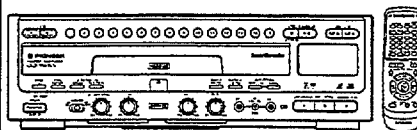


# Service Manual



ORDER NO.  
RRV1675

CD/VIDEO CD/LD PLAYER

# CLD-3760KV



THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	Remarks
	CLD-3760KV		
RD	○	AC110-127V/220-240V	Automatic selector
RDXQ/NC	○	AC110-127V/220-240V	Automatic selector
RL	○	AC110-127V/220-240V	Automatic selector

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# 1. SAFETY INFORMATION

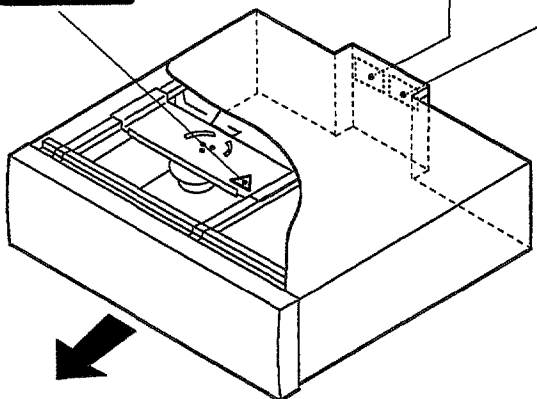
<p><b>VARO!</b> AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NAKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.</p>		<p><b>WARNING!</b> DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.</p>	
<p><b>ADVERSEL:</b> USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.</p>	<p>LASER Kuva 1 Lasersäteilyn varoitusmerkki</p>	<p><b>IMPORTANT</b> THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.</p>	<p>LASER Picture 1 Warning sign for laser radiation</p>
<p><b>VARNING!</b> OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.</p>		<p><b>LASER DIODE CHARACTERISTICS</b> MAXIMUM OUTPUT POWER: 5 mw WAVELENGTH: 780-785 nm</p>	

## LABEL CHECK

**CAUTION**  
INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO BEAM  
PRW1018

**CLASS 1 LASER PRODUCT**  
VRW-328





**Additional Laser Caution**

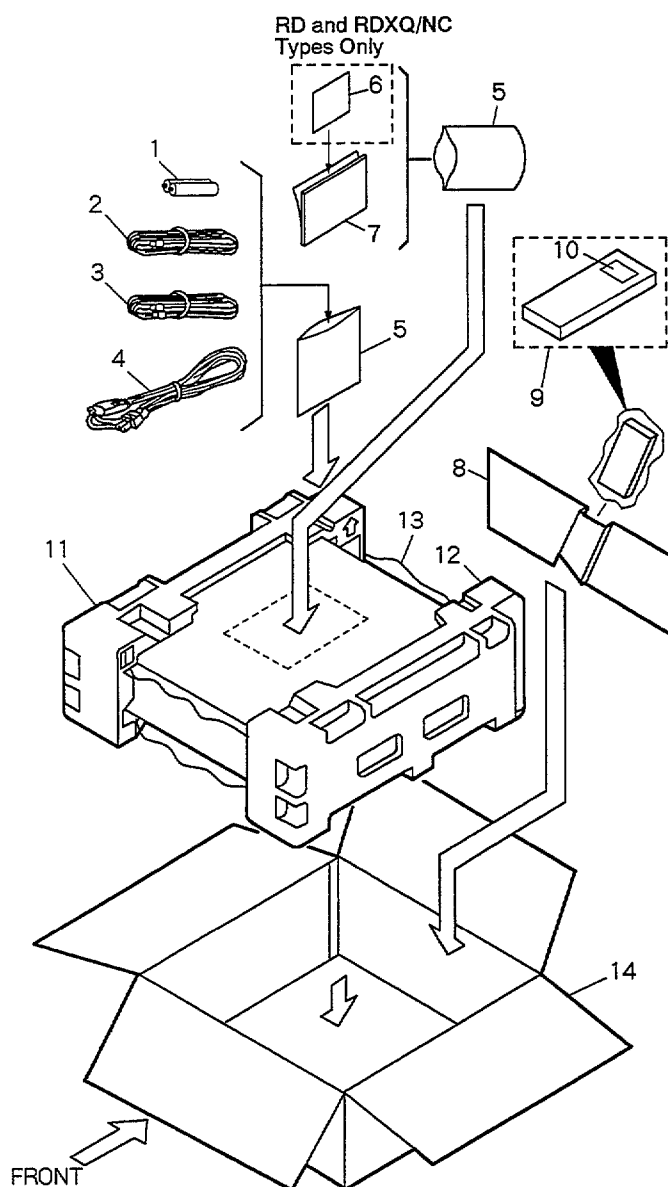
- The ON/OFF statuses of the side-A/B detection switch (TURN switch on the TNSB assy), slider-position detection switches (INNER and OUTER on the PKSB assy) and loading-status detection switches (SW 1, 2 and 3 on the LMSB assy) are detected by the microprocessor (IC101 in the MOTHER assy). To permit the laser diode to oscillate, it is required to set the side-A/B detection switch for side A status (TRN : OFF) and the slider-position detection switches for the LD ACTIVE status (INNER : OFF, OUTER : OFF), and to set the loading-status detection switches for tilt neutral state (SW1 : OFF, SW2 : OFF, SW3 : ON). As long as these requirements are not satisfied, the laser diode will not oscillate. When the requirements are met in any way, the laser diode can oscillate. The laser diode oscillation will continue if pin 13 of IC801 is shorted to GND or the emitter and collector of Q834 are shorted each other (fault condition) in MOTHER assy.  
In the test mode \*, the laser diode oscillates when the microprocessor detects a PLAY signal, or when the PLAY key is pressed (S102 ON in the FLKB assy), with the above requirements satisfied.
- When the cover is open, close viewing through the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

\* : Refer to pages 56 and 57.

## 2. EXPLODED VIEWS AND PARTS LIST

NOTES: ● Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.  
 ● The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

### 2.1 PACKING



### (1) PARTS LIST

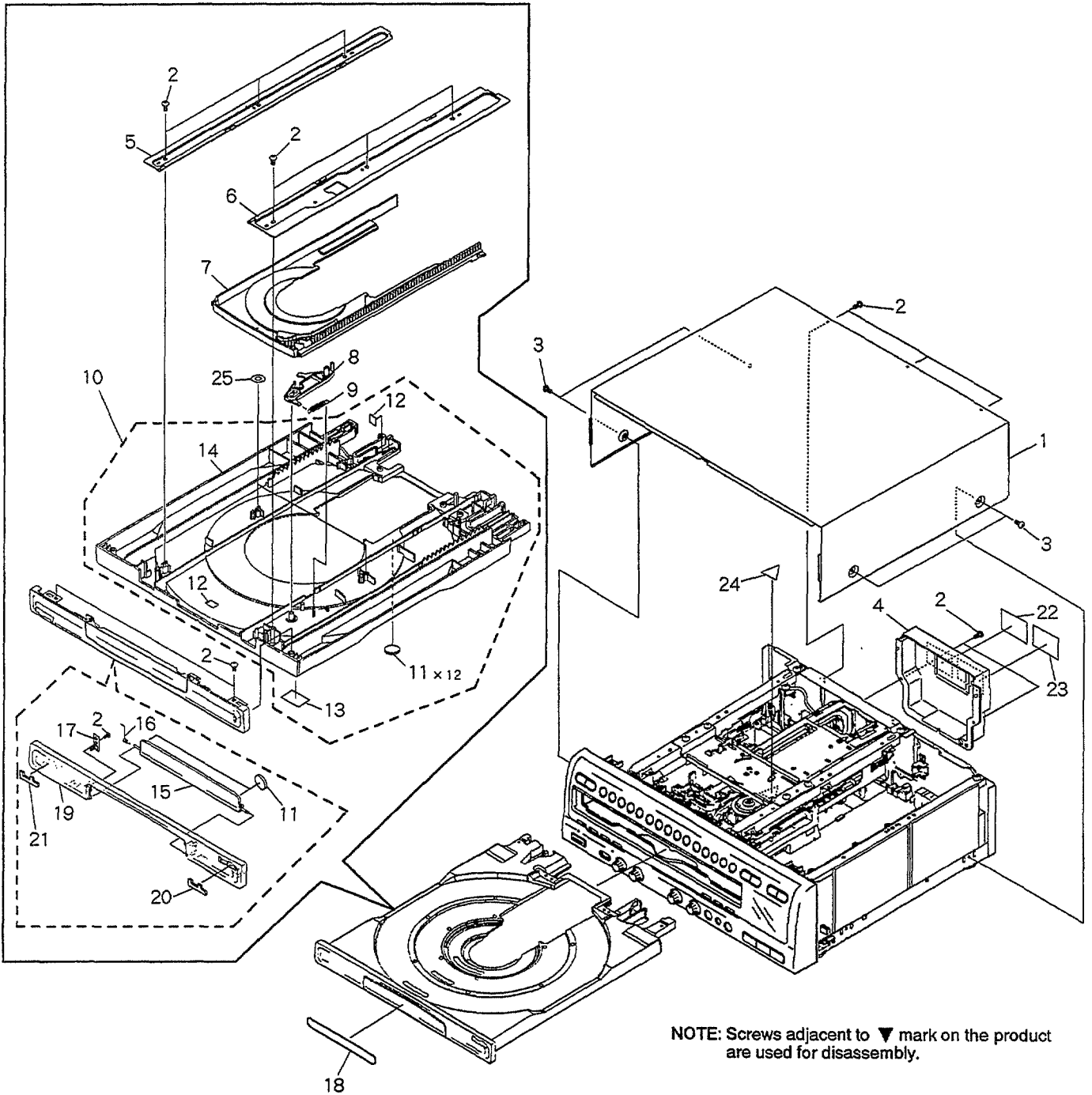
Mark	No.	Description	Part No.
NSP	1	Dry Cell Battery (R03, AAA)	VEM-022
	2	Video Cord	VDE1048
	3	Audio Cord	VDE1033
Δ	4	AC Power Cord	See Contrast table (2)
	5	Polyethylene Bag (230 × 340 × 0.03)	Z21-038
NSP	6	Warranty Card	See Contrast table (2)
	7	Operating Instructions (English/Spanish/Chinese)	VRE1055
	8	RCU Holder	VHC1040
	9	Remote Control Unit (CU-CLD145)	VXX2460
	10	Battery Cover	VNK2805
	11	Pad L	VHA1177
	12	Pad R	VHA1178
	13	Mirror Mat	DHL1006
	14	Packing Case	See Contrast table (2)

### (2) CONTRAST TABLE

CLD-3760KV/RD, RDXQ/NC and RL have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			Remarks
			RD type	RDXQ/NC type	RL type	
Δ	4	AC Power cord	ADG1158	ADG1158	ADG1154	
NSP	6	Warranty Card	ARW1020	ARW1020	Not used	
	14	Packing Case	VHG1627	VHG1653	VHG1662	

2.2 EXTERIOR AND DISC TRAY SECTION



**(1) PARTS LIST**

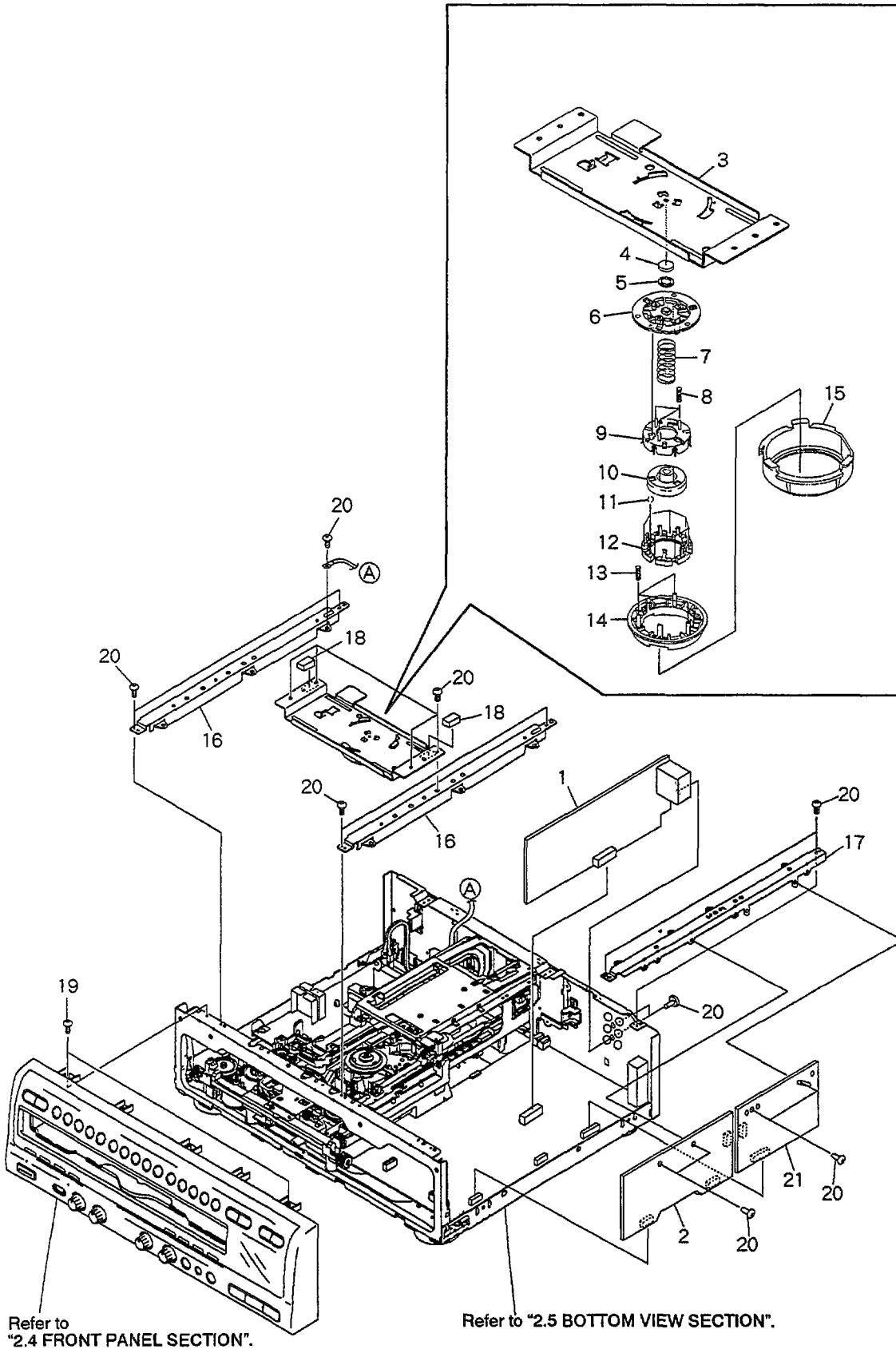
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Bonnet S	See Contrast table (2)		11	Cushion	VEC1682
	2	Screw	BBZ30P080FMC		12	Damp Cushion	VEC1683
	3	Screw	BCZ40P060FZK	NSP	13	Label	VRW1289
	4	Rear Cover	See Contrast table (2)		14	LD Tray Assy	VXA2173
	5	Guide Plate (R)	VNE1939		15	CD Door Assy	VXA2315
	6	Guide Plate (L)	VNE1938		16	Door Spring	VBH1248
	7	CD Tray	VNK3007		17	Door Holder	VNL1704
	8	Lock Plate	VNL1703	NSP	18	Getter	VRW1615
	9	Lock Plate Spring	VBH1188		19	Tray Panel	VNK3881
	10	Tray Assy - S	VXX2307		20	Karaoke Plate	VAM1055
					21	Name Plate	PAM1704
					22	Caution Label	PRW1018
				NSP	23	Caution Label (F)	VRW - 328
					24	Caution Label (G)	VRW - 329
					25	Fiber Washer	VEC1254

**(2) CONTRAST TABLE**

CLD-3760KV/RD, RDXQ/NC and RL have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			Remarks
			RD type	RDXQ/NC type	RL type	
	1	Bonnet S	VXX2252	VXX2411	VXX2252	
	4	Rear Cover	VNK3885	VNK3961	VNK3886	

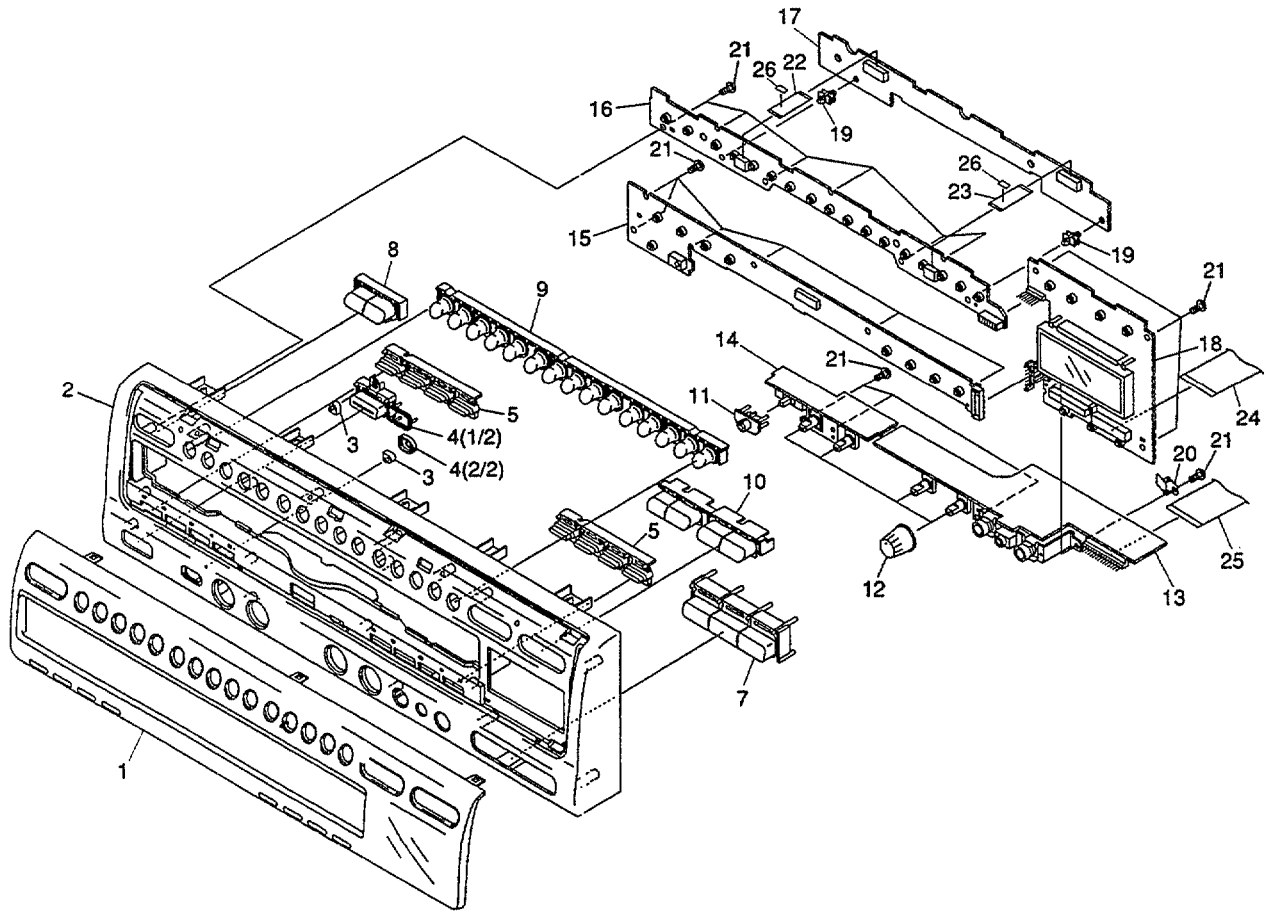
2.3 TOP VIEW SECTION



## Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	KRAB Assy	VWV1491		11	Steel Ball	VNX1013
	2	GRPB Assy	VWV1503		12	Ball Guide	VNL1616
	3	Center Plate	VNE1971		13	Clamp Spring	VBH1239
	4	Rubber Mat	VEB1114		14	Clamper	VNL1604
	5	Thrust Holder	VNL1663		15	Clamper Holder	VNL1680
	6	Clamper Head	VNL1603		16	Center Angle	VNE1965
	7	LD Spring	VBH1240	NSP	17	PCB Holder	VNE2087
	8	Cover Spring	VBH1234	NSP	18	Damp Cushion	VEC1602
	9	Ball Cover	VNL1602		19	Screw	IBZ30P080FMC
	10	LD Hab	VNT1047		20	Screw	BBZ30P080FMC
					21	VCDB Assy	VWV1507

2.4 FRONT PANEL SECTION

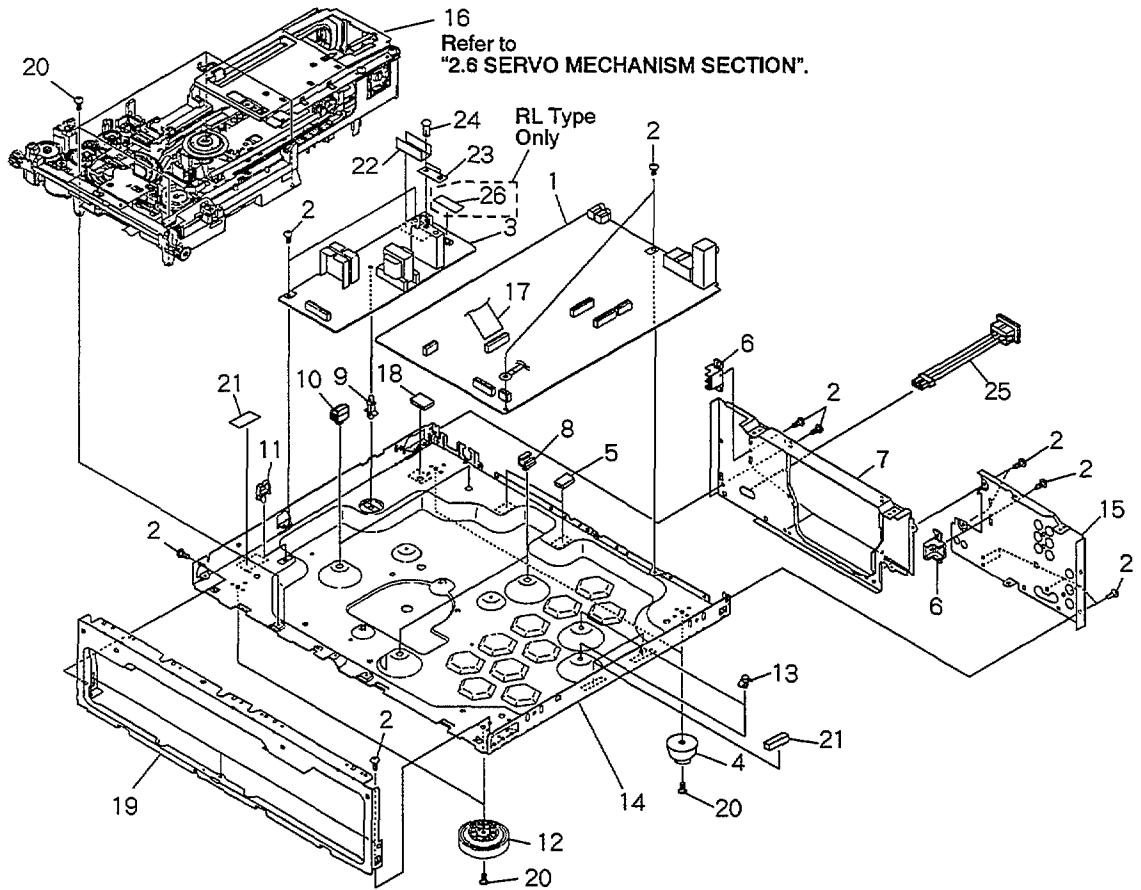


Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Center Panel	VNK3883		16	DIKB Assy	VWG1763
	2	Front Panel	VNK3669	NSP	17	IOEB Assy	VWG1764
	3	LED Lens	PNW2019		18	FLKB Assy	VWG1765
	4	PW Button	VNK3179	NSP	19	PC Support (B)	VEC1244
	5	L Key A	VNK3688		20	Earth Plate	VNE2027
	6	• • • • •		21	Screw	BBZ30P080FMC	
	7	Key Con. Button	VNK3674	22	Flexible Cable (10P)	VDA1557	
	8	A/B Button	VNK3678			(DIKB CN303 – IOEB CN702)	
	9	15 Key	VNK3673	23	Flexible Cable (10P)	VDA1557	
	10	Play Button	VNK3676			(DIKB CN302 – IOEB CN701)	
	11	Slide Knob	VNK3187	24	Flexible Cable (24P)	VDA1564	
	12	VR Knob	VNK3677			(FLKB CN102 – MOTHER CN107)	
NSP	13	JACB Assy	VWV1492	25	Flexible Cable (19P)	VDA1552	
NSP	14	VR SB Assy	VWG1761			(JACB CN501 – KRAB CN102)	
	15	KALB Assy	VWG1762	26	Spacer	VEC1894	



2.5 BOTTOM VIEW SECTION



(1) PARTS LIST

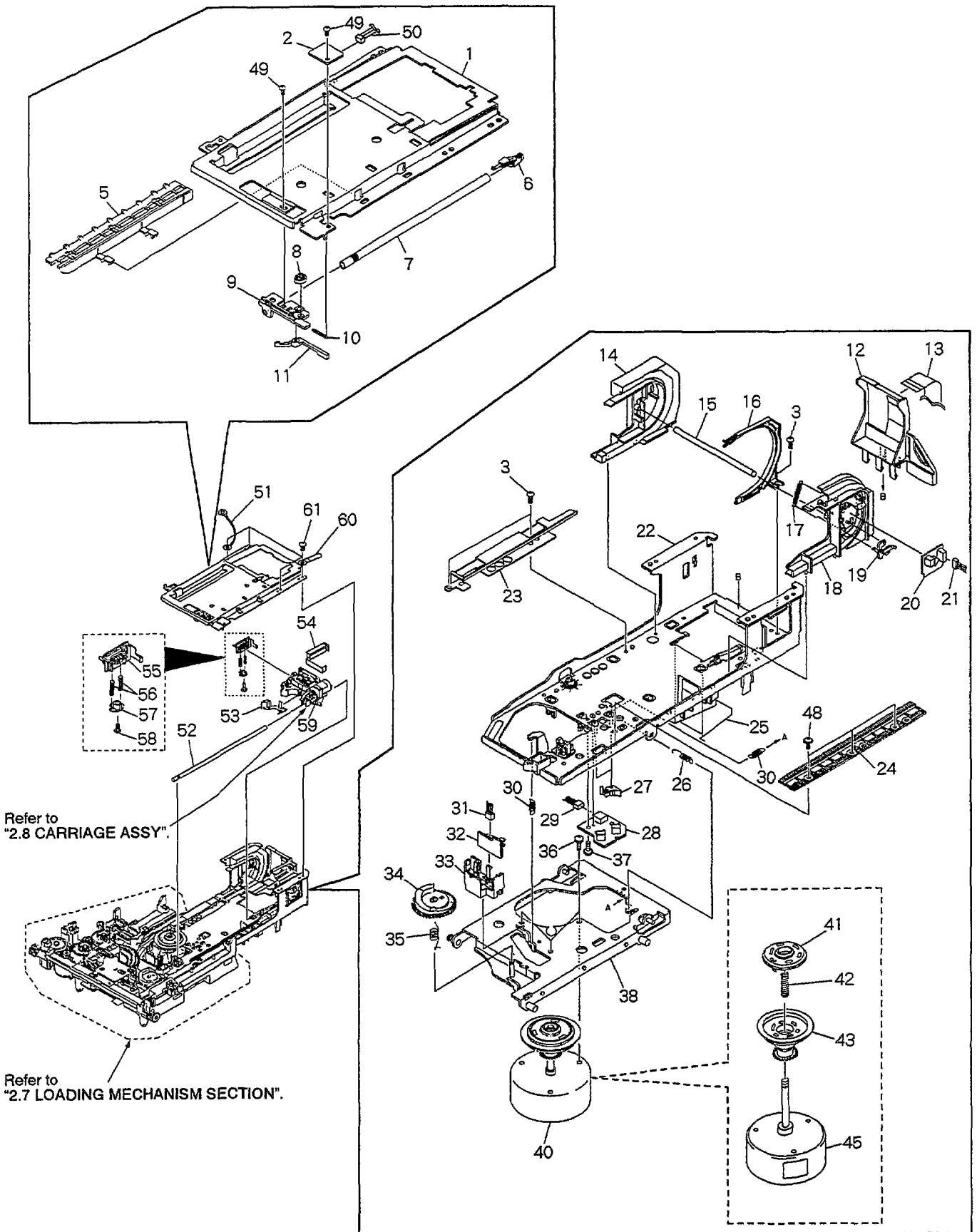
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	MOTHER Assy	VWS1252	NSP	16	Mechanism Assy	VWT1131
	2	Screw	BBZ30P080FMC		17	Flexible Cable (21P) (MOTHER CN102-POWER SUPPLY CN202)	VDA1465
△	3	POWER SUPPLY Assy	VWR1268		18	Spacer	PEB1275
	4	Insulator Assy	VXA2295	NSP	19	Panel Holder	See Contrast table (2)
NSP	5	Rubber Spacer	VEB1252		20	Screw	BBZ30P100FMC
	6	Tray Stopper	VNL1657		21	Spacer	REB1171
	7	Rear Panel (R)	VNA1606		22	Barrier Sheet	VEC1877
NSP	8	P Plate Holder	PNY-405		23	Barrier Sheet	VEC1878
NSP	9	PC Support	VEC-269		24	Rivet	DEC-176
	10	PCB Hinge	VEC1174				
NSP	11	Wire Clip (H)	VEC1181	△	25	AC Inlet Assy	VKP2116
	12	Insulator	PNW1912	NSP	26	Fuse Card	See Contrast table (2)
	13	Card Spacer A	VEC1708				
NSP	14	Chassis	VNA1564				
	15	Rear Panel (L)	VNA1726				

(2) CONTRAST TABLE

CLD-3760KV/RD, RDXQ/NC and RL have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			Remarks
			RD type	RDXQ/NC type	RL type	
NSP	19	Panel Holder	VNA1835	VNA1714	VNA1835	
NSP	26	Fuse Card	Not used	Not used	AAX1581	

2.6 SERVO MECHANISM SECTION

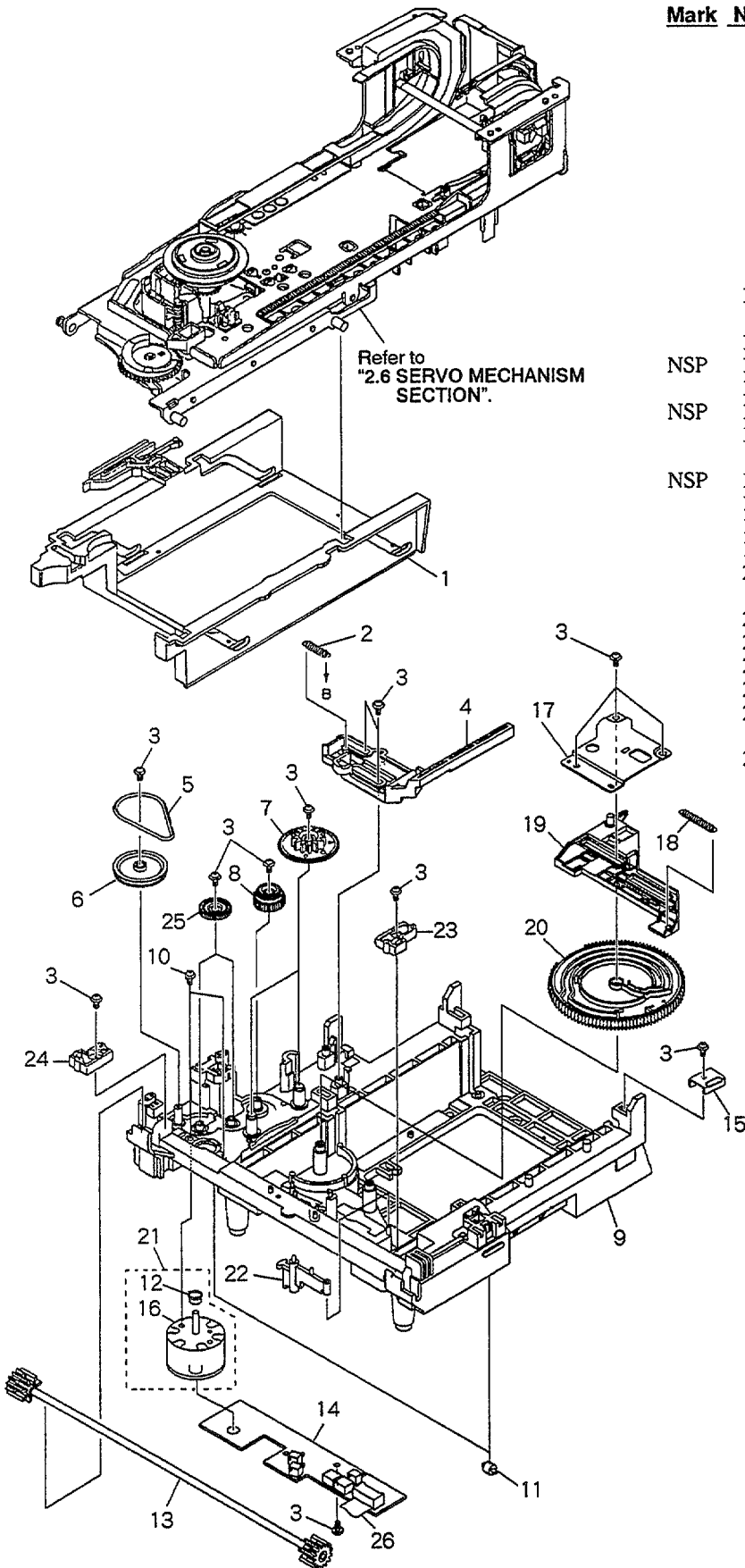


## Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.	
NSP	1	Tilt Base (upper)	VNE1969	NSP	31	Housing Assy (3P, Yellow)	VKP2046	
	2	BISB Assy	VWG1558		32	FG Assy	VWG1556	
	3	Screw	BBZ30P060FMC		33	FG Base	VNL1645	
	4	•••••			34	Tilt Cam	VNL1643	
	5	Rack (Upper)	VNL1679		35	Tilt Cam Spring	VBH1243	
	6	Shaft Stay	VNL1671		36	Screw	PMA30P050FMC	
	7	Carriage Shaft (upper)	VLL1478		37	Screw	IBZ26P120FMC	
	8	B Cam	VNL1673		38	Motor Base	VNE1941	
	9	Shaft Support	VNL1672		39	•••••		
	10	Support Spring	VBH1265		40	Spindle Motor Assy	VXA2271	
	11	SW Lever (B)	VNL1678		41	PRC Hub	VNL1684	
	12	Large hill	VNL1682		42	Centering Spring	VBH1269	
	13	Flexible Cable (23P)	VDA1528		NSP	43	R Turn Table Assy	VXA2225
	14	Turn Guide	VNL1701		44	•••••		
	15	FFC Style Shaft	VLL1474		NSP	45	Spindle Motor	VXM1057
NSP	16	Guide	VNL1674	46	•••••			
	17	Lever Spring	VBH1266	47	•••••			
	18	Turn Gear	VNL1702	48	Screw	IBZ26P060FMC		
	19	SW Lever (T)	VNL1695	49	Screw	BPZ20P040FZK		
	20	TNSB Assy	VWG1557	50	Housing Assy (2P, Red)	VKP2060		
	21	Housing Assy (3P, Black)	VKP2059	NSP	51	Earth Lead Unit	DE007VF0	
	22	Tilt Base (Under)	VNL1670	52	Carriage Shaft (Under)	VLL1493		
	23	TAN Guide	VNE1973	53	Body Guard	VNL1681		
	24	CA Rack	VNL1647	54	FFC Holder	VNL1706		
	25	FFC Style Spring	VBH1270	55	CA Guide	VNL1668		
NSP	26	Thrust Spring	VBH1245	56	TAN Spring (B)	VBH1264		
	27	CA - SW Lever	VNL1644	57	TAN Lever (B)	VNL1669		
	28	PKSB Assy	VWG1555	58	Screw	PMZ20P060FZK		
	29	Housing Assy (3P, Blue)	VKP2045	59	Carriage Assy	VWT1110		
	30	Tilt Spring	VBH1263	NSP	60	Cord Binder	ZCB - 069Z	
				61	Screw	BBZ30P080FMC		

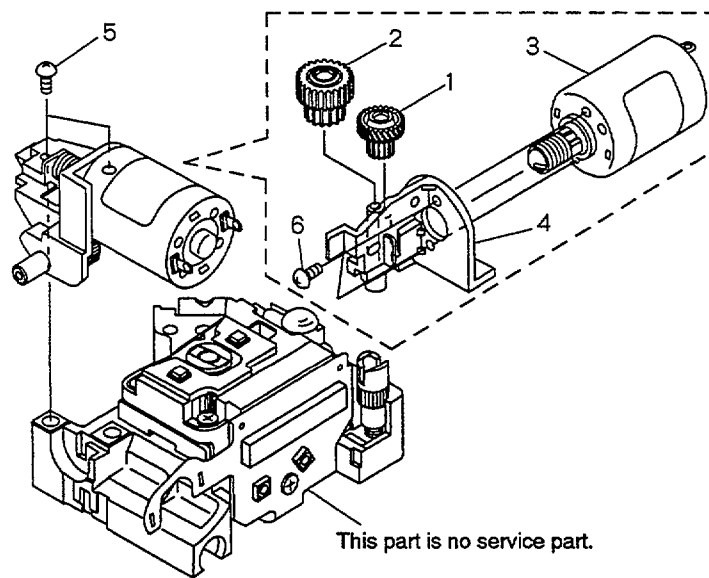
2.7 LOADING MECHANISM SECTION

Parts List



Mark	No.	Description	Part No.
	1	Clamp Cam	VNL1633
	2	CDP Spring	VBH1191
	3	Screw	Z39-019
	4	CD Plate	VNL1685
	5	Rubber Belt	VEB1184
	6	Gear Pulley	VNL1662
	7	Twin Gear	VNL1626
	8	Center Gear	VNL1660
	9	Mechanism Base	VNK3239
	10	Screw	BMZ26P040FMC
	11	Roller	VNL1042
NSP	12	Motor Pulley	VNL1630
	13	Synchro Gear Assy	VXA2105
NSP	14	LMSB Assy	VWG1612
	15	Cam Holder	VNE2032
NSP	16	Carriage Motor	VXM1033
	17	Shaft Holder	VNE1942
	18	CAS Spring	VBH1190
	19	Cam Plate	VNL1631
	20	Cam Gear	VNL1625
	21	Loading Motor Assy	VXX2045
	22	MB-SW Lever	VNL1664
	23	Slider (R)	VNL1666
	24	Slider (L)	VNL1665
	25	Double Gear	VNL1661
	26	Flexible Cable (12P)	VDA1485

## 2.8 CARRIAGE ASSY



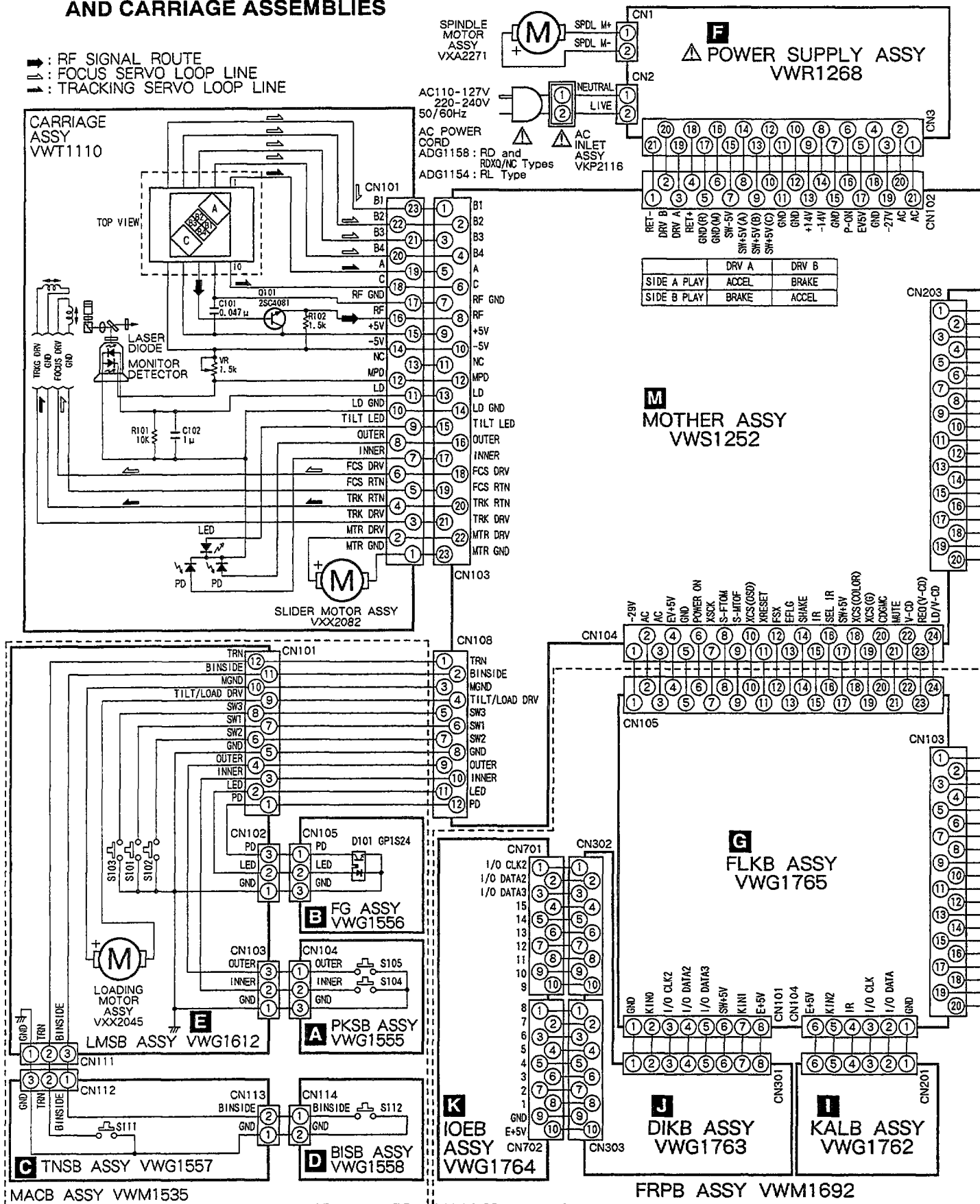
## Parts List

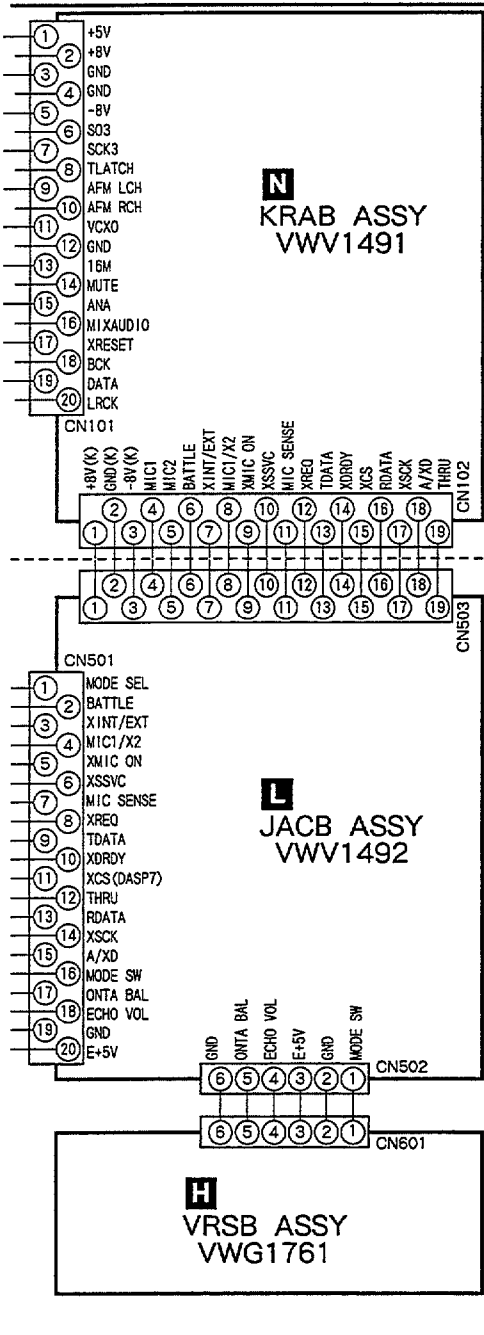
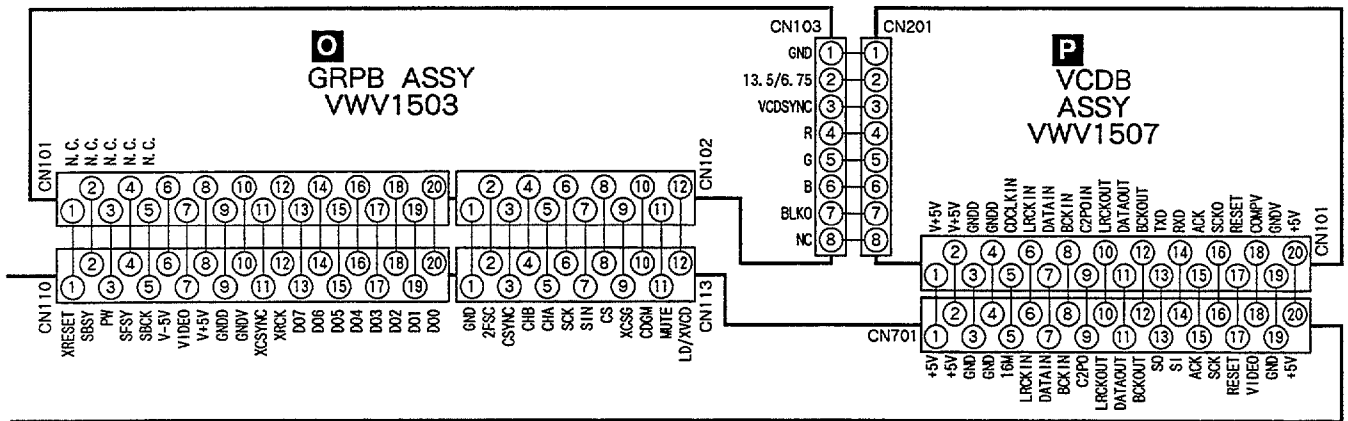
Mark	No.	Description	Part No.
	1	CA Gear (A)	VNL1638
	2	CA Gear (B)	VNL1639
	3	Slider Motor Assy	VXX2082
	4	M Holder	VNL1700
	5	Screw	PBZ20P060FMC
	6	Screw	PMZ20P030FMC

### 3. SCHEMATIC DIAGRAMS

#### 3.1 OVERALL CONNECTIONS, PKSB, FG, TNSB, BISB, LMSB AND CARRIAGE ASSEMBLIES

- ➔ : RF SIGNAL ROUTE
- ➡ : FOCUS SERVO LOOP LINE
- ➡ : TRACKING SERVO LOOP LINE





**NOTE FOR SCHEMATIC DIAGRAMS**

(Type 4A)

- When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".
- Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.
- RESISTORS:**  
Unit: k $\Omega$ , M $\Omega$ , or  $\Omega$  unless otherwise noted.  
Rated power: 1/4W, 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.
- CAPACITORS:**  
Unit: p $\mu$ F or  $\mu$ F unless otherwise noted.  
Ratings: capacitor ( $\mu$ F) / voltage (V) unless otherwise noted.  
Rated voltage: 50V except for electrolytic capacitors.
- COILS:**  
Unit: m $\mu$ H or  $\mu$ H unless otherwise noted.
- VOLTAGE AND CURRENT:**  
□ or ←V: 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.
- OTHERS:**
  - ⊙ or ⊙ : Adjusting point.
  - ◀ : 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.
- SWITCHES**  
(Underline indicates switch position):  
**LMSB ASSY**  
 S101 : SW1  
 S102 : SW2  
 S103 : SW3  
**PKSB ASSY**  
 S105 : OUTER  
**BISB ASSY**  
 S112 : B INSIDE  
 S104 : INNER  
**TNSB ASSY**  
 S111 : TURN  
**BISB ASSY**  
 S112 : B INSIDE  
**FLKB ASSY**  
 S101 : STOP(■)  
 S102 : PLAY/PAUSE(▶ / ||)  
 S103 : OPEN/CLOSE(CD ▲)  
 S104 : OPEN/CLOSE(LD ▲)  
 S105 : ♪  
 S106 : ♪  
 S107 : #  
**VRSB ASSY**  
 S601 : NORMAL/KARAOKE/AUX INPUT  
**KALB ASSY**  
 S201 : POWER STANDBY/ON  
 S202 : SINGLE PLAY  
 S203 : VOCAL PARTNER  
 S204 : ONE-TOUCH KARAOKE  
 S205 : ONE-TOUCH GUIDE VOCAL  
 S206 : VIDEO CD SYSTEM  
 S207 : PLAYBACK CONTROL  
 S208 : COMPETITION ] SCORING  
 S209 : NORMAL ] SCORING  
**DIKB ASSY**  
 S301 : A ] DISC SIDE  
 S302 : B ] DISC SIDE  
 S303 : 1  
 S304 : 2  
 S305 : 3  
 S306 : 4  
 S307 : 5  
 S308 : 6  
 S309 : 7  
 S310 : 8  
 S311 : 9  
 S312 : 10  
 S313 : 11  
 S314 : 12  
 S315 : 13  
 S316 : 14  
 S317 : 15  
**KRAB ASSY**  
 S301 : ATTENUATOR

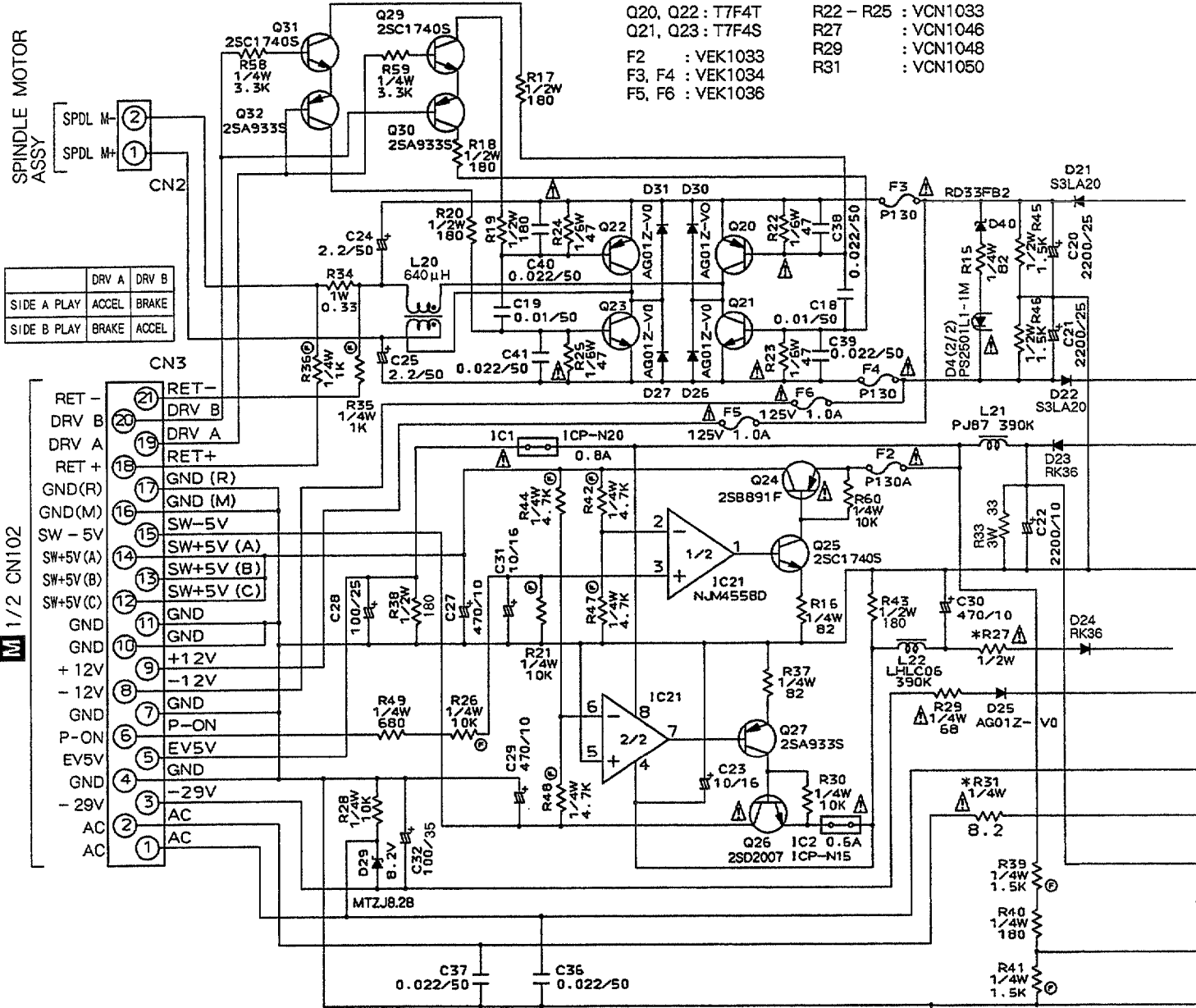
3.2 POWER SUPPLY ASSY

• NOTE FOR FUSE REPLACEMENT

CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.

**F** △ SYPS ASSY VWR1268

- Q20, Q22 : T7F4T
- Q21, Q23 : T7F4S
- F2 : VEK1033
- F3, F4 : VEK1034
- F5, F6 : VEK1036
- R22 - R25 : VCN1033
- R27 : VCN1046
- R29 : VCN1048
- R31 : VCN1050



CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE NO. ICP-N20, MFD BY ROHM CO., LTD. FOR IC1.

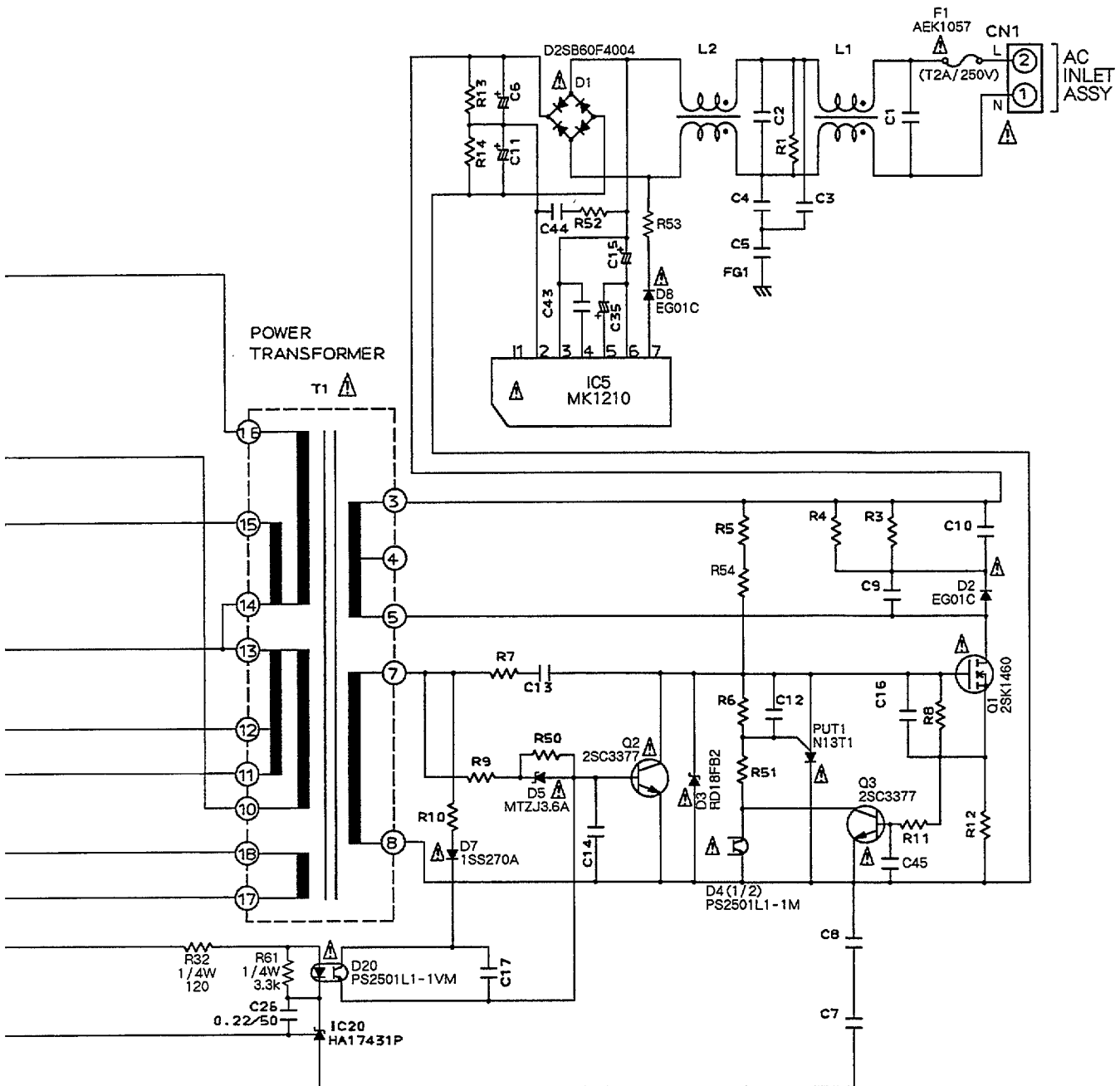
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE NO. ICP-N15, MFD BY ROHM CO., LTD. FOR IC2.



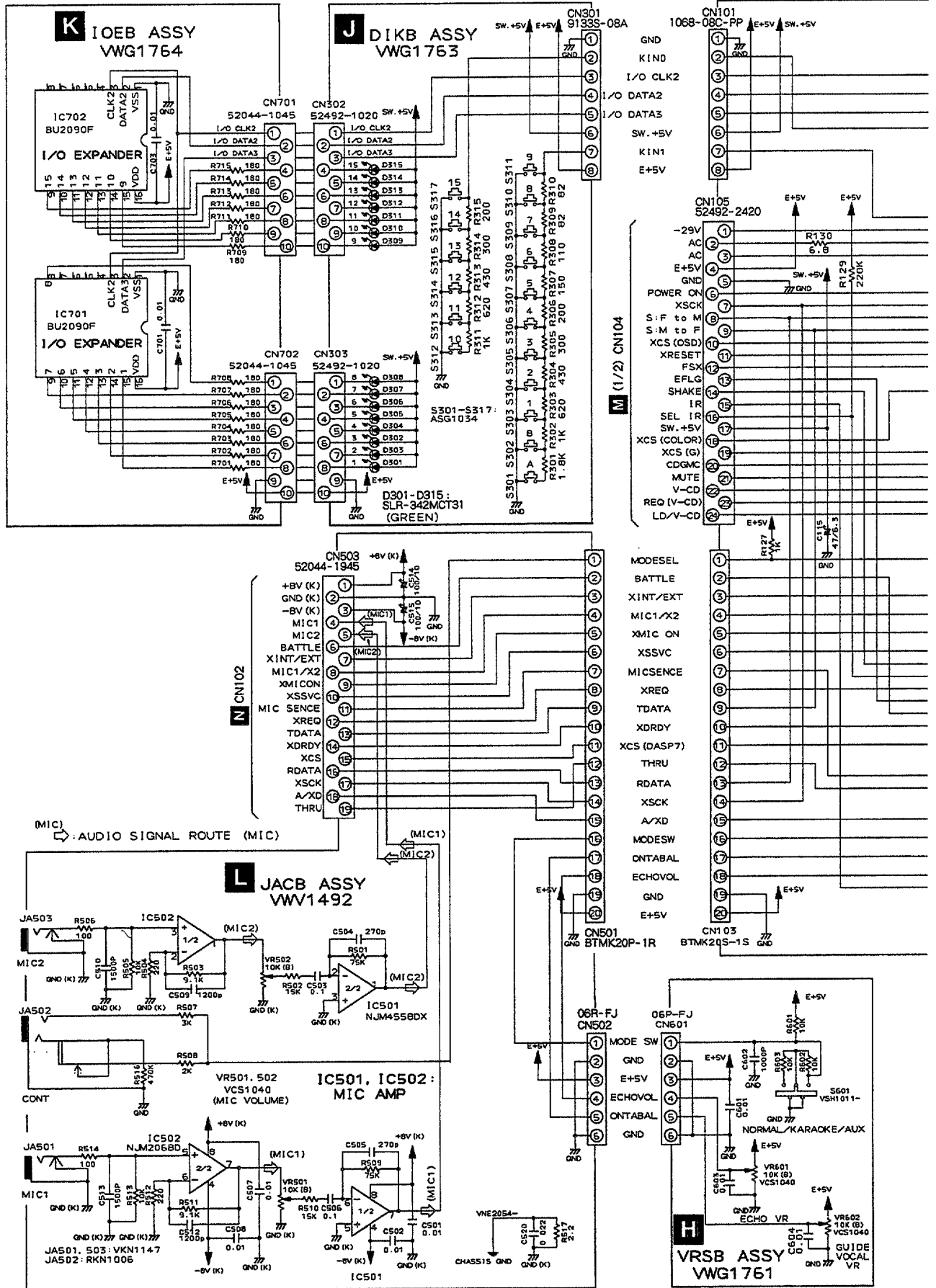


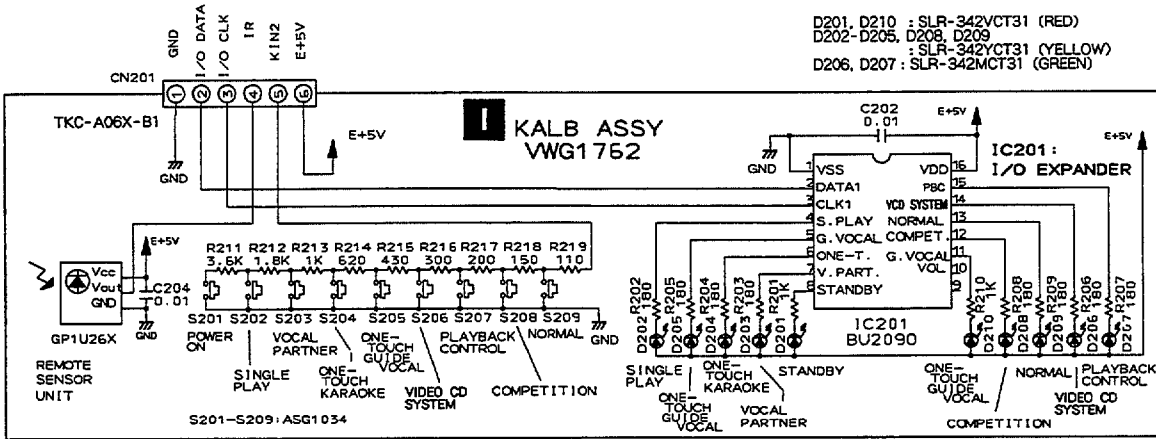
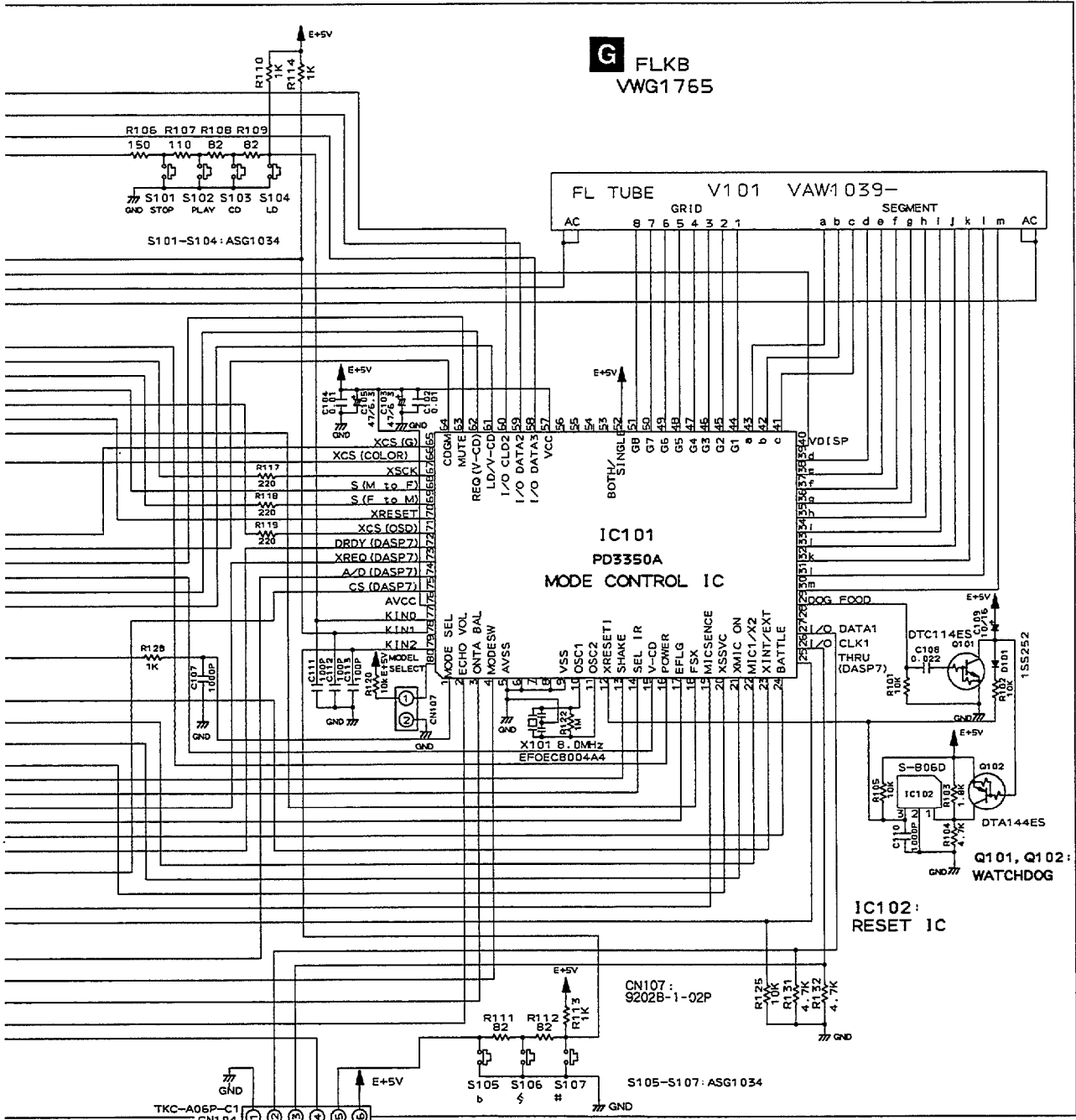
《NOTE OF SPARE PARTS IN POWER SUPPLY (SYPS) ASSY》

- In case of repairing, use the described parts only to prevent an accident.
- Please write the red ✓ mark on the board when the primary section of POWER SUPPLY (SYPS) Assy is repaired.
- Please take care to keep the space, not touching other parts when replacing the parts.



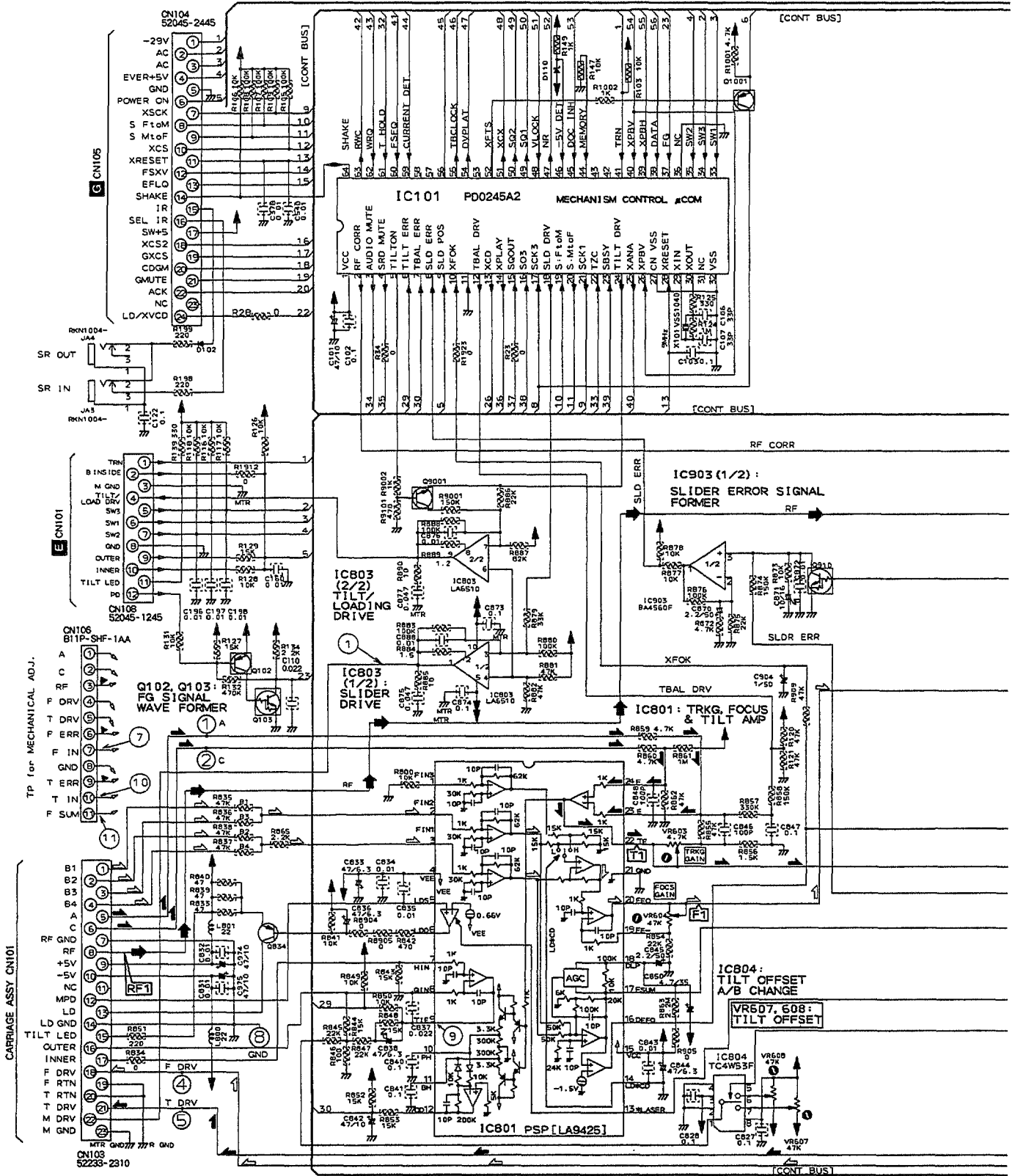
3.3 FLKB, VRSB, KALB, DIKB, IOEB AND JACB ASSEMBLIES

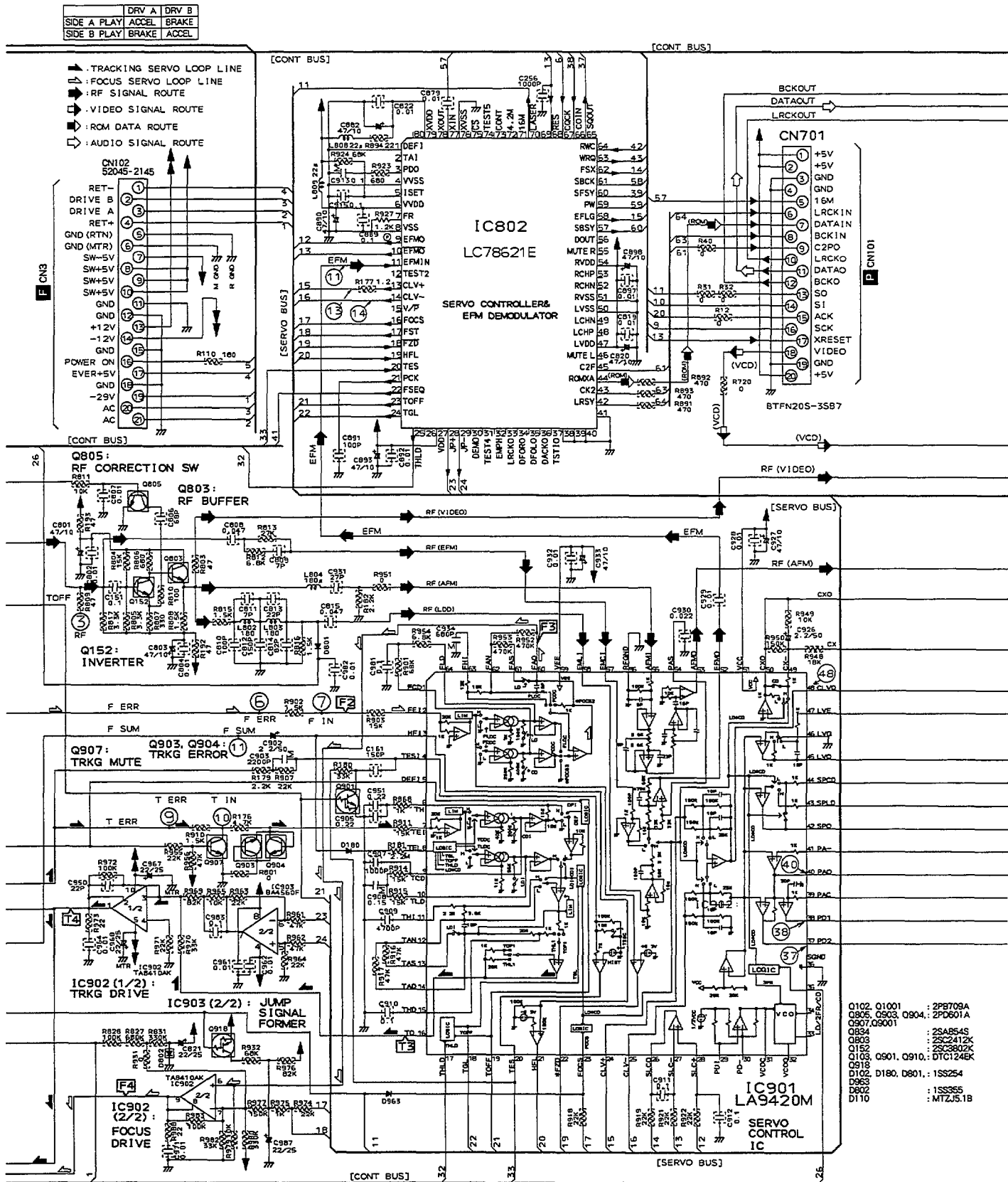




3.4 MOTHER ASSY(1/2)

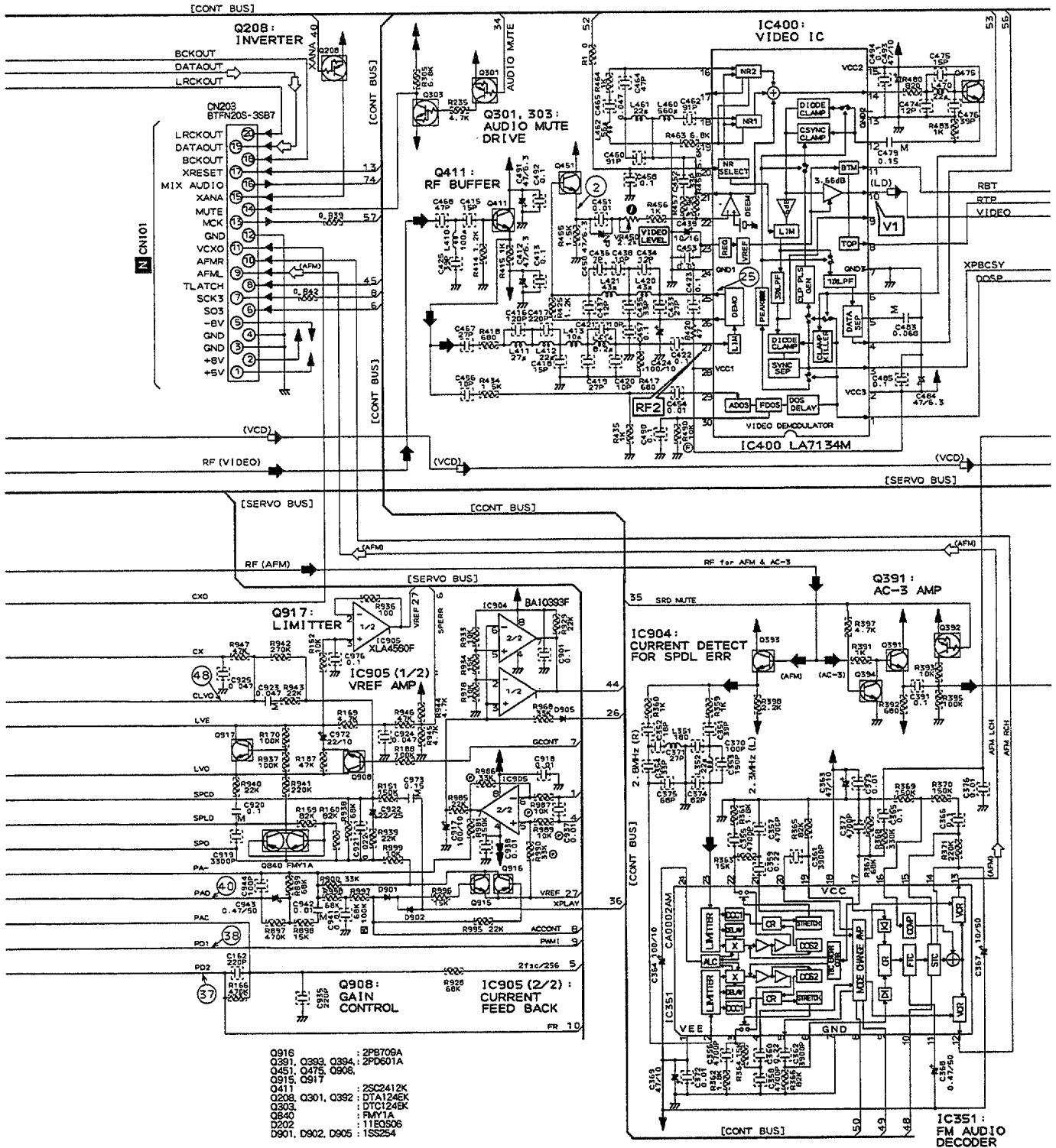
M MOTHER ASSY(1/2) VWS1252

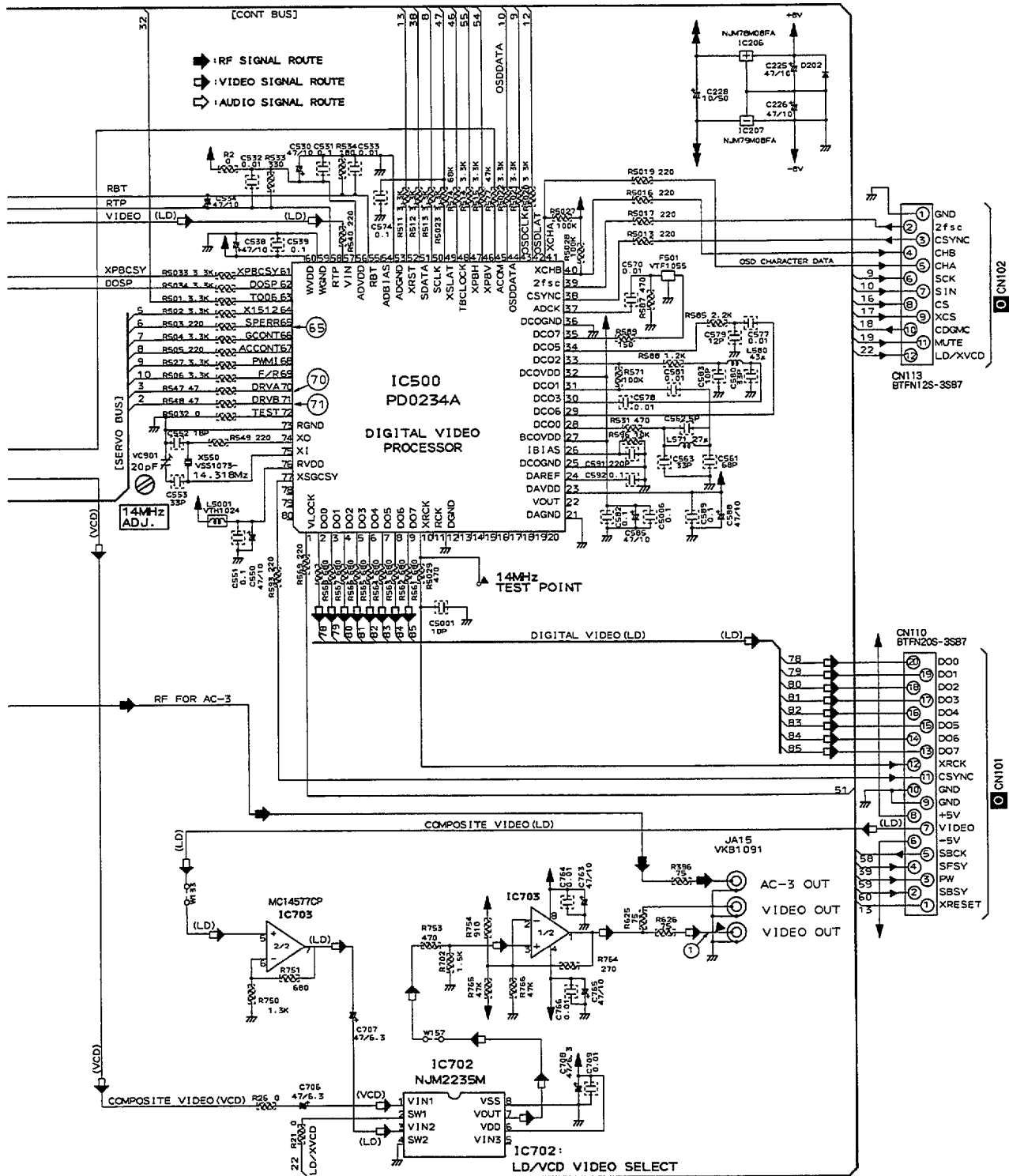




3.5 MOTHER ASSY(2/2)

M MOTHER ASSY(2/2) VWS1252



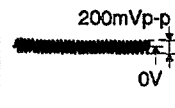
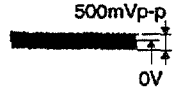
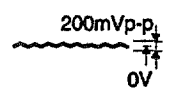

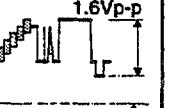
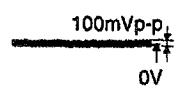
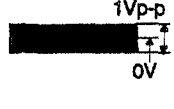
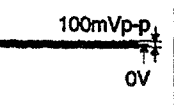
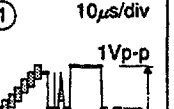
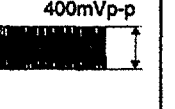
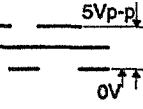
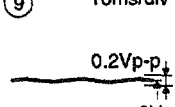
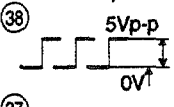
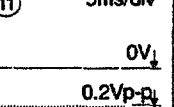
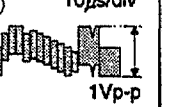
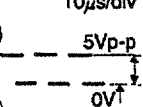
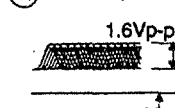
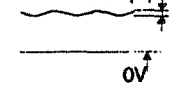
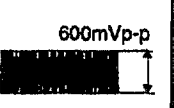
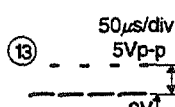
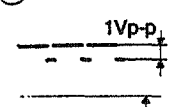
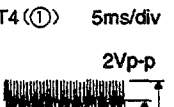
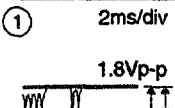
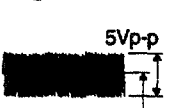


WAVEFORMS AND VOLTAGE

MOTHER ASSY

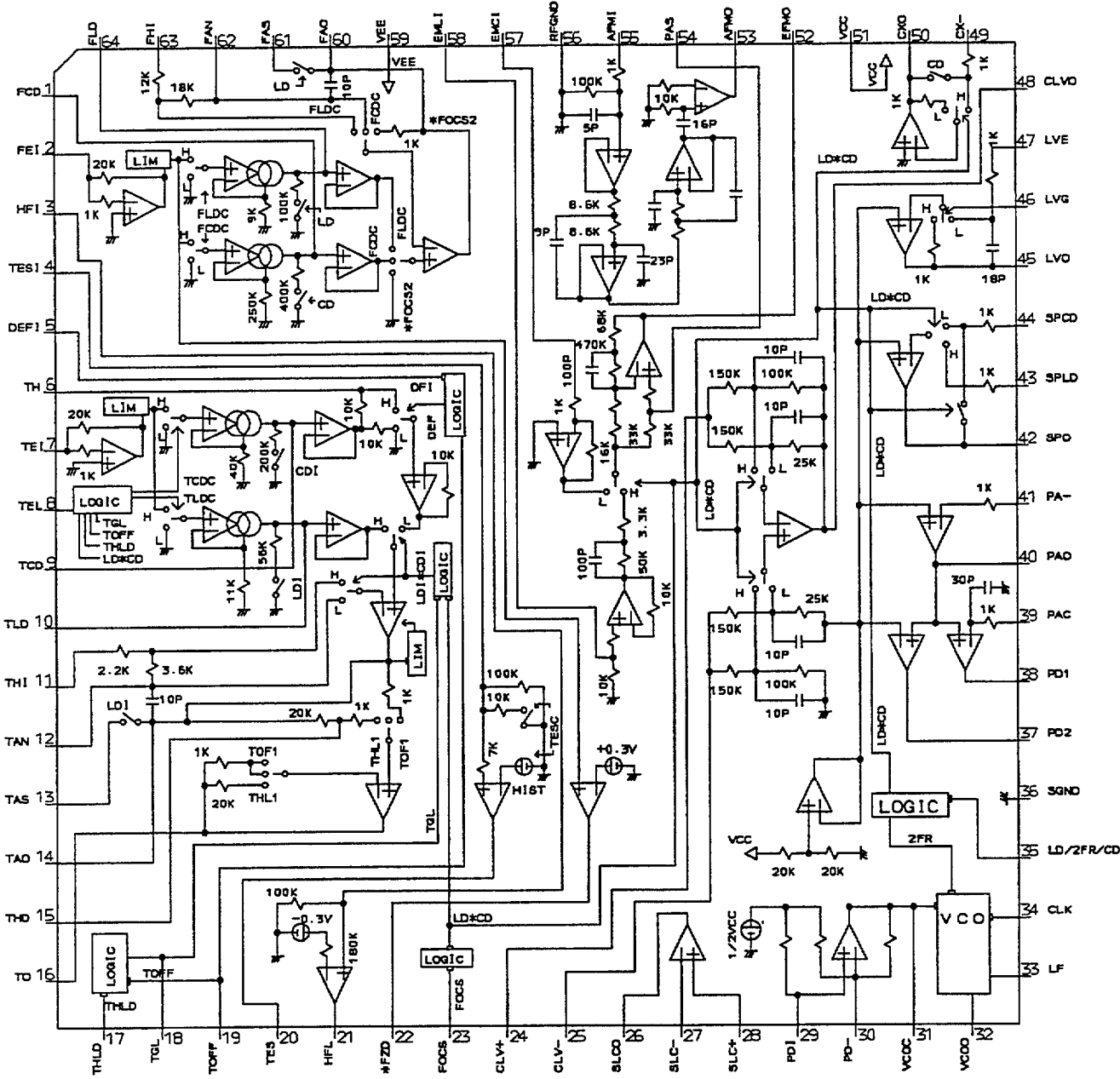
Note : (No) in the table correspond to the pin number.

Measurement condition : In case when (D. audio) is written, at time when disc that has digital audio recording is played.

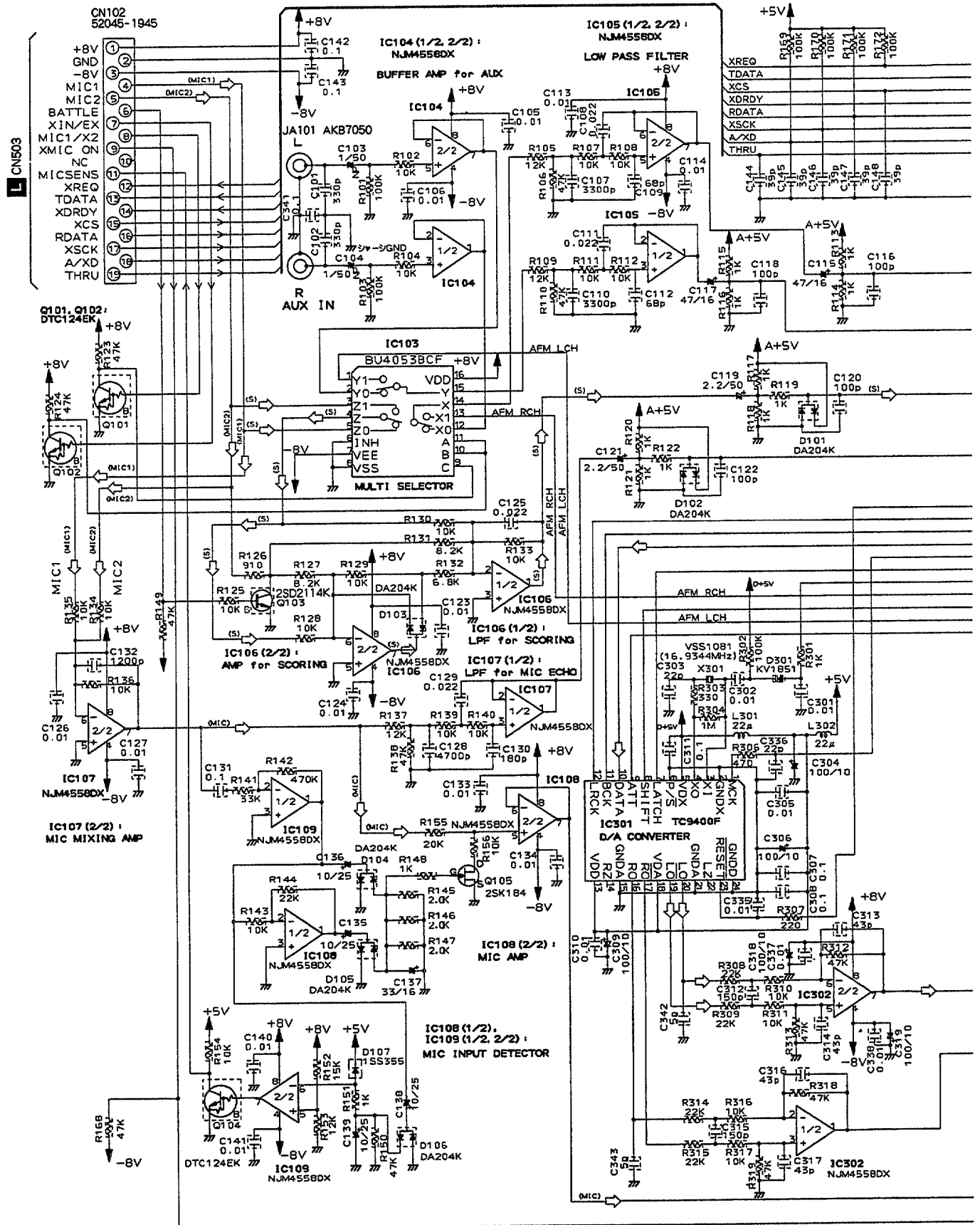
MOTHER ASSY					
IC801 (LA9425)	IC901 (LA9420M)	CN106	Q451 Emitter	IC400 (LA7134M)	IC500 (PD0234A)
T1(22) 5ms/div  DC mode	T3(16) 5ms/div  DC mode	7(F2) 5ms/div  DC mode	2 10μs/div  AC mode	V1(10) 10μs/div  DC mode	
F1(20) 5ms/div  DC mode	F3(60) 5ms/div  DC mode	10 5ms/div  DC mode	JA14 VIDEO OUT 1 10μs/div  (75Ω termination) 0V DC mode	RF2(27) 2ms/div  AC mode	65 5ms/div  DC mode
9 10ms/div  DC mode	38 10μs/div  DC mode	11 5ms/div  DC mode		25 10μs/div  DC mode	71 10μs/div  DC mode
IC802 (LC78621E) 11 0.5μs/div  DC mode	40 10ms/div  DC mode	CN103 RF1(8) 2ms/div  AC mode			
13 50μs/div  DC mode	48 50μs/div  DC mode				
	IC902 (TA8410AK) T4(1) 5ms/div  DC mode				
IC803 (LA6510) 1 2ms/div  DC mode	F4(9) 5ms/div  DC mode				



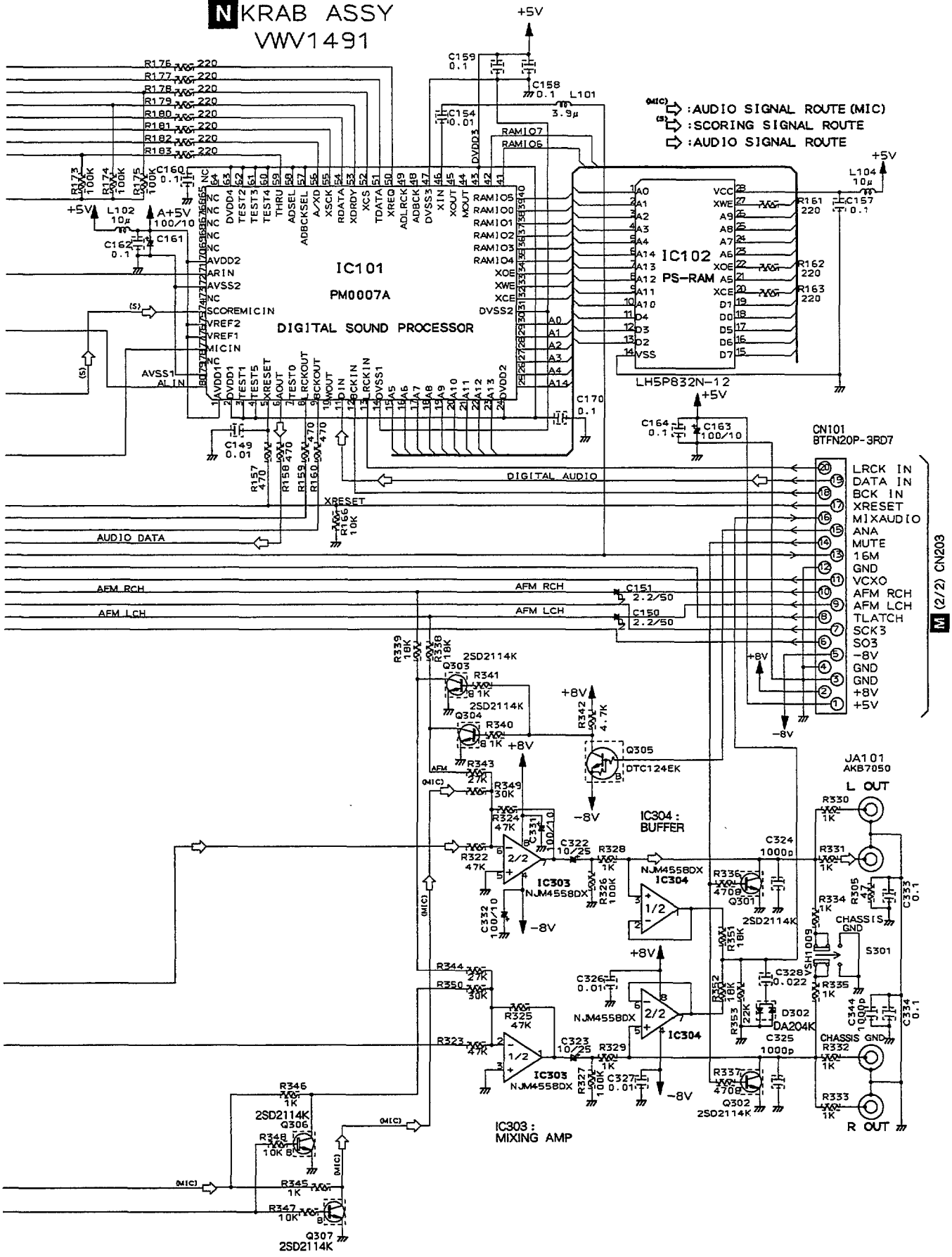
• The Inside Block Diagram of IC901 (LA9420M)



3.6 KRAB ASSY



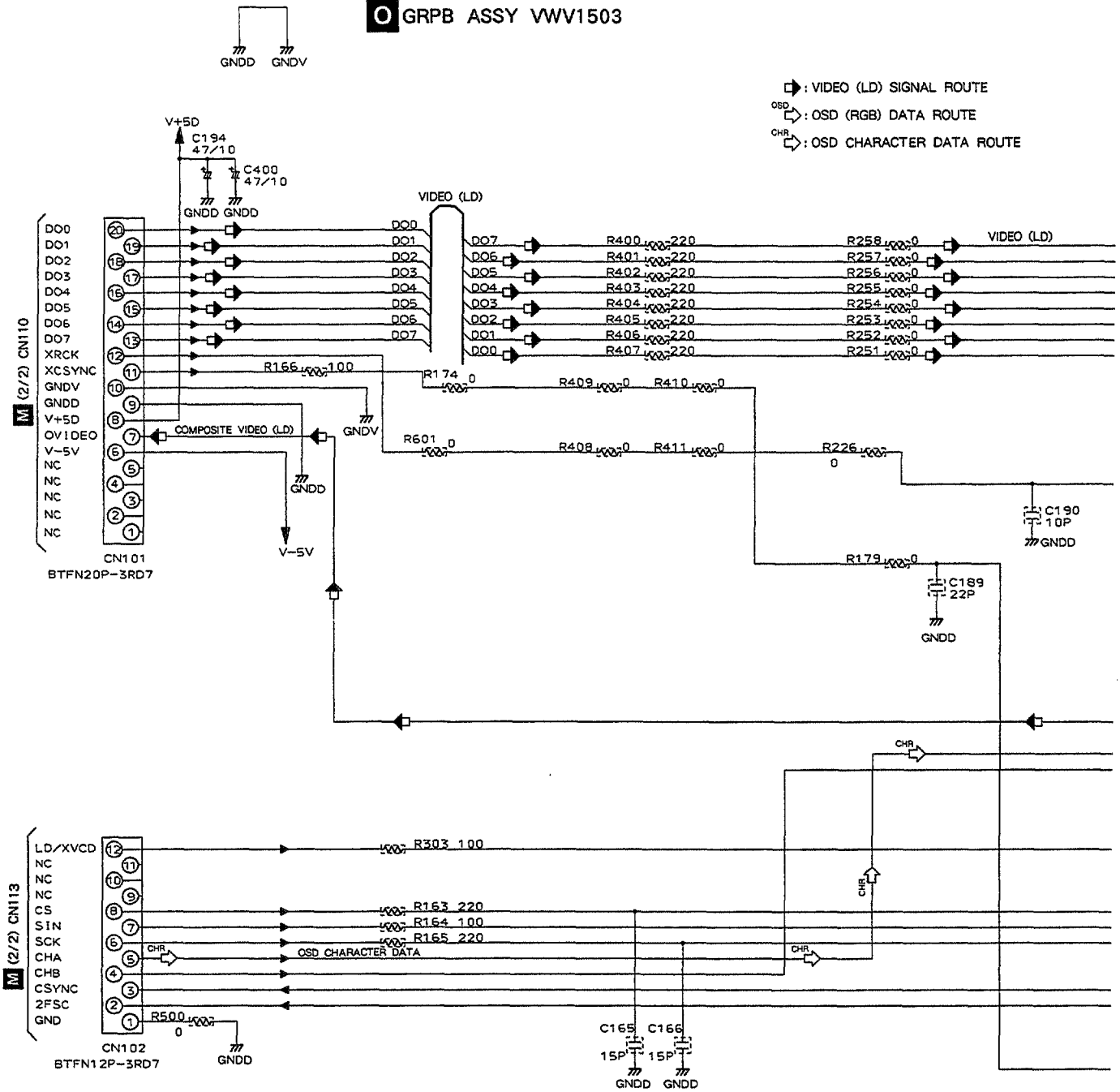
**N** KRAB ASSY  
VWV1491

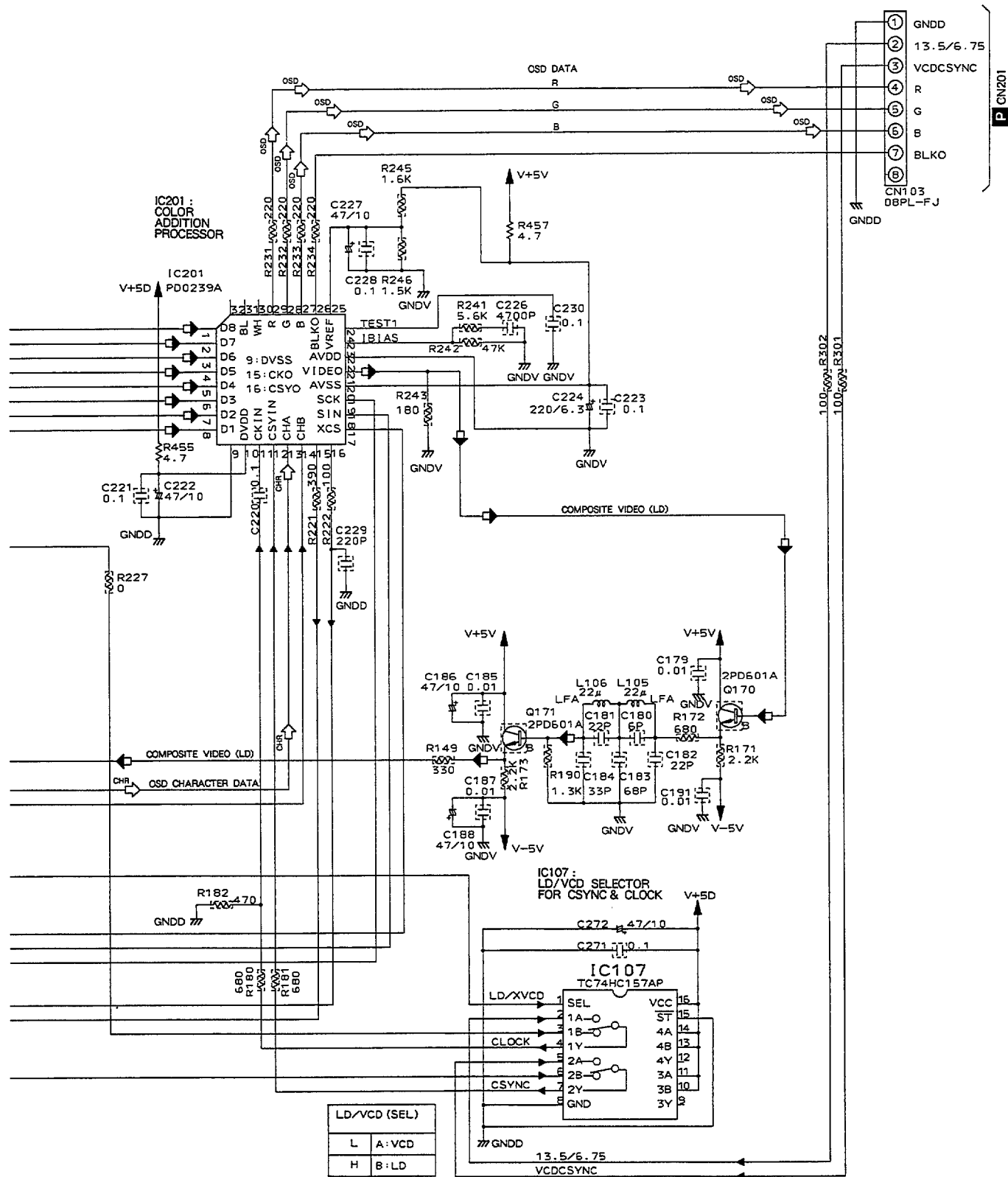


M (2/2) CN203

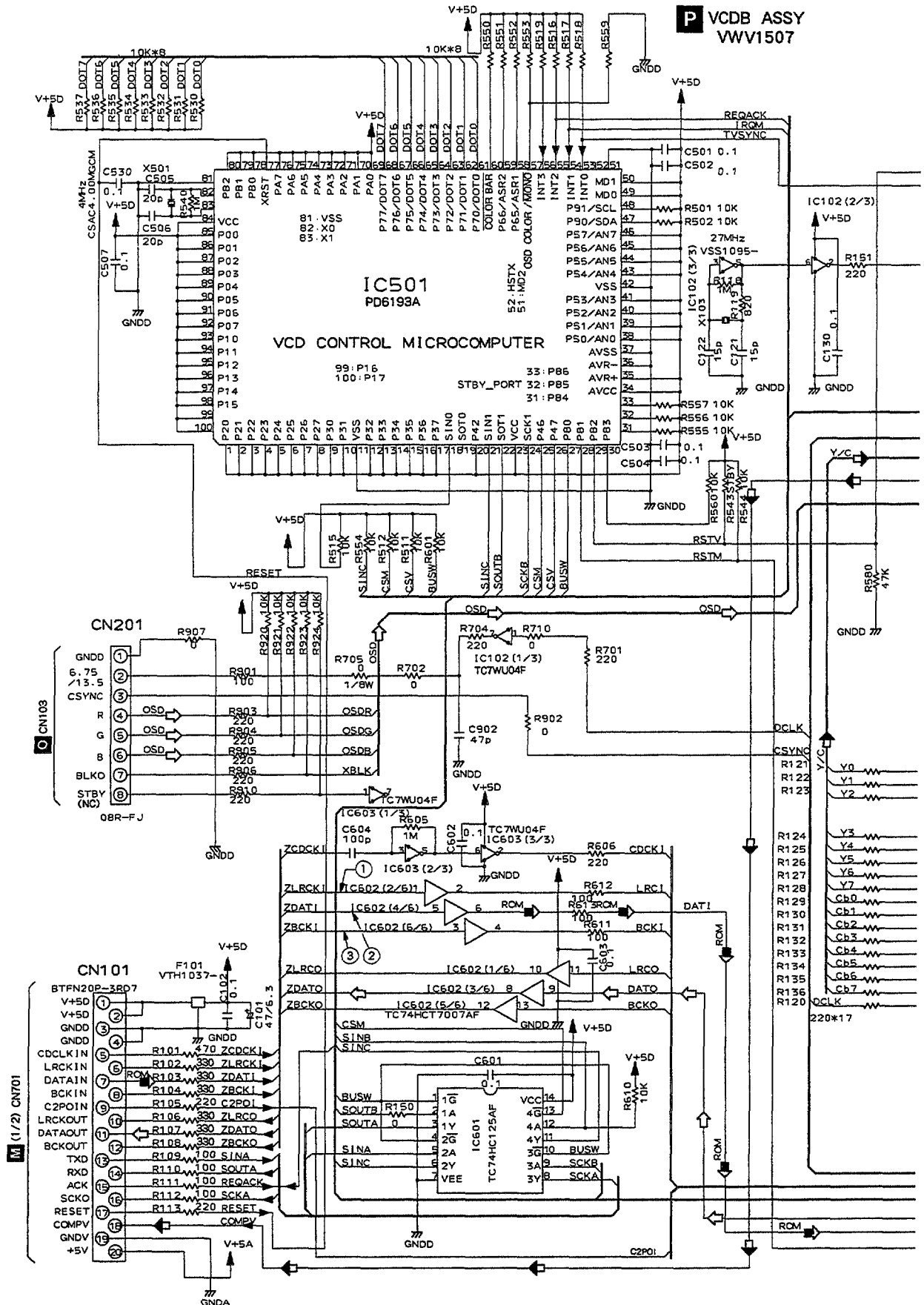
3.7 GRPB ASSY

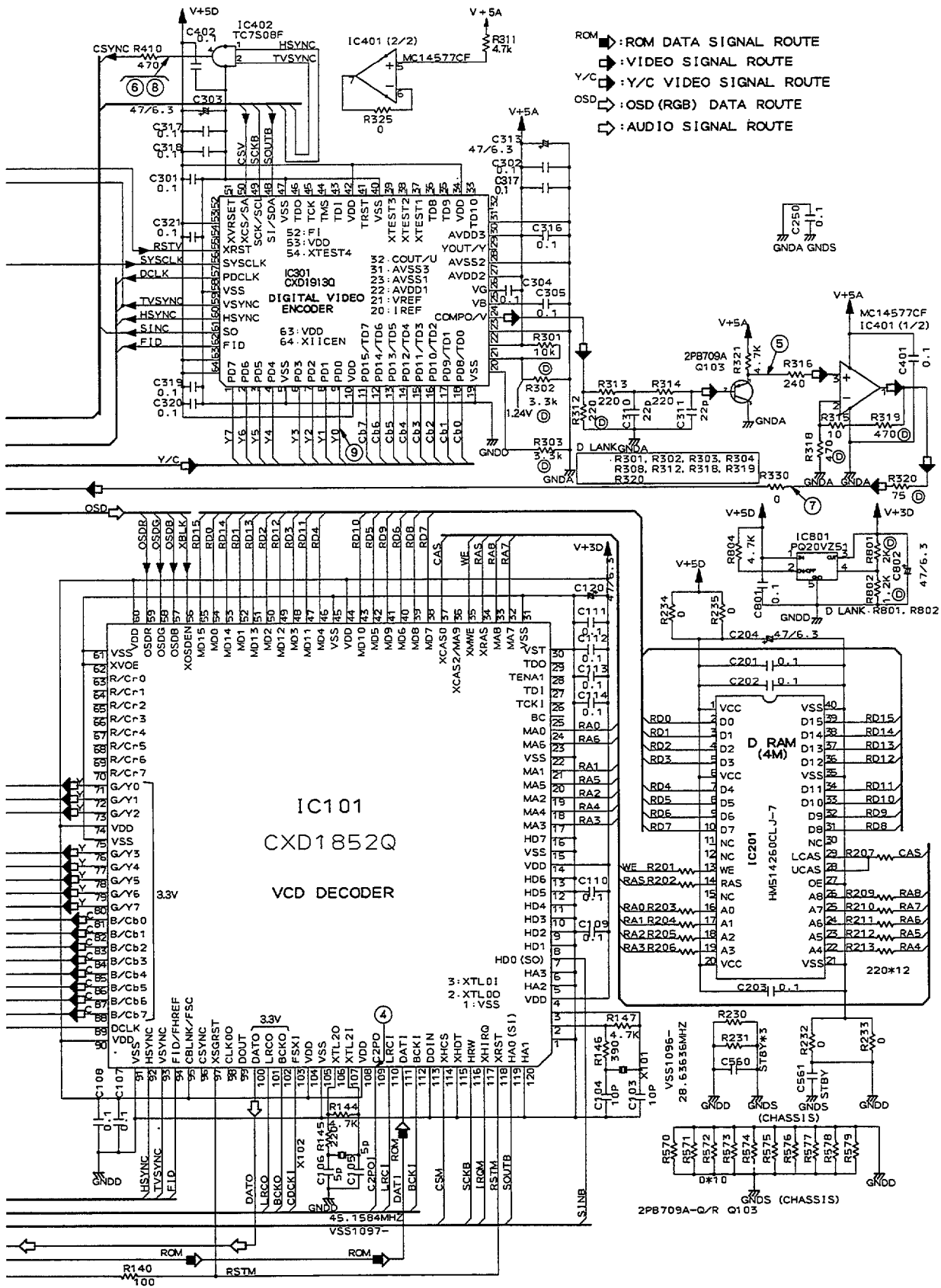
GRPB ASSY VWV1503





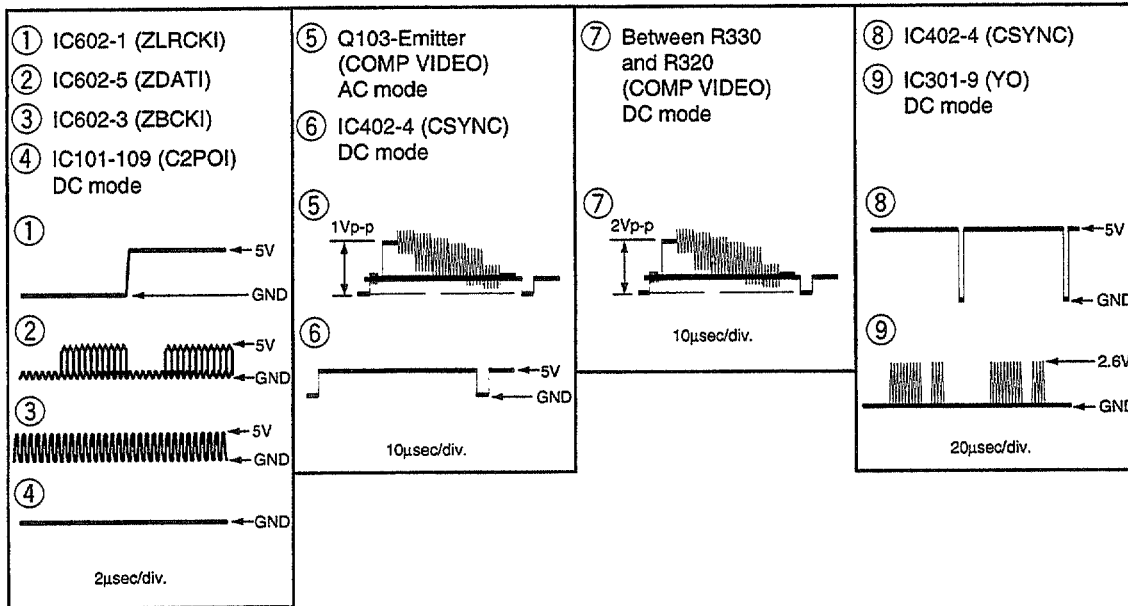
3.8 VCDB ASSY



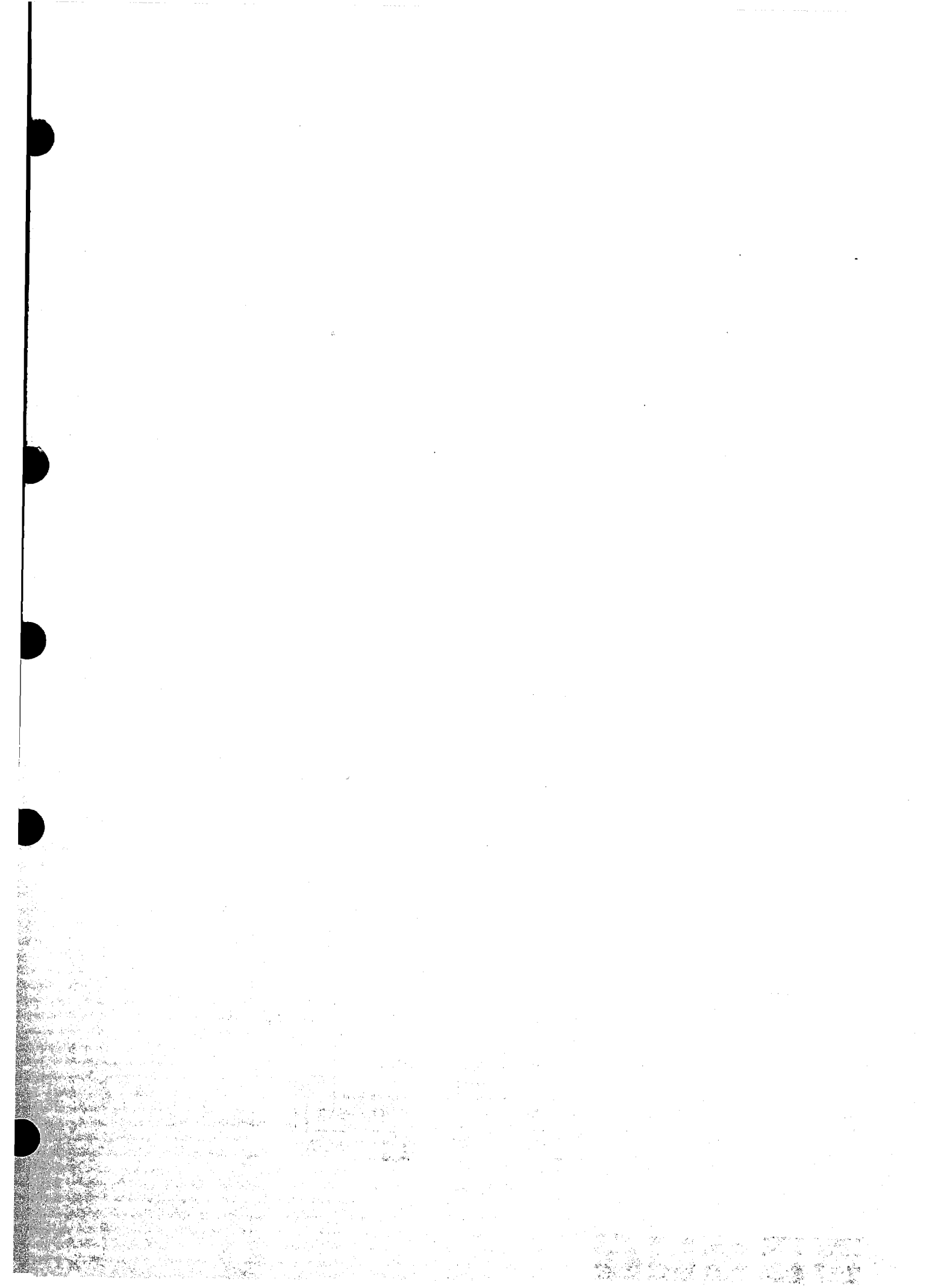


## VCDB ASSY WAVEFORMS

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





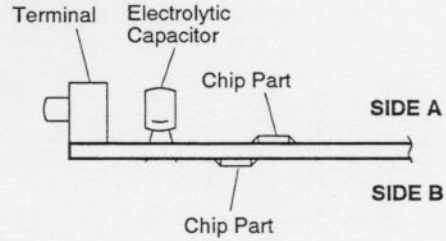


# 4. PCB CONNECTION DIAGRAMS

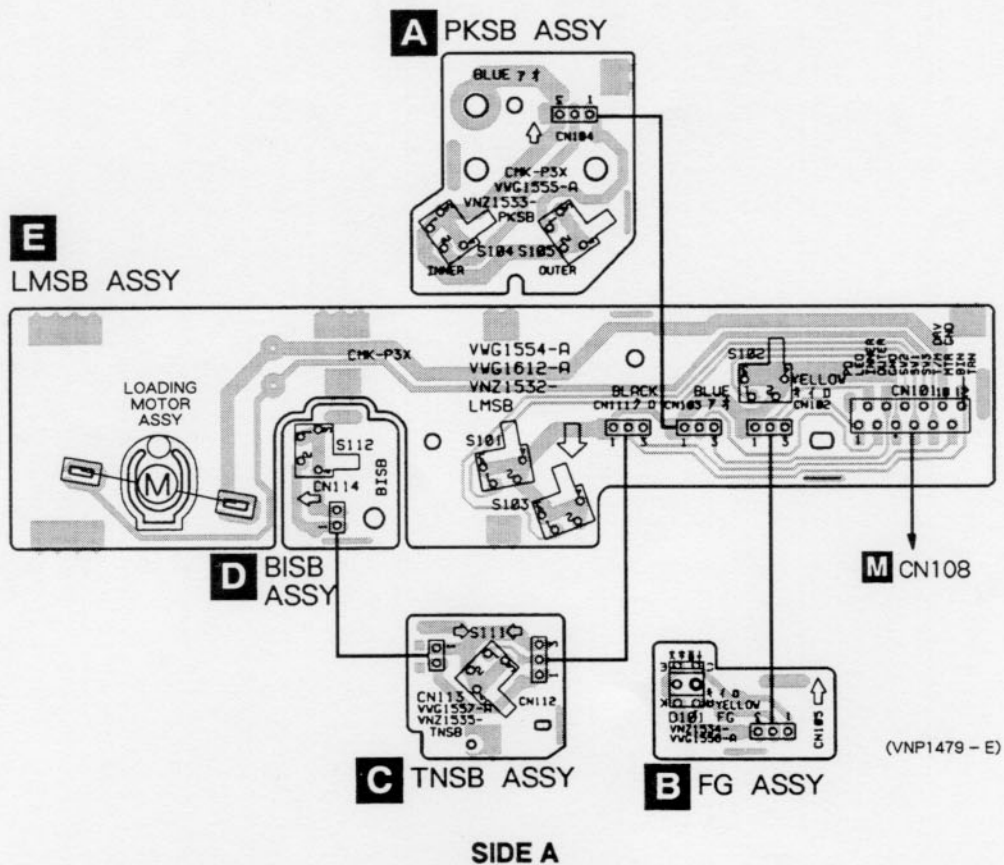
## 4.1 PKSB, FG, TNSB, BISB AND LMSB ASSEMBLIES

**NOTE FOR PCB DIAGRAMS:**

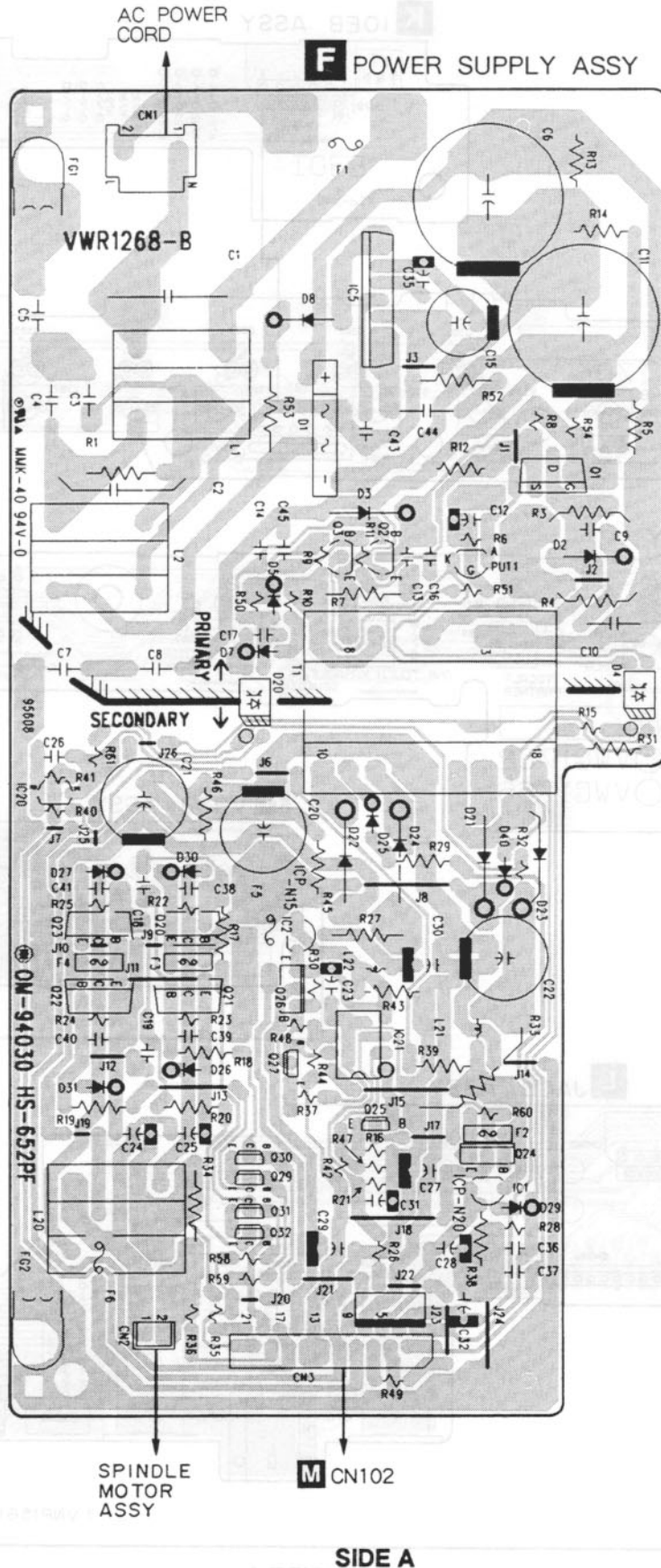
1. Part numbers in PCB diagrams match those in the schematic diagrams.
  2. A comparison between the main parts of PCB and schematic diagrams is shown below.
  3. The parts mounted on this PCB include all necessary parts for several destinations.
- For further information for respective destinations, be sure to check with the schematic diagram.



Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

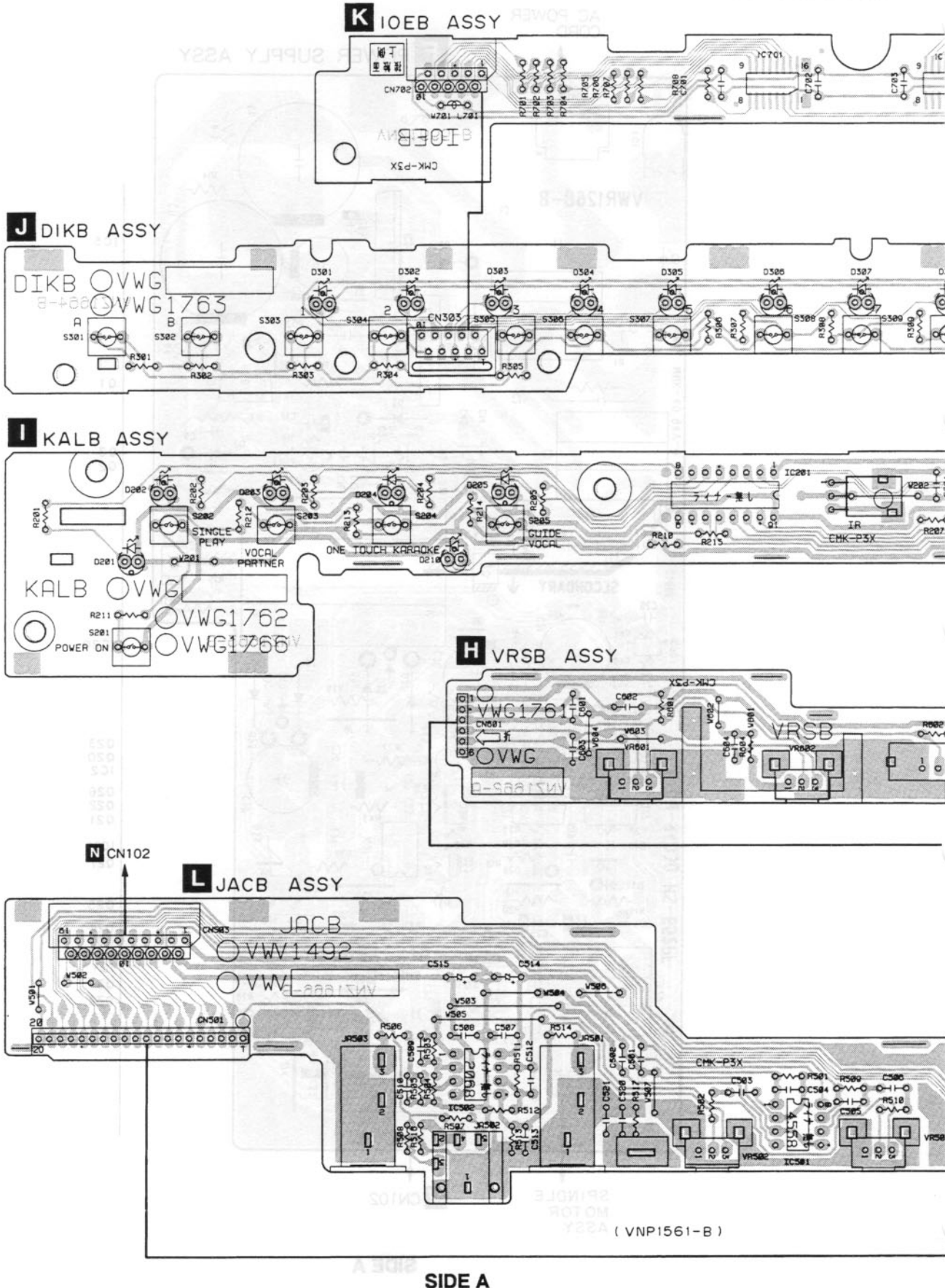


4.2 POWER SUPPLY ASSY



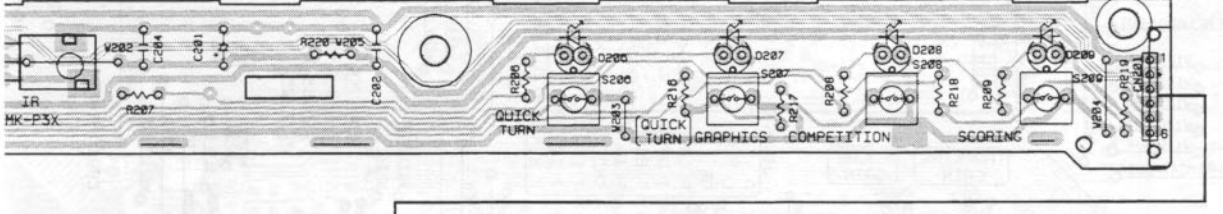
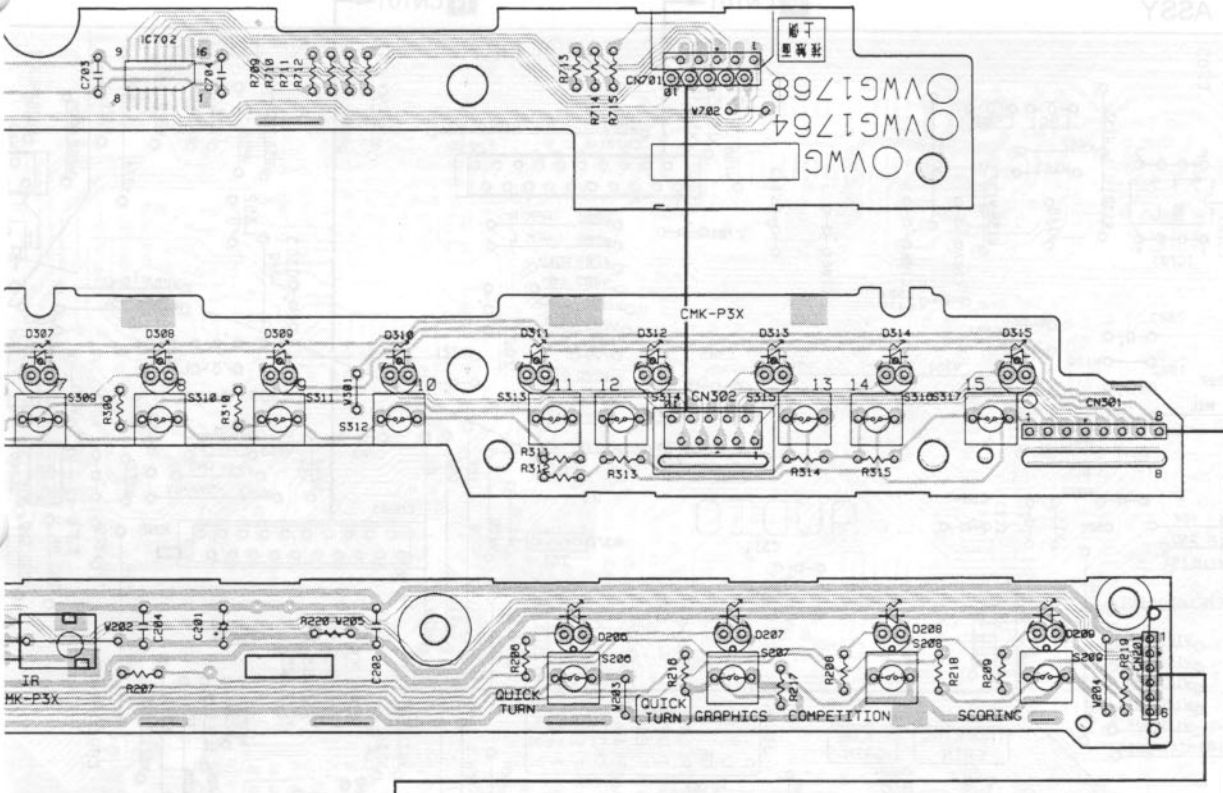
- IC 5
- Q 1
- Q 2
- Q 23
- Q 20
- IC 2
- Q 26
- Q 22
- Q 21
- IC 21
- Q 27
- Q 25
- Q 24
- Q 30
- Q 29
- IC 1
- Q 31
- Q 32

4.3 FLKB, VRSB, KALB, DIKB, IOEB AND JACB ASSEMBLIES

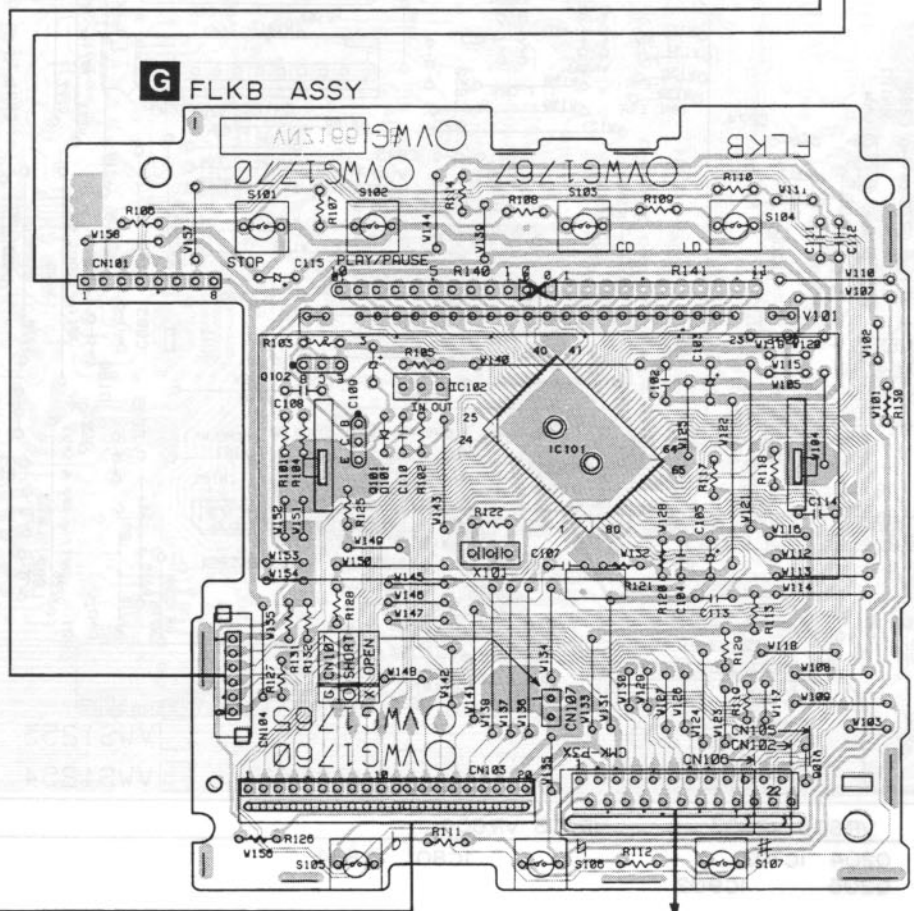
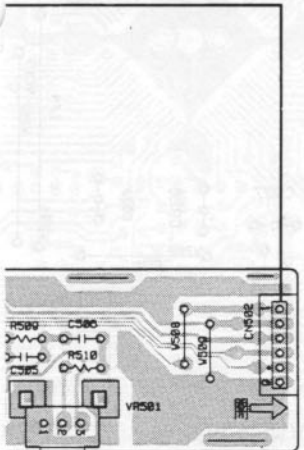
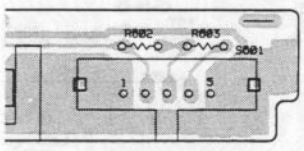


A.A. MOTHER ASSY

MOTHER ASSY



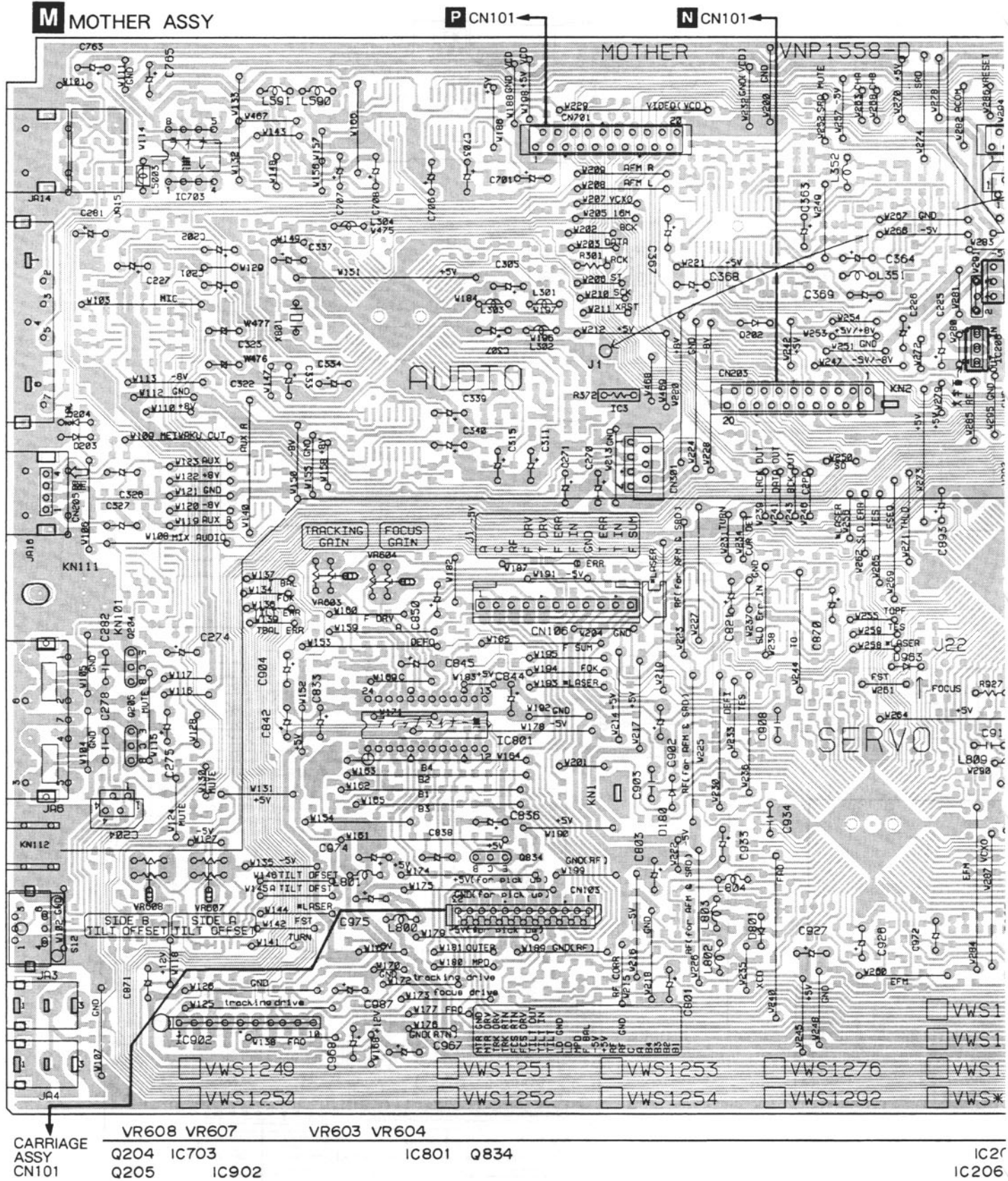
**G** FLKB ASSY



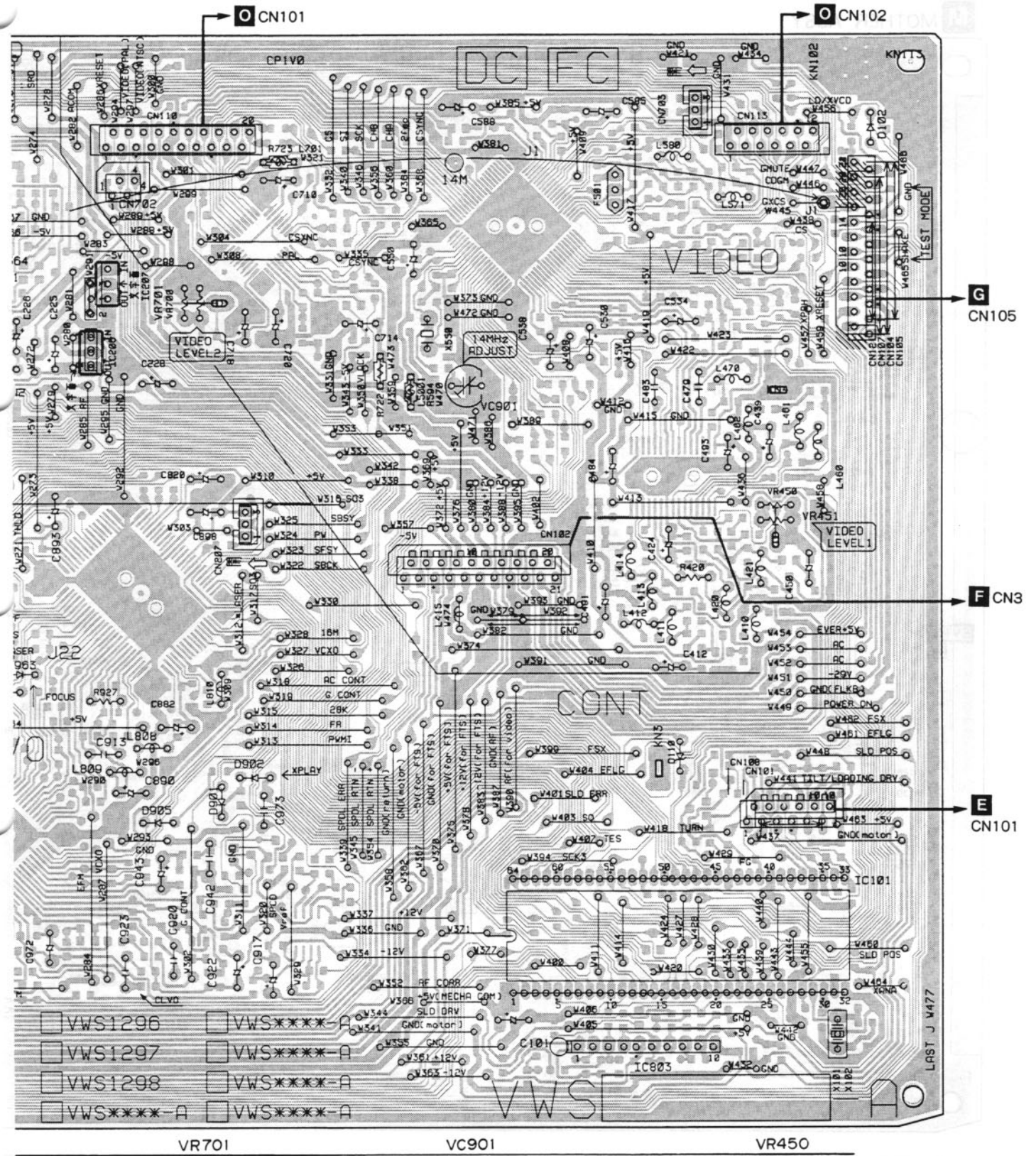
SIDE A

**M** CN104

4.4 MOTHER ASSY



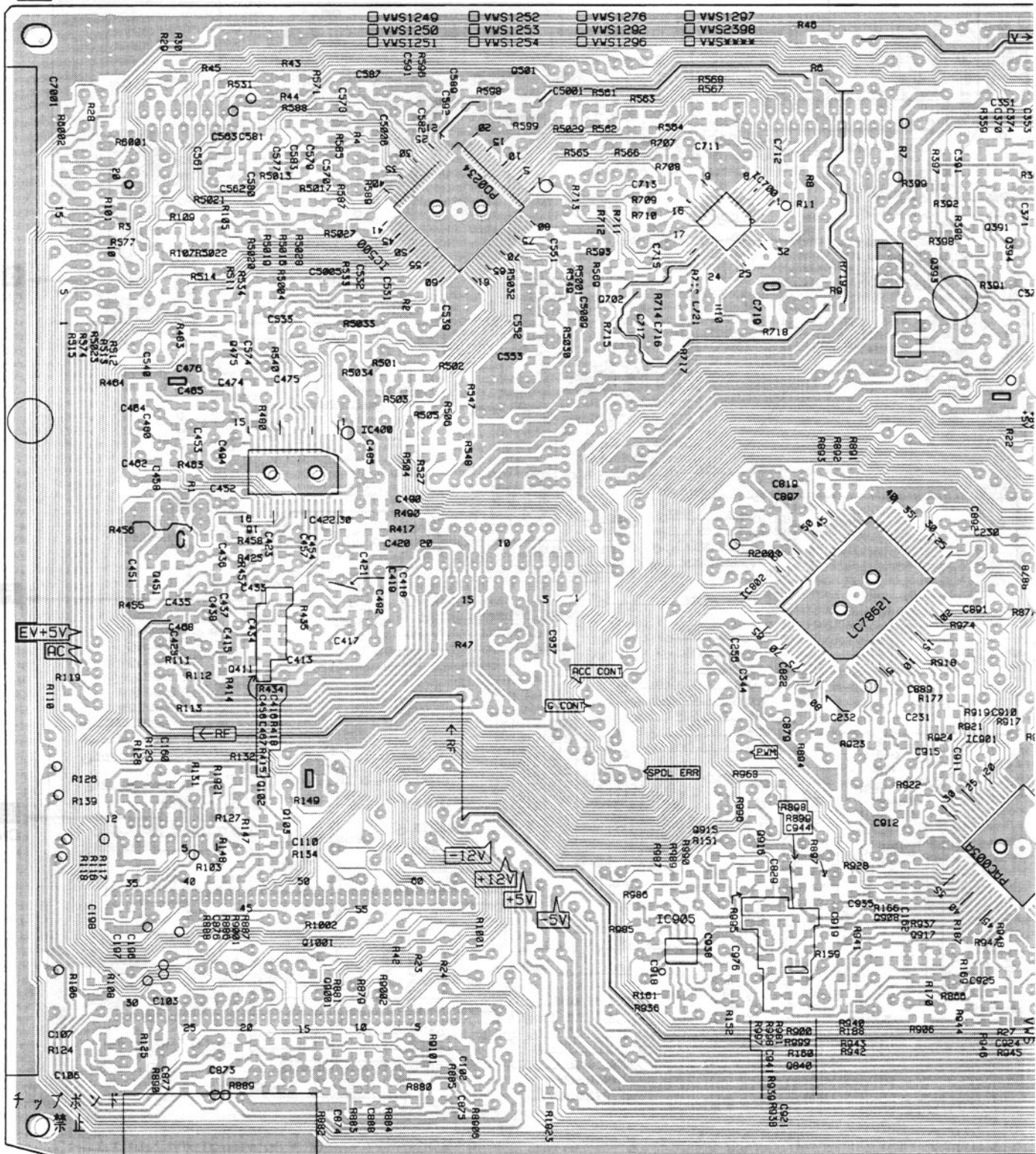
SIDE A



- IC207
- IC101
- IC206
- IC803

SIDE A

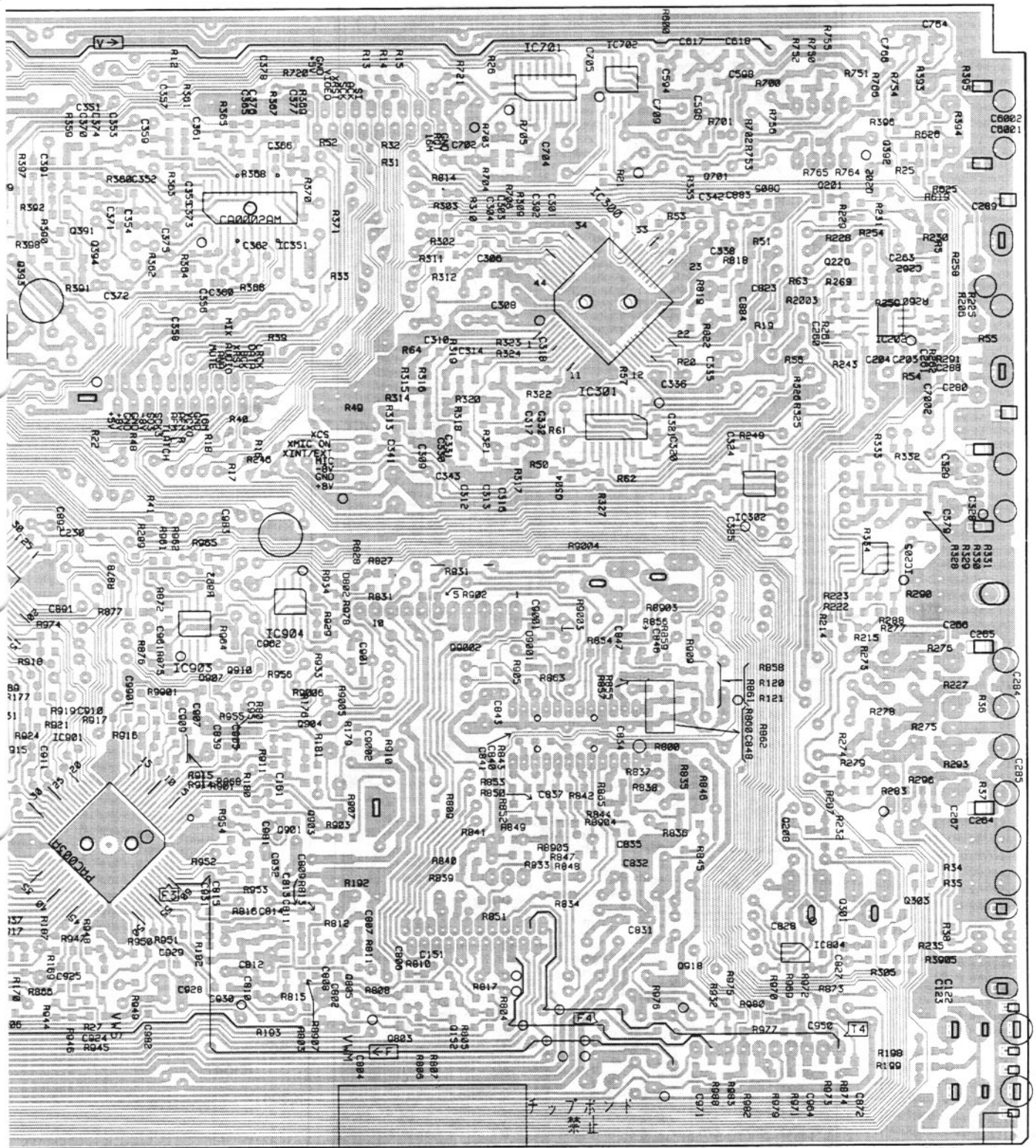
**M** MOTHER ASSY



- |      |      |       |       |      |      |       |       |      |      |
|------|------|-------|-------|------|------|-------|-------|------|------|
| Q451 | Q475 | IC400 | IC500 | Q501 | Q702 | IC700 | IC802 | Q393 | Q391 |
|      | Q411 | Q102  | Q103  |      |      | IC905 | Q915  | Q916 | Q840 |
|      |      | Q1001 | Q9001 |      |      |       | Q908  | Q917 | IC90 |

**SIDE B**





(VNP 1558-D)

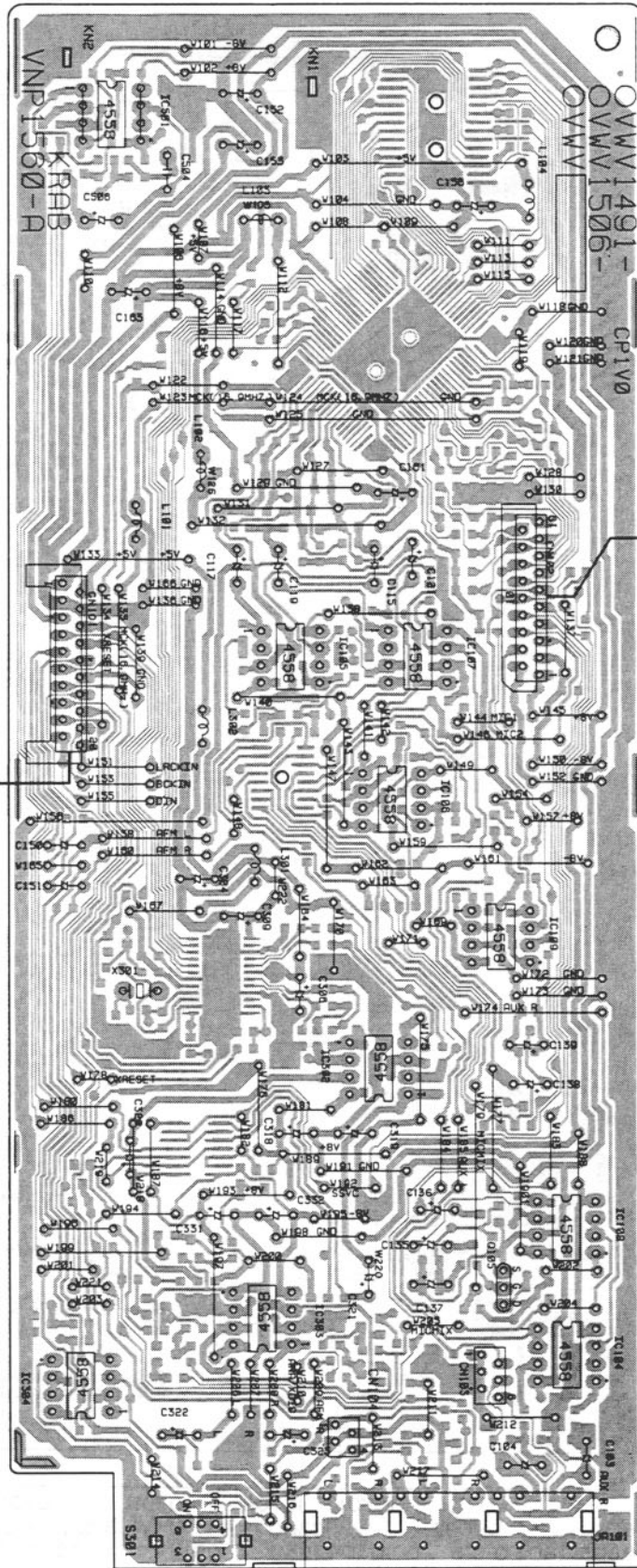
- |      |       |       |       |       |       |       |       |      |       |       |       |      |       |      |
|------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|------|-------|------|
| Q393 | Q391  | Q394  | IC351 | IC701 | IC702 | Q701  | Q201  | Q202 | Q392  |       |       |      |       |      |
| Q197 | IC901 | IC903 | Q910  | IC904 | Q904  | Q9002 | IC302 | Q208 | Q220  | IC202 |       |      |       |      |
|      |       | Q907  | Q901  | Q903  | Q805  | Q803  | Q152  | Q304 | IC301 | Q918  | IC804 | Q301 | IC205 | Q303 |

**SIDE B**



4.5 KRAB ASSY

**N** KRAB ASSY



- IC501
- IC105 IC107
- IC106
- IC109
- IC302
- IC108
- Q105
- IC303
- IC104
- IC304

**M** CN203

**L** CN503

**SIDE A**

**N** KRAB ASSY

IC102

IC101

Q501

IC103

Q103

Q104

IC301

Q102 IC502

Q101 Q305

Q502

Q503

Q304

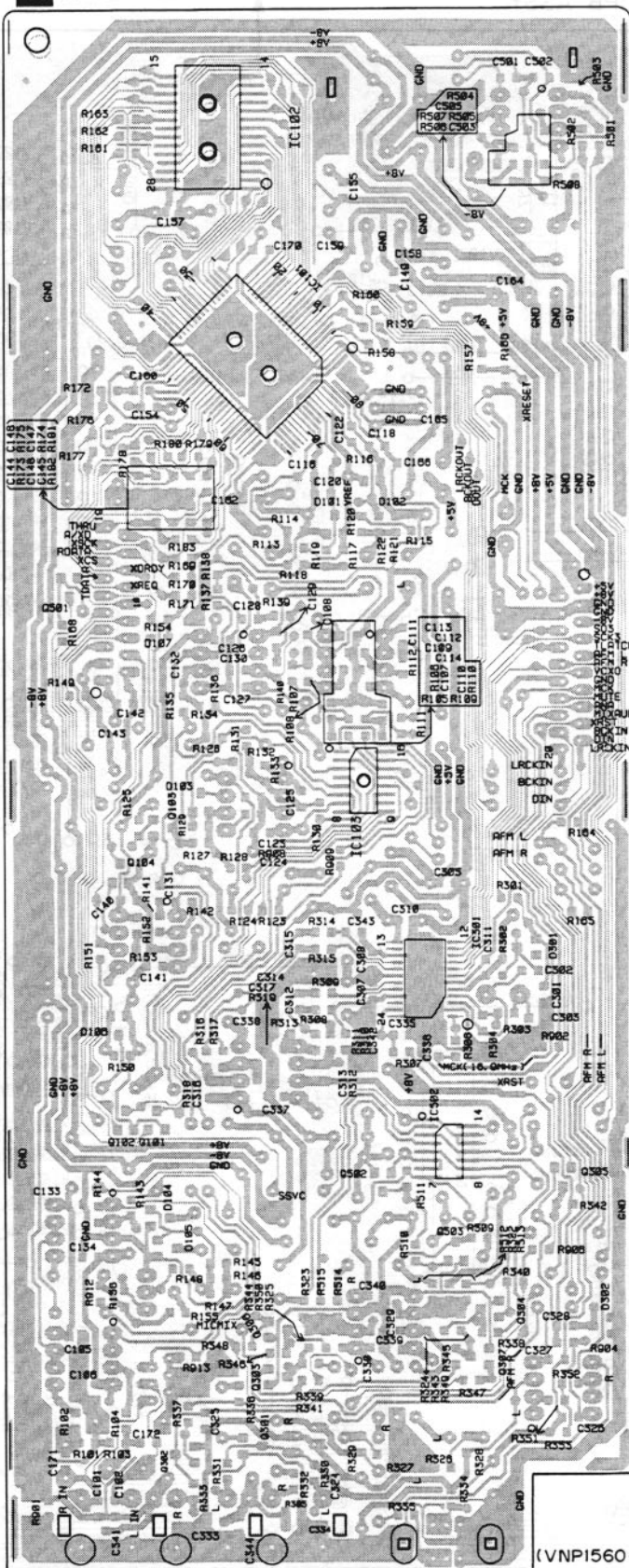
Q306

Q307

Q303

Q301

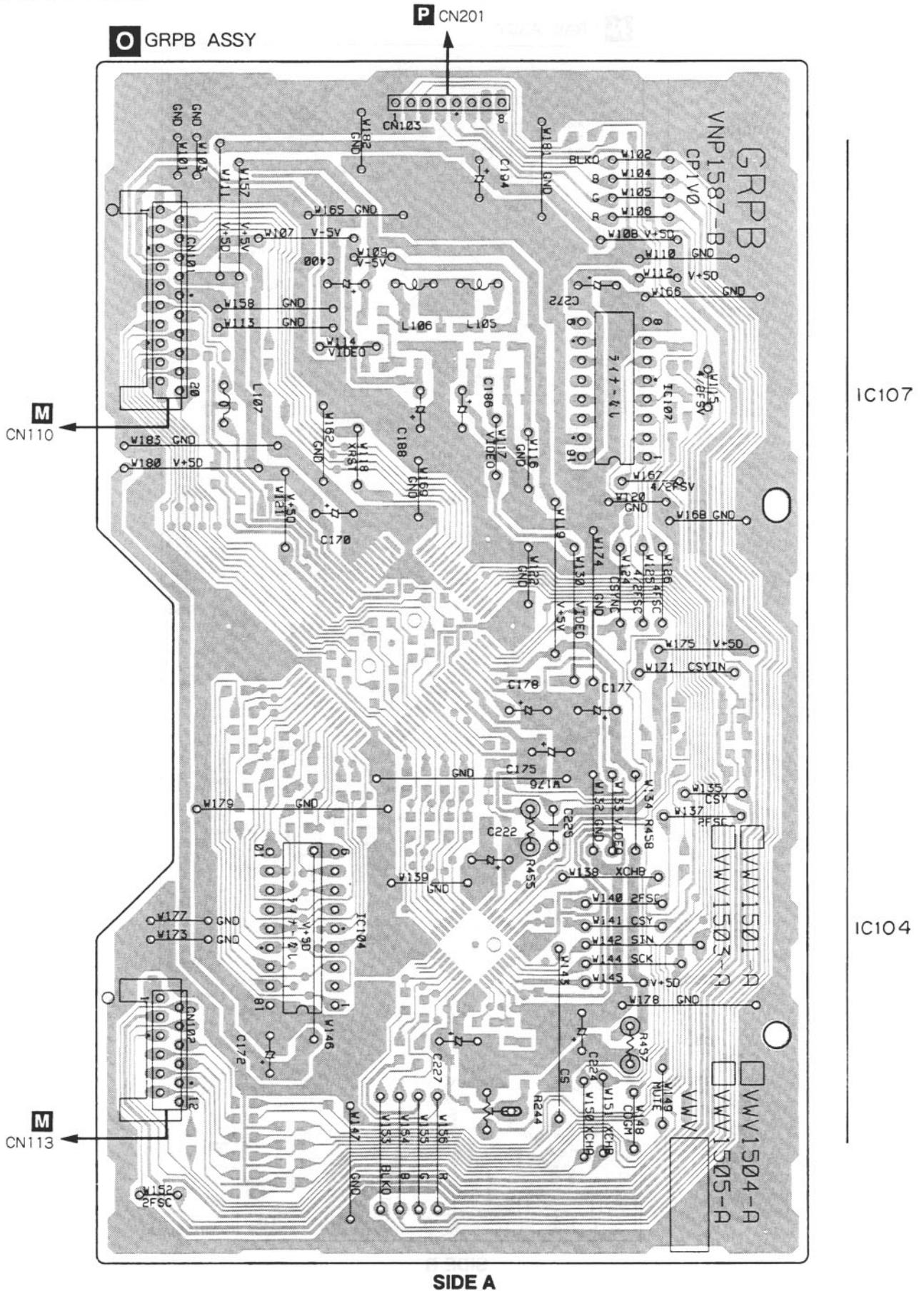
Q302



(VNPI560-A)

**SIDE B**

4.6 GRPB ASSY



GRPB ASSY

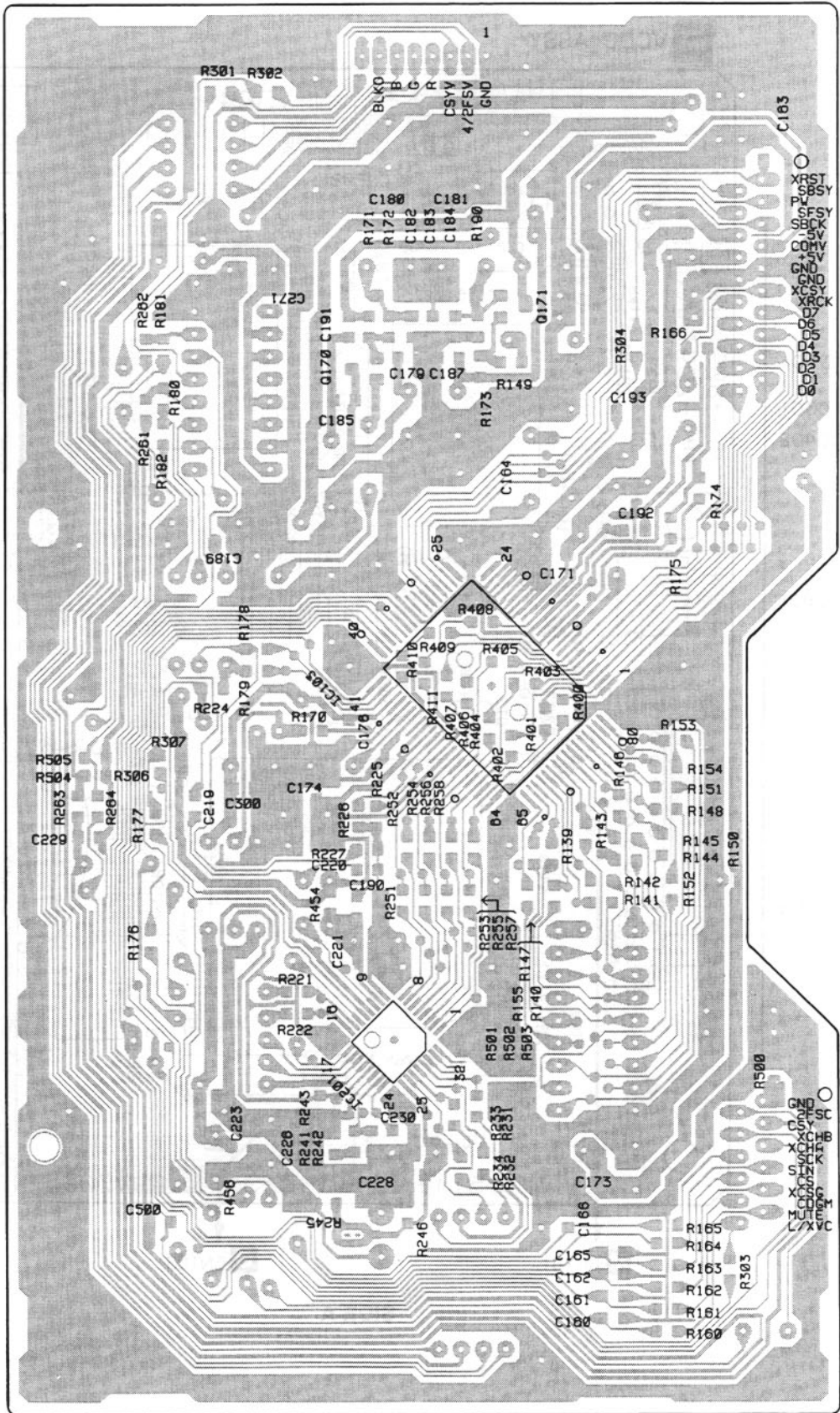
YB2A P00V 3 1

Q171

Q170

IC103

IC201

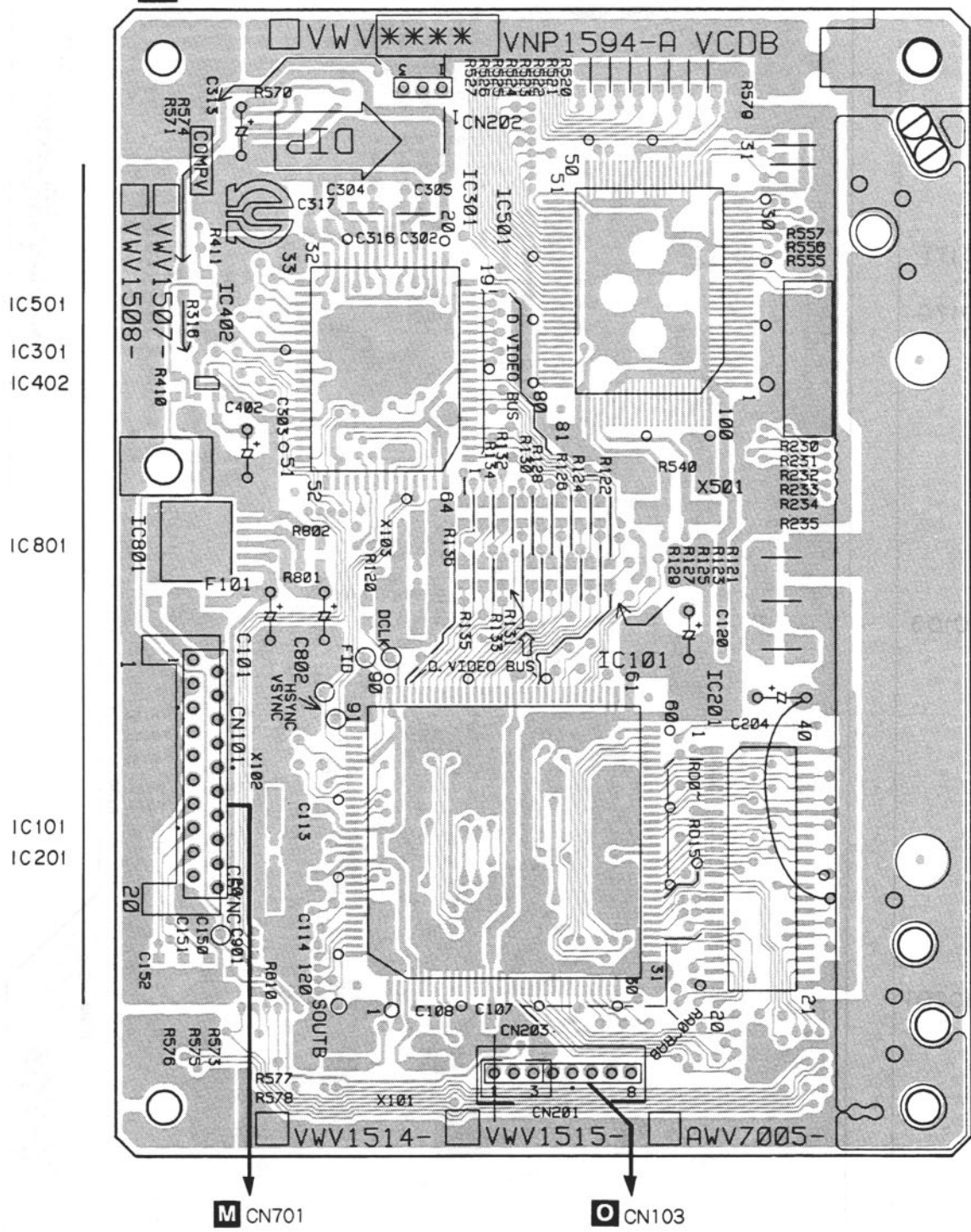


(VNP1587 - B)

SIDE B

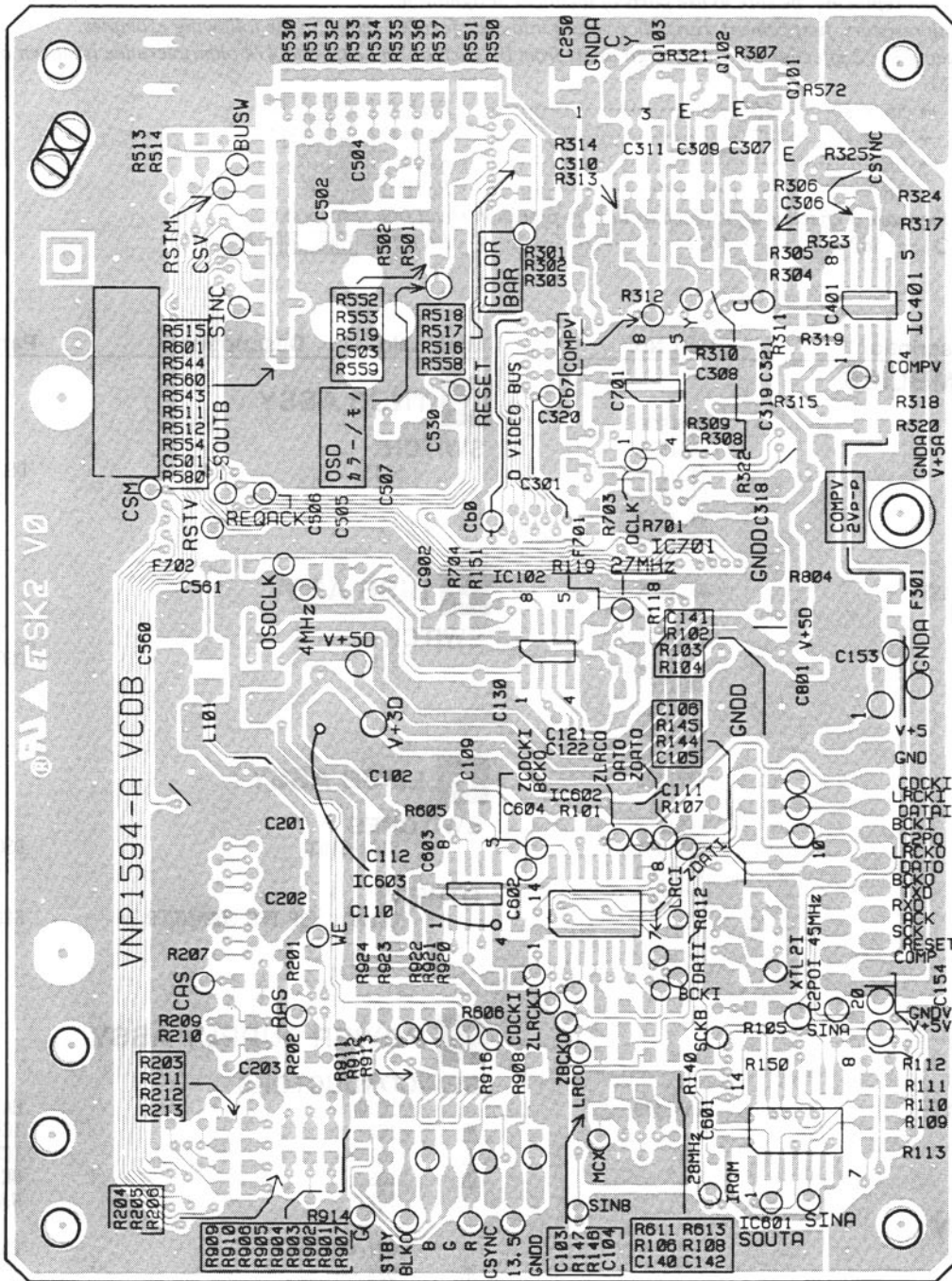
4.7 VCDB ASSY

**P** VCDB ASSY



SIDE A

**P** VCDB ASSY



SIDE B

## 5. 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.  
 ● 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%).  
 $560 \Omega \rightarrow 56 \times 10^1 \rightarrow 561 \dots\dots\dots RD1/4PU \boxed{5} \boxed{6} \boxed{1} J$   
 $47k \Omega \rightarrow 47 \times 10^3 \rightarrow 473 \dots\dots\dots RD1/4PU \boxed{4} \boxed{7} \boxed{3} J$   
 $0.5 \Omega \rightarrow 0R5 \dots\dots\dots RN2H \boxed{0} \boxed{R} \boxed{5} K$   
 $1 \Omega \rightarrow 1R0 \dots\dots\dots RS1P \boxed{1} \boxed{R} \boxed{0} K$   
 Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).  
 $5.62k \Omega \rightarrow 562 \times 10^1 \rightarrow 5621 \dots\dots\dots RN1/4PC \boxed{5} \boxed{6} \boxed{2} \boxed{1} F$

Mark	No.	Description	Part No.
<b>LIST OF ASSEMBLIES</b>			
NSP	MACB ASSY		VWM1535
NSP	PKSB ASSY		VWG1555
NSP	FG ASSY		VWG1556
NSP	TNSB ASSY		VWG1557
NSP	BISB ASSY		VWG1558
NSP	LMSB ASSY		VWG1612
$\Delta$	POWER SUPPLY ASSY		VWR1268
NSP	FRPB ASSY		VWM1692
	FLKB ASSY		VWG1765
NSP	VRSB ASSY		VWG1761
	KALB ASSY		VWG1762
NSP	DIKB ASSY		VWG1763
NSP	IOEB ASSY		VWG1764
NSP	JACB ASSY		VWV1492
	MOTHER ASSY		VWS1252
	KRAB ASSY		VWV1491
	GRPB ASSY		VWV1503
	VCDB ASSY		VWV1507

### MACB ASSY

<b>OTHERS</b>		
PC Board MACB		VNP1479

### A PKSB ASSY

<b>SWITCHES</b>		
S104, S105		DSG1017

### B FG ASSY

<b>SEMICONDUCTOR</b>		
D101		GP1S24

Mark	No.	Description	Part No.
<b>C TNSB ASSY</b>			
		<b>SWITCH</b>	
		S111	DSG1017
<b>D BISB ASSY</b>			
		<b>SWITCH</b>	
		S112	DSG1017
<b>E LMSB ASSY</b>			
		<b>SWITCHES</b>	
		S101-S103	DSG1017
		<b>OTHERS</b>	
		CN101 12P FFC CONNECTOR	52044-1245

### F POWER SUPPLY ASSY

<b>SEMICONDUCTORS</b>			
		IC20	HA17431P
$\Delta$		IC2	ICP-N15
$\Delta$		IC1	ICP-N20
$\Delta$		IC5	MK1210
		IC21	NJM4558D
		Q27, Q30, Q32	2SA933S
$\Delta$		Q24	2SB891F
		Q25, Q29, Q31	2SC1740S
$\Delta$		Q2, Q3	2SC3377
$\Delta$		Q26	2SD2007
		Q1	2SK1460
		Q21, Q23	T7F4S
		Q20, Q22	T7F4T
$\Delta$		D7	1SS270A
		D25-D27, D30, D31	AG01Z-V0



Mark	No.	Description	Part No.
△	D1		D2SB60F4004
△	D2, D8		EG01C
△	D5		MTZJ3. 6A
	D29		MTZJ8. 2B
△	D4		PS2501L1-1M
△	D20		PS2561L1-1VM
△	D3		RD18FB2
	D40		RD33FB2
	D23, D24		RK36
	D21, D22		S3LA20
△	PUT1		N13T1
<b>RESISTORS</b>			
△	R22-R25 (47Ω, 1/6W)		VCN1033
△	R27 (0. 47Ω, 1/2W)		VCN1046
△	R29 (68Ω, 1/4W)		VCN1048
△	R31 (8. 2Ω, 1/4W)		VCN1050
<b>OTHERS</b>			
△	F1 FUSE (T2A/250V)		AEK1057
△	F2 FUSE		VEK1033
△	F3, F4 FUSE		VEK1034
△	F5, F6 FUSE (1. 0A/125V)		VEK1036

**FRPB ASSY**

**OTHERS**

PC Board FRPB	VNP1561
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**G FLKB ASSY**

**SEMICONDUCTORS**

IC101	PD3350A
IC102	S-806D
Q102	DTA144ES
Q101	DTC114ES
D101	ISS252

**SWITCHES**

S101-S107	ASG1034
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**CAPACITORS**

C109	CEAL100M16
C103, C105, C115	CEAL470M6R3
C111-C113	CKPUYB101K50
C107, C110	CKPUYB102K50
C108	CKPUYF223Z25
C102, C104	CKPUYY103N16

**RESISTORS**

R140	RA10S104J
R141	RA11S104J
R110, R113, R114, R127	RN1/6PQ1001F
Other Resistors	RD1/4PU□□□J

**OTHERS**

CN101	2.5mm PIN HEADER	1068-08C-PP
CN105	FFC BOTTOM CONNECTOR 24P	52492-2420
CN107	2.54mm PIN HEADER	9202B-1-02P
CN103	20P CONNECTOR	BTMK20S-1S
X101	CERAMIC RESONATOR (8Mz)	EFOEC8004A4

Mark	No.	Description	Part No.
	CN104	2mm PITCH CONNECTOR PLUG	TKC-A06P-C1
	V101	FL TUBE	VAW1039
		SPACER	VEC1599
		FL HOLDER (FE)	VNF1091

**H VRSB ASSY**

**SWITCH**

S601	VSH1011
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**CAPACITORS**

C602	CKPUYB102K50
C601, C603, C604	CKPUYY103N16

**RESISTORS**

VR601, VR602 (10kΩ)	VCS1040
Other Resistors	RD1/4PU□□□J

**OTHERS**

CN601 CONNECTOR 6P	06P-FJ
PCB HOLDER (FE)	VNE2026

**I KALB ASSY**

**SEMICONDUCTORS**

IC201	BU2090
D206, D207	SLR-342MCT31
D201, D210	SLR-342VCT31
D202-D205, D208, D209	SLR-342YCT31

**SWITCHES**

S201-S209	ASG1034
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**CAPACITORS**

C202, C204	CKPUYY103N16
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**RESISTORS**

All Resistors	RD1/4PU□□□J
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**OTHERS**

REMOTE SENSOR UNIT	GPIU26X
CN201 2mm PITCH B TO B CONNECTOR	TKC-A06X-B1

**J DIKB ASSY**

**SEMICONDUCTORS**

D301-D315	SLR-342MCT31
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**SWITCHES**

S301-S317	ASG1034
-----------	---------

**RESISTORS**

All Resistors	RD1/4PU□□□J
---------------	-------------

**OTHERS**

CN302, CN303	52492-1020
FFC BOTTOM CONNECTOR 10P	
CN301 8P BOARD CONNECTOR	9133S-08A

Mark	No.	Description	Part No.
<b>K</b>		<b>IOEB ASSY</b>	
		<b>SEMICONDUCTORS</b>	
		IC701, IC702	BU2090F
		<b>CAPACITORS</b>	
		C701, C703	CKPUYY103N16
		<b>RESISTORS</b>	
		All Resistors	RD1/4PU□□□J
		<b>OTHERS</b>	
		CN701, CN702 10P FFC CONNECTOR	52044-1045

Mark	No.	Description	Part No.
<b>L</b>		<b>JACB ASSY</b>	
		<b>SEMICONDUCTORS</b>	
		IC502	NJM2068D
		IC501	NJM4558DX
		<b>CAPACITORS</b>	
		C514, C515	CEJA101M10
		C504, C505	CKPUYB271K50
		C520	CKPUYF223Z25
		C509, C512	CKPUYX122M16
		C510, C513	CKPUYX152M16
		C501, C502, C507, C508	CKPUYY103N16
		C503, C506	CQMA104J50
		<b>RESISTORS</b>	
		R508	RN1/6PQ2001F
		R507	RN1/6PQ3001F
		VR501, VR502(10kΩ)	VCS1040
		Other Resistors	RD1/4PU□□□J
		<b>OTHERS</b>	
		CN502 FJ CONNECTOR 6P	06R-FJ
		CN503 19P FFC CONNECTOR	52044-1945
		CN501 20P CONNECTOR	BTMK20P-1R
		JA502 HEADPHONE JACK	RKN1006
		JA501, JA503 MIC JACK	VKN1147
		SNAP PLATE	VNE1102
		JACK HOLDER (FE)	VNE2054

Mark	No.	Description	Part No.
<b>M</b>		<b>MOTHER ASSY</b>	
		<b>SEMICONDUCTORS</b>	
		IC904	BA10393F
		IC903	BA4560F
		IC351	CA0002AM
		IC803	LA6510
		IC400	LA7134M
		IC901	LA9420M
		IC801	LA9425
		IC802	LC78621E
		IC703	MC14577CP
		IC702	NJM2235M

Mark	No.	Description	Part No.
		IC206	NJM78M08FA
		IC207	NJM79M08FA
		IC500	PD0234A
		IC101	PD0245A2
		IC902	TA8410AK
		IC804	TC4W53F
		IC905	XLA4560F
		Q1001, Q102, Q916	2PB709A
		Q391, Q393, Q394, Q451, Q475	2PD601A
		Q805, Q9001, Q903, Q904	2PD601A
		Q907, Q908, Q915, Q917	2PD601A
		Q834	2SA854S
		Q411, Q803	2SC2412K
		Q152	2SC3802K
		Q208, Q301, Q392	DTA124EK
		Q103, Q303, Q901, Q910, Q918	DTC124EK
		Q840	FMY1A
		D202	11EQS06
		D102, D180, D801, D901, D902	1SS254
		D905, D963	1SS254
		D802	1SS355
		D110	MTZJ5. 1B
		<b>COILS AND FILTERS</b>	
		L413	LAU100J
		L410	LAU101J
		L351, L802-L804	LAU181J
		L352, L412, L461, L470	LAU220J
		L800, L801, L808, L809	LAU220J
		L411, L571	LAU270J
		L420, L421, L580	LAU430J
		L462	LAU560J
		L414	LAU8R2J
		L460	LFA561J
		F501	VTF1055
		L5001	VTH1024
		<b>CAPACITORS</b>	
		C562	CCSQCH050C50
		C436, C809, C811	CCSQCH070D50
		C420, C421, C438, C456, C5001	CCSQCH100D50
		C583	CCSQCH100D50
		C370, C810, C846, C848, C891	CCSQCH101J50
		C944	CCSQCH101J50
		C434, C437, C474, C579	CCSQCH120J50
		C416	CCSQCH121J50
		C415, C418, C475	CCSQCH150J50
		C161, C353, C812	CCSQCH151J50
		C352, C552	CCSQCH180J50
		C813, C950	CCSQCH220J50
		C162, C417, C591, C935	CCSQCH221J50
		C371, C419, C433, C467, C931	CCSQCH270J50
		C106, C107, C354, C435, C452	CCSQCH330J50
		C553, C563, C580	CCSQCH330J50
		C351, C425, C476	CCSQCH390J50
		C464, C468	CCSQCH470J50
		C375, C561, C806	CCSQCH680J50
		C374, C814	CCSQCH820J50

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	C460, C462		CCSQCH910J50		C483		CQMA683J50
	C439		CEAL100M16		C871(10 $\mu$ F/16V NP)		VCH1152
	C412, C484, C491, C706-C708		CEAL470M6R3		VC901(20pF)		VCM-008
	C833, C836, C844		CEAL470M6R3	<b>RESISTORS</b>			
	C838		CEALNP470M6R3		R927		RD1/4PU122J
	C972		CEANP220M10		R420		RD1/4PU470J
	C450		CEANP470M6R3		R625, R626		RN1/10SC750D
	C904		CEAS010M50		R490, R987, R989		RN1/10SE103D
	C228, C367		CEAS100M50		R880, R883		RN1/10SE104D
	C364, C424, C917		CEAS101M10		R750		RN1/10SE132D
	C821, C922, C967		CEAS220M25		R702		RN1/10SE152D
	C845, C870, C902, C926		CEAS2R2M50		R764		RN1/10SE271D
	C101, C225, C226, C363, C369		CEAS470M10		R879, R986, R990		RN1/10SE333D
	C493, C530, C534, C538, C550		CEAS470M10		R753		RN1/10SE471D
	C763, C765, C801, C803, C820		CEAS470M10		R765, R766, R881, R882		RN1/10SE473D
	C842, C882, C890, C893, C898		CEAS470M10		R751		RN1/10SE681D
	C927, C933, C974, C975		CEAS470M10		R754		RN1/10SE911D
	C368, C943		CEASR47M50		VR450(2.2k $\Omega$ )		PCP1025
	C968, C987		CEHAQ220M50		VR603(4.7k $\Omega$ )		RCP1020
	C585, C588		CEJA470M6R3		VR604, VR607, VR608(47k $\Omega$ )		RCP1047
	C850		CEJA4R7M35		Other Resistors		RS1/10S□□□□
	C256, C490, C907		CKSQYB102K50	<b>OTHERS</b>			
	C879		CKSQYB103K50		CN108 12P FFC CONNECTOR		52045-1245
	C915, C981		CKSQYB104K25		CN102 21P FFC CONNECTOR		52045-2145
	C919		CKSQYB332K50		CN104 24P FFC CONNECTOR		52045-2445
	C361, C362		CKSQYB392K50		CN103 23P FFC CONNECTOR		52233-2310
	C355-C358, C377, C909		CKSQYB472K50		CN106 11P TOP POST		B11P-SHF-1AA
	C110, C122, C160, C196-C198		CKSQYF103Z50		CN113 B TO B CONNECTOR 12P		BTFN12S-3SB7
	C372, C373, C376, C378, C451		CKSQYF103Z50		CN110, CN203, CN701		BTFN20S-3SB7
	C454, C532, C533, C540, C570		CKSQYF103Z50		B TO B CONNECTOR 20P		
	C577, C578, C581, C802, C804		CKSQYF103Z50		JA3, JA4 REMOTE CONTROL JACK		RKN1004
	C807, C819, C822, C831, C832		CKSQYF103Z50		PCB BINDER		VEF1040
	C834, C835, C843, C872, C876		CKSQYF103Z50		JA15 3P PIN JACK		VKB1091
	C888, C889, C892, C897, C918		CKSQYF103Z50		SCREW PLATE		VNE1948
	C928, C929, C932, C937, C938		CKSQYF103Z50		KN101, KN102 EARTH METAL FITTING		VNF1084
	C941, C961, C962, C964, C971		CKSQYF103Z50		X101 CERAMIC RESONATOR (9.00MHz)		VSS1040
	C982		CKSQYF103Z50		X550 CRYSTAL RESONATOR		VSS1073
	C102, C103, C151, C365, C366		CKSQYF104Z25		(14.318MHz)		
	C391, C413, C422, C423, C453		CKSQYF104Z25	<b>N KRAB ASSY</b>			
	C457, C458, C485, C492, C494		CKSQYF104Z25	<b>SEMICONDUCTORS</b>			
	C5006, C531, C539, C551, C574		CKSQYF104Z25		IC103		BU4053BCF
	C582, C589, C592, C709, C764		CKSQYF104Z25		IC102		LH5P832N-12
	C766, C827, C828, C840, C841		CKSQYF104Z25		IC104-IC109, IC302-IC304		NJM4558DX
	C847, C873, C874, C901		CKSQYF104Z25		IC101		PMO007A
	C910-C912, C976, C983		CKSQYF104Z25		IC301		TC9400F
	C837, C921, C930		CKSQYF223Z50		Q103, Q301-Q304, Q306, Q307		2SD2114K
	C359, C360, C905, C951		CKSQYF224Z25		Q105		2SK184
	C465, C808, C815, C875, C877		CKSQYF473Z25		Q101, Q102, Q104, Q305		DTC124EK
	C924, C925		CKSQYF473Z25		D107		1SS355
	C942		CQMA103J50		D101-D106, D302		DA204K
	C913, C920		CQMA104J50		D301		KV1851
	C479, C908, C973		CQMA154J50				
	C903		CQMA222J50				
	C923		CQMA473J50				
	C934		CQMA681J50				

Mark No.	Description	Part No.
<b>COILS</b>		
L102, L104		LFA100J
L301, L302		LFA220J
L101		LFA3R9J
<b>SWITCH</b>		
S301		VSH1009
<b>CAPACITORS</b>		
C342, C343		CCSQCH050C50
C116, C118, C120, C122		CCSQCH101J50
C312, C315		CCSQCH151J50
C130		CCSQCH181J50
C303, C336		CCSQCH220J50
C144-C148		CCSQCH390J50
C313, C314, C316, C317		CCSQCH430J50
C109, C112		CCSQCH680J50
C324, C325, C344		CCSQL102J50
C101, C102		CCSQL331J50
C103, C104		CEANP010M50
C150, C151		CEANP2R2M50
C135, C136, C138, C139		CEAS100M25
C322, C323		CEAS100M25
C161, C163, C304, C306, C309		CEAS101M10
C318, C319, C331, C332		CEAS101M10
C119, C121		CEAS2R2M50
C137		CEAS330M16
C115, C117		CEAS470M16
C149, C154, C302		CKSQYB103K50
C131		CKSQYB104K25
C132		CKSQYB122K50
C108, C111, C125, C129, C328		CKSQYB223K50
C107, C110		CKSQYB332K50
C128		CKSQYB472K50
C105, C106, C113, C114		CKSQYF103Z50
C123, C124, C126, C127		CKSQYF103Z50
C133, C134, C140, C141, C301		CKSQYF103Z50
C305, C310, C326, C327, C335		CKSQYF103Z50
C337, C338		CKSQYF103Z50
C142, C143, C157-C160, C162		CKSQYF104Z25
C164, C170, C307, C308, C311		CKSQYF104Z25
C333, C334, C341		CKSQYF104Z25
<b>RESISTORS</b>		
R113-R116		RN1/10SE102D
R312, R313, R318, R319		RN1/10SE473D
R322-R325		RN1/10SE473D
Other Resistors		RS1/10S□□□J
<b>OTHERS</b>		
CN102	19P FFC CONNECTOR	52045-1945
JA101	PIN JACK (6P)	AKB7050
CN101	B TO B CONNECTOR 20P	BTFN20P-3RD7
	PCB BINDER	VEF1040
X301	CRYSTAL RESONATOR (16MHz)	VSS1081

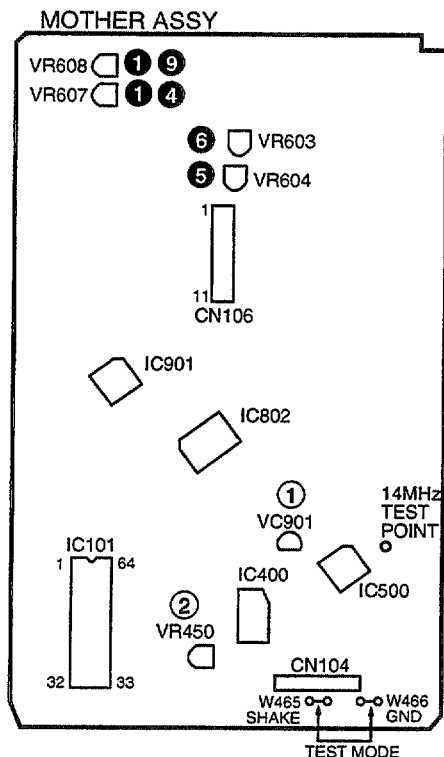
Mark No.	Description	Part No.
<b>GRPB ASSY</b>		
<b>SEMICONDUCTORS</b>		
IC201		PD0239A
IC107		TC74HC157AP
Q170, Q171		2PD601A
<b>COILS</b>		
L105, L106		LFA220J
<b>CAPACITORS</b>		
C180		CCSQCH060D50
C190		CCSQCH100D50
C165, C166		CCSQCH150J50
C181, C182, C189		CCSQCH220J50
C229		CCSQCH221J50
C184		CCSQCH330J50
C183		CCSQCH680J50
C222, C227		CEAL470M6R3
C186, C188, C194, C272, C400		CEAS470M10
C224		CEJA221M6R3
C226		CKSQYB472K50
C179, C185, C187, C191		CKSQYF103Z50
C219, C221, C223, C228, C230		CKSQYF104Z25
C271		CKSQYF104Z25
<b>RESISTORS</b>		
R455, R458		RFA1/6PU4R7J
R190		RN1/10SE132D
R246		RN1/10SE152D
R245		RN1/10SE162D
R243		RN1/10SE181D
R172		RN1/10SE681D
Other Resistors		RS1/10S□□□J
<b>OTHERS</b>		
CN103	FJ CONNECTOR 8P	08PL-FJ
CN102	B TO B CONNECTOR 12P	BTFN12P-3RD7
CN101	B TO B CONNECTOR 20P	BTFN20P-3RD7
<b>VCDB ASSY</b>		
<b>SEMICONDUCTORS</b>		
IC101		CXD1852Q
IC301		CXD1913AQ
IC201		HM514260CLJ-7
IC401		MC14577CF
IC501		PD6193A
IC801		PQ20VZ51
IC601		TC74HC125AF
IC602		TC74HCT7007AF
IC402		TC7S08F
IC102, IC603		TC7WU04F
Q103		2PB709A
<b>FILTER</b>		
F101		VTH1037

Mark No.	Description	Part No.
<b>CAPACITORS</b>		
C105, C106		CCSQCH050C50
C103, C104		CCSQCH100D50
C604		CCSQCH101J50
C121, C122		CCSQCH150J50
C505, C506		CCSQCH200J50
C310, C311		CCSQCH220J50
C902		CCSQCH470J50
C101, C120, C204, C303, C313		CEAL470M6R3
C802		CEAL470M6R3
C102, C107-C114, C130		CKSQYF104Z25
C201-C203, C250, C301, C302		CKSQYF104Z25
C304, C305, C316-C321		CKSQYF104Z25
C401, C402, C501-C504, C507		CKSQYF104Z25
C530, C601-C603, C801		CKSQYF104Z25
<b>RESISTORS</b>		
R320		RN1/10SC750D
R301		RN1/10SE103D
R802		RN1/10SE122D
R801		RN1/10SE202D
R312		RN1/10SE221D
R302, R303		RN1/10SE332D
R318, R319		RN1/10SE471D
R705		RS1/8S000J
Other Resistors		RS1/10S□□□J
<b>OTHERS</b>		
CN201	FJ CONNECTOR 8P	08R-FJ
CN101	B TO B CONNECTOR 20P	BTFN20P-3RD7
X501	CERAMIC RESONATOR (4MHz)	CSAC4.00MGCM
X103	CRYSTAL RESONATOR (27.000MHz)	VSS1095
X101	CRYSTAL RESONATOR (28.63636MHz)	VSS1096
X102	CRYSTAL RESONATOR (45.1584MHz)	VSS1097

## 6. ADJUSTMENTS (調整方法)

### 6.1 ADJUSTMENT ITEMS AND LOCATION (調整項目と調整位置)

#### ■ Adjustment Points (PCB Part)



#### ■ Adjustment Items

##### [Mechanical Part]

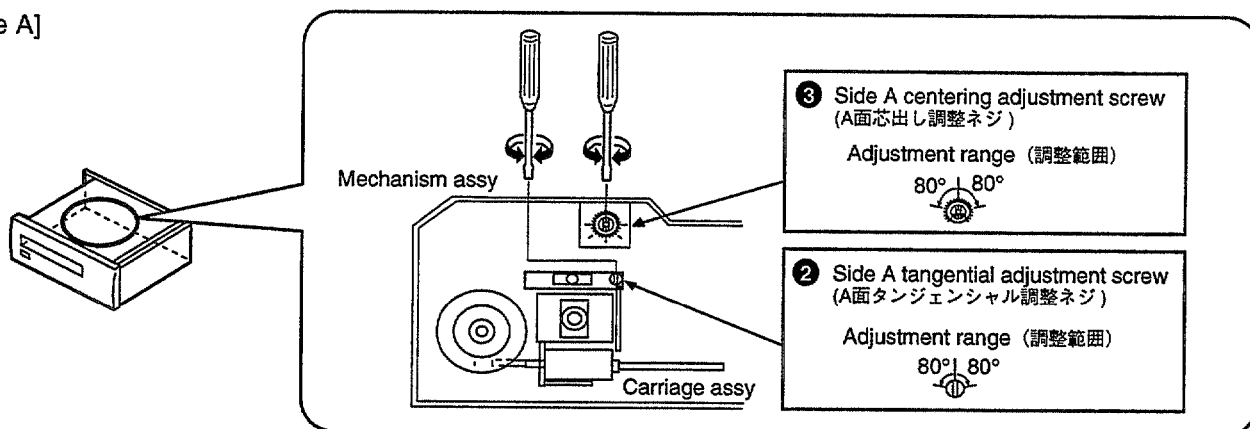
- ① Tilt Offset Adjustment (チルトオフセット調整)
- ② Tangential Direction Angle Adjustment for Side A (A面タンジェンシャル傾き調整)
- ③ Spindle Motor Centering Adjustment for Side A (A面スピンドル芯出し調整)
- ④ Crosstalk Check and Fine Tilt Offset Adjustment for Side A (A面クロストーク確認及び、チルトオフセット微調)
- ⑤ Focus Servo Loop Gain Adjustment (フォーカスサーボループゲイン調整)
- ⑥ Tracking Servo Loop Gain Adjustment (トラッキングサーボループゲイン調整)
- ⑦ Tangential Direction Angle Adjustment for Side B (B面タンジェンシャル傾き調整)
- ⑧ Spindle Motor Centering Adjustment for Side B (B面スピンドル芯出し調整)
- ⑨ Crosstalk Check and Fine Tilt Offset Adjustment for Side B (B面クロストーク確認及び、チルトオフセット微調)

##### [Electrical Part]

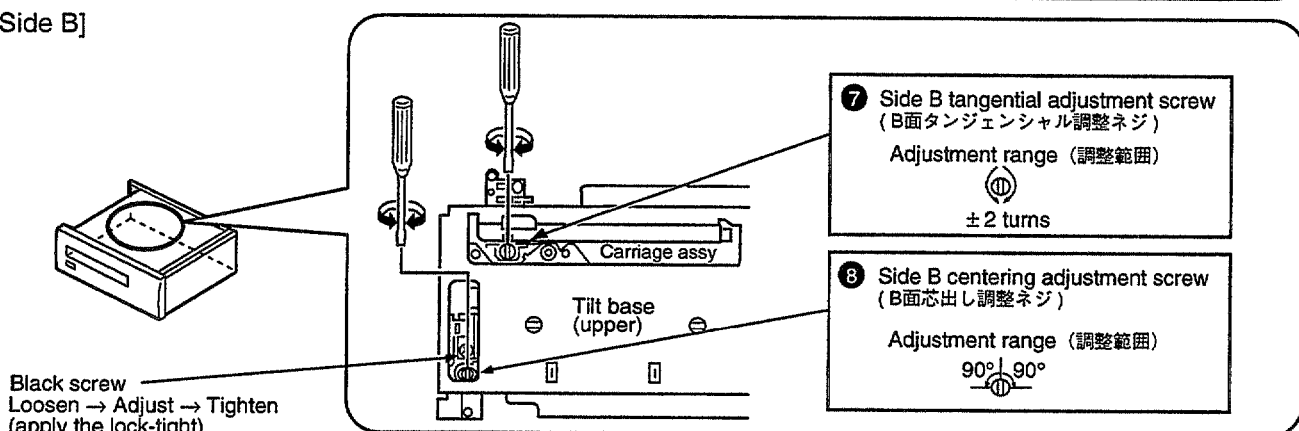
- ① Master Clock Adjustment (マスタークロック調整)
- ② Output Video Level Adjustment (出力ビデオレベル調整)

#### ■ Adjustment Points (Mechanism Part)








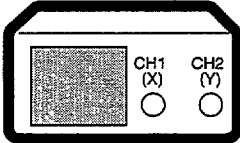

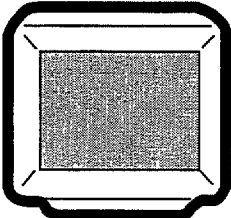
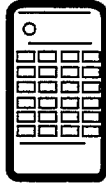
##### [Side A]



##### [Side B]

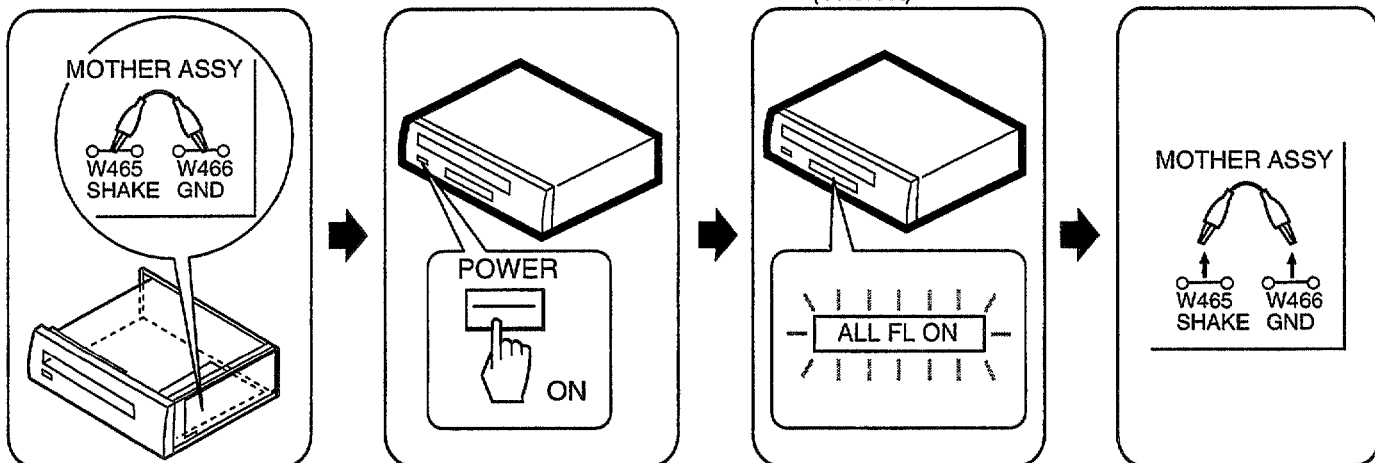


6.2 JIGS AND MEASURING INSTRUMENTS (調整に必要な治工具類)

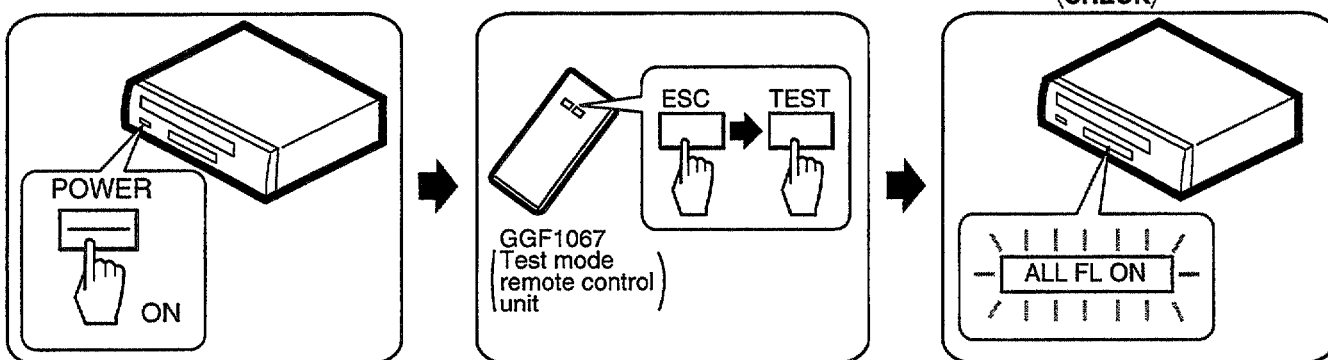
 <p>CD test disc (YEDS-7)</p>	 <p>LD test disc (GGV1012)</p>	 <p>⊖ Screwdriver (medium)</p>	 <p>⊖ Screwdriver (small)</p>
 <p>⊖ Precise screwdriver</p>	 <p>⊕ Screwdriver (large)</p>	 <p>⊕ Screwdriver (medium)</p>	 <p>Dual-trace oscilloscope (with delay) Frequency band <math>\geq</math> 40MHz</p>
 <p>Frequency counter Display digit <math>\geq</math> 8-digit</p>	 <p>TV monitor</p>	 <p>Test mode remote control unit (GGF1067)</p>	

6.3 TEST MODE (テストモード)

**TEST MODE: ON**

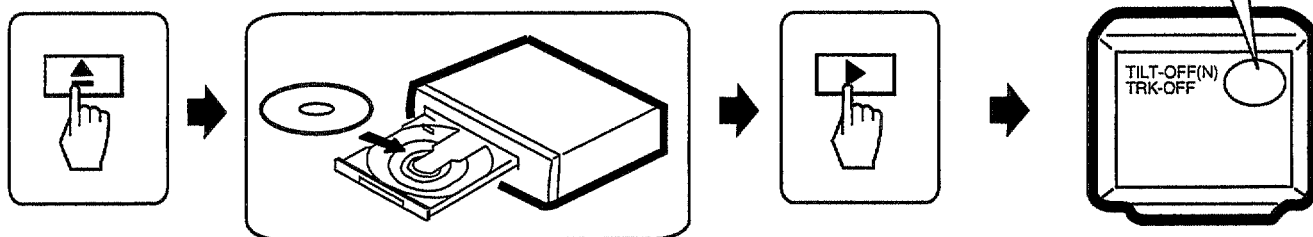


OR

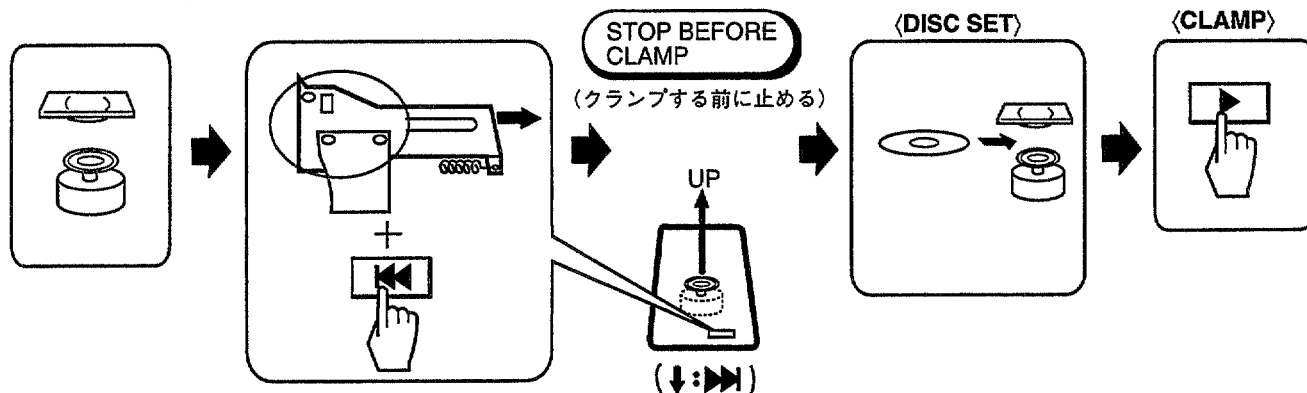


**TEST MODE: DISC SET**

• With TRAY (トレイ有りの場合)

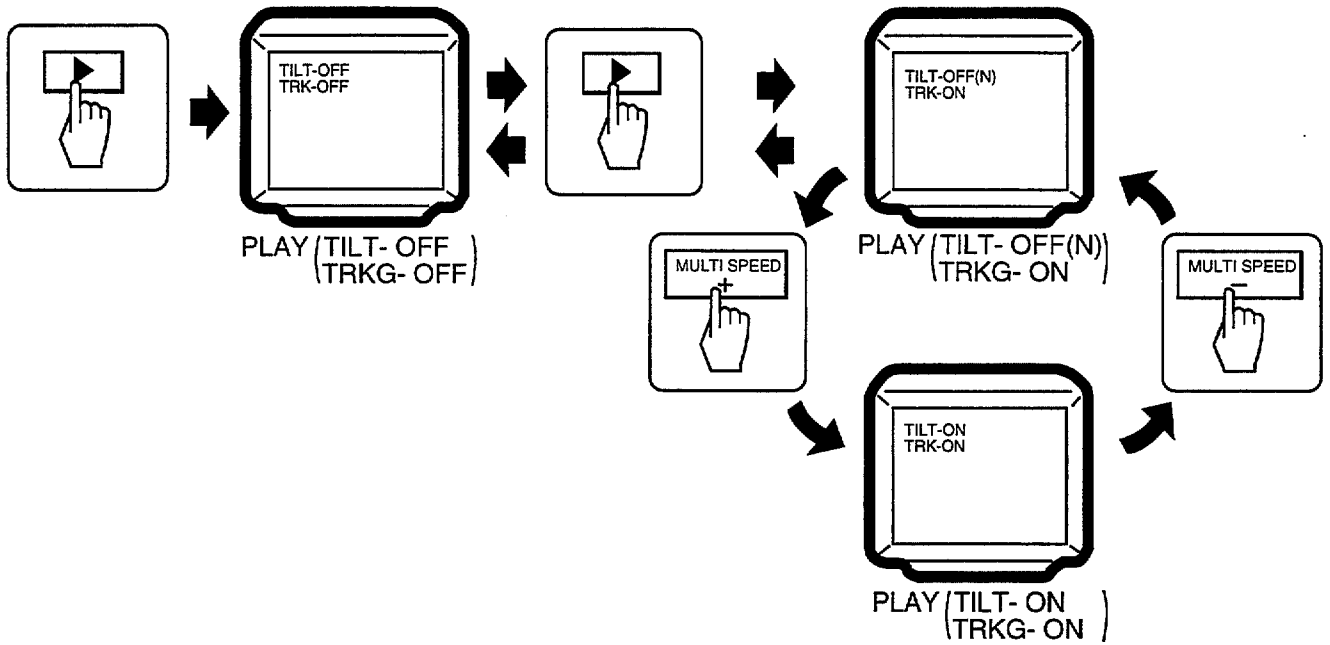


• No TRAY (トレイ無しの場合)

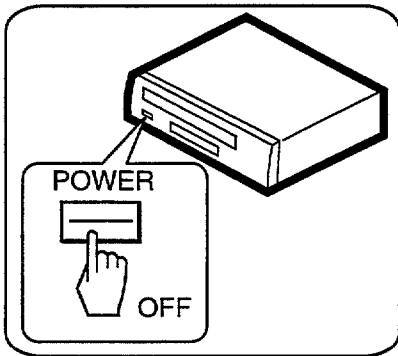




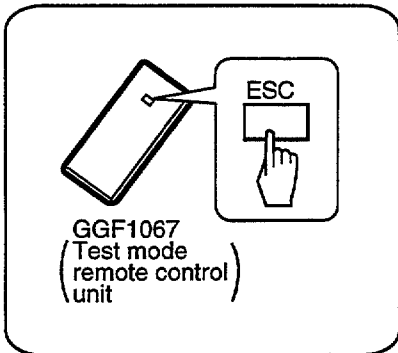
**TEST MODE: PLAY**



**TEST MODE: OFF**



OR



6.4 NECESSARY ADJUSTMENT POINTS (必要な調整項目)

When (このような時)

Adjustment Points

■ EXCHANGE MECHANISM ASSY PARTS  
(メカASSY部品を交換したとき)

Exchange pickup  
(ピックアップを交換したとき)



Mechanical point ①, ②, ③, ④, ⑤, ⑥, ⑦, ⑧, ⑨

Electric point \_\_\_\_\_

Exchange spindle motor  
(スピンドルモータを交換したとき)



Mechanical point ③, ⑧

Electric point \_\_\_\_\_

■ EXCHANGE PCB ASSY  
(PCB ASSYを交換したとき)

Exchange board  
MOTHER ASSY  
(マザーボードを交換したとき)



Mechanical point ①, ④, ⑤, ⑥, ⑨

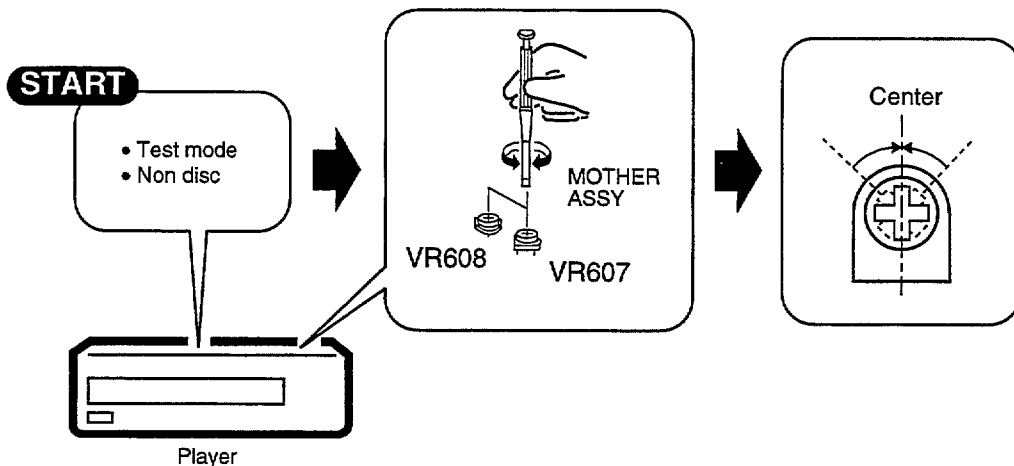
Electric point \_\_\_\_\_

Note : ① and ② are adjusted already. (①,②は調整済)

## 6.5. MECHANICAL ADJUSTMENT (機構系の調整)

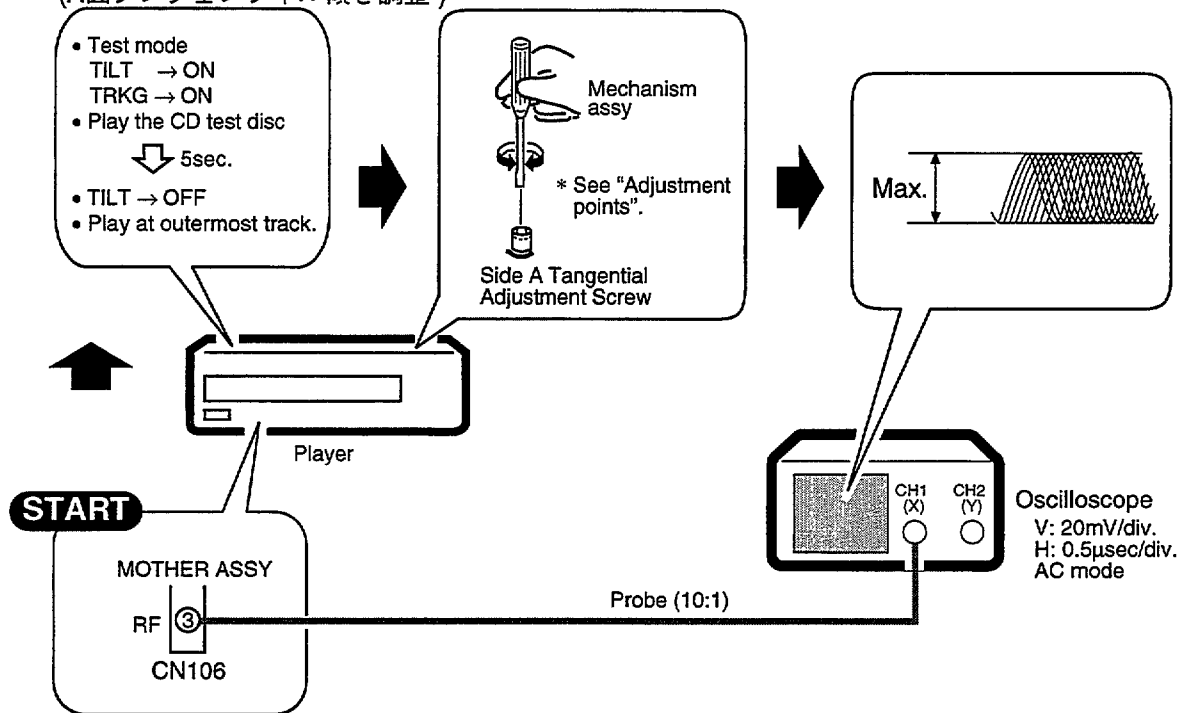
### 1 Tilt Offset Adjustment

(チルトオフセット調整)



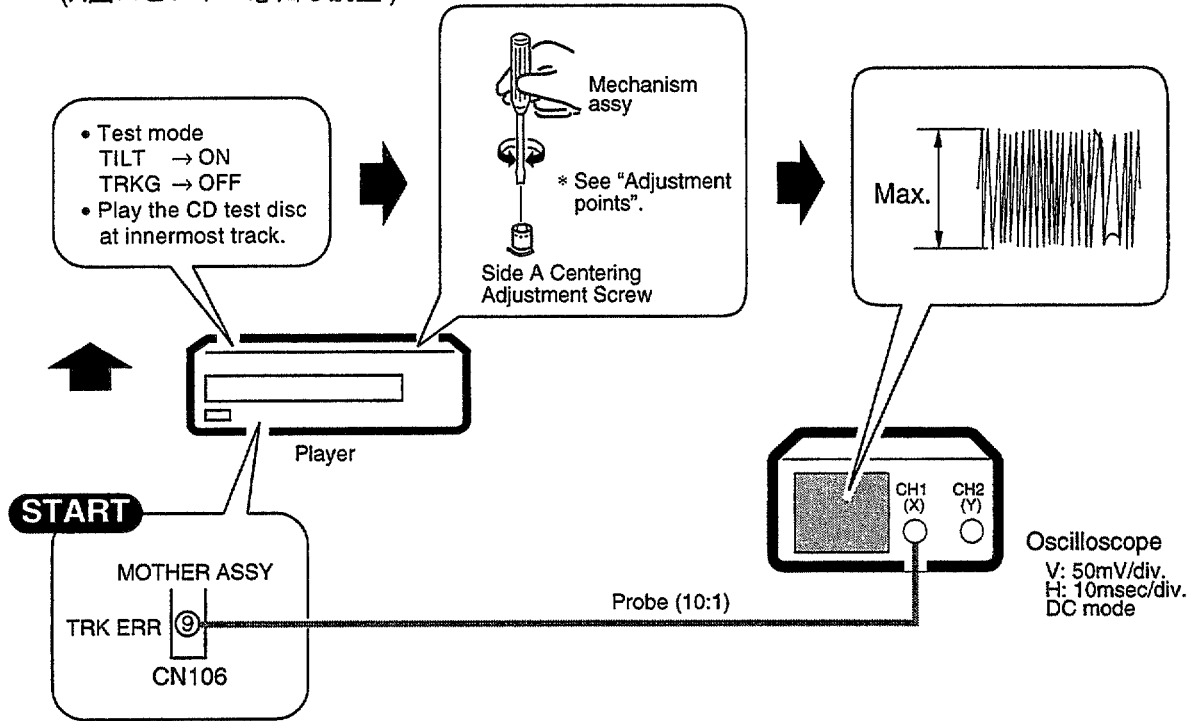
### 2 Tangential Direction Angle Adjustment for Side A

(A面タンジェンシャル傾き調整)



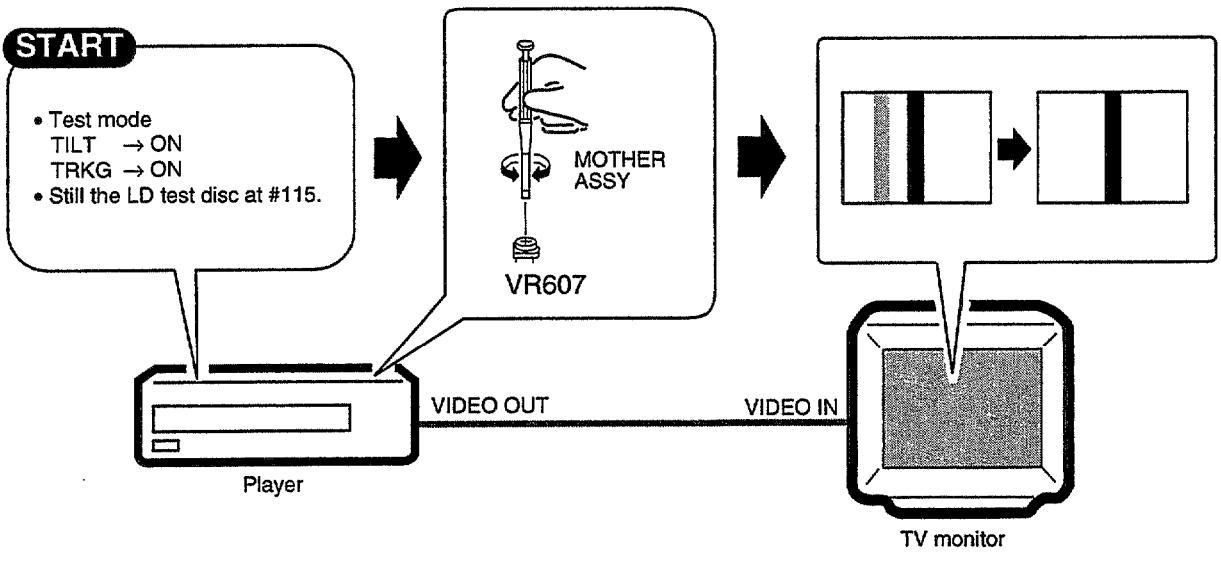
outermost : 最外周

### 3 Spindle Motor Centering Adjustment for Side A (A面スピンドル芯出し調整)



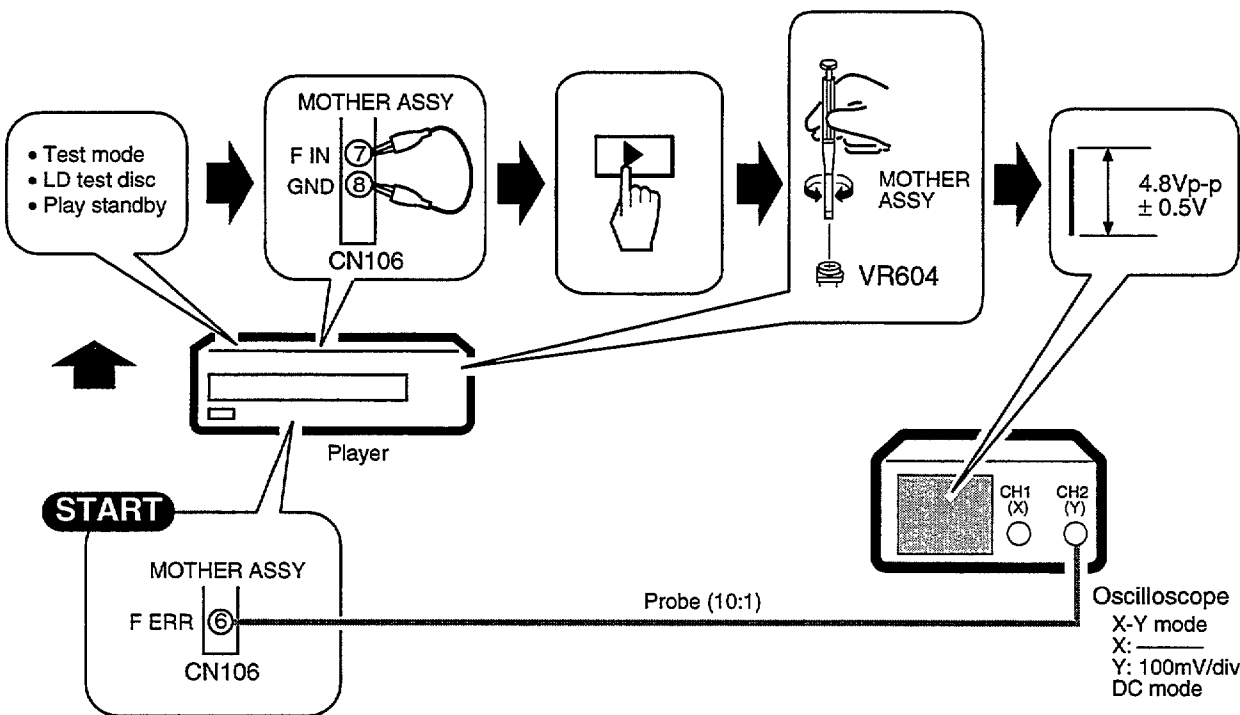
innermost : 最内周

### 4 Crosstalk Check and Fine Tilt Offset Adjustment for Side A (A面クロストーク確認及び、チルトオフセット微調)



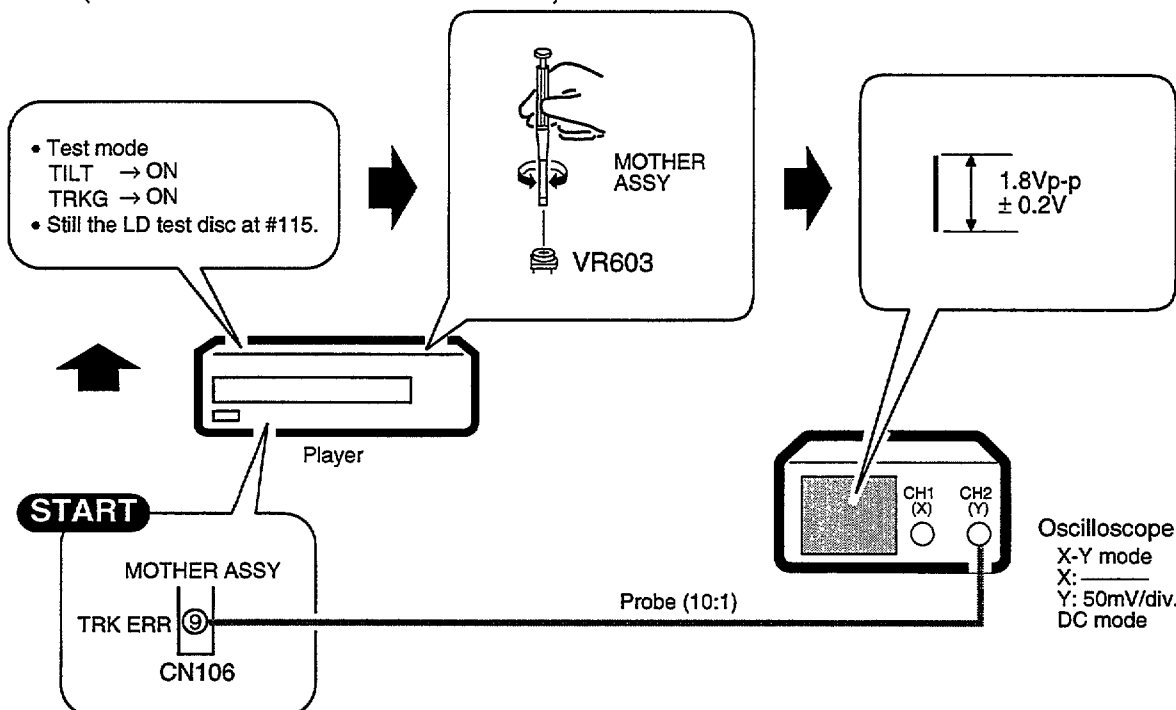
### 5 Focus Servo Loop Gain Adjustment

(フォーカスサーボループゲイン調整)

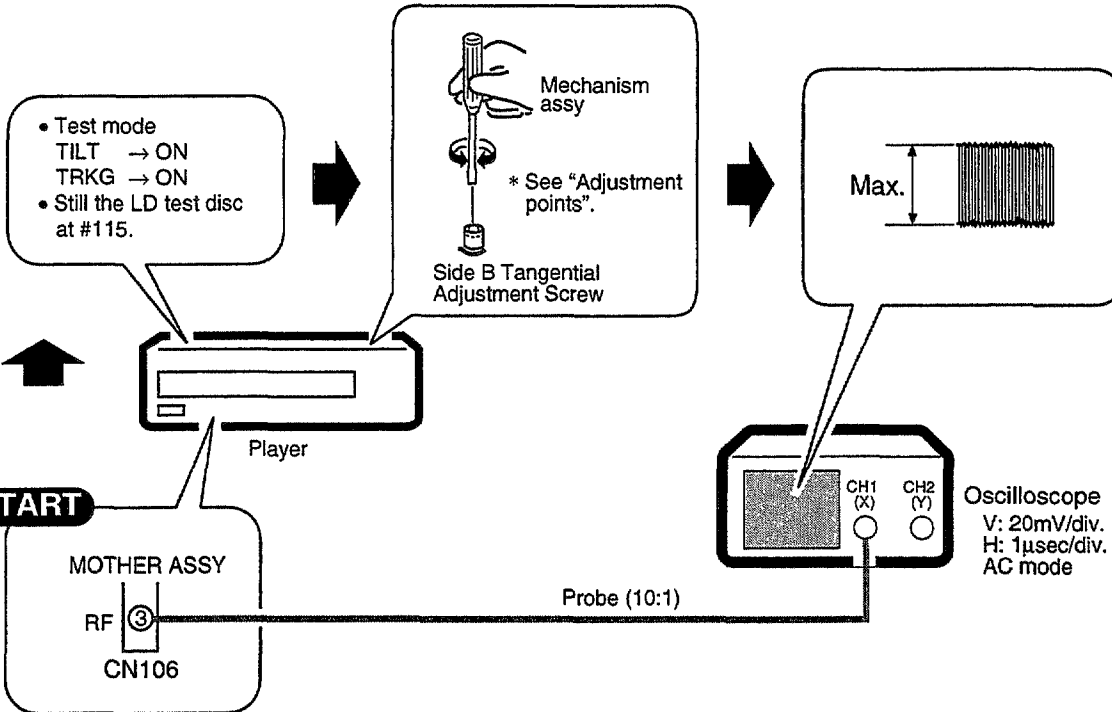


### 6 Tracking Servo Loop Gain Adjustment

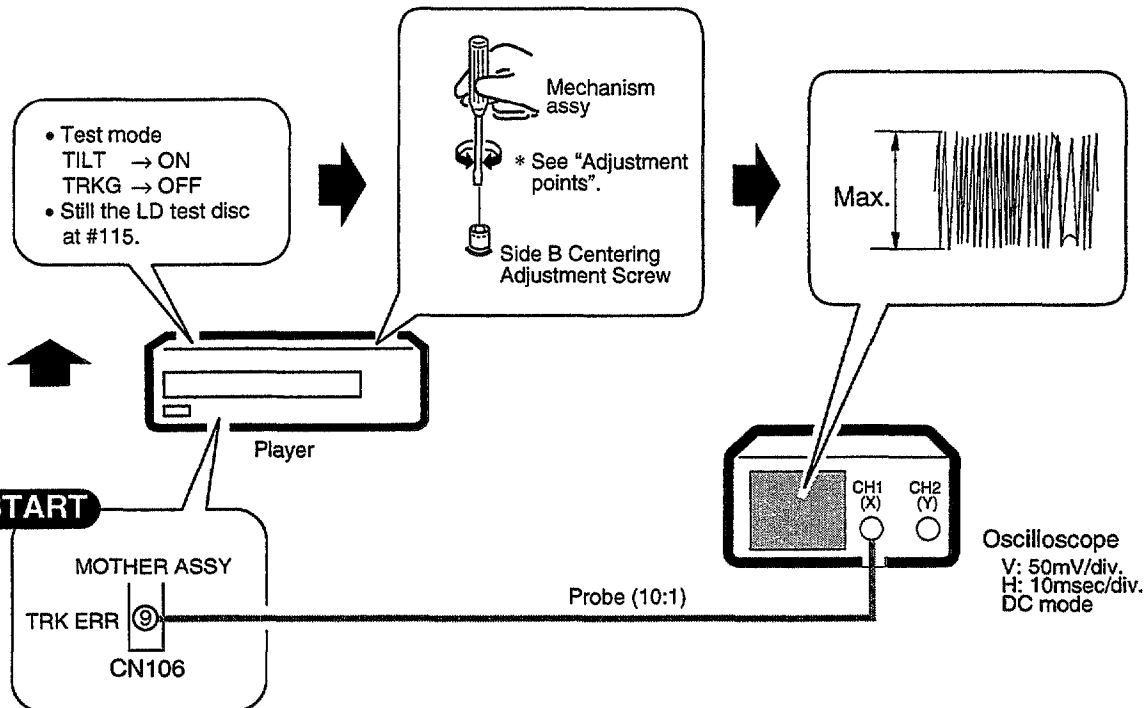
(トラッキングサーボループゲイン調整)



### 7 Tangential Direction Angle Adjustment for Side B (B面タンジェンシャル傾き調整)



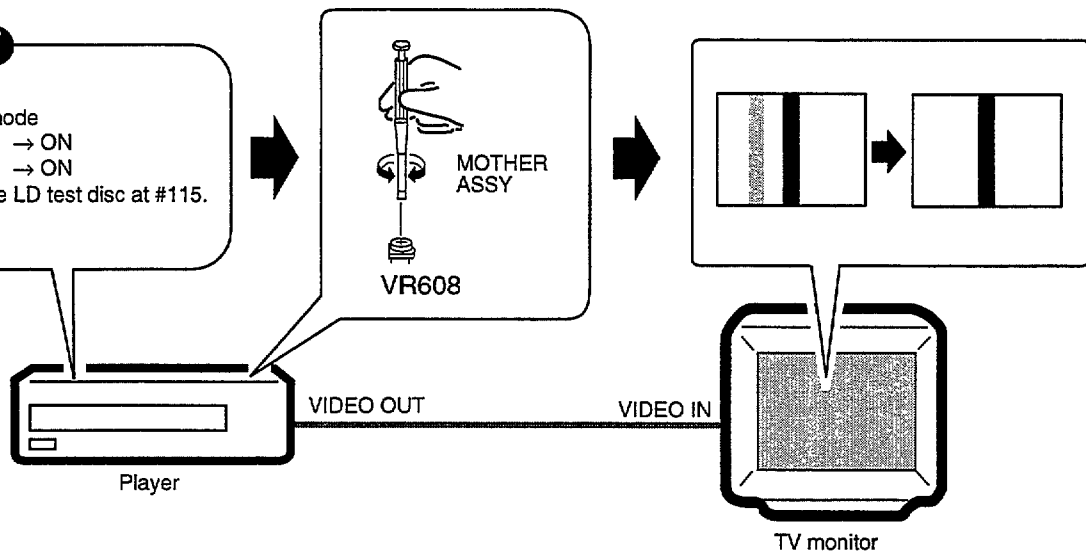
### 8 Spindle Motor Centering Adjustment for Side B (B面スピンドル芯出し調整)



## 9 Crosstalk Check and Fine Tilt Offset Adjustment for Side B (B面クロストーク確認及び、チルトオフセット微調)

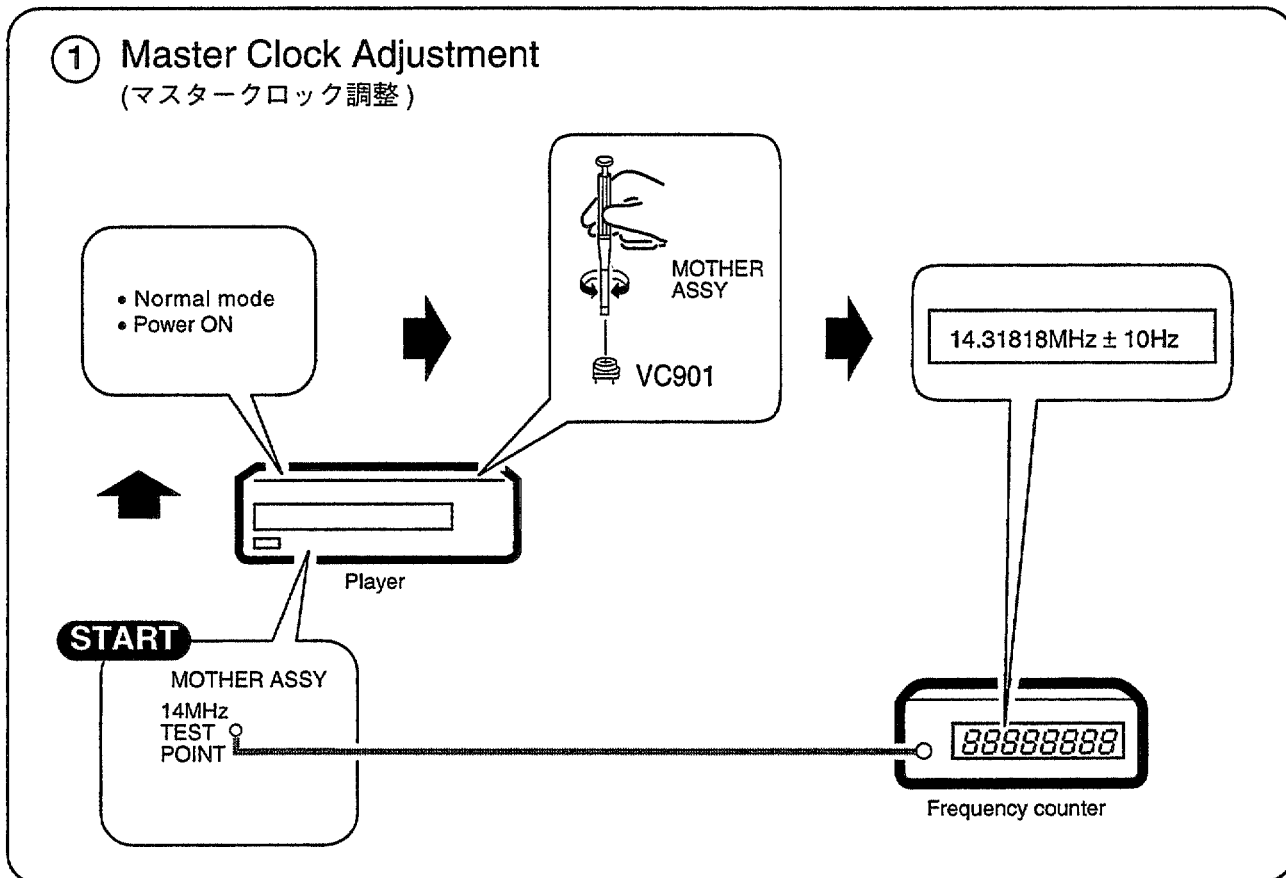
### START

- Test mode  
TILT → ON  
TRKG → ON
- Still the LD test disc at #115.

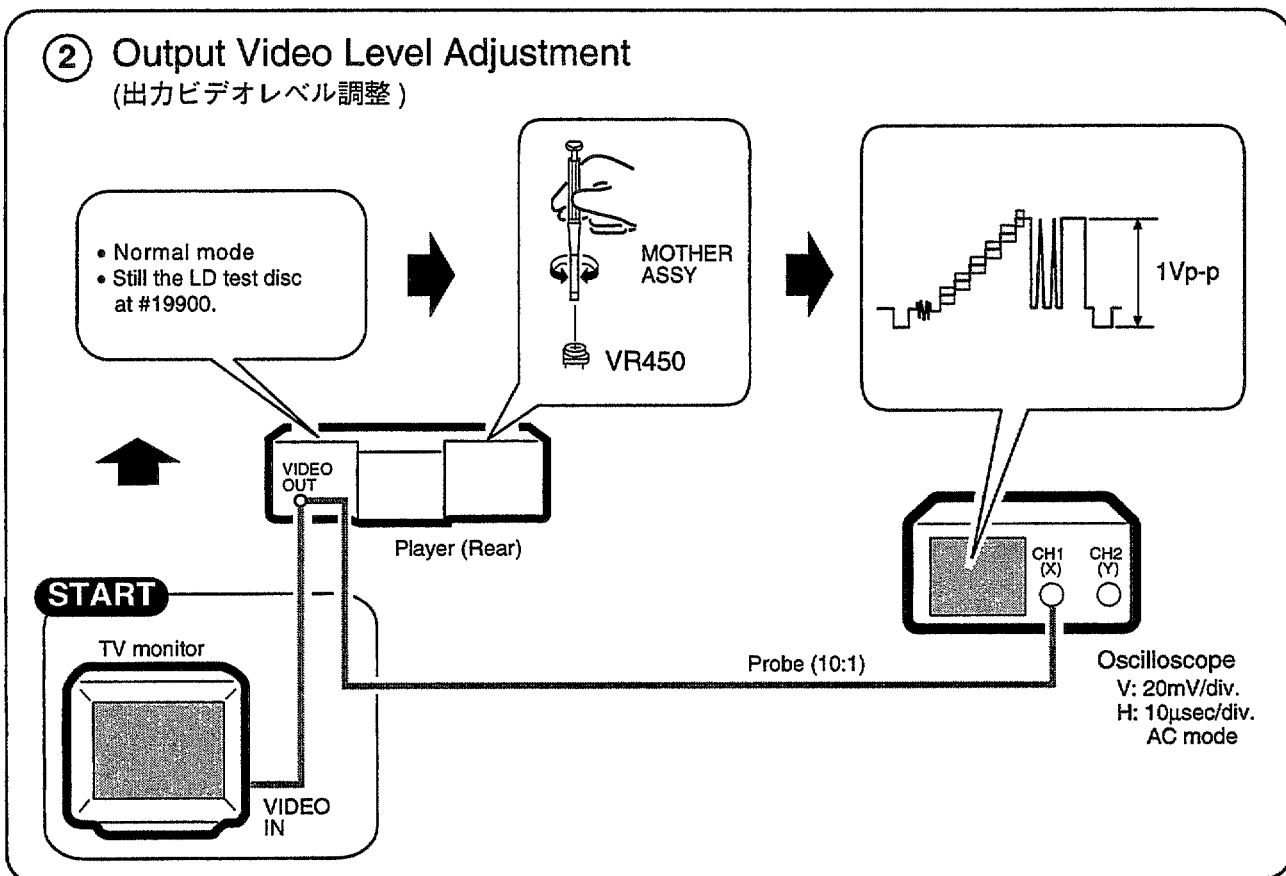


6.6 ELECTRICAL ADJUSTMENT (電気系の調整)

① Master Clock Adjustment  
(マスタークロック調整)



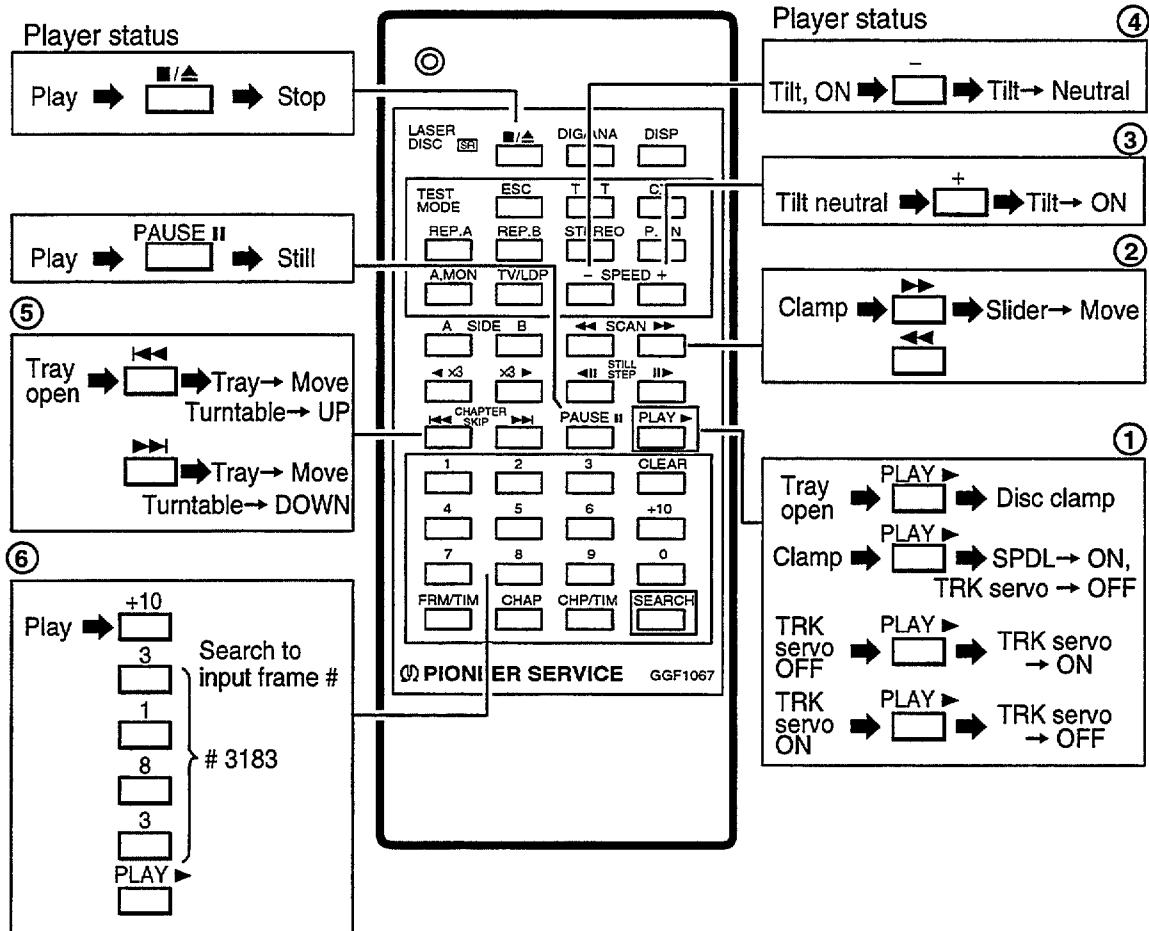
② Output Video Level Adjustment  
(出力ビデオレベル調整)



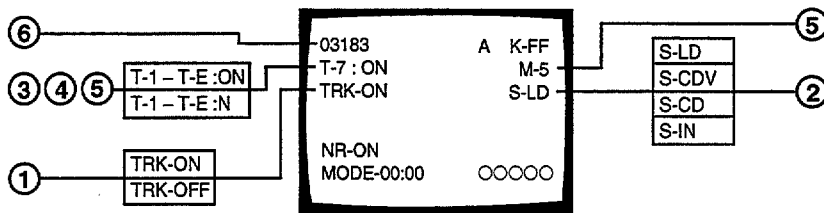


6.7 OPERATIONS IN THE TEST MODE (テストモード時のサービス用リモコン操作方法)

■ Test Mode Remote Control Unit (GGF1067)



■ TV Monitor Display



## 7. GENERAL INFORMATION

### 7.1 PARTS

#### 7.1.1 IC INFORMATION

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

#### ■ PD3350A (FLKB ASSY : IC101)

##### • MODE CONTROL IC

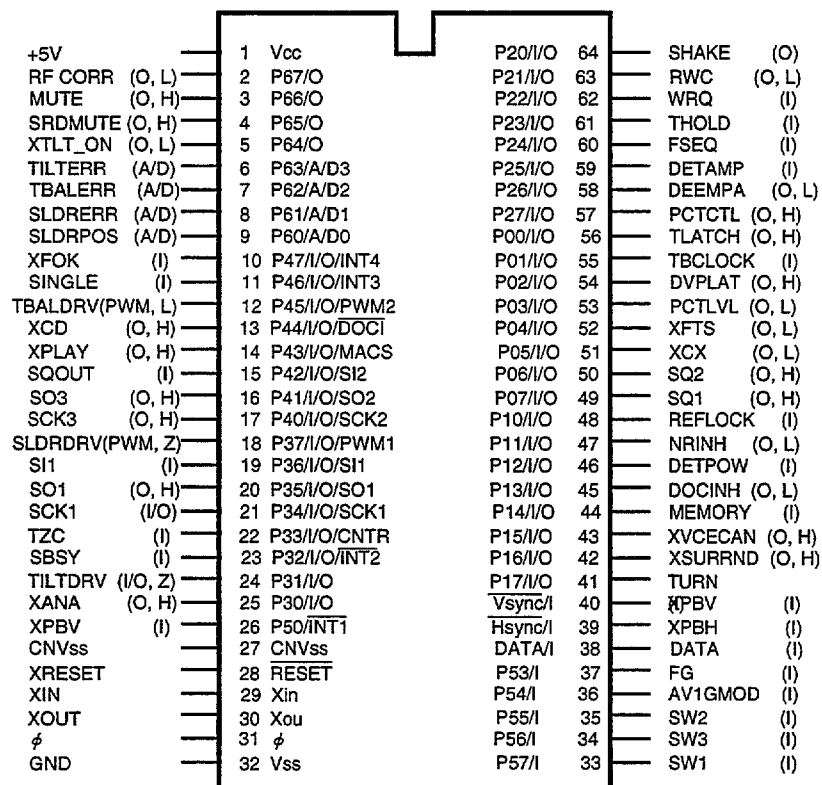
##### • Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	MODESEL	I	Mic control input (AD input)	41	C	O	Display segment output
2	ECHO VOL	I	Echo volume data value (AD input)	42	B		
3	ONTA BAL	I	Vocal volume data value (AD input)	43	A		
4	MODE SW	I	Mode switch (Normal, Karaoke, External) (AD input)	44	G1	O	Display grid output
5	AVss	I	GND	45	G2		
6	TEST	I	GND	46	G3		
7	X2	O	Not used (N.C)	47	G4		
8	X1	I	GND	48	G5		
9	Vss	I	GND	49	G6		
10	OSC1	I	Oscillator (8MHz)	50	G7		
11	OSC2	O					
12	XRESET (IN)	I	CPU reset (L : reset)	52	P7/3	I	Not used (+5V)
13	SHAKE (ACK)	I/O	Mech. control communication requirement input (mode control communication permission output)	53	P7/4	O	Not used (N.C)
14	SEL IR	I	Remote control input	54	P7/5		
15	V-CD	O	VCD control communication requirement input (mode control communication permission output)	55	P7/6		
16	POWER	O	Mother board power supply switching output	56	P7/7		
17	EFLG	I	For measuring error rate	57	VCC	I	Power supply (+5V)
18	FSX	I	For measuring error rate	58	I/O DATA3	O	I/O expander data output (for IC701)
19	MICSENSE	I	Mic input	59	I/O DATA2	O	I/O expander data output (for IC702)
20	XSSVC	O	Stereo voice canceler at marking (L : ON)	60	I/O CLKOC2	O	I/O expander clock output (for IC701, IC702)
21	XMICON	O	Mic line switch (L : ON, H : OFF)	61	LD/VCD	O	LD/VCD display switch (H : LD, L : VCD)
22	MIC1/XMIC2	O	Mic input switch (L : MIC1, H : MIC2)	62	P8/4	O	Not used (N.C)
23	XINT/EXT	O	Analog audio switch (L : player, H : External input)	63	MUTE	O	Data mute output of graphics decoder
24	BATTLE	O	Karaoke battle mic switch (L : at normal, H : at karaoke battle)	64	CDGM	O	Graphics mode input of graphics decoder
25	THRU (DASP7)	I	H : through the digital audio L : DSP input of the digital audio	65	G-CS	O	Graphics decoder (PDC016A) communication requirement output
26	I/O CLKOC1	O	I/O expander clock output (for IC201)	66	C-CS	O	Coloring IC communication requirement output
27	I/O DATA1	O	I/O expander data output (for IC201)	67	XSCK	I/O	Serial communication clock
28	P4/1	O	Not used (N.C)	68	S-MTOF	I	Serial communication data input
29	DOG FOOD	O	Pulse output for WATCH DOG	69	S-FTOM	O	Serial communication data output
30	M	O	Display segment output	70	XRESET (OUT)	O	Mother board reset output
31	L						
32	K						
33	J						
34	I						
35	H						
36	G						
37	F						
38	E						
39	D						
40	VDISP	I	FL power supply (-29V)	71	XCS	O	Communication requirement output of character generator (PD0198A)
				72	XDRDY (DASP7)	I	DSP (PM0007A) L : data reception OK
				73	XREQ (DASP7)	I	DSP (PM0007A) L : data transmission OK
				74	A/D (DASP7)	O	Transmission data switch of DSP (PM0007A) (H : address, L : data)
				75	CS (DASP7)	O	DSP (PM0007A) communication requirement output
				76	AVcc	I	+5V
				77	KIN0	I	Key data input (AD input)
				78	KIN1		
				79	KIN2		
				80	Model select	I	Model select switch port (AD input)

■ PD0245A2 (MOTHER ASSY : IC101)

• MECHANISM CONTROL IC

• Pin Arrangement (Top View)



• Pin Function

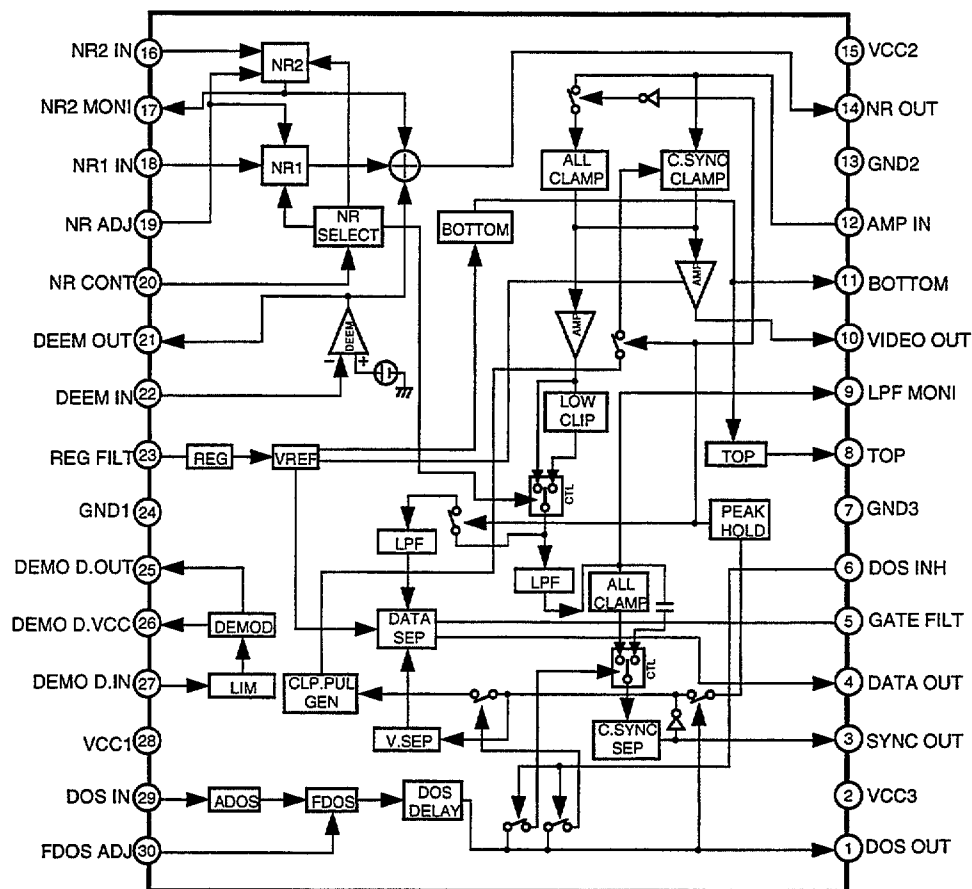
No.	Pin Name	I/O	Function
1	VCC	I	Power supply pin Apply 5V±10%
2	RFCORR	O	RF correction switch signal output H : Gain UP CD, CDV-A : Low, CAV inner circuit gain up, others are High
3	MUTE	O	Audio mute control signal output of audio system L : Release MUTE H : MUTE
4	SRDMUTE	O	Mute control signal output for AC3 Release MUTE during playback. L : Release MUTE H : MUTE
5	XTLT_ON	O	Tilt operation information L : During operation In the OPEN/CLOSE, the voltage will up about 10% by using this port.
6	TILTERR	I A/D	This signal is A/D converted as the tilt servo control input. Control the tilt motor so that this signal becomes 2.5V.
7	TBALERR	I A/D	Tracking balance error signal input This signal is A/D converted as the tracking offset control input.
8	SLDERR	I A/D	This signal is A/D converted as the slider servo control input. Control the tilt motor so that this signal becomes 2.5V.
9	SLDPOS	I A/D	Pickup position detection switch input Detect the position by reading A/D input value which each switches are resistance divided.
10	XFOK	I	Focus servo lock signal input L : Lock H : Unlock Use for lock detection of focus servo.
11	SINGLE	I	This information transmit to mode control by communication. L : Port high H : Port low Use for the signal mode
12	TBALDRV	O PWM	Output the tracking offset signal to PWM output, then use for auto tracking offset. 910 μsec period, tri-state control H, L, Z
13	XCD	O	LD/CD switch signal output L : CD H : LD
14	XPLAY	O	Signal output during spindle servo L : During servo H : During acceleration, brake and stop
15	SQOUT	I	Command data input from DSP Read out SUBQ
16	SO3	O	Serial 3 data signals output Serial signals are common used and signal distinguishes from the latch signals (DVPLAT and TLAT).
17	SCK3	O	Serial 3 clock signals output
18	SLDRV	O PWM	Slider control signal output 5V=FWD, 0V=REV, 2.5V=STOP 910 μsec period, tri-state control H, L, Z

No.	Pin Name	I/O	Function
19	SI1	I	Data input from the mode control IC
20	SO1	O	Serial data output to the mode control IC
21	SCK1	I/O	Clock for serial communication with the mode control IC Becomes input mode without communicate with the mode control IC
22	TZC	I INT	Tracking error zero cross signal input Monitor this signal when searching track count in the miss clamp detection.
23	SBSY	I	Interrupt input for reading sub-code Q data from DSP
24	TILTDRV	I/O	LOAD/TILT control output 0.5V-Tray IN, OUT/Tilt DOWN, UP 2.5V-STOP Use for tilt servo that tilt drive is PWM output.
25	XANA	O	Digital/Analog audio switch signal output L : Analog H : Digital
26	XPBV	I	Playback vertical sync. signal input of LD/CDV L : During vertical sync.
27	CNVss	I	Ground for A/D conversion
28	XRESET	I	Reset signal input L : Reset H : Release reset Mode control is controlled.
29	XIN	I	9MHz clock oscillation input
30	XOUT	O	9MHz clock oscillation output
31	N.C.	O	Not used
32	GND	I	Ground
33	SW1	I	Switch input for Loading/Tilt position detection
34	SW3		
35	SW2		
36	AV1GMOD	I	AV1 gijutu mode When this port set to H, anti-shock control will be effective by Address C-bit2 from the mode control.
37	FG	I	Spindle motor FG signal input 16 outputs per rotation Used after dividing by 2 in microprocessor
38	DATA	I	Input pin for Phillips code decoder with built in mechanism controller
39	XPBH	I	Playback H-SYNC input for Phillips code decoder
40	XPBV	I	Playback V-SYNC input for Phillips code decoder
41	TURNA	I	Turn switch input H : side A L : side B
42	XSURRND	O	Surround control H : OFF L : ON
43	XVCECAN	O	Voice cancel output H : OFF L : Cancel
44	MEMORY	I	Memory model discrimination H : Memory model L : Non-memory model
45	DOCINH	O	Control the clamp pulse and clamp killer by tri-state value
46	DETPOW	I	Use for power abnormal signal input port. L : Normal H : Abnormal
47	NRINH	O	Control output of the noise reduction switch signal output L : CX ON H : CX OFF
48	REFLOCK	I	Reference signal input from DVP L : Phase not aligned H : Phase aligned (Non-memory)
49	SQ1	O	Analog audio switch signal output 1/L L : Squelch OFF H : Squelch ON
50	SQ2	O	Analog audio switch signal output 2/R L : Squelch OFF H : Squelch ON
51	XCX	O	Analog audio CX noise reduction switch signal output L : CX ON H : CX OFF
52	XFTS	O	Serial command output switch signal output of DSP/others L : DSP H : others
53	PCTLVL	O	Signal output for the picture quality adjustment L : SHARP2 (strong) H : SHARP1 (weak)
54	DVPLAT	O	PD0234 serial latch signal output Latches at falling edge.
55	TBCLOCK	I	Spindle lock signal input L : Unlock H : Lock
56	TLATCH	O	DAC & digital filter PD2026B serial control latch signal output Latches at falling edge.
57	PCTCTL	O	Outline correction signal output L : Correction OFF H : Correction ON
58	DEEMPA	O	DSP deemphasis control L : OFF H : ON
59	DETAMP	I	Spindle over-current detection signal input L : Over current H : Normal
60	FSEQ	I	Subcode sync. conformity detection signal input L : Not conformity H : Conformity
61	THOLD	I	Track jump accelerating / decelerating signal input L : other H : accelerating / decelerating
62	WRQ	I	Subcode Q reading OK signal input L : NG H : OK This pin will be H when Subcode Q data passed by CRC check.
63	RWC	O	DSP read / write command signal output L : Read H : Write
64	SHAKE	I/O	Handshake signal for data communication with the mode control IC This pin is the bilateral data line and each microprocessor control the Input / Output.

■ LA7134M (MOTHER ASSY : IC400)

• VIDEO IC

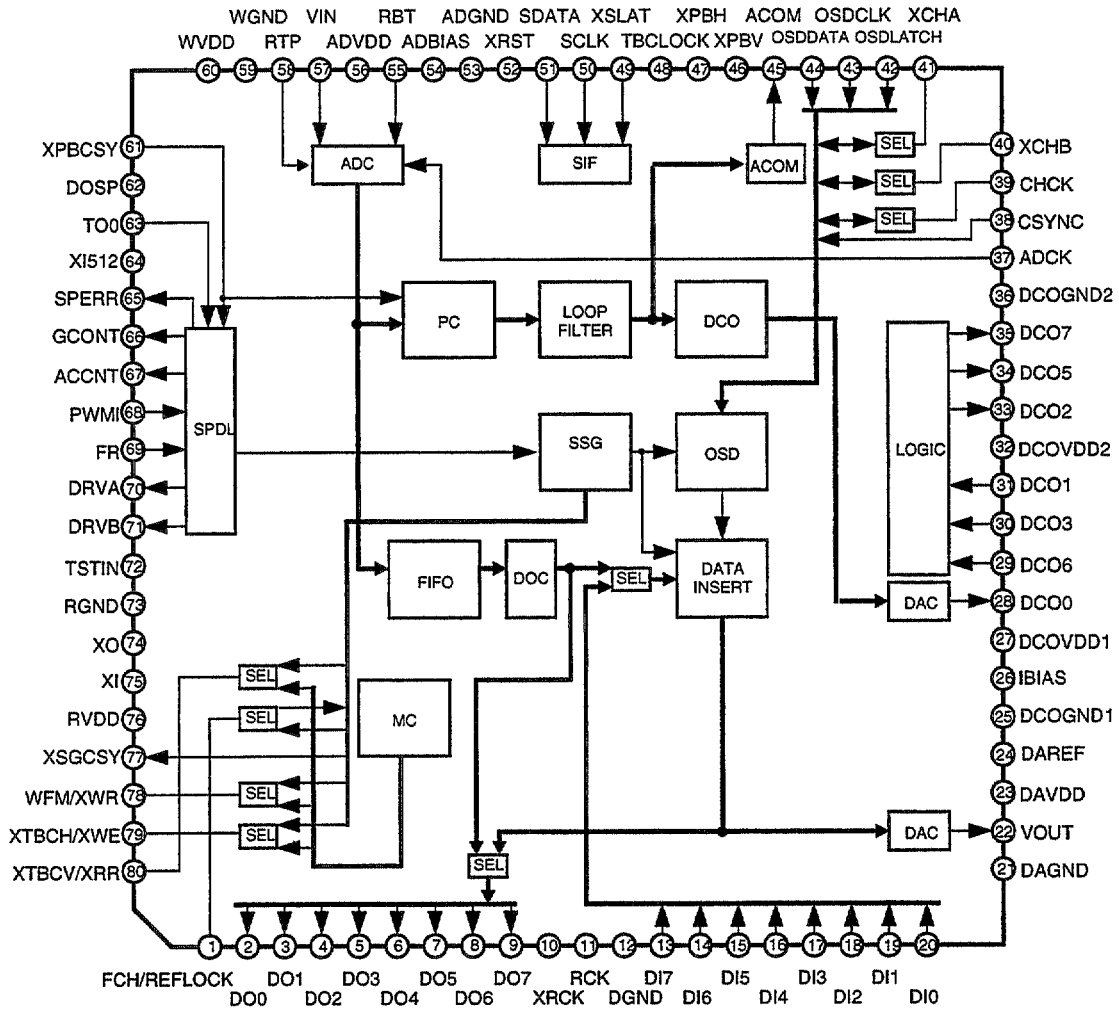
• Block Diagram



■ PD0234A (MOTHER ASSY : IC500)

• DVP

• Block Diagram



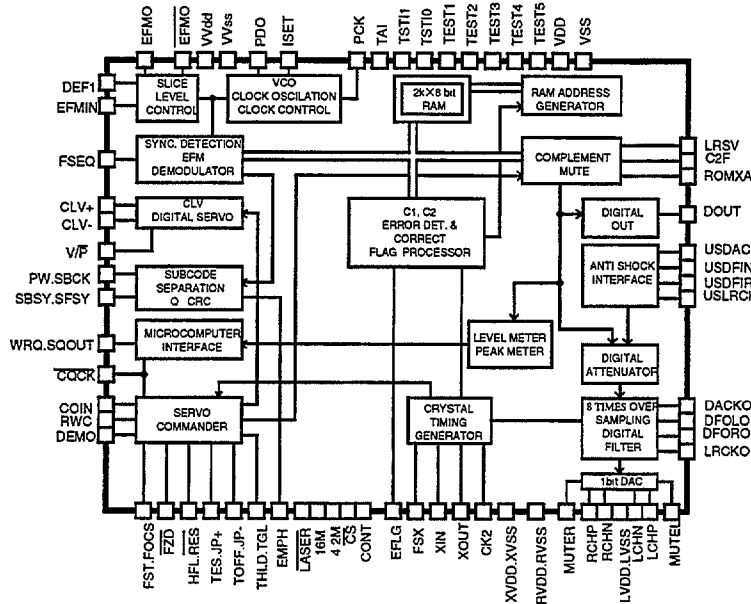
## • Pin Function

No.	Pin Name	I/O	Function	
1	FCH	I	MEMSYS:1	Switch the field of SSG by "H"
	REFLOCK	O	MEMSYS:0	Outputs "H" when the phase difference of H/V sync. signal associated with the time-base-corrected video signal and those associated with SSG is small enough.
2	DO0	O		Outputs the digital data of the time-base-corrected video signal for the memory system. When using the internal memory controller (MEMSYS:1 & EXTMC:0), output for field memory and external output are common used. Perform the data output setting with the serial command. DO7 : MSB , DO0 : LSB
3	DO1			
4	DO2			
5	DO3			
6	DO4			
7	DO5			
8	DO6			
9	DO7			
10	XRCK	O		Inverting outputs the CLK of the reading system. When using the internal memory controller (MEMSYS:1 & EXTMC:0), phase is able to control with the serial command.
11	RCK	O		Outputs the CLK of the reading system. When using the internal memory controller (MEMSYS:1 & EXTMC:0), phase is able to control with the serial command.
12	DGND	—		Ground of digital system Connect to GND.
13	DI7	I		Digital video signal input Outputs the field memory when using the internal memory controller (MEMSYS:1 & EXTMC:0) and inputs the external signal when using the external A/D. DI7 : MSB , DI0 : LSB
14	DI6			
15	DI5			
16	DI4			
17	DI3			
18	DI2			
19	DI1			
20	DI0			
21	DAGND	—		Ground for DAC Connect to GND.
22	VOU	O		DAC output of the time-base-corrected video signal
23	DAVDD	—		Power supply for DAC Connect to GND.
24	DAREF	—		Reference pin for DAC Normally, decoupling to the DAGND through the 0.1 $\mu$ F laminated ceramic capacitor.
25	DCOGND1	—		Ground for DCO Connect to GND.
26	IBIAS	—		Current setting pin of the bias circuit Normally, connect to DAGND through the 10k $\Omega$ resistor.
27	DCOVDD1	—		Power supply for DCO Connect to +5V.
28	DCO0	O		DCO output pin Outputs a fsc in synchronization with the input video signal. This signal is multiplied by 4 to produce CLK of writing system.
29	DCO6	I		Waveform shaping input pin 6 Inputs a signal obtained by delaying the DCO5 output signal by 35 ns. (to be self biased)
30	DCO3	I		Waveform shaping input pin 3 Inputs a signal obtained by delaying the DCO5 output signal by 70 ns. (to be self biased)
31	DCO1	I		Waveform shaping input pin 1 Inputs a DCO0 output signal via the fsc BPF. (to be self biased)
32	DCOVDD2	—		Power supply for output multiplied by 4 Connect to +5V.
33	DCO2	O		Waveform shaping input pin 2 Outputs a signal obtained through waveform shaping of the DCO0 output signal.
34	DCO5	O		Waveform shaping input pin 5 Outputs a signal multiplied by 2.
35	DCO7	O		Waveform shaping input pin 7 Outputs a signal multiplied by 4.
36	DCOGND2	—		Ground for output multiplied by 4 Connect to GND.
37	ADCK	I		CLK input for writing system Inputs DCO7 output signal via a 4fsc BPF. (to be self biased)
38	CSYNC	I		Composite sync. input for character generator When using the OSD for single (EXTMIX:1), input the composite sync. for generating the character.
39	CHCK	I	EXTMIX :1	CLK input for character generator Inputs 2fsc.
	CHCK	O	EXTMIX :0	CLK output for character generator Outputs 2fsc.
40	XCHB	O	EXTMIX :1	Blanking signal output
	XCHB	I	EXTMIX :0	Blanking signal input Inputs "L" when inserting the blanking signal.
41	XCHA	O	EXTMIX :1	Character signal output
	XCHA	I	EXTMIX :0	Character signal input Inputs "L" when inserting the character signal.
42	OSDLATCH	I		Latch input for OSD Serial transmission of the OSD control data is able to accept by this pin set to "L".
43	OSDCLK	I		CLK input for reading the OSD data

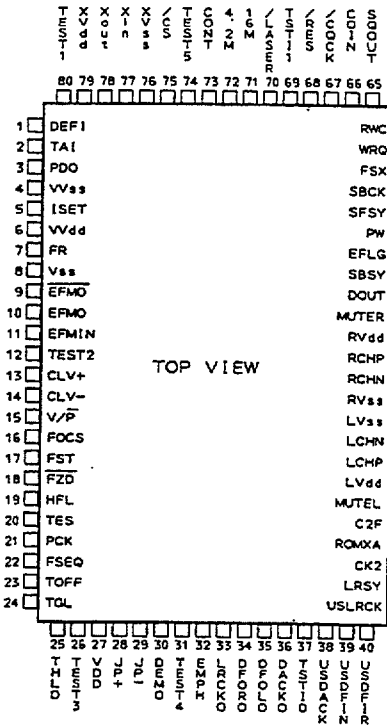
No.	Pin Name	I/O	Function
44	OSDDATA	I	Control data input for OSD Read the data in synchronization with CLK which input to OSDCLK pin.
45	ACOM	O	Jitter correction signal output for analog audio Use for cancelling the jitter element of analog audio.
46	XPBV	O	PB system V sync. output Outputs the signal obtained by separating V sync. signal from the signal at pin 61 (XPBCSY) with negative logic.
47	XPBH	O	PB system H sync. output Outputs the signal obtained by separating H sync. signal from the signal at pin 61 (XPBCSY) with negative logic.
48	TBCLOCK	O	PLL lock detection signal output Outputs "H" when the spindle loop and the TBC loop are locked.
49	XSLAT	I	Serial interface latch input Gives the latch timing for data applied to the serial interface. Latches at "L".
50	SCLK	I	CLK input for the serial interface SDATA value will be read at the rising edge.
51	SDATA	I	Data input pin for the serial interface
52	XRST	I	System reset input Input for initializing the internal register of IC with negative logic.
53	ADGND	—	Ground for ADC Connect to GND.
54	ADBIAS	—	NC or connect to ADGND.
55	RBT	I	ADC bottom reference input Gives the bottom reference voltage of ADC.
56	ADVDD	—	Power supply for ADC Connect to +5V.
57	VIN	I	ADC input Inputs the composite video signal.
58	RTP	I	ADC top reference input Gives the top reference voltage of ADC.
59	WGND	—	Ground for writing system Connect to GND.
60	WVDD	—	Power supply for writing system Connect to +5V.
61	XPBCSY	I	Inputs the composite sync. signal of PB system with negative logic.
62	DOSP	I	Inputs the dropout detection pulse with positive logic.
63	TOO	I	Inputs the tracking-servo open signal with positive logic.
64	XI512	O	Outputs a 1/512th division of the CLK of reading system.
65	SPERR	O	PFD error output of the spindle error It outputs the result of comparison (PFD) between PBH and reading system H in tristate.
66	GCONT	O	Spindle gain control output Outputs a PWM signal according to the serial-command specified value.
67	ACCNT	O	Acceleration control output Tristate output of the acceleration/deceleration signal, which depends either on the forced acceleration/deceleration signal, the error detection by serial command or error detection by H sync. signal.
68	PWMI	I	Spindle error PWM input Inputs a signal obtained through the voltage comparison between the spindle error signal which has passed through a loop filter and the chopping wave.
69	FR	I	Spindle error direction element input Inputs a signal obtained through the voltage comparison between the spindle error which has passed through a loop filter and the destination voltage.
70	DRVA	O	Output for driving the spindle motor driver It is applicable to either a brush or brushless motor, selection of which is by a serial command.
71	DRVB		
72	TSTIN	I	Input for IC test Fixed to "L".
73	RGND	—	Ground for reference system Connect to GND.
74	XO	O	Connect the X'tal. Connect the 8fsc when using the internal memory controller (MEMSYS:1 & EXTMC:0) and the 4fsc is at others.
75	XI	I	
76	RVDD	—	Power supply for reference system Connect to +5V.
77	XSGCSY	O	Internal SSG composite sync. output Outputs the composite sync. signal of the internal SSG with negative logic. It can be delayed by a serial command with a specified delay duration.
78	WFM	O	MEMSYS:1 & EXTMC:1 Field monitor output of write system Outputs "H" for the odd field.
	XWR	O	MEMSYS:1 & EXTMC:0 Write reset output Outputs a signal to initializing the writing address of field memory. Outputs "L" pulse for 1CLK on every field of write system. Connect to XWRST input of field memory.
79	XTBCH	O	MEMSYS:1 & EXTMC:1 TBC H sync. output Outputs the time-base-corrected H sync. signal with negative logic.
	XWE	O	MEMSYS:1 & EXTMC:0 Write enable output Control the writing operation of field memory. "L" for enable and "H" for disable. Connect to XWE input of field memory.
80	XTBCV	O	MEMSYS:1 & EXTMC:1 TBC V sync output Outputs the time-base-correcter V sync. signal with negative logic.
	XRR	O	MEMSYS:1 & EXTMC:0 Read reset output Outputs a signal to initializing the reading address of field memory. Outputs "L" pulse for 1CLK on every each field of read system. Connect to XRRST input of field memory.



**LC78621E (MOTHER ASSY : IC802)**  
**• SERVO CONTROLLER & EFM DEMODULATOR**  
**• Block Diagram**



**• Pin Arrangement (Top View)**



**• Pin Function**

No.	Pin Name	I/O	Function
1	DE-FI	I	Defect detection signal (DEF) input pin ("L" at not used)
2	TAI	I	Test input pin with pull-down resistor
3	PDO	O	Phase comparison output for controlling the external VCO
4	V Vss	—	Power supply for PLL and internal VCO Normally, 0V.
5	ISET	AI	Connect a resistor for current adjustment of PDO output
6	V VDD	—	Ground for internal VOO Normally, 5V.
7	FR	AI	For VCO frequency range adjustment
8	Vss	—	Ground for digital system Normally, 0V.
9	EFMO	O	EFM signal inversion output
10	EFMO	O	EFM signal output
11	EFMIN	I	EFM signal input
12	TEST2	I	Test input pin with pull-down resistor
13	CLV+	O	Output pin for controlling the spindle servo Acceleration for CLV+ is "H" and Deceleration for CLV- is "H".
14	CLV-	O	Tristate output is able to output with command
15	V/P	O	Automatic switching monitor output of rough servo/phase control H : Rough servo , L : Phase control mode
16	FOCS	O	Output pin for focus servo ON/OFF Focus servo ON for "L"
17	FST	O	Focus start pulse output (open drain output)
18	F2D	I	Focus error zerocross signal input ("L" at not used)
19	HFL	I	Track detection signal input (schmitt input)
20	TES	I	Tracking error signal input (schmitt input)
21	PCK	O	Clock monitor output for EFM data playback (4.3218MHz at phase clock)
22	FSEQ	O	Sync. signal detection output Becomes "H" when the sync. signals between the detected sync. signal from EFM signal and internal generated sync. signal are aligned.
23	TOFF	O	Tracking OFF output
24	TGL	O	Output pin for output tracking gain switch Gain up for "L".
25	THLD	O	Tracking hold output
26	TEST3	I	Test input pin with pull-down resistor

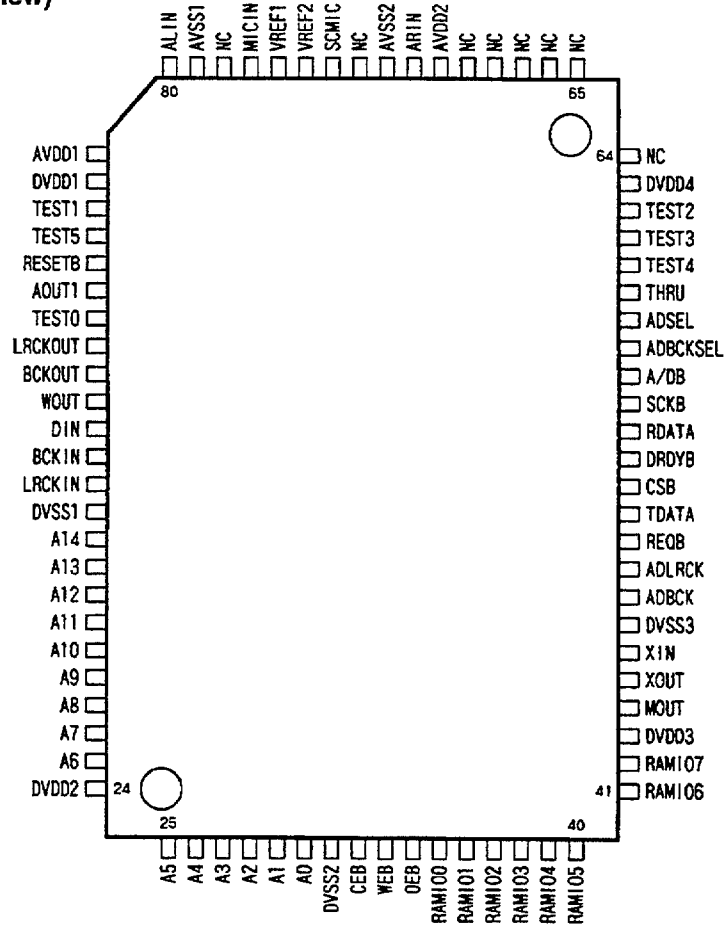
# CLD-3760KV

No.	Pin Name	I/O	Function		
27	VDD		Power supply for digital system Normally, 5V.		
28	JP+	O	Output pin for track jump When JP+ is "H" , Acceleration in the outer direction jump or Deceleration in the inner direction jump.		
29	JP-		When JP- is "H" : Acceleration in the inner direction jump or deceleration in the outer direction jump. Tristate output is able to output with the bcommand.		
30	DEMO	I	Sound output function input for the player adjustment with pull-down resistor		
31	TEST4	I	Test input pin with pull-down resistor		
32	EMPH	O	Deemphasis monitor output H : during playback the deemphasis disc		
33	LRCKO	O	Digital filter output		Word clock output
34	DFORO		R ch data output		
35	DFOLO		L ch data output		
36	DACKO		Bit clock output		
37	TST10	O	Test output pin Open (Normally, output "L")		
38	USDACK	I	Antishock correspondence input		Bit clock input
39	USDFIN		("L" at not used)		L ch and R ch data
40	USDFIR		("L" at not used)		Test input pin Normally, "L".
41	USLRCK	I	Antishock correspondence	Input word clock input ("L" at not used)	
42	LRSY	O	ROMXA		L/R clock output
43	CK2		correspondence		Bit clock output
44	ROMXA		output		DACLK (at RES)
45	C2F				Polarity inversion (CK2COK mode)
46	MUTEL	O	For1bit DAC		Mute output
47	L VDD				Power supply for L ch Normally, 5V.
48	LCHP	O			L ch P output
49	LCHN	O			L ch N output
50	LVSS				Ground for L ch Normally, 0V.
51	RVSS				Ground for R ch Normally, 0V.
52	RCHN	O			R ch N output
53	RCHP	O			R ch P output
54	RVDD				Power supply for R ch Normally, 5V.
55	MUTER	O			Mute output
56	DOUT	O	Digital OUT output		
57	SBSY	O	Perion signal output of subcode block		
58	EFLG	O	Correction monitor output of C1, C2, single and double		
59	PW	O	Subcode P, Q, R, S, T, U and W output		
60	SFSY	O	Period signal output of subcode frame Rise down when the subcode is stndbyed.		
61	SBCK	I	Subcode reading clock input (schmitt input)		
62	FSX	O	7.35kHz sync. signal output which is divided the frequency from the crystal resonator.		
63	WRQ	O	Standby output of subcode Q output		
64	RWC	I	Read / Write control input		
65	SQOUT	O	Subcode Q output		
66	COIN	I	Command input from the microcomputer		
67	CQCK	I	Command input take in clock or subcode take out clock input from SQOUT (schmitt input)		
68	RES	I	Chip reset input Once turn to "L" at the power ON		
69	TST11	O	Test input pin Open (Normally, output "L")		
70	LASER	O	Laser ON/OFF output Control with the serial data command from the microcomputer		
71	16M	O	16.9344MHz output However, output 33.8688MHz in the fourfold speed playback mode.		
72	4.2M	O	4.2336MHz output		
73	CONT	O	Auxiliary output Control with the serial data command from the microcomputer.		
74	TEST5	I	Test input pin with pull-down resistor		
75	CS	I	Chip select input with pull-down resistor		
76	XVSS		Ground for the crystal resonator Normally, 0V.		
77	XIN	I	Connect the 16.9344MHz crystal resonator.		
78	XOUT	O	Connect the 33.8688MHz crystal resonator in the fourfold speed playback system.		
79	XVDD		Power supply for the crystal resonator Normally, 5V.		
80	TEST1	I	Test input pin with pull-down resistor		

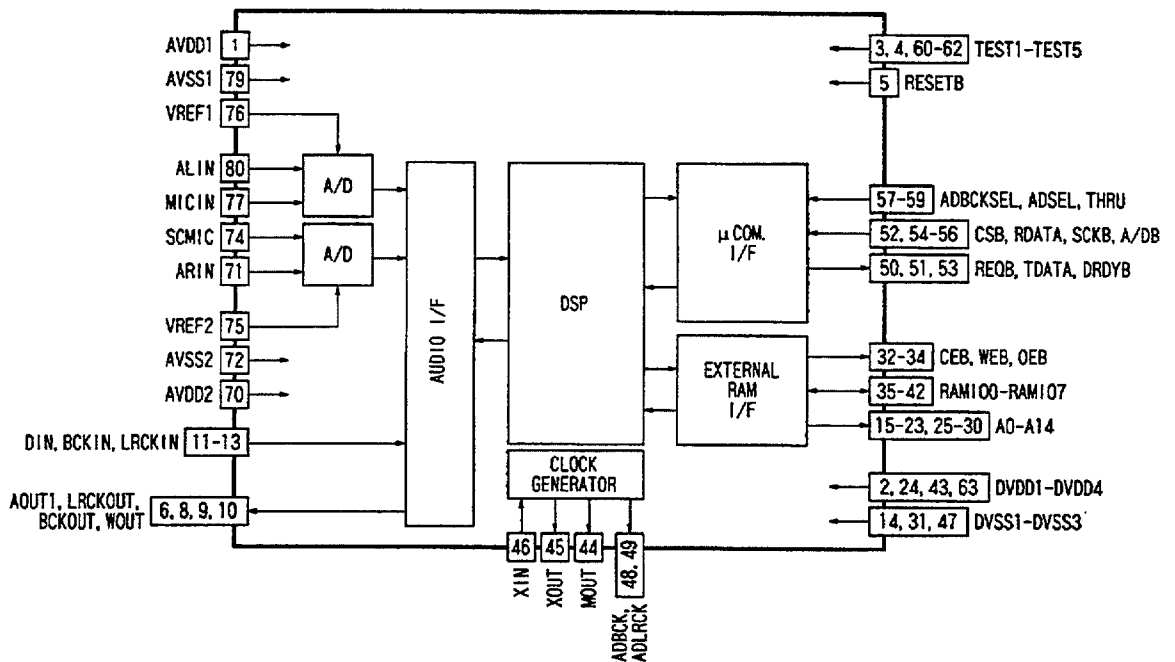
■ PM0007A (KRAB ASSY : IC101)

• DASP IC

• Pin Arrangement (Top View)



• Block Diagram



## • Pin Function

No.	Name	I/O	Function	No.	Name	I/O	Function
1	AVDD1	—	Power supply pin for A/D converter 1	41	RAMIO6	IOD	Data input/output pins for external Pseudo-SRAM
2	DVDD1	—	Power supply pin 1 for logical block	42	RAMIO7		
3	TEST1	IC	Selection input pin for test mode	43	DVDD3	—	Power supply pin 3 for logical block
4	TEST5		Normally fixed at "H".	44	MOUT	OC	Master clock output pin
5	RESETB	IS	Reset input pin. Reset when "L"	45	XOUT	OCX	Crystal oscillator connection pin
6	AOUT	OC	Audio serial data output pin 1	46	XIN	ICX	
7	TEST0	OC	Test data output pin	47	DVSS3	—	Ground pin 3 for logical block
8	LRCKOUT	OC	LR clock output pin "H" : Lch, "L" : Rch	48	ADBCK	IC	Bit clock output pin for external A/D converter
9	BCKOUT	OC	Bit clock output pin Outputs 32fs	49	ADLRCK	IC	LR clock output pin for external A/D converter
10	WOOUT	OC	Word clock output pin	50	REQB	OT	Data transfer request output pin for microcomputer.
11	DIN	IC	Digital audio input pin	51	TDATA	OT	Data output pin for microcomputer
12	BCKIN	IC	Bit clock input pin	52	CSB	IC	Chip select input pin for microcomputer interface
13	LRCKIN	IC	LR clock input pin	53	DRDYB	OT	Signal receive condition output pin for microcomputer.
14	DVSS1	—	Ground pin 1 for logical block	54	RDATA	IC	Serial data input pin from microcomputer
15	A14	OC	Address output pins for external Pseudo - SRAM	55	SCKB	IC	Serial clock input pin for receiving data from microcomputer
16	A13			56	A/DB	IC	Address/data judgement pin for data from microcomputer
17	A12			57	ADBCKSEL	IC	Output selection input pin for ADBCK pin 32fs/64fs
18	A11			58	ADSEL	IC	Digital/Analog audio selection input pin
19	A10			59	THRU	IC	Setting pin for through mode. Normally fixed at "L"
20	A9			60	TEST4	IC	Selection input pins for test mode. Normally fixed at "H"
21	A8			61	TEST3		
22	A7			62	TEST2		
23	A6			63	DVDD4	—	Power supply pin 4 logical block
24	DVDD2	—	Power supply pin 2 for logical block.	64	NC	Not connected	
25	A5	OC	Address output pins for external Pseudo - SRAM.	65	NC		
26	A4			66	NC		
27	A3			67	NC		
28	A2			68	NC		
29	A1			69	NC		
30	A0			70	AVDD2	—	Power supply pin for A/D converter 2
31	DVSS2	—	Ground pin 2 for logical block	71	ARIN	IA	Rch input pin of analog audio
32	CEB	OC	Chip enable pin for external Pseudo-SRAM	72	AVSS2	—	Ground pin for A/D converter 2
33	WEB	OC	Write enable pin for external Pseudo-SRAM	73	NC	—	Not connected
34	OEB	OC	Output enable pin for external Pseudo-SRAM	74	SCMIC	IA	Score microphone input pin
35	RAMIO0	IOD	Data input/output pins for external Pseudo-SRAM	75	VREF2	IAR	Reference voltage input pin for A/D converter 2
36	RAMIO1			76	VREF1	IAR	Reference voltage input pin for A/D converter 1
37	RAMIO2			77	MICIN	IA	Microphone input pin
38	RAMIO3			78	NC	—	Not connected
39	RAMIO4			79	AVSS1	—	Ground pin for A/D converter 1
40	RAMIO5			80	ALIN	IA	Lh input pin of analog audio

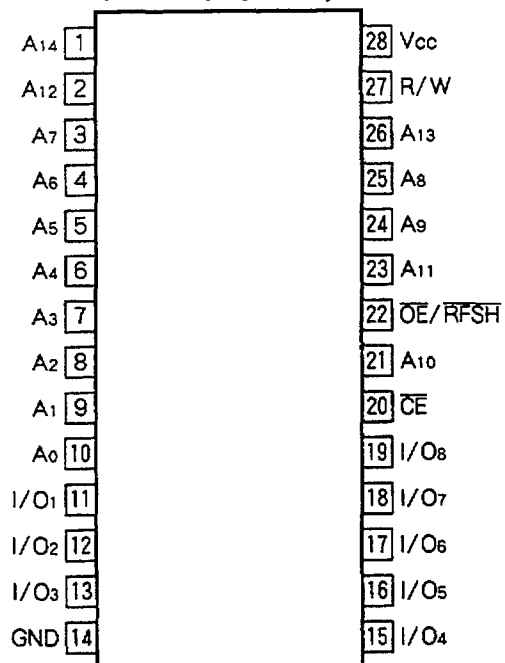
Note IC : CMOS input  
 IOD : TTL input, CMOS output, Built-in pull-down resistor  
 IAR : Analog input, Reference voltage input  
 OCX : Oscillator, CMOS output  
 IS : Schmidt input

IO : TTL input, CMOS output  
 IA : Analog input  
 ICX : Oscillator, CMOS input  
 OT : Tri-state output  
 OC : CMOS output

■ LH5P832N-12 (KRAB ASSY : IC102)

• 256k PSEUDO-SRAM

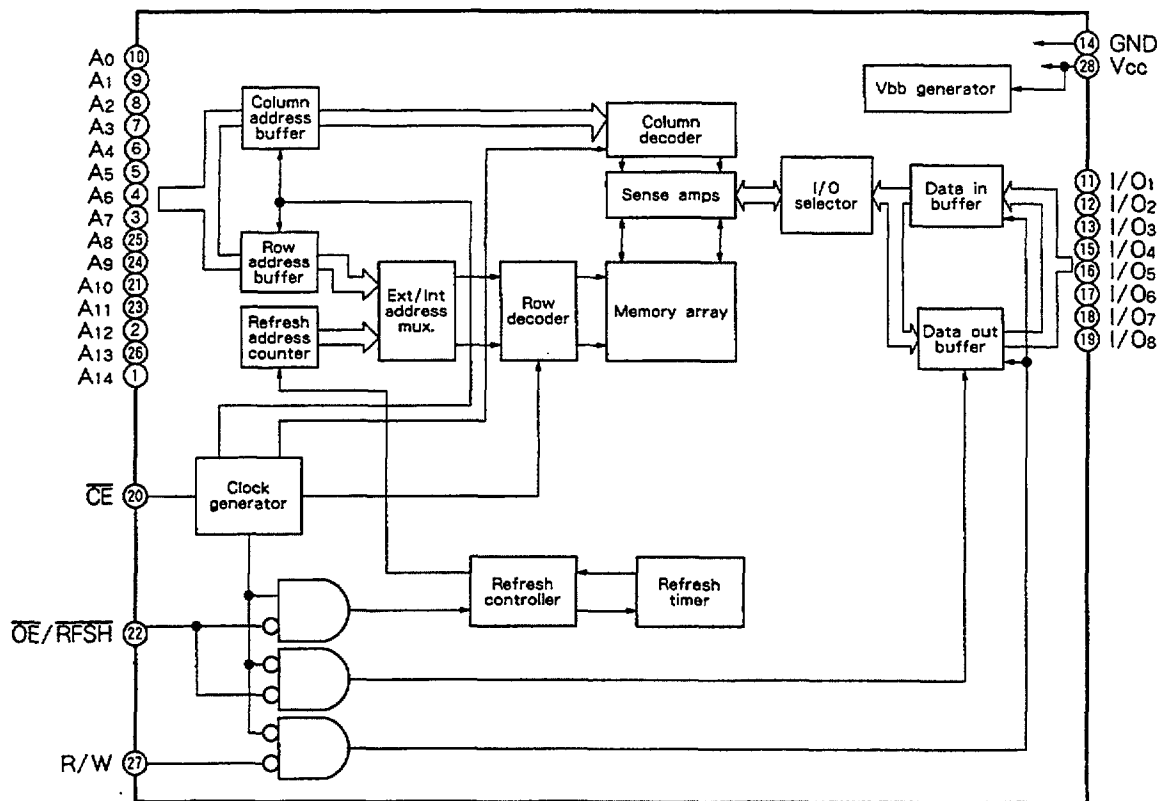
• Pin Arrangement (Top View)



• Pin Function

No.	Pin Name	Function
1-10, 21, 23-26	A0-A14	Address input
27	R/W	Read/write input
22	$\overline{OE}/RFSH$	Output enable?refresh
20	$\overline{CE}$	Chip enable
11-13, 15-19	I/O1-I/O8	Data input/output
14	GND	Ground
28	Vcc	Power supply

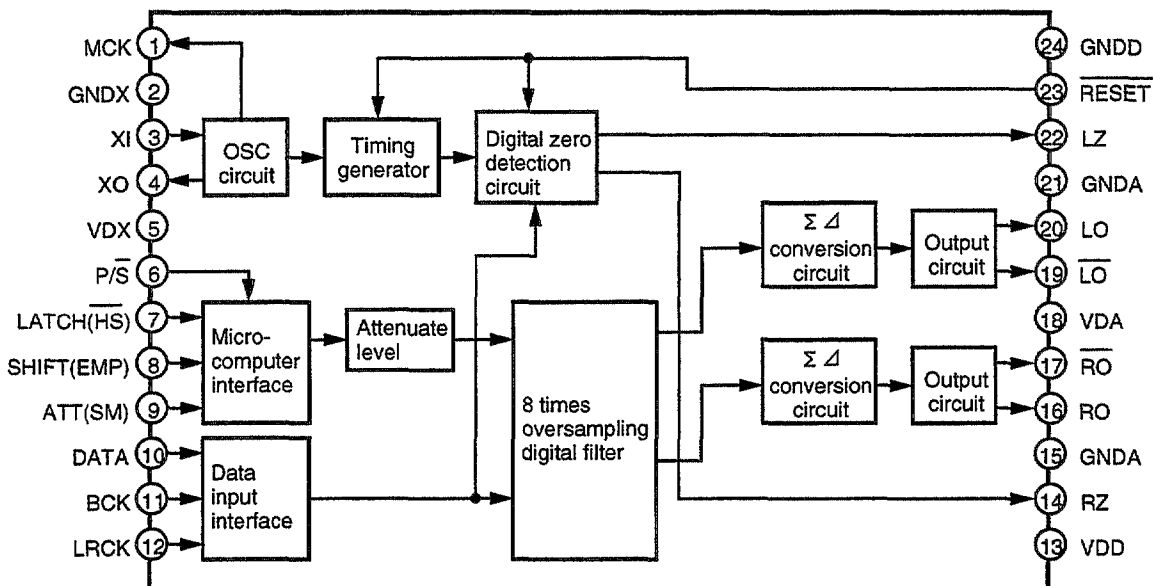
• Block Diagram



## TC9400F (KRAB ASSY : IC301)

### • D/A CONVERTER

#### • Block Diagram



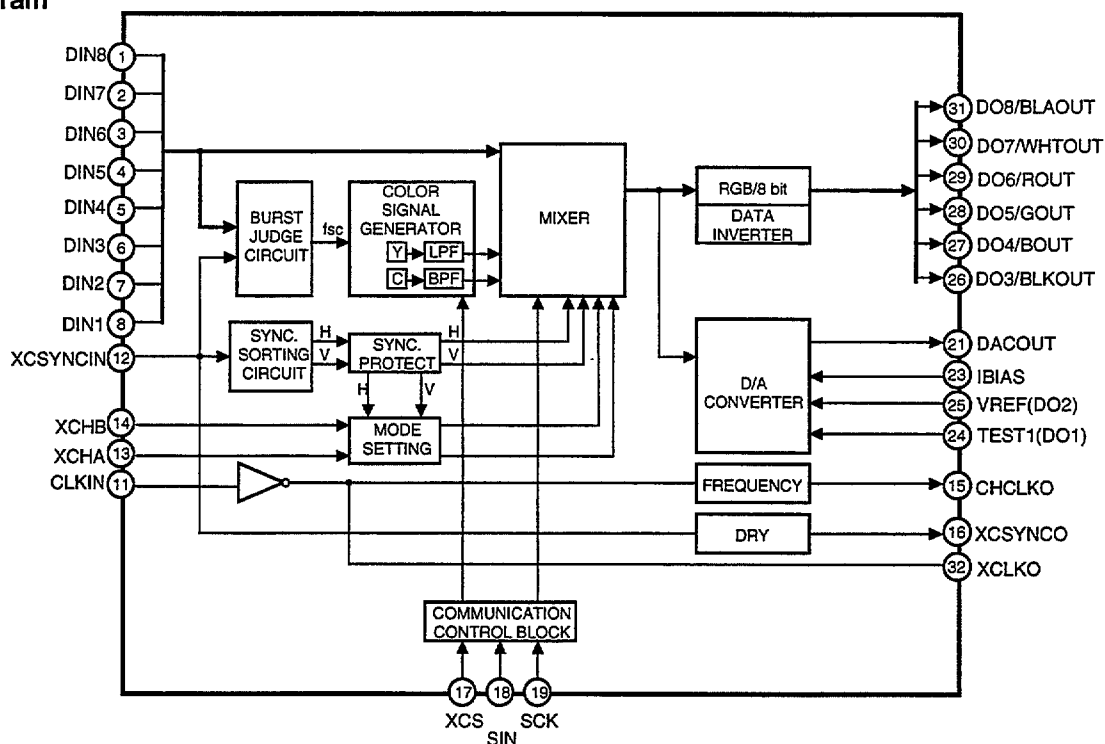
#### • Pin Function

No.	Pin name	I/O	Function
1	MCK	O	System clock supply pin
2	GNDX	—	Ground pin of oscillation section
3	XI	I	Crystal oscillator connection pin. Generates a clock for system.
4	XO	O	
5	VDX	—	Power supply pin for oscillation section
6	P/S	I	Parallel/serial control switching pin (Schmitt input and pull-up resistor)
7	LATCH (HS)	I	In the serial control, data latch signal input pin for attenuator. In the parallel control, normal/double speed mode selection pin. (Schmitt input and pull-up resistor)
8	SHIFT (EMP)	I	In the serial control, shift clock input pin for attenuator. In the parallel control, deemphasis filter ON/OFF control pin. (Schmitt input and pull-up resistor)
9	ATT (SM)	I	In the serial control, data I input pin for attenuator. In the parallel control, soft mute control pin. (Schmitt input and pull-up resistor)
10	DATA	I	Data input pin (Schmitt input)
11	BCK	I	Bit clock input pin (Schmitt input)
12	LRCK	I	LR clock input pin (Schmitt input)
13	VDD	—	Power supply pin for digital section
14	RZ	O	R-ch digital zero detection output pin
15	GNDA	—	Ground pin for R-ch analog section
16	RO	O	R-ch data positive-phase output pin
17	RO	O	R-ch data negative-phase output pin
18	VDA	—	Power supply pin for analog section
19	LO	O	L-ch data negative-phase output pin
20	LO	O	L-ch data positive-phase output pin
21	GNDA	—	Ground pin for L-ch analog section
22	LZ	O	L-ch digital zero detection output pin
23	RESET	I	Reset signal input pin
24	GND	—	Ground pin

■ PD0239A (GRPB ASSY : IC201)

• COLOR ADDITION PROCESSOR

• Block Diagram



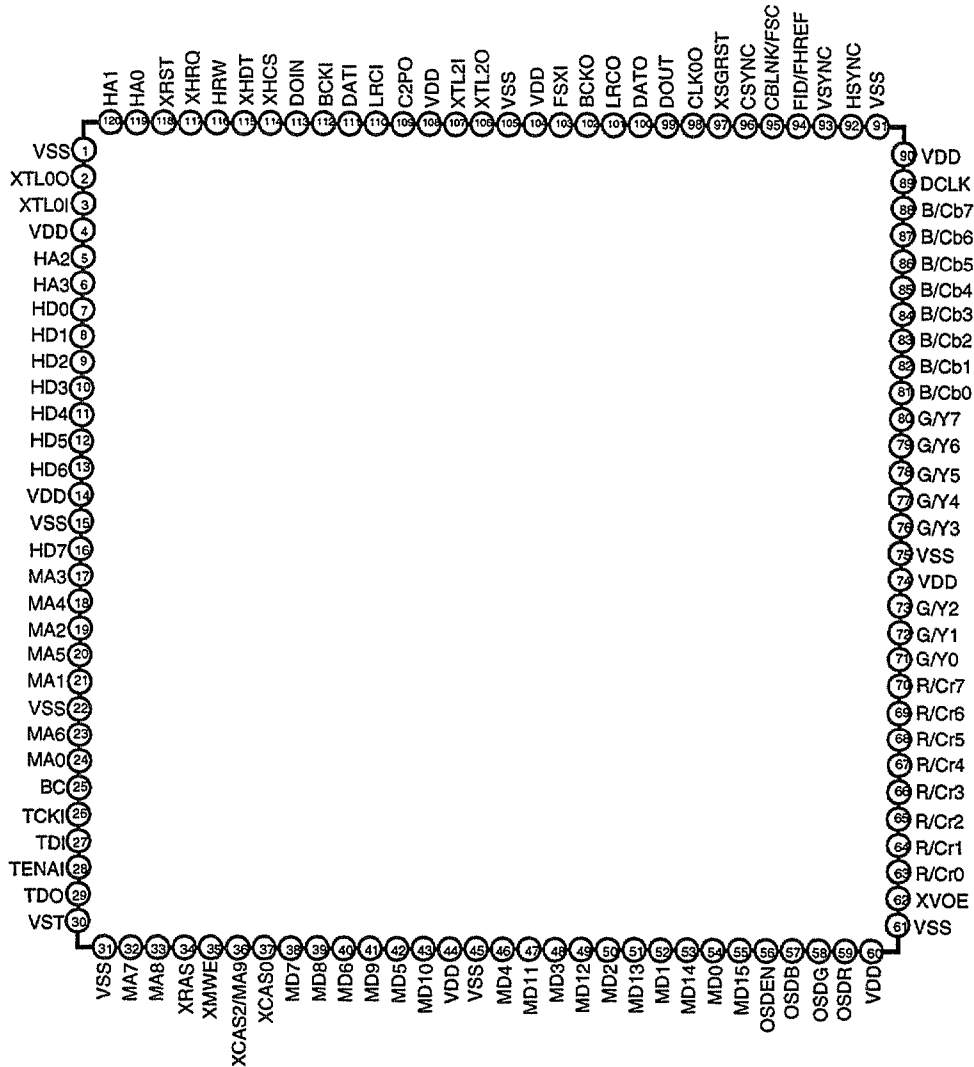
• Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	DIN8	I	(MSB) Composite video data input	17	XCS	I	Chip select input Serial data conytol input
2	DIN7	I		18	SIN	I	Serial data input
3	DIN6	I		19	SCK	I	Clock input for serial data input
4	DIN5	I		20	AVDD	—	Analog section power supply for DAC (+5V)
5	DIN4	I		21	DACOUT	O	Composite video signal output (DAC output)
6	DIN3	I		22	AVss	—	Analog section GND for DAC
7	DIN2	I		23	IBIAS	I	Connect a resistor for DAC reference current setting
8	DIN1	I		(LSB)	24	TEST1/DO1	I/O
9	DVss	—	GND for digital section	25	TEST2/DO2	I/O	Reference voltage input for DAC/composite video data output
10	DVDD	—	+5V power supply for digital section	26	BLKO/DO3	O	OSD timing (blanking) signal output/composite video data output
11	CLKIN	I	Master clock input LD : 14.31818MHz, VIDEO CD : 13.5MHz	27	BOUT/DO4	O	OSD B signal output/composite video data output
12	XCSYNCIN	I	Composite sync.signal input	28	GOUT/DO5	O	OSD G signal output/composite video data output
13	XCHA	I	OSD character data input	29	ROUT/DO6	O	OSD R signal output/composite video data output
14	XCHB	I	OSD framing data input	30	WHTOUT/DO7	O	OSD white signal output/composite video data output
15	CHCLKO	O	DOT clock output System clock output for OSD (Outputs a clock (CLKIN) divided by 2)	31	BLAOUT/DO8	O	OSD black signal output/composite video data output
16	XCSYNCO	O	Composite sync. signal output for OSD	32	XCLKO	O	Inversion master clock (CLKIN) output

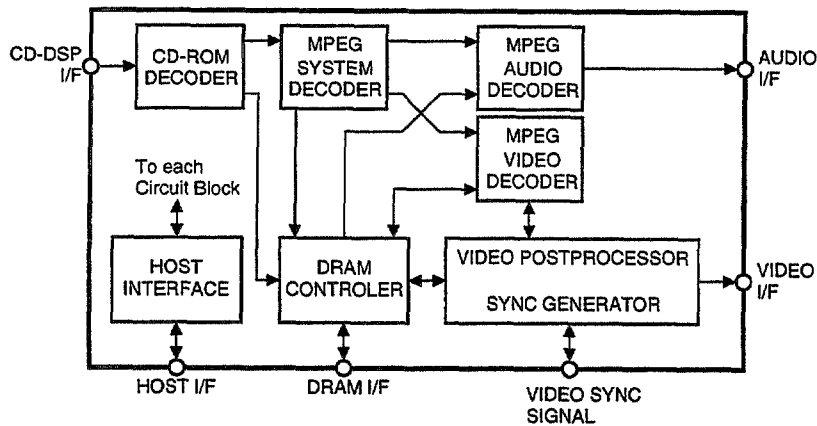
## ■ CXD1852Q (VCDB ASSY : IC101)

### • MPEG1 DECODER

### • Pin Assignment (Top View)



### • Block Diagram





## • Pin Function

No.	Pin Name	I/O	Function
1	VSS	—	Connect to ground
2	XTL00	O	Master clock of video decoder
3	XTL01	I	Clock input to XTL01 or connect an oscillator between XTL01 and XTL00. Frequency is 27MHz, 28.6363MHz (NTSC 8fsc), 35.4686MHz (PAL 8fsc).
4	VDD	—	+3.3V power supply
5	HA2	I	When host interface is parallel mode, HA0-HA3, become register address input pins. When host interface is serial mode, HA0 becomes serial data input pin, and HA1-HA3 are fixed to "L" level.
6	HA3		
7	HD0	I/O	When host interface is parallel mode, HD0-HD7, become register data input/output pins. When host interface is serial mode, HD0 becomes serial data output pin, and HD1-HD7 are fixed to "L" level.
8	HD1		
9	HD2		
10	HD3		
11	HD4		
12	HD5		
13	HD6		
14	VDD	—	+3.3V power supply
15	VSS	—	Connect to ground
16	HD7	I/O	When host interface is parallel mode, HD0-HD7, become register data input/output pins. When host interface is serial mode, HD0 becomes serial data output pin, and HD1-HD7 are fixed to "L" level.
17	MA3	O	DRAM address signal output Connect to DRAM address pins agree with number.
18	MA4		
19	MA2		
20	MA5		
21	MA1		
22	VSS	—	Connect to ground
23	MA6	O	DRAM address signal output Connect to DRAM address pins agree with number.
24	MA0		
25	BC	—	Test pin Set to open.
26	TCKI		
27	TDI		
28	TENAI		
29	TDO		
30	VST	—	Test pin Connect to ground.
31	VSS	—	Connect to ground
32	MA7	O	DRAM address signal output Connect to DRAM address pins agree with number.
33	MA8		
34	XRAS	O	Low address strobe signal output Connect to $\overline{RAS}$ signal pin of DRAM.
35	XMWE	O	Write enable signal output of DRAM Connect to $\overline{WE}$ signal pin of DRAM.
36	XCAS2/MA9	O	Use for when connecting the 8 bit DRAM When construction of DRAM is 256kw $\times$ 16bit $\times$ 2, connect to $\overline{CAS}$ signal pin of upper word (256k-512k-1) side DRAM (upper and lower bytes are common used). When DRAM is 512kw $\times$ 8bit $\times$ 2, connect to MA9 pin (two DRAMs).
37	XCAS0	O	Column address strobe signal output of DRAM. When construction of DRAM is 256kw $\times$ 16bit $\times$ 2, connect to $\overline{CAS}$ signal pin of lower word (0-256k-1) side DRAM (upper and lower bytes are common used). In other case, connect to all $\overline{CAS}$ signal pins of DRAM.
38	MD7	I/O	Data signal input/output of DRAM Connect to DRAM data pins agree with number.
39	MD8		
40	MD6		
41	MD9		
42	MD5		
43	MD10		
44	VDD		
45	VSS	—	Connect to ground

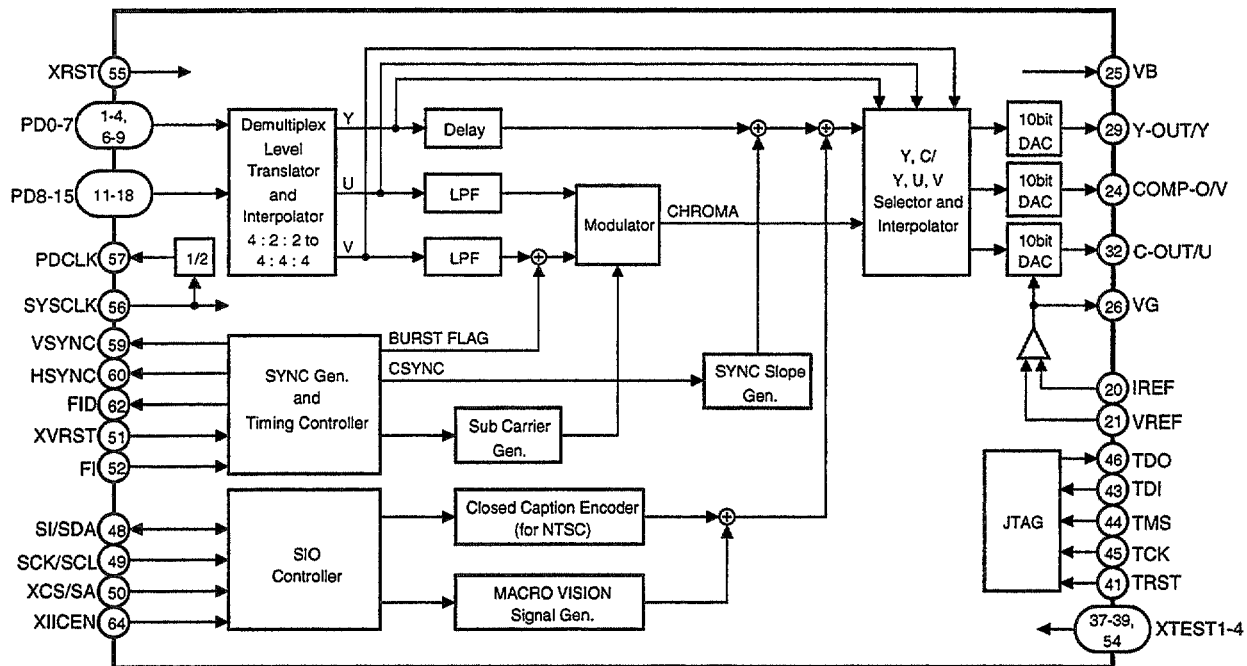
No.	Pin Name	I/O	Function
46	MD4	I/O	Data signal input/output of DRAM Connect to DRAM data pins gree with number.
47	MD11		
48	MD3		
49	MD12		
50	MD2		
51	MD13		
52	MD1		
53	MD14		
54	MD0		
55	MD15		
56	OSDEN	I	OSD enable signal Polarity of enable is changed by register setting.
57	OSDB	I	OSD data input When input signal which input to OSDEN is enable state, entered color in the color table which setting with there inputs (3 bit) is output to the picture data.
58	OSDG		
59	OSDR		
60	VDD	—	+3.3V power supply
61	VSS	—	Connect to ground
62	XVOE	I	Video output enable signal pin L : Picture data output and DCLK output are enabled. H : Disable (High impedance)
63	R/Cr0	O	Picture data output Correspondence of output data format (RGB, YCbCr etc.) and output data are able to changed by register setting.
64	R/Cr1		
65	R/Cr2		
66	R/Cr3		
67	R/Cr4		
68	R/Cr5		
69	R/Cr6		
70	R/Cr7		
71	G/Y0		
72	G/Y1		
73	G/Y2		
74	VDD	—	+3.3V power supply
75	VSS	—	Connect to ground
76	G/Y3	O	Picture data output Correspondence of output data format (RGB, YCbCr etc.) and output data are able to changed by register setting.
77	G/Y4		
78	G/Y5		
79	G/Y6		
80	G/Y7		
81	B/Cb0		
82	B/Cb1		
83	B/Cb2		
84	B/Cb3		
85	B/Cb4		
86	B/Cb5		
87	B/Cb6		
88	B/Cb7		
89	DCLK	I/O	Dot clock (DCLK) signal pin Normally, DCLK frequency is 13.5MHz. DCLK is able to input from this pin and output from this pin by dividing from clock input.
90	VDD	—	+3.3V power supply

No.	Pin Name	I/O	Function
91	VSS	—	Connect to ground
92	HSYNC	I/O	Horizontal sync. signal pin When internal sync. generator is used, outputs dot clock (DCLK) by frequency divided. When internal sync. generator is not used, it becomes input.
93	VSNC	I/O	Vertical sync. signal pin When internal sync. generator is used, outputs dot clock (DCLK) by frequency divided. When internal sync. generator is not used, it becomes input.
94	FID/FHREF	I/O	Field discrimination signal (FID) and horizontal sync. phase reference signal (FHREF) pin Set this pin by register setting. When set to FID, outputs by using the internal sync. generator and inputs by not using it. "H" is correspond to odd field. When set to FHREF, outputs signal divided by XTLO. When XTLO is 8fsc, signal becomes suitable HSYNC period and we for phase compare with HSYNC signal.
95	CBLNK/FSC	I/O	Composite blanking signal (CBLNK) and fsc signal pin Set this pin by register setting. When set to CBLK, outputs by using the internal sync. generator and inputs by not using it. When set to fsc, outputs signal divided by XTLO. Divided ratio is able to selected 1/8 or 1/16.
96	CSYNC	O	Composite sync. signal pin divided by DCLK. Signal is not able to input.
97	XSGRST	I	Reset signal input of sync. generator "L" for initialize the internal sync. generator.
98	CLK00	O	Outputs clock divided by XTLO Divided ratio is able to selected 1/8 or 1/16.
99	DOUT	O	Audio digital output
100	DATO	O	Audio serial data output to DAC
101	LRCO	O	L/R clock output to DAC
102	BCKO	O	Bit clock output to DAC
103	FSXI	I	Clock input for audio interface Input 256fs (11.2896MHz), 384fs (16.9344MHz), 512fs (22.5792MHz) and 768fs (33.8688MHz).
104	VDD	—	+3.3V power supply
105	VSS	—	Connect to ground
106	XTL2O	O	Master clock of CD-ROM decoder and audio decoder
107	XTL2I	I	Clock input to XTL2I or connect a oscillator between XTL2I and XTL2O. Frequency is 45MHz. This clock is for internal circuit, then not synchronize the input and output.
108	VDD	—	+3.3V power supply
109	C2PO	I	C2 pointer input from CD-DSP Indicate the error of DATI input.
110	LRCI	I	LR clock input from CD-DSP Indicate the L ch and R ch of DATI.
111	DATI	I	Serial data input from CD-DSP
112	BCKI	I	Bit clock input from CD-DSP Clock for strobe the DATI input.
113	DOIN	I	Digital data input from CD-DSP
114	XHCS	I	Chip select signal input at register access
115	XHDT	I/O	Wait signal output at register access When host interface is pararell mode only, this pin is effective. Use to pull-up for open drain operation. in the serial mode, use to pull-up.
116	HRW	I	When host interface is parallel mode, this pin becomes R/W signal input. When host interface is serial mode, it becomes serial clock input.
117	XHIRQ	O	Interrupt request signal output Use to pull-up for open drain operation.
118	XRST	I	Hardware reset signal input When this pin set to "L", initialize the all operation.
119	HA0	I	When host interface is parallel mode, HA0-HA3, become register address input pins.
120	HA1		When host interface is serial mode, HA0 becomes serial data input pin, and HA1-HA3 are fixed to "L" level.

■ CXD1913Q (VCDB ASSY : IC301)

• DIGITAL VIDEO ENCODER

• Block Diagram



### • Pin Function

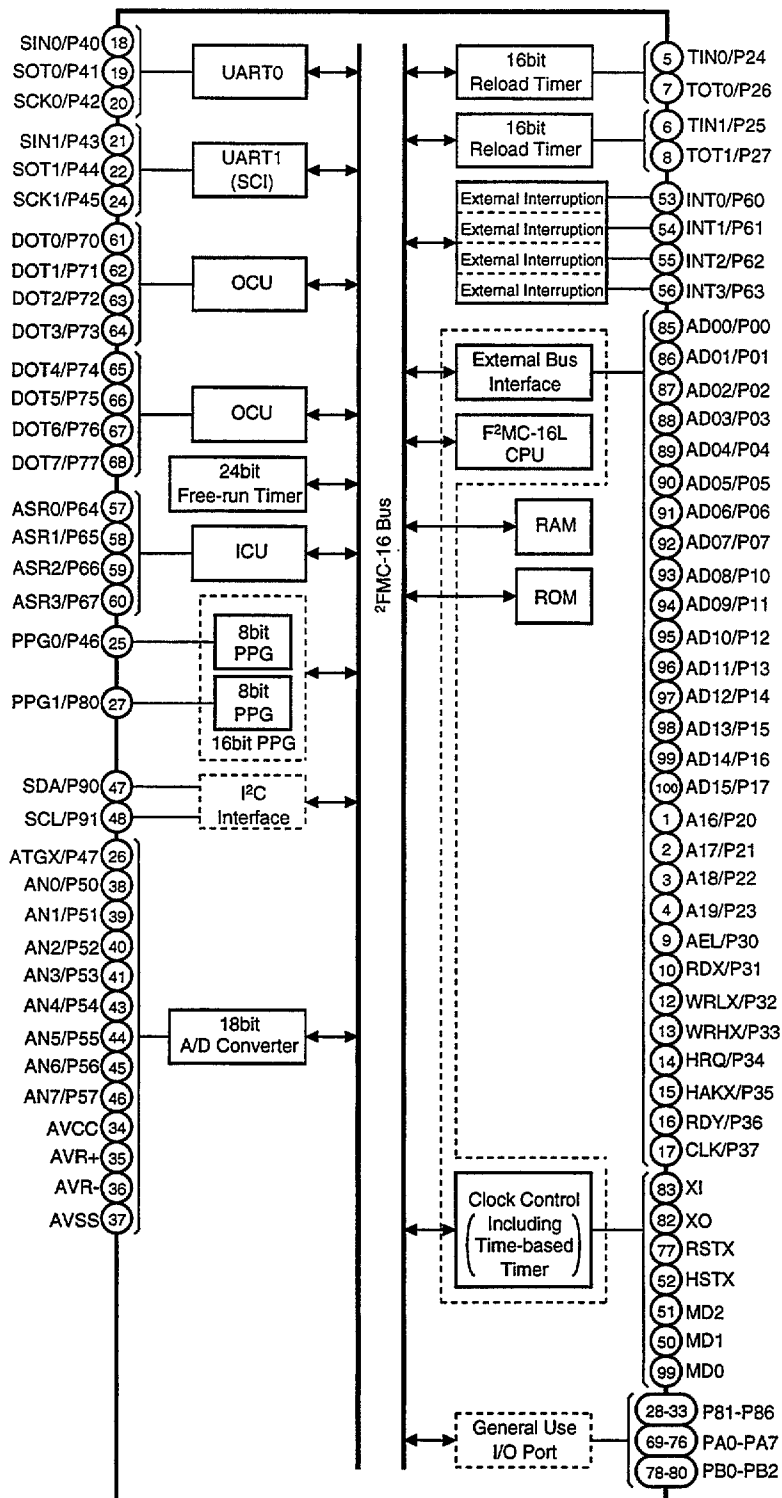
No.	Pin Name	I/O	Function
1	PD7	I	8bit pixel data input When PIF MODE = 0, input for Y, Cb and Cr signals which are multiplexed. When PIF MODE = 1, input for Y signal.
2	PD6		
3	PD5		
4	PD4		
5	VSS	—	Ground for digital
6	PD3	I	8bit pixel data input When PIF MODE = 0, input for Y, Cb and Cr signals which are multiplexed. When PIF MODE = 1, input for Y signal.
7	PD2		
8	PD1		
9	PD0		
10	VDD	—	Power supply for digital
11	PD15/TD7	I/O	8bit pixel data input/test data bus When PIF MODE = 0, there pins are not able to we. When PIF MODE = 1, input for Cb and Cr signals which are multiplexed. In the test mode, use for the internal circuit test data bus. Test mode is opened for device vender only.
12	PD14/TD6		
13	PD13/TD5		
14	PD12/TD4		
15	PD11/TD3		
16	PD10/TD2		
17	PD9/TD1		
18	PD8/TD0		
19	VSS	—	Ground for digital
20	IREF	I	Reference current input Connect a 16-times resistor ( "16R" ) of output resistor value "R" .
21	VREF	I	Reference voltage input Set the output full scale.
22	AVDD1	—	Power supply for analog
23	AVSS1	—	Ground for analog
24	COMP-O/V	O	10bit D/A converter output When YC/YUV = 1, outputs composite signal. When YC/YUV = 0, outputs color-difference (V) signal.
25	VB	O	Connect a about 0.1 $\mu$ F capacitor to VSS.
26	VG	O	Connect a about 0.1 $\mu$ F capacitor to AVDD.
27	AVDD2	—	Power supply for analog
28	AVSS2	—	Ground for analog
29	Y-OUT/Y	O	10bit D/A converter output Outputs luminance (Y) signal.
30	AVDD3	—	Power supply for analog
31	AVSS3	—	Ground for analog
32	C-OUT/U	O	10bit D/A converter output When YC/YUV = 1, outputs chroma (C) signal. When YC/YUV = 0, outputs color-difference (U) signal.

No.	Pin Name	I/O	Function
33	TD10	I/O	Test data bus Set to open. In the test mode, we for the internal circuit test data bus. Test mode is opened for device vender only.
34	VDD	—	Power supply for digital
35	TD9	I/O	Test data bus Set to open. In the test mode, we for the internal circuit test data bus.
36	TD8		Test mode is opened for device vender only.
37	XTEST1	I	Test mode control input with pull-up
38	XTEST2		When these pins are "H", CXD1910AQ is not test mode.
39	XTEST3		Test mode is opened for device vender only.
40	VSS	—	Ground for digital
41	TRST	I	Reset signal input for JTAG of active "L" with pull-up.
42	VDD	—	Power supply for digital
43	TDI	I	Serial data input for JTAG with pull-up
44	TMS	I	Control signal input for JTAG with pull-up
45	TCK	I	Clock input for JTAG
46	TDO	O	Serial data output for JTAG
47	VSS	—	Ground for digital
48	SI/SDA	I	This pins function is selected by XIICEN (pin 64). When XIICEN is "H", it becomes SONY SIO mode and SI serial data input. When XIICEN is "L", it becomes I <sup>2</sup> C-BUS mode and SDA input/output.
49	SCK/SCL	I	This pins function is selected by XIICEN (pin 64). When XIICEN is "H", it becomes SONY SIO mode and SCK serial clock input. When XIICEN is "L", it becomes I <sup>2</sup> C-BUS mode and SCL input.
50	XCS/SA	I	This pins function is selected by XIICEN (pin 64). When XIICEN is "H", it becomes SONY SIO mode and XCS chip select input. When XIICEN is "L", it becomes I <sup>2</sup> C-BUS mode and SA slave address selection input signal which selecting slave address of I <sup>2</sup> C-BUS.
51	XVRST	I	Vertical sync. reset input of active "L" with pull-up Use for synchronize the external and internal vertical sync. When XVRST is "L", reset the internal digital sync. generator according to FI.
52	FI	I	Field ID input Indicates the field ID at vertical sync. reset. H : 1st field L : 2nd field
53	VDD	—	Power supply for digital
54	XTEST4	I	Test mode control input with pull-up When these pins are H, CXD1910AQ is not test mode. Test mode is opened for device vender only.
55	XRST	I	System reset input at active "L" "L" for more than 40 clocks (SYSCLK) at power on reset.
56	SYSCLK	I	System clock input It needs to correctly 27MHz for generating the correctly sub-carrier frequency.
57	PDCLK	O	Pixel data clock output for 13.5MHz This clock is SYSCLK divided by 2. Use for 16bit pixel data mode.
58	VSS	—	Ground for digital
59	VSYNC	O	Vertical sync. signal output
60	HSYNC	O	Horizontal sync. signal output
61	SO	O	This pin's function is selected by XIICEN (pin 64). When XIICEN is "H", it becomes SONY SIO mode and SO serial out output. When XIICEN is "L", this pin is not used and output becomes Hi-impedance.
62	FID	O	Field ID output When FIDS = 1, L : 1st field, H : 2nd field. When FIDS = 0, H : 1st field, L : 2nd field.
63	VDD	—	Power supply for digital
64	XIICEN	I	Serial interface mode selection input with pull-up When this pin is "L", pins 48 to 50 and 61 become I <sup>2</sup> -C-BUS mode. When this pin is "H", pins 48 to 50 and 61 become SONY SIO mode.

■ PD6193A (VCDB ASSY : IC501)

• VCD CONTROL IC

• Block Diagram



• Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	P20	I	Not used (+5V)	51	MD2	I	Operation mode setting (connect to GND)
2	P21			52	HSTX	I	N.C.
3	P22			53	TVSYNC	I	Video vertical sync. signal interruption
4	P23			54	IRQM	I	CXD1852 interruption
5	P24			55	REQACK	I/O	Serial communication (REQ/ENB)
6	P25			56	INT3	I	Not used (+5V)
7	P26			57	OSD MODE	I	H : Color L : Monochrome (connect to +5V)
8	P27			58	P65	I	Not used (+5V)
9	P30			59	P66		
10	P31			60	COLOR BAR	I	L : Color-bar display
11	VSS	—	GND	61	P70	I	Reserve pin (+5V)
12	P32	I	Not used (+5V)	62	P71		
13	P33			63	P72		
14	P34			64	P73		
15	P35			65	P74		
16	P36			66	P75		
17	P37			67	P76		
18	SIN0			I	Serial data input		
19	SOT0			O	Serial data output	69	PA0
20	P42	I	Not used (+5V)	70	PA1		
21	SINC	I	Serial communication (data input)	71	PA2		
22	SOUTB	O	Serial communication (data output)	72	PA3		
23	VCC	I	Power supply (+5V)	73	PA4		
24	SCKB	O	Serial communication (clock)	74	PA5		
25	CSM	O	Communication device selection (CXD1852)	75	PA6		
26	CSV	O	Communication device selection (CXD1913)	76	PA7		
27	BUSW	O	Communication device selection (system controller)	77	XRST	I	External reset request input
28	RSTM	O	Reset (CXD1852)	78	PB0	I	Not used (+5V)
29	RSTV	O	Reset (CXD1913)	79	PB1		
30	LD/VCD	O	Select the player output screen H : Player screen L : VCD screen	80	PB2		
31	NTSC/PAL	O	Reserve pin (+5V)	81	VSS	—	GND
32	P85			82	X0	I	Pins for crystal oscillator (4MHz)
33	P86			83	X1	O	
34	AVCC	I	Power supply (+5V)	84	VCC	I	Power supply (+5V)
35	AVR+	I	Reference voltage of analog circuit (+5V)	85	P00	I	Not used (+5V)
36	AVR-	I	Reference voltage of analog circuit (GND)	86	P01		
37	AVSS	—	GND	87	P02		
38	P50	I	Not used (+5V)	88	P03		
39	P51			89	P04		
40	P52			90	P05		
41	P53			91	P06		
42	VSS			—	GND		
43	P54	I	Not used (+5V)	93	P10		
44	P55			94	P11		
45	P56			95	P12		
46	P57			96	P13		
47	P90			97	P14		
48	P91	I/O	Not used (+5V)	98	P15		
49	MD0	I	Operation mode setting (connect to +5V)	99	P16		
50	MD1			100	P17		

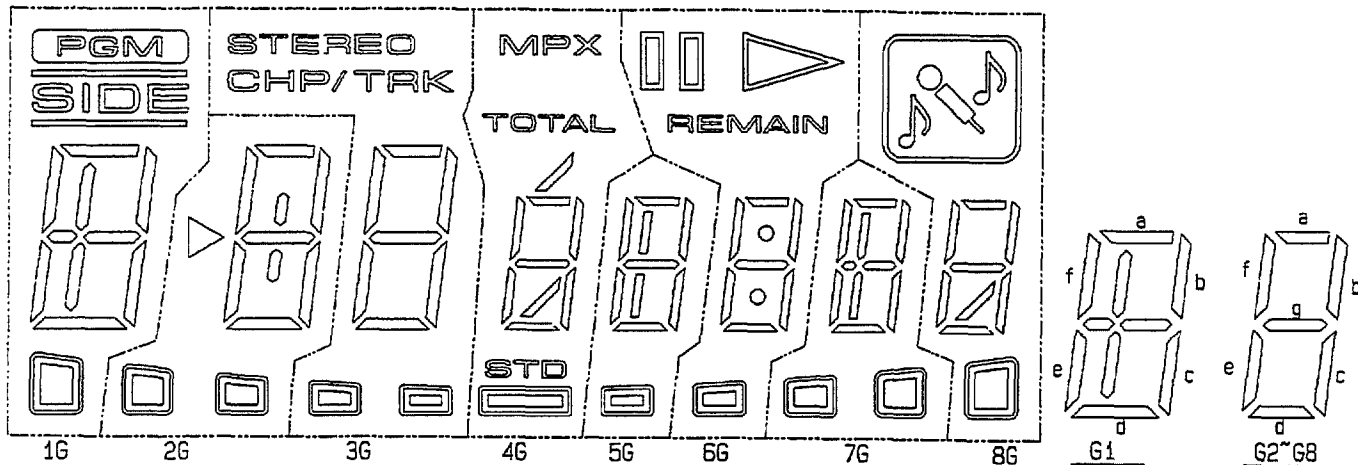


7.1.2 DISPLAY

■ VAW1039 (FLKB ASSY : V101)

•FL TUBE

• ANODE GRID ASSIGNMENT & PIN ASSIGNMENT



• ANODE GRID ASSIGNMENT

	G1	G2	G3	G4	G5	G6	G7	G8
S1	a	a	a	a	a	a	a	a
S2	b	b	b	b	b	b	b	b
S3	c	c	c	c	c	c	c	c
S4	d	d	d	d	d	d	d	d
S5	e	e	e	e	e	e	e	e
S6	f	f	f	f	f	f	f	f
S7	-	g	g	g	g	g	g	g
S8	-	:	STEREO (UP) /	/	:	-	/	/
S9	/	▷	CHP/TRK (DW.) /	/		/	▷	▷
S10	PGM	(R) □	(R) □	MPX	/	▷	(R) □	/
S11	SIDE	(L) □	(L) □	TOTAL	/	REMAIN	(L) □	/
S12	□	(R) □	(R) □	STD	□	□	(R) □	□
S13	□	(L) □	(L) □	□	□	□	(L) □	□

• PIN ASSIGNMENT

Pin No.	1	2	3	4	5	6	7	8	9	10
Assignment	F	F	NP	S13	S12	S11	S10	S9	S8	S7
Pin No.	11	12	13	14	15	16	17	18	19	20
Assignment	S6	S5	S4	S3	S2	S1	G1	G2	G3	G4
Pin No.	21	22	23	24	25	26	27			
Assignment	G5	G6	G7	G8	NP	F	F			

F:Filament G1~G8:Grid S1~S13:Anode NP:No pin

## 7.2 DIAGNOSIS

### 7.2.1 SELF-DIAGNOSTIC FUNCTIONS

#### (1) SELF-DIAGNOSTIC FUNCTIONS

The self-diagnostic functions automatically display an error code on the TV screen and front panel fluorescent display section when there is an error. The customer checks the error code and conveys it to the service personnel to make repairs more efficient.

After an error occurs, even if the error code goes off, you can display the error code again by holding down the **CLEAR** key for 5 seconds (except a loading error **L \*** display). At that time, partial error is displayed with the mechanism switch information. However, if the power cord is unplugged, the error code information is lost.

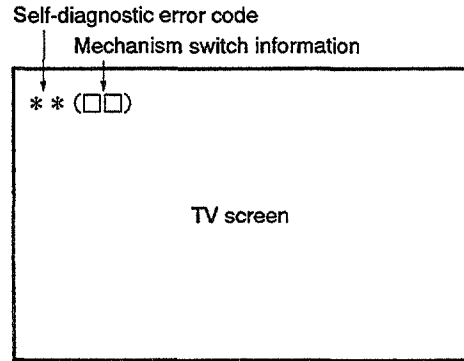


Fig. 1 TV screen display

This table explains the information for analyzing the cause when an error occurs with the CLD player.

Self-diagnostic error code	Contents	Conditions	Probable cause
H0	Spindle overcurrent detection error.	In the play state, overcurrent was detected in the spindle motor. Monitoring starts 5 seconds after the start of play or special playback mode, this error is detected if the overcurrent port is "L" for 4 seconds.	<ul style="list-style-type: none"> <li>• Motor NG</li> <li>• Clamper rubbing</li> </ul>
U0	FG abnormality error	<ol style="list-style-type: none"> <li>① At LD start-up, the rate of rotation calculated from the FG was less than 15 rpm for 5 consecutive seconds from the spindle run command.</li> <li>② At CD start-up, there was less than 1/8th rotation even after 5 seconds had passed since the end of acceleration.</li> <li>③ During play search, CD : subcodes are being read/LD : Phillips codes are being read and the spindle is locked, but a state in which the rate of rotation calculated from the FG was less than 15 rpm continued for 5 seconds or more. In the above case, it is judged that an abnormality has occurred in the FG sensor and that accurate rotation rate calculation has become impossible.</li> </ol>	<ul style="list-style-type: none"> <li>• FG sensor abnormality, FG signal not coming to mechanism controller</li> <li>• FG sensor clogged</li> <li>• Rubbing between FG sensor and slit</li> <li>• Turntable dropped</li> <li>• FG slit deposition NG</li> </ul>
H1	Partial short error	<ol style="list-style-type: none"> <li>① At LD start-up, the speed did not reach 1200 rpm within a certain time (12 seconds) after the spindle run command.</li> <li>② At CD start-up, a certain speed (313 rpm) was not reached within 6 seconds from the end of spindle acceleration.</li> </ol>	<ul style="list-style-type: none"> <li>• Spindle motor NG</li> <li>• Commutator NG</li> <li>• Bearing too tight</li> <li>• Power supply NG</li> </ul>
H2 A0	Power supply abnormality error	<p>– 5V power supply abnormality detected.</p> <p>The power supply abnormality port is constantly monitored and if its signal stays high for about 1 second consecutively, the power supply is judged to be abnormal.</p>	<ul style="list-style-type: none"> <li>• – 5V not fed from POWER SUPPLY assy</li> <li>• Parts shorted</li> </ul>
L *	Loading error	<ol style="list-style-type: none"> <li>① When loading operation goes over time (approx. 10 sec.).</li> <li>② When assist at disc sense entry ends and is not tilt neutral.</li> <li>③ When assist at set up entry ends and is not tilt neutral.</li> </ol>	<ul style="list-style-type: none"> <li>• Tilt switch 1, 2, 3 abnormal, so tilt/loading state not read in correctly</li> <li>• Tilt/loading mechanism mechanically locked</li> <li>• Drive IC NG</li> <li>• Power supply NG</li> </ul>
E *	Slider error	During slider movement, a time over-run occurred (track count search 20 seconds, mandatory movement 10 seconds)	<ul style="list-style-type: none"> <li>• Slider ceased being able to run</li> <li>• The slider mechanism is mechanically locked and can no longer move to its target.</li> <li>• Slider position switch NG</li> <li>• Flexible cable pulled out</li> <li>• Drive IC NG</li> <li>• Power supply abnormal</li> </ul>
U1	Miss clamp error	<ol style="list-style-type: none"> <li>① During LD setup, after 1/8th rotation, the track count during 1/8 rotation exceeded 511.</li> <li>② During start-up, the focus was lost once and refocusing was attempted, but the focus could not be locked.</li> <li>③ Two FG pulses did not come within 800 ms from from the start of LD start-up.</li> <li>④ The disc clamp operation did not end within 5 seconds.</li> </ol>	<ul style="list-style-type: none"> <li>• Disc sandwiched</li> <li>• Disc shifted</li> <li>• Spindle motor NG</li> <li>• Disc scratched or dirty defocused during start-up</li> <li>• Two discs loaded</li> <li>• PU actuator NG</li> <li>• Tilt sensor NG</li> <li>• Tilt neutral NG (tilt base NG)</li> </ul>

Self-diagnostic error code	Contents	Conditions	Probable cause
P *	Spindle error	① During TOC reading with an LD, the spindle servo was not locked within 60 seconds from the start of the spindle run. ② When CAV/CLV determination is not finished within 60 seconds from spindle servo lock. ③ The codes could not be read for 10 - 15 seconds consecutively for an LD or 7 - 10 seconds for a CD/CDV and the spindle servo was not locked. ④ The speed exceeded 2100 rpm during LD start up.	P0 :•PH code, SUB-Q code can not be read •VCO, PLL offset out of adjustment •Disc defect P5:•PAL disc, mirror disc, etc. PLAY •No RF P6:•Spindle servo does not lock •Spindle motor NG
F *	Focus error	① "In the "no disc" state, a setup command was received from the mode controller. ② When LD is out of focus when slider is moved to starting position during set up. In case of CD/CDV is NG even after three focus tries. ③ During start-up, the maximum slider servo duty continued for 3 loops or more.	F5 :•CD, LD on top of each other •LD scratched or dirty defocused during slider movement •Disc NG •Slider position switch NG F6 :•Inner edge of disc scratched or dirty •Slider ran into inner edge mechanical stopper
J1	VCD μ COM communication error	Communication error between the microcomputer (IC501) on the VCDB Assy and the mode control IC.	•Wire break of communication line (connector CN101 NG) •Power supply NG •VCD microcomputer (IC501) NG •Communication line buffer IC (IC601) NG
J2	VCD μ COM communication error	Communication error between the microcomputer (IC501) on the VCDB Assy and the VCD decoder (IC101).	•VCD microcomputer (IC501) NG •Communication line buffer IC (IC601) NG •Buffer IC (IC602, IC603) NG •MPEG decoder IC (IC101) NG
J3	VCD μ COM communication error	Communication error between the microcomputer (IC501) on the VCDB Assy and the video encoder (IC301).	•VIDEO encoder IC (IC301) NG •Wire break of communication line between IC501 and IC301

\* Besides the above errors, there is the "U2" communications error (the mode controller could not communicate normally with the mechanism controller)  
 The probable cause is a defective mechanism controller, disconnected cable, etc..

\* Mechanism mode contents (meanig of \* for L \* etc.)

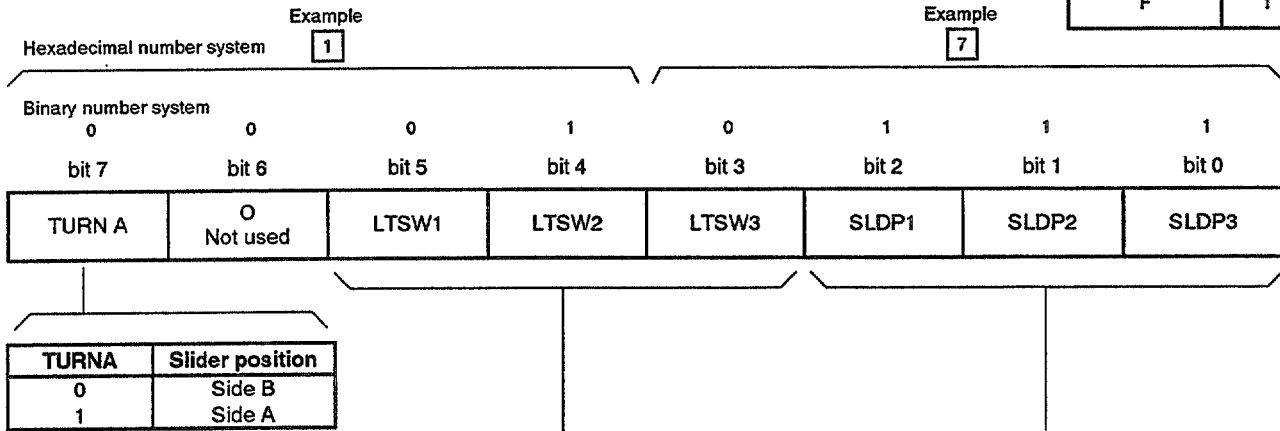
- |                |                            |                     |
|----------------|----------------------------|---------------------|
| 0 : Play       | 5 : Setup (rotation start) | 9 : Side A → Side B |
| 1 : Open       | 6 : TOC read               | A : Side B → Side A |
| 2 : Standby    | 7 : Play                   |                     |
| 3 : Clamp      | 8 : Search                 |                     |
| 4 : Disc sense |                            |                     |

(2) FORMAT OF THE MECHANISM SWITCH INFORMATION WHICH IS TRANSMITTED TO THE MODE CONTROL IN THE ERROR OCCURRENCE

Hexadecimal number system	Binary number system
0	0 0 0 0
1	0 0 0 1
2	0 0 1 0
3	0 0 1 1
4	0 1 0 0
5	0 1 0 1
6	0 1 1 0
7	0 1 1 1
8	1 0 0 0
9	1 0 0 1
A	1 0 1 0
B	1 0 1 1
C	1 1 0 0
D	1 1 0 1
E	1 1 1 0
F	1 1 1 1

● Mechanism switch information ( 1 7 )  
 Mechanism control → Mode control  
 Communication byte address 5 (COMBUF5)  
 (Mode control displays this value as it is.)

Example



Example of 1 7 is indicated as follows.

( Slider : Side B  
 Tilt : Tilt +  
 Position : B-INSIDE

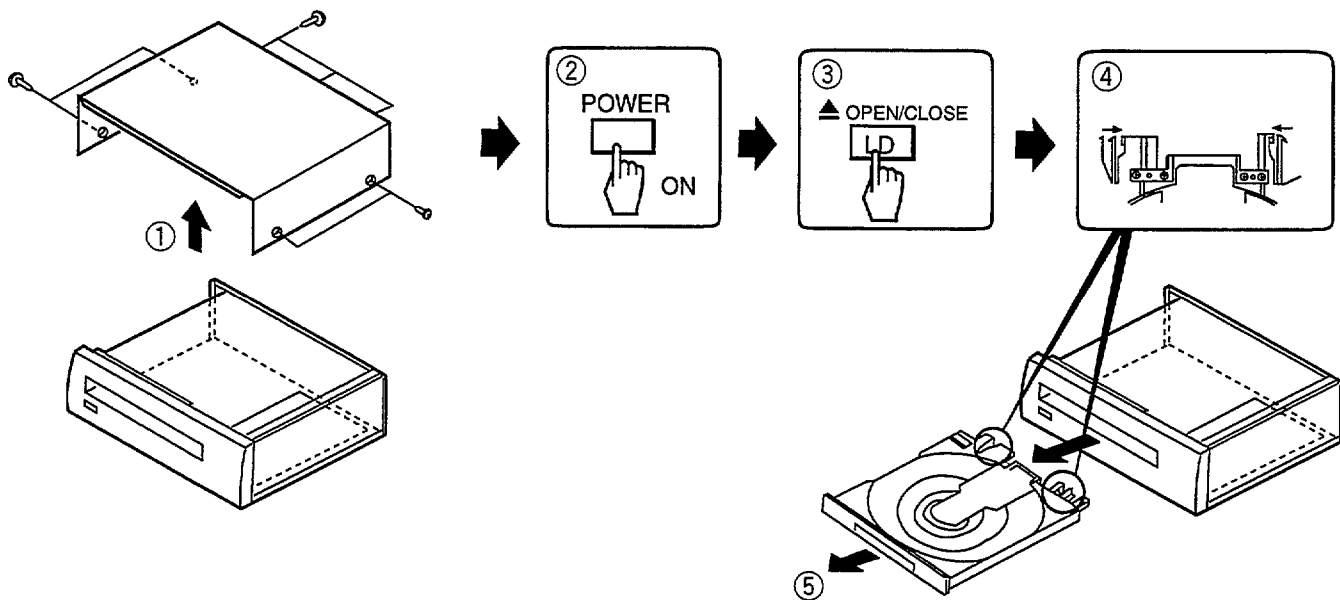
LTSW			Loading/tilt position
1	2	3	
0	1	1	Open (Tray open state)
0	0	1	Loading (During move the tray horizontally)
1	0	1	Standby (Tray close & spindle down state)
1	0	0	Clamp (Durring spindle up or down)
0	0	0	Tilt - (Clamp state)
0	1	0	Tilt + (Clamp state)
1	1	0	Tilt limit (Clamp state)

SLDP			Slider position
1	2	3	
1	0	0	CD active position
1	0	1	CDV active position
1	1	0	LD active position
0	1	1	CD inside position
1	1	1	Side B inside position

7.2.2 DISASSEMBLY/ASSEMBLY (分解/組立の手順)

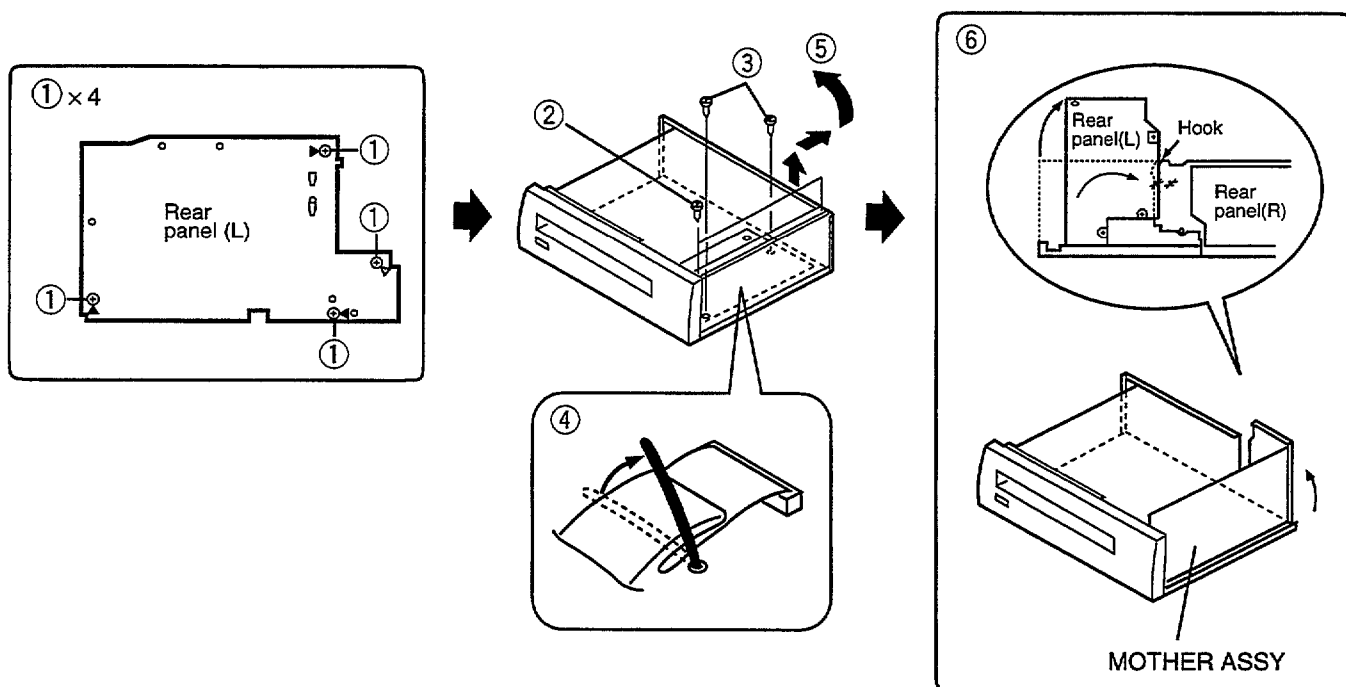
(1) DISC TRAY

- Disassembly : ①→②→③→④→⑤
- Assembly : ⑤→①



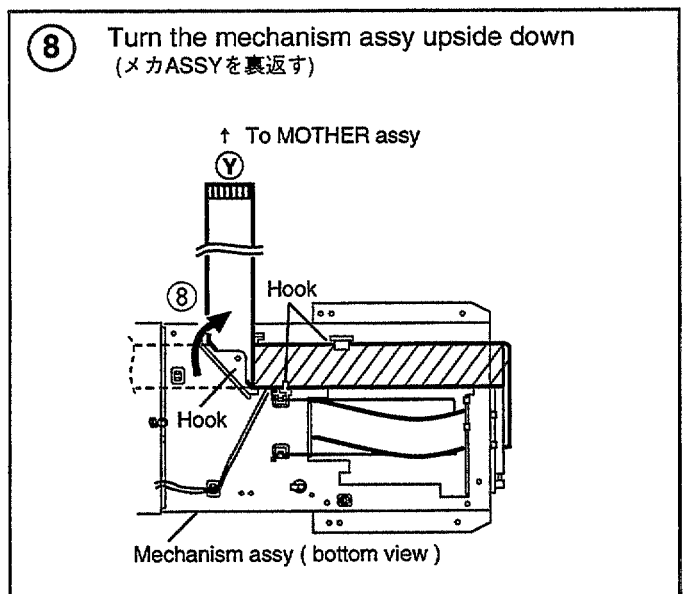
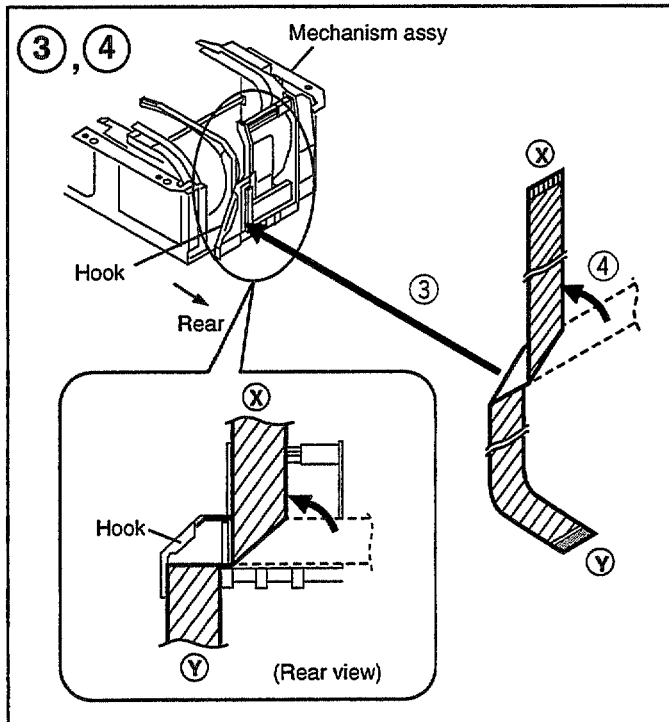
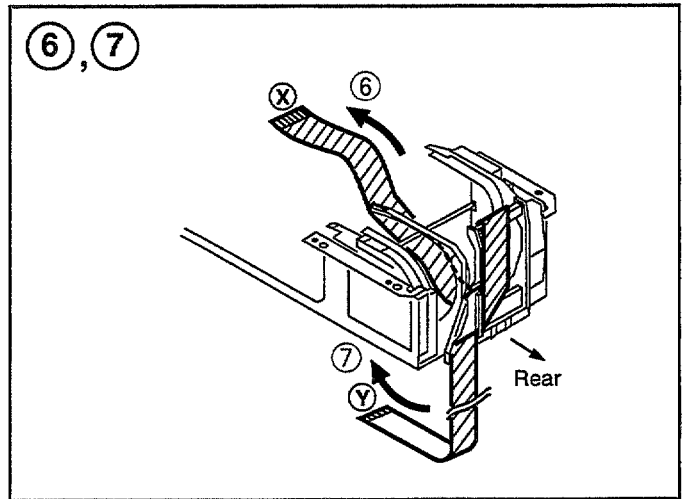
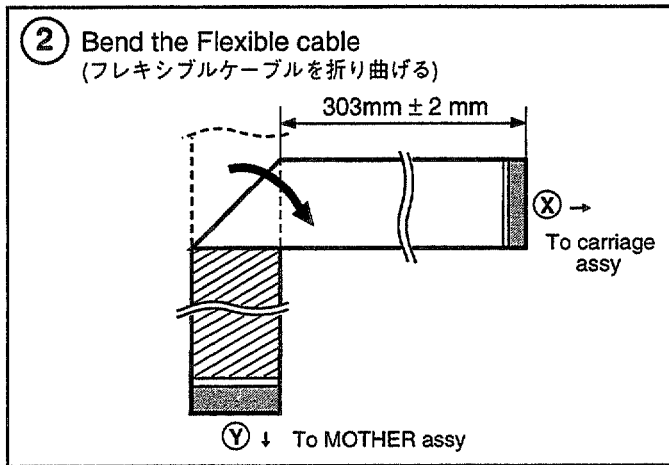
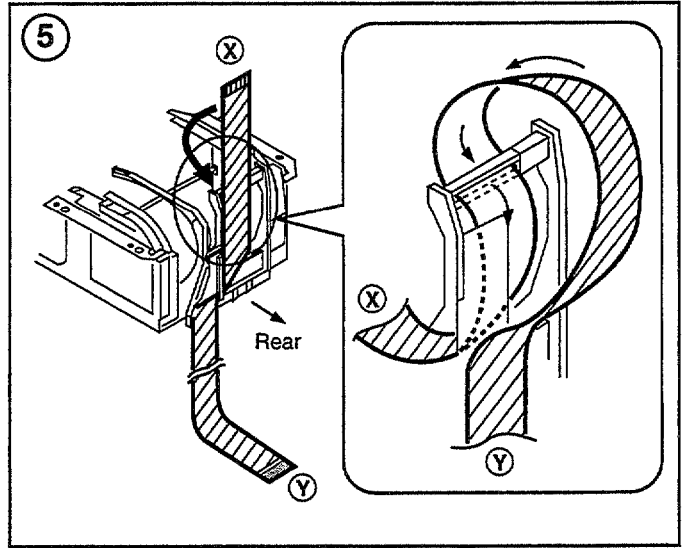
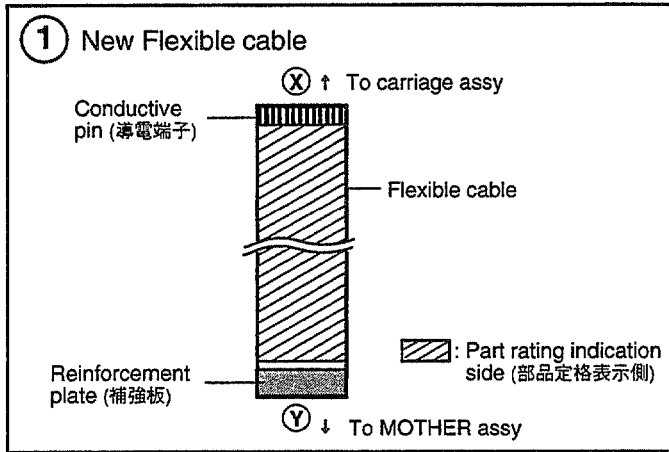
(2) MOTHER ASSY

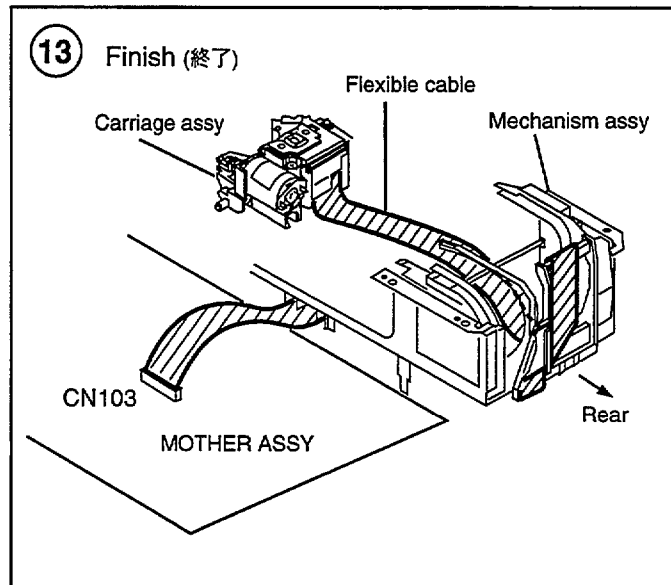
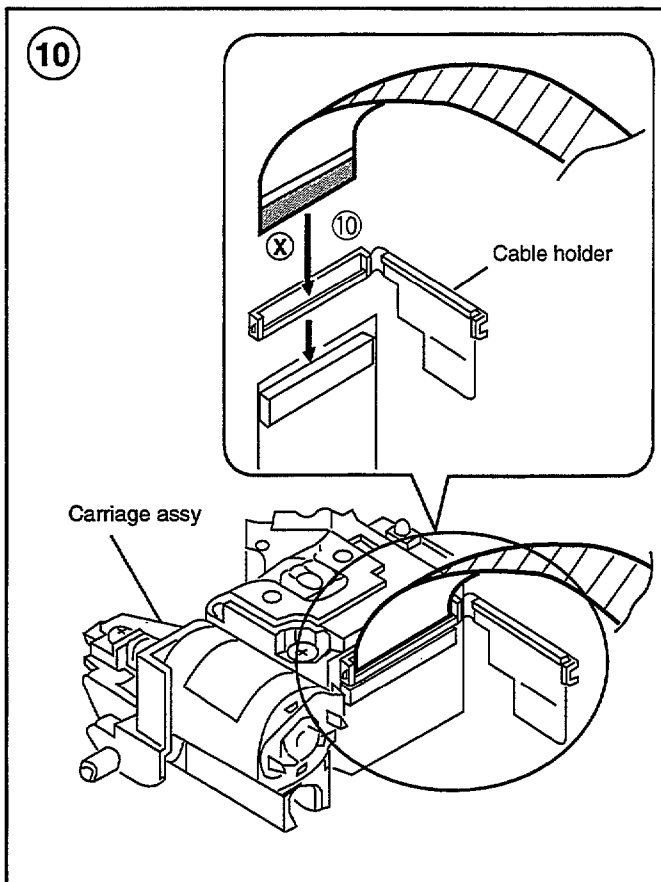
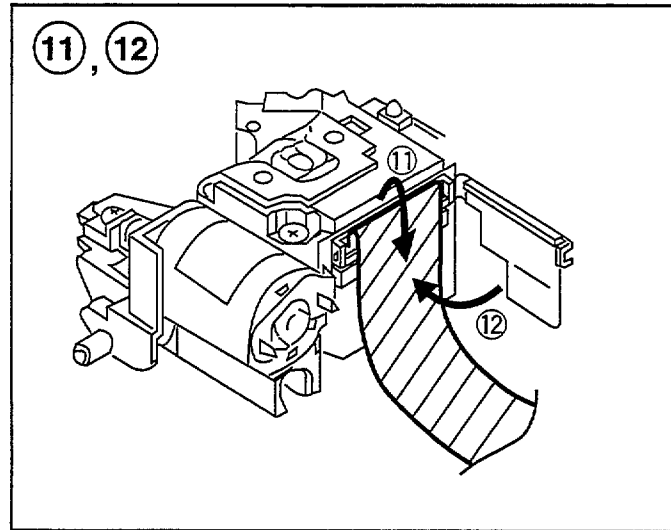
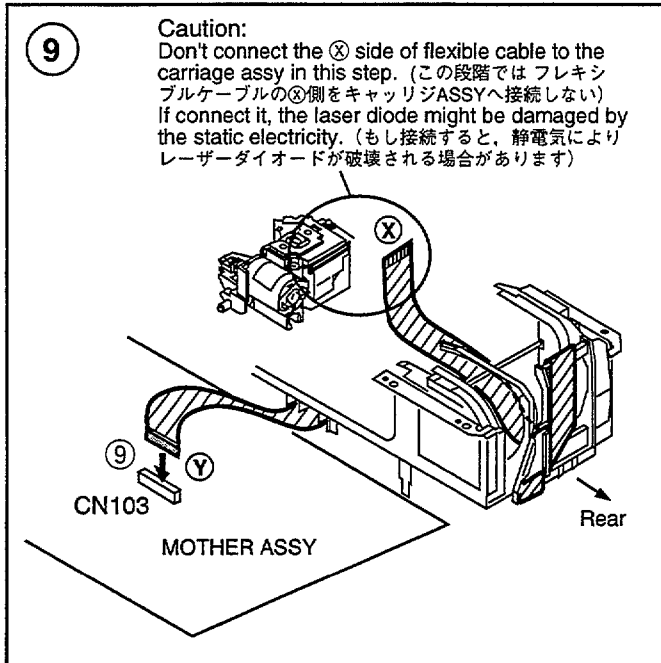
- Disassembly : ①→②→③→④→⑤→⑥
- Assembly : ⑥→⑤→④→③→②→①



**(3) HOW TO INSTALL THE FLEXIBLE CABLE FOR CARRIAGE ASSY**

(キャリッジASSY用フレキシブルケーブルの取付方法)

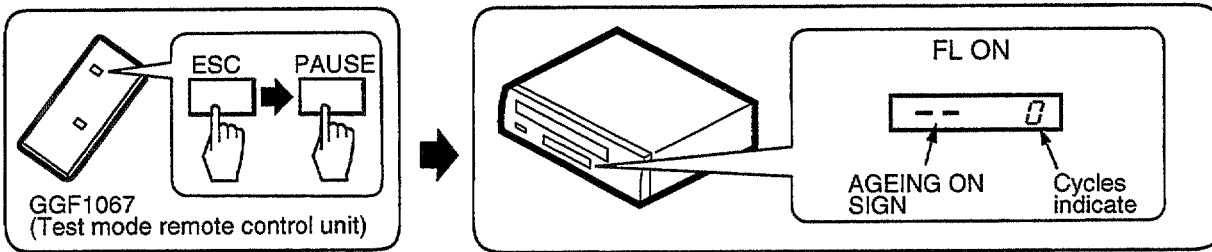




7.2.3 AGEING MODE (エージングモード)

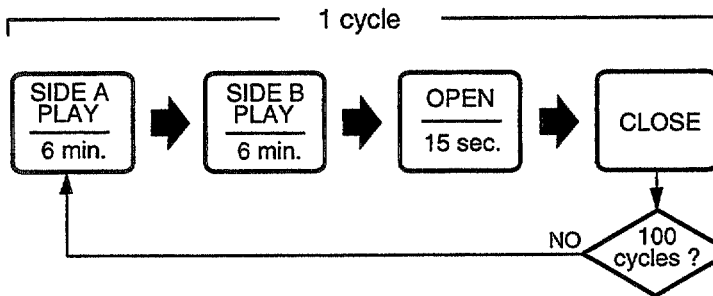
**AGEING MODE: ON**

•Note for KARAOKE model : Set the SINGLE PLAY (一曲停止) mode to OFF.

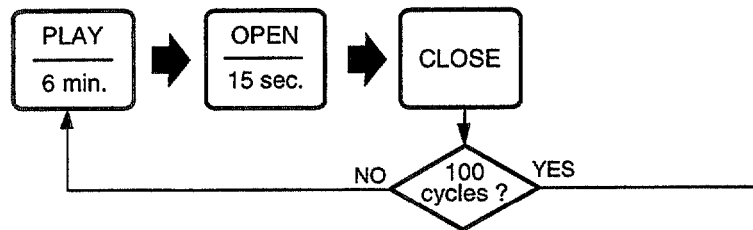


**AGEING**

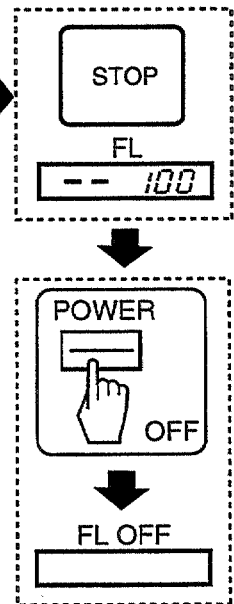
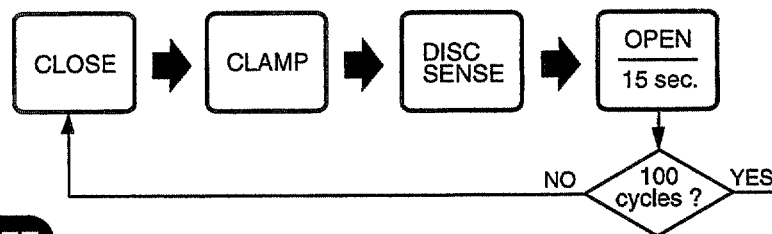
• LD



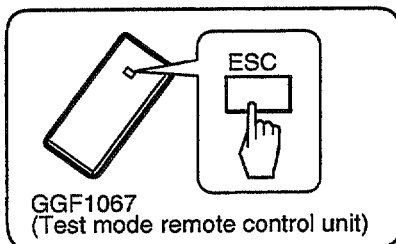
• CD, CDV



• NO DISC

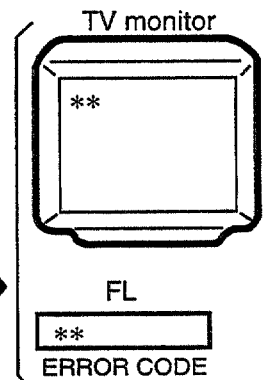
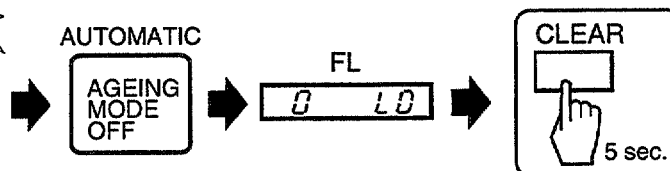
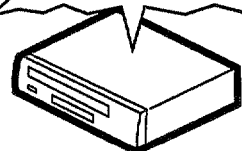


**AGEING MODE: OFF**



**ERROR OCCURRED**

ERROR OCCURED : エラー発生





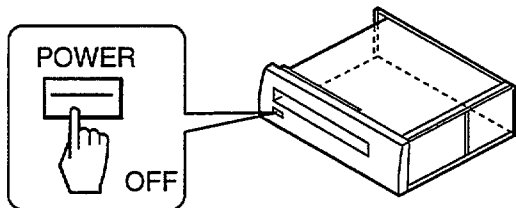
## 7.2.4 VCD Color-bar Output

The VCDB ASSY have the test mode which output the color-bar signal independently.

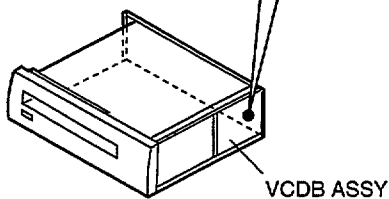
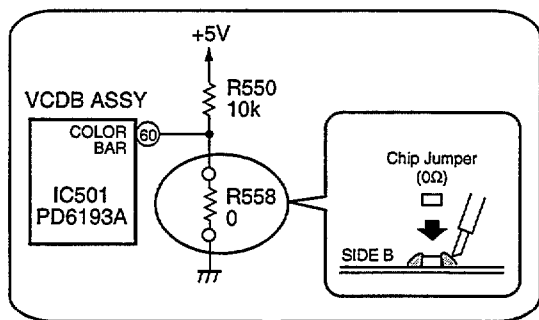
### VCD Color-bar Test Mode

#### Color-bar TEST MODE: ON

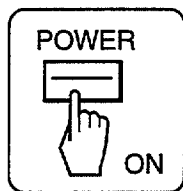
① Power OFF



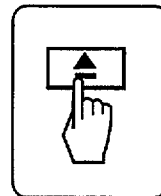
② Mount R558 (0Ω)



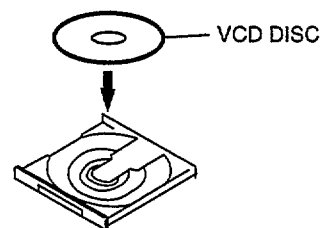
③ Power ON



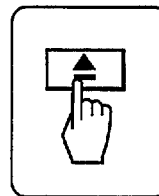
④ Tray Open



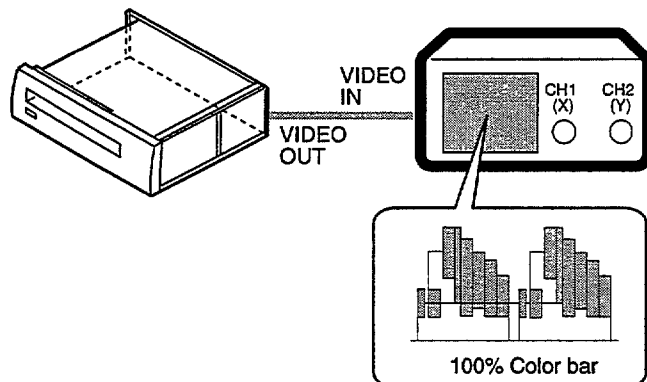
⑤ VCD Disc Set



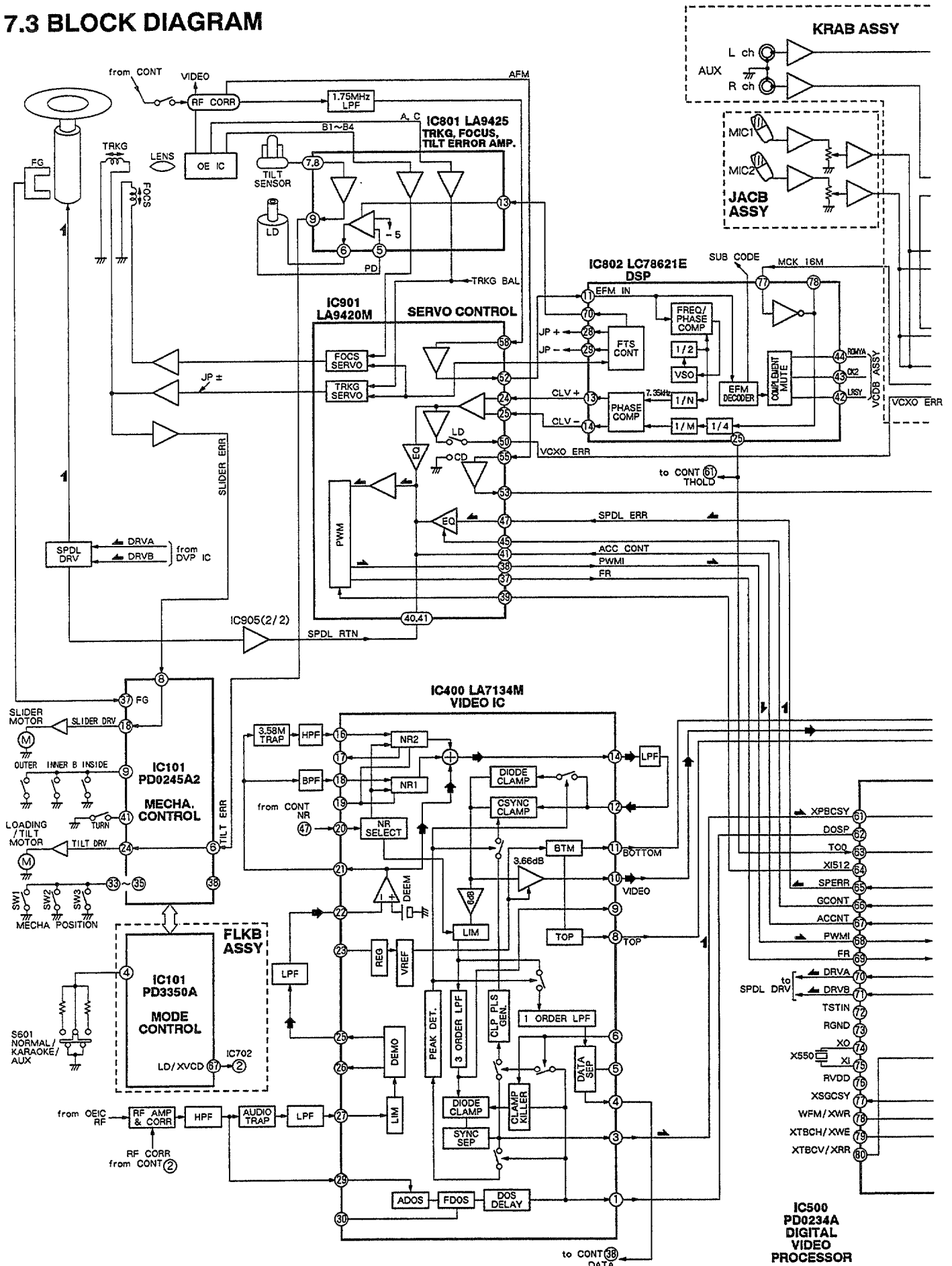
⑥ Tray Close

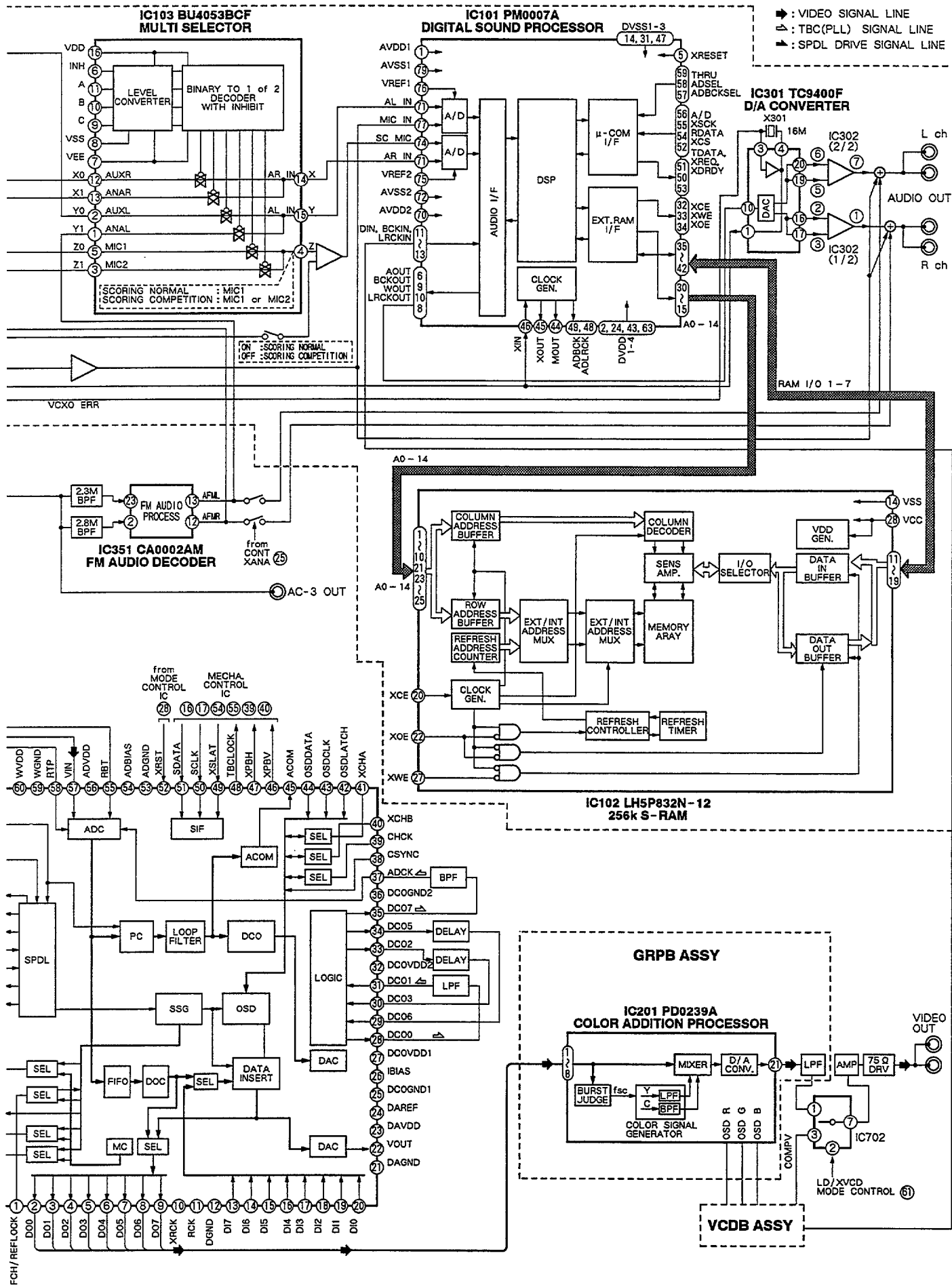


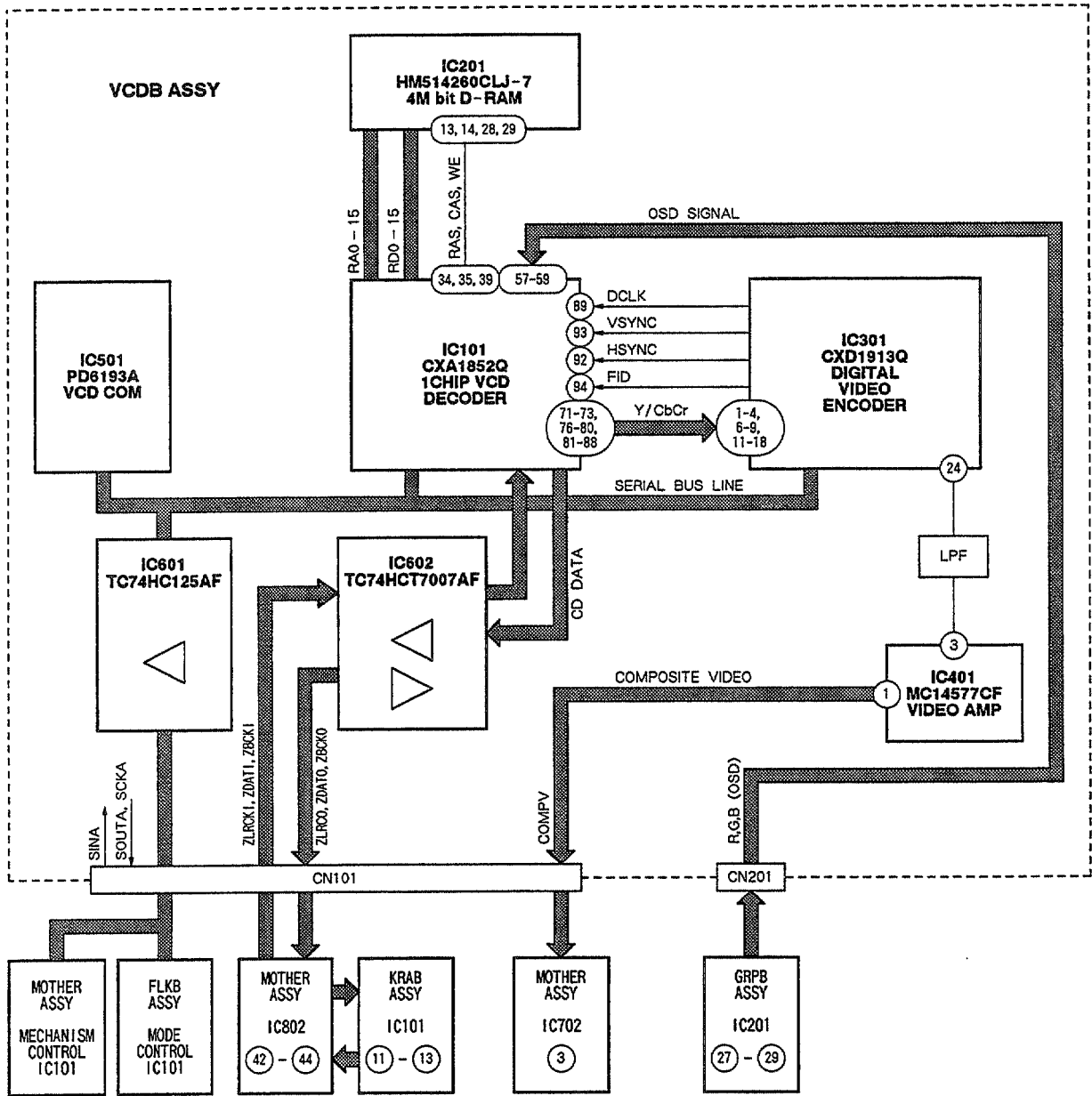
⑦ 100% Color-bar Output



7.3 BLOCK DIAGRAM

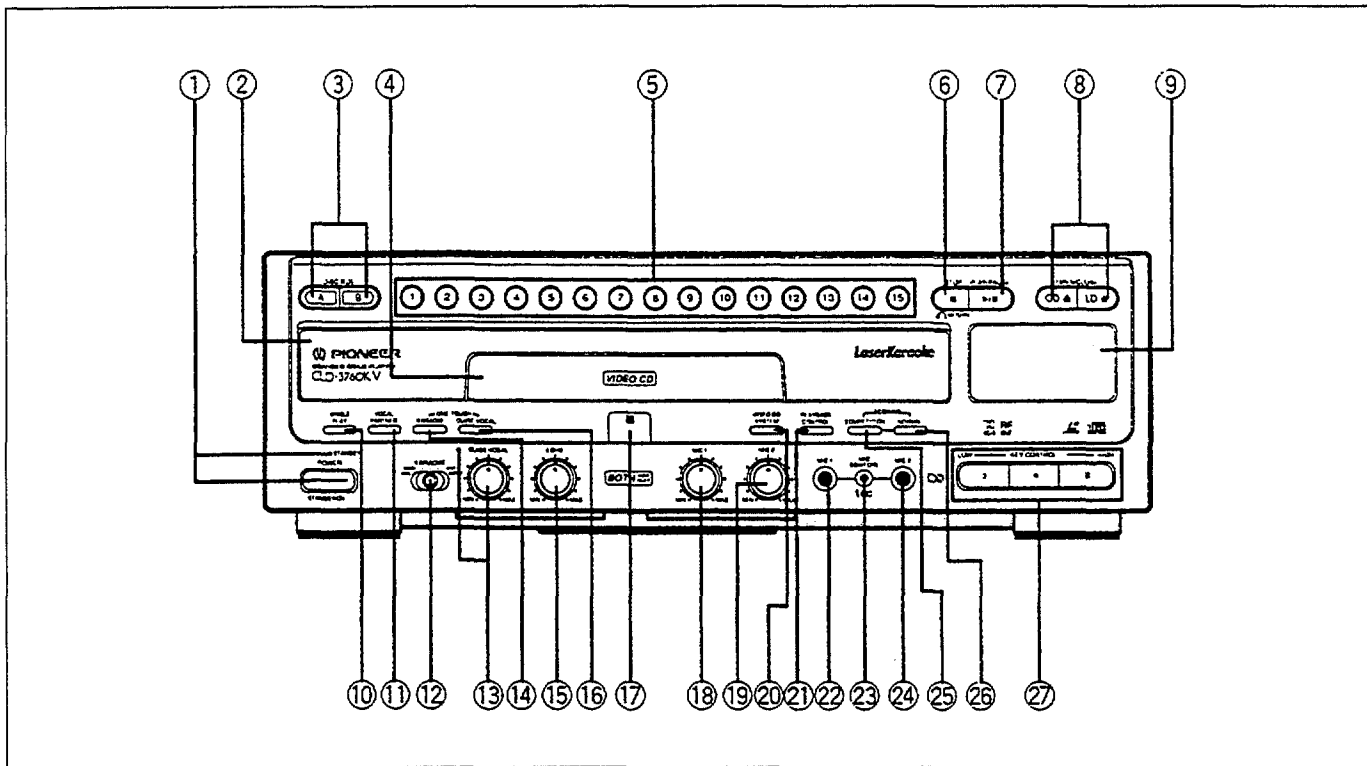






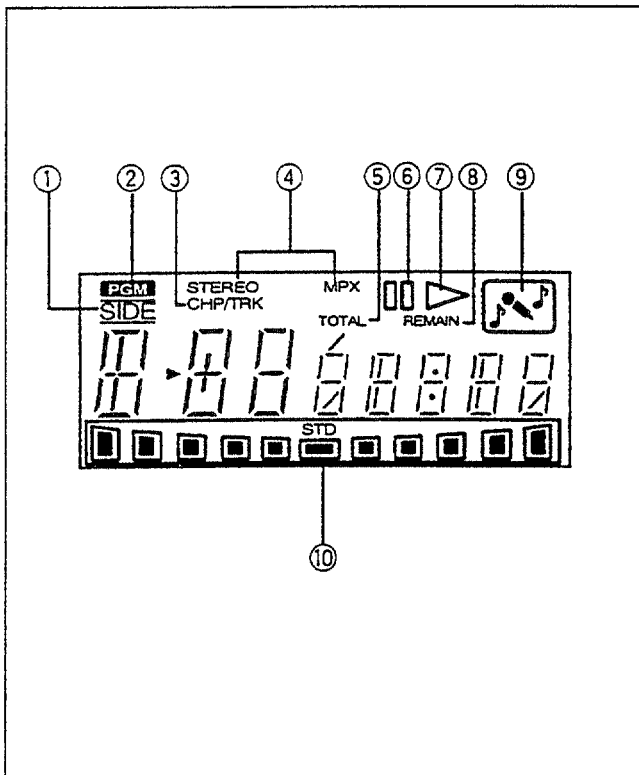
## 8. PANEL FACILITIES AND SPECIFICATIONS

### ■ FRONT PANEL



- |   |  |
|---|--|
| <p>① <b>POWERSTANDBY/ON</b> switch and <b>STANDBY</b> indicator<br/>Press to turn the power on and off.</p> <p>② <b>Disc table</b></p> <p>③ <b>DISC SIDE A/SIDE B</b> buttons</p> <p>④ <b>CD Disc table</b></p> <p>⑤ <b>Direct music search</b> buttons</p> <p>⑥ <b>STOP (■)/RETURN (↶)</b> button</p> <p>⑦ <b>PLAY/PAUSE (▶/  )</b> button</p> <p>⑧ <b>OPEN/CLOSE (CD ▲/LD ▲)</b> buttons</p> <p>⑨ <b>Display window</b></p> <p>⑩ <b>SINGLE PLAY</b> button/indicator</p> <p>⑪ <b>VOCAL PARTNER</b> button/indicator</p> <p>⑫ <b>NORMAL/KARAOKE/AUX INPUT</b> selector</p> <p>⑬ <b>GUIDE VOCAL</b> level control/indicator</p> | <p>⑭ <b>ONE-TOUCH KARAOKE</b> button/indicator</p> <p>⑮ <b>ECHO</b> level control</p> <p>⑯ <b>ONE-TOUCH GUIDE VOCAL</b> button/indicator</p> <p>⑰ <b>Remote sensor</b></p> <p>⑱ <b>MIC 1</b> level control</p> <p>⑲ <b>MIC 2</b> level control</p> <p>⑳ <b>VIDEO CD SYSTEM</b> button/indicator<br/>Press to switch the video output signal format from the VIDEO CD between NTSC and PAL. (Indicator lit)</p> <p>㉑ <b>PLAYBACK CONTROL</b> button/indicator</p> <p>㉒ <b>MIC 1</b> jack</p> <p>㉓ <b>MIC CONTROL</b> jack</p> <p>㉔ <b>MIC 2</b> jack</p> <p>㉕ <b>SCORING COMPETITION</b> button/indicator</p> <p>㉖ <b>SCORING NORMAL</b> button/indicator</p> <p>㉗ <b>KEY CONTROL</b> buttons</p> |
|---|--|

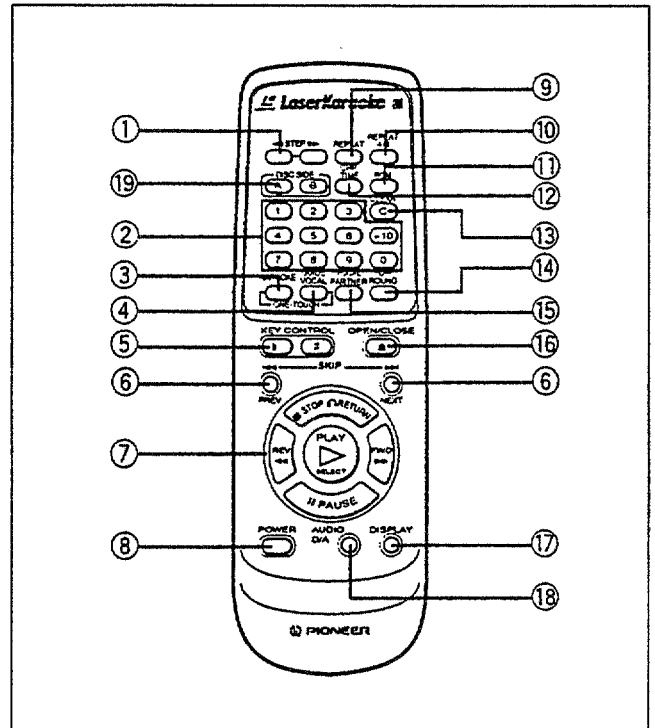
## ■ DISPLAY WINDOW



- ① **SIDE indicator**
- ② **PGM (Program) indicator**
- ③ **Chapter number/Track number indicator**
- ④ **Audio mode indicators**  
Display the type of the played audio signal when the KARAOKE or AUX input is selected.
- ⑤ **TOTAL indicator**
- ⑥ **|| Pause indicator**
- ⑦ **▶ Play indicator**
- ⑧ **REMAIN indicator**
- ⑨ **KARAOKE indicator**
- ⑩ **Key control indicator**

## ■ REMOTE CONTROL UNIT

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



- ① **STEP (◀||||▶) buttons**
- ② **Digit buttons**
- ③ **ONE-TOUCH KARAOKE button**
- ④ **ONE-TOUCH GUIDE VOCAL button**
- ⑤ **KEY CONTROL buttons**
- ⑥ **SKIP (◀◀/PREV ▶▶/NEXT) buttons**
- ⑦ **Operation buttons**  
  - /◊ : **STOP/RETURN button**
  - ▶ : **PLAY/SELECT button**
  - || : **PAUSE button**
  - ◀◀/▶▶ : **Scan buttons**
- ⑧ **POWER button**
- ⑨ **REPEAT button**
- ⑩ **REPEAT A-B button**
- ⑪ **PGM (Program) button**
- ⑫ **CHP/TIME (Chapter/Time) button**
- ⑬ **CLEAR button**
- ⑭ **SURROUND button**
- ⑮ **VOCAL PARTNER button**
- ⑯ **OPEN/CLOSE (▲) button**
- ⑰ **DISPLAY button**
- ⑱ **AUDIO D/A button**
- ⑲ **DISC SIDE A/B buttons**

## ■ SPECIFICATIONS

### General

System ..... LaserVision Disc system and Compact Disc digital audio system  
 Laser ..... Semiconductor laser wavelength 780 nm  
 Power requirements ..... AC 110 - 127/220 - 240 V, 50/60 Hz  
 Power consumption ..... 38 W  
 Weight ..... 6.8 kg  
 Dimensions ..... 420 (W) x 412 (D) x 132 (H) mm  
 Operating temperature ..... +5 °C ~ +35 °C  
 Operating humidity ..... 5 % ~ 85 %  
 (There should be no condensation of moisture.)

### Video characteristics (two pairs)

Format ..... NTSC specifications  
 PAL (VIDEO CD only)  
 Video output  
 Level ..... 1 Vp-p nominal, sync. negative, terminated  
 Impedance ..... 75 Ω unbalanced  
 Jack ..... RCA jack

### Audio characteristics (two pairs)

Output level  
 During analog audio output ..... 200 mVrms  
 (1 kHz, 40 %)  
 During digital audio output ..... 200 mVrms  
 (1 kHz, -20 dB)  
 Jacks ..... Both RCA jacks  
 Number of channels ..... 2 (Stereo)

### Other terminals

Control input/output ..... Both miniature jacks  
 AUX ..... RCA jacks  
 AC-3 · RF OUT PUT ..... RCA jack

### Accessories

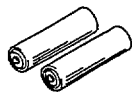
Remote control unit ..... 1  
 Size "AAA" (IEC R03) dry cell batteries ..... 2  
 Video cord ..... 1  
 Audio cord ..... 1  
 Power cord ..... 1  
 Operating instructions ..... 1  
 Warranty card ..... 1

### NOTE:

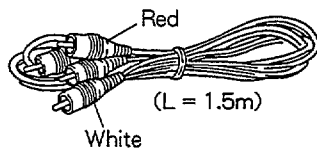
*The specifications and design of this product are subject to change without notice, due to improvement.*

## When unpacking the player, first check to make sure that all of the accessories listed below are supplied.

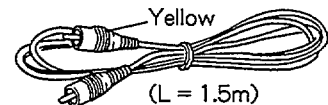
- Remote control unit
- Size "AAA" (IEC R03) dry cell battery x 2



- Audio cord  
 (Pin plug x 2 ↔ Pin plug x 2)  
 Use to connect the player to a stereo amplifier etc.



- Video cord  
 (Pin plug ↔ Pin plug)  
 Use to connect the player to a color monitor etc.



- Power cord  
 <Flat blade 2-pin AC plug model>



- <Round blade 2-pin AC plug model>



- Operating instructions
- Warranty card