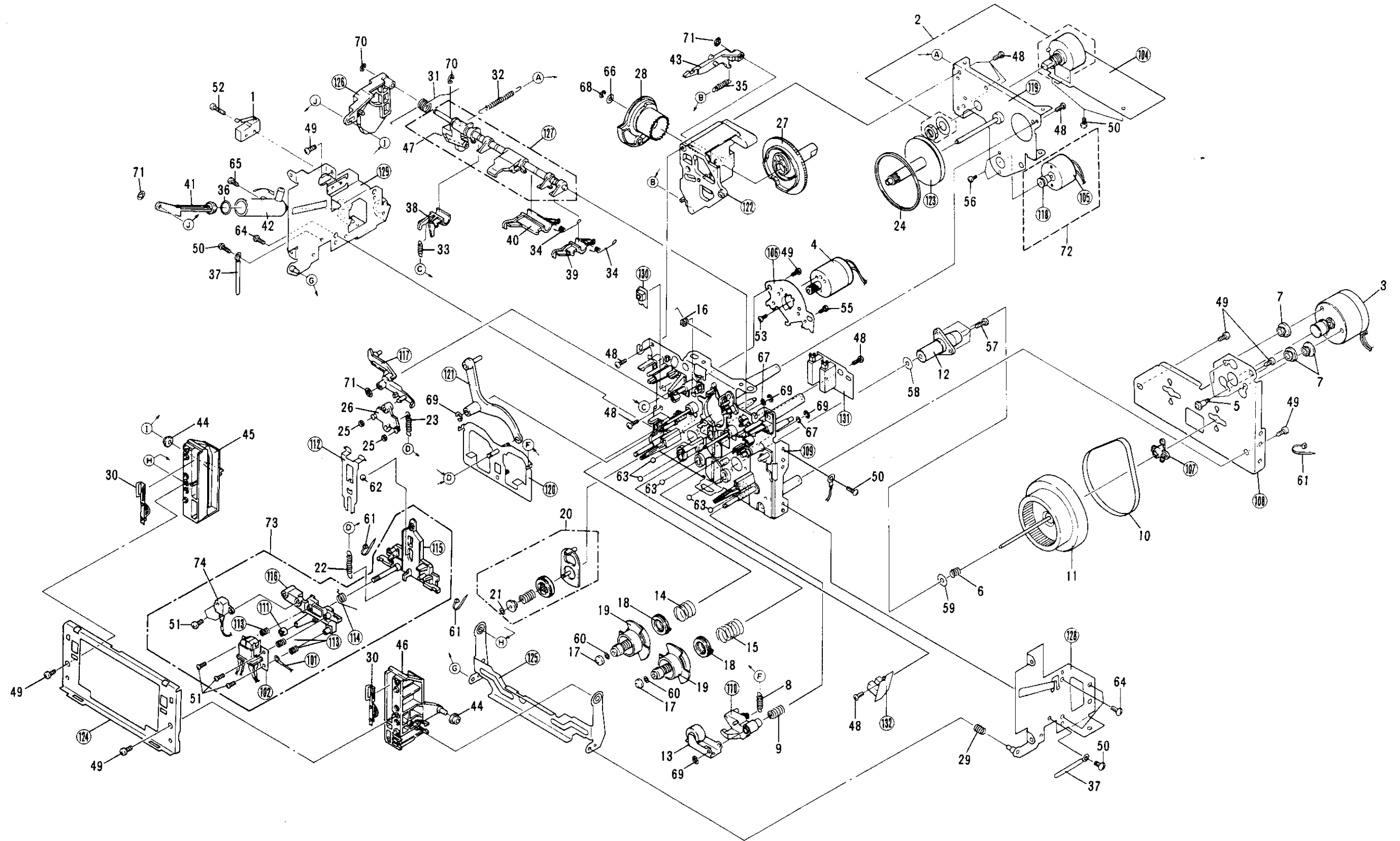
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3.2 MECHANISM UNIT



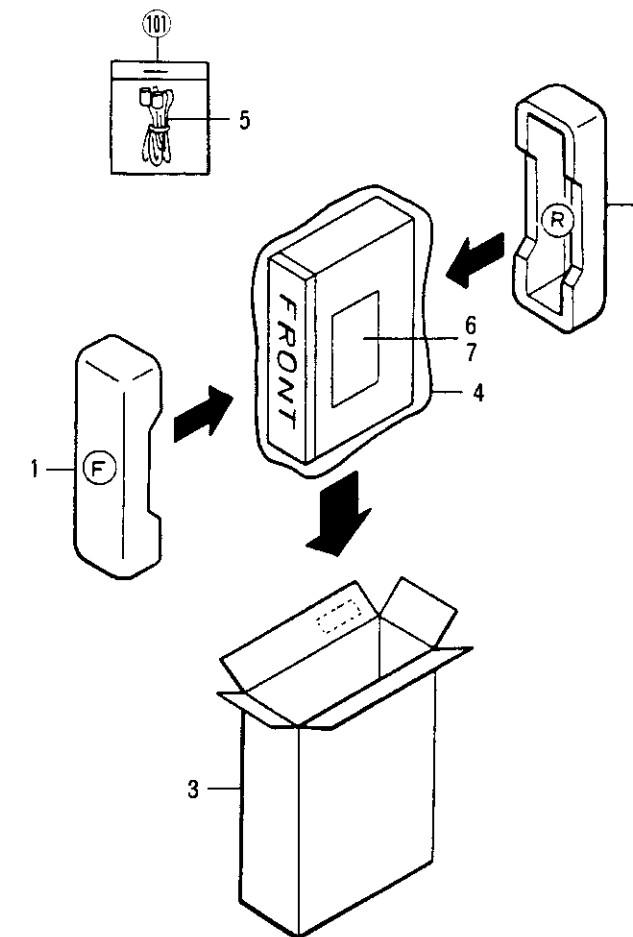
3.2 Part List of Mechanism Unit

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	RSF-031	Micro switch		56	JGZ20P025FMC	Screw
	2	RSX-059	Rotary encoder		57	PMA26P050FZK	Screw
	3	RXM1016	Capstan motor assembly		58	RBF-030	Oil stopper
	4	RXM1018	Reel motor assembly		59	RBF-069	Thrust washer (A)
	5	RBA-064	Step screw		60	RBF-076	Slider washer
	6	RBL-044	Thrust spring		61	REC-371	Binder
	7	REB-408	Rubber cushion		62	REF-022	Steel ball (φ 3)
	8	RBL-028	Pinch spring		63	REF-023	Steel ball (φ 4)
	9	RBL-030	Pinch thrust spring		64	VCT30P060FZK	Screw
	10	REB-501	Capstan belt		65	VCZ26P080FMC	Screw
	11	RXA1262	Flywheel assembly		66	WA26N070W040	Washer
	12	RXB-362	Metal holder assembly A		67	WA32D080D050	Washer
	13	RXB-876	Pinch roller arm (R) assembly		68	YE20FUC	E ring
	14	RBH1213	BT spring (C)		69	YE25FUC	E ring
	15	RBL-032	BT spring (B)		70	YE30FUC	E ring
	16	RBL-033	idler pressure spring		71	YS24FBT	Washer
	17	RNK-815	Reel shaft cap B		72	RXX1055	Power motor assembly
	18	RXB-751	BT disc assembly		73	RXX1210	Head base assembly
	19	RXB-874	Reel base assembly		74	RPB1002	Erase head
	20	RXB-875	Take-up idler assembly		101		Earth lead wire assembly
	21	RBF-065	Polyslider washer		102		R/P head
	22	RBL-037	Head base spring		103		.....
	23	RBL-038	Brake spring		104		Connector unit
	24	REB-502	Drive belt		105		Power motor
	25	REB-511	Brake shoe		106		Reel motor mounting plate
	26	RNL-723	Brake		107		Flywheel holder
	27	RNL-729	Cam gear		108		Thrust holder
	28	RXB-884	Side cam gear assembly		109		Mechanism chassis assembly
	29	RBL-045	Position spring		110		Pressure arm (R)
	30	RBK1021	Half pressure spring		111		Adjustment nut
	31	RBL-039	Eject spring		112		Head base pressure spring
	32	RBL-040	Half pressure spring		113		Head adjust spring (C)
	33	RBL-041	Rec arm spring		114		Hight spring
	34	RBL-042	Detect arm spring		115		Head base
	35	RBL-043	Lock lever spring		116		Sub head base
	36	REB-447	O ring		117		Brake lever
	37	RNH-184	Cord clammer		118		First pulley
	38	RNL-733	Rec detect arm		119		Gear chassis assembly
	39	RNL-734	CrO ₂ detect arm		120		Pinch base assembly
	40	RNL-735	Metal detect arm		121		Pinch lever assembly
	41	RNL-739	Piston		122		Gear base assembly
	42	RNL-740	Cylinder		123		Second pulley assembly
	43	RNL-741	Lock lever		124		Pocket frame
	44	RNL-742	Collar		125		Door arm
	45	RNL-849	Pocket (L)		126		Eject lever
	46	RNL-850	Pocket (R)		127		Shift shaft assembly
	47	RBF-057	Polyslider washer		128		Door frame (R) assembly
	48	BBZ26P080FZK	Screw		129		Door frame (L) assembly
	49	BBZ30P080FZK	Screw		130		Rec switch unit
	50	BCZ30P060FMC	Screw		131		Tape selector unit
	51	PMZ20P080FZK	Screw		132		Sensor unit (A)
	52	BMZ23P100FZK	Screw				
	53	BMZ26P030FZK	Screw				
	54	.....	.....		
	55	BMZ30P080FZK	Screw				

4. PACKING

Parts List

Mark	No.	Part No.	Description
	1	RHA1021	Pad (F)
	2	RHA1022	Pad (R)
	3	RHG1126	Packing case
	4	RHX-034	Sheet
	5	RDE-010	Connection cord
	6	RRD1062	Operating instructions (French/Italian/Dutch/Swedish/Spanish/Portuguese)
	7	RRE1026	Operating instructions (English/German)
	101		Connection cord assembly



A

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5. SCHEMATIC DIAGRAM

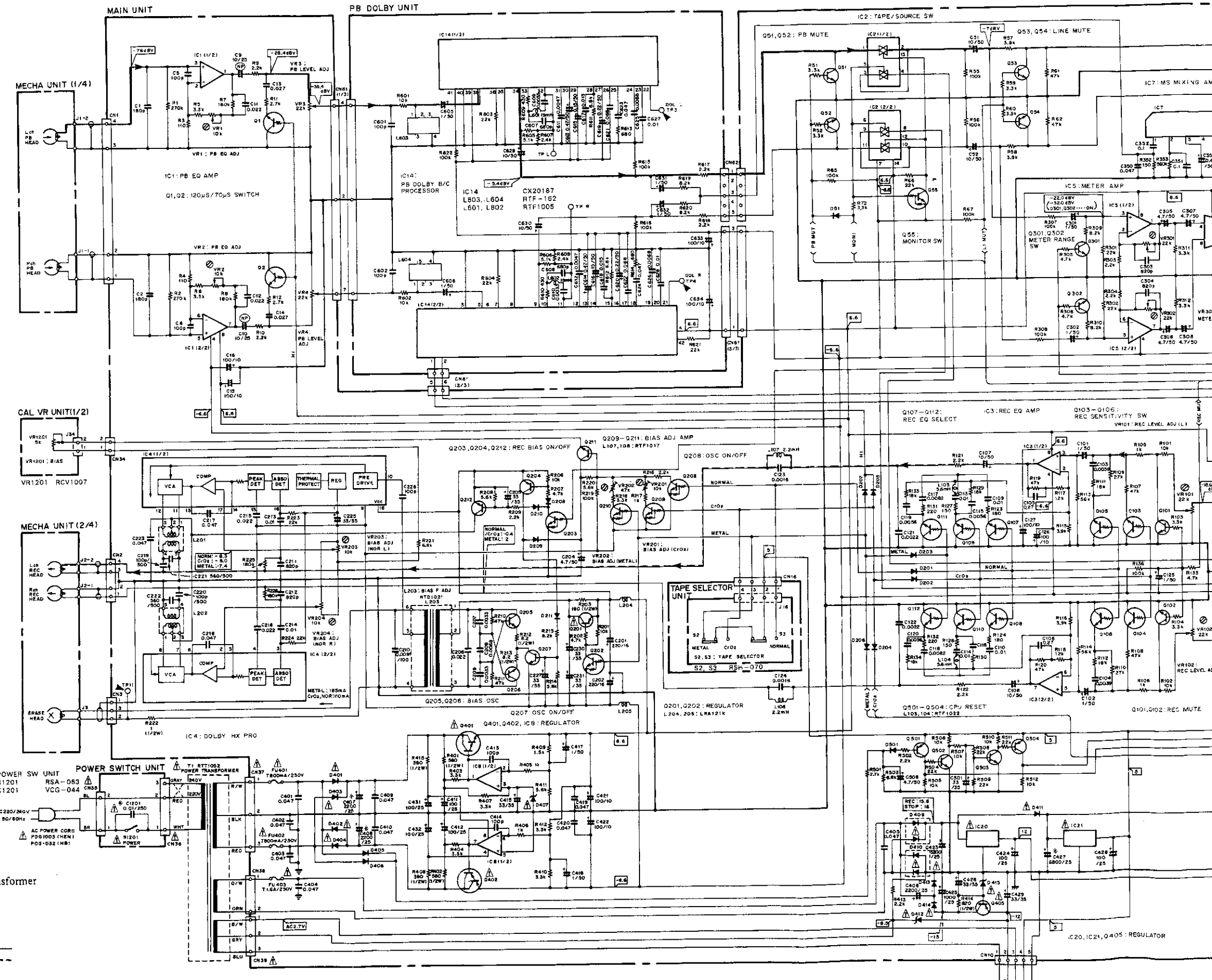
MAIN UNIT	BA335	D401-D404	10DF2FA9
IC7	BA6109	S301-S303	RS01017
IC9, IC10	BA6138	L204, L205	LRA121K
IC6	MS220L	L201, L202	RTD1021
IC1	M5233L	L203	RTD1020
IC13			
A			
IC21	NJM78M05A	L107, L108	RTF1017
IC11	NJM78M12A	L101-L106	RTF1022
IC12	PD4148B	L501	RTF1068
IC2	TC4050BP	C427	RCH1010
	TC4066BP	C407, C408	RCH1013
IC4	J PC1297CA	VR1, VR2, VR201,	VRTB6VS103
IC3, IC5, IC8	M5218L	V203, V204	VRTB6VS223
Q1, Q2, Q103-Q112	DTC114TS	VR3, VR4, VR101,	VRTB6VS473
Q55, Q202, Q203,	DTC124ES	VR102, VR301, VR302	RXCI009
Q208-Q210		VR202	RXCI1010
Q550-Q553	07A114ES	R550, R551	
		R554, R560	
Q201, Q405	2SA1283	R591	RXCI1020
Q204, Q212, Q501,	2SA1309A	X650	VSS1014
Q504-Q506, Q554			
Q508	2SA936	C7, C8, C15, C16,	RCH1020
Q402	2SB950	C128, C127, C421,	
Q205, Q206	2SC3243	C22	
Q211, Q301, Q302,	2SC3311A		
Q502, Q503, Q507,			
Q509, Q555, Q556			
Q401	2SD1276		
Q51-Q54, Q101,	2SD1302		
Q102, Q207			
D407	HZ5CLL		
D415	MTZ13B		
D412	RD2.7EB1		
D409	1B2C1-LC2		
D410	1B2T-LC2		
D411, D413, D414,	1SR35-100A		
D502			
D201-D211, D405	1SS254		
D406, D501, D550			
D551, D552, D51			

- RESISTORS: Indicated in Ω, 1/4W, 1/2W, ±5% tolerance unless otherwise noted. K, 10k, M, 1M, Ω, (F), ±1%, (G), ±2%, (K), ±10%, (M), ±20% tolerance.
- CAPACITORS: Indicated in capacity (μF) / voltage (V) unless otherwise noted. p, pF. Indication without voltage is 50V except electrolytic capacitor.
- VOLTAGE CURRENT: □ DC voltage (V) at no input signal.
- SWITCHES (Underline indicates switch position):
 - MAIN UNIT:
 - S301: DOLBY NR ON-OFF
 - S302: DOLBY NR B-C
 - S303: MPX L-R ON-OFF
 - SW UNIT:
 - S901: OPEN/CLOSE
 - S902: COJNTER RESE
 - S903: COUNTER MODE
 - S904: TAPE RETURN
 - S905: METER RANGE
 - S906: MS (REW)
 - S907: STOP
 - S908: PLAY
 - S909: MS (FF)
 - S910: REC
 - S911: PAUSE
 - S912: REC MUTE
 - S913: MONITOR AUTO
 - TAPE SELECTOR UNIT:
 - S2: TAPE SELECTOR METAL-C02
 - S3: TAPE SELECTOR NORM
 - TIMER UNIT:
 - S1101: TIMER REC-OFF-PLAY
 - REC SW UNIT:
 - S1: REC INH ON-OFF
 - MECHA UNIT:
 - S11: DOOR OPEN-CLOSE
 - POWER SW UNIT:
 - S1201: POWER ON-OFF

5 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.

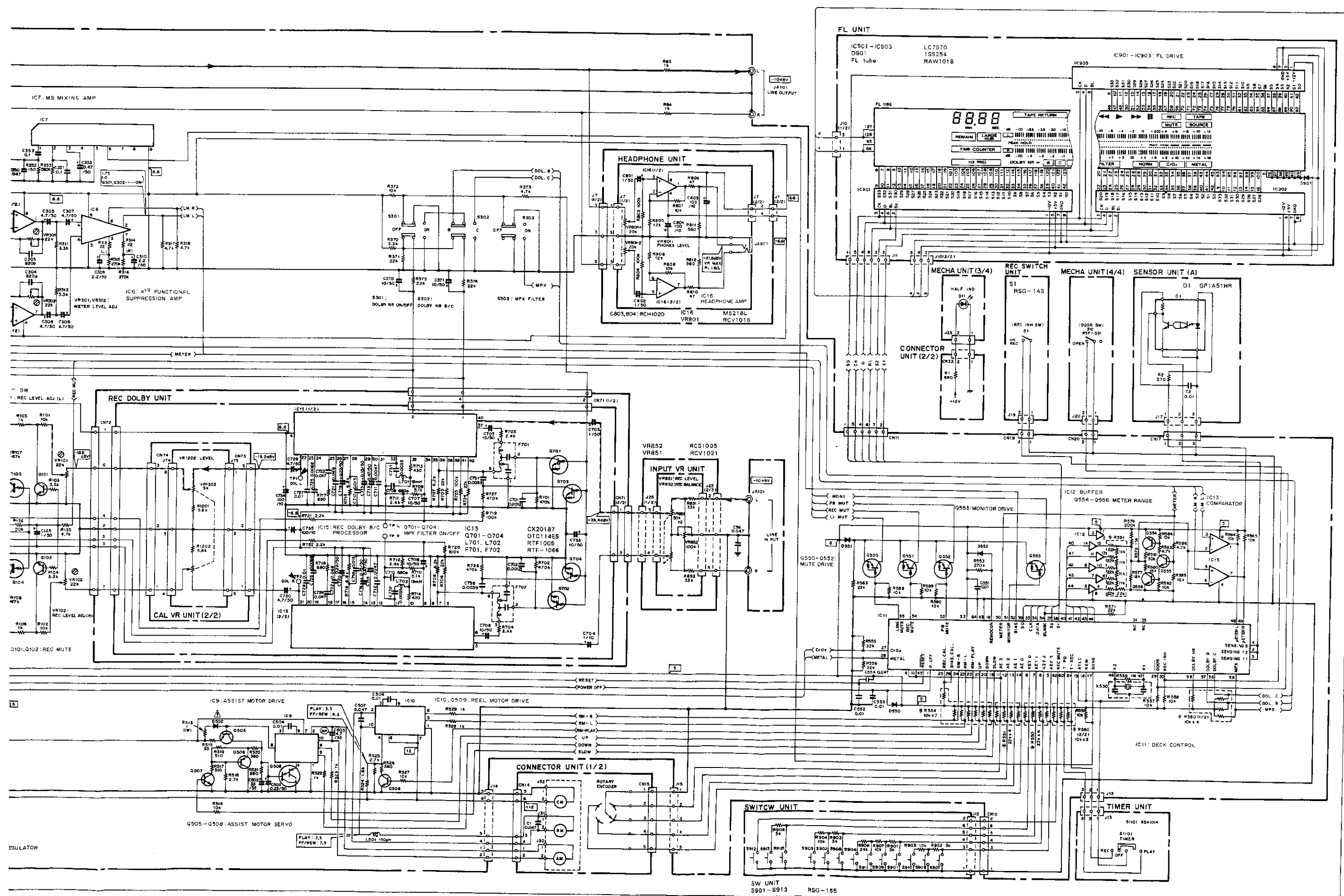
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.



HEM, HB type Line Voltage Selection

- Line voltage can be changed with following steps.
1. Disconnect the AC power cord.
 2. Remove the Bonnet case.
 3. Change the connection of the power transformer lead wire.
 4. Stick the line voltage label on the rear panel.

Part No.	Description	HEM 220V	HB 240V
AAX-193	220v label	—	---
AAX-192	240v label	---	—



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6. P.C. BOARDS CONNECTION DIAGRAM

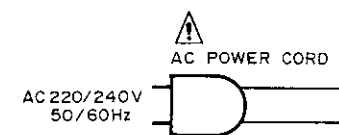
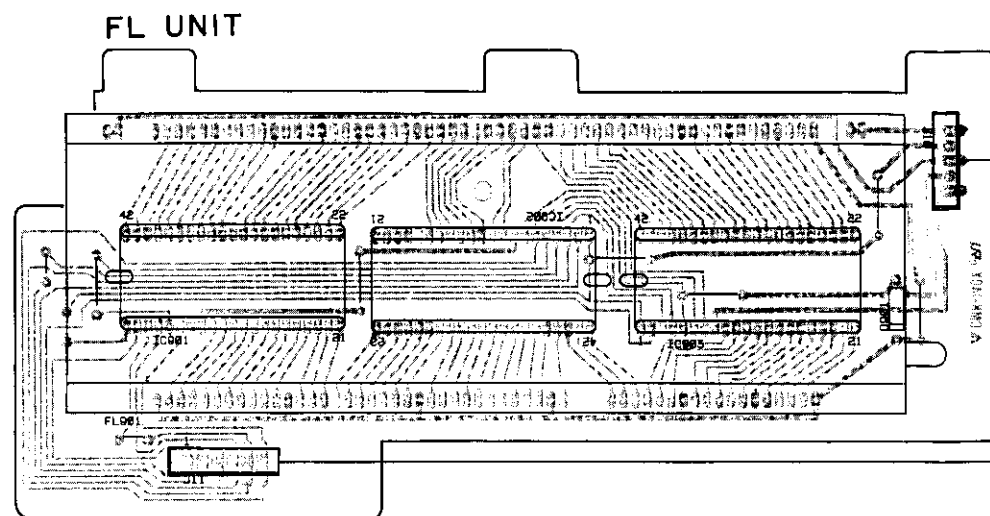
• View from component side

A

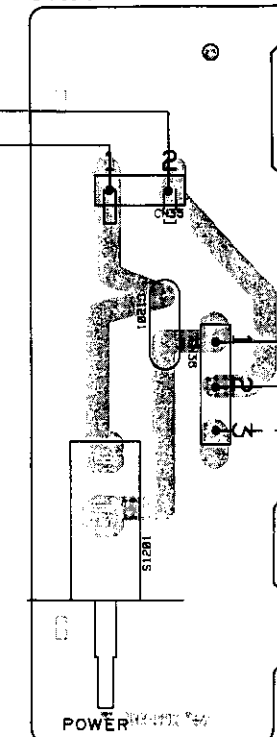
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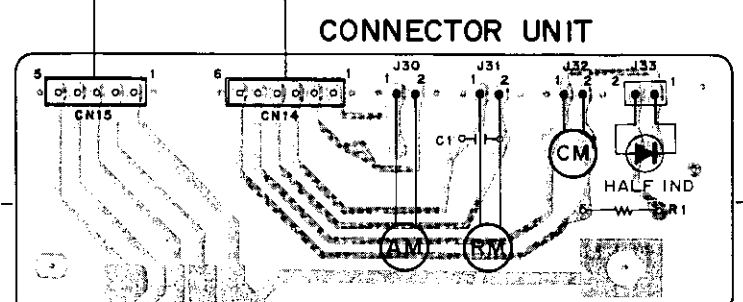
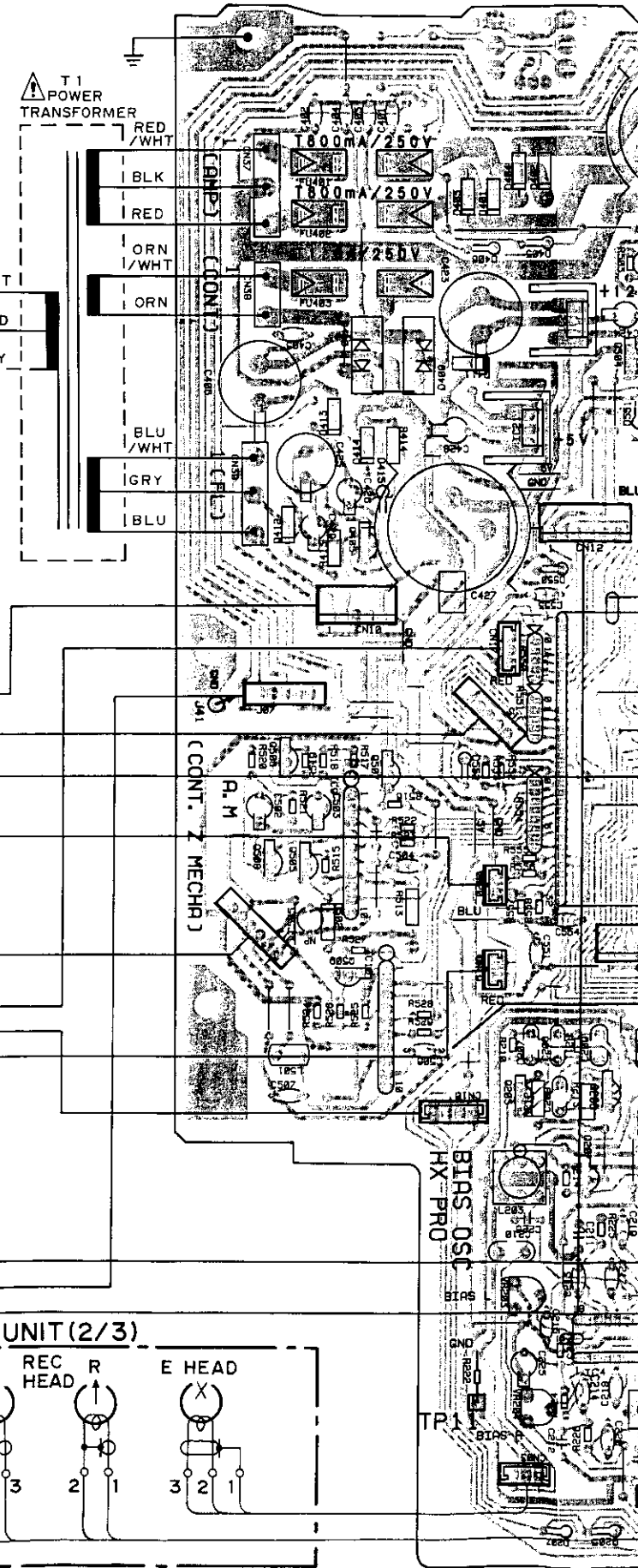
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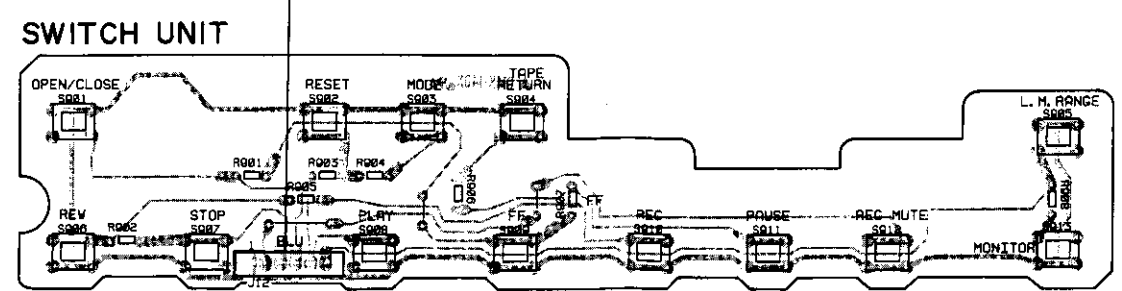
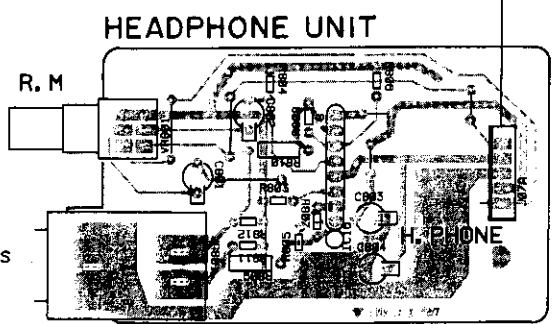
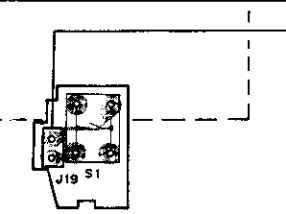
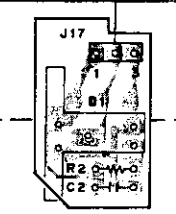
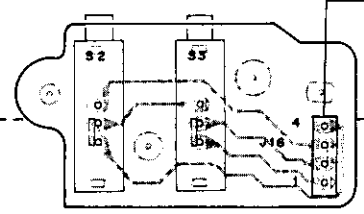
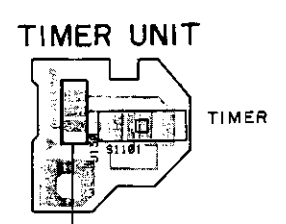
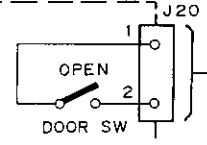
POWER SWITCH UNIT



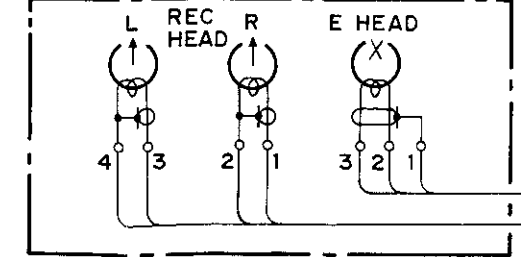
MAIN UNIT

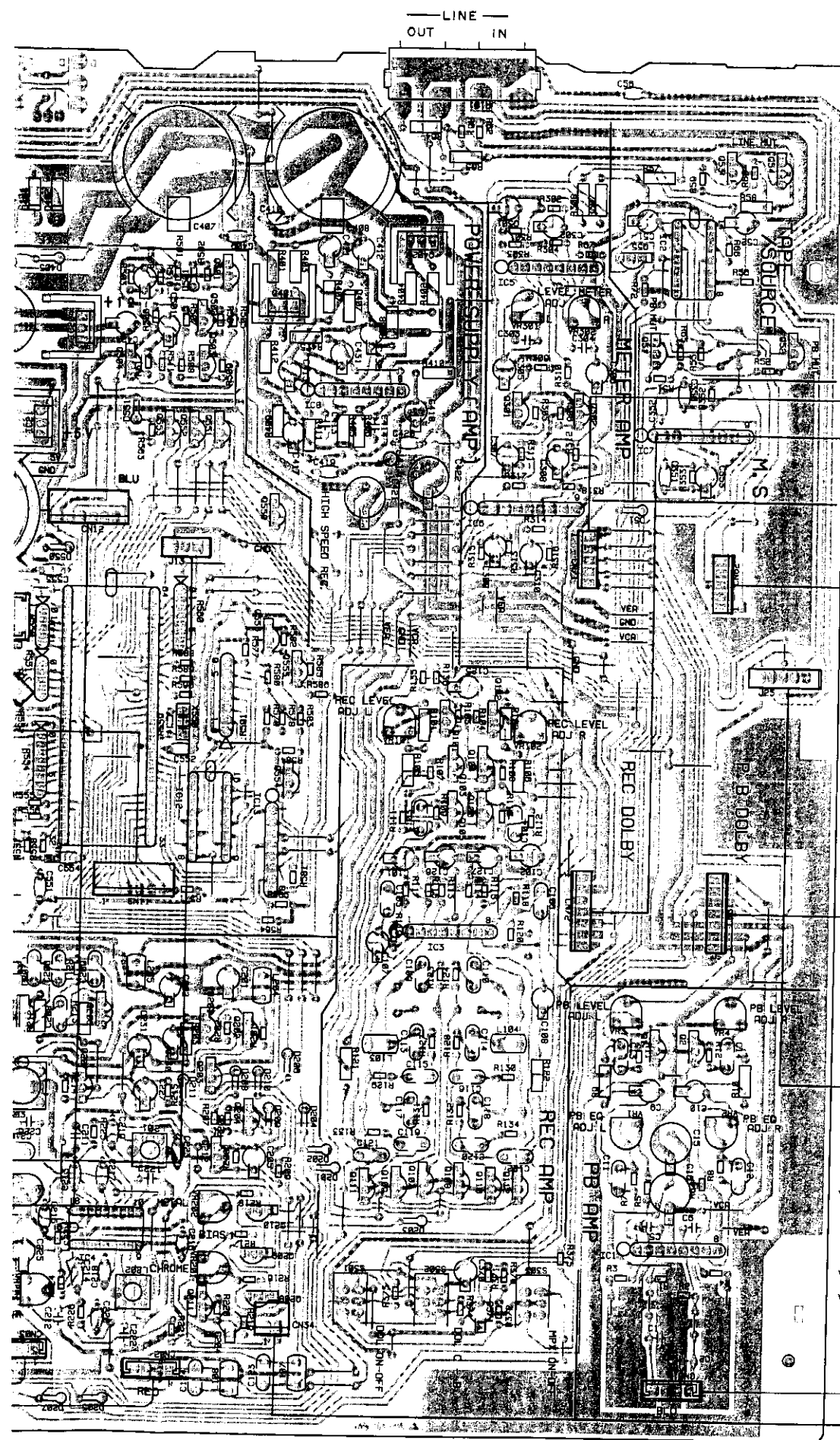


MECHA UNIT (1/3)

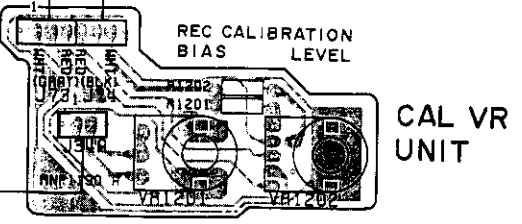
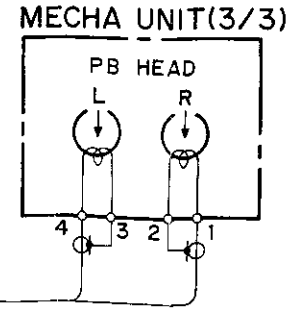
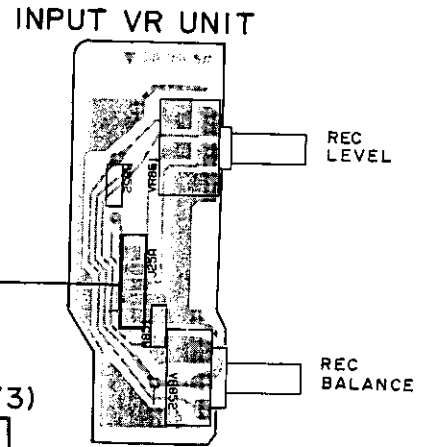
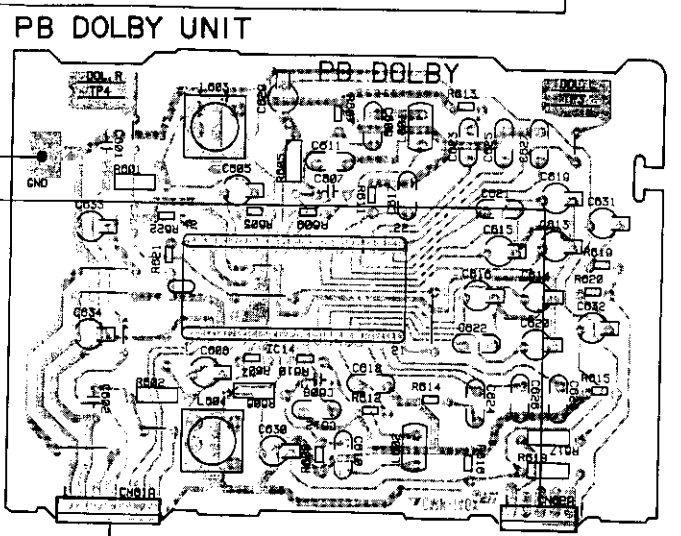
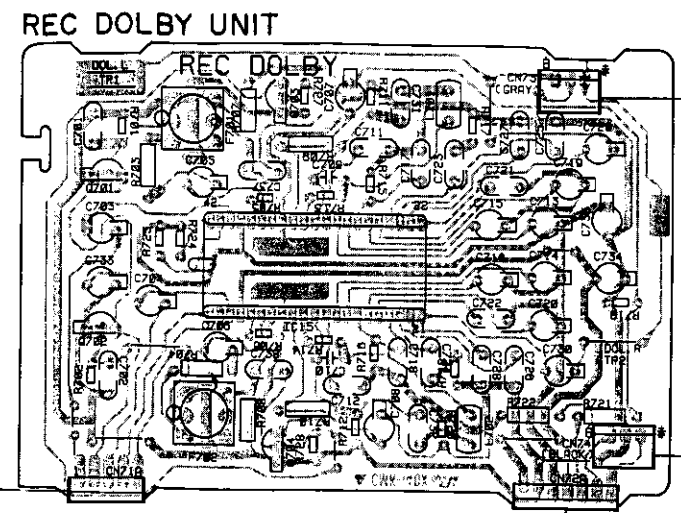


MECHA UNIT (2/3)





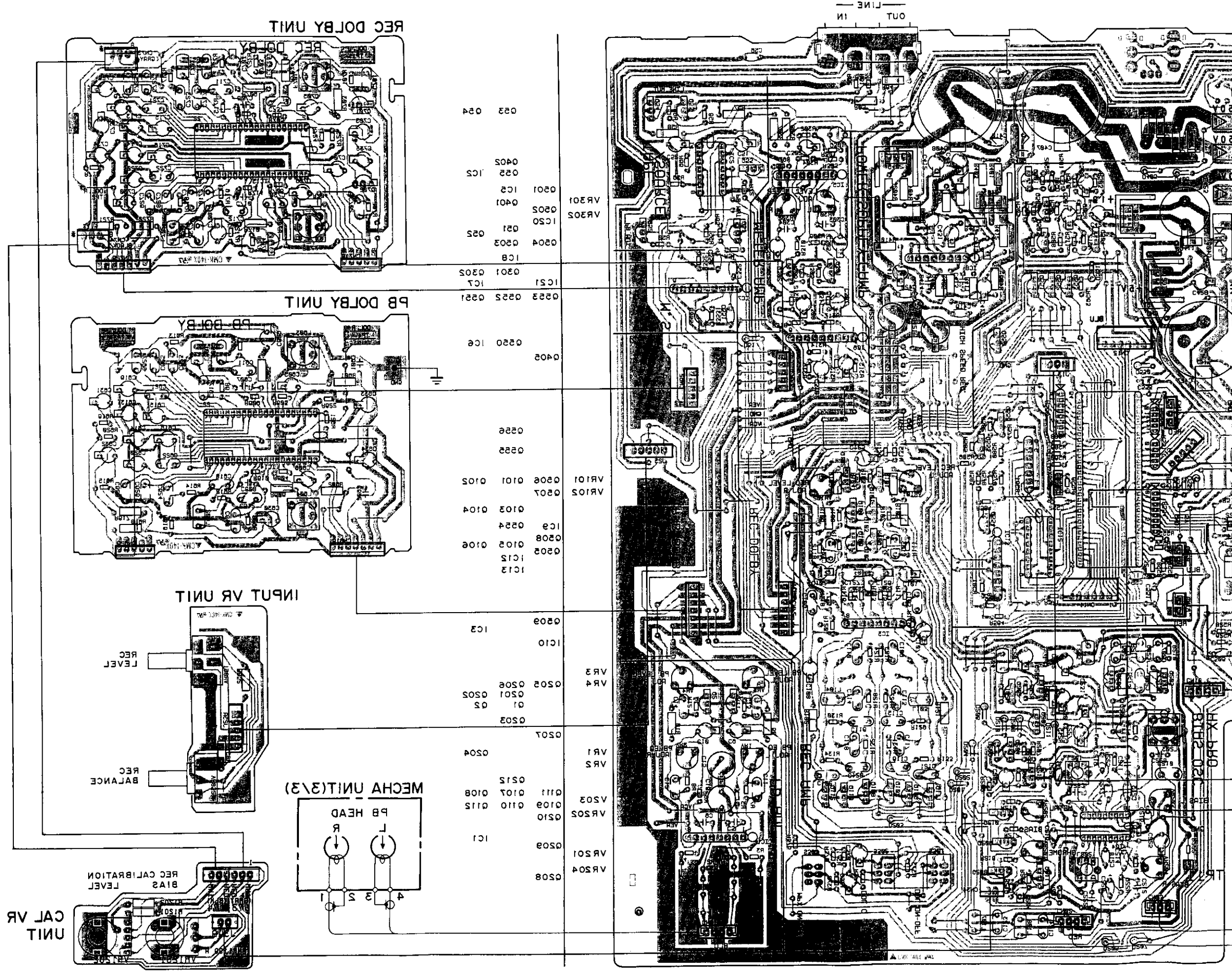
VR301 VR302	Q53 Q54		
	Q402 Q55 IC2		
	Q501 Q502 IC20	IC5 Q401	
	Q504	Q51 Q52	
	IC8		
	Q301 Q302	Q302 IC7	
	IC21 Q553	Q552 Q551	
	Q405	Q550 IC6	
VR101 VR102	Q556 Q555		
	Q506 Q507	Q101 Q102	
	IC9 Q508 Q505	Q103 Q104 Q105 Q106	
	IC12 IC13		
VR3 VR4	Q509 IC10	IC3	
VR1 VR2	Q205 Q206 Q201 Q1 Q2 Q203	Q202 Q2	
	Q207	Q204	
V203 VR202	Q111 Q109 Q210	Q212 Q107 Q108 Q110 Q112	
VR201 VR204	Q209 Q208	IC1	



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
		StyroI capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

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

• View from soldering side



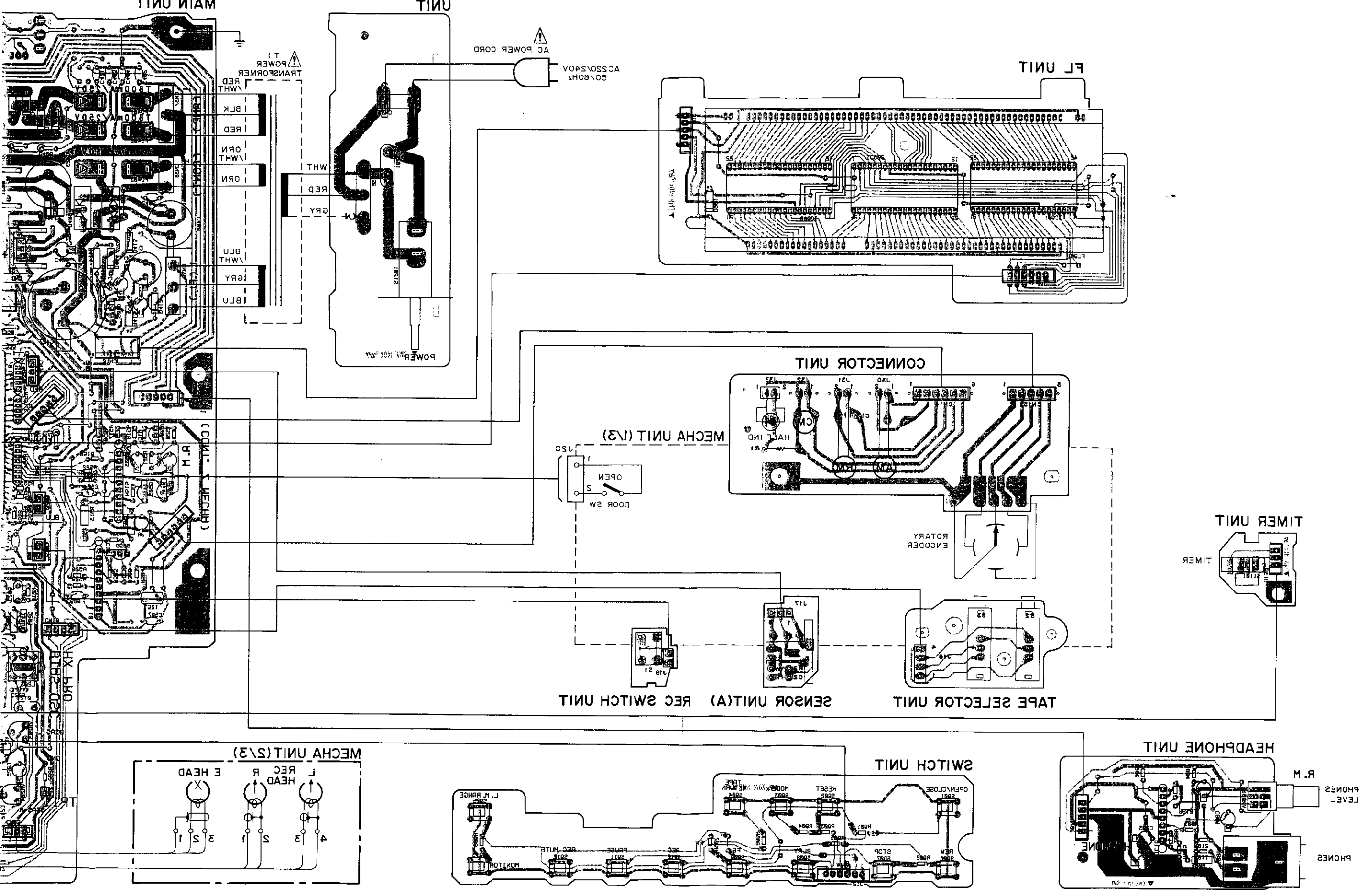
A

B

C

D

6. P.C. BOARDS CONNECTION DIAGRAM



A
B
C
D

MAIN UNIT

POWER SWITCH UNIT

FL UNIT

CONNECTOR UNIT

MECHA UNIT (1)

SENSOR UNIT (A) REC SWITCH UNIT

TAPE SELECTOR UNIT

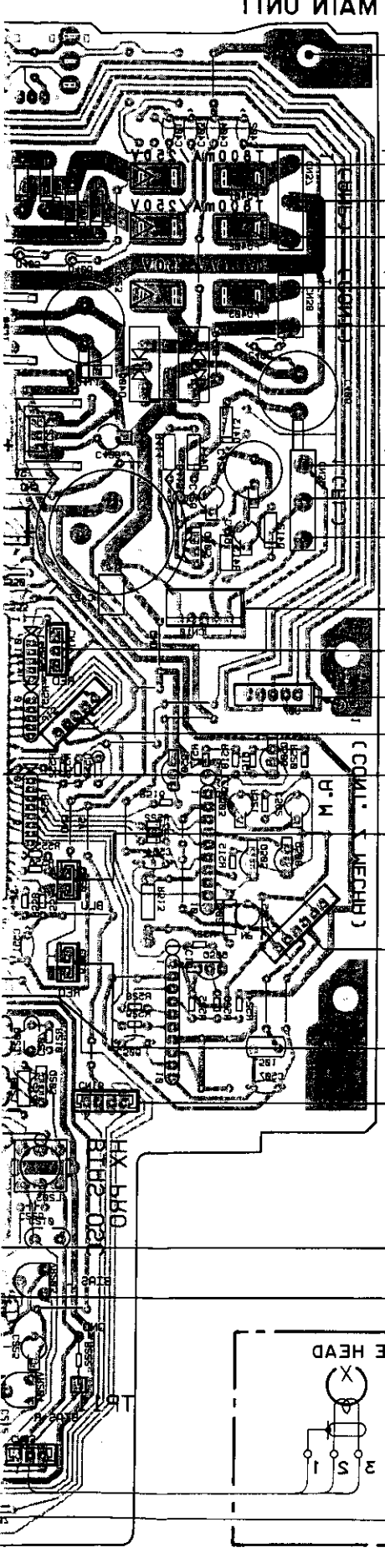
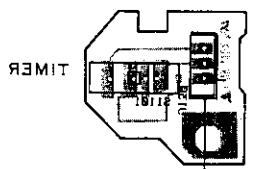
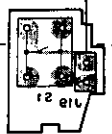
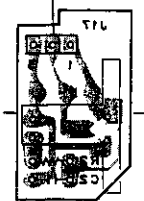
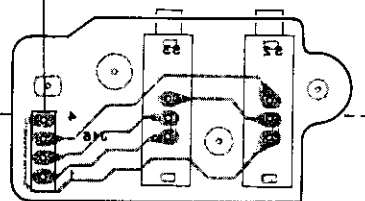
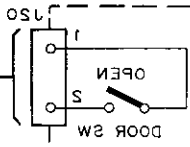
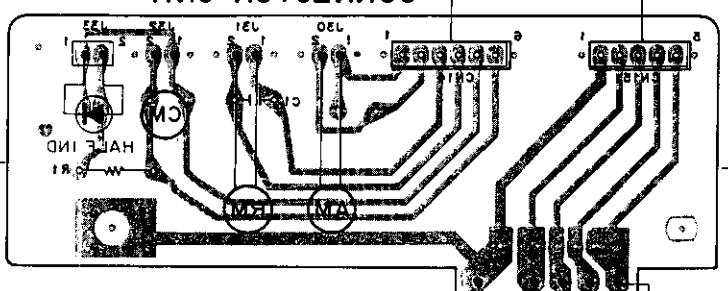
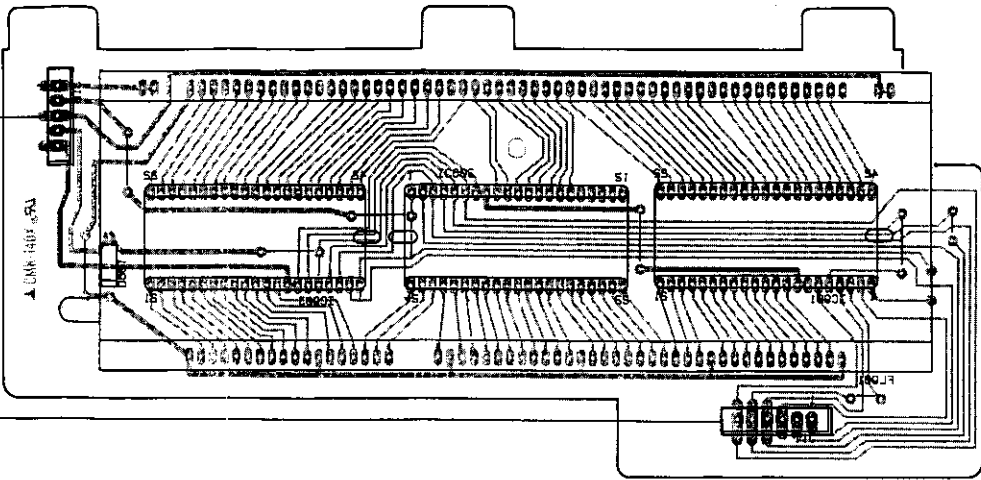
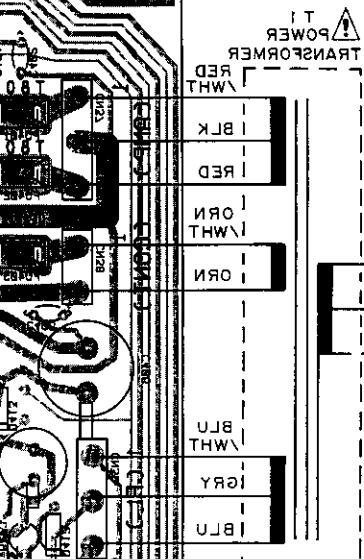
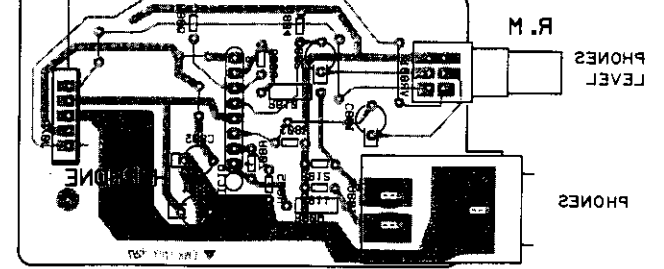
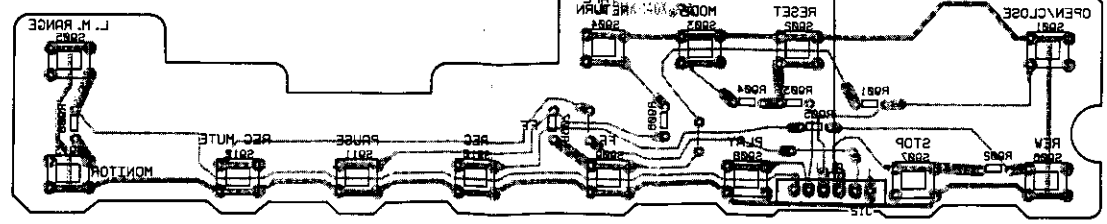
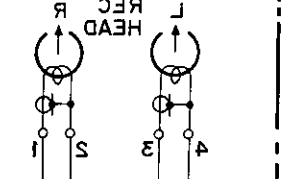
ROTARY ENCODER

TIMER UNIT

HEADPHONE UNIT

SWITCH UNIT

MECHA UNIT (2)



6

2

4

3

5

1

6

2

4

3

5

1

A
B
C
D

7. ELECTRICAL 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	56×10 ¹	561	RD1/4PS	561J
47k Ω	47×10 ³	473	RD1/4PS	473J
0.5 Ω	0R5		RN2H	0R5K
1 Ω	010		RS1P	010K

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

5.62k Ω	562×10 ¹	5621	RN1/4SR	5621F
---------	---------------------	------	---------	-------

Miscellaneous Parts

P. C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	Main unit	
	Headphone unit	
	Input VR unit	
	Timer unit	
	Power switch unit	
	FL unit	
	Switch unit	
	PB Dolby unit	
	REC Dolby unit	
	CAL VR unit	
	Tape selector unit	
	Sensor unit (A)	
	REC switch unit	
	Connector unit	

OTHERS

Mark	Symbol & Description	Part No.
Δ	FU403 Fuse (1.6A)	REK-102
Δ	FU401, FU402 Fuse (800mA)	REK-099
Δ	T1 Power transformer	RTT1052
Δ	AC Power cord	PDG1003
	D11 Diode (LED)	SLF-401C
	Erase head	RPB1002
	Micro switch	RSF-031
	Rotary encorder	RSX-059
	Capstan motor assembly	RXM1016
	Reel motor assembly	RXM1018
	Power motor assembly	RXX1055
	Head base assembly	RXX1103
Δ	Strain relief	CM22B

Main unit

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC7	BA335
	IC9, IC10	BA6109
	IC6	BA6138
	IC1	M5220L
	IC13	M5233L
Δ	IC21	NJM78M05A
Δ	IC20	NJM78M12A
	IC11	PD4148B
	IC12	TC4050BP
	IC2	TC4066BP
	IC4	μ PC1297CA
	IC3, IC5, IC8	M5218L
	Q1, Q2, Q103-Q112	DTC114TS
	Q55, Q202, Q203, Q208-Q210	DTC124ES
	Q550-Q553	DTA114ES
Δ	Q201, Q405	2SA1283
	Q204, Q212, Q501, Q504-Q506, Q554	2SA1309A
	Q508	2SA936
Δ	Q402	2SB950
	Q205, Q206	2SC3243
	Q211, Q301, Q302, Q502, Q503, Q507, Q509, Q555, Q556	2SC3311A
Δ	Q401	2SD1276
	Q51-Q54, Q101, Q102, Q207	2SD1302
Δ	D407	HZ5CLL
Δ	D415	MTZ13B
Δ	D412	RD2.7EB1
Δ	D409	1B2C1-LC2
Δ	D410	1B2Z1-LC2
Δ	D411, D413, D414, D502	1SR35-100A
	D51, D201-D211, D405, D406, D501, D550-D552	1SS254
Δ	D401-D404	10DF2FA9

CT-737MARK II

SWITCHES

Mark	Symbol & Description	Part No.
	S301-S303 Push switch (DOLBY NR, MPX FILTER)	RSG1017

COILS

Mark	Symbol & Description	Part No.
	L204, L205	LRA121K
	L201, L202 (85kHz)	RTD1020
	L203 Oscillator coil	RTD1021
	L107, L108 (2.2mH)	RTF1017
	L103, L104 (5.6mH)	RTF1022
	L501 (0.15mH)	RTF1068

CAPACITORS

Mark	Symbol & Description	Part No.
	C219, C220	CCCSL101K500
	C505	CEANP4R7M35
	C503	CEASR22M50
	C353	CEASR47M50
	C411, C412, C424, C428, C431, C432	CEAS101M25
	C201, C202	CEAS221M16
	C425	CEAS102M25
	C309, C310	CEAS2R2M50
	C406	CEAS222M25
	C205, C225, C227, C230, C231, C415, C426, C429, C501, C502	CEAS330M35
	C423	CEAS332M25
	C204, C305-C308, C508	CEAS4R7M50
	C9, C10	CEYANP100M25
	C101, C102, C125, C301, C302, C417, C418	CEYA010M50
	C51, C52, C107, C108, C370, C371	CEYA100M50
	C15, C16, C126, C127, C421, C422	CEZA101M10
	C109, C110, C113, C114, C213, C214	CFTXA103J50
	C121, C122	CFTXA222J50
	C11, C12, C206, C215, C216	CFTXA223J50
	C13, C14	CFTXA273J50
	C207, C209	CFTXA332J50
	C105, C106	CFTXA274J50
	C103, C104	CFTXA392J50
	C115, C116, C119, C120	CFTXA562J50
	C208	CFTXA682J50
	C117, C118	CFTXA822J50
	C351, C352	CGCYX104K25
	C221, C222 -	CKCYB561J500
	C504, C506, C551-C553	CKCYF103Z50
	C56, C217, C218, C223, C350, C401-C405, C409, C410, C419, C420, C507, C554	CKCYF473Z50

Mark	Symbol & Description	Part No.
	C5, C6, C226, C413, C414	CKPUYB101K50
	C211, C212, C303, C304	CKPUYB821K50
	C123, C124	CQMA162J50
	C210	CQPA912J100
	C1, C2	CQSF181J50
	C427 (6800/25)	RCH1010
	C407, C408 (2200/25)	RCH1029

RESISTORS

Mark	Symbol & Description	Part No.
	VR1, VR2, VR201, VR203, VR204 (Semi-fixed 10k)	VRTB6VS103
	VR3, VR4, VR101, VR102, VR301, VR302 (Semi-fixed 22k)	VRTB6VS223
	VR202 (Semi-fixed 47k)	VRTB6VS473
	R550, R551 (22k×4)	RCX1009
	R554, R560 (10k×7)	RCX1010
	R591 (11k)	RCX1020
	R577-R581	RN 1/4 PQ □ □ □ □ □ □
	R513	RS1LMF010J
	R222	RD 1/4 LF010J
	R203, R212, R213, R401, R402, R408, R414, R415	RD 1/4 PMF □ □ □ □ J
	R9, R10, R57, R58, R63, R64, R101, R102, R105, R106, R121, R122, R307, R308, R403-R407, R409-R413	RD 1/4 PM □ □ □ □ J
	Other resistors	RD 1/4 PM □ □ □ □ J

OTHERS

Mark	Symbol & Description	Part No.
	Pin jack 4P (INPUT, OUTPUT)	RKB1003
	X550 Ceramic resonator (4.19MHz)	VSS1014

Headphone Unit

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
	IC16 OP-AMP IC	M5218L

CAPACITORS

Mark	Symbol & Description	Part No.
	C801, C802	CEYA010M50
	C803, C804	CEZA101M10

RESISTORS

Mark	Symbol & Description	Part No.
	VR801 Variable resistor (20k-B) (PHONES LEVEL)	RCV1016
	R809, R810	RD 1/4 PM470J
	Other resistors	RD 1/4 PM □ □ □ □ J

OTHER

Mark	Symbol & Description	Part No.
	JA801 Jack (PHONES)	RKN1002

INPUT VR Unit

RESISTORS

Mark	Symbol & Description	Part No.
	VR852 Variable resistor (20k-A)	RCS1005
	VR851 Variable resistor (50k-A)	RCV1021
	R851, R852	RD $\frac{1}{4}$ PM333J

Timer Unit

SWITCH

Mark	Symbol & Description	Part No.
	S1101 Slide Switch (TIMER REC-OFF-PLAY)	RSH1014

Power Switch Unit

SWITCH

Mark	Symbol & Description	Part No.
Δ	S1201 Push switch (POWER)	RSA-063

CAPACITOR

Mark	Symbol & Description	Part No.
Δ	C1201 (0.01 μ F/AC400V)	VCG-044

FL Unit

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC901-IC903 D901	LC7570 1SS254

OTHER

Mark	Symbol & Description	Part No.
	FL tube	RAW1018

Switch Unit

SWITCHES

Mark	Symbol & Description	Part No.
	S901-S913 Tact switch (\blacksquare , \blacktriangleleft , \bullet , \blacktriangle , \blacksquare , TAPE RETURN, \blacktriangleright , COUNTER, RESET, COUNTER MODE, TAPE CAPACITY, METER RANGE, MONITOR, \bullet)	RSG-155

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD $\frac{1}{8}$ DPM $\square\square\square$ J

PB DOLBY Unit

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
	IC14 DOLBY-B, C IC	CX20187

COILS

Mark	Symbol & Description	Part No.
	L603, L604 Trap coil	RTF1067
	L601, L602 Coil (19mH)	RTF1005

CAPACITORS

Mark	Symbol & Description	Part No.
	C631, C632	CEASR10M50
	C615, C616	CEASR15M50
	C619, C620	CEASR22M50
	C613, C614	CEASR47M50
	C605, C606	CEYA010M50
	C629, C630	CEYA100M50
	C633, C634	CEZA101M10
	C627, C628	CFTXA103J50
	C617, C618	CFTXA153J50
	C609, C610	CFTXA332J50
	C611, C612	CFTXA472J50
	C623, C624	CFTXA473J50
	C625, C626	CFTXA682J50
	C621, C622	CFTXA683J50
	C601, C602	CKPUYB101K50
	C607, C608	CKPUYB681K50

RESISTORS

Mark	Symbol & Description	Part No.
	R601, R602, R605, R606, R617, R618	RD $\frac{1}{4}$ PM $\square\square\square$ J
	Other resistors	RD $\frac{1}{8}$ PM $\square\square\square$ J

REC DOLBY Unit

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC15	CX20187
	Q701-Q704	DTC114ES

COILS AND FILTERS

Mark	Symbol & Description	Part No.
	L701, L702 Coil (19mH)	RTF1005
	F701, F702 MPX Filter	RTF1066

CAPACITORS

Mark	Symbol & Description	Part No.
C715, C716 C719, C720 C713, C714 C733 C703, C704		CEASR15M50 CEASR22M50 CEASR47M50 CEAS100M50 CEYA010M50
C705-C708 C729, C730 C734, C735 C727, C728 C701, C702		CEYA100M50 CEYA4R7M50 CEZA101M10 CFTXA103J50 CFTXA122J50
C717, C718 C731, C732 C737, C738 C711, C712 C723, C724		CFTXA153J50 CFTXA332J50 CFTXA392J50 CFTXA472J50 CFTXA473J50
C725, C726 C721, C722 C709, C710		CFTXA682J50 CFTXA683J50 CKPUYB681K50

RESISTORS

Mark	Symbol & Description	Part No.
R721, R722, R703, R704, R707-R710 Other resistors		RD $\frac{1}{4}$ PM□□□J RD $\frac{1}{6}$ PM□□□J

CAL VR Unit**RESISTORS**

Mark	Symbol & Description	Part No.
VR1201 Variable resistor (5k-B)		RCV1007
VR1202 Variable resistor (5kB×2)		RCV1036
R1201, R1202		RD $\frac{1}{4}$ PM562J

Tape Selector Unit**SWITCHES**

Mark	Symbol & Description	Part No.
S2, S3 Slide switch (NORMAL, CrO ₂ , MATAL)		RSH-070

Sensor Unit (A)**SEMICONDUCTOR**

Mark	Symbol & Description	Part No.
D1 Photo interrupter		GP1A51HR

CAPACITOR

Mark	Symbol & Description	Part No.
C2		CKPUYY103N16

REC SW Unit**SWITCH**

Mark	Symbol & Description	Part No.
	S1 Tact switch	RSG-143

Connector Unit**CAPACITOR**

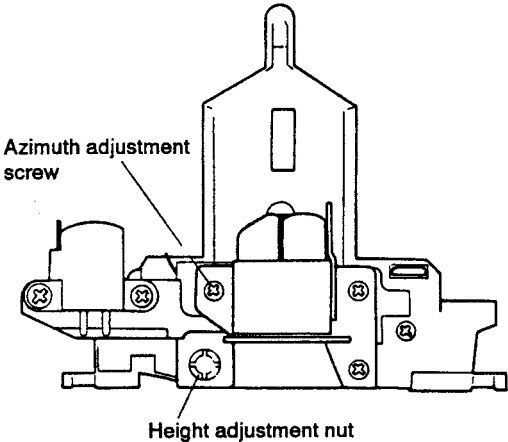
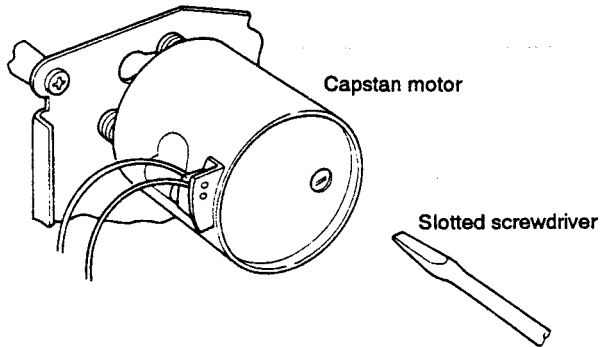


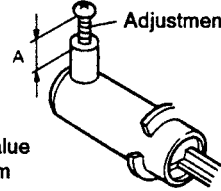
Mark	Symbol & Description	Part No.
	C1	CKCYF473Z50

RESISTOR

Mark	Symbol & Description	Part No.
	R1	RD $\frac{1}{4}$ PM681J

8. ADJUSTMENTS

8.1. MECHANISM RELATED ADJUSTMENT

1. Azimuth adjustment				2. Tape Speed Adjustment						
No.	Mode	Adjustment Location	Specifications	Mode	Adjustment Location	Specifications				
1	PLAY	Azimuth adjustment screw (Refer to Fig. 1.)	Playback test tape STD-331B and adjust so that the 10 kHz output level is maximum and also so that there is no phase difference between L-ch and R-ch.	PLAY	Capstan motor adjustment hole (Refer to Fig. 2.)	Adjust so that the playback frequency is 3015 ± 5 Hz at the beginning of winding of test tape STD-301.				
 <p style="text-align: center;">Fig. 1.</p>				PLAY		Playback test tape STD-301 again and confirm that the above specifications are satisfied.				
				 <p style="text-align: center;">Fig. 2.</p>						
<h3>3. Adjustment of Door Damper</h3> <table border="1" style="width: 100%;"> <thead> <tr> <th>Adjustment Location</th> <th>Specifications</th> </tr> </thead> <tbody> <tr> <td>Cylinder adjustment screw (Refer to Fig. 3.)</td> <td>Make sure that the door opens smoothly, there is no two-stage motion, and that there is no bounding when it opens completely. (Perform with no cassette half inserted.)</td> </tr> </tbody> </table>							Adjustment Location	Specifications	Cylinder adjustment screw (Refer to Fig. 3.)	Make sure that the door opens smoothly, there is no two-stage motion, and that there is no bounding when it opens completely. (Perform with no cassette half inserted.)
Adjustment Location	Specifications									
Cylinder adjustment screw (Refer to Fig. 3.)	Make sure that the door opens smoothly, there is no two-stage motion, and that there is no bounding when it opens completely. (Perform with no cassette half inserted.)									
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Opening becomes slower (when bounding)</p>  </div> <div style="text-align: center;"> <p>Opening becomes faster (when two-stage motion)</p>  </div> </div> <div style="text-align: center;">  <p>Reference value $A = 5 \pm 1$ mm</p> <p style="text-align: center;">Fig. 3.</p> </div>										

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 $0\text{dBv}=1\text{Vrms}$.
 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. 8-1)
- STD-630 : NORMAL blank tape
 STD-620 : CrO₂ blank tape
 STD-610 : METAL blank tape

List of Adjustments

Playback sections

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

Recording sections

1. Bias oscillator adjustment.
2. Recording bias adjustment.
3. Recording level adjustment.

NOTE: This unit has an automatic tape selection feature.

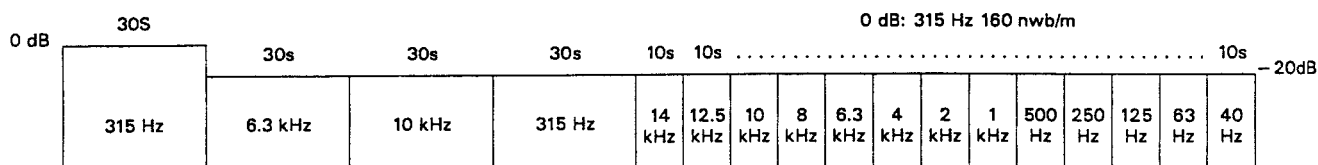


Fig. 8-1. Constants of the test tape STD-331B

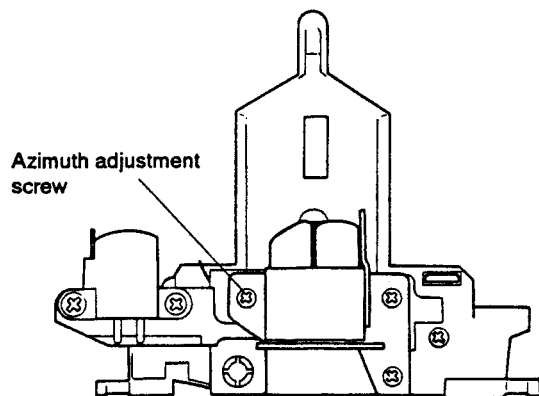


Fig. 8-2. Head azimuth adjustment

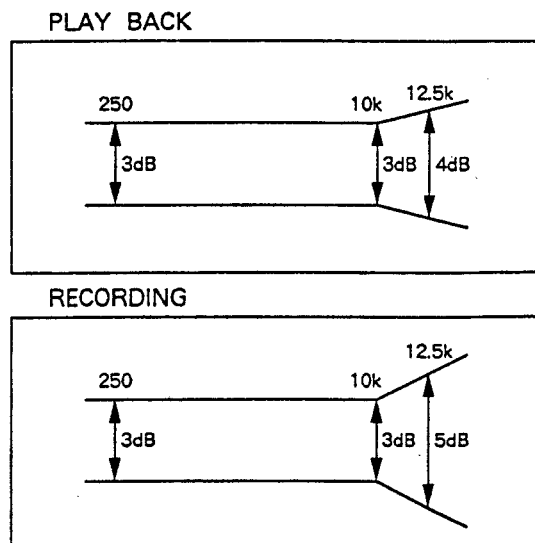


Fig. 8-3. Allowable playback frequency response zone

PLAYBACK SECTION

1. Head Azimuth Adjustment

• Turn VR3, VR4 to mechanical center positions.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks	
1.	PLAY	Play the 10 kHz/−20 dB section of STD-331B test tape.	Head azimuth adjustment screw. (See Fig. 8-2)	LINE OUT	Maximum playback signal level.		
2.	STOP	Lock the screw with screw lock after completing adjustment.					

2. Playback Equalizer Adjustment

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 315 Hz and 10 kHz/−20 dB portion of the STD-331B test tape.	VR1 (Lch) VR2 (Rch)	LINE OUT	Adjust the 10 kHz level to 0.0 dB ±0.5 dB in respect to the 315 Hz playback level.	

3. Playback level Adjustment

• This adjustment determines the DOLBY NR level, and must be performed with great care.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 315 Hz/0 dB section of the STD-331B test tape.	VR3 (Lch) VR4 (Rch)	TP. 3 (Lch) TP. 4 (Rch)	−15.2 dBv	

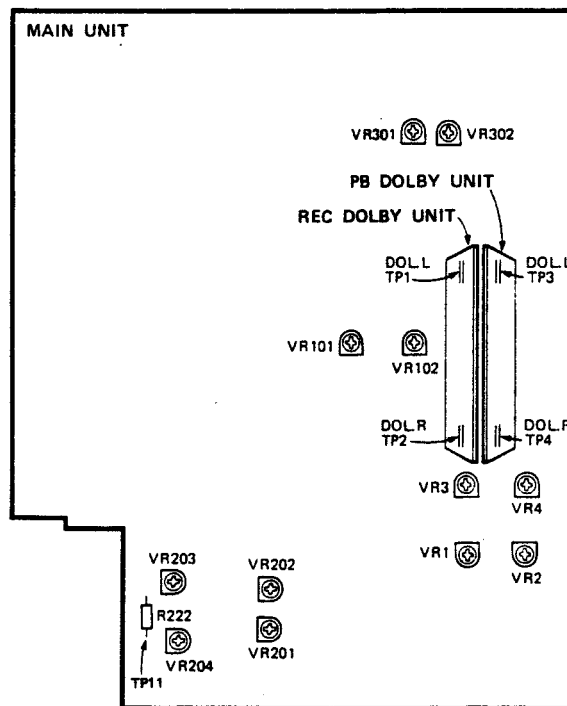


Fig.8-4 Adjustments locations

RECORDING SECTION

1. Bias Oscillator Adjustment

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	REC	Load the STD-610 test tape with no input signal.	L 203	TP. 11	85kHz \pm 300Hz	

2. Recording Bias Adjustment

2-1. Overbias Adjustment							
No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks	
1.	REC/ PAUSE	Apply a 6.3 kHz/10 dBv (-10VU meter reading) signal to the Line input terminals and insert STD-630.	—	LINE OUT L, R terminals	—		
2.	REC →PLAY	Record and play back the 6.3 kHz signal at -10 dBv input level.	NOR	LINE OUT L, R terminals	NOR	3.0 dB overbias	Turn control clockwise past the peak to assure proper overbias value.
3.		Record the 6.3 kHz/-10 dBv signal on STD-620 and play back.	CrO ₂		CrO ₂	2.5 dB overbias	
4.		Record the 6.3kHz/-10 dBv signal on STD-610 and play back.	METAL		METAL	1.0 dB overbias	
5.	Turn control clockwise past the peak to assure proper overbias value.						
2-2. Frequency Response Adjustment							
No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks	
1.	REC/ PAUSE	Apply a 10kHz/315 Hz/-20 dBv signal to the Line input terminals and insert STD-630.	—	LINE OUT L, R terminals	—		
2.	REC →PLAY	Record and play back the 315 Hz signal and a 10 kHz signal at -20 dBv input level.	NOR	LINE OUT L, R terminals		Record and play back repeatedly, comparing the 315 Hz and 10 kHz playback levels, and adjust to +0.5 \pm 0.5 dB.	
3.		Record the 10 kHz/315 Hz, -20 dBv signal on STD-620 and play back.	CrO ₂		CrO ₂	+0.5 \pm 1.0 dB	
4.		Record the 10 kHz/315 Hz, -20 dBv signal on STD-610 and play back.	METAL		METAL	+0.5 \pm 1.0 dB	
5.	Check distortion value after adjustment is completed and confirm that there is no underbias.						

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 315 Hz/0 dBv signal to the line input terminals, load the STD-630 test tape.	Rec Level control volume	TP. 1 (Lch) TP. 2 (Rch)	-15.2 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.	VR101 (Lch) VR102 (Rch)	TP. 3 (Lch) TP. 4 (Rch)	Repeatedly record, playback and adjust so that the playback signal level becomes -15.2 dB.	
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. 3 (Lch) TP. 4 (Rch)	-15.2 dBv \pm 1.5 dB	
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. 3 (Lch) TP. 4 (Rch)	-15.2 dBv \pm 1.5 dB	

9. FOR CT-737MARK II / HB AND CT-737MARK II S / HEM TYPES

CONTRAST OF MISCELLANEOUS PARTS

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.

The CT-737MARK II / HB and CT-737MARK II S / HEM types are the same as the CT-737MARK II / HEM type with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		CT-737MARK II / HEM type	CT-737MARK II / HB type	CT-737MARK II S / HEM type	
Δ	AC Power cord	PDG1003	RDG-032	PDG1003	
	Slide SW knob (A) (TIMER)	RAC-668	RAC-668	RAC1219	
	Power button (POWER)	RAC1203	RAC1203	RAC1292	
	Push button (DOLBY, MPX)	RAC1204	RAC1204	RAC1293	
	Button (◀, ■, ▶, ▶▶, ●, ■, ○)	RAC1206	RAC1206	RAC1294	
	Counter button (COUNTER)	RAC1232	RAC1232	RAC1289	
	VR knob B (REC BALANCE)	RAC1262	RAC1262	RAC1263	
	Headphone knob (PHONES LEVEL, REC CALIBRATION)	RAC1337	RAC1337	RAC1360	
	Side panel (L)	RAH1200	RAH1200	RAH1321	
	Side panel (R)	RAH1201	RAH1201	RAH1322	
	Door panel	RAH1314	RAH1314	RAH1315	
	Under escutcheon	RAP1003	RAP1003	RAP1006	
	Button holder	RNK1301	RNK1301	RNK1361	
	VR knob assembly (A)	RXA1158	RXA1158	RXA1214	
	Bonnet	RXX1092	RXX1092	RXX1093	
	Door assembly	RXX1113	RXX1113	RXX1114	
	Front panel assembly	RXX1207	RXX1207	RXX1208	
	Packing case	RHG1126	RHG1126	RHG1127	
	Operating instructions (French/Italian/Dutch/Swedish/Spanish/Portuguese)	RRD1062	.....	.....