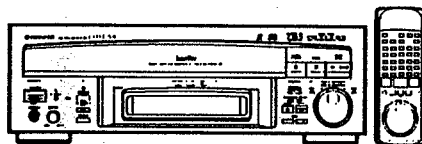


# Service Manual



ORDER NO.  
ARP2463

CD CDV LD PLAYER

# CLD-D701

## CLD-D750

CLD-D701 AND CLD-D750 HAVE THE FOLLOWING :

Type	Model		Power Requirement	Remarks
	CLD-D701	CLD-D750		
KU/CA	○	—	AC120V only	
RD	—	○	AC110-127V, 220-240V (Switchable)	

- This manual is applicable to the following : CLD-D701/KU/CA ; CLD-D750/RD.
- For CLD-D750/RD, refer to page 113.
- For the circuit and mechanism descriptions, refer to the service guide ARP2234 for CLD-1090/2090/3090.

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This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

**WARNING**

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

# 1. SAFETY INFORMATION

(FOR USA MODEL ONLY)

## 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

### LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.

**ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.**

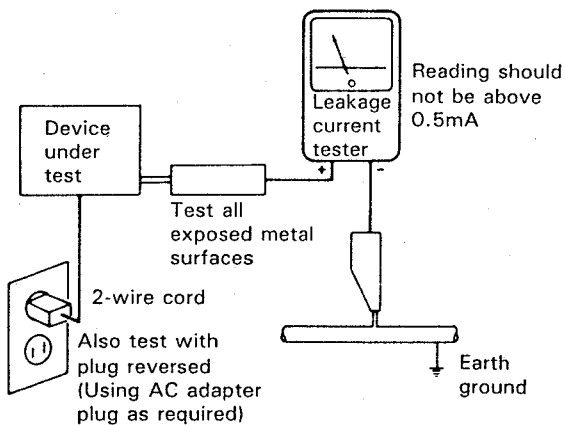
## 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a  $\Delta$  on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

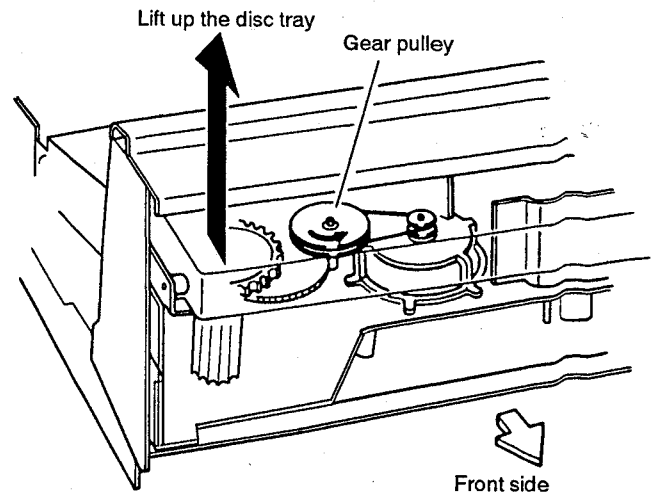
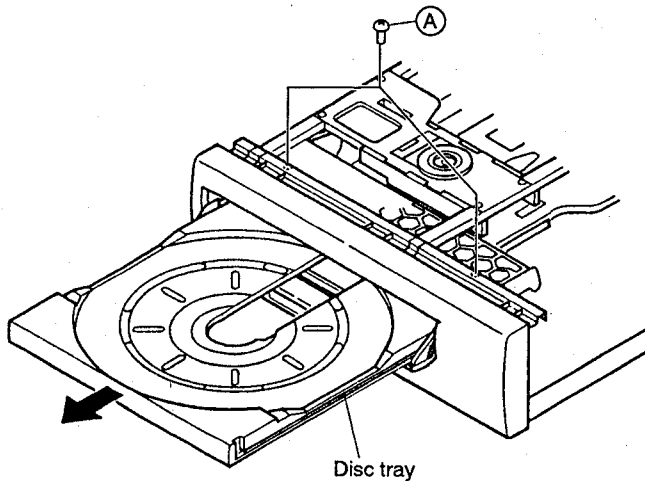


AC Leakage Test

## 2. DISSASSEMBLY

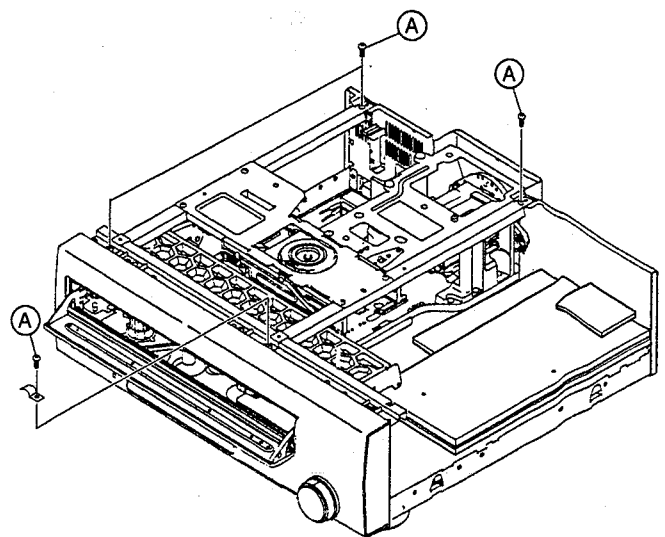
### 1. Disc Tray

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



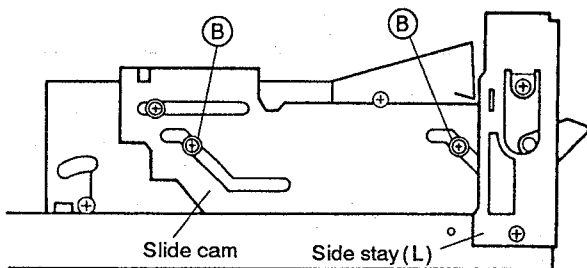
### 2. Clamper Assembly

- ① Remove four screws (A) to remove the clamper assembly.



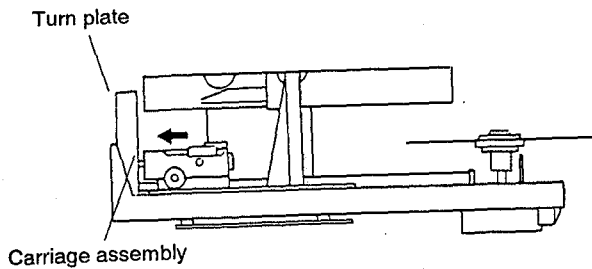
#### Note 1: How to open the tray by hand

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

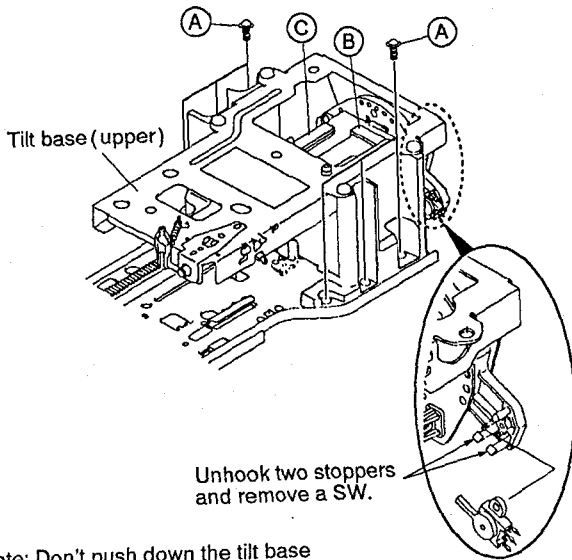


### 3. Carriage Assembly

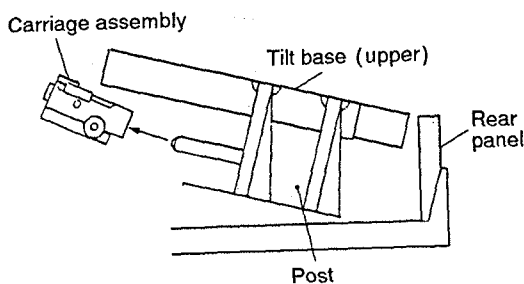
- ① Slide the carriage assembly to the shaft of the turn plate by hand.



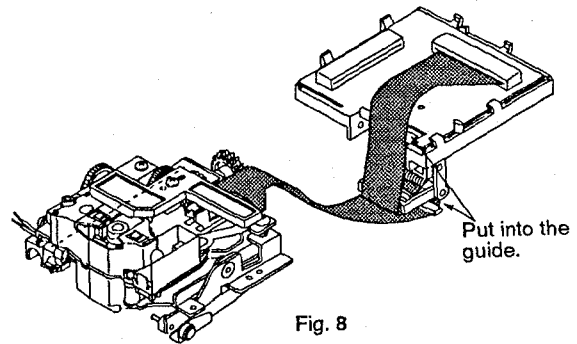
- ② Disconnect two connectors (B) and (C) from the CNNB assembly to remove the flexible cable (Fig. 6).
- ③ Remove six screws (A) from the post (L) and (R) to remove the tilt base.
- ④ Pull out the carriage assembly by setting the tilt base (upper) toward the upper (Fig. 7).
- ⑤ Unhook two stoppers and remove a SW.



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

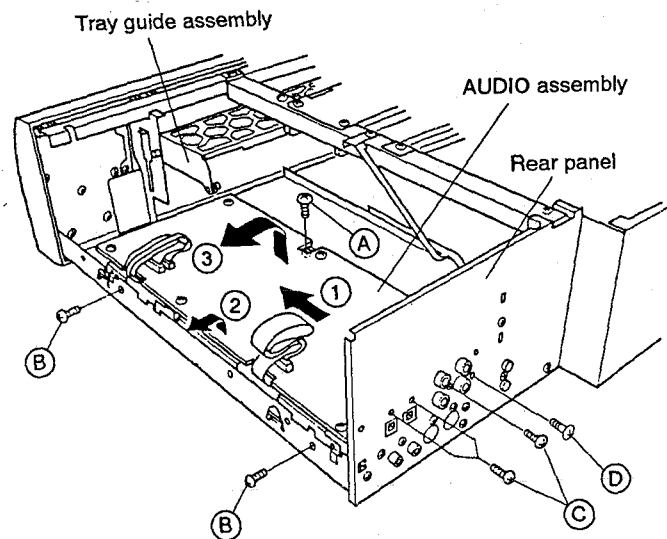


### ● How to replace the flexible cable



### 4. AUDIO Assembly

- ① Open the tray.
- ② Remove one screw (A), two screws (B), three screws (C) and one screw (D).
- ③ Separate the output terminal of the AUDIO Assembly from the rear panel. (Arrow ①)
- ④ Slide the AUDIO Assembly by lifting it up. (Arrow ②)
- ⑤ Raise the AUDIO Assembly so that it does not touch the tray guide assembly. (Arrow ③)



### 5. How to install the cam gear

① Grease the cam gear. (Fig.10)

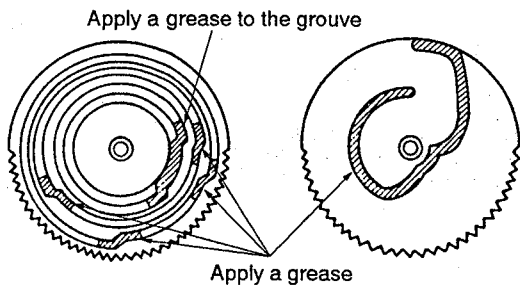


Fig. 10

② Move switch levers (A) and (B) (Fig.11) in the direction of arrow ① (SW is ON), switch lever (C) in the direction of arrow ② and lever (D) in the direction of arrow ③.

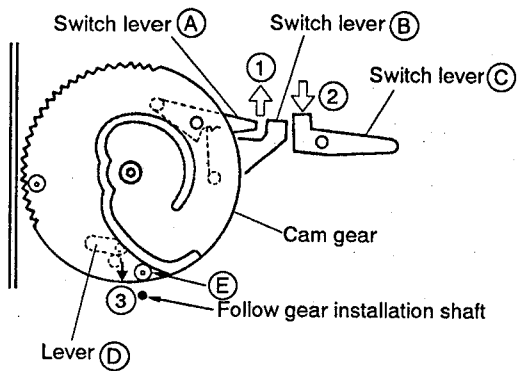


Fig. 11

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

### 6. How to install the spring slanting cam

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

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

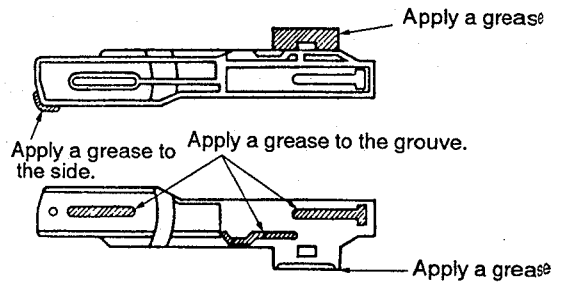


Fig. 12

③ Install 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.*

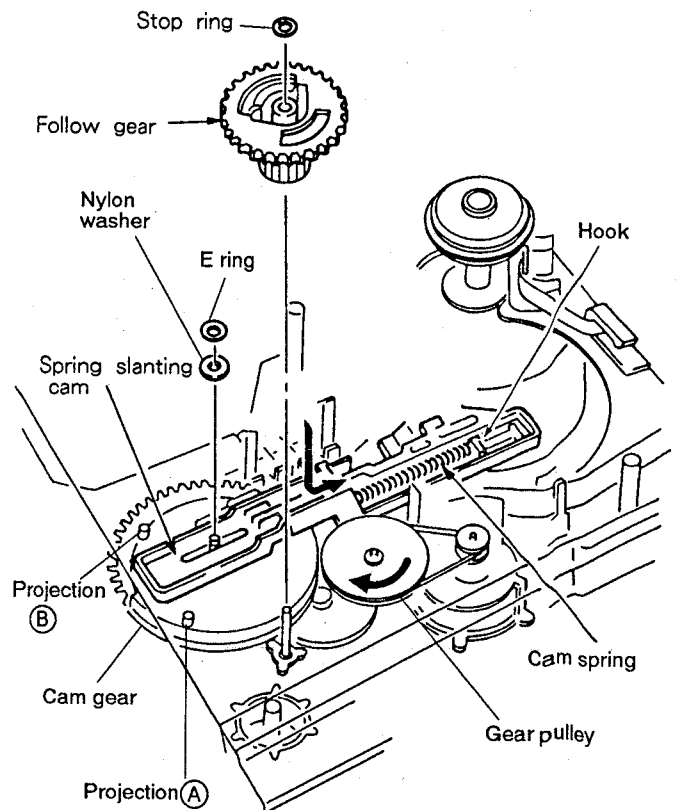


Fig. 13

**7. How to install the follow gear**

- ① Grease the follow gear. (Fig.14)

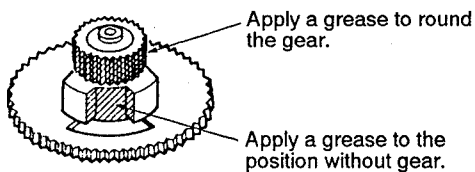


Fig. 14

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

- ③ Install the stop ring. (Fig.13)

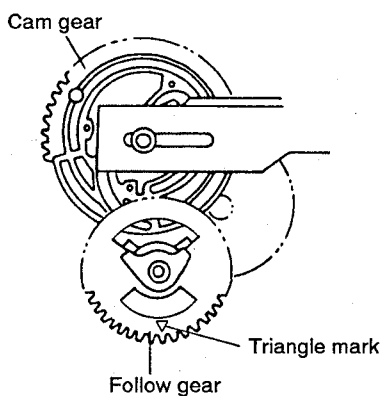


Fig. 15

**8. How to install the roller plate assembly**

- ① Mount 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)

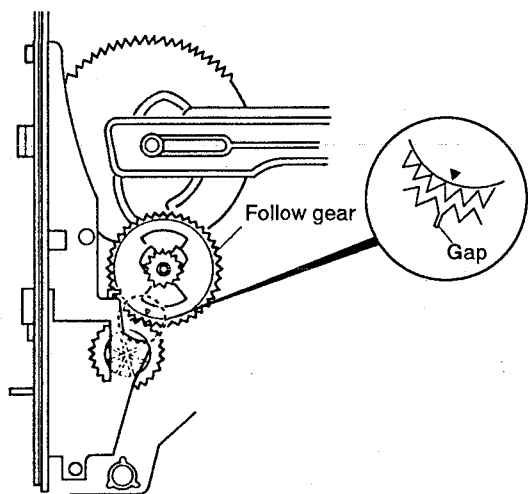


Fig. 16

**9. Caution for installing the tray guide assembly**

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

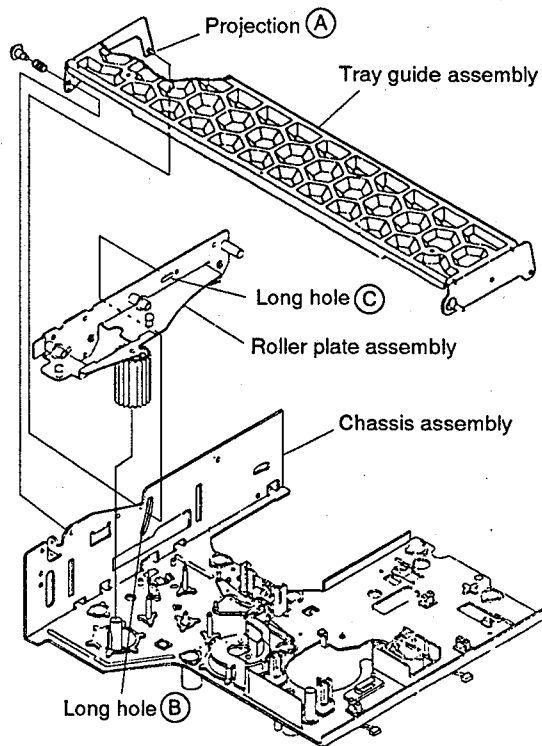


Fig. 17

**10. How to install the slide cam**

- ① Set the position of projection (A) and (B) of the cam gear by turning the gear pulley clockwise by hand as shown in Fig.13.
- ② Tighten four screws (C) to install the slide cam. (Fig. 18)

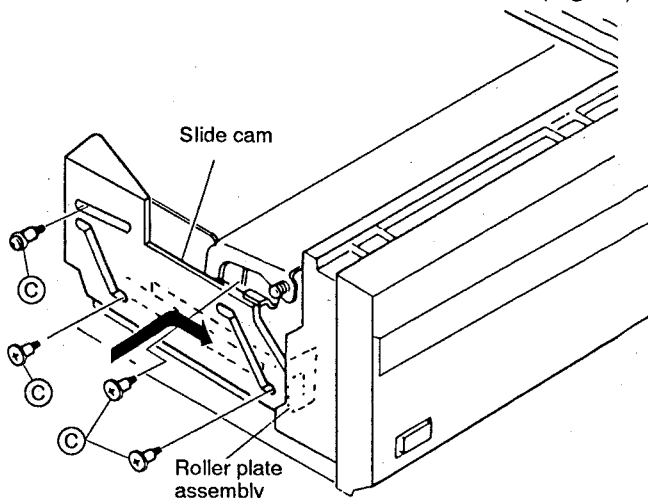


Fig. 18

## 11. How to install the disc tray

- ① Adjust the gear positions in the loading mechanism for the disc tray open status, as ㉓ and ㉔ mentioned below.
  - ㉓: The position where the cam gear turns counterclockwise and stops when the OPEN/CLOSE button is pressed.
  - ㉔: The position where the cam gear stops when the pulley is continuously turned by hand.
- ② The 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)

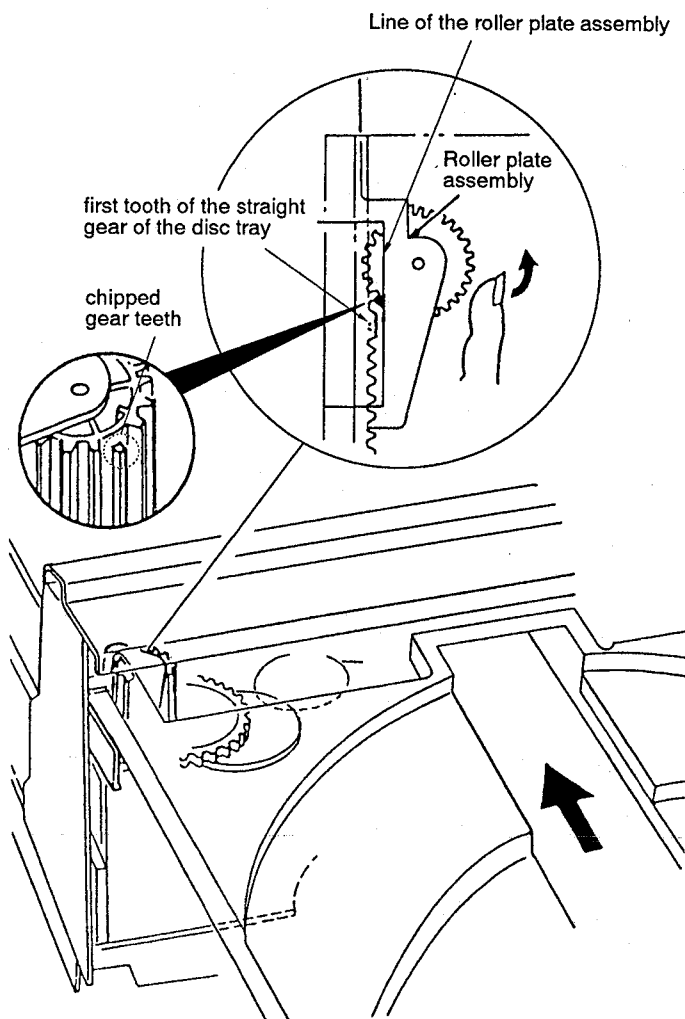


Fig. 19

- 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.
- ④ Tighten two screws ㉕ for disc tray stopper. (Fig.1)

### 3. EXPLODED VIEWS, PACKING AND PARTS LIST

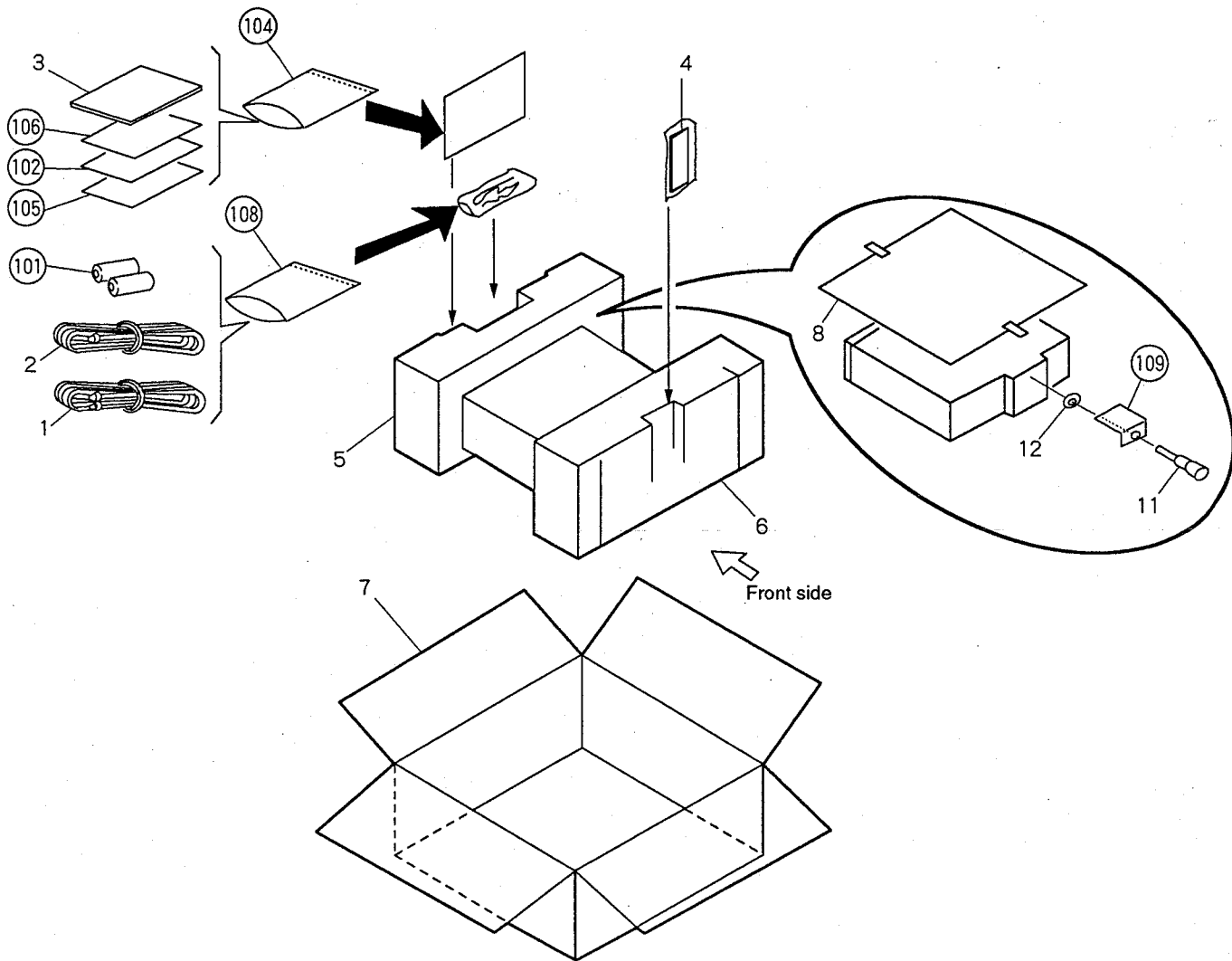
**NOTES:**

- The parts with an encircled number are generally unavaliabe because they are not in our Master Spare Parts List.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

#### 3.1 PACKING

**Parts List**

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Connection cord	VDE-055	101	Dry cell battery (R03, AAA)	VEM-022
2	Video cable	VDE-056	102	Caution card	VRR1009
3	Operating instructions	VRB1065	103	.....	
4	Remote control unit	VXX1721	104	Polyethylene bag	VHL-014
5	Pad (R)	VHA1099	105	Caution card (UC)	VRM1039
6	Pad (F)	VHA1100	106	Caution card (UC)	VRM1026
7	Packing case	VHG1209	107	.....	
8	Mirror mat	VHL1012	108	Polyethylene bag	Z21-029
9	.....		109	Tac card	VRW1200
10	.....				
11	Shipping screw	VLL1358			
12	Washer	WT36D072D025			



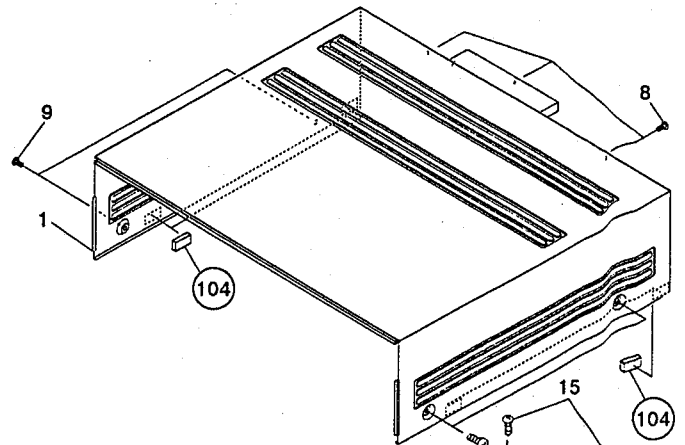


### 3.2 EXTERIOR SECTION

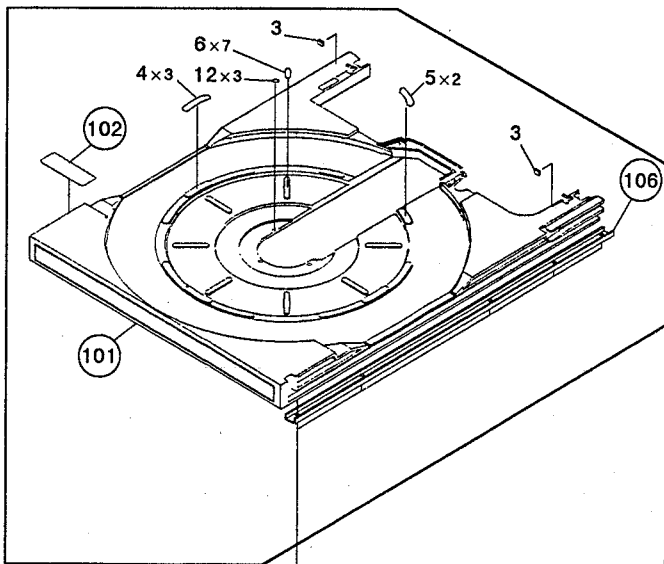
#### Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Bonnet - S	VXX1535	101	Tray	VNK1672
2	Tray assembly - S	VXX1707	102	Label(plastic)	VRW1274
3	Tray rubber	VEB1089	103	Cushion	VEC1092
4	Disc pad (Large)	VEC1191	104	Cushion	VEC1004
5	Disc pad (B)	VEC1379	105	.....	
6	Disc pad (C)	VEC1380	106	Reinforced plate	VNE1679
7	Screw	VCZ30P120FMC	107	PCB holder(A)	VNE1771
8	Screw	BBT30P060FCC			
9	Screw	BCZ40P060FZK			
10	Screw	BBZ30P060FCC			
11	Screw	BPZ30P080FCU			
12	CD pad	VEC1252			
13	Tray push plate	VBK1029			
14	AUDIO assembly	VWV1251			
15	Screw	IBZ30P060FCC			

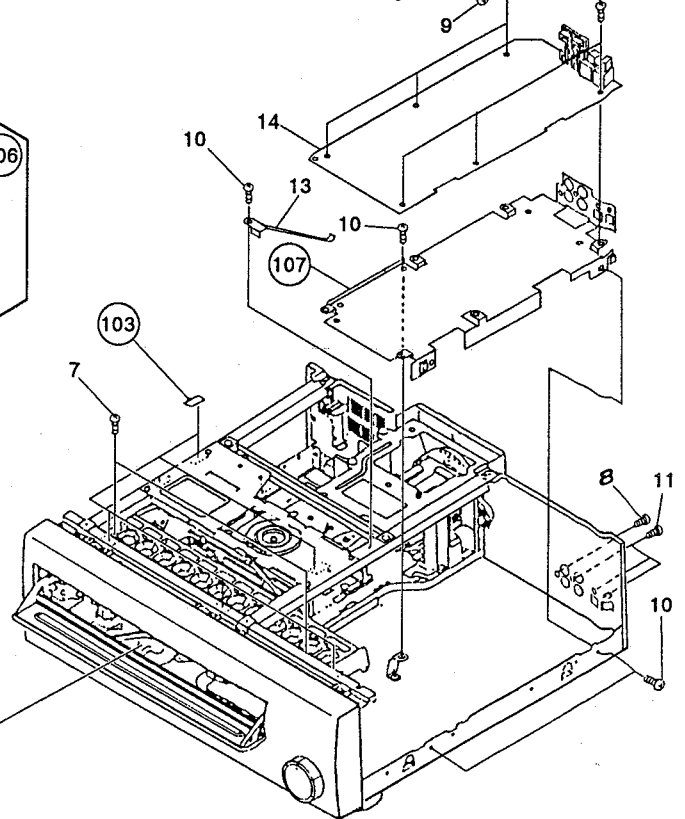
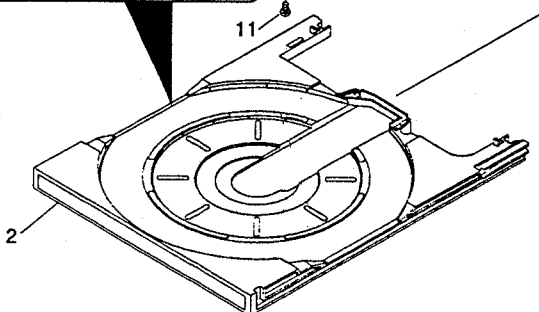
B



C



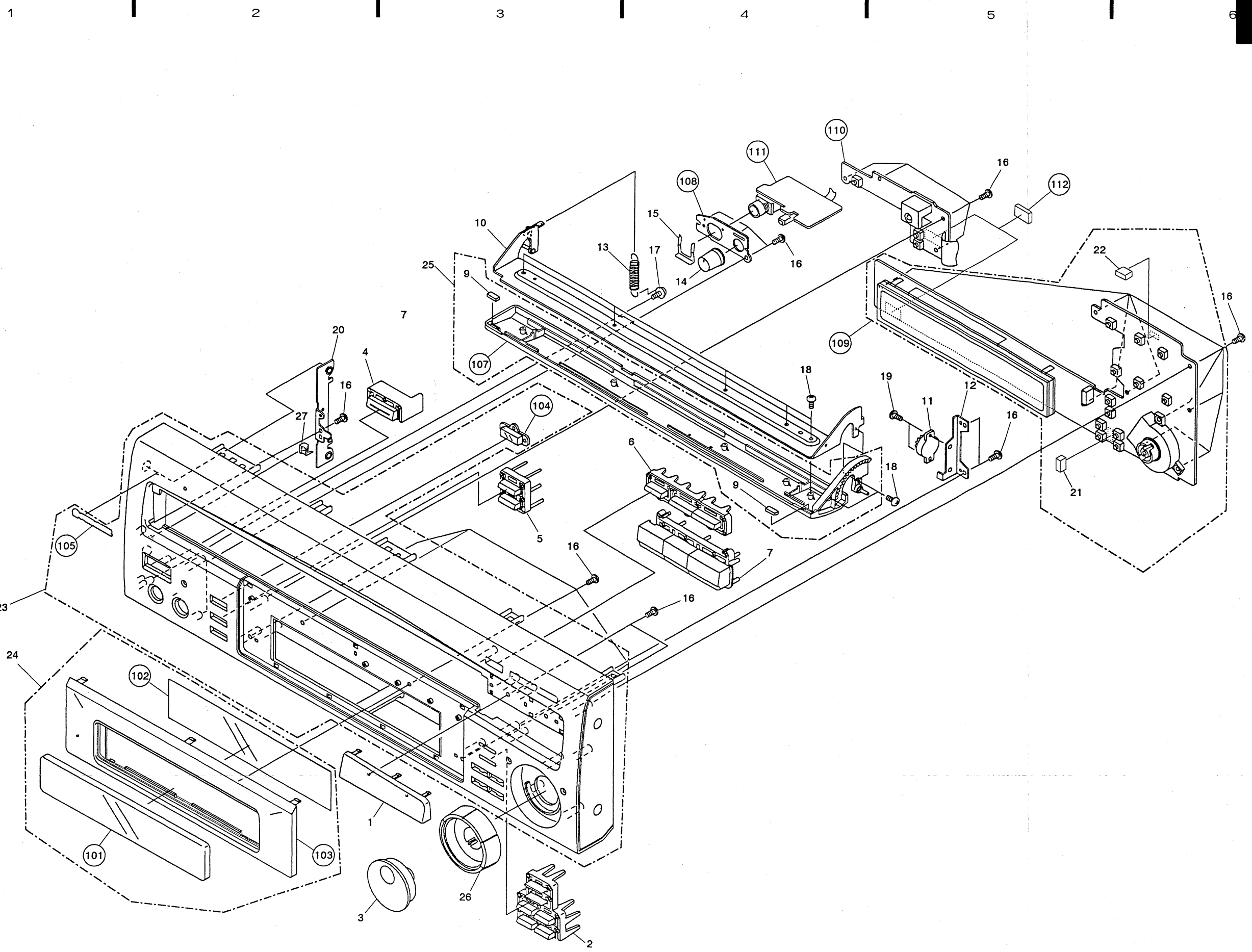
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### 3.3 FRONT PANEL SECTION

#### Parts list

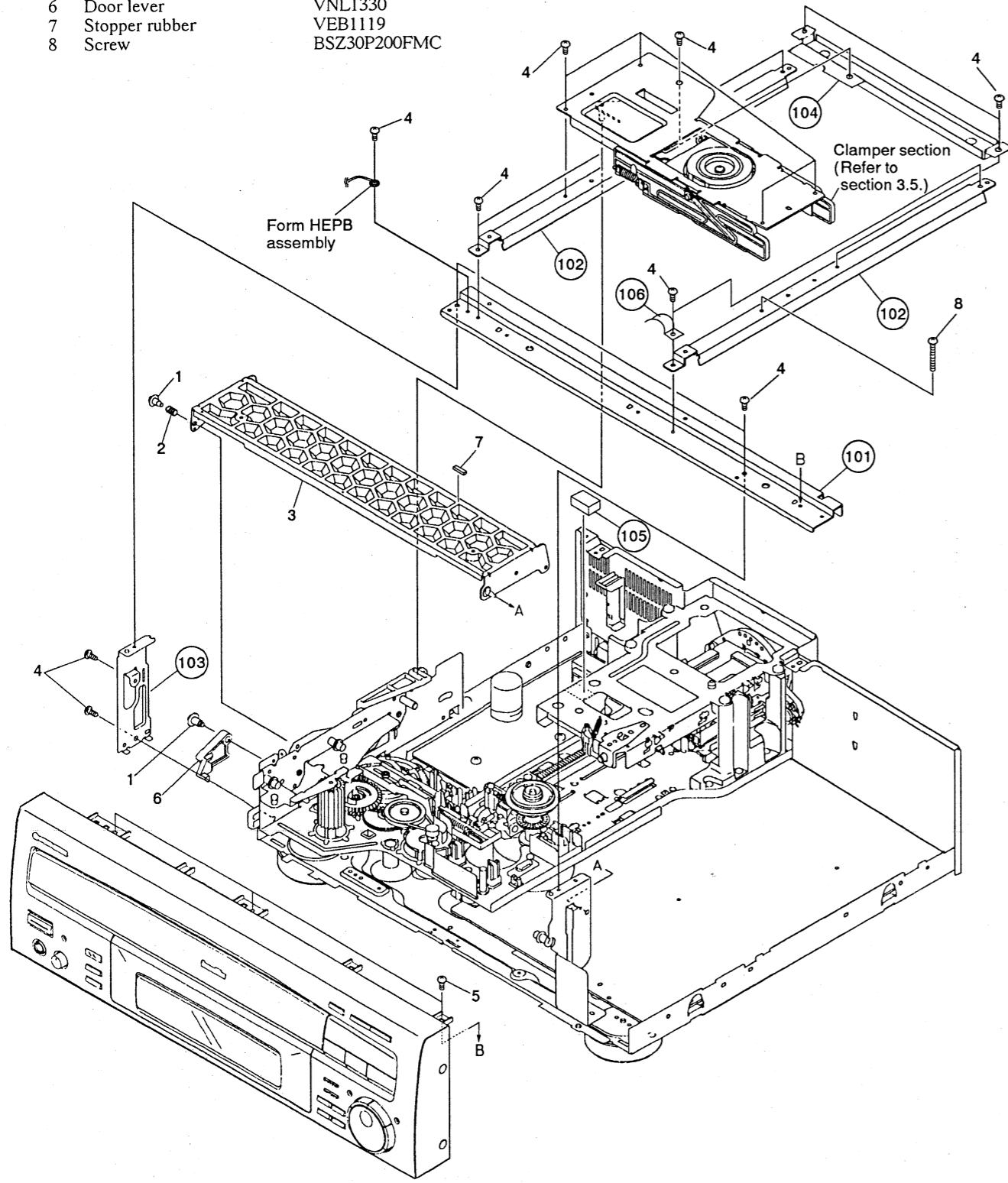
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Door panel	VNK2000		101	FL lens(A)	VNK1923
	2	Function key assembly	VXA1838		102	FL filter(A)	VEC1565
	3	Jog dial	VNK2004		103	Center panel(A)	VNK1998
	4	PW button	VNK2002		104	IR window	VNK1937
	5	Sub key assembly	VXA1837		105	Name plate	PAN1035
	6	Disc side key assembly	VXA1836		106	•••••	
	7	Main key	VNK2001		107	Front door assembly	VXA1832
	8	•••••			108	Jack holder	VNE1768
	9	Door damp rubber	VEB1185		109	FLKY assembly	VWG1333
	10	Door base assembly	VXA1790		110	IRPS assembly	VWG1289
	11	Damper assembly	VXA1053		111	HEPB assembly	VWV1252
	12	Damper plate	VNE1765		112	Damp cushion	VEC1112
	13	Door spring	VBH1194				
	14	Volume knob	VNK2003				
	15	Snap plate	VNE1102				
	16	Screw	BPZ26P060FCU				
	17	Screw	IPZ26P060FMC				
	18	Screw	BBZ20P050FNI				
	19	Screw	PMZ20P040FCU				
	20	Hinge plate	VNE1763				
	21	Cushion A	VEC1551				
	22	Cushion B	VEC1552				
	23	Front panel assembly	VXA1830				
	24	Center panel assembly - S	VXX1723				
	25	Door assembly - S	VXX1725				
	26	Shuttle ring	VNK2005				
	27	Door earth plate	VBK1038				



3.4 TOP VIEW SECTION

Parts list

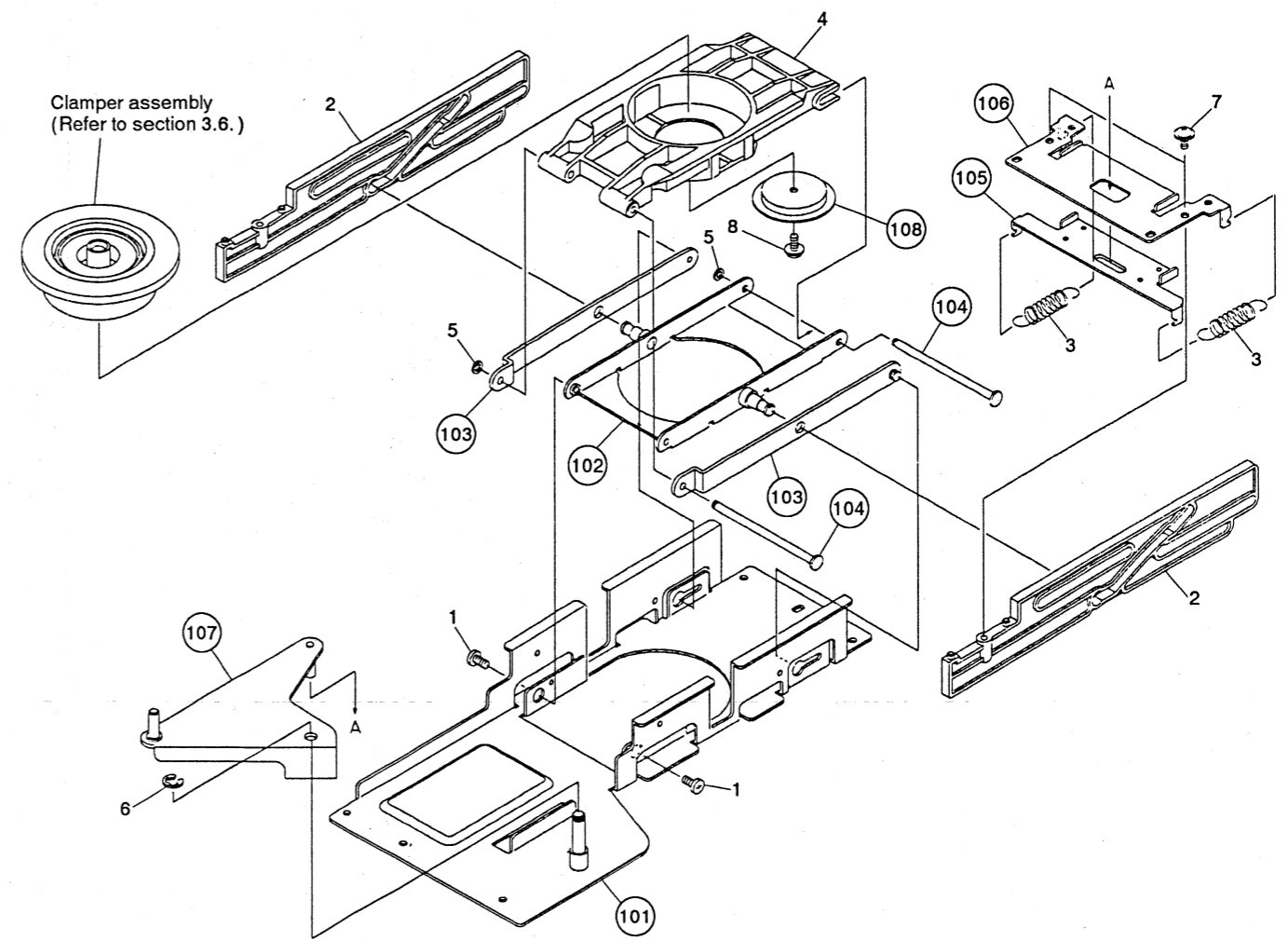
Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw (B)	VBA1008	101	Front angle	VNE1543
2	Arm spring	VBH1093	102	Center angle	VNE1761
3	Tray guide assembly	VXA1576	103	Side stay (L)	VNE1545
4	Screw	BBZ30P060FCC	104	Reinforced angle	VNE1673
5	Screw	IBZ30P060FCC	105	Damp cushion	VEC1493
6	Door lever	VNL1330	106	Earth plate	VNE1518
7	Stopper rubber	VEB1119			
8	Screw	BSZ30P200FMC			



3.5 CLAMPER SECTION

Parts list

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

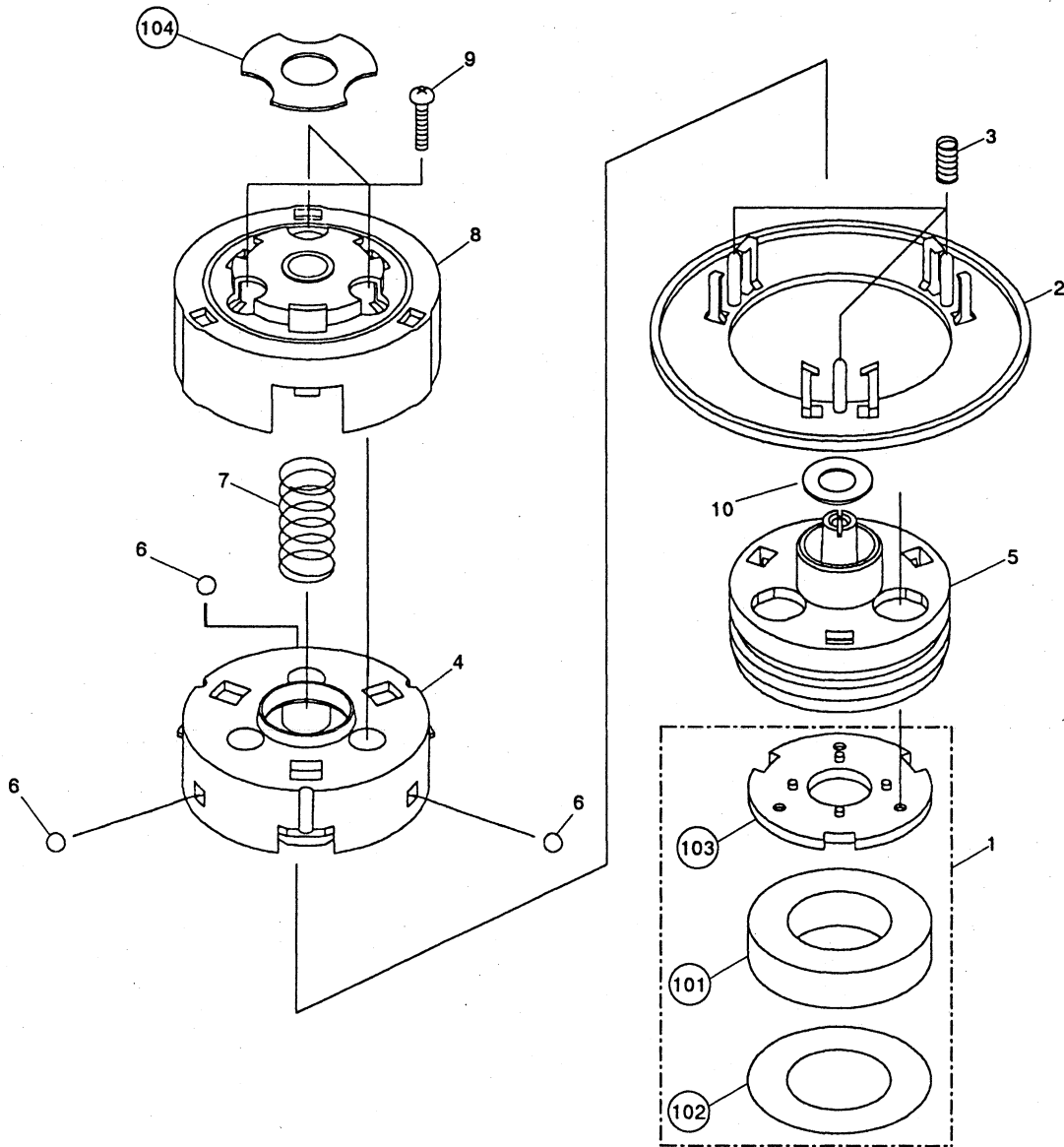


### 3.6 CLAMPER ASSEMBLY

#### Parts List

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

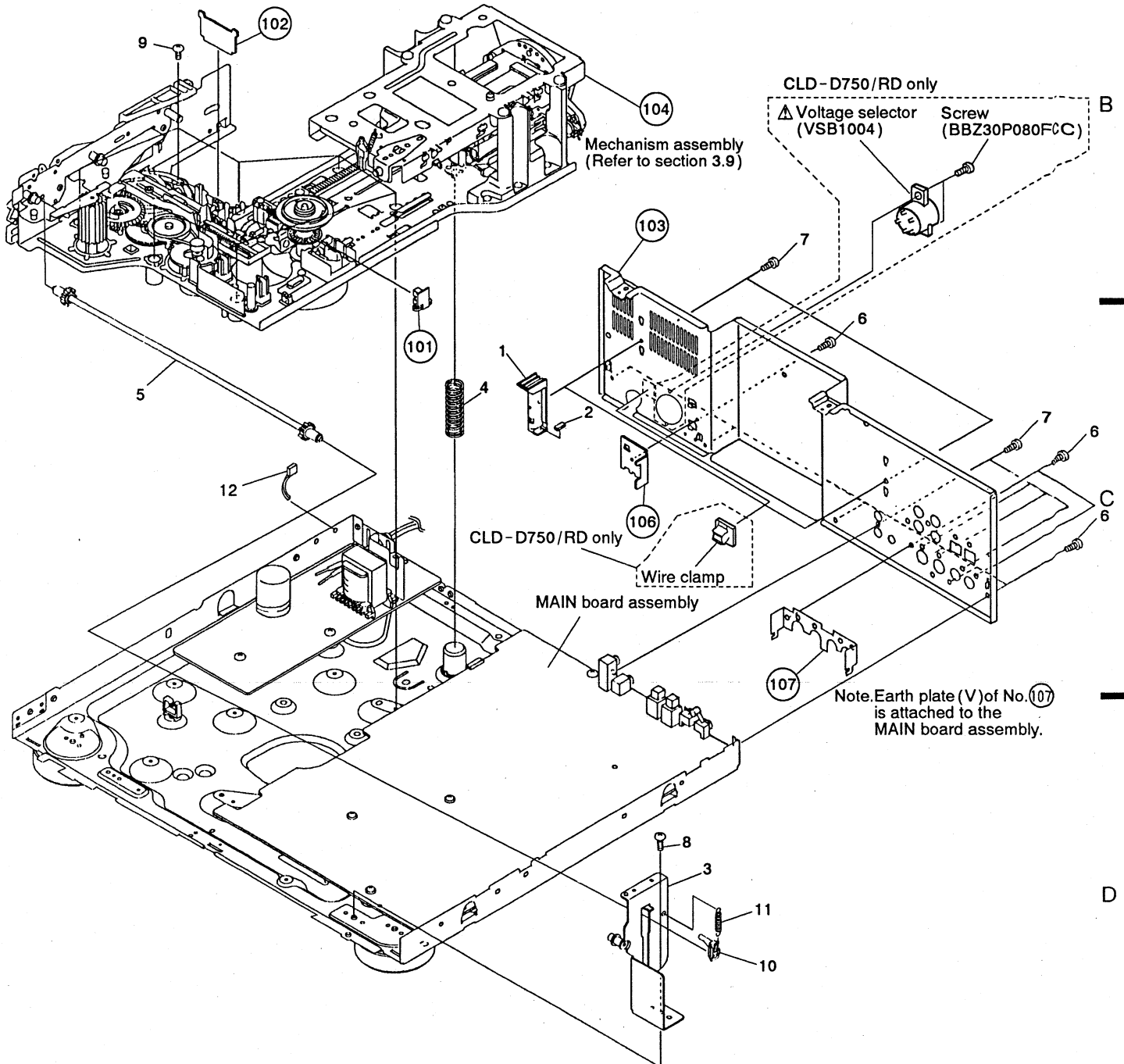
Mark No.	Description	Part No.
101	Magnet	VMG1010
102	Gap sheet	VEC1561
103	Clamber plate	VNE1549
104	Absorber rubber(A)	VEB1146



**3.7 BASE SECTION (1)**

**Parts list**

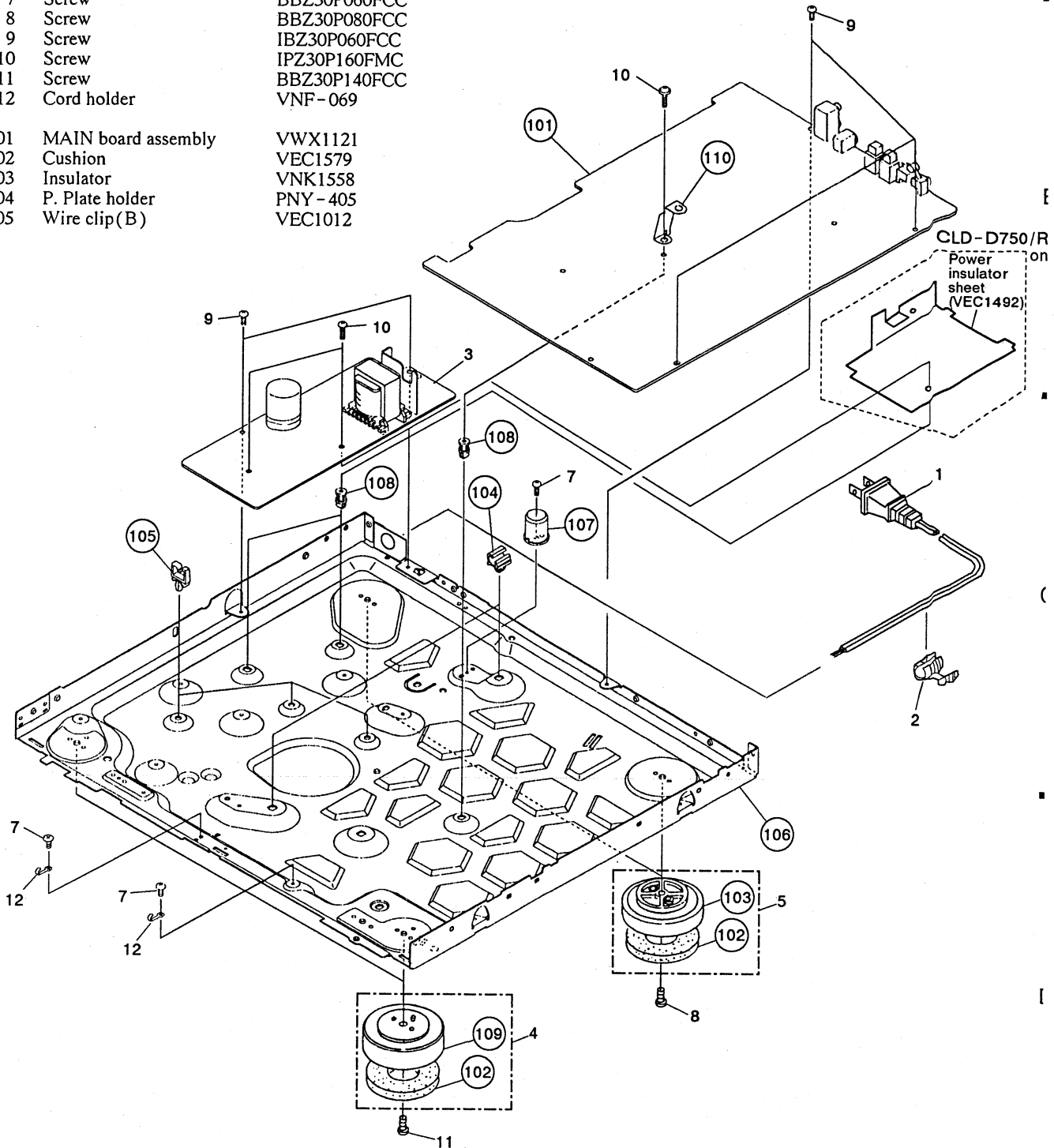
Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Tray stopper	VNL1202	11	Synchro spring	VBH1139
2	Door damp rubber	VEB1033	12	Binder	VEC-067
3	Side stay (R) assembly	VXA1690	101	FG board assembly	VWG1290
4	Base spring	VBH1145	102	SW board assembly	VWG1291
5	Synchro gear assembly	VXA1627	103	Rear panel	VNA1259
6	Screw	BBT30P060FCC	104	Mechanism assembly	VWT1078
7	Screw	BBZ30P080FCU	105	.....	
8	Screw	BBZ30P060FCC	106	TB holder	VNE1612
9	Screw	VBA1023	107	Earth plate (V)	VNE1788
10	Synchro holder	VNL1334			



3.8 BASE SECTION (2)

A Parts list

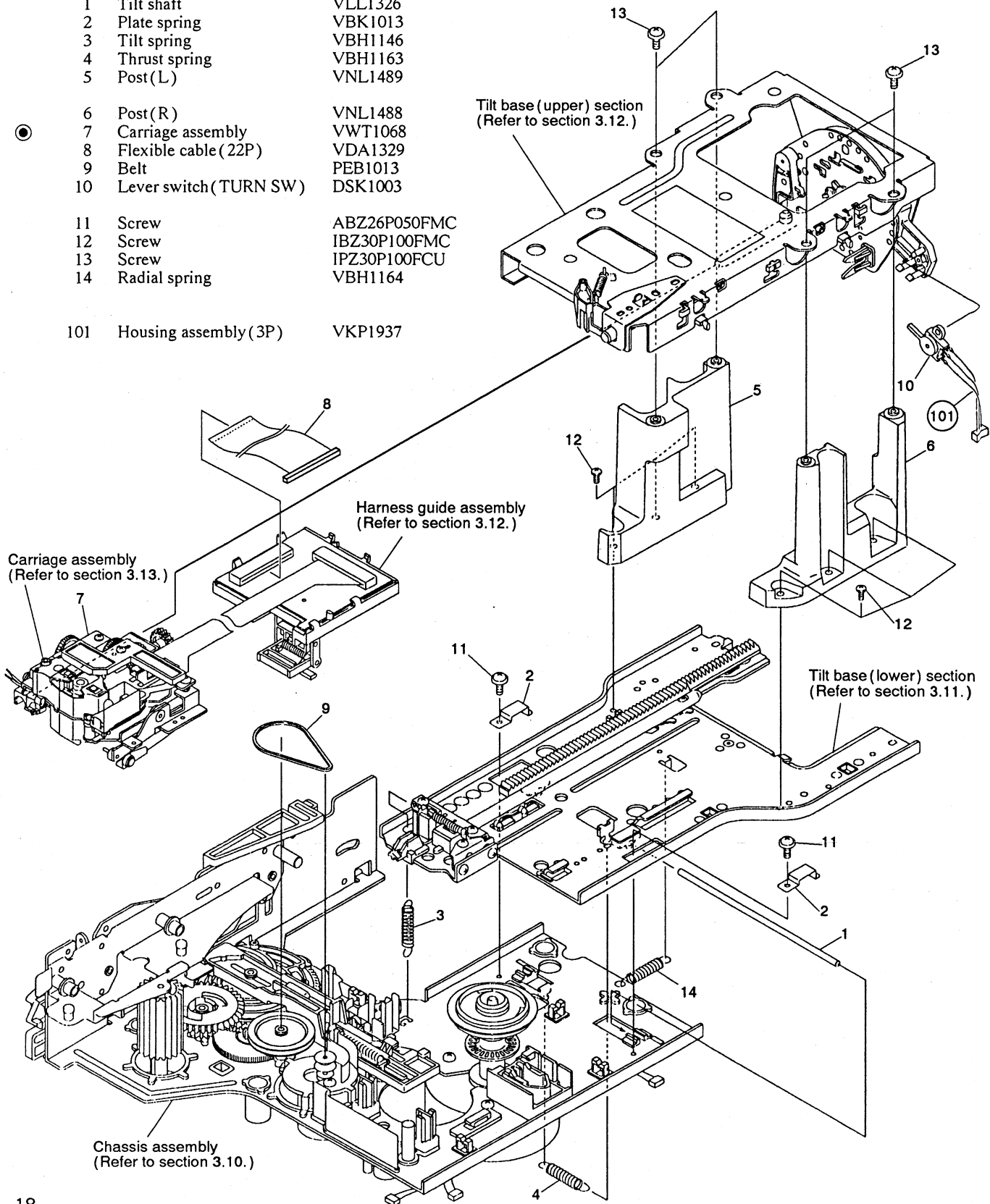
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
△	1	AC power cord	PDG1015	106	Base chassis	VNA1254	
△	2	Cord stopper	CM-22C	107	Spring guide	VNL1343	
	3	Power supply assembly	VWR1131	108	PCB spacer	PNY-404	
	4	Insulator assembly	VXA1869	109	Insulator	VNK1409	
	5	Insulator assembly	VXA1870	110	PCB holder(B)	VNE1772	
	6	.....					
	7	Screw	BBZ30P060FCC				
	8	Screw	BBZ30P080FCC				
	9	Screw	IBZ30P060FCC				
	10	Screw	IPZ30P160FMC				
	11	Screw	BBZ30P140FCC				
	12	Cord holder	VNF-069				
	101	MAIN board assembly	VWX1121				
	102	Cushion	VEC1579				
	103	Insulator	VNK1558				
	104	P. Plate holder	PNY-405				
	105	Wire clip(B)	VEC1012				



### 3.9 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
101		Housing assembly (3P)	VKP1937

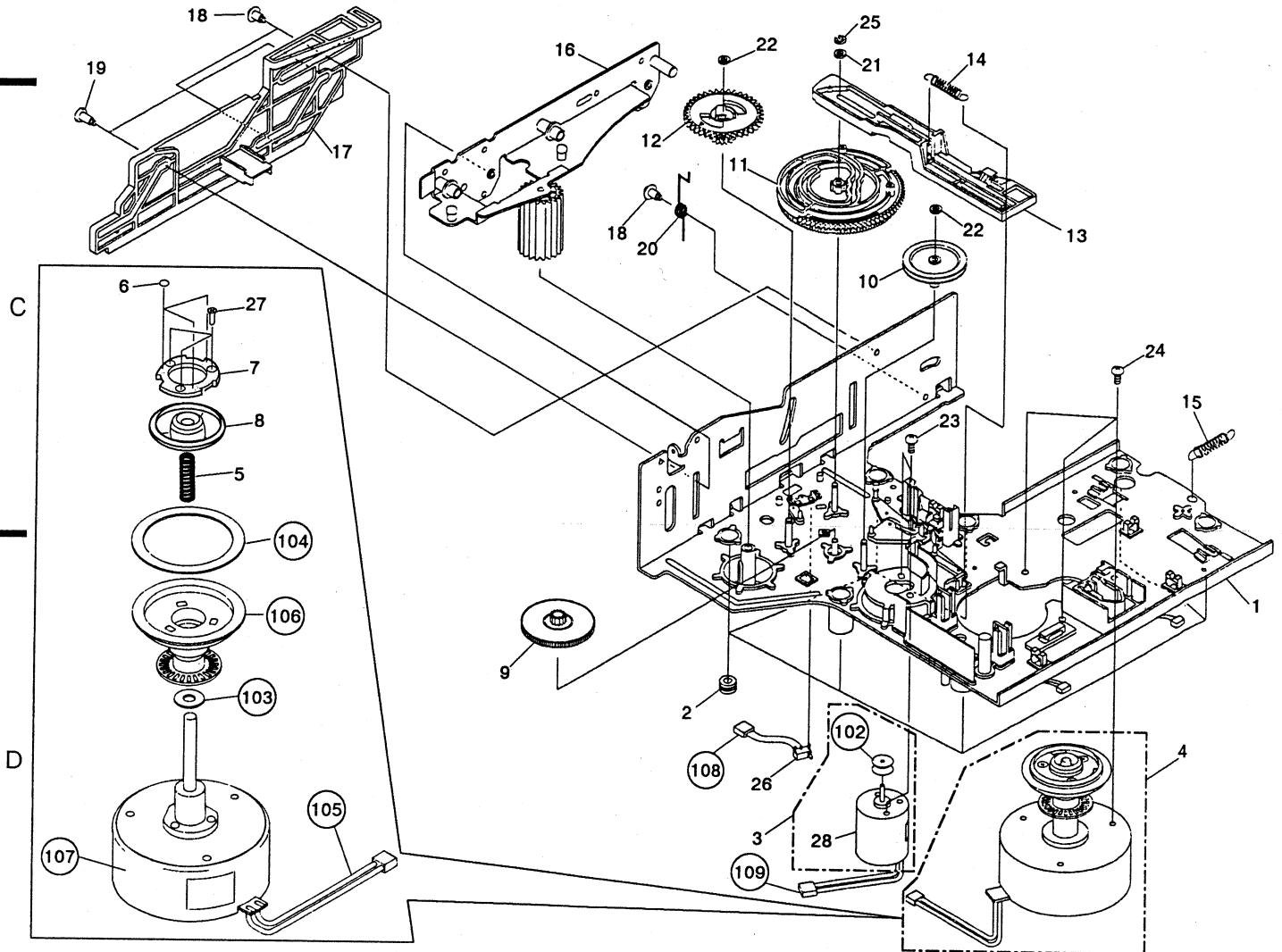




### 3.10 MECHANISM CHASSIS SECTION

#### Parts List

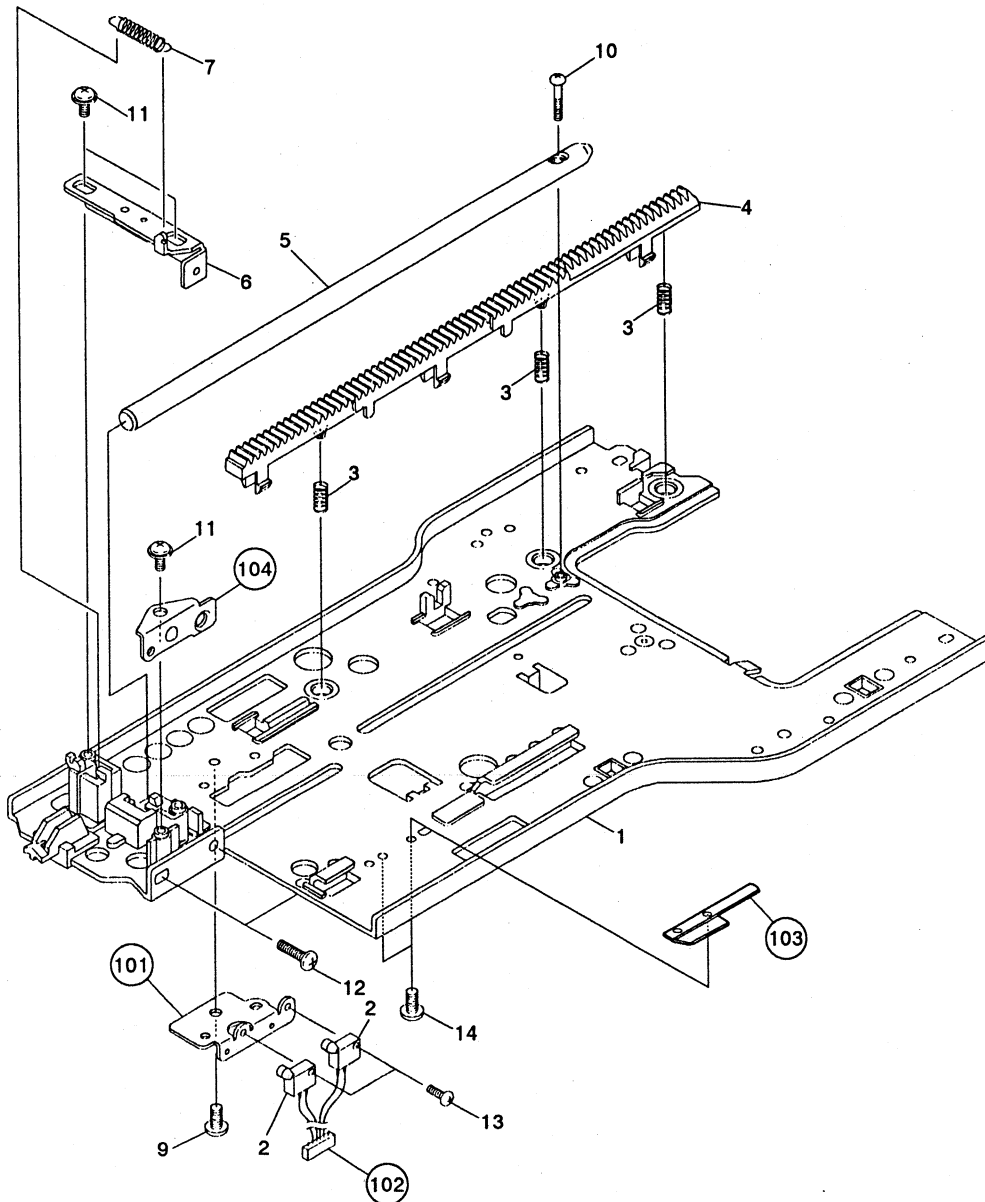
A	Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
⊙		1	Chassis assembly	VXA1577		21	Washer	WA32N08OW050
		2	Rubber bushing	VEB1138		22	Washer	WT26D047D025
		3	Loading motor assembly	VXX1262		23	Screw	PMZ30P040FCU
		4	Spindle motor assembly	VXA1761		24	Screw	PMA30P050FCU
		5	Centering spring	VBH1024		25	E ring	YE23FUC
		6	Sheet	VEC1510		26	Push switch (TRAY SW)	DSG1014
		7	Yoke plate A	VNE1360		27	Screw	CPZ20P080FMC
		8	Centering hab (A)	VNL1296		28	Loading motor	VXM1034
		9	Two stair gear	VNL1326				
		10	Gear pulley	VNL1249				
		11	Cam gear	VNL1350	101	•••••		
		12	Follow gear	VNL1317	102	Motor pulley	VLL1176	
		13	Spring slating cam	VNL1316	103	Oil stopped washer	VBF1002	
		14	Cam spring	VBH1082	104	Rubber sheet	VEB1135	
		15	Radial spring	VBH1164	105	Housing assembly (02P)	VKP1566	
B		16	Roller plate assembly	VXA1770	106	Turn table assembly	VXA1760	
		17	Slide cam	VNL1304	107	Spindle assembly	VXM1046	
		18	Screw (B)	VBA1008	108	Housing assembly (02P red)	VKP1815	
		19	Screw (C)	VBA1015	109	Housing assembly	VKP1875	
		20	Return spring	VBH1129				



### 3.11 TILT BASE (LOWER) SECTION

#### Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Tilt base (Lower) assembly	VXA1798	11	Screw	IPZ20P080FMC
2	Slide switch (LD, CDV INSIDE)	OSH1001	12	Screw	BMZ26P100FMC
3	Rack spring	VBH1133	13	Screw	PMZ20P060FMC
4	Rack gear (Lower)	VNL1346	14	Screw	PMZ20P030FMC
5	Carriage shaft (Lower)	VLL1325	101	SW holder	VNE1620
6	Shaft plate (Lower) assembly	VXA1626	102	Housing assembly (04P white)	VKP1851
7	S plate spring	VBH1149	103	Roller shaft holder plate	VNE1666
8	.....		104	S plate holder	VNE1621
9	Screw	BBZ30P060FCC			
10	Screw	PPZ20P120FMC			



A

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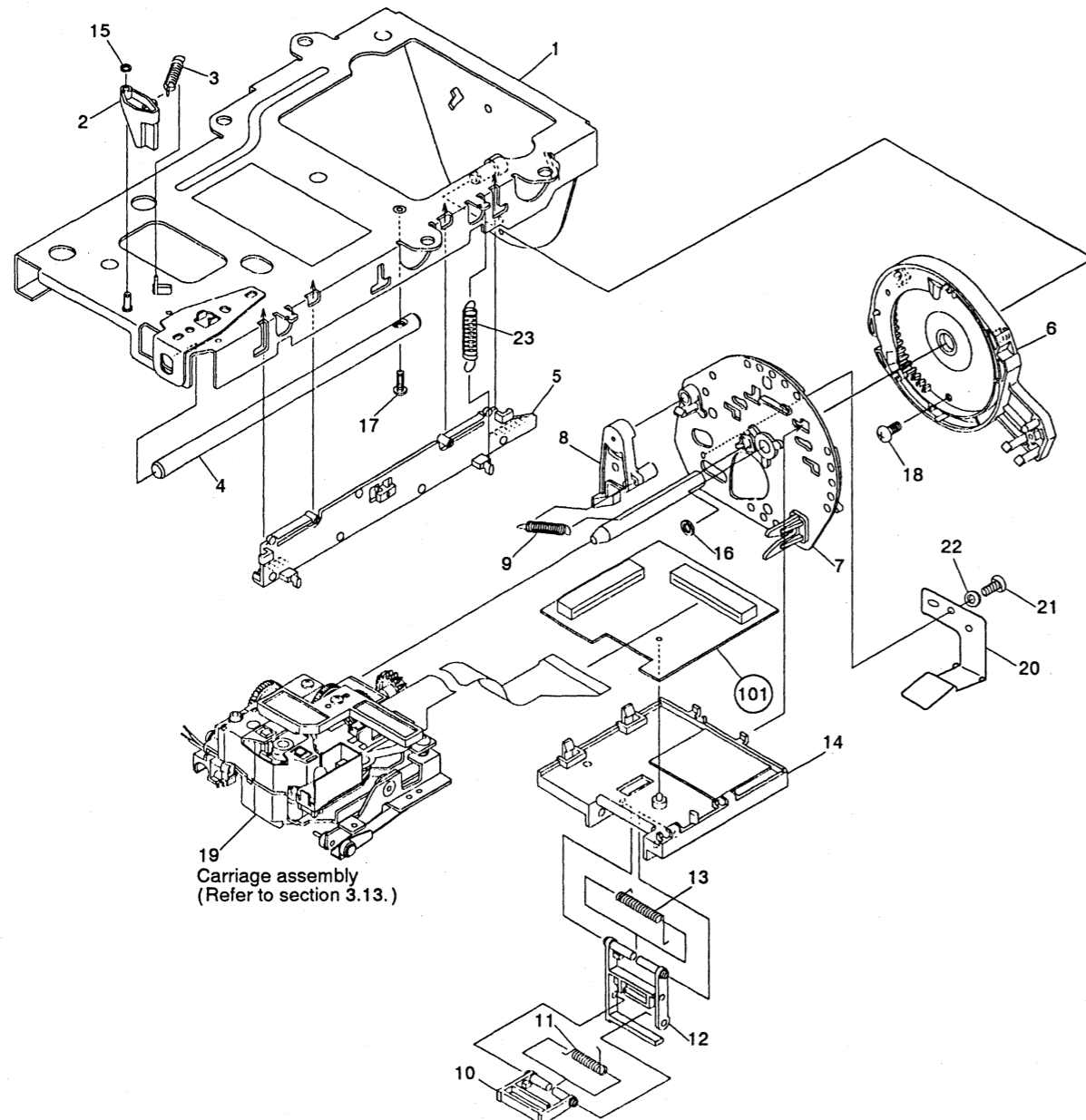
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## 3.12 TILT BASE (UPPER) SECTION

## Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Tilt base (Upper) assembly	VXA1808	13	Guide spring (A)	VBH1166
2	SW lever	VNL1359	14	Harness guide (A)	VNL1349
3	SW lever spring	VBH1150	15	Washer	WT16D032D025
4	Carriage shaft (Upper)	VLL1324	16	Washer	WT36D072D050
5	Rack gear (Upper)	VNL1345	17	Screw	PMZ20P120FMC
6	Internal gear assembly	VXA1491	18	Screw	BBZ26P050FCC
7	R plate assembly	VXA1579	19	Carriage assembly	VWT1068
8	Rock lever	VNL1351	20	Rock plate	VBK1026
9	Lever spring	RBH1323	21	Screw	IBZ20P040FZK
10	Harness guide (C)	VNL1361	22	Washer	WB20FMC
11	Guide spring (B)	VBH1155	23	Rack spring (upper)	VBH1198
12	Harness guide (B)	VNL1408	101	CNNB assembly	VWG1194



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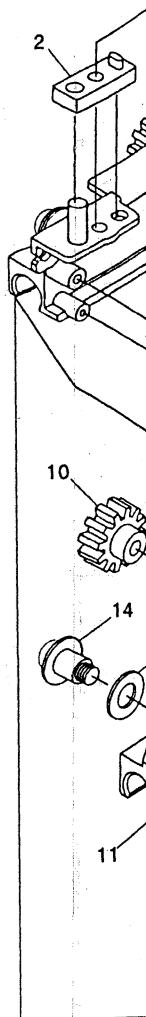
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## 3.13 CARRIAGE ASSEMBLY

## Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Flexible holder	VNL1358	101	Slider motor	VXM1027
2	PU base	VNT1037	102	P.C.board, SLMB	VNP1295
3	Housing assembly (1.5MP2P)	VKP1852	103	Flexible spacer	VEC1498
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	Stop 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			



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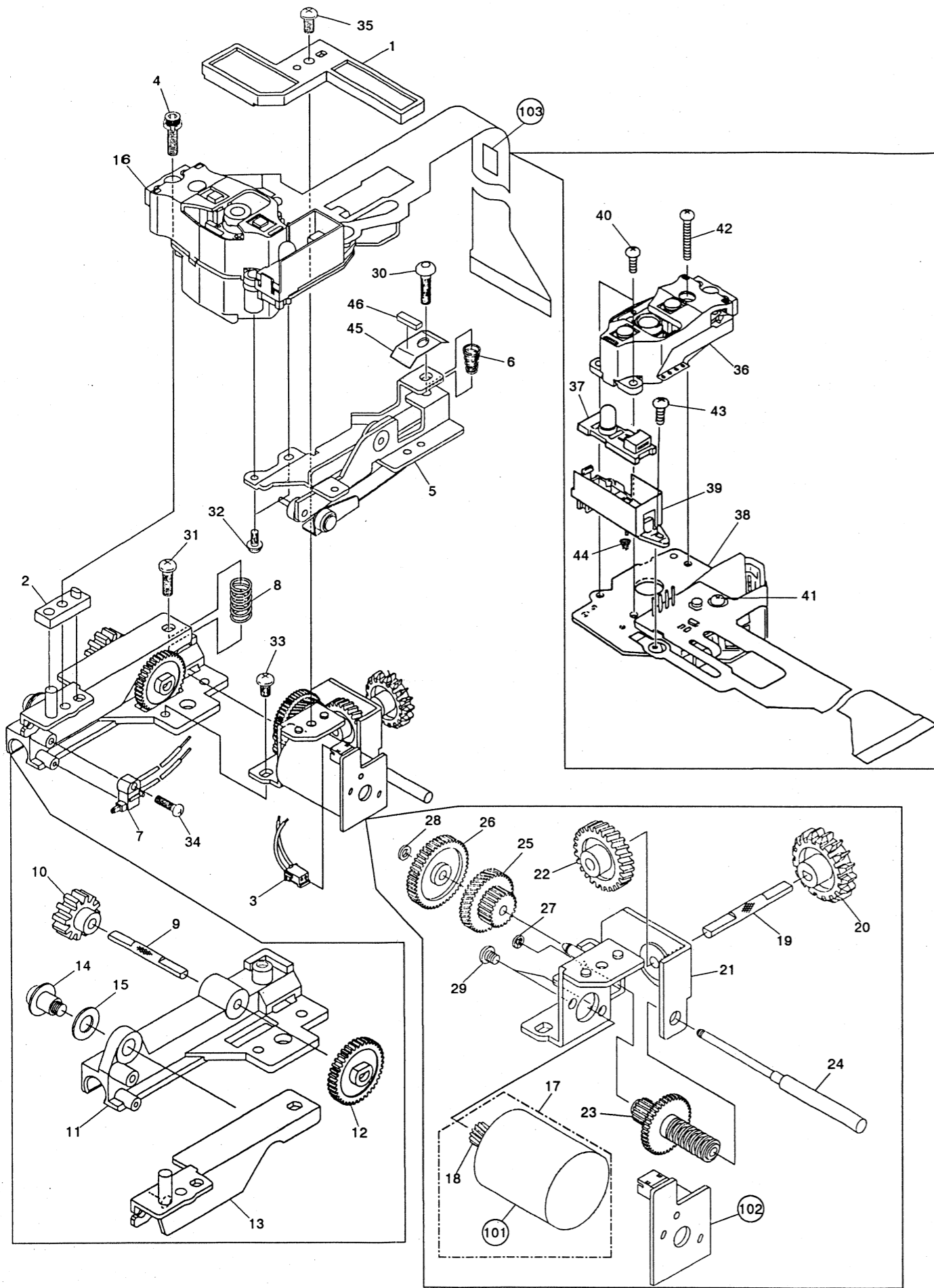
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### 4. ABBREVIATIONS TABLE

<b>A</b>	ACCEL ACOM AF AFM AGC ALC ANT ATC	ACCELERATE AUDIO COMPENSATOR AUDIO FREQUENCY ANALOGUE FM AUDIO AUTOMATIC GAIN CONTROL AUTOMATIC LEVEL CONTROL ANTENNA AUTOMATIC THRESHOLD CONTROL	<b>M</b> MTR μCOM	MOTOR MICROCOMPUTER
<b>B</b>	BAL	BALANCE	<b>P</b> PD PB PLL P-ON	PHOTO DETECTOR PLAYBACK PHASE LOCKED LOOP POWER ON
<b>C</b>	CAV CLV CCD CD CK CONT CS C-SYNC CX	CONSTANT ANGULAR VELOCITY CONSTANT LINEAR VELOCITY CHARGE COUPLED DEVICE COMPACT DISC CLOCK CONTROL CHIP SELECT COMPOSITE SYNCHRONIZATION AFM NOISE REDUCTION	<b>R</b> R-CH RTN RFMD RST REV RF-CORR	RIGHT CHANNEL RETURN RADIO FREQUENCY MODULATOR RESET REVERSE RF CORRECTION
<b>D-</b>	DEM DIG/ANA DL DSP DOS DRV	DEMODULATOR DIGITAL/ANALOGUE DELAY LINE DIGITAL SIGNAL PROCESSOR DROP OUT SENSE DRIVER	<b>S</b> SPDL SLD SO SI SCK SYPS SW S/H SENS SQ	SPINDLE SLIDER SERIAL OUTPUT SERIAL INPUT SERIAL CLOCK SYSTEM POWER SUPPLY SWITCH SAMPLE & HOLD SENSITIVITY SQUELCH
<b>E</b>	EFM ERR EQ EXT	EIGHT TO FOURTEEN MODULATION ERROR EQUALIZER EXTERNAL	<b>T</b> TRK or TRKG TP TBC TGL	TRACKING TEST POINT TIME BASE CORRECTION TOGGLE
<b>F</b>	FCS or FOCS FG FL FTS Fsc FWD	FOCUS FREQUENCY GENERATOR FLUORESCENT LAMP FOCUS TRACKING SLIDER CHROMINANCE SUBCARRIER FREQUENCY FORWARD	<b>U</b> UNREG	UNREGULATED
<b>G</b>	GFS GND	GET FRAME SYNC LOCK GROUND	<b>V</b> V-SYNC VSQ VPS VDEM VHF VCA VCO	VERTICAL SYNCHRONIZATION VIDEO SQUELCH VIDEO PHASE SHIFTER VIDEO DEMODULATOR VERY HIGH FREQUENCY VOLTAGE CONTROLLED AMPLIFIER VOLTAGE CONTROLLED OSCILLATOR
<b>H</b>	HLD H SYNC	HOLD HORIZONTAL SYNCHRONIZATION	<b>X</b> X...	ACTIVATED WHEN LOW VOLTAGE
<b>I</b>	INT IR	INTERNAL INFRARED RAYS		
<b>L</b>	L-CH LAT LD LPF LIM	LEFT CHANNEL LATCH LASER DIODE LOW PASS FILTER LIMITER		



27  
15  
18

A

B

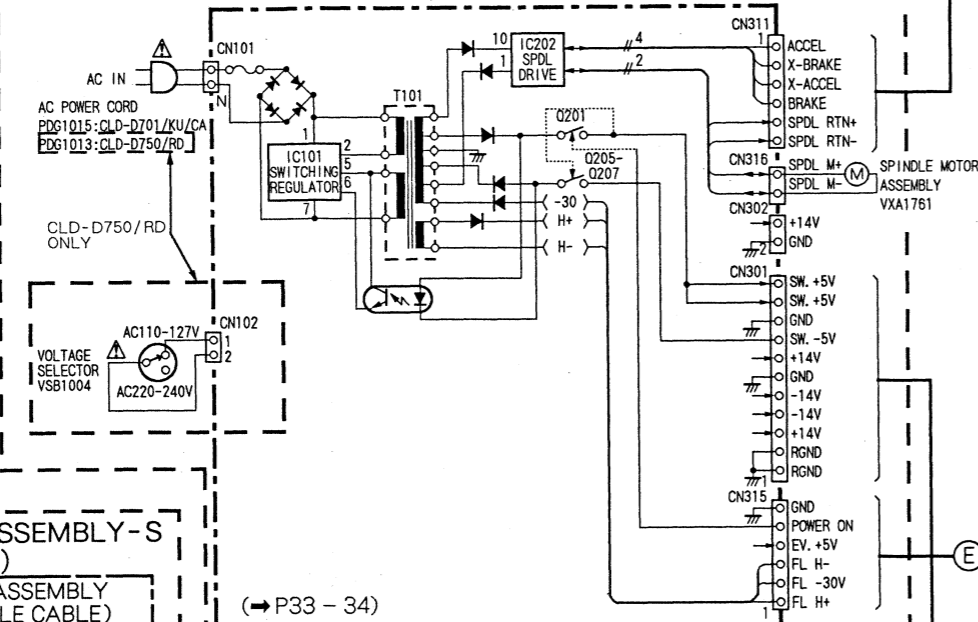
C

D

# 5. SCHEMATIC AND PCB CONNECTION DIAGRAMS

## 1. OVERALL WIRING DIAGRAM

POWER SUPPLY ASSEMBLY (VWR1131 : CLD-D701/KU/CA)  
(VWR1132 : CLD-D750/RD)



PICKUP ASSEMBLY-S (VXX1553)

HEAD ASSEMBLY (FLEXIBLE CABLE)

CARRIAGE MOTOR ASSEMBLY-S (VXX1537)

CD, B INSIDE (VSK1008)

OBJECTIVE LENS

LASER DIODE MONITOR DETECTOR

TILT SENSOR

TRKG DRV, TRKG RTN, FOCUS DRV, FOCUS RTN

OEIC

VR1 10k

SLD M, GND(M), PARK1, -5V, +5V, RF, GND, TRK C, TRK A, B4, B3, B2, B1, APC-5V, PD, LD, LD GND, TRK RTN, FCS DRV, FCS RTN, TRK DRV, TILT OUT, TILT IN, LED

VKN1138 CN203

TILT IN, TILT OUT, TRK DRV, FCS RTN, FCS DRV, TRK RTN, LD GND, LD, -5V, B1, B2, B3, B4, TRK A, TRK C, GND, RF, +5V, GND(M), PARK1, SLD M

VKN1139 CN204

SLD M, GND(M), PARK1, -5V, +5V, RF, GND, TRK C, TRK A, B4, B3, B2, B1, APC-5V, PD, LD, LD GND, TRK RTN, FCS DRV, FCS RTN, TRK DRV, TILT OUT, TILT IN, LED

VKN1138 CN203

TILT IN, TILT OUT, TRK DRV, FCS RTN, FCS DRV, TRK RTN, LD GND, LD, -5V, B1, B2, B3, B4, TRK A, TRK C, GND, RF, +5V, GND(M), PARK1, SLD M

VKN1138 CN203

TILT IN, TILT OUT, TRK DRV, FCS RTN, FCS DRV, TRK RTN, LD GND, LD, -5V, B1, B2, B3, B4, TRK A, TRK C, GND, RF, +5V, GND(M), PARK1, SLD M

VKN1138 CN203

TILT IN, TILT OUT, TRK DRV, FCS RTN, FCS DRV, TRK RTN, LD GND, LD, -5V, B1, B2, B3, B4, TRK A, TRK C, GND, RF, +5V, GND(M), PARK1, SLD M

VKN1138 CN203

TILT IN, TILT OUT, TRK DRV, FCS RTN, FCS DRV, TRK RTN, LD GND, LD, -5V, B1, B2, B3, B4, TRK A, TRK C, GND, RF, +5V, GND(M), PARK1, SLD M

Y/C SEP SECTION (P49 - 50)

DIGITAL COMB FIL

Y. AMP

C. AMP

A/D REFV SETTING

VIDEO BUFFER

LOCAL REGULATOR

PHASE CORRECTION

SOFT PICTURE

VIDEO OUT

RF

RF CORR

CD

XCD

J TRIG

TILT ERR

IC801 CXA1081S

RF AMP

IC803 PM3003

TRKG EQ SWITCHING

TRKG DRIVE

TRKG GAIN SWITCHING

FOCUS DRIVE

PICKUP PROTECTION

FOCUS PROTECTION

LOADING MOTOR ASSEMBLY (VXX1262)

TRK EQ SWITCHING

TRKG DRIVE

TRKG GAIN SWITCHING

FOCUS DRIVE

VIDEO SECTION (P45 - 46)

RF

V+5, V-5

VR482

BPF

IC401 PA5013A

VR521

C SYNC DELAY

SOFT PICTURE

XCLV

XREFV

COLORBACK

XREFH

SOFT PICTURE

S-VIDEO

RF

CD SPDL ERR

ACOM

CDV INSIDE (OSH1001)

PARK3 (CDV)

PARK2 (LD)

CD INSIDE (OSH1001)

CCD ERR

XCD

XCX

SQ1

SQ2

IC101 MECHA CONTROL IC

XRESET

NPCLATCH

FILTER CHARACTERISTIC SWITCHING for THROUGH/MEMORY

Q422, Q423

Q401 LPF

Q402

BPF

Q406

Q407, Q408

C SYNC DELAY

VPS ERR

V+5S, CSYN, V-5S

IC403 CHARACTER GENERATOR

XRESET, XCS, S11, SCK1, VSQ

SOFT PICTURE

XCLV

XREFV

COLORBACK

XREFH

SOFT PICTURE

S-VIDEO

RF

CD SPDL ERR

ACOM

CDV INSIDE (OSH1001)

PARK3 (CDV)

PARK2 (LD)

CD INSIDE (OSH1001)

CCD ERR

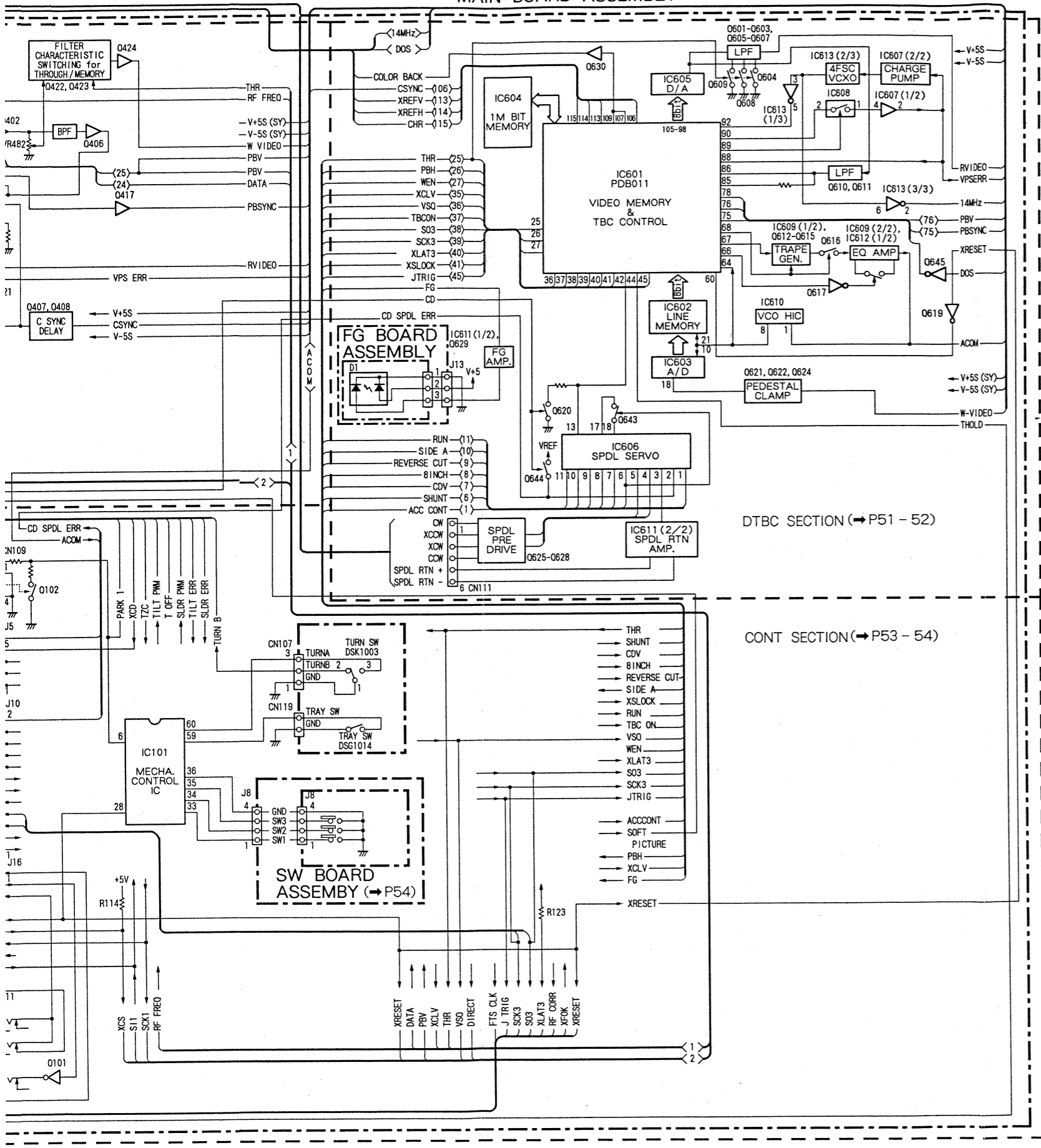
XCD

XCX

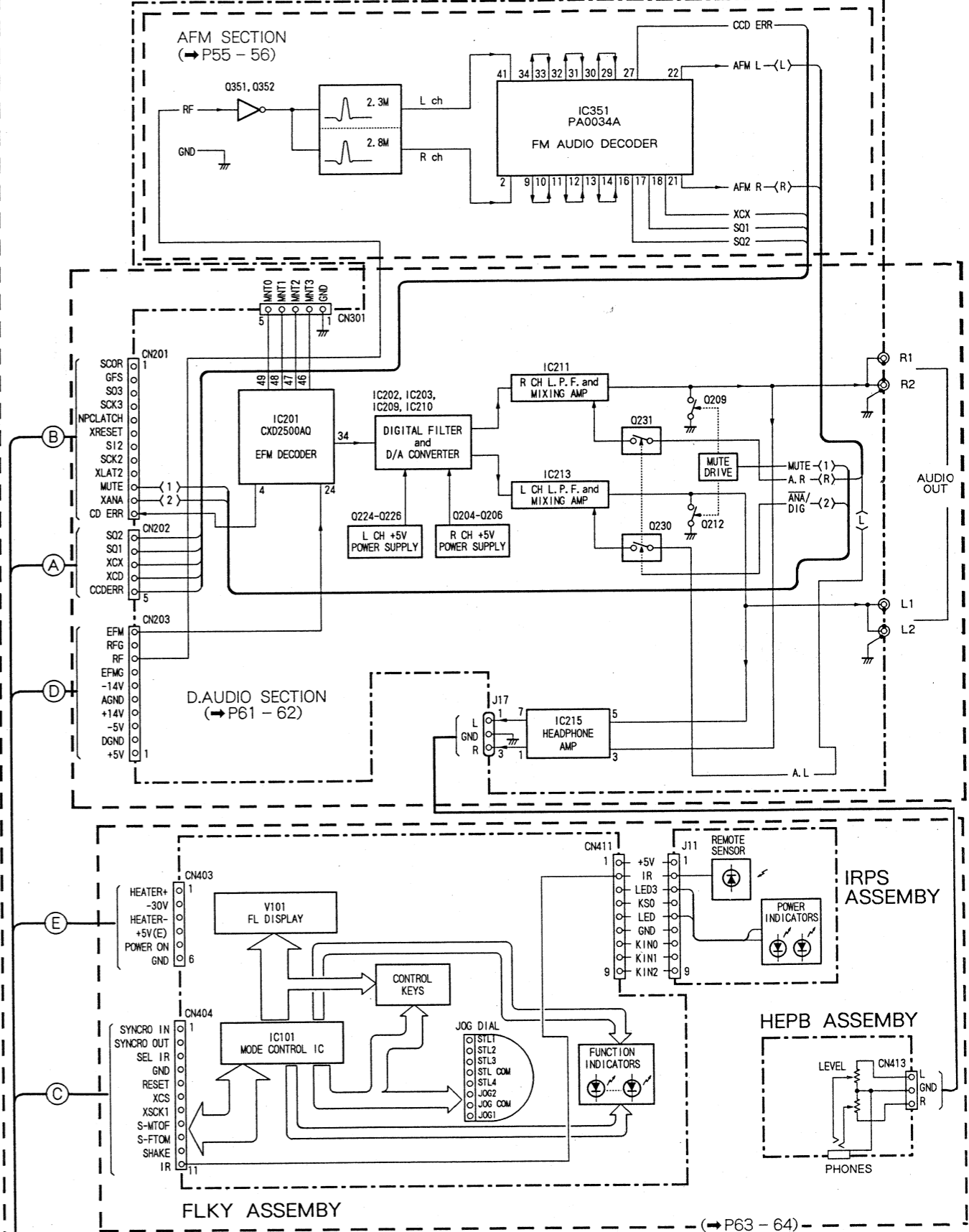
SQ1

SQ2

MAIN BOARD ASSEMBLY

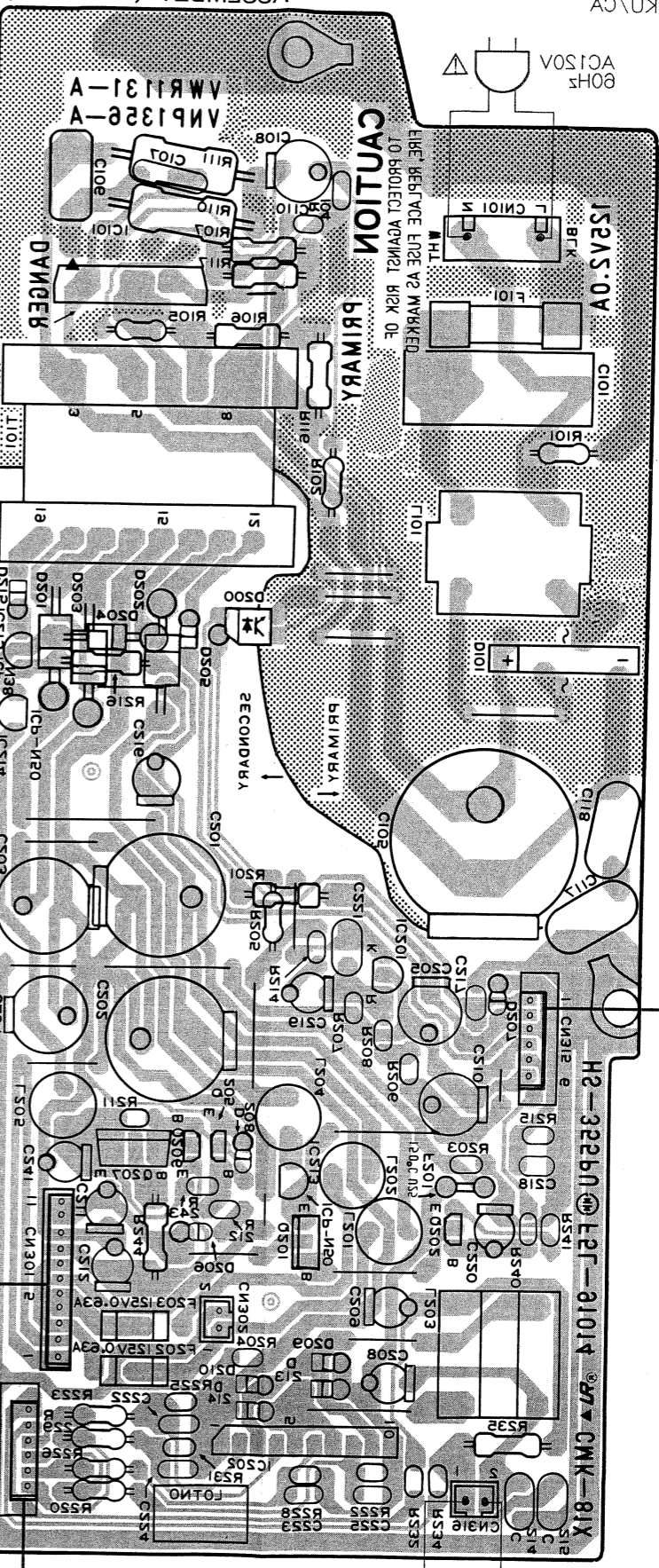


AUDIO ASS'Y (VWV1251)



CLD-D201\KUNCA

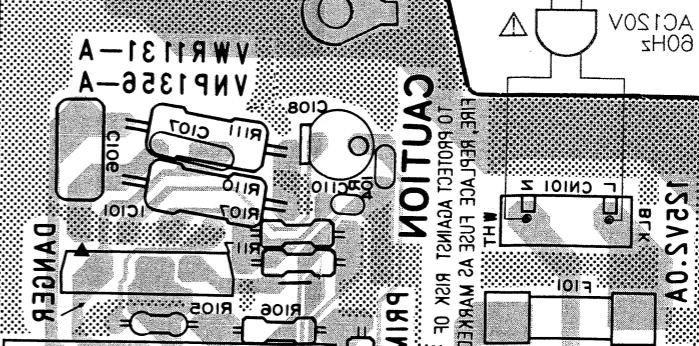
POWER SUPPLY ASSEMBLY (VWR131)



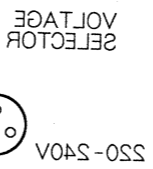
- IC 101
- IC 512
- IC 514
- IC 501
- Q 502
- Q 506
- Q 507
- IC 513
- Q 501
- Q 505
- IC 505

FLKY ASSEMBLY [CN403]  
 SPINDLE MOTOR ASSEMBLY  
 MAIN BOARD ASSEMBLY [CN111] [CN101]

CLD-D201\RD



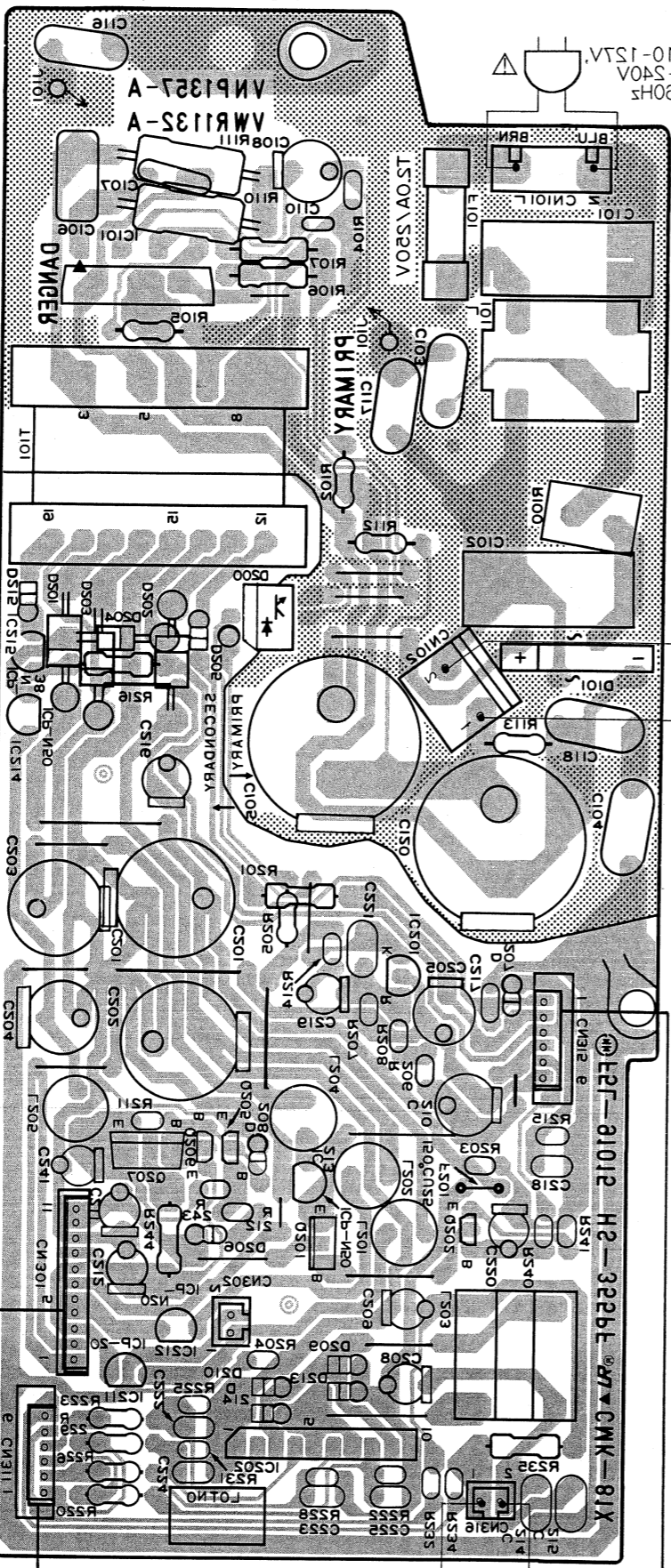
- IC 101
- IC 512
- IC 514
- IC 501
- Q 502
- Q 506
- Q 507
- IC 513
- Q 505
- Q 501
- IC 515
- IC 511
- IC 505



SELECTOR VOLTAGE

CLD-D201\RD

POWER SUPPLY ASSEMBLY (VWR132)



FLKY ASSEMBLY [CN403]  
 SPINDLE MOTOR ASSEMBLY  
 MAIN BOARD ASSEMBLY [CN111] [CN101]

A

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1

A

B

C

D

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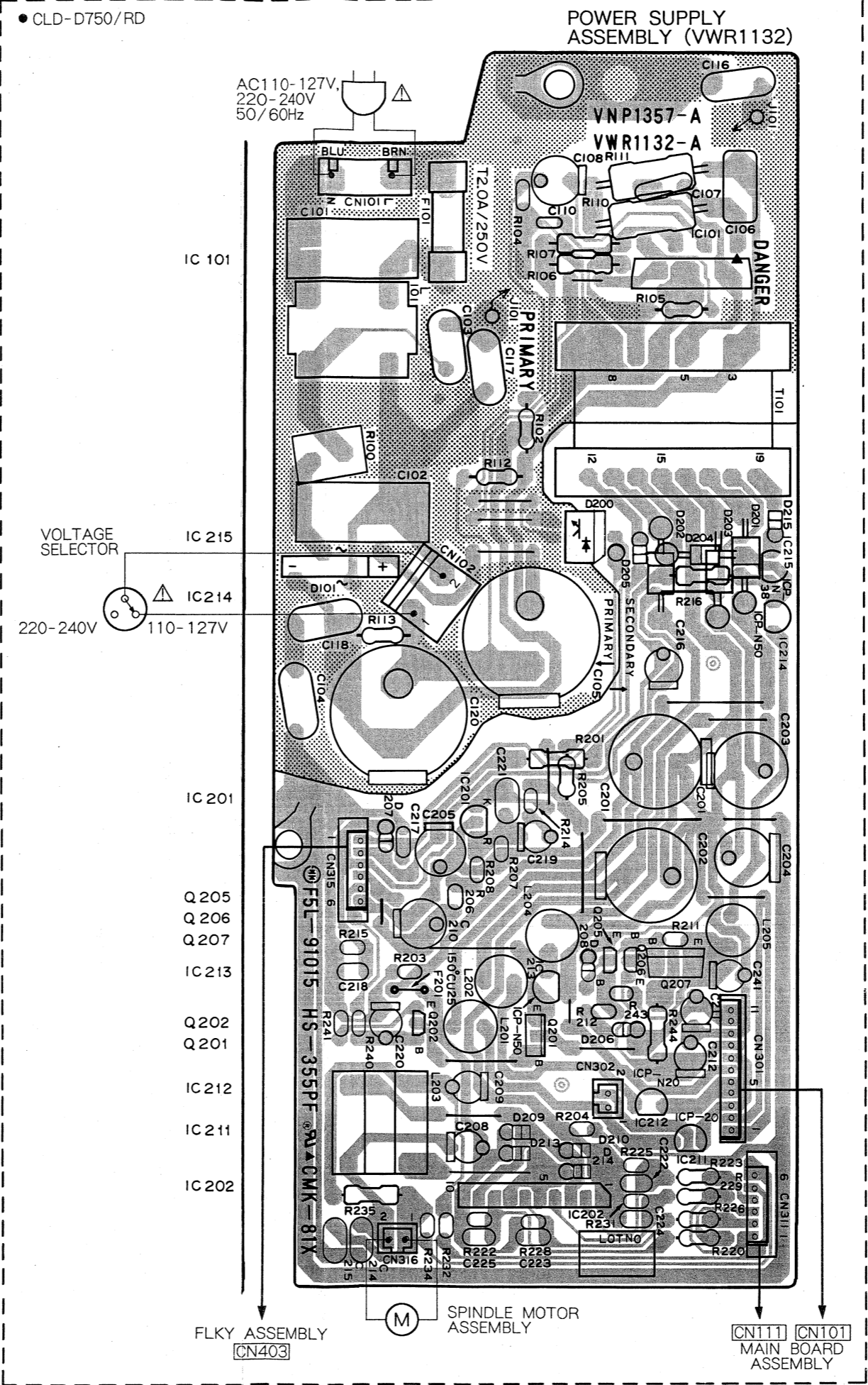
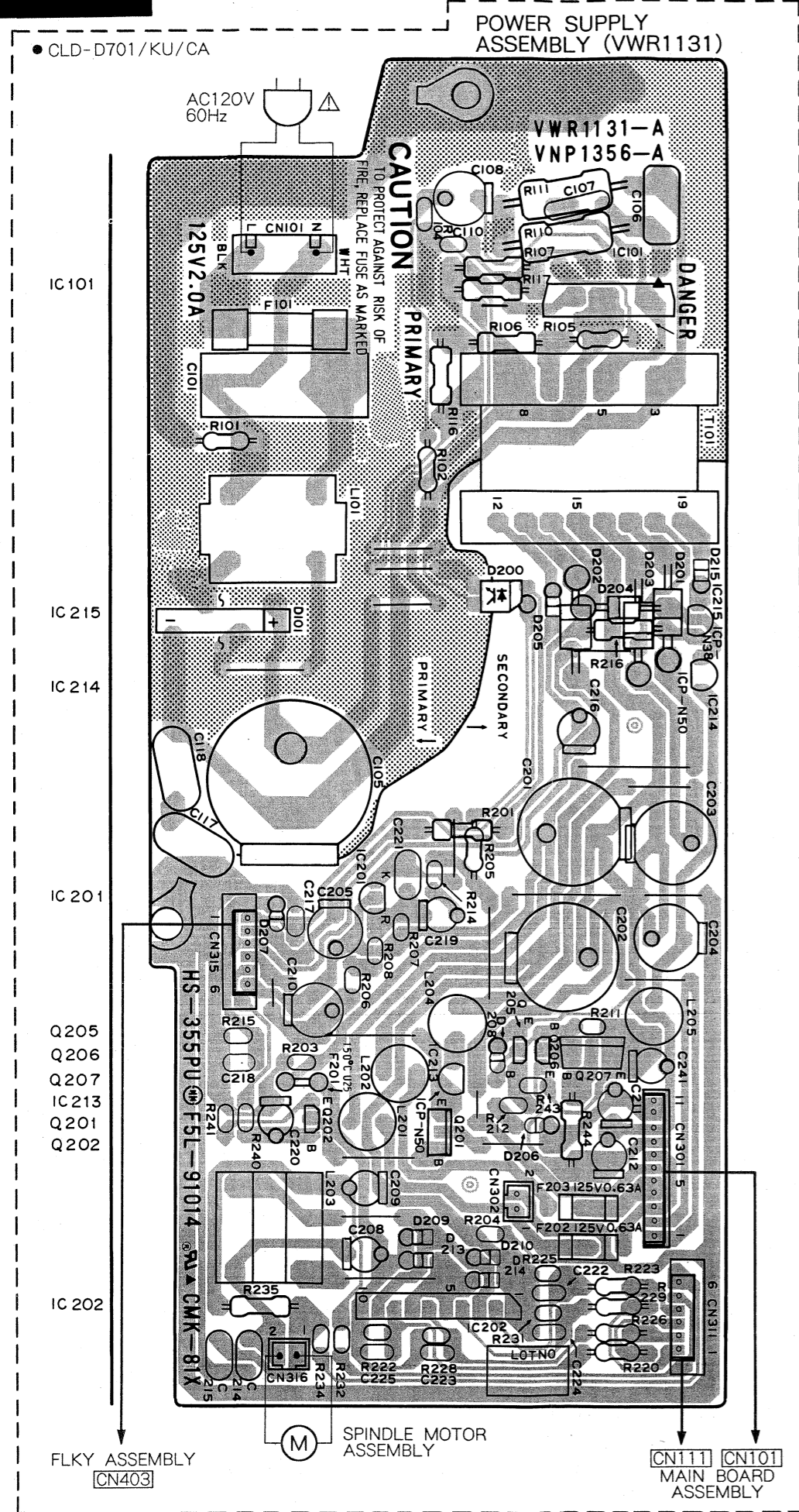
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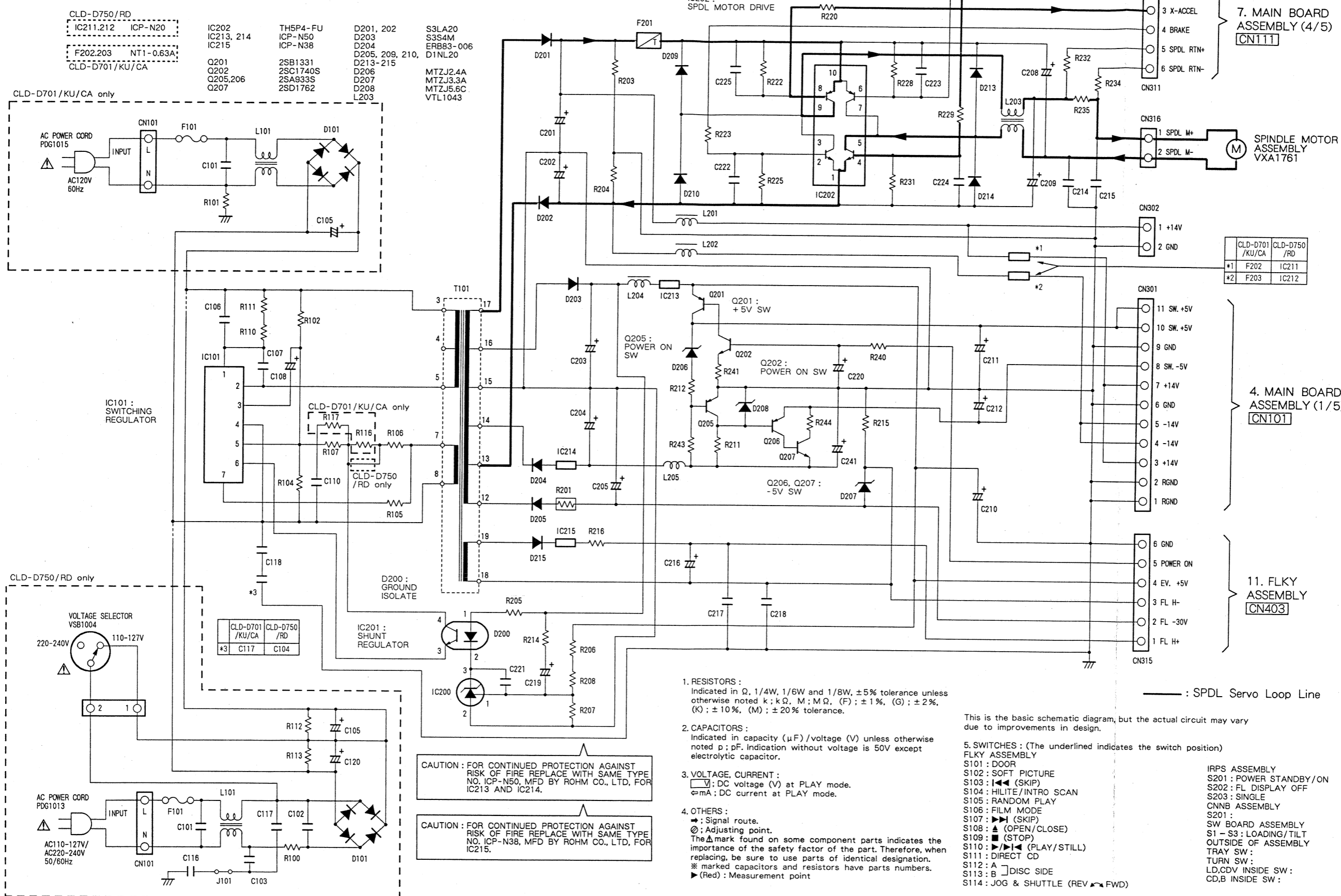
P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zener diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styro capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor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

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.



2. POWER SUPPLY ASSEMBLY

POWER SUPPLY ASSEMBLY (VWR1131 : CLD-D701/KU/CA)  
(VWR1132 : CLD-D750/RD)



CLD-D750/RD IC211,212 ICP-N20 F202,203 NT1-0.63A CLD-D701/KU/CA	IC202 IC213, 214 IC215 Q201 Q202 Q205,206 Q207	TH5P4-FU ICP-N50 ICP-N38 2SB1331 2SC1740S 2SA933S 2SD1762	D201, 202 D203 D204 D205, 209, 210, D213-215 D206 D207 D208 L203	S3LA20 S3S4M ERB83-006 D1NL20 MTZJ2.4A MTZJ3.3A MTZJ5.6C VTL1043
--------------------------------------------------------------------------	------------------------------------------------------------------	-----------------------------------------------------------------------------	------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------

CLD-D701 /KU/CA	CLD-D750 /RD
*1 F202	IC211
*2 F203	IC212

- RESISTORS:**  
Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance.
- CAPACITORS:**  
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
- VOLTAGE, CURRENT:**  
V: DC voltage (V) at PLAY mode.  
mA: DC current at PLAY mode.
- OTHERS:**  
→: Signal route.  
⊙: Adjusting point.  
The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.  
\* marked capacitors and resistors have parts numbers.  
▶ (Red): Measurement point

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE WITH SAME TYPE NO. ICP-N50, MFD BY ROHM CO., LTD, FOR IC213 AND IC214.

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE WITH SAME TYPE NO. ICP-N38, MFD BY ROHM CO., LTD, FOR IC215.

7. MAIN BOARD ASSEMBLY (4/5) [CN11]

4. MAIN BOARD ASSEMBLY (1/5) [CN10]

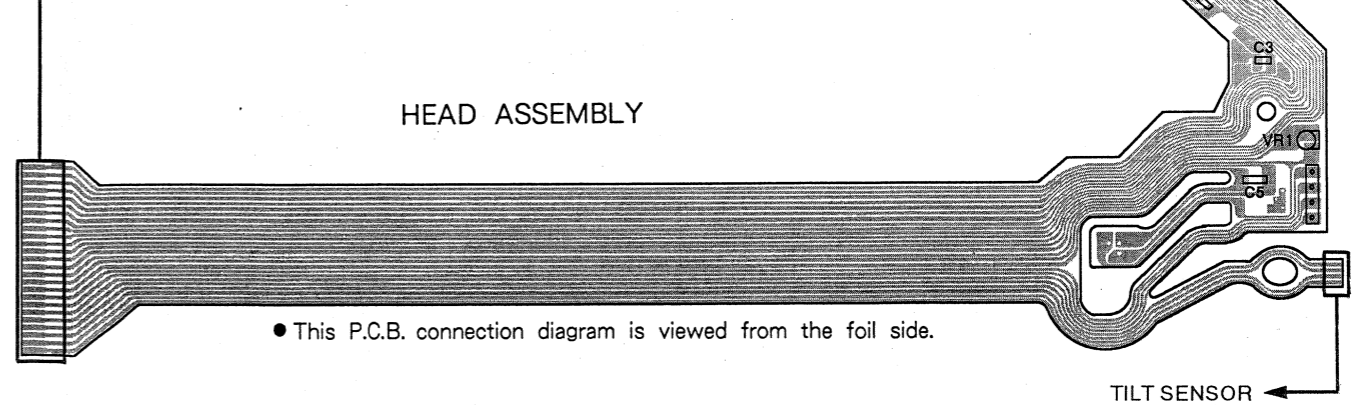
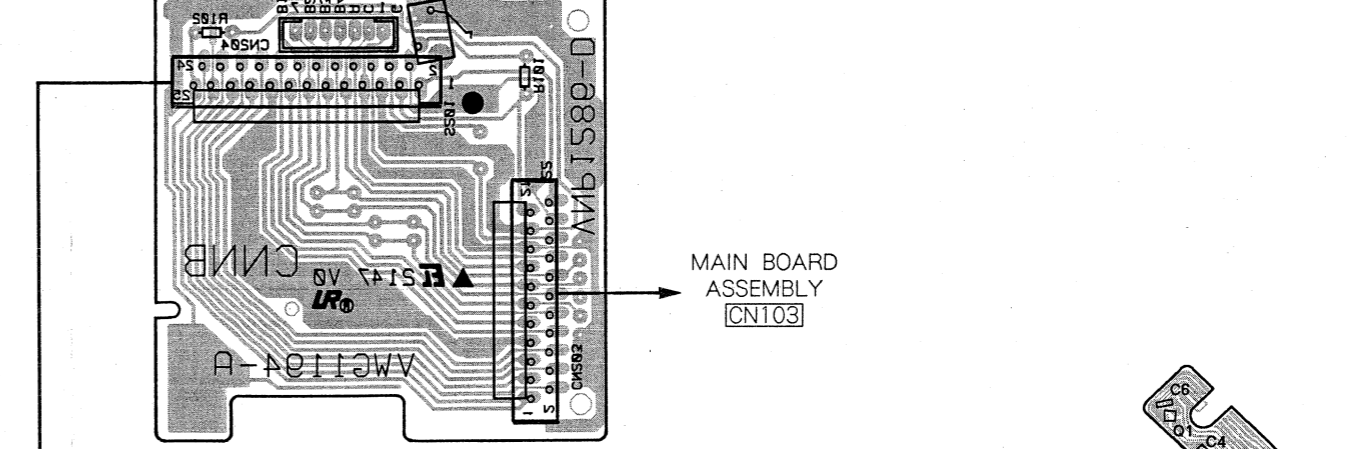
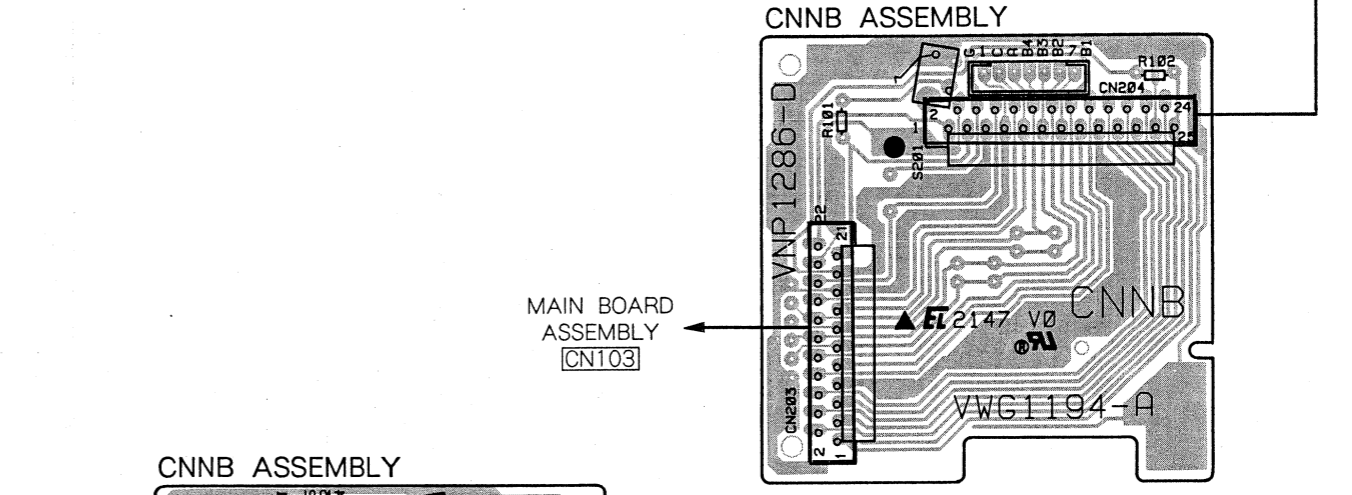
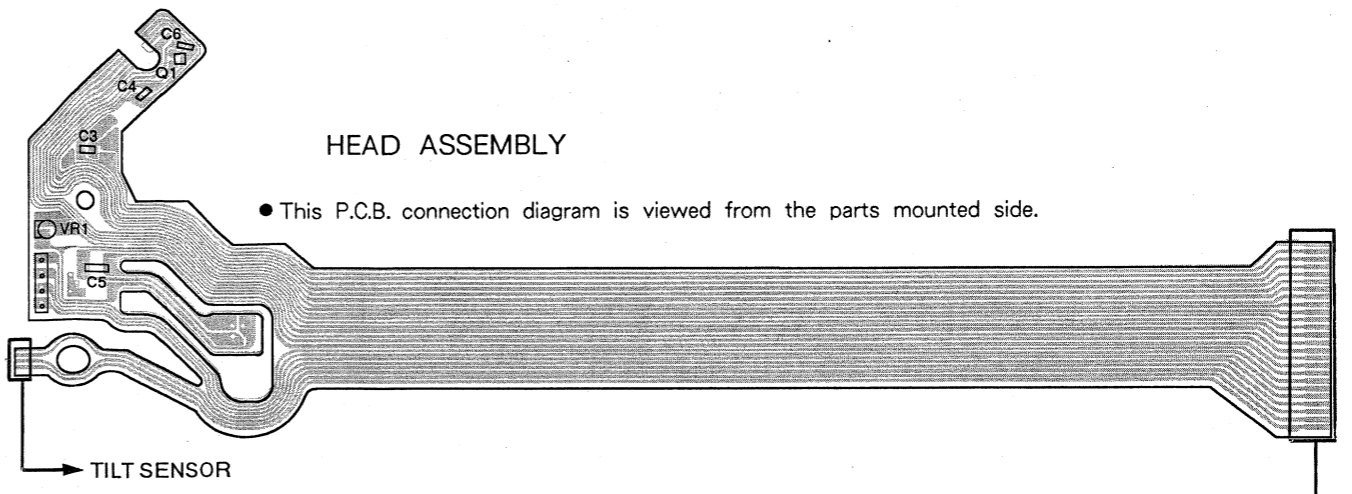
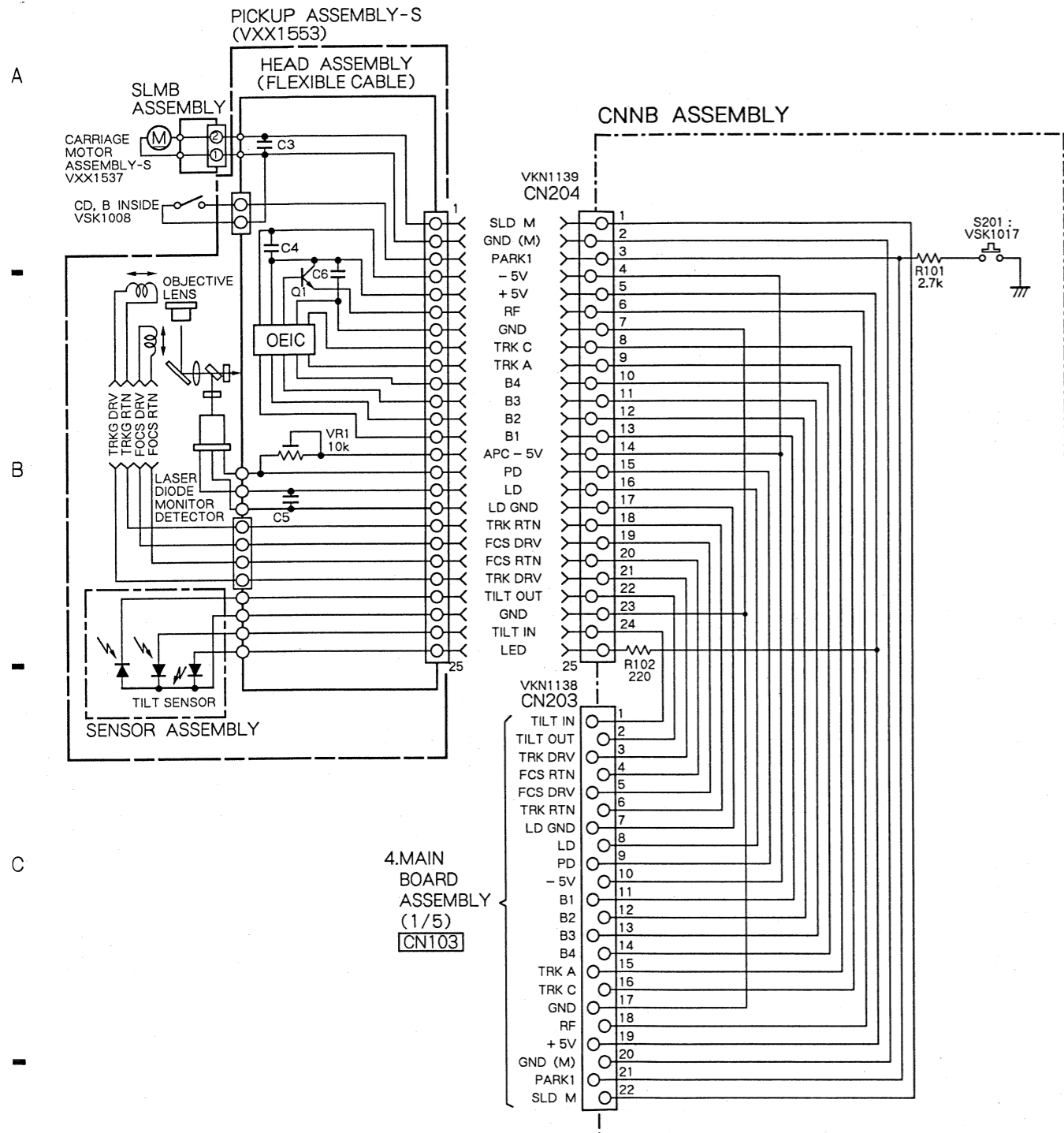
11. FLKY ASSEMBLY [CN403]

— : SPDL Servo Loop Line

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

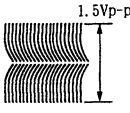
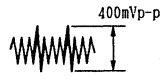
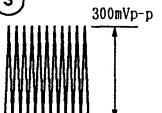
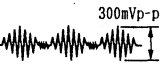

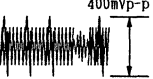
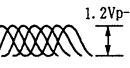
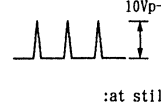
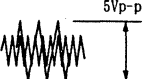

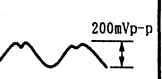

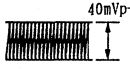


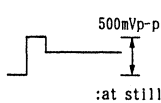

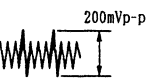
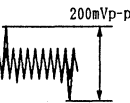
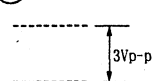
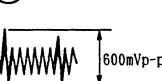
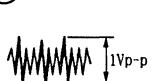
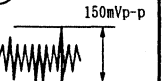
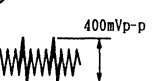
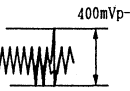
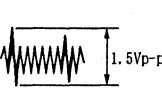
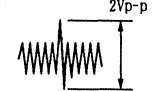
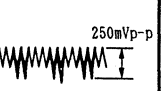
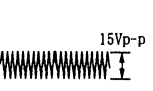
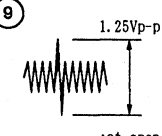
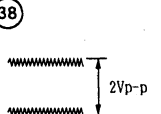
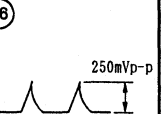
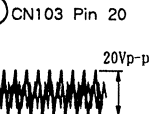
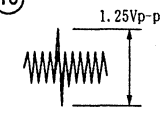
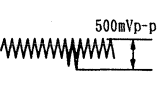
- SWITCHES:** (The underlined indicates the switch position)  
FLKY ASSEMBLY  
S101: DOOR  
S102: SOFT PICTURE  
S103: <<< (SKIP)  
S104: HILITE/INTRO SCAN  
S105: RANDOM PLAY  
S106: FILM MODE  
S107: >>> (SKIP)  
S108: ▲ (OPEN/CLOSE)  
S109: ■ (STOP)  
S110: ▶▶▶ (PLAY/STILL)  
S111: DIRECT CD  
S112: A  
S113: B DISC SIDE  
S114: JOG & SHUTTLE (REV ◀ FWD)
- IRPS ASSEMBLY**  
S201: POWER STANDBY/ON  
S202: FL DISPLAY OFF  
S203: SINGLE  
CNBB ASSEMBLY  
S201:  
SW BOARD ASSEMBLY  
S1 - S3: LOADING/TILT OUTSIDE OF ASSEMBLY  
TRAY SW:  
TURN SW:  
LD,CDV INSIDE SW:  
CD,B INSIDE SW:

3. PICKUP AND CNNB ASSEMBLIES



Waveforms of the FTS section

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

IC801 (CXA1081S)		CN401		IC803 (PM3003)		Other points
(1) 	(20) 	(3) 	(1) 	(39) 	(1) Q810 Collector 	
(2) 	(22) 	(4) 	(8) 	(40) 	(2) Q809 Emitter 	
(7) 	(23) 	(5) 	(34) 	(43) 	(3) Between C830 and C832 	
(12) 	(27) 	(6) 	(35) 	(47) 	(4) Q828 Collector 	
(15) 	/		(7) 	(36) 	(55) 	(5) CN103 Pin 18 
(9) 			(38) 	(56) 	(6) CN103 Pin 20 	
(10) 						
(11) 						

4. MAIN BOARD ASSEMBLY (1/5)

MAIN BOARD ASSEMBLY (1/5)  
• FTS SECTION

Note: Abbreviations listed indicate circuit connections.

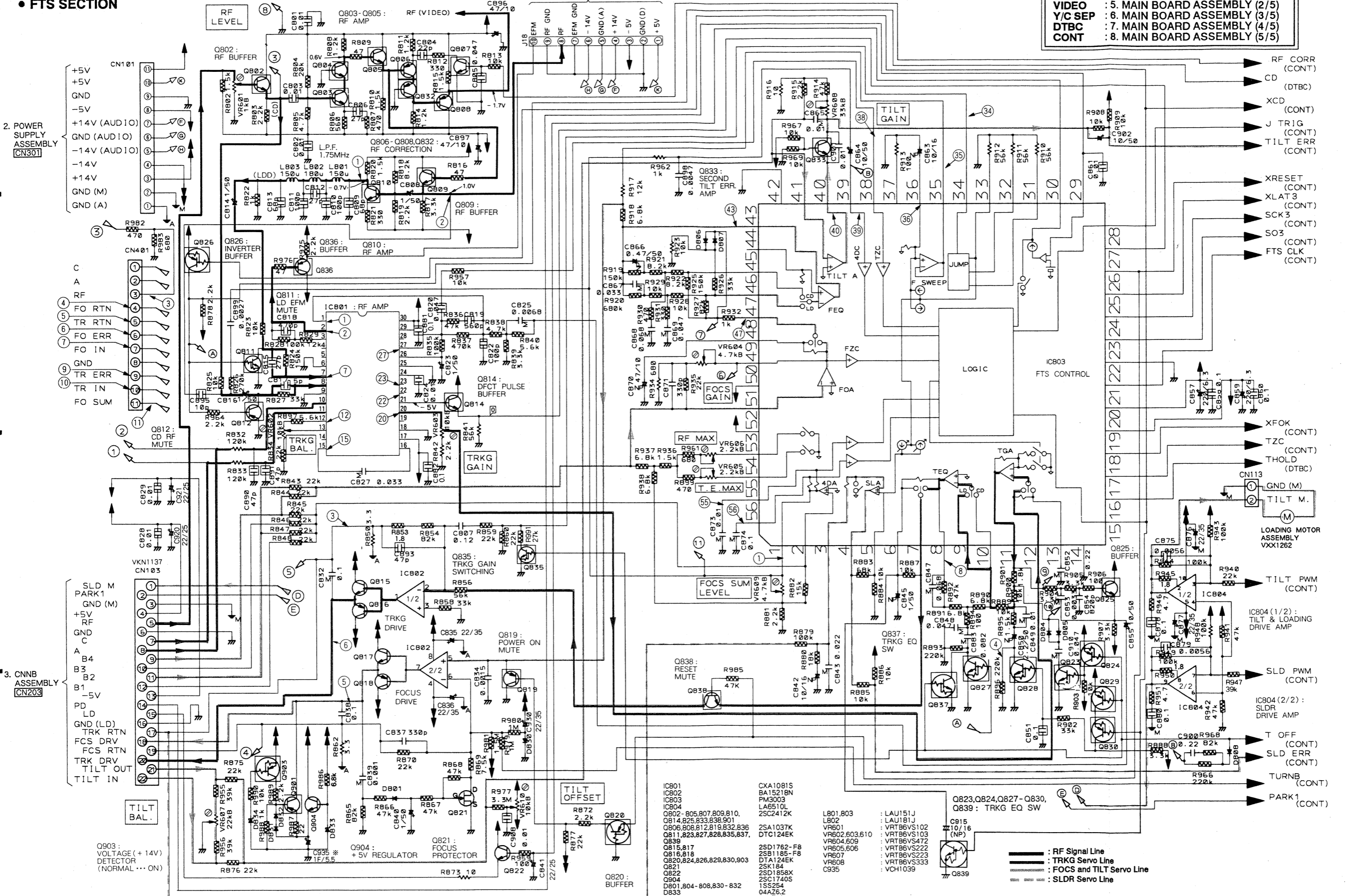
FTS	: 4. MAIN BOARD ASSEMBLY (1/5)
VIDEO	: 5. MAIN BOARD ASSEMBLY (2/5)
Y/C SEP	: 6. MAIN BOARD ASSEMBLY (3/5)
DTBC	: 7. MAIN BOARD ASSEMBLY (4/5)
CONT	: 8. MAIN BOARD ASSEMBLY (5/5)

A

B

C

D



2. POWER SUPPLY ASSEMBLY (CN301)

3. CNNB ASSEMBLY (CN203)

Q901: PICKUP PROTECTION IN SIDE B PLAYBACK for AC POWER SUPPLY OUTAGE

Q822: LD POWER SUPPLY

- IC801 : CXA1081S
- IC802 : BA15218N
- IC803 : PM3003
- IC804 : LA6510L
- Q802-805,807,809,810,814,825,833,838,901 : 25C2412K
- Q806,808,812,819,832,836 : 25A1037K
- Q811,823,827,828,835,837,839 : DT1A124EK
- Q815,817 : 2SD1762-F8
- Q816,818 : 2SB1185-F8
- Q820,824,826,829,830,903 : 25K184
- Q821 : 2SD1858X
- Q822 : 25C1740S
- Q804 : 1SS294
- D801,804-808,830-832 : 04A26.2
- D833 : 04A26.2
- D834 : 04A210
- L801,803 : LAU151J
- L802 : LAU181J
- VR601 : VRTB6VS102
- VR602,603,610 : VRTB6VS103
- VR604,609 : VRTB6VS472
- VR605,606 : VRTB6VS222
- VR607 : VRTB6VS223
- VR608 : VRTB6VS333
- C935 : VCH1039
- Q823, Q824, Q827-Q830, Q839 : TRKG EQ SW
- C915 : Z10/16 (NP)
- Q839 : Z10/16 (NP)

RF Signal Line  
TRKG Servo Line  
FOCUS and TILT Servo Line  
SLDR Servo Line

AUC ASSEMBLY (CN2)

POW SUPPLY ASSEMBLY (CN3)

CNNB ASSEMBLY (CN2)

LOAD MOTOR ASSEMBLY (CN3)

1

2

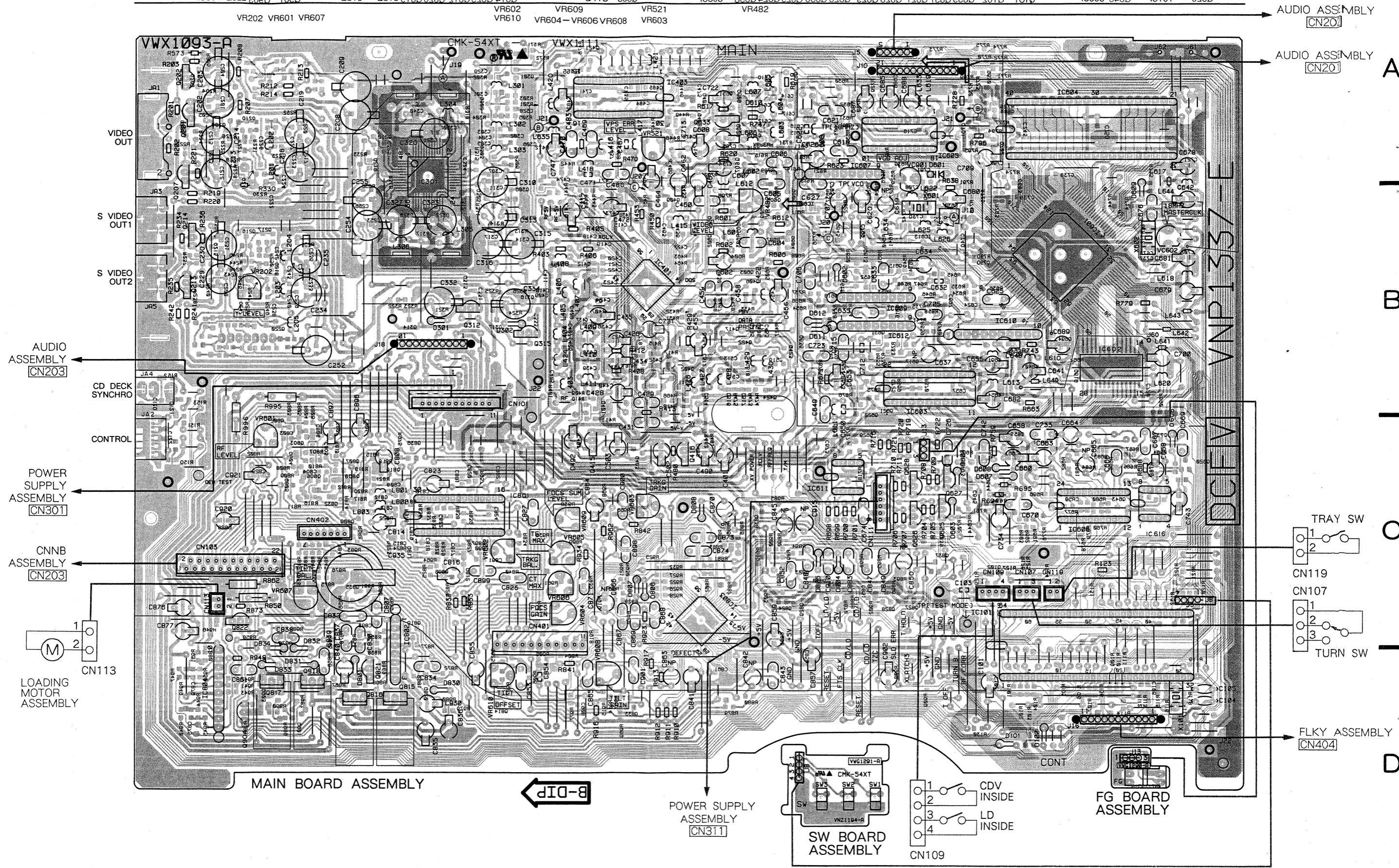
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4

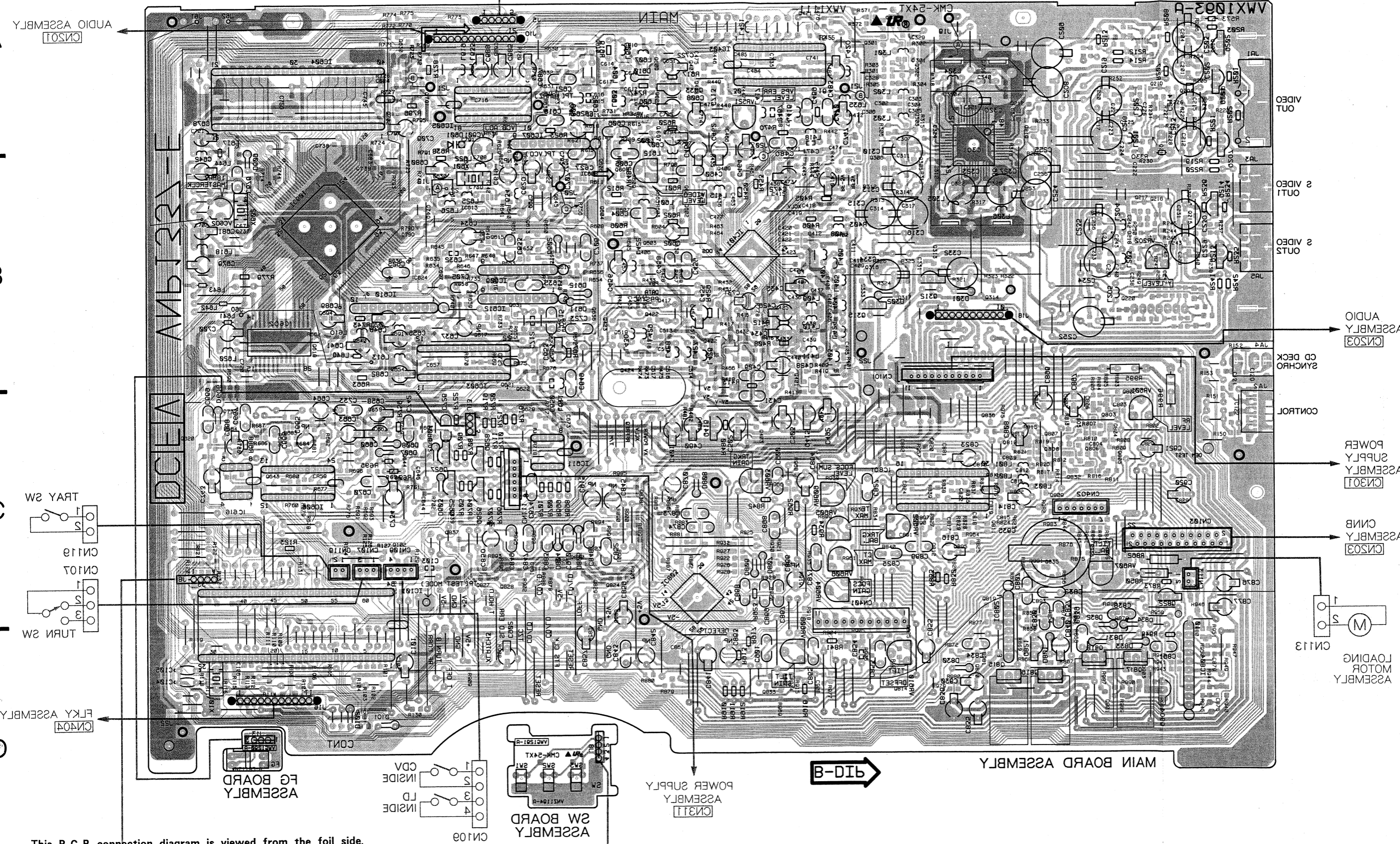
5

6

Q202 80SO 1150-80SO	IC301 8080C0301-1080	IC403 8080-1080	IC605 8080-1080	IC604 8080-1080	IC616 8080-1080
80SO Q201 8150-80SO	IC401 8080-1080	IC609 8080-1080	IC603 8080-1080	IC610 8080-1080	IC602 8080-1080
Q207 Q214 0817 Q904 Q818	IC802 8080-1080	IC611 8080-1080	Q625 -Q628 8080-1080	IC612 8080-1080	IC606 8080-1080
Q213 IC804 Q822 8080-1080	IC801 8080-1080	IC607 8080-1080	Q625 -Q628 8080-1080	IC603 8080-1080	IC101 8080-1080



IC804 IC801 IC811 IC805 IC101 IC102 IC103 IC104 IC105 IC106 IC107 IC108 IC109 IC110 IC111 IC112 IC113 IC114 IC115 IC116 IC117 IC118 IC119 IC120 IC121 IC122 IC123 IC124 IC125 IC126 IC127 IC128 IC129 IC130 IC131 IC132 IC133 IC134 IC135 IC136 IC137 IC138 IC139 IC140 IC141 IC142 IC143 IC144 IC145 IC146 IC147 IC148 IC149 IC150 IC151 IC152 IC153 IC154 IC155 IC156 IC157 IC158 IC159 IC160 IC161 IC162 IC163 IC164 IC165 IC166 IC167 IC168 IC169 IC170 IC171 IC172 IC173 IC174 IC175 IC176 IC177 IC178 IC179 IC180 IC181 IC182 IC183 IC184 IC185 IC186 IC187 IC188 IC189 IC190 IC191 IC192 IC193 IC194 IC195 IC196 IC197 IC198 IC199 IC200 IC201 IC202 IC203 IC204 IC205 IC206 IC207 IC208 IC209 IC210 IC211 IC212 IC213 IC214 IC215 IC216 IC217 IC218 IC219 IC220 IC221 IC222 IC223 IC224 IC225 IC226 IC227 IC228 IC229 IC230 IC231 IC232 IC233 IC234 IC235 IC236 IC237 IC238 IC239 IC240 IC241 IC242 IC243 IC244 IC245 IC246 IC247 IC248 IC249 IC250 IC251 IC252 IC253 IC254 IC255 IC256 IC257 IC258 IC259 IC260 IC261 IC262 IC263 IC264 IC265 IC266 IC267 IC268 IC269 IC270 IC271 IC272 IC273 IC274 IC275 IC276 IC277 IC278 IC279 IC280 IC281 IC282 IC283 IC284 IC285 IC286 IC287 IC288 IC289 IC290 IC291 IC292 IC293 IC294 IC295 IC296 IC297 IC298 IC299 IC300 IC301 IC302 IC303 IC304 IC305 IC306 IC307 IC308 IC309 IC310 IC311 IC312 IC313 IC314 IC315 IC316 IC317 IC318 IC319 IC320 IC321 IC322 IC323 IC324 IC325 IC326 IC327 IC328 IC329 IC330 IC331 IC332 IC333 IC334 IC335 IC336 IC337 IC338 IC339 IC340 IC341 IC342 IC343 IC344 IC345 IC346 IC347 IC348 IC349 IC350 IC351 IC352 IC353 IC354 IC355 IC356 IC357 IC358 IC359 IC360 IC361 IC362 IC363 IC364 IC365 IC366 IC367 IC368 IC369 IC370 IC371 IC372 IC373 IC374 IC375 IC376 IC377 IC378 IC379 IC380 IC381 IC382 IC383 IC384 IC385 IC386 IC387 IC388 IC389 IC390 IC391 IC392 IC393 IC394 IC395 IC396 IC397 IC398 IC399 IC400 IC401 IC402 IC403 IC404 IC405 IC406 IC407 IC408 IC409 IC410 IC411 IC412 IC413 IC414 IC415 IC416 IC417 IC418 IC419 IC420 IC421 IC422 IC423 IC424 IC425 IC426 IC427 IC428 IC429 IC430 IC431 IC432 IC433 IC434 IC435 IC436 IC437 IC438 IC439 IC440 IC441 IC442 IC443 IC444 IC445 IC446 IC447 IC448 IC449 IC450 IC451 IC452 IC453 IC454 IC455 IC456 IC457 IC458 IC459 IC460 IC461 IC462 IC463 IC464 IC465 IC466 IC467 IC468 IC469 IC470 IC471 IC472 IC473 IC474 IC475 IC476 IC477 IC478 IC479 IC480 IC481 IC482 IC483 IC484 IC485 IC486 IC487 IC488 IC489 IC490 IC491 IC492 IC493 IC494 IC495 IC496 IC497 IC498 IC499 IC500 IC501 IC502 IC503 IC504 IC505 IC506 IC507 IC508 IC509 IC510 IC511 IC512 IC513 IC514 IC515 IC516 IC517 IC518 IC519 IC520 IC521 IC522 IC523 IC524 IC525 IC526 IC527 IC528 IC529 IC530 IC531 IC532 IC533 IC534 IC535 IC536 IC537 IC538 IC539 IC540 IC541 IC542 IC543 IC544 IC545 IC546 IC547 IC548 IC549 IC550 IC551 IC552 IC553 IC554 IC555 IC556 IC557 IC558 IC559 IC560 IC561 IC562 IC563 IC564 IC565 IC566 IC567 IC568 IC569 IC570 IC571 IC572 IC573 IC574 IC575 IC576 IC577 IC578 IC579 IC580 IC581 IC582 IC583 IC584 IC585 IC586 IC587 IC588 IC589 IC590 IC591 IC592 IC593 IC594 IC595 IC596 IC597 IC598 IC599 IC600 IC601 IC602 IC603 IC604 IC605 IC606 IC607 IC608 IC609 IC610 IC611 IC612 IC613 IC614 IC615 IC616 IC617 IC618 IC619 IC620 IC621 IC622 IC623 IC624 IC625 IC626 IC627 IC628 IC629 IC630 IC631 IC632 IC633 IC634 IC635 IC636 IC637 IC638 IC639 IC640 IC641 IC642 IC643 IC644 IC645 IC646 IC647 IC648 IC649 IC650 IC651 IC652 IC653 IC654 IC655 IC656 IC657 IC658 IC659 IC660 IC661 IC662 IC663 IC664 IC665 IC666 IC667 IC668 IC669 IC670 IC671 IC672 IC673 IC674 IC675 IC676 IC677 IC678 IC679 IC680 IC681 IC682 IC683 IC684 IC685 IC686 IC687 IC688 IC689 IC690 IC691 IC692 IC693 IC694 IC695 IC696 IC697 IC698 IC699 IC700 IC701 IC702 IC703 IC704 IC705 IC706 IC707 IC708 IC709 IC710 IC711 IC712 IC713 IC714 IC715 IC716 IC717 IC718 IC719 IC720 IC721 IC722 IC723 IC724 IC725 IC726 IC727 IC728 IC729 IC730 IC731 IC732 IC733 IC734 IC735 IC736 IC737 IC738 IC739 IC740 IC741 IC742 IC743 IC744 IC745 IC746 IC747 IC748 IC749 IC750 IC751 IC752 IC753 IC754 IC755 IC756 IC757 IC758 IC759 IC760 IC761 IC762 IC763 IC764 IC765 IC766 IC767 IC768 IC769 IC770 IC771 IC772 IC773 IC774 IC775 IC776 IC777 IC778 IC779 IC780 IC781 IC782 IC783 IC784 IC785 IC786 IC787 IC788 IC789 IC790 IC791 IC792 IC793 IC794 IC795 IC796 IC797 IC798 IC799 IC800 IC801 IC802 IC803 IC804 IC805 IC806 IC807 IC808 IC809 IC810 IC811 IC812 IC813 IC814 IC815 IC816 IC817 IC818 IC819 IC820 IC821 IC822 IC823 IC824 IC825 IC826 IC827 IC828 IC829 IC830 IC831 IC832 IC833 IC834 IC835 IC836 IC837 IC838 IC839 IC840 IC841 IC842 IC843 IC844 IC845 IC846 IC847 IC848 IC849 IC850 IC851 IC852 IC853 IC854 IC855 IC856 IC857 IC858 IC859 IC860 IC861 IC862 IC863 IC864 IC865 IC866 IC867 IC868 IC869 IC870 IC871 IC872 IC873 IC874 IC875 IC876 IC877 IC878 IC879 IC880 IC881 IC882 IC883 IC884 IC885 IC886 IC887 IC888 IC889 IC890 IC891 IC892 IC893 IC894 IC895 IC896 IC897 IC898 IC899 IC900 IC901 IC902 IC903 IC904 IC905 IC906 IC907 IC908 IC909 IC910 IC911 IC912 IC913 IC914 IC915 IC916 IC917 IC918 IC919 IC920 IC921 IC922 IC923 IC924 IC925 IC926 IC927 IC928 IC929 IC930 IC931 IC932 IC933 IC934 IC935 IC936 IC937 IC938 IC939 IC940 IC941 IC942 IC943 IC944 IC945 IC946 IC947 IC948 IC949 IC950 IC951 IC952 IC953 IC954 IC955 IC956 IC957 IC958 IC959 IC960 IC961 IC962 IC963 IC964 IC965 IC966 IC967 IC968 IC969 IC970 IC971 IC972 IC973 IC974 IC975 IC976 IC977 IC978 IC979 IC980 IC981 IC982 IC983 IC984 IC985 IC986 IC987 IC988 IC989 IC990 IC991 IC992 IC993 IC994 IC995 IC996 IC997 IC998 IC999 IC1000



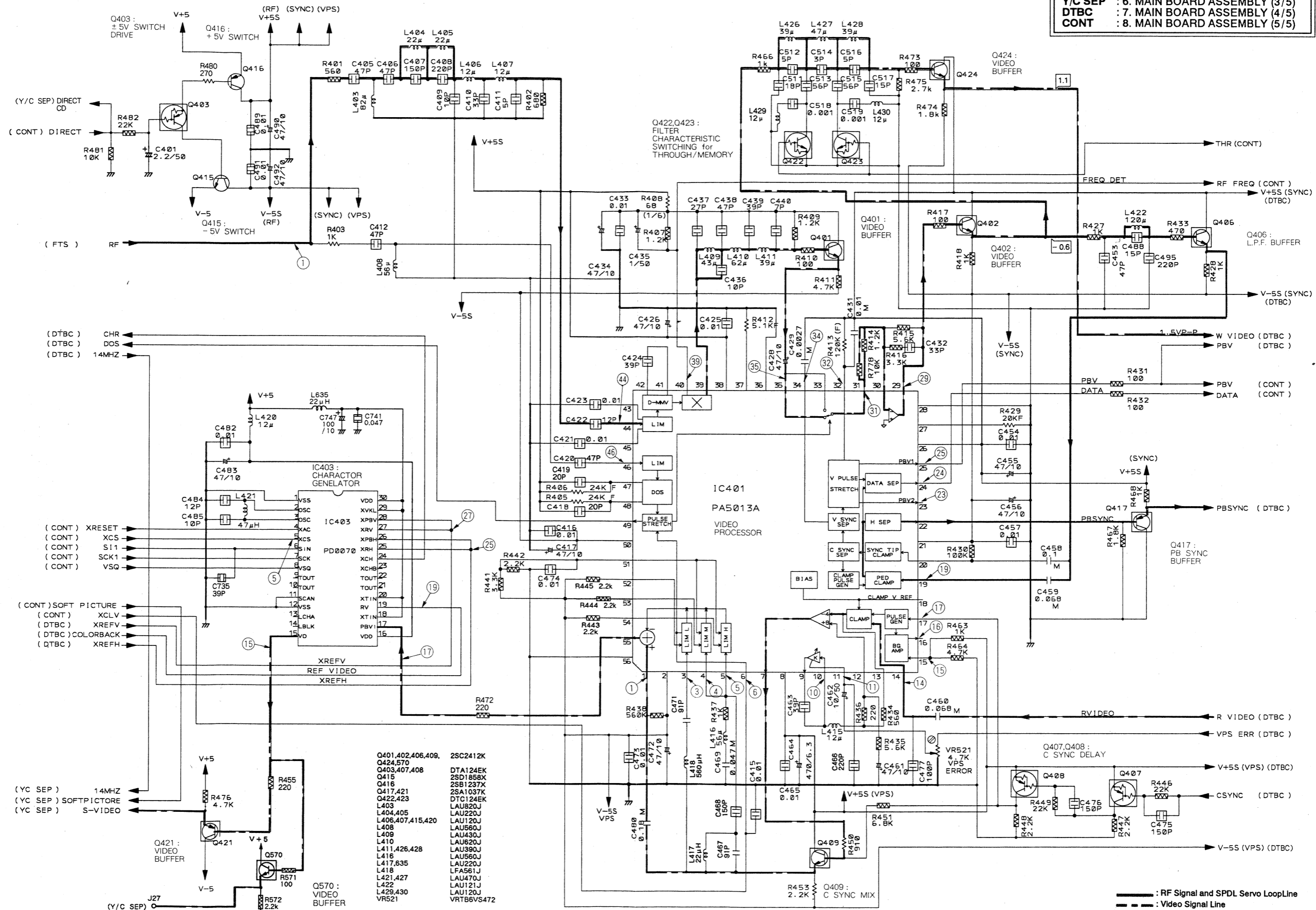
This P.C.B. connection diagram is viewed from the foil side.

5. MAIN BOARD ASSEMBLY (2/5)

MAIN BOARD ASSEMBLY (2/5)  
• VIDEO SECTION

Note: Abbreviations listed indicate circuit connections.

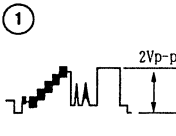
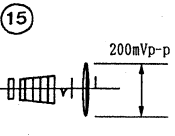
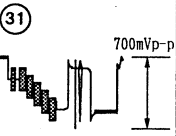
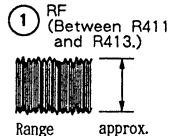
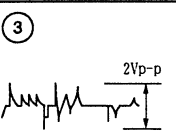
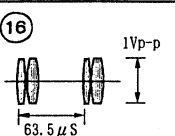
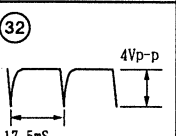
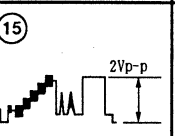
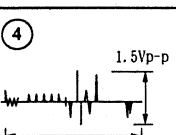
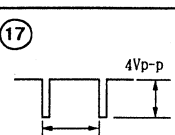
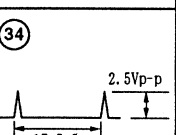
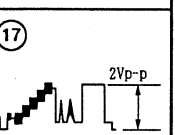
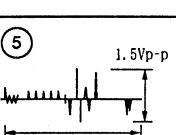
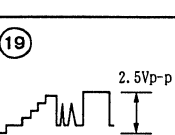
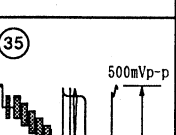
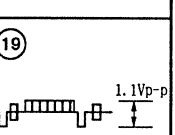
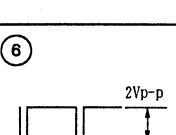
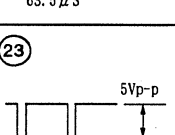
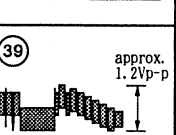
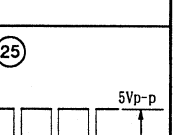
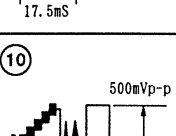
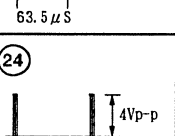
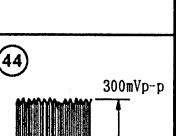
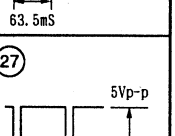
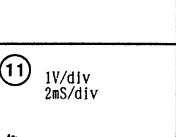
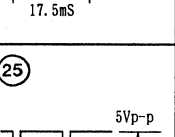
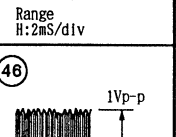
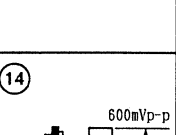
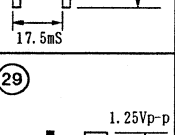
FTS	: 4. MAIN BOARD ASSEMBLY (1/5)
VIDEO	: 5. MAIN BOARD ASSEMBLY (2/5)
Y/C SEP	: 6. MAIN BOARD ASSEMBLY (3/5)
DTBC	: 7. MAIN BOARD ASSEMBLY (4/5)
CONT	: 8. MAIN BOARD ASSEMBLY (5/5)



UAI  
ASSEMB  
POM  
SUPP  
ASSEMB  
CN  
ASSEMB  
LOAD  
TOM  
ASSEMB

A  
B  
C  
D

Waveforms of the VIDEO section Note : (No.) in the table correspond to the pin No.

IC401 (PA5013A)		IC403 (PD0070)	Other points
(1) 	(15) 	(31) 	(1) RF (Between R411 and R413.)  Range approx. H:2mS/div 2Vp-p
(3) 	(16) 	(32) 	(15) 
(4) 	(17) 	(34) 	(17) 
(5) 	(19) 	(35) 	(19) 
(6) 	(23) 	(39) 	(25) 
(10) 	(24) 	(44)  Range H:2mS/div	(27) 
(11) 	(25) 	(46)  Range H:2mS/div	
(14) 	(29) 		

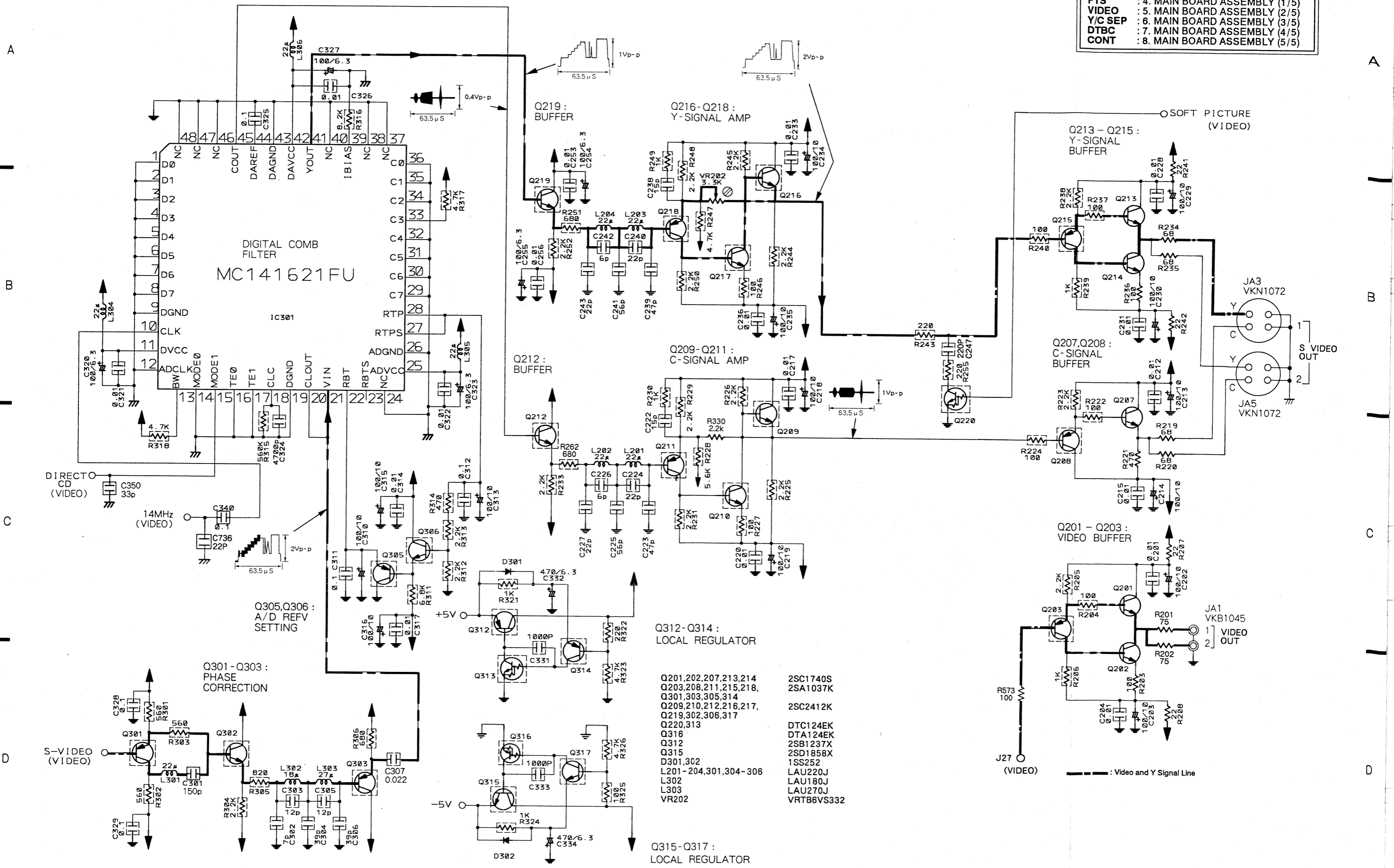


6. MAIN BOARD ASSEMBLY (3/5)

MAIN BOARD ASSEMBLY (3/5)  
• Y/C SEP SECTION

Note : Abbreviations listed indicate circuit connections.

FTS	: 4. MAIN BOARD ASSEMBLY (1/5)
VIDEO	: 5. MAIN BOARD ASSEMBLY (2/5)
Y/C SEP	: 6. MAIN BOARD ASSEMBLY (3/5)
DTBC	: 7. MAIN BOARD ASSEMBLY (4/5)
CONT	: 8. MAIN BOARD ASSEMBLY (5/5)



Q312-Q314 : LOCAL REGULATOR

- Q201,202,207,213,214 2SC1740S
- Q203,208,211,215,218, 2SA1037K
- Q301,303,305,314
- Q209,210,212,216,217, 2SC2412K
- Q219,302,306,317
- Q220,313
- Q316 DTC124EK
- Q312 DTA124EK
- Q315 2SB1237X
- D301,302 2SD1858X
- L201-204,301,304-306 1SS252
- L302 LAU220J
- L303 LAU180J
- VR202 LAU270J
- VRTB6VS332

Q315-Q317 : LOCAL REGULATOR

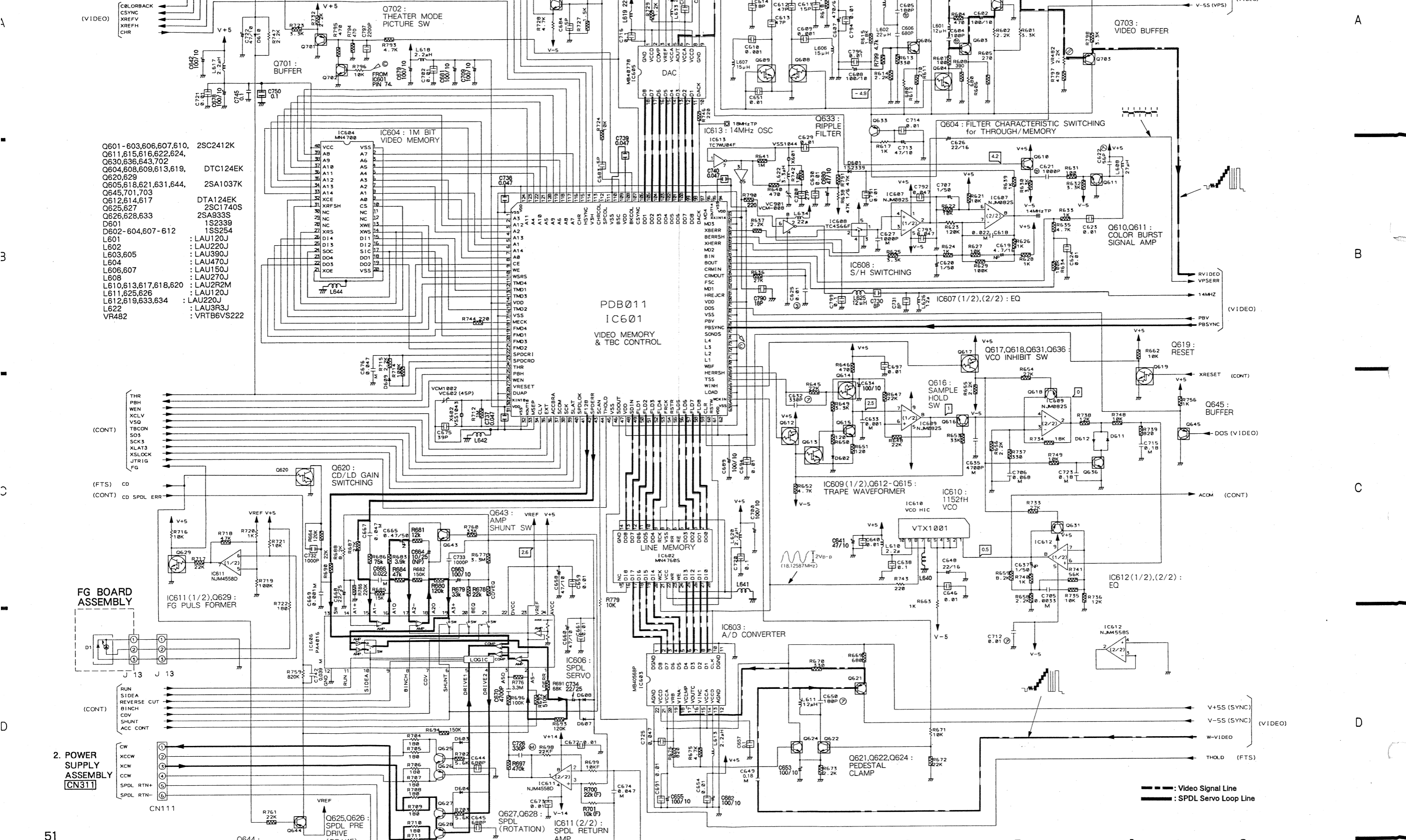
--- : Video and Y Signal Line

7. MAIN BOARD ASSEMBLY (4/5) AND FG BOARD ASSEMBLY

MAIN BOARD ASSEMBLY (4/5) DTBC SECTION

Note: Abbreviations listed indicate circuit connections.

FTS	: 4. MAIN BOARD ASSEMBLY (1/5)
VIDEO	: 5. MAIN BOARD ASSEMBLY (2/5)
Y/C SEP	: 6. MAIN BOARD ASSEMBLY (3/5)
DTBC	: 7. MAIN BOARD ASSEMBLY (4/5)
CONT	: 8. MAIN BOARD ASSEMBLY (5/5)



Q601-603, 606, 607, 610,	2SC2412K
Q611, 615, 616, 622, 624,	
Q630, 636, 643, 702	DTC124EK
Q604, 608, 609, 613, 619,	
Q620, 629	2SA1037K
Q605, 618, 621, 631, 644,	
Q645, 701, 703	DTA124EK
Q612, 614, 617	2SC1740S
Q625, 627	2SA933S
Q626, 628, 633	1S2339
D601	1S2354
D602-604, 607-612	
L601	: LAU120J
L602	: LAU220J
L603, 605	: LAU390J
L604	: LAU470J
L606, 607	: LAU150J
L608	: LAU270J
L610, 613, 617, 618, 620	: LAU2R2M
L611, 625, 626	: LAU120J
L612, 619, 633, 634	: LAU220J
L622	: LAU3R3J
VR482	: VRT6VS222

FG BOARD ASSEMBLY

2. POWER SUPPLY ASSEMBLY [CN311]

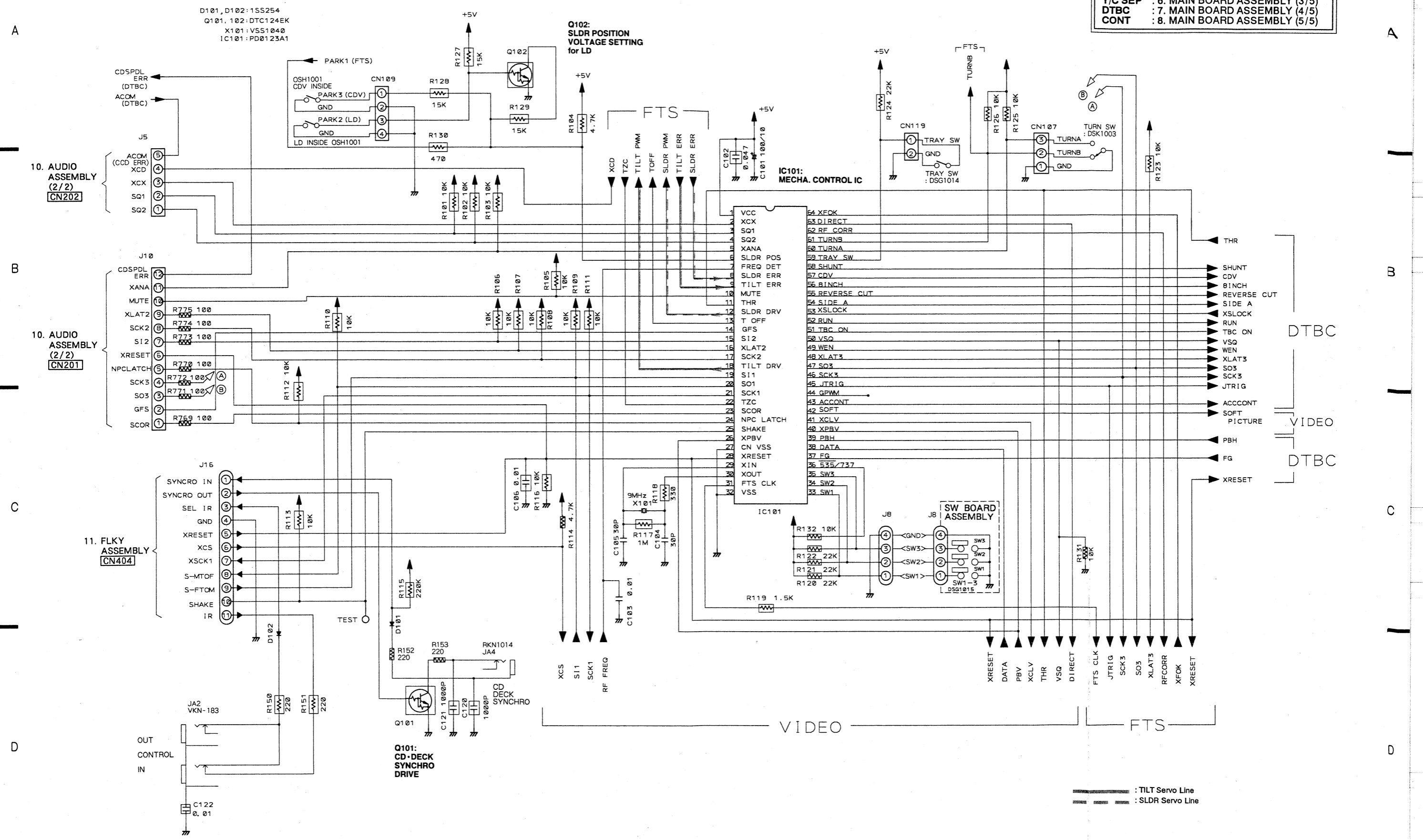
A  
B  
C  
D

8. MAIN BOARD ASSEMBLY (5/5) AND SW BOARD ASSEMBLY

MAIN BOARD ASSEMBLY (5/5)  
• CONT SECTION

Note : Abbreviations listed indicate circuit connections.

FTS	: 4. MAIN BOARD ASSEMBLY (1/5)
VIDEO	: 5. MAIN BOARD ASSEMBLY (2/5)
Y/C SEP	: 6. MAIN BOARD ASSEMBLY (3/5)
DTBC	: 7. MAIN BOARD ASSEMBLY (4/5)
CONT	: 8. MAIN BOARD ASSEMBLY (5/5)



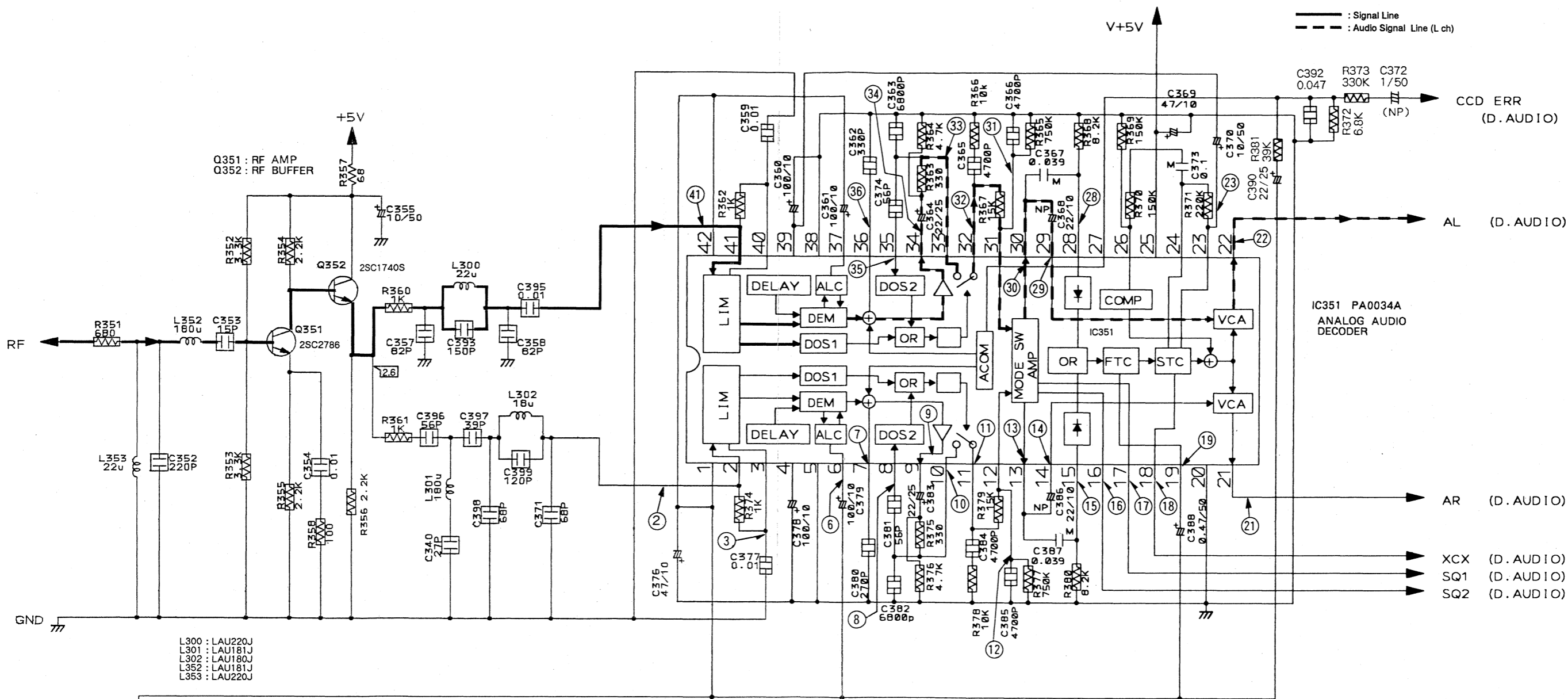
— : TILT Servo Line  
 - - - : SLDR Servo Line

9. AUDIO ASSEMBLY (1/2)

AUDIO ASSEMBLY (1/2) (VWV1251)  
• AFM SECTION

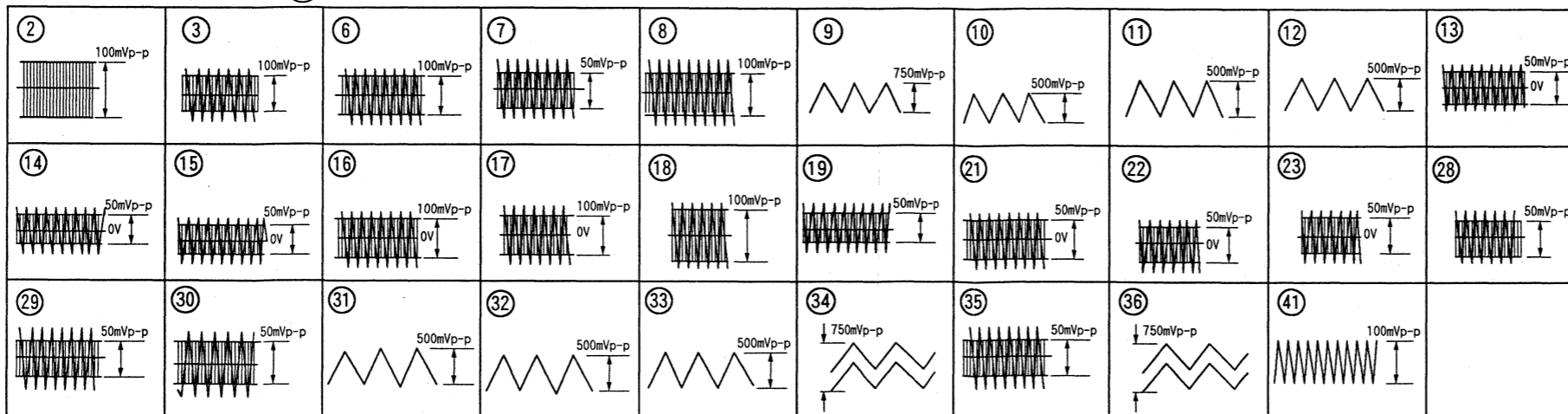
Note : Abbreviations listed indicate circuit connections.

AFM : 9. AUDIO ASSEMBLY (1/2)  
D.AUDIO : 10. AUDIO ASSEMBLY (2/2)



L300 : LAU220J  
L301 : LAU181J  
L302 : LAU180J  
L352 : LAU181J  
L353 : LAU220J

• IC351 (PA0034A) Note : (No.) in the table correspond to the pin No.



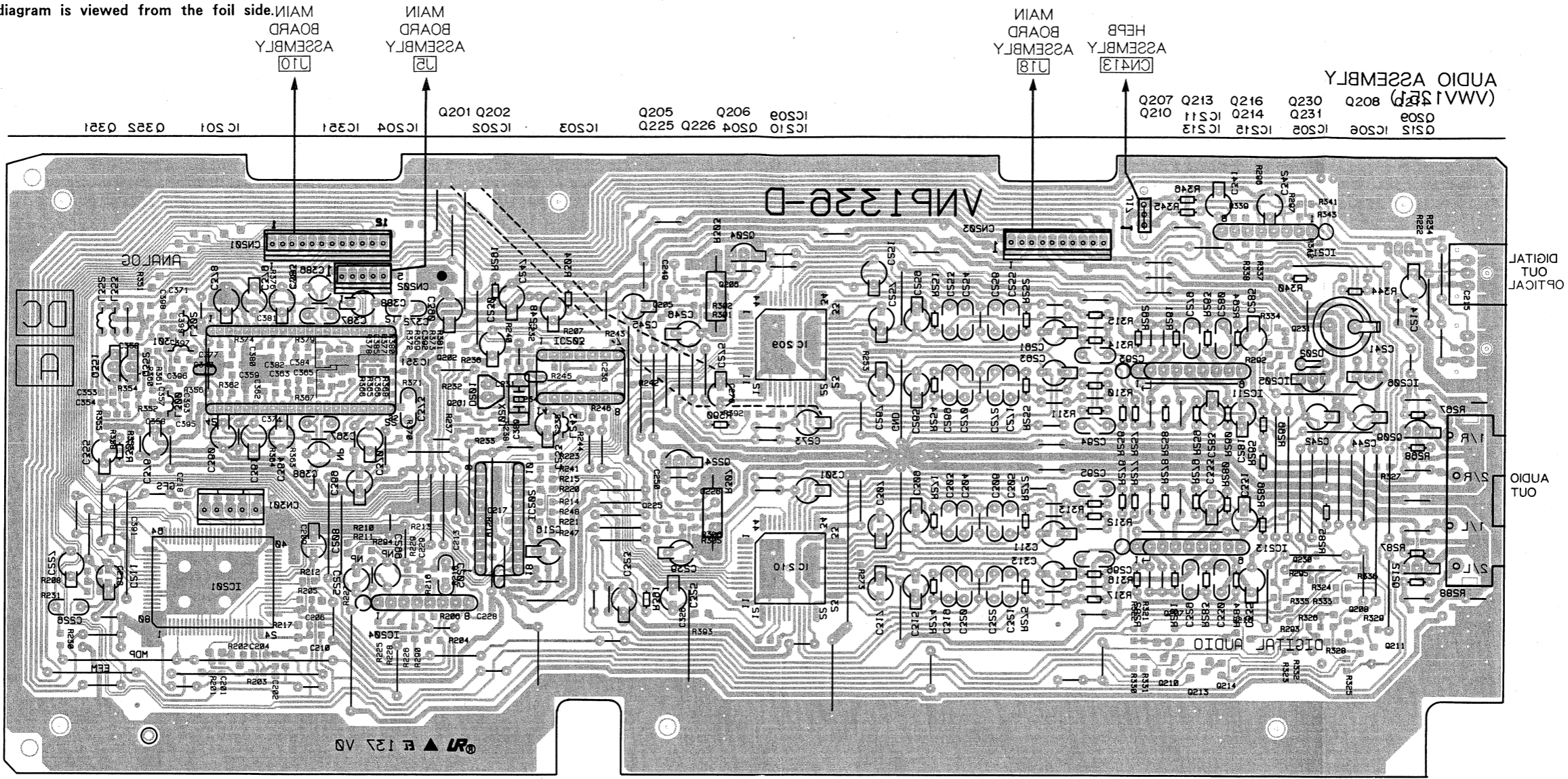
Note : These waveforms and voltage are the play mode.

• IC351 (PA0034A)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	-5V	15	*	29	*
2	*	16	*	30	*
3	*	17	*	31	*
4	*	18	*	32	*
5	*	19	*	33	*
6	*	20	0	34	*
7	*	21	*	35	*
8	*	22	*	36	*
9	*	23	*	37	*
10	*	24	0	38	*
11	*	25	5V	39	*
12	*	26	0	40	*
13	*	27	0	41	*
14	*	28	*	42	-5V

\*: Refer to the waveforms

This P.C.B. connection diagram is viewed from the foil side.



A

B

C

D

A

B

C

D

AUDIO ASSEMBLY  
(VWV1251)

Q209 80SD 0ESD 0ISD 0ISD 0ISD 0ISD  
Q209 1ESD 1ISD IC211 0ISD  
Q212 IC206 IC205 IC215 IC213

HEPB ASSEMBLY  
(CN413)

MAIN BOARD ASSEMBLY  
(J18)

IC209 80SD 80SD  
IC210 Q204 8SSD 8SSD

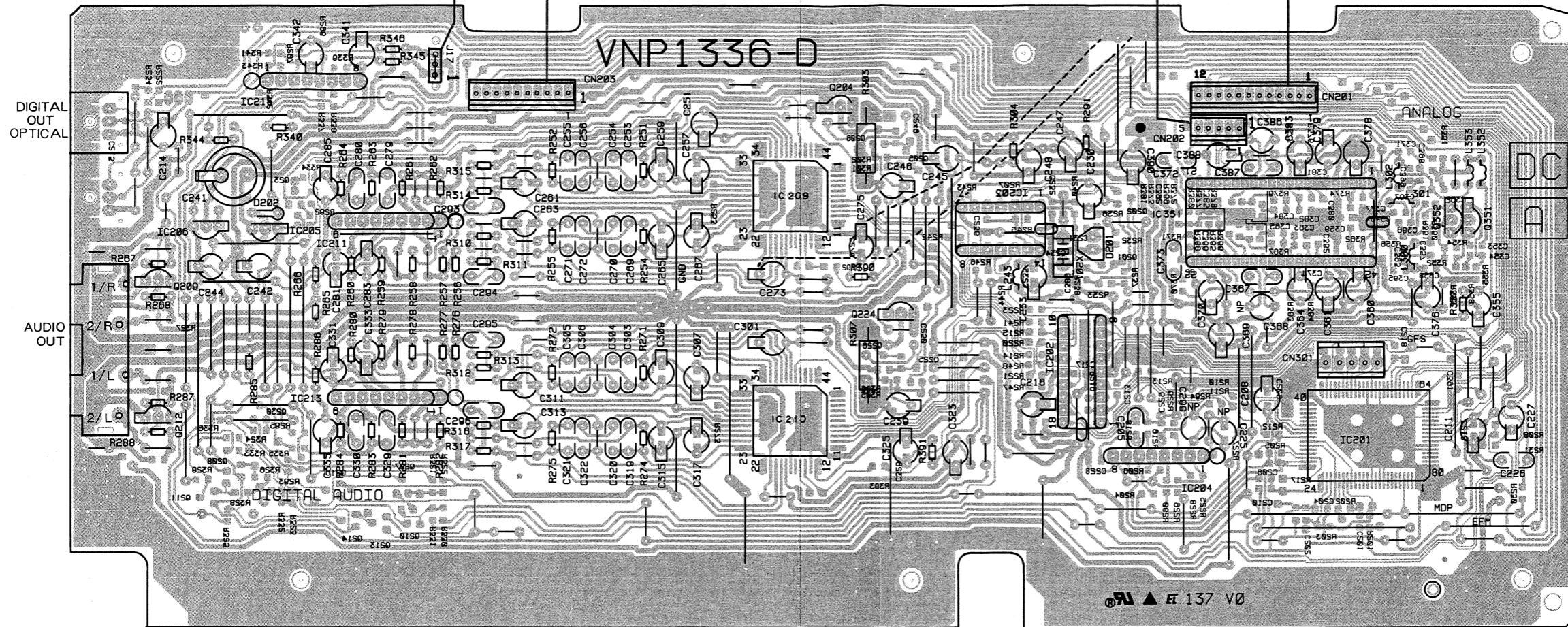
IC203

MAIN BOARD ASSEMBLY  
(J5)

MAIN BOARD ASSEMBLY  
(J10)

S0SD 10SD  
IC202 IC204 IC351

IC201 Q352 Q351



A

B

C

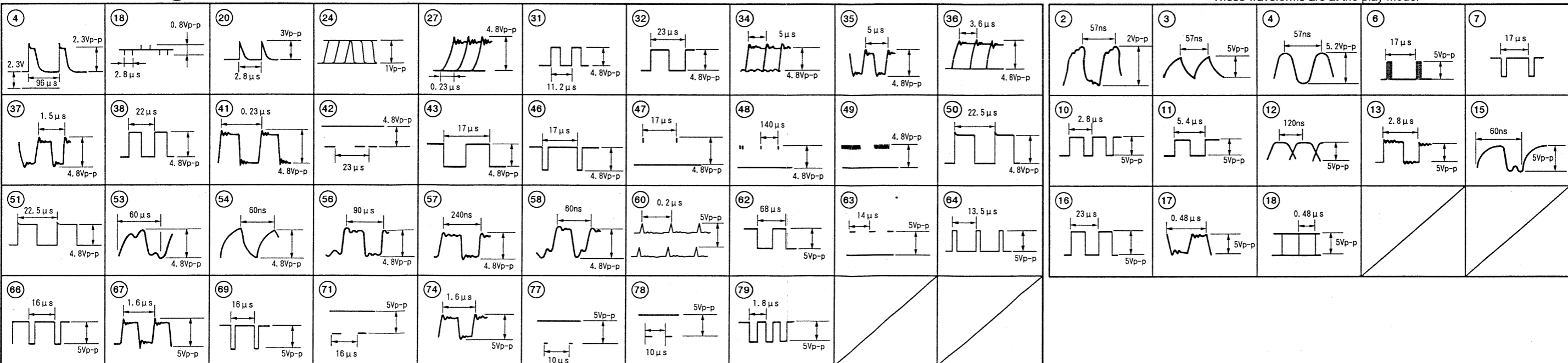
D

IC202 (SM5840AP)

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

These waveforms are at the play mode.

IC201 (CXD2500AQ) Note : (No.) in the table correspond to the pin No. These waveforms are at the play mode.

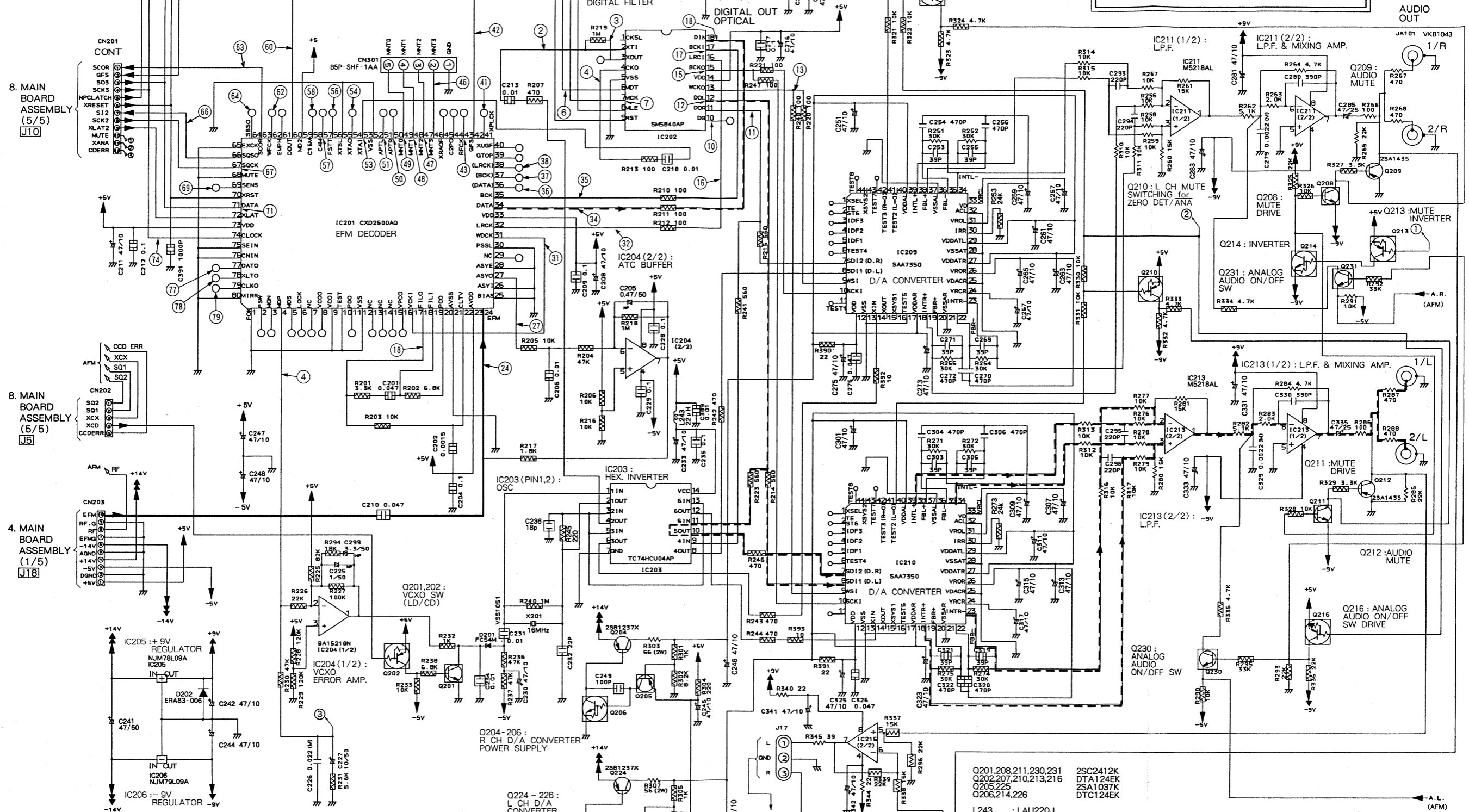


10. AUDIO ASSEMBLY (2/2)

AUDIO ASSEMBLY (2/2)  
(VW1251)  
• D.AUDIO SECTION

Note: Abbreviations listed indicate circuit connections.

AFM : 9. AUDIO ASSEMBLY (1/2)  
D.AUDIO : 10. AUDIO ASSEMBLY (2/2)



Note: These waveforms and voltage are the play mode.

IC201 (CXD2500AO)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	0	15	0	29	0	43	*	57	*	71	*
2	0	16	4.8	30	0	44	0	58	*	72	5
3	0	17	0	31	*	45	4.8	59	5	73	5
4	*	18	*	32	*	46	*	60	*	74	*
5	0	19	2.4	33	4.8	47	*	61	5	75	0
6	4.8	20	*	34	*	48	*	62	*	76	0
7	0	21	0	35	*	49	*	63	*	77	*
8	4.8	22	2.3	36	*	50	*	64	*	78	*
9	0	23	4.8	37	*	51	*	65	0	79	*
10	0	24	*	38	*	52	0	66	*	80	0
11	0	25	0	39	0	53	*	67	*		
12	0	26	0	40	4.8	54	*	68	0		
13	0	27	*	41	*	55	0	69	*		
14	0	28	0	42	*	56	*	70	5		

Note: These waveforms and voltage are the play mode.

IC202 (SM5840AP)

Pin No.	Voltage	Pin No.	Voltage
1	5	10	*
2	*	11	*
3	*	12	*
4	*	13	*
5	0	14	5
6	*	15	*
7	*	16	*
8	5	17	*
9	5	18	*

\*: Refer to the waveforms

Q201, 208, 211, 230, 231 : 2SC2412K  
Q202, 207, 210, 213, 216 : DTA124EK  
Q205, 225 : 2SA1037K  
Q206, 214, 226 : DTC124EK  
L243 : LAU220J

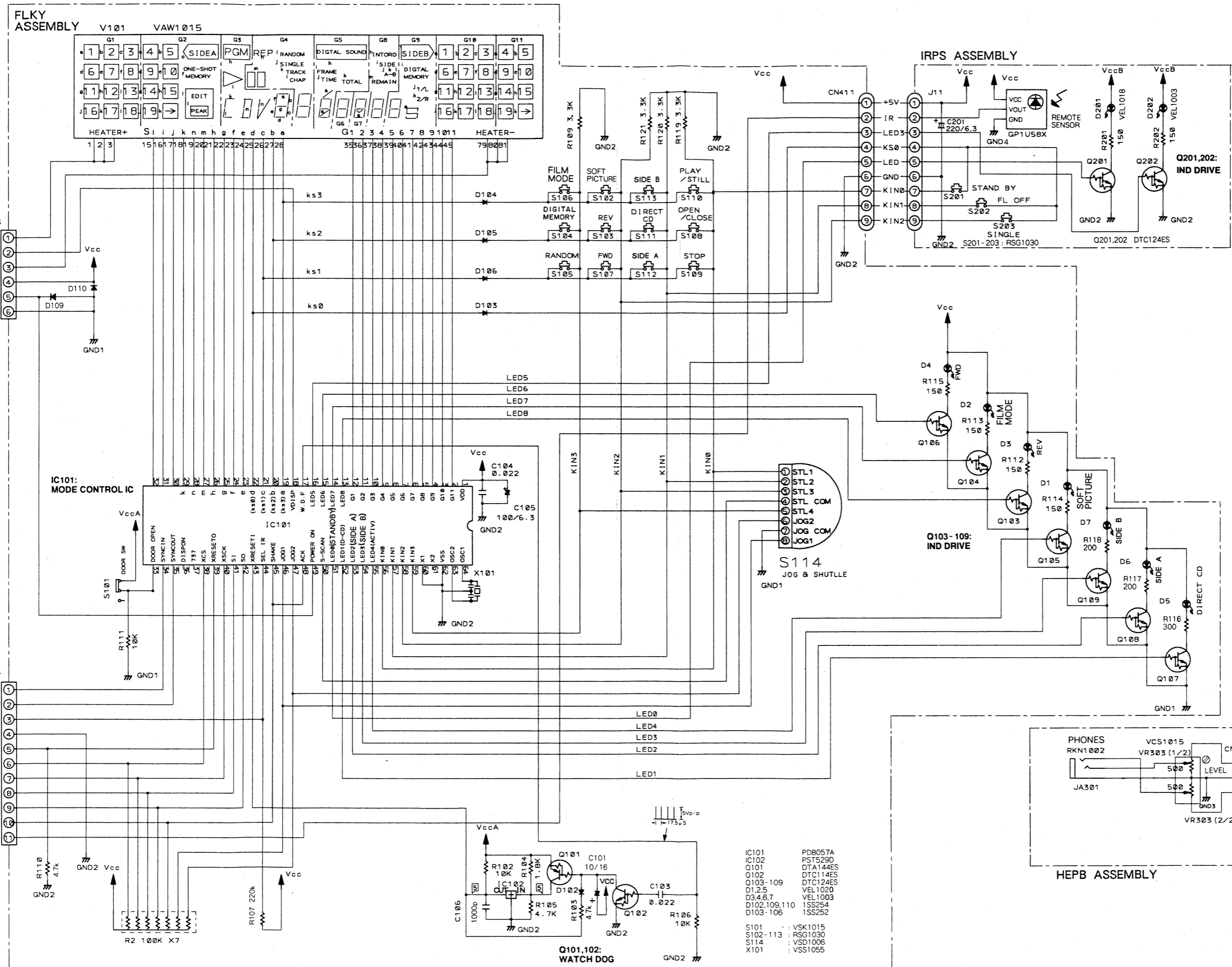
— : RF Signal Line  
- - - : Audio Signal Line (Lch)

11. FLKY, IRPS AND HEPB ASSEMBLIES

2. POWER SUPPLY ASSEMBLY (CN315)

8. MAIN BOARD ASSEMBLY (5/5) (J16)

10. AUDIO ASSEMBLY (2/2) (J17)



- IC101 : PDB057A
- IC102 : PST529D
- Q101 : DT1A44ES
- Q102 : DTC114ES
- Q103-109 : DTC124ES
- D1,2,5 : VEL1020
- D3,4,6,7 : VEL1003
- D102,109,110 : 1SS254
- D103-106 : 1SS252
- S101 : VSK1015
- S102-113 : RSG1030
- S114 : VSD1006
- X101 : VSS1055

A  
B  
C  
D



1 2 3 4 5 6

A

B

C

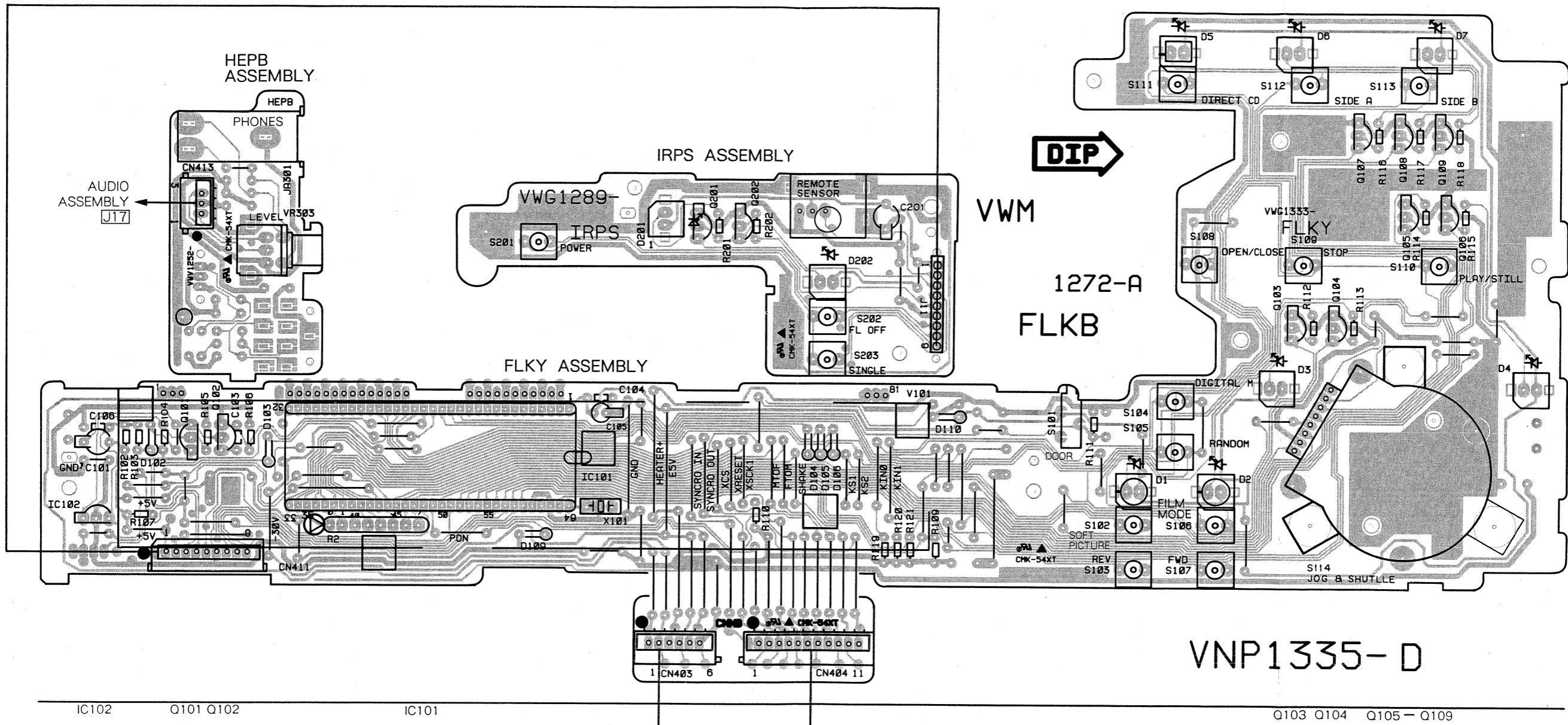
D

A

B

C

D

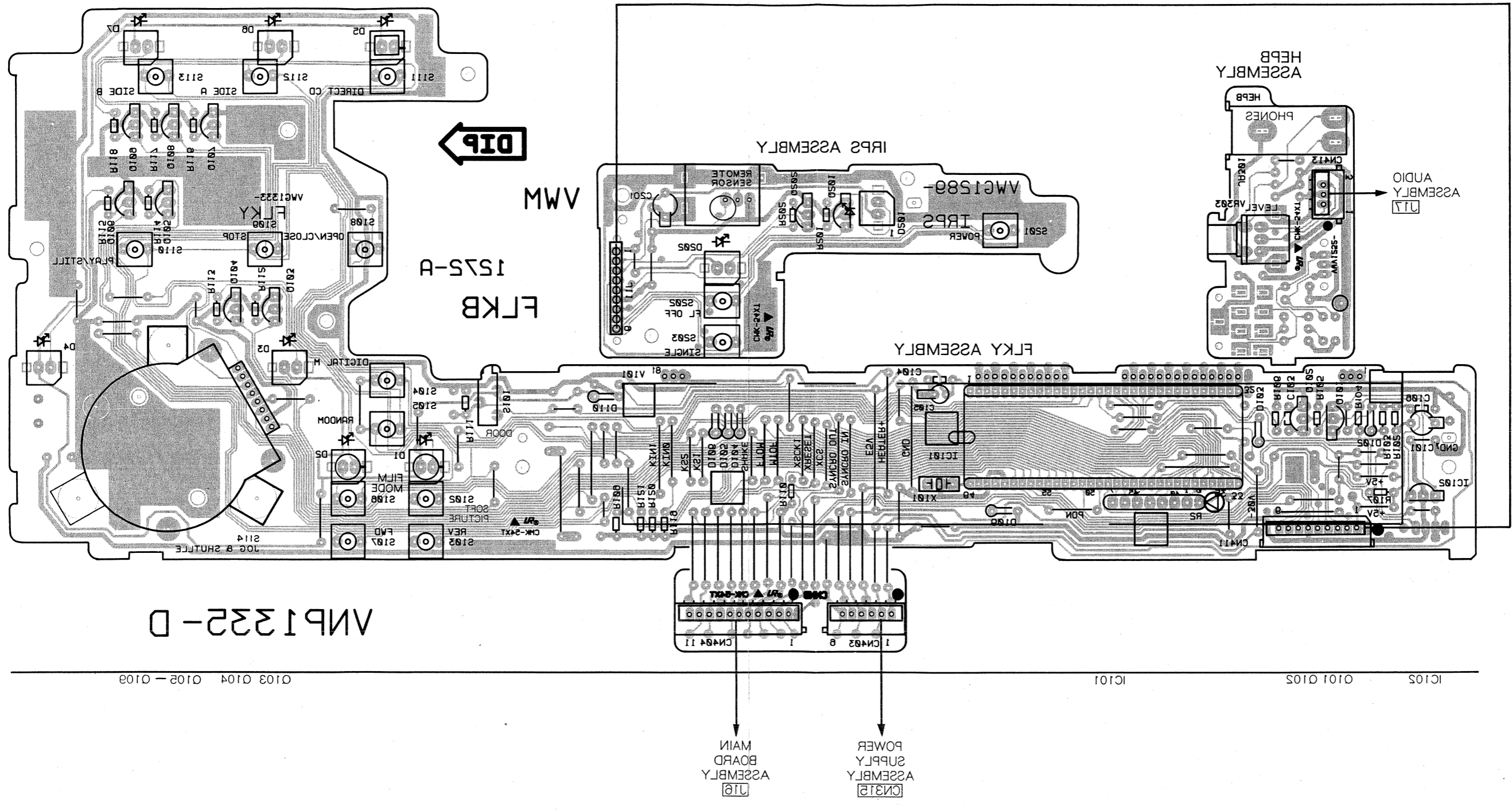


IC102 Q101 Q102 IC101 Q103 Q104 Q105 - Q109

POWER SUPPLY ASSEMBLY [CN315] MAIN BOARD ASSEMBLY [J16]

1 2 3 4 5 6

This P.C.B. connection diagram is viewed from the foil side.



## 6. PCB PARTS LIST

**NOTES:**

- Part without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.
  - Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K= 10%).
 

560 Ω	56 × 10 <sup>1</sup>	561	RD1/8PM 561J
47k Ω	47 × 10 <sup>3</sup>	473	RD1/4PS 473J
0.5 Ω	0R5		RN2H 0R5K
1 Ω	010		RSIP 010K
  - Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).
 

5.62k Ω	562 × 10 <sup>1</sup>	5621	RN1/4SR 5621F
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Mark	No.	Description	Part No.
<b>LIST OF ASSEMBLIES</b>			
		POWER SUPPLY ASSEMBLY	VWR1131
⊙		VSOP ASSEMBLY	VWM1270
		├ FG BOARD ASSEMBLY	
		├ SW BOARD ASSEMBLY	
		└ MAIN BOARD ASSEMBLY	
⊙		FUNCTION BOARD ASSEMBLY	VWM1272
		├ FLKY ASSEMBLY	
		├ IRPS ASSEMBLY	
		└ HEPB ASSEMBLY	
⊙		AUDIO ASSEMBLY	VWV1251
		CNNB ASSEMBLY	
		HEAD ASSEMBLY	

### POWER SUPPLY ASSEMBLY(VWR1131)

**SEMICONDUCTORS**

IC202	TRANSISTOR ARRAY WITH FUSE	TH5P4-FU
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

**COIL**

L203	SPDL CHORK COIL	VTL1043
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Mark	No.	Description	Part No.
<b>OTHERS</b>			
	F202, 203	MICRO FUZU(0. 63A)	NT1-0. 63A
OTHER PARTS ARE NOT SUPPLIED.			
<b>FG BOARD ASSEMBLY</b>			
<b>SEMICONDUCTOR</b>			
		PHOTO INTERRUPTER	GP1S51
<b>SW BOARD ASSEMBLY</b>			
<b>SWITCHES</b>			
	S1-3	PUSH SWITCH (LOADING/TILT)	DSG1015

### MAIN BOARD ASSEMBLY

**SEMICONDUCTORS**

IC101	MECHANISM CONT. MCU	PD0123A1
IC301	DIGI-COMB FILTER IC	MC141621FU
IC401	VIDEO IC	PA5013A
IC403	CHARACTER GENE IC	PD0070
IC601	DTBC IC	PDB011
IC602	IC LILE MEMORY	MN4760S
IC603	A/D CONVERTER IC	MB40568P
IC604	1M D-RAM	MN4700
IC605	D/A CONVERTER IC	MB40778
IC606	SPINDLE SERVO IC	PA4016
IC607	OP-AMP IC	NJM082S
IC608	LOGIC IC	TC4S66F
IC609	OP-AMP IC	NJM082S
IC610	VCO HIC	VTX1001
IC611	LINEAR IC	NJM4558D
IC612	OP-AMP IC	NJM4558S
IC613	LOGIC IC(3GATE)	TC7WU04F
IC801	PRE AMP IC	CXA1081S
IC802	IC	BA15218N
IC803	FTS IC	PM3003

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
IC804		POWER OP AMP	LA6510L	Q630		CHIP TRANSISTOR	2SC2412K
Q101, 102		DIGITAL TRANSISTOR	DTC124EK	Q631		CHIP TRANSISTOR	2SA1037K
Q201, 202		TRANSISTOR	2SC1740S	Q633		TRANSISTOR	2SA933S
Q203		CHIP TRANSISTOR	2SA1037K	Q636, 643		CHIP TRANSISTOR	2SC2412K
Q207		TRANSISTOR	2SC1740S	Q644, 645		CHIP TRANSISTOR	2SA1037K
Q208		CHIP TRANSISTOR	2SA1037K	Q701		CHIP TRANSISTOR	2SA1037K
Q209, 210		CHIP TRANSISTOR	2SC2412K	Q702		CHIP TRANSISTOR	2SC2412K
Q211		CHIP TRANSISTOR	2SA1037K	Q703		CHIP TRANSISTOR	2SA1037K
Q212		CHIP TRANSISTOR	2SC2412K	Q802-805		CHIP TRANSISTOR	2SC2412K
Q213, 214		TRANSISTOR	2SC1740S	Q806		CHIP TRANSISTOR	2SA1037K
Q215		CHIP TRANSISTOR	2SA1037K	Q807		CHIP TRANSISTOR	2SC2412K
Q216, 217		CHIP TRANSISTOR	2SC2412K	Q808		CHIP TRANSISTOR	2SA1037K
Q218		CHIP TRANSISTOR	2SA1037K	Q809, 810		CHIP TRANSISTOR	2SC2412K
Q219		CHIP TRANSISTOR	2SC2412K	Q811		DIGITAL TRANSISTOR	DTC124EK
Q220		DIGITAL TRANSISTOR	DTC124EK	Q812		CHIP TRANSISTOR	2SA1037K
Q301		CHIP TRANSISTOR	2SA1037K	Q814		CHIP TRANSISTOR	2SC2412K
Q302		CHIP TRANSISTOR	2SC2412K	Q815		TRANSISTOR	2SD1762-F8
Q303, 305		CHIP TRANSISTOR	2SA1037K	Q816		TRANSISTOR	2SB1185-F8
Q306		CHIP TRANSISTOR	2SC2412K	Q817		TRANSISTOR	2SD1762-F8
Q312		TRANSISTOR	2SB1237X	Q818		TRANSISTOR	2SB1185-F8
Q313		DIGITAL TRANSISTOR	DTC124EK	Q819		CHIP TRANSISTOR	2SA1037K
Q314		CHIP TRANSISTOR	2SA1037K	Q820		DIGITAL TRANSISTOR	DTA124EK
Q315		TRANSISTOR	2SD1858X	Q821		N-FET	2SK184
Q316		DIGITAL TRANSISTOR	DTA124EK	Q822		TRANSISTOR	2SD1858X
Q317, 401		CHIP TRANSISTOR	2SC2412K	Q823		DIGITAL TRANSISTOR	DTC124EK
Q402		CHIP TRANSISTOR	2SC2412K	Q824		DIGITAL TRANSISTOR	DTA124EK
Q403		DIGITAL TRANSISTOR	DTA124EK	Q825		CHIP TRANSISTOR	2SC2412K
Q406		CHIP TRANSISTOR	2SC2412K	Q826		DIGITAL TRANSISTOR	DTA124EK
Q407, 408		DIGITAL TRANSISTOR	DTA124EK	Q827, 828		DIGITAL TRANSISTOR	DTC124EK
Q409		CHIP TRANSISTOR	2SC2412K	Q829, 830		DIGITAL TRANSISTOR	DTA124EK
Q415		TRANSISTOR	2SD1858X	Q832		CHIP TRANSISTOR	2SA1037K
Q416		TRANSISTOR	2SB1237X	Q833		CHIP TRANSISTOR	2SC2412K
Q417, 421		CHIP TRANSISTOR	2SA1037K	Q835		DIGITAL TRANSISTOR	DTC124EK
Q422, 423		DIGITAL TRANSISTOR	DTC124EK	Q836		CHIP TRANSISTOR	2SA1037K
Q424, 570		CHIP TRANSISTOR	2SC2412K	Q837		DIGITAL TRANSISTOR	DTC124EK
Q601-603		CHIP TRANSISTOR	2SC2412K	Q838		CHIP TRANSISTOR	2SC2412K
Q604		DIGITAL TRANSISTOR	DTC124EK	Q839		DIGITAL TRANSISTOR	DTC124EK
Q605		CHIP TRANSISTOR	2SA1037K	Q901		CHIP TRANSISTOR	2SA1037K
Q606, 607		CHIP TRANSISTOR	2SC2412K	Q903		DIGITAL TRANSISTOR	DTA124EK
Q608, 609		DIGITAL TRANSISTOR	DTC124EK	Q904		TRANSISTOR	2SC1740S
Q610, 611		CHIP TRANSISTOR	2SC2412K	D101, 102		DIODE	1SS254
Q612		DIGITAL TRANSISTOR	DTA124EK	D301, 302		DIODE	1SS252
Q613		DIGITAL TRANSISTOR	DTC124EK	D601		DIODE	1S2339
Q614		DIGITAL TRANSISTOR	DTA124EK	D602-604		DIODE	1SS254
Q615, 616		CHIP TRANSISTOR	2SC2412K	D607-612		DIODE	1SS254
Q617		DIGITAL TRANSISTOR	DTA124EK	D801		DIODE	1SS254
Q618		CHIP TRANSISTOR	2SA1037K	D804-808		DIODE	1SS254
Q619, 620		DIGITAL TRANSISTOR	DTC124EK	D830-832		DIODE	1SS254
Q621		CHIP TRANSISTOR	2SA1037K	D833		ZENER DIODE	04AZ6. 2
Q622, 624		CHIP TRANSISTOR	2SC2412K	D834		ZENER DIODE	04AZ10
Q625		TRANSISTOR	2SC1740S				
Q626		TRANSISTOR	2SA933S				
Q627		TRANSISTOR	2SC1740S				
Q628		TRANSISTOR	2SA933S				
Q629		DIGITAL TRANSISTOR	DTC124EK				

**COILS**

L201-204	AXIAL INDUCTOR	LAU220J
L301	AXIAL INDUCTOR	LAU220J
L302	AXIAL INDUCTOR	LAU180J
L303	AXIAL INDUCTOR	LAU270J
L304-306	AXIAL INDUCTOR	LAU220J

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
L403		AXIAL INDUCTOR	LAU820J	C222		CHIP CERAMIC C.	CCSQCH150J50
L404, 405		AXIAL INDUCTOR	LAU220J	C223		CHIP CAPACITOR	CCSQCH470J50
L406, 407		AXIAL INDUCTOR	LAU120J	C224		CHIP CERAMIC C.	CCSQCH220J50
L408		AXIAL INDUCTOR	LAU560J	C225		CERAMIC CAPACITOR	CCSQCH560J50
L409		AXIAL INDUCTOR	LAU430J	C226		CHIP CAPACITOR	CCSQCH060D50
L410		AXIAL INDUCTOR	LAU620J	C227		CHIP CERAMIC C.	CCSQCH220J50
L411		AXIAL INDUCTOR	LAU390J	C228		CHIP CAPACITOR	CKSQYF103Z50
L415		AXIAL INDUCTOR	LAU120J	C229, 230		ELECTR. CAPACITOR	CEAS101M10
L416		AXIAL INDUCTOR	LAU560J	C231, 233		CHIP CAPACITOR	CKSQYF103Z50
L417		AXIAL INDUCTOR	LAU220J	C234, 235		ELECTR. CAPACITOR	CEAS101M10
L418		RADIAL INDUCTOR	LFA561J	C236		CHIP CAPACITOR	CKSQYF103Z50
L420		AXIAL INDUCTOR	LAU120J	C238		CHIP CERAMIC C.	CCSQCH150J50
L421		AXIAL INDUCTOR	LAU470J	C239		CHIP CAPACITOR	CCSQCH470J50
L422		AXIAL INDUCTOR	LAU121J	C240		CHIP CERAMIC C.	CCSQCH220J50
L426		AXIAL INDUCTOR	LAU390J	C241		CERAMIC CAPACITOR	CCSQCH560J50
L427		AXIAL INDUCTOR	LAU470J	C242		CHIP CAPACITOR	CCSQCH060D50
L428		AXIAL INDUCTOR	LAU390J	C243		CHIP CERAMIC C.	CCSQCH220J50
L429, 430		AXIAL INDUCTOR	LAU120J	C247		CHIP CERAMIC C.	CCSQCH221J50
L601		AXIAL INDUCTOR	LAU120J	C253		CHIP CAPACITOR	CKSQYF103Z50
L602		AXIAL INDUCTOR	LAU220J	C254, 255		ELECTR. CAPACITOR	CEAL101M6R3
L603		AXIAL INDUCTOR	LAU390J	C256		CHIP CAPACITOR	CKSQYF103Z50
L604		AXIAL INDUCTOR	LAU470J	C301		CHIP CAPACITOR	CCSQCH151J50
L605		AXIAL INDUCTOR	LAU390J	C302		CHIP CAPACITOR	CCSQCH070D50
L606, 607		AXIAL INDUCTOR	LAU150J	C303		CHIP CAPACITOR	CCSQCH120J50
L608		AXIAL INDUCTOR	LAU270J	C304		CHIP CAPACITOR	CCSQCH390J50
L610		AXIAL INDUCTOR	LAU2R2M	C305		CHIP CAPACITOR	CCSQCH120J50
L611		AXIAL INDUCTOR	LAU120J	C306		CHIP CAPACITOR	CCSQCH390J50
L612		AXIAL INDUCTOR	LAU220J	C307		CHIP CAPACITOR	CKSQYF223Z50
L613		AXIAL INDUCTOR	LAU2R2M	C310		ELECTR. CAPACITOR	CEAS101M10
L617, 618		AXIAL INDUCTOR	LAU2R2M	C311, 312		CERAMIC CAPACITOR	CKSQYF104Z25
L619		AXIAL INDUCTOR	LAU220J	C313		ELECTR. CAPACITOR	CEAS101M10
L620		AXIAL INDUCTOR	LAU2R2M	C314		CHIP CAPACITOR	CKSQYF103Z50
L622		AXIAL INDUCTOR	LAU3R3J	C315, 316		ELECTR. CAPACITOR	CEAS101M10
L625, 626		AXIAL INDUCTOR	LAU120J	C317		CHIP CAPACITOR	CKSQYF103Z50
L633-635		AXIAL INDUCTOR	LAU220J	C320		ELECTR. CAPACITOR	CEAL101M6R3
L640-644		FERRITE BEAD	VTH1024	C321, 322		CHIP CAPACITOR	CKSQYF103Z50
L801		AXIAL INDUCTOR	LAU151J	C323		ELECTR. CAPACITOR	CEAL101M6R3
L802		AXIAL INDUCTOR	LAU181J	C324		CERAMIC CAPACITOR	CKSQYB472K50
L803		AXIAL INDUCTOR	LAU151J	C325		CERAMIC CAPACITOR	CKSQYF104Z25
				C326		CHIP CAPACITOR	CKSQYF103Z50
				C327		ELECTR. CAPACITOR	CEAL101M6R3
				C328, 329		CERAMIC CAPACITOR	CKSQYF104Z25
				C331		CHIP CAPACITOR	CKSQYB102K50
				C332		ELECTROLYTIC CAPACITOR	CEAS471M6R3
				C333		CHIP CAPACITOR	CKSQYB102K50
				C334		ELECTROLYTIC CAPACITOR	CEAS471M6R3
				C340		CERAMIC CAPACITOR	CKSQYF104Z25
				C350		CHIP CAPACITOR	CCSQCH330J50
				C401		ELECTR. CAPACITOR	CEAS2R2M50
				C405, 406		CHIP CAPACITOR	CCSQCH470J50
				C407		CHIP CAPACITOR	CCSQCH151J50
				C408		CHIP CERAMIC C.	CCSQCH221J50
				C409		CHIP CAPACITOR	CCSQCH100D50
				C410		CHIP CAPACITOR	CCSQCH330J50
				C411		CHIP CAPACITOR	CCSQCH050C50

## CAPACITORS

VC602	VARIABLE CAPACITOR(45P)	VCM1002
VC901	VARIABLE CAPACITOR(20P)	VCM-008
C101	ELECTR. CAPACITOR	CEAS101M10
C102	CERAMIC CAPACITOR	CKSQYF473Z25
C103	CERAMIC CAPACITOR	CKPUY103N16
C104, 105	CERAMIC CAPACITOR	CCCCH300J50
C106	CHIP CAPACITOR	CKSQYF103Z50
C120, 121	CHIP CAPACITOR	CKSQYB102K50
C122, 201	CHIP CAPACITOR	CKSQYF103Z50
C202, 203	ELECTR. CAPACITOR	CEAS101M10
C204, 212	CHIP CAPACITOR	CKSQYF103Z50
C213, 214	ELECTR. CAPACITOR	CEAS101M10
C215, 217	CHIP CAPACITOR	CKSQYF103Z50
C218, 219	ELECTR. CAPACITOR	CEAS101M10
C220	CHIP CAPACITOR	CKSQYF103Z50

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
C412		CHIP CAPACITOR	CCSQCH470J50	C513		CERAMIC CAPACITOR	CCSQCH560J50
C415, 416		CHIP CAPACITOR	CKSQYF103Z50	C514		CHIP CAPACITOR	CCSQCH030C50
C417		ELECTR. CAPACITOR	CEAS470M10	C515		CERAMIC CAPACITOR	CCSQCH560J50
C418, 419		CHIP CERAMIC C.	CCSQCH200J50	C516		CHIP CAPACITOR	CCSQCH050C50
C420		CHIP CAPACITOR	CCSQCH470J50	C517		CHIP CERAMIC C.	CCSQCH150J50
C421		CHIP CAPACITOR	CKSQYF103Z50	C518, 519		CHIP CAPACITOR	CKSQYB102K50
C422		CHIP CAPACITOR	CCSQCH120J50	C602		ELECTR. CAPACITOR	CEAS101M10
C423		CHIP CAPACITOR	CKSQYF103Z50	C604		CERAMIC CAPACITOR	CCCCH101J50
C424		CHIP CAPACITOR	CCSQCH390J50	C605		CERAMIC CAPACITOR	CCCCH181J50
C425		CHIP CAPACITOR	CKSQYF103Z50	C606		MYLAR FILM CAPACITOR	CQMA681J50
C426, 428		ELECTR. CAPACITOR	CEAS470M10	C607		ELECTROLYTIC CAPACITOR	CEAS471M6R3
C429		MYLAR FILM CAPACITOR	CQMA272J50	C608		ELECTR. CAPACITOR	CEAS101M10
C431		AUDIO FILM CAPACITOR	CFTXA103J50	C609, 610		CHIP CAPACITOR	CKSQYB102K50
C432		CHIP CAPACITOR	CCSQCH330J50	C611		CHIP CERAMIC C.	CCSQCH150J50
C433		CHIP CAPACITOR	CKSQYF103Z50	C612, 613		CHIP CAPACITOR	CCSQCH470J50
C434		ELECTR. CAPACITOR	CEAS470M10	C614		CHIP CAPACITOR	CCSQCH180J50
C435		ELECTR. CAPACITOR	CEAS010M50	C615		CHIP CAPACITOR	CCSQCH050C50
C436		CHIP CAPACITOR	CCSQCH100D50	C616		CHIP CAPACITOR	CCSQCH030C50
C437		CHIP CAPACITOR	CCSQCH270J50	C617		CHIP CAPACITOR	CCSQCH050C50
C438		CHIP CAPACITOR	CCSQCH470J50	C618		AUDIO FILM CAPACITOR	CFTXA223J50
C439		CHIP CAPACITOR	CCSQCH390J50	C619		ELECTR. CAPACITOR	CEANP4R7M16
C440		CHIP CAPACITOR	CCSQCH070D50	C620		ELECTR. CAPACITOR	CEAS010M50
C453		CHIP CAPACITOR	CCSQCH470J50	C621		CERAMIC CAPACITOR	CKCYB102K50
C454		CHIP CAPACITOR	CKSQYF103Z50	C622		AXIAL CERAMIC C.	CCPUSL560J50
C455, 456		ELECTR. CAPACITOR	CEAS470M10	C623, 624		CHIP CAPACITOR	CKSQYF103Z50
C457		CHIP CAPACITOR	CKSQYF103Z50	C625		AUDIO FILM CAPACITOR	CFTXA103J50
C458		AUDIO FILM CAPACITOR	CFTXA104J50	C626		ELECTR. CAPACITOR	CEAS220M16
C459, 460		AUDIO FILM CAPACITOR	CFTXA683J50	C627		MYLAR FILM CAPACITOR	CQMA102J50
C461		ELECTR. CAPACITOR	CEAS470M10	C629, 630		CHIP CAPACITOR	CKSQYF103Z50
C462		ELECTR. CAPACITOR	CEAS100M50	C632		CERAMIC CAPACITOR	CKPUYB331K50
C463		CHIP CAPACITOR	CCSQCH390J50	C633		MYLAR FILM CAPACITOR	CQMA102J50
C464		ELECTROLYTIC CAPACITOR	CEAS471M6R3	C634		ELECTR. CAPACITOR	CEAS101M10
C465		CHIP CAPACITOR	CKSQYF103Z50	C635		MYLAR FILM CAPACITOR	CQMA472J50
C466		CHIP CERAMIC C.	CCSQCH221J50	C637		ELECTR. CAPACITOR	CEANP010M50
C467		CERAMIC CAPACITOR	CKPUYB910K50	C638		CERAMIC CAPACITOR	CKSQYF104Z25
C468		CHIP CAPACITOR	CCSQCH151J50	C640		CHIP CAPACITOR	CKSQYF103Z50
C469		AUDIO FILM CAPACITOR	CFTXA473J50	C641		ELECTR. CAPACITOR	CEAS470M10
C471		CERAMIC CAPACITOR	CKPUYB910K50	C642		ELECTR. CAPACITOR	CEAS101M10
C472		ELECTR. CAPACITOR	CEAS470M10	C644, 645		CHIP CAPACITOR	CCSQSL681J50
C473, 474		CHIP CAPACITOR	CKSQYF103Z50	C646		CHIP CAPACITOR	CKSQYF103Z50
C475, 476		CHIP CAPACITOR	CCSQCH151J50	C648		ELECTR. CAPACITOR	CEAS220M16
C477		CHIP CAPACITOR	CCSQCH101J50	C649		FILM CAPACITOR	CFTNA184J50
C480		FILM CAPACITOR	CFTNA184J50	C650		CERAMIC CAPACITOR	CKPUYB181K50
C482		CHIP CAPACITOR	CKSQYF103Z50	C651		CHIP CAPACITOR	CKSQYF103Z50
C483		ELECTR. CAPACITOR	CEAS470M10	C653		ELECTR. CAPACITOR	CEAS100M50
C484		CHIP CAPACITOR	CCSQCH120J50	C654		CHIP CAPACITOR	CKSQYF103Z50
C485		CHIP CAPACITOR	CCSQCH100D50	C655		ELECTR. CAPACITOR	CEAS101M10
C488		CHIP CERAMIC C.	CCSQCH150J50	C657		CERAMIC CAPACITOR	CKSQYF104Z25
C489		CHIP CAPACITOR	CKSQYF103Z50	C658		ELECTR. CAPACITOR	CEAS470M10
C490		ELECTR. CAPACITOR	CEAS470M10	C659		CHIP CAPACITOR	CKSQYF103Z50
C491		CHIP CAPACITOR	CKSQYF103Z50	C660		ELECTR. CAPACITOR	CEAS470M10
C492		ELECTR. CAPACITOR	CEAS470M10	C661		CHIP CAPACITOR	CKSQYF103Z50
C495		CHIP CERAMIC C.	CCSQCH221J50	C663		ELECTR. CAPACITOR	CEAS101M10
C511		CHIP CAPACITOR	CCSQCH180J50	C664		ELECTROLYTIC CAPACITOR	CEANP100M25
C512		CHIP CAPACITOR	CCSQCH050C50	C665		ELECTROLYTIC CAPACITOR	CEANPR47M50

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
C666		AUDIO FILM CAPACITOR	CFTXA223J50	C805		CERAMIC CAPACITOR	CKSQYF473Z25
C667		AUDIO FILM CAPACITOR	CFTXA473J50	C806		CHIP CAPACITOR	CCSQCH270J50
C668		ELECTR. CAPACITOR	CEAS220M25	C807		AUDIO FILM CAPACITOR	CFTXA124J50
C669		MYLAR FILM CAPACITOR	CQMA102J50	C808		ELECTR. CAPACITOR	CEAS010M50
C670		MYLAR FILM CAPACITOR	CQMA472J50	C809		CHIP CAPACITOR	CCSQCH60J50
C672, 673		CHIP CAPACITOR	CKSQYF103Z50	C810, 811		CHIP CAPACITOR	CCSQCH101J50
C674		AUDIO FILM CAPACITOR	CFTXA473J50	C812		CHIP CAPACITOR	CCSQCH270J50
C675		CHIP CAPACITOR	CCSQCH390J50	C813		CHIP CAPACITOR	CCSQCH60J50
C676		AUDIO FILM CAPACITOR	CFTXA473J50	C814		ELECTROLYTIC CAPACITOR	CEANP010M50
C678, 679		ELECTR. CAPACITOR	CEAS101M10	C815		CHIP CAPACITOR	CCSQCH270J50
C680		ELECTR. CAPACITOR	CEAS470M10	C816		ELECTR. CAPACITOR	CEAS010M50
C681, 682		ELECTR. CAPACITOR	CEAS101M10	C817		CHIP CAPACITOR	CCSQCH050C50
C683, 684		CHIP CAPACITOR	CCSQCH050C50	C818		CHIP CAPACITOR	CCSQSL471J50
C685		ELECTR. CAPACITOR	CEAS101M10	C819		CHIP CAPACITOR	CCSQSL561J50
C686		CHIP CAPACITOR	CKSQYF103Z50	C820		CERAMIC CAPACITOR	CKSQYF473Z25
C687		ELECTR. CAPACITOR	CEAS101M10	C822		CHIP CAPACITOR	CCSQCH101J50
C688		ELECTR. CAPACITOR	CEAS010M50	C823		ELECTR. CAPACITOR	CEAS010M50
C689		ELECTR. CAPACITOR	CEAS101M10	C824		CHIP CAPACITOR	CKSQYF103Z50
C691, 694		CHIP CAPACITOR	CKSQYF103Z50	C825		MYLAR FILM CAPACITOR	CQMA682J50
C697		CHIP CAPACITOR	CKSQYF103Z50	C827		AUDIO FILM CAPACITOR	CFTXA333J50
C700		ELECTR. CAPACITOR	CEAS101M10	C828, 829		CHIP CAPACITOR	CKSQYF103Z50
C702		CHIP CAPACITOR	CKSQYF103Z50	C830		FILM CAPACITOR	CFTNA154J50
C705		MYLAR FILM CAPACITOR	CQMA332J50	C832		AUDIO FILM CAPACITOR	CFTXA104J50
C706		AUDIO FILM CAPACITOR	CFTXA683J50	C834		MYLAR FILM CAPACITOR	CQMA152J50
C707		ELECTR. CAPACITOR	CEAS010M50	C835, 836		ELECTROLYTIC CAPACITOR	CEAL220M35
C708		CHIP CAPACITOR	CCSQCH270J50	C837		CERAMIC CAPACITOR	CCCSL331J50
C709		ELECTR. CAPACITOR	CEAS101M10	C838		AUDIO FILM CAPACITOR	CFTXA104J50
C712		CERAMIC CAPACITOR	CKPUYF103Z25	C839		MYLAR FILM CAPACITOR	CQMA102J50
C713		ELECTR. CAPACITOR	CEAS470M10	C840		ELECTR. CAPACITOR	CEAL010M50
C714		CHIP CAPACITOR	CKSQYF103Z50	C841		ELECTR. CAPACITOR	CEAS220M25
C715		FILM CAPACITOR	CFTNA184J50	C842		ELECTR. CAPACITOR	CEANP100M16
C716, 720		CERAMIC CAPACITOR	CKSQYF104Z25	C843		AUDIO FILM CAPACITOR	CFTXA223J50
C721		CHIP CAPACITOR	CKSQYF103Z50	C845		ELECTR. CAPACITOR	CEANP010M50
C722		ELECTR. CAPACITOR	CEAS470M10	C847		AUDIO FILM CAPACITOR	CFTXA683J50
C723		FILM CAPACITOR	CFTNA184J50	C848		AUDIO FILM CAPACITOR	CFTXA473J50
C725		CERAMIC CAPACITOR	CKSQYF473Z25	C849		AUDIO FILM CAPACITOR	CFTXA103J50
C726		CERAMIC CAPACITOR	CCCSL331J50	C850		ELECTR. CAPACITOR	CEANP2R2M50
C730, 731		CHIP CAPACITOR	CCSQCH080D50	C851		CERAMIC CAPACITOR	CKSQYF104Z25
C732		CHIP CAPACITOR	CKSQYB102K50	C852		FILM CAPACITOR	CFTNA224J50
C733		MYLAR FILM CAPACITOR	CQMA102J50	C853		MYLAR FILM CAPACITOR	CQMA332J50
C734		ELECTR. CAPACITOR	CEAS220M25	C854		AXIAL CAPACITOR	CKPUYB821K50
C735		CHIP CAPACITOR	CCSQCH390J50	C855		ELECTR. CAPACITOR	CEAS100M50
C736		CHIP CERAMIC C.	CCSQCH220J50	C857		ELECTROLYTIC CAPACITOR	CEAS221M6R3
C737-741		CERAMIC CAPACITOR	CKSQYF473Z25	C858		CERAMIC CAPACITOR	CKSQYF104Z25
C742		AUDIO FILM CAPACITOR	CFTXA393J50	C859		ELECTROLYTIC CAPACITOR	CEAS221M6R3
C745		CERAMIC CAPACITOR	CKSQYF104Z25	C860		CERAMIC CAPACITOR	CKSQYF104Z25
C747		ELECTR. CAPACITOR	CEAS101M10	C861		CHIP CAPACITOR	CKSQYF103Z50
C750		CERAMIC CAPACITOR	CKSQYF104Z25	C863		ELECTR. CAPACITOR	CEANP100M16
C790		CHIP CAPACITOR	CCSQCH180J50	C864		ELECTR. CAPACITOR	CEAS100M50
C791		CHIP CAPACITOR	CKSQYF103Z50	C865		AUDIO FILM CAPACITOR	CFTXA103J50
C792, 793		CERAMIC CAPACITOR	CKSQYF473Z25	C866		ELECTROLYTIC CAPACITOR	CEANPR47M50
C794, 795		CHIP CAPACITOR	CKSQYF103Z50	C867		AUDIO FILM CAPACITOR	CFTXA333J50
C797		CHIP CAPACITOR	CKSQYB222K50	C868		AUDIO FILM CAPACITOR	CFTXA683J50
C799		CERAMIC CAPACITOR	CKSQYF104Z25	C869		AUDIO FILM CAPACITOR	CFTXA473J50
C801-803		CHIP CAPACITOR	CKSQYF103Z50	C870		ELECTROLYTIC CAPACITOR	CEANP470M10
C804		CHIP CERAMIC C.	CCSQCH220J50				

Mark	No.	Description	Part No.
C871		CERAMIC CAPACITOR	CCCSL331J50
C873		AUDIO FILM CAPACITOR	CFTXA103J50
C874		AUDIO FILM CAPACITOR	CFTXA104J50
C875		CERAMIC CAPACITOR	CKSQYB562K50
C876, 877		ELECTROLYTIC CAPACITOR	CEAL220M35
C878		CERAMIC CAPACITOR	CKSQYF104Z25
C879		CERAMIC CAPACITOR	CKSQYB562K50
C880-882		CERAMIC CAPACITOR	CKSQYF104Z25
C883		AUDIO FILM CAPACITOR	CFTXA823J50
C890, 891		CHIP CAPACITOR	CCSQCH470J50
C893		CHIP CAPACITOR	CCSQCH470J50
C895		CHIP CAPACITOR	CCSQCH100D50
C896, 897		ELECTR. CAPACITOR	CEAS470M10
C898		MYLAR FILM CAPACITOR	CQMA472J50
C899		MYLAR FILM CAPACITOR	CQMA272J50
C900		FILM CAPACITOR	CFTNA224J50
C901		AUDIO FILM CAPACITOR	CFTXA103J50
C902		ELECTR. CAPACITOR	CEAS100M50
C908		CHIP CAPACITOR	CKSQYF103Z50
C910		AUDIO FILM CAPACITOR	CFTXA473J50
C915		ELECTR. CAPACITOR	CEANP100M16
C920, 921		ELECTR. CAPACITOR	CEAS220M25
C930		ELECTROLYTIC CAPACITOR	CEAL220M35
C935		(1F/5.5V)	VCH1039

**RESISTORS**

VR202	SEMI-FIXED VR(3.3kΩ)	VRTB6VS332
VR482	SEMI-FIXED VR(2.2kΩ)	VRTB6VS222
VR521	SEMI-FIXED VR(4.7kΩ)	VRTB6VS472
VR601	SEMI-FIXED VR(1kΩ)	VRTB6VS102
VR602, 603	SEMI-FIXED VR(10kΩ)	VRTB6VS103
VR604	SEMI-FIXED VR(4.7kΩ)	VRTB6VS472
VR605, 606	SEMI-FIXED VR(2.2kΩ)	VRTB6VS222
VR607	SEMI-FIXED VR(22kΩ)	VRTB6VS223
VR608	SEMI-FIXED VR(33kΩ)	VRTB6VS333
VR609	SEMI-FIXED VR(4.7kΩ)	VRTB6VS472
VR610	SEMI-FIXED VR(10kΩ)	VRTB6VS103
R123	CARBON FILM RESISTOR	RD1/6PM103J
R201, 202	CARBON FILM RESISTOR	RD1/6PM750J
R203	CARBON FILM RESISTOR	RD1/6PM101J
R207, 208	CARBON FILM RESISTOR	RD1/6PM220J
R219, 220	CARBON FILM RESISTOR	RD1/6PM680J
R221	CARBON FILM RESISTOR	RD1/6PM471J
R234, 235	CARBON FILM RESISTOR	RD1/6PM680J
R236	CARBON FILM RESISTOR	RD1/6PM101J
R241, 242	CARBON FILM RESISTOR	RD1/6PM220J
R330	CARBON FILM RESISTOR	RD1/6PM222J
R403	CARBON FILM RESISTOR	RD1/6PM102J
R405, 406	METALFILM RESISTOR	RN1/6PQ2402F
R408	CARBON FILM RESISTOR	RD1/6PM680J
R412	METALFILM RESISTOR	RN1/6PQ5101F
R413	METALFILM RESISTOR	RN1/6PQ1203F
R429	METALFILM RESISTOR	RN1/6PQ2002F
R450	CARBON FILM RESISTOR	RD1/6PM911J
R453	CARBON FILM RESISTOR	RD1/6PM222J
R480	CARBON FILM RESISTOR	RD1/6PM271J

Mark	No.	Description	Part No.
R573		CARBON FILM RESISTOR	RD1/6PM101J
R601		CARBON FILM RESISTOR	RD1/6PM332J
R602		CARBON FILM RESISTOR	RD1/6PM222J
R606, 612		CARBON FILM RESISTOR	RD1/6PM681J
R617, 619		CARBON FILM RESISTOR	RD1/6PM102J
R620		CARBON FILM RESISTOR	RD1/6PM220J
R623		CARBON FILM RESISTOR	RD1/6PM124J
R638		CARBON FILM RESISTOR	RD1/6PM473J
R663		CARBON FILM RESISTOR	RD1/6PM102J
R671		CARBON FILM RESISTOR	RD1/6PM103J
R688		CARBON FILM RESISTOR	RD1/6PM822J
R698		METALFILM RESISTOR	RN1/6PQ2202F
R699		METALFILM RESISTOR	RN1/6PQ1002F
R700		METALFILM RESISTOR	RN1/6PQ2202F
R701		METALFILM RESISTOR	RN1/6PQ1002F
R704-711		CARBON FILM RESISTOR	RD1/6PM181J
R716		CARBON FILM RESISTOR	RD1/6PM103J
R719		CARBON FILM RESISTOR	RD1/6PM104J
R720		CARBON FILM RESISTOR	RD1/6PM102J
R721		CARBON FILM RESISTOR	RD1/6PM103J
R722		CARBON FILM RESISTOR	RD1/6PM181J
R728		CARBON FILM RESISTOR	RD1/6PM472J
R743		CARBON FILM RESISTOR	RD1/6PM221J
R747		CARBON FILM RESISTOR	RD1/6PM222J
R759		CARBON FILM RESISTOR	RD1/6PM824J
R779, 796		CARBON FILM RESISTOR	RD1/6PM103J
R832		CARBON FILM RESISTOR	RD1/6PM124J
R841		CARBON FILM RESISTOR	RD1/6PM563J
R842		CARBON FILM RESISTOR	RD1/6PM222J
R850		METAL OXIDE RESISTOR	RS1LMF3R3J
R862		METAL OXIDE RESISTOR	RS1LMF3R3J
R873		CARBON FILM RESISTOR	RD1/6PM100J
R910-912		CARBON FILM RESISTOR	RD1/6PM563J
R913		CARBON FILM RESISTOR	RD1/6PM101J
R916		CARBON FILM RESISTOR	RD1/6PM100J
R917		CARBON FILM RESISTOR	RD1/6PM123J
R923		CARBON FILM RESISTOR	RD1/6PM103J
R934		CARBON FILM RESISTOR	RD1/6PM681J
R948		CARBON FILM RESISTOR	RD1/6PM104J
R962		CARBON FILM RESISTOR	RD1/6PM102J
OTHER RESISTORS			RD1/10S□□□□

**OTHERS**

JA1	2P PINJACK (VIDEO OUT)	VKB1045
JA2	2P MINI JACK (CONTROL IN)	VKN-183
JA3	4P MINI DIN SOCKET (S VIDEO OUT1)	VKN1072
JA4	MINI JACK(CD DECK SYNCHRO)	RKN1014
JA5	4P MINI DIN SOCKET (S VIDEO OUT2)	VKN1072
CN103	22P TOP	VKN1137
X101	CERAMIC RESONATOR(9.00MHz)	VSS1040
X601	CRYSTAL RESONATOR (14.318MHz)	VSS1044
X602	CRYSTAL RESONATOR (18.12587MHz)	VSS1043



**Mark No. Description Part No.**

**FLKY ASSEMBLY**

**SEMICONDUCTORS**

IC101 MODE CONTROL MCU PDB057A  
 IC102 RESET IC PST529D  
 Q101 TRANSISTOR DTA144ES  
 Q102 TRANSISTOR DTC114ES  
 Q103-109 TRANSISTOR DTC124ES

D1 LED INDICATOR(GREEN) VEL1020  
 D102 DIODE 1SS254  
 D103-106 DIODE 1SS252  
 D109, 110 DIODE 1SS254  
 D2 LED INDICATOR(GREEN) VEL1020

D3, 4 LED INDICATOR(YELLOW) VEL1003  
 D5 LED INDICATOR(GREEN) VEL1020  
 D6, 7 LED INDICATOR(YELLOW) VEL1003

**SWITCHES**

S101 DOOR SWITCH(DOOR) VSK1015  
 S102-113 TACT SWITCH RSG1030  
 (SOFT PICTURE, SKIP(◀◀, ▶▶),  
 (DIGITAL MEMORY RANDOM PLAY, FILM MODE,  
 OPEN/CLOSE(▲), STOP(■), PLAY/STILL  
 (▶/▶◀), DIRECT CD, DISC SIDE(A, B))

S114 ROTARY ENCODER VSD1006  
 (JOG & SHUTTLE)

**CAPACITORS**

C101 ELECTR. CAPACITOR CEAL100M16  
 C103, 104 CERAMIC CAPACITOR CKPUYF223Z25  
 C105 ELECTR. CAPACITOR CEAL101M6R3  
 C106 CERAMIC CAPACITOR CKPUYB102K50

**RESISTORS**

R2 RESISTOR ARRAY(100K) RA7S104J  
 OTHER RESISTORS RD1/6PM□□□□

**OTHERS**

FL SPACER VEB1140  
 CUSHION(A) VEC1551  
 CUSHION(B) VEC1552  
 V101 FL TUBE VAW1015  
 X101 CERAMIC RESONATOR(5.50MHz) VSS1055

**IRPS ASSEMBLY**

**SIMICONDUCTORS**

Q201, 202 TRANSISTOR DTC124ES  
 D201 LED INDICATOR(RED) VEL1018  
 D202 LED INDICATOR(YELLOW) VEL1003

**SWITCHES**

S201-203 TACT SWITCH RSG1030  
 (POWER STANDBY/ON,  
 (FL DISPLAY OFF, SINGLE))

**CAPACITOR**

C201 ELECTROLYTIC CAPACITOR CEAS221M6R3

**RESISTORS**

R201, 202 CARBON FILM RESISTOR RD1/6PM151J

**OTHERS**

REMOTO CONTROL SENSOR UNIT GPIU58X

**Mark No. Description Part No.**

**HEPB ASSEMBLY**

**RESISTOR**

VR303 DOUBLE ROTARY VOLUME VCS1015  
 (LEVEL)

**OTHERS**

JA301 HEADPHONE JACK RKN1002

**◎ AUDIO ASSEMBLY (VWV1251)**

**SEMICONDUCTORS**

IC201 EFM DEMODULATION IC CXD2500HQ  
 IC202 8FS DIGITAL FILTER, IC SM5840AP  
 IC203 LOGIC IC TC74HC00-4AP  
 IC204 IC BA15218N  
 IC205 REGULATOR IC NJM78L09A

IC206 REGULATOR IC NJM79L09A  
 IC209, 210 DA CONVERTER IC SAA7350  
 IC211, 213 OP-AMP, IC M5218AL  
 IC215 OP-AMP, IC M5218AL  
 IC351 AUDIO IC PA0034A

Q201 CHIP TRANSISTOR 2SC2412K  
 Q202 DIGITAL TRANSISTOR DTA124EK  
 Q204 TRANSISTOR 2SB1237K  
 Q205 CHIP TRANSISTOR 2SA1037K  
 Q206 DIGITAL TRANSISTOR DTC124EK

Q207 DIGITAL TRANSISTOR DTA124EK  
 Q208 CHIP TRANSISTOR 2SC2412K  
 Q209 TRANSISTOR 2SA1435  
 Q210 DIGITAL TRANSISTOR DTA124EK

Q211 CHIP TRANSISTOR 2SC2412K  
 Q212 TRANSISTOR 2SA1435  
 Q213 DIGITAL TRANSISTOR DTA124EK  
 Q214 DIGITAL TRANSISTOR DTC124EK  
 Q216 DIGITAL TRANSISTOR DTA124EK

Q224 TRANSISTOR 2SB1237K  
 Q225 CHIP TRANSISTOR 2SA1037K  
 Q226 DIGITAL TRANSISTOR DTC124EK  
 Q230, 231 CHIP TRANSISTOR 2SC2412K  
 Q351 TRANSISTOR 2SC2786

Q352 TRANSISTOR 2SC1740S  
 D201 VARI-CAP FC54M  
 D202 SCHOTTKY DIODE ERA83-006

**COILS**

L243, 300 AXIAL INDUCTOR LAU220J  
 L301 AXIAL INDUCTOR LAU181J  
 L302 AXIAL INDUCTOR LAU180J  
 L352 AXIAL INDUCTOR LAU181J  
 L353 AXIAL INDUCTOR LAU220J

**CAPACITORS**

C201 CERAMIC CAPACITOR CKSQYF473Z25  
 C202 CERAMIC CAPACITOR CKSQYB152K50  
 C204 CERAMIC CAPACITOR CKSQYF104Z25  
 C205 ELECTROLYTIC CAPACITOR CEANPR47M50  
 C206 CHIP CAPACITOR CKSQYF103Z50

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
C208		ELECTR. CAPACITOR	CEAS470M10	C320		AUDIO FILM CAPACITOR	CFTXA471J50
C209		CERAMIC CAPACITOR	CKSQYF104Z25	C321		AXIAL CERAMIC C	CCPUSL390J50
C210		CERAMIC CAPACITOR	CKSQYF473Z25	C322		AUDIO FILM CAPACITOR	CFTXA471J50
C211		ELECTR. CAPACITOR	CEAS470M10	C323, 325		ELECTR. CAPACITOR	CEAS470M10
C212		CERAMIC CAPACITOR	CKSQYF104Z25	C326		CERAMIC CAPACITOR	CKSQYF473Z25
C213		CHIP CAPACITOR	CKSQYF103Z50	C329		AUDIO FILM CAPACITOR	CFTXA222J50
C214		ELECTR. CAPACITOR	CEAS470M10	C330		CERAMIC CAPACITOR	CCCSL391J50
C215		CERAMIC CAPACITOR	CKSQYF104Z25	C331, 333		ELECTR. CAPACITOR	CEAS470M10
C216		ELECTR. CAPACITOR	CEAS470M10	C335		ELECTR. CAPACITOR	CEAS470M25
C217		CERAMIC CAPACITOR	CKSQYF104Z25	C340		CHIP CAPACITOR	CCSQCH270J50
C218		CHIP CAPACITOR	CKSQYF103Z50	C341, 342		ELECTR. CAPACITOR	CEAS470M10
C225		ELECTR. CAPACITOR	CEANP010M50	C352		CHIP CERAMIC C.	CCSQCH221J50
C226		AUDIO FILM CAPACITOR	CFTXA223J50	C353		CHIP CERAMIC C.	CCSQCH150J50
C227		ELECTR. CAPACITOR	CEAS100M50	C354		CHIP CAPACITOR	CKSQYF103Z50
C228, 229		CERAMIC CAPACITOR	CKSQYF104Z25	C355		ELECTR. CAPACITOR	CEAS100M50
C230		ELECTR. CAPACITOR	CEAS470M10	C357, 358		CHIP CAPACITOR	CCSQCH820J50
C231		CHIP CAPACITOR	CKSQYF103Z50	C359		CHIP CAPACITOR	CKSQYF103Z50
C232		CHIP CERAMIC C.	CCSQCH220J50	C360, 361		ELECTR. CAPACITOR	CEAS101M10
C233		ELECTR. CAPACITOR	CEAS470M10	C362		CHIP CAPACITOR	CCSQL331J50
C234		CHIP CAPACITOR	CKSQYF103Z50	C363		CHIP CAPACITOR	CKSQYB682K50
C235		CERAMIC CAPACITOR	CKSQYF104Z25	C364		ELECTR. CAPACITOR	CEAS220M25
C236		CHIP CAPACITOR	CCSQCH180J50	C365, 366		CERAMIC CAPACITOR	CKSQYB472K50
C239		ELECTR. CAPACITOR	CEAS470M10	C367		AUDIO FILM CAPACITOR	CFTXA393J50
C241, 242		ELECTR. CAPACITOR	CEAS470M10	C368		ELECTR. CAPACITOR	CEANP220M10
C244-248		ELECTR. CAPACITOR	CEAS470M10	C369		ELECTR. CAPACITOR	CEAS470M10
C249, 250		CHIP CAPACITOR	CCSQCH101J50	C370		ELECTR. CAPACITOR	CEAS100M50
C251		ELECTR. CAPACITOR	CEAS470M10	C371		CHIP CAPACITOR	CCSQCH680J50
C253		AXIAL CERAMIC C	CCPUSL390J50	C372		ELECTR. CAPACITOR	CEANP010M50
C254		AUDIO FILM CAPACITOR	CFTXA471J50	C373		AUDIO FILM CAPACITOR	CFTXA104J50
C255		AXIAL CERAMIC C	CCPUSL390J50	C374		CERAMIC CAPACITOR	CCSQCH560J50
C256		AUDIO FILM CAPACITOR	CFTXA471J50	C376		ELECTR. CAPACITOR	CEAS470M10
C257, 259		ELECTR. CAPACITOR	CEAS470M10	C377		CHIP CAPACITOR	CKSQYF103Z50
C261, 263		ELECTR. CAPACITOR	CEAS470M10	C378, 379		ELECTR. CAPACITOR	CEAS101M10
C265, 267		ELECTR. CAPACITOR	CEAS470M10	C380		CHIP CERAMIC C.	CCSQCH271J50
C269		AXIAL CERAMIC C	CCPUSL390J50	C381		CERAMIC CAPACITOR	CCSQCH560J50
C270		AUDIO FILM CAPACITOR	CFTXA471J50	C382		CHIP CAPACITOR	CKSQYB682K50
C271		AXIAL CERAMIC C	CCPUSL390J50	C383		ELECTR. CAPACITOR	CEAS220M25
C272		AUDIO FILM CAPACITOR	CFTXA471J50	C384, 385		CERAMIC CAPACITOR	CKSQYB472K50
C273, 275		ELECTR. CAPACITOR	CEAS470M10	C386		ELECTR. CAPACITOR	CEANP220M10
C276		CERAMIC CAPACITOR	CKSQYF473Z25	C387		AUDIO FILM CAPACITOR	CFTXA393J50
C279		AUDIO FILM CAPACITOR	CFTXA222J50	C388		ELECTR. CAPACITOR	CEASR47M50
C280		CERAMIC CAPACITOR	CCCSL391J50	C389		CHIP CAPACITOR	CKSQYF103Z50
C281, 283		ELECTR. CAPACITOR	CEAS470M10	C390		ELECTR. CAPACITOR	CEAS220M25
C285		ELECTR. CAPACITOR	CEAS470M25	C391		CHIP CAPACITOR	CKSQYB102K50
C293-296		CERAMIC CAPACITOR	CCCSL221J50	C392		CERAMIC CAPACITOR	CKSQYF473Z25
C299		ELECTR. CAPACITOR	CEANP3R3M50	C393		CHIP CAPACITOR	CCSQCH151J50
C301		ELECTR. CAPACITOR	CEAS470M10	C395		CHIP CAPACITOR	CKSQYF103Z50
C303		AXIAL CERAMIC C	CCPUSL390J50	C396		CERAMIC CAPACITOR	CCSQCH560J50
C304		AUDIO FILM CAPACITOR	CFTXA471J50	C397		CHIP CAPACITOR	CCSQCH390J50
C305		AXIAL CERAMIC C	CCPUSL390J50	C398		CHIP CAPACITOR	CCSQCH680J50
C306		AUDIO FILM CAPACITOR	CFTXA471J50	C399		CHIP CAPACITOR	CCSQCH121J50
C307, 309		ELECTR. CAPACITOR	CEAS470M10				
C311, 313		ELECTR. CAPACITOR	CEAS470M10				
C315, 317		ELECTR. CAPACITOR	CEAS470M10				
C319		AXIAL CERAMIC C	CCPUSL390J50				

**RESISTORS**

R251, 252	CARBON FILM RESISTOR	RD1/6PM303J
R254, 255	CARBON FILM RESISTOR	RD1/6PM303J
R256-259	CARBON FILM RESISTOR	RD1/6PM103J
R260, 261	CARBON FILM RESISTOR	RD1/6PM153J
R262	CARBON FILM RESISTOR	RD1/6PM512J

Mark	No.	Description	Part No.
	R263	CARBON FILM RESISTOR	RD1/6PM202J
	R264	CARBON FILM RESISTOR	RD1/6PM472J
	R265	CARBON FILM RESISTOR	RD1/6PM223J
	R266	CARBON FILM RESISTOR	RD1/6PM101J
	R267, 268	CARBON FILM RESISTOR	RD1/6PM471J
	R271, 272	CARBON FILM RESISTOR	RD1/6PM303J
	R274, 275	CARBON FILM RESISTOR	RD1/6PM303J
	R276-279	CARBON FILM RESISTOR	RD1/6PM103J
	R280, 281	CARBON FILM RESISTOR	RD1/6PM153J
	R282	CARBON FILM RESISTOR	RD1/6PM512J
	R283	CARBON FILM RESISTOR	RD1/6PM202J
	R284	CARBON FILM RESISTOR	RD1/6PM472J
	R285	CARBON FILM RESISTOR	RD1/6PM223J
	R286	CARBON FILM RESISTOR	RD1/6PM101J
	R287, 288	CARBON FILM RESISTOR	RD1/6PM471J
	R291	CARBON FILM RESISTOR	RD1/6PM103J
	R303	METAL OXIDE RESISTOR	RS2LMF560J
	R304	CARBON FILM RESISTOR	RD1/6PM221J
	R307	METAL OXIDE RESISTOR	RS2LMF560J
	R310-317	CARBON FILM RESISTOR	RD1/6PM103J
	R340	CARBON FILM RESISTOR	RD1/6PM220J
	R344	CARBON FILM RESISTOR	RD1/6PM220J
	R345, 346	CARBON FILM RESISTOR	RD1/6PM390J
	R357	CARBON FILM RESISTOR	RD1/6PM680J
	R390, 391	CARBON FILM RESISTOR	RD1/6PM220J
	OTHER RESISTORS		RS1/10S□□□J

**OTHERS**

CN301	5P TOP POST (NH)	B5P-SHF-1AA
JA101	4P PIN JACK	VKB1044
JA102	OPTICAL OUTPUT JACK	TOTX178
X201	CRYSTAL RESONATOR (16MHz)	VSS1051

**CNNB ASSEMBLY****SWITCH**

S201	LEVER SWITCH	VSK1017
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**RESISTORS**

R101	CARBON FILM RESISTOR	RD1/6PM272J
R102	CARBON FILM RESISTOR	RD1/6PM221J

**OTHERS**

CN203	22P SIDE CONNECTOR	VKN1138
CN204	25P SIDE CONNECTOR	VKN1139

**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
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## 7. ADJUSTMENTS

### 7.1 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 ( $47k\Omega$ ,  $10k\Omega \times 2$ ,  $75\Omega$ )
- Low-pass filter ( $47k\Omega + 1\mu F$ )

### 7.2 TEST MODE

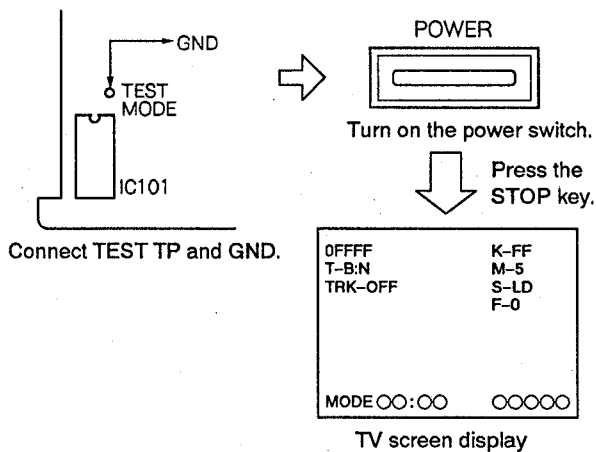
The player has a test mode function which allows the servicer to check the player's status on the TV screen by executing the respective key operation.

Also, since the TRKG servo opens and closes easily, the test mode is especially useful for mechanical adjustments.

#### 7.2.1 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.



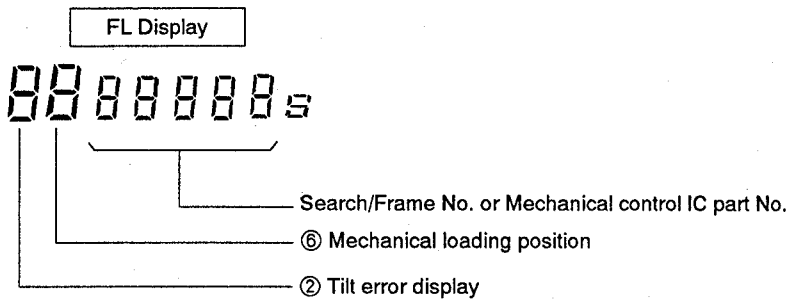
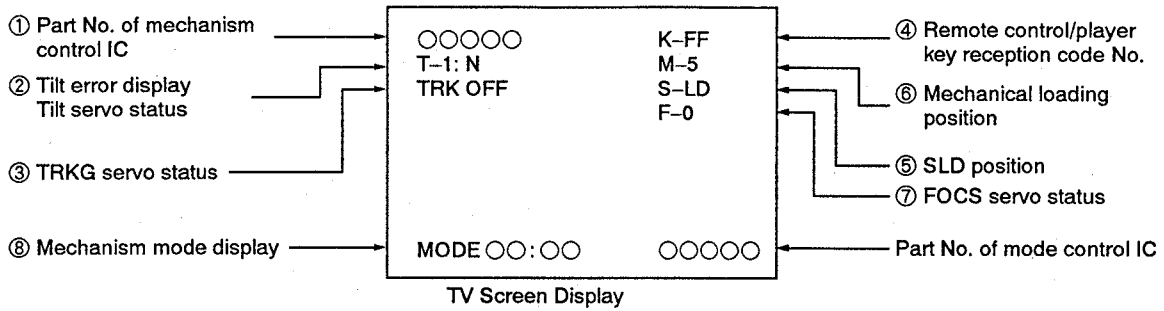
*Note: When using the remote control unit (GGF1067) for the test mode.*

- Press the **TEST** key after pressing the **ESC** key.

#### 7.2.2 TEST MODE CANCELLATION

Turn off the power switch.

### 7.2.3 TV SCREEN AND FL DISPLAYS IN THE TEST MODE



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

Example: PD0081A1 → 0081A  
PD0081B1 → 0081B

④ Remote Control/Player Key Reception Code No.

TV screen display  
K-00  
See table 1

② Tilt Servo Status / Tilt Error Display

T-0:00  
 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-0000  
 ON...TRKG servo close  
 OFF...TRKG servo open

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 (CT MAX)  
TRKG open : VR605 (TE MAX)  
1 ... VR606 is activated when opening the TRKG servo loop.

**7.2.4 KEY OPERATION IN THE TEST MODE**

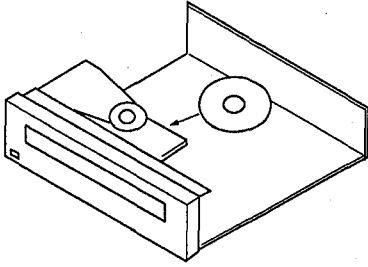
Function	Player Status	Key Operation	Remarks
Open Tray	STOP mode	▲	
Close Tray	Tray open	▲	
Stop	PLAY mode	■	
Play	Disc placement and tray closed.	▶	<ul style="list-style-type: none"> <li>Start play with the TRKG servo open.</li> <li>Raise up with tilt neutral.</li> <li>The disc type (LD/CD/CDV) is determined when playback starts at the SLDR position during start play.</li> </ul>
TRKG Servo Open/Close	PLAY mode	▶	<ul style="list-style-type: none"> <li>Each time the PLAY button (▶) is pressed, the TRKG servo will open or close alternately.</li> </ul>
Still	PLAY mode TRKG servo closed.	(Remote control unit key)	<ul style="list-style-type: none"> <li>Each time the STILL button (  ) is pressed, the player will switch between the PLAY and STILL modes alternately.</li> </ul>
SLDR REV SCAN	PLAY mode	◀◀ (SHUTTLE RING REV)	<ul style="list-style-type: none"> <li>Press and hold down the key. To use the shuttle ring, turn it clockwise.</li> <li>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.</li> </ul>
SLDR FWD SCAN	PLAY mode	▶▶ (SHUTTLE RING REV)	<ul style="list-style-type: none"> <li>Press and hold down the key. To use the shuttle ring, turn it clockwise.</li> <li>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.</li> </ul>
TILT Neutral	POWER switch ON	EDIT	
TILT Servo ON	PLAY mode	RANDOM PLAY	
TILT Minus TILT Servo OFF	PLAY mode	◀◀	<ul style="list-style-type: none"> <li>Press and hold down the keys.</li> </ul>
TILT Plus TILT Servo OFF	PLAY mode	▶▶	<ul style="list-style-type: none"> <li>Press and hold down the keys.</li> </ul>
Screen Display ON/OFF	POWER switch ON	PGM key	
Frame search	PLAY mode	+10 key ↓ 0-9 key ↓ ▶	<ul style="list-style-type: none"> <li>In the PLAY mode, press the +10 key. (The player will standby for the frame No. entry.)</li> <li>Use the numeric keys(0—9) to enter the frame No.. Then press the player's PLAY key to search.</li> <li>After the search is completed, the player will return to the previous mode before the search was performed.</li> </ul>
Loading Motor Rotation Clockwise Counterclockwise	Tray open	▶▶  ◀◀	<ul style="list-style-type: none"> <li>FWD : Unloading</li> <li>REV : Loading</li> </ul>
FOCS Offset for checking VR606	PLAY mode TRKG servo open	Remote control unit key •MULTI- SPEED FWD → F-1 REV → F-0 Player key •INTRO SCAN (toggle)	<p>VR606 and VR605 : For check</p> <p>F - 0 : Normal state ••••• TRKG close : VR606 (CT MAX) TRKG open : VR605 (TE MAX)</p> <p>F - 1 : VR606 is effectived when opening the TRKG.</p>

**7.2.5 PLAYER OPERATION IN THE TEST MODE**

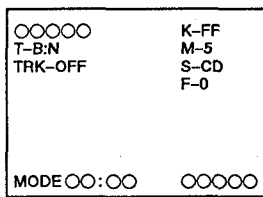
Operate the player by selecting a test mode function with the keys on the player or on the remote control unit.

● **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.

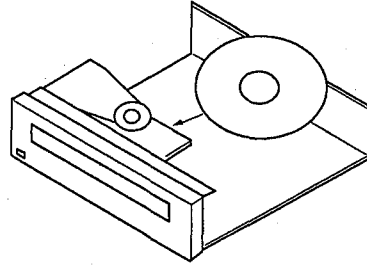


TV screen display

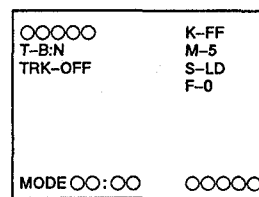
- ③ Clamp the disc by pressing the PLAY () key once.  
Then, press the PLAY () key twice, disc will be normal playbacked.

● **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.



### 7.3 PREPARATIONS FOR ADJUSTMENT AND PRECAUTIONS

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

##### -Carriage assembly in forward state-

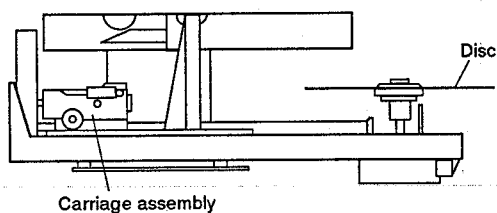
1. Tilt offset adjustment
2. Tilt servo gain adjustment
3. Coarse grating adjustment, tracking balance adjustment
4. Slider shaft horizontal adjustment
5. Pickup inclination adjustment
6. TRKG error MAX. / RF level MAX. adjustment
7. Tilt sensor inclination/tilt balance adjustment
8. Spindle motor centering 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-

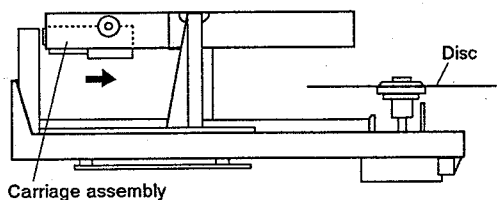
15. Coarse centering adjustment for side B play
16. Pickup tangential direction angle adjustment for side B play
17. Fine centering adjustment for side B play

*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

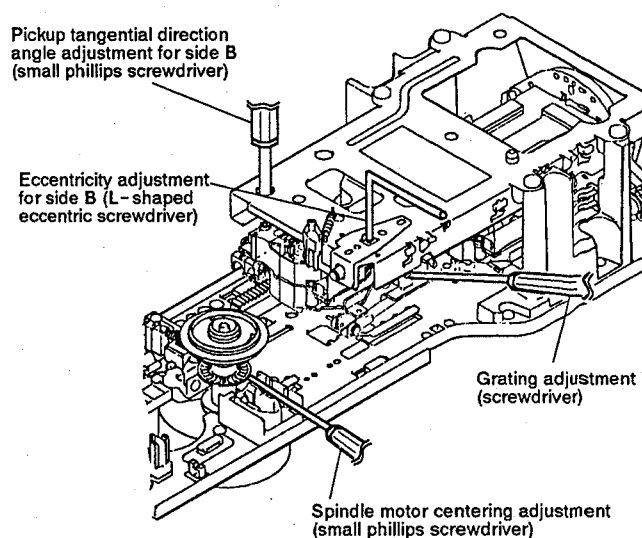


#### 2) Side B play

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

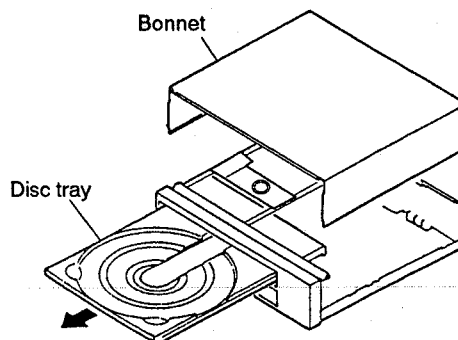
#### 3) Where to insert the screwdriver when adjusting the pickup assembly

##### -Carriage assembly in forward state-



#### 4) Setting the player

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



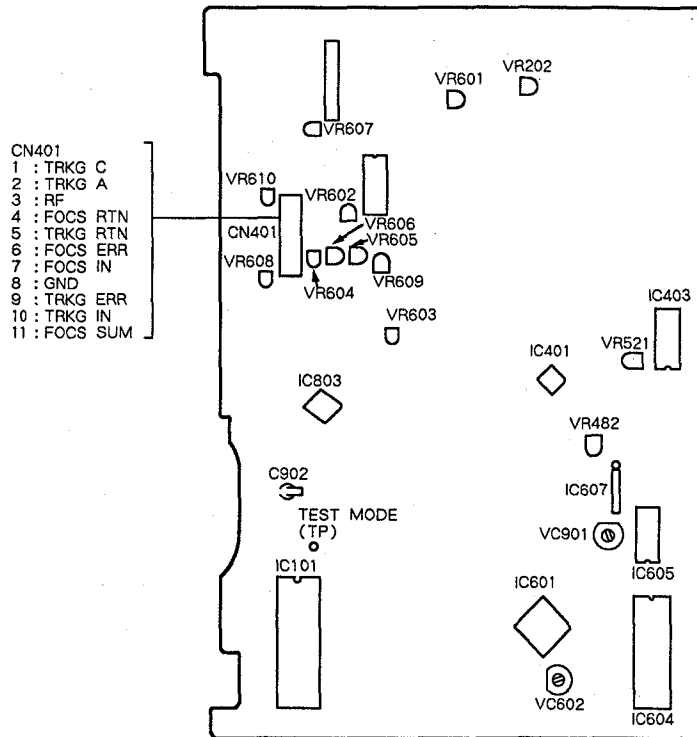
#### 5) Installing the disc

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.

7.4 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	<ul style="list-style-type: none"> <li>• Stop mode (power on)</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust VR610 so that the DC voltage becomes <math>0 \pm 0.2V</math>.</li> </ul>
2	Tilt Servo Gain Adjustment	VR608	None	<ul style="list-style-type: none"> <li>• Power OFF</li> </ul>	<ul style="list-style-type: none"> <li>• Making of Tilt gain VR position Red : Turn to right Clear : Center Blue : Turn to left</li> </ul>
3	Coarse Grating and Tracking Balance Adjustment	Grating / VR602	CN401-9 (TRKG ERR)	<ul style="list-style-type: none"> <li>• Test mode #6,500 still TRKG servo open</li> <li>• Tilt servo NEUTRAL</li> </ul>	<ul style="list-style-type: none"> <li>• Null point → TRK error MAX</li> <li>• Adjust VR602 so that the TRK error waveform amplitude's positive and negative level become equal.</li> </ul>
4	Slider Shaft Horizontal Adjustment	SKIP key	CN401-4 (FOCS RTN)	<ul style="list-style-type: none"> <li>• Test mode #9,800 , #22,000-25,000 still TRKG servo open</li> <li>• TILT servo OFF</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust the SKIP key so that the FOCS RTN voltage between #9,800 and #22,000-#25,000 becomes equal.</li> </ul>
5	Pickup Inclination Adjustment	Pickup assembly TAN / TRK inclination adjustment screw	CN401-3 (RF)	<ul style="list-style-type: none"> <li>• Test mode , #2,701 still TRKG servo loop close</li> <li>• TILT servo OFF</li> </ul>	<ul style="list-style-type: none"> <li>• RF waveform's amplitude MAX (Pickup TAN / TRK adjustment screw)</li> <li>• Minimized crosstalk.</li> </ul>
6	TRKG Error MAX / RF level MAX Adjustment	VR605 (TE MAX) VR606 (CT MAX)	CN401-9 (TRKG ERR) CN401-3 (RF)	<ul style="list-style-type: none"> <li>• Test mode #2,701 / #115 still TRKG servo close /open</li> <li>• TILT servo OFF</li> </ul>	<ul style="list-style-type: none"> <li>• TRK error MAX (VR605) RF level MAX (VR606)</li> <li>• Check crosstalk</li> </ul>
7	Tilt Sensor Inclination/ Tilt Balance Adjustment	Tilt senser inclination adjustment screw VR607(TILT BAL.)	Video output terminal (TV monitor (Test mode screen))	<ul style="list-style-type: none"> <li>• Test mode #18,200 / #115 still TRKG servo loop close</li> <li>• TILT servo OFF</li> </ul>	<ul style="list-style-type: none"> <li>• Set VR607 to the center.</li> <li>• Adjust the adjustment screw so that the tilt error display code is 8, 7, or 8.</li> <li>• Adjust VR607 so that the tilt error display becomes 7.</li> </ul>
8	Spindle Motor Centering Check	None	CH1:CN401-9(TRKG ERR) CH2:CN401-1, 2(TRKG A+C) (X-Y mode)	<ul style="list-style-type: none"> <li>• Test mode #22,000-25,000 and #100 TRKG servo open</li> <li>• TILT servo ON</li> </ul>	<ul style="list-style-type: none"> <li>• Check that the amplitude of the lissajous figure of the frame #100 is the same as that of the frame #22,000-25,000.</li> </ul>
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)	<ul style="list-style-type: none"> <li>• Test mode #22,000-25,000 and #100 TRKG servo open / close</li> <li>• TILT servo ON</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust the centering adjustment screw so that the lissajous figures of #100 and #22,000-25,000 are the same.</li> </ul>
10	Fine Grating Adjustment	Grating	CH1:CN401-9(TRKG ERR) CH2:CN401-1, 2(TRK A+C) (X-Y mode)	<ul style="list-style-type: none"> <li>• Test mode #6,500 still TRKG servo open</li> <li>• TILT servo ON</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize the Y direction of the lissajous figure.</li> <li>• Check TRKG balance.</li> </ul>
11	FOCS SUM Level Adjustment	VR609	CN401-11 (FOCS SUM)	<ul style="list-style-type: none"> <li>• Test mode #15,000 still TRKG servo close</li> <li>• Tilt servo NEUTRAL</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust VR609 so that the voltage becomes 1.8V DC.</li> </ul>
12	FOCS Servo Loop Gain Adjustment	VR604	CH1:CN401-8 (FOCS ERR) CH2:CN401-7 (FOCS IN) (X-Y mode)	<ul style="list-style-type: none"> <li>• Test mode #15,000 still TRKG servo close</li> <li>• TILT servo NEUTRAL</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust VR604 so that the lissajous figure is symmetrical with respect to the X and Y axes.</li> </ul>
13	TRKG Servo Loop Gain Adjustment	VR603	CH1:CN401-9 (TRKG ERR) CH2:CN401-10 (TRKG IN) (X-Y mode)	<ul style="list-style-type: none"> <li>• Test mode #15,000 still TRKG servo close</li> <li>• TILT servo NEUTRAL</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust VR603 so that the lissajous figure is symmetrical with respect to the X and Y axes.</li> </ul>
14	RF Gain Adjustment	VR601	CH1:CN401-3 (RF)	<ul style="list-style-type: none"> <li>• Test mode #15,000 still TRKG servo close</li> <li>• TILT servo NEUTRAL</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust VR601 so that the RF level becomes <math>300mV \pm 50mV</math>.</li> </ul>
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)	<ul style="list-style-type: none"> <li>• Test mode #100 still TRKG servo open / close</li> <li>• TILT servo ON</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust that the X-axis amplitude of the lissajous figure becomes maximum.</li> </ul>
16	Pickup Tangential Direction Angle Adjustment for Side B Play	Pickup tangential direction angle adjustment screw.	Video output terminal (TV monitor)	<ul style="list-style-type: none"> <li>• Test mode #115 still TRKG servo close</li> <li>• TILT servo ON</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust that the crosstalk is minimized.</li> </ul>
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)	<ul style="list-style-type: none"> <li>• Test mode #100 still TRKG servo open</li> <li>• TILT servo ON</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust that the X-axis amplitude of the lissajous figure becomes maximum.</li> </ul>
18	Reference Frequency Adjustment	VC602 VC901	IC605 - pin 10 IC607 - pin 8	<ul style="list-style-type: none"> <li>• Stop mode (Power ON)</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust VC602 so that the frequency becomes 18.12587MHz.</li> <li>• Adjust VC901 so that the DC voltage becomes <math>0.2 \pm 0.3V</math>.</li> </ul>
19	Input Video Level Adjustment for Y/C SEP Circuit	VR482	IC403 - pin 15	<ul style="list-style-type: none"> <li>• Normal mode</li> <li>• #19,900 still</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust VR482 so that the voltage between the sync tip and the white peak becomes <math>2.1Vp-p \pm 5\%</math>.</li> </ul>
20	Output Video Level Adjustment	VR202	VIDEO OUT terminal (Terminating with $75 \Omega$ )	<ul style="list-style-type: none"> <li>• Normal mode</li> <li>• #19,900 still</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust VR202 so that the voltage between the sync tip and the white peak becomes <math>1.0Vp-p \pm 5\%</math>.</li> </ul>
21	Color Tint Error Signal Level Adjustment	VR521	Video output terminal (TV monitor)	<ul style="list-style-type: none"> <li>• Normal mode</li> <li>• #8,000 still</li> </ul>	<ul style="list-style-type: none"> <li>• Color irregularity on the magenta screen is minimized.</li> </ul>

### 7.5 ADJUSTMENT POINTS OF THE MAIN BOARD ASSEMBLY



Adjustment Locations

**7.6 MECHANICAL ADJUSTMENTS**

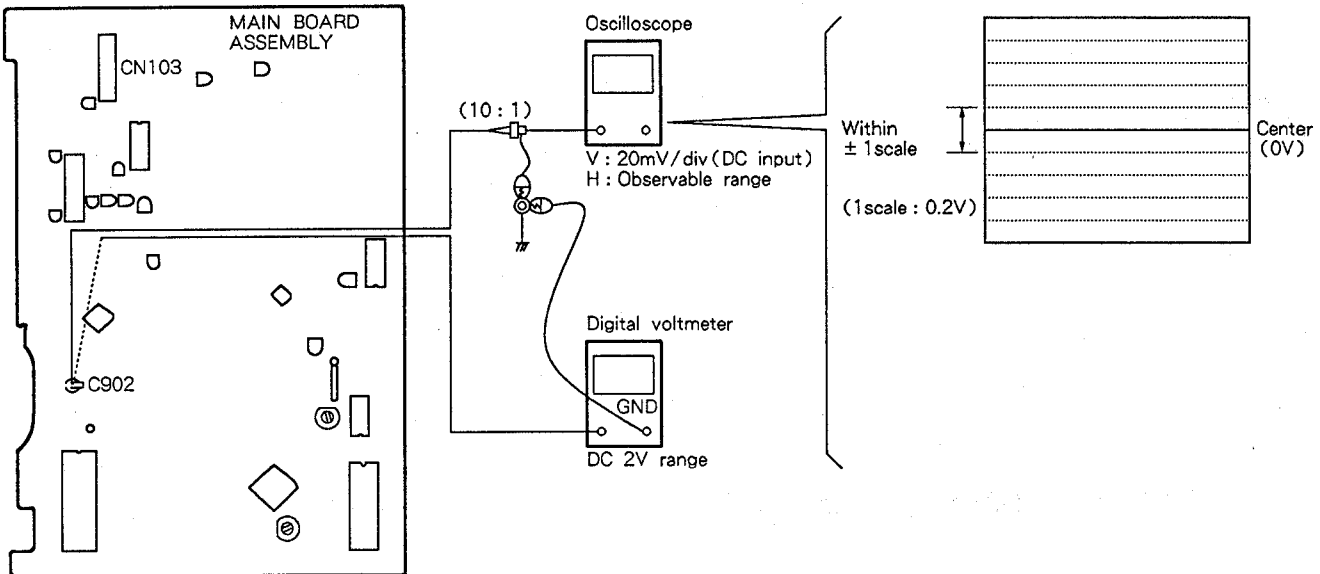
**1. TILT OFFSET ADJUSTMENT**

Mechanical 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.

- |                                                                                                                                                      |                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Measuring instruments and jigs:</li> <li>• Measuring point:</li> <li>• Test disc and player mode</li> </ul> | <ul style="list-style-type: none"> <li>• Oscilloscope</li> <li>• (Digital voltmeter)</li> </ul>                    |
| <ul style="list-style-type: none"> <li>• Positions to be adjusted</li> </ul>                                                                         | <ul style="list-style-type: none"> <li>• - (minus) lead wire of C902</li> <li>• Normal mode (STOP mode)</li> </ul> |
|                                                                                                                                                      | <ul style="list-style-type: none"> <li>• VR610 (TILT OFFSET)</li> </ul>                                            |

**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  $\pm$  one scale ( $\pm 0.2V$ ) 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  $0 \pm 0.2V$ .
4. Connect the flexible cable to CN103. (Perform this step by turning off the power.)

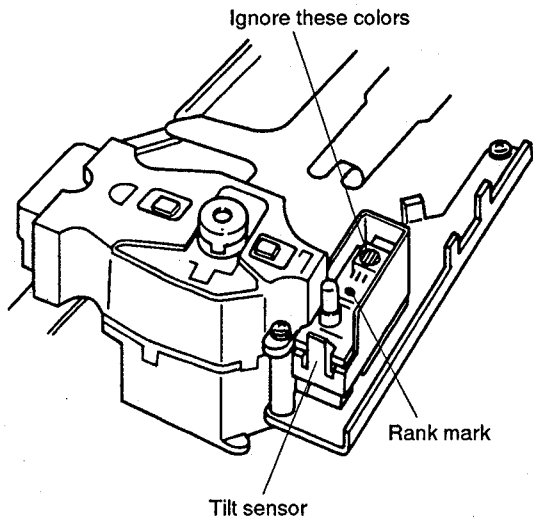
**2. TILT SERVO GAIN ADJUSTMENT**

**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.

- |                                                                                                                                                                                          |                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Measuring instruments and jigs:</li> <li>• Measuring point:</li> <li>• Test disc and player mode</li> <li>• Positions to be adjusted</li> </ul> | <ul style="list-style-type: none"> <li>• Small screwdriver</li> <li>• Power OFF</li> <li>• VR608</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|

**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:

● Measuring point:  
● Test disc and player mode

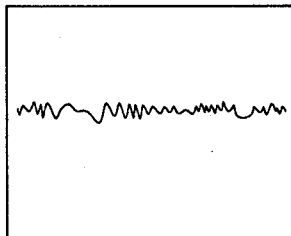
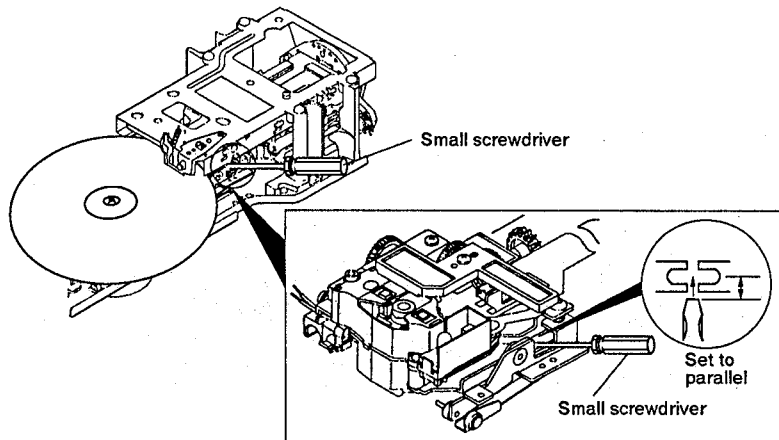
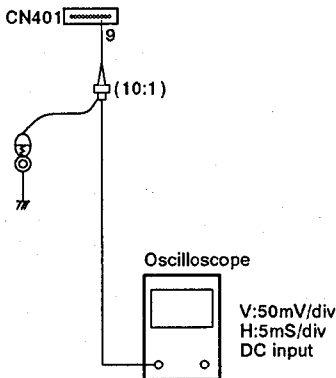
● Positions to be adjusted

● Small screwdriver ● Oscilloscope

● CN401 -9 (TRKG ERR)  
● 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.

● Grating ● VR602 (TRKG BAL)

Connection diagram



Not null point

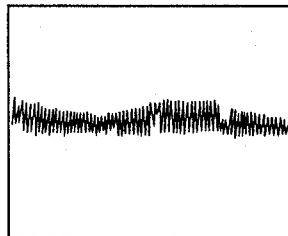


Fig. 2 Null point

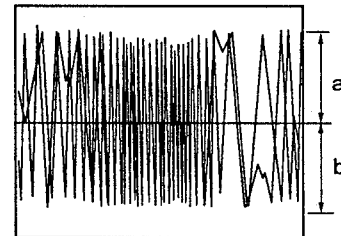


Fig. 3 Maximize the TRKG error a=b

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 null point 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.

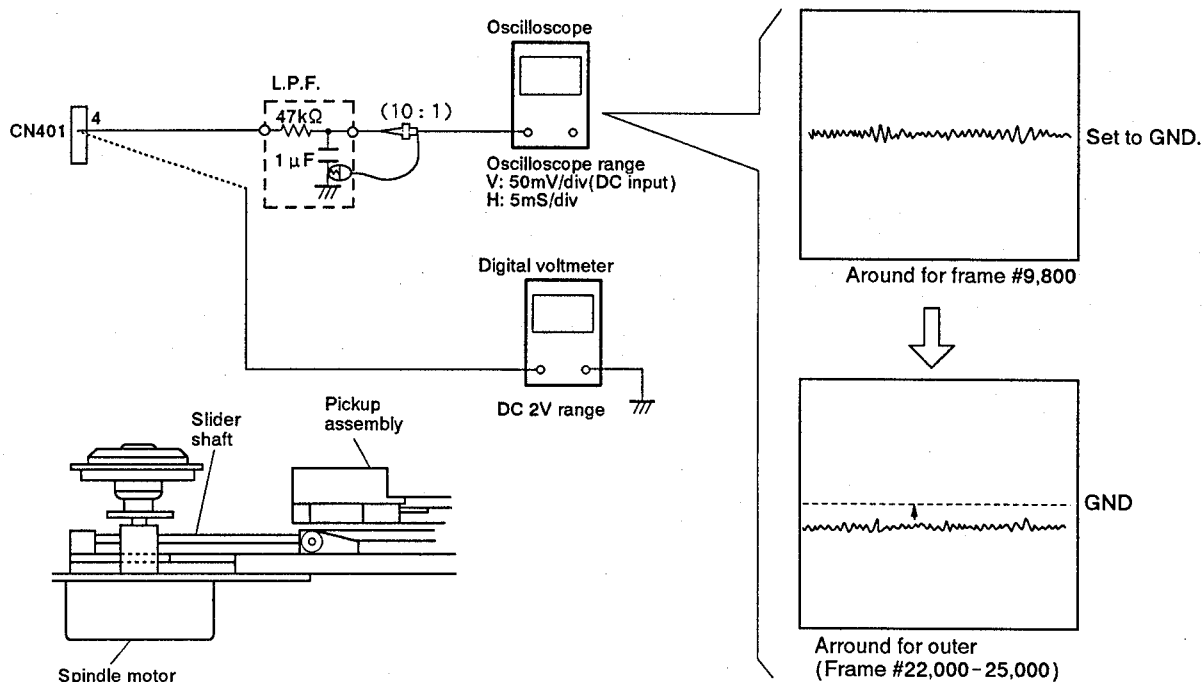
## 4. SLDR SHAFT HORIZONTAL ADJUSTMENT

## Mechanical 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.

- |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>● Measuring instruments and jigs:</li> <li>● Measuring point:</li> <li>● Test disc and player mode</li> <li>● Positions to be adjusted</li> </ul> | <ul style="list-style-type: none"> <li>● Oscilloscope ● Low-pass filter (<math>47k\Omega + 1\mu F</math>) ● (Digital voltmeter)</li> <li>● CN401 - 4 (FOCS RTN) and GND.</li> <li>● 8 - inch LD test disc GGV1003</li> <li>● Test Mode (#9,800 / #22,000 - 25,000, TRKG servo : Open, Tilt servo : OFF)</li> <li>● Player SKIP ( ◀◀ or ▶▶ ) key (During test mode)</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 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**

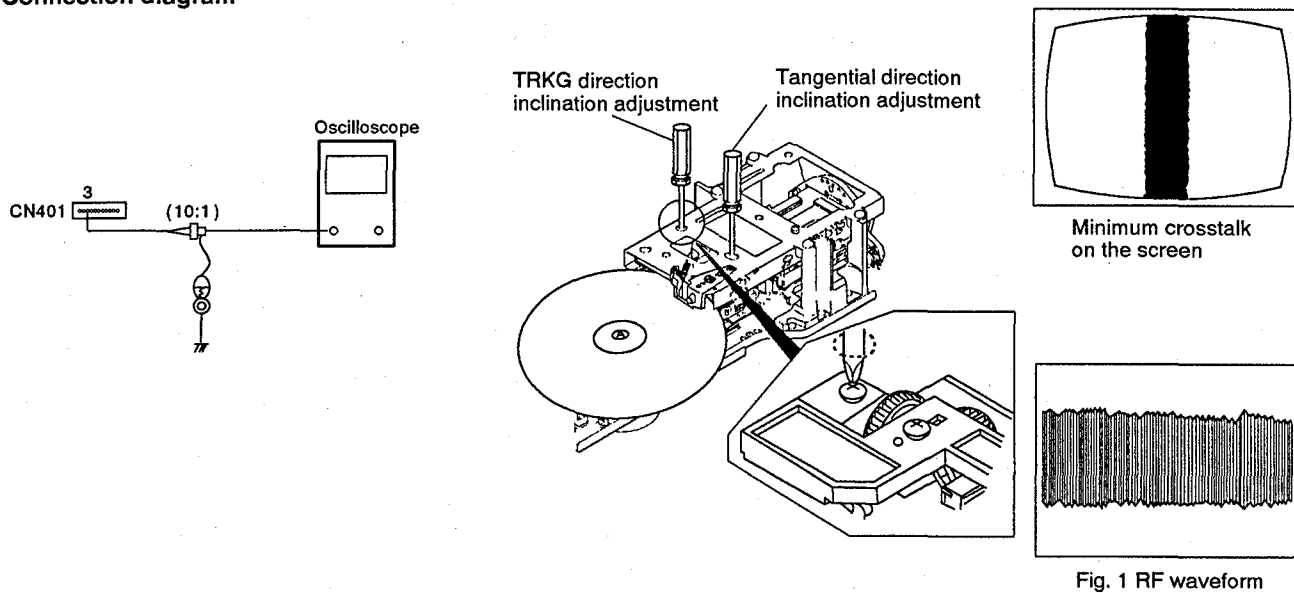
**Mechanical Adjustment**

- 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:
- Measuring point:
- Test disc and player mode
- Positions to be adjusted

- TV monitor ● Phillips screwdriver ● Oscilloscope
- CN401 -3(RF) ● Player's VIDEO OUT terminal
- 8-inch LD test disc GGV1003
- Test Mode { #2,701 (Black,7.5%) still , TRKG servo : Close, Tilt servo : OFF}
- Pickup assembly TRKG/Tangential direction inclination adjustment screws

**Connection diagram**



**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:

• Measuring point:  
• Test disc and player mode

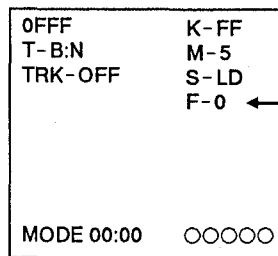
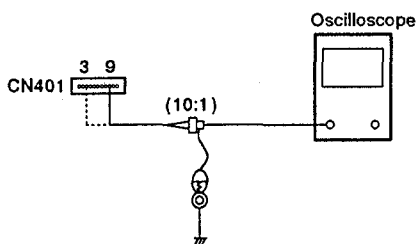
• Positions to be adjusted

• TV monitor • Oscilloscope

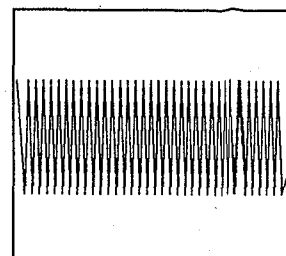
• CN401 - 3 (RF) • CN401 - 9 (TRKG ERR) • Player's VIDEO OUT terminal  
• 8-inch LD test disc (GGV1003)  
• Test Mode [#2,701 (Black, 7.5%) / #115 (H.V Bar) still, TRKG servo : Close / Open, Tilt servo : OFF]

• VR605 (TE MAX.) • VR606 (CT MAX.)

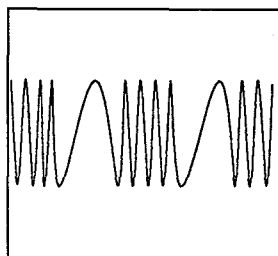
Connection diagram



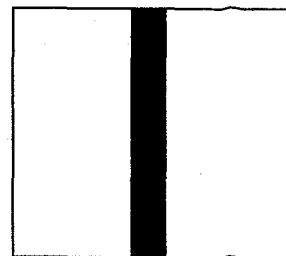
Screen display of test mode



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 frame #2,701 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.*

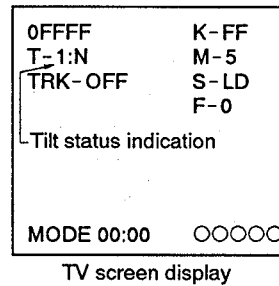
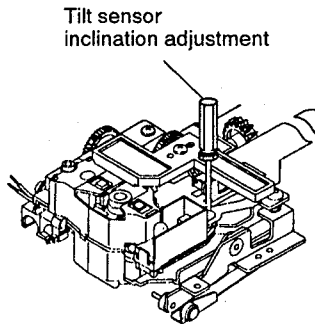
**7. TILT SENSOR INCLINATION / TILT BALANCE ADJUSTMENT**

**Mechanical 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.

- |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>● Measuring instruments and jigs:</li> <li>● Measuring point:</li> <li>● Test disc and player mode</li> <li>● Positions to be adjusted</li> </ul> | <ul style="list-style-type: none"> <li>● TV monitor</li> <li>● Small Phillips screwdriver</li> <li>● Player's VIDEO OUT terminal</li> <li>● 8-inch LD test disc (GGV1003)</li> <li>● Test Mode (#16,200 and #115 still, TRKG servo : Close, Tilt servo : OFF)</li> <li>● Tilt sensor inclination adjustment screw</li> <li>● VR607 (TILT BAL).</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Connection diagram**



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**

**Mechanical Adjustment**

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

- Measuring instruments and jigs:
- Measuring point:
- Test disc and player mode
- Positions to be adjusted

- Oscilloscope ● Resistor(10kΩ × 2)
- CN401 - 9 (TRKG ERR), CN401 - 1 (TRKG C) and CN401 - 2 (TRKG A)
- 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)
- The carriage assembly should be in the forward state.
- Check the Lissajous figure

**Connection diagram**

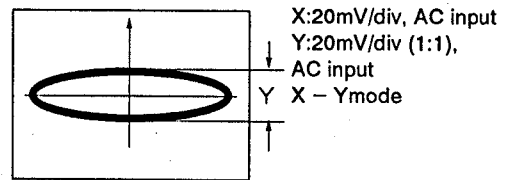
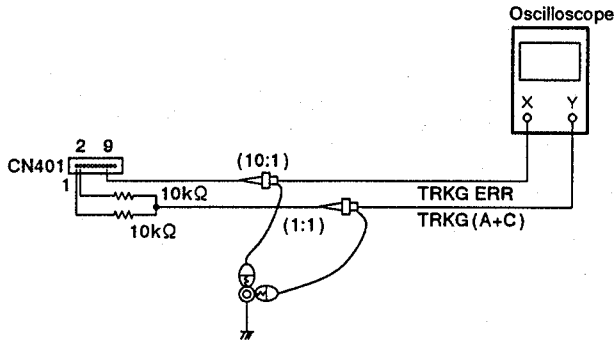


Fig. 1 Lissajous figure of the inner track of the disc (CD)

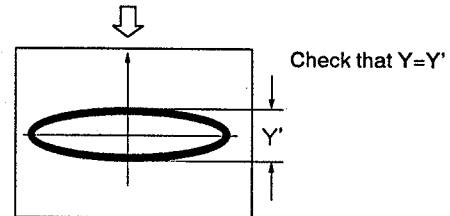


Fig. 2 Lissajous figure of the outer track of the disc (CD)

**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".

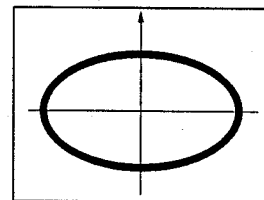


Fig. 3 Lissajous figure when not properly adjusted

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:
- Measuring point:
- Test disc and player mode
- Positions to be adjusted

- Small phillips screwdriver ● Oscilloscope ● Resistor(10kΩ × 2)
- CN401 - 9 (TRKG ERR), CN401 - 1 (TRKG C) and CN401 - 2 (TRKG A)
- 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)
- The carriage assembly should be in the forward state.
- Spindle motor centering adjustment screw

Connection diagram

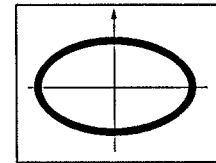
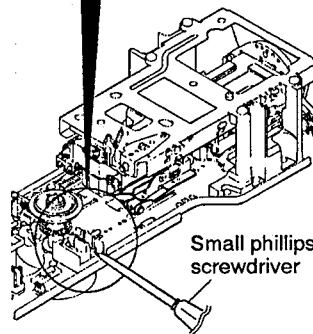
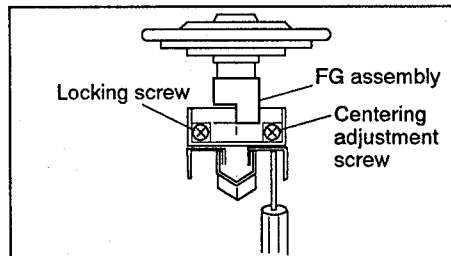
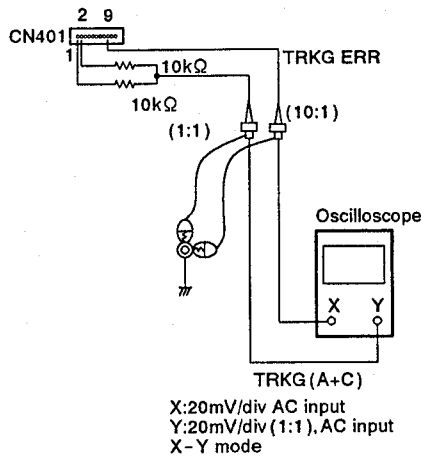


Fig. 1

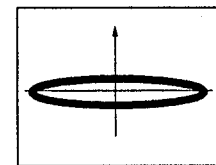


Fig. 2

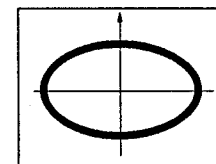


Fig. 3

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" step 6.
11. Tighten the locking screw.

10. FINE GRATING ADJUSTMENT

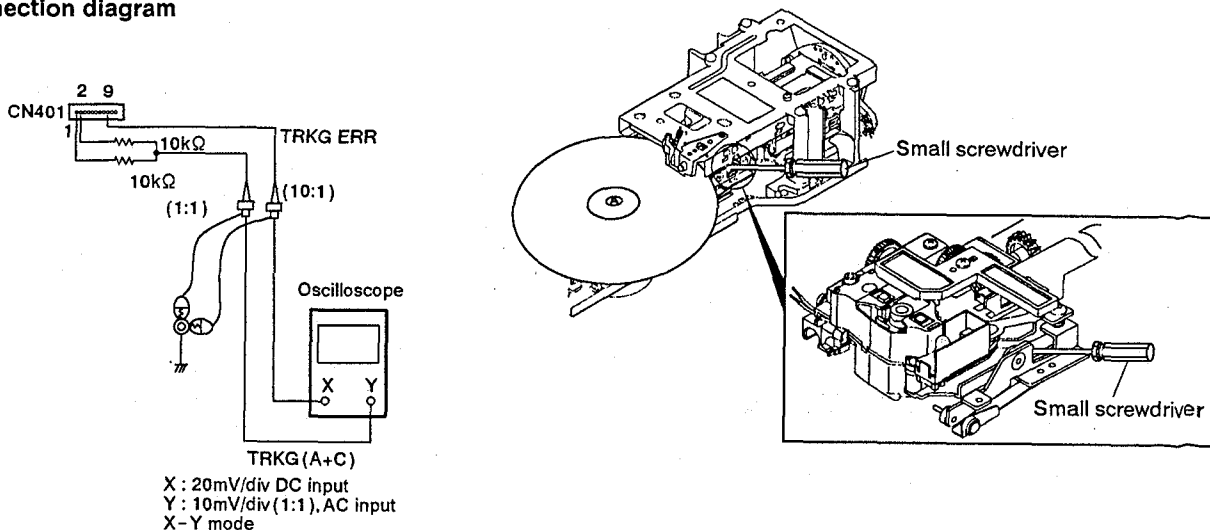
Mechanical Adjustment

- 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:
- Measuring point:
- Test disc and player mode
- Positions to be adjusted

- Oscilloscope ● Small screwdriver ● Resistor(10kΩ × 2)
- CN401 -9 (TRKG ERR), CN401 -1 (TRKG C) and CN401 -2 (TRKG A)
- 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.
- Grating

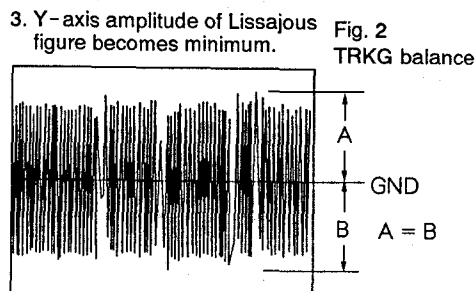
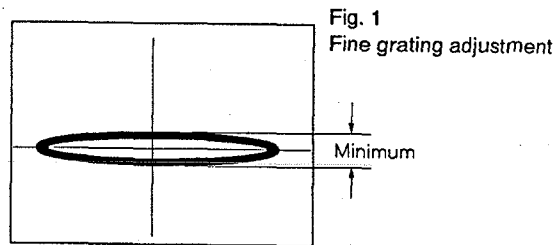
Connection diagram



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.



**11. FOCS SUM LEVEL ADJUSTMENT**

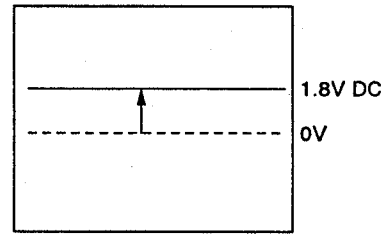
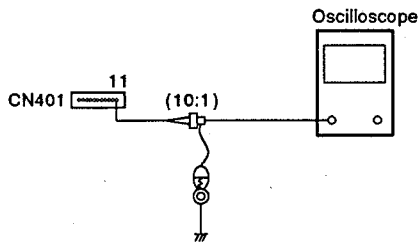
**Mechanical Adjustment**

- 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:
- Measuring point:
- Test disc and player mode
- Positions to be adjusted

- Oscilloscope
- CN401 - 11 (FOCS SUM)
- 8 - inch LD test disc GGV1003
- Test mode (#15,000 still, TRKG servo : Close, Tilt servo : Neutral)
- 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

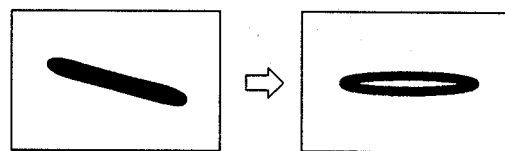
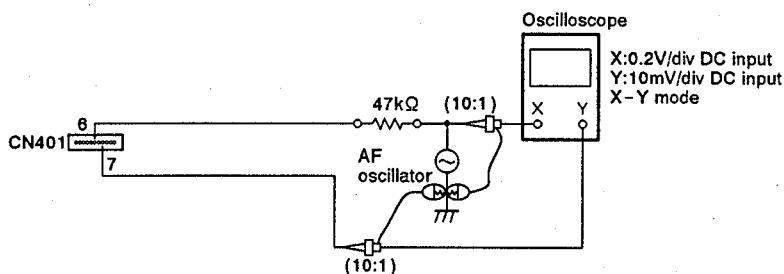
Mechanical Adjustment

- 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:
- Measuring point:
- Test disc and player mode
- Positions to be adjusted

- Oscilloscope ● AF oscillator ● Resistor(47kΩ)
- CN401 - 6 (FOCS ERR) and CN401 - 7 (FOCS IN)
- 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.
- 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)*

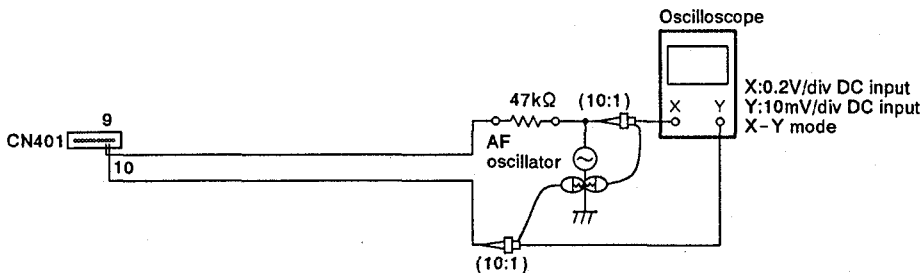
13. TRKG SERVO LOOP GAIN ADJUSTMENT

Mechanical Adjustment

- Purpose: To set the loop gain of the TRKG servo to the optimum value.
- When not properly adjusted: Playability is poor.

- |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>● Measuring instruments and jigs:</li> <li>● Measuring point:</li> <li>● Test disc and player mode</li> <li>● Positions to be adjusted</li> </ul> | <ul style="list-style-type: none"> <li>● Oscilloscope</li> <li>● Resistor(47kΩ)</li> <li>● AF oscillator</li> <li>● CN401 - 9 (TRKG ERR), CN401 - 10 (TRKG IN)</li> <li>● 8 - inch LD test disc GGV1003</li> <li>● Test mode (#15,000 still, TRKG servo : Close, Tilt servo : Neutral)</li> <li>● The carriage assembly should be in the forward state.</li> <li>● VR603 (TRKG GAIN)</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Connection diagram



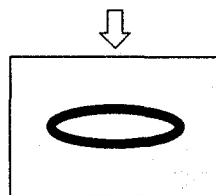
Adjustment Procedure

1. Connect the oscilloscope's X-input(CH-1) via the 47kΩ resistor 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

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

Fig. 1



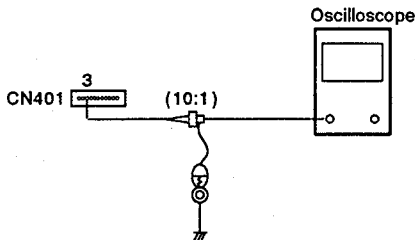
**14. RF GAIN ADJUSTMENT**

**Mechanical Adjustment**

- Purpose: To adjust the RF signal amplitude to the optimum value.
- When not properly adjusted: Dropout occurs frequently.

- |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>● Measuring instruments and jigs:</li> <li>● Measuring point:</li> <li>● Test disc and player mode</li> <li>● Positions to be adjusted</li> </ul> | <ul style="list-style-type: none"> <li>● Oscilloscope</li> <li>● CN401 -3 (RF signal)</li> <li>● 8 - inch LD test disc GGV1003</li> <li>● Test Mode (#15,000 still, TRKG servo : Close, Tilt servo : Neutral)</li> <li>● The carriage assembly should be in the forward state.</li> <li>● VR601 (RF LEVEL)</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**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  $300\text{mV} \pm 50\text{mV}$ . (Fig. 1)

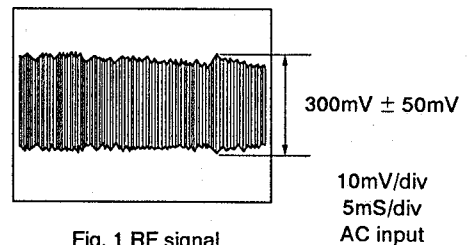


Fig. 1 RF signal

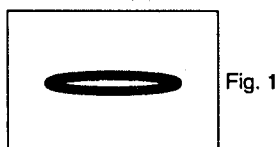
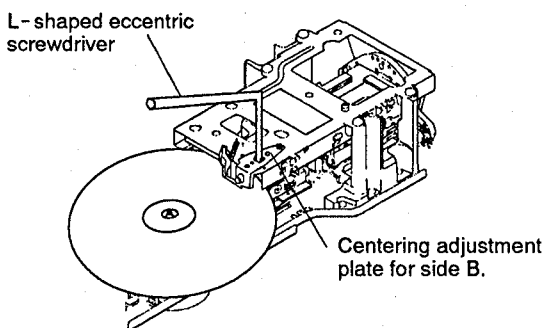
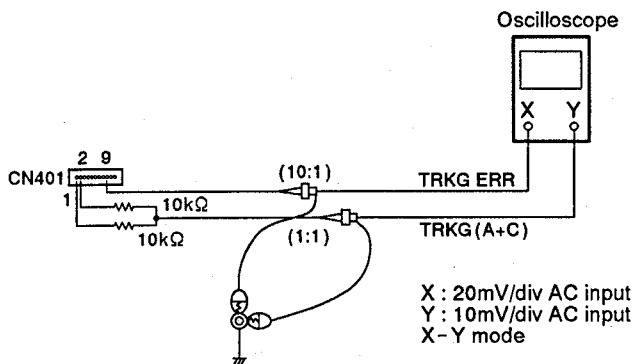
15. COARSE CENTERING ADJUSTMENT FOR SIDE B PLAY

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.

- |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>● Measuring instruments and jigs:</li> <li>● Measuring point:</li> <li>● Test disc and player mode</li> <li>● Positions to be adjusted</li> </ul> | <ul style="list-style-type: none"> <li>● L-shaped eccentric screwdriver (GGV-129)</li> <li>● Oscilloscope</li> <li>● Resistor (10kΩ × 2)</li> <li>● CN401-9 (TRKG ERR), CN401-1 (TRKG C) and CN401-2 (TRKG A)</li> <li>● 8-inch LD test disc GGV1003</li> <li>● The carriage assembly should be in the reverse state.</li> <li>● Test mode (#100 still, TRKG servo : Open /Close, Tilt servo : ON)</li> <li>● Centering adjustment plate for side B</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Connection diagram



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 resistor.
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".

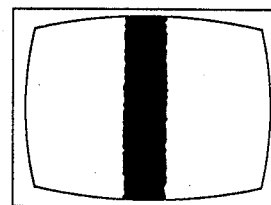
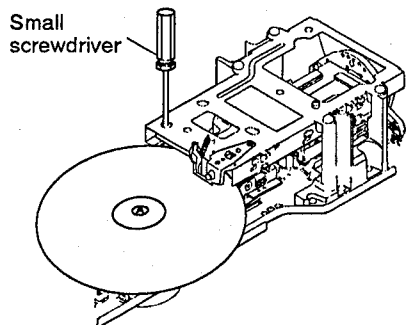
**16. PICKUP TANGENTIAL DIRECTION ANGLE ADJUSTMENT FOR SIDE B PLAY Mechanical Adjustment**

- 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:
- Measuring point:
- Test disc and player mode
- Positions to be adjusted

- TV monitor
- Small phillips screwdriver
- Player's VIDEO OUT terminal (Monitor screen)
- 8-inch LD test disc GGV1003
- Test mode [#115 (H.V Bar) still, TRKG servo : Close, Tilt servo : ON)
- 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.

- |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>● Measuring instruments and jigs:</li> <li>● Measuring point:</li> <li>● Test disc and player mode</li> <li>● Positions to be adjusted</li> </ul> | <ul style="list-style-type: none"> <li>● Oscilloscope</li> <li>● L-Shaped eccentric screwdriver (GGV-129)</li> <li>● Resistor (10kΩ × 2)</li> <li>● CN401 - 9 (TRKG ERR), CN401 - 1 (TRKG C) and CN401 - 2 (TRKG A)</li> <li>● 8-inch LD test disc GGV1003</li> <li>● Test mode (#100 still, TRKG servo : Open, Tilt servo : ON)</li> <li>● The carriage assembly should be in the reverse state.</li> <li>● Centering adjustment plate for side B</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Connection diagram

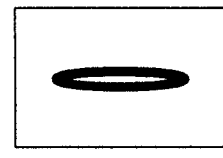
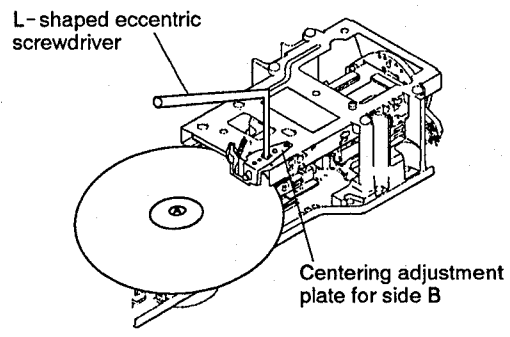
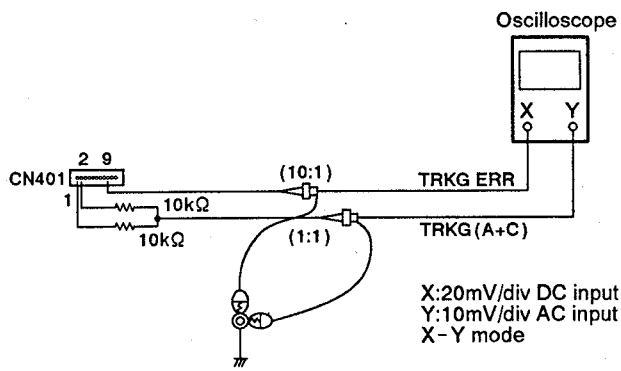


Fig. 1

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 follows;
  - Spindle motor centering adjustment screw
  - Pickup tangential direction angle adjustment screw
  - Centering adjustment hole for side B
  - Tilt sensor inclination adjustment screw

7.7 ELECTRICAL ADJUSTMENT

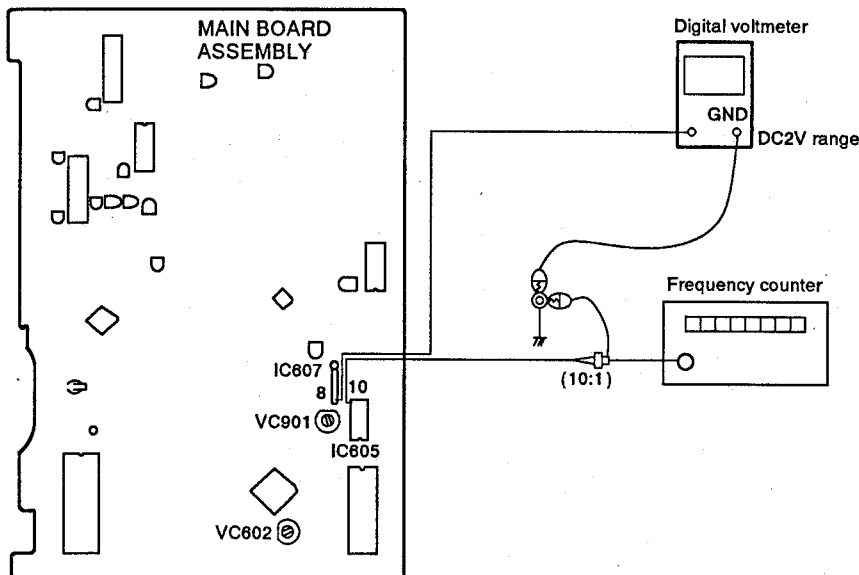
18. REFERENCE FREQUENCY ADJUSTMENT

Electrical Adjustment

- Purpose: Adjustment of the standard clock frequency.
- When not properly adjusted:
  - When the adjustment of VC901 (3.579545MHz) is not proper :  
Colors are not locked. A considerable amount of red striping appears on the screen.
  - When the adjustment of VC601 (18.12587 MHz) is not proper :  
Insufficient or no color appears on the screen.

- |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Measuring instruments and jigs:</li> <li>• Measuring point:</li> <li>• Test disc and player mode</li> <li>• Positions to be adjusted</li> </ul> | <ul style="list-style-type: none"> <li>• Frequency counter</li> <li>• Oscilloscope 10:1 probe</li> <li>• Digital voltmeter</li> <li>• IC605-10</li> <li>• IC607-8</li> <li>• Normal mode (Stop mode)</li> <li>• VC602 (18MHz MASTER CLK)</li> <li>• VC901 (VCO)</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Connection diagram



Adjustment Procedure

1. Connect the frequency counter via a 10 : 1 probe and the digital voltmeter as shown connection diagram above.
2. Adjust VC602 so that the frequency of the IC605-10 becomes 18.12587MHz.
3. Adjust VC901 so that the DC voltage of the IC607-8 becomes  $0.2 \pm 0.3V$ .

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

19. INPUT VIDEO LEVEL ADJUSTMENT FOR Y/C SEP CIRCUIT

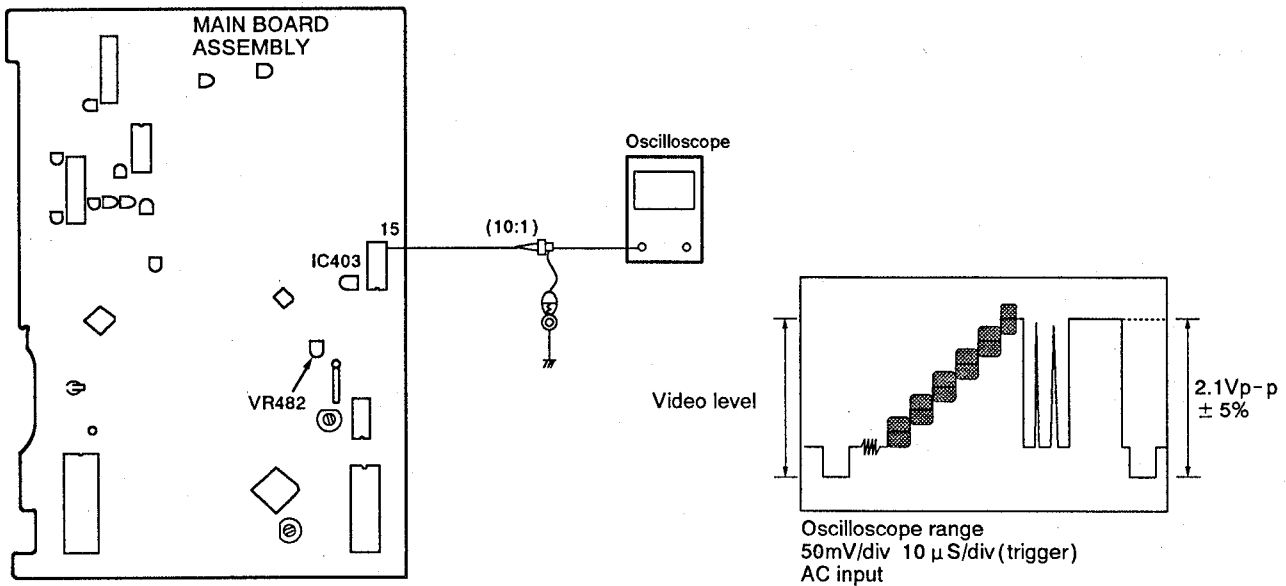
Electrical Adjustment

- Purpose: Setting the video signal level to  $2.1V_{p-p} \pm 5\%$ .
- When not properly adjusted:
  - When the video level is high :  
The dynamic range of the A/D conversion block in IC301 is exceeded and the waveform of the video signal is distorted.
  - When the video level is low :  
The signal-to-noise ratio is degraded and the gradation becomes rough.

- Measuring instruments and jigs:
- Measuring point:
- Test disc and player mode
  
- Positions to be adjusted

- Oscilloscope
- IC403- 15
- 8 - inch LD test disc (GGV1003)
- Normal mode [Still mode, #19,900 (Composite Test Signal)]
  
- VR482 (VIDEO LEVEL)

Connection diagram



Adjustment Procedure

*Note : Since the VIDEO OUT terminal will be connected to a TV monitor, it is to have 75Ω termination. (If it is connected to a TV via VHF OUT, terminate the VIDEO OUT terminal with a 75Ω resistor).*

1. Search for frame #19,900 on the LD test disc.
2. Connect the oscilloscope to IC403- 15.
3. Adjust VR482 so that the white level becomes  $2.1V_{p-p} \pm 5\%$  from the video signal's sync tip level.

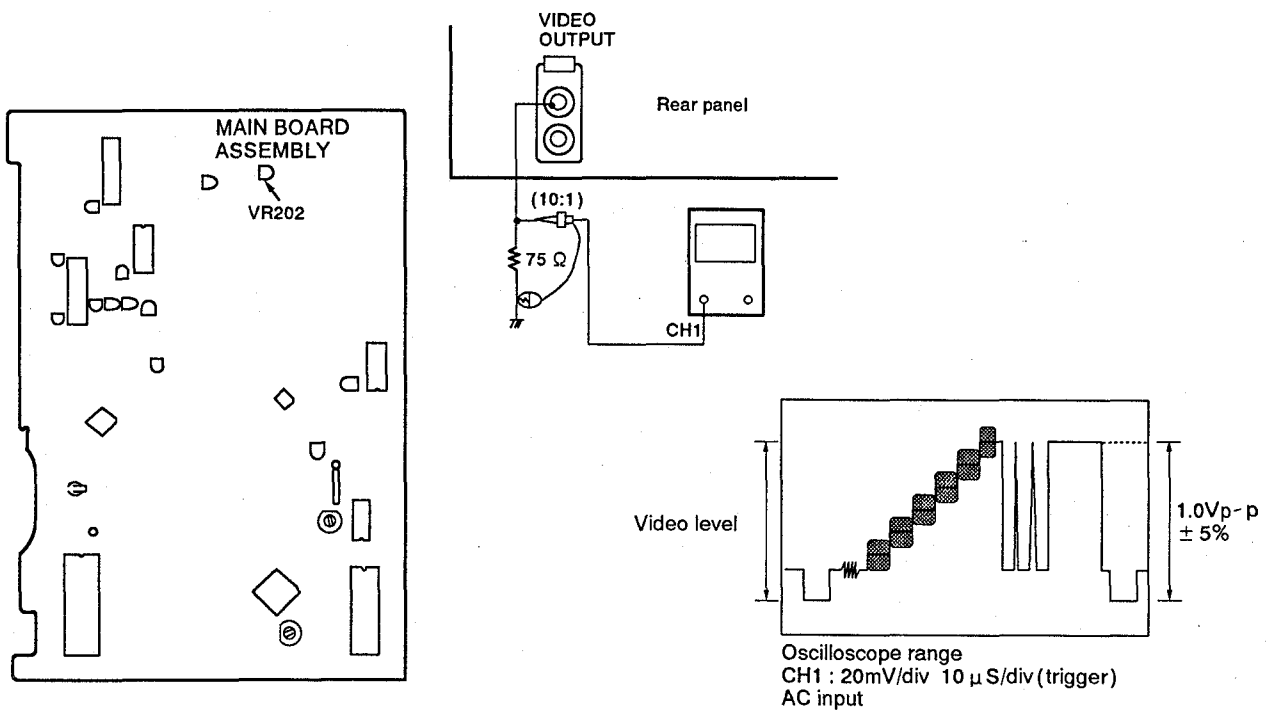
20. OUTPUT VIDEO LEVEL ADJUSTMENT

Electrical Adjustment

- Purpose: Setting the video signal level to 1.0Vp-p ( 75 Ω termination).
- When not properly adjusted: The screen is too bright or too dark.

- |                                                                                                                                                      |                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Measuring instruments and jigs:</li> <li>• Measuring point:</li> <li>• Test disc and player mode</li> </ul> | <ul style="list-style-type: none"> <li>• Oscilloscope</li> <li>• Resistor (75 Ω )</li> <li>• Player's VIDEO OUT terminal</li> <li>• 8 - inch LD test disc (GGV1003)</li> <li>• Normal mode (Still mode, #19,900)</li> </ul> |
| <ul style="list-style-type: none"> <li>• Positions to be adjusted</li> </ul>                                                                         | <ul style="list-style-type: none"> <li>• VR202 (Y- LEVEL)</li> </ul>                                                                                                                                                        |

Connection diagram



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 VR202 so that the white level becomes 1.0Vp-p ± 5% from the video signal's sync tip level.

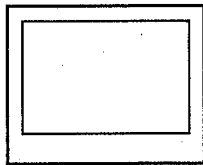
21. COLOR TINT ERROR SIGNAL LEVEL ADJUSTMENT

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.)

- |                                                                                                                                                  |                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Measuring instruments and jigs:</li><li>• Measuring point:</li><li>• Test disc and player mode</li></ul> | <ul style="list-style-type: none"><li>• TV monitor</li><li>• Player's VIDEO OUT terminal (Monitor screen)</li><li>• 8-inch LD test disc (GGV1003)</li><li>• Normal mode [ Still mode, #8,000 (Magenta) ]</li></ul> |
| <ul style="list-style-type: none"><li>• Positions to be adjusted</li></ul>                                                                       | <ul style="list-style-type: none"><li>• VR521 (VPS LEVEL)</li></ul>                                                                                                                                                |

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 until the color irregularity on the magenta screen is minimized.



## 8. IC INFORMATION

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

### ■ PD0123A1 (Mechanism - control IC, MAIN BOARD Assembly IC101)

#### ● Pin Functions

No.	Pin Name	Function	No.	Pin Name	Function
1	VCC	Power supply connection. Applies 5V ± 10%.	20	S-MTOF	Serial data output to the mode-control IC.
2	XCX	Analog audio CX noise-reduction switching signal output. "L" for ON and "H" for OFF.	21	SCK1	Clock for serial communication with the mode-control IC. Set the input mode when there is no communication with the mode-control IC.
3	SQ1	Analog audio-switching signal output 1/L. "H" for squelch. Digital audio is controlled by IC201 (CXD2500AQ).	22	TZC	Tracking error zero-cross signal input. The signal is obtained by comparison of the tracking-error signal.
4	SQ2	Analog audio-switching signal output 2/R. "H" for squelch.	23	SCOR	Subcode sync signal input. When this signal is "H", the subcode signal is supplied from the IC201 (CXD2500AQ). The disc playback status is also monitored through the presence/absence of the signal.
5	XANA	Digital/analog audio-switching signal output. "H" for digital and "L" for analog. This signal switches the signal to be sent to LINE OUT and headphones.	24	NPC LATCH	Digital filter (IC202: SM5840AP) control latch signal output.
6	SLDR POS	Pickup position detection switch input (analog signal). Detects the position by performing resistive division for each switch and reading the value of the A/D input.	25	SHAKE	Handshake signal terminal for data communication with mode-control IC (IC101: PDB057A). This terminal is a bidirectional data line used by both ICs for both input and output.
7	FREQ DET	RF detection signal input (analog signal). The RF detection output is converted to digital and used for spindle rough servo.	26	PBV	Vertical-sync signal input for LD/CDV playback. This IC basically operates in synchronization with this signal (at the falling edge).
8	SLDR ERR	Slider-error signal input (analog signal). This signal undergoes A/D conversion and becomes the slider servo control input.	27	CN VSS	GND for A/D converter.
9	TILT ERR	Tilt-sensor output signal input (analog signal). The signal obtained by amplifying the tilt sensor output by 40 to 50 dB is input.	28	XRESET	Reset signal input. "L" for reset and "H" for reset cancellation.
10	MUTE	Audio system mute-control signal output. "H" for MUTE ON and "L" for MUTE OFF.	29	XTAL IN	9MHz clock oscillation input.
11	THR	Video signal through/memory switching signal output.	30	XTAL OUT	9MHz clock oscillation output.
12	SLDR DRV	Slider-control signal output. A PWM signal is supplied to drive the slider for the slider servo.	31	FTS CLK	External clock output. A clock (2.25MHz) obtained by dividing the master clock frequency (9MHz) by 4 is output for the FTS IC (IC803: PM3003).
13	T OFF	Tracking-operation control signal output. This signal backs up the tracking servo operation ON/OFF.	32	VSS	For GND.
14	GFS	CD (EFM signal) frame-lock signal input. Connect to pin 12 of IC201 (CXD2500AQ).	33	SW1	Loading/tilt position-detection switch input.
15	SI2	IC201 CXD2500AQ subcode input. Subcodes are read by two lines of this signal and SCK2.	34	SW2	Loading/tilt position-detection switch input.
16	XLAT2	IC201 CXD2500AQ control latch signal output. Latch for serial 3 (SO3, SCK3).	35	SW3	Loading/tilt position-detection switch input.
17	SCK2	IC201 CXD2500AQ subcode-reading clock signal output. 96 clocks are generated to read subcodes.	36	X535/737	Mechanism controller mode-switching input. Set to "H". Switch the function of the mechanism-control microcomputer by this port.
18	TILT DRV	Tilt control signal input. The tilt-drive PWM signal is output and used for the tilt servo.	37	FG	Input for Spindle-motor FG-signal generated 24 FGs per rotation. Used by dividing the signal by 3 in the IC.
19	S-FTOM	Serial data input from the mode-control IC.	38	DATA	Input for the PHILLIPS code decoder in the mechanism controller.
			39	PBH	Playback H-SYNC input for detecting the PHILLIPS codes.

No.	Pin Name	Function	No.	Pin Name	Function
40	PBV	Playback V-SYNC input for detecting the PHILLIPS codes.	51	TBCON	Spindle/TBC servo switching signal output. "H" for TBC servo operation by hardware.
41	CAV	CAV /CLV switching-signal output. Connected to pin 6 of IC401(PA5013A), it is used as the video NR switching signal.	52	RUN	Spindle motor RUN signal output. "H" for RUN and "L" for STOP.
42	SOFT	Soft picture switching signal output. "H" for soft and "L" for normal.	53	XSPLOCK	Spindle-lock signal input. "L" for lock and "H" for unlock.
43	ACC CONT	Spindle acceleration/deceleration signal output. "H" for acceleration of side A or deceleration on side B, "L" for deceleration on side A or acceleration on side B, and "Z" for CD stop and play.	54	SIDE A	Side A/side B switching signal terminal. "H" for side A and "L" for side B.
			55	REVERSE CUT	Spindle-power save signal output. "H" for saving and "L" for no saving.
44	GPWM	Duty pulse signal output for spindle gain switching. "L" for CLV inner periphery or CAV and "H" for CLV outer periphery or CDV.	56	8INCH	Spindle small gain switching signal output. "L" for gain-up. CDV terminal and this terminal switch the spindle gain depending on the four disc types.
45	J, TRIG	Track-jump signal output. For 1-track jump. "H" during a jump operation and "L" in other states.	57	CDV	Spindle large gain switching signal output. "L" for up gain-up.
			58	SHUNT	Shunt the LD error signal for CD and CDV-A. "H" for CD and CDV-A and "L" for LD and CDV-V.
46	SCK3	Serial-signal for the FTS servo IC(IC803: PM3003), the SPDL servo IC(IC601: PDB011), the digital filter IC(IC202: SM5840AP), the EFM decoder IC(IC201: CXD2500AQ).	59	TRAY, SW	Switch input for detecting the CD direct tray position.
			60	TURN A	$\alpha$ -turn position detection signal input. "L" for side A and "H" for side B or during turn.
47	SO3	Serial data output. The above four ICs commonly use the same serial signal, distinguishing by XLAT3, XLAT2 and NPC LATCH.	61	TURN B	$\alpha$ -turn position detection signal input. "L" for side B and "H" for side A or during turn.
			62	RFCORR	RF-correction switching signal input. "H" for gain-up. Increase the gain for CAV inner periphery. #8,000 - #8,100.
48	XLATCH3	Latch-signal output for the FTS servo IC and SPDL servo IC.	63	DIRECT	Video-system power supply OFF signal output in CD direct mode. "H" for video system power supply OFF and "L" for normal operation.
49	WRE	Video-memory writing control signal output. "H" for WRITE and "L" for FREEZ.			
50	VSQ	Video-output switching signal output. "H" for squelch and "L" for playback video.	64	XFOK	Focus servo lock signal input. Used for focus servo-lock detection. "L" for lock and "H" for unlock.

■ PDB057A (Mode-control IC, FLKY Assembly IC101)

● Pin Functions

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	VDD	I	Power supply (5V).	33	DOOROPEN	I	Door-switch input. "H" for OPEN.
2	G1	O	FL lighting timing outputs. "H" for ON and "L" for OFF.	34	SYNC IN	I	Synchronized REC control input.
3	G2			35	SYNC OUT	O	Synchronized REC control output.
4	G3			36			Not used (No connection).
5	G4			37			
6	G5			38	XCS	O	PD0070 select.
7	G6			39	XRESET	O	Reset output.
8	G7			40	XSCK	I/O	Serial data transfer clock.
9	G8			41	SI	I	Serial data input
10	G9			42	SO	O	Serial data output.
11	G10			43	XRESETI	I	Reset input.
12	G11			44	SELIR	I	Remote control input.
13	LED REV	O	Direction LED (reverse direction). "H" for ON.	45	SHAKE	I	Serial communication start - request <sup>0</sup> output.
14	LED THR	O	Theater-mode LED. "H" for ON.	46	JOG2		JOG data input.
15	LED FWD	O	Direction LED (regular direction). "H" for ON.	47	JOG1		
16	LED FLOF	O	FL-off LED. "H" for ON.	48	ACK	O	Serial communication start - acknowledge output.
17	DOG FOOD	O	Timing output for the watchdog timer.	49	POWER ON	O	Power ON/OFF. 'H' for ON and "L" for OFF.
18	VDISP	I	Power supply (-30V) for the FL display.	50	SHTL SCN	O	Shuttle-scan output. "L" for ON and "H" for OFF.
19	a(KS1)	O	FL lighting segment outputs. "H" for ON and "L" for OFF. Key-scan outputs. "H" for ON and "L" for OFF.	51	LED STBY	O	Standby LED. "H" for ON.
20	b(KS2)			52	LED DTCD	O	Direct CD-mode LED. "H" for ON.
21	c(KS3)			53	LED SIDA	O	Side-A LED. "H" for ON.
22	d(KS4)			54	LED SIDB	O	Side-B LED. "H" for ON.
23	e			55	LED SOFT	O	Soft picture LED. "H" for ON.
24	f			56	KIN0	I	Key data input. "H" for ON and "L" for OFF.
25	g			57	KIN1		
26	h			58	KIN2		
27	m			59	KIN3		
28	n			60	X1		Not used (GND).
29	k			61	X2		Not used (No connection).
30	j			62	VSS		Not used (GND).
31	i			63	OSC2	I	Oscillator (5.5 or 5.56MHz).
32	l			64	OSC1	O	

**MC141621FU (Advanced comb filter, IC301)**

**● Outline**

The advanced Comb Filter (ACF) is a high-performance HCMOS digital filter equipped with an A/D converter and a D/A converter on the chip.

It separates an NTSC composite signal into the luminance signal (Y) and chrominance signal (C). By using 14.3MHz clocks, video signal input of a wide range is accepted. This Y/C separation has been made possible by the digital Advanced Comb Filter.

Fig. 1 is a block diagram of the Advanced Comb Filter, which is roughly divided into three blocks. The first block is the A/D converter block. In this block, a high-speed 8-bit binary A/D converter quantizes the supplied analog video signal into 8-bit binary data. The conversion frequency is 14.3 MHz, which corresponds to four times the subcarrier frequency. The input level of the analog video signal is 3.3 Vp-p at maximum. In addition, this chip is equipped with a clamp-voltage generator, which generates a clamp voltage by comparing the externally supplied clamp level with the output code of the A/D converter. By connecting this output with the A/D converter input and inputting a video signal through AC coupling, the input video signal can be clamped.

The second block is the Advanced Comb Filter block. In this block, The digital data converted by the A/D converter is processed with an algorithm by the Advanced Comb Filter for separation into luminance and chrominance signals. The third block is the digital-to-analog converter block. Two 8-bit D/A converters output the luminance and chrominance signals in analog.

The conversion frequency is the same 14.3 MHz as that of the A/D converter, which is four times the subcarrier frequency. The analog output of the chrominance signal is incorporated with a DC offset bias for the center of the reference of the D/A converter.

**● Block Diagram**

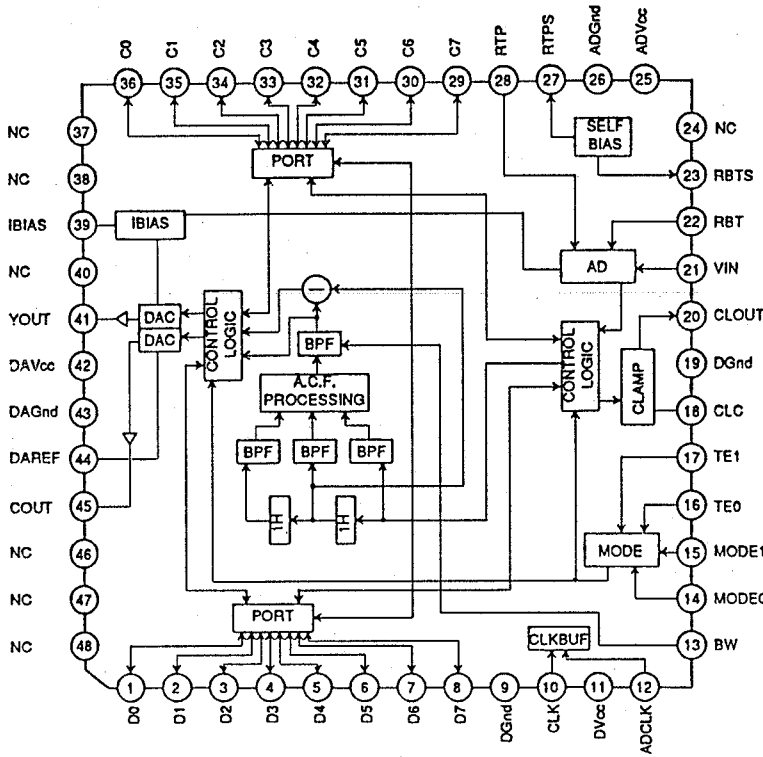


Fig. 1 Block Diagram

● Pin Functions

No.	Pin Name	Function	No.	Pin Name	Function
1	D0	Digital input/output interface 2: Normally set to the ground level.	24	N.C.	Not used : Normally set to the ground level.
2	D1		25	AD Vcc	Power for the A/D converter.
3	D2		26	AD GND	Ground for the A/D converter.
4	D3		27	RTPS	Supply terminal of the top reference for the A/D converter: Supplies the top reference voltage when connected to RTP.
5	D4		28	RTP	Top reference input for the A/D converter.
6	D5		29	C7	Clamp level input and digital input/output interface 1.
7	D6		30	C6	
8	D7		31	C5	
9	D GND	32	C4		
10	CLK	33	C3		
11	D Vcc	34	C2		
12	ADCLK	Clock input for the A/D converter: Effective only in digital input comb-filter mode and in some states in test mode. The input level is CMOS level.	35	C1	Unused : Normally set to the ground level.
13	BW	Band-switching input for the bandpass filter for the chrominance signal. "L" for narrow band pass.	36	C0	
14	MODE0	Mode input : Normally set to the ground level.	37	N.C.	Unused : Normally set to the ground level.
15	MODE1		38	N.C.	
16	TE0	Test mode input: Normally set to the ground level.	39	IBIAS	Bias circuit current control for the A/D and D/A converters: Normally connect to the D/A GND through an external resistor.
17	TE1		40	N.C.	Unused : Normally set to the ground level.
18	CLC	Terminal for setting the clamp time constant.	41	YOUT	Luminance signal output.
19	D GND	Ground for digital.	42	DA Vcc	Power for the D/A converter.
20	CLOUT	Voltage output for clamp: The input signal can be clamped by connecting to VIN and supplying a video signal through AC coupling.	43	DA GND	Ground for the D/A converter.
21	VIN	A/D converter input: The maximum input voltage is 3.3 Vp-p.	44	DAREF	Reference for the D/A converter : Normally connect to D/A GND through a 0.1 $\mu$ F laminated ceramic capacitor.
22	RBT	Bottom reference input for the A/D converter.	45	COUT	Chrominance signal output.
23	RBTS	Supply terminal of the bottom reference voltage for the A/D converter: Supplies the bottom reference voltage when connected to RBT.	46	N.C.	Unused : Normally set to the ground level.
			47	N.C.	
48	N.C.				

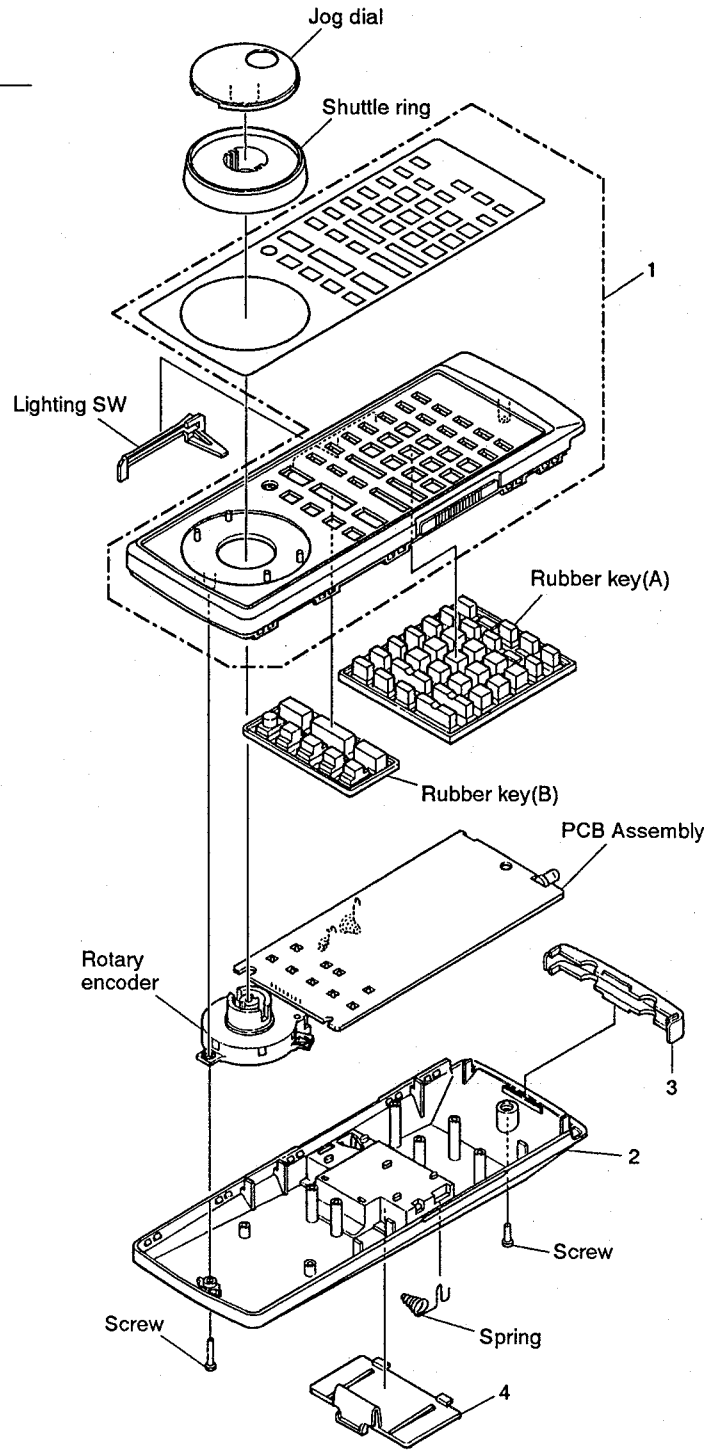
# 9. REMOTE CONTROL UNIT (VXX1721)

**NOTES:**

- The parts with an encircled number are generally unavailable because they are not in our Master Spare Parts List.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

**Parts List**

Mark	No.	Description	Part No.
	1	Case (Upper)with name plate	VNK2061
	2	Case (Lower)	VNK2062
	3	Filter	VNK2063
	4	Battery cover	DNK2286



## 10. FOR CLD - D750/RD

**NOTES:**

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

### CONTRAST OF MISCELLANEOUS PARTS

CLD - D750/RD and CLD - D701/KU/CA have the same construction except for the following:

Mark	Symbol & Description	Part No.		Remarks
		CLD - D701/KU/CA	CLD - D750/RD	
	Power supply assembly	VWR1131	VWR1132	
	Front panel assembly	VXA1830	VXA1848	
$\Delta$	Voltage selector(AC110-127V, 220-240V)	.....	VSΒ1004	
$\Delta$	Cord stopper	CM-22C	CM-22B	
$\Delta$	AC power cord	PDG1015	PDG1013	
	Wire clamp	.....	Non supply	
	Power insulator sheet	.....	VEC1492	
	Packing case	VHG1209	VHG1210	

### POWER SUPPLY ASSEMBLY (VWR1132)

VWR1132 and VWR1131 have the same construction except for the following:

Mark	Symbol & Description	Part No.		Remarks
		VWR1131	VWR1132	
	Fuse (F202, F203)	NT1-0.63A	.....	
	IC protector (IC211, IC212)	.....	ICP-N20	

# 11. PANEL FACILITIES

## FL DISPLAY OFF button/indicator

Pressing this button turns off the display window and causes the DISPLAY OFF indicator to light. Press the button again to cause the display to return. Turning off the display prevents low levels of noise from adversely affecting sound quality.

## STANDBY indicator

This indicator lights when the power is set to standby and goes out when the power is turned on.

## POWER STANDBY/ON switch

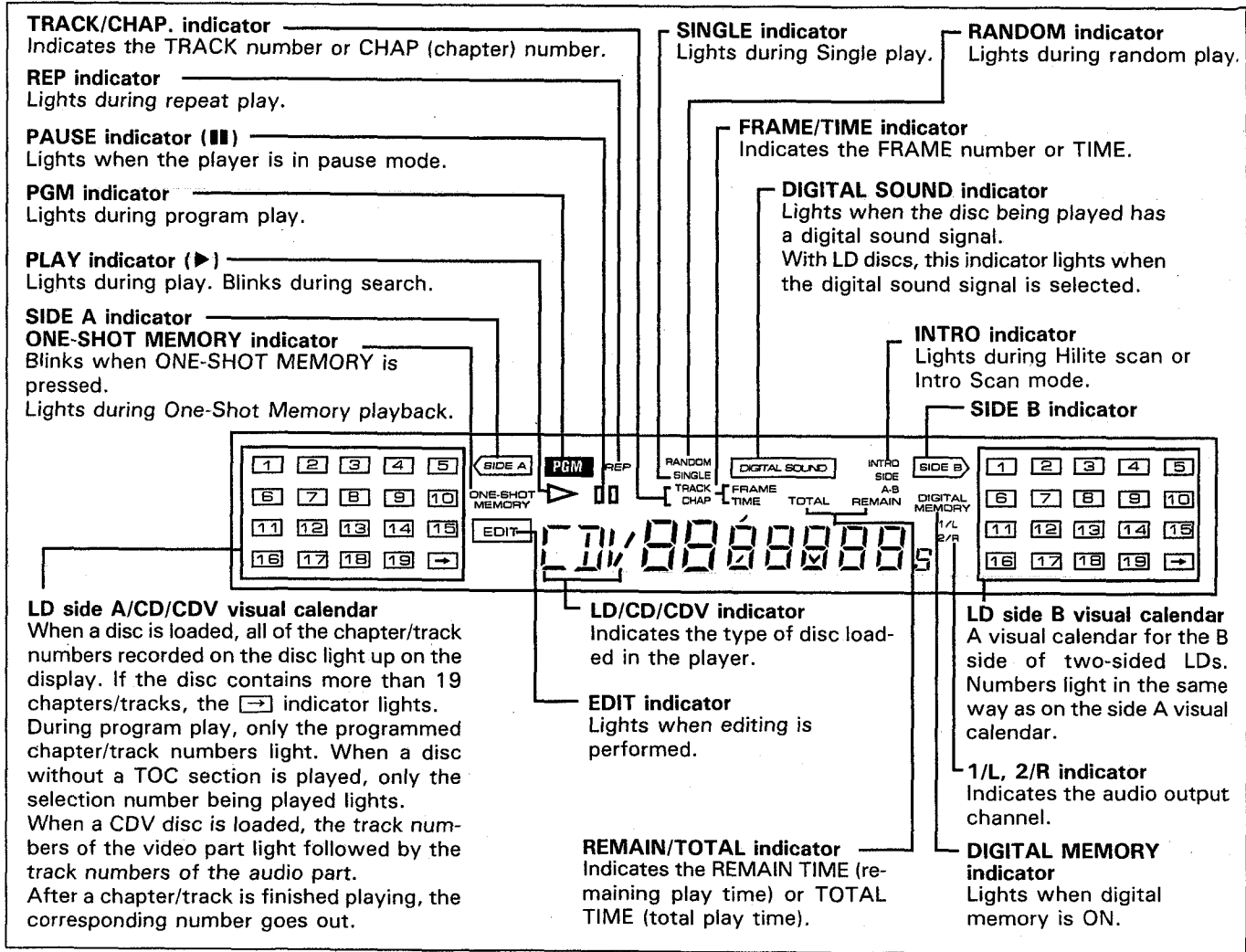
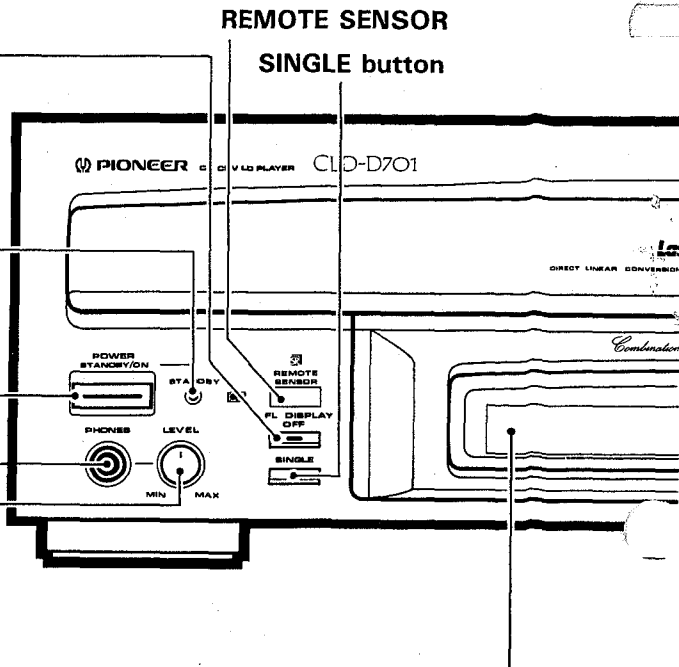
Press to turn the power on and off.

## PHONES jack

## PHONES LEVEL control

Turn this control in the "MAX" direction to increase the output level from the PHONES jack, and in the "MIN" direction to decrease the output level from the PHONES jack.

## Display window





Door/Disc table

DIRECT CD button

DISC SIDE A/B buttons

OPEN/CLOSE button (▲)

STOP button (■)

PLAY/STILL button (▶/▶▶)

DIGITAL MEMORY button

Play direction indicator (REV, FWD)

Indicates the direction of movement when using the JOG dial for frame advance/reverse, and when using the JOG dial for fast-forward or fast reverse. FWD:Forward direction REV:Reverse direction

JOG dial

SHUTTLE ring

RANDOM PLAY button

FILM MODE button/indicator

Set to ON in accordance with your tastes, particularly when viewing movie discs.

When the film mode is ON:

- The screen display turns off.
- The screen is blacked (blanked) while disc is changing sides.
- The display window disappears (can be turned on/off using the FL DISPLAY OFF button).

SKIP buttons

SOFT PICTURE button/indicator

Press to turn the soft picture function on and off. When the soft picture function is ON, SOFT PICTURE indicator lights and picture will be softened.

(S-video output connection only)

### DIGITAL MEMORY button

When playing a CAV or CLV disc, turning the digital memory function ON allows you to enjoy special playback functions such as still frame and multi-speed playback with no screen disturbance. If the digital memory function is OFF, it will automatically turn ON when you fast-forward, fast-reverse or activate a special playback function (except with CAV discs). When digital memory is OFF, screen disturbance may occur momentarily when an operation such as fast-forward is carried out. However, horizontal resolution is better than when digital memory is ON.

### Notes:

- When using a special function obtained by connecting a commercially available adaptor (such as a caption adaptor), be sure to turn the digital memory function OFF. The adaptor will not function properly if digital memory is left ON.
- Screen disturbance may occur momentarily when an operation such as fast-forward, fast-reverse or a special playback function is carried out when digital memory is OFF. This is not a malfunction or disc defect.
- This player memorizes the ON/OFF condition of the digital memory function even if the power is turned off. Turn the digital memory function ON or OFF as required the next time you play a disc. The "DIGITAL MEMORY" indicator lights in the display window when digital memory is ON.

Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

**AUDIO button**

**DISPLAY button**

**POWER button**

Press to turn the power on and off.

**EDIT button**

**CHP/TM button**

**Lighting button**

- When the lighting button is pressed, the buttons indicated in the accompanying illustration will light for about 3 seconds.
- The light will become dim and the range of remote control operation will become shorter when the batteries become exhausted. If this occurs, replace with fresh batteries.

These buttons light up.

**STROBE button**

**SCAN buttons (◀◀, ▶▶)**

◀◀ to scan in reverse direction;  
▶▶ for fast-forward scan

**JOG MODE button/  
JOG indicator**

**DISC SIDE A/B buttons**

**JOG dial**

**SHUTTLE ring**

**D/A/CX button**

**REPEAT A/B buttons**

**EJECT button (■ / ▲)**

**ONE-SHOT MEMORY button**

**PGM button**

**CLEAR button**

Used to clear the repeat mode, program mode, random play mode or intro scan mode. This button is also for use in correcting input digits.

**Direct search/Digit buttons**

**MULTI-SPEED buttons  
(-, +/◀, ▶)**

**STEP button (◀■, ■▶)**

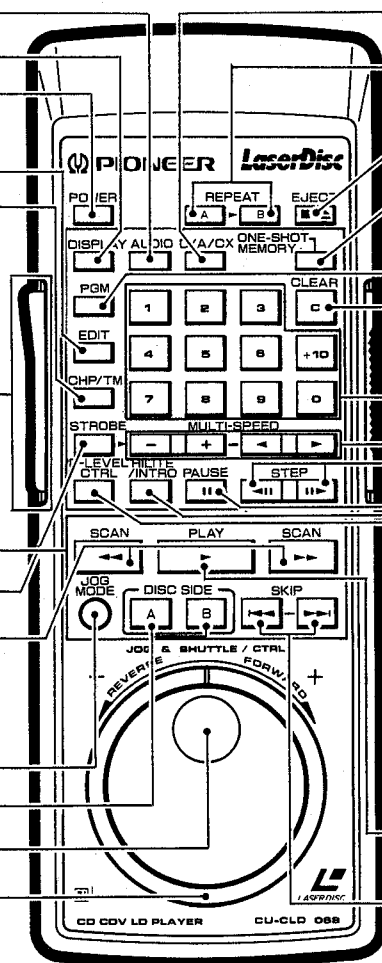
**PAUSE button (■|■)**

**HILITE/INTRO button**

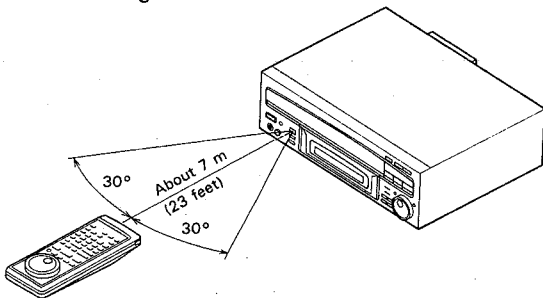
**Digital level control button  
(D-LEVEL CTRL)**

**PLAY button (▶)**

**SKIP buttons (◀◀, ▶▶)**



When operating the remote control unit, point the unit's infrared signal transmitter at the remote control receiver (REMOTE SENSOR) on the front panel of the player. The remote control unit can be used within a range of about 7 meters (23 feet) from the remote sensor, and within angles of up to about 30 degrees.



**NOTE FOR USING THE REMOTE CONTROL UNIT**

● If a plug is connected to the CONTROL IN terminal at the rear of the player, remote control operations cannot be done with the remote control unit aimed at the player's remote control sensor. Aim the remote control unit at the AV amplifier or the component display's sensor instead.

- If there is any obstacle between the remote control unit and the player, or if the unit is held at too large an angle relative to the front panel of the player, the signal from the remote control unit will fail to reach the remote sensor.
- If the player is operating in the vicinity of other appliances generating infrared rays, or if other remote control devices using infrared rays are used near the player, the player may operate improperly. Conversely, if the player's remote control unit is operated in the vicinity of other appliances which use an infrared remote control device, the other appliance may operate improperly. If this should happen, change the place of installation so that improper operation does not occur.
- If the range of operation of the remote control unit becomes too short replace the batteries.
- When the unit is not to be used for a long period of time (more than one month), remove the batteries to prevent them from leaking inside the compartment. If leakage occurs, wipe up the liquid inside the compartment and replace the batteries with new ones.
- Do not place books or other objects on the remote control unit, since they might depress the buttons and run down the batteries.
- If the remote control sensor window is in a position where it receives strong light such as sunlight or fluorescent light, control may not be possible.

## 12. SPECIFICATIONS

### 1. General

System .....	LaserVision Disc system and Compact Disc digital audio system
Laser .....	Semiconductor laser wavelength 780nm
Power requirements	
U.S. and Canadian models .....	AC 120V, 60 Hz
Multi voltage models .....	AC110-127 V/220-240V (Switchable), 50/60 Hz
Power consumption	
U.S. and Canadian models .....	41 W
Multi voltage models .....	41 W
Weight .....	9.2 kg (19 lbs)
Dimensions .....	420 (W) × 434 (D) × 137 (H) mm 16-9/16 (W) × 17-1/14 (D) × 5-3/8 (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 time	
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

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

### 4. S-Video output

Y (luminance) - Output level .....	1 Vp-p (75Ω)
C (color) - Output level .....	286 mVp-p (75Ω)
Jack .....	S-VIDEO jack
Number of channels .....	2

### 5. Audio characteristics

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

#### Digital Audio Characteristics

Frequency response	4 Hz-20 kHz (EIAJ)
SN ratio	115 dB (EIAJ)
Dynamic range	99 dB (EIAJ)
Total harmonic distortion	0.0018% (EIAJ)
Wow and flutter	Limit of measurement (EIAJ)

### 6. Other Terminals

Control input/output .....	Both miniature jacks
CD-DECK synchro .....	Miniature jack
Optical digital output .....	Optical digital jack

### 7. Accessories


Remote control unit (CU-CLD068) .....	1
Size "AAA" (IEC R03) dry cell batteries .....	2
Video cord .....	1
Audio cord .....	1
Operating instructions .....	1
Warranty card .....	1

## 8. Functions

Remote control unit operations (CU-CLD068)

	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
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	Repeat between 2 points	YES	YES	YES	YES
	Memory repeat	YES	YES	YES	YES
	Chapter/Track repeat	YES	YES	YES	YES
	One-side repeat	YES	YES	YES	YES
	Two-side repeat	YES	YES	—	—
	Program repeat	YES	YES	YES	YES
	Random repeat	YES* <sup>1</sup>	YES* <sup>1</sup>	YES	YES
Program random repeat	YES	YES	YES	YES	
Trick play	Still/Step	YES	YES	YES* <sup>4</sup>	NO
	Multi-speed (Forward/reverse 9-level variable)	YES	YES	YES* <sup>4</sup>	NO
	Still with Sound	YES	YES	YES* <sup>4</sup>	NO
	Strobe motion	YES	YES	YES* <sup>4</sup>	NO
	Jog dial/Shuttle ring	YES	YES	YES	YES
Time display	Elapsed time display	NO	YES	YES	YES
	Absolute time display	YES* <sup>1</sup>	NO	NO	YES
	Remaining track time display	NO	NO	YES	YES
	Remaining total time display	YES* <sup>1</sup>	YES* <sup>1</sup>	YES	YES
	Total number of selections, total time display	YES* <sup>1</sup>	YES* <sup>1</sup>	YES	YES
Others	CX system ON/OFF	YES* <sup>2</sup>	YES* <sup>2</sup>	NO	NO
	AUTO DIGITAL/ANALOG switch	YES* <sup>3</sup>	YES* <sup>3</sup>	NO	NO
	One-shot memory	YES	YES	YES* <sup>4</sup>	NO
	Audio channel selection (Stereo, 1/L, 2/R)	YES	YES	YES	YES
	Digital level control	YES* <sup>3</sup>	YES* <sup>3</sup>	YES	YES

\*<sup>1</sup> Only discs with TOC

\*<sup>2</sup> Valid for analog sound playing a disc with the  mark.

\*<sup>3</sup> Can only be used with discs with digital sound tracks.

\*<sup>4</sup> Video part only

**NOTE:**

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

### PLAYER FUNCTIONS

- Display ON/OFF, Visual Calendar Display
- Hilite/Intro Scan, Single Play, Random Playback and Compu Program/Auto Program Edit
- Digital Sound for LaserVision Discs
- Last Memory
- Direct CD

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