PIONEER®
The Art of Entertainment

Service Manual

ORDER NO.
ARP2384

STEREO DOUBLE CASSETTE DECK

CT-P720WR

AB, AEM

- **Refer to the service manual ARP2380 for CT–P920WR.**
- This manual is applicable to the AB and AEM types.
- This product is a component of a system.
  As to the system composition, refer to the system manual.
- This product does not function properly when independent ; to avoid malfunctions, be sure to connect it to the prescribed system component, otherwise damage may result.

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SN DEC. 1991 Printed in Japan

1. CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- Parts without part number cannot be supplied.
- 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.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

The CT-P720WR/AB, AEM and CT-P920WR/AUC have the same construction except for the following :

Mark	Symbol & Description	Part No.			Remarks
		CT-P920WR/ AUC type	CT-P720WR/ AB type	CT-P720WR/ AEM type	
⊙	MOTHER UNIT	RWM1470	RWM1422	RWM1422	
	├ MAIN UNIT	Non supply	Non supply	Non supply	
	├ REAR UNIT	Non supply	Non supply	Non supply	
	└ DOLBY HX PRO UNIT	Non supply	.....	.....	
	Door panel (L)	RAH1960	RAH1958	RAH1958	
	Packing case	RHF1026	RHG1332	RHG1332	

MAIN UNIT

MAIN UNIT (CT-P720WR/AB and AEM) and MAIN UNIT (CT-P920WR/AUC) have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		CT-P920WR/ AUC type	CT-P720WR/ AB and AEM types	
	Q581, Q582	2SC1815	2SD1302	
	Q814	2SD2144S	2SD1302	
	L581	RTD1063	.....	
	T581	.....	RTD1066	
	C403	CQPA682J100	CQPA162J100	
	C417, C418	.....	CCCSL101K500	
	C581	CFTXA223J50	CFTXA123J50	
	C582	CFTXA332J50	CFTXA153J50	
	C583, C584	CFTXA332J50	CFTXA103J50	
	R582, R583	RD1/6PM123J	RD1/6PM223J	
	R585	RCN1036	RCN1041	
	R586	RCN1044	RCN1020	
	VR411, VR412	.....	RCP1049	
	CN51	B5B-XH	.....	
	CN52	B6B-XH	.....	

REAR UNIT

REAR UNIT (CT-P720WR/AB and AEM) and REAR UNIT (CT-P920WR/AUC) have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		CT-P920WR/ AUC type	CT-P720WR/ AB and AEM types	
	R545, R546	RD1/6PM181J	RD1/6PM151J	

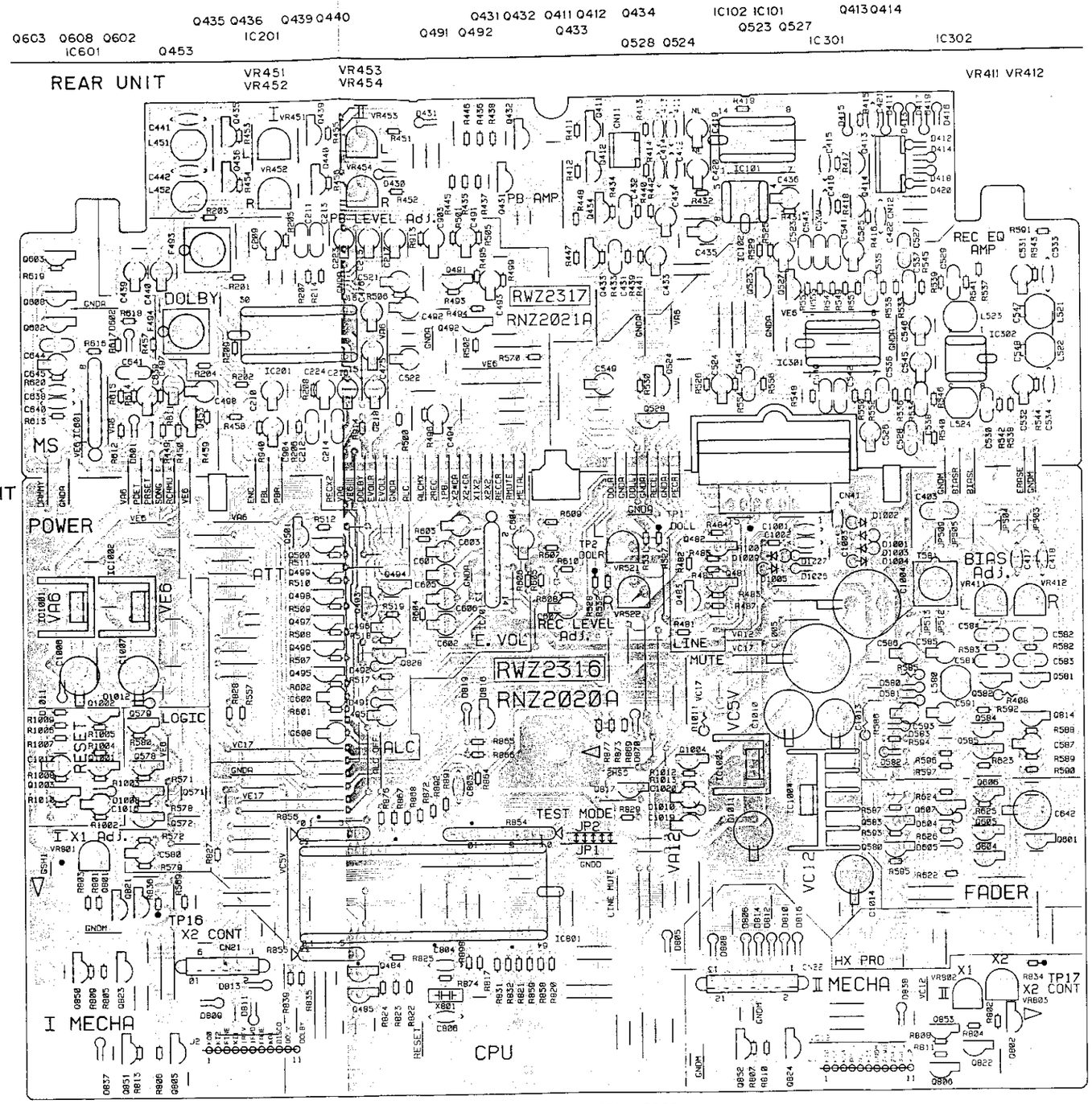
CT-P720WR/AB, AEM

- View from component side

P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol 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.

MAIN UNIT

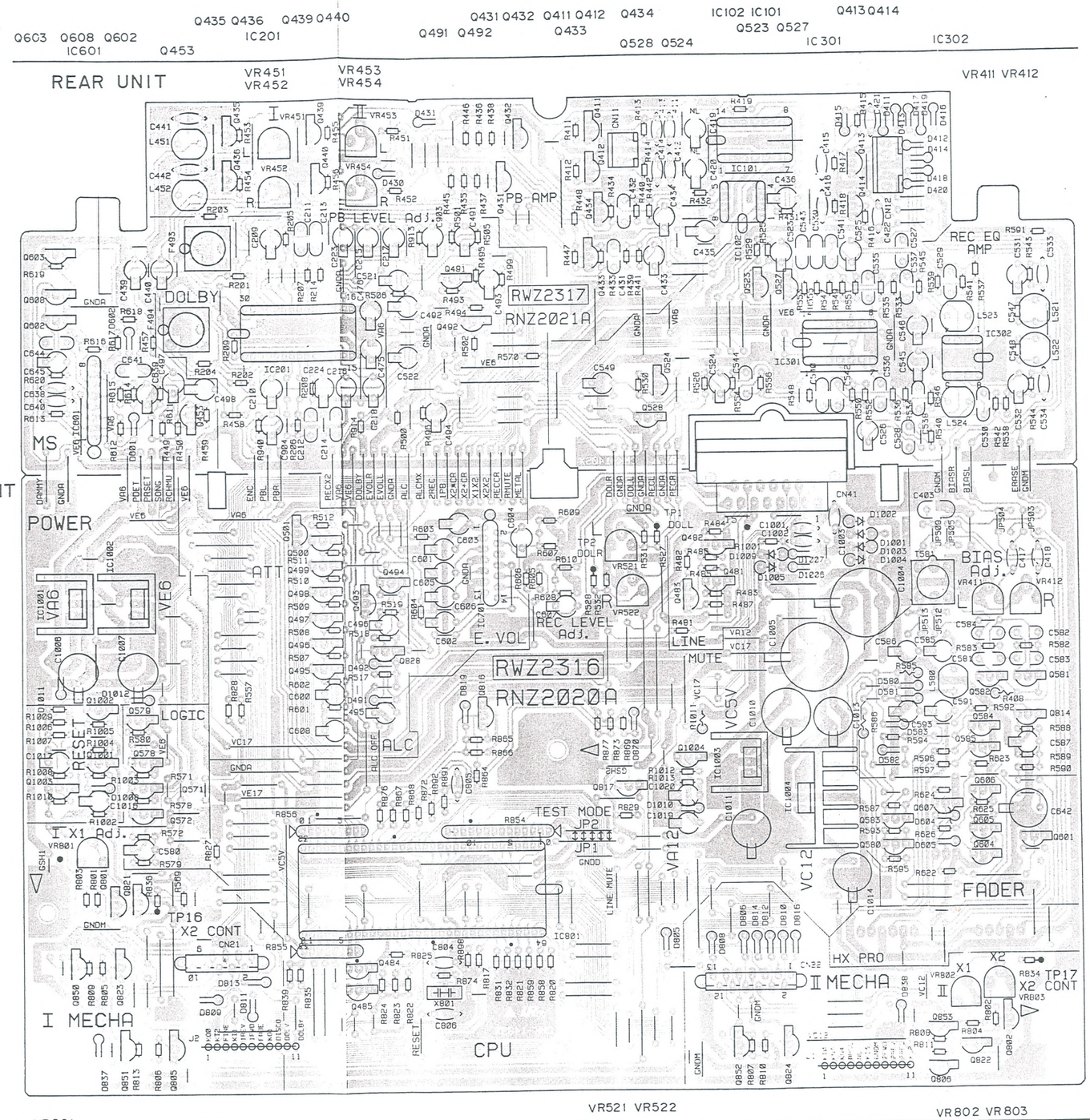


CT-P720WR/AB, AEM

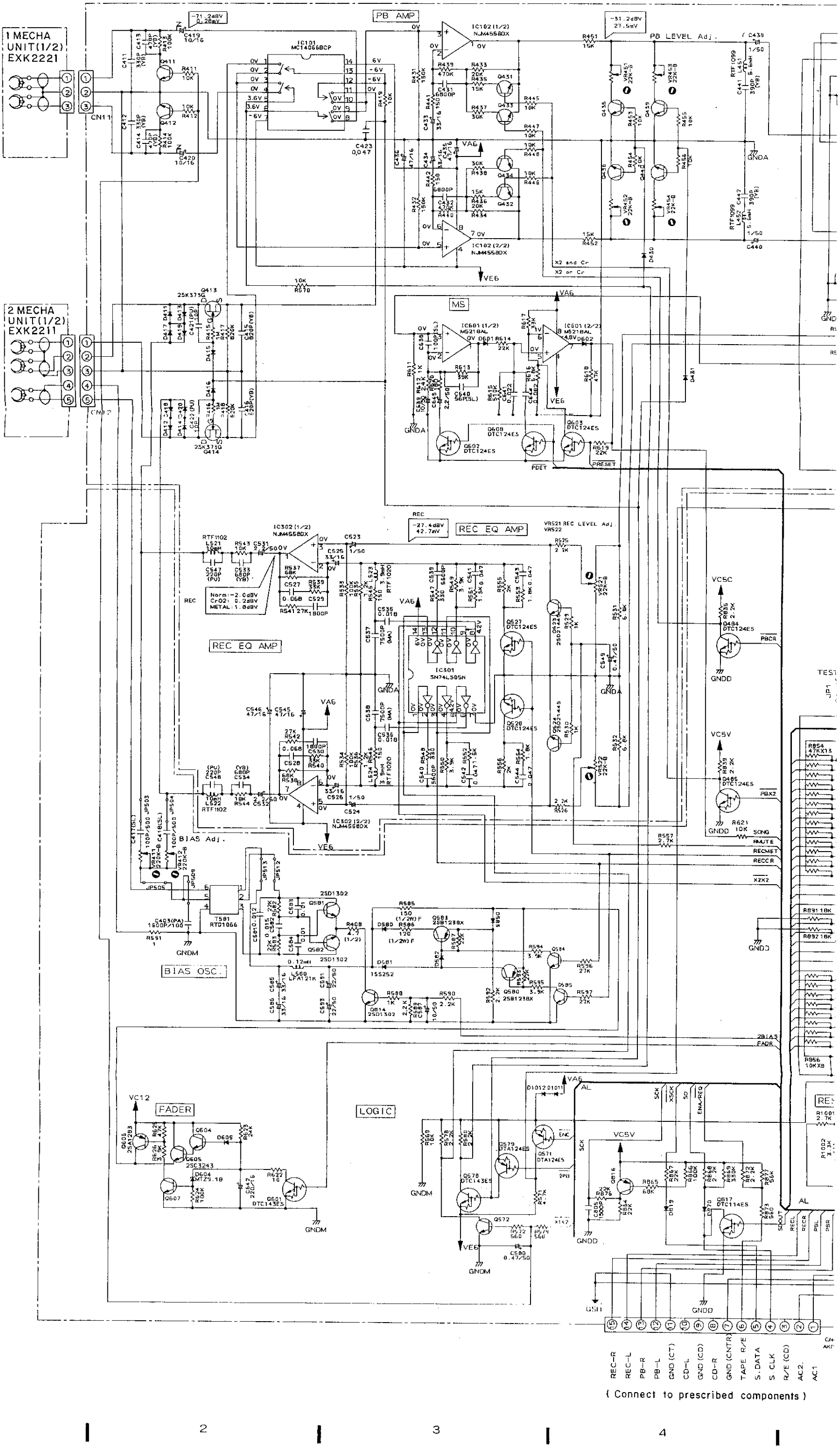
- View from component side

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

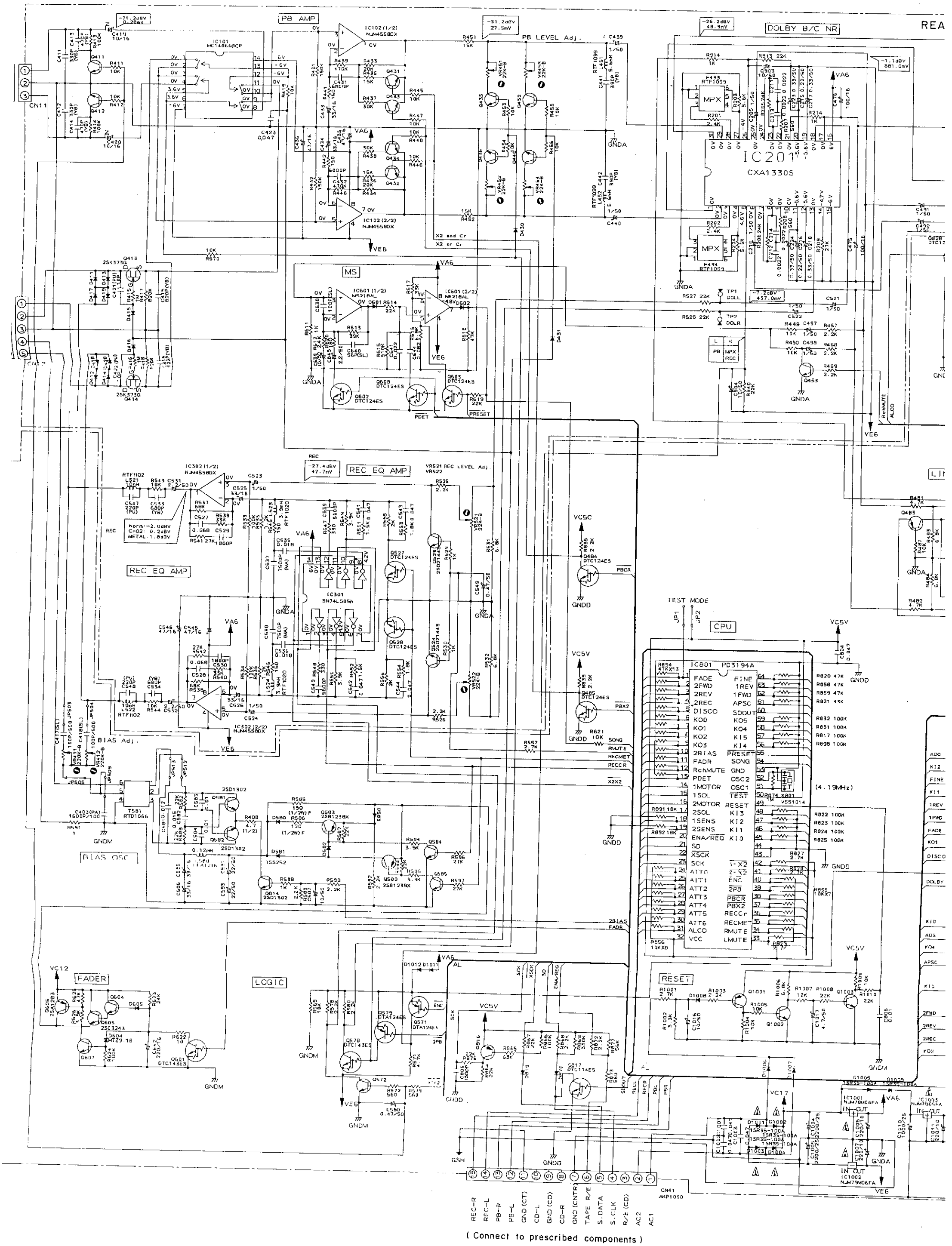
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked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



3. SCHEMATIC DIAGRAM



.TIC DIAGRAM


PB AMP
PB LEVEL Adj.
DOLBY B/C NR
IC201
CXA1330S
MPX
MS
IC601 (1/2) M5218AL
IC601 (2/2) M5218AL
IC102 (1/2) NJM4558DX
IC102 (2/2) NJM4558DX
IC101 MC14066BCP
REC EQ AMP
IC302 (1/2) NJM4558DX
IC302 (2/2) NJM4558DX
IC301 SN74LS05N
BIAS Adj.
BIAS OSC
FADER
LOGIC
CPU
RESET
IC801 PD3194A
TEST MODE
VA6
VE6
VC5V
VC12
VC17
GNDA
GNDD
GNDM
GSH
CN11
CN12
CN41 AKP1090
REC-R
REC-L
PB-R
PB-L
GND (CT)
CD-L
GND (CD)
CD-R
GND (CNTR)
TAPE R/E
S.DATA
S.CLK
R/E (CD)
AC2
AC1
(Connect to prescribed components)

1. RESISTORS :
Indicated in Ω, 1/6W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (M) ; ±20% tolerance.

2. CAPACITORS :
Indicated in capacity (μF) / voltage (V) unless otherwise noted p ; pF.
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT :
; DC voltage (V) at no input signal.
mA ; DC current at no input signal.

4. OTHERS :
→ ; 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.

REAR UNIT

IC201 CXA1330S

ATT

IC701 M51131L

Electron VR

LINE MUTE

1 MECHA UNIT(2/2) EXK2221

2 MECHA UNIT(2/2) EXK2211

MECHA CONTROL

CPU

PD3194A

OPERATE UNIT

MAIN UNIT

SERVICEANLEITUNG

Pioneer

Stereo Double Cassette Deck

CT-P920WR

ORDER NO. ARP -2380

Dez.1991

LFDNR.4057 FACH XP 396

3. EXPLODED VIEWS AND PARTS LIST

NOTES:

- The parts with an encircled number are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be 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.

3.1 EXTERIOR

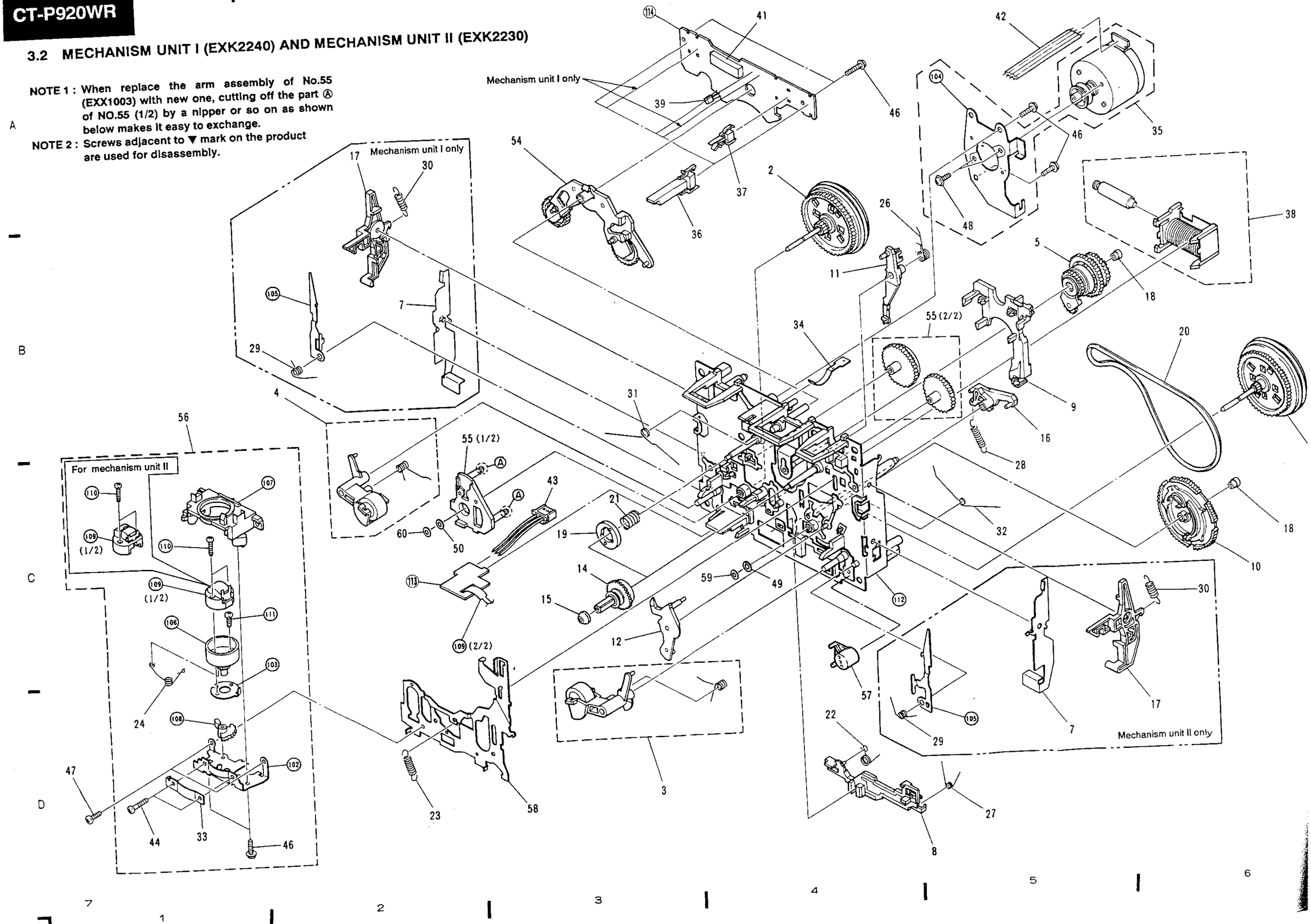
Parts List

Mark	No.	Description	Part No.
⊙	1	Mechanism unit II	EXK2230
⊙	2	Mechanism unit I	EXK2240
	3	Rubber sheet	AEB1111
	4	Door coil spring (L)	RBH1301
	5	Door coil spring (R)	RBH1302
	6	Half pressure spring	RBK1004
	7	Leg assembly	REC – 434
	8	Damper assembly	REC1005
	9	Door pocket (L)	RNK1743
	10	Door pocket (R)	RNK1746
	11	Eject knob (L)	RAC1639
	12	Eject knob (R)	RAC1640
	13	Slide knob	RAC1641
	14	Door lens (L)	RAH1913
	15	Door lens (R)	RAH1914
	16	Remain display paper	REE – 104
	17	Bonnet	RNA1469
	18	REC lens	RNK1745
	19	Operation button assembly	RXA1459
	20	Front panel	RAH1957
	21	Door panel (L)	RAH1960
	22	Door panel (R)	RAH1959
	23	Center panel	RAH1962
	24	Scerw	BPZ30P250FMC
	25	Screw	BBZ30P080FZK
	26	Screw	CBZ30P080FZK
	27	Cord clamper	RNH – 184
	101	Main unit	RWZ2501
	102	Rear unit	RWZ2578
	103	Operate unit	RWZ2318
	104	Main Chassis	RNB1067
	105	Mechanism shield plate	RNE1461
	106	Center bracket	RNK1747
	107	Mechanical cover board	RNZ2105
	108	.....	
	109	Rear panel	RNA1500
	110	DOLBY HX PRO unit	RWZ2456

3.2 MECHANISM UNIT I (EXK2240) AND MECHANISM UNIT II (EXK2230)

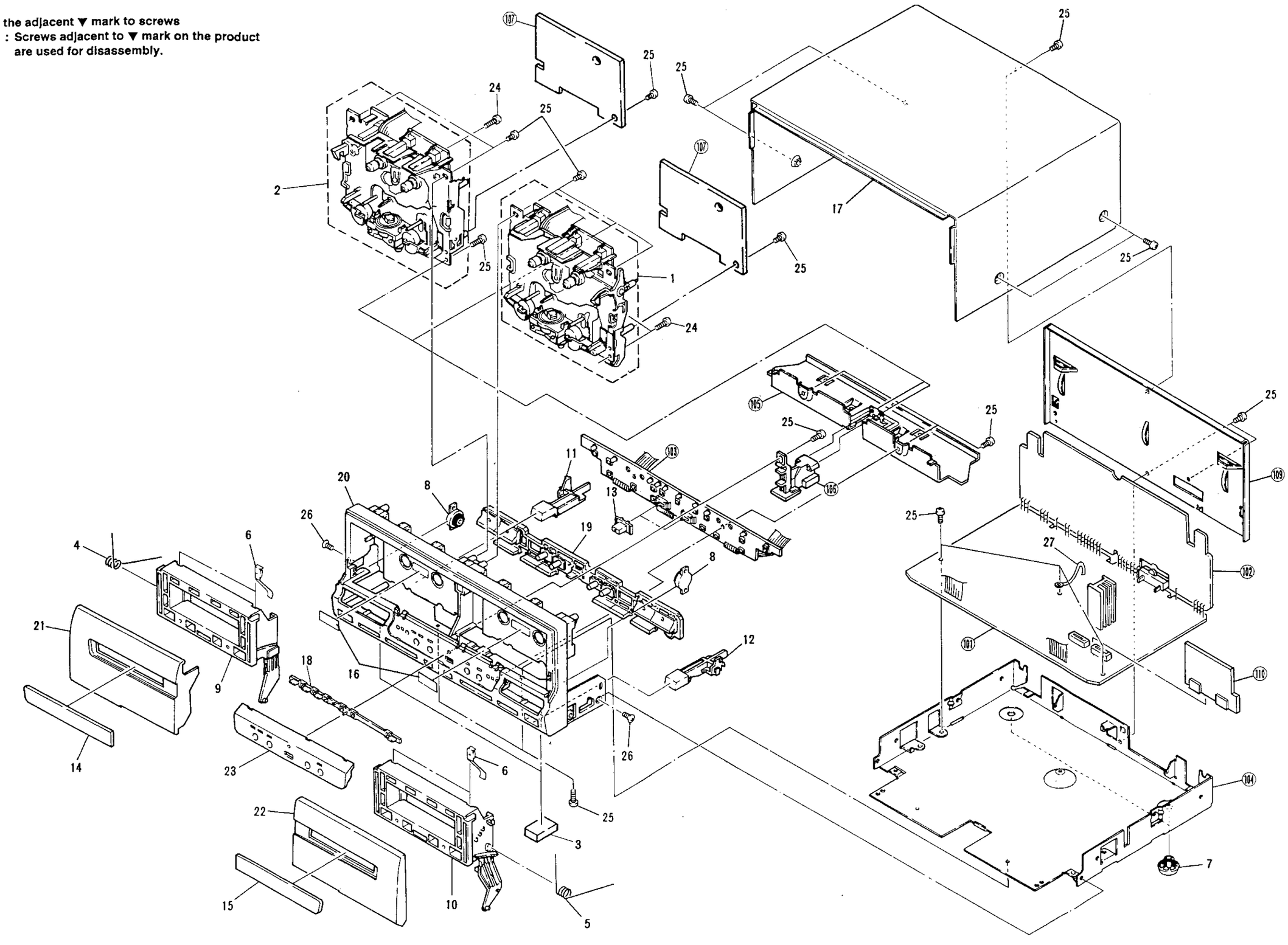
NOTE 1 : When replace the arm assembly of No.55 (EXX1003) with new one, cutting off the part Ⓐ of NO.55 (1/2) by a nipper or so on as shown below makes it easy to exchange.

NOTE 2 : Screws adjacent to ▼ mark on the product are used for disassembly.



EXTERIOR

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

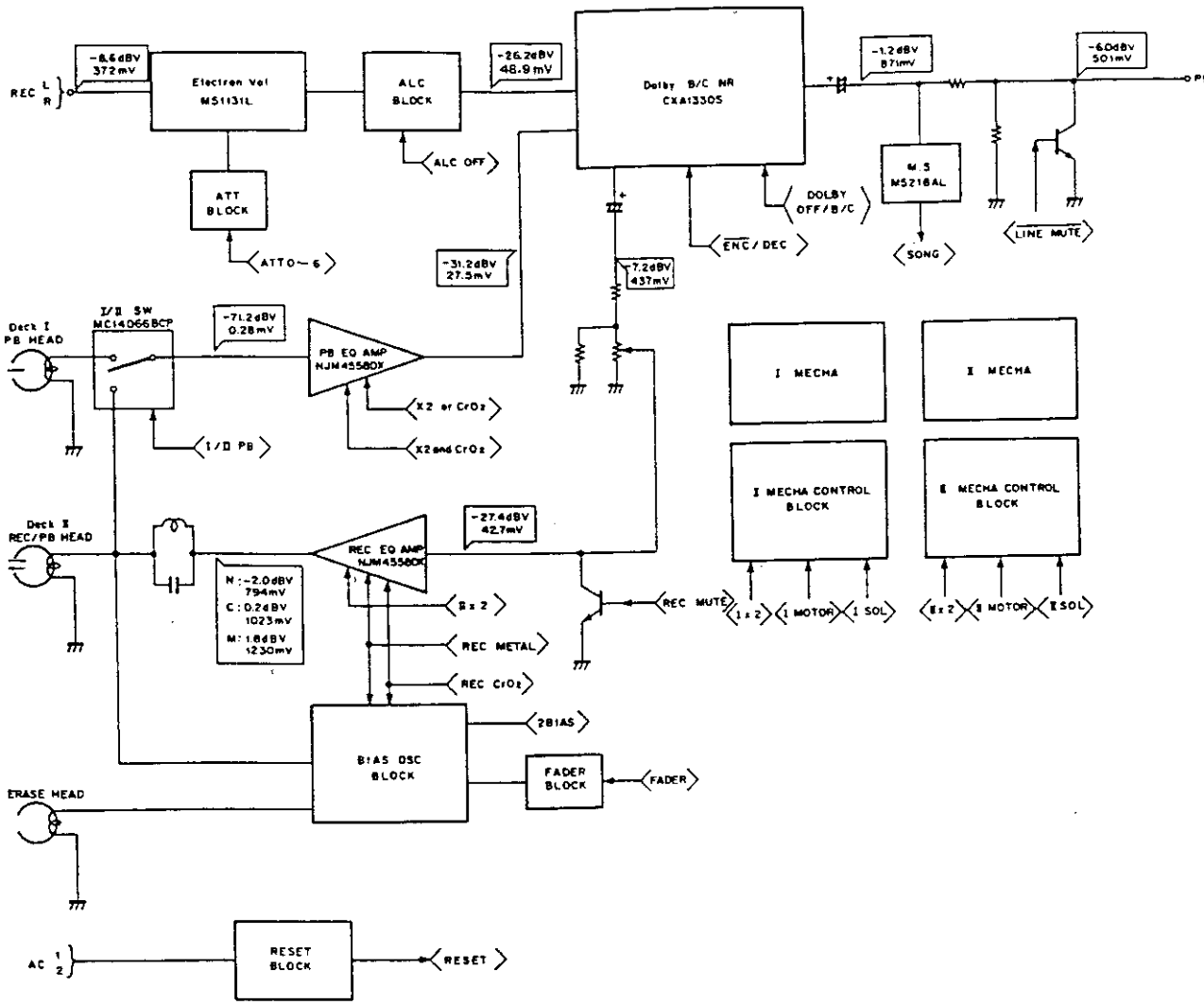


Parts List

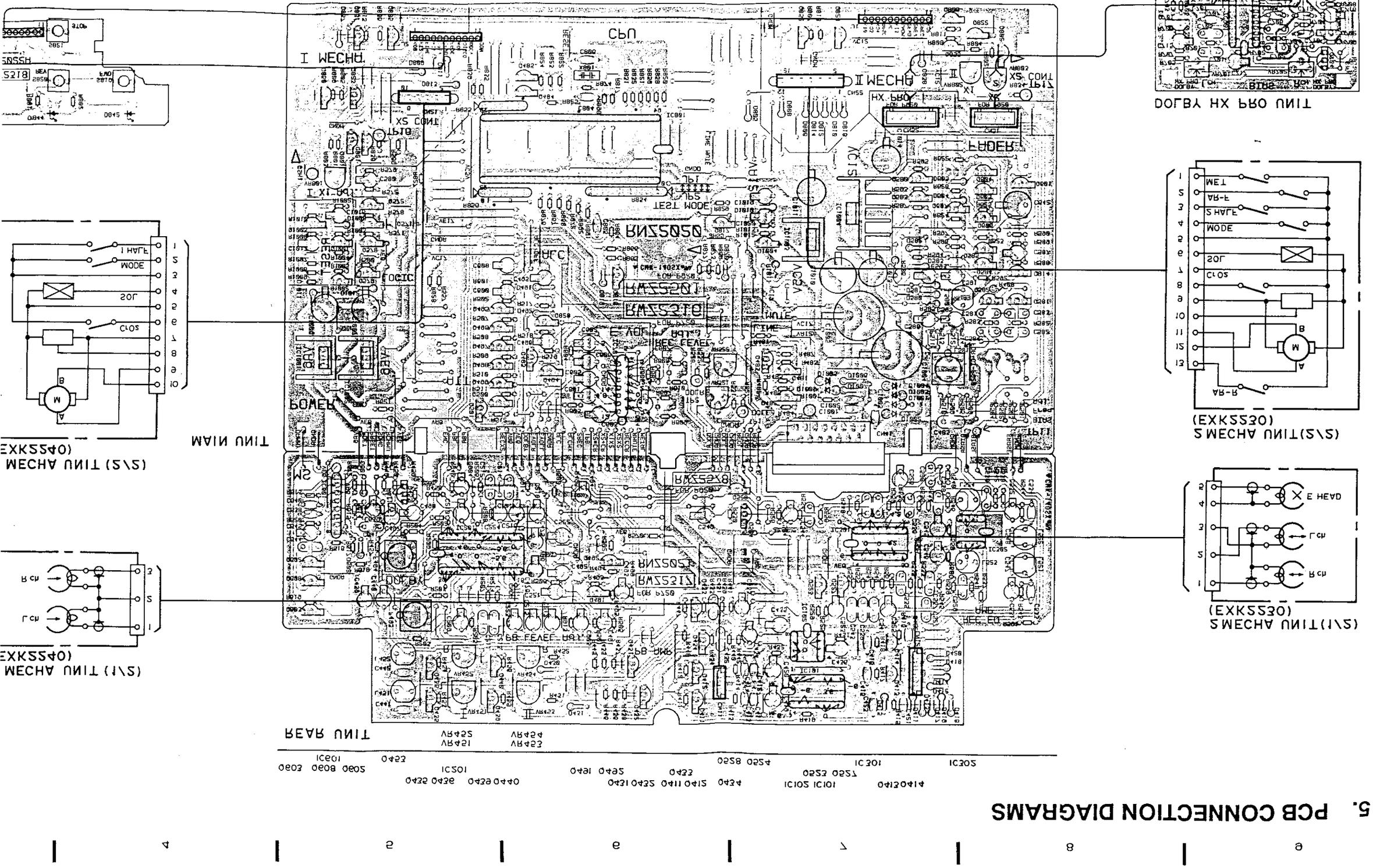
Mark	No.	Description	Part No.
	1	Flywheel unit (FWD)	EXA1231
	2	Flywheel unit (RVS)	EXA1240
	3	Pinch roller unit (FWD)	EXA1224
	4	Pinch roller unit (RVS)	EXA1225
	5	Limiter unit	EXA1226
	6	.....	
	7	Eject lever L2 (Mechanism unit I)	AZN2063
		Eject lever R2 (Mechanism unit II)	AZN2064
	8	Lever	ENV1155
	9	Brake	ENV1317
	10	Gear	ENV1158
	11	Arm	ENV1159
	12	Arm	ENV1163
	13	.....	
	14	Reel	ENV1335
	15	Bush	ENV1178
	16	Arm	ENV1330
	17	Eject lever L1 (Mechanism unit I)	AZN2108
		Eject lever R1 (Mechanism unit II)	AZN2109
	18	Bush	ENV1184
	19	Magnet	ENV1336
	20	Belt	ENT1023
	21	Spring	EBH1424
	22	Spring	EBH1401
	23	Spring	EBH1203
	24	Spring	EBH1402
	25	.....	
	26	Spring	EBH1406
	27	Spring	EBH1407
	28	Spring	EBH1408
	29	Spring (Mechanism unit I)	EBH1413
		Spring (Mechanism unit II)	EBH1412
	30	Spring	EBH1409
	31	Spring	EBH1410
	32	Spring	EBH1256
	33	Spring	EBL1013
	34	Spring	EBL1014
	35	Motor unit	EXA1241
	36	Switch (Detect)	ESN1003
	37	Switch (Mode)	ESN1004
	38	Solenoid	EXP1005
	39	Hall IC	DN6847SE
	40	.....	

Mark	No.	Description	Part No.
	41	Connector (10P) (Mechanism unit I)	EKS1013
		Connector (15P) (Mechanism unit II)	EKS1012
	42	Wire (4P)	EDD1003
	43	Connector (Mechanism unit I)	EDE1013
		Connector (Mechanism unit II)	EDE1012
	44	Screw	EBA1020
	45	.....	
	46	Screw (M2 × 8)	ATZ20P080FMC
	47	Screw	BSZ20P060FMC
	48	Screw	PMS26P025FUC
	49	Washer	EBF1008
	50	Washer	EBF1009
	51	.....	
	52	.....	
	53	.....	
	54	Arm unit	EXX1006
	55	Arm unit	EXX1003
	56	Head frame assembly (Mechanism unit I)	EXX1008
		Head frame assembly (Mechanism unit II)	EXX1007
	57	Arm	ENV1283
	58	Head chassis unit	EXA1230
	59	Washer	EBF1010
	60	Washer	EBF1011
	101	.....	
	102	Bracket	ENC1194
	103	Plate	ENC1185
	104	Bracket	ENC1198
	105	Arm (Mechanism unit I)	ENC1188
		Arm (Mechanism unit II)	ENC1189
	106	Holder	ENV1161
	107	Holder	ENV1162
	108	Gear	ENV1177
	109	Head unit (Mechanism unit I)	EXA1110
		Head unit (Mechanism unit II)	EXA1109
	110	Screw	JGZ14P085FNI
	111	Screw	JGZ14P040FNI
	112	Chassis unit	EXX1001
	113	PC board	ENP1056
	114	PC board (Mechanism unit I)	ENP1053
		PC board (Mechanism unit II)	ENP1055

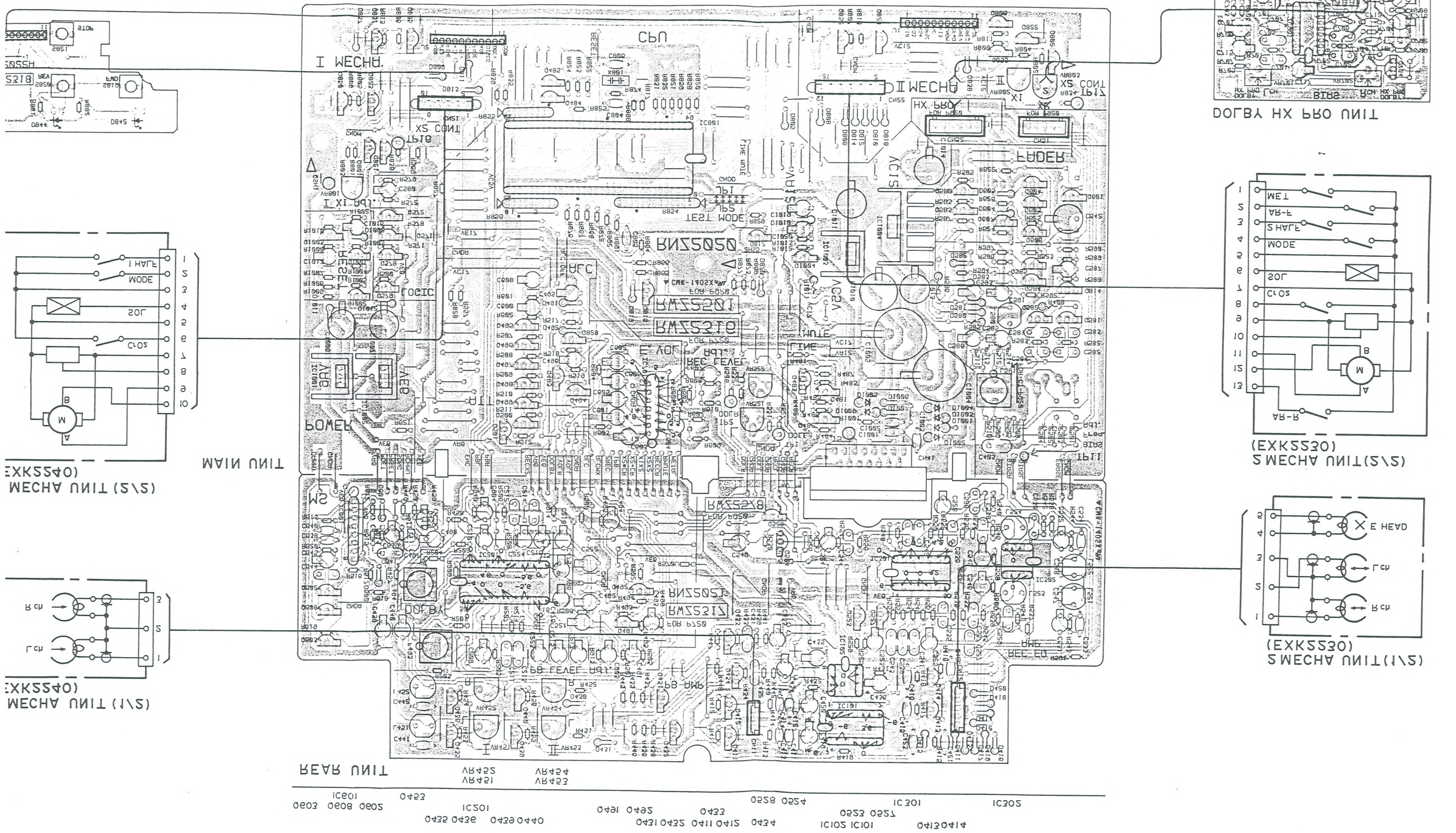
4. BLOCK DIAGRAM



5. PCB CONNECTION DIAGRAMS



5. PCB CONNECTION DIAGRAMS



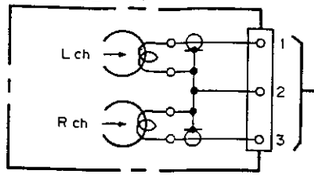
T-P920WR

• View from component side

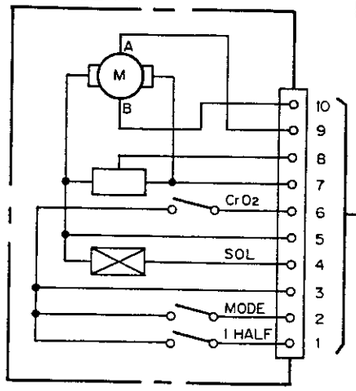
P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode	SA		Styrol capacitor
			NP		Electrolytic capacitor (Non polarized)
			NL		Electrolytic capacitor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

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 O shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

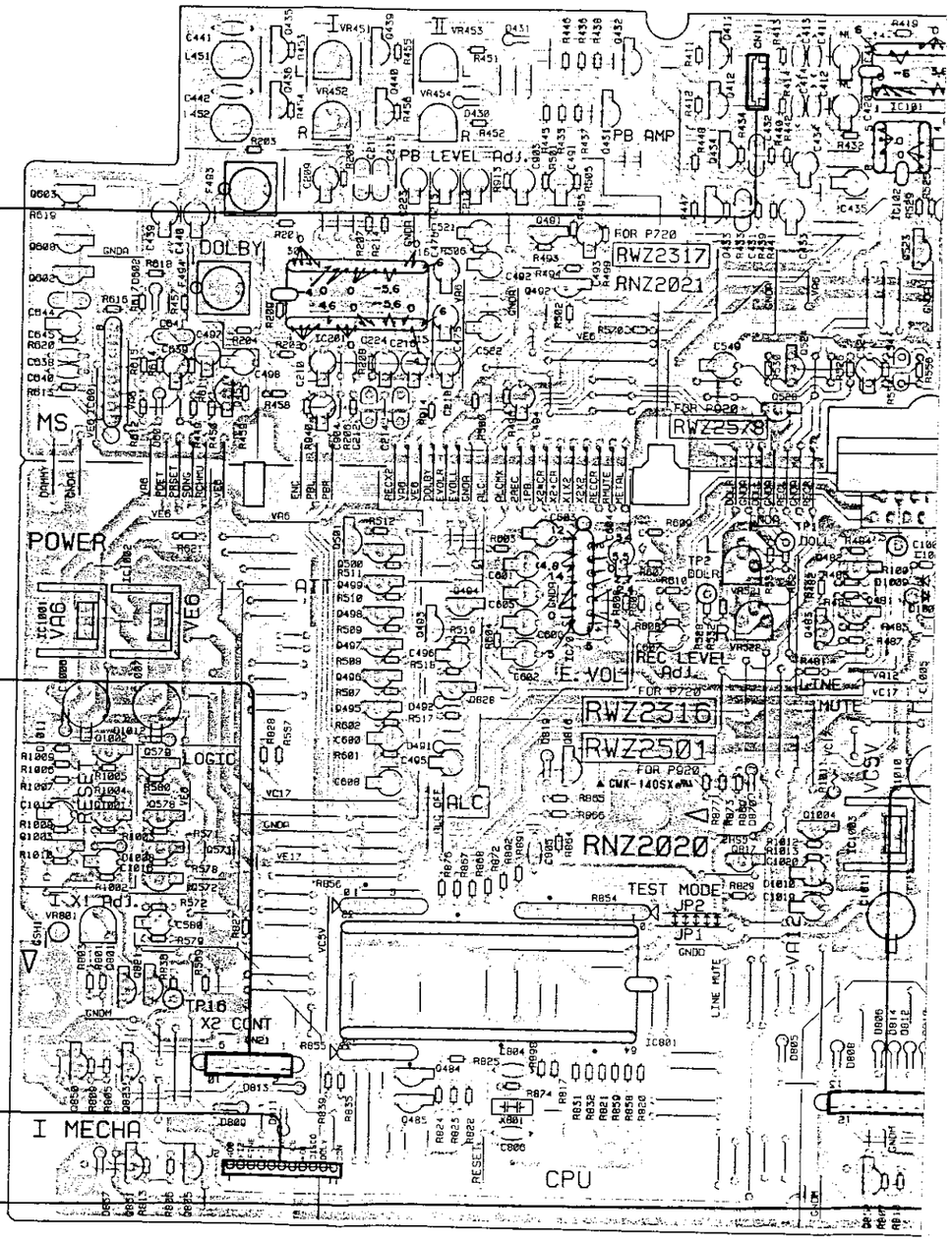
1 MECHA UNIT (1/2)
(EXK2240)



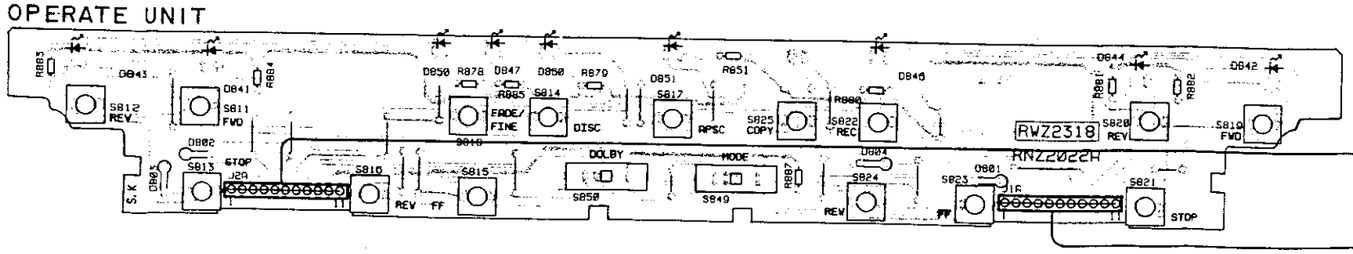
1 MECHA UNIT (2/2)
(EXK2240)



MAIN UNIT



OPERATE UNIT



RNP1355D

T-P920WR

- View from component side

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

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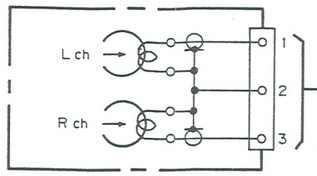
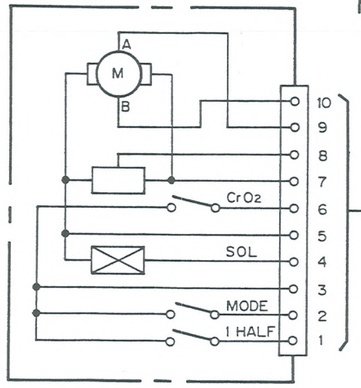
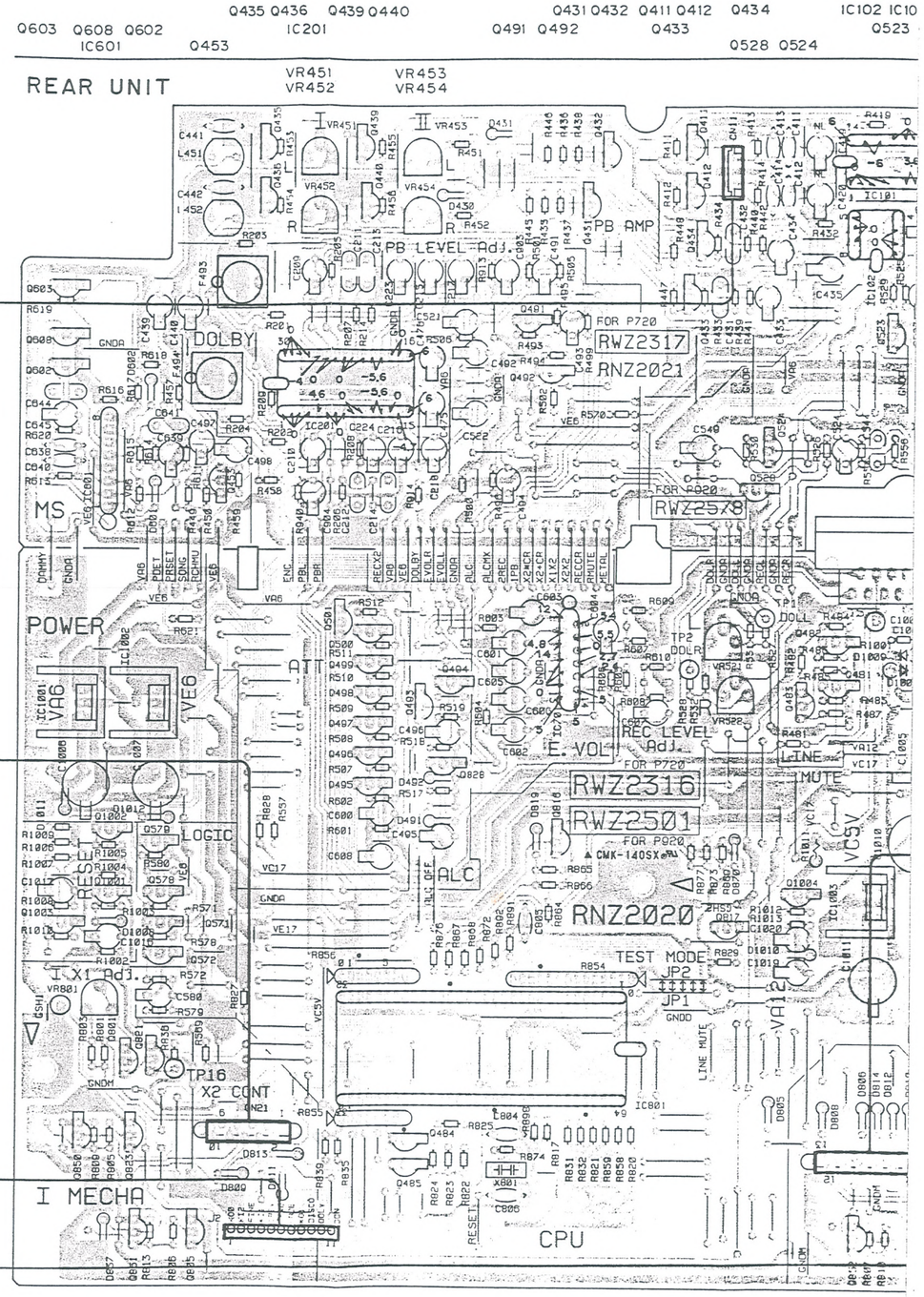
(EXK2240)



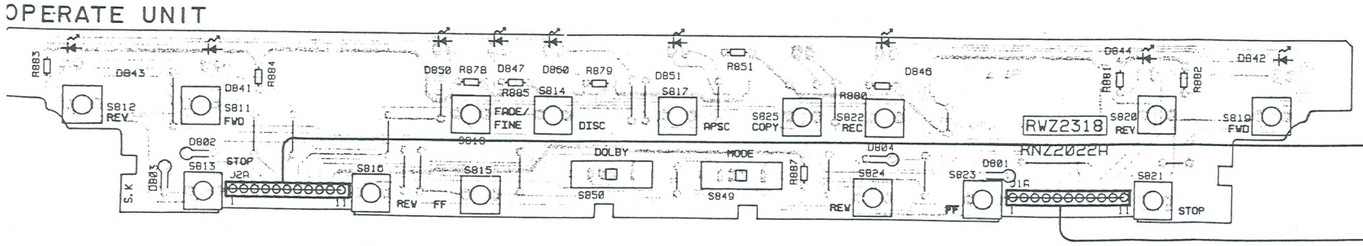
1 MECHA UNIT (2/2)
(EXK2240)



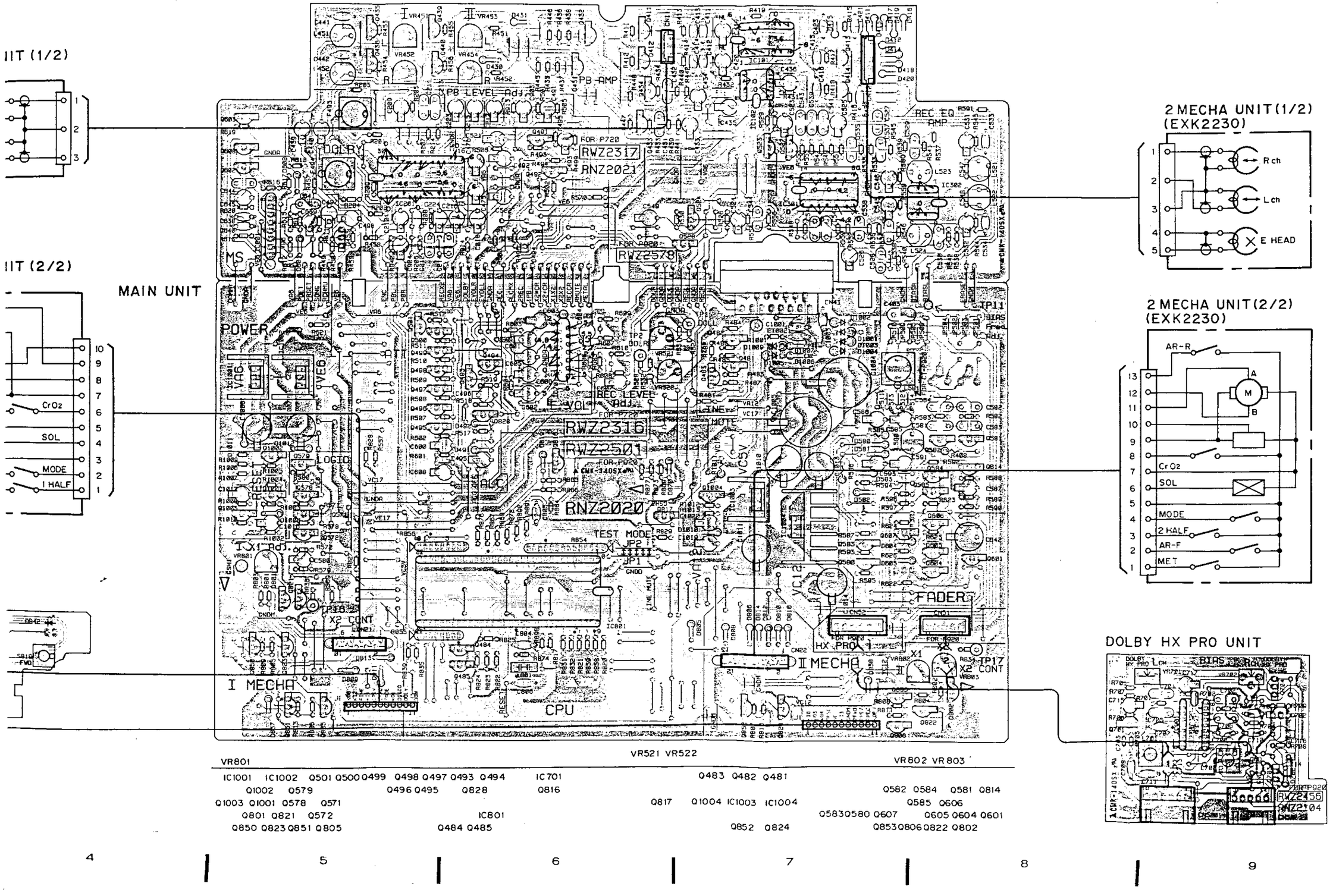
MAIN UNIT



OPERATE UNIT



RNP1355D

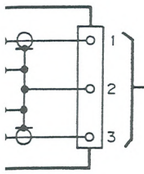

REAR UNIT
MAIN UNIT
IIT (1/2)
IIT (2/2)
2 MECHA UNIT(1/2)
(EXK2230)
2 MECHA UNIT(2/2)
(EXK2230)
DOLBY HX PRO UNIT
PB AMP
PB LEVEL Adj
REC EQ AMP
REC LEVEL Adj
DOLBY
POWER
LOGIC
ALC
CPU
I MECHA
II MECHA
FADER
TEST MODE
TX1 Adj.
TP16 X2 CONT
TP17 X2 CONT
TP11 BIAS Adj
RWZ2317
RNZ2021
RWZ2578
RWZ2316
RWZ2501
RNZ2020
FOR P720
FOR P020
FOR P028
CNK-3405X
VR451 VR452 VR453 VR454
VR801
VR521 VR522
VR802 VR803
IC1001 IC1002 Q501 Q500 Q499 Q498 Q497 Q493 Q494 IC701
Q1002 Q579 Q496 Q495 Q828 Q816
Q1003 Q1001 Q578 Q571
Q801 Q821 Q572 IC801
Q850 Q823 Q851 Q805 Q484 Q485
Q483 Q482 Q481
Q817 Q1004 IC1003 IC1004
Q852 Q824
Q582 Q584 Q581 Q814
Q585 Q606
Q583 Q580 Q607 Q605 Q604 Q601
Q853 Q806 Q822 Q802
0603 0608 0602 IC601 Q453
0435 Q436 Q439 Q440 IC201
Q491 Q492 Q431 Q432 Q411 Q412 Q433
Q434 Q528 Q524
IC102 IC101 Q523 Q527 IC301
Q413 Q414 IC302
R Ch
L Ch
E HEAD
A
M
B
AR-R
CrO2
SOL
MODE
2 HALF
AR-F
MET
10 9 8 7 6 5 4 3 2 1
13 12 11 10 9 8 7 6 5 4 3 2 1
1 2 3
1 2 3 4 5
A
B
C
D

Q603 Q608 Q602 IC601 Q453 Q435 Q436 IC201 Q439 Q440 Q491 Q492 Q431 Q432 Q433 Q411 Q412 Q434 Q528 Q524 IC102 IC101 Q523 Q527 IC301 Q413 Q414 IC302

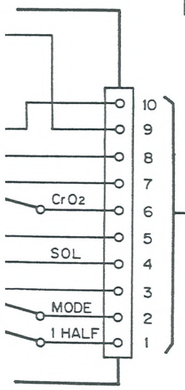
REAR UNIT

VR451 VR452 VR453 VR454

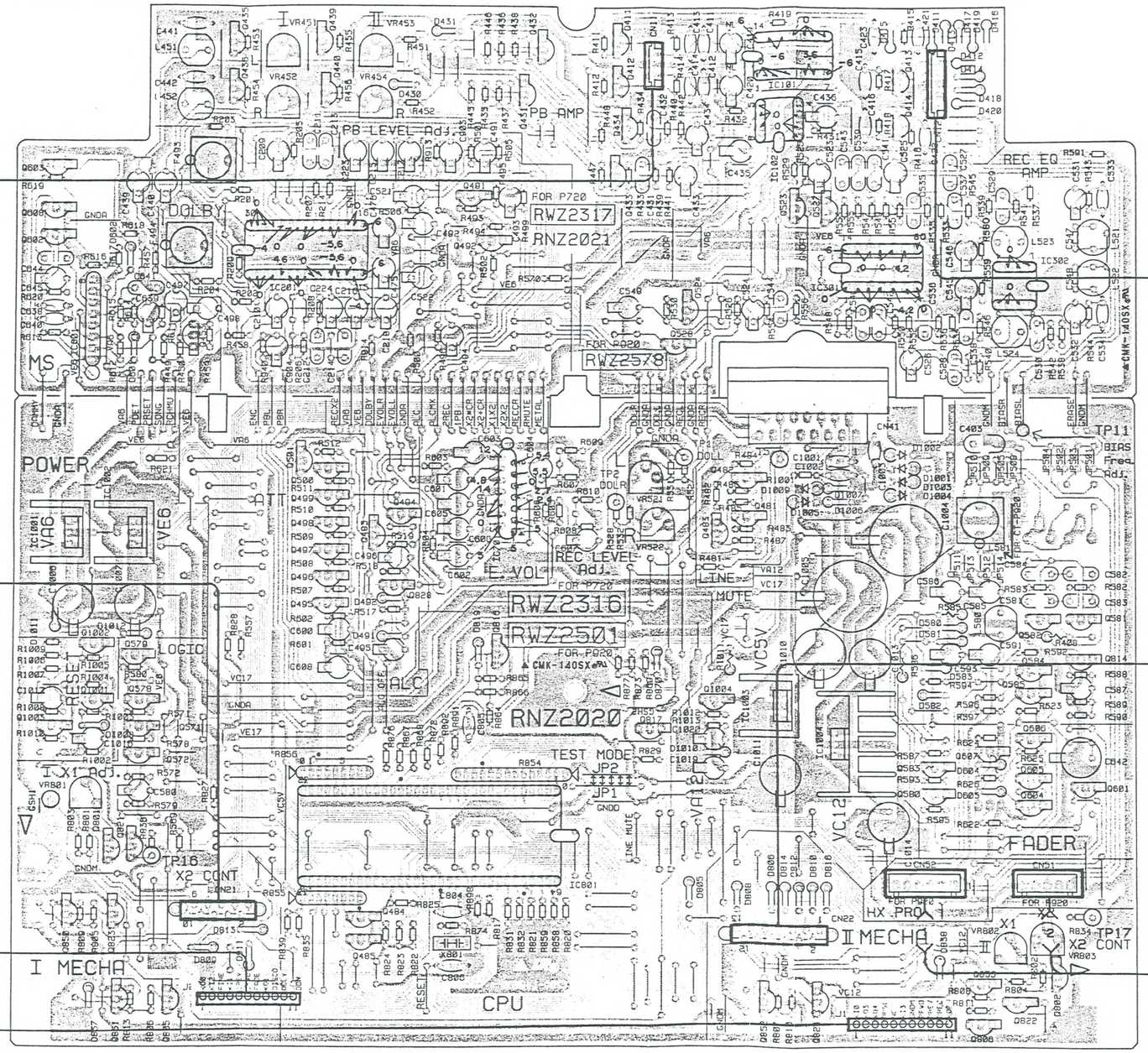
T (1/2)



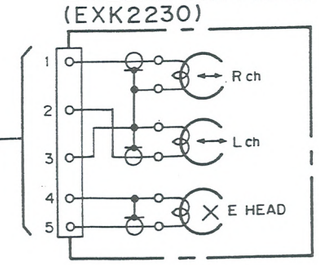
T (2/2)



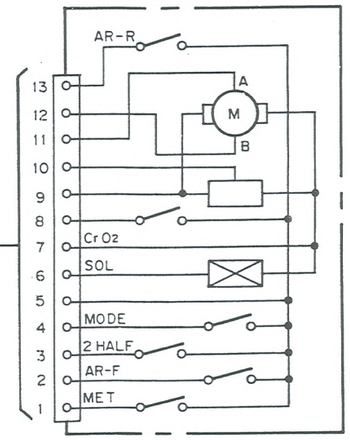
MAIN UNIT



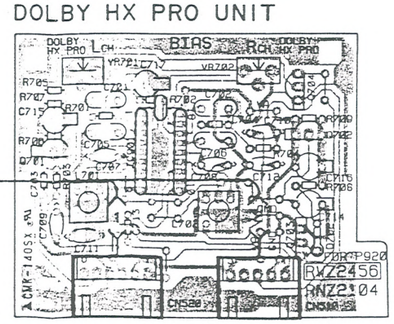
2 MECHA UNIT (1/2) (EXK2230)



2 MECHA UNIT (2/2) (EXK2230)



DOLBY HX PRO UNIT



VR801 VR521 VR522 VR802 VR803

IC1001 IC1002 Q501 Q500 Q499 Q498 Q497 Q493 Q494 IC701 Q483 Q482 Q481

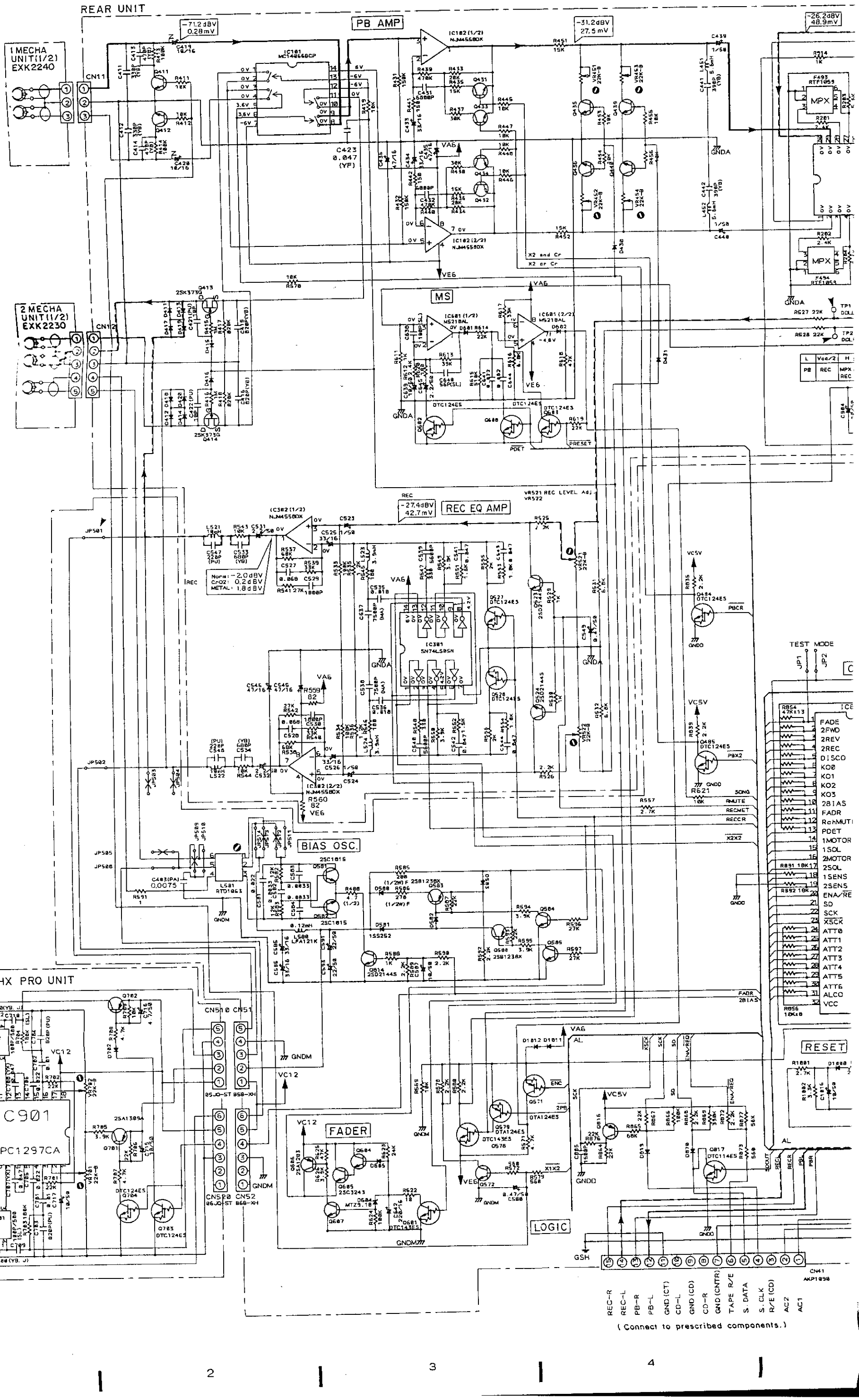
Q1002 Q579 Q496 Q495 Q828 Q816 Q582 Q584 Q581 Q814

Q1003 Q1001 Q578 Q571 Q817 Q1004 IC1003 IC1004 Q585 Q606

Q801 Q821 Q572 IC801 Q5830580 Q607 Q605 Q604 Q601

Q850 Q823 Q851 Q805 Q484 Q485 Q852 Q824 Q853 Q806 Q822 Q802

6. SCHEMATIC DIAGRAMS



GRAMS

T

PB AMP

MS

REC EQ AMP

BIAS OSC.

FADER

LOGIC

DOLBY B/C NR

IC201 CXA1330S

ATT

LINE MUTE

CPU

IC801 PD3194A

RESET

TEST MODE

REC

VR521 REC LEVEL Adj
VR522

-71.2dBV 0.28mV
-31.2dBV 27.5mV
-26.2dBV 48.9mV
-1.2dBV 871mV
-27.4dBV 42.7mV
-2.0dBV
-7.2dBV 437mV
-6.0dBV 501mV

Norm: -2.0dBV
CrO2: 0.2dBV
METAL: 1.8dBV

(4.19MHz)

(Connect to prescribed components.)

1. RESISTORS :
Indicated in Ω, 1/6W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (M) ; ±20% tolerance.

2. CAPACITORS :
Indicated in capacity (μF) / voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

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

4. OTHERS :
→ : 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.
► : Measurement point

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

DOLBY B/C NR

MAIN UNIT

IC201 CXA1330S

ATT

ELECTRON VR

IC701 MS1131L

LINE MUTE

1 MECHA UNIT (2/2) EXK2240

2 MECHA UNIT (2/2) EXK2230

MECHA CONTROL

CPU

IC801 PD3194A

OPERATE UNIT

:PLAYBACK SIGNAL
:RECORDING SIGNAL

7. PCB 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 ⚠ 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 × 10¹ → 561 ····· RD1/4PS 5 6 1 J
47k Ω → 47 × 10³ → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

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

5.62k Ω → 562 × 10¹ → 5621 ····· RN1/4SR 5 6 2 1 F

Mark	No.	Description	Part No.
		LIST OF ASSEMBLIES	
⊙		MOTHER UNIT	RWM1470
		├ OPERATE UNIT	
		├ DOLBY HX PRO UNIT	
		├ MAIN UNIT	
		└ REAR UNIT	
		OPERATE UNIT	
		SEMICONDUCTORS	
	D801-804	DIODE	1SS254
	D841-844	LED	SEL6410G
	D846, 847		SEL6C10R
	D850		SEL6C10R
	D851	LED	SEL6910D
	D860		SEL6C10R
		SWITCHES	
	S811-825	SWITCH	RSG1033
	S849, 850	SWITCH	RSH1030
		RESISTORS	
	R851	CARBONFILM RESISTOR	RD1/6PM□□□J
	R878-885	CARBONFILM RESISTOR	RD1/6PM□□□J
	R887	CARBONFILM RESISTOR	RD1/6PM□□□J
		DOLBY HX PRO UNIT	
		SEMICONDUCTORS	
	IC901	DOLBY HX PRO IC	UPC1297CA
	Q701, 702	TRANSISTOR	2SA1309A
	Q703, 704	TRANSISTOR	XDC124ES
	D702	DIODE	1SS254
		COILS/TRANSFORMERS	
	L701, 702	COIL	RTD1046
		CAPACITORS	
	C701, 702	AUDIO FILM CAPACITOR	CFTXA103J50
	C703, 704	AXIAL CAPACITOR	CKPUYB821K50
	C705, 706	AUDIO FILM CAPACITOR	CFTXA223J50
	C707, 708	CERAMIC CAPACITOR	CGCYX473K25
	C709, 710	CERAMIC CAPACITOR	CCCSL101K500
	C711, 712	CERAMIC CAPACITOR	RCG1005
	C713	AXIAL CAPACITOR	CKPUYB101K50
	C714	CERAMIC CAPACITOR	CGCYX104M25
	C715	ELECTR. CAPACITOR	CEAS100M50
	C716	ELECTR. CAPACITOR	CEAS4R7M50
	C717	ELECTR. CAPACITOR	CEAS100M50
		RESISTORS	
	R701-709	CARBONFILM RESISTOR	RD1/6PM□□□J
	VR701, 702	VR	VRTB6HS223
		OTHERS	
	CN510		05JQ-ST
	CN520		06JQ-ST
		MAIN UNIT	
		SEMICONDUCTORS	
	IC701	VCA	M51131L
	IC801		PD3194A
⚠	IC1001	REGULATOR IC	NJM78M06FA
⚠	IC1002	REGULATOR IC	NJM79M06FA
⚠	IC1003	REGULATOR IC	NJM7805FA
⚠	IC1004	REGULATOR IC	NJM7812FA
	Q481, 482	TRANSISTOR	2SD2144S
	Q483	TRANSISTOR	2SA1309A
	Q484, 485	TRANSISTOR	XDC124ES
	Q493, 494	TRANSISTOR	2SC1740SLN
	Q495-501	TRANSISTOR	XDC124ES
	Q571	TRANSISTOR	XDA124ES
	Q572	TRANSISTOR	2SC3311A
	Q578	TRANSISTOR	DTC143ES
	Q579	TRANSISTOR	XDA124ES
	Q580	TRANSISTOR	2SB1238X
	Q581, 582	TRANSISTOR	2SC1815
	Q583	TRANSISTOR	2SB1238X
	Q584, 585	TRANSISTOR	2SC3311A
	Q601	TRANSISTOR	DTC143ES
	Q604	TRANSISTOR	2SC3311A
	Q605	TRANSISTOR	2SC3243
	Q606	TRANSISTOR	2SA1283

Mark	No.	Description	Part No.
	Q607	TRANSISTOR	2SC3311A
	Q801, 802	TRANSISTOR	XDA144ES
	Q805, 806	DIGITAL TRANSISTOR	XDC114ES
	Q814	TRANSISTOR	2SD2144S
	Q816	TRANSISTOR	2SA1309A
	Q817	DIGITAL TRANSISTOR	XDC114ES
	Q821, 822	TRANSISTOR	DTC143ES
	Q823, 824	DIGITAL TRANSISTOR	XDC114ES
	Q828	TRANSISTOR	XDC124ES
	Q850-853	TRANSISTOR	2SA1283
	Q1001	TRANSISTOR	2SA1309A
	Q1002, 1003	TRANSISTOR	2SC3311A
⚠	Q1004	TRANSISTOR	2SC3246
	D491, 492	DIODE	1SS254
	D580	DIODE	1SS254
	D581	DIODE	1SS252
	D582, 583	DIODE	1SS254
	D604	ZENER DIODE	MTZ9.1B
	D605	DIODE	1SS254
	D805, 806	DIODE	1SS254
	D808-814	DIODE	1SS254
	D816	DIODE	1SS254
	D819	DIODE	1SS254
	D837, 838	DIODE	1SS254
	D870	DIODE	1SS254
⚠	D1001-1004	DIODE	1SR35-100AVL
	D1006-1008	DIODE	1SS254
	D1005, 1009	DIODE	1SR35-100AVL
	D1010	ZENER DIODE	MTZJ11B
	D1011, 1012	DIODE	1SS254

COILS/TRANSFORMERS

L580	RADIAL INDUCTOR	LFA121K
L581	COIL	RTD1063

CAPACITORS

C403	CAPACITOR	CQPA682J100
C495	ELECTR. CAPACITOR	CEASR33M50
C496	ELECTR. CAPACITOR	CEAS100M50
C580	ELECTR. CAPACITOR	CEASR47M50
C581	AUDIO FILM CAPACITOR	CFTXA223J50
C582-584	AUDIO FILM CAPACITOR	CFTXA332J50
C585, 586	ELECTR. CAPACITOR	CEAS330M16
C587	ELECTR. CAPACITOR	CEAS100M50
C591	ELECTR. CAPACITOR	CEAS220M50
C593	ELECTR. CAPACITOR	CEAS220M50
C600	ELECTR. CAPACITOR	CEASR22M50
C601, 602	ELECTR. CAPACITOR	CEAS100M50
C603	ELECTR. CAPACITOR	CEAS470M16
C604	ELECTR. CAPACITOR	CEAS100M50
C605	ELECTR. CAPACITOR	CEAS470M16
C606	ELECTR. CAPACITOR	CEAS4R7M50
C607	ELECTR. CAPACITOR	CEAS100M50
C608	ELECTR. CAPACITOR	CEAS470M16
C642	ELECTR. CAPACITOR	CEAS221M16
C804	CERAMIC CAPACITOR	CKCYF473Z50

Mark	No.	Description	Part No.
	C805	CERAMIC CAPACITOR	CKCYB152K50
	C806	CERAMIC CAPACITOR	CKCYF103Z50
	C1001-1003	CERAMIC CAPACITOR	CKCYF473Z50
	C1004, 1005	ELECTR. CAPACITOR	CEAS222M25
	C1006, 1007	ELECTR. CAPACITOR	CEAS221M10
	C1010	ELECTR. CAPACITOR	CEAS102M25
	C1011	ELECTR. CAPACITOR	CEAS221M10
	C1013	ELECTR. CAPACITOR	CEAS101M25
	C1014	ELECTR. CAPACITOR	CEAS221M16
	C1016	ELECTR. CAPACITOR	CEAS100M50
	C1017	ELECTR. CAPACITOR	CEAS4R7M50
	C1019	ELECTR. CAPACITOR	CEAS101M25
	C1020	ELECTR. CAPACITOR	CEAS470M16

RESISTORS

R408	CARBONFILM RESISTOR	RCN1022
R481-487	CARBONFILM RESISTOR	RD1/6PM□□□J
R507-512	CARBONFILM RESISTOR	RD1/6PM□□□J
R517-519	CARBONFILM RESISTOR	RD1/6PM□□□J
R527, 528	CARBONFILM RESISTOR	RCN1023
R531, 532	CARBONFILM RESISTOR	RD1/6PM□□□J
R557	CARBONFILM RESISTOR	RD1/6PM□□□J
R569	CARBONFILM RESISTOR	RD1/6PM□□□J
R571, 572	CARBONFILM RESISTOR	RD1/6PM□□□J
R578-580	CARBONFILM RESISTOR	RD1/6PM□□□J
R582, 583	CARBONFILM RESISTOR	RD1/6PM□□□J
R585	CARBONFILM RESISTOR	RCN1036
R586	CARBONFILM RESISTOR	RCN1044
R587-597	CARBONFILM RESISTOR	RD1/6PM□□□J
R601-610	CARBONFILM RESISTOR	RD1/6PM□□□J
R621-626	CARBONFILM RESISTOR	RD1/6PM□□□J
R801-811	CARBONFILM RESISTOR	RD1/6PM□□□J
R813	CARBONFILM RESISTOR	RD1/6PM□□□J
R817	CARBONFILM RESISTOR	RD1/6PM□□□J
R820-825	CARBONFILM RESISTOR	RD1/6PM□□□J
R827-829	CARBONFILM RESISTOR	RD1/6PM□□□J
R831, 832	CARBONFILM RESISTOR	RD1/6PM□□□J
R834-836	CARBONFILM RESISTOR	RD1/6PM□□□J
R839	CARBONFILM RESISTOR	RD1/6PM□□□J
R854	RESISTOR ARRAY	RA13T□□□J
R855	RESISTOR ARRAY	RA7T□□□J
R856	RESISTOR ARRAY	RA8T□□□J
R858, 859	CARBONFILM RESISTOR	RD1/6PM□□□J
R864-869	CARBONFILM RESISTOR	RD1/6PM□□□J
R872-874	CARBONFILM RESISTOR	RD1/6PM□□□J
R876, 877	CARBONFILM RESISTOR	RD1/6PM□□□J
R891, 892	CARBONFILM RESISTOR	RD1/6PM□□□J
R898	CARBONFILM RESISTOR	RD1/6PM□□□J
R1001-1010	CARBONFILM RESISTOR	RD1/6PM□□□J
R1011	CARBONFILM RESISTOR	RCN1026
R1012, 1013	CARBONFILM RESISTOR	RD1/6PM□□□J
VR521, 522	VR	RCP1046
VR801, 802	VR	VRTG6VS223
VR803	VR	RCP1054

Mark	No.	Description	Part No.
	CN41	SOCKET(15P)	AKP1090
	CN51		B5B-XH
	CN52		B6B-XH
	X801	CERAMIC RESONATOR (4.19MHz)	VSS1014

REAR UNIT

SEMICONDUCTORS

IC101	LOGIC IC	MC14066BCP
IC102	OP-AMP IC	NJM4558DX
IC201	DOLBY B/C IC	CXA1330S
IC301	LOGIC IC	SN74LS05N
IC302	OP-AMP IC	NJM4558DX
IC601	OP-AMP, IC	M5218AL
Q411, 412	TRANSISTOR	2SC3311A
Q413, 414	N-FET	2SK373
Q431-436	TRANSISTOR	2SC3311A
Q439, 440	TRANSISTOR	2SC3311A
Q453	TRANSISTOR	2SC3311A
Q491, 492	TRANSISTOR	2SC3311A
Q523, 524	TRANSISTOR	2SD2144S
Q527, 528	TRANSISTOR	XDC124ES
Q602, 603	TRANSISTOR	XDC124ES
Q608	TRANSISTOR	XDC124ES
D411-420	DIODE	1SS254
D430, 431	DIODE	1SS254
D601, 602	DIODE	1SS254

COILS/TRANSFORMERS

L451, 452	COIL	RTF1099
L521, 522	COIL	RTF1102
L523, 524	COIL	RTF1020
F493, 494	FILTER	RTF1059

CAPACITORS

C209, 210	ELECTR. CAPACITOR	CEAS010M50
C211-214	AUDIO FILM CAPACITOR	CFTXA222J50
C215, 216	ELECTR. CAPACITOR	CEASR22M50
C217, 218	ELECTR. CAPACITOR	CEASR33M50
C223, 224	ELECTR. CAPACITOR	CEASR33M50
C411, 412	CERAMIC CAPACITOR	CKCYB331K50
C413, 414	CERAMIC CAPACITOR	CKCYB471K50
C415, 416	CERAMIC CAPACITOR	CKCYB821K50
C419, 420	ELECTR. CAPACITOR	CEANL100M16
C421, 422	CERAMIC CAPACITOR	CCCSL100D50
C423	CERAMIC CAPACITOR	CKCYF473Z50
C431, 432	AUDIO FILM CAPACITOR	CFTXA682J50
C433, 434	ELECTR. CAPACITOR	CEAS330M16
C435, 436	ELECTR. CAPACITOR	CEAS470M16
C439, 440	ELECTR. CAPACITOR	CEAS010M50
C441, 442	CERAMIC CAPACITOR	CKCYB391K50
C475, 476	ELECTR. CAPACITOR	CEAS101M16
C491, 492	ELECTR. CAPACITOR	CEAS010M50
C493, 494	ELECTR. CAPACITOR	CEAS100M50
C497, 498	ELECTR. CAPACITOR	CEAS010M50
C521-524	ELECTR. CAPACITOR	CEAS010M50
C525, 526	ELECTR. CAPACITOR	CEAS330M16
C527, 528	AUDIO FILM CAPACITOR	CFTXA683J50

Mark	No.	Description	Part No.
	C529, 530	AUDIO FILM CAPACITOR	CFTXA182J50
	C531, 532	ELECTR. CAPACITOR	CEAS2R2M50
	C533, 534	CERAMIC CAPACITOR	CKCYB681K50
	C535, 536	AUDIO FILM CAPACITOR	CFTXA183J50
	C537, 538	MYLAR FILM CAPACITOR	CQMA752J50
	C539, 540		CFTXA562J50
	C541-544	AUDIO FILM CAPACITOR	CFTXA473J50
	C545, 546	ELECTR. CAPACITOR	CEAS470M16
	C547, 548	AXIAL CAPACITOR	CKPUYB221K50
	C549	ELECTR. CAPACITOR	CEASR47M50
	C638	CERAMIC CAPACITOR	CCCSL101J50
	C639	ELECTR. CAPACITOR	CEAS100M50
	C640	CERAMIC CAPACITOR	CCCSL560J50
	C641	AUDIO FILM CAPACITOR	CFTXA223J50
	C644	AUDIO FILM CAPACITOR	CFTXA823J50
	C645	ELECTR. CAPACITOR	CEAS2R2M50
	C903, 904	ELECTR. CAPACITOR	CEAS100M50

RESISTORS

R201-209	CARBONFILM RESISTOR	RD1/6PM□□□J
R214	CARBONFILM RESISTOR	RD1/6PM□□□J
R411-419	CARBONFILM RESISTOR	RD1/6PM□□□J
R431-442	CARBONFILM RESISTOR	RD1/6PM□□□J
R445-459	CARBONFILM RESISTOR	RD1/6PM□□□J
R493-496	CARBONFILM RESISTOR	RD1/6PM□□□J
R499-502	CARBONFILM RESISTOR	RD1/6PM□□□J
R505, 506	CARBONFILM RESISTOR	RD1/6PM□□□J
R525, 526	CARBONFILM RESISTOR	RD1/6PM□□□J
R529, 530	CARBONFILM RESISTOR	RD1/6PM□□□J
R533-556	CARBONFILM RESISTOR	RD1/6PM□□□J
R559, 560	CARBONFILM RESISTOR	RD1/6PM□□□J
R570	CARBONFILM RESISTOR	RD1/6PM□□□J
R611-620	CARBONFILM RESISTOR	RD1/6PM□□□J
R913, 914	CARBONFILM RESISTOR	RD1/6PM□□□J
R940	CARBONFILM RESISTOR	RD1/6PM□□□J
VR451-454	VR	RCP1046

8. ADJUSTMENTS

8.1 MECHANICAL ADJUSTMENT

This adjustment should be performed in test mode.
- Entering the test mode. — Short circuit JP1 and JP2 inside the main unit and turn the power on.

1. Tape Speed Adjustment and Check

No.	Deck	Mode	Test tape	Adjusting points	Specifications/Ratings (playback frequency)	Remarks
1	I	Normal speed PLAY	STD-301 (3 kHz)	Playback for 1 minute and press the FF (REW) key. *1		
2		Double speed PLAY		check	6000 Hz ± 600 Hz (LINE OUT)	
3		Normal speed PLAY		Release the FF (REW) key after checking.		
4	II			Playback for 1 minute and press the FF (REW) key. *1		
5		Double speed PLAY		VR803	Within ± 10 Hz of step 2 (deck I) check value.	
6		Normal speed PLAY		Release the FF (REW) key after checking.		
7				VR802	3000 Hz ± 5 Hz (LINE OUT)	
8	I			VR801	Within ± 5 Hz of step 7 (deck II) adjustment value.	

*1: As long as the FF (REW) key is pressed during playback, the unit is double speed mode.

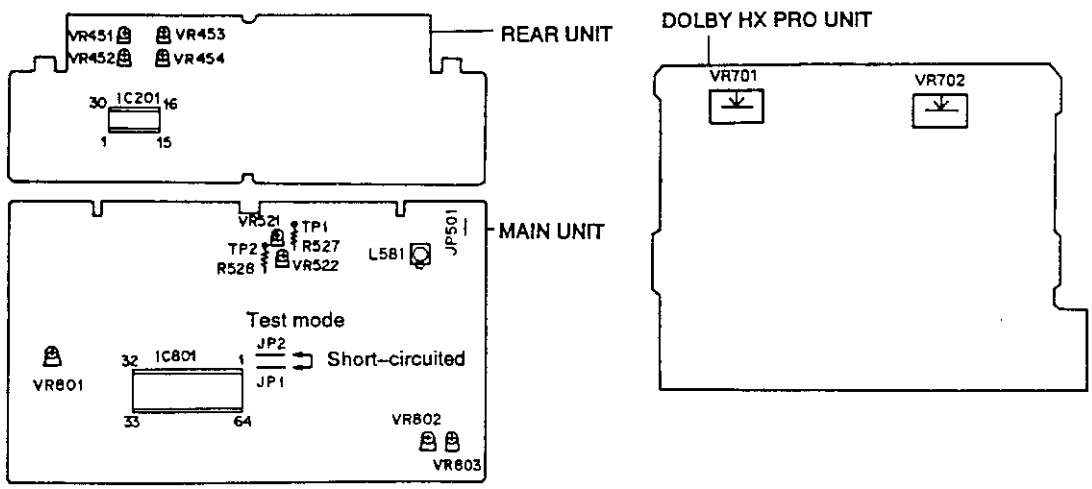


Fig. 8–1 Adjusting points

● Door Dump Check and Adjustment

1. Mount the door coil spring on the position Ⓐ as shown in Fig. 8–2, and then upright the front panel assembly as shown in Fig. 8–3.
2. Start moving the doors of DECK I and DECK II open at the same time. When either door is fully open, confirm that the difference between that door and the other door is equal to or less than 15 mm.
3. If the specifications of steps 1 and 2 above are not satisfied, adjust by changing the position where the door coil spring is mounted, as follows.
   - When DECK I door moves more slowly than DECK II door, change the position of the DECK I door coil spring from Ⓐ to Ⓑ.
   - When DECK I door moves faster than DECK II door, change the position of the DECK II door coil spring from Ⓐ to Ⓑ.

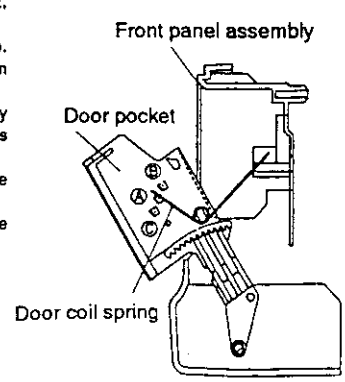


Fig. 8–2

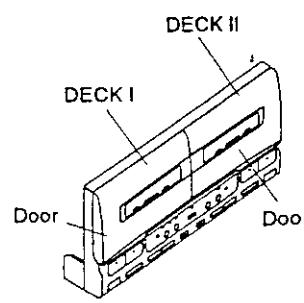


Fig. 8–3

8.2 PERPARATION FOR ADJUSTMENT OF HEAD ANGLE

1. Push the EJECT knob, and make the cassette door open. (See Fig. 8–4.)
2. Take the door panel off, as shown with an arrow in Fig. 8–4. Take the DECK I and DECK II doors off, one after the other.

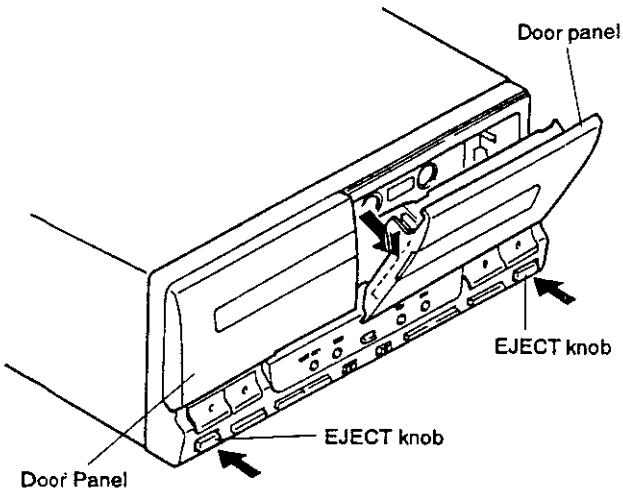


Fig. 8–4

3. Close the door pockets of DECK I and DECK II, and then insert a screwdriver in the slit of the center panel. Push the three hooks, and take off the center panel. (See Fig. 8–5.)

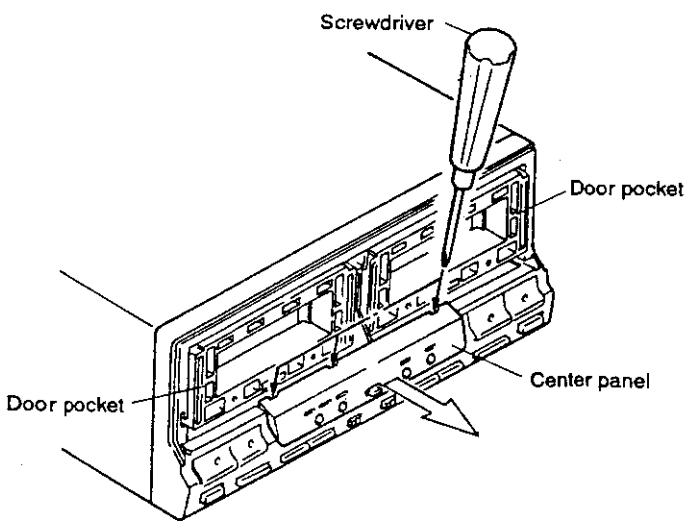


Fig. 8–5

4. Insert the screwdriver in each of the four holes on the front panel, and make azimuth adjustment. (See Fig. 8–6.)

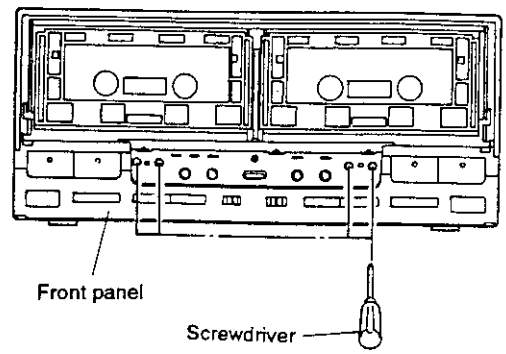


Fig. 8–6

8.3 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 dBv=1 Vrms.
5. Connect a 50 kΩ (or between 47k to 52 kΩ) load resistance to the OUTPUT terminals.
6. Unless otherwise specified, the switches listed below are left in the positions indicated.
   DOLBY NR : OFF

Test Tapes

STD–331E : Playback adjustments (See Fig. 8–7)
STD–631 : NORMAL blank tape
STD–620 : CrO_2 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.

NOTE: This unit has an automatic tape selection feature.

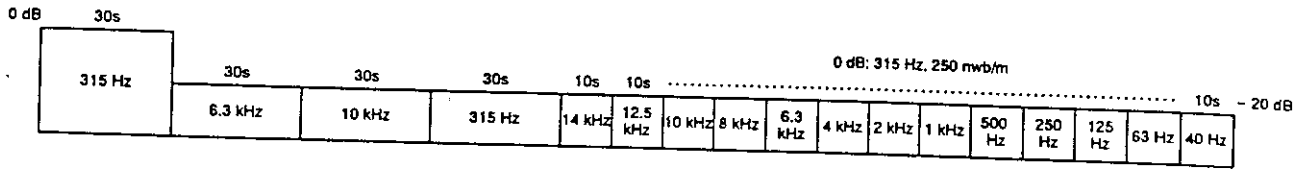


Fig. 8–7 Constants of the test tape STD–331E

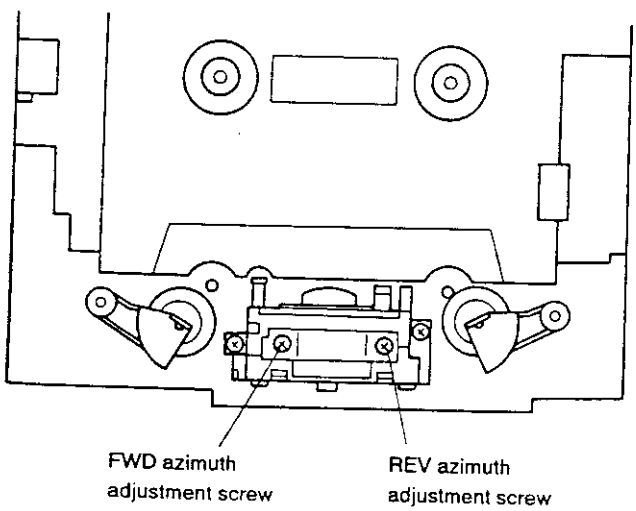


Fig. 8–8 Head azimuth adjustment

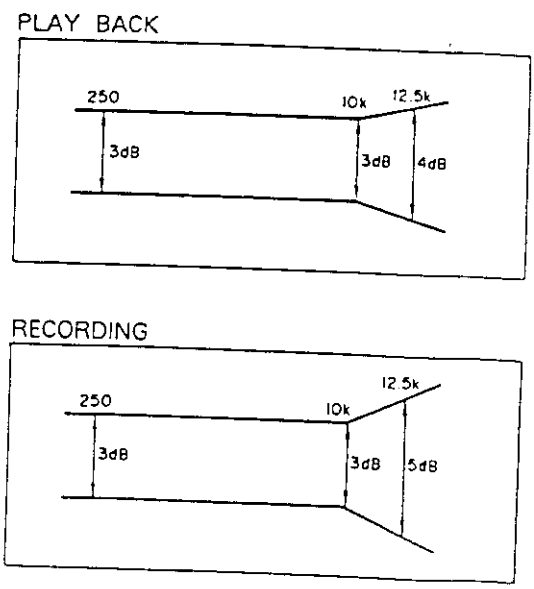


Fig. 8–9 Frequency response zone

PLAYBACK SECTION

1. Head Azimuth Adjustment

- Turn VR451, VR452 (Deck I) or VR453, VR454 (Deck II) to mechanical center positions.

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

2. Playback Level Adjustment

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

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 315 Hz/0 dB section of the STD–331E test tape.	Deck I	VR451 (Lch) VR452 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	–6.7 dBv	
			Deck II	VR453 (Lch) VR454 (Rch)			

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.	Deck II	L581	JP501	108 kHz ± 0.5 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	Load the STD–631 (NORMAL) test tape.					
2.	REC/ PLAY	Record the 315 Hz and 6.3 kHz signals at –20 dB input level and playback.	Deck II	VR701 (Lch) VR702 (Rch)	LINE OUT	Repeatedly record, playback and adjust so that the plyaback level of 6.3 kHz signal becomes +0.5 dB ± 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.	REC/ PAUSE	Apply a 315 Hz/–4 dB signal to the line input terminals, load the STD–631 test tape.	———		———	———	
2.	REC/ PLAY	Record the above signal onto the STD–631 test tape, and playback.	Deck II	VR521 (Lch) VR522 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	Repeatedly record, playback and adjust so that the playback signal level becomes –11.2 dBv.	
3.	REC/ PLAY	Record the above signal onto the STD–620 test tape, and playback.	Check		TP. 1 (Lch) TP. 2 (Rch)	–11.2 dBv ± 1.5 dB	
4.	REC/ PLAY	Record the above signal onto the STD–610 test tape, and playback.	Check		TP. 1 (Lch) TP. 2 (Rch)	–11.2 dBv ± 1.5 dB	

9. IC INFORMATION

● PD3194A

Pin Function

Pin No.	Name	Function
1	FADE LED	Pins 1 to 5 perform LED display. LED lights up at "H".
2	2FWD LED	
3	2REV LED	
4	2REC LED	
5	DISCO LED	
6	KO_0	KO_0 to KO_3 perform key scan output.
7	KO_1	
8	KO_2	
9	KO_3	
10	BIAS	Turns the BIAS oscillator ON. BIAS ON at "H".
11	FADER	Operates when making DISCO ASES cross fade. BIAS OFF at "H" and BIAS ON at "L".
12	Rch MUTE	Mutes the Rch input to the peak detector circuit during peak search. MUTE ON at "H".
13	PDET	Switches the frequency characteristics and gain of the MS circuit during MS and peak search. "L" during peak search.
14	1 – MOTOR	Turns the motor ON at "H".
15	1 – SOL	Turns the solenoid ON at "H".
16	2 – MOTOR	Turns the motor ON at "H".
17	2 – SOL	Turns the solenoid ON at "H".
18	1 – SENS	1–, 2–SENS input the sensing pulse from the reel table, and are used for determination of tape end and tape counters (ASES).
19	2 – SENS	
20	ENA/$\overline{REQ}$	Functions as an output pin normally, and becomes the input mode during communication. Determines the permission or prohibition of the communication. Normally level "H".
21	SDin	System bus data input pin.
22	$\overline{XSCK}$	System bus clock input. Normally level "H".
23	SCK	SCK reverse input.
24	ATT0	ATT0 to ATT6 control the attenuation amount of the electronic VR.
25	ATT1	
26	ATT2	
27	ATT3	
28	ATT4	
29	ATT5	
30	ATT6	
31	ALCO	Stops the operations of the ALC circuit during ASES and APSC REC. ALC CUT at "H".
32	VCC	Power supply pin +5V.

Pin No.	Name	Function
33	LINE MUTE	Becomes LINE MUTE OFF during PLAY. LINE MUTE ON at "H".
34	REC MUTE	Becomes REC MUTE OFF during REC. However, REC MUTE ON during space mute. MUTE ON at "H".
35	REC METAL	Switches the EQ and BIAS levels of the REC AMP to metal when the metal tape attaches to 2 MECHA. "H" active.
36	REC Cr	Switches the EQ and BIAS levels of the REC AMP to chrome when the chrome tape attaches to 2 MECHA. "H" active.
37	$\overline{\text{PB} \times 2}$	Outputs "L" when the EQ of the tape attached to the MECHA which is playing back is 70 μs during ×2 copy, and switches the frequency characteristics of the PB AMP. Normally "H". ×2 and Cr
38	$\overline{\text{PB Cr}}$	Outputs "L" when the EQ of the tape attached to the MECHA which is playing back is 70 μs or performing ×2 copy, and switches the frequency characteristics of the PB AMP. Normally "L". ×2 and Cr
39	$\overline{2-\text{PB}}$	Switches the 2 MECHA head to REC or PB. Normally "L" level. Becomes "L" when PLAY and MS, and the PB head turns on.
40	$\overline{\text{ENCODE}}$	Switches the ENCODE and DECODE of the Dolby NR IC. "L" active.
41	$\overline{2-\times 2}$	Sets the tape speed to double speed when 1–×2. 2–×2 perform ×2 copy. Double speed at "L".
42	$\overline{1-\times 2}$	
43	NC	Not used. Connected to GND.
44	NC	
45	KI0	K10 to K13 are key scan input pins. Normally at "L" level. Becomes "H" with KEY or SW ON.
46	KI1	
47	KI2	
48	KI3	
49	RESET	CPU hard RESET pin. Resets at "H". Normally "L".
50	$\overline{\text{TEST}}$	Not used. Connected to power supply potential.
51	OSC1	System clock. Connects a 4.19 MHz ceramic lock between OSC1 and OSC2.
52	OSC2	
53	GND	CPU GND pin. Connected to GND.
54	SONG	Used for detecting interval between songs during MS. Song signal is present at "H". Used for level detection during APSC, and is above the reference level at "H".
55	$\overline{\text{PRESET}}$	HOLDS/RESETS the SONG output. HOLD mode at "H". Peak reset at "L".
56	KI4	KI4 and KI5 are key scan input pins. Normally "L" level. Becomes "H" with KEY or SW ON.
57	KI5	
58	KO4	K04 and K05 perform key scan output.
59	KO5	
60	SDout	System bus data output pin. Outputs "0" to bus at "H", and "1" to bus at "L".
61	APSC LED	Pins 61 to 64 perform LED display. LED lights up at "H".
62	1FWD LED	
63	1REV LED	
64	FINE LED	

10. FOR AB AND AEM TYPES

CONTRAST OF MISCELLANEOUS PARTS

NOTES:

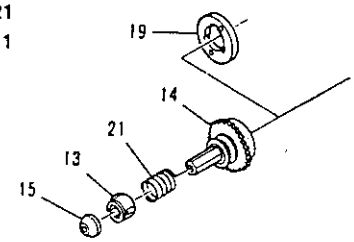
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be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

The CT-P920WR/AB and AEM types are the same as the CT-P920WR/AUC type with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		AUC type	AB type	AEM type	
⊙	Mechanism unit I	EXK2240	EXK2221	EXK2221	
⊙	Mechanism unit II	EXK2230	EXK2211	EXK2211	
	Packing case	RHF1026	RHG1340	RHG1340	
	Caution card	.....	RRN1001	.....	

The EXK2221 and EXK2211 are the same as the EXK2240 and EXK2230 with the exception of the following parts.

Location No.	Symbol & Description	EXK2240, EXK2230	EXK2221, EXK2211	Remarks
13	Collar	.....	ENV1164	EXK2221 EXK2211
14	Reel	ENV1335	ENV1310	
15	Bush	ENV1178	ENV1178	
19	Magnet	ENV1336	ENV1132	
21	Spring	EBH1424	EBH1201	



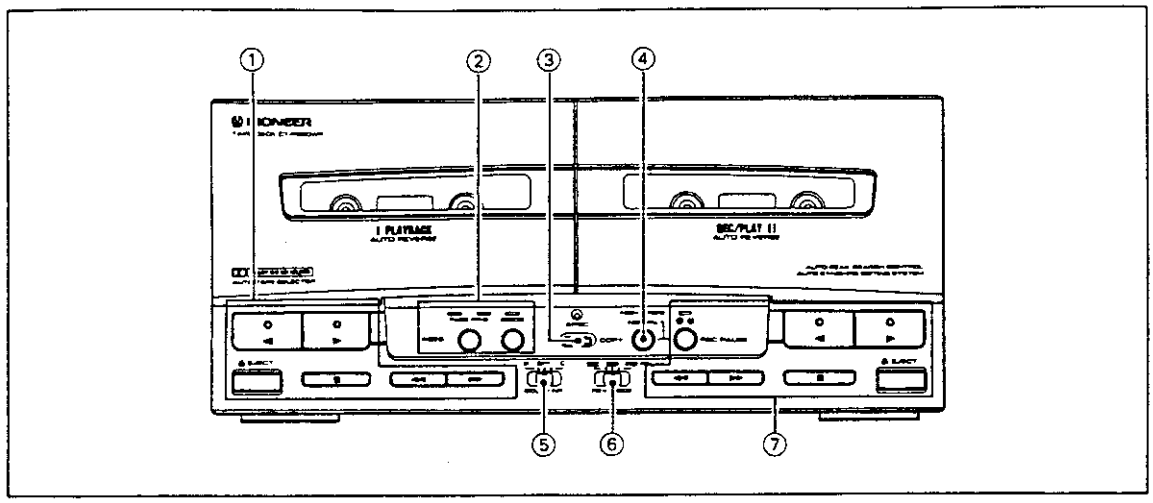
11. SPECIFICATIONS

Tracks ..... 4-track, 2-channel stereo
Playback head ..... Hard permaloy (× 1)
Recording/Playback head ..... Hard permaloy (× 1)
Erasing head ..... Ferrite (× 1)
Motor ..... DC servo 2-speed motor (× 2)
Wow and flutter ..... 0.09% (WRMS)
Rewind/Fast forward time ..... about 120 seconds (with C-60 tape)
Frequency response:
TYPE IV (metal) tape ... 35 Hz—16,000 Hz ±6 dB (recorded at −20 dB).
TYPE II (high/CrO_2) tape ..... 35 Hz—15,000 Hz ±6 dB (recorded at −20 dB).
TYPE I (normal) tape ... 35 Hz—14,000 Hz ±6 dB (recorded at −20 dB).
S/N ratio ..... 56 dB
- With Dolby NR type B on ..... 10 dB improvement at 5 kHz.
- With Dolby NR type C on ..... 19 dB improvement at 5 kHz.

Other
Dimensions ..... 260 (W) × 117 (H) × 242.5 (D) mm
10-1/4 (W) × 4-5/8 (H) × 9-3/8 (D) in
Weight ..... 2.7 kg (6 lb 3 oz.)

NOTE:
The specifications and design of this product are subject to change without notice, due to improvements.

12. PANEL FACILITIES



① Deck I operating buttons

◀, ▶: Play
⏏ EJECT: Eject cassette (cassette door opens)
■ : Stop
◀◀, ▶▶: Rewind, fast forward

② ASES button (ASES FADE/FINE, DISCO)

Use these buttons for automatic editing of CD tracks when recording on cassette tapes.

③ Auto peak search control button (APSC)

When recording is performed with this button in the ON position, the recording level will be set automatically to produce the optimum dynamic range for the tape.
This button does not function during use of the tape copy function.

④ COPY button

Use to perform copying of one cassette tape to another. Two speeds are available, NORMAL and HIGH-SPEED (twice normal speed).

⑤ DOLBY* NR selector switch (DOLBY NR B/OFF/C)

Use to select Dolby noise reduction.

*

- *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.*

⑥ Reverse mode switch (REV MODE ⇄ / ⇉ / ↻ RELAY)

Use to select the tape-travel mode

⇄ : Play back one side only.
⇉ : One full play (forward and reverse sides) of the cassette tape in either deck I or deck II.
↻ RELAY: Continuous auto-reverse play of the tapes in decks I and II, beginning from the forward (▶) direction.

⑦ Deck II operating buttons

◀, ▶: Play
⏏ EJECT: Eject cassette (cassette door opens)
■ : Stop
◀◀, ▶▶: Rewind, fast forward
● ❚❚ REC PAUSE: Temporarily pause recording.