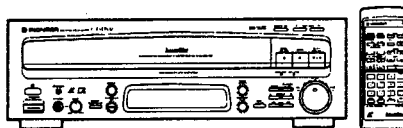


# Service Manual



ORDER NO.  
ARP2677

CD CDV LD PLAYER

# CLD-D502

# CLD-D560

CLD-D502 AND CLD-D560 HAVE THE FOLLOWING :

Type	Model		Power Requirement	Remarks
	CLD-D502	CLD-D560		
KU/CA	○	—	AC120V only	
RD	—	○	AC110-127V, 220-240V (switchable)	

- This manual is applicable to the following : CLD-D502/KU/CA ; CLD-D560/RD.
- For CLD-D560/RD, refer to page 60.
- For the circuit and mechanism descriptions, refer to the service guide ARP2234 for CLD-1090/2090/3090.

## CONTENTS

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# 1. SAFETY INFORMATION



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.



**NOTICE**

(FOR CANADIAN MODEL ONLY)

Fuse symbols  (fast operating fuse) and/or  (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

**REMARQUE**

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible  (fusible de type rapide) et/ou  (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

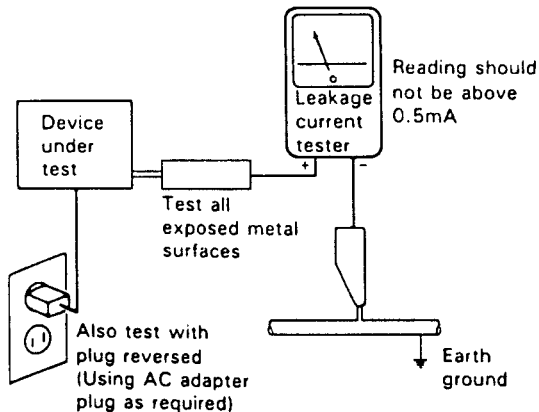
(FOR USA MODEL ONLY)

## 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.



AC Leakage Test

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.

## 2. EXPLODED VIEWS, PACKING AND PARTS LIST

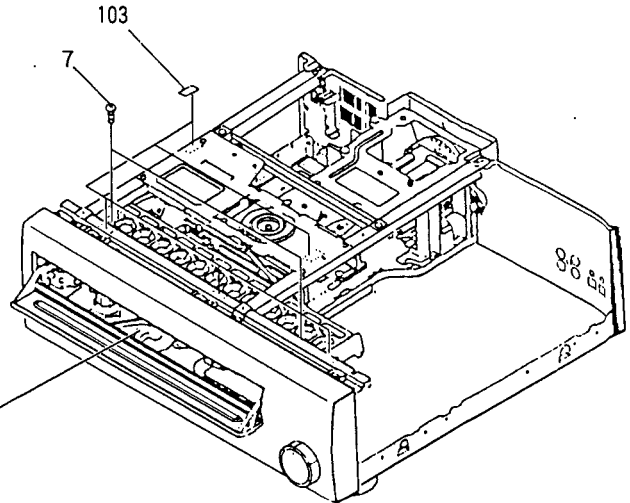
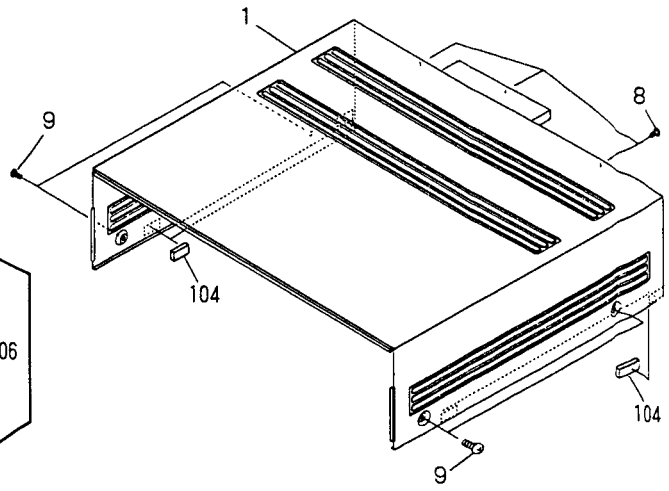
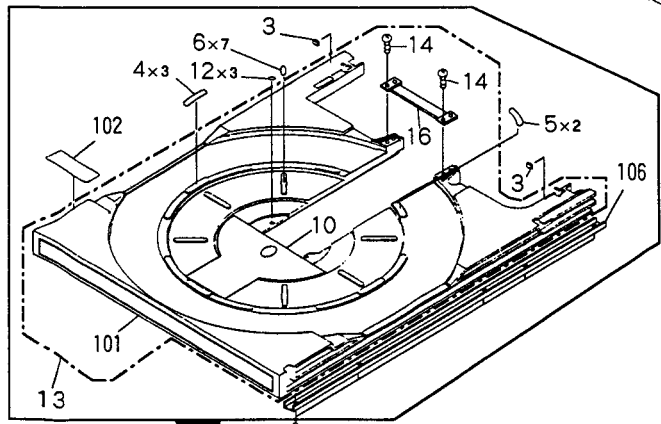
**NOTES:**

- Parts marked by "NSP" 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.

### 2.1 EXTERIOR SECTION

**Parts List**

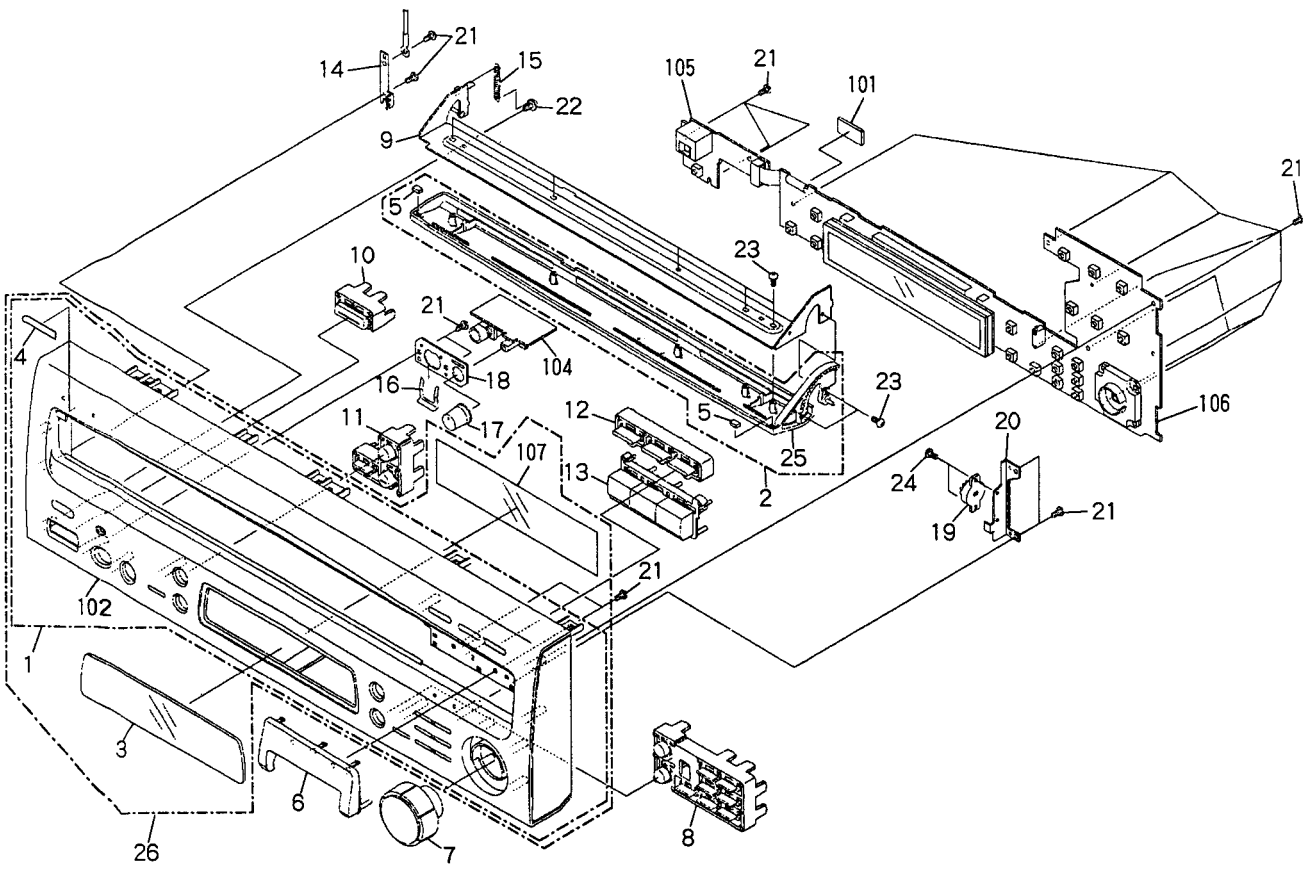
Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Bonnet - S	VXX1535	NSP 101	Tray	VNK2185
2	Tray assembly - S	VXX1808	NSP 102	Carry label	VRW1289
3	Tray rubber	VEB1089	NSP 103	Cushion	VEC1092
4	Disc pad (Large)	VEC1191	NSP 104	Cushion	VEC1004
5	Disc pad (B)	VEC1379	105	.....	
6	Disc pad (C)	VEC1380	NSP 106	Tray reinforced plate	VNE1679
7	Screw	VCZ30P120FMC			
8	Screw	BBT30P060FCC			
9	Screw	BCZ40P060FZK			
10	Transportation sheet	VRY1035			
11	Screw	BPZ30P080FCU			
12	CD pad	VEC1252			
13	Tray assembly	VXA1922			
14	Screw	BPZ26P060FZK			
15	.....				
16	Tray bridge	VNE1855			



2.2 FRONT PANEL SECTION

A Parts List

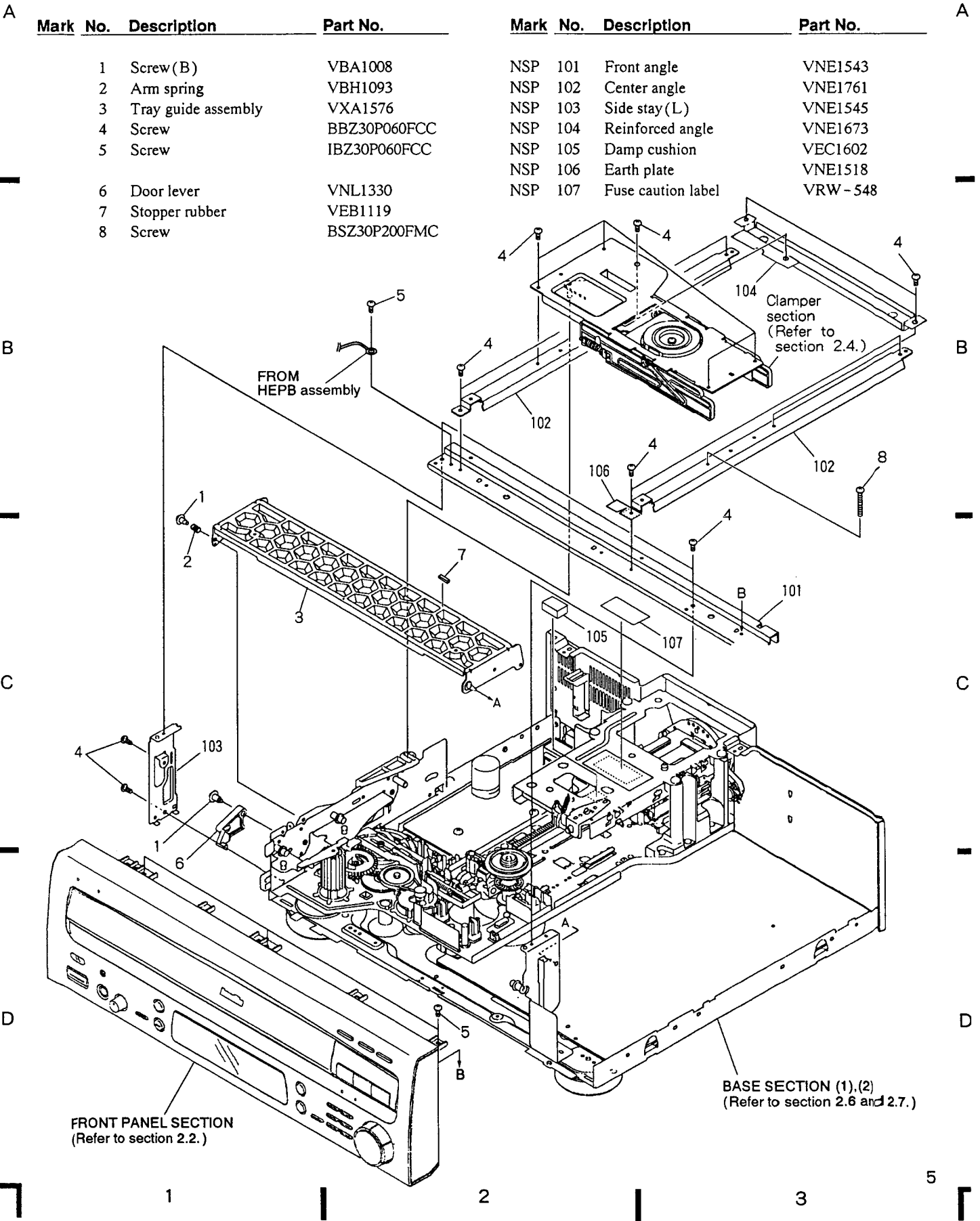
Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Front panel assembly	VXA1943	21	Screw	BPZ26P060FCU
2	Door assembly - S	VXX1835	22	Screw	BPZ26P060FMC
3	FL lens	VEC1590	23	Screw	BBZ20P050FZK
4	Name plate	VAM1032	24	Screw	PMZ20P040FCU
5	Door rubber	VEB1106	25	Front door assembly	VXA1930
6	Door panel	VNK2137	26	Front panel assembly - S	VXX1867
7	Shuttle knob	VNK2039			
8	Function key	VNK2147			
9	Door base assembly	VXA1790			
10	PW button	VNK2140			
11	L key assembly	VXA1896	NSP 101	Damp cushion	VEC1112
12	Disc side key	VNK2144	NSP 102	Front panel	VNK2202
13	Main key	VNK2138	103	•••••	
14	Door shaft holder	VNE1842	NSP 104	HEPB assembly	VWV1280
15	Door spring	VBH1194	NSP 105	IRPS assembly	VWG1363
16	Snap plate	VNE1102	NSP 106	FLKY assembly	VWG1408
17	Volume knob	VNK2003	NSP 107	FL filter	VEC1321
18	Jack holder	VNE1863			
19	Damper assembly	VXA1053			
20	Damper plate	VNE1843			



2.3 TOP VIEW SECTION

Parts List

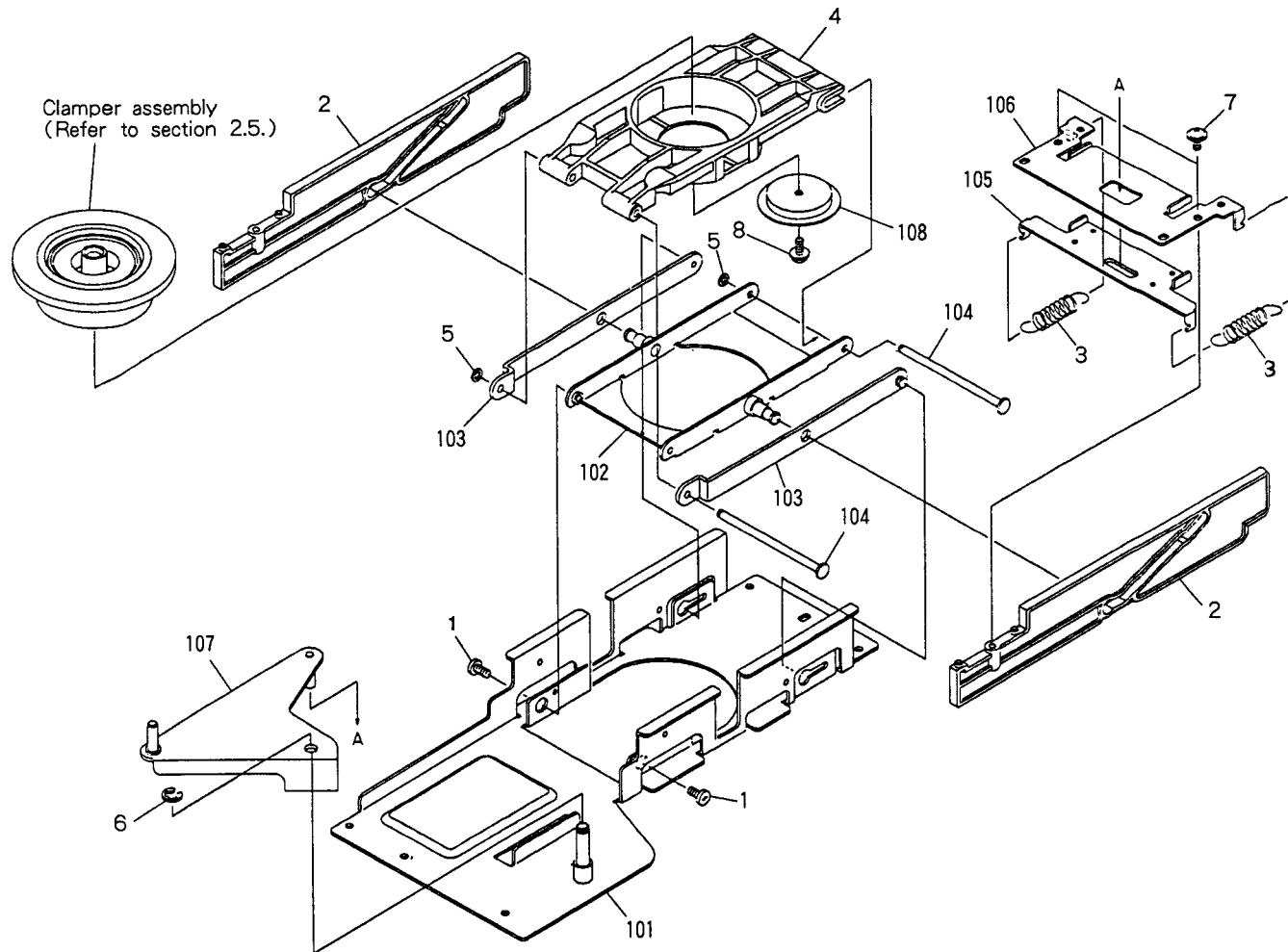
Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw (B)	VBA1008	NSP 101	Front angle	VNE1543
2	Arm spring	VBH1093	NSP 102	Center angle	VNE1761
3	Tray guide assembly	VXA1576	NSP 103	Side stay (L)	VNE1545
4	Screw	BBZ30P060FCC	NSP 104	Reinforced angle	VNE1673
5	Screw	IBZ30P060FCC	NSP 105	Damp cushion	VEC1602
6	Door lever	VNL1330	NSP 106	Earth plate	VNE1518
7	Stopper rubber	VEB1119	NSP 107	Fuse caution label	VRW-548
8	Screw	BSZ30P200FMC			



## 2.4 CLAMPER SECTION

### A Parts List

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

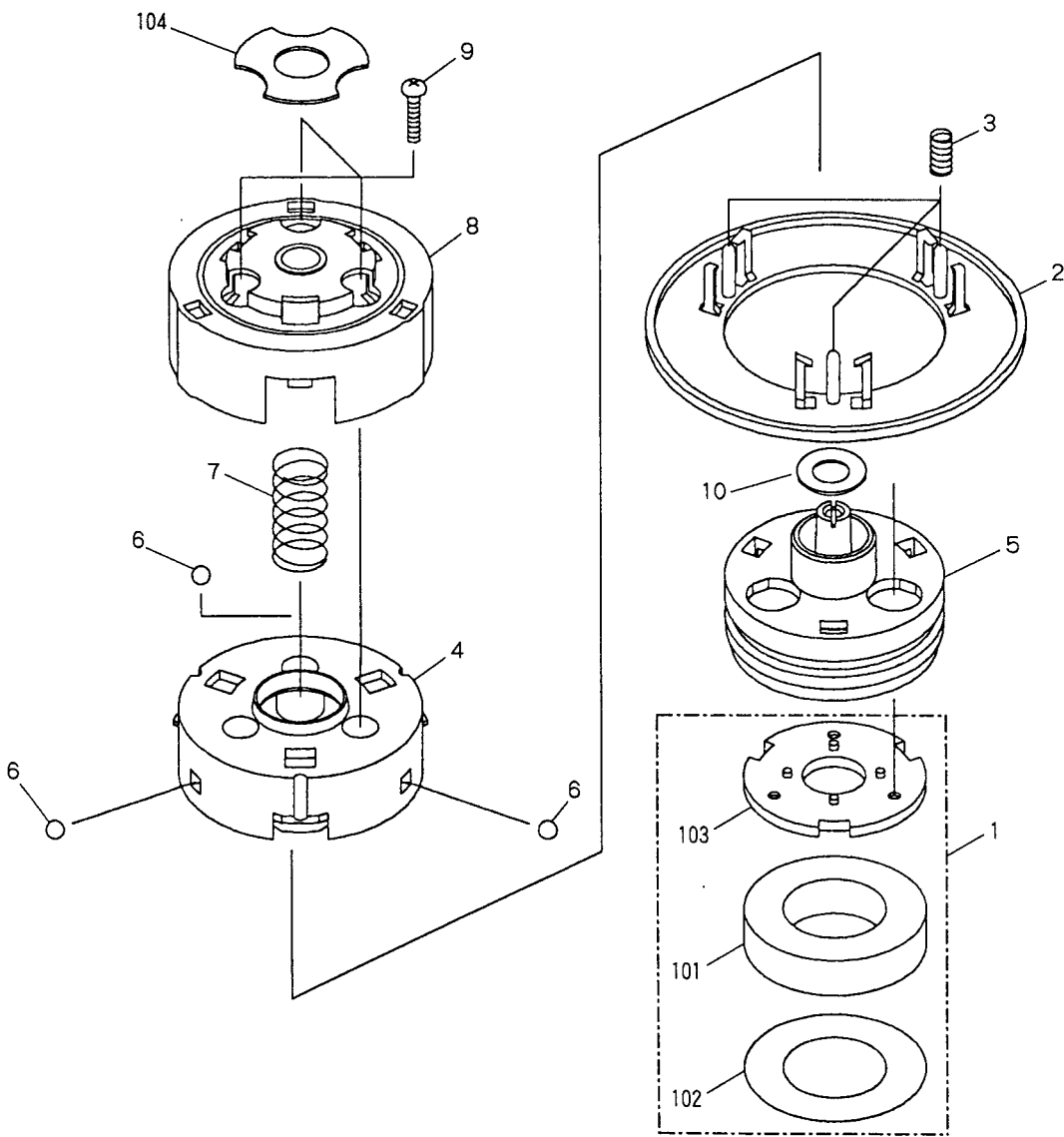


2.5 CLAMPER ASSEMBLY

Parts List

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

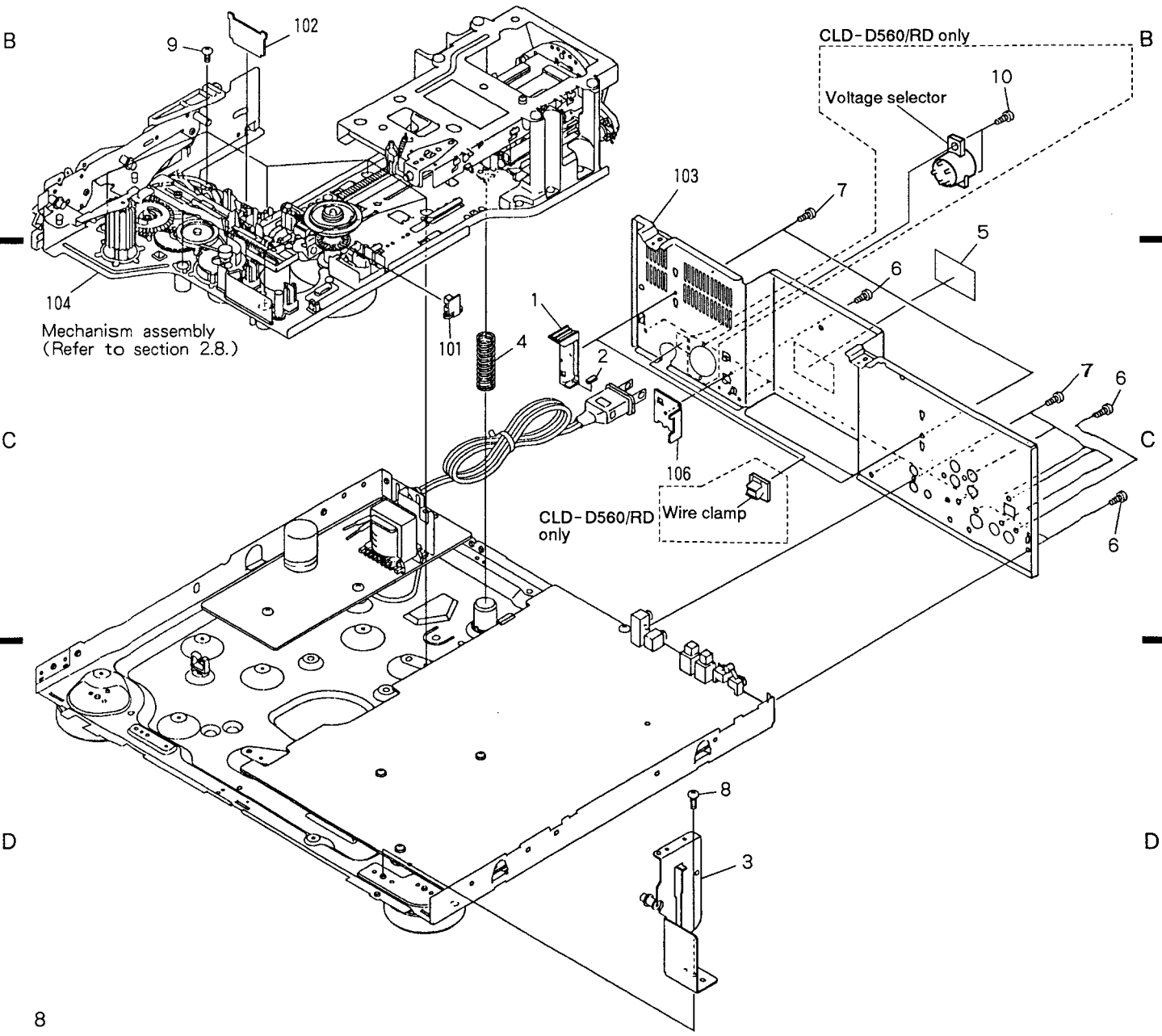
Mark No.	Description	Part No.
NSP 101	Magnet	VMG1010
NSP 102	Gap sheet	VEC1561
NSP 103	Clamper plate	VNE1549
NSP 104	Absorber rubber(A)	VEB1146



2.6 BASE SECTION (1)

Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Tray stopper	VNL1202	NSP 101	FG board assembly	VWG1358
2	Door damp rubber	VEB1033	NSP 102	SW board assembly	VWG1359
3	Side stay (R) assembly	VXA1690	NSP 103	Rear panel	VNA1333
4	Base spring	VBH1145	NSP 104	Mechanism assembly	VWT1085
5	Model name label	VRW1307	105	•••••	
6	Screw	BBT30P060FCC	NSP 106	TB holder	VNE1612
7	Screw	BPZ30P080FCU			
8	Screw	BBZ30P060FCC			
9	Screw	VBA1023			
10	Screw	BBZ30P080FCC			

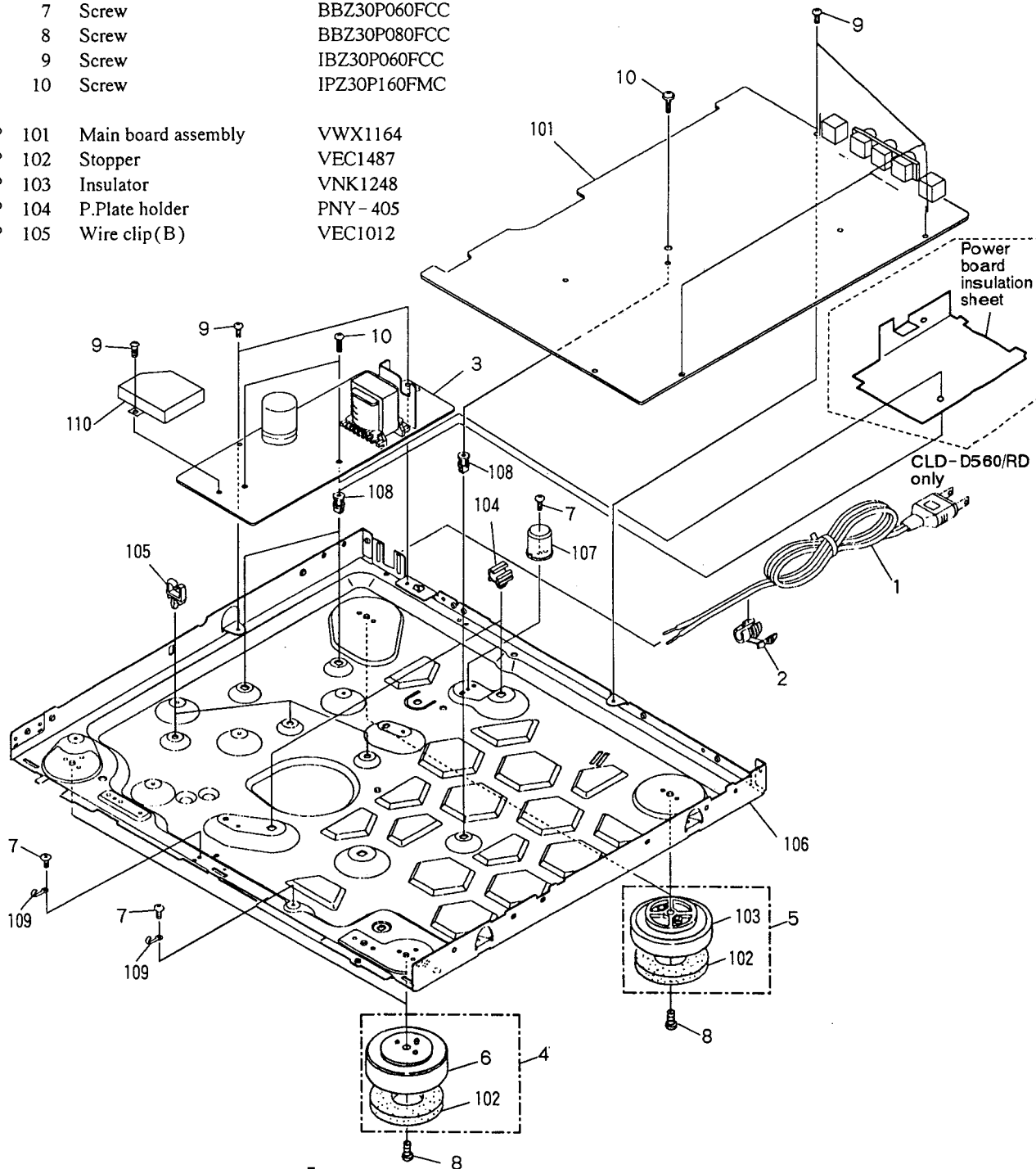




## 2.7 BASE SECTION (2)

### A Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.	
△	1	AC power cord	PDG1015	NSP 106	Base chassis	VNA1254
△	2	Cord stopper	CM- 22C	NSP 107	Spring guide	VNL1343
	3	Power supply assembly	VWR1179	NSP 108	PCB spacer	PNY - 404
	4	Insulator assembly	VXA1686	NSP 109	Cord holder	VNF-069
	5	Insulator assembly	VXA1687	NSP 110	Heat guard	VNE1864
	6	Insulator	VNK1095			
	7	Screw	BBZ30P060FCC			
	8	Screw	BBZ30P080FCC			
	9	Screw	IBZ30P060FCC			
	10	Screw	IPZ30P160FMC			
NSP	101	Main board assembly	VWX1164			
NSP	102	Stopper	VEC1487			
NSP	103	Insulator	VNK1248			
NSP	104	P.Plate holder	PNY - 405			
NSP	105	Wire clip(B)	VEC1012			

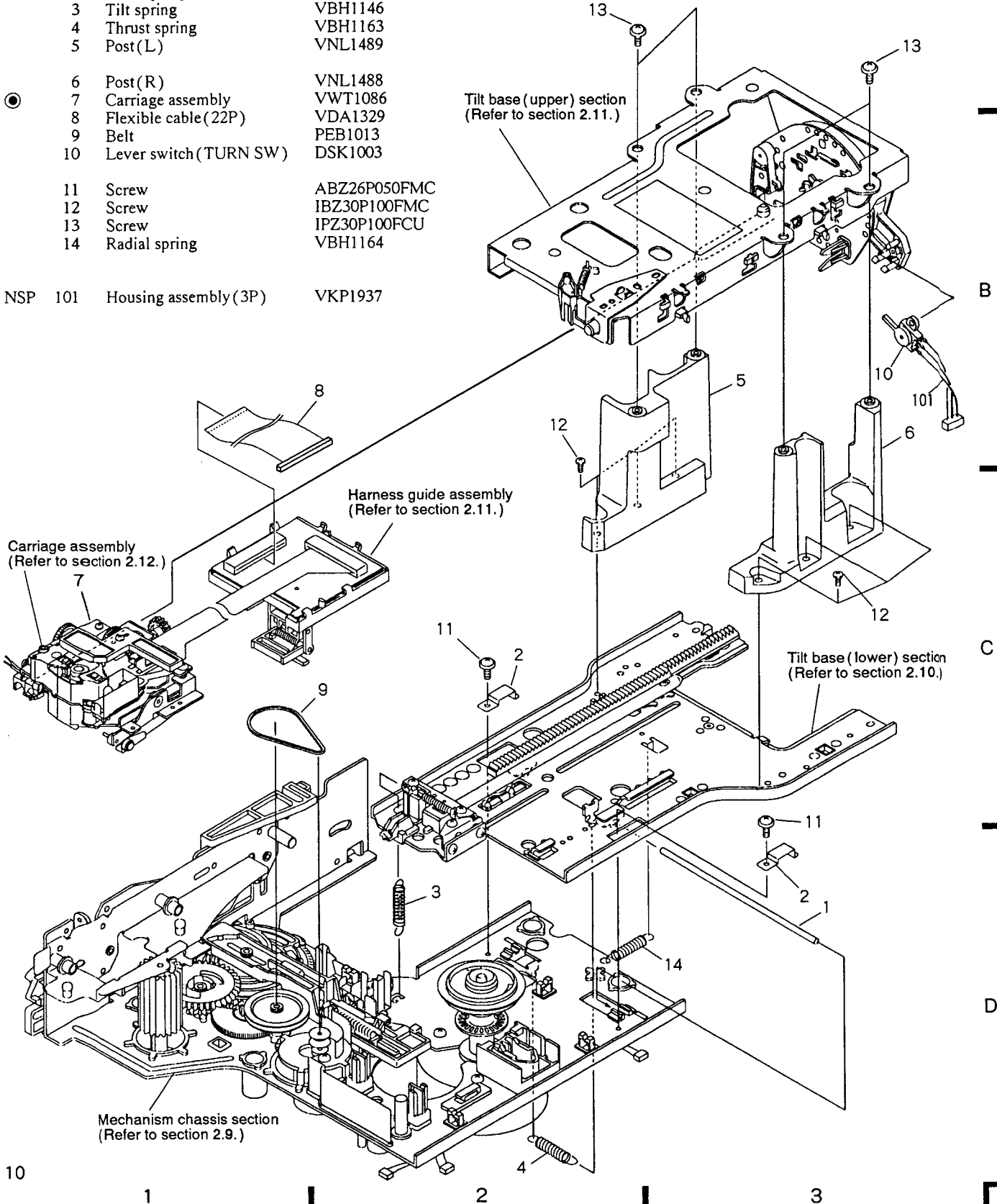


### 2.8 MECHANISM ASSEMBLY

#### Parts list

Mark	No.	Description	Part No.
	1	Tilt shaft	VLL1326
	2	Plate spring	VBK1013
	3	Tilt spring	VBH1146
	4	Thrust spring	VBH1163
	5	Post(L)	VNL1489
	6	Post(R)	VNL1488
●	7	Carriage assembly	VWT1086
	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

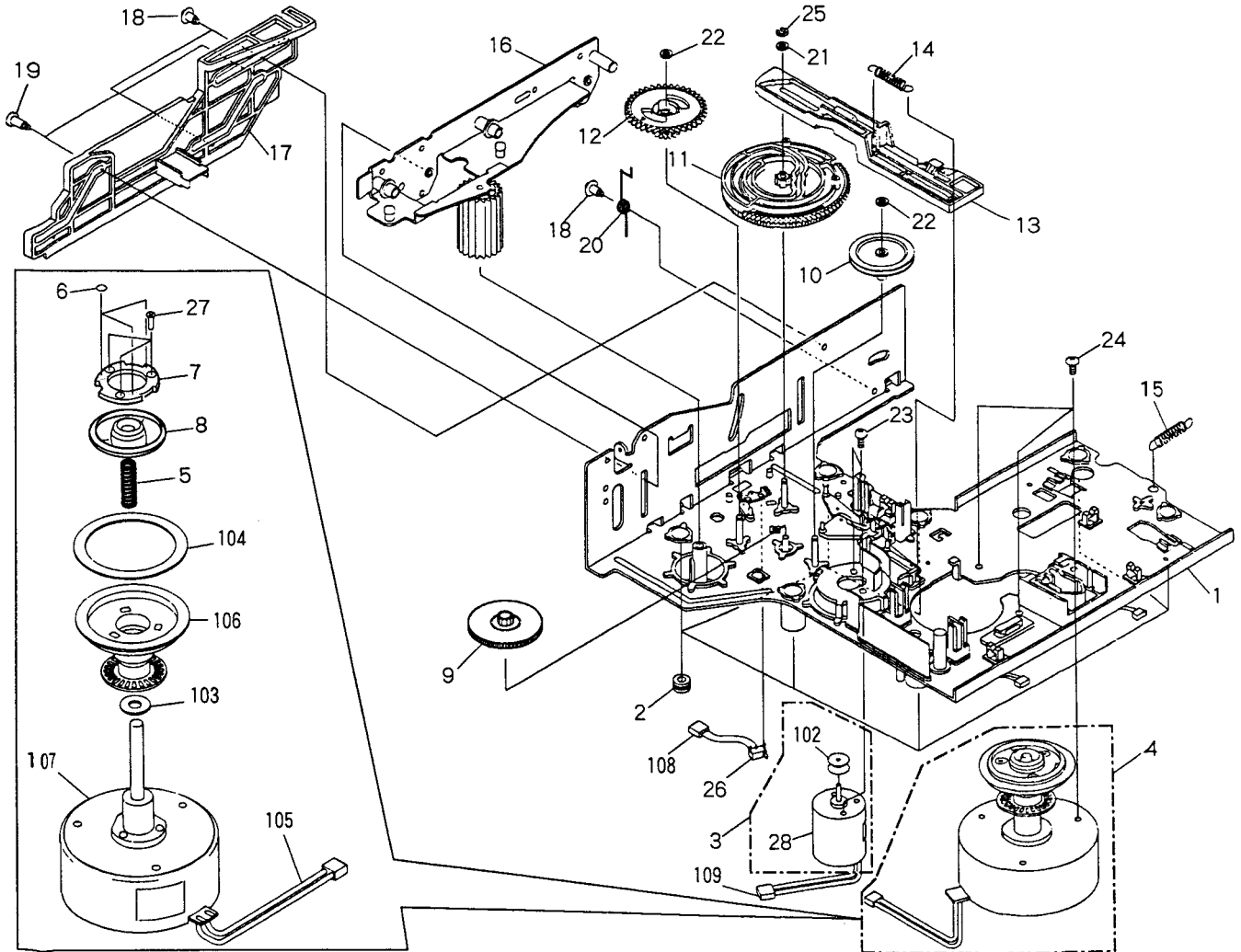
B NSP 101 Housing assembly(3P) VKP1937



2.9 MECHANISM CHASSIS SECTION

Parts list

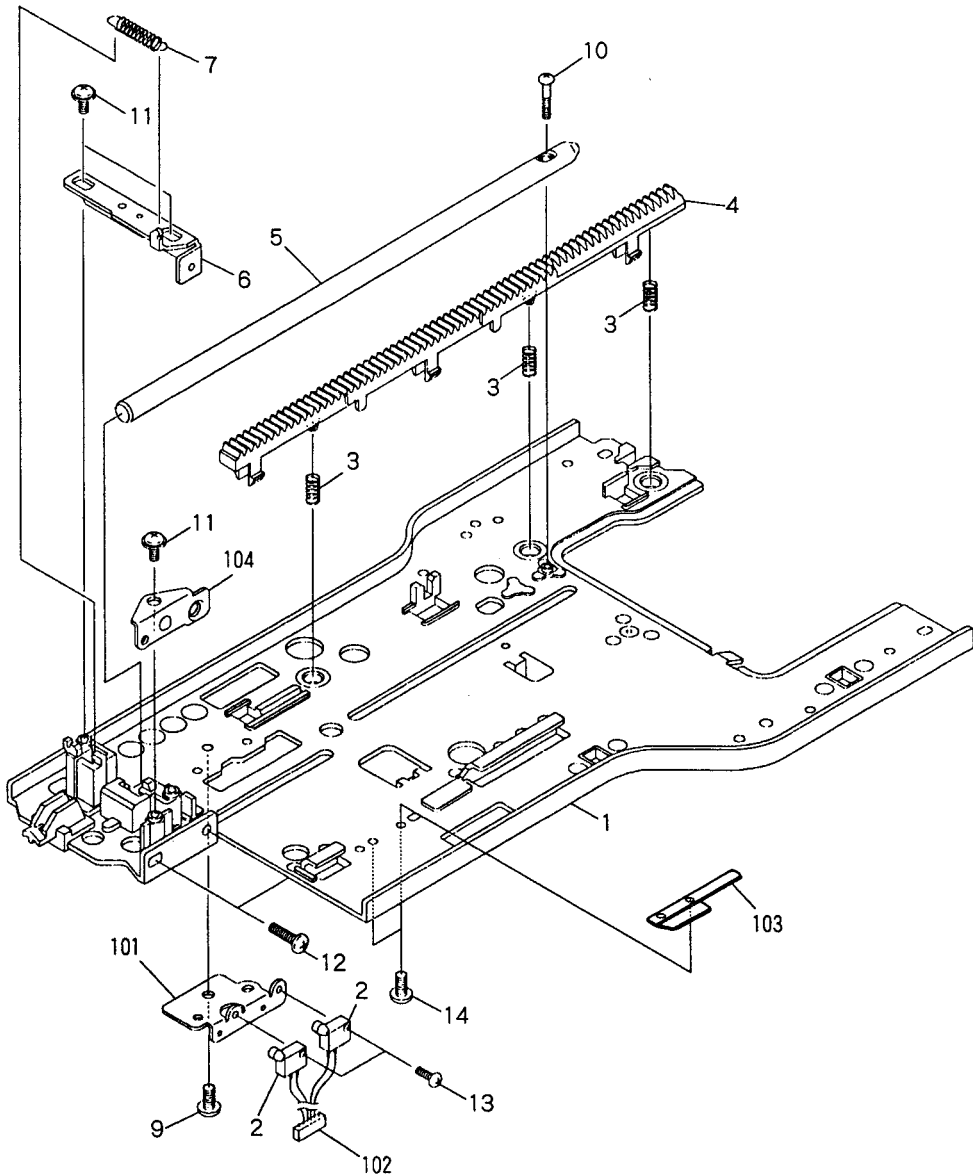
Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Chassis assembly	VXA1577	21	Washer	WA32N080W050
2	Rubber bushing	VEB1138	22	Washer	WT26D047D025
3	Loading motor assembly	VXX1262	23	Screw	PMZ30P040FCU
4	Spindle motor assembly	VXA1900	24	Screw	PMA30P050FCU
5	Centering spring	VBH1024	25	E ring	YE23FUC
6	Sheet	VEB1194	26	Push switch (TRAY SW)	DSG1014
7	Yoke plate A	VNE1835	27	Screw	CPZ20P080FMC
8	Centering hab(A)	VNL1296	28	Loading motor	VXM1034
9	Two stair gear	VNL1326	101	•••••	
10	Gear pulley	VNL1249	NSP 102	Motor pulley	VLL1176
11	Cam gear	VNL1350	NSP 103	Oil stopped washer	VEB1002
12	Follow gear	VNL1317	NSP 104	Rubber sheet	VEB1135
13	Spring slanting cam	VNL1316	NSP 105	Housing assembly(02P)	VKP1566
14	Cam spring	VBH1082	NSP 106	Turn table assembly	VXA1760
15	Radial spring	VBH1164	NSP 107	Spindle motor	VXM1046
16	Roller plate assembly	VXA1770	NSP 108	Housing assembly(02P red)	VKP1815
17	Slide cam	VNL1304	NSP 109	Housing assembly	VKP1875
18	Screw(B)	VBA1008			
19	Screw(C)	VBA1015			
20	Return spring	VBH1129			



## 2.10 TILT BASE (LOWER) SECTION

### Parts list

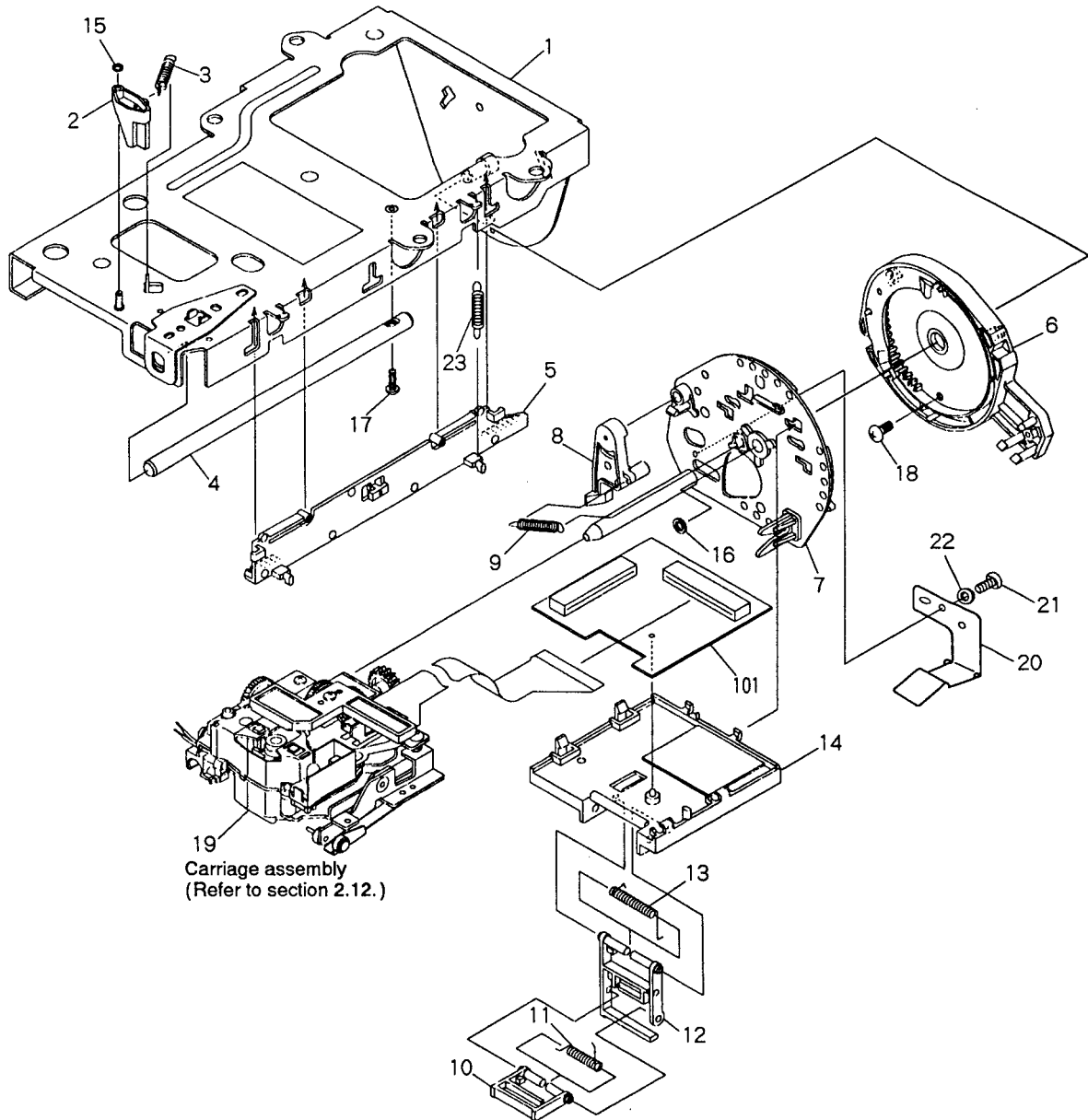
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
⊙	1	Tilt base(Lower)assembly	VXA1798	11	Screw	IPZ20P080FMC	
	2	Slide switch (LD,CDV INSIDE)	OSH1001	12	Screw	BMZ26P100FMC	
	3	Rack spring	VBH1133	13	Screw	PMZ20P060FMC	
	4	Rack gear(Lower)	VNL1346	14	Screw	PMZ20P030FMC	
	5	Carriage shaft(Lower)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



### 2.11 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	VXA1903	18	Screw	BBZ26P050FCC
7	R plate assembly	VXA1579	19	Carriage assembly	VWT1086
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	NSP 101	CNNB assembly	VWG1194



**2.12 CARRIAGE ASSEMBLY**

**Parts list**

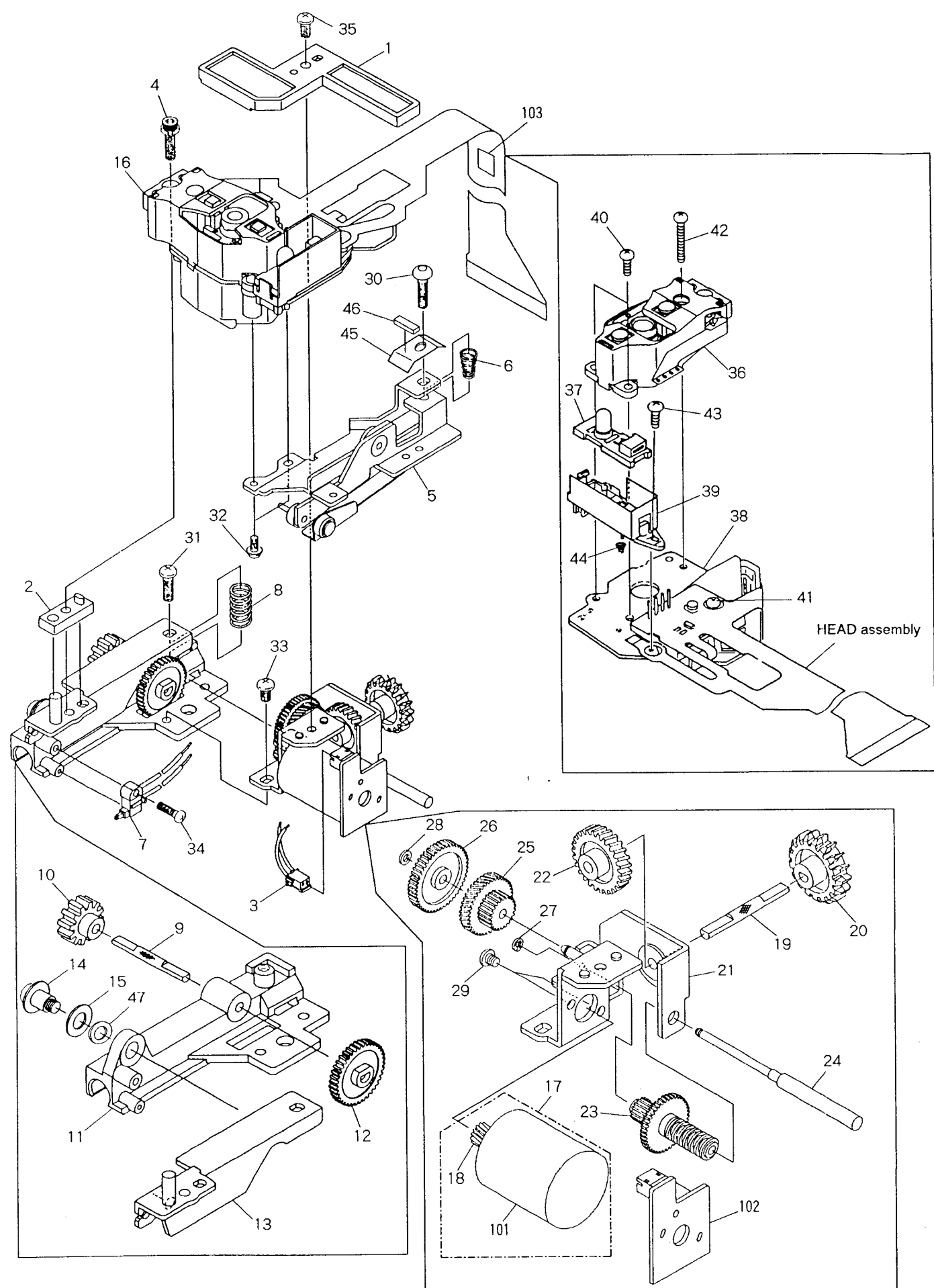
<u>Mark</u>	<u>No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Mark</u>	<u>No.</u>	<u>Description</u>	<u>Part No.</u>
	1	Flexible holder	VNL1358	NSP	101	Slider motor	VXM1027
	2	PU base	VNT1037	NSP	102	P.C.board, SLMB	VNP1295
	3	Housing assembly (1.5MP2P)	VKP1852	NSP	103	Flexible spacer	VEC1498
	4	Bolt 2.6 × 10	VLL1192				
	5	TAN base assembly	VXA1752				
	6	TAN spring	VBH1151				
	7	Slide switch (CD,B INSIDE)	VSK1008				
	8	TRKG spring	VBH1204				
	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	VXX1841				
	17	Carriage motor assembly - S	VXX1537				
	18	SL gear(A)	VNL1250				
	19	SL shaft(C)	VLL1289				
	20	Gear(G)	VNL1365				
	21	Motor holder assembly	VXA1939				
	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	PBZ20P080FMC				
	35	Screw	BBZ26P050FMC				
	36	Actuator assembly	VXX1740				
	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				
	47	Washer	WA42B080D010				

C

D

E

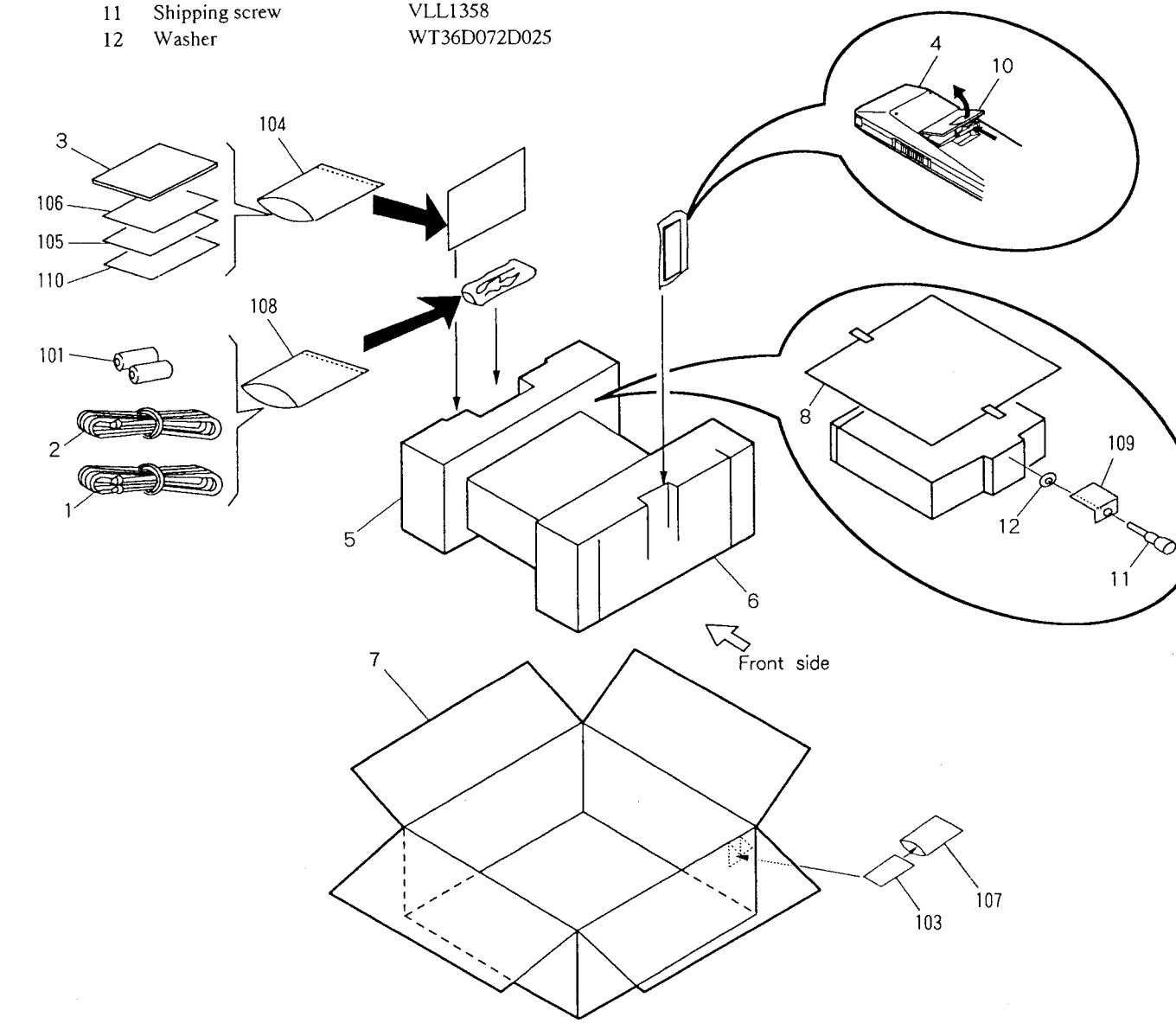
F



### 2.13 PACKING

#### Parts List

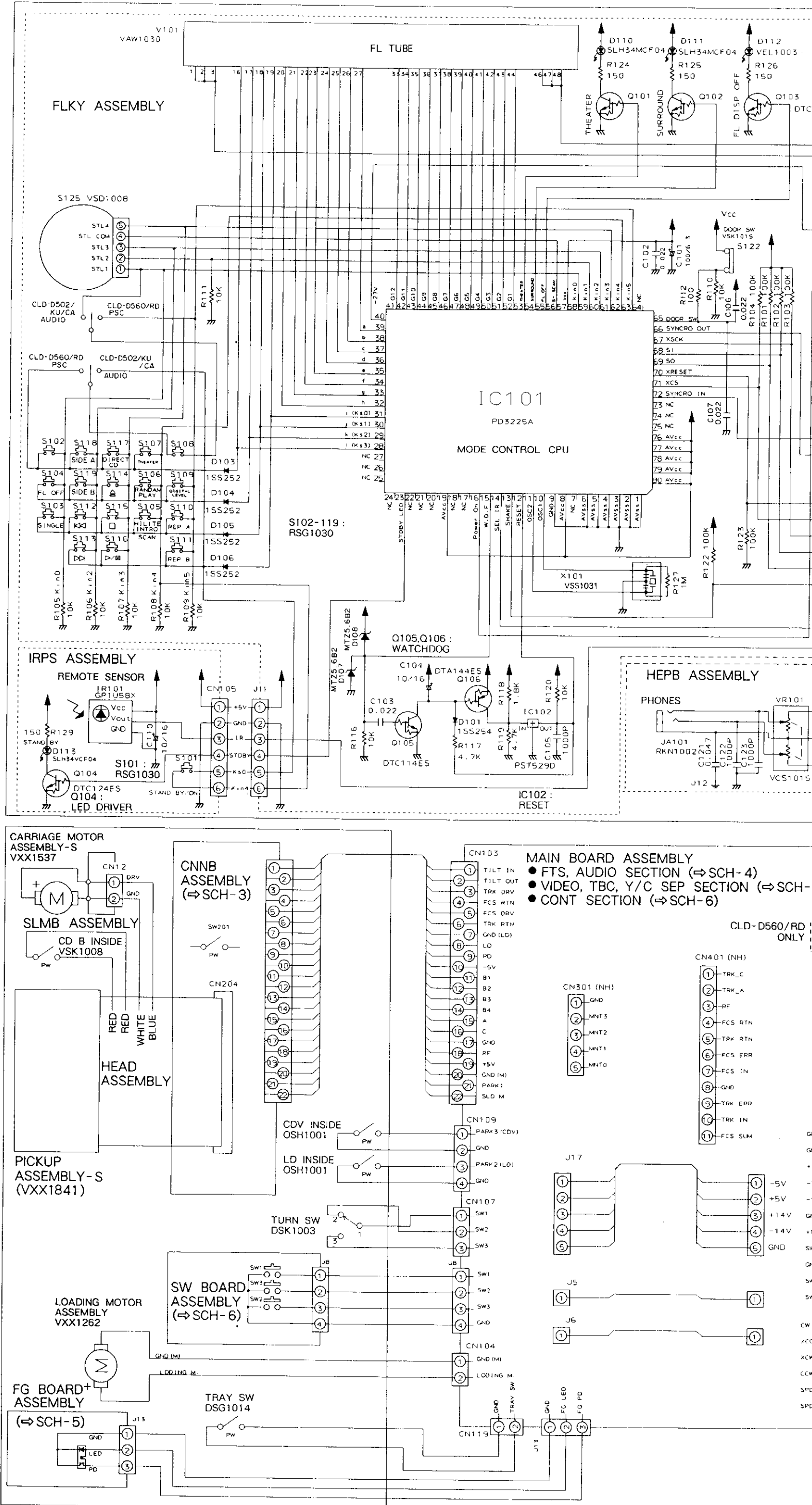
Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Connection cord	VDE-055	NSP 101	Dry cell battery (R03, AAA)	VEM-022
2	Video cable	VDE-056	102	•••••	
3	Operating instructions (English)	VRB1081	NSP 103	Warranty card	ARY1044
4	Remote control unit (CU-CLD084)	VXX1836	NSP 104	Polyethylene bag	VHL-014
			NSP 105	Caution card	VRR1009
5	Pad (R)	VHA1099	NSP 106	Caution card (UC)	VRM1026
6	Pad (F)	VHA1100	NSP 107	Polyethylene bag	Z21-010
7	Packing case	VHG1254	NSP 108	Polyethylene bag	Z21-029
8	Mirror mat	VHL1012	NSP 109	Tac card	VRW1200
9	•••••		NSP 110	Caution card (UC)	VRM1039
10	Battery cover	VNK1293			
11	Shipping screw	VLL1358			
12	Washer	WT36D072D025			



### 3. SCHEMATIC AND PCB CONNECTION DIAGRAMS

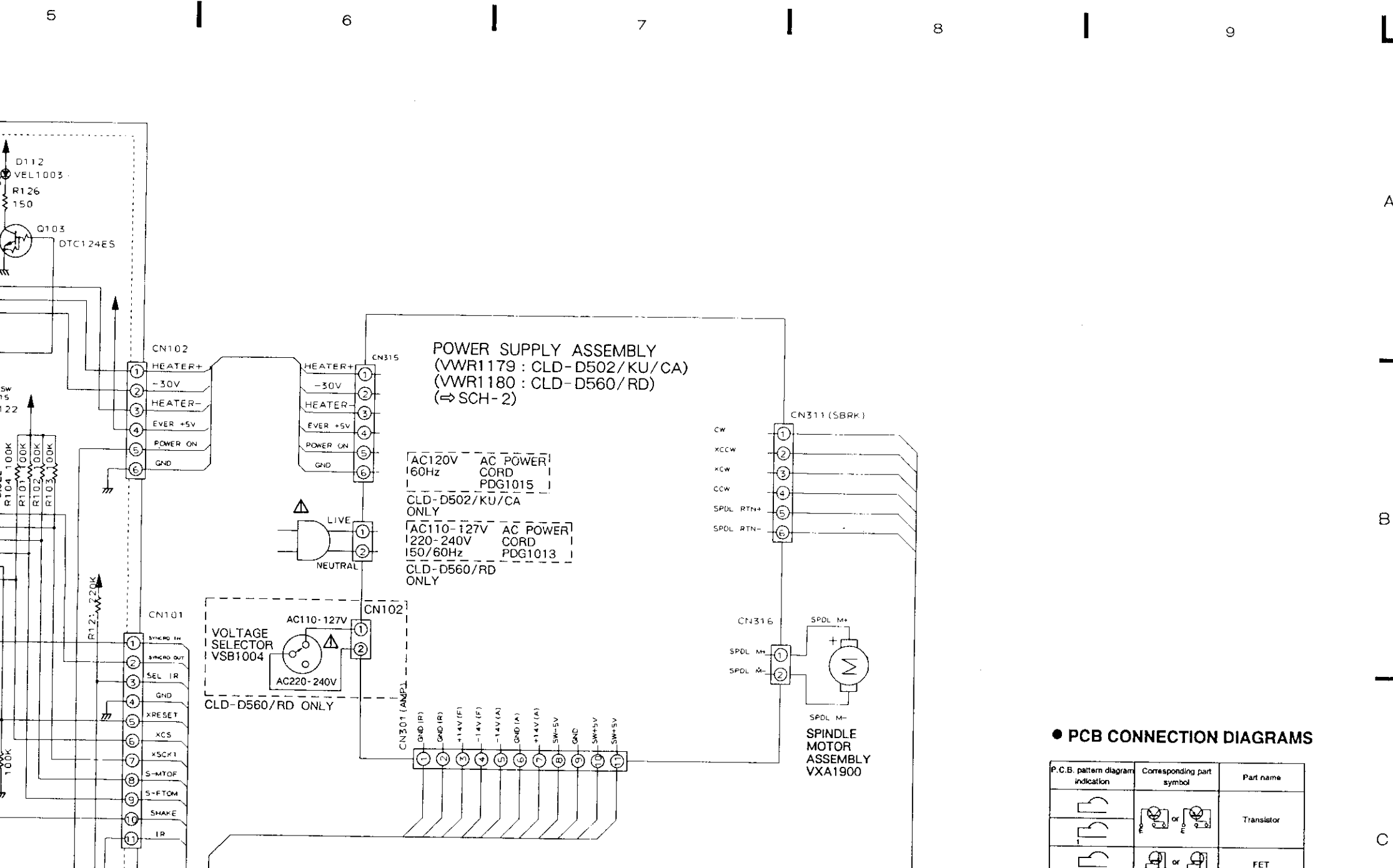
#### 3.1 OVERALL WIRING DIAGRAM, FLKY, IRPS AND HEPB ASSEMBLIES

A  
B  
C  
D  
E  
F



**SCH-1** OVERALL WIRING DIAGRAM, FLKY, IRPS AND HEPB ASSEMBLIES





● SCHEMATIC DIAGRAM

Note: (Type 4)

1. When ordering service parts, be sure to refer to "PARTS LIST OF EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:  
Unit: k $\Omega$ , M $\Omega$ , or  $\Omega$  unless otherwise noted.  
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.  
Tolerance: (F):  $\pm 1\%$ , (G):  $\pm 2\%$ , (K):  $\pm 10\%$ , (M):  $\pm 20\%$  or  $\pm 5\%$  unless otherwise noted.

4. CAPACITORS:  
Unit: pF or  $\mu$ F unless otherwise noted.  
Ratings: capacitor ( $\mu$ F) / voltage (V) unless otherwise noted.  
Rated voltage: 50V except for electrolytic capacitors.

5. COILS:  
Unit: mH or  $\mu$ H unless otherwise noted.

6. VOLTAGE AND CURRENT:  
□: DC voltage (V) in PLAY mode unless otherwise noted.  
⇨ mA or ⇩ mA: DC current in PLAY mode unless otherwise noted.  
Value in ( ) is DC current in STOP mode.

7. OTHERS:  
● → : Signal route.  
● ⊕ : Adjusting point.  
● ▼ (Red): Measurement point.  
● The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

8. SWITCHES (Underline indicates switch position):

- OUT OF P.C. BOARD ASSEMBLY
- Push switch : TRAY SW
  - Lever switch : TURN SW
  - Slide switch : LD, CDV INSIDE
  - Slide switch : CD, B INSIDE
  - SW 基板 Ass'y
  - S1-S3: LOADING/TILT
  - FLKY Ass'y
  - S102: FRONT SURROUND
  - S103: SINGLE
  - S104: FL DISPLAY OFF
  - S105: HILITE/INTRO
  - S106: RANDOM PLAY
  - S107: THEATER
  - S108: PSC
  - S109: D-LEVEL CTRL
  - S110: A-REPEAT
  - S111: B-REPEAT
  - S112: SKIP
  - S113: SKIP
  - S114: OPEN/CLOSE
  - S115: STOP
  - S116: PLAY/PAUSE
  - S117: DIRECT CD
  - S118: A-DISC SIDE
  - S119: B-DISC SIDE
  - S122: DOOR SW
  - S125: JOG & SHUTTLE (REV FWD)
  - IRPS Ass'y
  - S201: POWER STANDBY/ON

9. For SCH-□ on the schematic diagram:  
SCH-□ indicates the drawing number of the schematic diagram.  
(SCH stands for schematic diagram.)

● PCB CONNECTION DIAGRAMS

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
		Styroly 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  $\ominus$  shows negative terminal.
4. The diode marked with  $\ominus$  shows cathode side.
5. The transistor terminal marked with  $\ominus$  shows emitter.

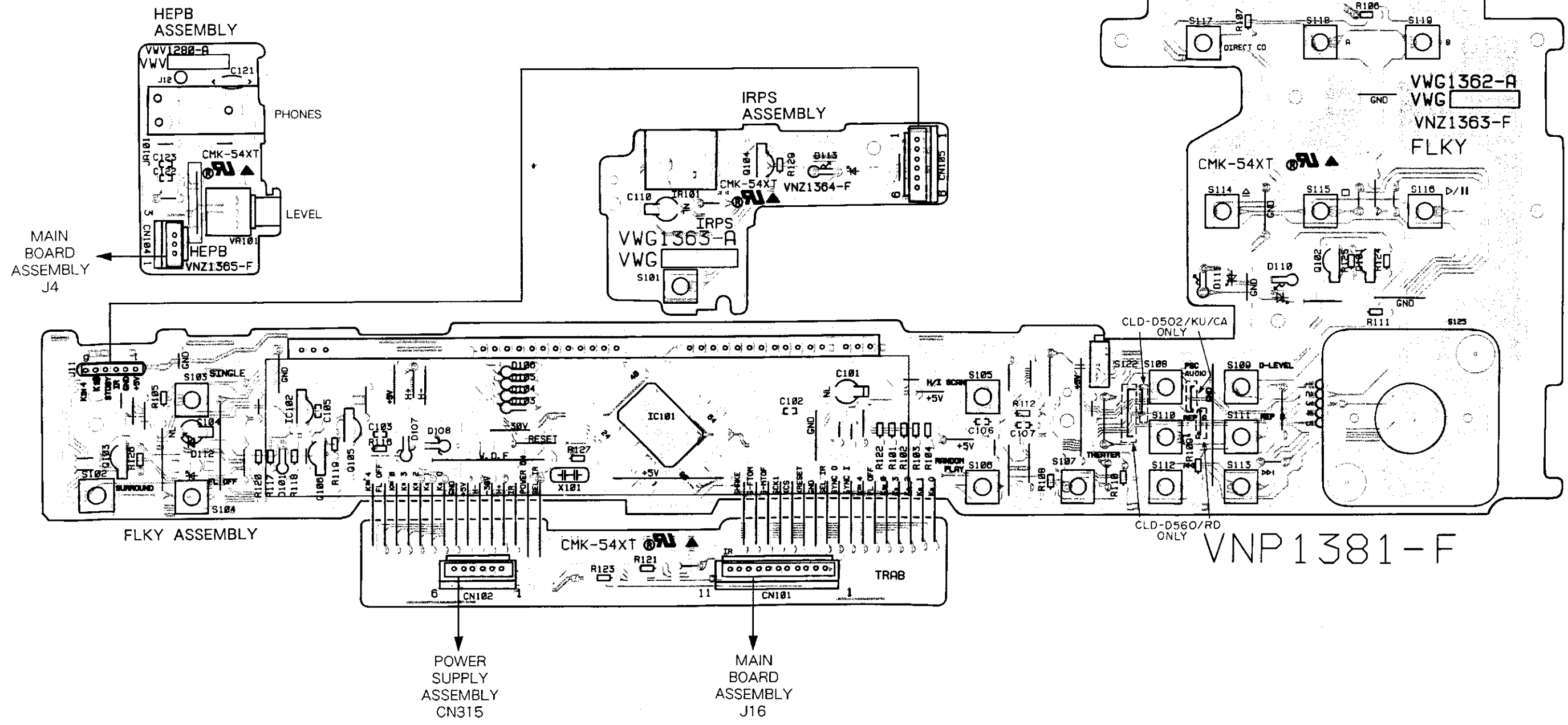
OVERALL WIRING DIAGRAM, FLKY, IRPS AND HEPB ASSEMBLIES

SCH-1

1 2 3 4 5

A

Q103 IC102 Q106 Q105 IC101 Q102 Q101



B

C

D

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

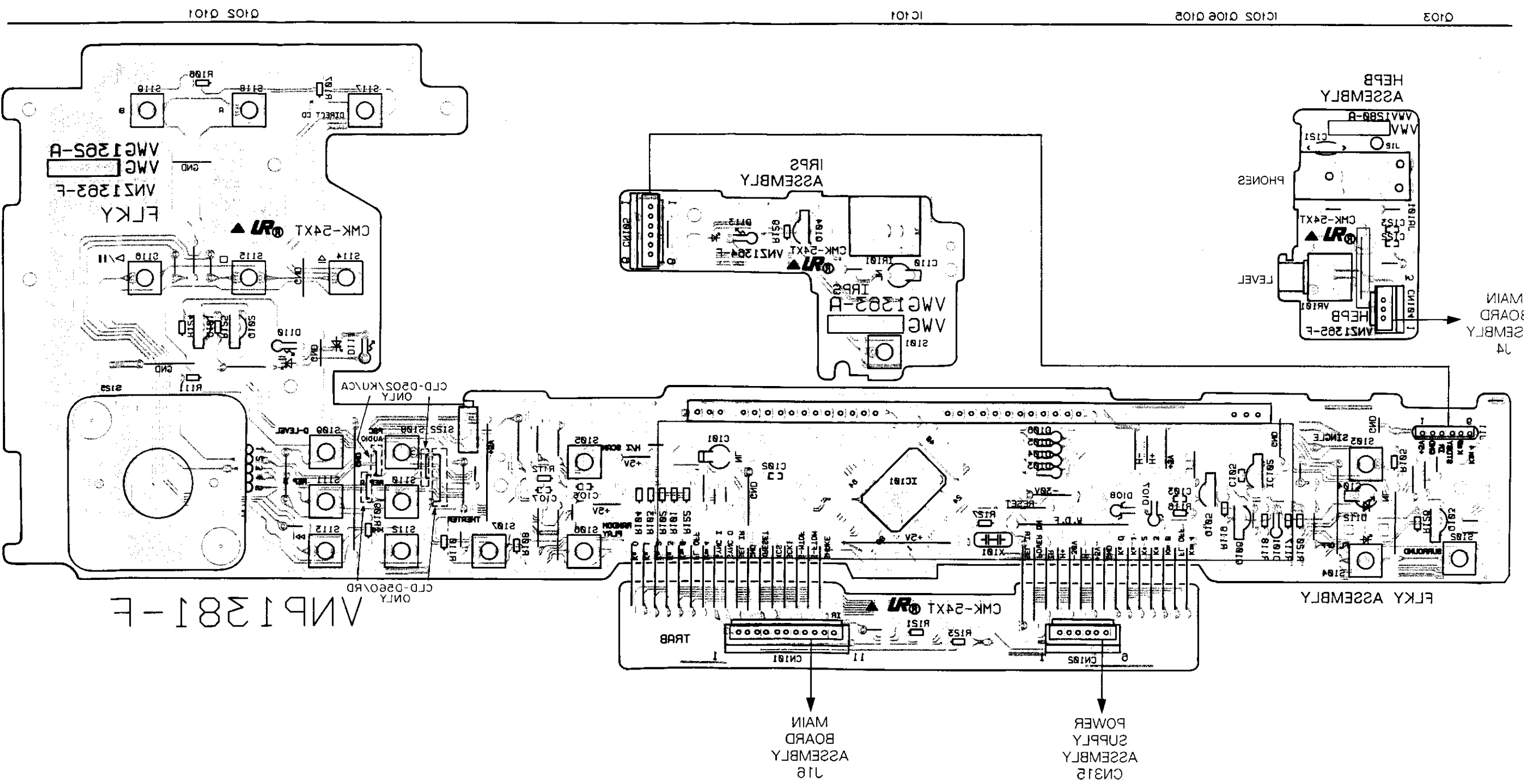
1 2 3 4 5 6

A

B

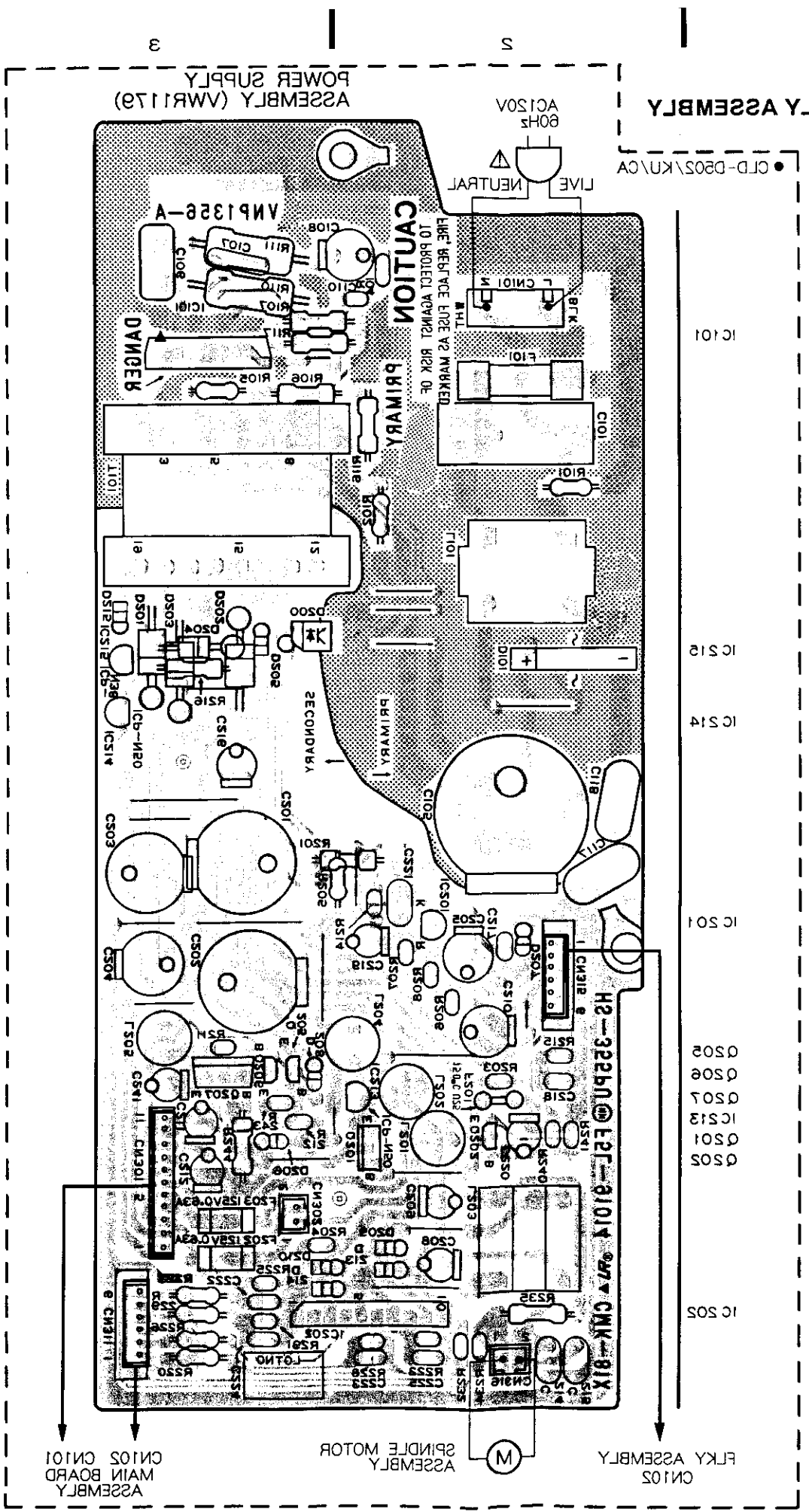
C

D

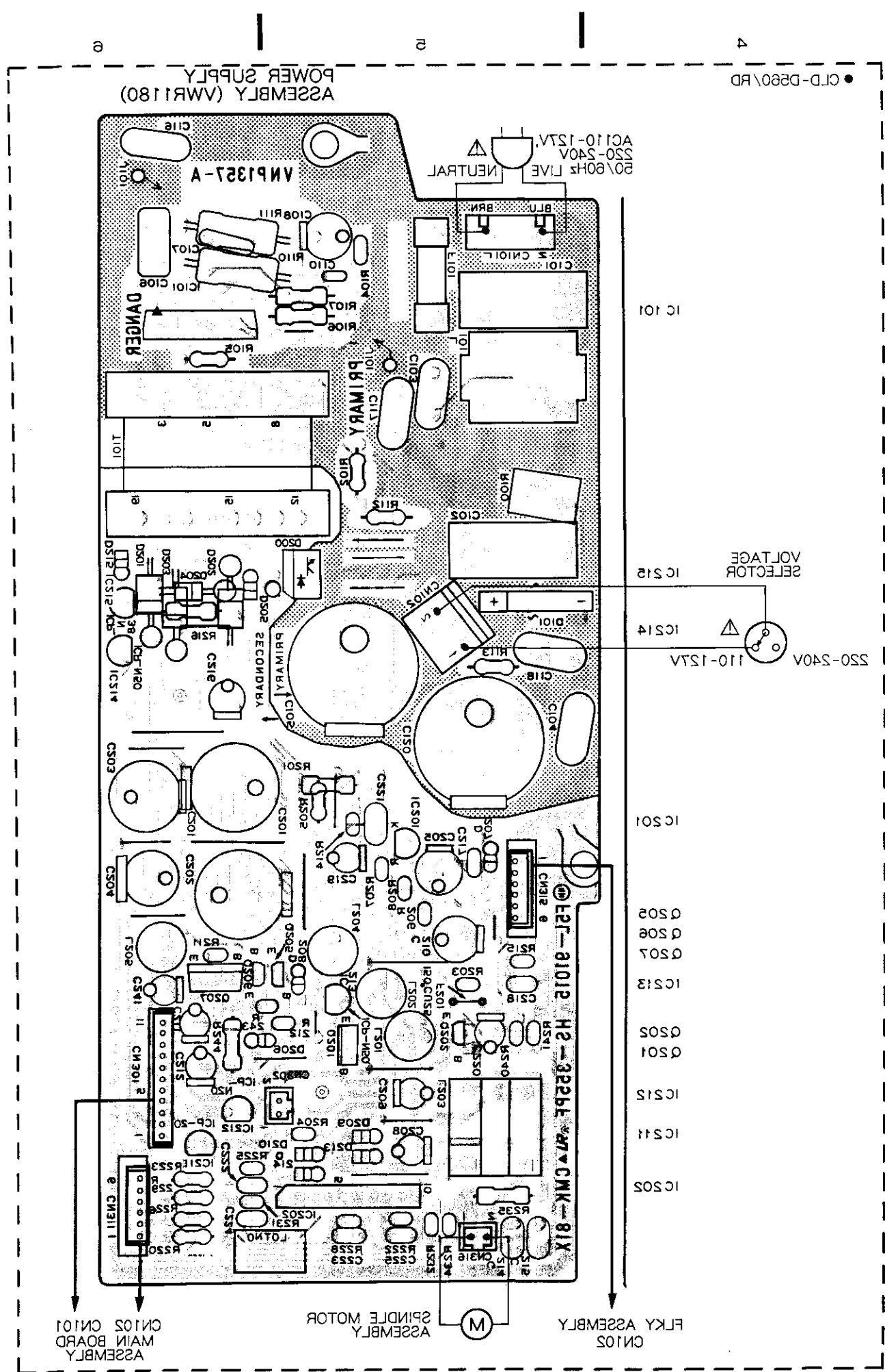


This P. C. B. connection diagram is viewed from the foil side.

3.S POWER SUPPLY ASSEMBLY



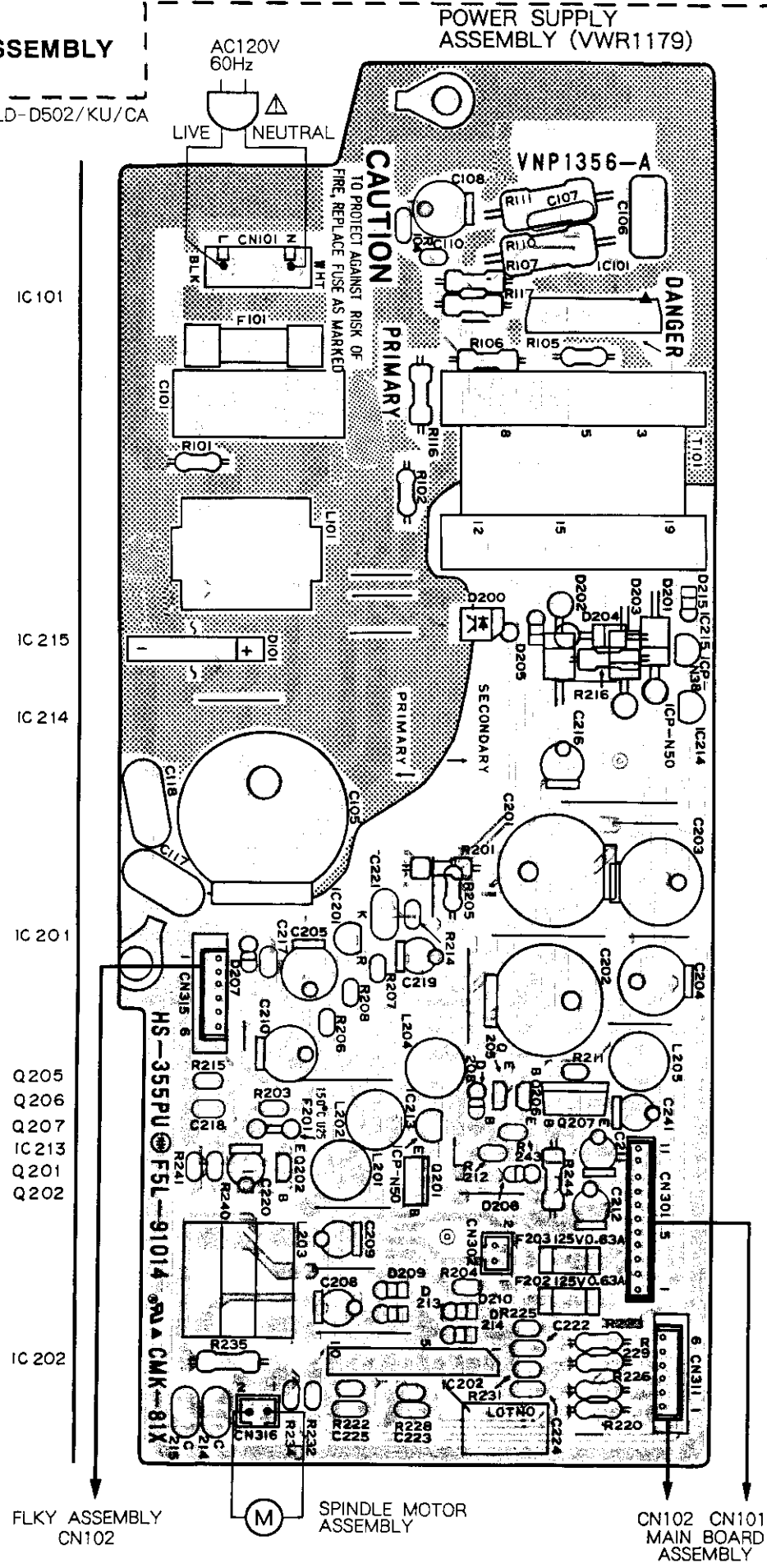
This P. C. B. connection diagram is viewed from the foil side.



**CLD - D502**

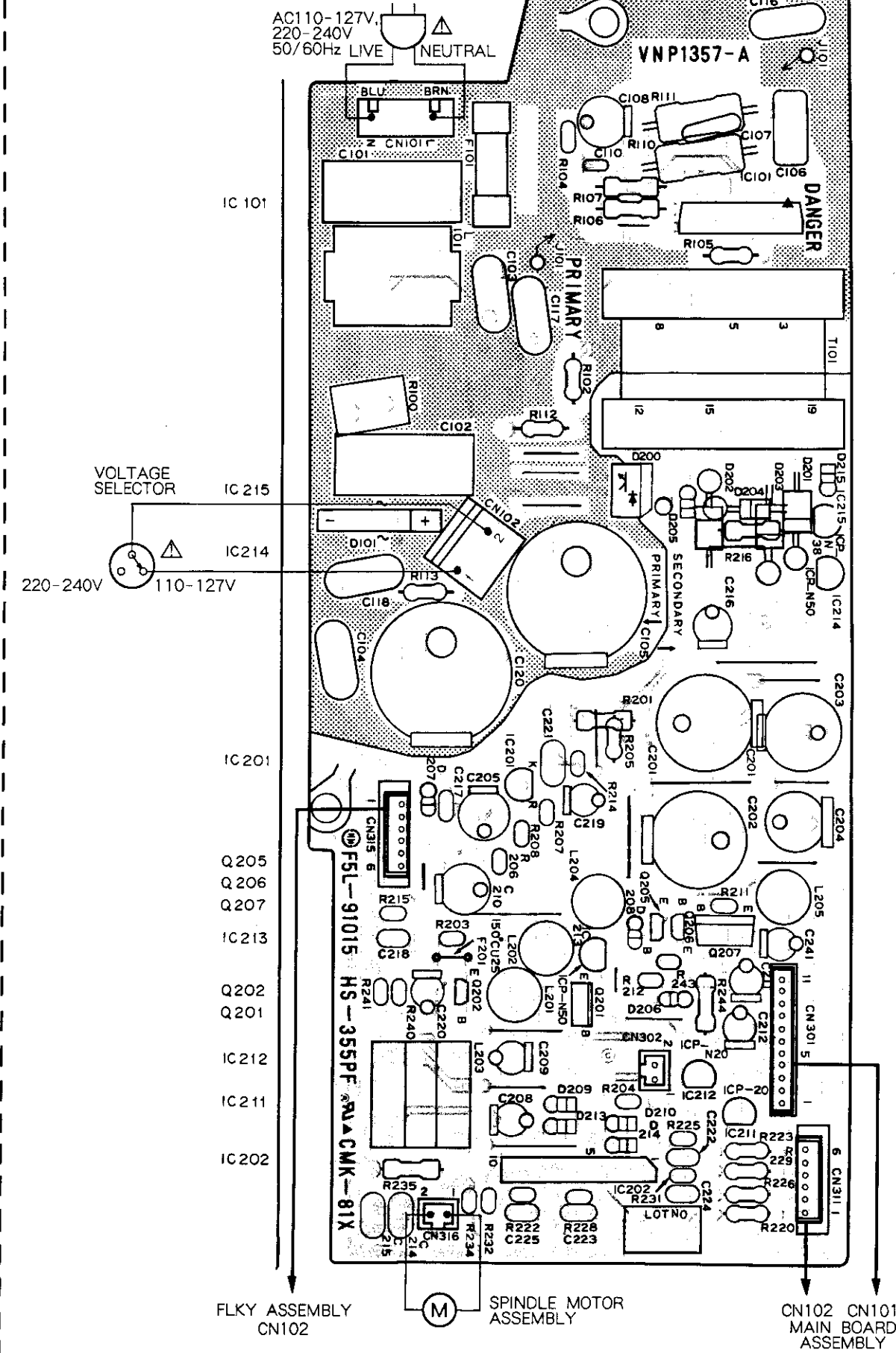
**3.2 POWER SUPPLY ASSEMBLY**

• CLD-D502/KU/CA



• CLD-D560/RD

**POWER SUPPLY ASSEMBLY (VWR1180)**

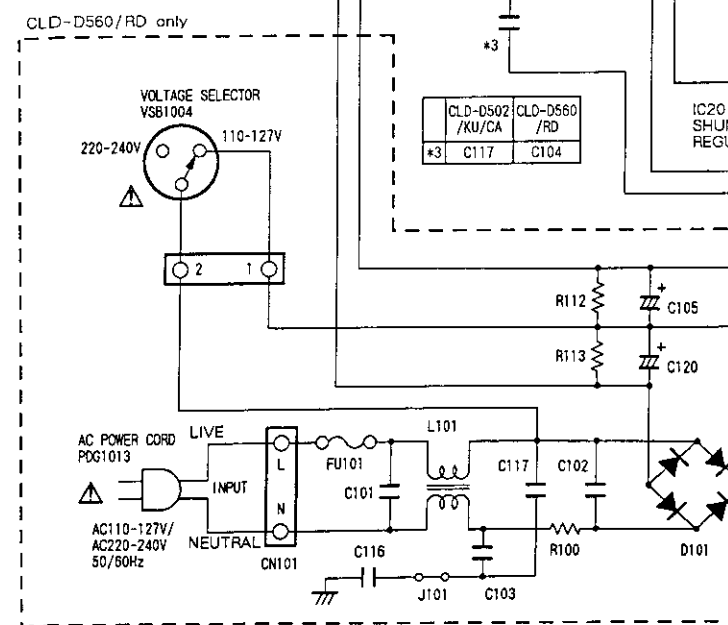
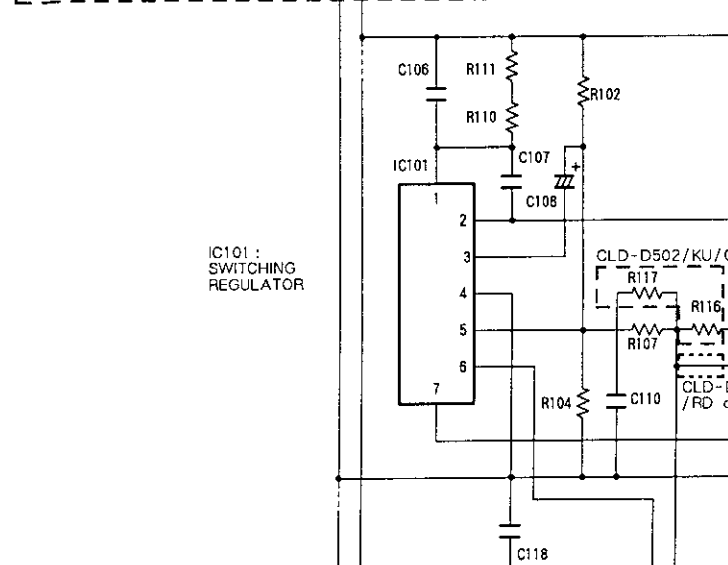
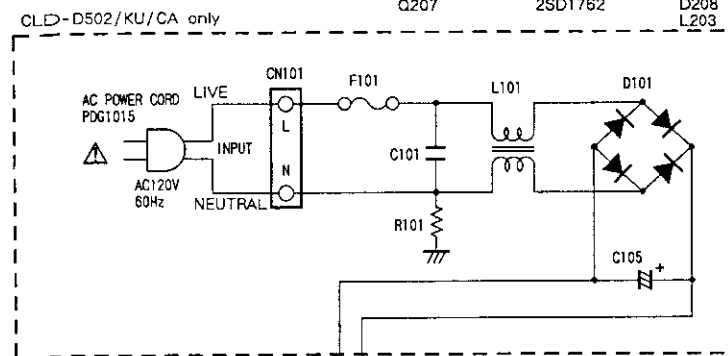


This P. C. B. connection diagram is viewed from the parts mounted side.

POWER SUPPLY ASSEMBLY (VWR1179 : CLD-D502/KU/CA)  
(VWR1180 : CLD-D560/RD)

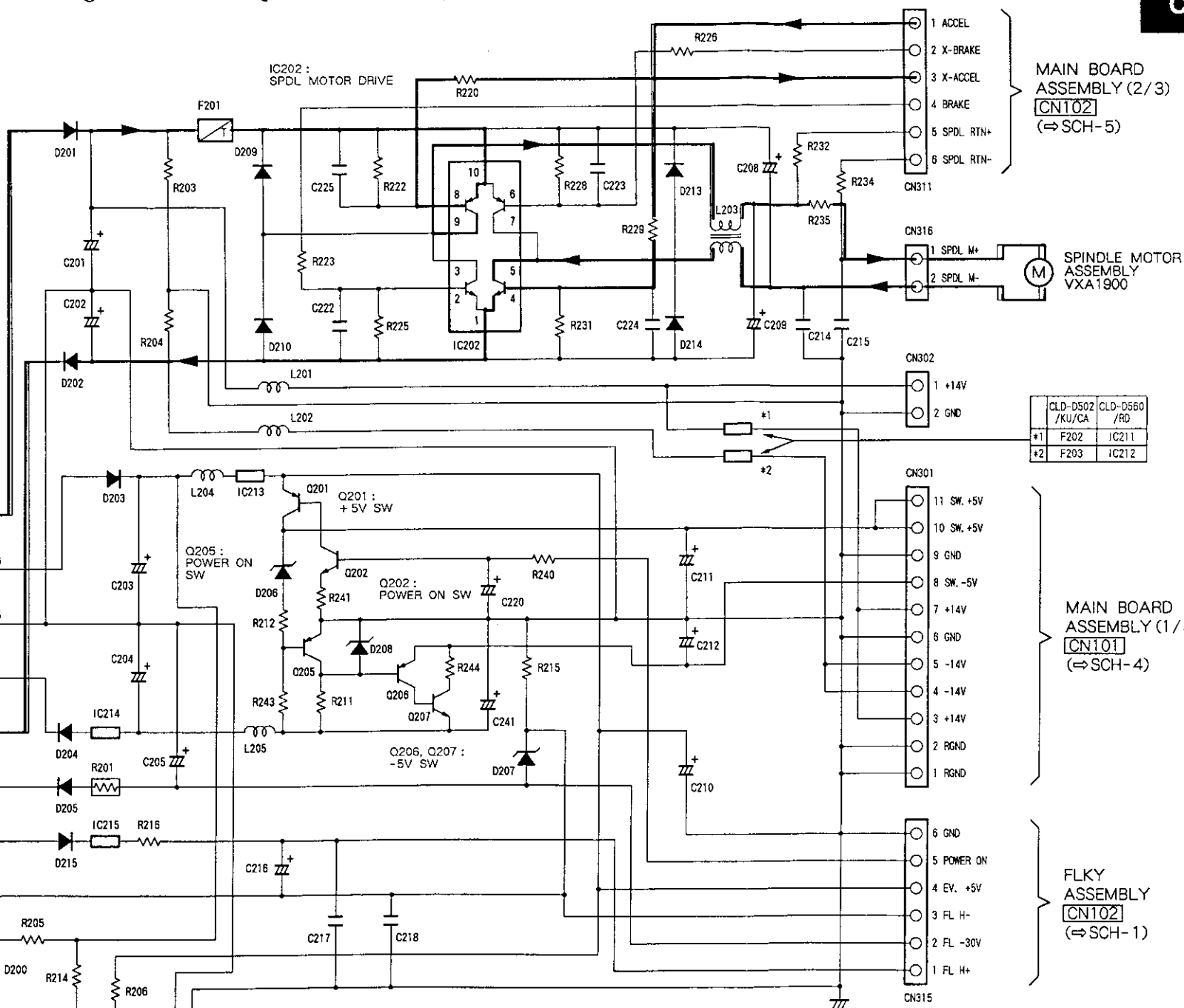
CLD-D560/RD	
IC211,212	ICP-N20
F202,203	NT1-0.63A
CLD-D502/KU/CA	

IC202	THSP4-FU	D201, 202	S3LA20
IC213, 214	ICP-N50	D203	S3S4M
IC215	ICP-N38	D204	ERB83-006
Q201	2SB1331	D205, 209, 210,	D1NL20
Q202	2SC1740S	D213-215	MTZJ2.4A
Q205,206	2SA933S	D206	MTZJ3.3A
Q207	2SD1762	D207	MTZJ5.6C
		D208	VTL1008
		L203	



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.



MAIN BOARD ASSEMBLY (2/3)  
CN102  
(⇒SCH-5)

SPINDLE MOTOR ASSEMBLY VXA1900

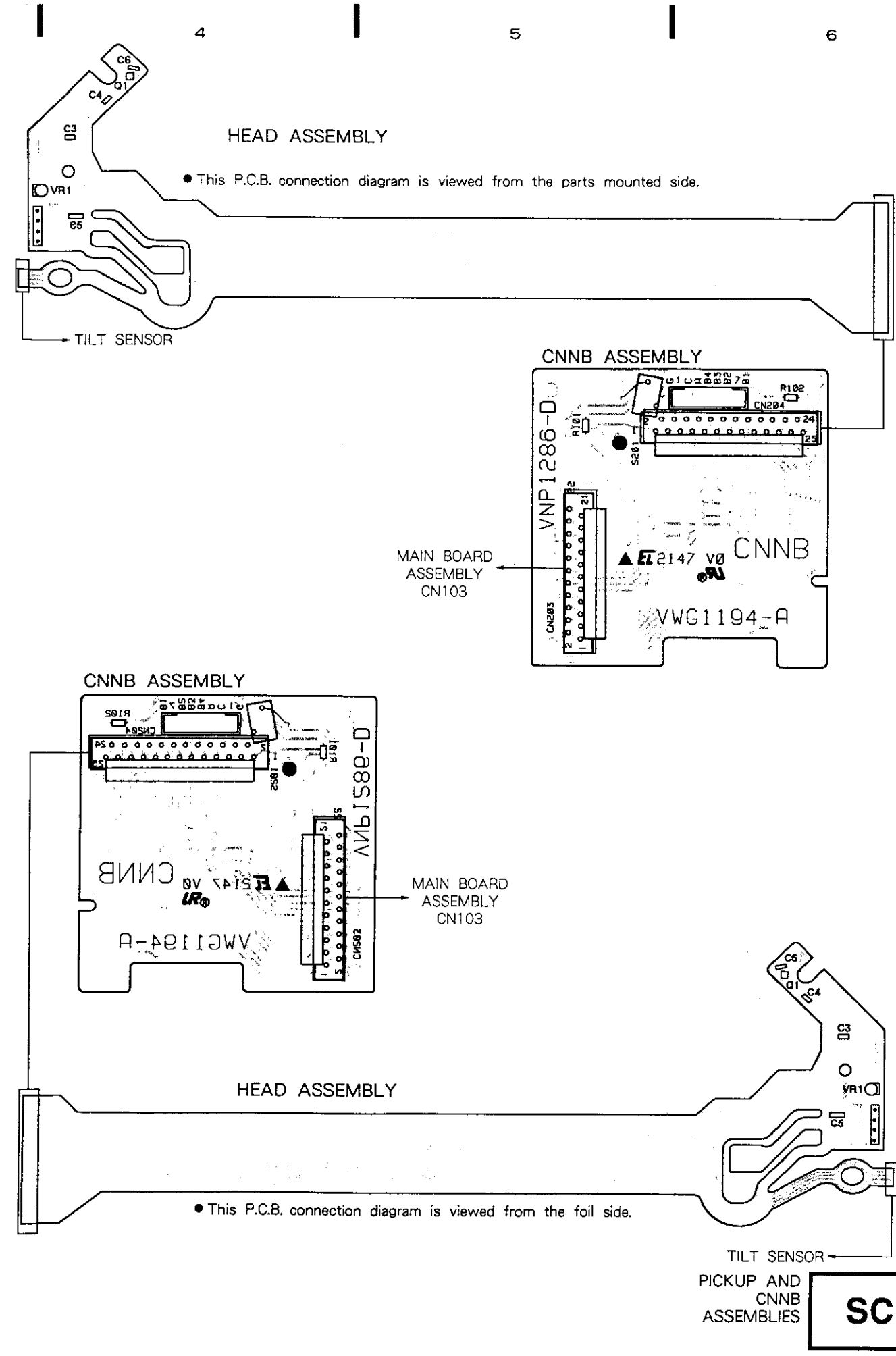
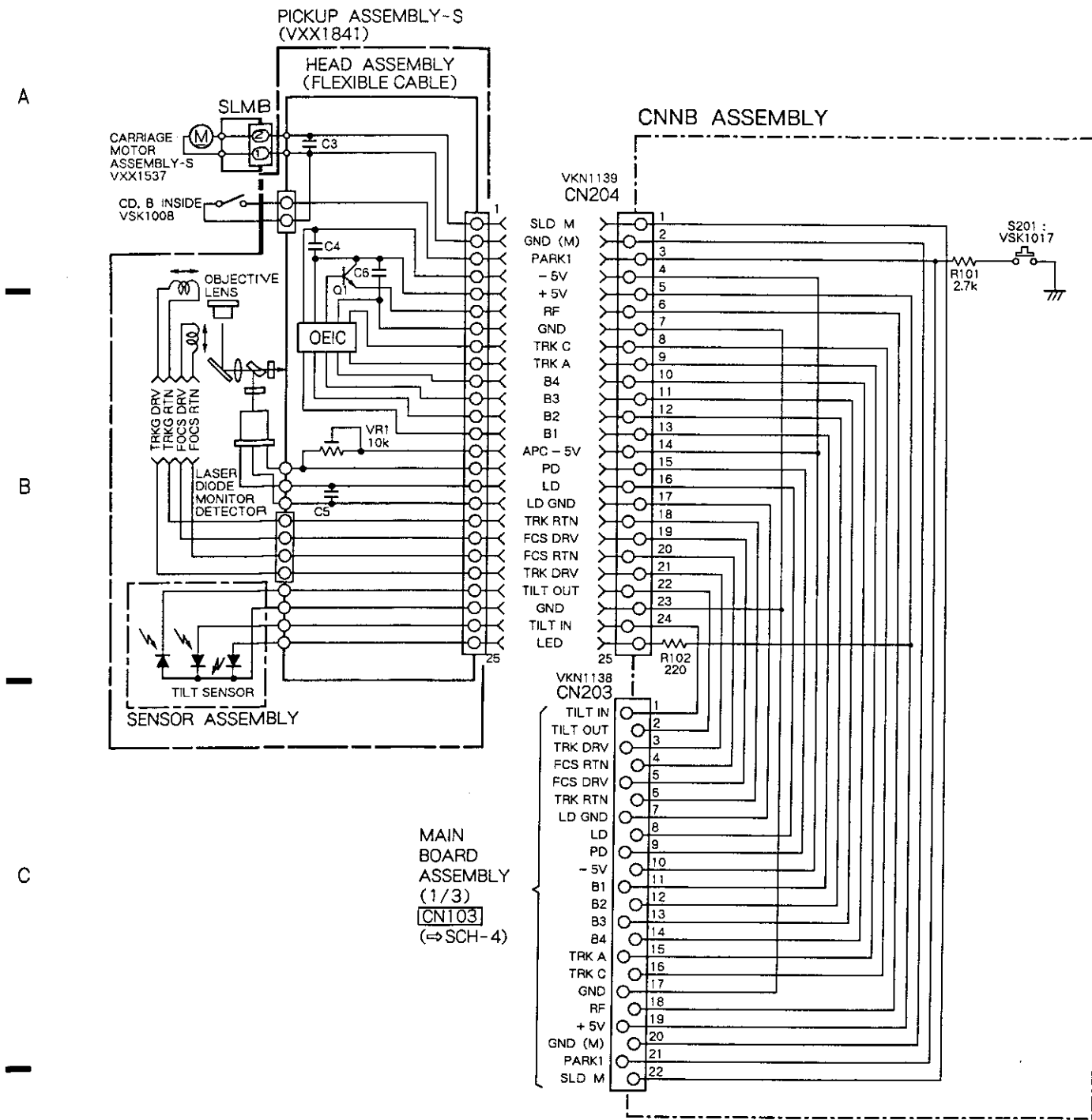
CLD-D502 /KU/CA	CLD-D560 /RD
*1 F202	IC211
*2 F203	IC212

MAIN BOARD ASSEMBLY (1/3)  
CN101  
(⇒SCH-4)

FLKY ASSEMBLY  
CNT02  
(⇒SCH-1)

: SPDL Servo Loop Line

3.3 PICKUP AND CNNB ASSEMBLIES

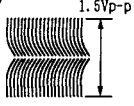
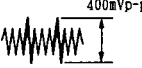
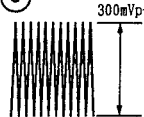


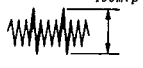
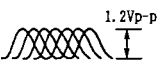
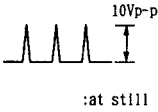
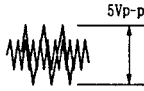

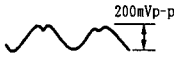


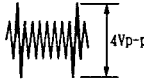
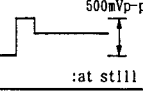

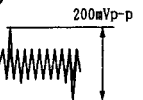
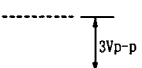
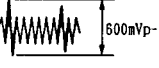

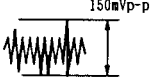
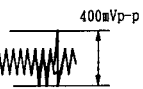
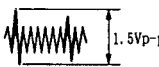
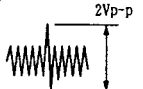
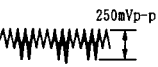
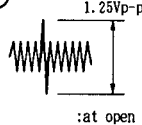
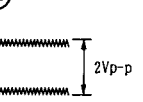
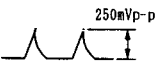
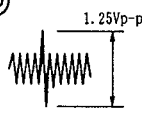



**SCH-3** PICKUP AND CNNB ASSEMBLIES

PICKUP AND CNNB ASSEMBLIES **SCH-3**

Waveforms of the FTS section

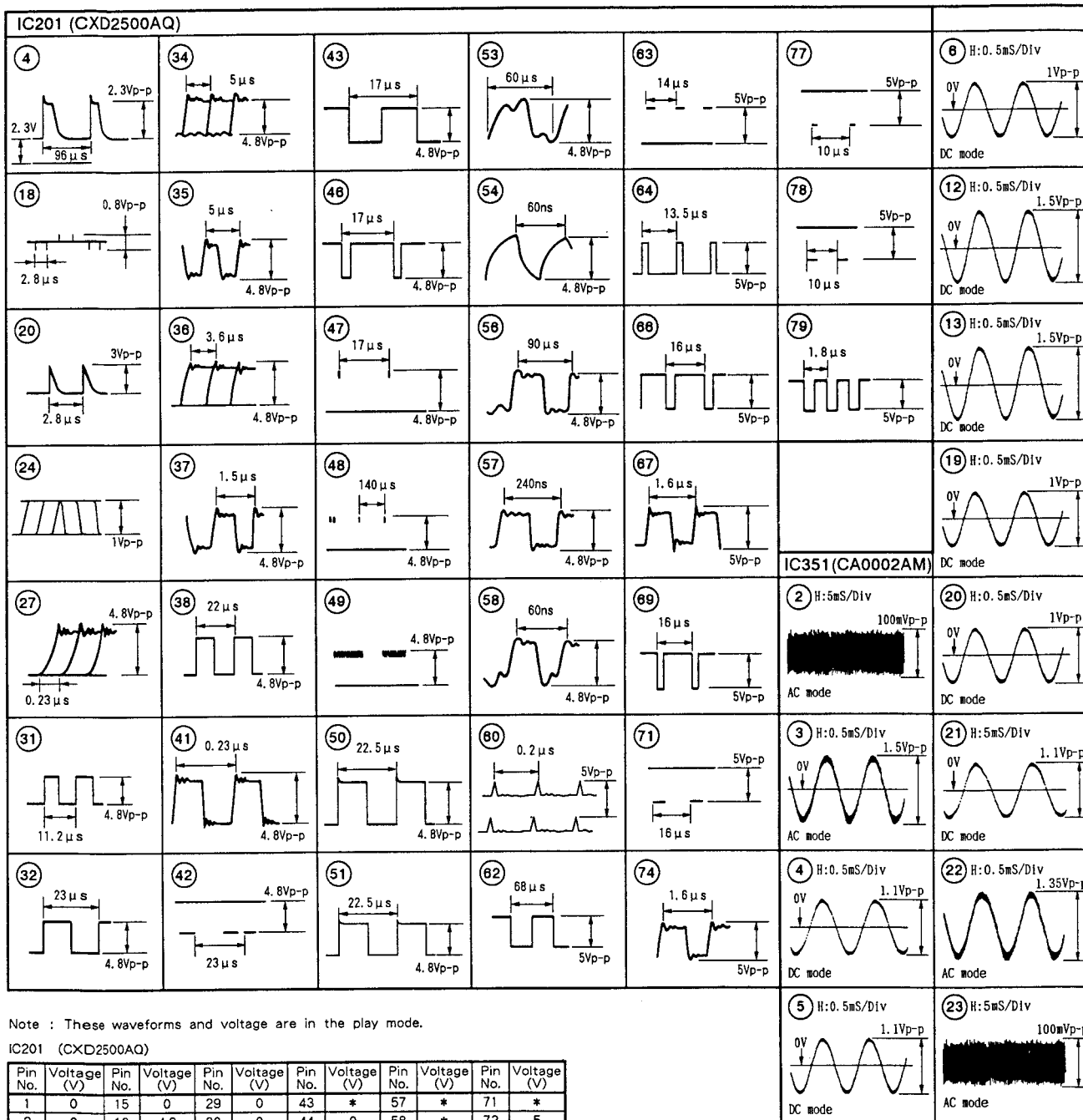
Note : (No.) in the table correspond to the pin No.

IC801 (CXA1081S)		CN401	IC803 (PM3003A)		Other points
(1) 	(20) 	(3) 	(1) 	(39) 	(4) Q828 Collector 
(2) 	(22) 	(4) 	(8) 	(40) 	
(7) 	(23) 	(5) 	(34) 	(43) 	
(12) 	(27) 	(6) 	(35) 	(47) 	
(15) 		(7) 	(38) 	(55) 	
		(9) 	(38) 	(56) 	
		(10) 			
		(11) 			



Waveforms of the AUDIO section

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



Note : These waveforms and voltage are in the play mode.

IC201 (CXD2500AQ)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
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		

\* : Refer to waveforms.

Note : These waveforms and voltage are in the play mode.

• IC351 (CA0002AM)

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

\* : Refer to waveforms.

# 3.4 MAIN BOARD ASSEMBLY (1/3)

## MAIN BOARD ASSEMBLY (1/3)

A  
B  
C  
D  
E  
F

POWER SUPPLY ASSEMBLY [CN301] (SCH-2)

CNNB ASSEMBLY [CN203] (SCH-3)

**SCH-4**

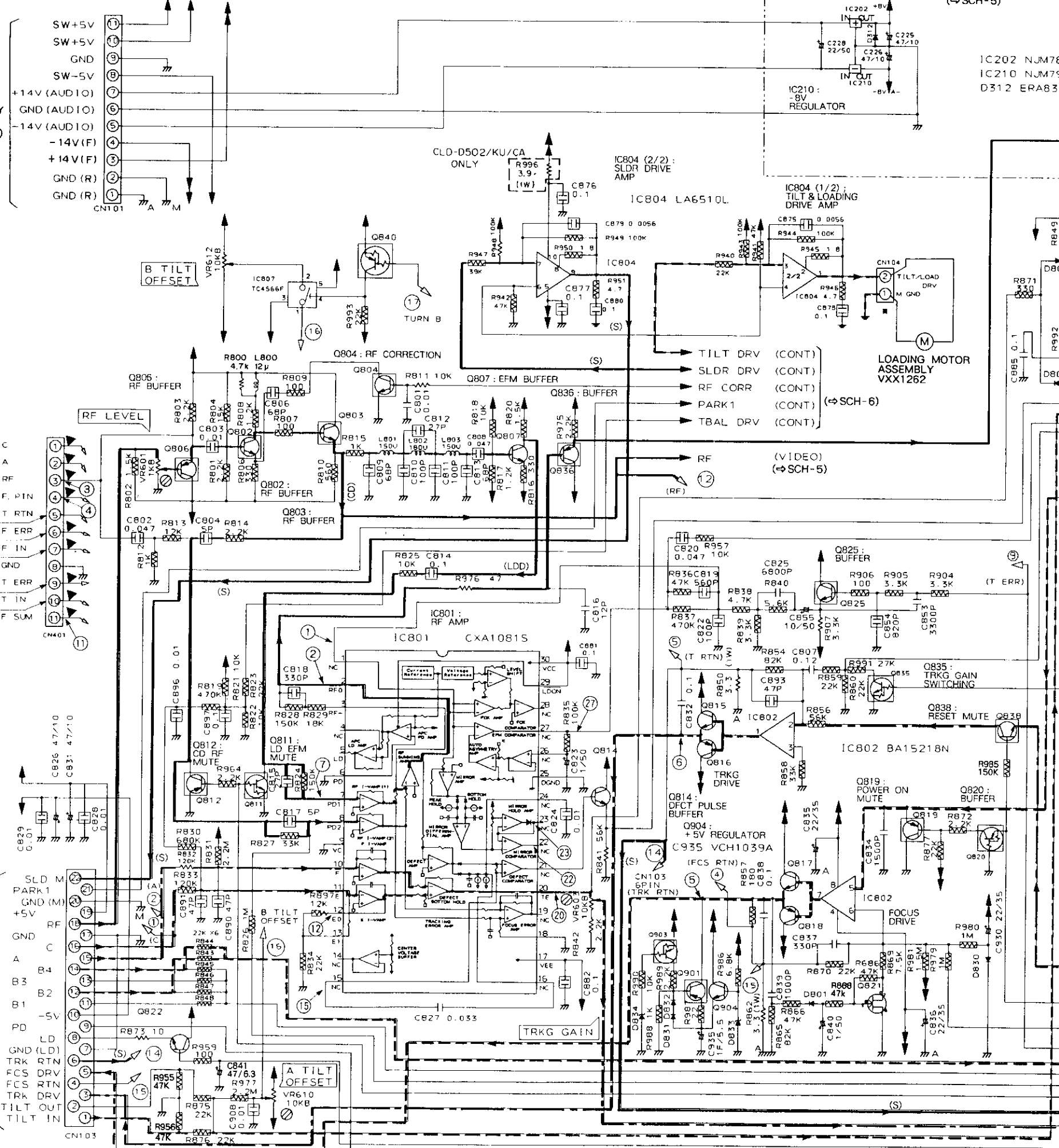
MAIN BOARD ASSEMBLY (1/3)

### • FTS SECTION

- FTS SECTION
- Q802-804,807,814,825 2SC2412K
- Q833,838
- Q806,812,819,836,901 2SA1037K
- Q811,823,827,828,835, DTC124EK
- Q837
- Q815,817 2SD1762-F8
- Q816,818 2SB1185-F8
- Q820,824,826,829,830, DTA124EK
- Q840,903
- Q821 2SK184
- Q822 2SD1858X
- Q904 2SC1740S
- D801-808,830-832 1SS254
- D833 MTZJ6.2B
- D834 MTZJ10B

### • AUDIO SECTION

- AUDIO SECTION
- Q201,202,285,352 2SC2412K
- Q203,207-213,286,301 DTA124EK
- Q206 DTC124EK
- Q351 2SC2786
- D202,205-207 1SS254



(CONT)  
(SCH-6)

(TBC)  
(SCH-5)

IC202 NJM78L08  
IC210 NJM79L08  
D312 ERA83-008

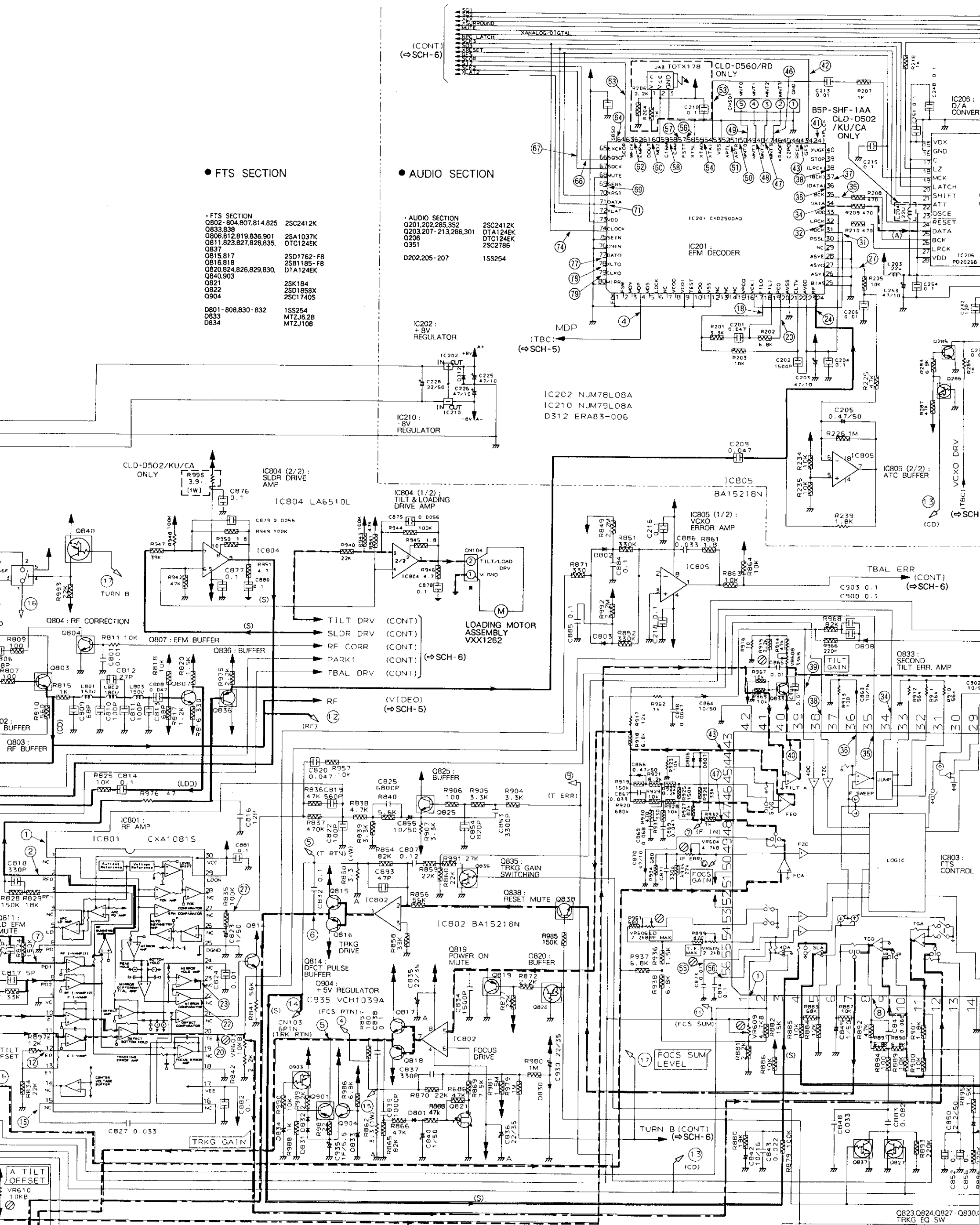
Q822: LD POWER SUPPLY  
Q903: VOLTAGE DETECTOR (+14V)  
Q901: PICKUP PROTECTION WHEN THE POWER IS SHUT OFF IN THE DISC B PLAYBACK.  
Q821: FOCUS PROTECTOR

• FTS SECTION

- FTS SECTION
- Q802-804,807,814,825 2SC2412K
- Q833,838
- Q806,812,819,836,901 2SA1037K
- Q811,823,827,828,835, DTC124EK
- Q837
- Q815,817 2SD1762-F8
- Q816,818 2SB1185-F8
- Q820,824,826,829,830, DTA124EK
- Q840,903
- Q821 2SK184
- Q822 2SD1858X
- Q904 2SC1740S
- D801-808,830-832 1SS254
- D833 MTZJ6,2B
- D834 MTZJ10B

• AUDIO SECTION

- AUDIO SECTION
- Q201,202,285,352 2SC2412K
- Q203,207-213,286,301 DTA124EK
- Q206 DTC124EK
- Q351 2SC2786
- D202,205-207 1SS254



Q903: VOLTAGE DETECTOR (+14V) (NORMAL: ON)

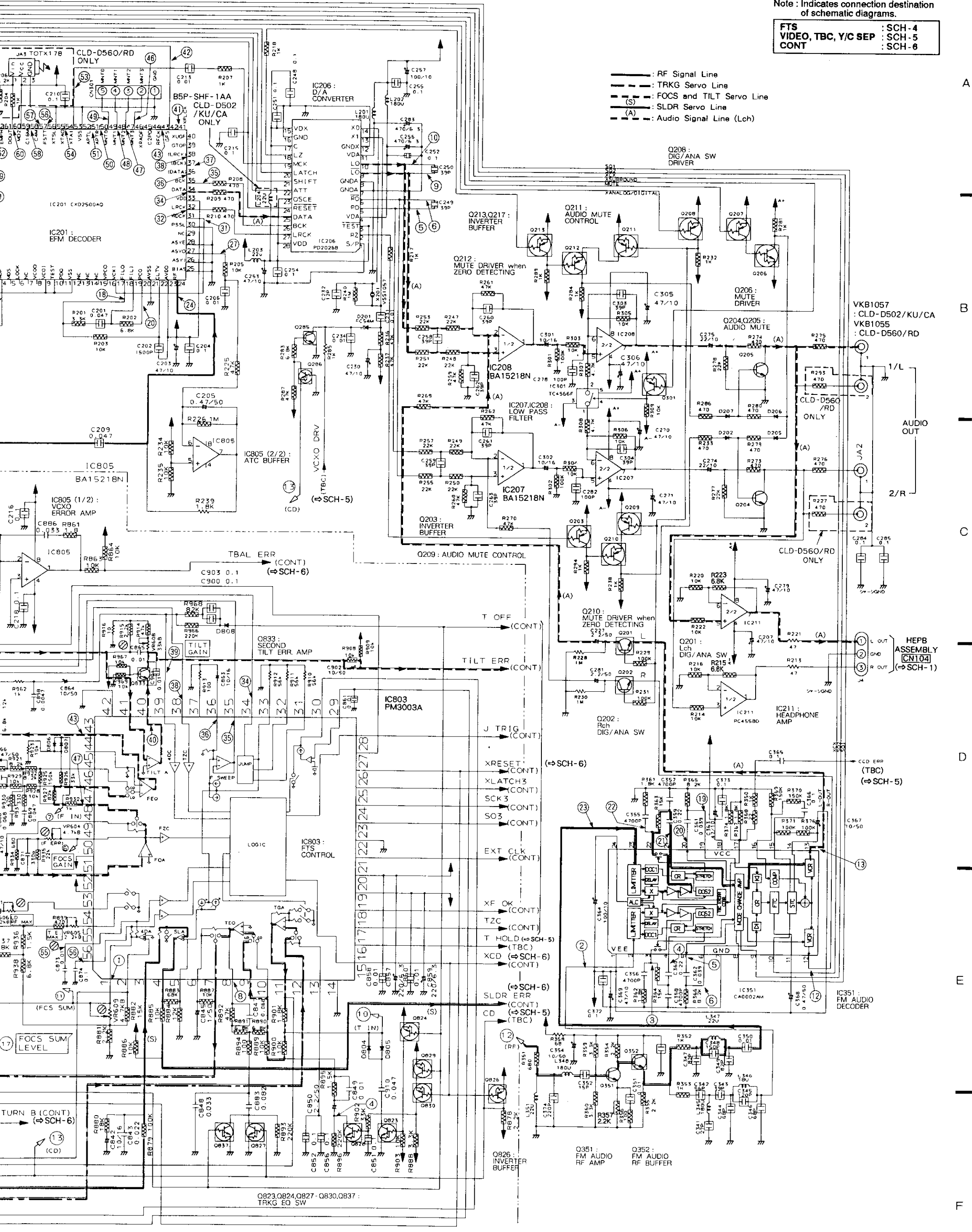
Q901: PICKUP PROTECTION WHEN THE POWER IS SHUT OFF IN THE DISC B PLAYBACK.

Q821: FOCUS PROTECTOR

Note : Indicates connection destination of schematic diagrams.

FTS	: SCH - 4
VIDEO, TBC, Y/C SEP	: SCH - 5
CONT	: SCH - 6

- RF Signal Line
- TRKG Servo Line
- FOCUS and TILT Servo Line
- (S) --- SLDR Servo Line
- (A) --- Audio Signal Line (Lch)

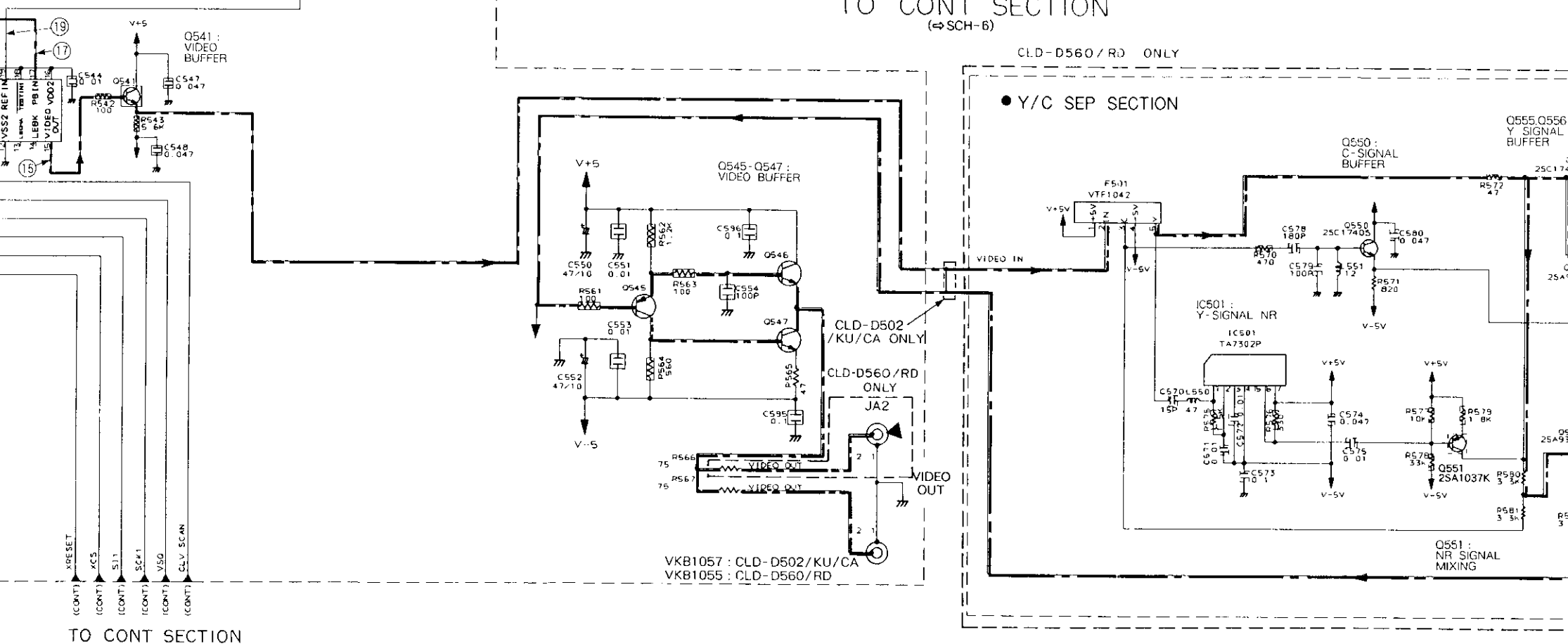
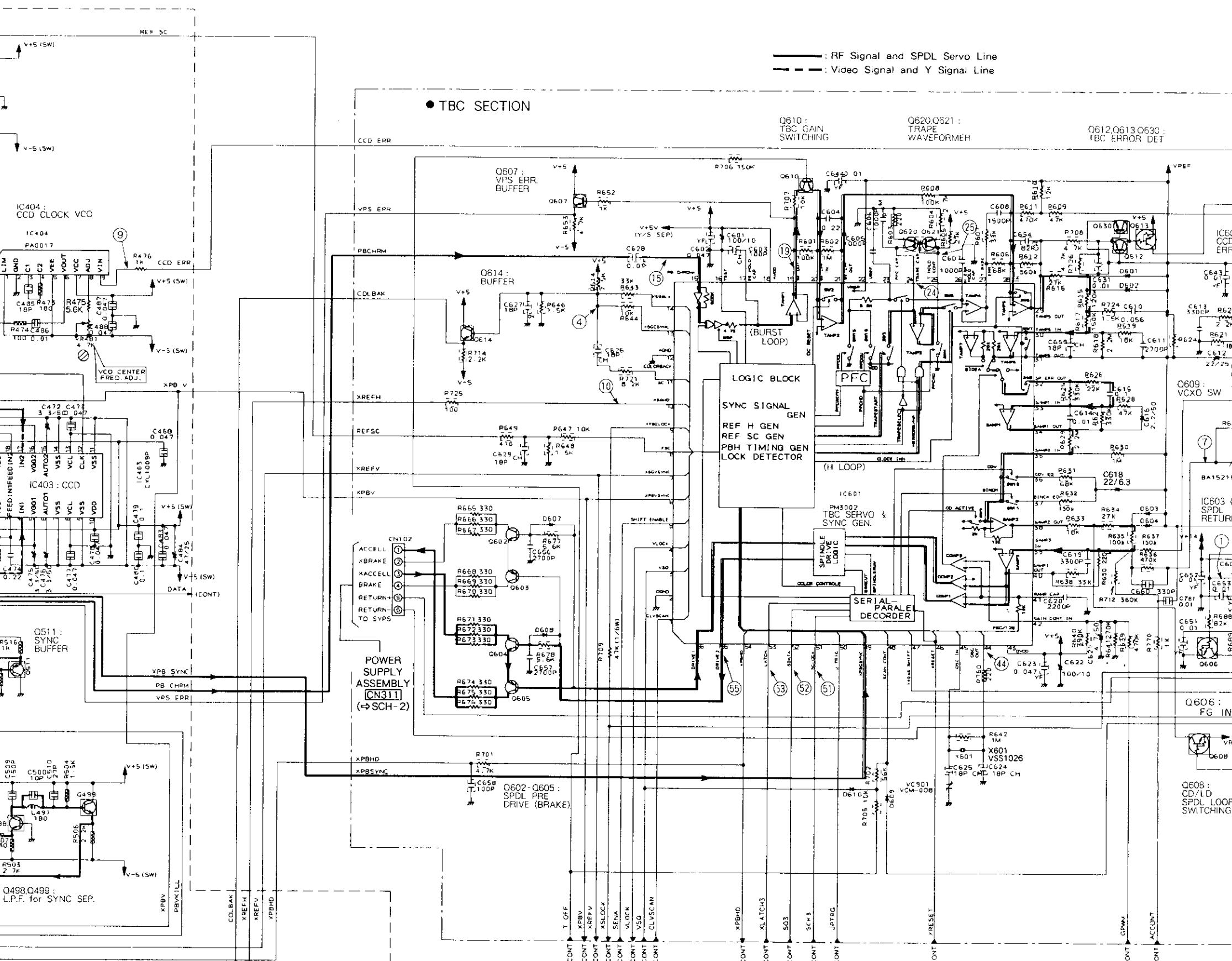


MAIN BOARD ASSEMBLY (1/3)

SCH-4

A  
B  
C  
D  
E  
F



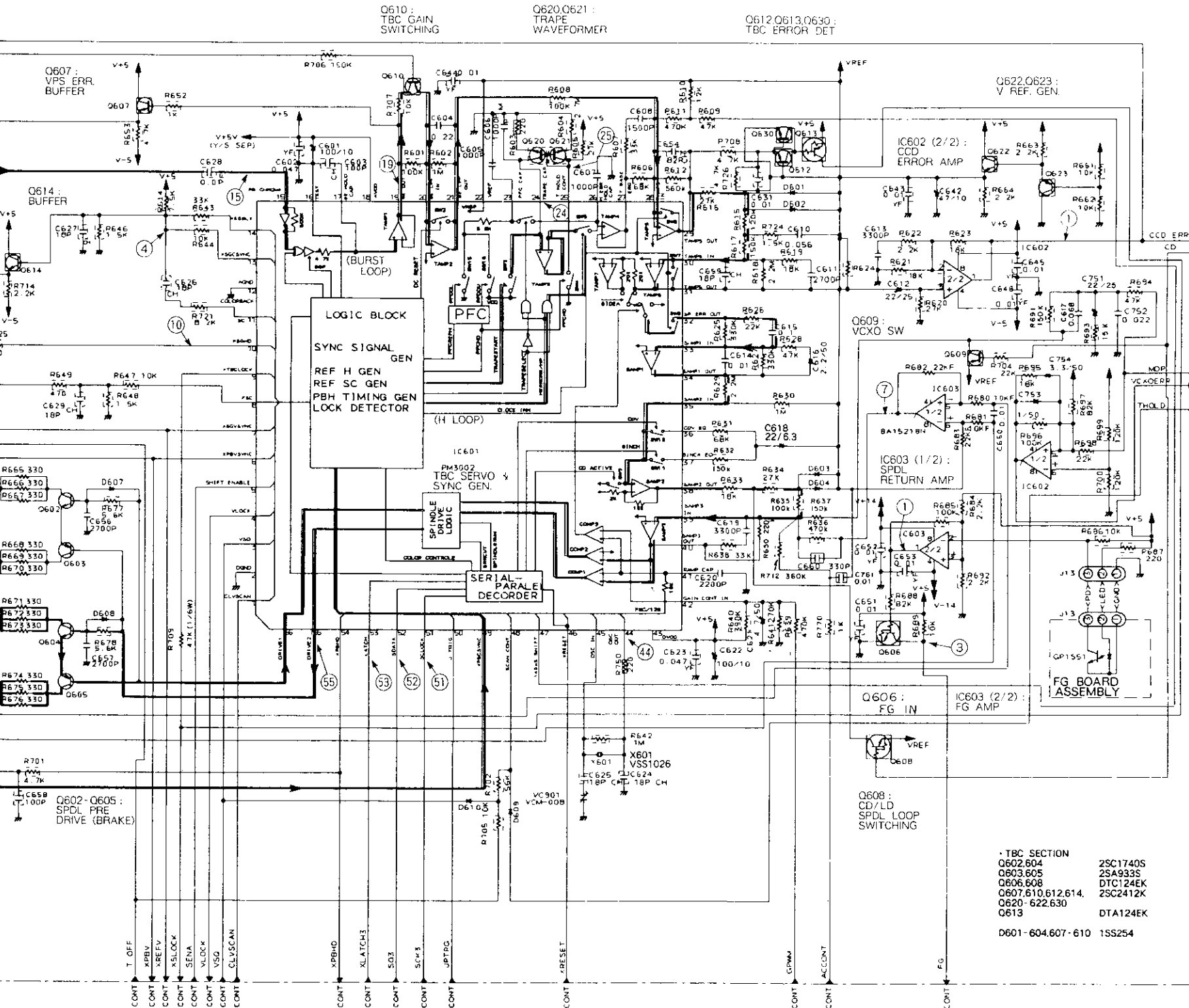


Note : Indicates connection destination of schematic diagrams.

FTS	: SCH-4
VIDEO, TBC, Y/C SEP	: SCH-5
CONT	: SCH-6

— : RF Signal and SPDL Servo Line  
 - - - : Video Signal and Y Signal Line

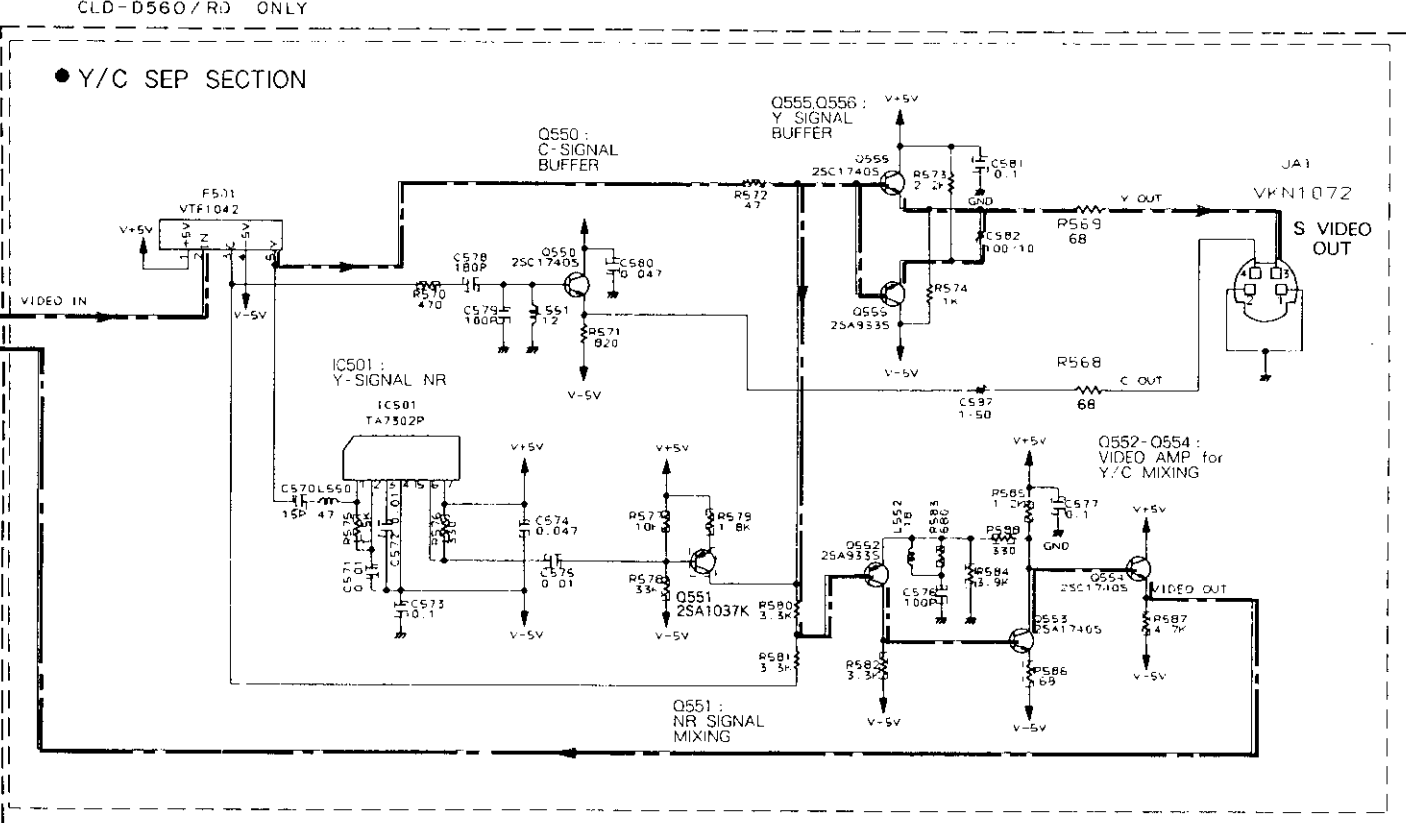
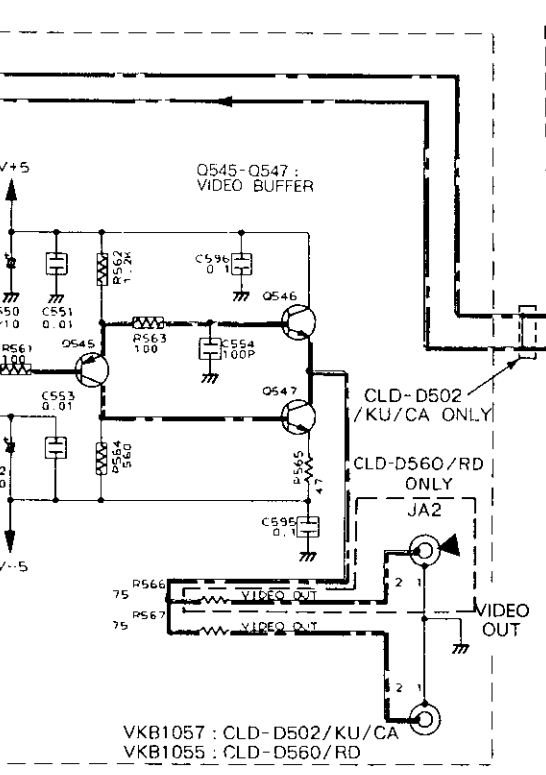
C SECTION



TO FTS & AUDIO SECTION (SCH-4)

TO CONT SECTION (SCH-6)

- TBC SECTION
- O602,604 2SC1740S
- O603,605 2SA933S
- O606,608 DTC124EK
- O607,610,612,614, 2SC2412K
- O620-622,630 DTA124EK
- O613
- O601-604,607-610 1SS254

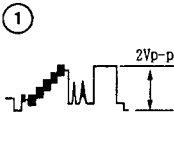
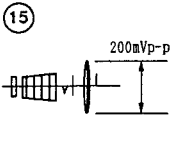
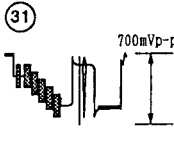
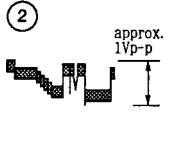
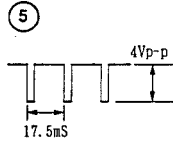
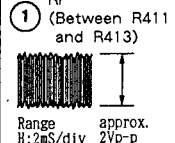
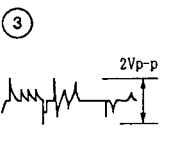
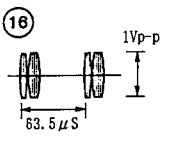
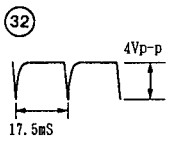
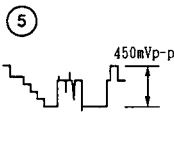
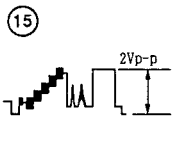
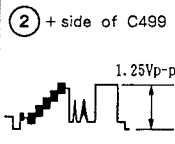
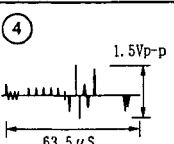
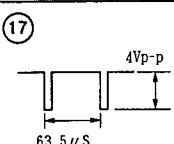
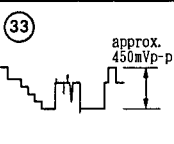
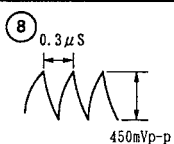
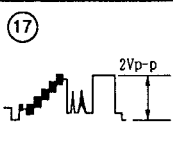
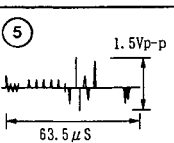
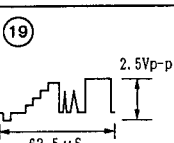
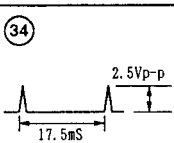
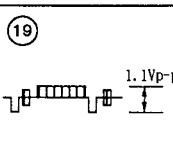
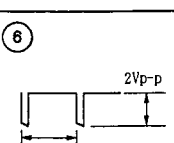
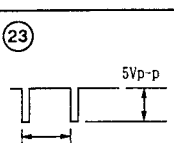
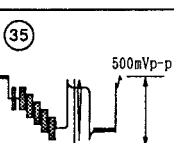
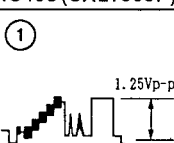
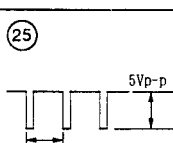
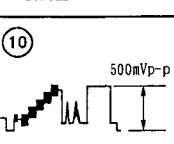
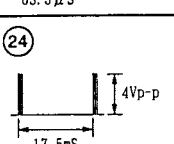
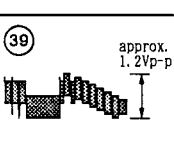
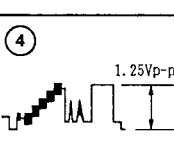
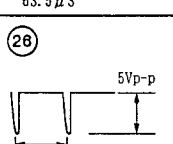
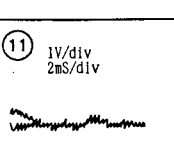
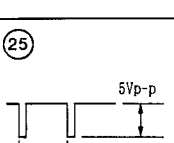
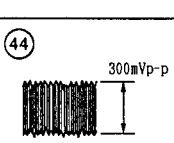
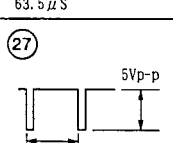
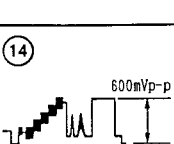
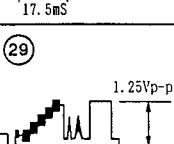
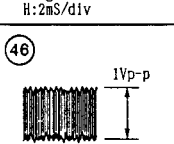
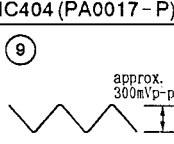


MAIN BOARD (2/3) AND FG BOARD ASSEMBLIES

SCH-5

Waveforms of the VIDEO section

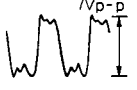
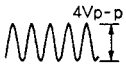
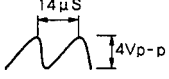

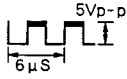
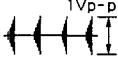

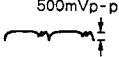

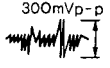

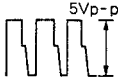
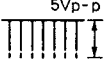
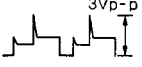
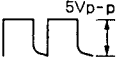
Note : (No.) in the table correspond to the pin No.

IC401 (PA5013A)			IC402 (PM0001)	IC405 (PD0093A)	Other points
(1) 	(15) 	(31) 	(2) 	(5) 	(1) RF (Between R411 and R413)  Range H:2mS/div
(3) 	(16) 	(32) 	(5) 	(15) 	(2) + side of C499 
(4) 	(17) 	(33) 	(8) 	(17) 	
(5) 	(19) 	(34) 	IC403 (CXL1009P)		(19) 
(6) 	(23) 	(35) 	(1) 	(25) 	
(10) 	(24) 	(39) 	(4) 	(26) 	
(11) 	(25) 	(44) 	IC404 (PA0017-P)		(27) 
(14) 	(29) 	(46) 	(9) 		

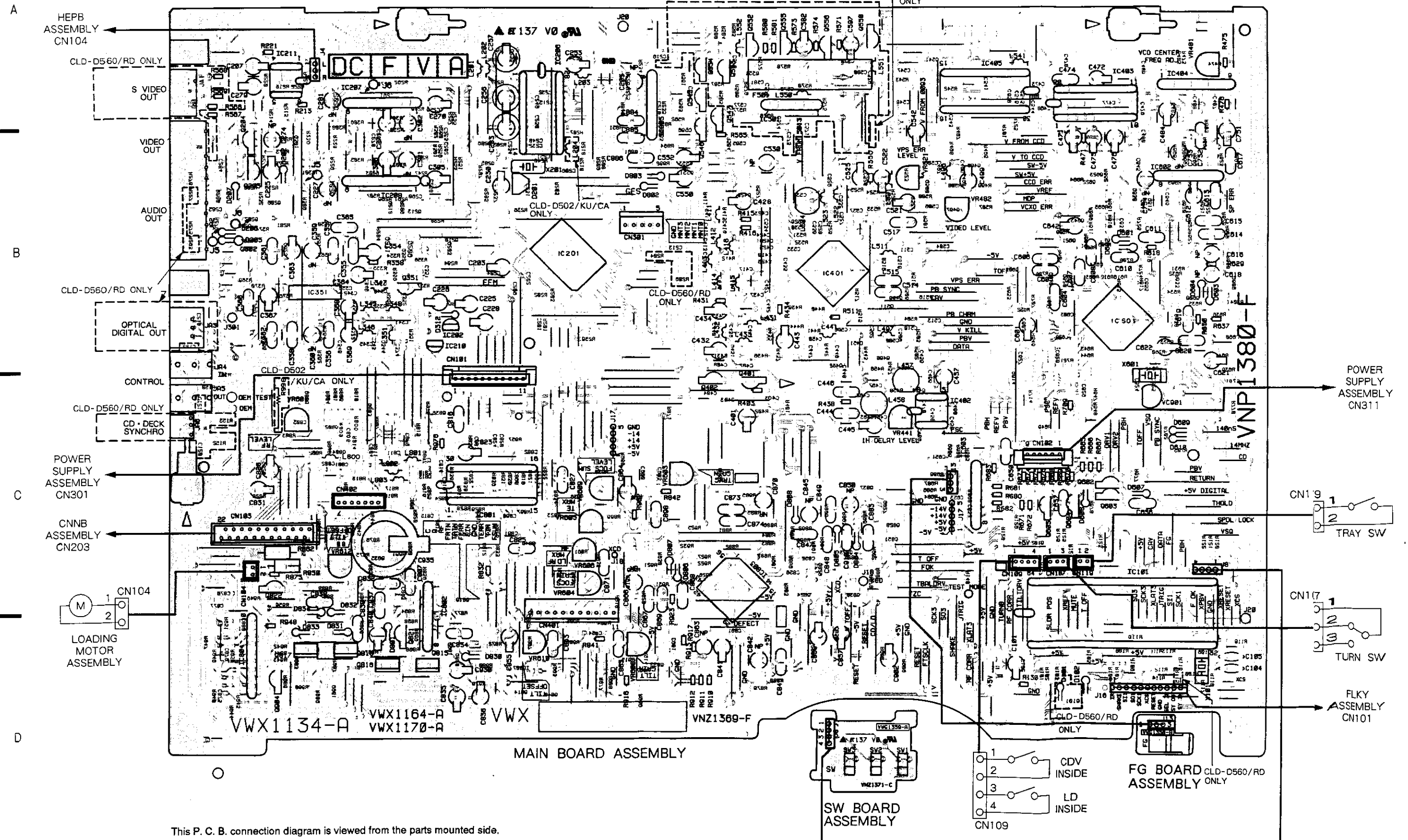


Waveforms of the TBC section

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

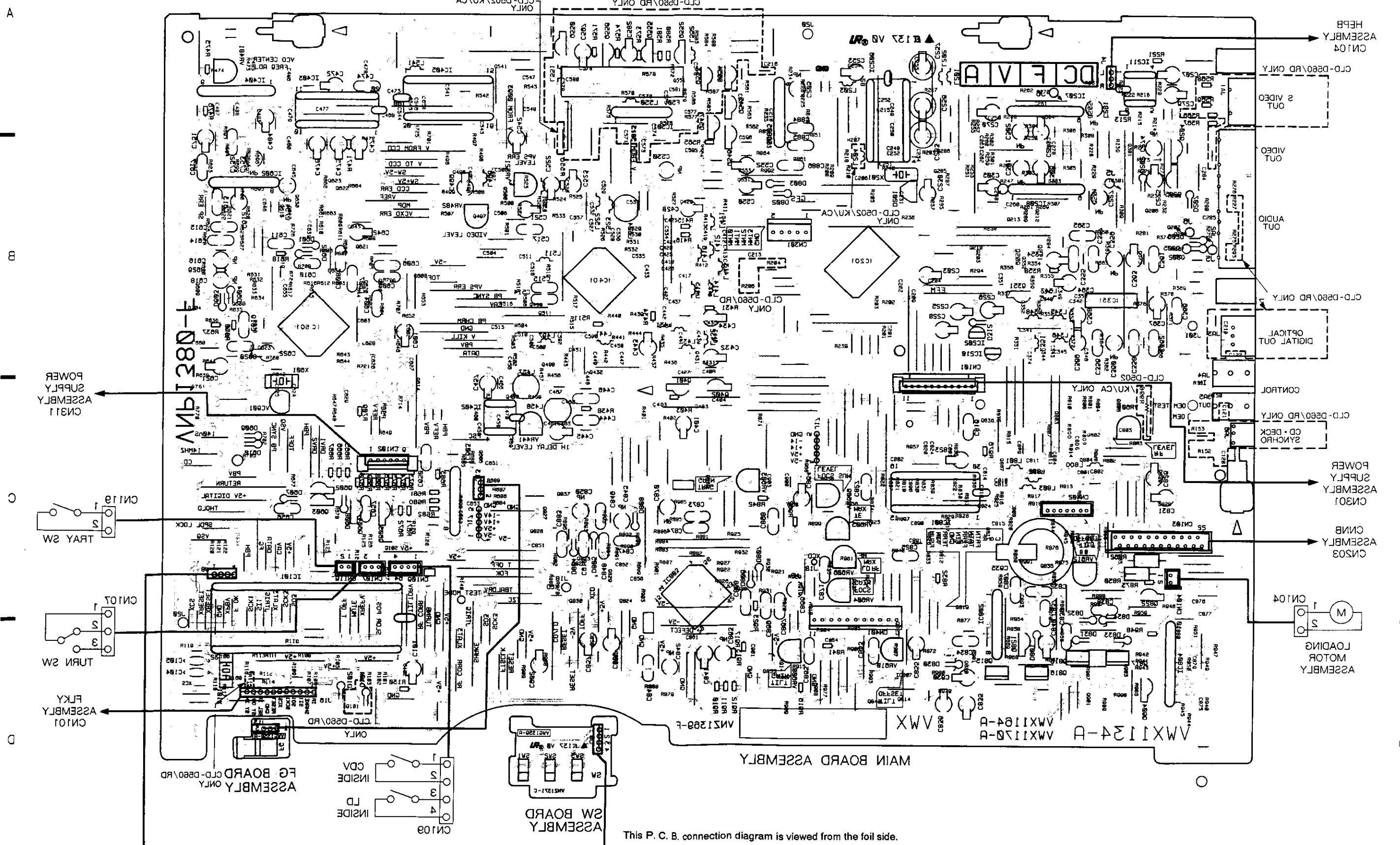
IC601 (PM3002)		IC602 (BA15218N)	IC603 (BA15218N)	Other points
(10) 	(44) 	(1) 	(1) 	(3) Q606 Collector 
(15) 	(51) 		(7) 	(4) Q614 Base 
(19) 	(52) 			
(24) 	(53) 			
(25) 	(55) 			

80SD-80SD	S0SD S1SD S2SD E1SD E0SD 88SD	CLD-D560/RD ONLY	IC 803	IC 501	IC 401	11SD 88SD	IC 402	IC 603	IC 405	IC 403	IC 101	IC 602	IC 404						
10SD	10SD 11SD	CLD-D560/RD ONLY	IC 805	IC 501	IC 401	11SD 88SD	IC 402	IC 603	IC 405	IC 403	IC 101	IC 602	IC 404						
IC 804	IC 211	IC 207	IC 208	IC 202	IC 801	IC 206	IC 201	IC 805	IC 803	IC 501	IC 401	11SD 88SD	IC 402	IC 603	IC 405	IC 403	IC 101	IC 602	IC 404
10E31	IC 351	E08D	E88D	IC 210	IC 201	IC 805	IC 803	IC 501	IC 401	11SD 88SD	IC 402	IC 603	IC 405	IC 403	IC 101	IC 602	IC 404		
Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D	Q08D
Q204	Q822	E08D	10E31	E88D	Q351	118D	Q58D	Q58D	Q545	Q547	Q552	Q554	Q555	Q556	Q557	Q558	Q559	Q560	Q561
Q205	Q904	Q817	Q818	Q816	Q821	Q815	S18D	F18D	Q48D	E88D	Q402	Q401	E88D	Q402	Q401	E88D	Q402	Q401	E88D
VR601	VR612	VR610	VR603-VR606	VR609	VR608	VR610	VR603-VR606	VR609	VR608	VR441	VR521	VR482	VR441	VR521	VR482	VR441	VR521	VR482	VR441



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

Q804	Q805	Q806	Q807	Q808	Q809	Q810	Q811	Q812	Q813	Q814	Q815	Q816	Q817	Q818	Q819	Q820	Q821	Q822	Q823	Q824	Q825	Q826	Q827	Q828	Q829	Q830	Q831	Q832	Q833	Q834	Q835	Q836	Q837	Q838	Q839	Q840	Q841	Q842	Q843	Q844	Q845	Q846	Q847	Q848	Q849	Q850	Q851	Q852	Q853	Q854	Q855	Q856	Q857	Q858	Q859	Q860	Q861	Q862	Q863	Q864	Q865	Q866	Q867	Q868	Q869	Q870	Q871	Q872	Q873	Q874	Q875	Q876	Q877	Q878	Q879	Q880	Q881	Q882	Q883	Q884	Q885	Q886	Q887	Q888	Q889	Q890	Q891	Q892	Q893	Q894	Q895	Q896	Q897	Q898	Q899	Q900	Q901	Q902	Q903	Q904	Q905	Q906	Q907	Q908	Q909	Q910	Q911	Q912	Q913	Q914	Q915	Q916	Q917	Q918	Q919	Q920	Q921	Q922	Q923	Q924	Q925	Q926	Q927	Q928	Q929	Q930	Q931	Q932	Q933	Q934	Q935	Q936	Q937	Q938	Q939	Q940	Q941	Q942	Q943	Q944	Q945	Q946	Q947	Q948	Q949	Q950	Q951	Q952	Q953	Q954	Q955	Q956	Q957	Q958	Q959	Q960	Q961	Q962	Q963	Q964	Q965	Q966	Q967	Q968	Q969	Q970	Q971	Q972	Q973	Q974	Q975	Q976	Q977	Q978	Q979	Q980	Q981	Q982	Q983	Q984	Q985	Q986	Q987	Q988	Q989	Q990	Q991	Q992	Q993	Q994	Q995	Q996	Q997	Q998	Q999	Q1000
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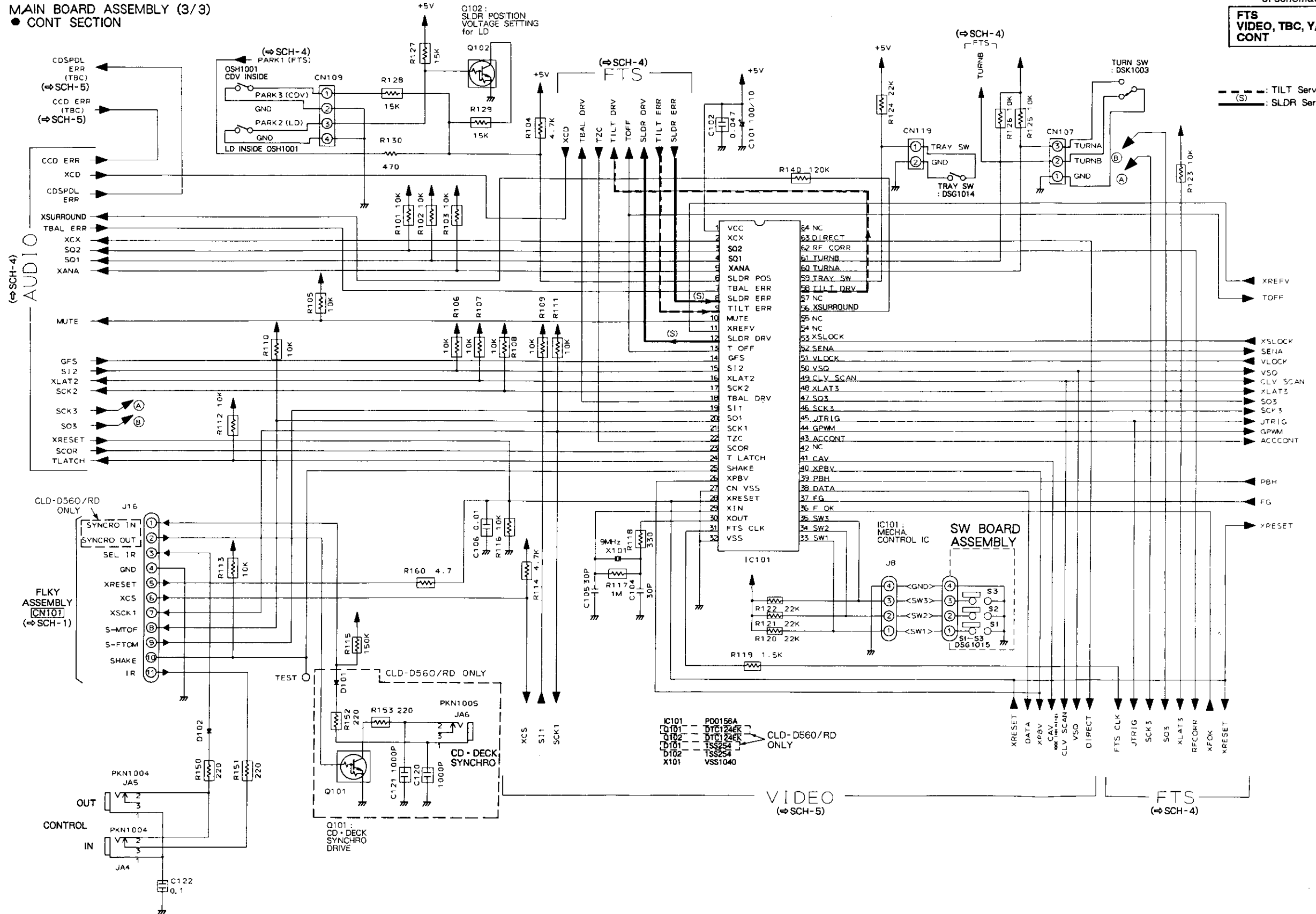


3.6 MAIN BOARD (3/3) AND SW BOARD ASSEMBLIES

Note : Indicates connection destination of schematic diagrams.

FTS	: SCH-4
VIDEO, TBC, Y/C SEP	: SCH-5
CONT	: SCH-6

MAIN BOARD ASSEMBLY (3/3)  
● CONT SECTION



A

B

C

D

A

B

C

D

SCH-6

MAIN BOARD (3/3) AND SW BOARD ASSEMBLIES

MAIN BOARD (3/3) AND SW BOARD ASSEMBLIES

SCH-6

## 4. PCB PARTS LIST

**NOTES:**

- Parts marked by "NSP" 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.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560  $\Omega$   $\rightarrow$  56  $\times$  10<sup>1</sup>  $\rightarrow$  561 ..... RD118PM  $\begin{matrix} \text{5} & \text{6} & \text{1} \\ \text{J} \end{matrix}$

47k  $\Omega$   $\rightarrow$  47  $\times$  10<sup>3</sup>  $\rightarrow$  473 ..... RD114PS  $\begin{matrix} \text{4} & \text{7} & \text{3} \\ \text{J} \end{matrix}$

0.5  $\Omega$   $\rightarrow$  0R5 ..... RN2H  $\begin{matrix} \text{0} & \text{R} & \text{5} \\ \text{K} \end{matrix}$

1  $\Omega$   $\rightarrow$  010 ..... RSIP  $\begin{matrix} \text{0} & \text{1} & \text{0} \\ \text{K} \end{matrix}$

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

5.62k  $\Omega$   $\rightarrow$  562  $\times$  10<sup>1</sup>  $\rightarrow$  5621 ..... RN114PC  $\begin{matrix} \text{5} & \text{6} & \text{2} & \text{1} \\ \text{F} \end{matrix}$

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
<b>LIST OF ASSEMBLIES</b>							
		MOTHER ASSEMBLY	VWM1361				
NSP		PG BOARD ASSEMBLY	VWG1358				
NSP		SW BOARD ASSEMBLY	VWG1359				
NSP		MAIN BOARD ASSEMBLY	VWX1164				
		FUNCTION BOARD ASSEMBLY	VWM1360				
NSP		IRPS ASSEMBLY	VWG1363				
NSP		FLKY ASSEMBLY	VWG1408				
NSP		HEPB ASSEMBLY	VWV1280				
		POWER SUPPLY ASSEMBLY	VWR1179				
NSP		CNNB ASSEMBLY	VWG1194				
NSP		HEAD ASSEMBLY	VWV1178				
		<b>FG BOARD ASSEMBLY</b>					
		<b>OTHERS</b>					
		PHOTO INTERRUPTER	GP1S51				
		<b>SW BOARD ASSEMBLY</b>					
		<b>SWITCHES</b>					
		S1-S3	DSG1015				
		<b>MAIN BOARD ASSEMBLY</b>					
		<b>SEMICONDUCTORS</b>					
		IC207, IC208, IC602, IC603, IC802, IC805	BA15218N				
		IC351	CA0002AM				
		IC801	CXA1081S				
		IC201	CXD2500AQ				
		IC403	CXL1009P				
		IC804	LA6510L				
		IC202	NJM78L08A				
		IC210	NJM79L08A				
		IC404	PA0017-P				
		IC401	PA5013A				
		<b>COILS</b>					
		L414, L415, L521, L541, L800	LAU120J				
		L801, L803	LAU151J				
		L346, L496	LAU180J				
		L201, L202, L345, L348, L497, L802	LAU181J				
		L203, L204, L347, L351, L412, L413, L523	LAU220J				

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
		L441	LAU270J			C205, C866	CEANPR47M50
		L411	LAU330J			C471	CEAS010M50
		L433	LAU390J			C354, C522, C855, C864	CEAS100M50
		L416, L431	LAU430J			C257, C364, C432, C434, C525, C601, C622	CEAS101M10
		L522	LAU560J			C751	CEAS220M25
		L432	LAU620J			C228	CEAS220M50
		L511	LAU820J			C857, C859	CEAS221M6R3
		L458	LFA221J			C401	CEAS2R2M50
		L457	LFA561J			C472, C475, C476	CEAS3R3M50
		L524	LFA561K			C203, C207, C225, C226, C230, C253, C270, C271, C279, C305, C306, C363, C369, C428, C499, C521, C542, C550, C552, C642, C826, C831	CEAS470M10
		<b>CAPACITORS</b>					
		VC901 (20P)	VCM-008				
		C816	CCCCH120J50				
		C104, C105	CCCCH300J50			C484	CEAS470M25
		C837, C871	CCCSL331J50			C256, C283	CEAS471M6R3
		C804, C817	CCSQCH050C50			C443, C621	CEAS4R7M50
		C441	CCSQCH070D50			C368	CEASR47M50
		C438, C450, C497, C500	CCSQCH100D50			C367	CEHAQ100M50
		C278, C282, C461, C528, C554, C603, C658, C810, C811, C822	CCSQCH101J50			C446, C614, C650, C849, C865, C873	CFTXA103J50
		C232, C418	CCSQCH120J50			C365, C366, C514, C615, C832, C838, C874, C884, C885	CFTXA104J50
		C345, C456	CCSQCH121J50			C807	CFTXA124J50
		C352	CCSQCH150J50			C752, C843	CFTXA223J50
		C348, C413, C509	CCSQCH151J50			C359, C360, C474, C604	CFTXA224J50
		C415, C417, C485, C624-C627, C629, C655	CCSQCH180J50			C827, C848, C867	CFTXA333J50
		C423, C424, C516	CCSQCH220J50			C361, C362	CFTXA393J50
		C374, C411, C414	CCSQCH221J50			C869, C910	CFTXA473J50
		C341, C437, C451, C510, C812, C815	CCSQCH270J50			C610	CFTXA563J50
		C463	CCSQCH271J50			C825	CFTXA682J50
		C447, C462	CCSQCH330J50			C515, C517, C617, C847, C868	CFTXA683J50
		C660	CCSQCH331J50			C883	CFTXA823J50
		C249, C250, C258-C263, C303, C304, C343, C416, C433, C440, C496, C524	CCSQCH390J50			C202	CKSQYB152K50
		C412, C419, C420, C439, C455, C546, C890, C891, C893	CCSQCH470J50			C875, C879	CKSQYB562K50
		C342	CCSQCH560J50			C854	CKSQYB821K50
		C344, C346, C545, C806, C809, C813	CCSQCH680J50			C106, C206, C213, C231, C234, C350, C351, C425, C426, C458-C460, C466, C467, C486, C532, C535, C544, C551, C553, C592, C628, C631, C643-C646, C651-C653, C761, C801, C803, C824, C828, C829, C858, C860, C861, C896, C901, C908	CKSQYF103Z50
		C347, C349, C498, C654	CCSQCH820J50			C122, C204, C215, C216, C218, C248, C251, C252, C254, C255, C284, C285, C372, C373, C403, C404, C427, C429, C435, C442, C479, C480, C511, C513, C526, C531, C543, C590, C595, C596, C814, C851, C852, C856, C876-C878, C880-C882, C897, C900, C903	CKSQYF104Z25
		C529, C536	CCSQCH910J50			C102, C201, C209, C407, C408, C431, C448, C449, C468-C470, C473, C477, C478, C483, C487, C488, C504-C506, C527, C534, C547, C548, C602, C623, C802, C808, C820	CKSQYF473Z25
		C818	CCSQSL331J50			C537	CKSYF105Z16
		C819	CCSQSL561J50			C605-C607, C839	CQMA102J50
		C823, C840	CEAL010M50			C608, C834	CQMA152J50
		C902	CEAL100M50			C620	CQMA222J50
		C101, C445, C457	CEAL101M6R3			C444, C611, C656, C657	CQMA272J50
		C612	CEAL220M16			C613, C619, C853	CQMA332J50
		C835, C836, C930	CEAL220M35				
		C841	CEAL470M6R3				
		C753	CEALNP010M50				
		C842, C863	CEALNP100M16				
		C618	CEALNP220M6R3				
		C845	CEANP010M50				
		C301, C302, C530	CEANP100M16				
		C274, C275	CEANP220M10				
		C227, C281, C616, C850	CEANP2R2M50				
		C754	CEANP3R3M50				
		C870	CEANP470M10				

Mark	No.	Description	Part No.
	C886		CQMA333J50
	C355-C358, C898		CQMA472J50
	C935		VCH1039
<b>RESISTORS</b>			
	VR601		VRTB6VS102
	VR441, VR603, VR610, VR612		VRTB6VS103
	VR482, VR605, VR606		VRTB6VS222
	VR608		VRTB6VS333
	VR481, VR521, VR604, VR609		VRTB6VS472
	R550 (10Ω)		DCN1002
	R873, R916		RD1/6PM100J
	R913		RD1/6PM101J
	R476, R962		RD1/6PM102J
	R923		RD1/6PM103J
	R948		RD1/6PM104J
	R471		RD1/6PM105J
	R917		RD1/6PM123J
	R832		RD1/6PM124J
	R842		RD1/6PM222J
	R650		RD1/6PM224J
	R618, R629		RD1/6PM225J
	R403		RD1/6PM271J
	R665-R676		RD1/6PM331J
	R637		RD1/6PM334J
	R213, R221, R565, R976		RD1/6PM470J
	R130		RD1/6PM471J
	R709		RD1/6PM473J
	R431		RD1/6PM510J
	R475		RD1/6PM562J
	R841, R910-R912		RD1/6PM563J
	R358		RD1/6PM680J
	R567		RD1/6PM750J
	R680, R681		RN1/6PQ1002F
	R438		RN1/6PQ1203F
	R511		RN1/6PQ2002F
	R682, R683		RN1/6PQ2202F
	R415, R416		RN1/6PQ2402F
	R434		RN1/6PQ5101F
	R850, R862		RS1LMF3R3J
	R996		RS1LMF3R9J
	Other resistors		RS1/10S□□□J
<b>OTHERS</b>			
	CN301	5P TOP POST	B5P-SHF
	CN103	22P TOP CONNECTOR	VKN1137
	JA4, JA5	REMOTE CONTROL JACK/12V	PKN1004
	JA2	3P PIN JACK	VKB1057
		SCREW TERMINAL	VNE1841
	X601	CRYSTAL RESONATOR (14.31MHz)	VSS1026
	X101	CERAMIC RESONATOR (9.00MHz)	VSS1040
	X201	CRYSTAL RESONATOR (16MHz)	VSS1057

Mark	No.	Description	Part No.
<b>IRPS ASSEMBLY</b>			
<b>SEMICONDUCTORS</b>			
	Q104		DTC124ES
	D113		SLH34VCF04
<b>SWITCH</b>			
	S101		RSG1030
<b>CAPACITOR</b>			
	C110		CEAS100M16
<b>RESISTOR</b>			
	R129		RD1/6PM151J
<b>OTHERS</b>			
		REMOTE CONTROL SENSOR UNIT	GP1U58X
<b>FLKY ASSEMBLY</b>			
<b>SEMICONDUCTORS</b>			
	IC101		PD3225A
	IC102		PST529D
	Q106		DTA144ES
	Q105		DTC114ES
	Q101-Q103		DTC124ES
	D103-D106		1SS252
	D101		1SS254
	D107, 108		MTZJ5. 6B2
	D110, D111		SLH34MCF04
	D112		VEL1003
<b>SWITCHES</b>			
	S102-S119		RSG1030
	S125		VSD1008
	S122		VSK1015
<b>CAPACITORS</b>			
	C104		CEAL100M16
	C101		CEAL101M6R3
	C105		CKPUYB102K50
	C102, C103, 106, 107		CKPUYF2232Z5
<b>RESISTORS</b>			
		All resistors	RD1/6PM□□□J
<b>OTHERS</b>			
	V101	FLUORESCENT INDICATOR TUBE	VAW1030
		SPACER	VEC1599
		FL HOLDER	VNF1078
	X101	CERAMIC RESONATOR	VSS1031
<b>HEPB ASSEMBLY</b>			
<b>CAPACITORS</b>			
	C121		CGCYF473Z25
	C122, C123		CKPUYB102K50
<b>RESISTOR</b>			
	VR101	(500Ω)	VCS1015
<b>OTHERS</b>			
	JA101	HEADPHONE JACK (PHONES)	RKN1002

<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>
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**POWER SUPPLY ASSEMBLY**

**SEMICONDUCTORS**

IC215		ICP-N38
IC213, IC214		ICP-N50
IC202		TH5P4-FU
Q205, Q206		2SA933S
Q201		2SB1331
Q202		2SC1740S
Q207		2SD1762
D205, D209, D210, D213-D215		D1NL20
D204		ERB83-006
D206		MTZJ2. 4A
D207		MTZJ3. 3A
D208		MTZJ5. 6C
D201, D202		S3LA20
D203		S3S4M

**COIL AND FUSES**

L203 (10mH)		VTL1008
F202, F203 MICRO FUSE (0. 63A)		NT1-0. 63A

**CNNB ASSEMBLY**

**SWITCH**

S201		VSK1017
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**RESISTORS**

All resistors		RD1/6PM□□□J
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**OTHERS**

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

**HEAD ASSEMBLY**

**CAPACITORS**

C4, C6		CKSQYF104Z25
C3		CKSQYF223Z50
C5		CKSYF105Z16

**RESISTOR**

VR1 (10kΩ)		VCP1025
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## 5. ADJUSTMENTS

### 5.1 JIGS AND INSTRUMENTS REQUIRED FOR ADJUSTMENT

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

### 5.2 TEST MODE

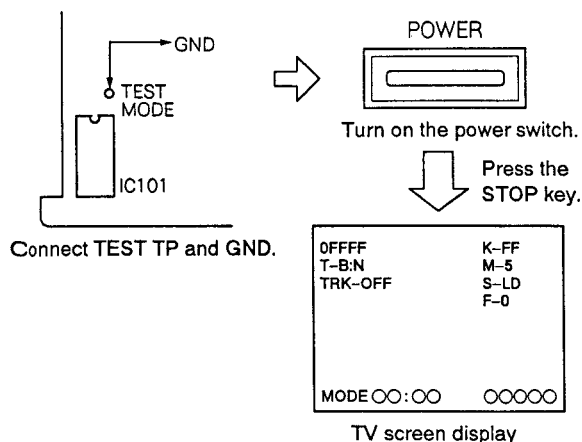
The player has a test mode function which allows the servicer to check the player's status on the TV screen by executing the respective key operation.

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

#### 5.2.1 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.



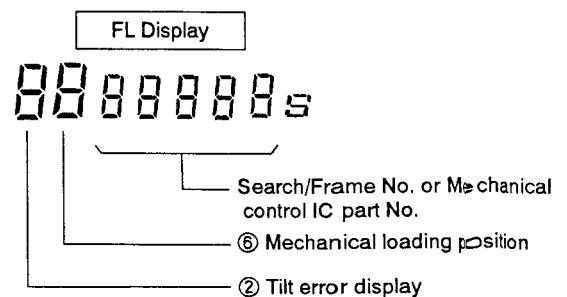
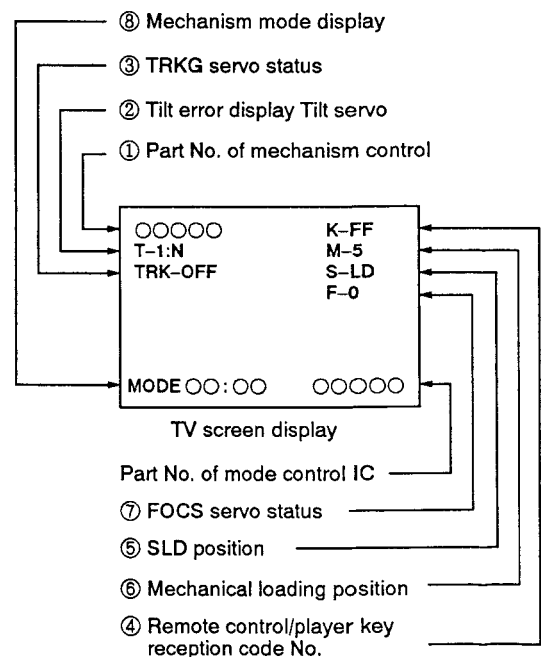
Note: When using the remote control unit (GGF1067) for the test mode.

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

#### 5.2.2 Test Mode Cancellation

Turn off the power switch.

#### 5.2.3 TV Screen and FL Displays in the Test Mode





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

Example: PD0081A1 → 0081A  
 PD0081B1 → 0081B

**② Tilt Servo Status / Tilt Error Display**

T-○○:○○  
 ↙ Tilt servo status : N ...Tilt neutral  
                           ON ...Tilt servo ON  
                           OFF...Tilt servo OFF  
 ↘ Tilt error display: 0 Tilt -  
                                   ↑ Tilt neutral  
                                   F Tilt +

**③ TRKG Servo Status**

TV screen display  
 TRK-○○○○  
 ↙ ON...TRKG servo ON  
       OFF...TRKG servo OFF

**④ Remote Control/Player Key Reception Code No.**

TV screen display  
 K-○○○  
 ↙ See Table 1

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

Table 1 Example of Code

**⑤ SLDR Position**

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

**⑥ Mechanical Loading Position**

TV screen display  
 M-○  
 ↙ 0 ... Tray open  
    1 ... Loading  
    2 ... Standby  
    3 ... Clamped  
    5 ... Tilt minus  
    7 ... Tilt plus  
    8 ... Tilt limit  
    9 ... B side clamped (two sides)

**⑦ Focus Offset VR Status**

TV screen display  
 F-○  
 ↙ 0 ... Normal mode  
    TRKG ON : VR606 (RF MAX)  
    TRKG OFF : VR605 (TE MAX)  
 1 ... VR606 is activated when the TRKG servo is OFF.

5.2.4 Key Operation in the Test Mode

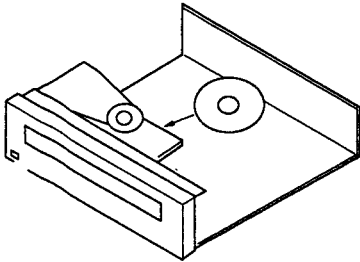
Function	Player Status	Key Operation	Remarks
Open Tray	STOP mode	▲	
Close Tray	Tray open	▲	
Stop	PLAY mode	■	
Play	Disc placement and tray closed.	▶	<ul style="list-style-type: none"> <li>• Start play with the TRKG servo OFF.</li> <li>• Raise up with tilt neutral.</li> <li>• The disc type (LD/CD/CDV) is determined when playback starts at the SLDR position during start play.</li> </ul>
TRKG Servo OFF/ON	PLAY mode	▶	<ul style="list-style-type: none"> <li>• Each time the PLAY button (▶) is pressed, the TRKG servo will OFF or ON 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 OFF, 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 FWD)	<ul style="list-style-type: none"> <li>• Press and hold down the key. To use the shuttle ring, turn it counterclockwise.</li> <li>• With the TRKG servo OFF, 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 OFF	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 ON : VR606 (RF MAX) TRKG OFF : VR605 (TE MAX)</p> <p>F - 1 : VR606 is effected when the TRKG servo is OFF.</p>

**5.2.5 Player Operation in the Test Mode**

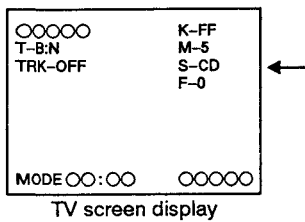
Operate the player by selecting a test mode function with the keys on the player or on the remote control unit.

● **CD PLAYBACK**

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



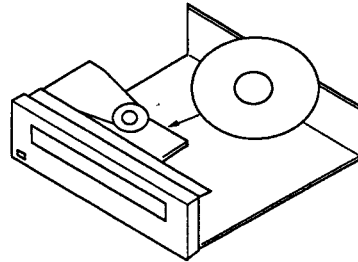
- ② Press the or key to appear "S-CD" on the TV screen display.



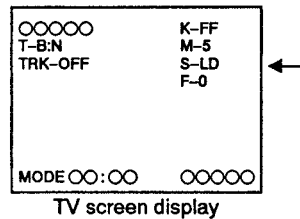
- ③ Clamp the disc by pressing the PLAY () key once.  
Then, press the PLAY () key twice, disc will be normal playbacked.

● **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.



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

### 5.3 PREPARATIONS FOR ADJUSTMENT AND PRECAUTIONS

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

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

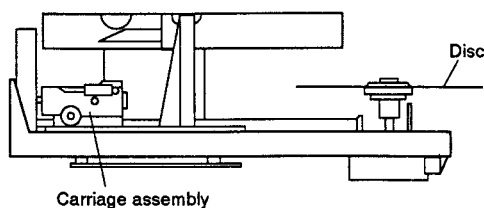
3. Coarse grating adjustment/TRKG balance adjustment /TRKG error MAX. adjustment
4. Slider shaft horizontal adjustment/RF level MAX. adjustment
5. Pickup inclination adjustment
6. Tilt sensor inclination adjustment
7. Spindle motor centering check
8. Spindle motor centering adjustment
9. Fine grating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

##### - Carriage assembly in reverse state-

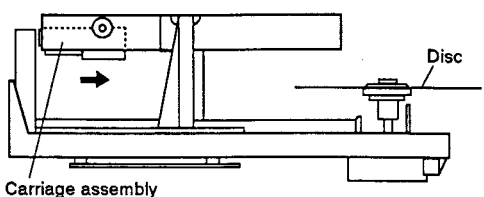
15. Coarse centering adjustment for side B play
16. Pickup tangential direction angle adjustment for side B play / (Tilt offset fine adjustment for side B)
17. Fine centering adjustment for side B play

*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 in forward state



##### Carriage assembly in reverse state



#### 2) How to reverse the carriage assembly

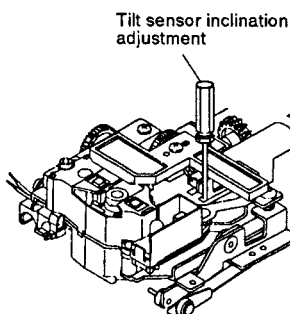
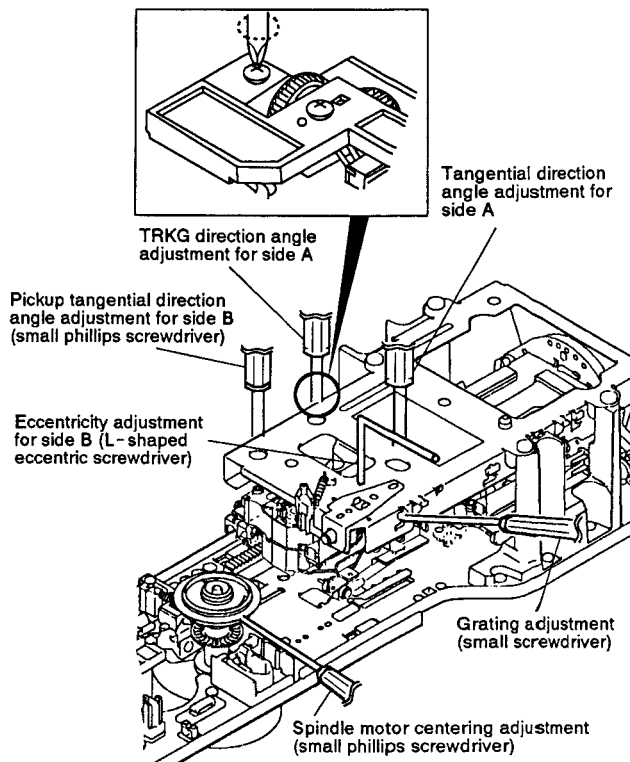
- Carriage assembly is reversed by pressing the DISC SIDE B key of the front panel.
- Side A is returned by pressing the STOP key.

#### 3) 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.

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

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

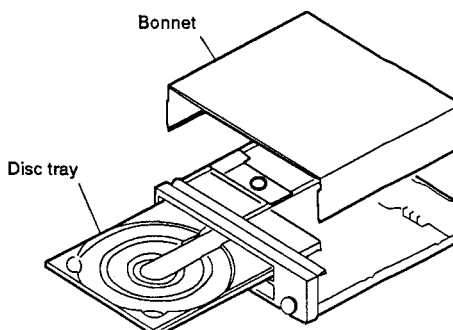


OFFFF	K-FF
T-1:N	M-5
TRK-OFF	S-LD
	F-0
Tilt status display	
MODE 00:00 ○○○○	

TV screen display

#### 5) Setting the player

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



5.4 MAIN BOARD ASSEMBLY ADJUSTMENT SUMMARY

	ADJUSTMENT	Adjusting Point	Measurement equipment Connecting Point	Player Condition	Adjusting Specification
1	Tilt Offset Adjustment for Side A	VR610	C841 - (minus) lead wire	• Stop mode (power ON)	• Adjust VR610 so that the DC voltage becomes $0 \pm 0.2V$ .
2	Tilt Servo Gain Adjustment	VR608	None	• Stop mode (Power OFF)	• Marking of Tilt gain VR position Red : Turn to right Clear : Center Blue : Turn to left
3	Coarse Grating / TRKG Balance /TRKG Error MAX. Adjustment	Grating / VR602 VR605(TE MAX)	CN401-9 (TRKG ERR)	• Test mode #6,500 still TRKG servo OFF • Tilt servo OFF	• Null point → TRKG error MAX • Adjust VR602 so that the TRKG error waveform amplitude's positive and negative level become equal. • TRKG error MAX (VR605)
4	Slider Shaft Horizontal Adjustment/RF Level MAX. Adjustment	SKIP key VR606 (RF MAX)	CN401-4 (FOCS RTN) CN401-3 (RF)	• Test mode #9,800 , #22,000-25,000 still TRKG servo OFF TILT servo OFF • #2,701 /#115 still TRKG servo ON TILT servo OFF	• Adjust the SKIP key so that the FOCS RTN voltage between #9,800 and #22,000-#25,000 becomes +8 to +12 mV. • RF level MAX (VR606) • Check that the crosstalk of the frame #115 is not appeared.
5	Pickup Inclination Adjustment	Pickup assembly TAN / TRK inclination adjustment screw	CN401-3 (RF)	• Test mode , #2,701 still TRKG servo ON • TILT servo OFF	• RF waveform's amplitude MAX (Pickup TAN / TRK adjustment screw) • Minimized crosstalk.
6	Tilt Sensor Inclination Adjustment	Tilt senser inclination adjustment screw	Video output terminal (TV monitor)	• Test mode #16,200 / #115 still TRKG servo ON • TILT servo OFF	• Adjust the adjustment screw so that the tilt error display code of #115 and #16,200 in still mode are 6, 7, or 8.
7	Spindle Motor Centering Check	None	CH1:CN401-9(TRKG ERR) CH2:CN401-1, 2(TRKG SUM) (X-Y mode) (Fig. 2)	• Test mode #22,000-25,000 and #100 still TRKG servo OFF • TILT servo ON	• Check that the amplitude of the lissajous figure of the frame #100 is the same as that of the frame #22,000-25,000.
8	Spindle Motor Centering Adjustment	Spindle motor centering adjustment screw.	CH1:CN401-9(TRKG ERR) CH2:CN401-1, 2(TRKG SUM) (X-Y mode) (Fig.2)	• Test mode #22,000-25,000 and #100 still TRKG servo OFF • TILT servo ON	• Adjust the centering adjustment screw so that the lissajous figures of #100 and #22,000-25,000 are the same.
9	Fine Grating Adjustment	Grating	CH1:CN401-9(TRKG ERR) CH2:CN401-1, 2(TRK SUM) (X-Y mode) (Fig.2)	• Test mode #6,500 still TRKG servo OFF • TILT servo ON	• Minimize the Y direction of the lissajous figure. • Check TRKG balance.
10	FOCS SUM Level Adjustment	VR609	CN401-11 (FOCS SUM)	• Test mode #15,000 still TRKG servo ON • Tilt servo NEUTRAL	• Adjust VR609 so that the voltage becomes $1.8V \pm 0.1V$ DC.
11	RF Gain Adjustment	VR601	CH1:CN401-3 (RF)	• Test mode #15,000 still TRKG servo ON • TILT servo NEUTRAL	• Adjust VR601 so that the RF level becomes $270mV \pm 20mV$ .
12	FOCS Servo Loop Gain Adjustment	VR604	CH1:CN401-7 (FOCS IN) CH2:CN401-6 (FOCS ERR) (X-Y mode) (Fig.3)	• Test mode #15,000 still TRKG servo ON • TILT servo NEUTRAL	• Connect the oscilloscope and AF oscillator as shown in Fig.3 and observe the lissajous figure. Adjust VR604 so that the lissajous figure is symmetrical with respect to the X and Y axes.
13	TRKG Servo Loop Gain Adjustment	VR603	CH1:CN401-10 (TRKG IN) CH2:CN401-9 (TRKG ERR) (X-Y mode) (Fig.4)	• Test mode #15,000 still TRKG servo ON • TILT servo NEUTRAL	• Connect the oscilloscope and AF oscillator as shown in Fig.4 and observe the lissajous figure. Adjust VR603 so that the lissajous figure is symmetrical with respect to the X and Y axes.
14	Temporary Tilt Offset Adjustment for Side B	VR612	None	• Stop mode (power ON)	• Temporary adjust VR612 so that the VR612 becomes line symmetry as compared with the mechanical inclination of tilt offset VR(VR610) for side A. (Fig.5)
15	Coarse Centering Adjustment for Side B Play	Centering adjustment plate for side B.	CH1:CN401-9 (TRKG ERR) CH2:CN401-1, 2(TRKG SUM) (X-Y mode)	• Test mode #100 still TRKG servo ON / OFF • TILT servo ON	• Adjust that the X-axis amplitude of the lissajous figure becomes maximum.
16	Pickup Tangential Direction Angle Adjustment for Side B Play/(Tilt Offset Fine A adjustment for Side B)	Pickup tangential direction angle adjustment screw. / (VR612)	Video output terminal (TV monotor)	• Test mode #115 still TRKG servo ON • TILT servo ON	• Adjust the pickup tangential adjustment screw for side B play so that the crosstalk becomes minimum. • If crosstalk is appeared, adjust the tilt offset fine adjustment for side B(VR612).
17	Fine Centering Adjustment for Side B Play	Centering adjustment plate for side B	CH1:CN401-9 (TRKG ERR) CH2:CN401-1, 2(TRKG SUM) (X-Y mode)	• Test mode #100 still TRKG servo ON/OFF • TILT servo ON	• Adjust that the X-axis amplitude of the lissajous figure becomes maximum.
18	Reference Sub-carrier Adjustment	VC901	IC402- pin 8	• Stop mode	• Adjust VC901 so that the frequency becomes $3.579545MHz \pm 10Hz$ .
18	VCO Center Frequency Adjustment	VR481	CH1: C471 + lead wire CH2: C499 + lead wire	• #5,100 still	• Adjust VR481 so that the center position of jitter of CH2 video signal is delayed to $76 \mu sec \pm \frac{1}{10}$ as compared with CH1 video signal.

	ADJUSTMENT	Adjusting Point	Measurement equipment Connecting Point	Player Condition	Adjusting Specification
20	Output Video Level Adjustment	VR482	Video output terminal	<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>1.0V_{p-p} \pm 5\%</math>. (Fig. 6)</li> </ul>
21	1H Delay Video Level Adjustment	VR441	CH1: C443 - (minus)lead wire CH2: C445 - (minus)lead wire	<ul style="list-style-type: none"> <li>#3,800 still</li> </ul>	<ul style="list-style-type: none"> <li>Adjust VR441 so that the level of the 1H-delay video becomes the same as that of the main-line video.</li> </ul>
22	VPS Error Adjustment	VR521	Video output terminal (TV monitor)	<ul style="list-style-type: none"> <li>#8,000 still</li> </ul>	<ul style="list-style-type: none"> <li>Color irregularity on the magenta screen is minimized.</li> </ul>

Adjustment Points in the Main Board Assembly

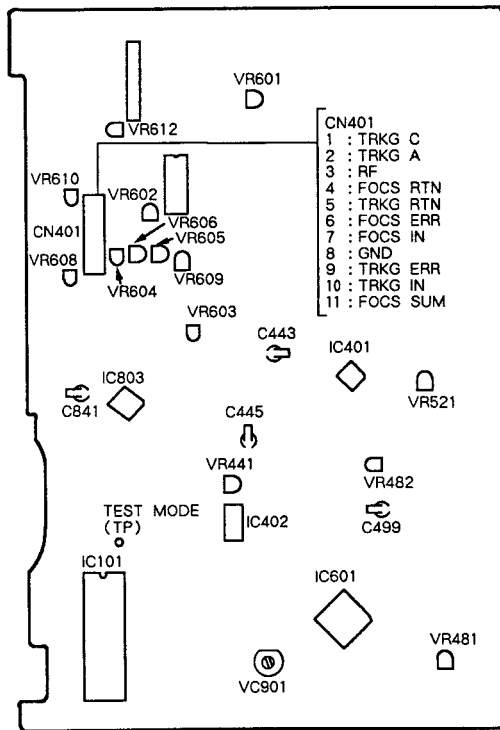


Fig.1 Adjustment points

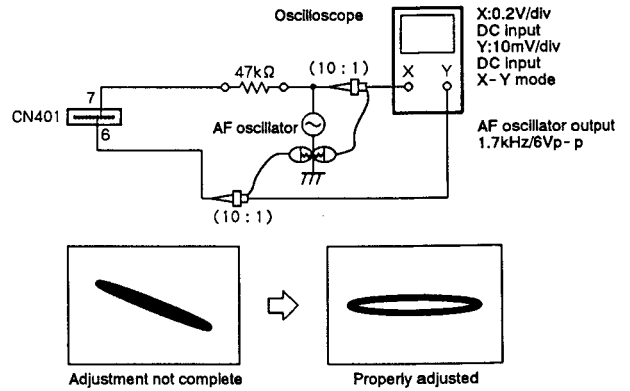


Fig.3 FOCUS servo loop gain adjustment

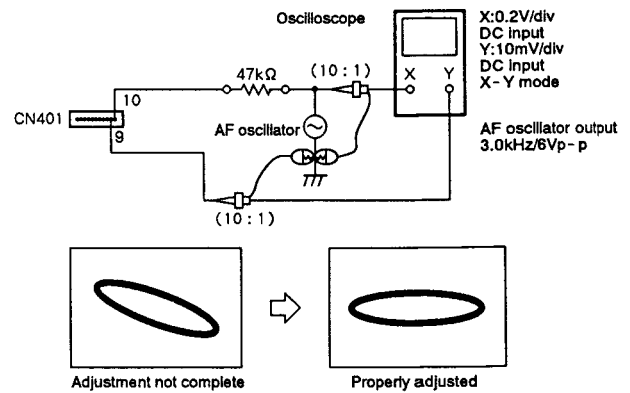


Fig.4 TRKG servo loop gain adjustment

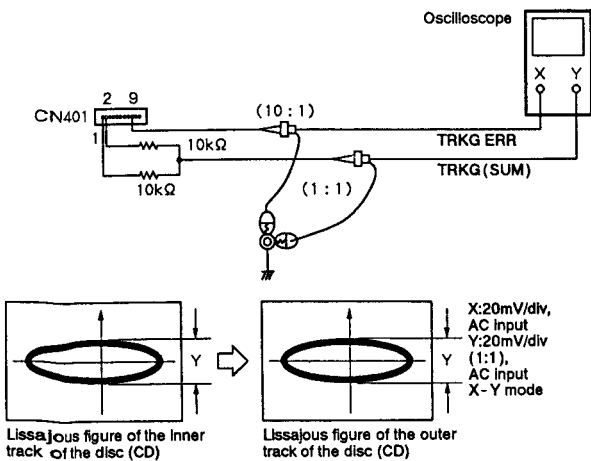


Fig.2 Connection for the spindle motor centering adjustment and fine grating adjustment

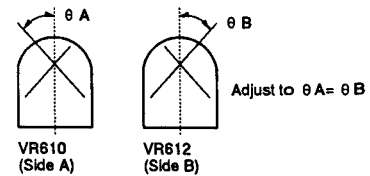


Fig. 5 Tilt offset VR

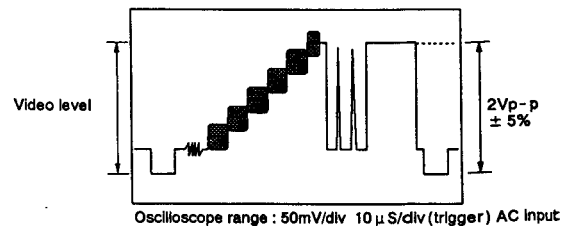


Fig.6 Output video level adjustment

## 6. FOR CLD- D560/RD

**NOTES:**

- Parts marked by "NSP" 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.

### CONTRAST OF MISCELLANEOUS PARTS

CLD - D560/RD and CLD - D502/KU/CA have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		CLD - D502/KU/CA	CLD - D560/RD	
NSP	Mother board assembly	VWM1361	VWM1370	Refer to P.8. Refer to P.9.
	MAIN board assembly	VWX1164	VWX1170	
NSP	Function board assembly	VWM1360	VWM1395	
	FLKY assembly	VWG1408	VWG1446	
	Power supply assembly	VWR1179	VWR1180	
$\Delta$	Cord stopper	CM-22C	CM-22B	
$\Delta$	AC power cord	PDG1015	PDG1013	
NSP	Wire clamp	.....	VEC1237	
	Power board insulation sheet	.....	VEC1492	
	Packing case	VHG1254	VHG1265	
$\Delta$	Operating instructions (English)	VRB1081	VRB1084	Refer to P.8.
	Voltage selector (AC110-127V/220-240V)	.....	VS1004	
	Front panel assembly - S	VXX1867	VXX1868	
	Front panel assembly	VXA1943	VXA1944	
	Remote control unit	VXX1836	VXX1722	
NSP	Battery cover	VNK1293	DNK2286	
	Warranty card	ARY1044	ARW1020	
NSP	Rear panel	VNA1333	VNA1339	
	Model name label	VRW1307	VRW1308	

### POWER SUPPLY ASSEMBLY

VWR1180 and VWR1179 have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		VWR1179	VWR1180	
	IC211, IC212 F202, F203	..... NT1-0.63A	ICP-N20 .....	

### FLKY ASSEMBLY

Although VWG1446 and VWG1408 are different in part number, they have the same service parts.

**MAIN BOARD ASSEMBLY**

VWX1170 and VWX1164 have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		VWX1164	VWX1170	
IC501		.....	TA7302P	
Q101		.....	DTC124EK	
Q550, Q553- Q555		.....	2SC1740S	
Q551		.....	2SA1037K	
Q552, Q556		.....	2SA933S	
D101		.....	1SS254	
L204		LAU220J	.....	
L550		.....	LAU470J	
L551		.....	LAU120J	
L552		.....	LAU180J	
F501		.....	VTF1042	
C120, C121		.....	CKSQYB102K50	
C210, C573, C574, C577, C581		.....	CKSQYF104Z25	
C570		.....	CCSQCH150J50	
C571, C572, C575		.....	CKSQYF103Z50	
C576, C579		.....	CCSQCH101J50	
C578		.....	CCSQCH181J50	
C580		.....	CKSQYF473Z25	
C582		.....	CEAS101M10	
C597		.....	CEAS010M50	
R115		.....	RS1/10S154J	
R152, R153		.....	RS1/10S221J	
R204		.....	RS1/10S102J	
R206		.....	RS1/10S222J	
R227, R293, R570		.....	RS1/10S471J	
R566		.....	RD1/6PM750J	
R568, R569		.....	RD1/6PM680J	
R571		.....	RD1/6PM821J	
R572		.....	RS1/10S470J	
R573		.....	RD1/6PM222J	
R574		.....	RD1/6PM102J	
R575		.....	RS1/10S152J	
R576, R588		.....	RS1/10S331J	
R577		.....	RS1/10S103J	
R578		.....	RS1/10S333J	
R579		.....	RS1/10S182J	
R580, R581		.....	RD1/6PM332J	
R582		.....	RS1/10S332J	
R583		.....	RS1/10S681J	
R584		.....	RS1/10S392J	
R585		.....	RS1/10S122J	
R586		.....	RS1/10S680J	
R587		.....	RS1/10S472J	
R996		RS1LMF3R9J	.....	
JA1 4P mini DIN socket		.....	VKN1072	
JA2 Pin jack		VKB1057	VKB1055	
JA3 Optical output module		.....	TOTX178	
JA6 Mini jack		.....	PKN1005	



# 7. PANEL FACILITIES

**PHONES LEVEL control**

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

**STANDBY indicator**

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

**REMOTE SENSOR**

**POWER STANDBY/ON switch**

Press to turn the power on and off.

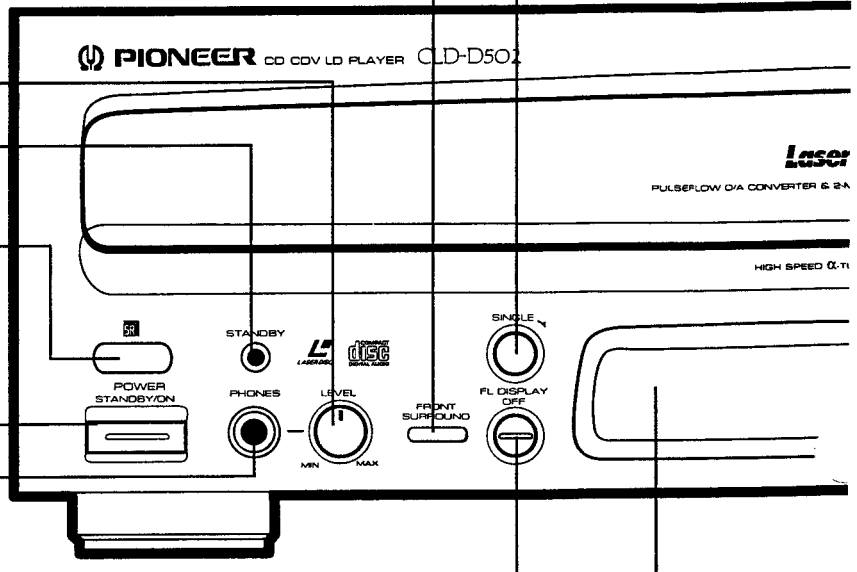
**PHONES jack**

**FL DISPLAY OFF button/indicator**

Pressing this button turns off the display in the front panel 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.

**FRONT SURROUND button**

**SINGLE button**



**Display window**

**Play indicator (▶)**

Lights during play. Blinks during search.

**PGM EDIT indicator**

Lights when editing is performed.

**PROGRAM indicator**

Lights during program play.

**HILITE/INTRO indicator**

Lights during Hilite scan or Intro Scan mode.

**DISC SIDE A indicator**

**TRACK/CHP indicator**

Indicates the TRACK number or CHP (chapter) number.

**REMAIN/TOTAL indicator**

Indicates the REMAIN TIME (remaining play time) or TOTAL TIME (total play time).

**FRAME/TIME indicator**

Indicates the FRAME number or TIME.

**REPEAT indicator**

Lights during repeat play.

**DIRECT CD indicator**

Lights during direct CD mode.

**RANDOM PLAY indicator**

Lights during random play.

**1/L, 2/R indicator**

Indicates the audio output channel.

**DISC SIDE B indicator**

**DIGITAL SOUND indicator**

Lights when the disc being played has a digital sound signal. With LD discs, this indicator lights when the digital sound signal is selected.

**Pause indicator (||)**

Lights when the player is in pause mode.

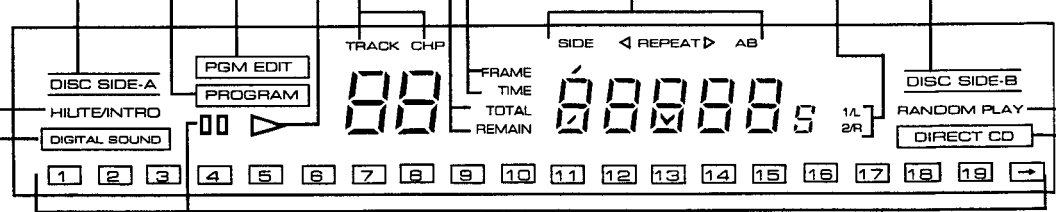
**LD/CD/CDV visual calendar**

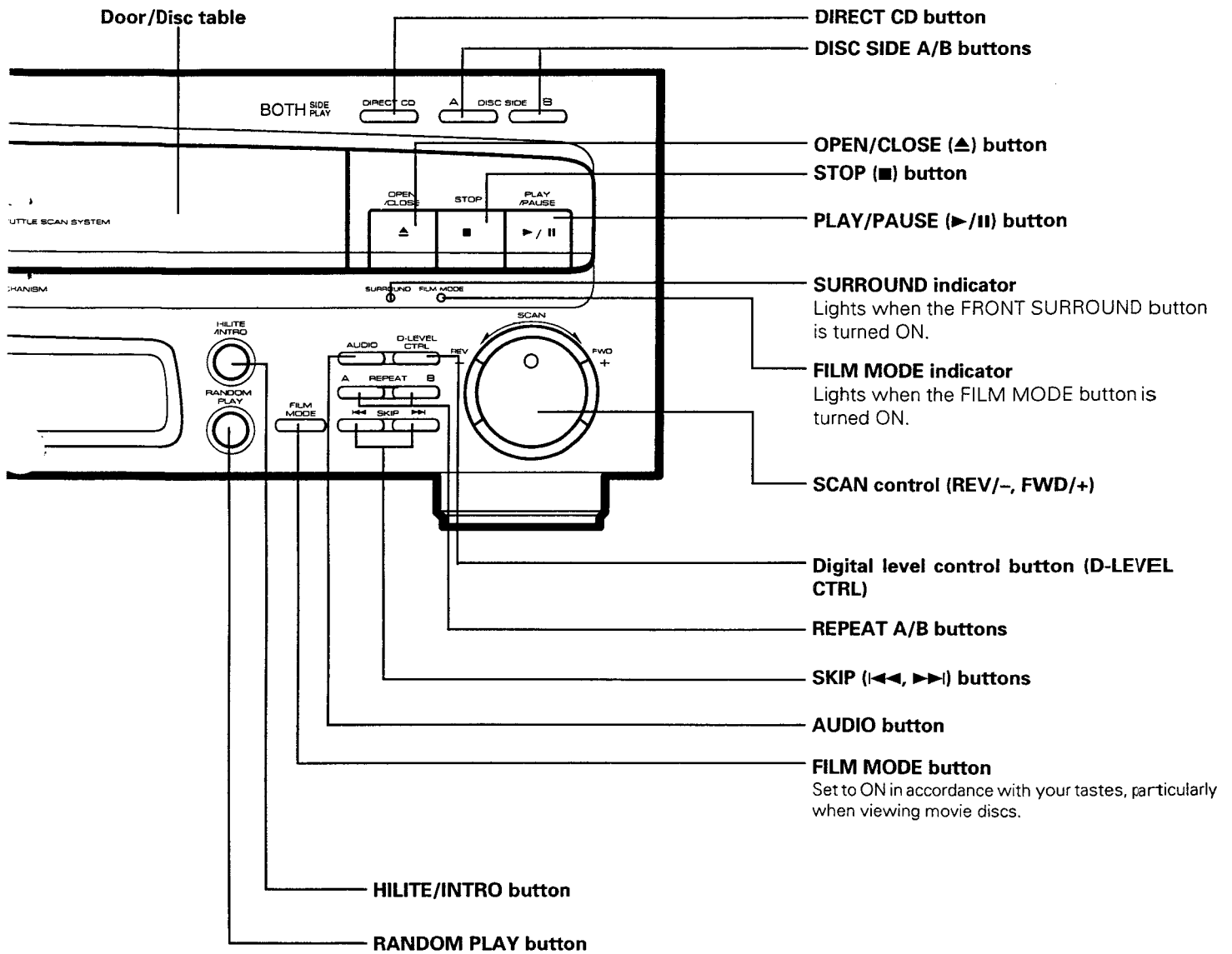
When a disc is loaded, all of the chapter/track numbers recorded on the disc light up on the display. If the disc contains more than 19 chapters/tracks, the → indicator lights.

During program play, only the programmed chapter/track numbers light. When a disc without a TOC section is played, only the selection number being played lights.

When a CDV disc is loaded, the track numbers of the video part light followed by the track numbers of the audio part.

After a chapter/track is finished playing, the corresponding number goes out.





## 8. SPECIFICATIONS

### 1. General

System ..... LaserVision Disc system and  
 Compact Disc digital audio system  
 Laser ..... Semiconductor laser wavelength 780 nm  
 Power requirements ..... AC 120 V, 60 Hz  
 Power consumption ..... 40 W  
 Weight ..... 8.2 kg (18 lbs 1 oz)  
 Dimensions ..... 420 (W) x 435 (D) x 135 (H) mm  
 16-9/16 (W) x 17-1/8 (D) x 5-5/16 (H) in  
 Operating temperature ..... +5°C ~ +35°C  
 (41°F - 95°F)  
 Operating humidity ..... 5% ~ 90%  
 (There should be no condensation of moisture.)

### 2. Disc

#### LaserVision Discs

\*Maximum playing times  
 12-inch standard play disc ..... 1 hour/both sides  
 12-inch extended play disc ..... 2 hours/both sides  
 8-inch standard play disc ..... 28 min/both sides  
 14 min/one side  
 8-inch extended play disc ..... 40 min/both sides  
 20 min/one side  
 Spindle motor speed  
 Standard play disc ..... 1,800 rpm  
 Extended play disc ..... 1,800 rpm (inner circumference)  
 to 600 rpm (outer circumference)  
 (For a 12-inch disc)

#### Compact Discs

DISC ..... Diameter: 5-inch, 3-inch, Thickness: 1.2 mm  
 Rotation direction (pickup side) ..... Counterclockwise  
 Linear 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  
 Jack ..... RCA jack

### 4. 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

#### Digital Audio Characteristics

Frequency response	4 Hz - 20 kHz (EIAJ)
SN ratio	113 dB (EIAJ)
Dynamic range	98 dB (EIAJ)
Total harmonic distortion	0.0025% (EIAJ)
Wow and flutter	Limit of measurement (EIAJ)

### 5. Other Terminals

Control input/output ..... Both miniature jacks

### 6. Accessories

Remote control unit (CU-CLD084) ..... 1  
 Size "AAA" (IEC R03) dry cell batteries ..... 2  
 Video cord ..... 1  
 Audio cord ..... 1  
 Operating instructions ..... 1  
 Warranty card ..... 1

## 7. Functions

Remote control unit operations (CU-CLD084)

	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
	All-side repeat	YES	YES	NO	NO
	Program repeat	YES	YES	YES	YES
	Random repeat	YES*1	YES*1	YES	YES
Program random repeat	YES	YES	YES	YES	
Trick play	Still/Step	YES	NO	NO	NO
	Multi-speed (Forward/reverse 9-level variable)	YES	NO	NO	NO
Time display	Elapsed time display	NO	YES	YES	YES
	Absolute time display	YES*1	NO	NO	YES
	Remaining track time display	NO	NO	YES	YES
	Remaining total time display	YES*1	YES*1	YES	YES
	Total number of selections, total time display	YES*1	YES*1	YES	YES
Others	CX system ON/OFF	YES*2	YES*2	NO	NO
	Auto Digital/Analog switch	YES*3	YES*3	NO	NO
	Audio channel selection (Stereo, 1/L, 2/R)	YES	YES	YES	YES
	Digital level control	YES*3	YES*3	YES	YES

\*1 Only discs with TOC

\*2 Valid for analog sound playing a disc with the  mark.

\*3 Can only be used with discs with digital sound tracks.

**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
- Hi-Lite/Intro Scan, Single Play, Random Playback and Compu Program/Auto Program Edit
- Digital Sound for LaserVision Discs
- Last Memory
- Direct CD
- Front Surround