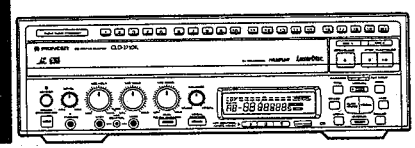
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2545

CD CDV LD PLAYER

CLD-2710K

CLD-2710K HAS THE FOLLOWING:

Type	Power Requirement	Remarks
RD	AC110 – 127V, 220 – 240V (switchable)	

- **This manual is applicable to CLD-2710K/RD.**

CONTENTS

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. 300 Allstate Parkway Markham, Ontario L3R 0P2 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

SO JUNE 1992 Printed in Japan

1. DISASSEMBLY

1. Disc Tray

①Turn the power switch on and press the OPEN button then pull the tray out from the player.
②Remove two tray stopper screws Ⓐ .
③Pull out the tray toward the front.

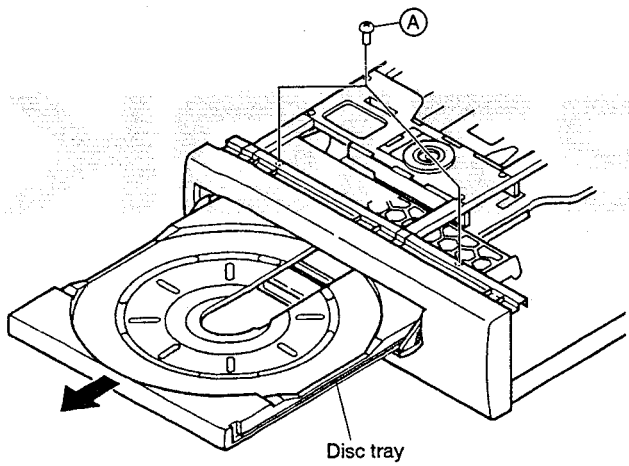


Fig. 1

Note 1: How to open the tray by hand

①Remove two screws Ⓐ for tray stopper. (Fig. 1)
②Remove the front panel. (by loosening three screws at the top side and a fixing screw of the earth lead.)
③Remove two fixing screws from the slide cam on the left side. (Fig.2)
④Lift up the front side of the disc tray to enable the gear pulley to be turned by hand. (Fig.3)
⑤Turn the gear pulley (Fig.3) counterclockwise by hand.
⑥After the disc tray is lifted up and moved toward you, tighten two screws Ⓑ which were removed in step 3.
⑦Pull out the disc tray toward you by hand.

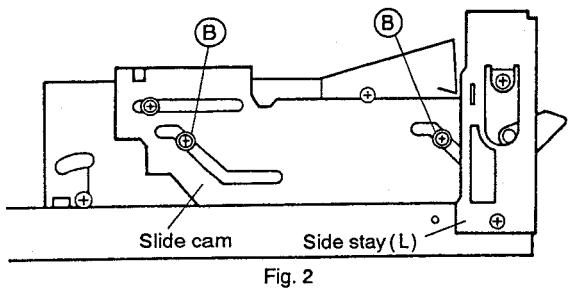


Fig. 2

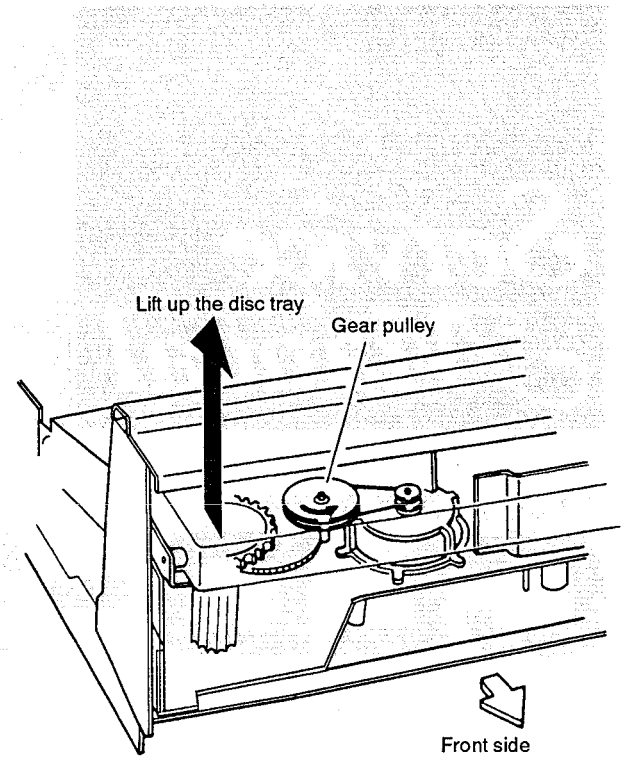


Fig. 3

2. Clamper Assembly

①Remove four screws Ⓐ to remove the clamper assembly.

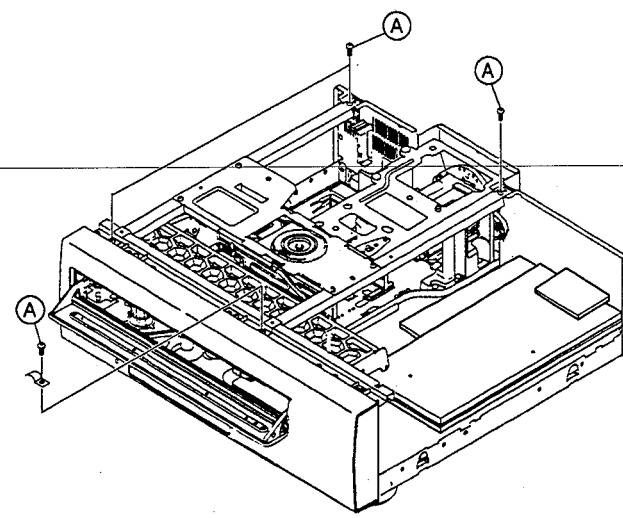


Fig. 4

3. Carriage Assembly

①Slide the carriage assembly to the shaft of the turn plate by hand.

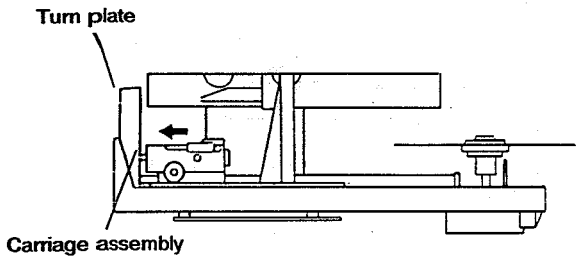


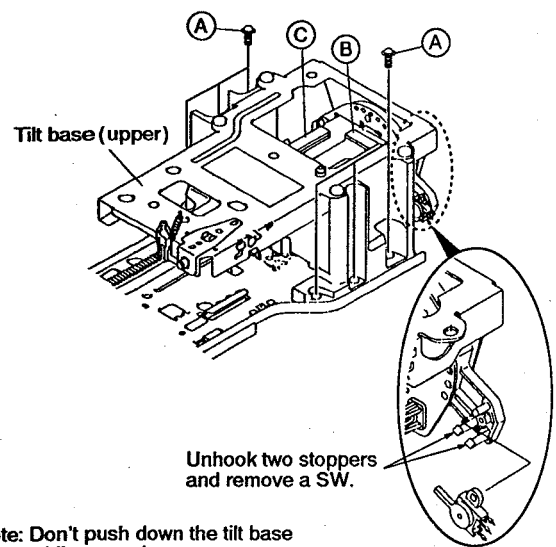
Fig. 5

②Disconnect two connectors Ⓑ and Ⓒ from the CNNB assembly to remove the flexible cable (Fig. 6).

③Remove six screws Ⓐ from the post (L) and (R) to remove the tilt base.

④Pull out the carriage assembly by setting the tilt base (upper) toward the upper (Fig. 7).

⑤Unhook two stoppers and remove a SW.



Note: Don't push down the tilt base while removing screws.

Fig.6

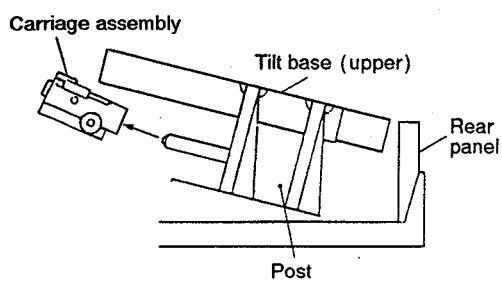


Fig. 7

● How to replace the flexible cable

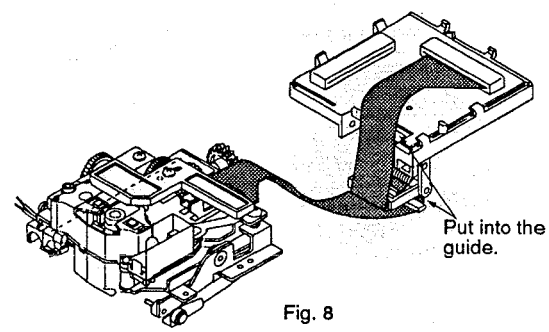


Fig. 8

4. KAUB Assembly

①Open the tray.

②Remove one screw Ⓐ, two screws Ⓑ and three screws Ⓒ.

③Separate the output terminal of the KAUB Assembly from the rear panel. (Arrow ①)

④Slide the KAUB Assembly by lifting it up. (Arrow ②)

⑤Raise the KAUB Assembly so that it does not touch the tray guide assembly. (Arrow ③)

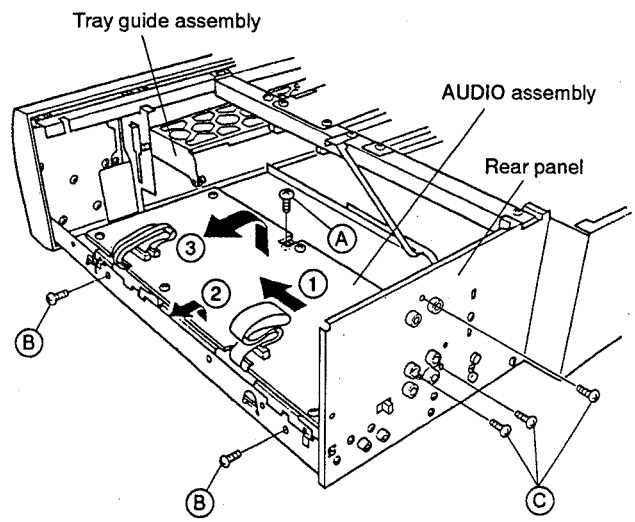


Fig. 9

5. How to install the cam gear

①Grease the cam gear. (Fig.10)

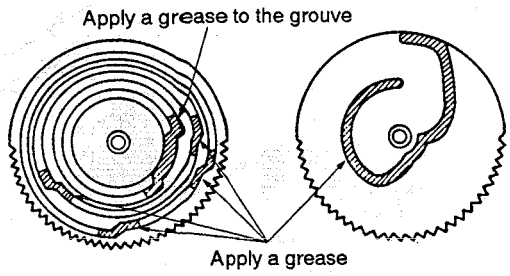


Fig. 10

②Move switch levers Ⓐ and Ⓑ (Fig.11) in the direction of arrow① (SW is ON) , switch leverⒸ in the direction of arrow ② and lever Ⓓ in the direction of arrow ③ .

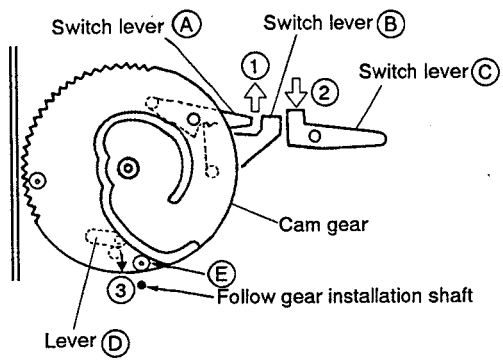


Fig. 11

③Install the cam gear in the position where projection Ⓔ of the cam gear comes to the front of the follow gear installation shaft..

6. How to install the spring slanting cam

①Grease the spring slanting cam. (Fig. 12)

②Install the cam gear when the cam gear comes to the position as shown in Fig. 11.

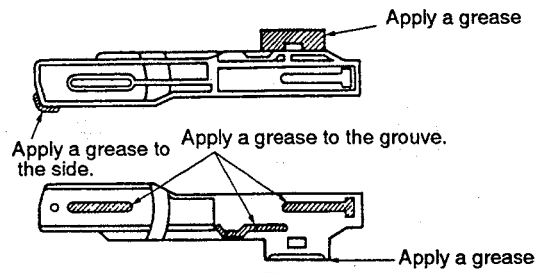


Fig. 12

③Install a nylon washer and an E ring, and hang the cam spring on the hook. (Fig.13)

Note: The cam gear and spring slanting cam as shown in Fig.13 are positioned when installing the slide cam.

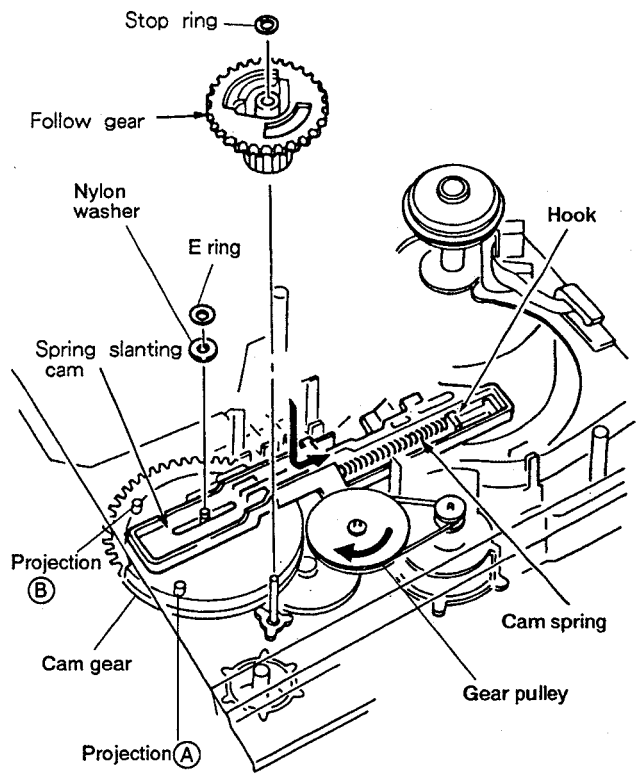


Fig. 13

7. How to install the follow gear

①Grease the follow gear. (Fig.14)

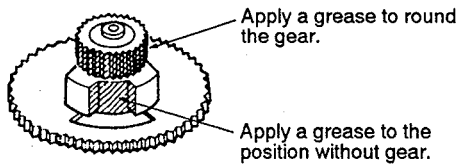


Fig. 14

②Install the follow gear where the portion of chipped tooth of the follow gear come to the position as shown in Fig. 15.

③Install the stop ring. (Fig.13)

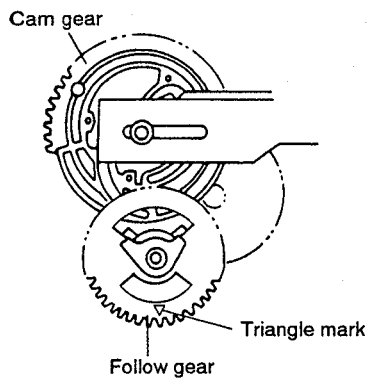


Fig. 15

8. How to install the roller plate assembly

①Mount the roller plate assembly in the position where the tooth with a triangle mark of the follow gear meshes with the gap of the gear of the roller plate assembly. (Fig.16)

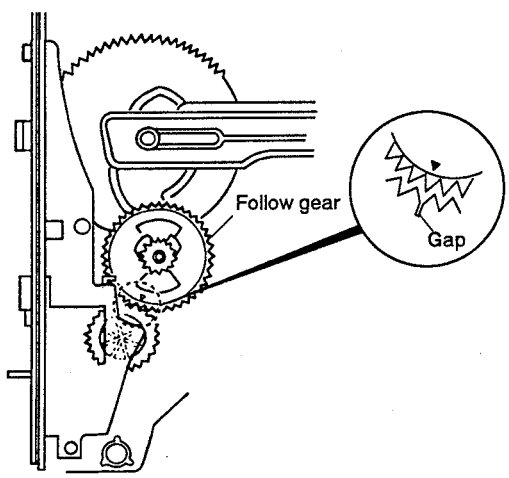


Fig. 16

9. Caution for installing the tray guide assembly

①Install the tray guide assembly in the position where projection Ⓐ of the tray guide assembly fits into the long hole Ⓑ of the chassis assembly and the long hole Ⓒ of the roller plate assembly. (Fig.17)

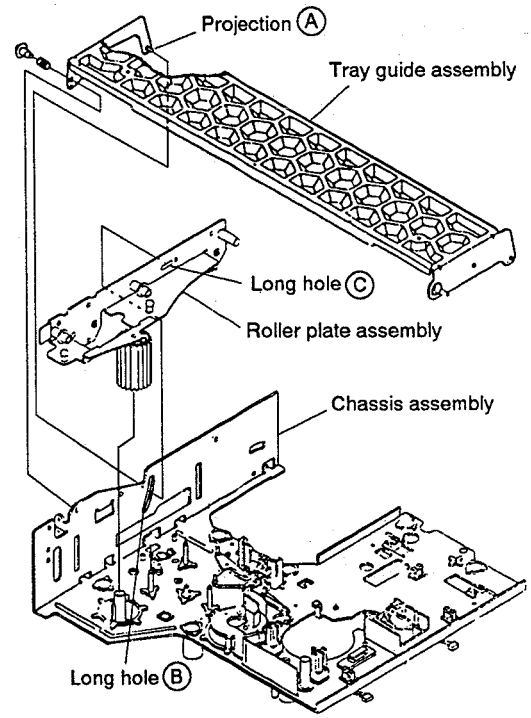


Fig. 17

10. How to install the slide cam

①Set the position of projection Ⓐ and Ⓑ of the cam gear by turning the gear pulley clockwise by hand as shown in Fig.13.

②Tighten four screws Ⓒ to install the slide cam. (Fig. 18)

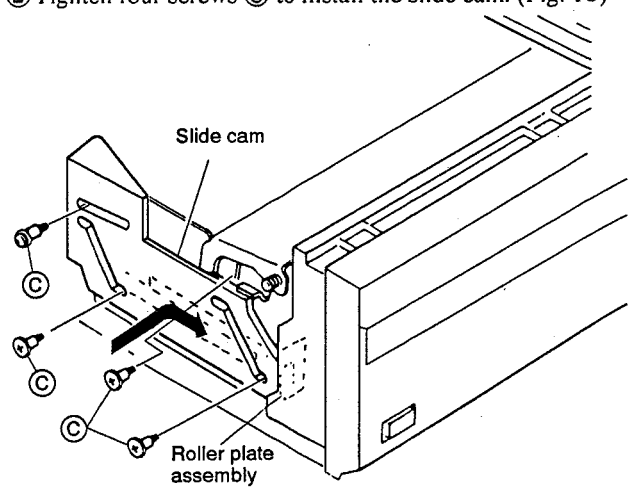


Fig. 18

11. How to install the disc tray

①Adjust the gear positions in the loading mechanism for the disc tray open status, as ⓐ and ⓑ mentioned below.

ⓐ : The position where the cam gear turns counter-clockwise and stops when the OPEN/CLOSE button is pressed.

ⓑ : The position where the cam gear stops when the pulley is continuously turned by hand.

②The top of one of the gear teeth of the roller plate assembly has been chipped off. Finely adjust the position of this chipped tooth by turning the gear counterclockwise so that the tooth comes halfway on the roller plate line.(Fig.19)

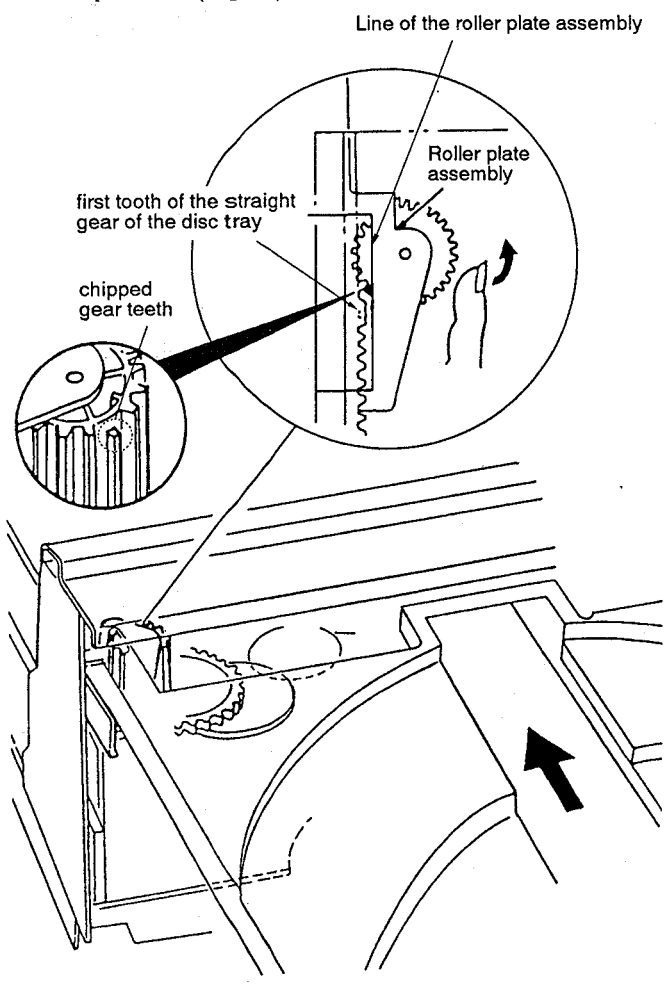


Fig. 19

③ Insert so that the first tooth of the straight gear on the rear of the disc tray meshes with the chipped gear teeth of the roller plate assembly.

④Tighten two screws Ⓐ for disc tray stopper. (Fig.1)

12. Power Supply Board Assembly

①Insert a screwdriver into the chassis hole near a strain relief through the back of the base chassis and remove the strain releif stop ring.

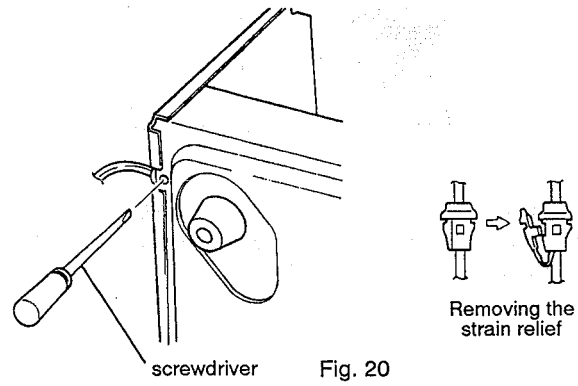


Fig. 20

②Remove four screws Ⓐ and raise the power supply board assembly. Then the power supply board assembly can be diagnosed for component replacement through the foil side.

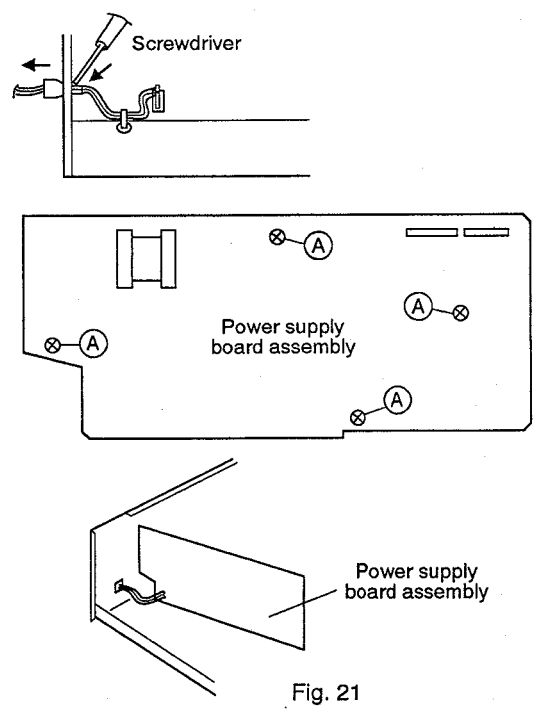


Fig. 21

2. EXPLODED VIEWS AND PARTS LIST

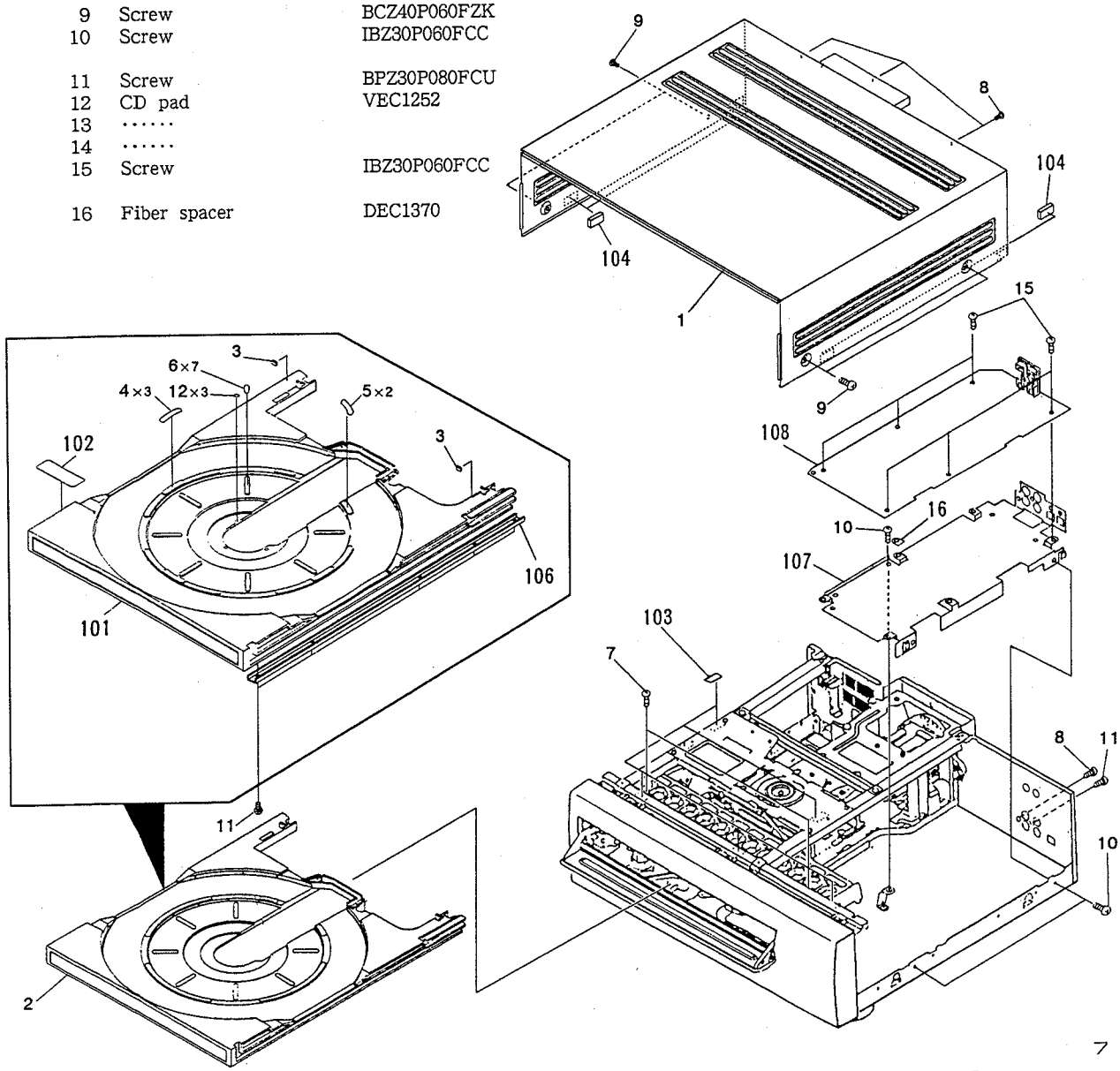
NOTES:

- Parts marked by "NSP" 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 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.

(1) EXTERIOR SECTION

Parts List

Mark	No.	Description	Part No.
	1	Bonnet – S	VXX1535
	2	Tray assembly – S	VXX1707
	3	Tray rubber	VEB1089
	4	Disc pad (L)	VEC1191
	5	Disc pad (B)	VEC1379
	6	Disc pad (C)	VEC1380
	7	Screw	VCZ30P120FMC
	8	Screw	BBT30P060FCC
	9	Screw	BCZ40P060FZK
	10	Screw	IBZ30P060FCC
	11	Screw	BPZ30P080FCU
	12	CD pad	VEC1252
	13	·····	
	14	·····	
	15	Screw	IBZ30P060FCC
	16	Fiber spacer	DEC1370
NSP	101	Tray	VNK1672
NSP	102	Carry label	VRW1289
NSP	103	Cushion	VEC1092
NSP	104	Cushion	VEC1004
	105	·····	
NSP	106	Reinforced plate	VNE1679
NSP	107	PCB holder (A)	VNE1771
NSP	108	KAUB assembly	VWV1257

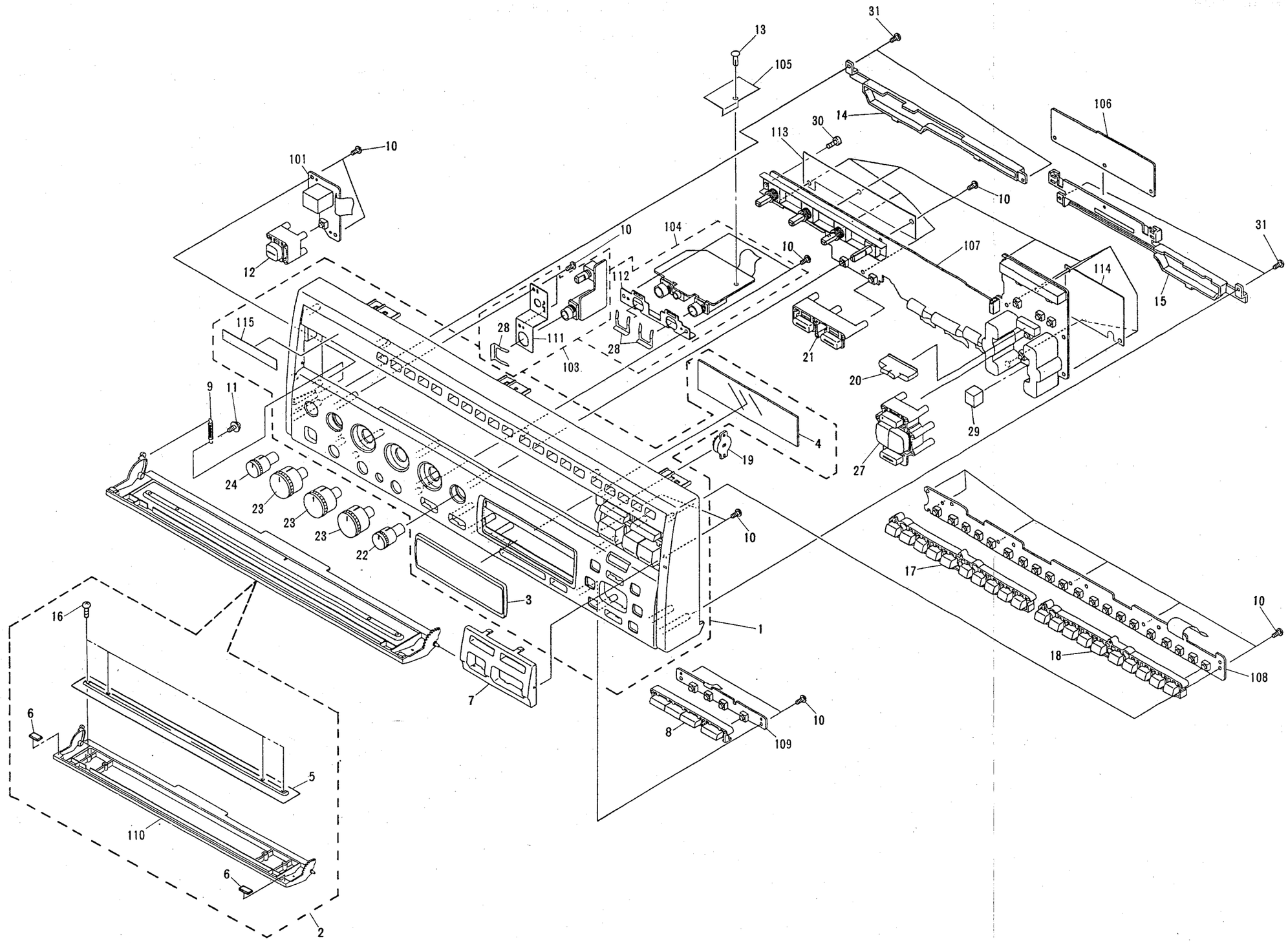


(2) FRONT PANEL SECTION

Parts List

Mark	No.	Description	Part No.
	1	Front panel assembly – S	VXX1778
	2	Door assembly – S	VXX1777
	3	FL panel	VNK1980
	4	FL filter	VNK1855
	5	Door plate	VNE1482
	6	Door damp rubber	VEB1141
	7	Sub panel (W)	VNK1863
	8	Key control button	VNK2114
	9	Door spring	VBH1193
	10	Screw	BPZ26P060FCU
	11	Screw	IPZ26P060FMC
	12	PW button	VNK2113
	13	Plastic rivet	VEC – 143
	14	Back panel (L)	VNK1864
	15	Back panel (R)	VNK1865
	16	Screw	BPZ20P040FZK
	17	Ten key (A)	VNK2110
	18	Ten key (B)	VNK2111
	19	Damper assembly	VXA1053
	20	Change knob	VNK1862
	21	Vocal button assembly	VXA1694
	22	VOL knob (S)	VNK1857
	23	VOL knob (L)	VNK1858
	24	HP knob	VNK1920
	25	.....	
	26	.....	
	27	Select button assembly	VXA1880
	28	Snap plate	VNE1102
	29	LED spacer	VEB1173
	30	Screw	BPZ26P060FCU
	31	Screw	BPZ26P080FMC
NSP	101	IRKB assembly	VWG1349
	102	.....	
NSP	103	HEPB assembly	VWV1267
NSP	104	MIJB assembly	VWV1266
NSP	105	Insulation sheet	VEC1465
NSP	106	CNCB assembly	VWG1352
NSP	107	FLKB assembly	VWG1347
NSP	108	DIKB assembly	VWG1348
NSP	109	KCKB assembly	VWG1350
NSP	110	Front door assembly	VXA1879
NSP	111	Jack holder (S)	VNE1643
NSP	112	Jack holder (L)	VNE1644
NSP	113	Shield sheet	VEF1039
NSP	114	Insulation sheet B	VEC1499
NSP	115	Name plate	VAM1023

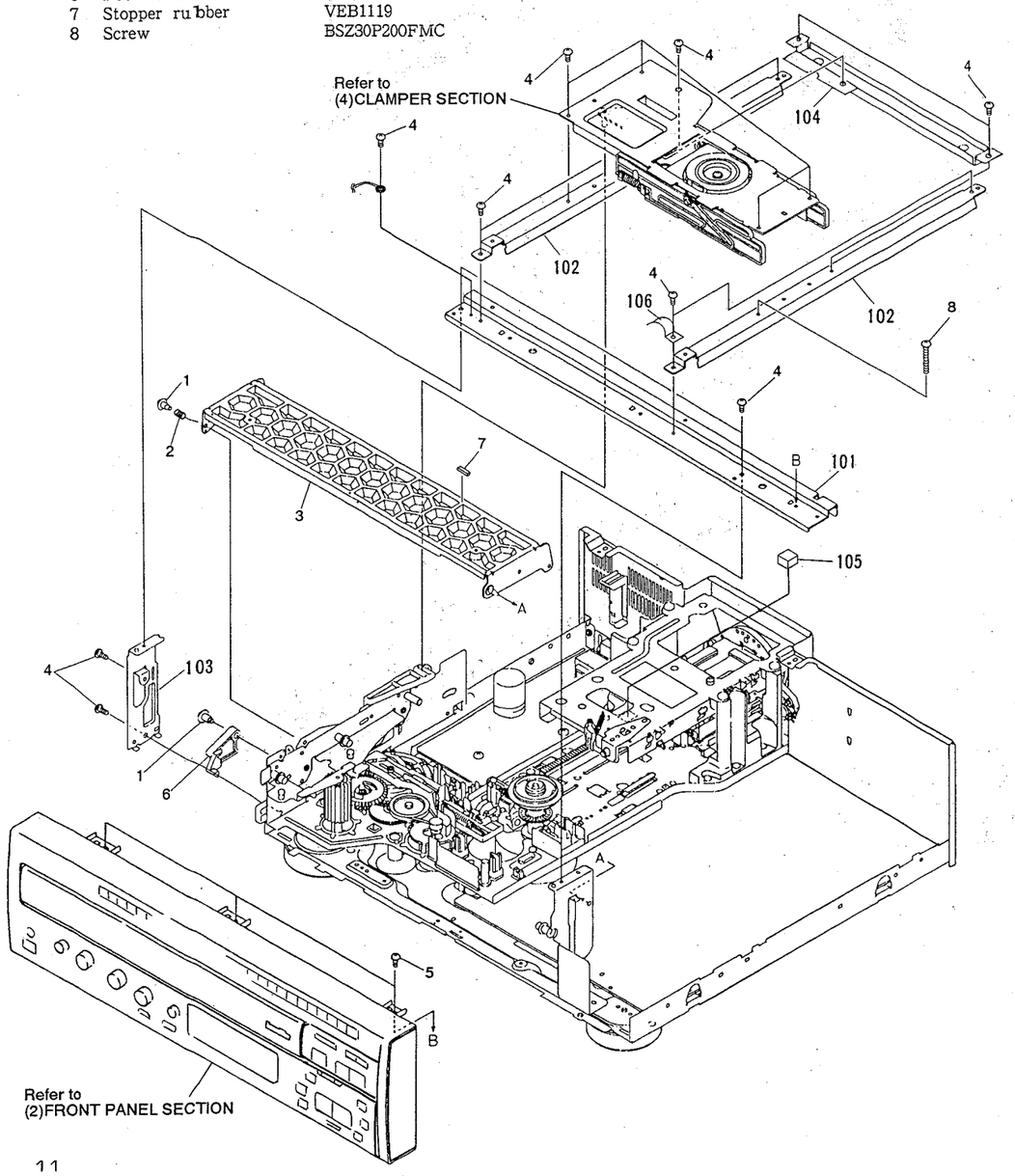
Front Panel Section



(3) TOP VIEW SECTION

Parts List

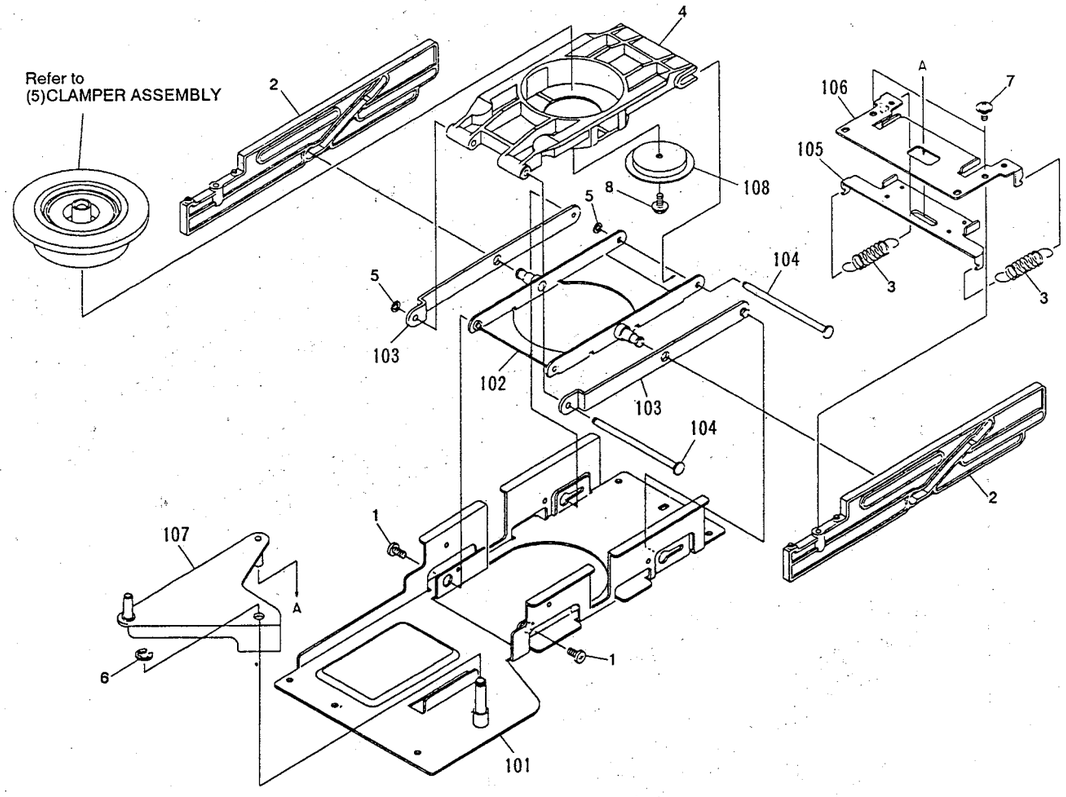
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Screw (B)	VBA1008	NSP	101	Front angle	VNE1543
	2	Arm spring	VBH1093	NSP	102	Center angle	VNE1761
	3	Tray guide assembly	VXA1576	NSP	103	Side stay (L)	VNE1545
	4	Screw	BBZ30P060FCC	NSP	104	Reinforced angle	VNE1673
	5	Screw	IBZ30P060FCC	NSP	105	Damp cushion	VEC1602
	6	Door lever (W)	VNL1398	NSP	106	Earth plate	VNE1518
	7	Stopper rubber	VEB1119				
	8	Screw	BSZ30P200FMC				



(4) CLAMPER SECTION

Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Pivot screw	VBA1022	NSP	101	Center plate assembly	VXA1506
	2	Clamp cam	VNL1527	NSP	102	Lever (B) assembly	VXA1504
	3	Limiter spring	VBH1168	NSP	103	Lever (A) assembly	VXA1503
	4	Clamper holder	VNL1305	NSP	104	Clamp shaft	VLL1299
	5	Washer	WT26D060D050	NSP	105	Limiter plate	VNE1551
	6	E ring	YE40FUC	NSP	106	Slide plate	VNE1556
	7	Screw	IPZ30P060FMC	NSP	107	Lever (C) assembly	VXA1505
	8	Screw	PMB30P080FMC	NSP	108	Clamper head	VNE1546

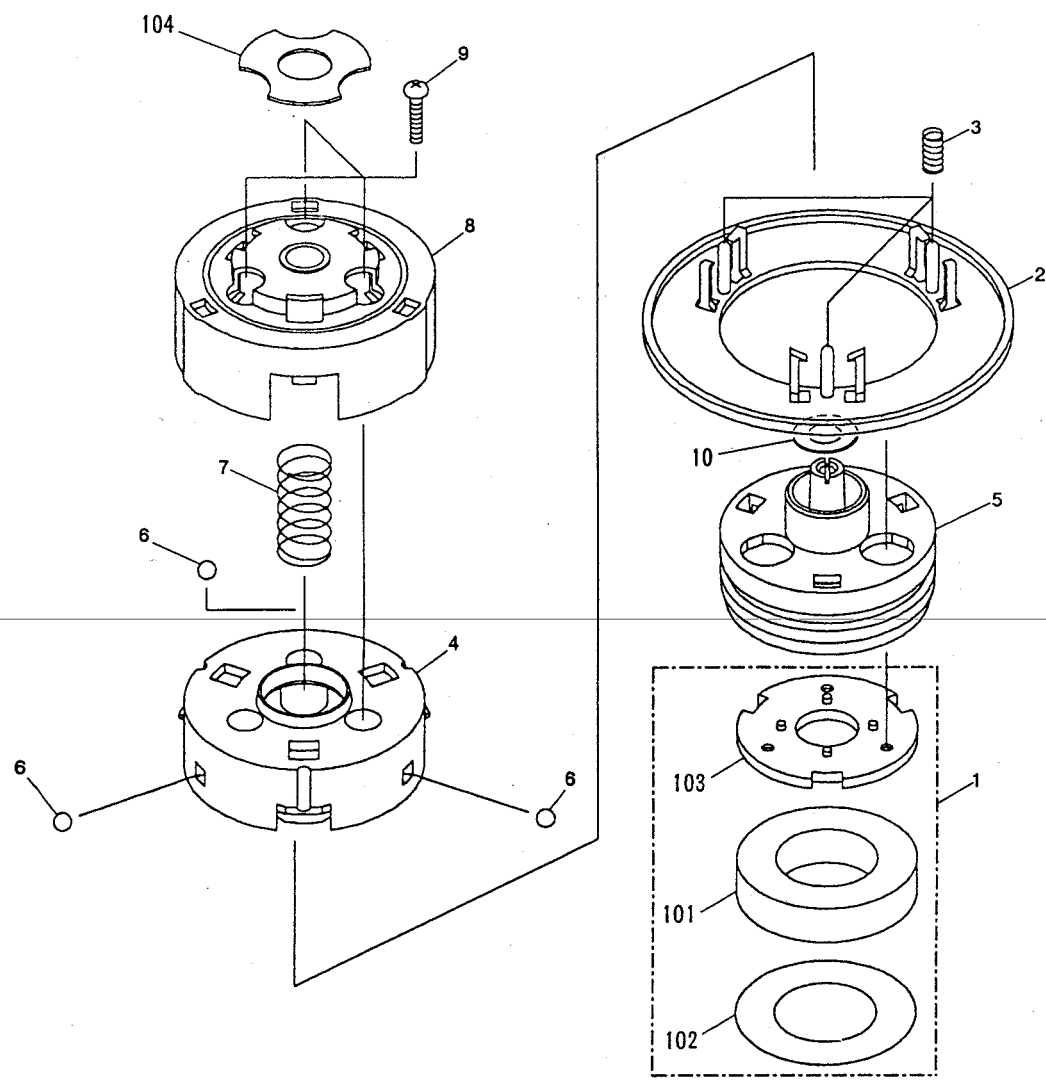


(5) CLAMPER ASSEMBLY

Parts List

Mark	No.	Description	Part No.
	1	Magnet assembly – S	VXX1475
	2	Disc clamper	VNL1362
	3	Clamper spring	VBH1153
	4	Clamper base	VNL1364
	5	Centering hub (B)	VNL1435
	6	Steel ball	VNX1006
	7	Centering spring (B)	VBH1130
	8	Clamper cover	VNL1363
	9	Screw	AMZ20P040FMC
	10	Washer	WA60F115M160

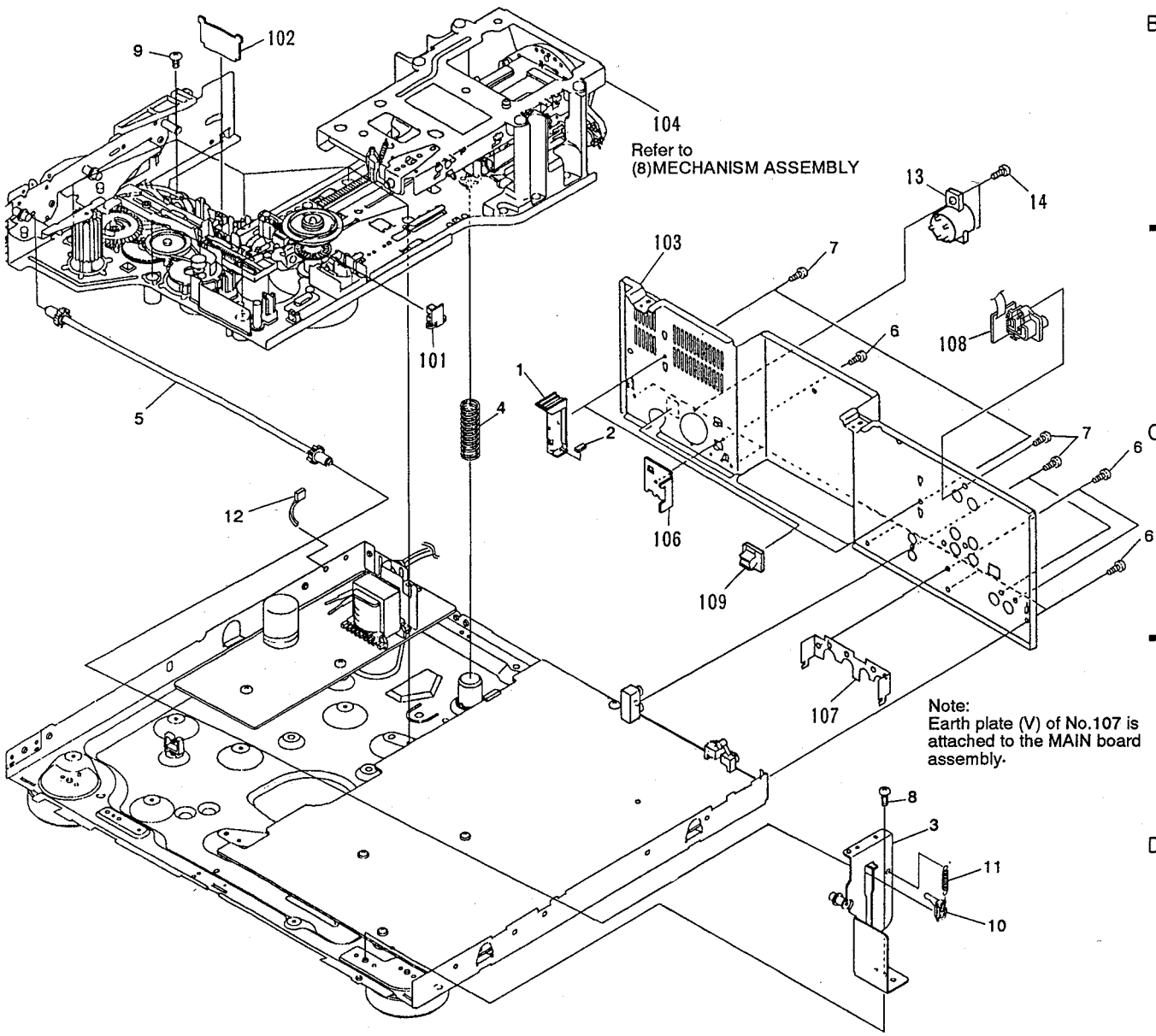
Mark	No.	Description	Part No.
NSP	101	Magnet	VMG1010
NSP	102	Gap sheet	VEC1561
NSP	103	Clamper plate	VNE1549
NSP	104	Absorber rubber (A)	VEB1146



6) BASE SECTION [1]

Parts List

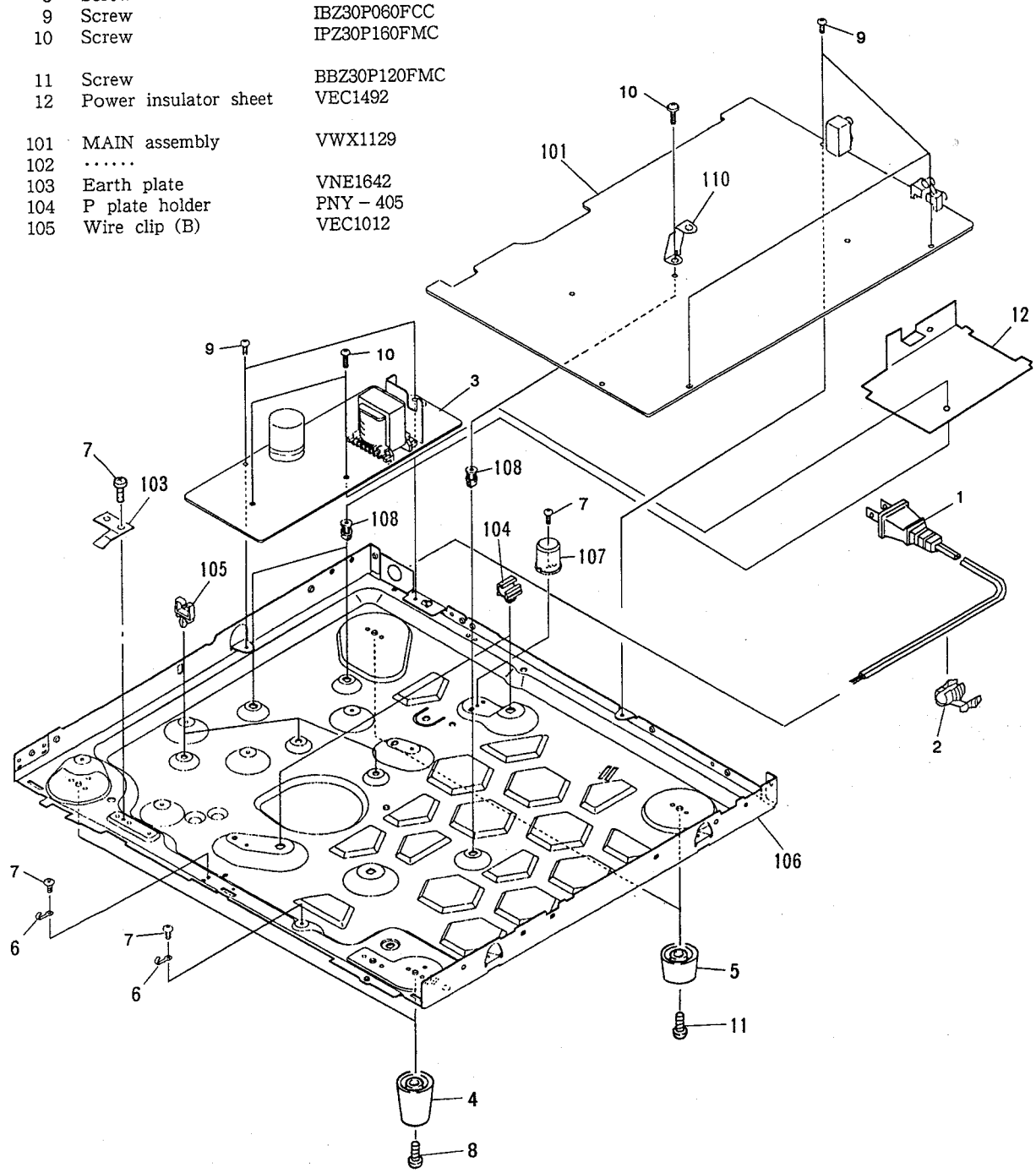
Mark	No.	Description	Part No.
	1	Tray stopper	VNL1202
	2	Door damp rubber	VEB1033
	3	Side stay (R) assembly	VXA1690
	4	Base spring	VBH1145
	5	Synchro gear assembly	VXA1627
	6	Screw	BBT30P060FCC
	7	Screw	BPZ30P080FCU
	8	Screw	BBZ30P060FCC
	9	Screw (B)	VBA1023
	10	Synchro holder	VNL1334
	11	Synchro spring	VBH1139
	12	Binder	VEC – 067
	13	Voltage selector	VSB1004
	14	Screw	BBZ30P080FCC
NSP	101	FG board assembly	VWG1286
NSP	102	SW board assembly	VWG1287
NSP	103	Rear panel	VNA1279
NSP	104	Mechanism assembly	VWT1074
	105	.....	
NSP	106	TB holder	VNE1612
NSP	107	Earth plate (V)	VNE1788
NSP	108	EXTB assembly	VWG1353
NSP	109	Wire clamp	VEC1237



(7) BASE SECTION [2]

Parts List

Mark	No.	Description	Part No.
⚠	1	AC power cord	PDG1013
⚠	2	Strain relief	CM – 22B
⊙	3	Power supply board assembly	VWR1132
	4	Insulator assembly	VXA1660
	5	Insurator assembly	VXA1661
	6	Code holder	VNF – 069
	7	Screw	BBZ30P060FCC
	8	Screw	BBZ30P180FMC
	9	Screw	IBZ30P060FCC
	10	Screw	IPZ30P160FMC
	11	Screw	BBZ30P120FMC
	12	Power insulator sheet	VEC1492
NSP	101	MAIN assembly	VWX1129
	102	.....	
NSP	103	Earth plate	VNE1642
NSP	104	P plate holder	PNY – 405
NSP	105	Wire clip (B)	VEC1012
NSP	106	Base chassis	VNA1226
NSP	107	Spring guide	VNL1343
NSP	108	PCB spacer	PNY – 404
	109	.....	
NSP	110	PCB holder (B)	VNE1772

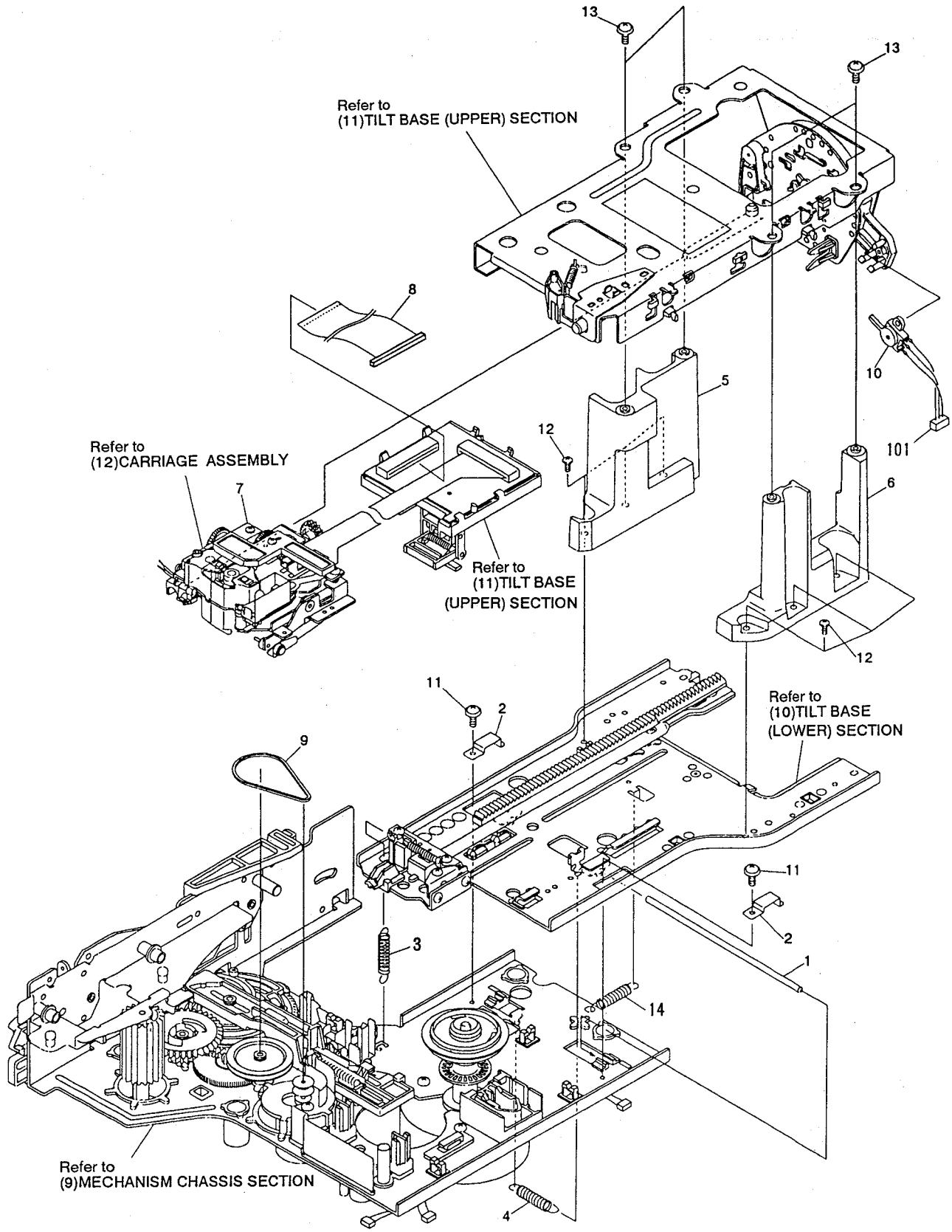


(8) MECHANISM ASSEMBLY

Parts List

Mark	No.	Description	Part No.
	1	Tilt shaft	VLL1326
	2	Plate spring	VBK1013
	3	Tilt spring	VBH1146
	4	Thrust spring	VBH1163
	5	Post (L)	VNL1489
	6	Post (R)	VNL1488
⊙	7	Carriage assembly	VWT1068
	8	Flexible cable (22P)	VDA1329
	9	Belt	PEB1013
	10	Lever switch (TURN SW)	DSK1003
	11	Screw	ABZ26P050FMC
	12	Screw	IBZ30P100FMC
	13	Screw	IPZ30P100FCU
	14	Radial spring	VBH1164
NSP	101	Housing assembly (3P)	VKP1937

Mechanism Assembly

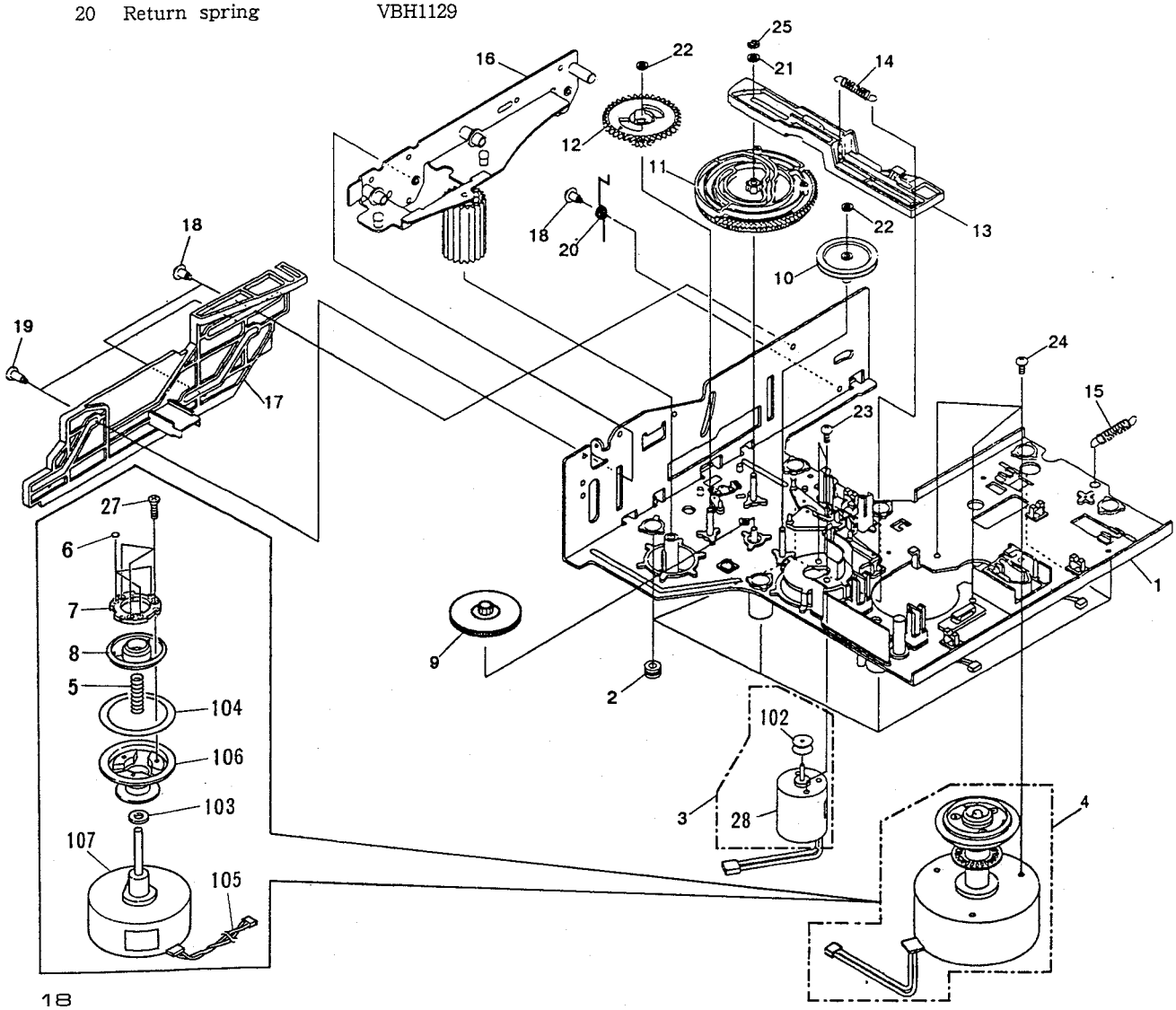


9) MECHANISM CHASSIS SECTION

Parts List

Mark	No.	Description	Part No.
⊅	1	Chassis assembly	VXA1577
	2	Rubber bushing	VEB1138
	3	Loading motor assembly	VXX1262
⚠	4	Spindle motor assembly	VXA1900
	5	Centering spring	VBH1024
	6	Sheet	VEB1194
	7	Yoke plate A	VNE1835
	8	Centering hub (A)	VNL1296
	9	Two stair gear	VNL1326
	10	Gear pulley	VNL1249
	11	Cam gear	VNL1350
	12	Follow gear	VNL1317
	13	Spring slanting cam	VNL1316
	14	Cam spring	VBH1082
	15	Radial spring	VBH1164
	16	Roller plate assembly	VXA1770
	17	Slide cam	VNL1304
	18	Screw (B)	VBA1008
	19	Screw (C)	VBA1015
	20	Return spring	VBH1129

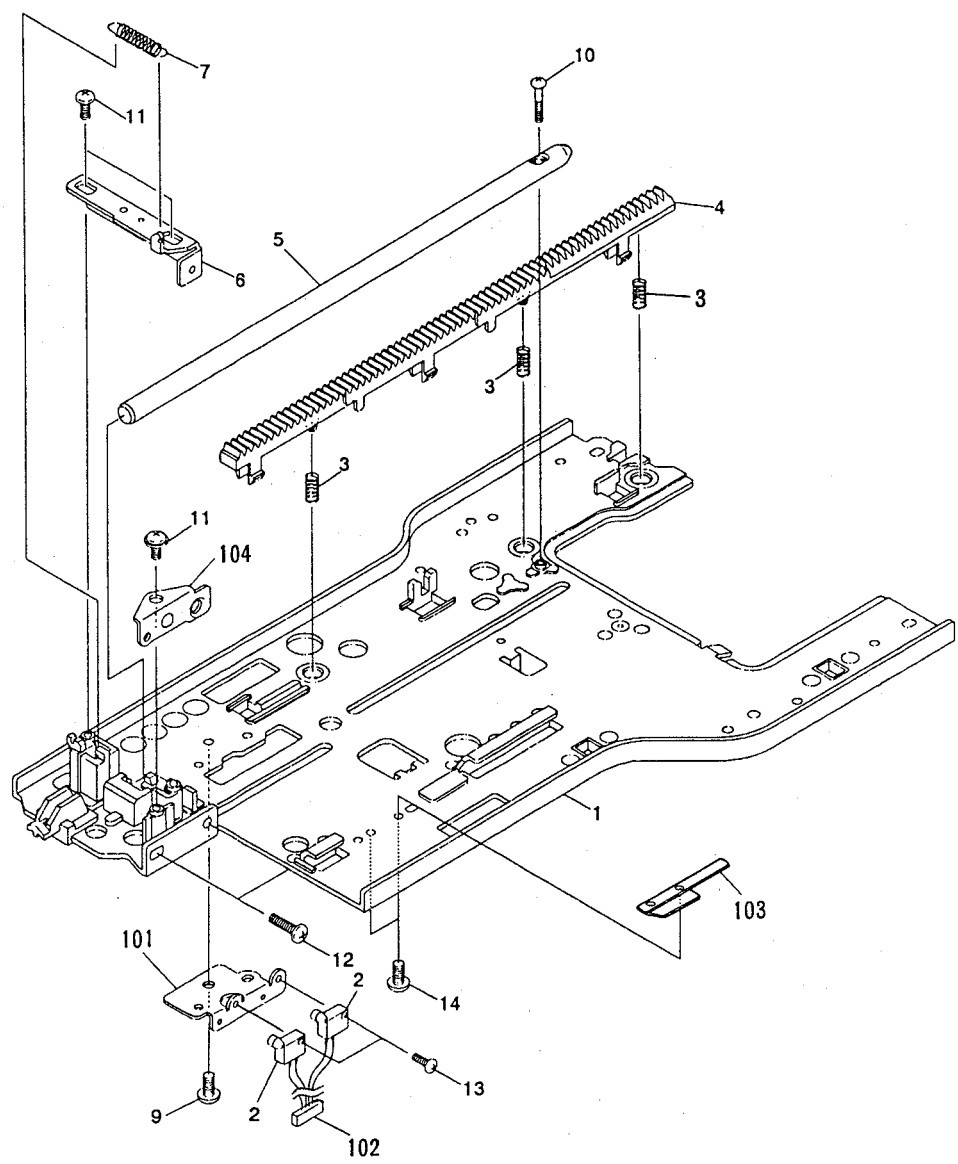
Mark	No.	Description	Part No.
	21	Nylon washer	WA32N080W050
	22	Washer	WT26D047D025
	23	Screw	PMZ30P040FCU
	24	Screw	PMA30P050FCU
	25	E ring 2, 3	YE23FUC
	26	.....	
	27	Screw	CPZ20P080FMC
	28	Loading motor	VXM1034
	101	.....	
NSP	102	Motor pulley	VLL1176
NSP	103	Oil stopped washer	VBF1002
NSP	104	Rubber sheet	VEB1135
NSP	105	Housing assembly	VKP1566
NSP	106	Turn table assembly	VXA1760
NSP	107	Spindle motor	VXM1046



(10) TILT BASE (LOWER) SECTION

Parts List

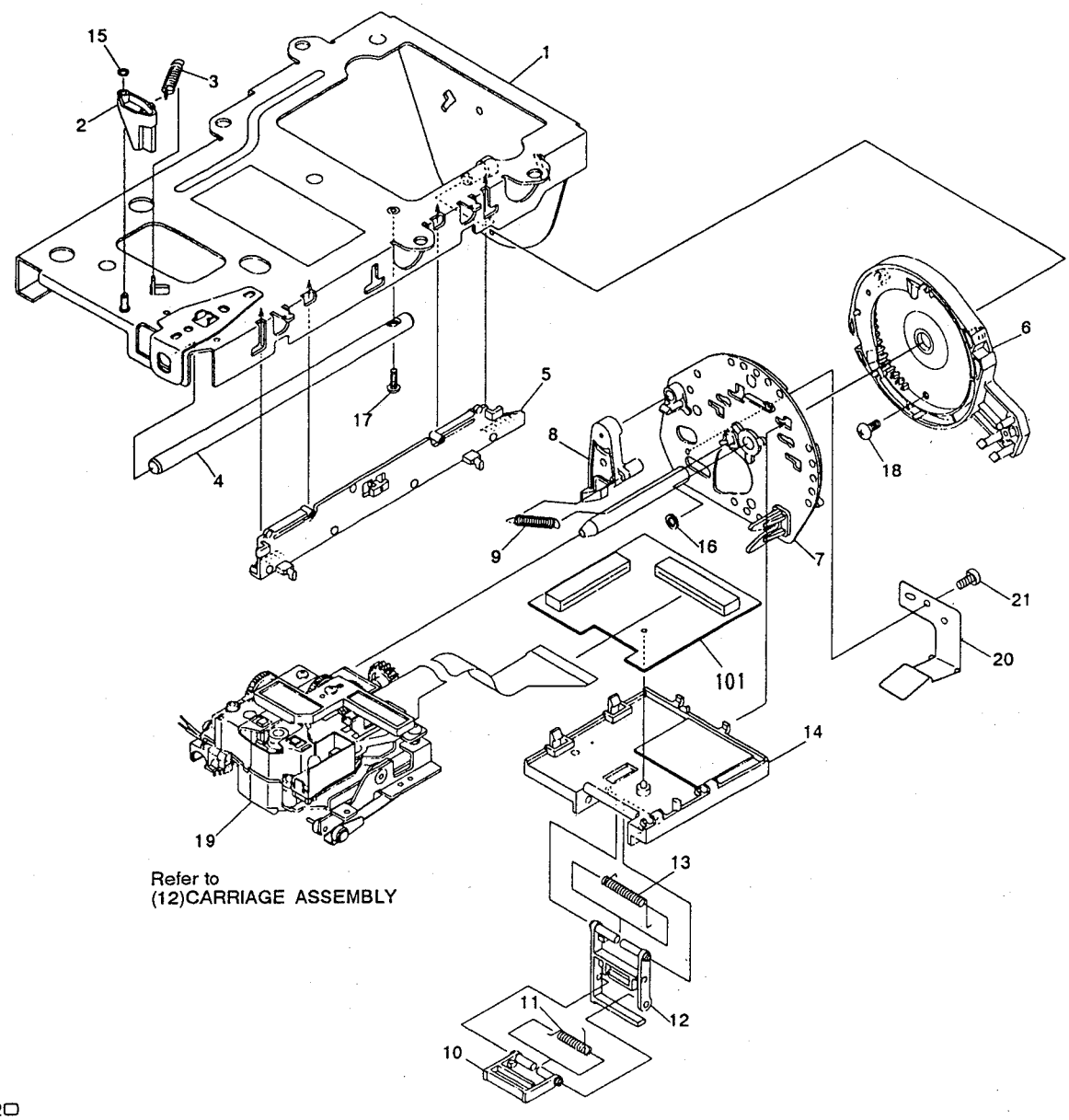
Mark	No.	Description	Part No.
⊙	1	Tilt base (lower) assembly	VXA1798
	2	Slide switch (LD, CDV INSIDE)	OSH1001
	3	Rack spring	VBH1133
	4	Rack gear (lower)	VNL1346
	5	Carriage shaft (lower)	VLL1325
	6	Shaft plate (lower) assembly	VXA1626
	7	S plate spring	VBH1149
	8	.....	
	9	Screw	BBZ30P060FCC
	10	Screw	PPZ20P120FMC
	11	Screw	IPZ20P080FMC
	12	Screw	BMZ26P100FMC
	13	Screw	PMZ20P060FMC
	14	Screw	PMZ20P030FMC
NSP	101	SW holder	VNE1620
NSP	102	Housing assembly	VKP1851
NSP	103	Roller shaft holder	VNE1666
NSP	104	S plate holder	VNE1621



(11) TILT BASE (UPPER) SECTION

Parts List

Mark	No.	Description	Part No.
	1	Tilt base (upper) assembly	VXA1808
	2	SW lever	VNL1359
	3	SW lever spring	VBH1150
	4	Carriage shaft (upper)	VLL1324
	5	Rack gear (upper)	VNL1345
	6	Internal gear assembly	VXA1903
⊙	7	R plate assembly	VXA1579
	8	Lock lever	VNL1351
	9	Lever spring	RBH1323
	10	Harness guide (C)	VNL1361
	11	Guide spring (B)	VBH1155
	12	Harness guide (B)	VNL1408
	13	Guide spring (A)	VBH1166
	14	Harness guide (A)	VNL1349
	15	Washer	WT16D032D025
	16	Washer	WT36D072D050
	17	Screw	PMZ20P120FMC
	18	Screw	BBZ26P050FCC
⊙	19	Carriage assembly	VWT1068
	20	Lock plate	VBK1026
	21	Screw	IBZ20P040FZK
	22	Washer	WB20FMC
	23	Rack spring (upper)	VBH1198
NSP	101	CNNB assembly	VWG1194

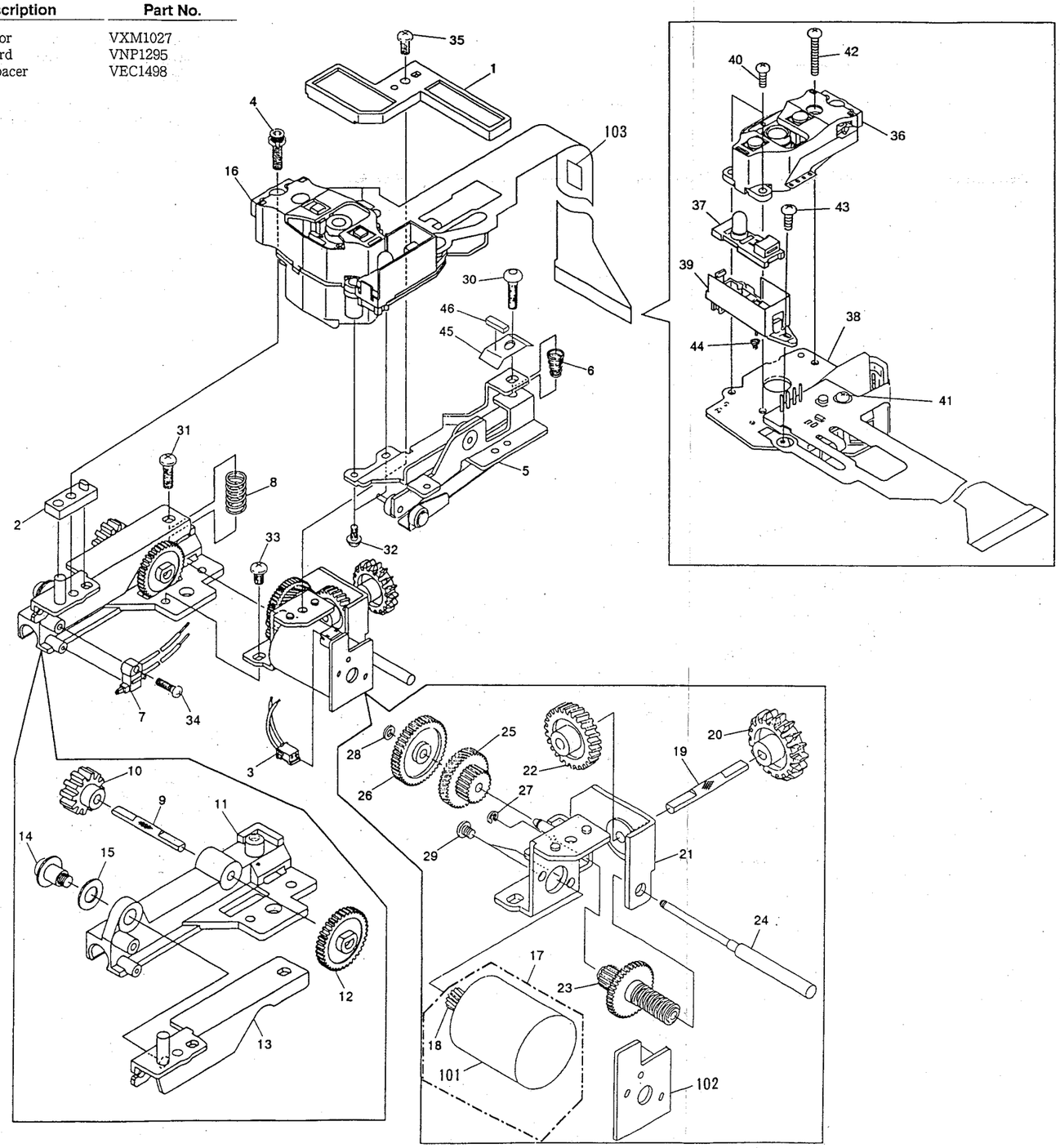


(12) CARRIAGE ASSEMBLY

Parts List

Mark	No.	Description	Part No.
	1	Flexible holder	VNL1358
	2	PU base	VNT1037
	3	Housing assembly (1.5MP2P)	VKP1852
	4	Bolt 2.6 × 10	VLL1192
	5	TAN base assembly	VXA1752
	6	TAN spring	VBH1151
	7	Slide switch (CD, B INSIDE)	VSK1008
	8	TRKG spring	VBH1152
	9	SL shaft (B)	VLL1334
	10	Gear (F)	VNL1356
	11	Carriage shaft holder	VNT1039
	12	Gear (E)	VNL1355
	13	PU plate assembly	VXA1583
	14	Screw 4	VLL – 183
	15	Spring washer ϕ 4	VEF – 027
	16	Pickup assembly – S	VXX1553
	17	Carriage motor assembly – S	VXX1537
	18	SL gear (A)	VNL1250
	19	SL shaft (C)	VLL1289
	20	Gear (G)	VNL1365
	21	Motor holder assembly	VXA1751
	22	Gear (H)	VNL1357
	23	Gear (C)	VNL1353
	24	SL shaft (A)	VLL1333
	25	Gear (B)	VNL1352
	26	Gear (D)	VNL1354
	27	E ring	YE12FUC
	28	Washer	WT17D034D050
	29	Screw	JGZ20P022FMC
	30	Screw	PMZ26P100FMC
	31	Screw	BMZ26P080FMC
	32	Screw	PMA20P040FMC
	33	Screw	PMH26P050FMC
	34	Screw	PBZ20P070FCC
	35	Screw	BBZ26P050FMC
	36	Actuator assembly	VXX1551
	37	Sensor assembly	VEX1018
	38	Pre-pickup assembly	VXX1554
	39	Sensor stay	VNH1037
	40	Screw	PMA20P060FMC
	41	Screw	PMA20P080FMC
	42	Screw	PMA20P160FMC
	43	Screw	BMZ20P060FMC
	44	Sensor spring	VBH1087
	45	Spacer	VEC1496
	46	Cushion	VEC1497

Mark	No.	Description	Part No.
NSP	101	Slider motor	VXM1027
NSP	102	SLMB board	VNP1295
NSP	103	Flexible spacer	VEC1498



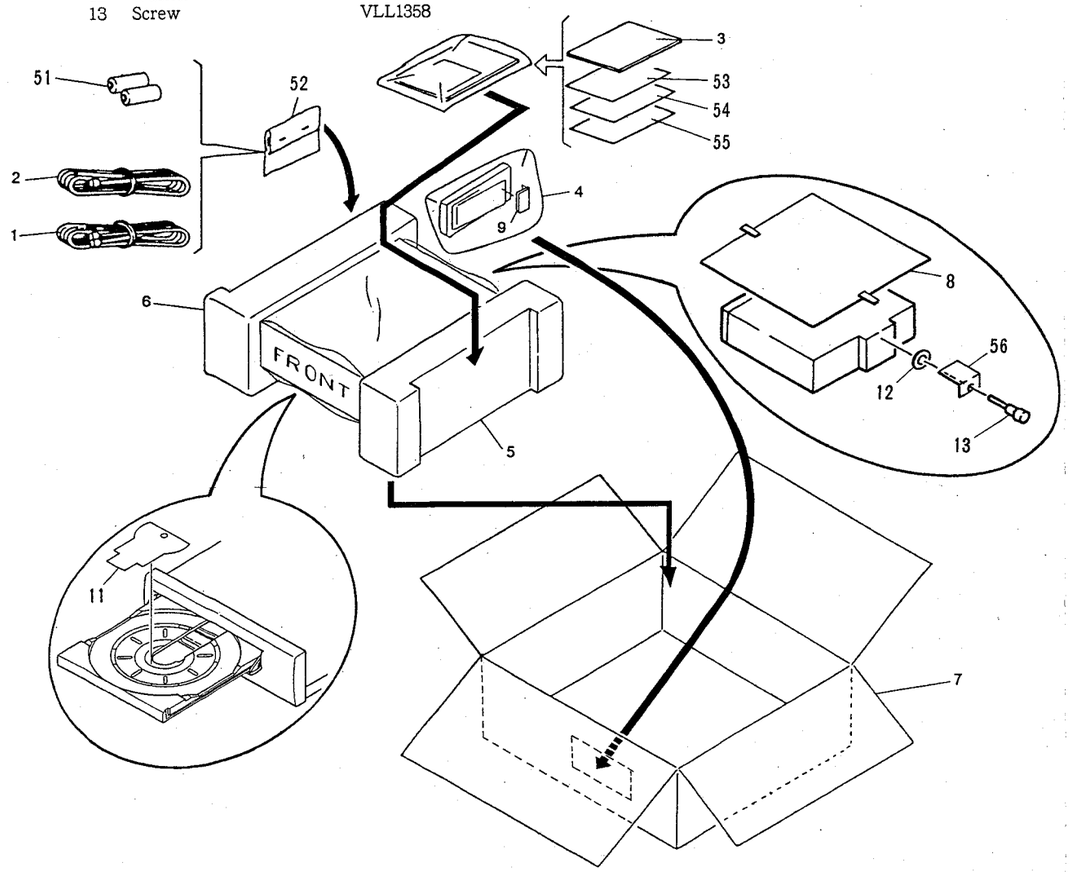
3. PACKING AND PARTS LIST

NOTES:

- Parts marked by "NSP" 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 sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

Mark	No.	Description	Part No.
	1	Connection cord	VDE – 055
	2	Video cable	VDE – 056
	3	Operating instructions	VRB1074
	4	Remote control unit (CU – CLD047)	VXX1604
	5	Pad (R)	VHA1083
	6	Pad (L)	VHA1082
	7	Packing case	VHG1230
	8	Mirror mat	VHL1012
	9	Battery cover	VNK1293
	10	·····	
	11	Sheet	VRY1035
	12	Washer	WT36D072D025
	13	Screw	VLL1358
NSP	51	Dry cell battery (R03, AAA)	VEM – 022
NSP	52	Vinyl bag	VHL – 014
NSP	53	Caution card	VRR1009
NSP	54	Caution card (UC)	VRM1026
NSP	55	Caution card (UC)	VRM1039
NSP	56	Tac card	VRW1200



4. SCHEMATIC AND PCB CONNECTIONS DIAGRAMS

Note: (Type 4)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or µF unless otherwise noted.
   Ratings: capacitor (µF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or µH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ⎕ : DC voltage (V) in PLAY mode unless otherwise noted.
   ⇦ mA or ⇽ mA: DC current in PLAY mode unless otherwise noted.
   Value in ( ) is DC current in STOP mode.
7. **OTHERS:**
   - ➡ : Signal route.
   - ⎚ : Adjusting point.
   - ▼ (Red) : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SWITCHES** (Underline indicates switch position):

IRKB ASSEMBLY
S401: POWER ON – OFF

SW ASSEMBLY
S1 : TILT, LOADING 1
S2 : TILT, LOADING 2
S3 : TILT, LOADING 3

FLKB ASSEMBLY
S101: CHORUS
S102: VOCAL
S103: ONE – TOUCH KARAOKE
S104: ONCE MORE
S105: SURROUND
S106: VOCAL PARTNER
S107: OPEN/CLOSE
S108: SIDE A
S109: SIDE B
S110: PLAY/PAUSE
S111: STOP
S112: DOOR SW
S113: KARAOKE/NORMAL/AUX INPUT SELECTOR

CNNB ASSEMBLY
S201: INHIBIT

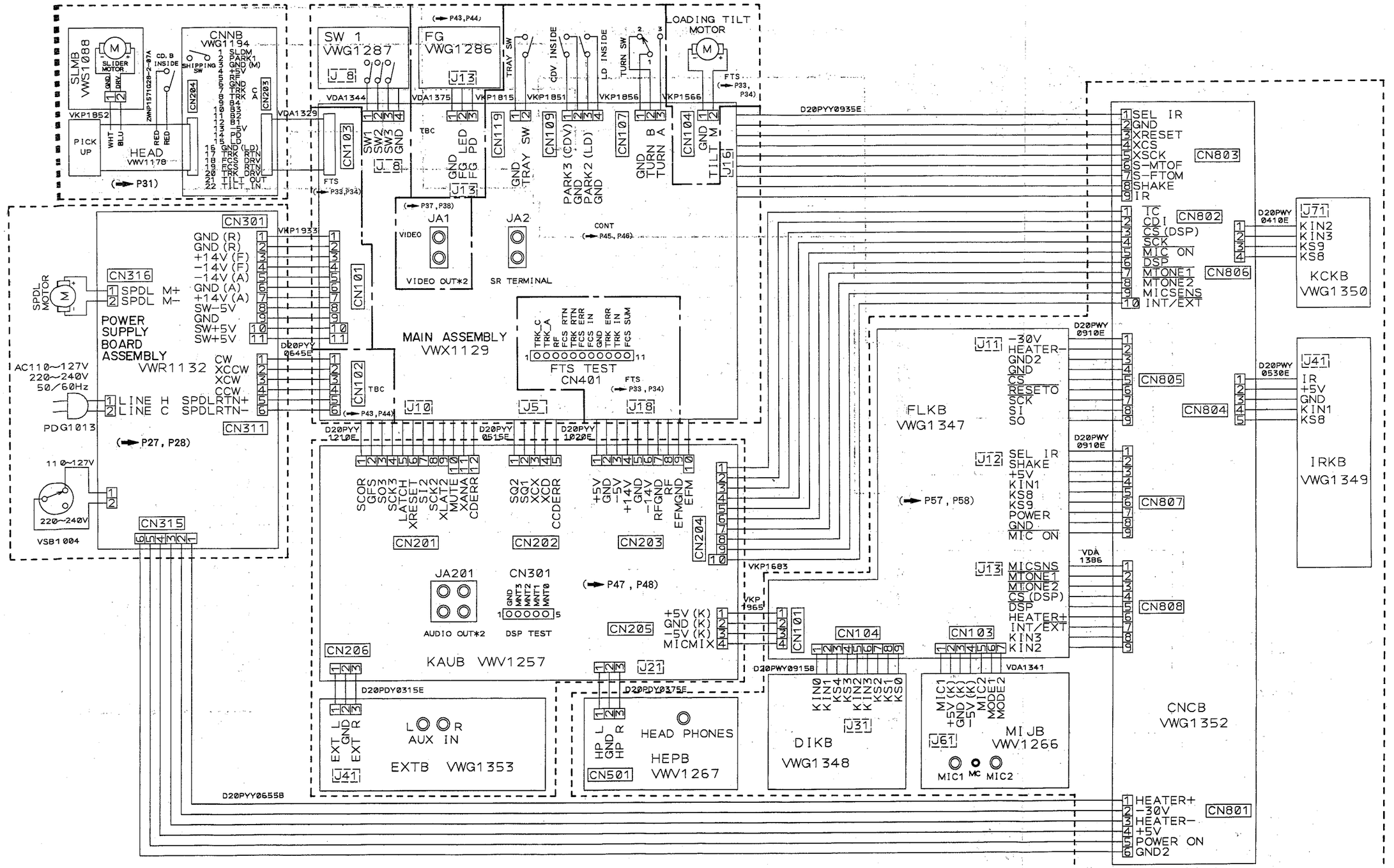
KAUB ASSEMBLY
S201: ATTENUATOR

DIKB ASSEMBLY
S301: 1
S302: 2
S303: 3
S304: 4
S305: 5
S306: 6
S307: 7
S308: 8
S309: 9
S310: 10
S311: 11
S312: 12
S313: 13
S314: 14
S315: 15
S316: 16
S317: 17
S318: 18
S319: 19
S320: 20

KCKB ASSEMBLY
S701: #
S702: ♭
S703: AUDIO MODE
S704: ♮

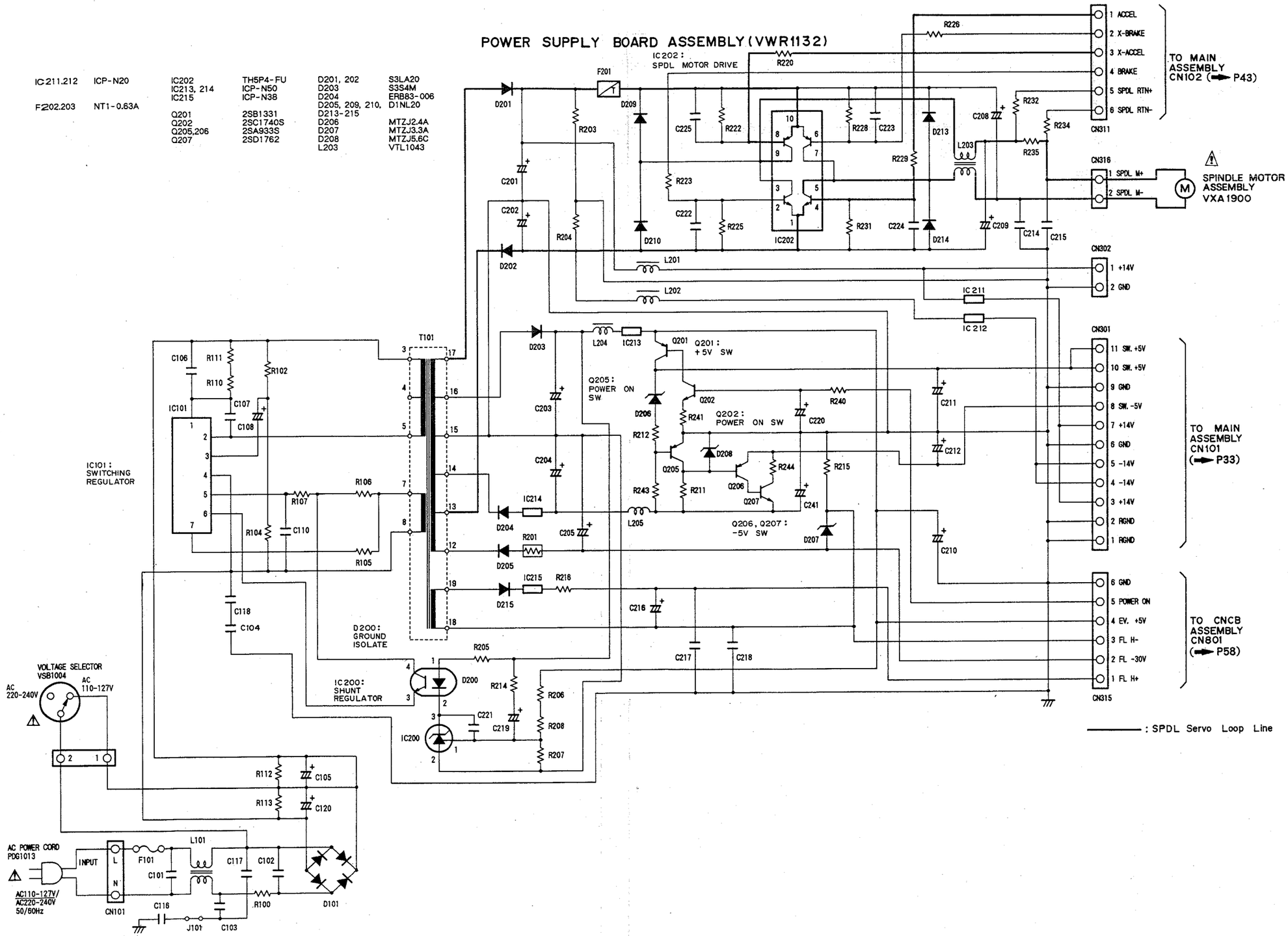
OUTSIDE OF ASSEMBLY
TRAY SW
TURN SW
LD, CDV INSIDE SW
VOLTAGE SELECTOR
(AC 110 – 127/220 – 240V)

(1) OVERALL WIRING DIAGRAM

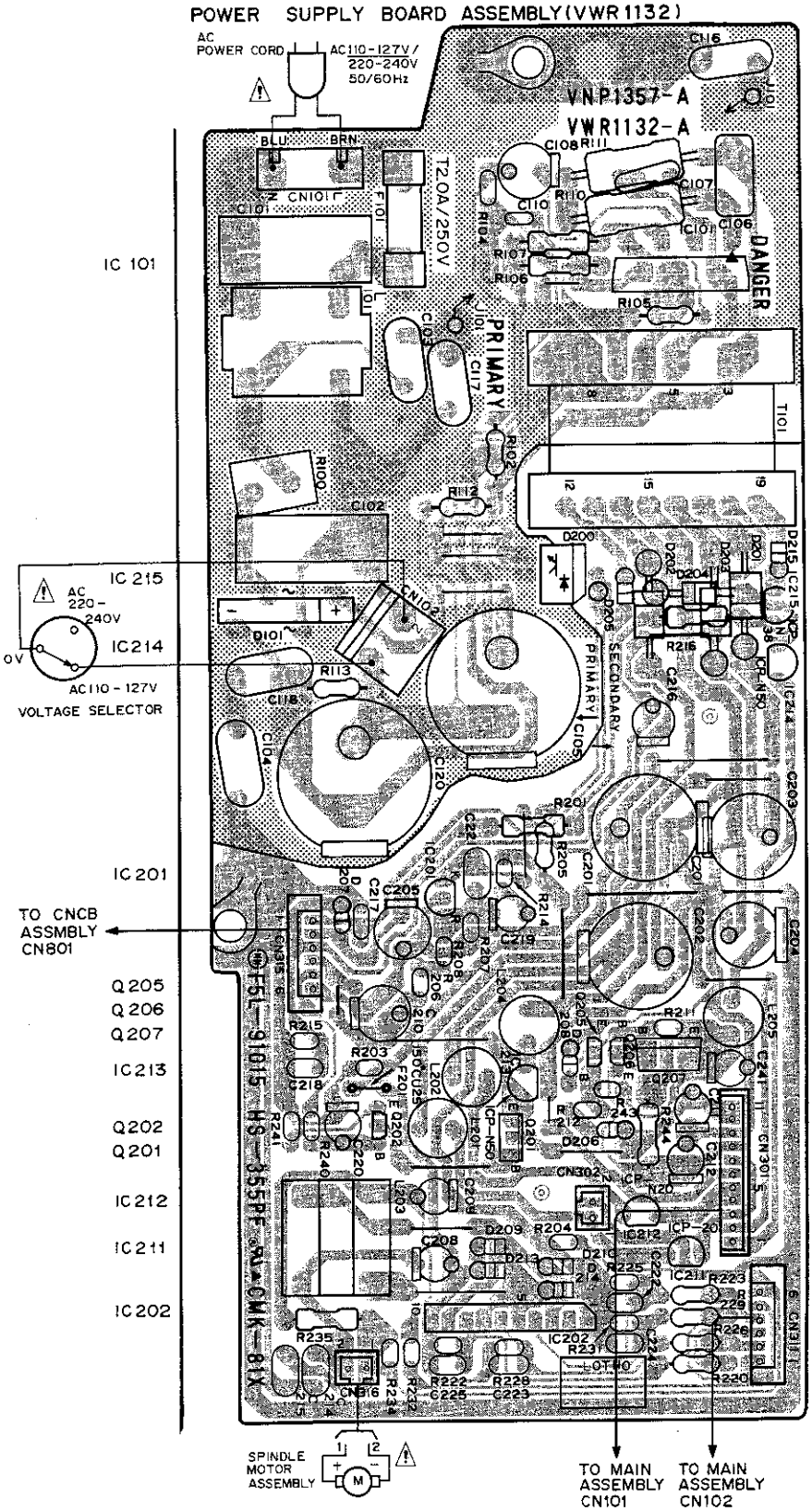


(2) POWER SUPPLY BOARD ASSEMBLY (SYPS)

IC211,212	ICP-N20	IC202	TH5P4-FU	D201, 202	S3LA20
		IC213, 214	ICP-N50	D203	S3S4M
F202,203	NT1-0.63A	IC215	ICP-N38	D204	ERB83-006
				D205, 209, 210,	D1NL20
		Q201	2SB1331	D213-215	
		Q202	2SC1740S	D206	MTZJ2.4A
		Q205,206	2SA933S	D207	MTZJ3.3A
		Q207	2SD1762	D208	MTZJ5.6C
				L203	VTL1043



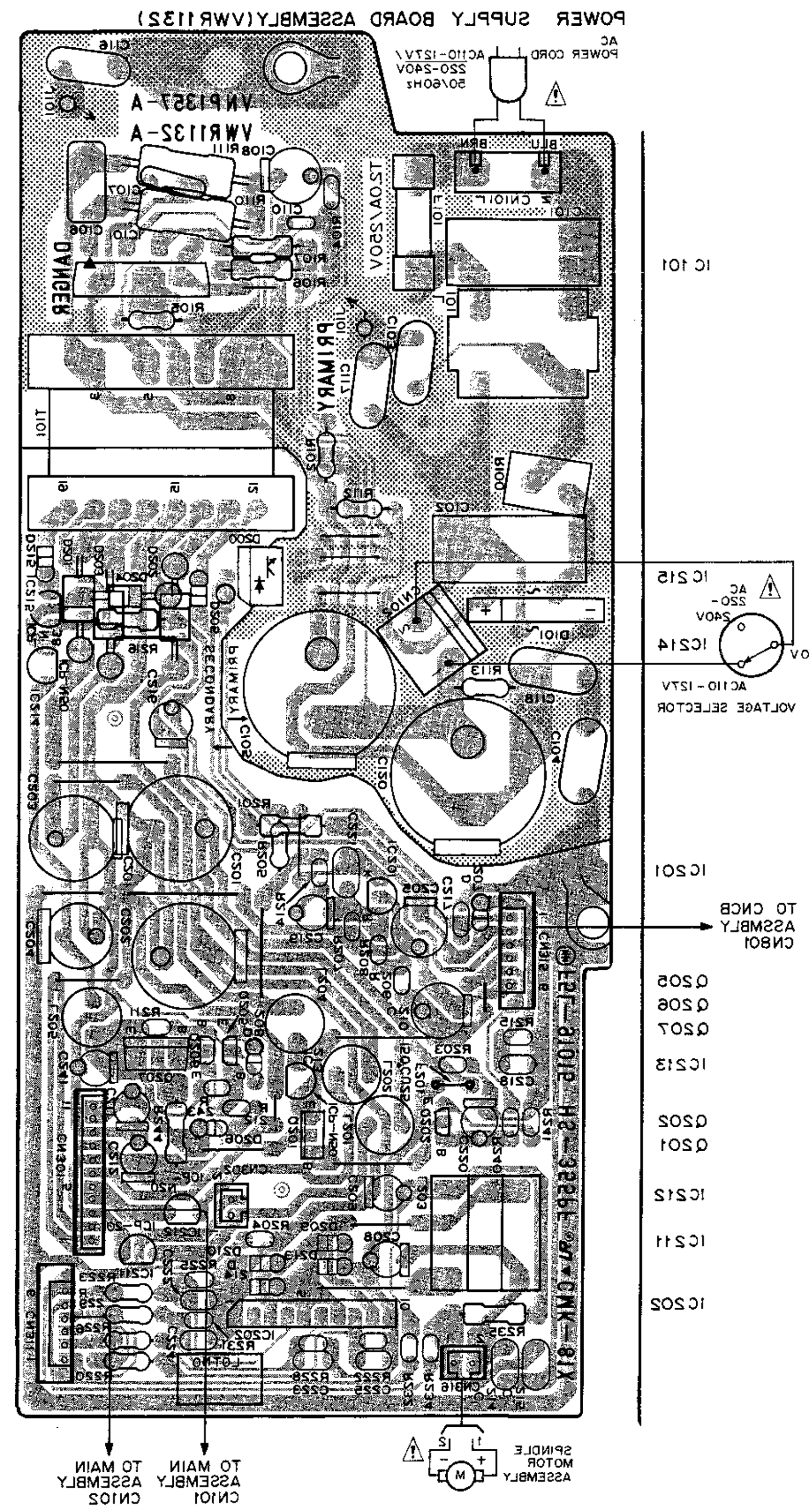
• View from component side



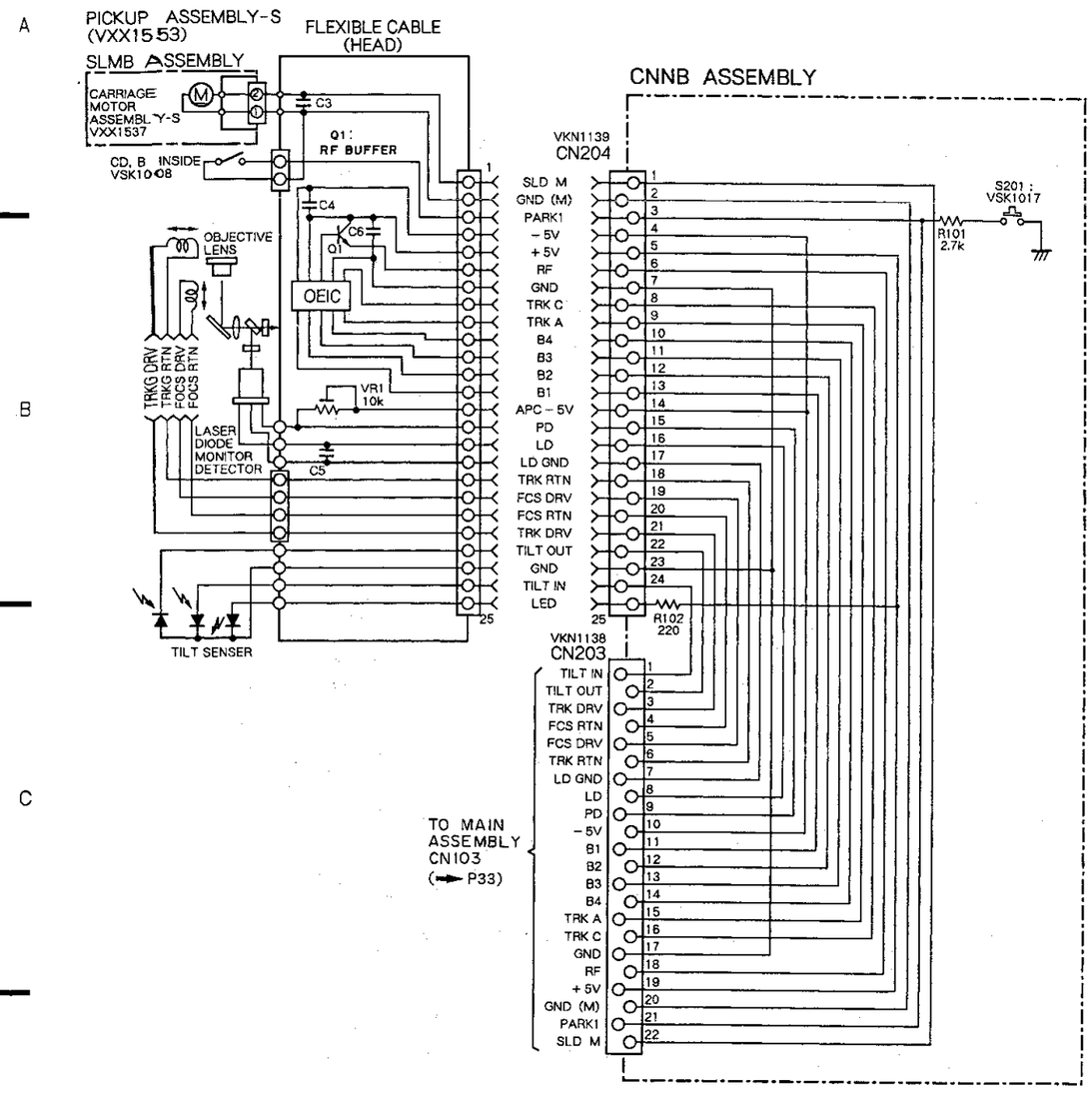
P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor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

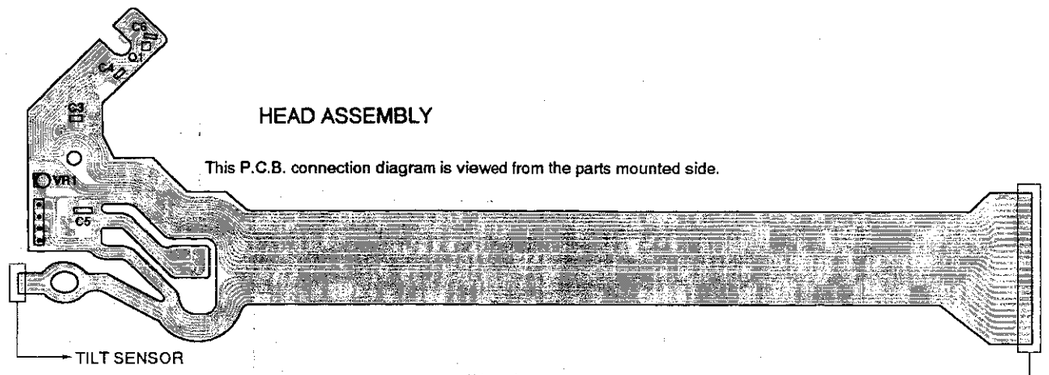
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked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

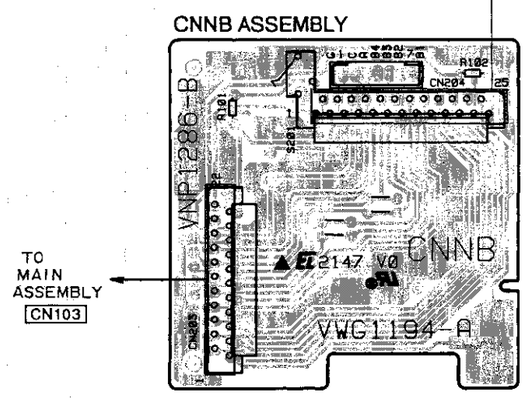
• **View from soldering side**

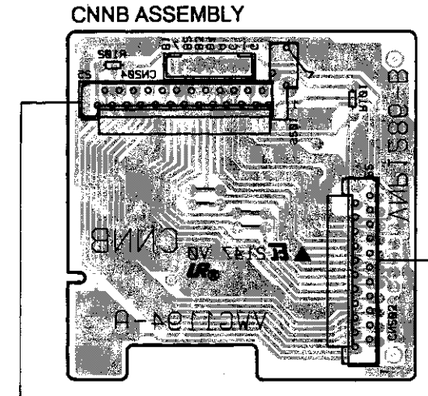


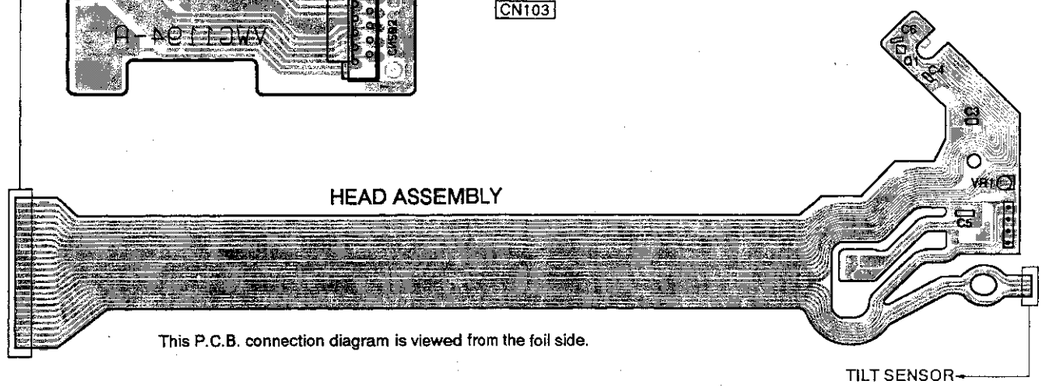
(3) PICKUP AND CNNB ASSEMBLIES







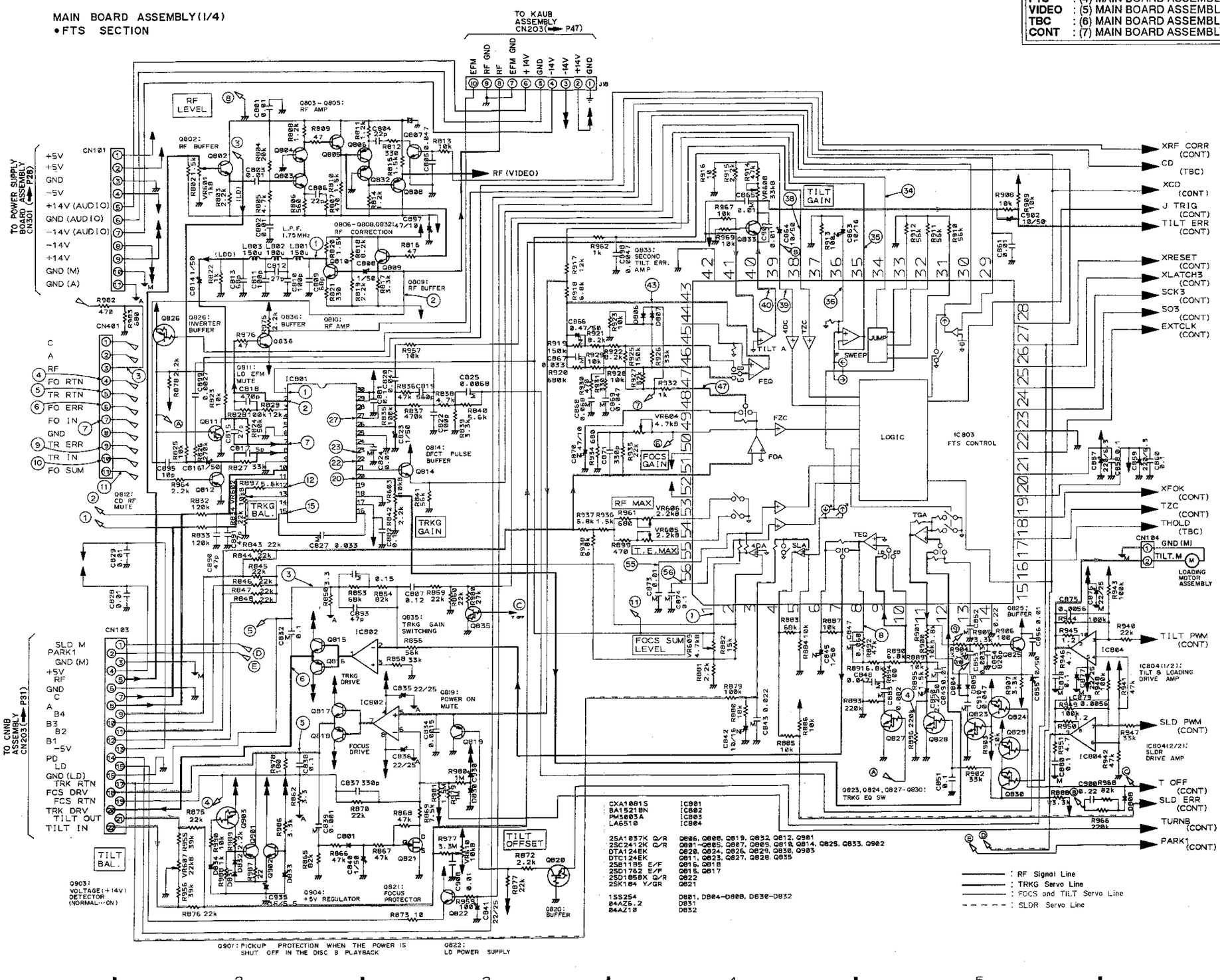




(4) MAIN BOARD ASSEMBLY (1/4)

Note: Abbreviations listed indicate circuit connections.

FTS	: (4) MAIN BOARD ASSEMBLY (1/4)
VIDEO	: (5) MAIN BOARD ASSEMBLY (2/4)
TBC	: (6) MAIN BOARD ASSEMBLY (3/4)
CONT	: (7) MAIN BOARD ASSEMBLY (4/4)

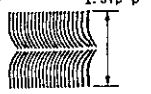


Waveforms of the FTS section

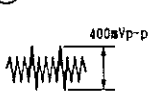
Note : (No.) in the table correspond to the pin No.

IC801 (CXA1081S)

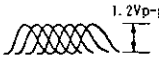
① 1.5Vp-p



⑳ 400mVp-p



② 1.2Vp-p



㉒ 10Vp-p

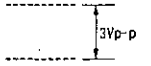
:at still

⑦ 40mVp-p

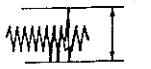
㉓ 2Vp-p

⑫ 200mVp-p

㉗ 3Vp-p

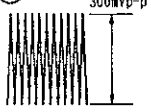


⑮ 400mVp-p

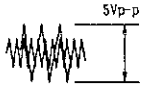


CN401

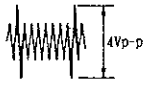
③ 300mVp-p



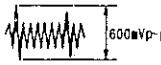
④ 5Vp-p



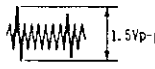
⑤ 4Vp-p



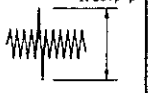
⑥ 600mVp-p



⑦ 1.5Vp-p

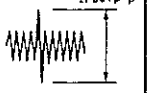


⑨ 1.25Vp-p

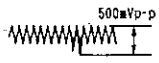


:at open

⑩ 1.25Vp-p

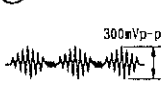


⑪ 500mVp-p

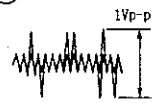


IC803 (PM3003A)

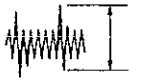
① 300mVp-p



㊴ 1Vp-p

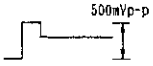


⑧ 2Vp-p



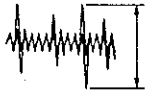
㊵ 200mVp-p

㉞ 500mVp-p



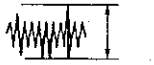
:at still

㊸ 1.5Vp-p

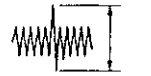


㉟ 1Vp-p

㊼ 150mVp-p

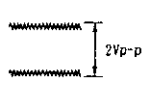


㊱ 2Vp-p

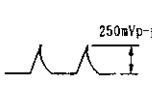


㊺ 250mVp-p

㊳ 2Vp-p



㊻ 250mVp-p

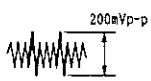


Other points

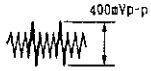
① Q810 Collector 400mVp-p

② Q809 Emitter 2Vp-p

③ Between C830 and C832. 200mVp-p



④ Q828 Collector 400mVp-p



⑤ CN103 Pin 18 15Vp-p

⑥ CN103 Pin 20 20Vp-p

Waveforms of the VIDEO section

Note : (No.) in the table correspond to the pin No.

IC401 (PA5013A)

(1) 2Vp-p	(15) 200mVp-p	(31) 700mVp-p
(3) 2Vp-p	(16) 1Vp-p, 63.5μS	(32) 4Vp-p, 17.5mS
(4) 1.5Vp-p, 63.5μS	(17) 4Vp-p, 63.5μS	(33) approx. 450mVp-p
(5) 1.5Vp-p, 63.5μS	(19) 2.5Vp-p, 63.5μS	(34) 2.5Vp-p, 17.5mS
(6) 2Vp-p, 17.5mS	(23) 5Vp-p, 63.5μS	(35) 500mVp-p
(10) 500mVp-p	(24) 4Vp-p, 17.5mS	(39) approx. 1.2Vp-p
(11) 1V/div, 2mS/div	(25) 5Vp-p, 17.5mS	(44) 300mVp-p, Range H:2mS/div
(14) 600mVp-p	(29) 1.25Vp-p	(46) 1Vp-p, Range H:2mS/div

IC402 (PM0001)

(2) approx. 1Vp-p
(5) 450mVp-p
(8) 0.3μS, 450mVp-p
(34) 2.5Vp-p, 17.5mS

IC403 (CXL1009P)

(1) 1.25Vp-p
(4) 1.25Vp-p
(9) approx. 300mVp-p

IC405 (PD0093A)

(5) 4Vp-p, 17.5mS
(15) 2Vp-p
(17) 2Vp-p
(19) 1.1Vp-p
(25) 5Vp-p, 63.5μS
(26) 5Vp-p, 63.5μS
(27) 5Vp-p, 17.5mS

Other points

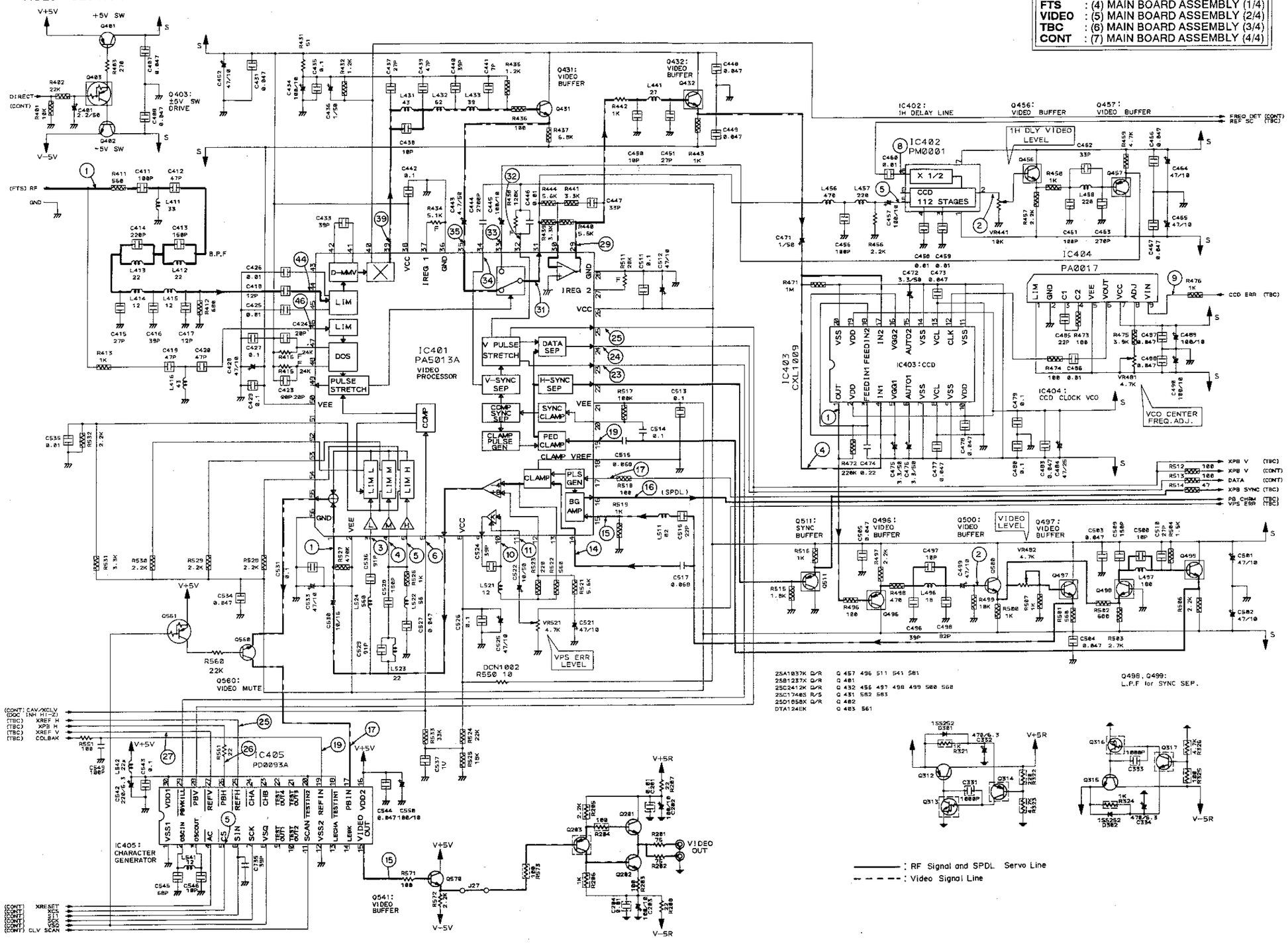
(1) RF (Between R411 and R413), Range H:2mS/div, approx. 2Vp-p
(2) + side of C499, 1.25Vp-p

(5) MAIN BOARD ASSEMBLY (2/4)

MAIN BOARD ASSEMBLY (2/4)
• VIDEO SECTION

Note: Abbreviations listed indicate circuit connections.

FTS	: (4) MAIN BOARD ASSEMBLY (1/4)
VIDEO	: (5) MAIN BOARD ASSEMBLY (2/4)
TBC	: (6) MAIN BOARD ASSEMBLY (3/4)
CONT	: (7) MAIN BOARD ASSEMBLY (4/4)



TO POWER SUPPLY CN301

LOADING TILT MOTOR

• View from component side

MAIN ASSEMBLY

TO KAUB ASSEMBLY CN202

TO KAUB ASSEMBLY CN201

FG BOARD ASSEMBLY

TO KAUB ASSEMBLY CN203

TO POWER SUPPLY BOARD CN301

TO POWER SUPPLY BOARD CN 311

TO CNNB ASSEMBLY CN203

LOADING TILT MOTOR

TRAY SW

TURN SW

CDV INSIDE

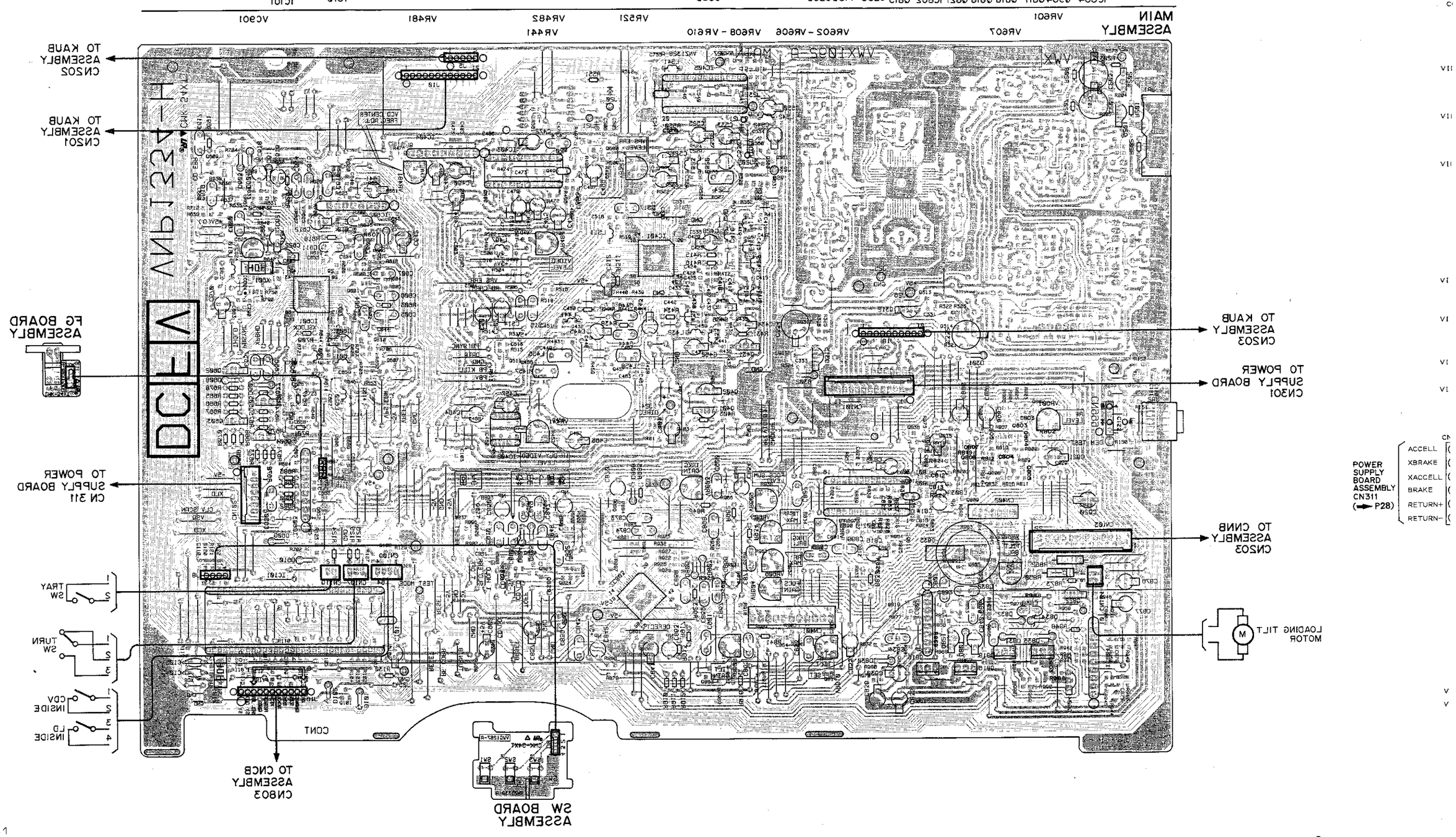
LD INSIDE

CONT

TO CNCB ASSEMBLY CN803

SW BOARD ASSEMBLY

• View from soldering side



(6) MAIN BOARD ASSEMBLY (3/4) AND FG BOARD ASSEMBLY

Note: Abbreviations listed indicate circuit connections.

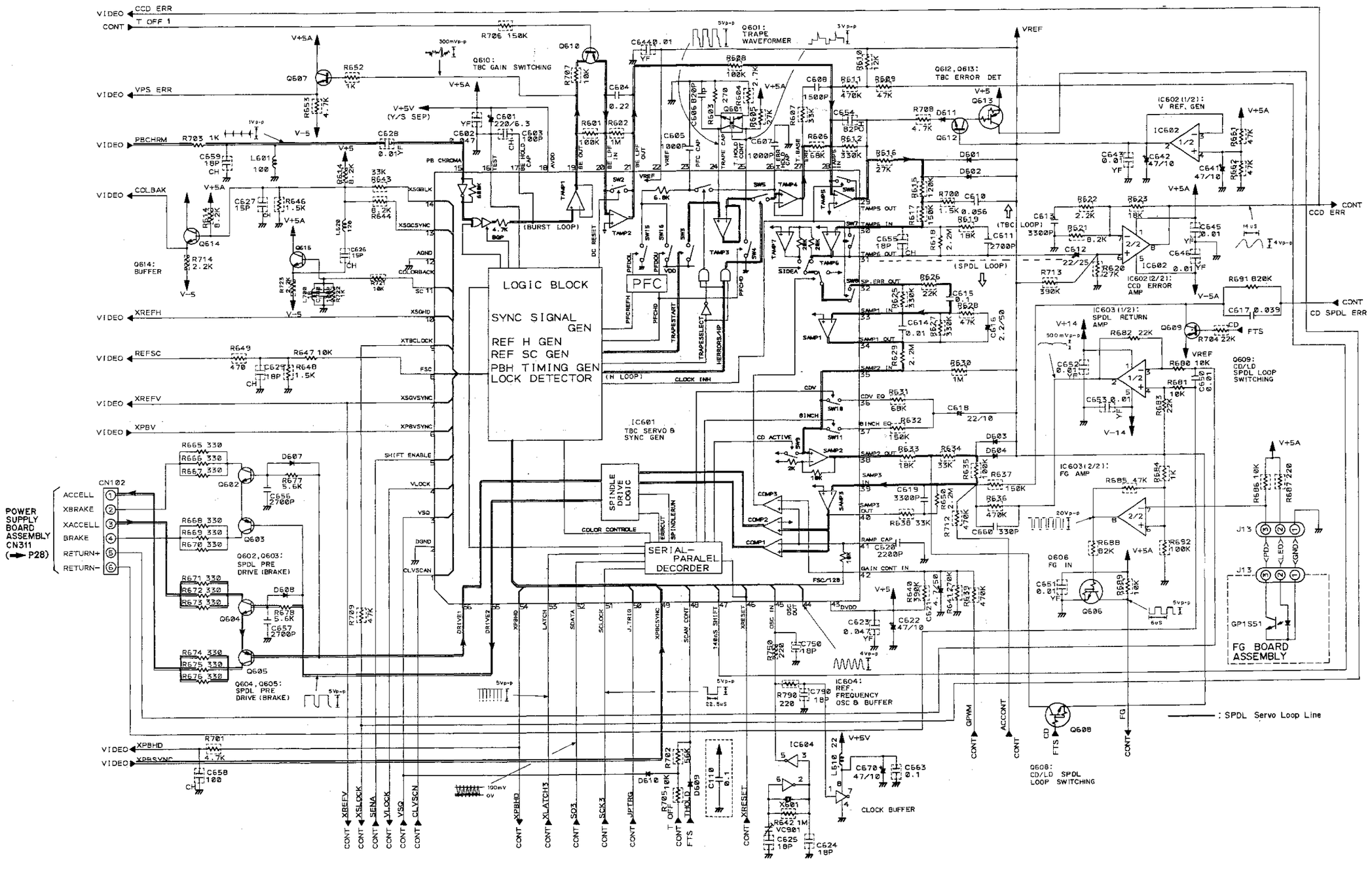
FTS	: (4) MAIN BOARD ASSEMBLY (1/4)
VIDEO	: (5) MAIN BOARD ASSEMBLY (2/4)
TBC	: (6) MAIN BOARD ASSEMBLY (3/4)
CONT	: (7) MAIN BOARD ASSEMBLY (4/4)

IC601 : PM3002
IC602 : NJM4558S
IC603 : NJM4558S
IC604 : TC7WU04F
VC901 : VCM-008
X601 : VSS1025
F601 : VTF1030

2SC1740S R/S : Q602, 604, 615
2SA933S R/S : Q603, 605
2SC2412K Q/R : Q607, 610, 612, 614
2SA1037K Q/R : Q609, 615
DTC124EK : Q606, 608
DTA124EK : Q613
FMW2 : Q601

1SS254 : D601–604, 607–611

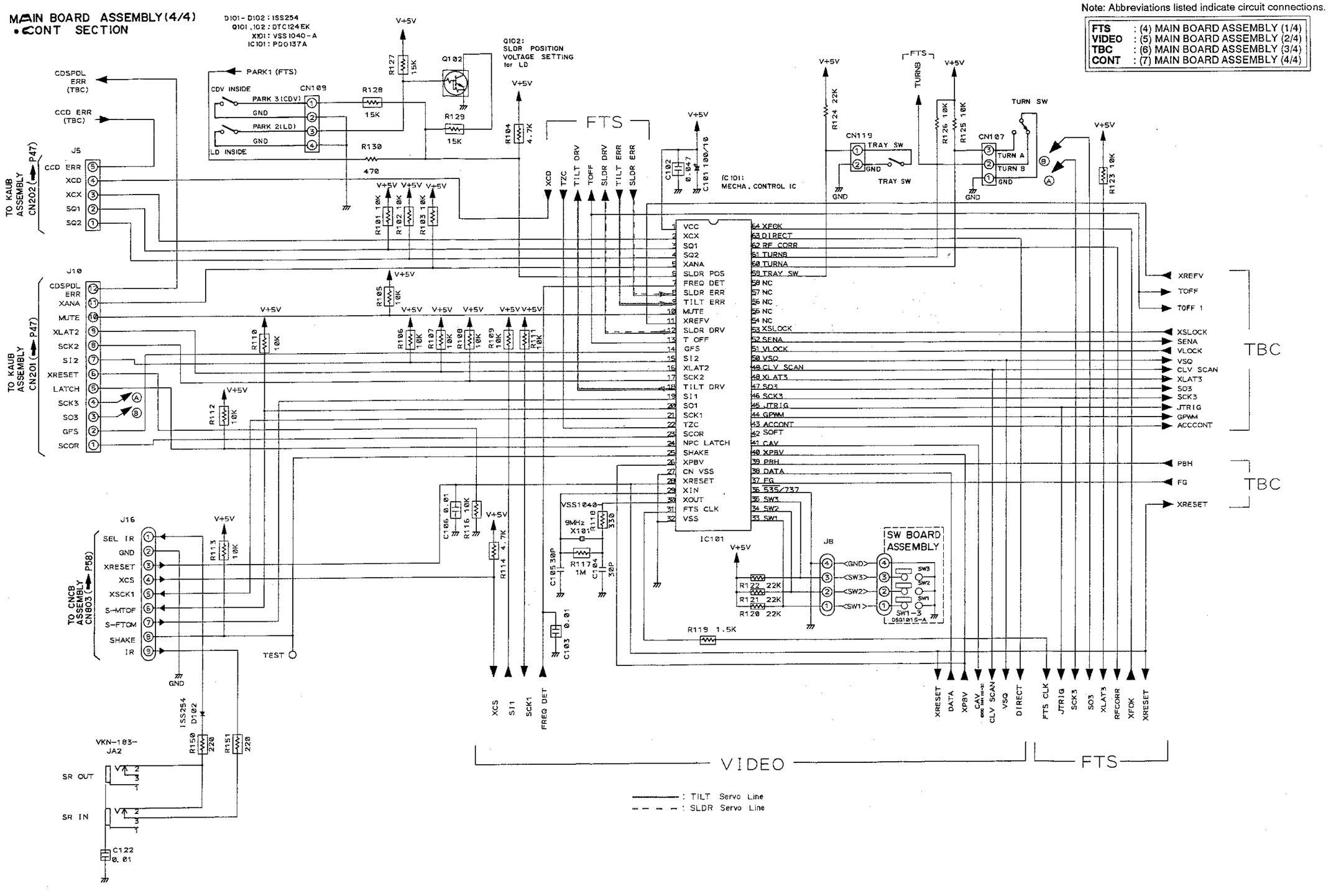
MAIN BOARD ASSEMBLY (3/4)
• TBC SECTION



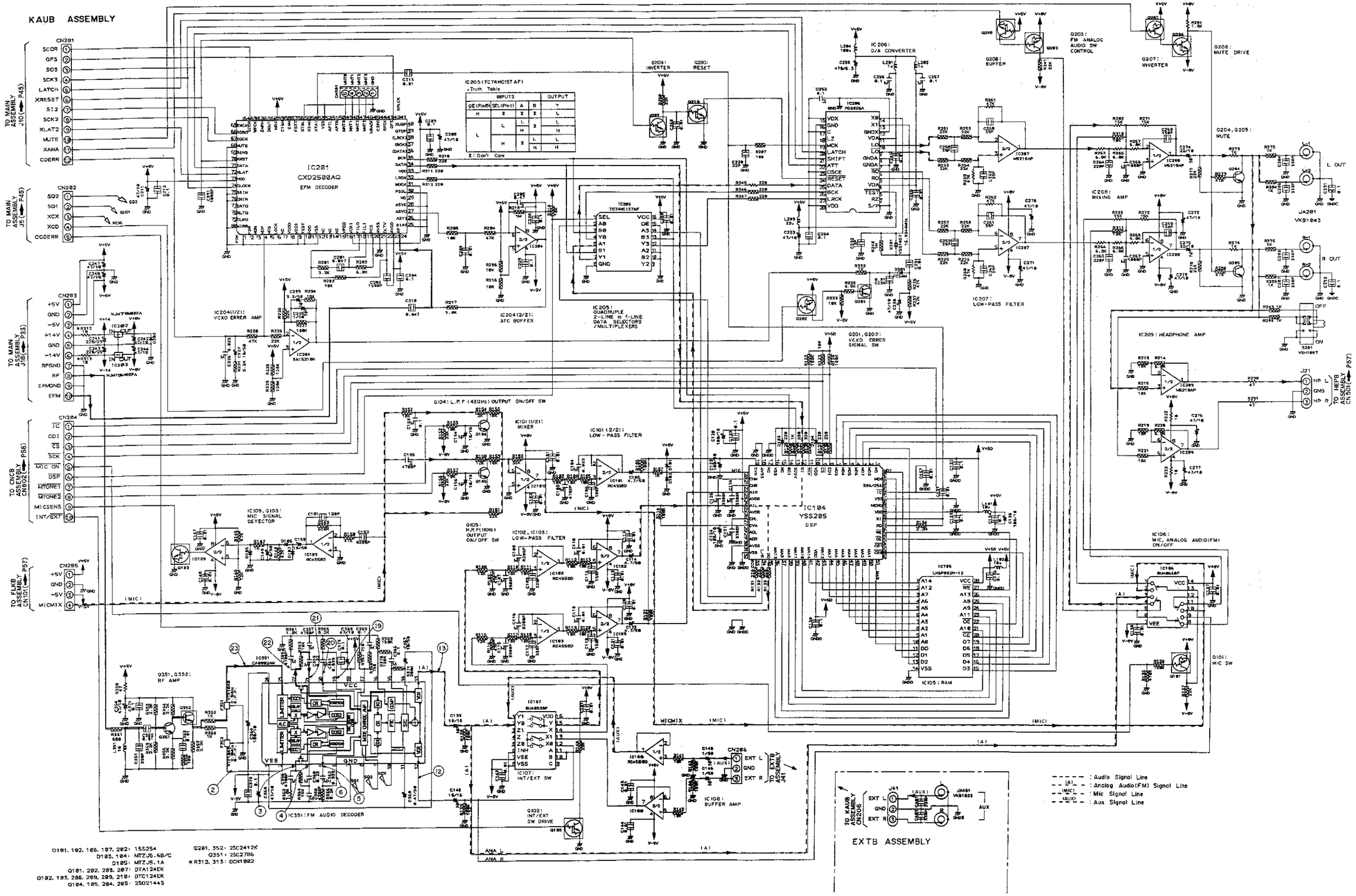
(7) MAIN BOARD ASSEMBLY (4/4) AND SW BOARD ASSEMBLY

Note: Abbreviations listed indicate circuit connections.

FTS	: (4) MAIN BOARD ASSEMBLY (1/4)
VIDEO	: (5) MAIN BOARD ASSEMBLY (2/4)
TBC	: (6) MAIN BOARD ASSEMBLY (3/4)
CONT	: (7) MAIN BOARD ASSEMBLY (4/4)



(8) EXTB AND KAUB ASSEMBLIES



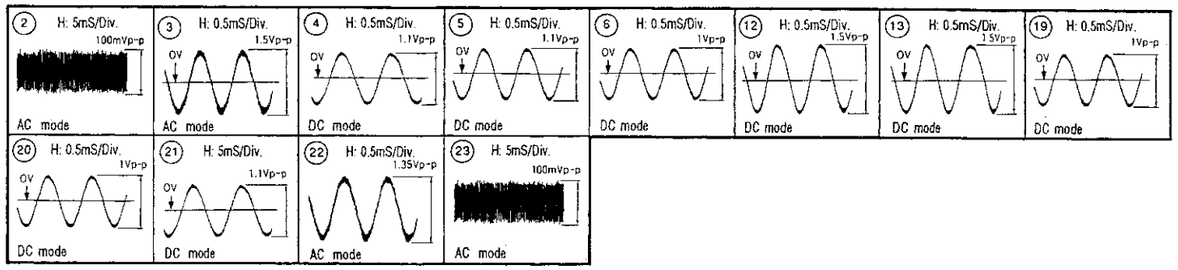
D101, 102, 105, 107, 282: 1SS254
D103, 104: MTZJ5.6B/C
D125: MTZJ5.1A
Q101, 202, 203, 207: DTA124EK
Q102, 103, 206, 208, 209, 210: DTC124EK
Q104, 105, 204, 205: 2SD2144S
Q201, 352: 2SC2412K
Q351: 2SC2786
*R312, 313: DCN1822

Note: Waveforms and voltages are at the PLAY mode.
IC351 (CA0002AM)

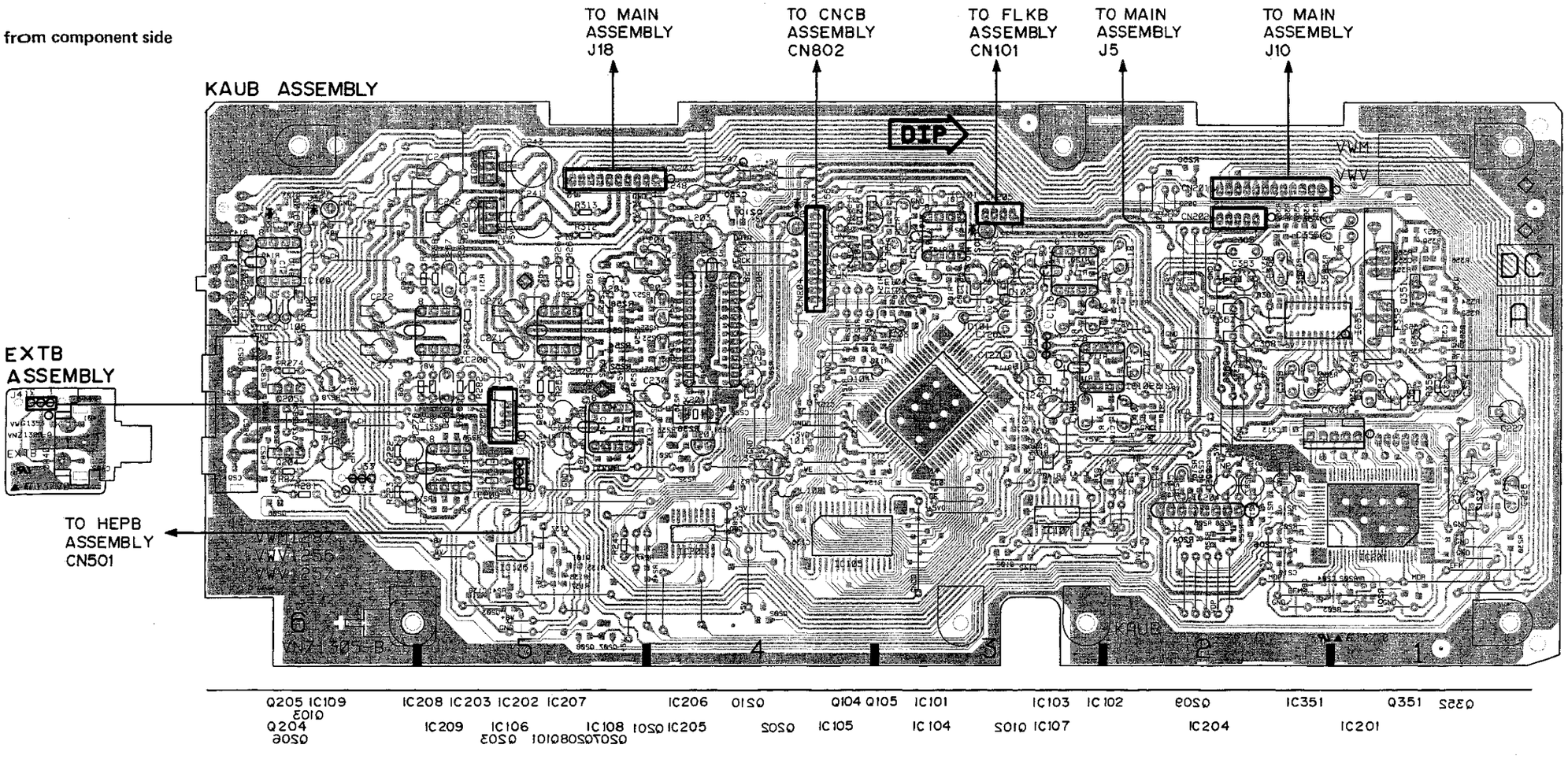
Pin No.	Voltage	Pin No.	Voltage
1	−5	13	*
2	*	14	− 0.6
3	*	15	− 0.6
4	*	16	0
5	*	17	0
6	*	18	+5
7	0	19	*
8	0	20	*
9	0	21	*
10	+5	22	*
11	+2	23	*
12	*	24	−2.2

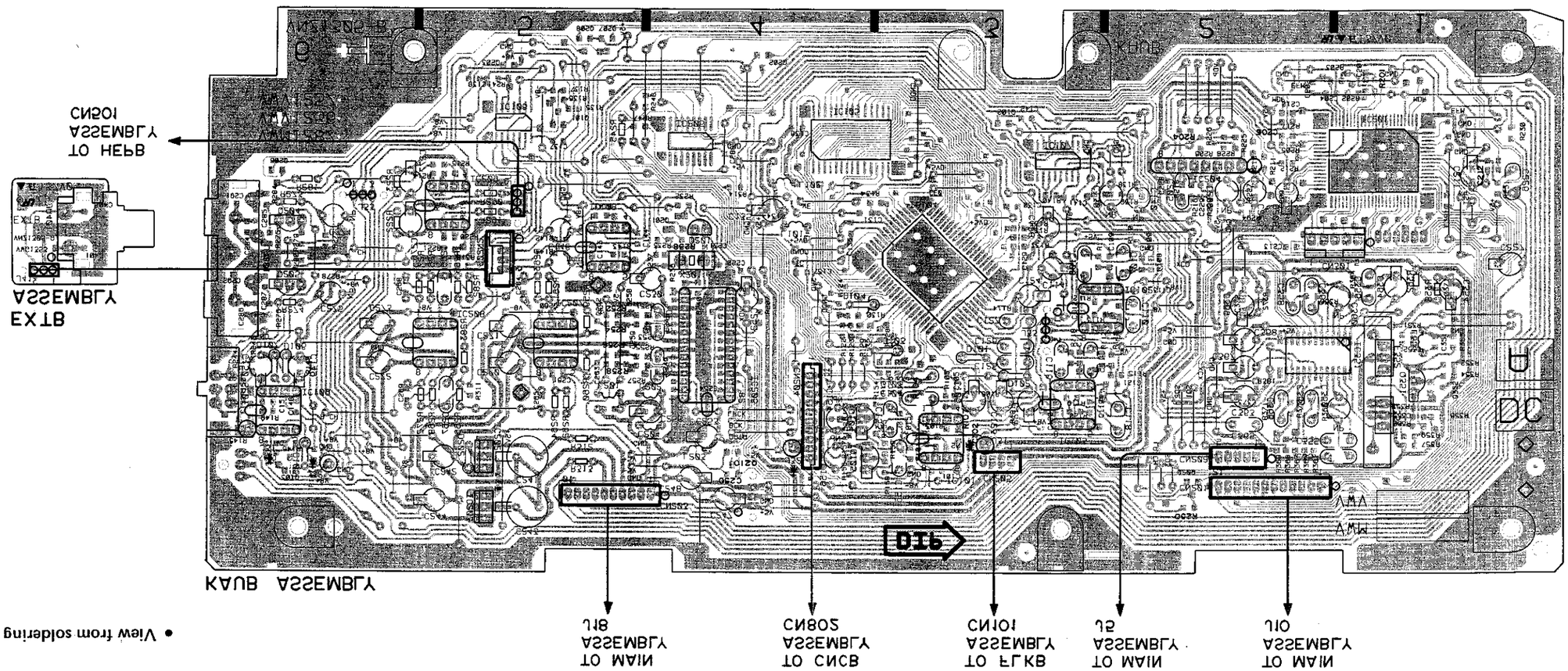
* : Refer to waveform

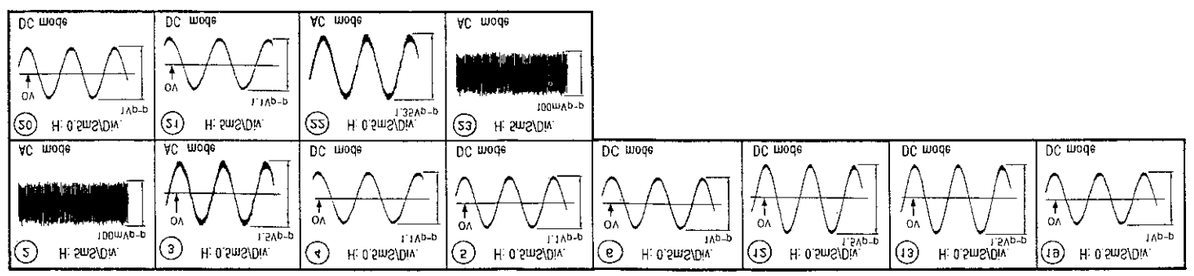
Note: (No.) in the table correspond to the pin number.
IC351 (CA0002AM)



• View from component side







Note: (No.) in the table correspond to the pin number.

IC351 (CXA5000AM)

Pin No.	Voltage	Pin No.	Voltage
1	−2	31	*
2	*	32	−0.6
3	*	33	−0.6
4	*	34	0
5	*	35	0
6	*	36	+2
7	0	37	*
8	0	38	*
9	0	39	*
10	+2	40	*
11	+2	41	*
12	*	42	−2.2

* : Refer to waveform

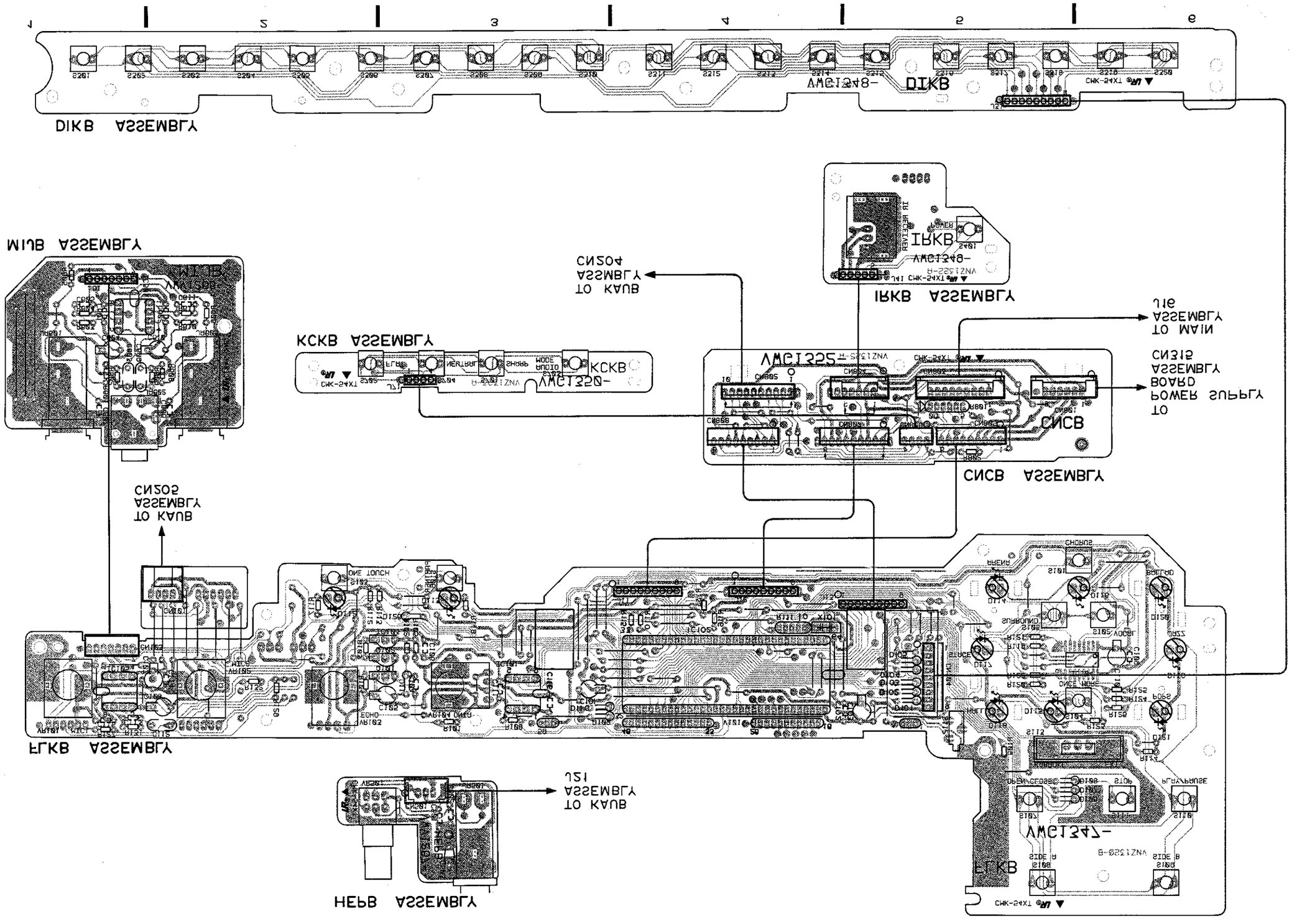
Note: Waveforms and voltages are at the PLAY mode.

IC351 (CXA5000AM)

• View from soldering side

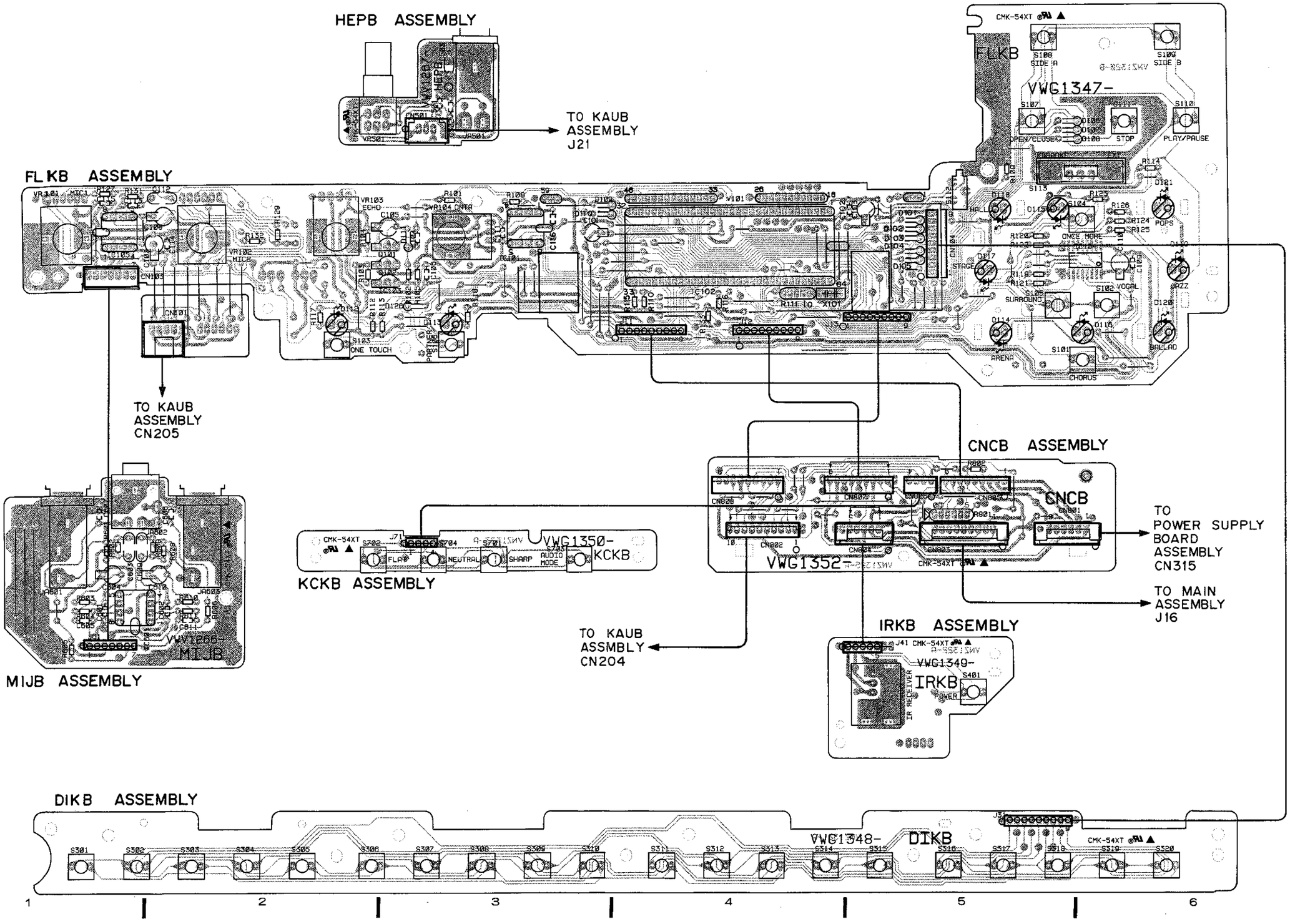
(a) FLKB, DIKB, IRKB, KCKB, CNCB, MLB AND HEPB ASSEMBLIES

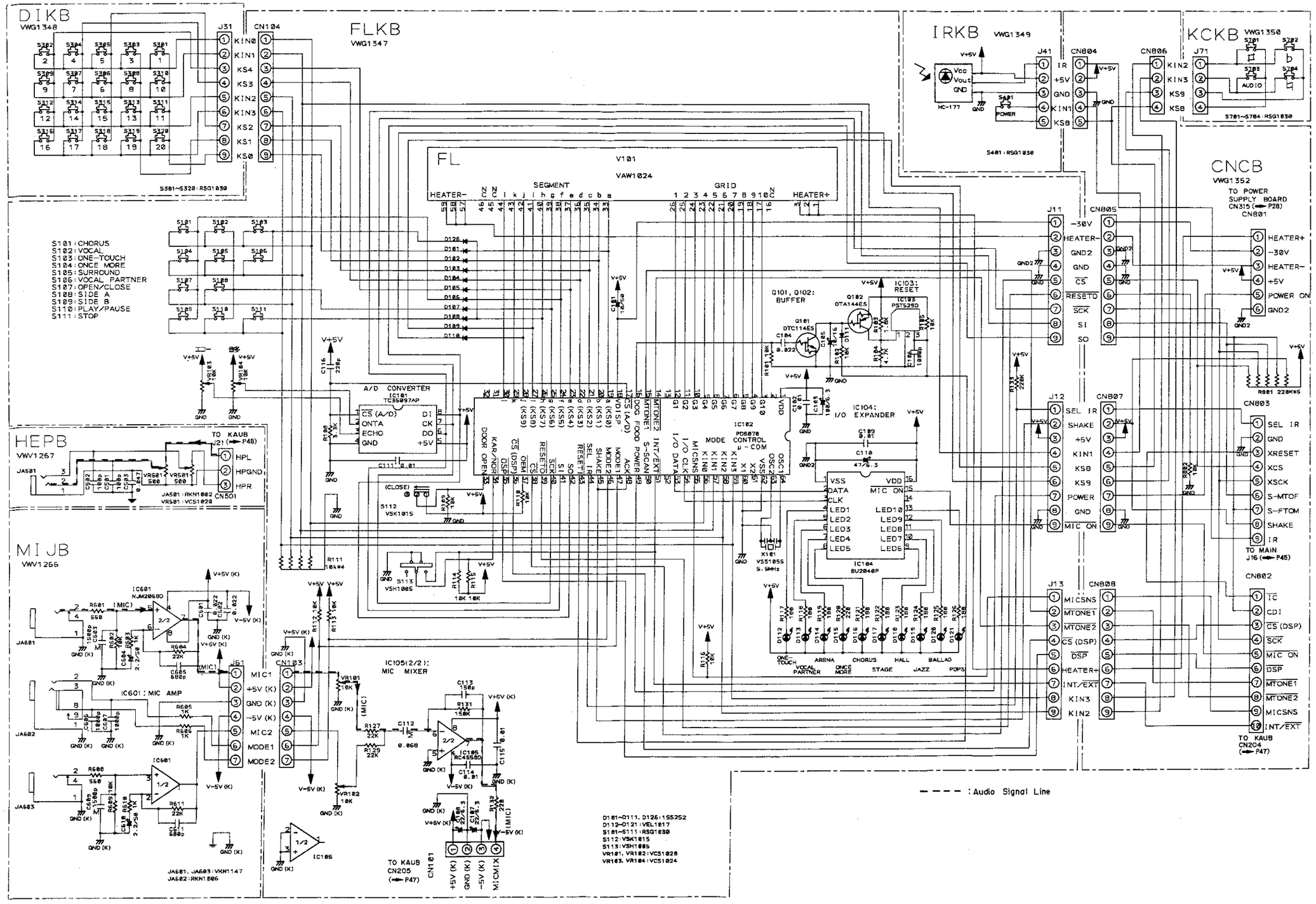
• View from soldering side



(9) FLKB, DIKB, IRKB, KCKB, CNCB, MIJB AND HEPB ASSEMBLIES

• View from component side




DIKB
VWG1348
J31
CN104
KIN0
KIN1
KS4
KS3
KIN2
KIN3
KS2
KS1
KS0
S301~S320:RSG1030
FLKB
VWG1347
FL
V101
VAW1024
SEGMENT
GRID
HEATER-
HEATER+
S101:CHORUS
S102:VOCAL
S103:ONE-TOUCH
S104:ONCE MORE
S105:SURROUND
S106:VOCAL PARTNER
S107:OPEN/CLOSE
S108:SIDE A
S109:SIDE B
S110:PLAY/PAUSE
S111:STOP
A/D CONVERTER
IC101
TC35097AP
IC102
PD5878
MODE CONTROL
μ-COM
I/O EXPANDER
IC104:
I/O EXPANDER
IC103:
RESET
PST529D
Q101, Q102:
BUFFER
Q102
DTA144ES
Q101
DTC114ES
X101
VSS1855
5.5MHz
IC104
BU2040F
IRKB
VWG1349
J41
CN804
CN806
HC-177
S401:RSG1030
KCKB
VWG1350
J71
AUDIO
S781~S784:RSG1030
CNCB
VWG1352
TO POWER
SUPPLY BOARD
CN315 (→P28)
CN801
J11
CN805
-30V
HEATER-
GND2
GND
CS
RESET0
SCK
SI
SO
HEATER+
-30V
HEATER-
+5V
POWER ON
GND2
J12
CN807
SEL IR
SHAKE
+5V
KIN1
KS8
KS9
POWER
GND
MIC ON
CN803
SEL IR
GND
XRESET
XCS
XSCK
S-MTOF
S-FTOM
SHAKE
IR
TO MAIN
J16 (→P45)
J13
CN808
MICSNS
MTONE1
MTONE2
CS (DSP)
DSP
HEATER+
INT/EXT
KIN3
KIN2
CN802
IC
CDI
CS (DSP)
SCK
MIC ON
DSP
MTONE1
MTONE2
MICSNS
INT/EXT
TO KAUB
CN204
(→P47)
HEPB
VWV1257
TO KAUB
J21 (→P48)
HPL
HPGND
HPR
JA501:RKN1002 CN501
VR501:VCS1028
MIJB
VWV1266
IC601
NJM2068D
IC601:MIC AMP
IC105(2/2):
MIC MIXER
IC105
RC4558D
IC105(1/2)
MIC1
+5V (K)
GND (K)
-5V (K)
MIC2
MODE1
MODE2
JA601
JA602
JA603
JA601, JA603:VKN1147
JA602:RKN1006
CN103
CN101
TO KAUB
CN205
(→P47)
MICMIX
D101~D111, D126:1SS252
D112~D121:VEL1017
S101~S111:RSG1030
S112:VSK1015
S113:VSH1085
VR101, VR182:VCS1028
VR183, VR184:VCS1024
ONE-TOUCH
VOCAL PARTNER
ARENA
ONCE MORE
CHORUS
STAGE
HALL
JAZZ
BALLAD
POPS
: Audio Signal Line

5. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- 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 × 10^1 → 561 ····· RD1/4PS 5 6 1 J
47k Ω → 47 × 10^3 → 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 × 10^1 → 5621 ····· RN1/4SR 5 6 2 1 F

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
⊙		VSOP ASSEMBLY	VWM1286
NSP		├MAIN ASSEMBLY	VWX1129
NSP		├FG BOARD ASSEMBLY	VWG1286
NSP		└SW BOARD ASSEMBLY	VWG1287
⊙		KRAB ASSEMBLY	VWM1287
NSP		└KAUB ASSEMBLY	VWV1257
NSP		└EXTB ASSEMBLY	VWG1353
⊙		FRPB ASSEMBLY	VWM1288
NSP		├FLKB ASSEMBLY	VWG1347
NSP		├DIKB ASSEMBLY	VWG1348
NSP		├IRKB ASSEMBLY	VWG1349
NSP		├KCKB ASSEMBLY	VWG1350
NSP		├CNCB ASSEMBLY	VWG1352
NSP		├MIJB ASSEMBLY	VWV1266
NSP		└HEPB ASSEMBLY	VWV1267
⊙		POWER SUPPLY BOARD ASSEMBLY	VWR1132
NSP		CNNB ASSEMBLY	VWG1194
NSP		HEAD ASSEMBLY	VWV1178
MAIN ASSEMBLY			
SEMICONDUCTORS			
	IC101	MECHANISM CONT. MCU	PD0137A
	IC401	VIDEO IC	PA5013A
	IC402	CDD DELAY LINE	PM0001
	IC403	IC	CXL1009P
	IC404		PA0017
	IC405	CHARACTER GENE IC	PD0093A
	IC601	TBC IC	PM3002
	IC602, 603	OP-AMP IC	NJM4558S
	IC604	LOGIC IC	TC7WU04F-TL
	IC801	PRE AMP IC	CXA1081S
	IC802	IC	BA15218N
	IC803	FTS IC	PM3003A
	IC804	POWER OP AMP	LA6510L
	Q101, 102		DTC124EK
	Q201, 202	TRANSISTOR	2SC1740S
	Q203	CHIP TRANSISTOR	2SA1037K
	Q312	TRANSISTOR	2SB1237X
	Q313		DTC124EK
	Q314	CHIP TRANSISTOR	2SA1037K
	Q315	TRANSISTOR	2SD1858X
	Q316	DIGITAL TRANSISTOR	DTA124EK
	Q317	CHIP TRANSISTOR	2SC2412K
	Q401	TRANSISTOR	2SB1237X
	Q402	TRANSISTOR	2SD1858X
	Q403	DIGITAL TRANSISTOR	DTA124EK
	Q431	TRANSISTOR	2SC1740S
	Q432	CHIP TRANSISTOR	2SC2412K
	Q456	CHIP TRANSISTOR	2SC2412K
	Q457	CHIP TRANSISTOR	2SA1037K
	Q496	CHIP TRANSISTOR	2SA1037K
	Q497-500	CHIP TRANSISTOR	2SC2412K
	Q511	CHIP TRANSISTOR	2SA1037K
	Q560	CHIP TRANSISTOR	2SC2412K
	Q561	DIGITAL TRANSISTOR	DTA124EK
	Q570	CHIP TRANSISTOR	2SC2412K
	Q601		FMW2-TR
	Q602	TRANSISTOR	2SC1740S
	Q603	TRANSISTOR	2SA933S
	Q604	TRANSISTOR	2SC1740S
	Q605	TRANSISTOR	2SA933S
	Q606		DTC124EK
	Q607	CHIP TRANSISTOR	2SC2412K
	Q608		DTC124EK
	Q609	CHIP TRANSISTOR	2SA1037K
	Q610	CHIP TRANSISTOR	2SC2412K
	Q612	CHIP TRANSISTOR	2SC2412K
	Q613	DIGITAL TRANSISTOR	DTA124EK
	Q614	CHIP TRANSISTOR	2SC2412K
	Q616	CHIP TRANSISTOR	2SC2412K
	Q802-805	CHIP TRANSISTOR	2SC2412K
	Q806	CHIP TRANSISTOR	2SA1037K
	Q807	CHIP TRANSISTOR	2SC2412K
	Q808	CHIP TRANSISTOR	2SA1037K
	Q809, 810	CHIP TRANSISTOR	2SC2412K
	Q811		DTC124EK

Mark	No.	Description	Part No.
	Q812	CHIP TRANSISTOR	2SA1037K
	Q814	CHIP TRANSISTOR	2SC2412K
	Q815	TRANSISTOR	2SD1762-F8
	Q816	TRANSISTOR	2SB1185-F8
	Q817	TRANSISTOR	2SD1762-F8
	Q818	TRANSISTOR	2SB1185-F8
	Q819	CHIP TRANSISTOR	2SA1037K
	Q820	DIGITAL TRANSISTOR	DTA124EK
	Q821	N-FET	2SK184
	Q822	TRANSISTOR	2SD1858X
	Q823		DTC124EK
	Q824	DIGITAL TRANSISTOR	DTA124EK
	Q825	CHIP TRANSISTOR	2SC2412K
	Q826	DIGITAL TRANSISTOR	DTA124EK
	Q827, 828		DTC124EK
	Q829, 830	DIGITAL TRANSISTOR	DTA124EK
	Q832	CHIP TRANSISTOR	2SA1037K
	Q833	CHIP TRANSISTOR	2SC2412K
	Q835		DTC124EK
	Q836	CHIP TRANSISTOR	2SA1037K
	Q837		DTC124EK
	Q838	CHIP TRANSISTOR	2SC2412K
	Q901	CHIP TRANSISTOR	2SA1037K
	Q903	DIGITAL TRANSISTOR	DTA124EK
	Q904	TRANSISTOR	2SC1740S
	D101, 102	DIODE	1SS254
	D301, 302	DIODE	1SS252
	D601-604	DIODE	1SS254
	D607-611	DIODE	1SS254
	D801	DIODE	1SS254
	D804-808	DIODE	1SS254
	D830-832	DIODE	1SS254
	D833	ZENER DIODE	04AZ6.2-Y
	D834	ZENER DIODE	04AZ10-Y
COILS/TRANSFORMERS			
	L411	AXIAL INDUCTOR	LAU330J
	L412, 413	AXIAL INDUCTOR	LAU220J
	L414, 415	AXIAL INDUCTOR	LAU120J
	L416	AXIAL INDUCTOR	LAU430J
	L431	AXIAL INDUCTOR	LAU430J
	L432	AXIAL INDUCTOR	LAU620J
	L433	AXIAL INDUCTOR	LAU390J
	L441	AXIAL INDUCTOR	LAU270J
	L456	RADIAL INDUCTOR	LFA471J
	L457, 458	RADIAL INDUCTOR	LFA221J
	L496	AXIAL INDUCTOR	LAU180J
	L497	AXIAL INDUCTOR	LAU181J
	L511	AXIAL INDUCTOR	LAU820J
	L521	AXIAL INDUCTOR	LAU120J
	L522	AXIAL INDUCTOR	LAU560J
	L523	AXIAL INDUCTOR	LAU220J
	L524	RADIAL INDUCTOR	LFA561K
	L541	AXIAL INDUCTOR	LAU120J
	L542	AXIAL INDUCTOR	LAU220J
	L601	AXIAL INDUCTOR	LAU101J
	L610	AXIAL INDUCTOR	LAU220J
	L620	AXIAL INDUCTOR	LAU121J
	L700	AXIAL INDUCTOR	LAU180J
	L801	AXIAL INDUCTOR	LAU151J
	L802	AXIAL INDUCTOR	LAU181J
	L803	AXIAL INDUCTOR	LAU151J
CAPACITORS			
	C101	ELECT. CAPACITOR	CEAS101M10
	C102	CERAMIC CAPACITOR	CKSQYF473Z25
	C103	CHIP CAPACITOR	CKSQYF103Z50
	C104, 105	CERAMIC CAPACITOR	CCCCH300J50
	C106	CHIP CAPACITOR	CKSQYF103Z50
	C110	CERAMIC CAPACITOR	CKSQYF104Z25
	C120, 121	CHIP CAPACITOR	CKSQYB102K50
	C122	CHIP CAPACITOR	CKSQYF103Z50
	C201	CHIP CAPACITOR	CKSQYF103Z50
	C202, 203	ELECT. CAPACITOR	CEAS101M10
	C204	CHIP CAPACITOR	CKSQYF103Z50
	C331	CHIP CAPACITOR	CKSQYB102K50
	C332	ELECT. CAPACITOR	CEAS471M6R3
	C333	CHIP CAPACITOR	CKSQYB102K50
	C334	ELECT. CAPACITOR	CEAS471M6R3
	C401	ELECTR. CAPACITOR	CEAL2R2M50
	C407, 408	CERAMIC CAPACITOR	CKSQYF473Z25
	C411	CHIP CAPACITOR	CCSQCH101J50
	C412	CHIP CAPACITOR	CCSQCH470J50
	C413	CHIP CAPACITOR	CCSQCH151J50
	C414	CHIP CERAMIC C.	CCSQCH221J50
	C415	CHIP CAPACITOR	CCSQCH270J50
	C416	CHIP CAPACITOR	CCSQCH390J50
	C417, 418	CHIP CAPACITOR	CCSQCH120J50
	C419, 420	CHIP CAPACITOR	CCSQCH470J50
	C423, 424	CHIP CERAMIC C.	CCSQCH200J50
	C425, 426	CHIP CAPACITOR	CKSQYF103Z50
	C427	CERAMIC CAPACITOR	CKSQYF104Z25
	C428	ELECT. CAPACITOR	CEAS470M10
	C429	CERAMIC CAPACITOR	CKSQYF104Z25
	C431	CERAMIC CAPACITOR	CKSQYF473Z25
	C433	CHIP CAPACITOR	CCSQCH390J50
	C434	ELECT. CAPACITOR	CEAS101M10
	C435	CERAMIC CAPACITOR	CKSQYF104Z25
	C436	ELECT. CAPACITOR	CEAS010M50
	C437	CHIP CAPACITOR	CCSQCH270J50
	C438	CHIP CAPACITOR	CCSQCH100D50
	C439	CHIP CAPACITOR	CCSQCH470J50
	C440	CHIP CAPACITOR	CCSQCH390J50
	C441	CHIP CAPACITOR	CCSQCH070D50
	C442	CERAMIC CAPACITOR	CKSQYF104Z25
	C443	ELECT. CAPACITOR	CEAS4R7M50
	C444	MYLAR FILM CAPACITOR	CQMA272J50
	C445	ELECT. CAPACITOR	CEAS101M10
	C446	AUDIO FILM CAPACITOR	CFTXA103J50
	C447	CHIP CAPACITOR	CCSQCH330J50
	C448, 449	CERAMIC CAPACITOR	CKSQYF473Z25
	C450	CHIP CAPACITOR	CCSQCH100D50
	C451	CHIP CAPACITOR	CCSQCH270J50
	C452	ELECT. CAPACITOR	CEAS470M10

Mark	No.	Description	Part No.
	C456	CHIP CAPACITOR	CCSQCH101J50
	C457	ELECT. CAPACITOR	CEAS101M10
	C458-460	CHIP CAPACITOR	CKSQYF103Z50
	C461	CHIP CAPACITOR	CCSQCH101J50
	C462	CHIP CAPACITOR	CCSQCH330J50
	C463	CHIP CERAMIC C.	CCSQCH271J50
	C464, 465	ELECT. CAPACITOR	CEAS470M10
	C466, 467	CERAMIC CAPACITOR	CKSQYF473Z25
	C471	ELECT. CAPACITOR	CEAS010M50
	C472	ELECT. CAPACITOR	CEAS3R3M50
	C473	CERAMIC CAPACITOR	CKSQYF473Z25
	C474	AUDIO FILM CAPACITOR	CFTXA224J50
	C475, 476	ELECT. CAPACITOR	CEAS3R3M50
	C477, 478	CERAMIC CAPACITOR	CKSQYF473Z25
	C479, 480	CERAMIC CAPACITOR	CKSQYF104Z25
	C483	CERAMIC CAPACITOR	CKSQYF473Z25
	C484	ELECT. CAPACITOR	CEAS470M25
	C485	CHIP CERAMIC C.	CCSQCH220J50
	C486	CHIP CAPACITOR	CKSQYF103Z50
	C487, 488	CERAMIC CAPACITOR	CKSQYF473Z25
	C489, 490	ELECT. CAPACITOR	CEAS101M10
	C496	CHIP CAPACITOR	CCSQCH390J50
	C497	CHIP CAPACITOR	CCSQCH100D50
	C498	CHIP CAPACITOR	CCSQCH820J50
	C499	ELECT. CAPACITOR	CEAS470M10
	C500	CHIP CAPACITOR	CCSQCH100D50
	C501, 502	ELECT. CAPACITOR	CEAS470M10
	C503-506	CERAMIC CAPACITOR	CKSQYF473Z25
	C509	CHIP CAPACITOR	CCSQCH151J50
	C510	CHIP CAPACITOR	CCSQCH270J50
	C511	CERAMIC CAPACITOR	CKSQYF104Z25
	C512	ELECT. CAPACITOR	CEAS470M10
	C513	CERAMIC CAPACITOR	CKSQYF104Z25
	C514	AUDIO FILM CAPACITOR	CFTXA104J50
	C515	AUDIO FILM CAPACITOR	CFTXA683J50
	C516	CHIP CERAMIC C.	CCSQCH220J50
	C517	AUDIO FILM CAPACITOR	CFTXA683J50
	C521	ELECT. CAPACITOR	CEAS470M10
	C522	ELECT. CAPACITOR	CEAS100M50
	C524	CHIP CAPACITOR	CCSQCH390J50
	C525	ELECT. CAPACITOR	CEAS470M10
	C526	CERAMIC CAPACITOR	CKSQYF104Z25
	C527	CERAMIC CAPACITOR	CKSQYF473Z25
	C528	CHIP CAPACITOR	CCSQCH151J50
	C529	CHIP CAPACITOR	CCSQCH910J50
	C530	ELECT. CAPACITOR	CEANP100M16
	C531	CERAMIC CAPACITOR	CKSQYF104Z25
	C533	ELECT. CAPACITOR	CEAS470M10
	C534	CERAMIC CAPACITOR	CKSQYF473Z25
	C535	CHIP CAPACITOR	CKSQYF103Z50
	C536	CHIP CAPACITOR	CCSQCH910J50
	C537	CAPACITOR(CERAMIC)	CKSYF105Z16
	C542	ELECT. CAPACITOR	CEAS221M6R3
	C543	CERAMIC CAPACITOR	CKSQYF104Z25
	C544	CERAMIC CAPACITOR	CKSQYF473Z25
	C545	CHIP CAPACITOR	CCSQCH680J50
	C546	CHIP CAPACITOR	CCSQCH470J50
	C549	CHIP CAPACITOR	CCSQCH101J50
	C550	ELECT. CAPACITOR	CEAS101M10
	C601	ELECT. CAPACITOR	CEAS221M6R3
	C602	CERAMIC CAPACITOR	CKSQYF473Z25
	C603	CHIP CAPACITOR	CCSQCH101J50
	C604	AUDIO FILM CAPACITOR	CFTXA224J50
	C605	MYLAR FILM CAPACITOR	CQMA102J50
	C606		CFTXA821J50
	C607	MYLAR FILM CAPACITOR	CQMA102J50
	C608	MYLAR FILM CAPACITOR	CQMA152J50
	C610	AUDIO FILM CAPACITOR	CFTXA563J50
	C611	MYLAR FILM CAPACITOR	CQMA272J50
	C612	ELECT. CAPACITOR	CEAS220M25
	C613	MYLAR FILM CAPACITOR	CQMA332J50
	C614	AUDIO FILM CAPACITOR	CFTXA103J50
	C615	AUDIO FILM CAPACITOR	CFTXA104J50
	C616	ELECT. CAPACITOR	CEANP2R2M50
	C617	AUDIO FILM CAPACITOR	CFTXA393J50
	C618	ELECT. CAPACITOR	CEANP220M10
	C619	MYLAR FILM CAPACITOR	CQMA332J50
	C620	MYLAR FILM CAPACITOR	CQMA222J50
	C621	ELECT. CAPACITOR	CEAS4R7M50
	C622	ELECT. CAPACITOR	CEAS470M10
	C623	CERAMIC CAPACITOR	CKSQYF473Z25
	C624, 625	CHIP CAPACITOR	CCSQCH180J50
	C626, 627	CHIP CERAMIC C.	CCSQCH150J50
	C628	CHIP CAPACITOR	CKSQYF103Z50
	C629	CHIP CAPACITOR	CCSQCH180J50
	C641, 642	ELECT. CAPACITOR	CEAS470M10
	C643-646	CHIP CAPACITOR	CKSQYF103Z50
	C650	AUDIO FILM CAPACITOR	CFTXA103J50
	C651-653	CHIP CAPACITOR	CKSQYF103Z50
	C654	CHIP CAPACITOR	CCSQCH820J50
	C655	CHIP CAPACITOR	CCSQCH180J50
	C656, 657	MYLAR FILM CAPACITOR	CQMA272J50
	C658	CHIP CAPACITOR	CCSQCH101J50
	C659	CHIP CAPACITOR	CCSQCH180J50
	C660	CHIP CAPACITOR	CCSQCH331J50
	C663	CERAMIC CAPACITOR	CKSQYF104Z25
	C670	ELECT. CAPACITOR	CEAS470M10
	C700	CHIP CAPACITOR	CCSQCH101J50
	C735	CHIP CAPACITOR	CCSQCH390J50
	C750	CHIP CAPACITOR	CCSQCH180J50
	C790	CHIP CAPACITOR	CCSQCH180J50
	C801-803	CHIP CAPACITOR	CKSQYF103Z50
	C804	CHIP CERAMIC C.	CCSQCH220J50
	C805	CERAMIC CAPACITOR	CKSQYF473Z25
	C806	CHIP CERAMIC C.	CCSQCH220J50
	C807	AUDIO FILM CAPACITOR	CFTXA124J50
	C808	ELECT. CAPACITOR	CEAS010M50
	C809	CHIP CAPACITOR	CCSQCH680J50
	C810, 811	CHIP CAPACITOR	CCSQCH101J50
	C812	CHIP CAPACITOR	CCSQCH270J50
	C813	CHIP CAPACITOR	CCSQCH680J50
	C814	ELECT. CAPACITOR	CEANP010M50

Mark	No.	Description	Part No.
	C815	CHIP CAPACITOR	CCSQCH270J50
	C816	ELECT. CAPACITOR	CEAS010M50
	C817	CHIP CAPACITOR	CCSQCH050C50
	C818	CHIP CAPACITOR	CCSQSL471J50
	C819	CHIP CAPACITOR	CCSQSL561J50
	C820	CERAMIC CAPACITOR	CKSQYF473Z25
	C822	CHIP CAPACITOR	CCSQCH101J50
	C823	ELECT. CAPACITOR	CEAS010M50
	C824	CHIP CAPACITOR	CKSQYF103Z50
	C825	AUDIO FILM CAPACITOR	CFTXA682J50
	C827	AUDIO FILM CAPACITOR	CFTXA333J50
	C828, 829	CHIP CAPACITOR	CKSQYF103Z50
	C832	AUDIO FILM CAPACITOR	CFTXA104J50
	C834	MYLAR FILM CAPACITOR	CQMA152J50
	C835, 836	ELECTR. CAPACITOR	CEAL220M35
	C837	CERAMIC CAPACITOR	CCCSL331J50
	C838	AUDIO FILM CAPACITOR	CFTXA104J50
	C839	MYLAR FILM CAPACITOR	CQMA102J50
	C840	ELECTR. CAPACITOR	CEAL010M50
	C841	ELECT. CAPACITOR	CEAS220M35
	C842	ELECT. CAPACITOR	CEANP100M16
	C843	AUDIO FILM CAPACITOR	CFTXA223J50
	C845	ELECT. CAPACITOR	CEANP010M50
	C847	AUDIO FILM CAPACITOR	CFTXA683J50
	C848	AUDIO FILM CAPACITOR	CFTXA473J50
	C849	AUDIO FILM CAPACITOR	CFTXA103J50
	C850	ELECT. CAPACITOR	CEANP2R2M50
	C851	CERAMIC CAPACITOR	CKSQYF104Z25
	C852	FILM CAPACITOR	CFTNA224J50
	C853	MYLAR FILM CAPACITOR	CQMA332J50
	C854	CERAMIC CAPACITOR	CKSQYB821K50
	C855	ELECT. CAPACITOR	CEAS100M50
	C857	ELECT. CAPACITOR	CEAS221M6R3
	C858	CERAMIC CAPACITOR	CKSQYF104Z25
	C859	ELECT. CAPACITOR	CEAS221M6R3
	C860	CERAMIC CAPACITOR	CKSQYF104Z25
	C861	CHIP CAPACITOR	CKSQYF103Z50
	C863	ELECT. CAPACITOR	CEANP100M16
	C864	ELECT. CAPACITOR	CEAS100M50
	C865	AUDIO FILM CAPACITOR	CFTXA103J50
	C866	ELECT. CAPACITOR	CEANPR47M50
	C867	AUDIO FILM CAPACITOR	CFTXA333J50
	C868	AUDIO FILM CAPACITOR	CFTXA683J50
	C869	AUDIO FILM CAPACITOR	CFTXA473J50
	C870	ELECT. CAPACITOR	CEANP470M10
	C871	CERAMIC CAPACITOR	CCCSL331J50
	C873	AUDIO FILM CAPACITOR	CFTXA103J50
	C874	AUDIO FILM CAPACITOR	CFTXA104J50
	C875	CERAMIC CAPACITOR	CKSQYB562K50
	C876, 877	ELECTR. CAPACITOR	CEAL220M35
	C878	CERAMIC CAPACITOR	CKSQYF104Z25
	C879	CERAMIC CAPACITOR	CKSQYB562K50
	C880	CERAMIC CAPACITOR	CKSQYF104Z25
	C881, 882	CHIP CAPACITOR	CKSQYF103Z50
	C883	AUDIO FILM CAPACITOR	CFTXA823J50
	C890, 891	CHIP CAPACITOR	CCSQCH470J50
	C893	CHIP CAPACITOR	CCSQCH470J50
	C895	CHIP CAPACITOR	CCSQCH100D50
	C896, 897	ELECT. CAPACITOR	CEAS470M10
	C898	MYLAR FILM CAPACITOR	CQMA472J50
	C899	MYLAR FILM CAPACITOR	CQMA272J50
	C900	FILM CAPACITOR	CFTNA224J50
	C901	AUDIO FILM CAPACITOR	CFTXA103J50
	C902	ELECT. CAPACITOR	CEAS100M50
	C908	CHIP CAPACITOR	CKSQYF103Z50
	C910	AUDIO FILM CAPACITOR	CFTXA473J50
	C920, 921	ELECT. CAPACITOR	CEAS220M25
	C930	ELECTR. CAPACITOR	CEAL220M35
	C935	(1F/5.5)	VCH1039

RESISTORS

	R101-123	CHIP RESISTOR	RS1/10S□□□J
	R124-126	CARBONFILM RESISTOR	RD1/6PM□□□J
	R127-129	CHIP RESISTOR	RS1/10S□□□J
	R130	CARBONFILM RESISTOR	RD1/6PM□□□J
	R150-153	CHIP RESISTOR	RS1/10S□□□J
	R201-203	CARBONFILM RESISTOR	RD1/6PM□□□J
	R204-206	CHIP RESISTOR	RS1/10S□□□J
	R207, 208	CARBONFILM RESISTOR	RD1/6PM□□□J
	R321-326	CHIP RESISTOR	RS1/10S□□□J
	R401, 402	CHIP RESISTOR	RS1/10S□□□J
	R403	CARBONFILM RESISTOR	RD1/6PM□□□J
	R411-413	CHIP RESISTOR	RS1/10S□□□J
	R415, 416	METALFILM RESISTOR	RN1/6PQ□□□□F
	R431	CARBONFILM RESISTOR	RD1/6PM□□□J
	R432	CHIP RESISTOR	RS1/10S□□□J
	R434	METALFILM RESISTOR	RN1/6PQ□□□□F
	R435-437	CHIP RESISTOR	RS1/10S□□□J
	R438	METALFILM RESISTOR	RN1/6PQ□□□□F
	R439-441	CHIP RESISTOR	RS1/10S□□□J
	R442	CARBONFILM RESISTOR	RD1/6PM□□□J
	R443, 444	CHIP RESISTOR	RS1/10S□□□J
	R456-459	CHIP RESISTOR	RS1/10S□□□J
	R471-476	CHIP RESISTOR	RS1/10S□□□J
	R496-504	CHIP RESISTOR	RS1/10S□□□J
	R506, 507	CHIP RESISTOR	RS1/10S□□□J
	R511	METALFILM RESISTOR	RN1/6PQ□□□□F
	R512-519	CHIP RESISTOR	RS1/10S□□□J
	R521-533	CHIP RESISTOR	RS1/10S□□□J
	R550	FUSE RESISTOR	DCN1002
	R551	CARBONFILM RESISTOR	RD1/6PM□□□J
	R560, 561	CHIP RESISTOR	RS1/10S□□□J
	R571-573	CHIP RESISTOR	RS1/10S□□□J
	R601, 602	CHIP RESISTOR	RS1/10S□□□J
	R603	CARBONFILM RESISTOR	RD1/6PM□□□J
	R604-612	CHIP RESISTOR	RS1/10S□□□J
	R614-617	CHIP RESISTOR	RS1/10S□□□J
	R618	CARBONFILM RESISTOR	RD1/6PM□□□J
	R619-623	CHIP RESISTOR	RS1/10S□□□J
	R625-628	CHIP RESISTOR	RS1/10S□□□J
	R629	CARBONFILM RESISTOR	RD1/6PM□□□J
	R630-644	CHIP RESISTOR	RS1/10S□□□J

Mark	No.	Description	Part No.
	R646	CHIP RESISTOR	RS1/10S□□□J
	R647	CARBONFILM RESISTOR	RD1/6PM□□□J
	R648, 649	CHIP RESISTOR	RS1/10S□□□J
	R650	CARBONFILM RESISTOR	RD1/6PM□□□J
	R652, 653	CHIP RESISTOR	RS1/10S□□□J
	R661, 662	CHIP RESISTOR	RS1/10S□□□J
	R665-678	CARBONFILM RESISTOR	RD1/6PM□□□J
	R680-683	METALFILM RESISTOR	RN1/6PQ□□□□F
	R684-689	CHIP RESISTOR	RS1/10S□□□J
	R691	CARBONFILM RESISTOR	RD1/6PM□□□J
	R692	CHIP RESISTOR	RS1/10S□□□J
	R700	CHIP RESISTOR	RS1/10S□□□J
	R701	CARBONFILM RESISTOR	RD1/6PM□□□J
	R702-708	CHIP RESISTOR	RS1/10S□□□J
	R709	CARBONFILM RESISTOR	RD1/6PM□□□J
	R712-714	CHIP RESISTOR	RS1/10S□□□J
	R721-723	CHIP RESISTOR	RS1/10S□□□J
	R750	CHIP RESISTOR	RS1/10S□□□J
	R790	CHIP RESISTOR	RS1/10S□□□J
	R802-829	CHIP RESISTOR	RS1/10S□□□J
	R832	CARBONFILM RESISTOR	RD1/6PM□□□J
	R833-840	CHIP RESISTOR	RS1/10S□□□J
	R841, 842	CARBONFILM RESISTOR	RD1/6PM□□□J
	R843-848	CHIP RESISTOR	RS1/10S□□□J
	R850	METAL OXIDE RESISTOR	RS1LMF□□□J
	R853, 854	CHIP RESISTOR	RS1/10S□□□J
	R856	CHIP RESISTOR	RS1/10S□□□J
	R858-860	CHIP RESISTOR	RS1/10S□□□J
	R862	METAL OXIDE RESISTOR	RS1LMF□□□J
	R865-870	CHIP RESISTOR	RS1/10S□□□J
	R872	CHIP RESISTOR	RS1/10S□□□J
	R873	CARBONFILM RESISTOR	RD1/6PM□□□J
	R875-897	CHIP RESISTOR	RS1/10S□□□J
	R899-909	CHIP RESISTOR	RS1/10S□□□J
	R910-913	CARBONFILM RESISTOR	RD1/6PM□□□J
	R914, 915	CHIP RESISTOR	RS1/10S□□□J
	R916, 917	CARBONFILM RESISTOR	RD1/6PM□□□J
	R918-922	CHIP RESISTOR	RS1/10S□□□J
	R923	CARBONFILM RESISTOR	RD1/6PM□□□J
	R925-932	CHIP RESISTOR	RS1/10S□□□J
	R934	CARBONFILM RESISTOR	RD1/6PM□□□J
	R935-938	CHIP RESISTOR	RS1/10S□□□J
	R940-947	CHIP RESISTOR	RS1/10S□□□J
	R948	CARBONFILM RESISTOR	RD1/6PM□□□J
	R949-951	CHIP RESISTOR	RS1/10S□□□J
	R955-957	CHIP RESISTOR	RS1/10S□□□J
	R959	CHIP RESISTOR	RS1/10S□□□J
	R961	CHIP RESISTOR	RS1/10S□□□J
	R962	CARBONFILM RESISTOR	RD1/6PM□□□J
	R964	CHIP RESISTOR	RS1/10S□□□J
	R966-969	CHIP RESISTOR	RS1/10S□□□J
	R975-983	CHIP RESISTOR	RS1/10S□□□J
	R985	CARBONFILM RESISTOR	RD1/6PM□□□J
	R986-991	CHIP RESISTOR	RS1/10S□□□J
	VR441	SEMI-FIXED RESISTOR	VRTB6VS103
	VR481, 482	VR	VRTB6VS472
	VR521	VR	VRTG6VS472
	VR601	VR	VRTB6VS102
	VR602, 603	SEMI-FIXED RESISTOR	VRTB6VS103
	VR604	VR	VRTB6VS472
	VR605, 606	VR	VRTB6VS222
	VR607	VR	VRTB6VS223
	VR608	VARIABLE RESISTOR	VRTB6VS333
	VR609	VR	VRTB6VS472
	VR610	SEMI-FIXED RESISTOR	VRTB6VS103
OTHERS			
	CN103		VKN1137
	JA1	2P PINJACK	VKB1042
	JA2	JACK	VKN-183
	VC901	VARIABLE CAPACITOR	VCM-008
	X101	CERAMIC RESONATOR	VSS1040
	X601	CRYSTAL RESONATOR	VSS1026

FG BOARD ASSEMBLY

OTHERS

	D		GP1S51

SW BOARD ASSEMBLY

SWITCHES

	S1-3	PUSH SWITCH	DSG1015

KAUB ASSEMBLY

SEMICONDUCTORS

	IC101-103	OP-AMP IC	RC4558D
	IC104		YSS205
	IC105	PSEUDO-SRAM(32KX8)	LH5P832N-12
	IC106		BU4066BF
	IC107	LOGIC IC	BU4053BF
	IC108, 109	OP-AMP IC	RC4558D
	IC201	EFM DEMODULATION IC	CXD2500AQ
	IC202	REGULATOR IC	NJM78M08FA
	IC203	REGULATOR IC	NJM79M08FA
	IC204	IC	BA15218N
	IC205	DATA SELECTOR	TC74HC157AF
	IC206	D/A CONVERTER IC	PD2026A
	IC207-209	OP-AMP, IC	M5218AP
	IC351		CA0002AM
	Q101	DIGITAL TRANSISTOR	DTA124EK
	Q102, 103		DTC124EK
	Q104, 105	TRANSISTOR	2SD2144S
	Q201	CHIP TRANSISTOR	2SC2412K
	Q202, 203	DIGITAL TRANSISTOR	DTA124EK
	Q204, 205	TRANSISTOR	2SD2144S
	Q206		DTC124EK
	Q207	DIGITAL TRANSISTOR	DTA124EK
	Q208-210		DTC124EK
	Q351	TRANSISTOR	2SC2786
	Q352	CHIP TRANSISTOR	2SC2412K
	D101, 102	DIODE	1SS254
	D103, 104	ZENER DIODE	MTZJ5.6B
	D105	ZINER DIODE	MTZJ5.1A

LD-2710K

Mark	No.	Description	Part No.
	D106, 107	DIODE	1SS254
	D201	VARI-CAP	FC54M
	D202	DIODE	1SS254
SWITCHES			
	S201	SLIDE SWITCH	VSH1007
COILS/TRANSFORMERS			
	L101, 102	AXIAL INDUCTOR	LAU100K
	L201, 202	AXIAL INDUCTOR	LAU010K
	L203	AXIAL INDUCTOR	LAU220K
	L204	AXIAL INDUCTOR	LAU101K
	L351	AXIAL INDUCTOR	LAU100K
	F351		VTF1048
	F352		VTF1049
CAPACITORS			
	C101, 102	CHIP CAPACITOR	CKSQYF103Z50
	C103	MYLAR FILM CAPACITOR	CQMA472J50
	C104	MYLAR FILM CAPACITOR	CQMA223J50
	C105	CHIP CAPACITOR	CCSQCH181J50
	C106	ELECT. CAPACITOR	CEAS4R7M50
	C107	MYLAR FILM CAPACITOR	CQMA392J50
	C108	MYLAR FILM CAPACITOR	CQMA822J50
	C109	CHIP CAPACITOR	CCSQSL331J50
	C110	MYLAR FILM CAPACITOR	CQMA103J50
	C111	CHIP CAPACITOR	CCSQCH151J50
	C112, 113	CHIP CAPACITOR	CKSQYF103Z50
	C114	ELECT. CAPACITOR	CEAS4R7M50
	C115	MYLAR FILM CAPACITOR	CQMA392J50
	C116	MYLAR FILM CAPACITOR	CQMA822J50
	C117	CHIP CAPACITOR	CCSQSL331J50
	C118	MYLAR FILM CAPACITOR	CQMA103J50
	C119	CHIP CAPACITOR	CCSQCH151J50
	C120, 121	CHIP CAPACITOR	CKSQYF103Z50
	C122	ELECT. CAPACITOR	CEAS4R7M50
	C123, 124	ELECT. CAPACITOR	CEAS101M10
	C125-127	MYLAR FILM CAPACITOR	CQMA332J50
	C128	ELECT. CAPACITOR	CEAS101M10
	C129, 130	CERAMIC CAPACITOR	CKSQYF104Z25
	C131	CHIP CAPACITOR	CKSQYF103Z50
	C132-134	CERAMIC CAPACITOR	CKSQYF104Z25
	C135	ELECT. CAPACITOR	CEAS101M10
	C136	CERAMIC CAPACITOR	CKSQYF104Z25
	C137, 138	CHIP CAPACITOR	CKSQYF103Z50
	C139, 140	ELECT. CAPACITOR	CEANP100M16
	C141-144	CHIP CAPACITOR	CKSQYF103Z50
	C145, 146	ELECT. CAPACITOR	CEANP010M50
	C147, 148	CHIP CAPACITOR	CKSQYF103Z50
	C149, 150	ELECT. CAPACITOR	CEAS100M50
	C151	CHIP CAPACITOR	CCSQCH121J50
	C152	CERAMIC CAPACITOR	CKSQYB822K50
	C153	AUDIO FILM CAPACITOR	CFTXA104J50
	C154	ELECT. CAPACITOR	CEANP100M16
	C155	MYLAR FILM CAPACITOR	CQMA472J50
	C156	ELECT. CAPACITOR	CEANP100M16
	C157	CHIP CAPACITOR	CKSQYF103Z50

Mark	No.	Description	Part No.
	C201	CERAMIC CAPACITOR	CKSQYF473Z25
	C202	CERAMIC CAPACITOR	CKSQYB152K50
	C204	CERAMIC CAPACITOR	CKSQYF104Z25
	C205	FILM CAPACITOR	CFTNA474J50
	C206	CHIP CAPACITOR	CKSQYF103Z50
	C208	ELECT. CAPACITOR	CEAS470M10
	C209	CERAMIC CAPACITOR	CKSQYF104Z25
	C210	CERAMIC CAPACITOR	CKSQYF473Z25
	C211	ELECT. CAPACITOR	CEAS470M10
	C212	CERAMIC CAPACITOR	CKSQYF104Z25
	C213	CHIP CAPACITOR	CKSQYF103Z50
	C220	CHIP CERAMIC C.	CCSQCH220J50
	C225	ELECT. CAPACITOR	CEANP010M50
	C226	MYLAR FILM CAPACITOR	CQMA223J50
	C227	ELECT. CAPACITOR	CEAS100M50
	C228, 229	CERAMIC CAPACITOR	CKSQYF104Z25
	C230	ELECT. CAPACITOR	CEAS470M10
	C231	CHIP CAPACITOR	CKSQYF103Z50
	C232	CHIP CAPACITOR	CCSQCH120J50
	C234	CHIP CAPACITOR	CKSQYF103Z50
	C241	ELECT. CAPACITOR	CEAS221M25
	C242	ELECT. CAPACITOR	CEAS470M10
	C243	ELECT. CAPACITOR	CEAS221M25
	C244	ELECT. CAPACITOR	CEAS470M10
	C245, 246	CHIP CAPACITOR	CKSQYF103Z50
	C247, 248	ELECT. CAPACITOR	CEAS470M10
	C250	CHIP CAPACITOR	CKSQYF103Z50
	C252	AUDIO FILM CAPACITOR	CFTXA104J50
	C253	ELECT. CAPACITOR	CEAS470M10
	C254	CERAMIC CAPACITOR	CKSQYF104Z25
	C255	AUDIO FILM CAPACITOR	CFTXA104J50
	C256	ELECT. CAPACITOR	CEAS471M6R3
	C257	AUDIO FILM CAPACITOR	CFTXA104J50
	C258-263	CHIP CAPACITOR	CCSQCH390J50
	C264, 265	CHIP CERAMIC C.	CCSQCH221J50
	C266, 267	MYLAR FILM CAPACITOR	CQMA102J50
	C268, 269	CHIP CAPACITOR	CCSQCH151J50
	C270-273	ELECT. CAPACITOR	CEAS470M10
	C274, 275	ELECT. CAPACITOR	CEANP220M10
	C276, 277	ELECT. CAPACITOR	CEAS470M10
	C284-287	CHIP CAPACITOR	CCSQSL331J50
	C288	CHIP CAPACITOR	CKSQYF103Z50
	C291, 292	CERAMIC CAPACITOR	CKSQYF104Z25
	C299	ELECT. CAPACITOR	CEANP3R3M50
	C351	CHIP CAPACITOR	CCSQSL391J50
	C352, 353	CHIP CAPACITOR	CKSQYF103Z50
	C354	ELECT. CAPACITOR	CEAS470M10
	C355-358	MYLAR FILM CAPACITOR	CQMA472J50
	C359, 360	FILM CAPACITOR	CFTNA224J50
	C361, 362	MYLAR FILM CAPACITOR	CQMA393J50
	C363	ELECT. CAPACITOR	CEAS470M10
	C364	ELECT. CAPACITOR	CEAS101M10
	C365, 366	AUDIO FILM CAPACITOR	CFTXA104J50
	C367	ELECT. CAPACITOR	CEAS100M50
	C368	ELECT. CAPACITOR	CEASR47M50
	C369	ELECT. CAPACITOR	CEAS470M10

Mark	No.	Description	Part No.
	C371-373	CERAMIC CAPACITOR	CKSQYF104Z25
	C391	CHIP CAPACITOR	CKSQYB102K50
RESISTORS			
	R101-159	CHIP RESISTOR	RS1/10S□□□J
	R201-207	CHIP RESISTOR	RS1/10S□□□J
	R210-221	CHIP RESISTOR	RS1/10S□□□J
	R222, 223	CARBONFILM RESISTOR	RD1/6PM□□□J
	R225-233	CHIP RESISTOR	RS1/10S□□□J
	R236-238	CHIP RESISTOR	RS1/10S□□□J
	R240, 241	CHIP RESISTOR	RS1/10S□□□J
	R243, 244	CHIP RESISTOR	RS1/10S□□□J
	R245	CARBONFILM RESISTOR	RD1/6PM□□□J
	R246, 247	CHIP RESISTOR	RS1/10S□□□J
	R250-258	CHIP RESISTOR	RS1/10S□□□J
	R259-268	CARBONFILM RESISTOR	RD1/6PM□□□J
	R271-274	CARBONFILM RESISTOR	RD1/6PM□□□J
	R275-280	CHIP RESISTOR	RS1/10S□□□J
	R281-283	CARBONFILM RESISTOR	RD1/6PM□□□J
	R284, 285	CHIP RESISTOR	RS1/10S□□□J
	R290, 291	CARBONFILM RESISTOR	RD1/6PM□□□J
	R294	CHIP RESISTOR	RS1/10S□□□J
	R310, 311	CHIP RESISTOR	RS1/10S□□□J
	R312, 313	FUSE RESISTOR	DCN1002
	R314	CHIP RESISTOR	RS1/10S□□□J
	R351-357	CHIP RESISTOR	RS1/10S□□□J
	R358	CARBONFILM RESISTOR	RD1/6PM□□□J
	R359-361	CHIP RESISTOR	RS1/10S□□□J
	R362	CARBONFILM RESISTOR	RD1/6PM□□□J
	R363-371	CHIP RESISTOR	RS1/10S□□□J
OTHERS			
	CN301		B5P-SHF-1AA
	JA201	JACK	VKB1043
	X201	CRYSTAL RESONATOR	VSS1057

EXTB ASSEMBLY

Mark	No.	Description	Part No.
CAPACITORS			
	C401, 402	CHIP CAPACITOR	CCSQSL331J50
OTHERS			
	JA401	JACK	VKB1022

FLKB ASSEMBLY

Mark	No.	Description	Part No.
SEMICONDUCTORS			
	IC101	IC	TC35097AP
	IC102	MODE CONTROL MCU	PDB070A
	IC103	RESET IC	PST529D
	IC104	I/O EXPANDER IC	BU2040F
	IC105	OP-AMP IC	RC4558D
	Q101	TRANSISTOR	DTC114ES
	Q102	TRANSISTOR	DTA144ES
	D101-111	DIODE	1SS252
	D112-121	LED	VEL1017
	D126	DIODE	1SS252
SWITCHES			
	S101-111	SWITCH	RSG1030
	S112	DOOR SWITCH	VSK1015
	S113	SLIDE SWITCH	VSH1005
CAPACITORS			
	C101	ELECT. CAPACITOR	CEJA100M50
	C102	CERAMIC CAPACITOR	CKPUYY103N16
	C103	ELECT. CAPACITOR	CEJA101M6R3
	C104	CERAMIC CAPACITOR	CKPUYF223Z25
	C105	ELECT. CAPACITOR	CEJA100M16
	C106	CERAMIC CAPACITOR	CKPUYB102K50
	C107, 108	ELECT. CAPACITOR	CEJA220M6R3
	C109	CERAMIC CAPACITOR	CKPUYY103N16
	C110	ELECT. CAPACITOR	CEJA470M6R3
	C111	CERAMIC CAPACITOR	CKPUYY103N16
	C112	FILM CAPACITOR	CFTNA683J50
	C113	CERAMIC CAPACITOR	CKPUYB151K50
	C114, 115	CERAMIC CAPACITOR	CKPUYY103N16
	C116	AXIAL CAPACITOR	CKPUYB221K50
RESISTORS			
	R101-105	CARBONFILM RESISTOR	RD1/6PM□□□J
	R108-110	CARBONFILM RESISTOR	RD1/6PM□□□J
	R111	RESISTOR ARRAY	RA4T□□□J
	R112-127	CARBONFILM RESISTOR	RD1/6PM□□□J
	R129	CARBONFILM RESISTOR	RD1/6PM□□□J
	R131-133	CARBONFILM RESISTOR	RD1/6PM□□□J
	VR101, 102	ROTARY VR	VCS1028
	VR103, 104	ROTARY VR	VCS1024
OTHERS			
	FL	SPACER	VEB1159
	CN103		BTMK07S-1S
	CN104		BTMK09S-1S
	V101	FL TUBE	VAW1024
	X101	CERAMIC RESONATOR	VSS1055

DIKB ASSEMBLY

Mark	No.	Description	Part No.
SWITCHES			
	S301-320	SWITCH	RSG1030

IRKB ASSEMBLY

Mark	No.	Description	Part No.
SWITCHES			
	S401	SWITCH	RSG1030
OTHERS			
		REMOTE SENSOR	HC-177

KCKB ASSEMBLY

Mark	No.	Description	Part No.
SWITCHES			
	S701-704	SWITCH	RSG1030

CNCB ASSEMBLY

Mark	No.	Description	Part No.
RESISTORS			
	R801	RESISTOR ARRAY	RA5T□□□J
	R802	CARBONFILM RESISTOR	RD1/6PM□□□J

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Mark	No.	Description	Part No.

MIJB ASSEMBLY

SEMICONDUCTORS

	IC601	NJM2068D

CAPACITORS

	C601, 602 CERAMIC CAPACITOR	CKPUYF223Z25
	C603 MYLAR FILM CAPACITOR	CQMA152J50
	C604 ELECT. CAPACITOR	CEJA2R2M50
	C605 AXIAL CAPACITOR	CKPUYB681K50
	C606, 607 CERAMIC CAPACITOR	CKPUYB102K50
	C609 MYLAR FILM CAPACITOR	CQMA152J50
	C610 ELECT. CAPACITOR	CEJA2R2M50
	C611 AXIAL CAPACITOR	CKPUYB681K50

RESISTORS

	R601-606 CARBONFILM RESISTOR	RD1/6PM□□□J
	R608-611 CARBONFILM RESISTOR	RD1/6PM□□□J

OTHERS

		VNE1102
	JA601 MIC JACK	VKN1147
	JA602 HEADPHONE JACK	RKN1006
	JA603 MIC JACK	VKN1147

HEPB ASSEMBLY

CAPACITORS

	C501, 502 AXIAL CAPACITOR	CKPUYB101K50
	C503 CERAMIC CAPACITOR	CGCYX473K25

RESISTORS

	VR501 ROTARY VR	VCS1020

OTHERS

	SNAP PLATE	VNE1102
	JA501 JACK	RKN1002

POWER SUPPLY BOARD ASSEMBLY

SEMICONDUCTORS

	IC202	TH5P4-FU
	IC211, 212 IC PROTECTOR	ICP-N20
	IC213, 214 IC PROTECTOR	ICP-N50
	IC215 IC PROTECTOR	ICP-N38
	Q201 TRANSISTOR	2SB1331
	Q202 TRANSISTOR	2SC1740S
	Q205, 206 TRANSISTOR	2SA933S
	Q207 TRANSISTOR	2SD1762
	D201, 202 DIODE	S3LA20
	D203 DIODE	S3S4M
	D204 DIODE	ERB83-006
	D205 DIODE	D1NL20
	D206 ZENER DIODE	MTZJ2.4A
	D207 ZENER DIODE	MTZJ3.3A
	D208 ZENER DIODE	MTZJ5.6C
	D209, 210 DIODE	D1NL20
	D213-215 DIODE	D1NL20

COILS/TRANSFORMERS

	L203 SPDL CHOKE COIL	VTL1043

CNNB ASSEMBLY

SWITCHES

	S201	VSK1017

RESISTORS

	R101, 102 CARBONFILM RESISTOR	RD1/6PM□□□J

OTHERS

	CN204	VKN1139
	CN203	VKN1138

HEAD ASSEMBLY

CAPACITORS

	C3	CHIP CAPACITOR	CKSQYF223Z50
	C4	CHIP CAPACITOR	CKSQYF104Z25
	C5	CHIP CAPACITOR	CKSYF105Z16
	C6	CHIP CAPACITOR	CKSQYF104Z25

RESISTOR

	VR1	SEMI-FIXED VR(10kΩ)	VCP1025

6. ADJUSTMENTS

(1) JIGS AND INSTRUMENTS REQUIRED FOR ADJUSTMENT

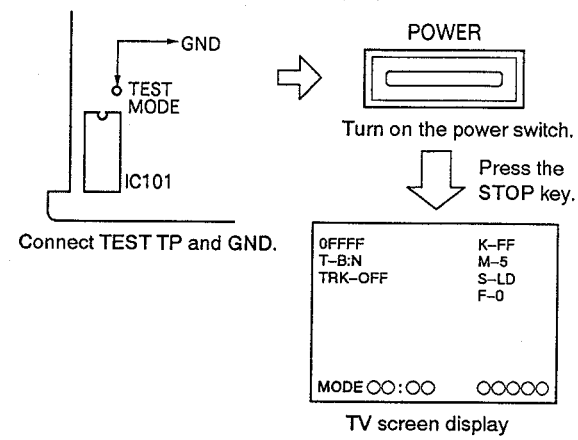
- Small screwdriver (about 10cm long)
- Small Phillips screwdriver (about 7cm long)
- Phillips screwdriver
- Dual-trace oscilloscope (with delay)
- AF oscillator
- Frequency counter
- LD test disc (GGV1003)
- CD test disc (YEDS - 7)
- Digital voltmeter
- Shorting clip
- L - shaped eccentric screwdriver (GGV - 129)
- TV monitor
- Resistor (47kΩ , 10kΩ × 2, 75Ω)
- Low-pass filter (47kΩ +1μF)

(2) TEST MODE

The player has a test mode function which allows the servicer to check the player's status on the TV screen by executing the respective key operation.
Also, since the TRKG servo opens and closes easily, the test mode is especially useful for mechanical adjustments.

TEST MODE INITIATION

[Procedure]
1. Remove the bonnet and disc tray.
2. Connect the TEST MODE (TP) to GND.
3. Turn on the power switch.
4. Disconnect the TEST MODE (TP) from GND.

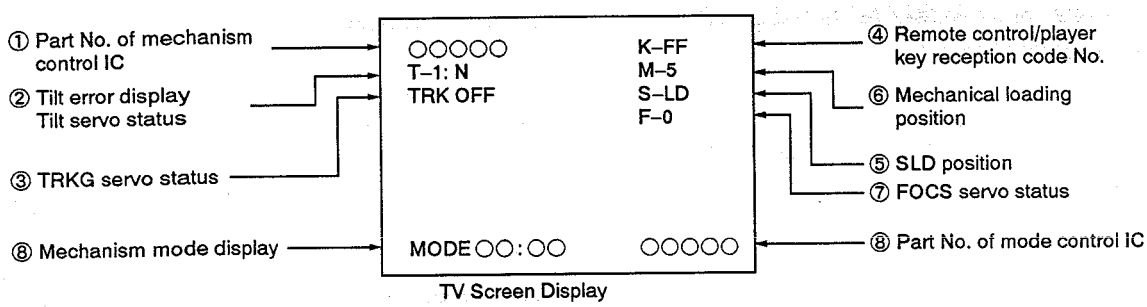


Note: When using the remote control unit (GGF1067) for the test mode.
- *Press the TEST key after pressing the ESC key.*

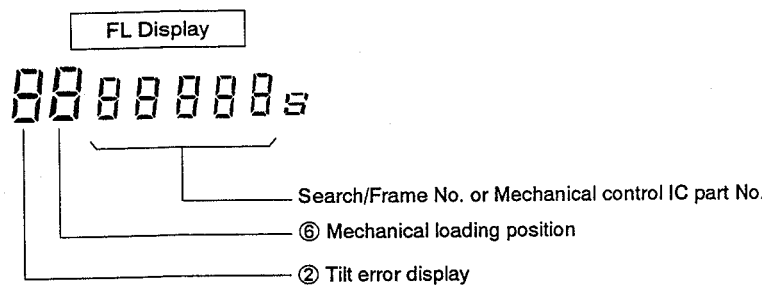
TEST MODE CANCELLATION

Turn off the power switch.

(3) TV SCREEN AND FL DISPLAYS IN THE TEST MODE



TV Screen Display



① The Mechanical Control IC Part No. will be Displayed.

Example: PD0081A1 → 0081A
PD0081B1 → 0081B
PD0123A1 → 0123A

② Tilt Servo Status / Tilt Error Display

T-○:○○
- Tilt servo status : N ...Tilt neutral
  ON ...Tilt servo ON
  OFF...Tilt servo OFF
- Tilt error display: 0 Tilt −
  ↕ Tilt neutral
  F Tilt +

③ TRKG Servo Status

TV screen display
TRK-○○○
- ON...TRKG servo close
  OFF...TRKG servo open

④ Remote Control/Player Key Reception Code No.

TV screen display
K-○○
- See table 1

Code	Function	Code	Function	Code	Function	Code	Function
00	0	20	F JOG0	40	(CHAP / TRK)	60	
01	1	21	F JOG1	41	(FRAM / TIM)	61	
02	2	22	F JOG2	42	(SEARCH)	62	
⋮	⋮	⋮	⋮	⋮	⋮	⋮	
1C	POW ON/OFF	3C		5C		7C	
1D	EDIT	3D		5D		7D	
1E	AUDIO	3E		5E	RNDM (TEST)	7E	
1F	+10	3F		5F	(ESC)	7F	

Table 1 Example of Code

⑤ SLDR Position

TV screen display	FL display	Mode
S-○○○		
└— IN	—	CD inside SW ON
CD	CD	CD active area
CDV	CDV	CDV active area
LD	LD	LD active area
B IN	—	LD B inside SW ON

⑥ Mechanical Loading Position

TV screen display

M-○

└— 0 ... Tray open
1 ... Loading
2 ... Standby
3 ... Clamped
5 ... Tilt minus
7 ... Tilt plus
8 ... Tilt limit
9 ... B side clamped (two sides)

⑦ Focus Offset VR Status

TV screen display

F-○

└— 0 ... Normal mode
TRKG close : VR606 (RF MAX)
TRKG open : VR605 (TE MAX)
1 ... VR606 is activated when opening the TRKG servo loop.

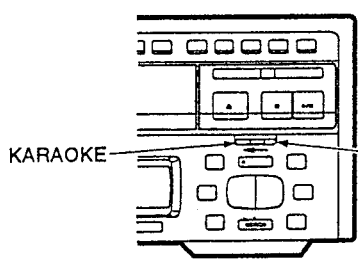
⑧ The mode control IC part No. will be displayed.

Example PDB056A → B056A

(4) KEY OPERATION IN THE TEST MODE

Function	Player Status	Key Operation	Remarks
Open Tray	STOP mode	▲	
Close Tray	Tray open	▲	
Stop	PLAY mode	■	
Play	Disc placement and tray closed.	►	• Start play with the TRKG servo open. • Raise up with tilt neutral. • The disc type (LD/CD/CDV) is determined when playback starts at the SLDR position during start play.
TRKG Servo Open/Close	PLAY mode	►	• Each time the PLAY button (►) is pressed, the TRKG servo will open or close alternately.
Still	PLAY mode TRKG servo closed.	▮▮ (Remote control unit key)	• Each time the STILL button (▮▮) is pressed, the player will switch between the PLAY and STILL modes alternately.
SLDR REV SCAN	PLAY mode	◄◄	• Press and hold down the key. • With the TRKG servo open, the pickup can be damaged if the SLDR moves further inward than the lead-in area on the disc. Do not allow the SLDR to move further inward than the lead-in area.
SLDR FWD SCAN	PLAY mode	►►	• Press and hold down the key. • With the TRKG servo open, the pickup can be damaged if the SLDR moves further outward than the lead-in area on the disc. Do not allow the SLDR to move further outward than the lead-in area.
TILT Neutral	POWER switch ON	* ♮ (KEY CONTROL key)	
TILT Servo ON	PLAY mode	* ♯ (KEY CONTROL key)	
TILT Minus TILT Servo OFF	PLAY mode	⏮	• Press and hold down the keys.
TILT Plus TILT Servo OFF	PLAY mode	⏭	• Press and hold down the keys.
Screen Display ON / OFF	POWER switch ON	PGM key	
Frame search	PLAY mode	+10 key ↓ 0 - 9 key ↓ ►	• In the PLAY mode, press the +10 key. (The player will standby for the frame No. entry.) • Use the numeric keys(0—9) to enter the frame No.. Then press the player's PLAY key to search. • After the search is completed, the player will return to the operation mode before the search was performed.
Loading Motor Rotation Clockwise Counterclockwise	Tray open	⏭ ⏮	• FWD: Unloading • REV: Loading
Focus Offset (CT MAX) for Checking VR606	PLAY mode TRKG servo open	* ♭ (KEY CONTROL key) (toggle)	VR606 and VR605 : For check F–0 : Normal state - - - - - - TRKG close : VR606 (CT BEST) TRKG open : VR605 (TE MAX) F–1 : VR606 is activated when opening the TRKG.

* Perform key operation by setting the KARAOKE/NORMAL/AUX INPUT selector switch, on the front panel, to the KARAOKE position.

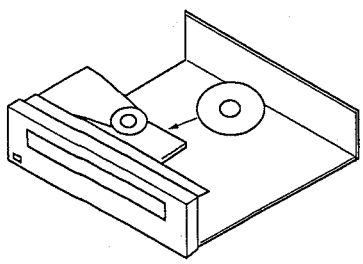


(5) PLAYER OPERATION IN THE TEST MODE

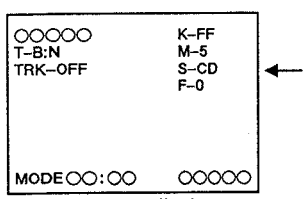
Operate the player by selecting a test mode function with the keys on the player or on the remote control unit.

● CD PLAYBACK

① Place the CD disc on the turn table.
(Clamper is already lifted up.)



② Press the ◀◀ or ▶▶ key to appear "S–CD" on the TV screen display.

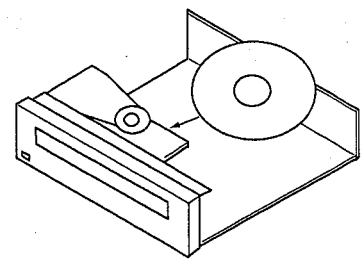


TV screen display

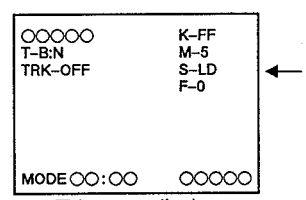
③ Clamp the disc by pressing the PLAY (▶) key once.
Then, press the PLAY (▶) key twice, disc will be normal playbacked.

● LD PLAYBACK

① Place the LD disc on the turn table.
(Clamper is already lifted up.)



② Press the ◀◀ or ▶▶ key to appear "S–LD" on the TV screen display.



TV screen display

③ Clamp the disc by pressing the PLAY (▶) key once.
Then, press the PLAY (▶) key twice, disc will be normal playbacked.

(6) PREPARATIONS FOR ADJUSTMENT AND PRECAUTIONS

1) When replacing the pickup assembly, adjust in the following way:

–Carriage assembly in forward state–

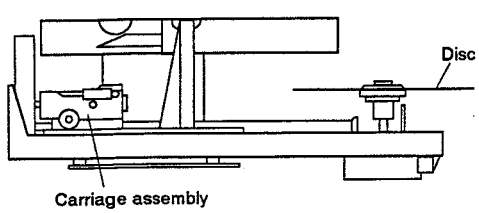
1. Tilt offset adjustment
2. Tilt servo gain adjustment
3. Coarse grating adjustment, tracking balance adjustment
4. Slider shaft horizontal adjustment
5. Pickup inclination adjustment
6. TRKG error MAX. / crosstalk MAX. adjustment
7. Tilt sensor inclination/tilt balance adjustment
8. Spindle motor centering check
9. Spindle motor centering adjustment
10. Fine grating adjustment
11. FOCS SUM level adjustment
12. FOCS servo loop gain adjustment
13. TRKG servo loop gain adjustment
14. RF gain adjustment

–Carriage assembly in reverse state–

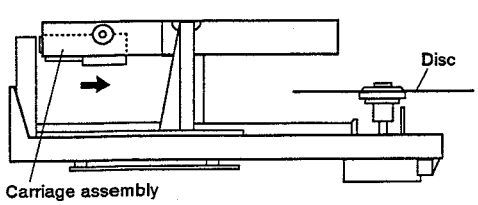
15. Coarse centering adjustment for side B play
16. Pickup tangential direction angle adjustment for side B play
17. Fine centering adjustment for side B play

Note : The forward status of carriage assembly is when the carriage assembly is in the position to play side A of the disc. The reverse status is when it is in the position to play side B of the disc.

Carriage assembly forward state



Carriage assembly reverse state

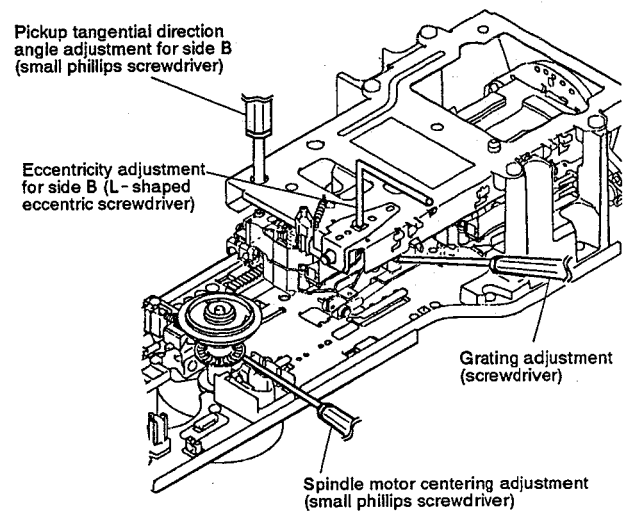


2) Side B play

Direct side B play is possibled by pressing the SIDE B key of the front panel.

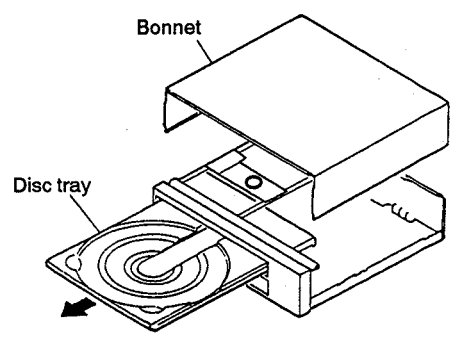
3) Where to insert the screwdriver when adjusting the pickup assembly

–Carriage assembly in forward state–



4) Setting the player

Adjustment should be performed with the bonnet, disc tray and KAUB assembly removed.



5) Installing the disc

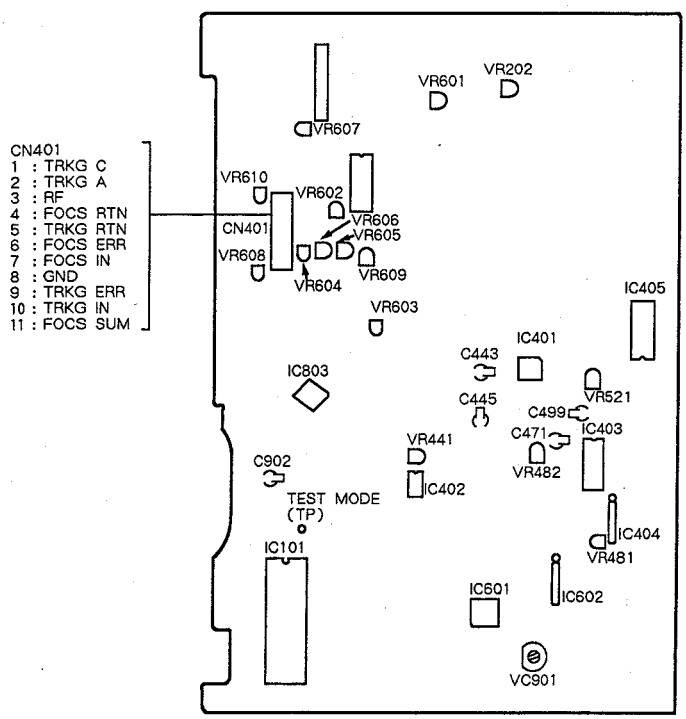
The disc should be placed from behind on the turntable and when Open/Close key is pressed, the clamper comes down to clamp the disc.

(7) MAIN BOARD ASSEMBLY ADJUSTMENT SUMMARY

	ADJUSTMENT	Adjusting Point	Measurement equipment Connecting Point	Player Condition	Adjusting Specification
1	Tilt Offset Adjustment	VR610	C902 – (minus) lead wire	• Stop mode (power on)	• Adjust VR610 so that the DC voltage becomes 0 ± 0.2V.
2	Tilt Servo Gain Adjustment	VR608	None	• Power OFF	• Making of Tilt gain VR position Red : Turn to right Clear : Center Blue : Turn to left
3	Coarse Grating and Tracking Balance Adjustment	Grating / VR602	CN401-9 (TRKG ERR)	• Test mode #6,500 still TRKG servo open • Tilt servo NEUTRAL	• Null point → TRK error MAX • Adjust VR602 so that the TRK error waveform amplitude's positive and negative level become equal.
4	Slider Shaft Horizontal Adjustment	SKIP key	CN401-4 (FOCS RTN)	• Test mode #9,800 , #22,000-25,000 still TRKG servo open • TILT servo OFF	• Adjust the SKIP key so that the FOCS RTN voltage between #9,800 and #22,000-#25,000 becomes equal.
5	Pickup Inclination Adjustment	Pickup assembly TAN / TRK inclination adjustment screw	CN401-3 (RF)	• Test mode , #2,701 still TRKG servo loop close • TILT servo OFF	• RF waveform's amplitude MAX (Pickup TAN / TRK adjustment screw) • Minimized crosstalk.
6	TRKG Error MAX / RF LEVEL MAX Adjustment	VR605 (TE MAX) VR606 (RF MAX)	CN401-9 (TRKG ERR) CN401-3 (RF)	• Test mode #15,000 / #115 still TRKG servo close /open • TILT servo OFF	• TRK error MAX (VR605) RF MAX (VR606) • Check crosstalk
7	Tilt Sensor Inclination/ Tilt Balance Adjustment	Tilt senser inclination adjustment screw VR607(TILT BAL.)	Video output terminal (TV monitor / Test mode screen)	• Test mode #16,200 / #115 still TRKG servo loop close • TILT servo OFF	• Set VR607 to the center. • Adjust the adjustment screw so that the tilt error display code is 6, 7, or 8. • Adjust VR607so that the tilt error display becomes 7.
8	Spindle Motor Centering Check	None	CH1:CN401-9(TRKG ERR) CH2:CN401-1, 2(TRKG A+C) (X-Y mode)	• Test mode #22,000-25,000 and #100 TRKG servo open • TILT servo ON	• Check that the amplitude of the lissajous figure of the frame #100 is the same as that of the frame #22,000-25,000.
9	Spindle Motor Centering Adjustment	Spindle motor centering adjustment screw.	CH1:CN401-9(TRKG ERR) CH2:CN401-1, 2(TRKG A+C) (X-Y mode)	• Test mode #22,000-25,000 and #100 TRKG servo open / close • TILT servo ON	• Adjust the centering adjustment screw so that the lissajous figures of #100 and #22,000-25,000 are the same.
10	Fine Grating Adjustment	Grating	CH1:CN401-9(TRKG ERR) CH2:CN401-1, 2(TRK A+C) (X-Y mode)	• Test mode #6,500 still TRKG servo open • TILT servo ON	• Minimize the Y direction of the lissajous figure. • Check TRKG balance.
11	FOCS SUM Level Adjustment	VR609	CN401-11 (FOCS SUM)	• Test mode #15,000 still TRKG servo close • Tilt servo NEUTRAL	• Adjust VR609 so that the voltage becomes 1.8V DC.
12	FOCS Servo Loop Gain Adjustment	VR604	CH1:CN401-6 (FOCS ERR) CH2:CN401-7 (FOCS IN) (X-Y mode)	• Test mode #15,000 still TRKG servo close • TILT servo NEUTRAL	• Adjust VR604 so that the lissajous figure is symmetrical with respect to the X and Y axes.
13	TRKG Servo Loop Gain Adjustment	VR603	CH1:CN401-9 (TRKG ERR) CH2:CN401-10 (TRKG IN) (X-Y mode)	• Test mode #15,000 still TRKG servo close • TILT servo NEUTRAL	• Adjust VR603 so that the lissajous figure is symmetrical with respect to the X and Y axes.
14	RF Gain Adjustment	VR601	CH1:CN401-3 (RF)	• Test mode #15,000 still TRKG servo close • TILT servo NEUTRAL	• Adjust VR601 so that the RF level becomes 300mV ± 50mV.
15	Coarse Centering Adjustment for Side B Play	Centering adjustment plate for side B.	CH1:CN401-9 (TRKG ERR) CH2:CN401-1, 2(TRKG A+C) (X-Y mode)	• Test mode #100 still TRKG servo open / close • TILT servo ON	• Adjust that the X-axis amplitude of the lissajous figure becomes maximum.
16	Pickup Tangential Direction Angle Adjustment for Side B Play	Pickup tangential direction angle adjustment screw.	Video output terminal (TV monotor)	• Test mode #115 still TRKG servo close • TILT servo ON	• Adjust that the crosstalk is minimized.
17	Fine Centering Adjustment for Side B Play	Centering adjustment plate for side B	CH1:CN401-9 (TRKG ERR) CH2:CN401-1, 2(TRKG A+C) (X-Y mode)	• Test mode #100 still TRKG servo open • TILT servo ON	• Adjust that the X-axis amplitude of the lissajous figure becomes maximum.

	ADJUSTMENT	Adjusting Point	Measurement equipment Connecting Point	Player Condition	Adjusting Specification
18	Reference Frequency Adjustment	VC901	IC402-pin 8	• Stop mode (blueback screen)	• Adjust VC901 so that the frequency becomes 3.579545MHz.
19	VCO Centering Frequency Adjustment	VR481	CH1 : C471 + side lead wire CH2 : C499 + side lead wire	• Normal mode • #5,100 still	• The center of CH1's video signal jitter is delayed by 71 μS with CH2's video signal.
20	Output Video Level Adjustment	VR482	VIDEO OUTPUT terminal	• Normal mode • #19,900 still	• Adjust VR482 so that the voltage between the sync tip and the white peak becomes 1Vp-p ± 5%.
21	1H Delay Video Level Adjustment	VR441	CH1 : C443 lead wire CH2 : C445 lead wire	• Normal mode • #3,800 still	• The 1H delay video level becomes the same as the main line video signal.
22	VPS Video Level Adjustment	VR521	TV monitor	• Normal mode • #8,000 still	• Color irregularity on the magenta screen is minimized.

ADJUSTMENT POINTS OF THE MAIN BOARD ASSEMBLY



Adjustment Locations

● MECHANICAL ADJUSTMENTS

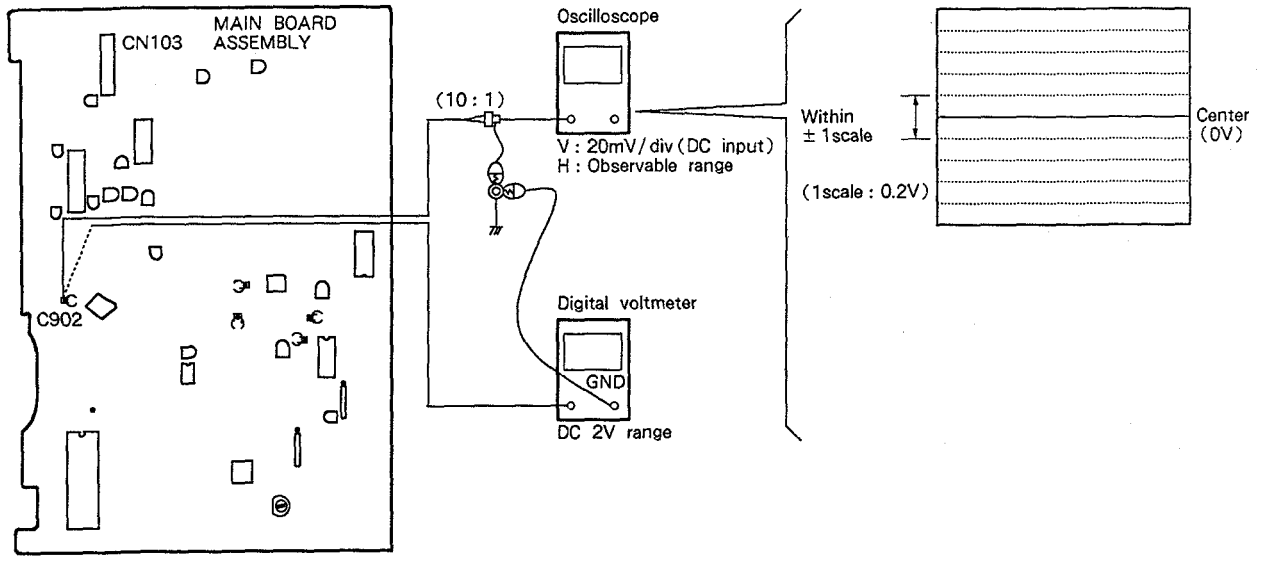
1. TILT OFFSET ADJUSTMENT

● Purpose: To adjust the tilt offset voltage to 0V.

● When not properly adjusted: Playability is poor when playing side B of the disc.
Crosstalk will be generated.

● Measuring instruments and jigs:	● Oscilloscope ● (Digital voltmeter)
● Measuring point:	● − (minus) lead wire of C902
● Test disc and player mode	● Normal mode (STOP mode)
● Positions to be adjusted	● VR610 (TILT OFFSET)

Connection diagram



Adjustment Procedure

1. Disconnect the flexible cable from CN103.
   (Perform this step by turning off the power.)
2. Set the oscilloscope to no input (GND) mode and set the main scale to the center position (0V).
3. Set the oscilloscope to the DC input mode and connect to the − (minus) lead wire of C902.
4. Adjust VR610 so that the DC level which appears on the oscilloscope within ± one scale (± 0.2V) as compared with center (0V).
5. Connect the flexible cable to CN103.
   (Perform this step by turning off the power.)

How to adjustment when using the Digital voltmeter

1. Disconnect the flexible cable from CN103.
   (Perform this step by turning off the power.)
2. Connect the digital voltmeter to the − (minus) lead wire of C902.
3. Adjust VR610 so that the DC voltage becomes 0 ± 0.2V.
4. Connect the flexible cable to CN103.
   (Perform this step by turning off the power.)

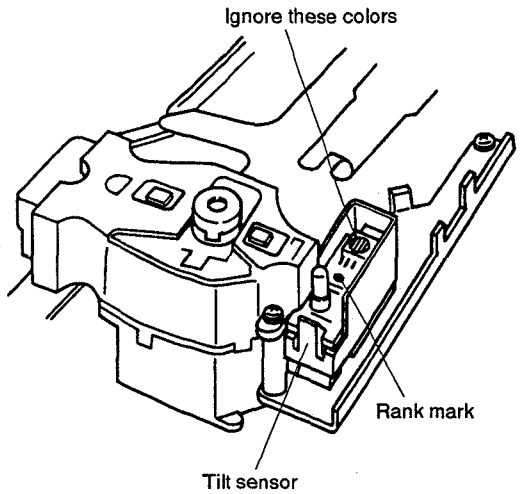
2. TILT SERVO GAIN ADJUSTMENT

Mechanical Adjustment

- Purpose: Adjustment of the tilt servo's gain according to the tilt sensor's sensitivity rank.
- When not properly adjusted: Increased tilt servo hunting and increased crosstalk.

● Measuring instruments and jigs:	● Small screwdriver
● Measuring point:	
● Test disc and player mode	● Power OFF
● Positions to be adjusted	● VR608

Connection diagram



Adjustment Procedure

1. Use a screwdriver to adjust the angle of VR608 according to the rank indicator's color.

Rank	Color	VR Angle
A	Red	Clockwise all the way
B	Clear	Mechanical center
C	Blue	Counterclockwise all the way

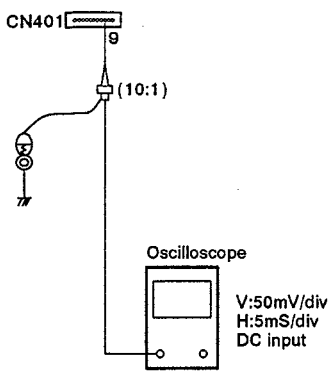
3. COARSE GRATING AND TRACKING (TRKG) BALANCE ADJUSTMENT

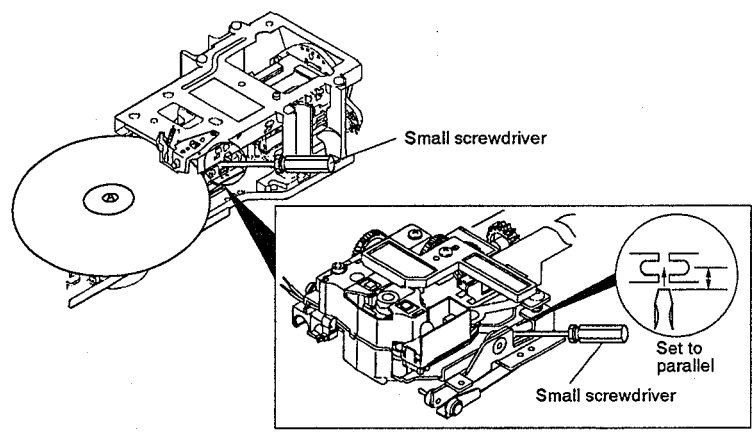
Mechanical Adjustment

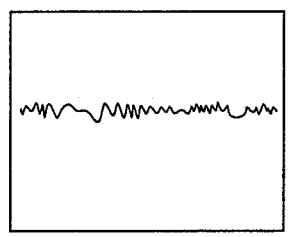
- Purpose: To adjust the laser beam which is divided into three by the grating to the optimum position on the track. Set the TRKG servo offset voltage to 0 V.
- When not properly adjusted: Disc playback will be impossible. During play, tracks may be skipped.

● Measuring instruments and jigs:	● Small screwdriver ● Oscilloscope
● Measuring point:	● CN401 - 9 (TRKG ERR)
● Test disc and player mode	● 8 - inch LD test disc GGV1003 ● Test Mode (#6,500, TRKG servo : Open, Tilt servo : Neutral) ● The carriage assembly should be in the forward state.
● Positions to be adjusted	● Grating ● VR602 (TRKG BAL)

Connection diagram







Not null point

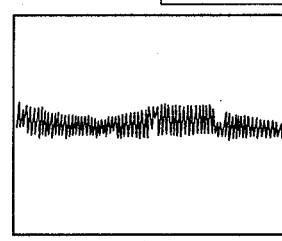


Fig. 2 Null point

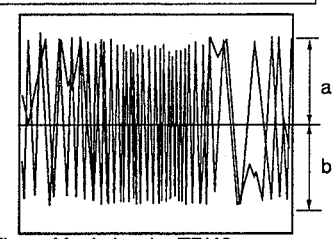


Fig. 3 Maximize the TRKG error a=b

Adjustment Procedure

<Coarse Grating Adjustment>

1. Play the LD test disc.
2. Search around for frame #6,500.
3. Open the TRKG servo. (See the table of operation in the test mode .)
4. Connect an oscilloscope to CN401 - 9 and observe the waveform.
5. Coarse adjust the TRKG error waveform becomes maximum by turning the TRKG and tangential direction angle adjustment screw for the pickup adjustment. (This is indispensable in order to minimize dispersion in the subsequent adjustments.)
6. Insert the small screwdriver into the grating adjustment hole. Turning the grating will allow you to vary the amplitude of the TRKG error waveform. Find the position where the waveform amplitude becomes minimum with a smooth envelope. (Fig. 2) (This indicates that the 3 - way split laser beams are directed onto the track. This is called the null point.)
7. Slowly turn the grating counterclockwise from the on track position until the waveform amplitude becomes maximum. (Fig. 3)
8. Close the TRKG servo and check that a normal picture is displayed on the TV screen.

<TRKG Balance Adjustment>

1. Align the oscilloscope GND so that it comes to the center of the oscilloscope screen.
2. Adjust VR602 so that the positive and negative amplitude of the TRKG error waveform become equal. (Fig. 3)

Note: If adjustment of VR602 fails to disturb the tracking, perform the adjustment after set VR607 to the mechanical center.

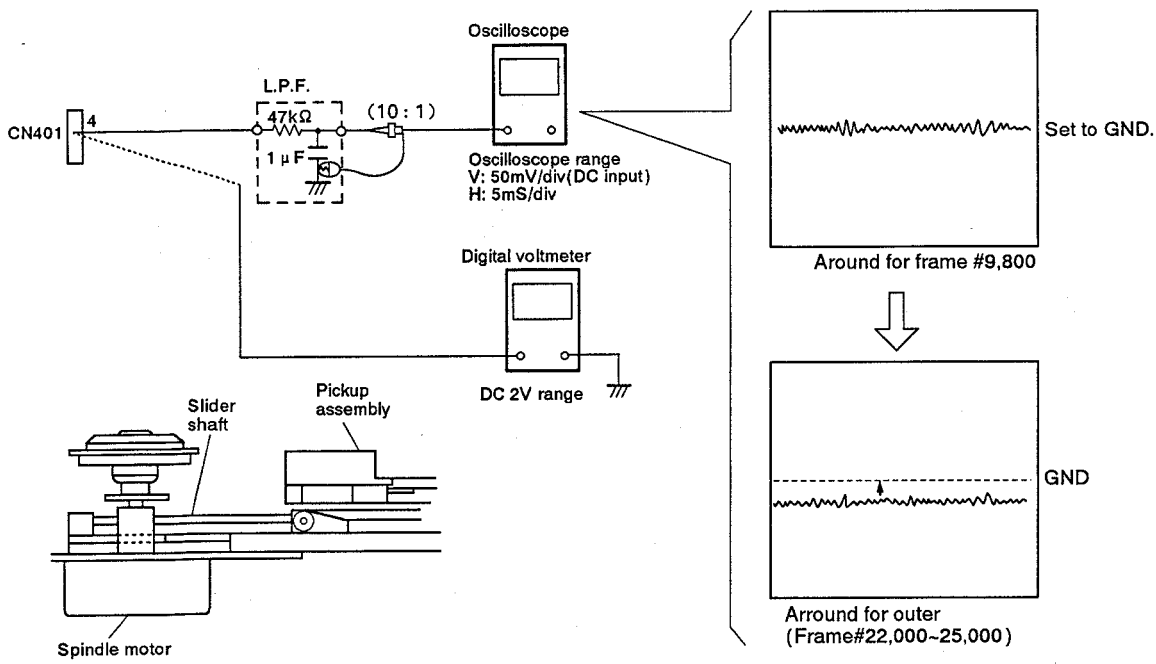
4. SLDR SHAFT HORIZONTAL ADJUSTMENT

● Purpose: Setting the slider shaft horizontally to enable the pickup to more in parallel with the disc.

● When not properly adjusted: With a warped disc, the FOCS servo does not function at the inner or outer periphery. All following adjustments can be done correctly.

● Measuring instruments and jigs:	● Oscilloscope ● Low-pass filter (47kΩ +1 μF) ● (Digital voltmeter)
● Measuring point:	● CN401 - 4 (FOCS RTN) and GND.
● Test disc and player mode	● 8 - inch LD test disc GGV1003 ● Test Mode (#9,800 / #22,000 – 25,000, TRKG servo : Open, Tilt servo : OFF)
● Positions to be adjusted	● Player SKIP (=◀ or ▶=) key (During test mode)

Connection diagram



Adjustment Procedure

1. Connect a digital voltmeter to CN401 - 4 via L. P. F.
2. Open the TRKG servo, and search around for frame #9,800.
3. Check the voltage.
3. Search around for frame #22,000 - 25,000 and check that the voltage is same as the frame #9,800. If not, adjust the SKIP key so that the voltage is same as the frame #9,800.

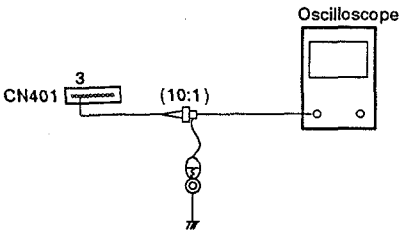
5. PICKUP INCLINATION ADJUSTMENT

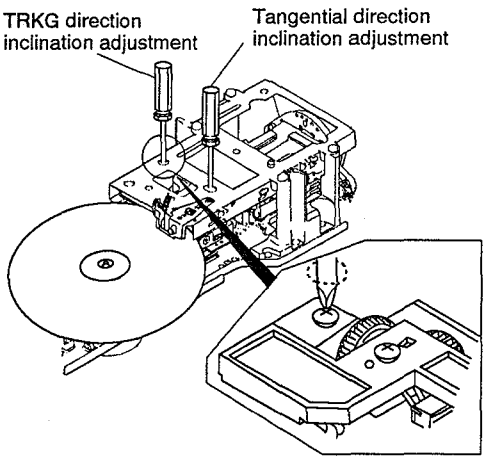
● Purpose: Adjustment of the pickup inclination to direct the laser beam vertically with respect to the disc.

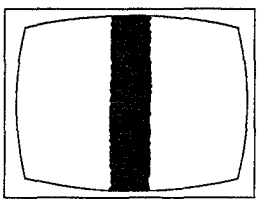
● When not properly adjusted: Crosstalk will be generated.

● Measuring instruments and jigs:	● TV monitor ● Phillips screwdriver ● Oscilloscope
● Measuring point:	● CN401 - 3(RF) ● Player's VIDEO OUT terminal
● Test disc and player mode	● 8 - inch LD test disc GGV1003 ● Test Mode [#2,701 (Black,7.5%) still , TRKG servo : close, Tilt servo : OFF]
● Positions to be adjusted	● Pickup assembly TRKG / Tangential direction inclination adjustment screws

Connection diagram







Minimum crosstalk on the screen

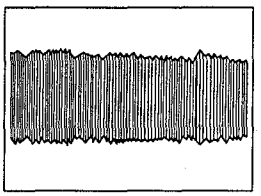


Fig. 1 RF waveform

Adjustment Procedure

1. Connect the oscilloscope to CN401 - 3.
2. Search for frame #2,701 and observe the RF waveform.(Fig. 1)
3. Adjust the pickup's TRKG / Tangential direction inclination adjustment screw to maximize the waveform's amplitude.
4. Look at the TV screen and make sure there is no crosstalk.

Note : Perform "6. TRKG Error MAX. / RF Level MAX. Adjustment" even when the crosstalk is not conspicuous on the TV screen.
(For improvement of the playability of CDs.)

6. TRKG ERROR MAX./ RF LEVEL MAX. ADJUSTMENT

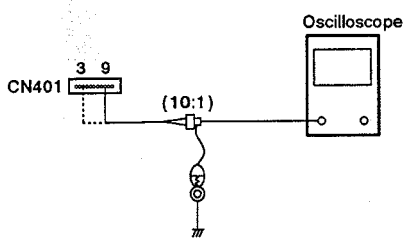
Mechanical Adjustment

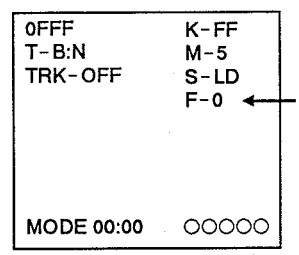
● Purpose: To set the FOCS servo to the optimum state when playing the normal playback and track jump (search).

● When not properly adjusted: Crosstalk will be generated.

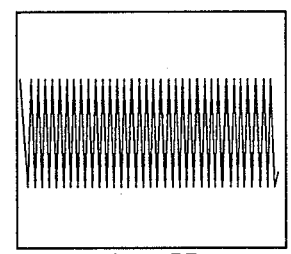
● Measuring instruments and jigs:	● TV monitor ● Oscilloscope
● Measuring point:	● CN401-3(RF) ● CN401-9(TRKG ERR) ● Player's VIDEO OUT terminal
● Test disc and player mode	● 8-inch LD test disc (GGV1003) ● Test Mode [#2,701 (Black, 7.5%) / #115 (H.V Bar) still, TRKG servo : Close / Open, Tilt servo : OFF]
● Positions to be adjusted	● VR605 (TE MAX.) ● VR606 (RF MAX.)

Connection diagram

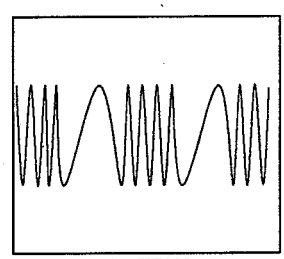




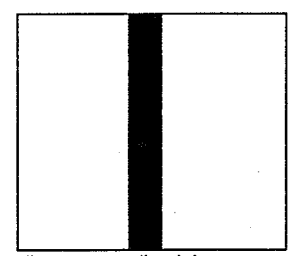
Screen display of test mode



Set to maximum RF amplitude at frame #2,701.



Maximize the TRKG error.



#115 crosstalk minimum

Adjustment Procedure

1. Connect the oscilloscope to CN401-9.
2. Play the LD test disc and open the TRKG servo .
3. Confirm that the test mode screen display is F-0.
   If not, press the MULTI-SPEED REV button to F-0.
4. Adjust VR605 so that the amplitude of the TRKG error waveform becomes maximum.
5. Close the TRKG servo.
6. Connect the oscilloscope to CN401-3.
7. Press the MULTI-SPEED FWD button to display "F-1" on the TV screen.
8. Search around for frame #15,000 and adjust VR606 so that the amplitude of the RF waveform becomes maximum.
9. Confirm that the crosstalk on the TV screen becomes minimum at frame #115.

Note : Perform "RF Level MAX. Adjustment" and "5. Pickup Inclination Adjustment" once or twice repeatedly to the optimum state.

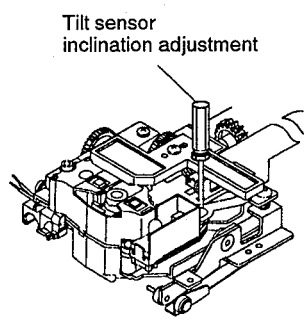
7. TILT SENSOR INCLINATION / TILT BALANCE ADJUSTMENT

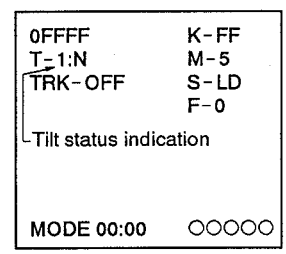
● Purpose: Adjustment of the tilt sensor's inclination to direct the tilt sensor's LED vertically with respect to the disc. Also, compensation for the sensitivity difference between the two sensors.

● When not properly adjusted: Crosstalk will be generated.

● Measuring instruments and jigs:	● TV monitor ● Small Phillips screwdriver
● Measuring point:	● Player's VIDEO OUT terminal
● Test disc and player mode	● 8-inch LD test disc (GGV1003) ● Test Mode (#16,200 and #115 still, TRKG servo : close, Tilt servo : OFF)
● Positions to be adjusted	● Tilt sensor inclination adjustment screw ● VR607 (TILT BAL).

Connection diagram





TV screen display

Note: This display indicates the tilt error display's location. Other displays may differ slightly from the actual.

Adjustment Procedure

1. Search for frame #16,200 on the test disc.
2. Set VR607 to the mechanical center.
3. Adjust the tilt sensor inclination adjustment screw so that the tilt status display code is 6, 7, or 8 on the TV monitor.

Note : When adjusting, turn the tilt-sensor inclination adjustment screw clockwise from the best point an extra quarter of a turn. Then turn the screw back to a quarter of a turn.

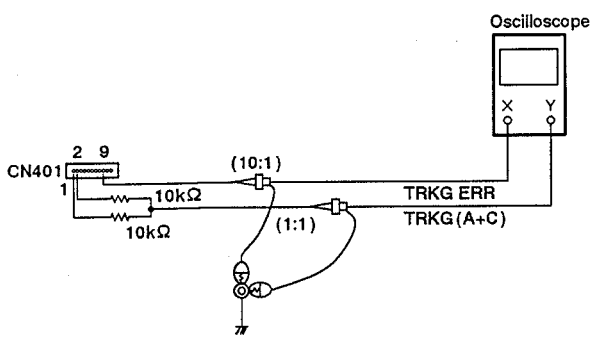
4. Search for frame #115.
5. Adjust VR607 so that the tilt error display becomes 7.

8. SPINDLE MOTOR CENTERING CHECK

● Purpose: To check that the center of the spindle motor is on the orbit of the laser beam.

● Measuring instruments and jigs:	● Oscilloscope ● Resistor(10kΩ×2)
● Measuring point:	● CN401-9(TRKG ERR), CN401-1(TRKG C) and CN401-2(TRKG A)
● Test disc and player mode	● 8-inch LD test disc GGV1003 ● CD test disc(YEDS-7) ● Test mode (#22,000-#25,000 and #100 still, TRKG servo : Open, Tilt servo : ON)
● Positions to be adjusted	● The carriage assembly should be in the forward state. ● Check the Lissajous figure

Connection diagram



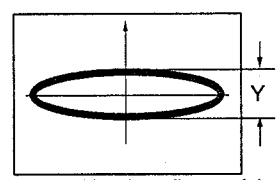


Fig. 1 Lissajous figure of the inner track of the disc(CD)

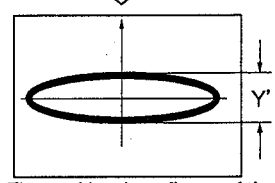


Fig. 2 Lissajous figure of the outer track of the disc(CD)

Checking Procedure

1. Play the 8-inch LD test disc.
2. Move the pickup to frame #22,000 - 25,000 by scanning or searching, then open the TRKG servo.
3. Connect the X-input (CH-1) of the oscilloscope to CN401-9 and the Y-input (CH-2) to CN401-1 and 2 via the 10kΩ resistor.
   Set the oscilloscope to the X-Y mode and observe the Lissajous figures of the TRKG error signal and the TRKG (A+C) signal.
4. Write down the Y-axis amplitudes of the Lissajous figures. (Fig. 1)
5. Close the TRKG servo and search frame #100, then open the TRKG servo again to observe the Lissajous figure.
   At this time, check that the Y-axis amplitude of the Lissajous figure is the same as that noted in step 4. (Fig. 2)
6. Remove the 8-inch LD test disc from the player, then load the CD test disc and repeat the checking procedures steps 1 to 5. However, it is not necessary to specify the inner or outer track positions of the disc. If the Y-axis amplitude of the Lissajous figure is different for the inner and outer tracks, perform "9. Spindle Motor Centering Adjustment".

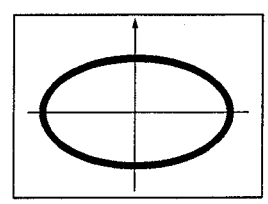


Fig. 3 Lissajous figure when not properly adjusted

9. SPINDLE MOTOR CENTERING ADJUSTMENT

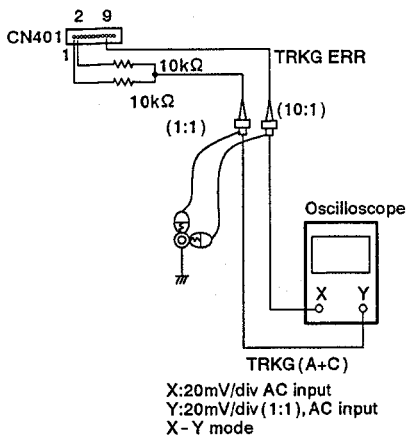
Mechanical Adjustment

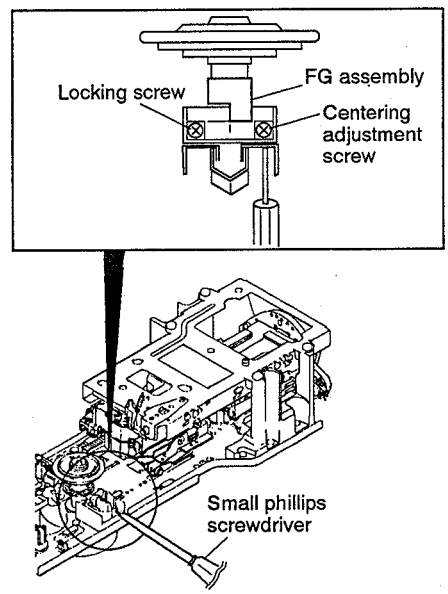
● Purpose: To adjust so that the center of the spindle motor is on the orbit of the laser beam.

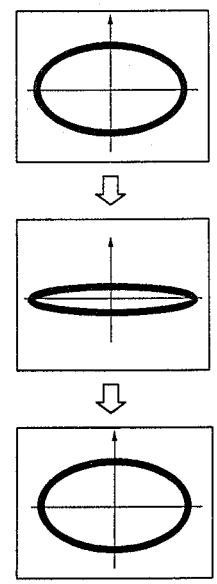
● When not properly adjusted: Track skips, or searching takes too long.

● Measuring instruments and jigs:	● Small phillips screwdriver ● Oscilloscope ● Resistor(10kΩ ×2)
● Measuring point:	● CN401-9(TRKG ERR), CN401-1(TRKG C) and CN401-2(TRKG A)
● Test disc and player mode	● 8-inch LD test disc GGV1003 ● CD test disc(YEDS-7) ● Test Mode (#22,000-#25,000 and #100 still, TRKG servo : Open/Close, Tilt servo : ON)
● Positions to be adjusted	● The carriage assembly should be in the forward state. ● Spindle motor centering adjustment screw

Connection diagram







Lissajous figure.

Adjustment Procedure

1. Connect the X-input (CH-1) of the oscilloscope to CN401-9 and the Y-input (CH-2) to CN120-1 and 2 via the 10kΩ resistor.
2. Play the 8-inch LD test disc and search frame #22,000-#25,000.
3. Open the TRKG servo and observe the Lissajous figures of the TRKG error signal and the TRKG sum signal.
4. Fine-adjust the grating so that the Y-axis amplitude of the Lissajous figure is minimized. (Fig. 2)
5. Close the TRKG servo and search frame #100.
6. Open the TRKG servo again and observe the Lissajous figure and write the values down. (Fig. 1)
7. Loosen a locking screw and insert the small phillips head screwdriver from the adjusting hole, and turn the centering adjustment screw slowly so that the Y-axis amplitude of the Lissajous figure is reduced. After the Y-axis amplitude of the Lissajous figure is minimized, turn the adjusting screw further until the amplitude becomes the same shape as that observed in step 6. (Fig. 1-3)
8. Close the TRKG servo, and move the pickup assembly to the outer track of the disc(#22,000-#25,000), then perform the adjustments in steps 4 to 7 again.
9. Re-open the TRKG servo and observe the Lissajous figure to check that the Y-axis amplitude is minimum. (Fig. 2)
   If the Y-axis amplitude of the Lissajous figure is larger than specified, repeat the adjustment procedures from steps 5 to 8.
10. After adjustment is complete, perform the adjustment in "8. Spindle Motor Centering Check" item 6.
11. Tighten the locking screw.

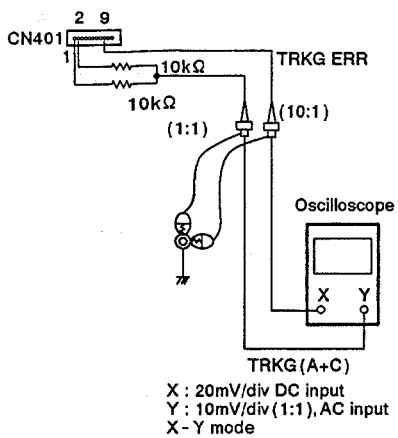
10. FINE GRATING ADJUSTMENT

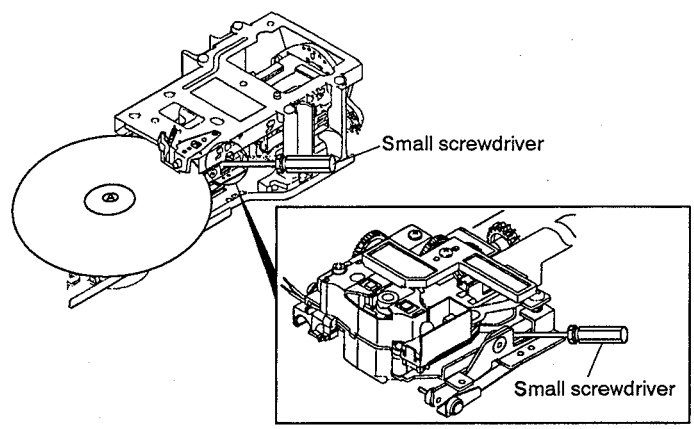
Mechanical Adjustment

- Purpose: To fine adjust the grating so that the two tracking beams for the TRKG servo are projected in the optimum positions on the tracks being played. Set the TRKG servo loop offset voltage to 0V.
- When not properly adjusted: During play, tracks may be skipped.

● Measuring instruments and jigs:	● Oscilloscope ● Small screwdriver ● Resistor(10kΩ×2)
● Measuring point:	● CN401-9(TRKG ERR), CN401-1(TRKG C) and CN401-2(TRKG A)
● Test disc and player mode	● 8-inch LD test disc GGV1003 ● Test Mode(#6,500 still, TRKG servo : Open, Tilt servo : ON) ● The carriage assembly should be in the forward state.
● Positions to be adjusted	● Grating

Connection diagram

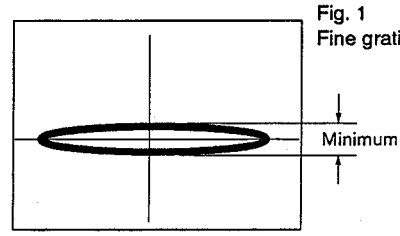




Adjustment Procedure

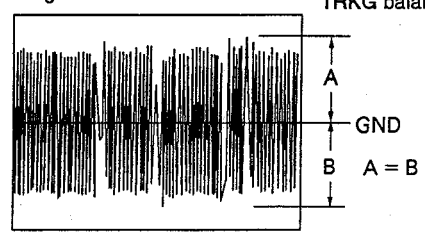
1. Connect the X-input(CH-1)of the oscilloscope to CN401-9 and the Y-input(CH2) to CN401-1 and 2 via the 10kΩ resistor.
2. Play the LD test disc and search frame #6,500, then open the TRKG servo.
   Set the oscilloscope to the X–Y mode and observe the Lissajous figures of the TRKG error signal and the TRKG sum signal.
3. Insert the small screwdriver into the grating adjustment hole, and fine-adjust the grating so that the Y-axis amplitude of the Lissajous figures is minimized. (Fig. 1)
   If the grating is turned too much and the optimum position can no longer be found, repeat the "3. Coarse Grating Adjustment".
4. Select the oscilloscope's X-input(CH-1) and check that the positive and negative amplitudes of the TRKG error signal are equal. (Fig. 2)
   If they are not, repeat the "3. Tracking Balance Adjustment".
5. Close the TRKG servo and check that the picture(image) on the TV screen is normal.

Fig. 1
Fine grating adjustment



3. Y-axis amplitude of Lissajous figure becomes minimum.

Fig. 2
TRKG balance



11. FOCS SUM LEVEL ADJUSTMENT

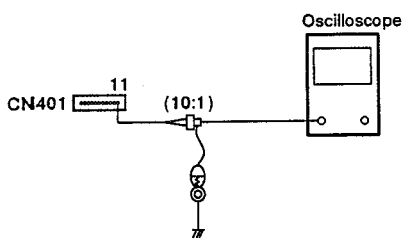
Mechanical Adjustment

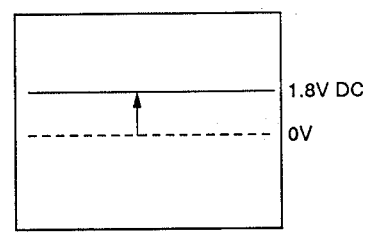
● Purpose: To set the sum level (FOCS A+B) of B1 – B4 to the optimum value for activating the FOCS servo.

● When not properly adjusted: Playability is poor.

● Measuring instruments and jigs:	● Oscilloscope
● Measuring point:	● CN401-11 (FOCS SUM)
● Test disc and player mode	● 8-inch LD test disc GGV1003 ● Test mode (#15,000 still, TRKG servo : Close, Tilt servo : Neutral)
● Positions to be adjusted	● VR609 (FOCS SUM LEVEL)

Connection diagram





Adjustment Procedure

1. Connect the oscilloscope to CN401-11.
2. Adjust VR609 so that the voltage becomes 1.8V DC.

12. FOCUS SERVO LOOP GAIN ADJUSTMENT

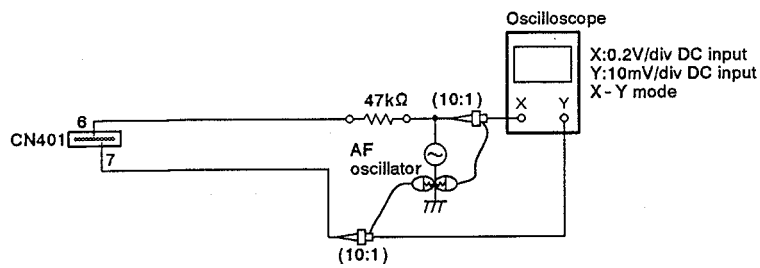
Mechanical Adjustment

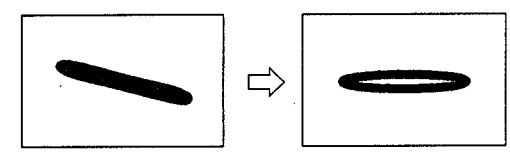
● Purpose: To set the loop gain of the FOCS servo to the optimum value.

● When not properly adjusted: Playability is poor.

● Measuring instruments and jigs:	● Oscilloscope ● AF oscillator ● Resistor(47kΩ)
● Measuring point:	● CN401-6(FOCS ERR) and CN401-7(FOCS IN)
● Test disc and player mode	● 8-inch LD test disc GGV1003 ● Test mode (#15,000 still, TRKG servo : Close, Tilt servo : Neutral) ● The carriage assembly should be in the forward state.
● Positions to be adjusted	● VR604 (FOCS GAIN)

Connection diagram





Adjustment not complete　　Properly adjusted

Fig. 1

Adjustment Procedure

1. Connect the oscilloscope's X-input(CH-1) via the 47kΩ resistor and AF oscillator to CN401-6, and the Y-input (CH-2) to CN401-7, as shown in the above diagram.
2. Play the 8-inch LD test disc and search frame #15,000.
3. Set the AF oscillator output to 1.7kHz/6Vp-p.
4. Set the oscilloscope to the X-Y mode and observe the Lissajous figure.
5. Adjust VR604 so that the Lissajous figure is symmetrical on both the X-axis and Y-axis of the oscilloscope. (Fig. 1)

Note : If the AF oscillator output does not exceed 6Vp-p, reduce the value of the resistor(47kΩ) in the above diagram, for easier observation of the Lissajous figure. (not below 33kΩ)

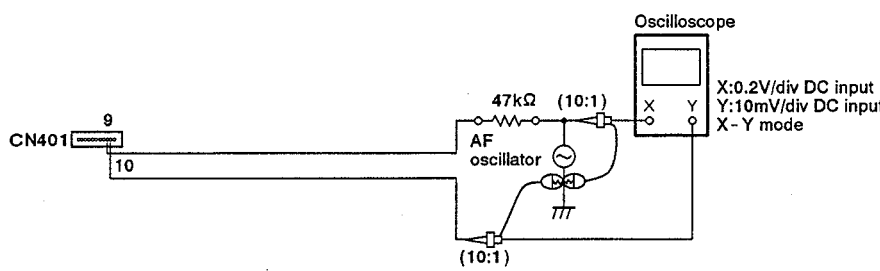
13. TRKG SERVO LOOP GAIN ADJUSTMENT

● Purpose: To set the loop gain of the TRKG servo to the optimum value.

● When not properly adjusted: Playability is poor.

● Measuring instruments and jigs:	● Oscilloscope ● Resistor(47kΩ) ● AF oscillator
● Measuring point:	● CN401-9(TRKG ERR), CN401-10(TRKG IN)
● Test disc and player mode	● 8-inch LD test disc GGV1003 ● Test mode (#15,000 still, TRKG servo : Close, Tilt servo : Neutral) ● The carriage assembly should be in the forward state.
● Positions to be adjusted	● VR603 (TRKG GAIN)

Connection diagram

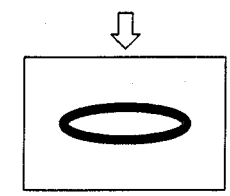


Adjustment Procedure

1. Connect the oscilloscope's X-input(CH-1) via the 47kΩ reisitor and AF oscillator to CN401-9, and the Y-input (CH-2) to CN401-10, as shown in the above diagram.
2. Play the LD test disc and search frame #15,000.
3. Set the AF oscillator output to 3.0kHz/6Vp-p.
4. Set the oscilloscope to the X-Y mode and observe the Lissajous figure.
5. Adjust VR603 so that the Lissajous figure is symmetrical on both the X-axis and Y-axis of the oscilloscope. (Fig. 1)

Note : If the AF oscillator output does not exceed 6Vp-p, reduce the value of the resistor(47kΩ) in the above diagram, for easier observation of the Lissajous figure. (not below 33kΩ)

Adjustment not complete



Properly adjusted

Fig. 1

5. The X-axis and Y-axis of the Lissajous figure are symmetrical.

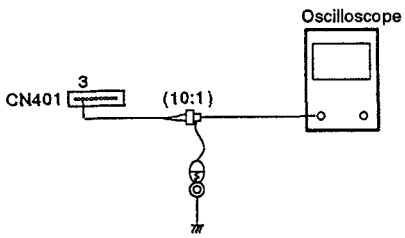
14. RF GAIN ADJUSTMENT

● Purpose: To adjust the RF signal amplitude to the optimum value.

● When not properly adjusted: Dropout occurs frequently.

● Measuring instruments and jigs:	● Oscilloscope
● Measuring point:	● CN401-3(RF signal)
● Test disc and player mode	● 8-inch LD test disc GGV1003 ● Test Mode(#15,000 still, TRKG servo : Close, Tilt servo : Neutral) ● The carriage assembly should be in the forward state.
● Positions to be adjusted	● VR601(RF LEVEL)

Connection diagram



Adjustment Procedure

1. Play the LD test disc and search frame #15,000.
2. Connect an oscilloscope to CN401-3(RF signal) and observe the RF signal.
3. Adjust VR601 so that the amplitude of the RF signal becomes 300mV ± 50mV. (Fig. 1)

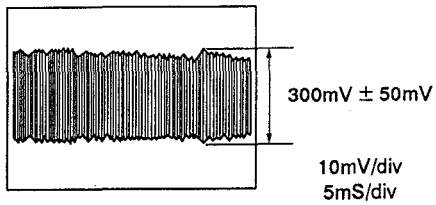


Fig. 1 RF signal

15. COARSE CENTERING ADJUSTMENT FOR SIDE B PLAY

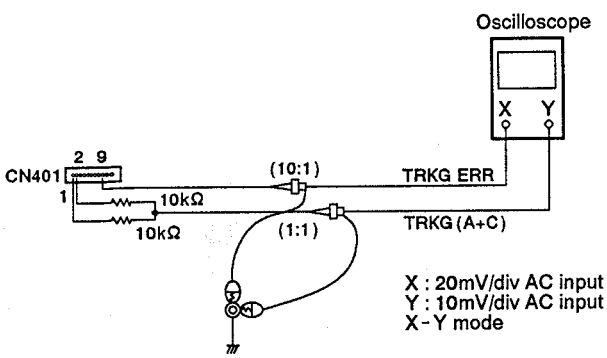
Mechanical Adjustment

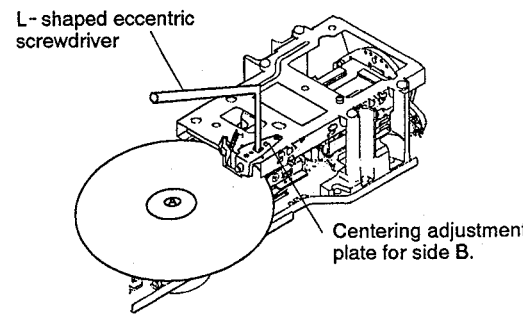
● Purpose: To check that the position check at the start play and to set the center of the spindle motor on the path of the laser beam when playing the side B of the disc.

● When not properly adjusted: Tracks skipped, longer searching time or searching is impossible when playing side B of the disc.

● Measuring instruments and jigs:	● L-shaped eccentric screwdriver(GGV-129) ● Oscilloscope ● Resistor(10kΩ × 2)
● Measuring point:	● CN401-9(TRKG ERR), CN401-1(TRKG C) and CN401-2(TRKG A)
● Test disc and player mode	● 8-inch LD test disc GGV1003 ● The carriage assembly should be in the reverse state. ● Test mode (#100 still, TRKG servo : Open /Close, Tilt servo : ON)
● Positions to be adjusted	● Centering adjustment plate for side B

Connection diagram





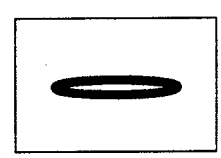


Fig. 1

Properly adjusted (X:maximum).

Adjustment Procedure

1. Turn the LD test disc upside-down (change from side A to side B). The start play position from side A to B should be within frame #3,500.
2. Set the oscilloscope to the X-Y mode, and connect the oscilloscope's X-input (CH-1) to CN401-9 (TRKG ERR) and the Y-input (CH-2) to CN401-1 and 2 (TRKG A+C) via the 10kΩ resisttor.
3. Play the LD test disc and search frame #100, then open the tracking servo.

Note: If the center is too eccentric on side B of the disc, since searching will be impossible on side B, open the TRKG servo when the carriage assembly moves to the side B play position and searches around frame #100.

4. While observing the Lissajous figure on the oscilloscope, insert the eccentric screwdriver into the centering adjustment plate for side B and adjust it so that the X-axis amplitude of the Lissajous figure is minimized (on-track position). Then turn the eccentric screwdriver clockwise further until the X-axis amplitude of the Lissajous figure becomes maximum. (Fig. 1)

Note: When "5. Pickup inclination Adjustment" is performed with the pickup in the forward state, perform "16. Pickup Tangential Direction Angle Adjustment for Side B Play" and "17. Fine Centering Adjustment for Side B play".

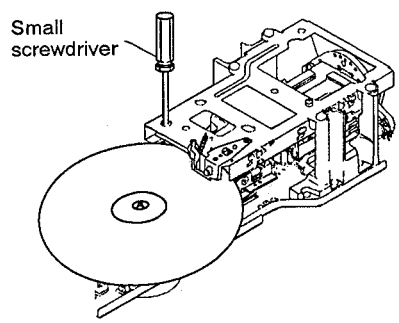
16. PICKUP TANGENTIAL DIRECTION ANGLE ADJUSTMENT FOR SIDE B PLAY Mechanical Adjustment

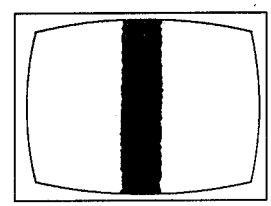
● Purpose: To adjust the crosstalk to become minimum in the tangential direction angle of the pickup assembly when playing side B of the disc.

● When not properly adjusted: Crosstalk is significant.

● Measuring instruments and jigs:	● TV monitor ● Small phillips screwdriver
● Measuring point:	● Player's VIDEO OUT terminal (Monitor screen)
● Test disc and player mode	● 8-inch LD test disc GGV1003 ● Test mode {#115 (H.V Bar) still, TRKG servo : Close, Tilt servo : ON)
● Positions to be adjusted	● The carriage assembly should be in the reverse state. ● Pickup tangential direction angle adjustment screw

Connection diagram





Minimum crosstalk

Adjustment Procedure

1. Play the LD test disc and search frame #115.
2. Check if crosstalk appears on the screen of the TV monitor, and adjust the pickup tangential direction angle adjustment screw so that the crosstalk is minimized.
3. After steps 1 and 2 have been completed, perform "15. Coarse Centering Adjustment for Side B Play" again.

Note: When the pickup tangential direction angle for side B play is varied by this adjustment, the center of the disc for side B may be shifted slightly. As a countermeasure, perform the centering adjustment again.

17. FINE CENTERING ADJUSTMENT FOR SIDE B PLAY

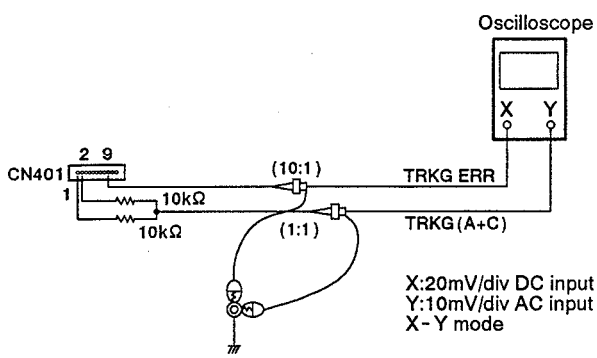
Mechanical Adjustment

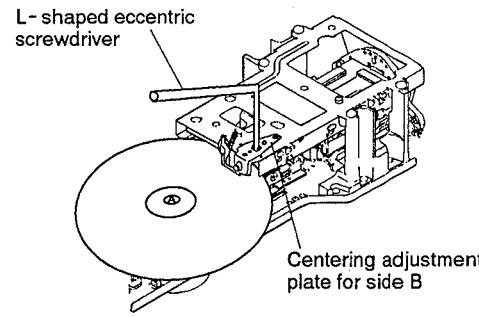
● Purpose: To set the center of the spindle motor on the track of the laser beam when playing the side B of the disc.

● When not properly adjusted: Tracks skipped when playing side B of the disc.

● Measuring instruments and jigs:	● Oscilloscope ● L-Shaped eccentric screwdriver(GGV-129) ● Resistor (10kΩ × 2)
● Measuring point:	● CN401-9(TRKG ERR), CN401-1(TRKG C) and CN401-2(TRKG A)
● Test disc and player mode	● 8-inch LD test disc GGV1003 ● Test mode (#100 still, TRKG servo : Open, Tilt servo : ON) ● The carriage assembly should be in the reverse state.
● Positions to be adjusted	● Centering adjustment plate for side B

Connection diagram





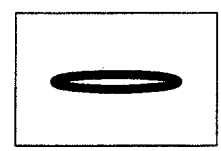


Fig. 1

X-axis of Lissajous figure maximum.

Adjustment Procedure

1. Set the oscilloscope to the X-Y mode, and connect the oscilloscope's X -input (CH-1) to CN401-9 (TRKG ERR) and the Y-input (CH-2) to CN401-1 and 2(TRKG A+C) via the 10kΩ resistor.
2. Play the LD test disc and search frame #100.
3. Open the TRKG servo.
4. While observing the Lissajous figure on the oscilloscope, insert the eccentric screwdriver into the centering adjustment plate for side B and adjust it so that the X-axis amplitude of the Lissajous figure becomes maximum. (Fig. 1)
5. Turn the power OFF.
6. Fixing and locking the screws as follws;
   Spindle motor centering adjustment screw
   Pickup tangential direction angle adjustment screw
   Centering adjustment hole for side B
   Tilt sensor inclination adjustment screw

● ELECTRICAL ADJUSTMENT

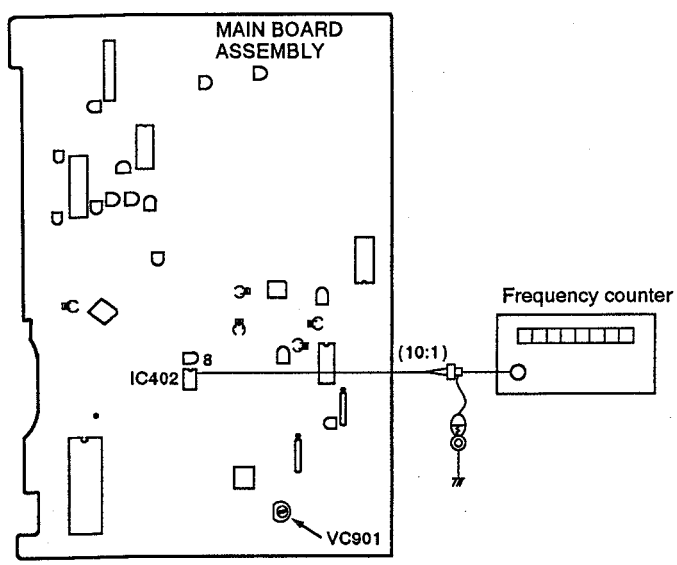
18. REFERENCE FREQUENCY ADJUSTMENT

● Purpose: Adjustment of the standard clock frequency.

● When not properly adjusted: Incorrect color tint. No TV color lock. VCXO cannot be adjusted during LDD playback.

● Measuring instruments and jigs:	● Frequency counter ● Oscilloscope 10:1 probe
● Measuring point:	● IC402-8
● Test disc and player mode	● Stop mode (blueback screen)
● Positions to be adjusted	● VC901 (REF FREQ)

Connection diagram



Adjustment Procedure

1. Adjust VC901 so that the frequency of the IC402-8 becomes 3.579545MHz in the stop mode. (blueback screen)

Note : The frequency counter probe should be an oscilloscope 10 : 1 probe.

19. VCO CENTERING FREQUENCY ADJUSTMENT

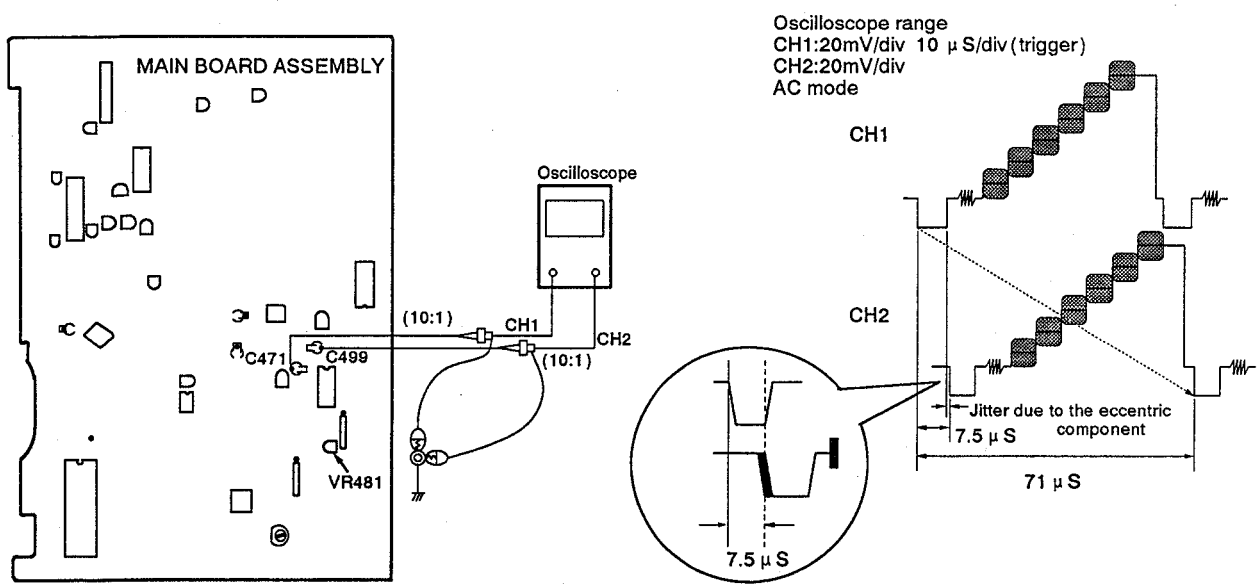
Electrical Adjustment

● Purpose: Setting the optimum delay time for the time axis error copensation CCD.

● When not properly adjusted: It is difficult to color lock, there is color lock delay after a search, and there is flicker on the white screen.

● Measuring instruments and jigs: ● Measuring point: ● Test disc and player mode	● Oscilloscope ● CH 1 : + side lead wire of C471. ● CH 2 : + side lead wire of C499. ● 8-inch LD test disc (GGV1003) ● Normal mode (Still mode, #5,100)
● Positions to be adjusted	● VR481 (VCO FREQ)

Connection diagram



Adjustment Procedure

1. Connect the + side lead wire of C471 and the + side lead wire of C499 to CH 1 and CH 2 of the oscilloscope respectively.
   CH 1 : Video signal before time axis error compensation.
   CH 2 : Video signal after time axis error compensation.

2. Search for frame #5,100 (stair step) on the test disc. Adjust VR481 so that the center of CH2's video signal jitter is delayed by 71 μs (1H + 7.5 μs) with respect to the CH1's video signal.

Note : Do not confuse CH 1 and CH 2.

20. OUTPUT VIDEO LEVEL ADJUSTMENT

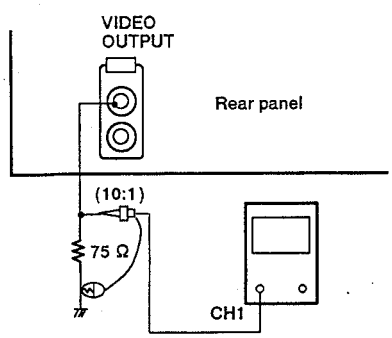
Electrical Adjustment

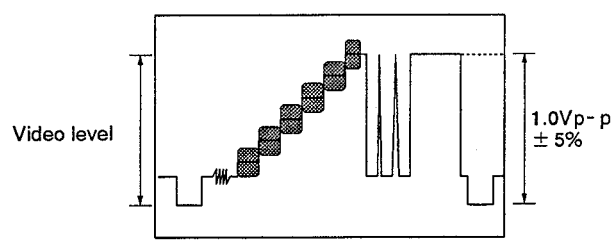
● Purpose: Setting the video signal level to1.0Vp-p (75 Ω termination).

● When not properly adjusted: The screen is too bright or too dark.

● Measuring instruments and jigs: ● Measuring point: ● Test disc and player mode	● Oscilloscope ● Resistor (75 Ω) ● Player's VIDEO OUT terminal ● 8-inch LD test disc (GGV1003) ● Normal mode (Still mode, #19,900)
● Positions to be adjusted	● VR482 (VIDEO LEVEL)

Connection diagram





Oscilloscope range
CH1 : 20mV/div 10 μ S/div (trigger)
AC input

Adjustment Procedure

1. Search for frame #19,900 on the test disc.
2. Connect the CH1 of oscilloscope to VIDEO OUTPUT terminal, it is to have 75Ω termination.
3. Adjust VR482 so that the white level becomes 1.0Vp-p ± 5% from the video signal's sync tip level.

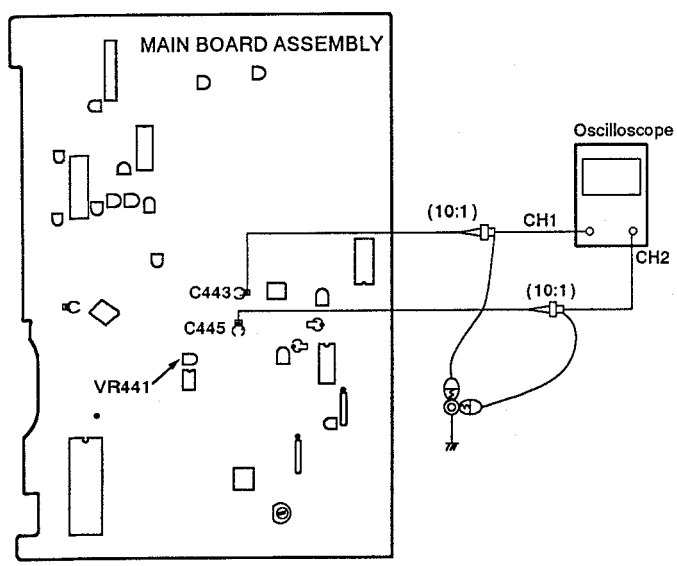
21. 1H DELAY VIDEO LEVEL ADJUSTMENT

● Purpose: Equalization of the video levels of the 1H delay video signal and the main line video signal.

● When not properly adjusted: If the 1H delay video signal level is high, white dropout will be noticeable and there will be H shifting. (Horizontal stripes across the screen.)

● Measuring instruments and jigs:	● Oscilloscope
● Measuring point:	● CH 1 : lead wire of C443 ● CH 2 : lead wire of C445
● Test disc and player mode	● 8-inch LD test disc (GGV1003) ● Normal mode (Still mode, #3,800)
● Positions to be adjusted	● VR441 (1H LEVEL)

Connection diagram



Oscilloscope range
CH1:20mV/div 10 μ S/div
CH2:20mV/div
AC mode

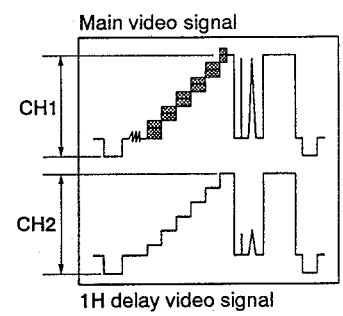


Fig. 1

Adjustment Procedure

1. Search for frame #3,800 on the test disc.
2. Connect lead wire of C443 to the oscilloscope's CH 1 and lead wire of C445 to the CH 2.
3. Adjust VR441 so that the 1H delay video level (CH 2) becomes the same as the main line video level (CH 1). (See Fig. 1)

Note : The video level is the level between the SYNC tip and the white peak.

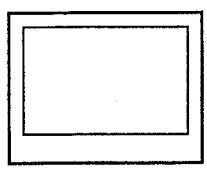
22. VPS ERROR LEVEL ADJUSTMENT

Electrical Adjustment

- Purpose: Optimization of the color tint compensation section's error signal level.
- When not properly adjusted: There is substantial color irregularity. (especially for CDV.)

● Measuring instruments and jigs:	● TV monitor
● Measuring point:	● Player's VIDEO OUT terminal (Monitor screen)
● Test disc and player mode	● 8-inch LD test disc (GGV1003) ● Normal mode [Still mode, #8,000 (Magenta)]
● Positions to be adjusted	● VR521 (VPS LEVEL)

Connection diagram



Color irregularity on the magenta screen is minimized.

Adjustment Procedure

1. Search for frame #8,000 on the test disc. (Magenta screen)
2. Adjust VR521 untill the color irregularity on the magenta screen is minimized.

7. IC INFORMATION

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

7.1 PDO137A(IC101)

● Mechanism control IC

Number	Pin Name	I/O	Pin Function
1	VCC	–	Power supply connection pin. Applies 5V ± 10%.
2	XCX	O	Analog audio CX noise reduction switching signal output pin . ON:L OFF:H
3	SQ1	O	Analog audio switching signal output pin. 1/L Squelch:H During digital audio, carried out by the control of the EFM decoder IC:CXD2500AQ.
4	SQ2	O	Analog audio switching signal output pin. 2/R Squelch:H
5	XANA	O	Digital/analog audio switching signal output pin. "H"=Digital "L"=Analog The signal output to the line-out and headphone is switched by this signal.
6	SLDR POS	I	Pickup position detection switch input pin (Analog signal). Divides the resistance of each switch, reads the value of the A/D input, and detects their positions.
7	FREQ DET	I	RF detection signal input pin (Analog signal) .Inputs the RF detection output to A/D and uses it for the spindle rough servo. The voltage and frequency are in proportion.
8	SLDR ERR	I	Slider error signal input pin (Analog signal). A/D converts this signal and uses it as the control input of the slider servo.
9	TILT ERR	I	Tilt sensor output signal input pin (Analog signal).Inputs a signal which amplifies the output of the tilt sensor by 40 to 50 dB (0 to 5V) A/D converts this signal and uses it as the control input of the tilt servo. Controls the tilt motor so that this signal becomes 2.5V.
10	MUTE	O	Audio system audio mute control signal output pin. "H"=MUTE ON "L"=MUTE OFF
11	XREFV	I	Reference V-SYNC signal input pin for clear scan. Edge detection
12	SLDR DRV	O	Slider control signal output pin. Outputs the slider drive to PWM, and uses it for the slider servo. Period 910 usec, tertiary control H, L, Z
13	T OFF	O	Tracking operation control signal output pin Backs up the ON/OFF of the tracking servo operation with this signal. "H"=OFF "L"=ON
14	GFS	I	CD (EFM signal) frame lock signal input pin. Connected to Pin 12 of EFM decoder IC:CXD2500AQ "H"=Lock "L"=Unlock GFS are the initials of Good Frame Sync.
15	SI2	I	EFM decoder IC:CXD2500AQ sub-code input pin. Reads the sub-code with this signal and SCK2.
16	XLAT2	O	EFM decoder IC:CXD2500AQ control latch signal output pin. Transmits the control command using the SO3 and 2500CLK.
17	SCK2	O	EFM decoder IC:CXD2500AQ sub-code reading clock signal output pin. Generates the clock 96 times, and reads the sub-code.
18	TILT DRV	O	Tilt control signal output pin. PWM outputs the tilt drive and uses it for the tilt servo.
19	S – FTOM	I	Input pin of the data from the mode control IC. Serial front to mechanism. Used together with the data signal to the character generator IC.
20	S – MTOF	O	Mode control IC Serial data output to the mode control IC. Serial mechanism to front.
21	SCK1	I/O	Clock for serial communication with the mode control. Other than the communication with the mode control IC, it becomes the input mode.Used together with the clock signal to the character generator IC
22	TZC	I	Tracking error zero cross signal input pin. Compared signal of the tracking error signal. During track count search, counts this signal and controls the slider motor.
23	SCOR	I	Sub-code sync signal input pin. When this signal is "H", inputs the sub-code signal from the EFM decoder IC:CXD2500AQ as well. Monitors the playback condition of the disk according to the presence/absence of this signal.
24	T LATCH	O	D/A converter and digital filter IC:PD2026 serial control latch signal output pin.
25	SHAKE	I/O	Handshake signal pin for data communication with the mode control IC. This pin is the data line for both directions. Transmits the timing of the data transmission when the microprocessors switch the output/input mode.
26	XPBV	I	LD/CDV playback vertical sync signal input pin. This IC basically operates by synchronizing with this signal (Falling edge). Creates the timing of the jump according to this signal in the special playback mode of CAV. "L"=During vertical sync
27	CN VSS	–	GND for A/D conversion.
28	XRESET	I	Reset signal input pin. "L"=Reset "H"=Reset release Controlled by the mode controller
29	XTAL IN	I	9 MHz clock oscillation input pin.
30	XTAL OUT	O	9 MHz clock oscillation output pin.
31	N.C.	–	Not used.
32	VSS	–	GND

Number	Pin Name	I/O	Pin Function
33	SW1	I	Switch input pin for loading/tilt position detection.
34	SW2	I	Switch input pin for loading/tilt position detection.
35	SW3	I	Switch input pin for loading/tilt position detection.
36	N.C.	–	Not used.
37	FG	I	Spindle motor FG signal input pin. 24 times per rotation. Used by dividing frequency into 3 in the microprocessor.
38	DATA	I	Input pin for the Phillips cord decoder of the built-in mechanism controller.
39	XPBH	I	Playback H-SYNC input for decoding the Phillips cord.
40	XPBV	I	Playback V-SYNC input for decoding the Phillips cord.
41	CAV	O	CAV/CLV switching signal output pin. "H"=CAV "L"=CLV Connected to Pin 6 of PA5013 and used as a video NR switching signal.
42	SOFT	O	Image quality adjustment switching signal output pin. "H"=Soft "L"=Normal
43	ACC CONT	O	Acceleration and deceleration signal output pin of the spindle. H=Acceleration L=Deceleration Z=CD, stop, play
44	GPWM	O	Duty pulse signal output pin for the spindle gain switching. CLV internal circumference:L, External circumference:H CAV:L CDV:H
45	J.TRIG	O	Truck jump signal output pin. For track 1 jump Start of jump:H Others:L Width of "H" is approximately 20 usec.
46	SCK3	O	Serial 3 clock signal output pin. Rising edge reading "H" period:2 usec "L" period:20 usec.
47	SO3	O	Serial 3 data signal output pin The serial signal is shared, and the latch signals(XLAT3, XLAT2, T LATCH) discriminate the signal. LSB first
48	XLATCH3	O	Latch signal output pin for the spindle servo IC.
49	CLV SCAN	O	CLV V sync scan mode signal output pin.
50	VSQ	O	Video output switching signal output pin. "H"=Squelch "L"=Video playback
51	VLOCK	I	Vertical sync lock detection signal input pin. For CLV clear scan, Constant time "H" when REF-V and PBV are in-phase
52	SENA	O	Shift enable signal output pin. For CLV clear scan, "H" when H is thinned out and REF-V and PBV are brought close together
53	XSPLOCK	I	Spindle lock signal input pin L:Lock H:Unlock
54	N.C.	–	Not used.
55	N.C.	–	Not used.
56	N.C.	–	Not used.
57	N.C.	–	Not used.
58	N.C.	–	Not used.
59	TRAY.SW	I	Switch input pin for CD direct tray position detection.
60	TURNA	I	α turn position detection signal input pin. "L"=Side A "H"=Side B, Turning
61	TURNB	I	α turn position detection signal input pin. "L"=Side B "H"=Side A, Turning
62	RFCORR	O	RF collection switching signal output pin. H=Gain-up Increases the gain in the CAV internal circumference. Frame #8000 to #8100
63	DIRECT	O	CD direct video system power supply OFF signal output pin. "H"=Video system power supply off, "L"=Normal
64	XFLOCK	I	Focus servo lock signal input pin Used for the lock detection of the focus servo. "L"=Lock "H"=Unlock

7.2 PDB070A (IC102)

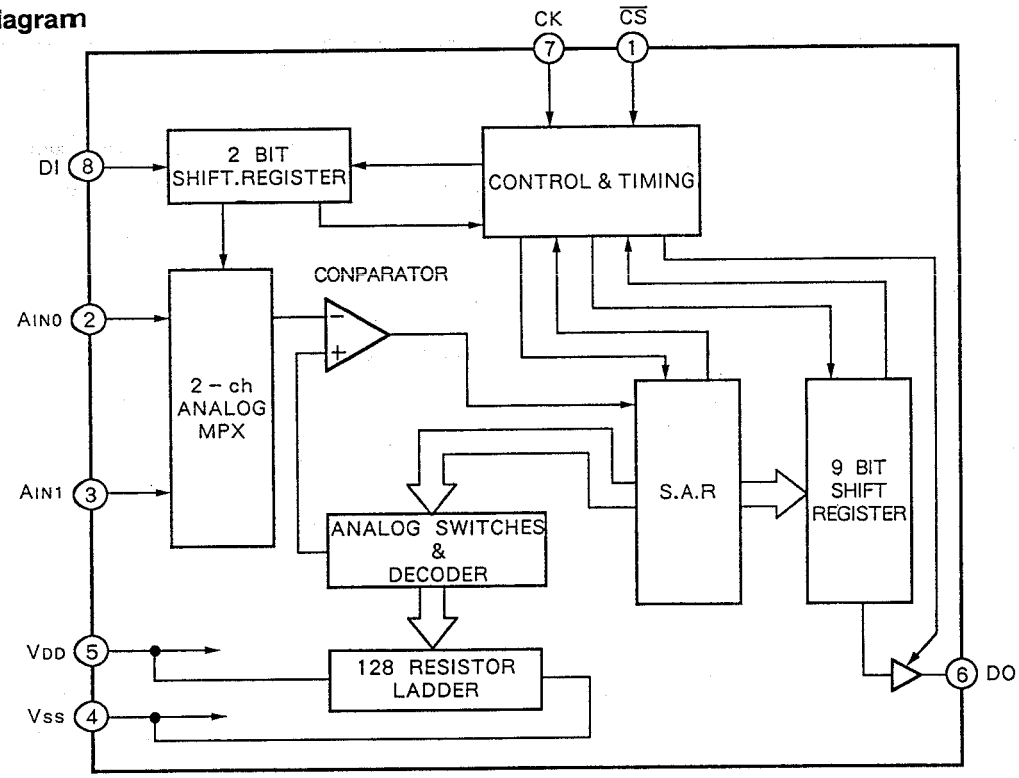
• Mode-control IC

No	Pin Name	I/O	Function	No	Pin Name	I/O	Function
1	V_{DD}	I	Power supply (5V)	33	DOOR OPEN	I	Door-switch input "H" for OPEN
2	(NC)			34	KAR/$\overline{\text{NOR}}$	I	KARAOKE/NORMAL select switch input
3	G10	O	Fl liting timing outputs "H" for ON and "L" for OFF	35	$\overline{\text{DSP}}$	O	Select DSP output "L" for ON
4	G9			36	$\overline{\text{CS}}$ (DSP)	O	YSS205(DSP) Select
5	G8			37	$\overline{\text{OEM}}$	I	OEM select input. "L" for OEM set
6	G7			38	$\overline{\text{CS}}$	O	PD0093(display IC) Select
7	G6			39	$\overline{\text{RESETO}}$	O	Reset output
8	G5			40	$\overline{\text{SCK}}$	I/O	Serial data transfer clock
9	G4			41	SI	I	Serial data input
10	G3			42	SO	O	Serial data output
11	G2			43	$\overline{\text{RESETI}}$	I	Reset input
12	G1			44	SEL IR	I	remote control input
13	(NC)			45	SHAKE	I	Serial-com start request input
14	$\overline{\text{MTONE2}}$	O	Low booster for MIC input "L" for ON	46	MODE1	I	MIC control-1(keycon down) input
15	$\overline{\text{MTONE1}}$	O	Hi booster for MIC input "L" for ON	47	MODE2	I	MIC control-2(keycon up) input
16	DOG FOOD	O	Timing output for the watchdog timer	48	ACK	O	Serial-com start acknowledge output
17	$\overline{\text{CS}}$ (A/D)	O	TC35097AP(A/D converter) Select	49	POWER	O	Power ON/OFF. "H" for ON "L" for OFF
18	V_{DISP}	I	Power supply(-30V)for the FL display	50	S-SCAN	O	Shuttle scan output. "H" for ON
19	a (KS0)	O	Fl lighting segment outputs "H" for ON and "L" for OFF Key scan outputs "H" for ON and "L" for OFF	51	INT/$\overline{\text{EXT}}$	I	Internal/External source select inp
20	b (KS1)			52	(NC)		
21	c (KS2)			53	I/O DATA	O	Serial data output for BU2040F
22	d (KS3)			54	I/O CLK	O	Serial clock output for BU2040F
23	e (KS4)			55	MICSNS	I	"Sense MIC input" input."H"for SENSE
24	f (KS5)			56	KIN0	I	Key data input "H" for ON and "L" for OFF
25	g (KS6)			57	KIN1		
26	h (KS7)			58	KIN2		
27	i (KS8)			59	KIN3		
28	j (KS9)			60	X1		Not Used (GND)
29	k			61	X2		Not Used (No connection)
30	l			62	X_{SS}		Not Used (GND)
31	(NC)			63	OSC2	I	Oscillator (5.5 MHz)
32	(NC)			64	OCS1	O	

7.3 TC35097AP (IC101)

- **8-Bit 2ch serial I/O A/D converter**

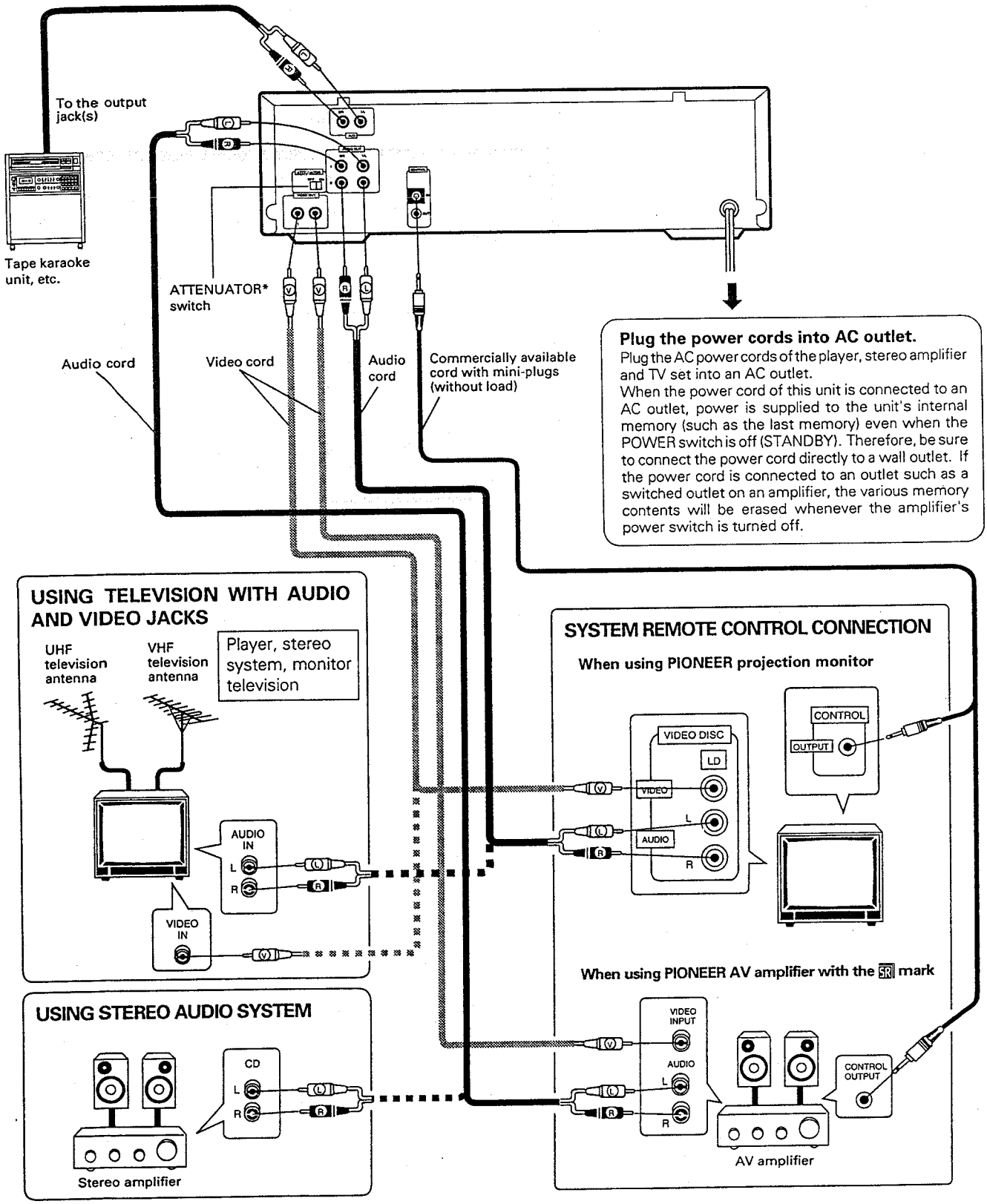
- **System Diagram**



- **Pin Descriptions**

Pin No.	Symbol	Function
1	$\overline{CS}$	[Chip Select] The conversion mode is set at the falling edge of $\overline{CS}$ and conversion begins. When adjusted to "H" the standby mode is set and all outputs become high impedance.
2	AIN0	[Analog Input] Analog input pin. The input level of the AIN selected by the DI input is converted. The input range is VSS to VDD. On Channel: AIN0 → Serial Input CHS: L On Channel: AIN1 → Serial Input CHS: H
3	AIN1	
4	VSS	[Digital Ground] System ground pin. Normally 0.0V.
5	VDD	[Power Supply] Power supply pin. 5.0V ± 10%.
6	DO	[Data Output] Following the start bit "L" the conversion data are sequentially output in serial form from MSB.
7	CK	[Clock Input] Reference clock input of the conversion operation.
8	DI	[Data Input] Following the start bit "L" the serial data are input in the order of CHS.

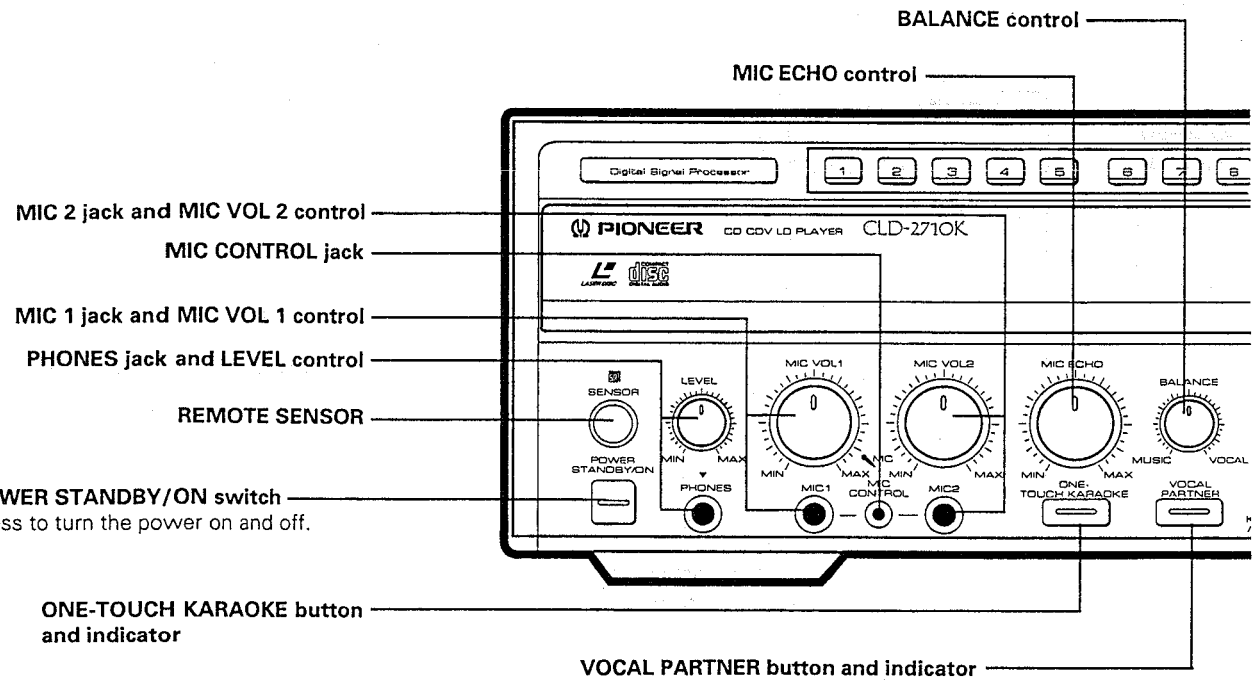
8. CONNECTIONS

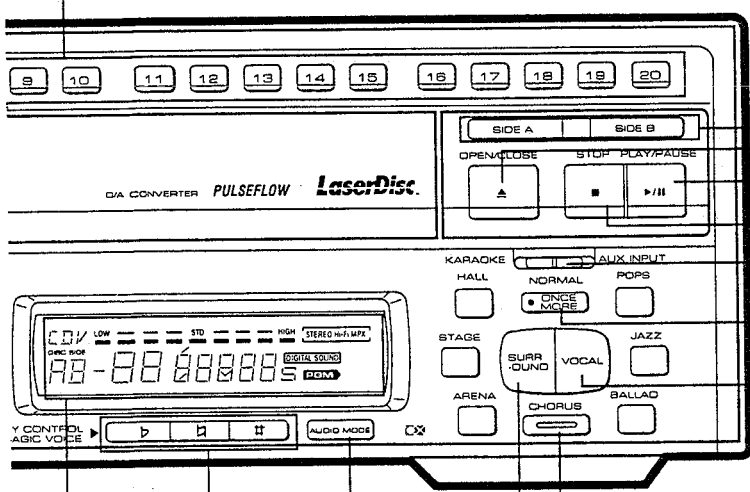


LD-2710K

9. PANEL FACILITIES

Most of the buttons on the front panel are used for Karaoke play.
A detailed description is provided on the indicated page(s).





Direct music search buttons

SIDE A/B buttons
When a two-sided LD is loaded, side A is the side with the label facing upward, and side B is the side with the label facing downward. Depending on how the LD is loaded, the A and B buttons may not correspond with the indications on the label (A, B or 1, 2).

OPEN/CLOSE button

PLAY/PAUSE button

STOP button

KARAOKE/NORMAL/AUX INPUT selector

ONCE MORE button and indicator

VOCAL button

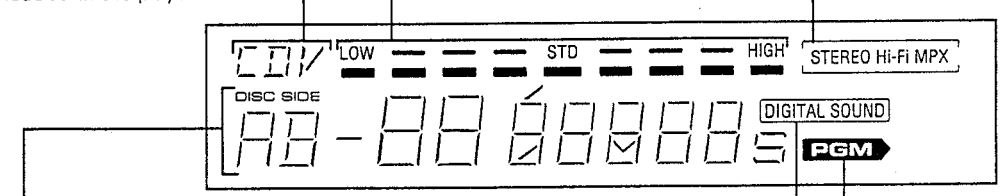
CHORUS button and indicator

SURROUND button

AUDIO MODE button

KEY CONTROL/MAGIC VOICE buttons

Display window



Disc indicator
Indicates the type of disc loaded in the player.

Key control indicator
Indicates the current pitch position.

Audio mode indicators
Indicates audio mode (Hi-Fi MPX/ MPX/STEREO) being selected.

DISC SIDE A/B indicators
Indicates the side of the disc being played. Side A is the side with the label facing upward, and side B is the side with the label facing downward.

DIGITAL SOUND indicator
Lights when a disc with digital audio is played. Also lights when the digital signal is selected during LD playback.

PGM indicator
Lights during program play.

LD-2710K

10. SPECIFICATIONS

1. General

System ..... LaserVision Disc system and Compact Disc digital audio system
Laser ..... Semiconductor laser wavelength 780 nm
Power requirements ..... AC 110 - 127 V/220 - 240 V (Switchable), 50/60 Hz
Power consumption ..... 39 W
Weight ..... 8.8 kg (19 lbs 6 oz)
Dimensions ..... 420 (W) x 441 (D) x 139 (H) mm 16-9/16 (W) x 17-3/8 (D) x 5-1/2 (H) in
Operating temperature ..... +5°C ~ +35°C (41°F - 95°F)
Operating humidity ..... 5% ~ 90% (There should be no condensation of moisture.)

2. Disc

LaserVision Discs

*Maximum playing times
- 12-inch standard play disc ..... 1 hour/both sides
- 12-inch extended play disc ..... 2 hours/both sides
- 8-inch standard play disc ..... 28 min/both sides 14 min/one side
- 8-inch extended play disc ..... 40 min/both sides 20 min/one side

Spindle motor speed
- Standard play disc ..... 1,800 rpm
- Extended play disc ..... 1,800 rpm (inner circumference) to 600 rpm (outer circumference) (For a 12-inch disc)

Compact Discs

DISC ..... Diameter: 5-inch, 3-inch, Thickness: 1.2 mm
Rotation direction (pickup side) ..... Counterclockwise
Liner speed ..... 1.2 ~ 1.4m/sec
*Maximum playing time ..... 74 min. 5-inch discs 20 min. 3-inch discs (For stereo playback)

Compact Discs with Video

Disc ..... Diameter: 5-inch, Thickness: 1.2 mm
Rotation direction (pickup side) ..... Counterclockwise
Linear speed ..... Audio portion: 1.2 ~ 1.4m/sec Video portion: 11 ~ 12m/sec
*Maximum playing time ..... Video portion: 5 min. (CLV) Audio portion: 20 min. (Digital)

** Actual playback time differs for each disc.*

3. Video characteristics (two pairs)

Format ..... NTSC specifications
Video output
- Level ..... 1 Vp-p nominal, sync. negative, terminated
- Impedance ..... 75Ω unbalanced
- Jack ..... RCA jack

4. Audio characteristics (two pairs)

Output level
- During analog audio output ..... 200 mVrms (1 kHz, 40%)
- During digital audio output ..... 200 mVrms (1 kHz, –20 dB)

Jacks ..... Both RCA jacks
Number of channels 2

5. Other Terminals

Microphone input 2
MIC control input ..... miniature jack
Head phones output 1
Control input/output ..... Both miniature jacks
AUX ..... RCA jacks

6. Accessories

Remote control unit (CU-CLD047) 1
Size "AAA" (IEC R03) dry cell batteries 2
Video cord 1
Audio cord 1
Operating instructions 1
Warranty card 1

7. Functions

Remote control unit operations (CU-CLD047)

	Function	Standard play Disc (CAV)	Extended play Disc (CLV)	Compact Disc with Video	Compact Disc
Basic Functions	Two-side play	YES	YES	NO	NO
	Single-side play	YES	YES	YES	YES
	Pause	YES	YES	YES	YES
	Stop	YES	YES	YES	YES
	Eject	YES	YES	YES	YES
Search	Fast forward (forward and reverse)	YES	YES	YES	YES
	Chapter/Track skip	YES	YES	YES	YES
	Direct chapter/Track number search	YES	YES	YES	YES
	Frame number search	YES	NO	NO	NO
	Time number search	NO	YES	YES	YES
	Absolute time search	NO	NO	NO	YES
Program	Chapter/Track program play	YES	YES	YES	YES
	Program correction	YES	YES	YES	YES
Repeat	Chapter/Track repeat	YES	YES	YES	YES
	One-side repeat	YES	YES	YES	YES
	Two-side repeat	YES	YES	NO	NO
	Program repeat	YES	YES	YES	YES
Trick play	Still/Step	YES	NO	NO	NO
Time display	Elapsed time display	NO	YES	YES	YES
	Absolute time display	YES*1	NO	NO	YES
	Remaining track time display	NO	NO	YES	YES
	Remaining total time display	YES*1	YES*1	YES	YES
	Total number of selections, total time display	YES*1	YES*1	YES	YES
Others	CX system ON/OFF	YES*2	YES*2	NO	NO
	AUTO DIGITAL/ANALOG switch	YES*3	YES*3	NO	NO
	Audio channel selection (Stereo, 1/L, 2/R)*4	YES	YES	YES	YES

*1 Only discs with TOC
*2 Valid for analog audio playing a disc with the CX mark.
*3 Can only be used with discs with digital audio tracks.
*4 Only NORMAL mode

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