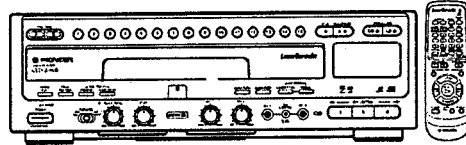


# Service Manual



ORDER NO.  
RRV1640

CD CDV LD PLAYER

# CLD-V870

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

Type	Model	Power Requirement	Remarks
	CLD-V870		
KU	○	AC120V	
KC	○	AC120V	

## CONTENTS

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# 1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.



**WARNING**

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

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



**NOTICE**

(FOR CANADIAN MODEL ONLY)

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

**REMARQUE**

(POUR MODÈLE CANADIEN SEULEMENT)

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

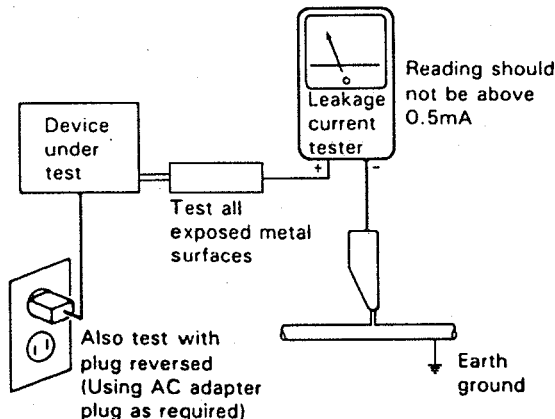
(FOR USA MODEL ONLY)

## 1. SAFETY PRECAUTIONS

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

### LEAKAGE CURRENT CHECK

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



AC Leakage Test

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

## 2. PRODUCT SAFETY NOTICE

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

Electrical components having such features are identified by marking with a  $\Delta$  on the schematics and on the parts list in this Service Manual. The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

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

## 2. PACKING, EXPLODED VIEWS AND PARTS LIST

**NOTES:**

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

### 2.1 PACKING

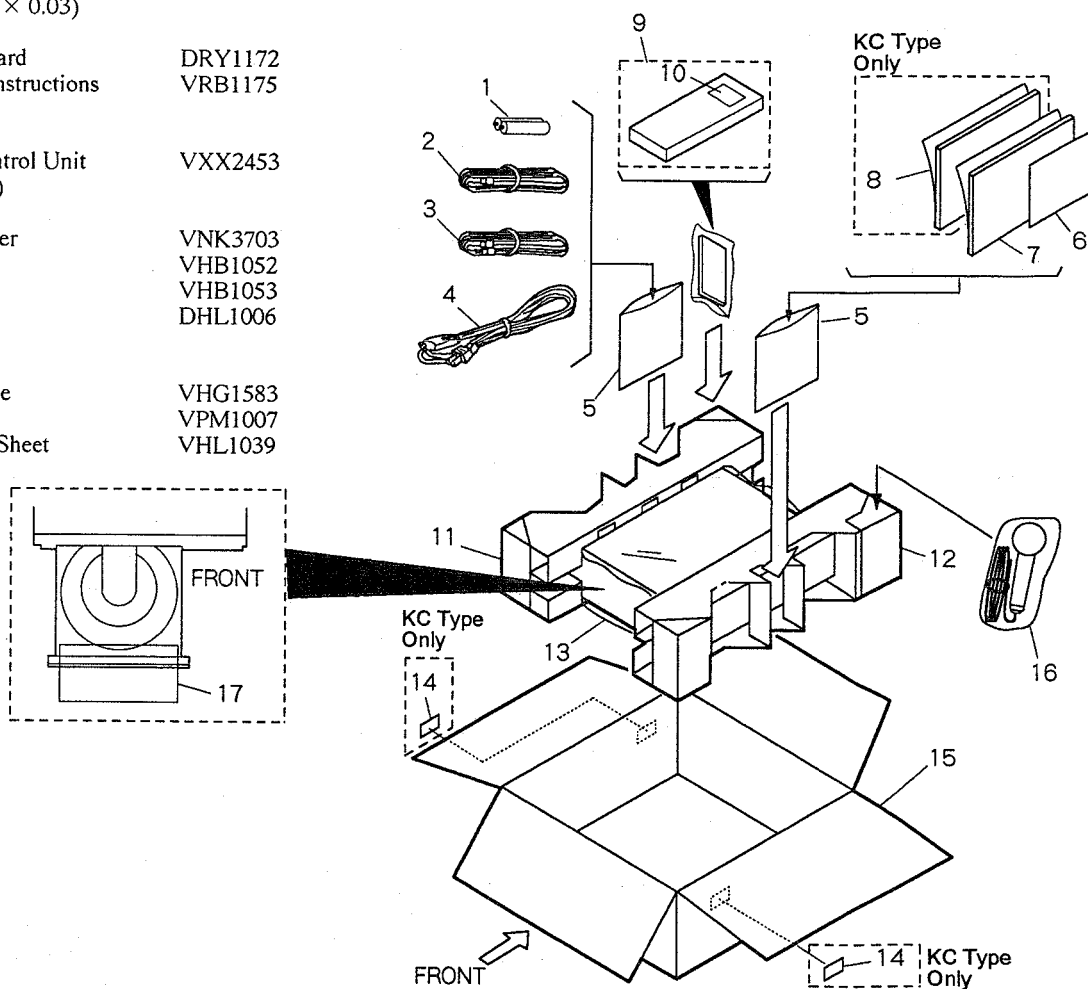
#### (1) CONTRAST OF CLD - V870/KU AND KC.

CLD - V870/KU and KC have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.		Remarks
			CLD - V870/KU	CLD - V870/KC	
NSP	6	Warranty Card	DRY1172	ARY1039	
	8	Operating Instructions (French)	Not used	VRC1049	
	14	KC Label	Not used	VRW1402	

#### (2) PARTS LIST FOR CLD - V870/KU

Mark	No.	Description	Part No.
NSP	1	Dry Cell Battery (R6P, AA)	VEM-013
	2	Video Cord	VDE1048
	3	Audio Cord	VDE1047
$\Delta$	4	AC Power Cord	ADG1126
	5	Polyethylene Bag (230 × 340 × 0.03)	Z21-038
NSP	6	Warranty Card	DRY1172
	7	Operating Instructions (English)	VRB1175
	8	.....	
	9	Remote Control Unit (CU - V152)	VXX2453
	10	Battery Cover	VNK3703
	11	Protector L	VHB1052
	12	Protector R	VHB1053
	13	Mirror Mat	DHL1006
	14	.....	
	15	Packing Case	VHG1583
	16	Microphone	VPM1007
	17	Mirror Mat Sheet	VHL1039



# CLD - V870

## 2.2 EXTERIOR AND DISC TRAY SECTION

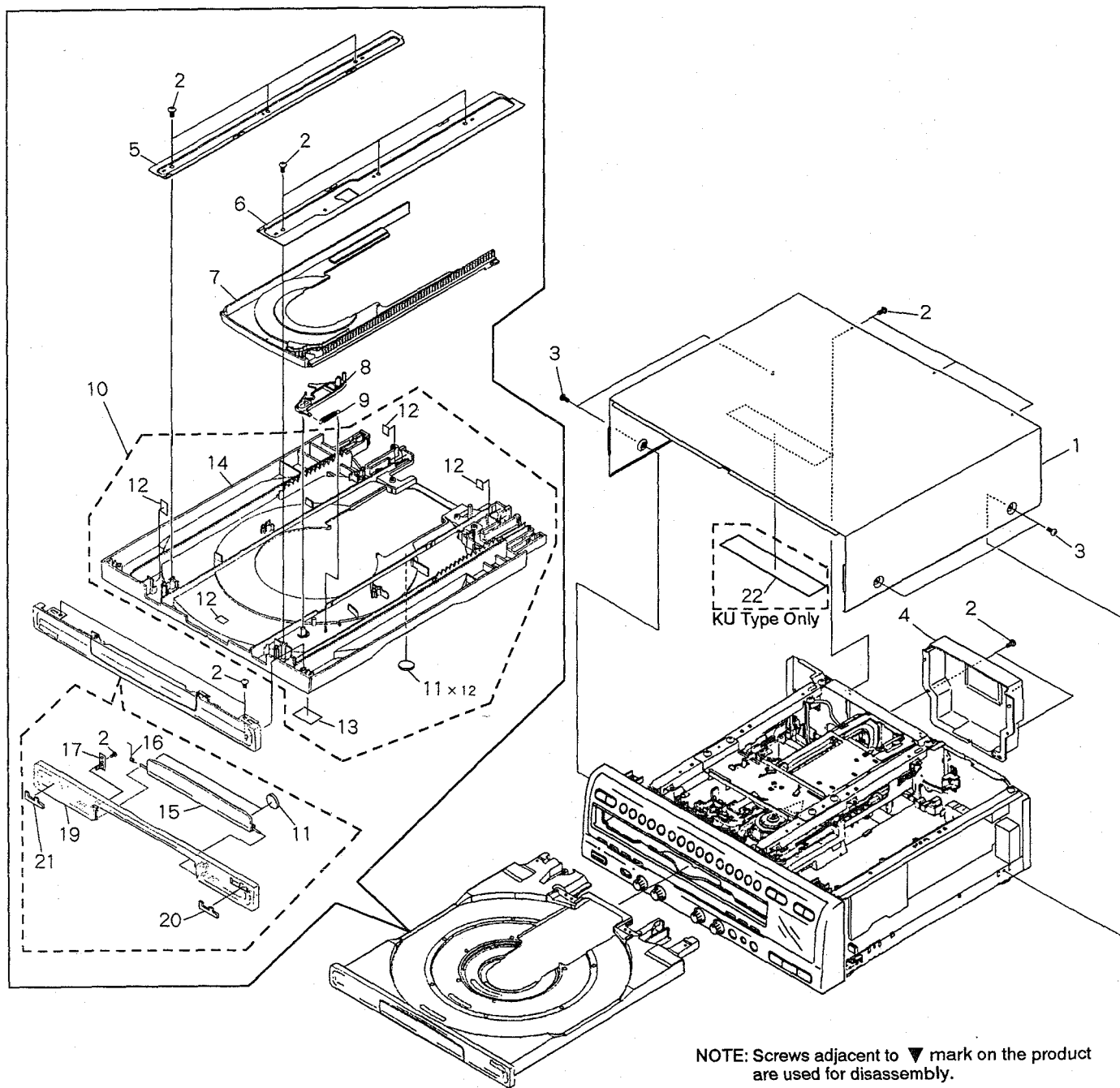
### (1) CONTRAST OF CLD - V870/KU AND KC.

CLD - V870/KU and KC have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.		Remarks
			CLD - V870/KU	CLD - V870/KC	
	1	Bonnet S	VXX2355	VXX2252	
	22	65 Label	ORW1069	Not used	

### (2) PARTS LIST FOR CLD - V870/KU

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Bonnet S	VXX2355		11	Cushion	VEC1682
	2	Screw	BBZ30P080FMC		12	Damp Cushion	VEC1683
	3	Screw	BCZ40P060FZK	NSP	13	Label	VRW1289
	4	Rear Cover	VNK3786		14	LD Tray Assy	VXA2173
	5	Guide Plate (R)	VNE1939		15	CD Door Assy	VXA2299
	6	Guide Plate (L)	VNE1938		16	Door Spring	VBH1248
	7	CD Tray	VNK3007		17	Door Holder	VNL1704
	8	Lock Plate	VNL1703		18	•••••	
	9	Lock Plate Spring	VBH1188		19	Tray Panel	VNK3788
	10	Tray Assy - S	VXX2307		20	Karaoke Plate	VAM1055
					21	Name Plate	PAM1704
					22	65 Label	ORW1069

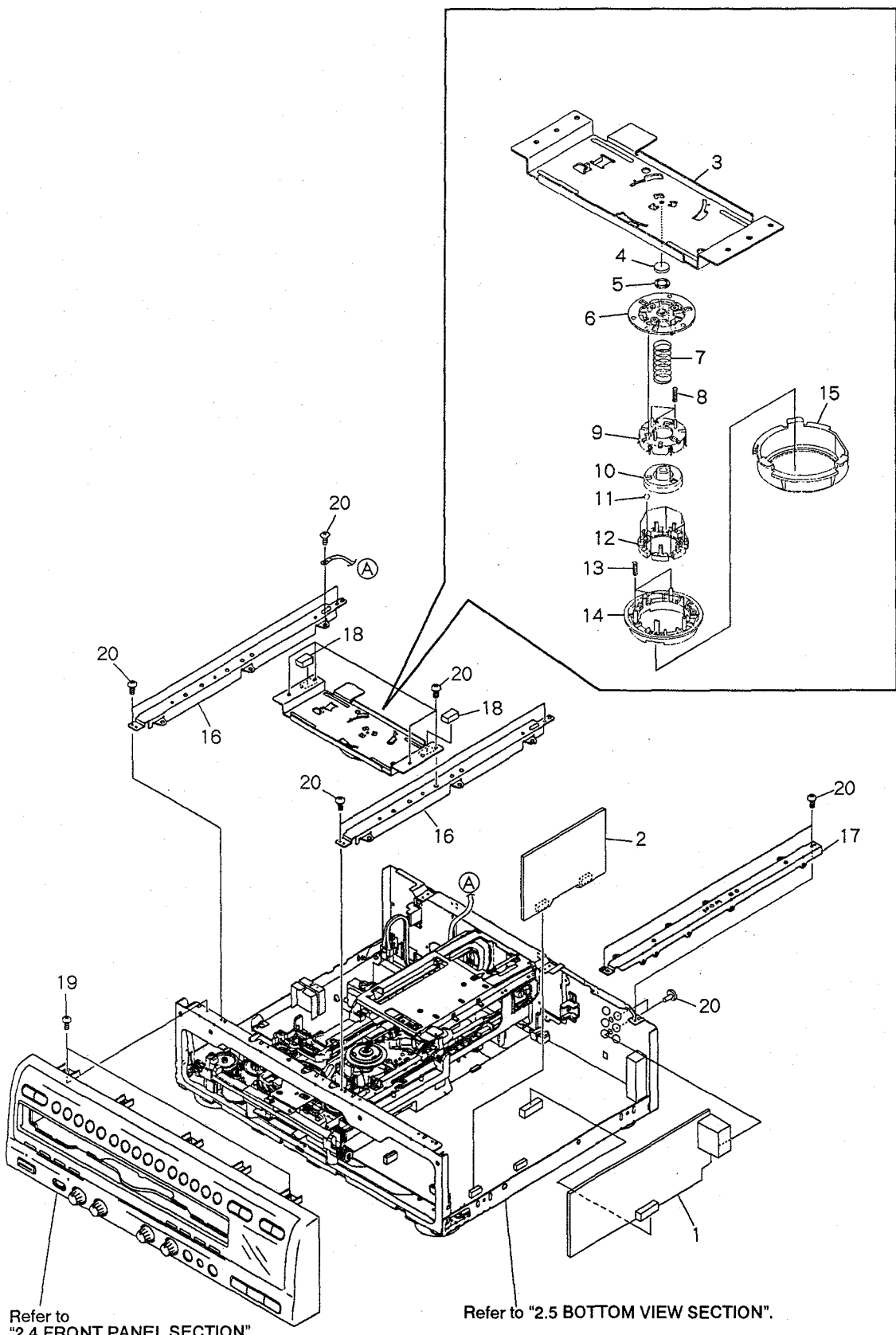


# CLD - V870

## 2.3 TOP VIEW SECTION

### Parts List

<u>Mark</u>	<u>No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Mark</u>	<u>No.</u>	<u>Description</u>	<u>Part No.</u>
	1	KRAB Assy	VWV1491		11	Steel Ball	VNX1013
	2	GRPB Assy	VWV1501		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	VNE1964
	8	Cover Spring	VBH1234	NSP	18	Damp Cushion	VEC1602
	9	Ball Cover	VNL1602		19	Screw	IBZ30P080FMC
	10	LD Hab	VNT1047		20	Screw	BBZ30P080FMC

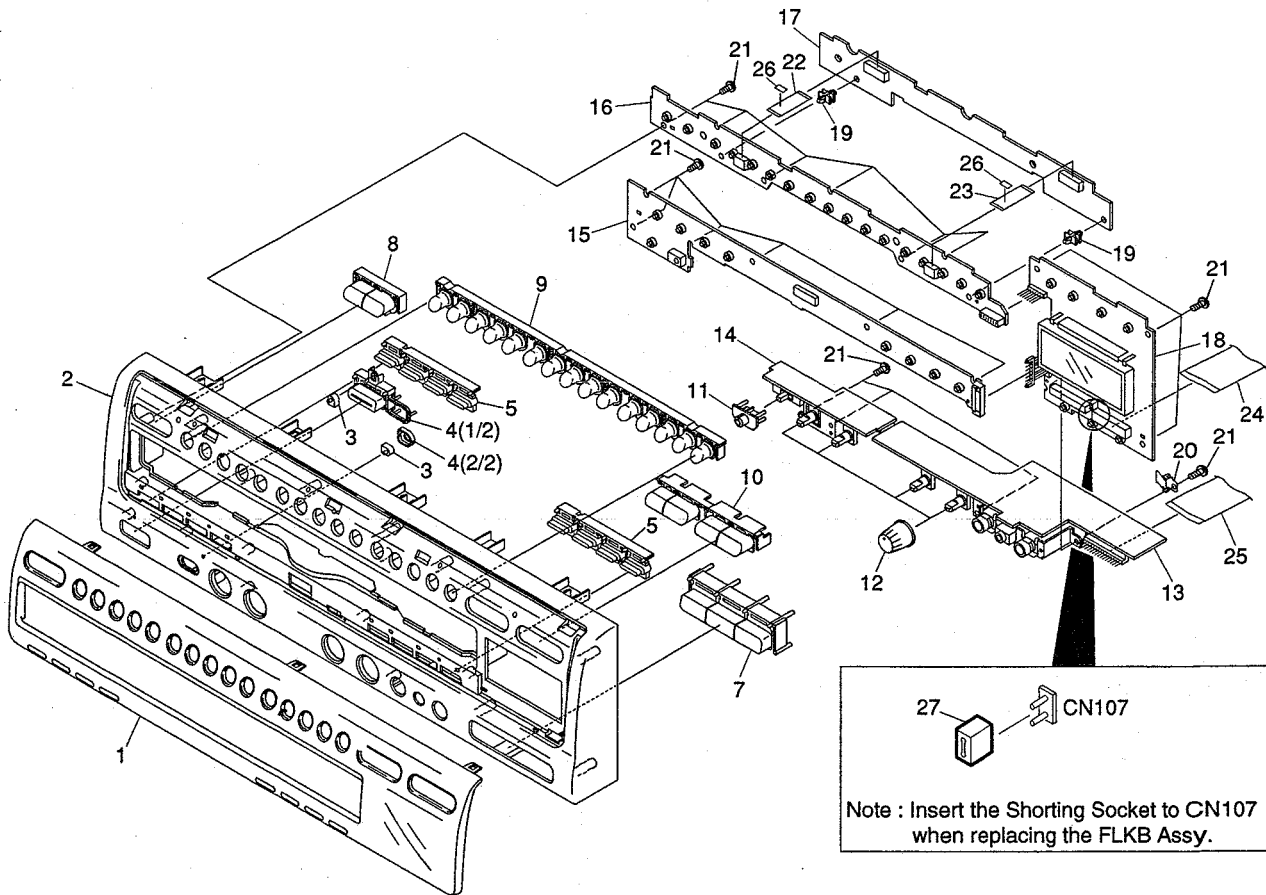


# CLD-V870

## 2.4 FRONT PANEL SECTION

### Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Center Panel	VNK3790	NSP	16	DIKB Assy	VWG1763
	2	Front Panel	VNK3770	NSP	17	IOEB Assy	VWG1764
	3	LED Lens	PNW2019		18	FLKB Assy	VWG1760
	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) (DIKB CN303 – IOEB CN702)	VDA1557
	8	A/B Button	VNK3678		23	Flexible Cable (10P) (DIKB CN302 – IOEB CN701)	VDA1557
	9	15 Key	VNK3673		24	Flexible Cable (22P) (FLKB CN102 – MOTHER CN107)	VDA1551
	10	Play Button	VNK3676		25	Flexible Cable (19P) (JACB CN501 – KRAB CN102)	VDA1552
	11	Slide Knob	VNK3187		26	Spacer	VEC1894
NSP	12	VR Knob	VWV1492		27	Shorting Socket	DKX1039
NSP	13	JACB Assy	VWG1761				
NSP	14	VRSB Assy	VWG1762				
	15	KALB Assy	VWG1762				

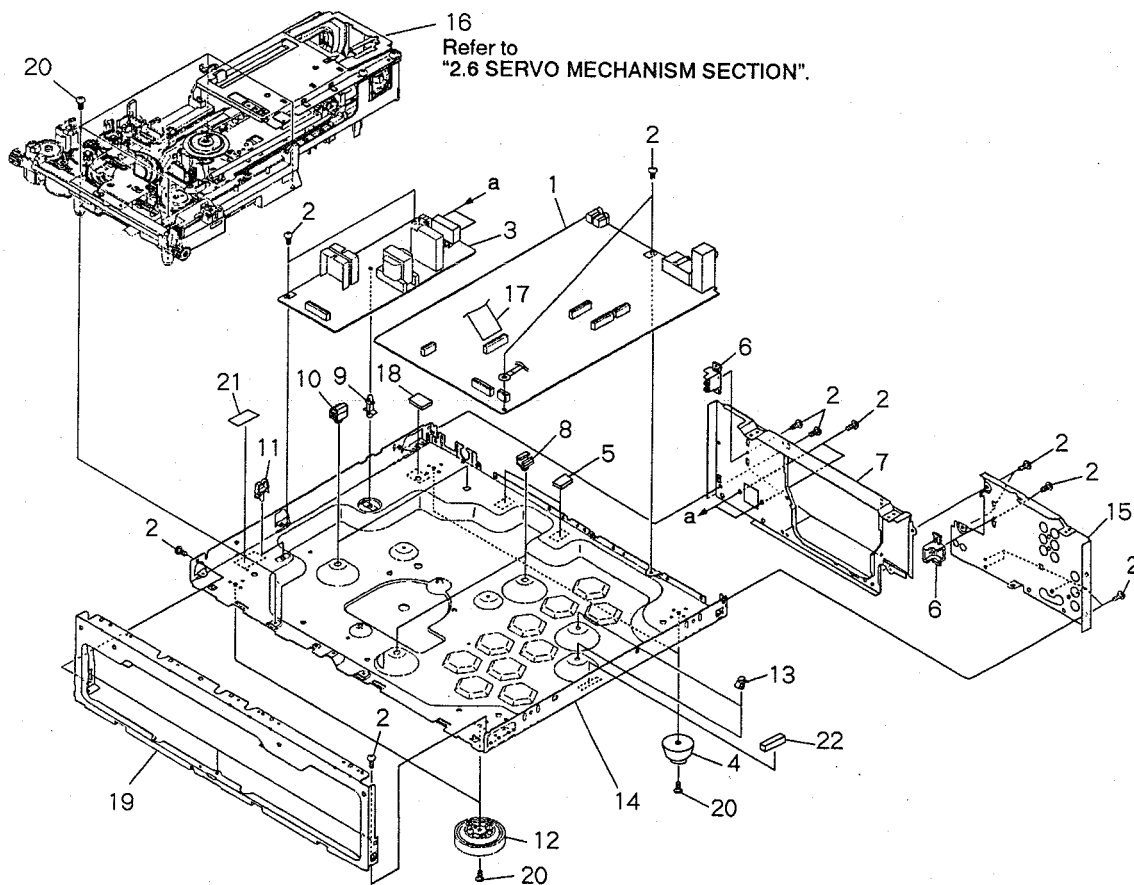




2.5 BOTTOM VIEW SECTION

Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	MOTHER Assy	VWS1249	NSP	11	Wire Clip (H)	VEC1181
	2	Screw	BBZ30P080FMC		12	Insulator	PNW1912
△	3	POWER SUPPLY Assy	VWR1269		13	Card Spacer A	VEC1708
	4	Insulator Assy	VXA2295	NSP	14	Chassis	VNA1564
NSP	5	Rubber Spacer	VEB1252		15	Rear Panel (L)	VNA1741
	6	Tray Stopper	VNL1657	NSP	16	Mechanism Assy	VWT1131
	7	Rear Panel (R)	VNA1734		17	Flexible Cable (21P)	VDA1465
NSP	8	P Plate Holder	PNY-405			(MOTHER CN102-POWER SUPPLY CN202)	
NSP	9	PC Support	VEC-269		18	Spacer	PEB1275
NSP	10	PCB Hinge	VEC1174	NSP	19	Panel Holder	VNA1507
					20	Screw	BBZ30P100FMC
					21	F. ICP Caution Label	VRW1590
					22	Spacer	REB1171

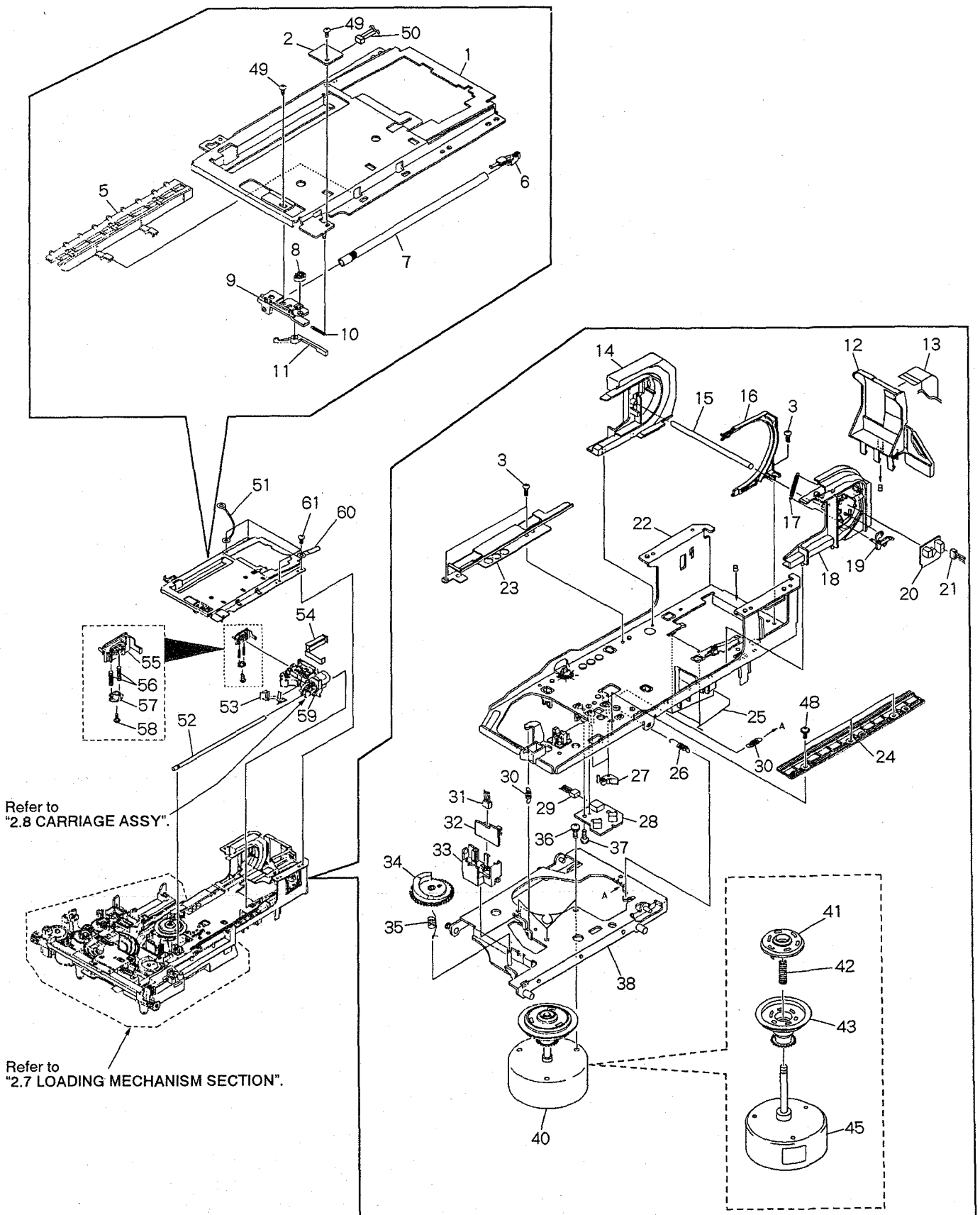


# CLD - V870

## 2.6 SERVO MECHANISM SECTION

### Parts List

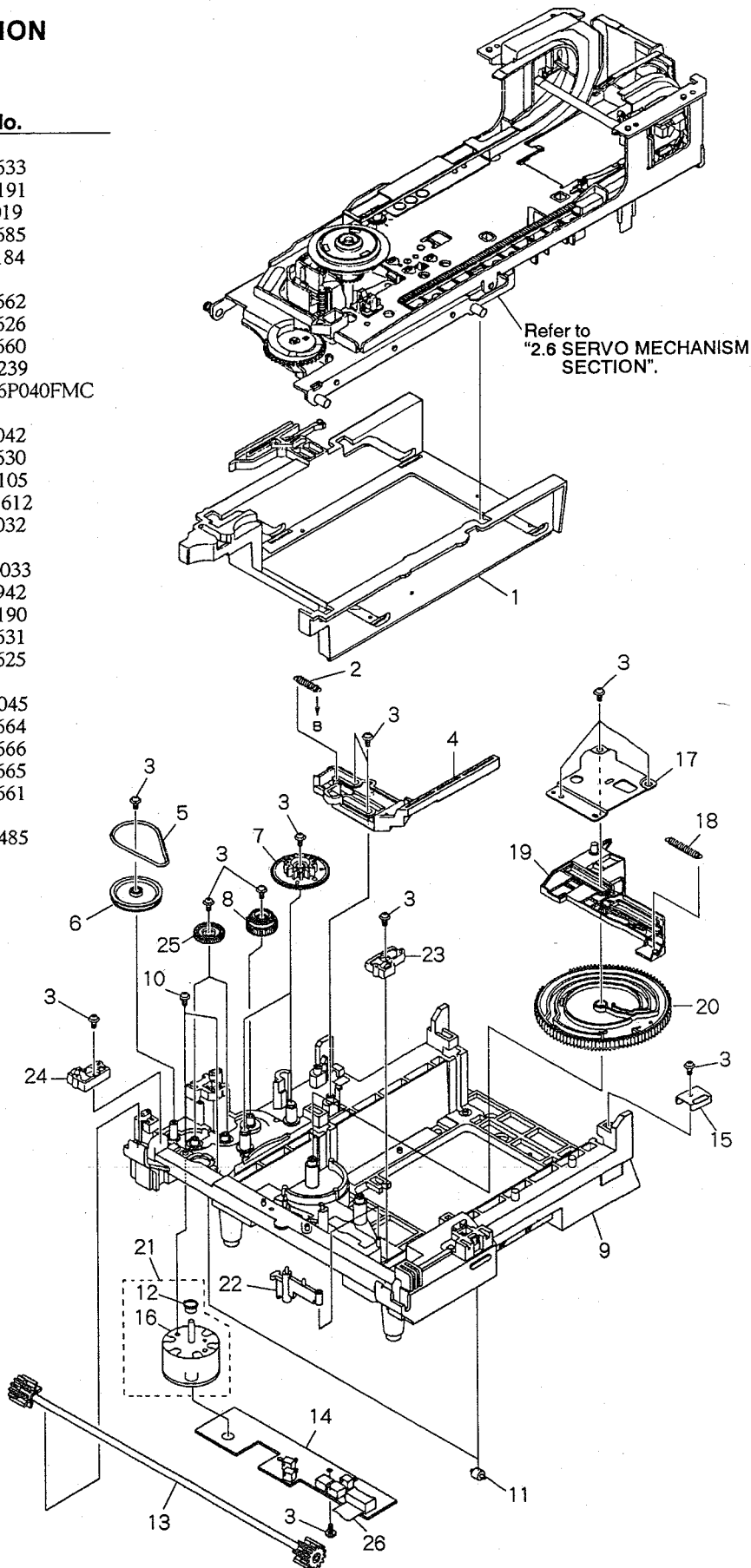
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
NSP	1	Tilt Base (upper)	VNE1969	NSP	31	Housing Assy (3P, Yellow)	VKP2046
	2	BISB Assy	VWG1558		32	FG Assy	VWG1556
	3	Screw	BBZ30P060FMC		33	FG Base	VNL1645
	4	•••••			34	Tilt Cam	VNL1643
	5	Rack (Upper)	VNL1679		35	Tilt Cam Spring	VBH1243
	6	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

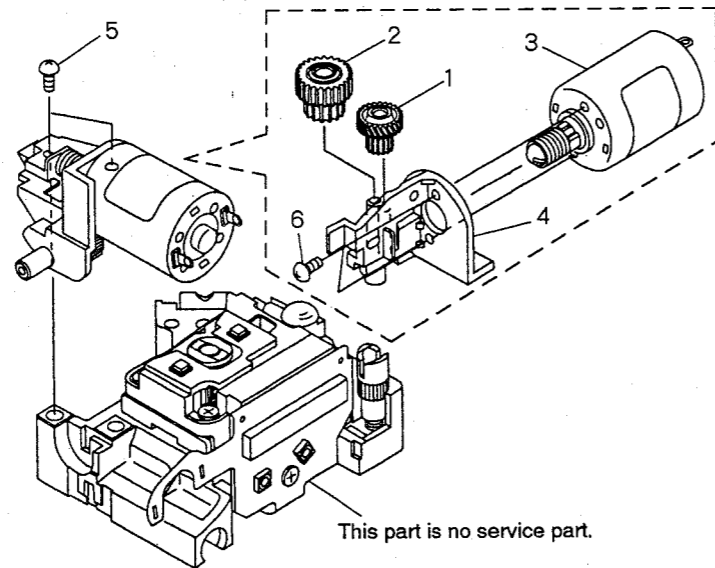
Mark	No.	Description	Part No.
	1	Clamp Cam	VNL1633
	2	CDP Spring	VBH1191
	3	Screw	Z39-019
	4	CD Plate	VNL1685
	5	Rubber Belt	VEB1184
	6	Gear Pulley	VNL1662
	7	Twin Gear	VNL1626
	8	Center Gear	VNL1660
	9	Mechanism Base	VNK3239
	10	Screw	BMZ26P040FMC
	11	Roller	VNL1042
NSP	12	Motor Pulley	VNL1630
	13	Synchro 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 AND PCB CONNECTION DIAGRAMS

### NOTE FOR SCHEMATIC DIAGRAM (Type 4A)

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

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

#### 3. RESISTORS:

Unit: k: kΩ, M: MΩ, or Ω unless otherwise noted.  
 Rated power: 1/4W, 1/8W, 1/10W unless otherwise noted.  
 Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.

#### 4. CAPACITORS:

Unit: p: pF or μF unless otherwise noted.  
 Ratings: capacitor (μF) / voltage (V) unless otherwise noted.  
 Rated voltage: 50V except for electrolytic capacitors.

#### 5. COILS:

Unit: m: mH or μH unless otherwise noted.

#### 6. VOLTAGE AND CURRENT:

□ 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.

#### 7. OTHERS:

- or ○ : Adjusting point.
- ◀ : Measurement point.
- The Δ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

#### 8. SCH - □ ON THE SCHEMATIC DIAGRAM:

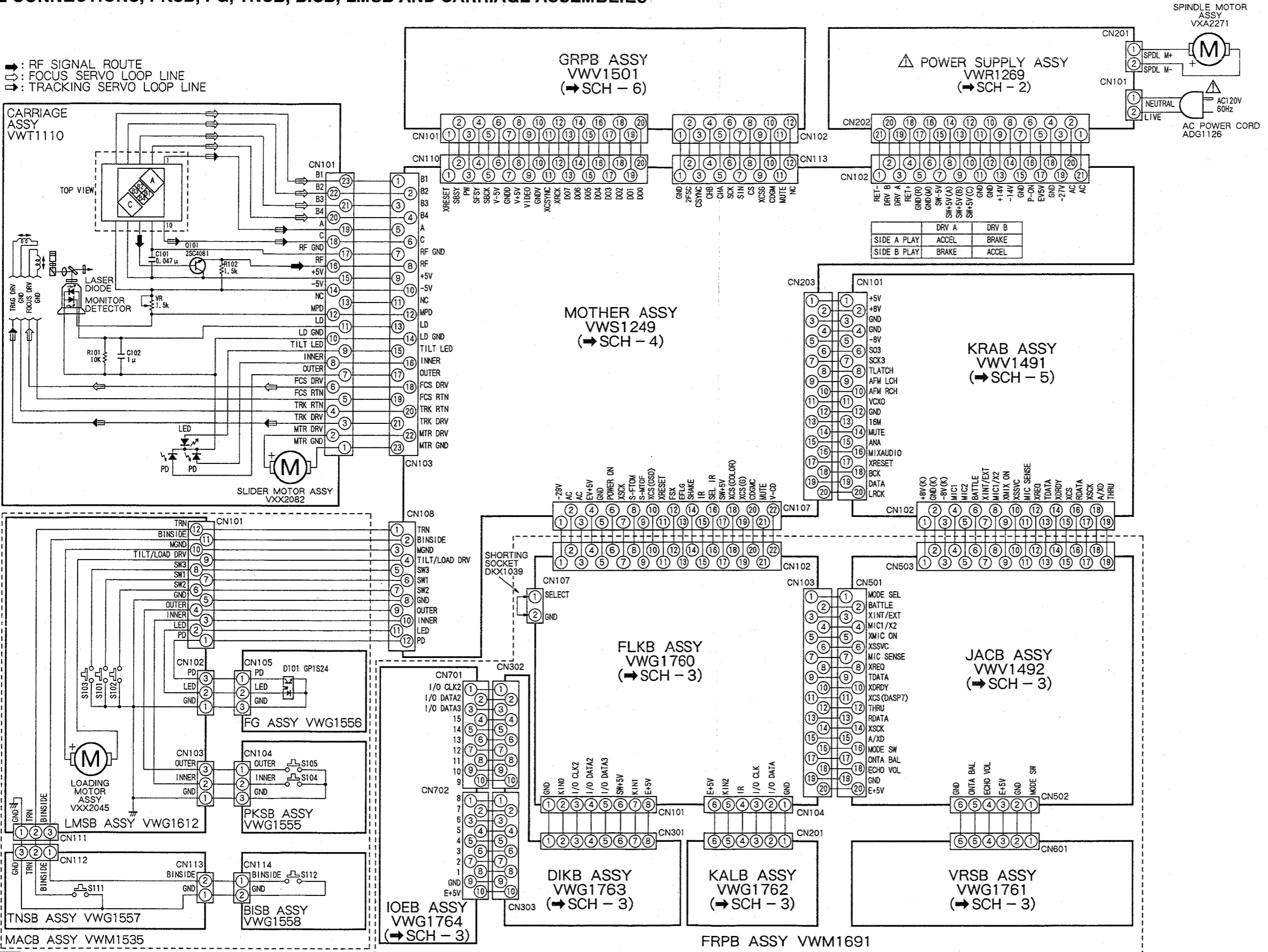
- SCH-□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

#### 9. SWITCHES (Underline indicates switch position):

LMSB ASSY	BISB ASSY
S101 : SW1	S112 : B INSIDE
S102 : SW2	
S103 : SW3	
PKSB ASSY	TNSB ASSY
S104 : INNER	S111 : TURN
S105 : OUTER	
FLKB ASSY	DIKB ASSY
S101 : STOP(■)	S301 : A
S102 : PLAY/PAUSE(▶/  )	S302 : B ] DISC SIDE
S103 : OPEN/CLOSE(CD ▲)	S303 : 1
S104 : OPEN/CLOSE(LD ▲)	S304 : 2
S105 : ♪	S305 : 3
S106 : #	S306 : 4
S107 : ♪	S307 : 5
	S308 : 6
VRSB ASSY	S309 : 7
S801 : NORMAL/KARAOKE/AUX INPUT	S310 : 8
	S311 : 9
KALB ASSY	S312 : 10
S201 : POWER STANDBY/ON	S313 : 11
S202 : SINGLE PLAY	S314 : 12
S203 : VOCAL PARTNER	S315 : 13
S204 : ONE- TOUCH KARAOKE	S316 : 14
S205 : ONE- TOUCH GUIDE VOCAL	S317 : 15
S206 : QUICK TURN	
S207 : GRAPHICS	KRAB ASSY
S208 : COMPETITION ] SCORING	S301 : ATTENUATOR
S209 : NORMAL	

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

SCH-1

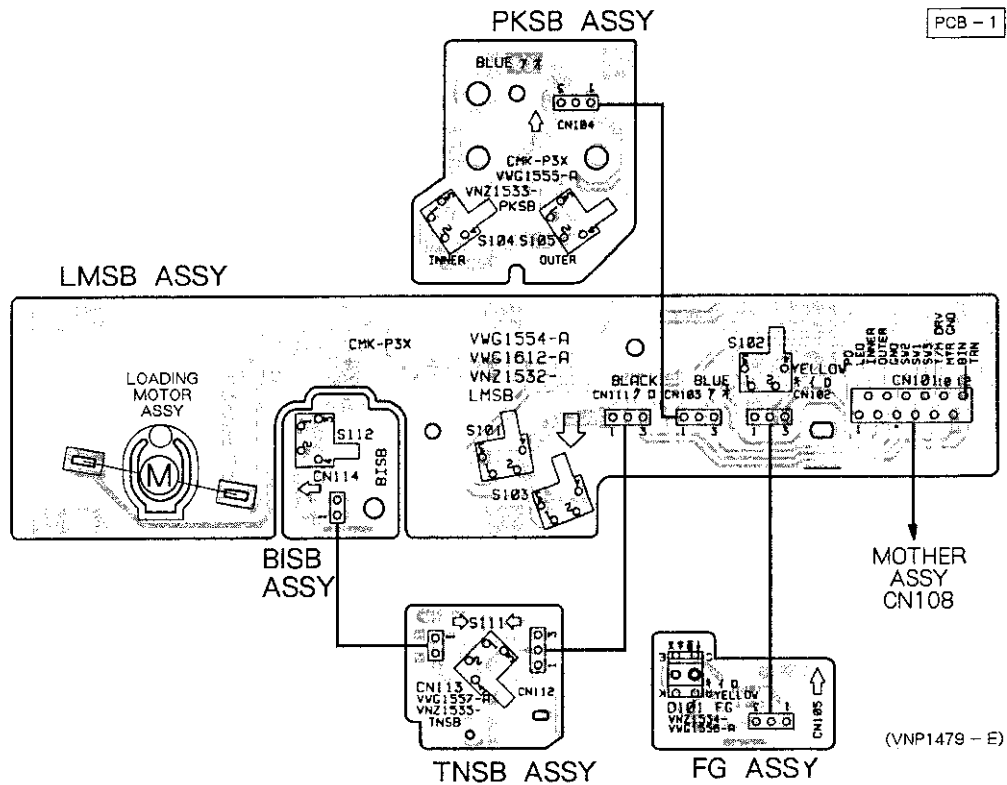


SCH-1

OVERALL CONNECTIONS, PKSB ASSY, FG ASSY, TNSB ASSY, BISB ASSY, LMSB ASSY, CARRIAGE ASSY

OVERALL CONNECTIONS, PKSB ASSY, FG ASSY, TNSB ASSY, BISB ASSY, LMSB ASSY, CARRIAGE ASSY

SCH-1



• This diagram is viewed from the mounted parts side.

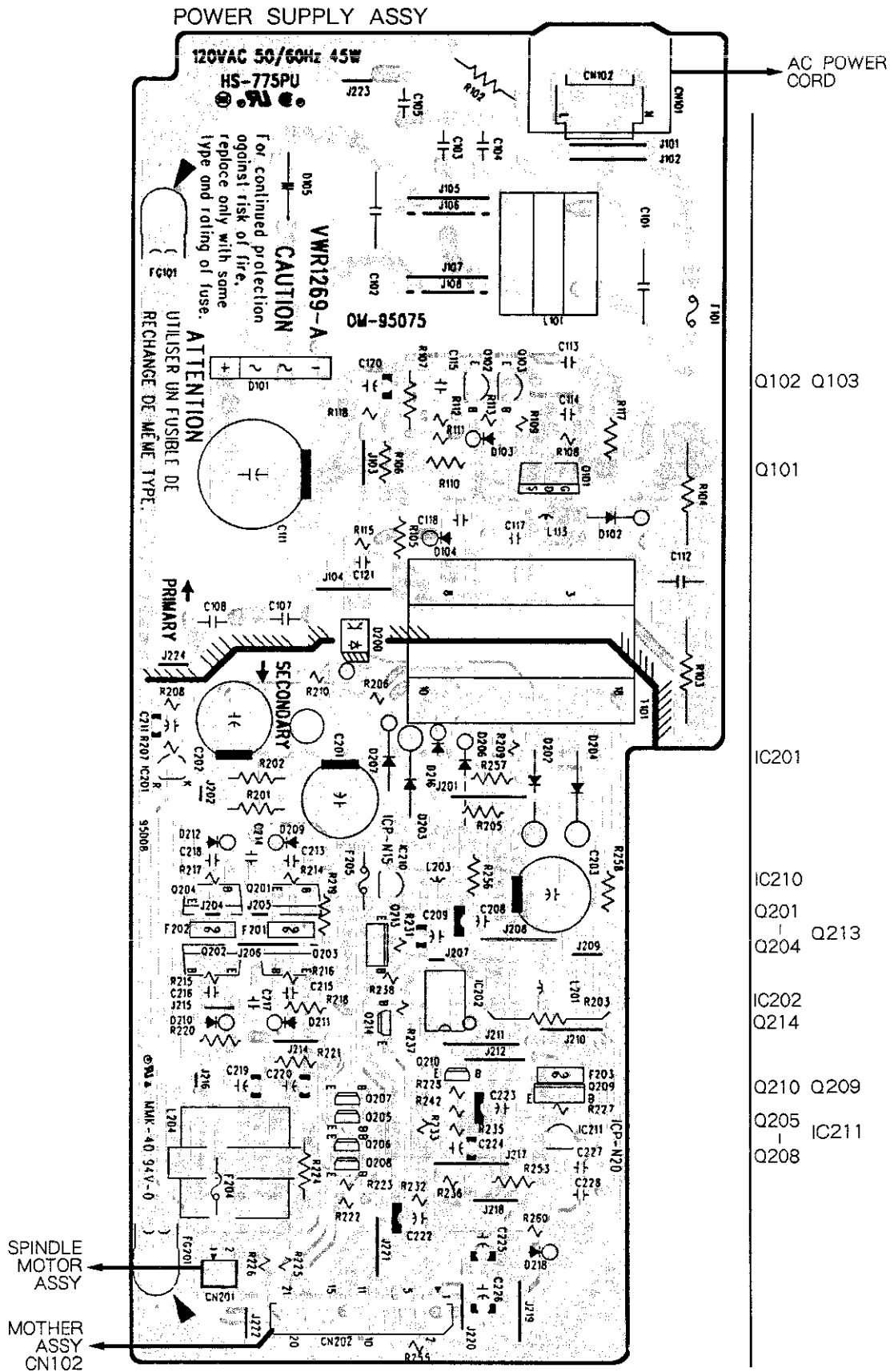
**NOTE FOR PCB DIAGRAMS:**

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.

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

3.2 POWER SUPPLY ASSY

PCB - 2



• This diagram is viewed from the mounted parts side.



△ POWER SUPPLY ASSY (VWR1269)

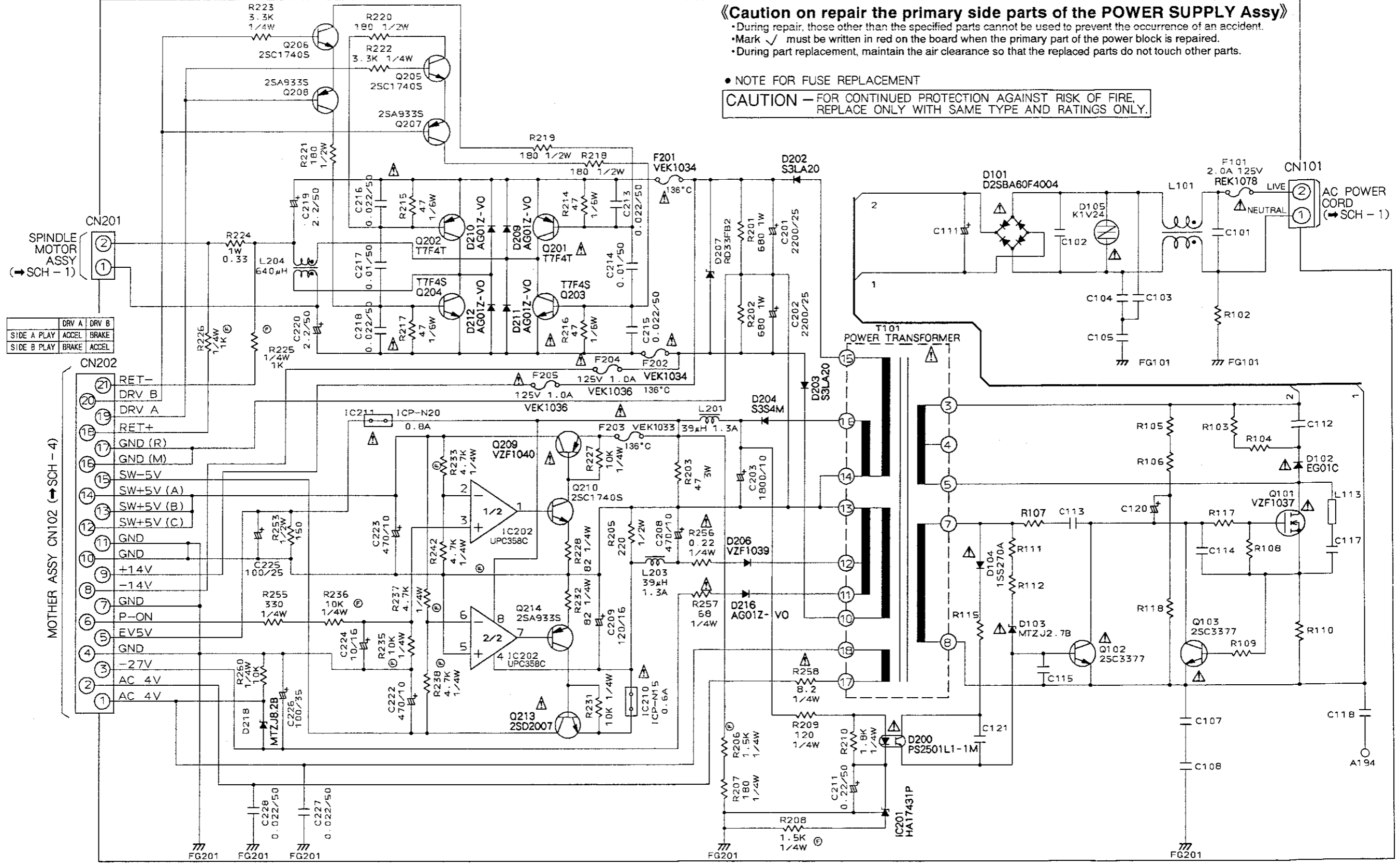
SCH-2

⚠️ Caution on repair the primary side parts of the POWER SUPPLY Assy

- During repair, those other than the specified parts cannot be used to prevent the occurrence of an accident.
- Mark ✓ must be written in red on the board when the primary part of the power block is repaired.
- During part replacement, maintain the air clearance so that the replaced parts do not touch other parts.

• NOTE FOR FUSE REPLACEMENT

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



DRV A	DRV B
SIDE A PLAY	ACCEL BRAKE
SIDE B PLAY	BRAKE ACCEL

21	RET-
20	DRV B
19	DRV A
18	RET+
17	GND (R)
16	GND (M)
15	SW-5V
14	SW+5V (A)
13	SW+5V (B)
12	SW+5V (C)
11	GND
10	+14V
9	-14V
8	GND
7	P-ON
6	EV5V
5	GND
4	-27V
3	AC 4V
2	AC 4V
1	

**SCH-2** POWER SUPPLY ASSY

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE NO. ICP-N20, MFD BY ROHM CO., LTD. FOR IC211.

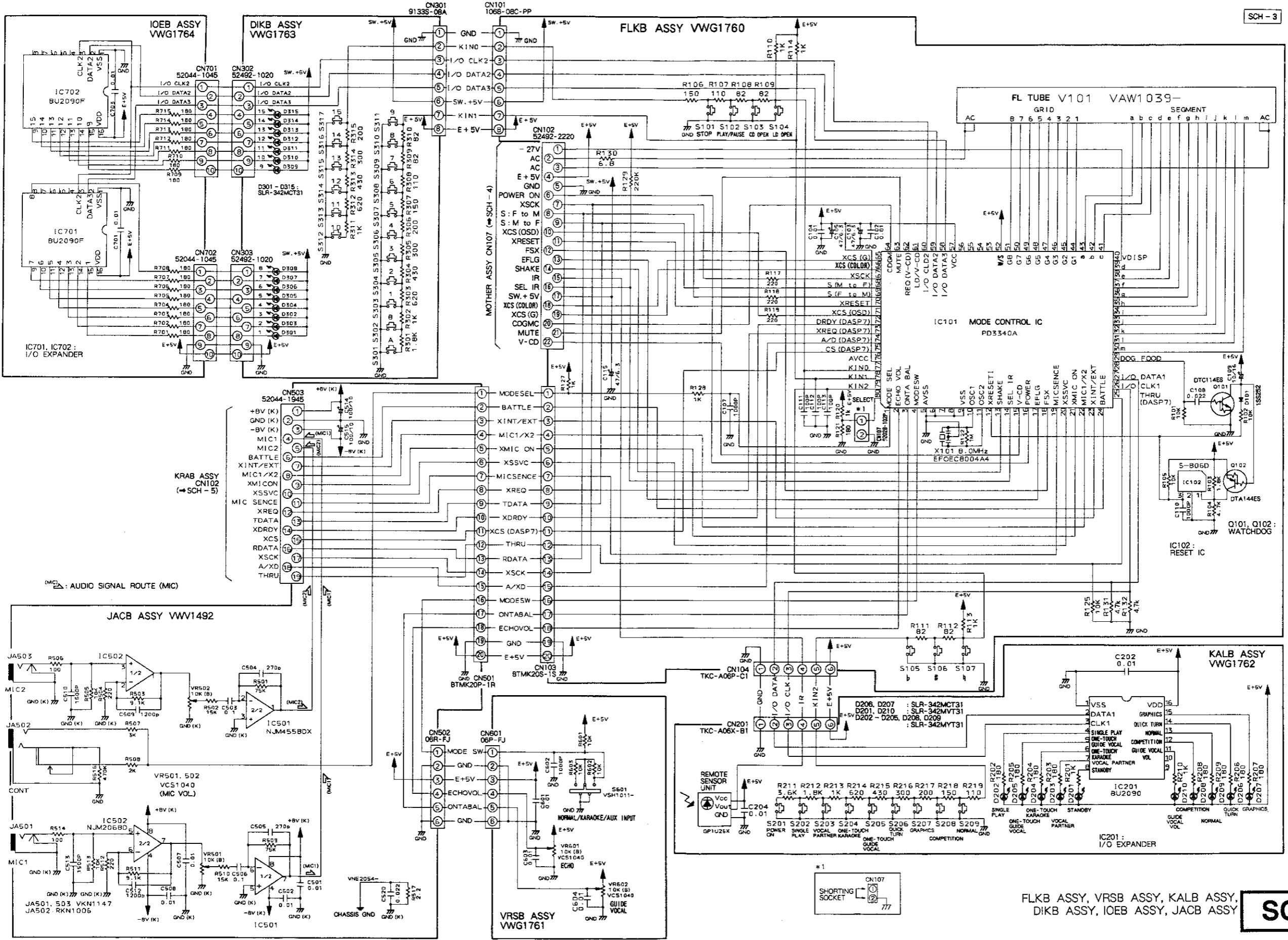
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE NO. ICP-N15, MFD BY ROHM CO., LTD. FOR IC210.

POWER SUPPLY ASSY **SCH-2**

3.3 FLKB, VRSB, KALB, IOEB AND JACB ASSEMBLIES

FLKB ASSY, VRSB ASSY, KALB ASSY, DIKB ASSY, IOEB ASSY, JACB ASSY

SCH-3



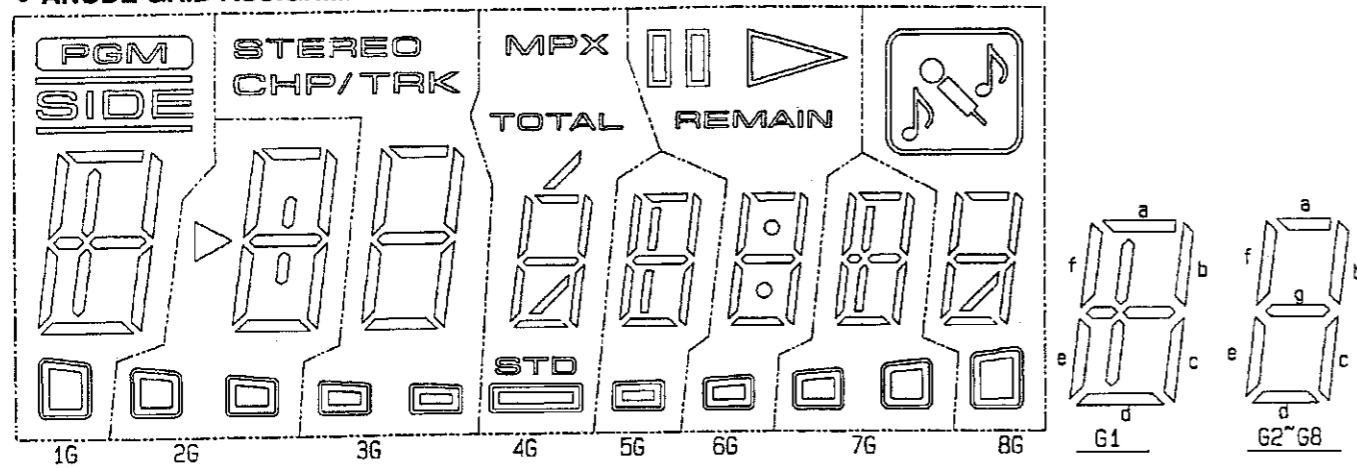
SCH-3

SCH-3

■ VAW1039 (FLKB ASSY : V101)

• FL TUBE

● ANODE GRID ASSIGNMENT & PIN ASSIGNMENT



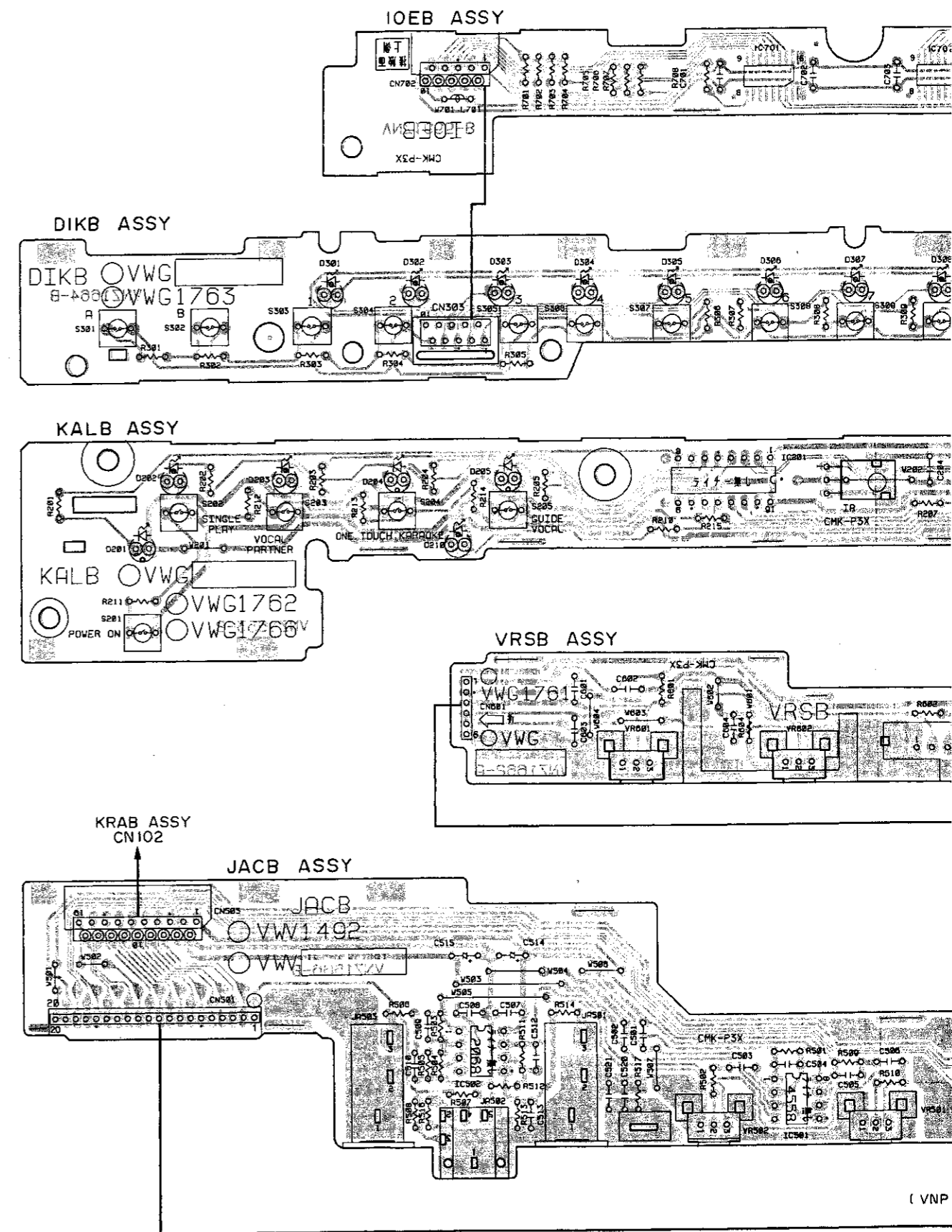
● ANODE GRID ASSIGNMENT

	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
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) □	□

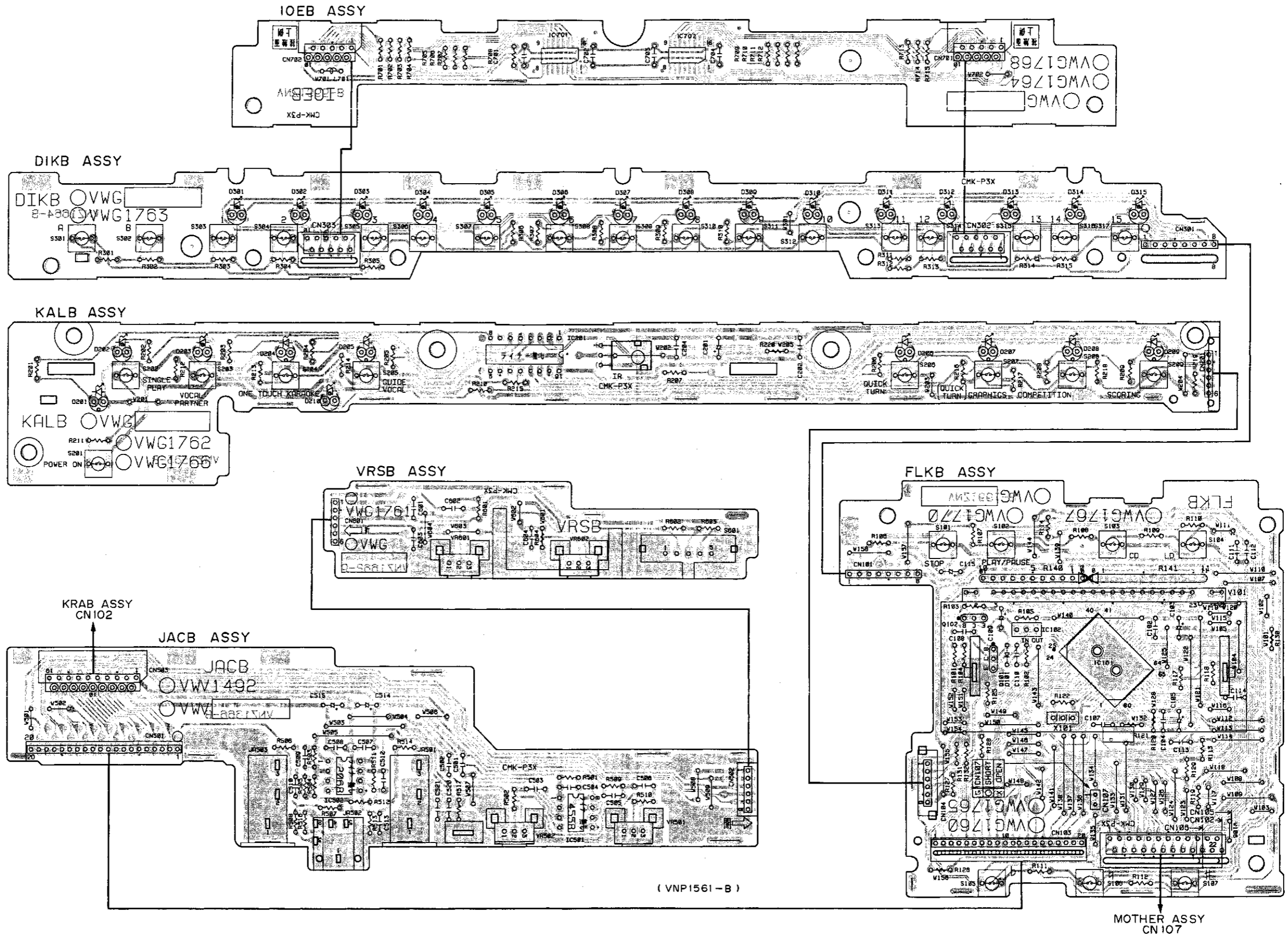
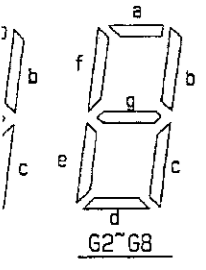
● PIN ASSIGNMENT

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



● This diagram is viewed from the mounted parts side.

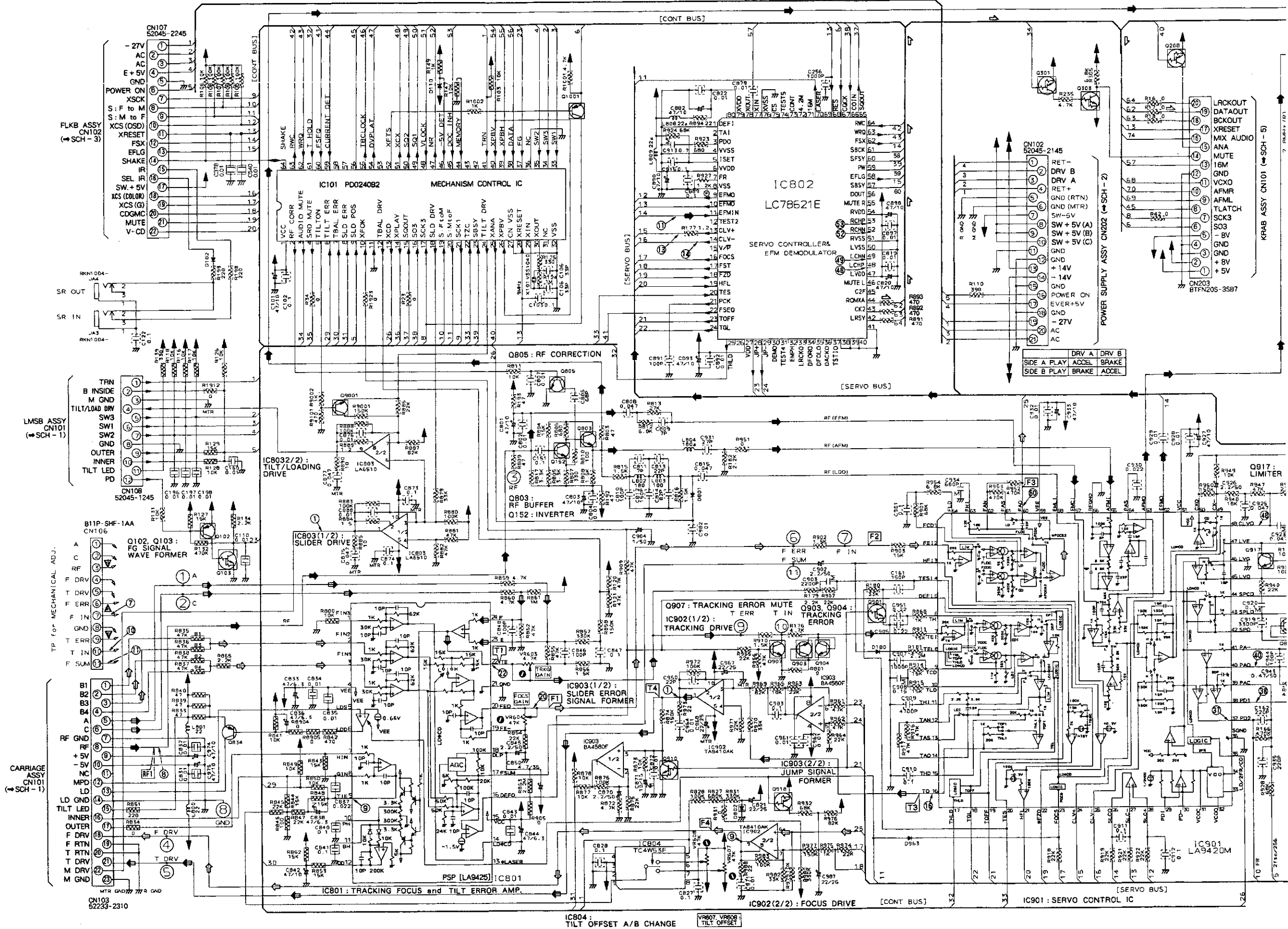


• This diagram is viewed from the mounted parts side.

• 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.

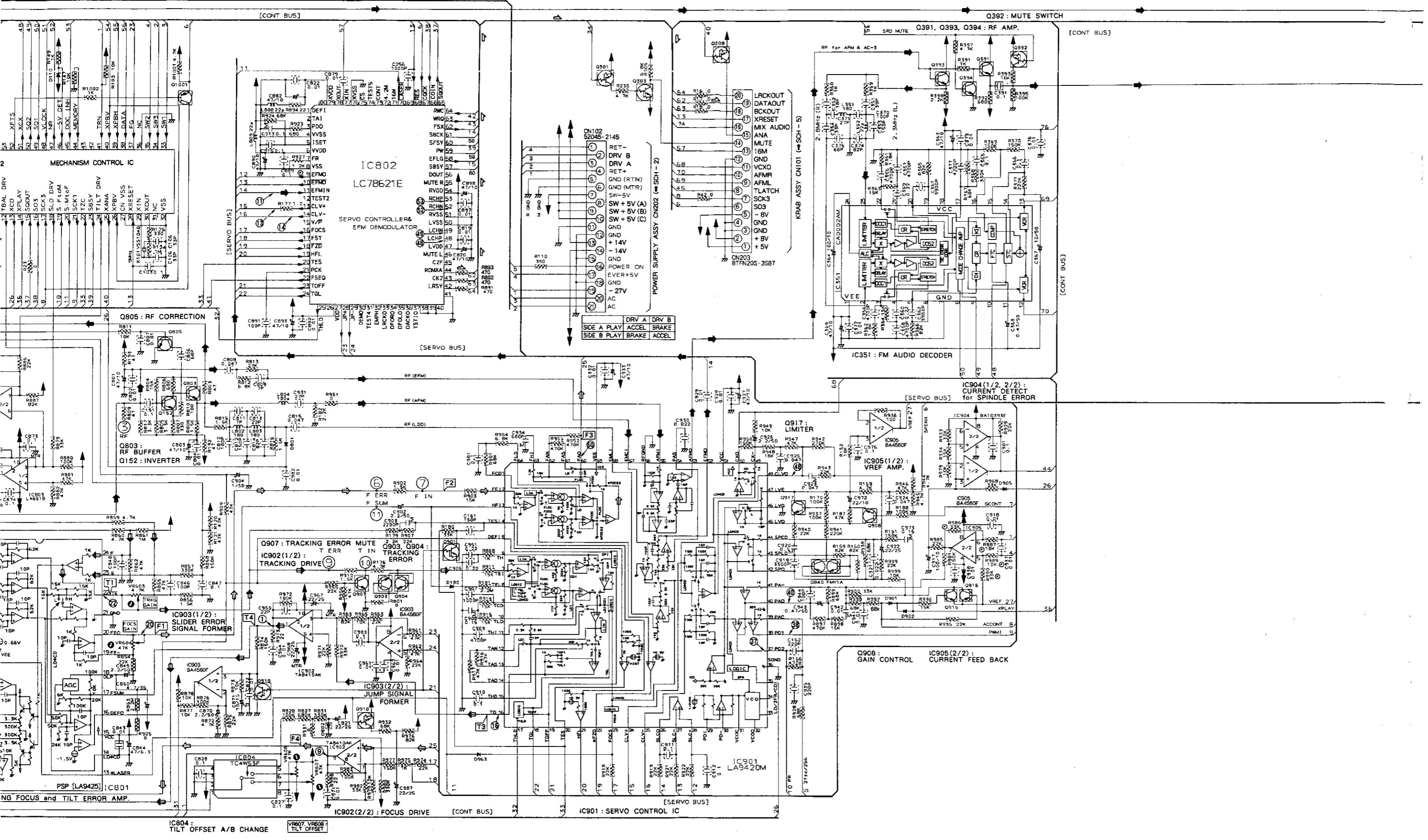
3.4 MOTHER ASSY

MOTHER ASSY VWS1249



SCH-4

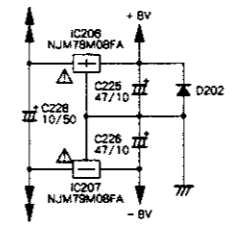
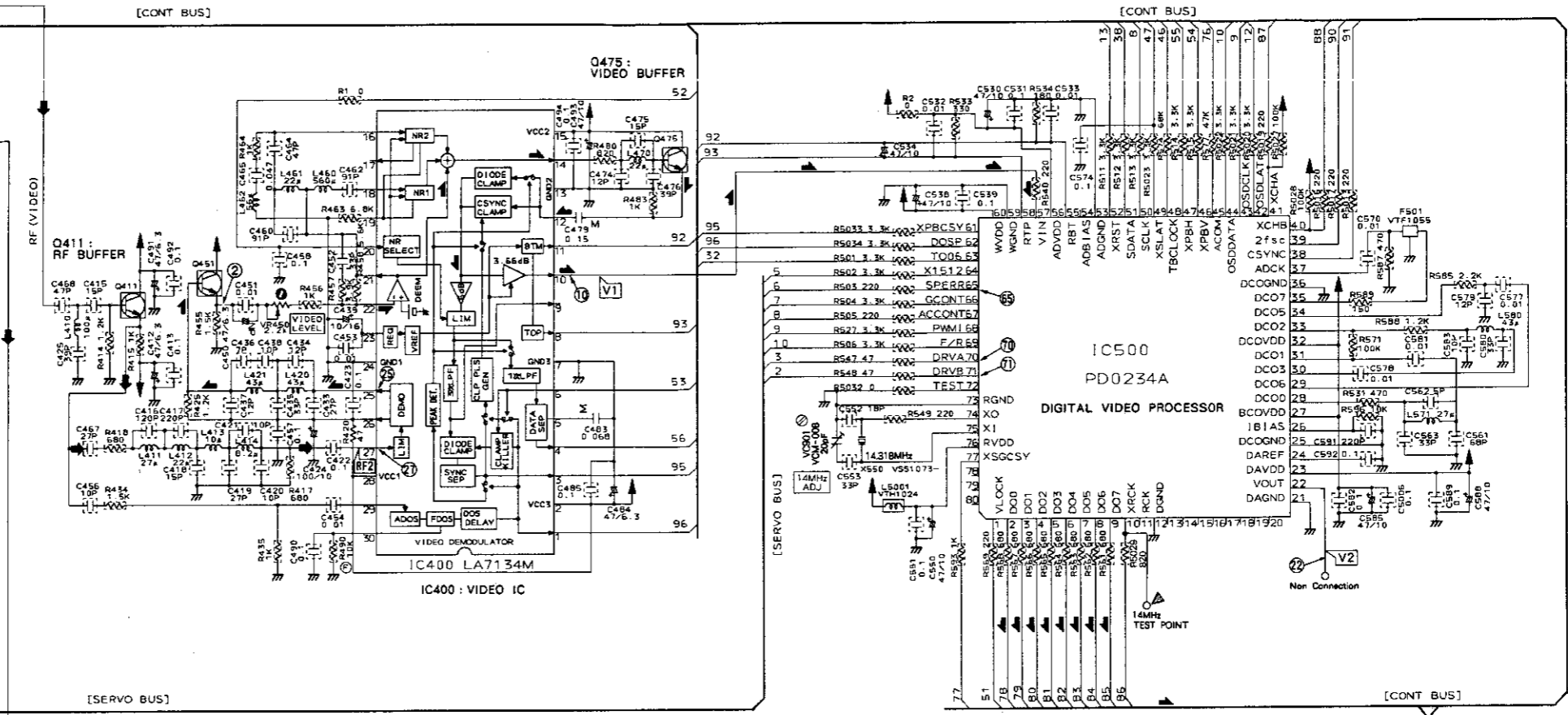
MOTHER ASSY



IC804 : TILT OFFSET A/B CHANGE

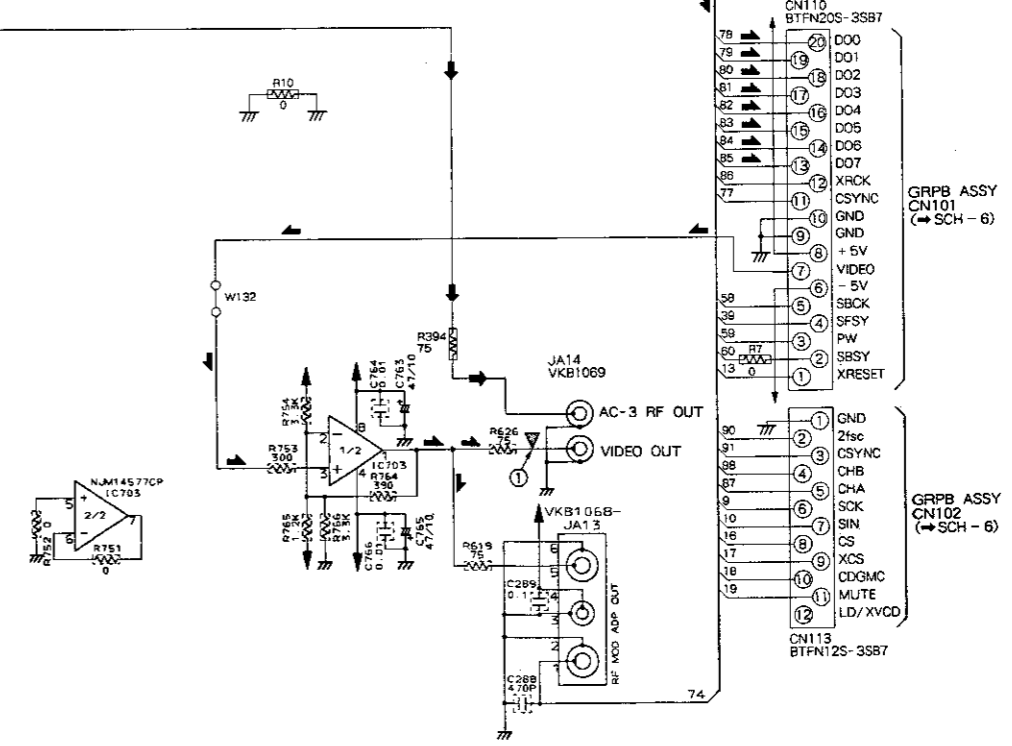
V907, V908 : TILT OFFSET

DRV A DRV B  
SIDE A PLAY ACCEL BRAKE  
SIDE B PLAY BRAKE ACCEL



01001, 0102, 0916	2P6705A
0301, 0303, 0304, 0451, 0475, 2P6601A	
0605, 09001, 0903, 0904, 0907, 0908, 0915, 0917, 0834	25A854S
0411, 0803	25C2412K
0152	25C3802K
0208, 0301, 0392	DTA124EK
0103, 0303, 0901, 0910, 0918, 0840	DTC124EK
	FM11A
D202	11E0906
0102, D180, 0801, 0901, 0902, 1S5254	
0905, 0993	1S5355
0802	
0110	MTJ5.1B

→ RF SIGNAL ROUTE      ▲ AUDIO SIGNAL ROUTE  
 ⇄ FOCUS SERVO LOOP LINE      ▼ VIDEO SIGNAL ROUTE  
 ⇄ TRACKING SERVO LOOP LINE



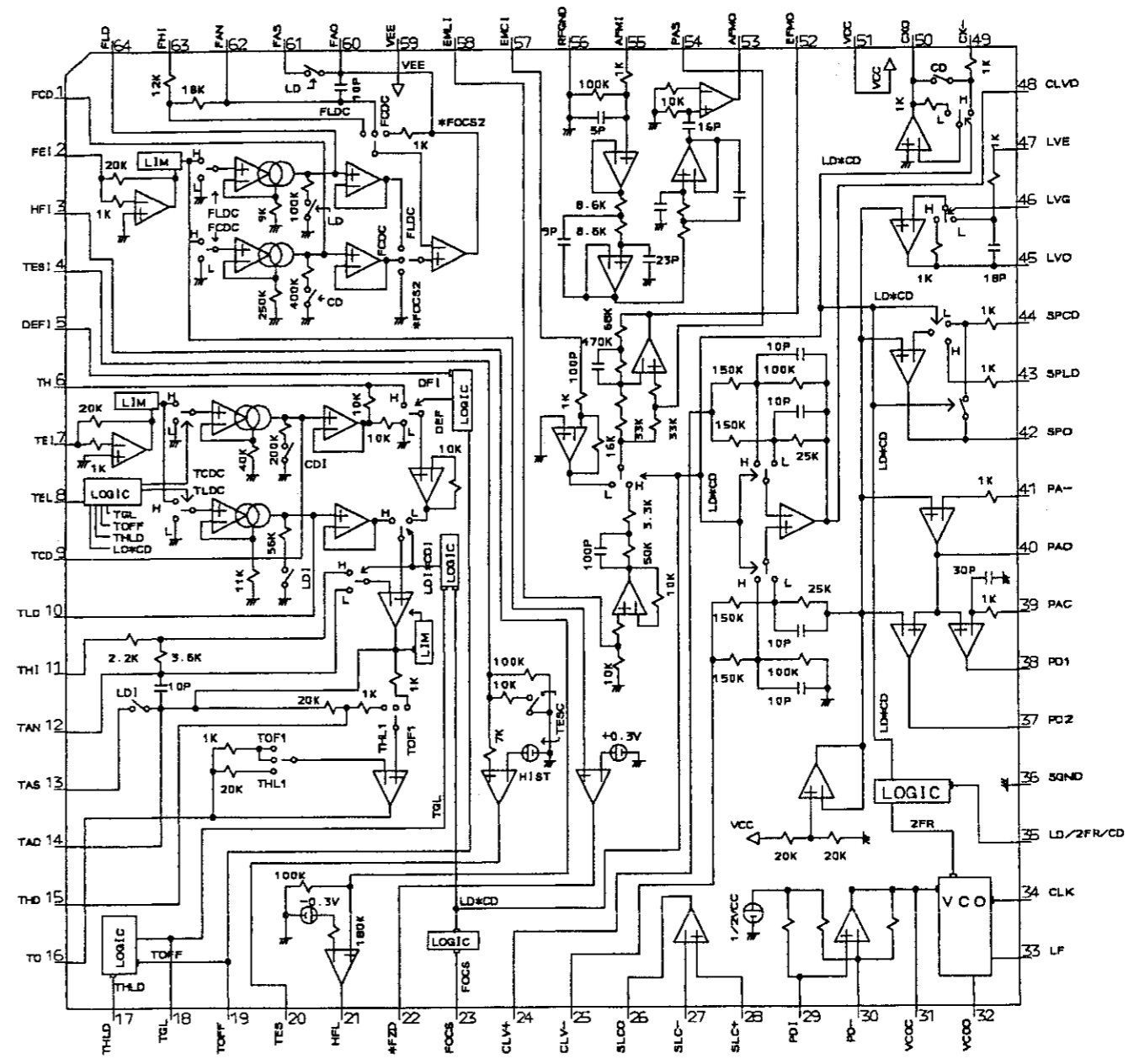
**WAVEFORMS AND VOLTAGE MOTHER ASSY**

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

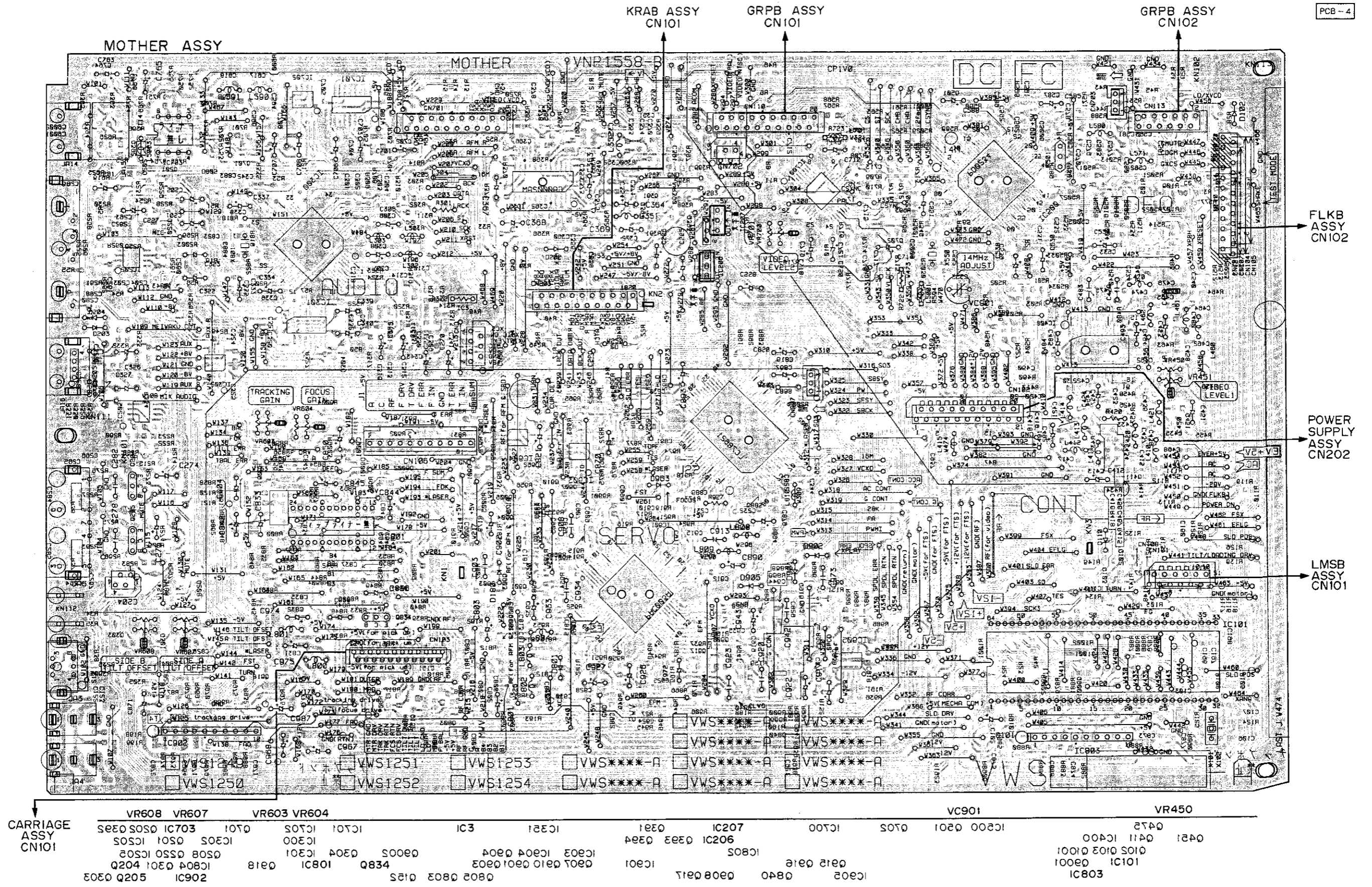
Measurement condition: In case when (D. audio) is written, at time when disc that has digital audio recording is played.

MOTHER ASSY					
IC801 (LA9425)	IC901 (LA9420M)	CN106	Q451 Emitter	IC400 (LA7134M)	IC500 (PD0234A)
T1 (22) 5ms/div 200mVp-p 0V DC mode	T3 (16) 5ms/div 500mVp-p 0V DC mode	7 (F2) 5ms/div 200mVp-p 0V DC mode	2 10μs/div 400mVp-p AC mode	V1 (10) 10μs/div 1.6Vp-p 0V DC mode	V2 (2) 10μs/div 1Vp-p 0V DC mode
F1 (20) 5ms/div 100mVp-p 0V DC mode	F3 (60) 5ms/div 1Vp-p 0V DC mode	10 5ms/div 100mVp-p 0V DC mode	JA14 VIDEO OUT 1 10μs/div 1Vp-p (75Ω termination) 0V DC mode	RF2 (27) 2ms/div 400mVp-p AC mode	65 5ms/div 5Vp-p 0V DC mode
9 10ms/div 0.2Vp-p 0V DC mode	38 10μs/div 5Vp-p 0V DC mode	11 5ms/div 0V 0.2Vp-p DC mode		25 10μs/div 1Vp-p 0V DC mode	71 10μs/div 5Vp-p 0V DC mode
IC802 (LC78621E)	40 10ms/div 0.3Vp-p 0V DC mode	CN103			
11 0.5μs/div 1.6Vp-p 0V DC mode		RF1 (8) 2ms/div 600mVp-p AC mode			
	48 50μs/div 1Vp-p 0V DC mode				
13 50μs/div 5Vp-p 0V DC mode					
14 50μs/div 5Vp-p 0V DC mode					
	IC902 (TA8410AK)				
48, 53 0.2μs/div 5Vp-p 0V DC mode	T4 (1) 5ms/div 2Vp-p 0V DC mode				
49, 52 0.2μs/div 5Vp-p 0V DC mode					
IC803 (LA6510)	F4 (5) 5ms/div 5Vp-p 0V DC mode				
1 2ms/div 1.8Vp-p 0V DC mode					

• The Inside Block Diagram of IC901 (LA9420M)





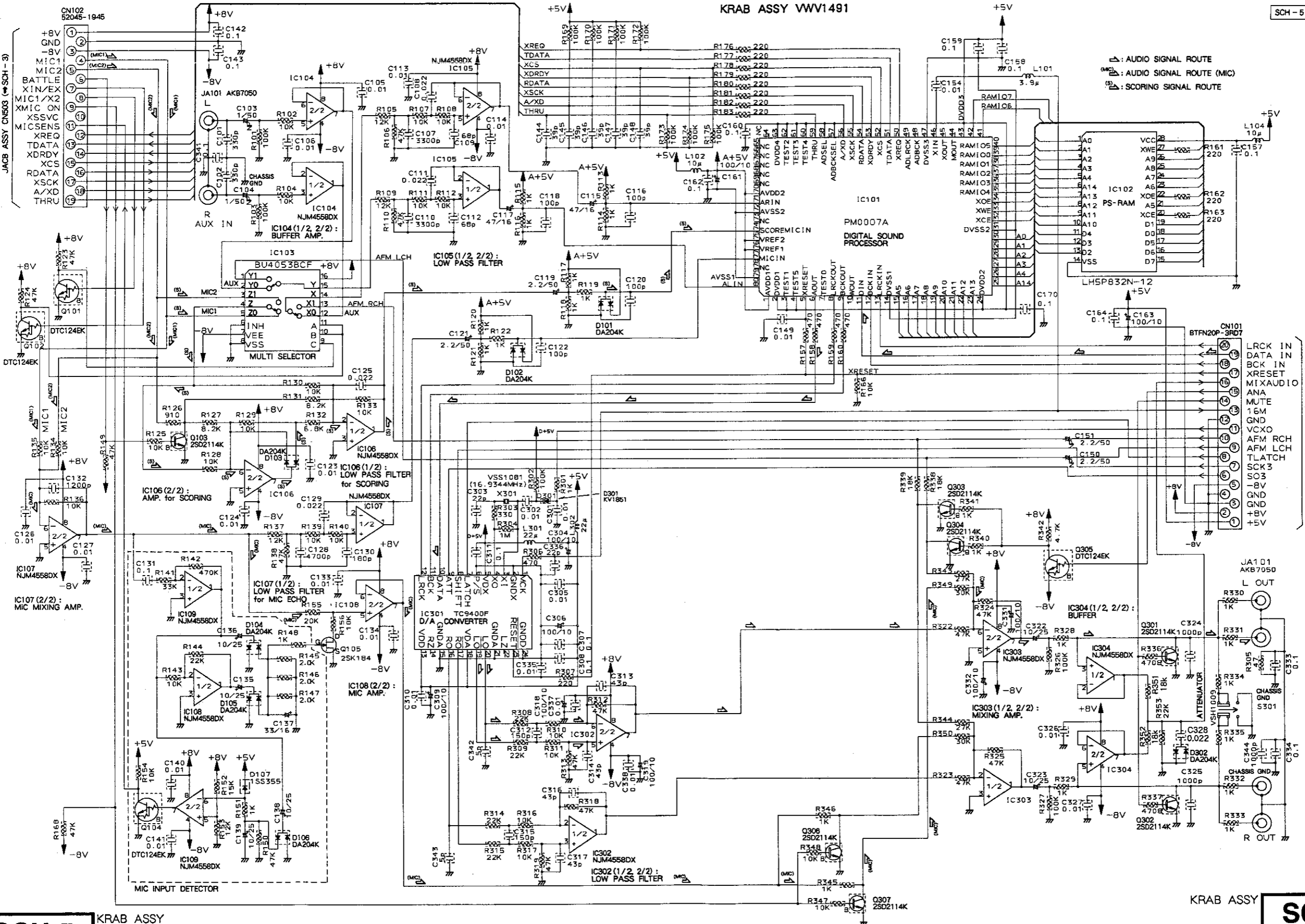


• This diagram is viewed from the mounted parts side.

• 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.

KRAB ASSY VWV1491

SCH-5



▬ AUDIO SIGNAL ROUTE  
 - - - AUDIO SIGNAL ROUTE (MIC)  
 ··· SCORING SIGNAL ROUTE

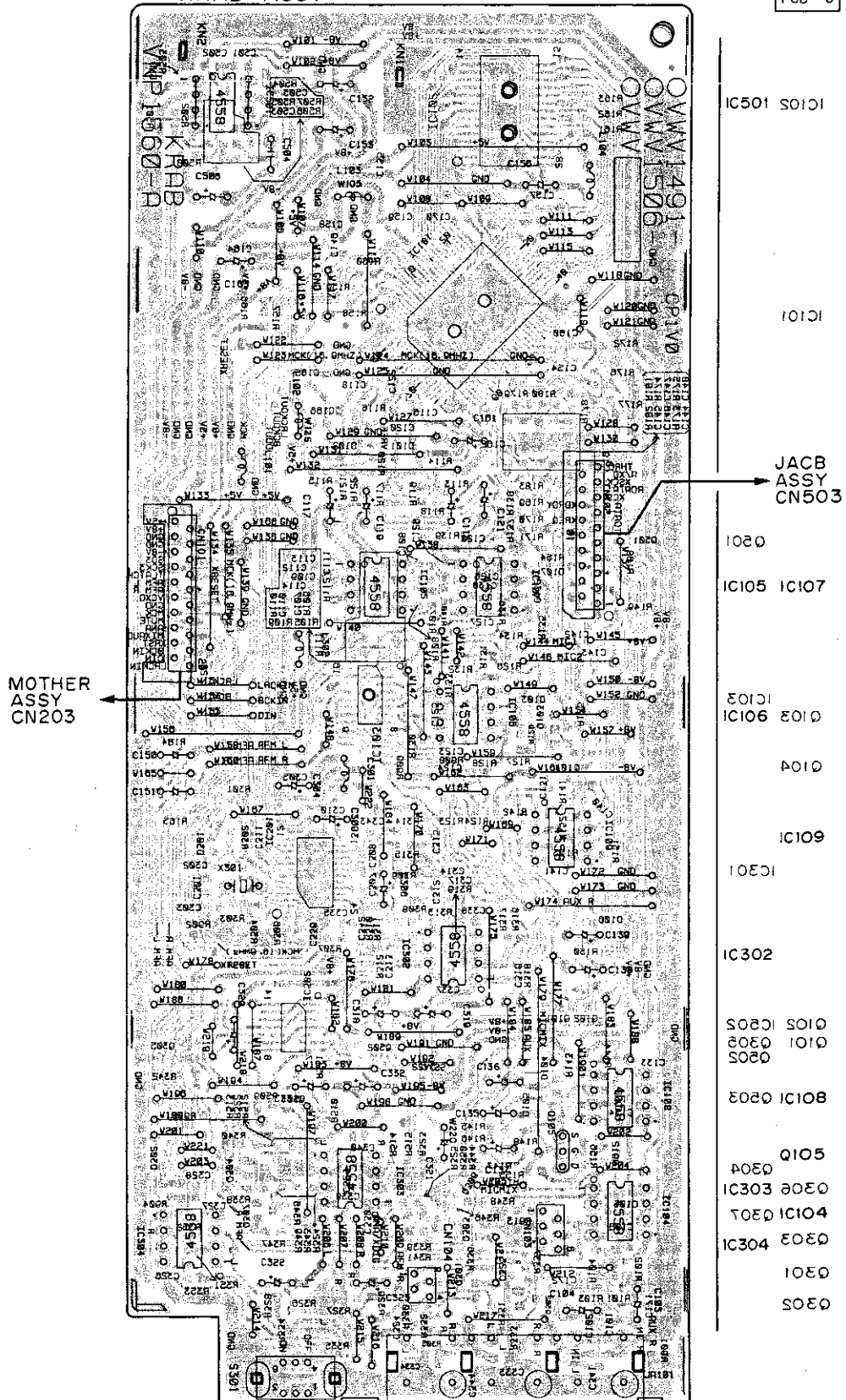
MOTHER ASSY CN203 (SCH-4)

KRAB ASSY **SCH-5**

**SCH-5**

KRAB ASSY

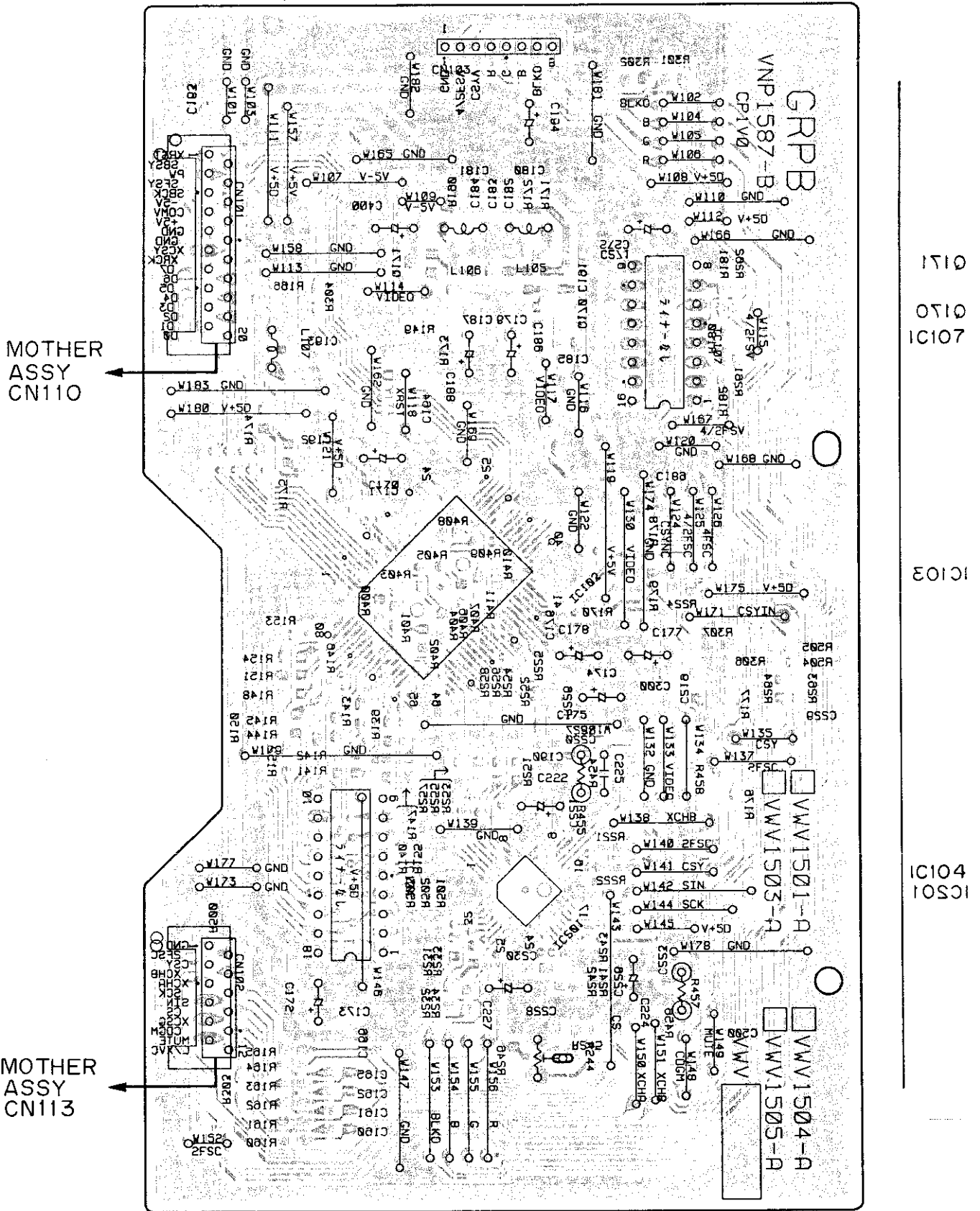
PCB-5



- This diagram is viewed from the mounted parts side.
- 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.

GRPB ASSY

PCB - 6



Q111  
Q150  
1C107  
  
1C103  
  
1C104  
1C101

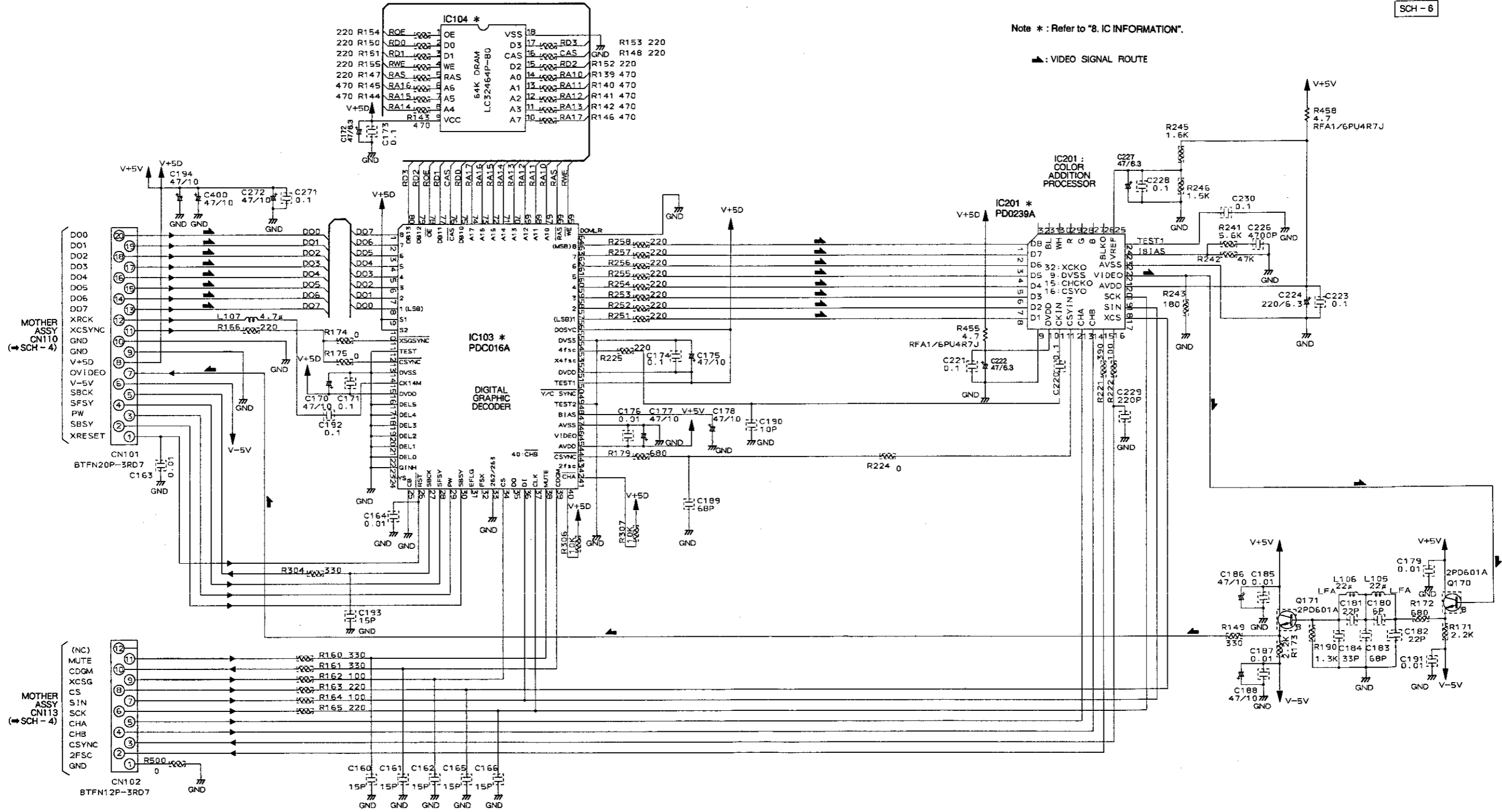
- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.  
For further information for respective destinations, be sure to check with the schematic diagram.

GRPB ASSY VWV1501

SCH-6

Note \* : Refer to "8. IC INFORMATION".

▲ : VIDEO SIGNAL ROUTE



SCH-6

GRPB ASSY

GRPB ASSY

SCH-6

# 4. PCB PARTS LIST

**NOTES:**

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

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

560  $\Omega$   $\rightarrow$   $56 \times 10^1 \rightarrow 561$  ..... RD1/4PU  $\begin{matrix} 5 \\ 6 \\ 1 \end{matrix} J$   
 47k  $\Omega$   $\rightarrow$   $47 \times 10^3 \rightarrow 473$  ..... RD1/4PU  $\begin{matrix} 4 \\ 7 \\ 3 \end{matrix} J$   
 0.5  $\Omega$   $\rightarrow$  0R5 ..... RN2H  $\begin{matrix} 0 \\ R \\ 5 \end{matrix} K$   
 1  $\Omega$   $\rightarrow$  1R0 ..... RS1P  $\begin{matrix} 1 \\ R \\ 0 \end{matrix} K$

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

5.62k  $\Omega$   $\rightarrow$   $562 \times 10^1 \rightarrow 5621$  ..... RN1/4PC  $\begin{matrix} 5 \\ 6 \\ 2 \\ 1 \end{matrix} F$

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
<b>LIST OF ASSEMBLIES</b>							
NSP		MACB ASSY	VWM1535	<b>TNSB ASSY</b>			
NSP		PKSB ASSY	VWG1555			<b>SWITCH</b>	
NSP		FG ASSY	VWG1556			S111	DSG1017
NSP		TNSB ASSY	VWG1557	<b>BISB ASSY</b>			
NSP		BISB ASSY	VWG1558			<b>SWITCH</b>	
NSP		LMSB ASSY	VWG1612			S112	DSG1017
$\Delta$		POWER SUPPLY ASSY	VWR1269	<b>LMSB ASSY</b>			
NSP		FRPB ASSY	VWM1691			<b>SWITCHES</b>	
NSP		FLKB ASSY	VWG1760			S101-S103	DSG1017
NSP		VRSB ASSY	VWG1761	<b>OTHERS</b>			
NSP		KALB ASSY	VWG1762			CN101	12P FFC CONNECTOR
NSP		DIKB ASSY	VWG1763	<b>POWER SUPPLY ASSY</b>			
NSP		IOEB ASSY	VWG1764	<b>SEMICONDUCTORS</b>			
NSP		JACB ASSY	VWV1492			$\Delta$ IC201	HA17431P
		MOTHER ASSY	VWS1249			$\Delta$ IC210	ICP-N15
		KRAB ASSY	VWV1491			$\Delta$ IC211	ICP-N20
		GRPB ASSY	VWV1501			IC202	UPC358C
						Q207, Q208, Q214	2SA933S
<b>MACB ASSY</b>							
<b>OTHERS</b>							
		PC Board MACB	VNP1479			Q205, Q206, Q210	2SC1740S
<b>PKSB ASSY</b>							
<b>SWITCHES</b>							
		S104, S105	DSG1017			Q102, Q103	2SC3377
<b>FG ASSY</b>							
<b>SEMICONDUCTOR</b>							
		D101	GP1S24			Q213	2SD2007
						Q203	T7F4S
						Q204	T7F4S
						Q201	T7F4T
						Q202	T7F4T
						Q101	VZF1037
						Q209	VZF1040
						D206	VZF1039

Mark	No.	Description	Part No.
$\Delta$	D104		1SS270A
	D209-D212, D216		AG01Z-V0
$\Delta$	D101		D2SB60F4004
$\Delta$	D102		EG01C
$\Delta$	D105		K1V24
$\Delta$	D103		MTZJ2, 7B
	D218		MTZJ8, 2B
$\Delta$	D200		PS2501L1-1M
	D207		RD33FB2
	D202, D203		S3LA20
	D204		S3S4M
<b>RESISTORS</b>			
$\Delta$	R257	(68 $\Omega$ , 1/4W)	VCN1048
$\Delta$	R258	(8.2 $\Omega$ , 1/4)	VCN1050
$\Delta$	R256	(0.22 $\Omega$ , 1/2W)	VCN1055
<b>OTHERS</b>			
$\Delta$	F101	FUSE (2A)	REK1078
$\Delta$	F203	FUSE (136°C)	VEK1033
$\Delta$	F201, F202	FUSE (136°C)	VEK1034
$\Delta$	F204, F205	FUSE (1A/125V)	VEK1036
<b>FRPB ASSY</b>			
<b>OTHERS</b>			
		PC Board FRPB	VNP1561
<b>FLKB ASSY</b>			
<b>SEMICONDUCTORS</b>			
		IC101	PD3340A
		IC102	S-806D
		Q102	DTA144ES
		Q101	DTC114ES
		D101	1SS252
<b>SWITCHES</b>			
		S101-S107	ASG1034
<b>CAPACITORS</b>			
		C109	CEAL100M16
		C103, C105, C115	CEAL470M6R3
		C111-C113	CKPUYB101K50
		C107, C110	CKPUYB102K50
		C108	CKPUYF223Z25
		C102, C104	CKPUYY103N16
<b>RESISTORS</b>			
		R110, R113, R114, R127	RN1/6PQ1001F
		Other Resistors	RD1/4PU□□□J

Mark	No.	Description	Part No.
<b>OTHERS</b>			
		CN101	2.5mm PITCH PIN HEADER
		CN102	FFC BOTTOM CONNECTOR 22P
		CN107	2.54mm PITCH PIN HEADER
		CN103	20P CONNECTOR
		X101	CERAMIC RESONATOR (8MHz)
		CN104	2mm PITCH CONNECTOR PLUG
		V101	FL TUBE
			SPACER
			FL HOLDER
			TKC-A06P-C1
			VAW1039
			VEC1599
			VNF1091
<b>VRSB ASSY</b>			
<b>SWITCH</b>			
		S601	VSH1011
<b>CAPACITORS</b>			
		C602	CKPUYB102K50
		C601, C603, C604	CKPUYY103N16
<b>RESISTORS</b>			
		VR601, VR602 (10k $\Omega$ )	VCS1040
		Other Resistors	RD1/4PU□□□J
<b>OTHERS</b>			
		CN601	FJ CONNECTOR 6P
			PCB HOLDER
			06P-FJ
			VNE2026
<b>KALB ASSY</b>			
<b>SEMICONDUCTORS</b>			
		IC201	BU2090
		D206, D207	SLR-342MCT31
		D201, D210	SLR-342VCT31
		D202-D205, D208, D209	SLR-342YCT31
<b>SWITCHES</b>			
		S201-S209	ASG1034
<b>CAPACITORS</b>			
		C202, C204	CKPUYY103N16
<b>RESISTORS</b>			
		All Resistors	RD1/4PU□□□J
<b>OTHERS</b>			
		CN201	REMOTE SENSOR UNIT
			GPIU26X
			2mm PITCH B TO B CONNECTOR
			TKC-A06X-B1

Mark No.	Description	Part No.
<b>DIKB ASSY</b>		
<b>SEMICONDUCTORS</b>		
D301-D315		SLR-342MCT31
<b>SWITCHES</b>		
S301-S317		ASG1034
<b>RESISTORS</b>		
All Resistors		RD1/4PU□□□J
<b>OTHERS</b>		
CN302, CN303		52492-1020
	FFC BOTTOM CONNECTOR 10P	
CN301		9133S-08A
	BOARD TO BOARD CONNECTOR 8P	

**IOEB ASSY****SEMICONDUCTORS**

IC701, IC702

BU2090F

**CAPACITORS**

C701, C703

CKPUYY103N16

**RESISTORS**

All Resistors

RD1/4PU□□□J

**OTHERS**

CN701, CN702 10P FFC CONNECTOR

52044-1045

**JACB ASSY****SEMICONDUCTORS**

IC502

NJM2068D

IC501

NJM4558DX

**CAPACITORS**

C514, C515

CEJA101M10

C504, C505

CKPUYB271K50

C520

CKPUYF223Z25

C509, C512

CKPUYX122M16

C510, C513

CKPUYX152M16

C501, C502, C507, C508

CKPUYY103N16

C503, C506

CQMA104J50

**RESISTORS**

R508

RN1/6PQ2001F

R507

RN1/6PQ3001F

VR501, VR502 (10kΩ)

VCS1040

Other Resistors

RD1/4PU□□□J

**OTHERS**

CN502 FJ CONNECTOR 6P  
 CN503 19P FFC CONNECTOR  
 CN501 20P CONNECTOR  
 JA502 HEADPHONES JACK  
 JA501, JA503 MICROPHONE JACK

06R-FJ  
 52044-1945  
 BTMK20P-1R  
 RKN1006  
 VKN1147

SNAP PLATE  
 JACK HOLDER

VNE1102  
 VNE2054

Mark No.	Description	Part No.
<b>MOTHER ASSY</b>		
<b>SEMICONDUCTORS</b>		
	IC904	BA10393F
	IC903, IC905	BA4560F
	IC351	CA0002AM
	IC803	LA6510
	IC400	LA7134M
	IC901	LA9420M
	IC801	LA9425
	IC802	LC78621E
	IC703	MC14577CP
△	IC206	NJM78M08FA
△	IC207	NJM79M08FA
	IC500	PD0234A
	IC101	PD0240B2
	IC902	TA8410AK
	IC804	TC4W53F
	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

Q411, Q803

Q152

Q208, Q301, Q392

Q103, Q303, Q901, Q910, Q918

Q840

D202

D102, D180, D801, D901, D902

D905, D963

D802

D110

**COILS AND FILTER**

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

**CAPACITORS**

C562

CCSQCH050C50

C436, C809, C811

CCSQCH070D50

C420, C421, C438, C456

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

# CLD - V870

Mark	No.	Description	Part No.
	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
	C288		CCSQCH471J50
	C375, C561, C806		CCSQCH680J50
	C374, C814		CCSQCH820J50
	C460, C462		CCSQCH910J50
	C439		CEAL100M16
	C412, C484, C491, C833, C836		CEAL470M6R3
	C844		CEAL470M6R3
	C838		CEALNP470M6R3
	C972		CEANP220M10
	C450		CEANP470M6R3
	C904		CEAS010M50
	C228, C367		CEAS100M50
	C364, C424, C917		CEAS101M10
	C821, C922, C967		CEAS220M25
	C845, C870, C902, C926		CEAS2R2M50
	C101, C225, C226, C363, C369		CEAS470M10
	C493, C530, C534, C538, C550		CEAS470M10
	C585, C588, C763, C765, C801		CEAS470M10
	C803, C820, C842, C882, C890		CEAS470M10
	C893, C898, C927, C933		CEAS470M10
	C974, C975		CEAS470M10
	C368, C943		CEASR47M50
	C968, C987		CEHAQ220M50
	C850		CEJA4R7M35
	C256, C490, C907		CKSQYB102K50
	C879		CKSQYB103K50
	C915, C981		CKSQYB104K25
	C919		CKSQYB332K50
	C361, C362		CKSQYB392K50
	C355-C358, C377, C909		CKSQYB472K50
	C110, C122, C160, C196-C198		CKSQYF103Z50
	C372, C373, C376, C378, C451, C454		CKSQYF103Z50
	C532, C533, C540, C570, C577, C578		CKSQYF103Z50
	C581, C802, C804, C807, C819		CKSQYF103Z50
	C822, C831, C832, C834, C835		CKSQYF103Z50
	C843, C872, C876, C888, C889		CKSQYF103Z50
	C892, C897, C918, C928, C929		CKSQYF103Z50
	C932, C937, C938, C941		CKSQYF103Z50
	C961, C962, C964, C971, C982		CKSQYF103Z50
	C102, C103, C151, C289		CKSQYF104Z25
	C365, C366, C391, C413		CKSQYF104Z25
	C422, C423, C453, C457, C458		CKSQYF104Z25
	C485, C492, C494, C5006, C531		CKSQYF104Z25
	C539, C551, C574, C582, C589		CKSQYF104Z25
	C592, C764, C766, C827, C828		CKSQYF104Z25
	C840, C841, C847, C873, C874		CKSQYF104Z25
	C901, C910-C912, C976, C983		CKSQYF104Z25

Mark	No.	Description	Part No.
	C837, C921, C930		CKSQYF223Z50
	C359, C360, C905, C951		CKSQYF224Z25
	C465, C808, C815, C875, C877		CKSQYF473Z25
	C924, C925		CKSQYF473Z25
	C942		CQMA103J50
	C913, C920		CQMA104J50
	C479, C908, C973		CQMA154J50
	C903		CQMA222J50
	C923		CQMA473J50
	C934		CQMA681J50
	C483		CQMA683J50
	C871	(10 $\mu$ F/16V NP)	VCH1152
	VC901	(20pF)	VCM-008

## RESISTORS

R927	RD1/4PU122J
R420	RD1/4PU470J
R490, R987, R989	RN1/10SE103D
R880, R883	RN1/10SE104D
R879, R986, R990	RN1/10SE333D
R881, R882	RN1/10SE473D
VR450	(2.2k $\Omega$ ) PCP1025
VR603	(4.7k $\Omega$ ) RCP1020
VR604, VR607, VR608	(47k $\Omega$ ) RCP1047
Other Resistors	RS1/10S□□□J

## OTHERS

CN108	12P FFC CONNECTOR	52045-1245
CN102	21P FFC CONNECTOR	52045-2145
CN107	22P FFC CONNECTOR	52045-2245
CN103	23P FFC CONNECTOR	52233-2310
CN106	11P TOP POST	B11P-SHF-1AA
CN113	B TO B CONNECTOR 12P	BTFN12S-3SB7
CN110, CN203	B TO B CONNECTOR 20P	BTFN20S-3SB7
JA3, JA4	REMOTE CONTROL JACK	RKN1004
	PCB BINDER	VEF1040
JA13	RF PIN JACK	VKB1068
JA14	2P PIN JACK	VKB1069
	SCREW TERMINAL	VNE1948
	EARTH METAL	VNF1084
X101	CERAMIC RESONATOR (9.00MHz)	VSS1040
X550	CRYSTAL RESONATOR (14.318MHz)	VSS1073

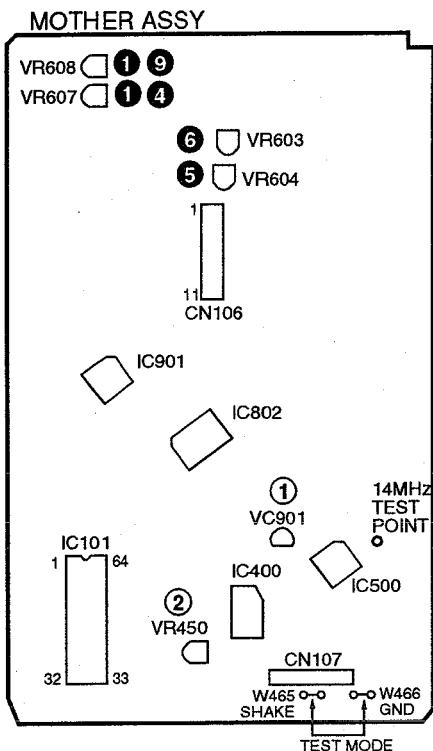


Mark No.	Description	Part No.	Mark No.	Description	Part No.
<b>KRAB ASSY</b>			<b>RESISTORS</b>		
<b>SEMICONDUCTORS</b>			R113-R116		RN1/10SE102D
IC103		BU4053BCF	R312, R313, R318, R319		RN1/10SE473D
IC102		LH5P832N-12	R322-R325		RN1/10SE473D
IC104-IC109, IC302-IC304		NJM4558DX	Other Resistors		RS1/10S□□□J
IC101		PM0007A	<b>OTHERS</b>		
IC301		TC9400F	CN102	19P FFC CONNECTOR	52045-1945
Q103, Q301-Q304, Q306, Q307		2SD2114K	JA101	6P PIN JACK	AKB7050
Q105		ZSK184	CN101	B TO B CONNECTOR 20P	BTFN20P-3RD7
Q101, Q102, Q104, Q305		DTC124EK		PCB BINDER	VEF1040
D107		1SS355	X301	CRYSTAL RESONATOR (16.9344MHZ)	VSS1081
D101-D106, D302		DA204K			
D301		KV1851			
<b>COILS</b>			<b>GRP B ASSY</b>		
L102, L104		LFA100J	<b>SEMICONDUCTORS</b>		
L301, L302		LFA220J	IC104		LC32464P-80
L101		LFA3R9J	IC201		PD0239A
<b>SWITCH</b>			IC103		PDC016A
S301		VSH1009	Q170, Q171		2PD601A
<b>CAPACITORS</b>			<b>COILS</b>		
C342, C343		CCSQCH050C50	L105, L106		LFA220J
C116, C118, C120, C122		CCSQCH101J50	L107		LFA4R7J
C312, C315		CCSQCH151J50	<b>CAPACITORS</b>		
C130		CCSQCH181J50	C180		CCSQCH060D50
C303, C336		CCSQCH220J50	C190		CCSQCH100D50
C144-C148		CCSQCH390J50	C160-C162, C165, C166, C193		CCSQCH150J50
C313, C314, C316, C317		CCSQCH430J50	C181, C182		CCSQCH220J50
C109, C112		CCSQCH680J50	C229		CCSQCH221J50
C324, C325, C344		CCSQSL102J50	C184		CCSQCH330J50
C101, C102		CCSQSL331J50	C183, C189		CCSQCH680J50
C103, C104		CEANP010M50	C172, C222, C227		CEAL470M6R3
C150, C151		CEANP2R2M50	C170, C175, C177, C178, C186		CEAS470M10
C135, C136, C138, C139		CEAS100M25	C188, C194, C272, C400		CEAS470M10
C322, C323		CEAS100M25	C224		CEJA221M6R3
C161, C163, C304, C306, C309		CEAS101M10	C226		CKSQYB472K50
C318, C319, C331, C332		CEAS101M10	C163, C164, C176, C179, C185		CKSQYF103Z50
C119, C121		CEAS2R2M50	C187, C191		CKSQYF103Z50
C137		CEAS330M16	C171, C173, C174, C192		CKSQYF104Z25
C115, C117		CEAS470M16	C220, C221, C223, C228, C230		CKSQYF104Z25
C149, C154, C302		CKSQYB103K50	C271		CKSQYF104Z25
C131		CKSQYB104K25	<b>RESISTORS</b>		
C132		CKSQYB122K50	R455, R458		RFA1/6PU4R7J
C108, C111, C125, C129, C328		CKSQYB223K50	Other Resistors		RS1/10S□□□J
C107, C110		CKSQYB332K50	<b>OTHERS</b>		
C128		CKSQYB472K50	CN102	B TO B CONNECTOR 12P	BTFN12P-3RD7
C105, C106, C113, C114		CKSQYF103Z50	CN101	B TO B CONNECTOR 20P	BTFN20P-3RD7
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			

# 5. ADJUSTMENTS (調整方法)

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

### ■ Adjustment Points (PCB Part)



### ■ Adjustment Items

#### [Mechanical Part]

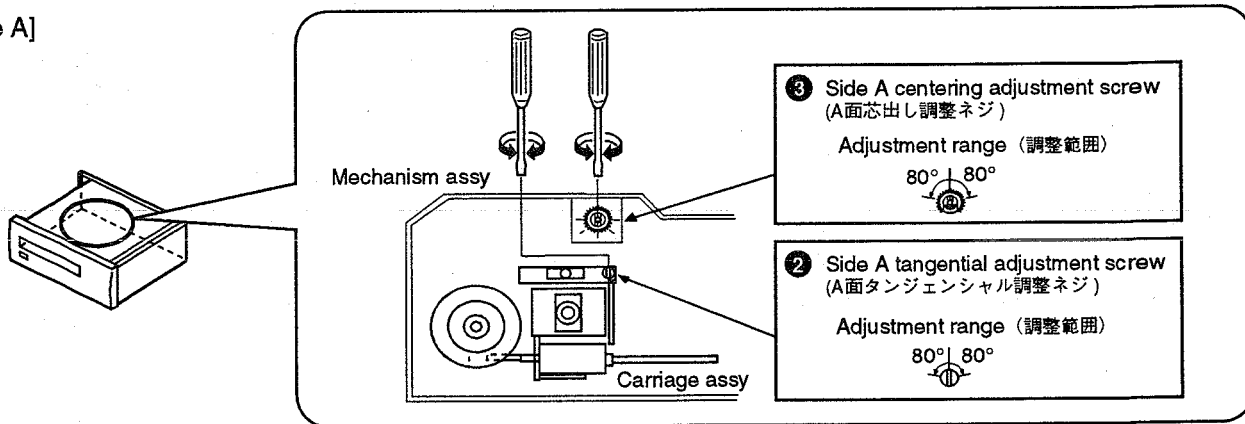
- ① Tilt Offset Adjustment (チルトオフセット調整)
- ② Tangential Direction Angle Adjustment for Side A (A面タンジェンシャル傾き調整)
- ③ Spindle Motor Centering Adjustment for Side A (A面スピンドル芯出し調整)
- ④ Crosstalk Check and Fine Tilt Offset Adjustment for Side A (A面クロストーク確認及び、チルトオフセット微調)
- ⑤ Focus Servo Loop Gain Adjustment (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]

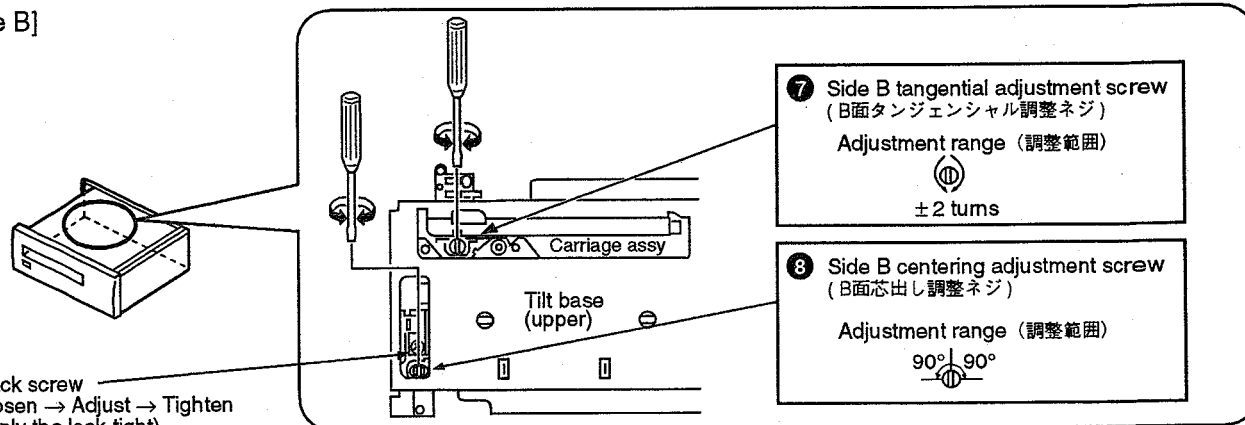
- ① Master Clock Adjustment (マスタークロック調整)
- ② Output Video Level Adjustment (出力ビデオレベル調整)

### ■ Adjustment Points (Mechanism Part)


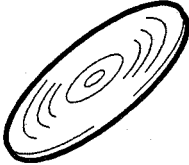


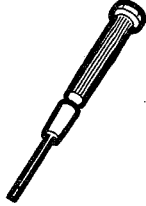


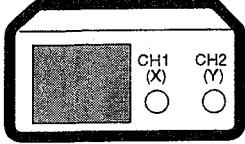
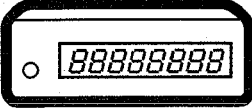
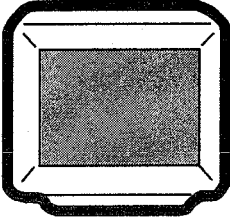
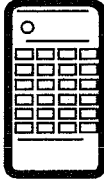
#### [Side A]



#### [Side B]

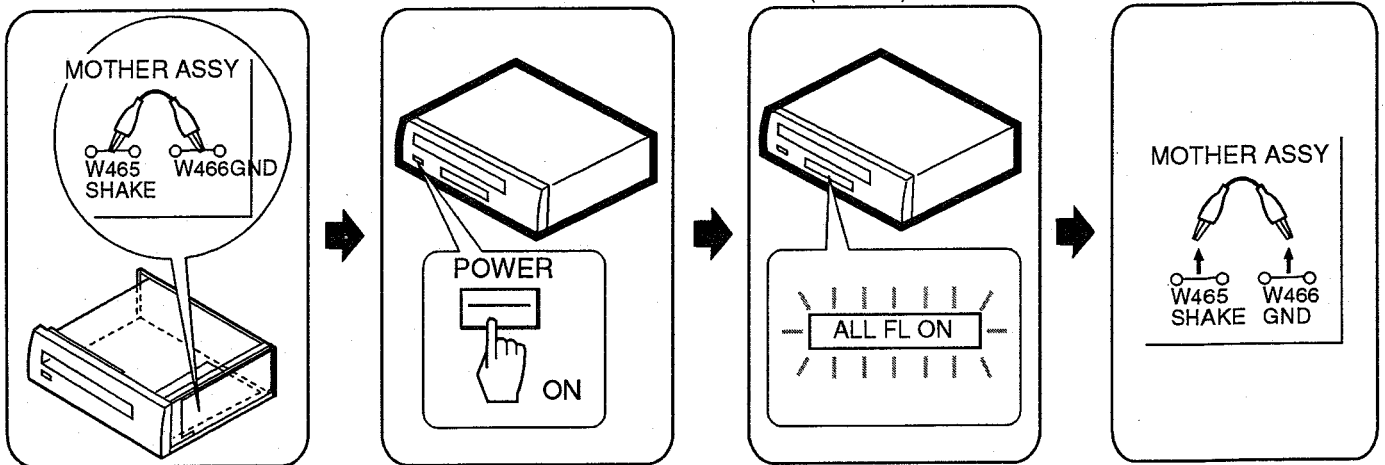


2. JIGS AND MEASURING INSTRUMENTS (調整に必要な治工具類)

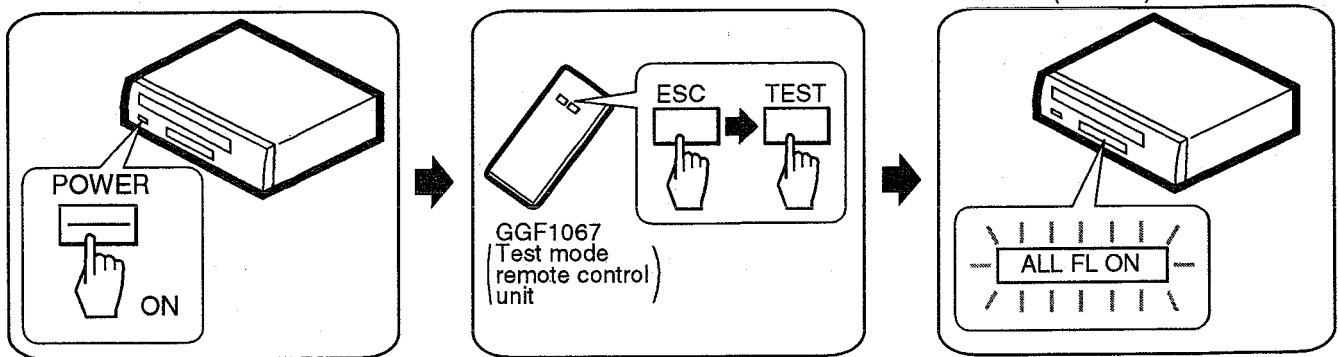
 <p>CD test disc (YEDS-7)</p>	 <p>LD test disc (GGV1012)</p>	 <p>⊖ Screwdriver (medium)</p>	 <p>⊖ Screwdriver (small)</p>
 <p>⊖ Precise screwdriver</p>	 <p>⊕ Screwdriver (large)</p>	 <p>⊕ Screwdriver (medium)</p>	 <p>Dual-trace oscilloscope (with delay) Frequency band <math>\geq</math> 40MHz</p>
 <p>Frequency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

3. TEST MODE (テストモード)

TEST MODE: ON

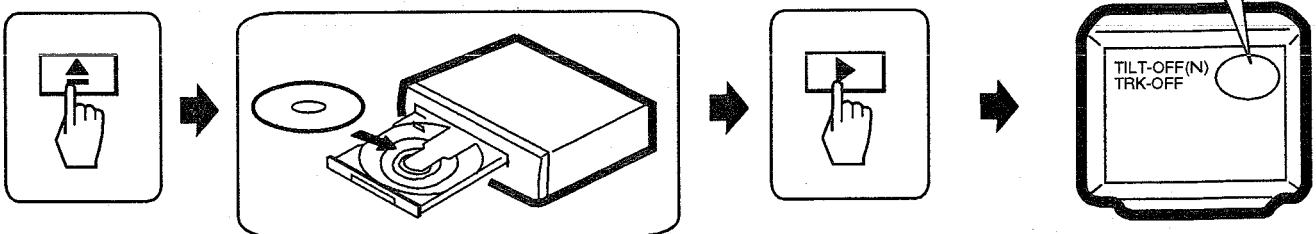


OR

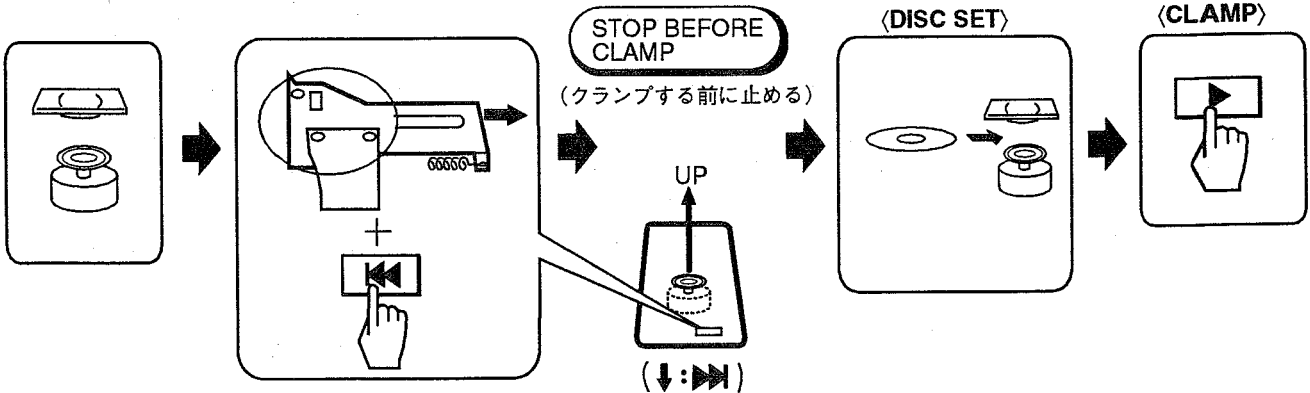


TEST MODE: DISC SET

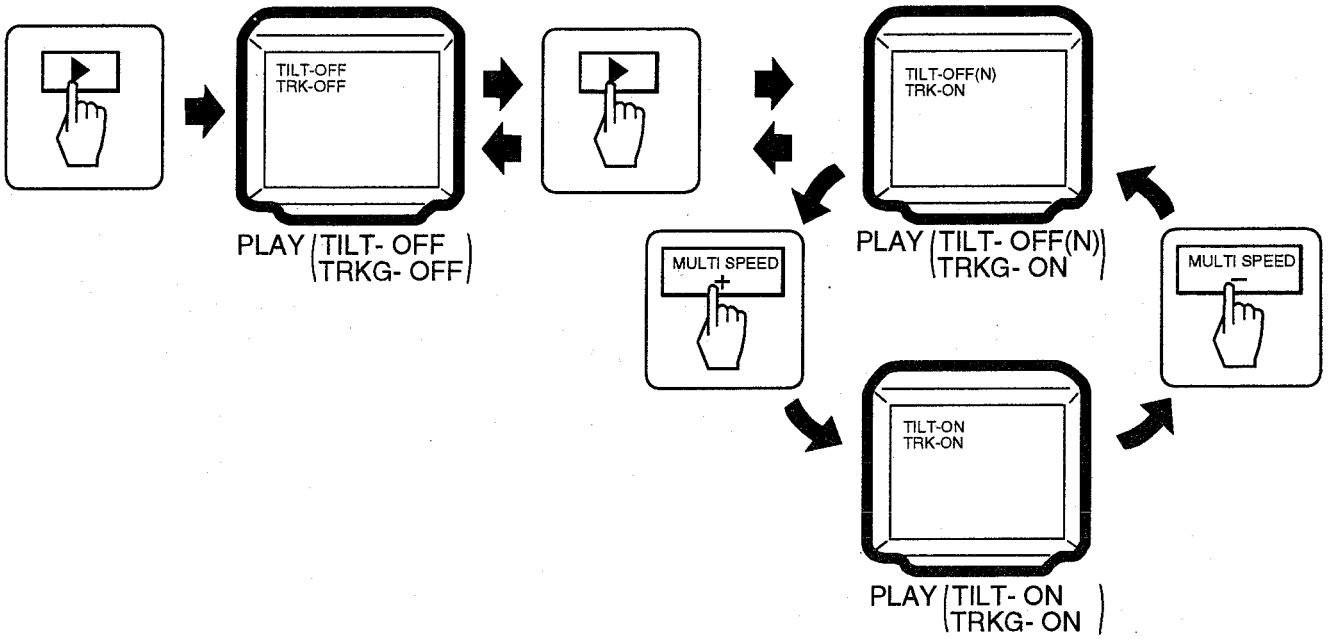
• With TRAY (トレイ有りの場合)



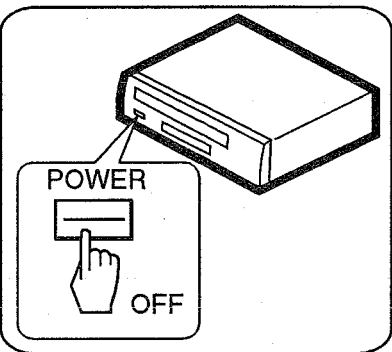
• No TRAY (トレイ無しの場合)



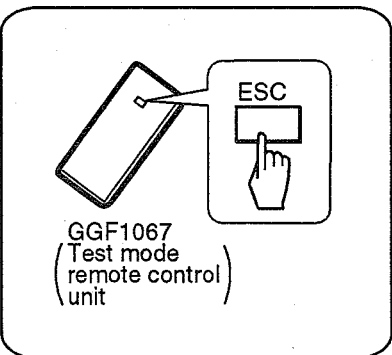
**TEST MODE: PLAY**



**TEST MODE: OFF**



OR



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)



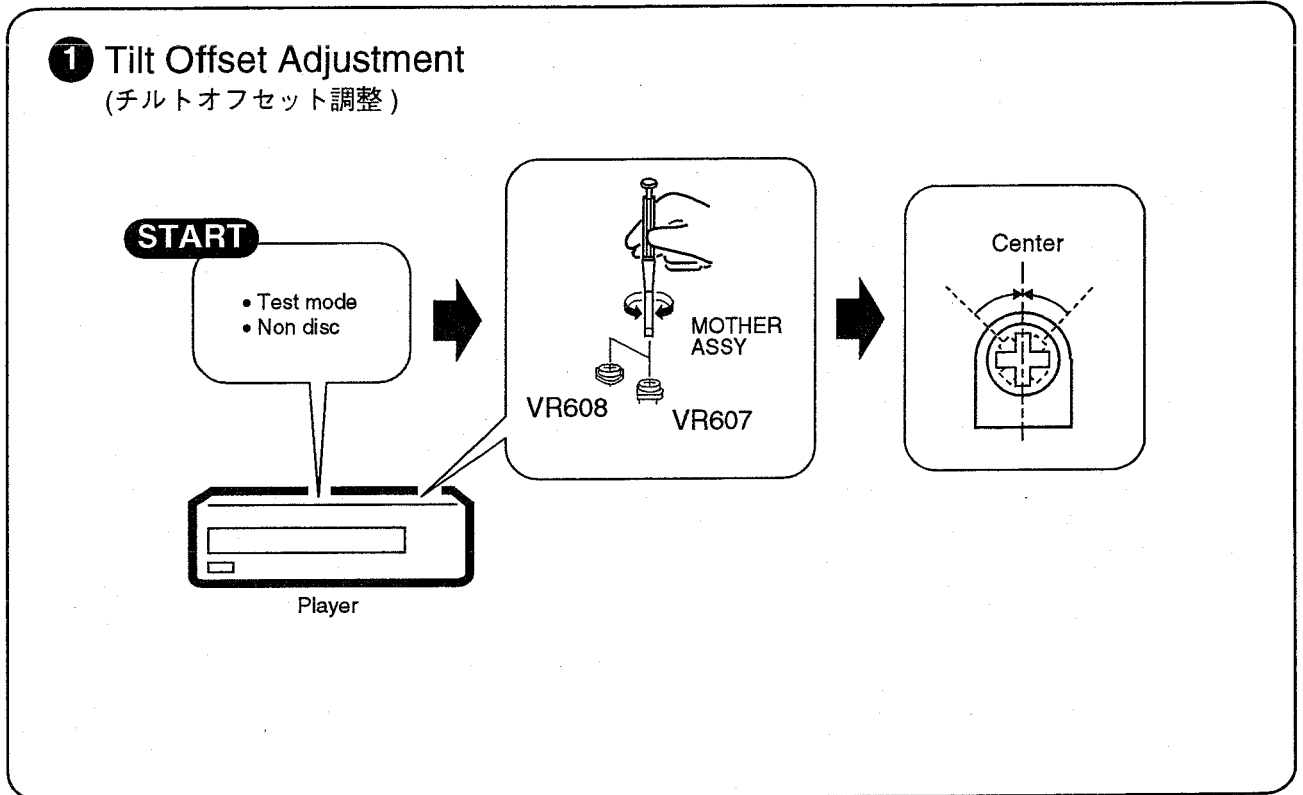
Mechanical point ①, ④, ⑤, ⑥, ⑨

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

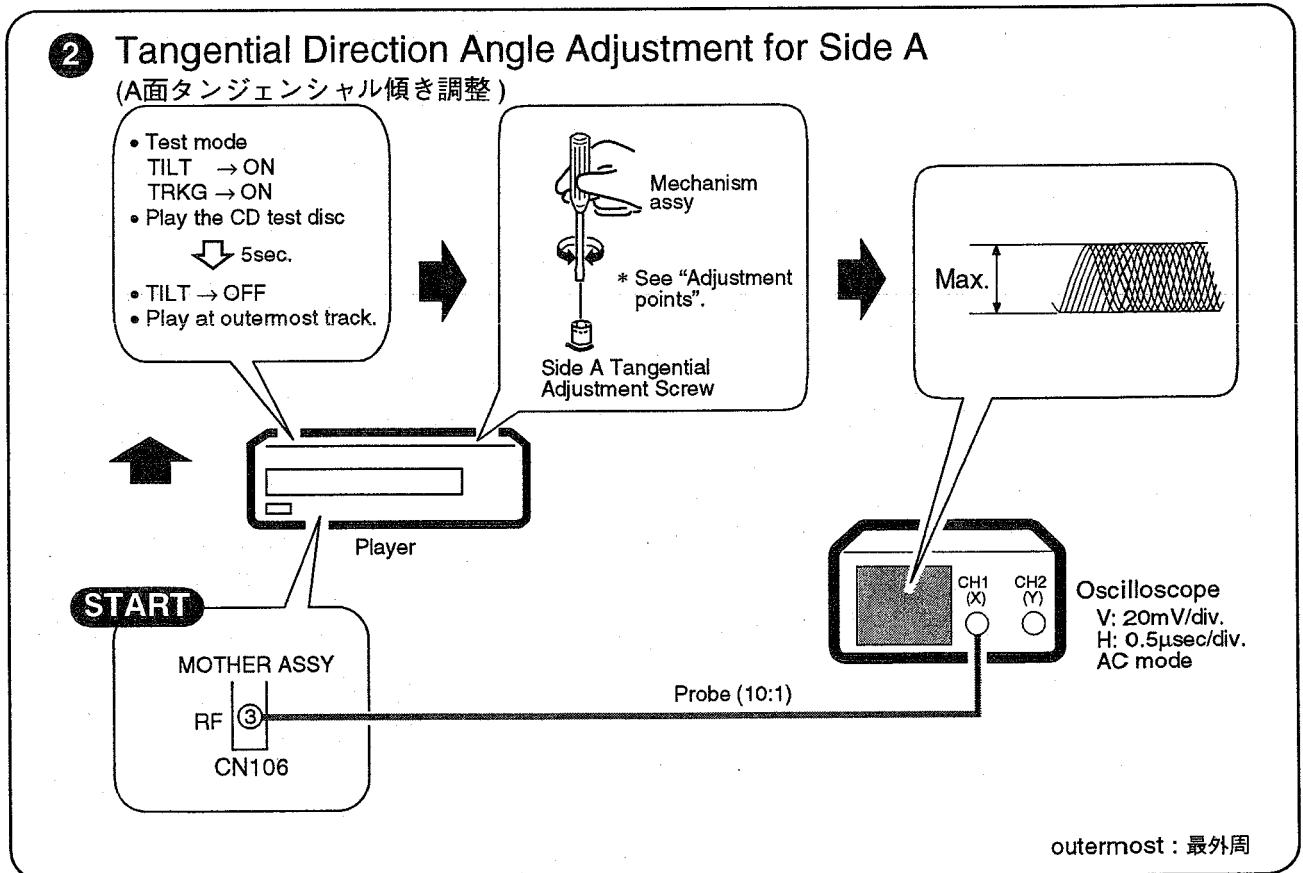
Note : ① and ② are adjusted already. (①,②は調整済)

5. MECHANICAL ADJUSTMENT (機構系の調整)

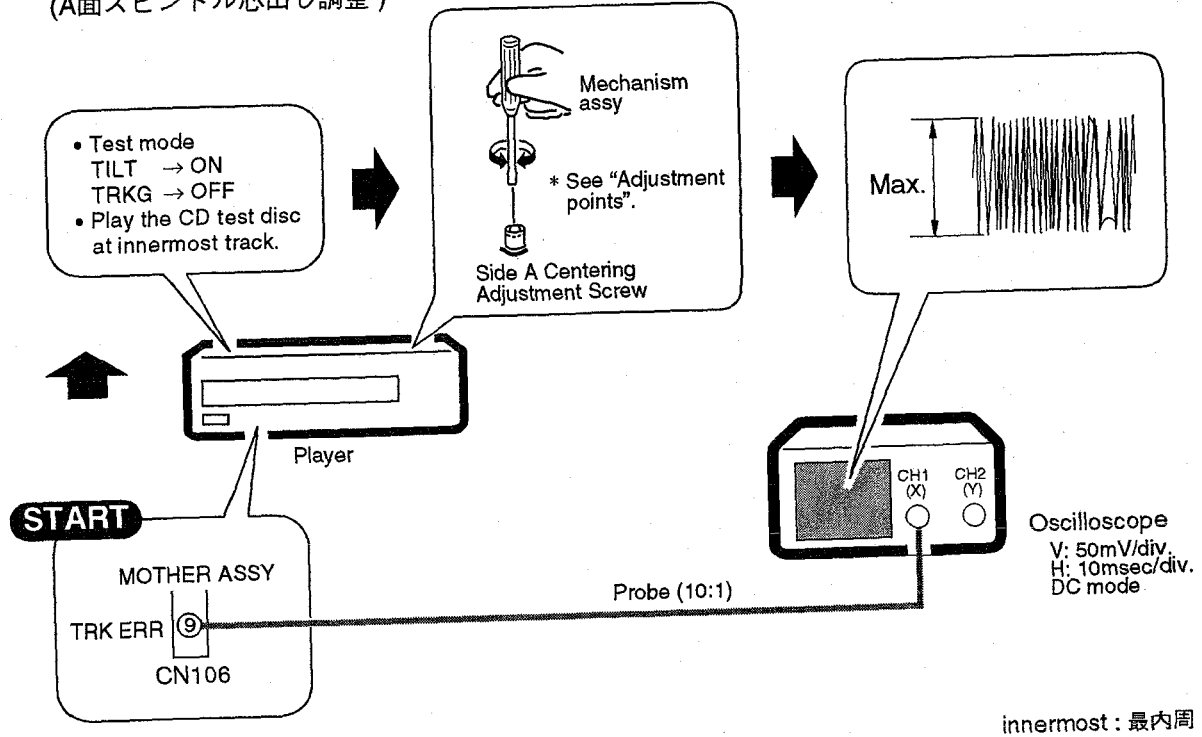
1 Tilt Offset Adjustment  
(チルトオフセット調整)



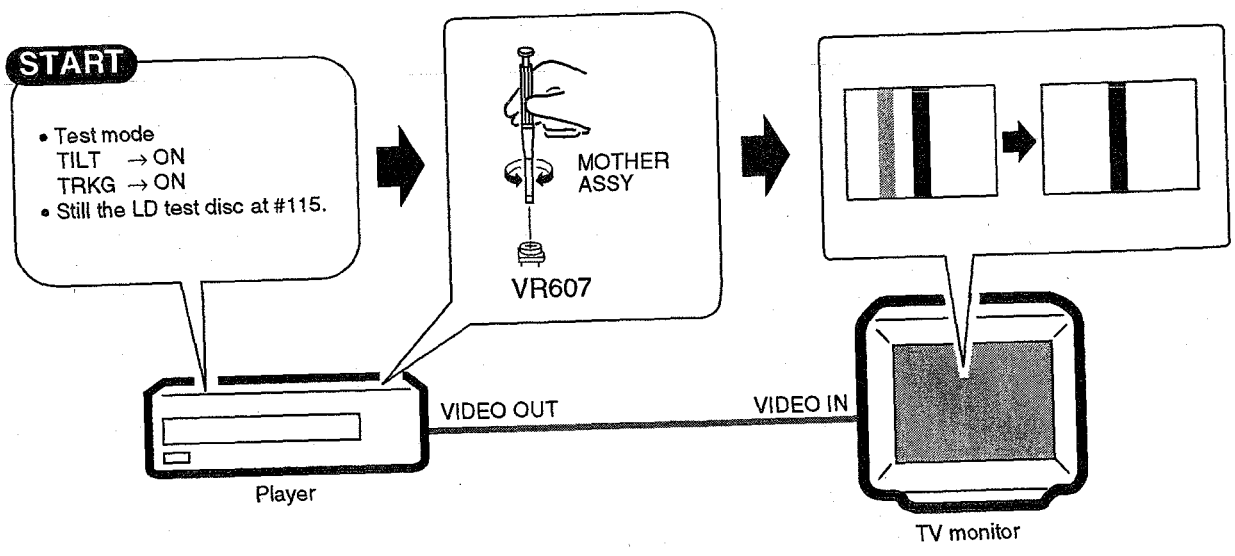
2 Tangential Direction Angle Adjustment for Side A  
(A面タンジェンシャル傾き調整)



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



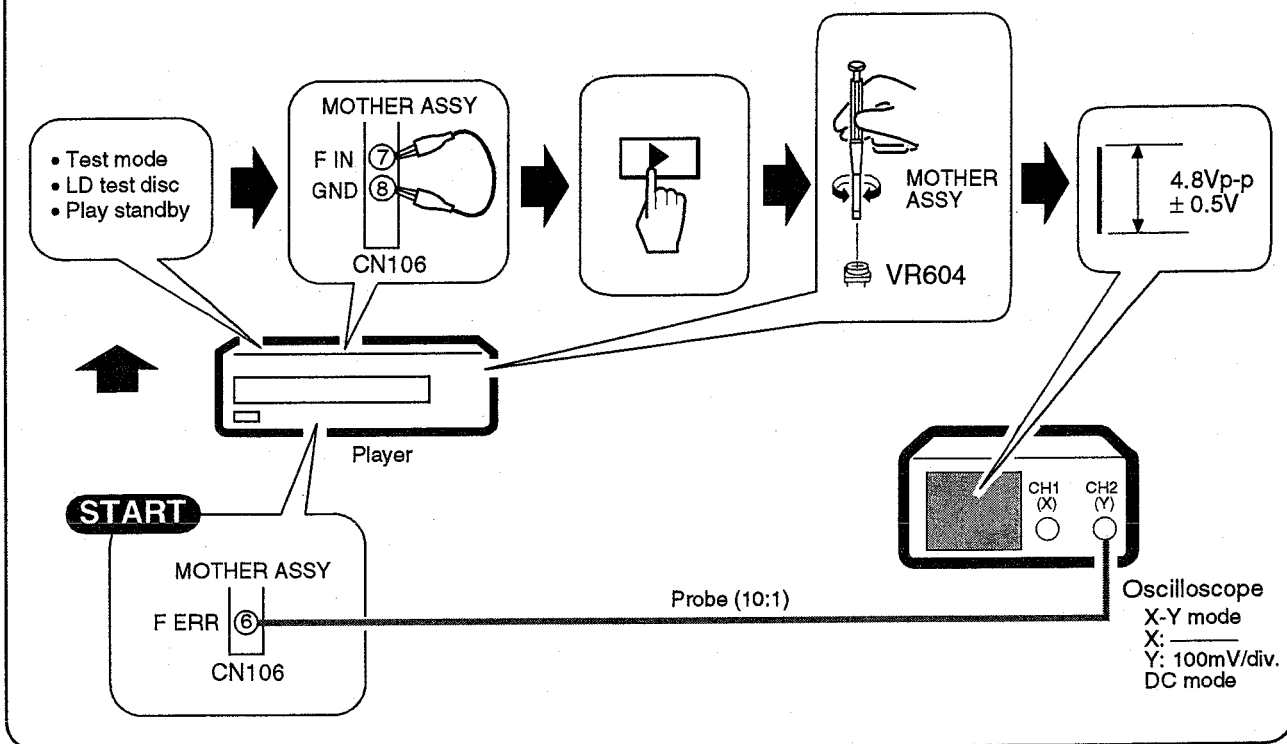
### 4 Crosstalk Check and Fine Tilt Offset Adjustment for Side A (A面クロストーク確認及び、チルトオフセット微調)





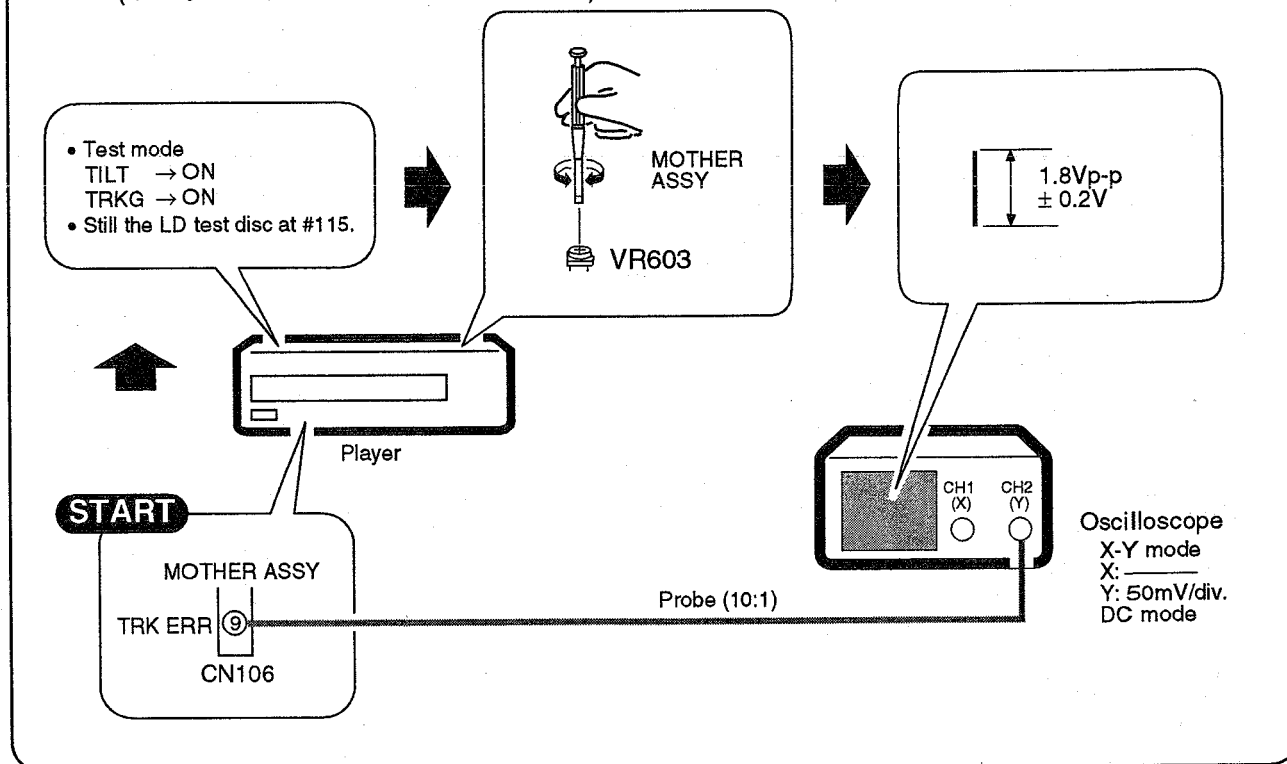
### 5 Focus Servo Loop Gain Adjustment

(フォーカスサーボループゲイン調整)



### 6 Tracking Servo Loop Gain Adjustment

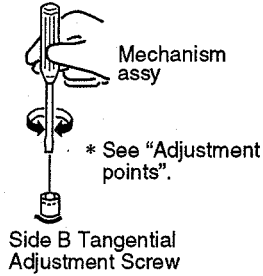
(トラッキングサーボループゲイン調整)



### 7 Tangential Direction Angle Adjustment for Side B

(B面タンジェンシャル傾き調整)

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



Max.

**START**

MOTHER ASSY  
RF ③  
CN106

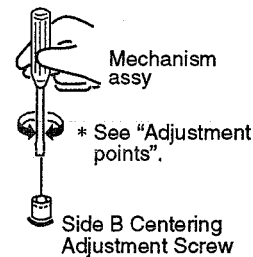
Probe (10:1)

Oscilloscope  
V: 20mV/div.  
H: 1μsec/div.  
AC mode

### 8 Spindle Motor Centering Adjustment for Side B

(B面スピンドル芯出し調整)

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



Max.

**START**

MOTHER ASSY  
TRK ERR ⑨  
CN106

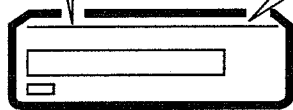
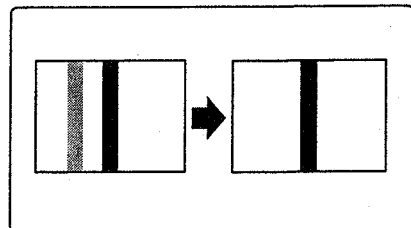
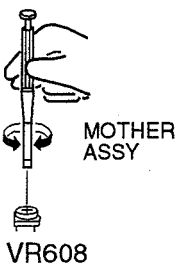
Probe (10:1)

Oscilloscope  
V: 50mV/div.  
H: 10msec/div.  
DC mode

**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)

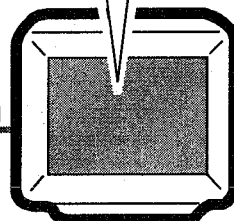
**START**

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



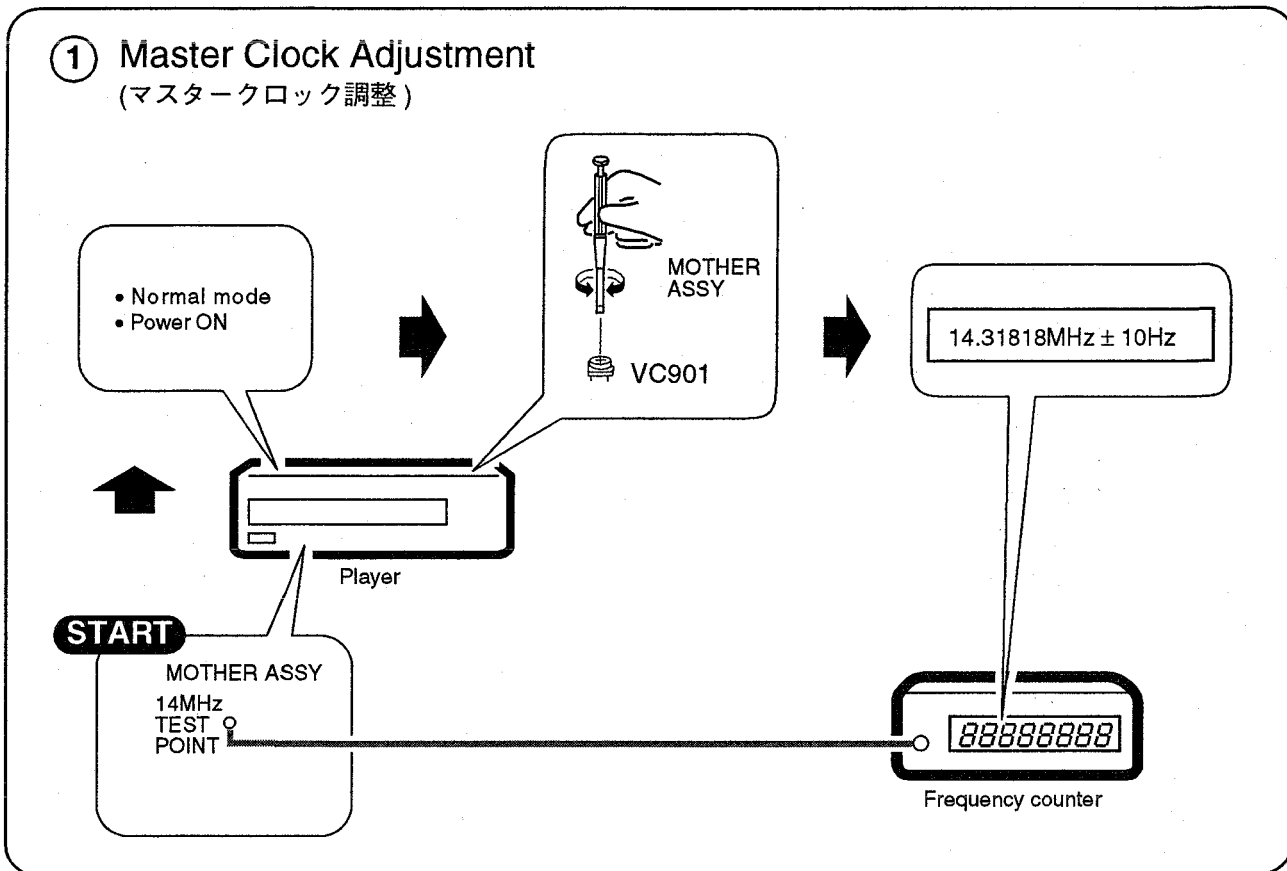
VIDEO OUT

VIDEO IN

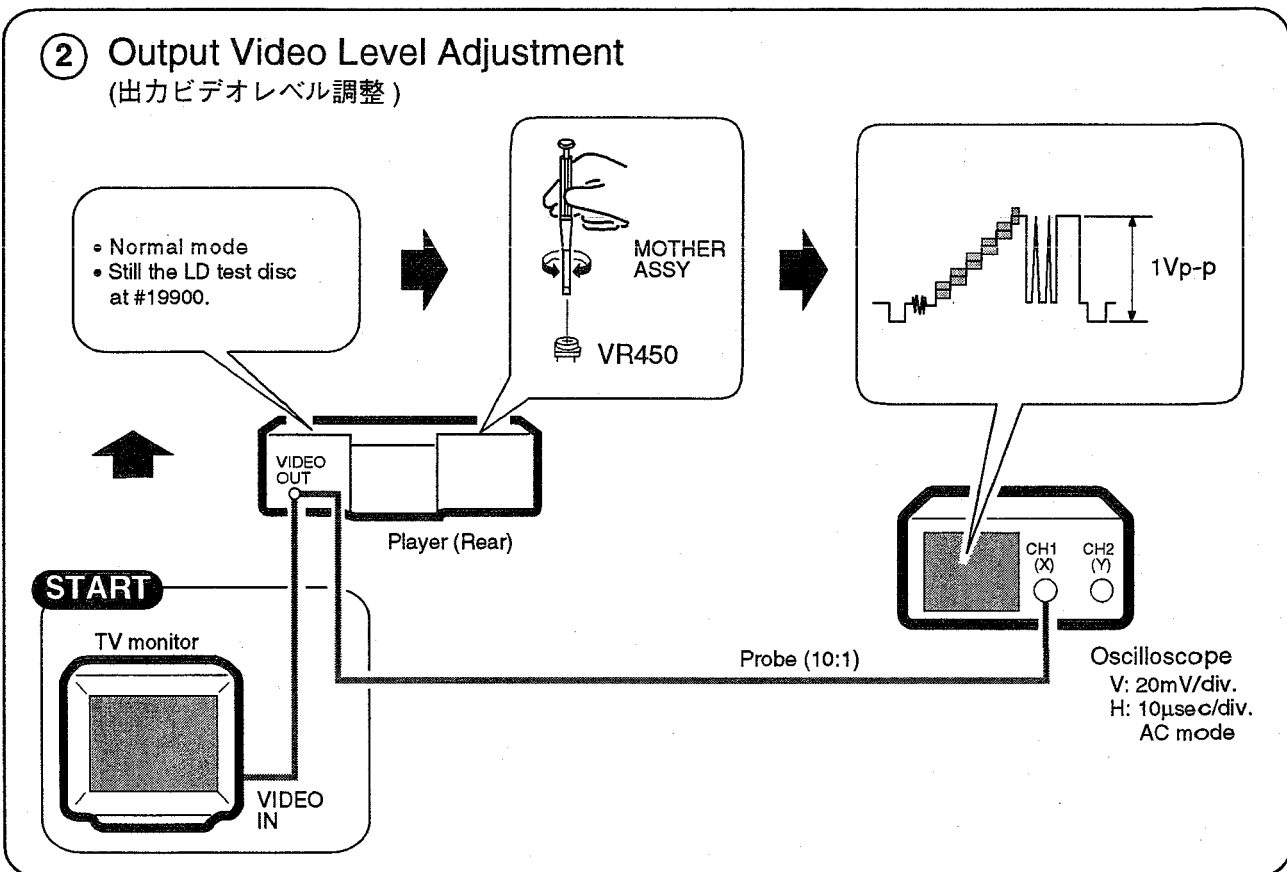


6. ELECTRICAL ADJUSTMENT (電気系の調整)

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

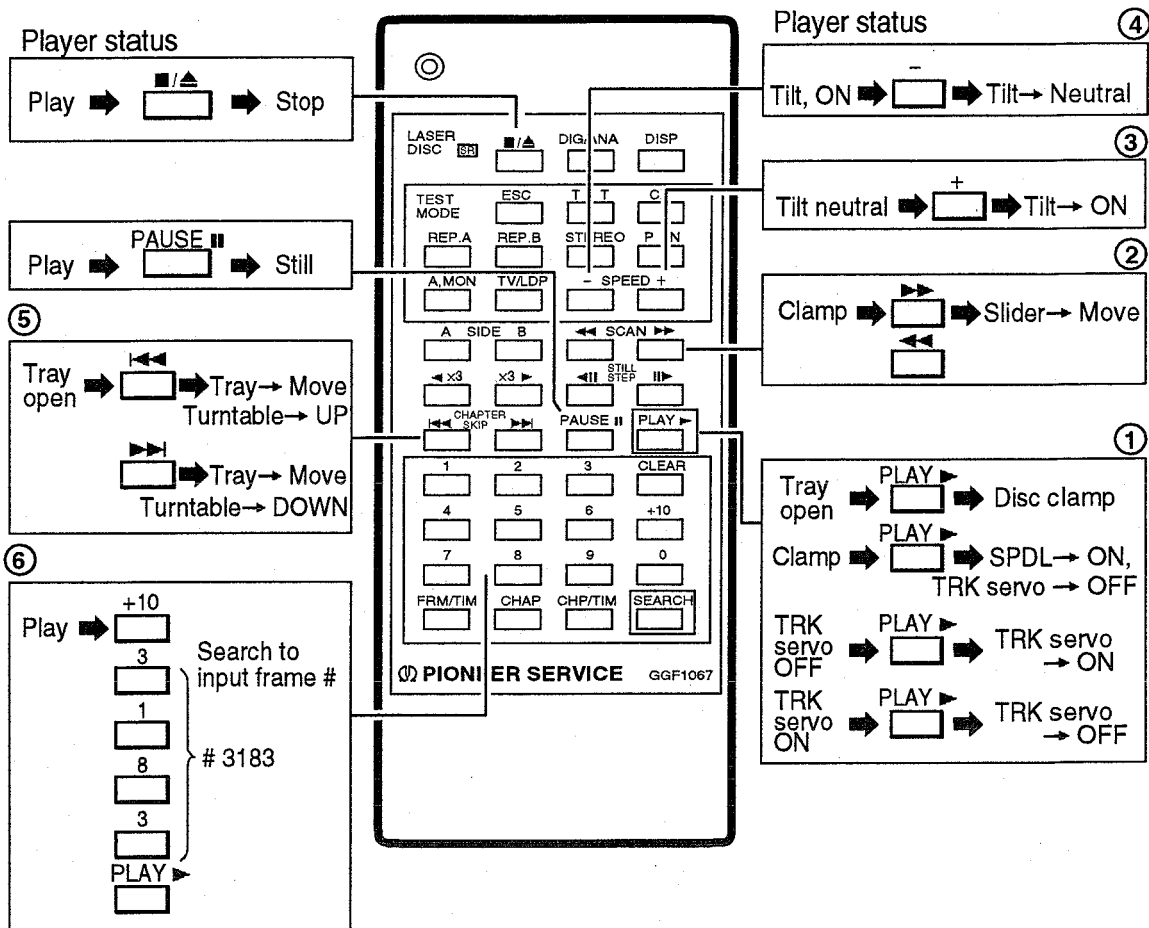


② Output Video Level Adjustment (出力ビデオレベル調整)

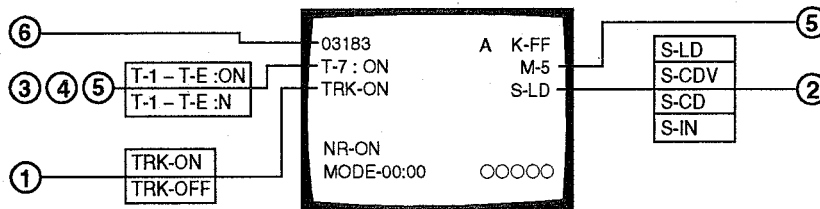


7. OPERATIONS IN THE TEST MODE (テストモード時のサービス用リモコン操作方法)

■ Test Mode Remote Control Unit (GGF1067)



■ TV Monitor Display



## 6. SELF-DIAGNOSTIC FUNCTIONS

### 6.1 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.

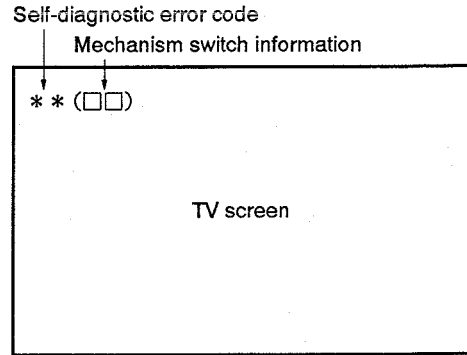


Fig. 1 TV screen display

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

\* 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 |                            |                     |

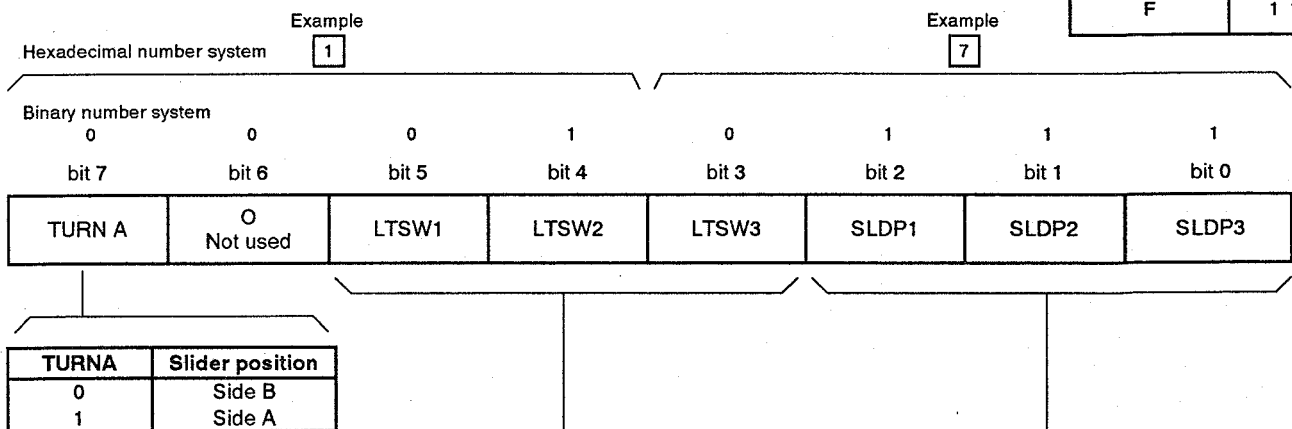
## 6.2 FORMAT OF THE MECHANISM SWITCH INFORMATION WHICH IS TRANSMITTED TO THE MODE CONTROL IN THE ERROR OCCURRENCE

### • Mechanism switch information ( 1 7 )

Mechanism control → Mode control  
 Communication byte address 5 (COMBUF5)  
 (Mode control displays this value as it is.)

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

Example



Example of 1 7 is indicated as follows.

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

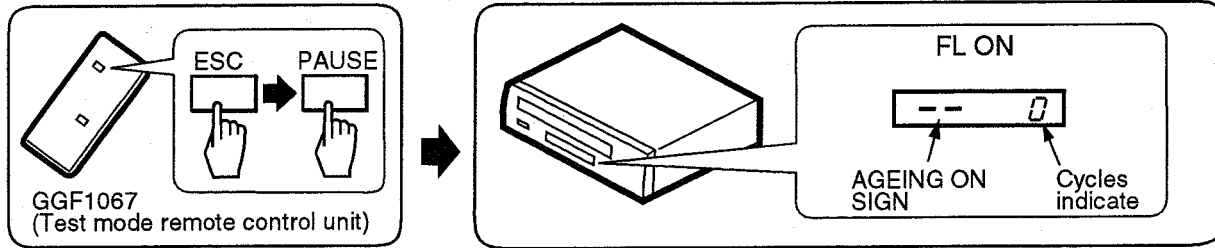
LTSW			Loading/tilt position
1	2	3	
0	1	1	Open (Tray open state)
0	0	1	Loading (During move the tray horizontally)
1	0	1	Standby (Tray close & spindle down state)
1	0	0	Clamp (Durring spindle up or down)
0	0	0	Tilt - (Clamp state)
0	1	0	Tilt + (Clamp state)
1	1	0	Tilt limit (Clamp state)

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

6.3 AGEING MODE (エージングモード)

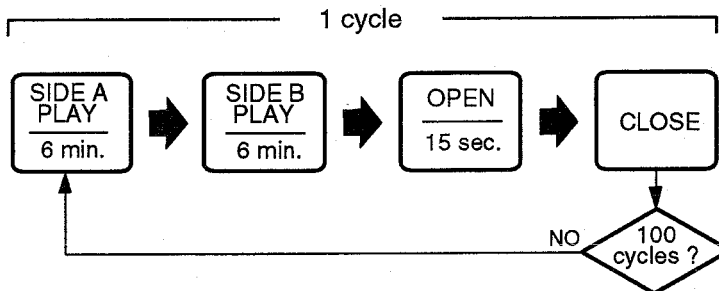
**AGEING MODE: ON**

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

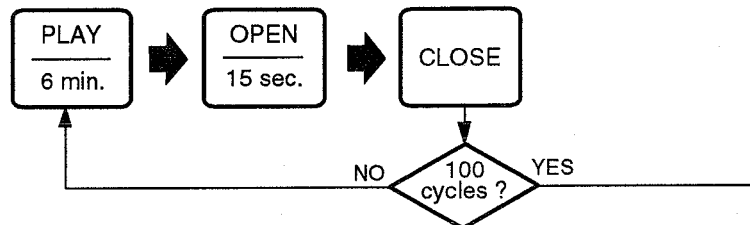


**AGEING**

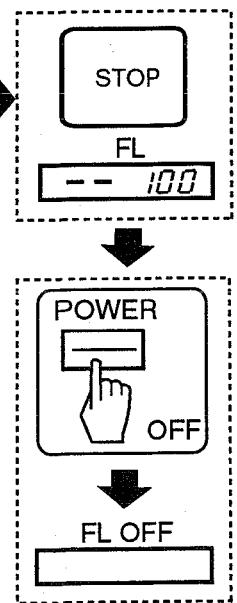
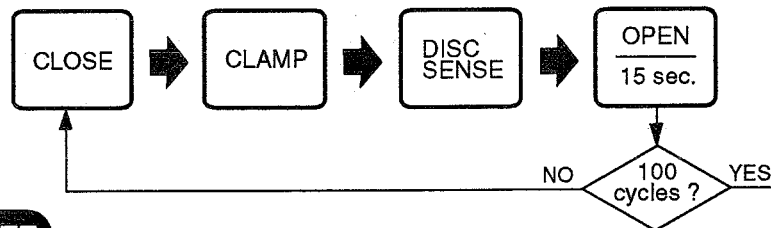
• LD



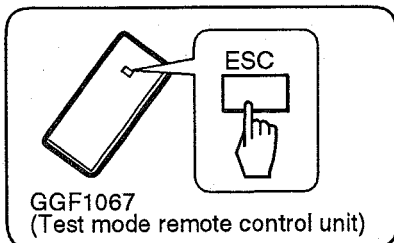
• CD, CDV



• NO DISC

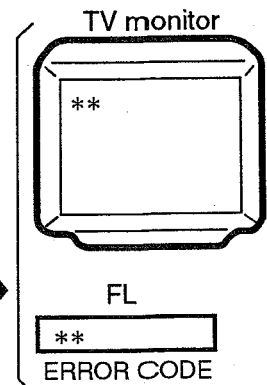
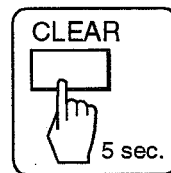
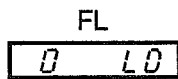
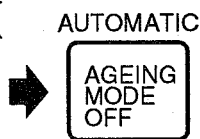
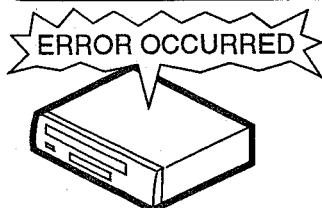


**AGEING MODE: OFF**



**ERROR OCCURRED**

ERROR OCCURED : エラー発生

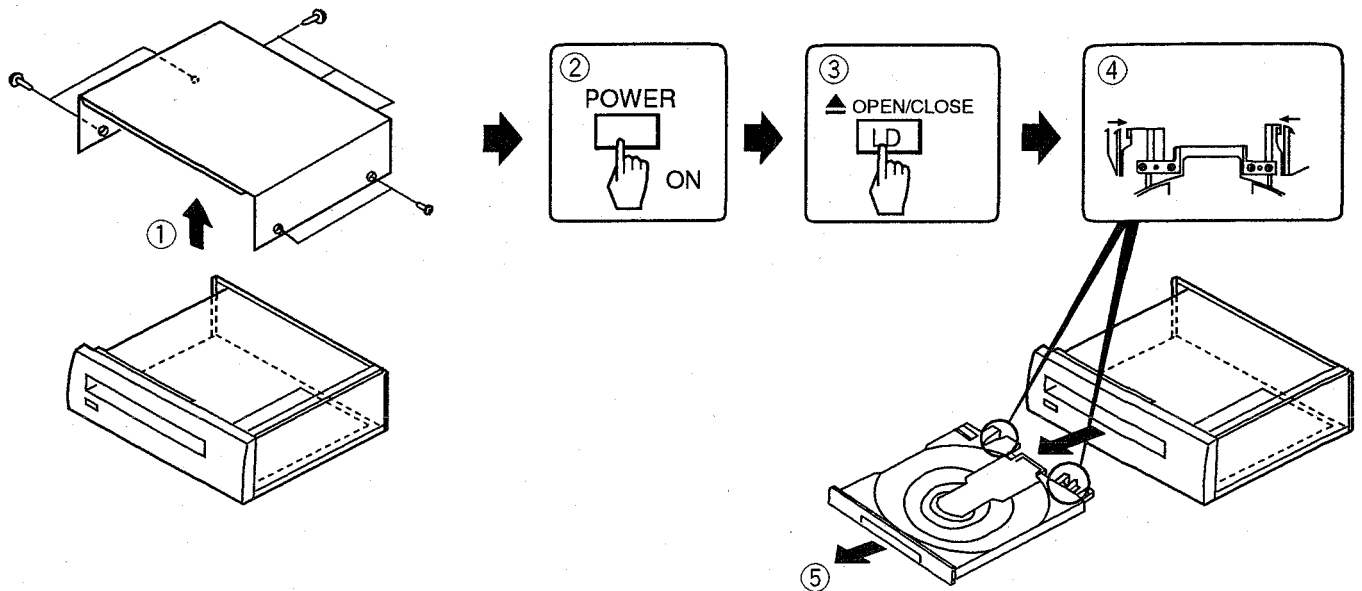




## 7. DISASSEMBLY/ASSEMBLY (分解/組立の手順)

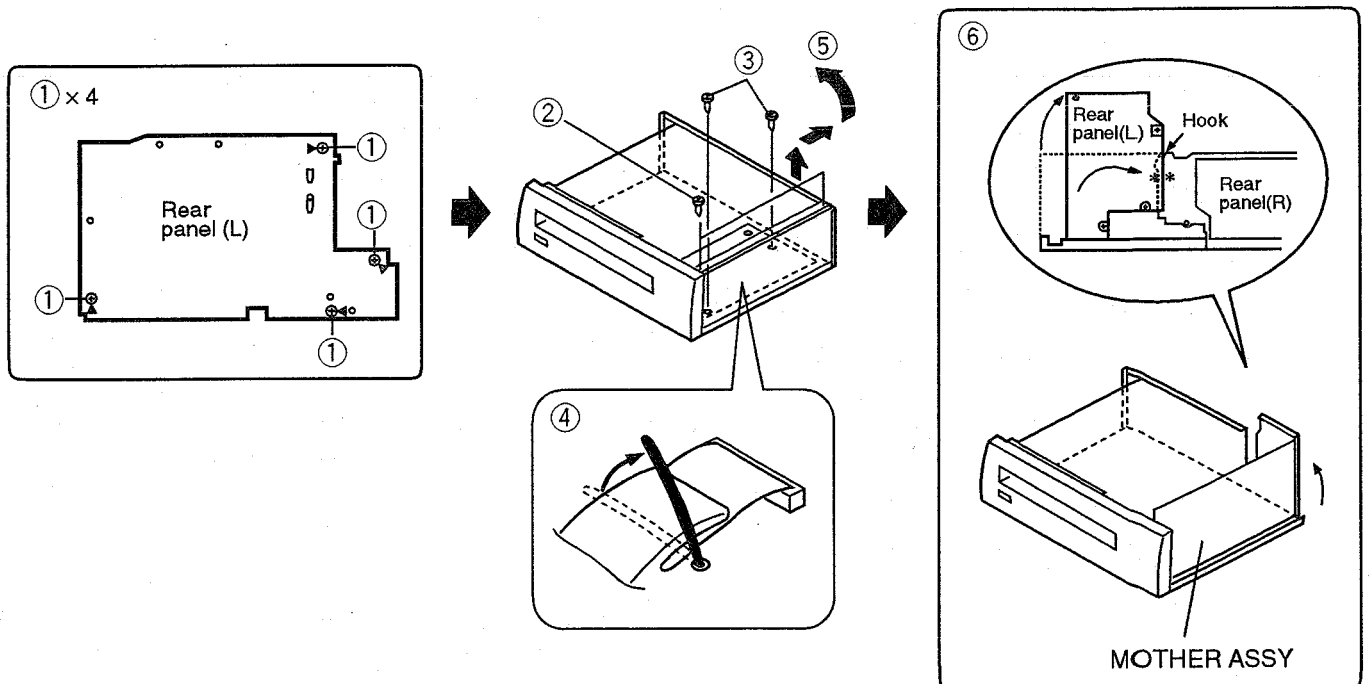
### 7.1 DISC TRAY

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



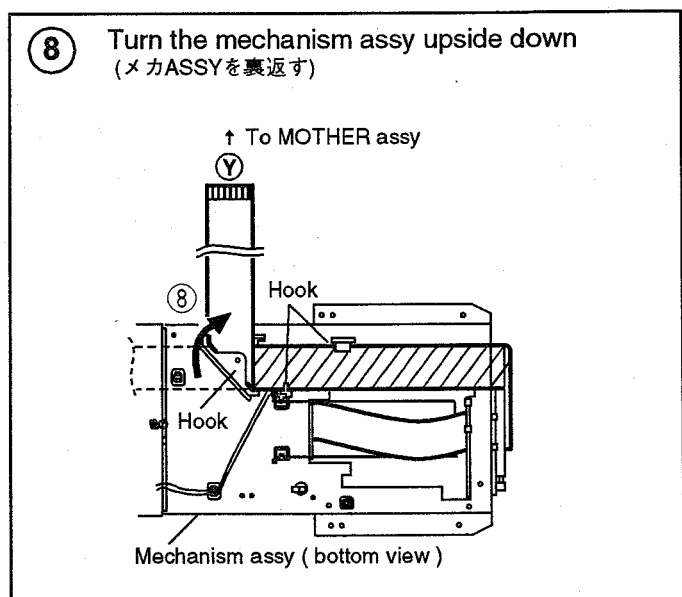
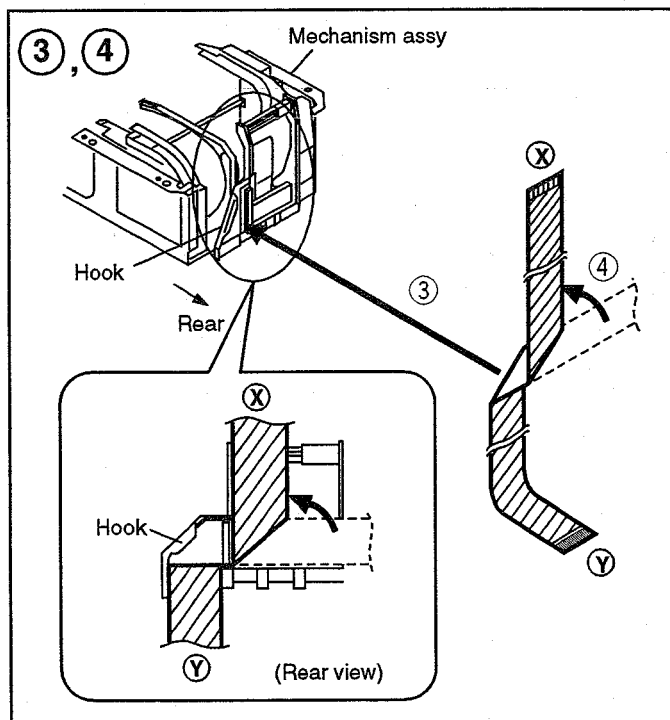
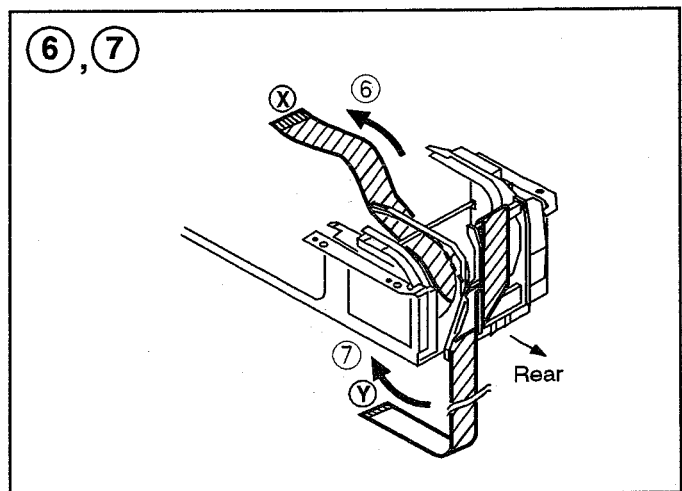
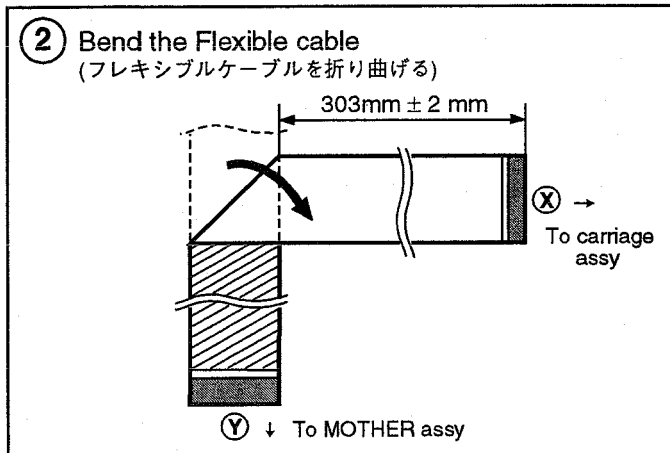
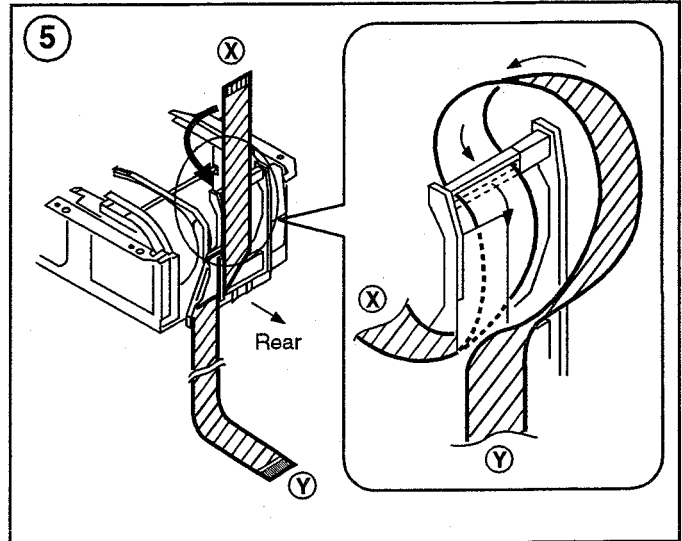
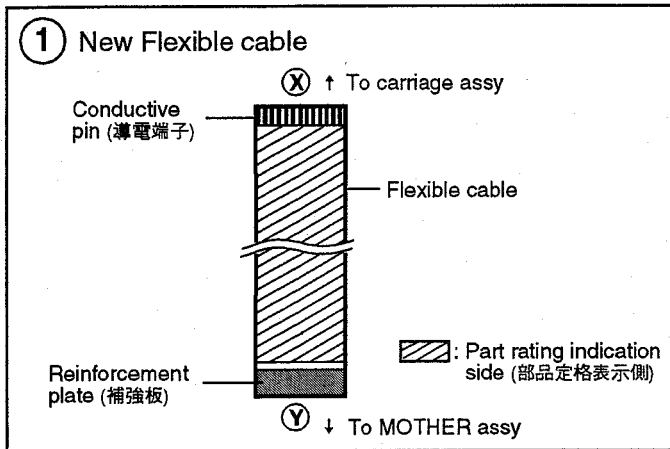
### 7.2 MOTHER ASSY

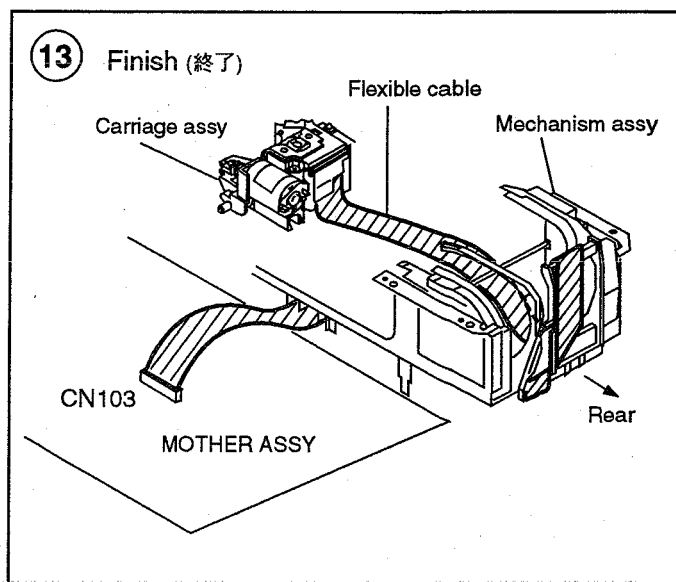
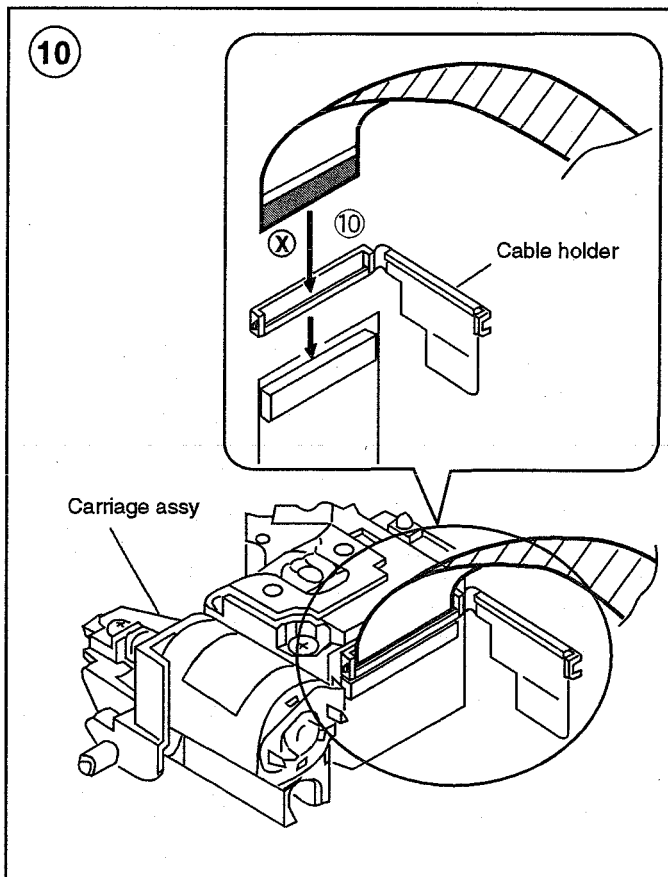
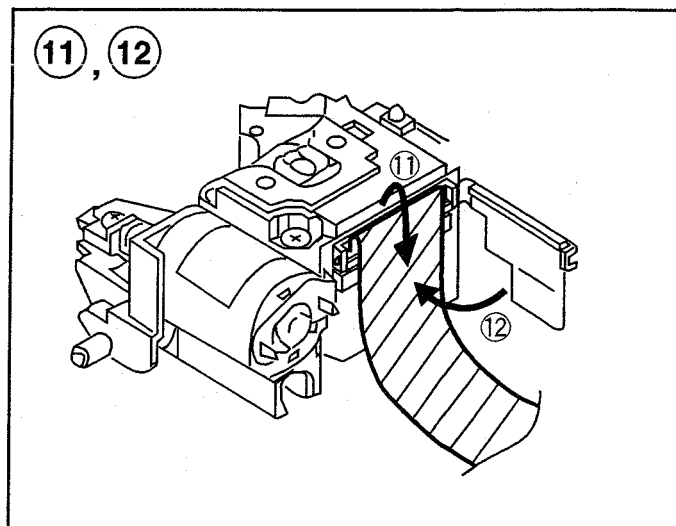
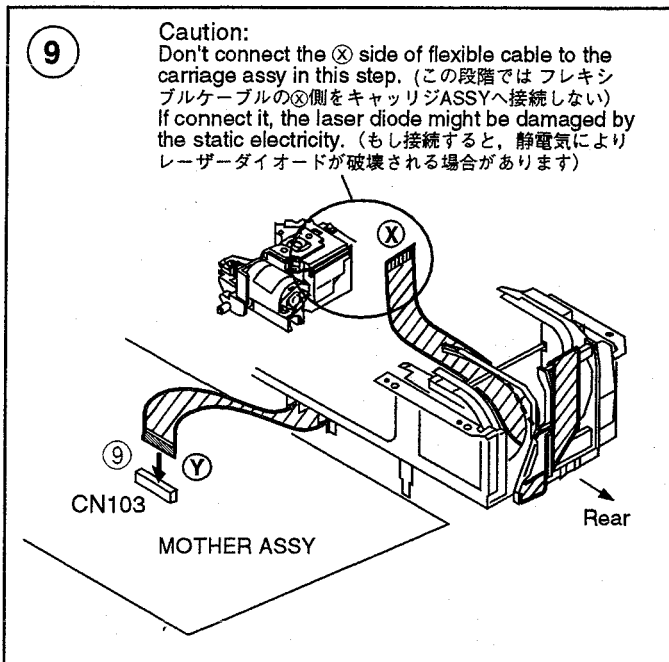
- Disassembly : ① → ② → ③ → ④ → ⑤ → ⑥
- Assembly : ⑥ → ⑤ → ④ → ③ → ② → ①



7.3 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)





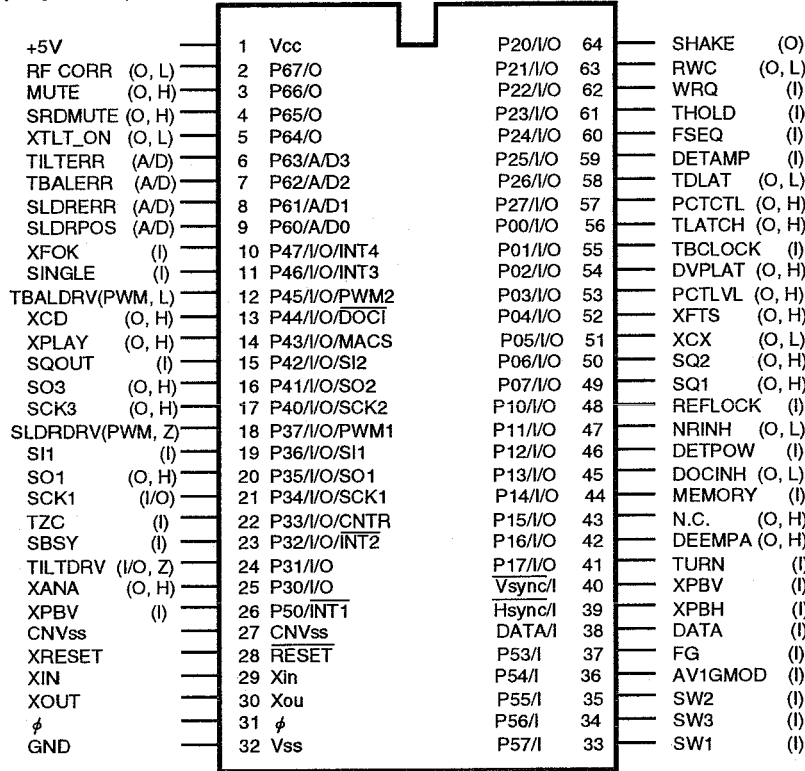
## 8. IC INFORMATION

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

### ■PD0240B2 (MOTHER ASSY : IC101)

• MECHANISM CONTROL IC

•Pin Arrangement (Top View)



### •Pin Function

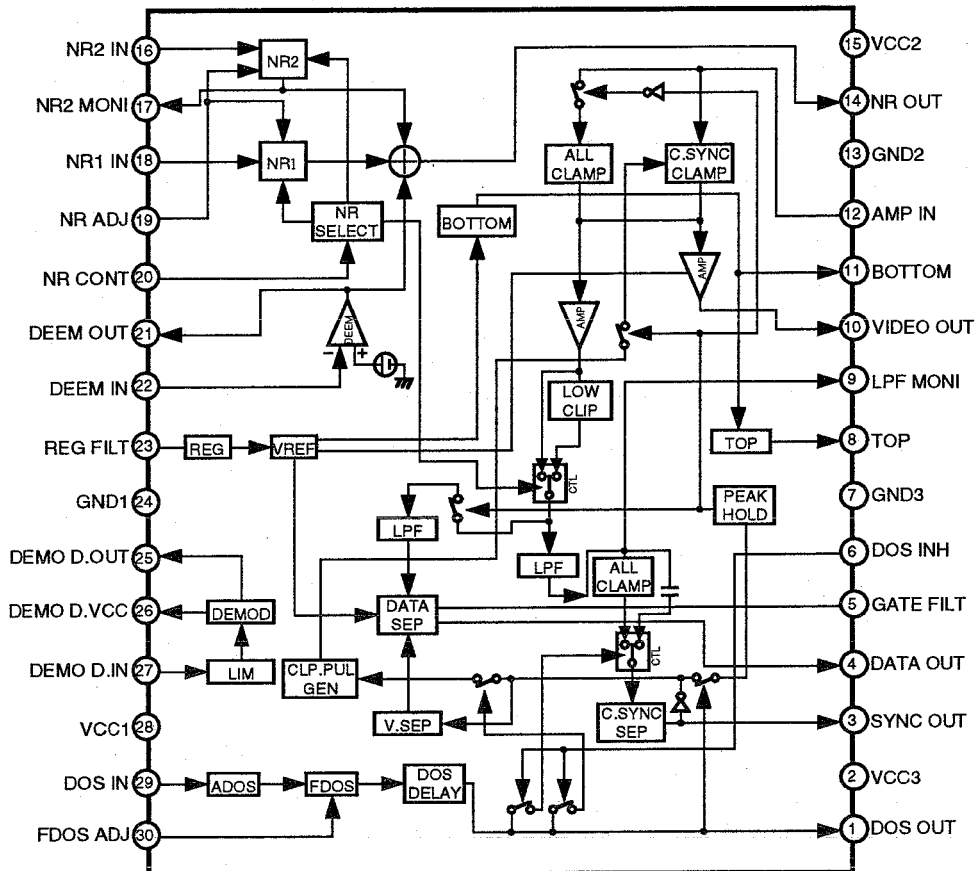
No.	Pin Name	I/O	Function
1	VCC	I	Power supply pin Apply 5V±10%
2	RFCORR	O	RF correction switch signal output H : Gain UP CD, CDV-A : Low, CAV inner circuit gain up, others are High
3	MUTE	O	Audio mute control signal output of audio system L : Release MUTE H : MUTE
4	SRDMUTE	O	Mute control signal output 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	ATT-SW of rear panel use for the single mode This information transmit to mode control by communication. L : Single H : Normal
12	TBALDRV	O PWM	Output the tracking offset signal to PWM output, then use for auto tracking offset. 910 μ sec 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 μ sec period, tri-state control H, L, Z

No.	Pin Name	I/O	Function
19	SI1	I	Data input from the mode control IC
20	SQ1	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 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	SW2		
35	SW3		
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	TURN	I	Turn switch input H : side A L : side B
42	DEEMPA	O	DSP deemphasis control L : OFF H : ON
43	N.C.	O	Not used
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 : NR ON H : NR 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 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	PD0234A 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	TDLAT	O	Latch signal for three-dimensional IC control Latches at falling edge.
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)

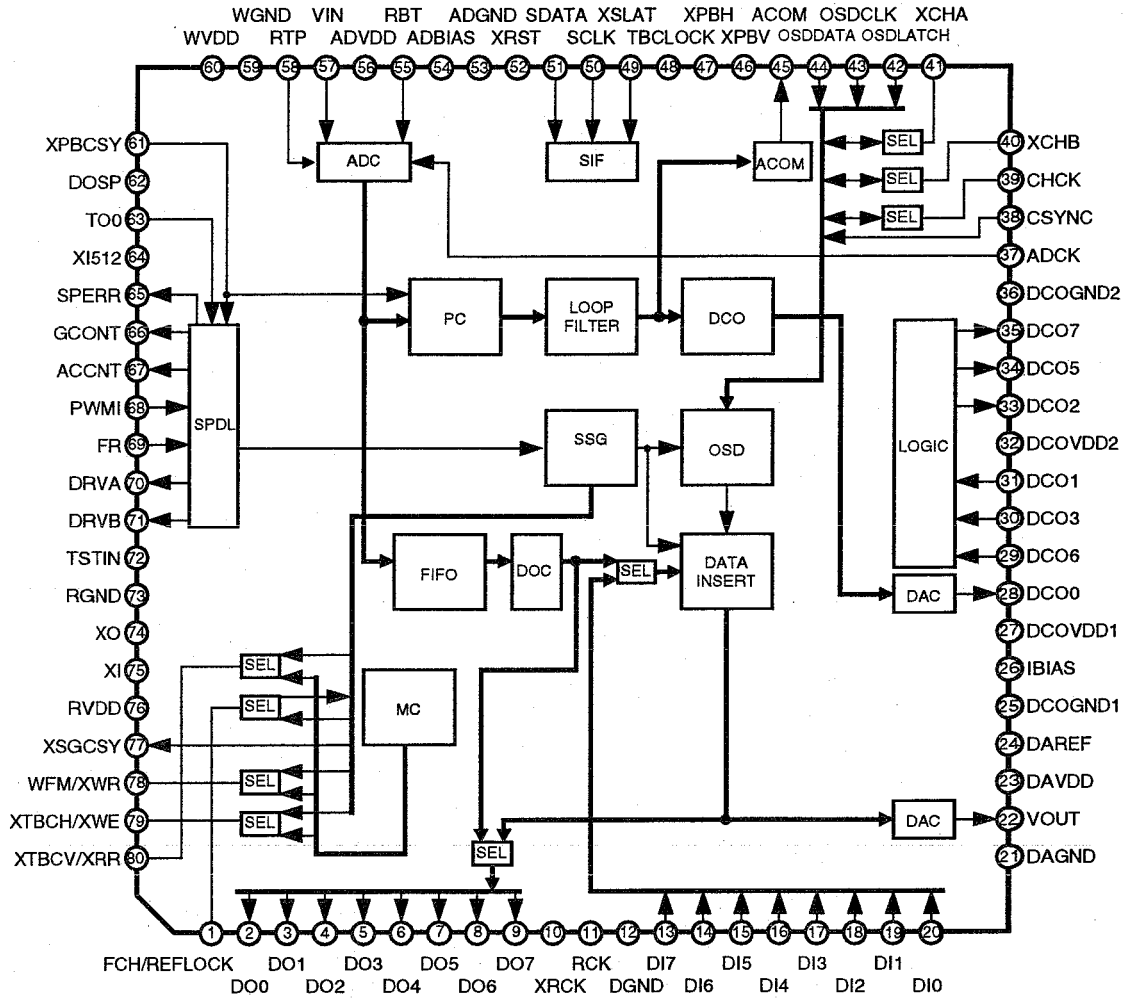
• VIDEO IC

• 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	VOUT	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 μF 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 10kΩ 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



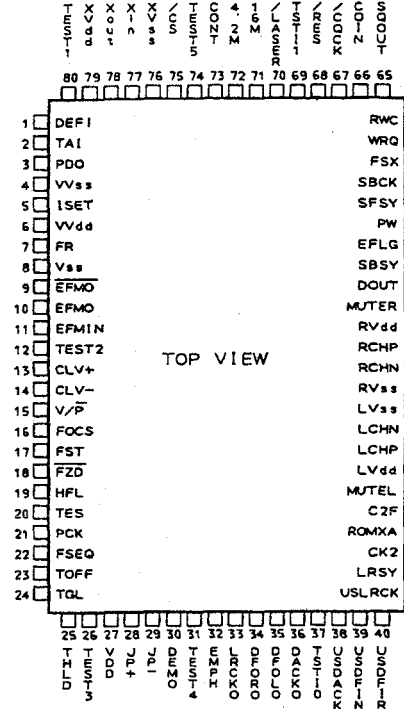
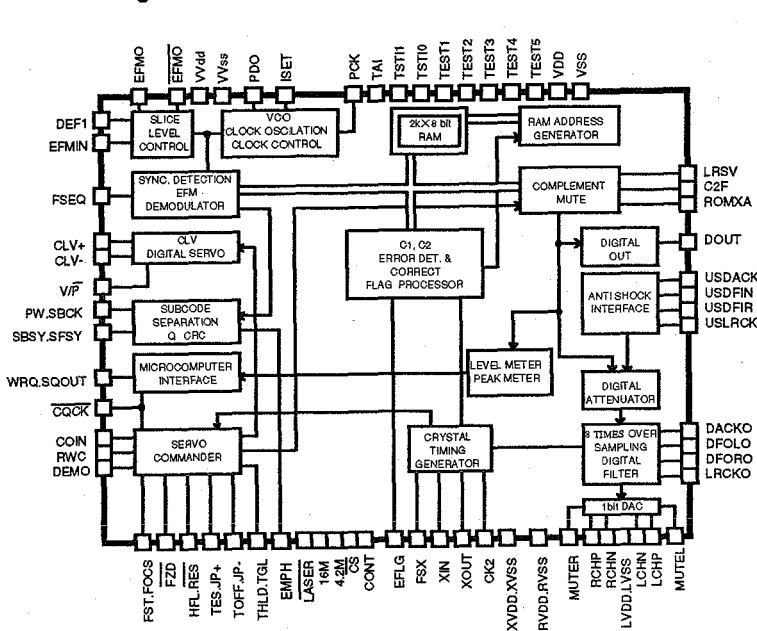
No.	Pin Name	I/O	Function
44	OSDDATA	I	Control data input for OSD Read the data in synchronization with CLK which input to OSDCLK pin.
45	ACOM	O	Jitter correction signal output for analog audio Use for cancelling the jitter element of analog audio.
46	XPBV	O	PB system V sync. output Outputs the signal 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	TO0	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
71	DRVB		It is applicable to either a brush or brushless motor, selection of which is by a serial command.
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 disenable. 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.

# CLD-V870

## 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 VCO Normally, 5V.
7	FR	AI	For VCO frequency range adjustment
8	Vss	—	Ground for digital system Normally, 0V.
9	EFMO	O	For slice level control 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 zero-cross 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

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 ("L" at not used)		Bit clock input		
39	USDFIN				L ch and R ch data		
40	USDFIR				Test input pin Normally, "L".		
41	USLRCK	I	Antishock correspondence Input word clock input ("L" at not used)				
42	LRSY	O	ROMXA correspondence output		L/R clock output		
43	CK2				Bit clock output	DACLK (at RES)	Polarity inversion (CK2COK mode)
44	ROMXA				Data output	Data (complement) (at RES)	ROMOUT (ROMXA mode)
45	G2F				C2 flag output		
46	MUTEL	O	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				

■ PD3340A (FLKB ASSY : IC101)

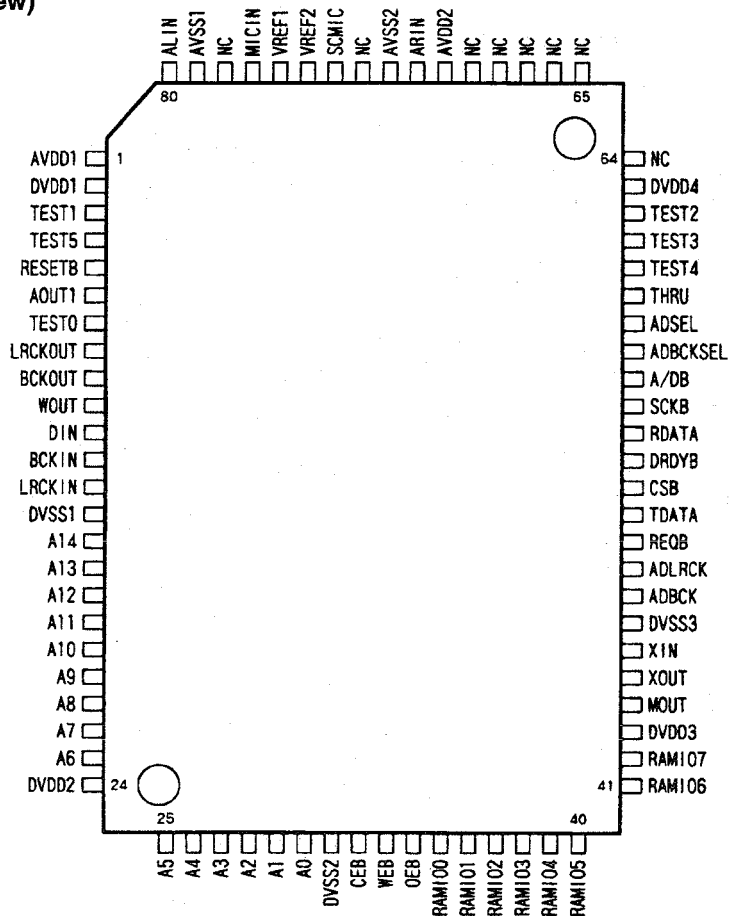
• MODE CONTROL IC

● Pin Function

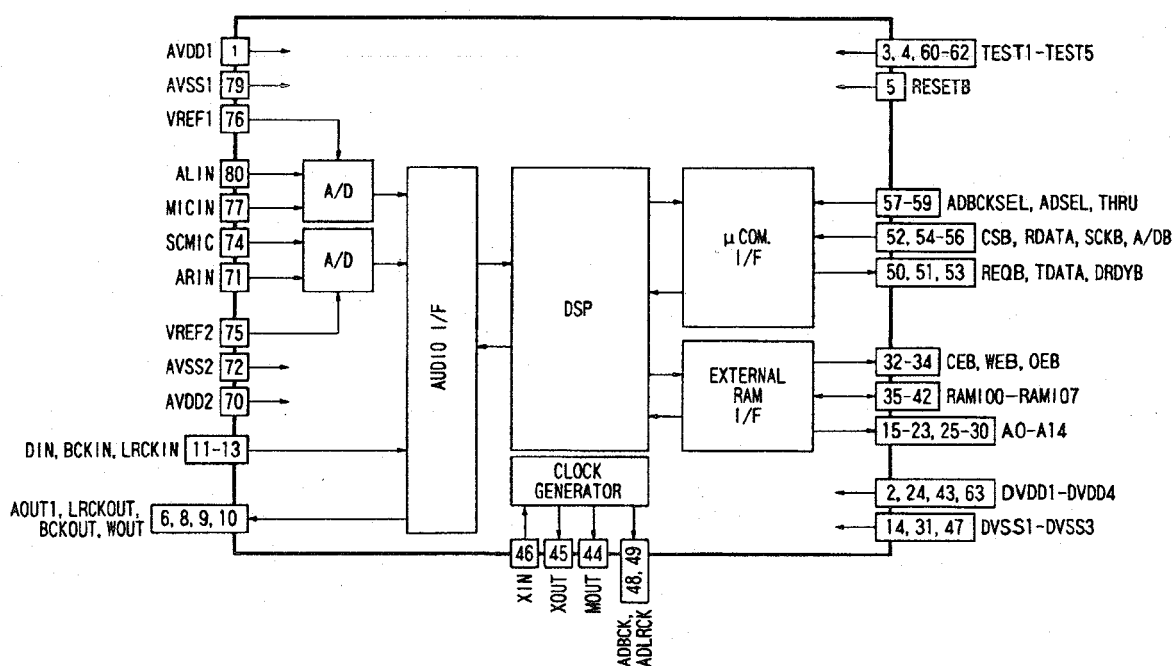
No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	MODESEL	I	MIC control input (AD input)	41	c	O	Display segment output
2	ECHO VOL	I	Echo volume data value (AD input)	42	b		
3	ONTA BAL	I	Vocal volume data value (AD input)	43	a		
4	MODE SW	I	Mode switch (Normal, Karaoke, External) (AD Input)	44	G1	O	Display grid output
5	AVss	I	GND	45	G2		
6	—	I	Not used (GND)	46	G3		
7	N.C.	O	Not used (N.C)	47	G4		
8	—	I	Not used (GND)	48	G5		
9	Vss	I	GND	49	G6		
10	OSC1	I	Oscillator (8MHz)	50	G7		
11	OSC2	O		51	G8		
12	XRESET IN	I	CPU reset (L : reset)	52	Double sided XSingle sided	I	Connect to power supply (+5V)
13	SHAKE	I/O	Mech. control communication requirement input (mode control communication permission output)	53	N.C.	O	Not used (N.C)
14	SEL IR	I	Remote control input	54	N.C.		
15	V-CD	O	Not used	55	N.C.		
16	POWER	O	Mother board power supply switching output	56	N.C.		
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
19	MICSENSE	I	MIC input	59	I/O DATA2	O	I/O expander data output
20	XSSVC	O	Not used	60	I/O CLK2	O	I/O expander clock output
21	XMICON	O	Mic line switch (L : ON, H : OFF)	61	N.C.	O	Not used (N.C)
22	MIC1/X2	O	MIC input switch (L : MIC1, H : MIC2)	62	N.C.		
23	XINT/EXT	O	Analog audio switch (L : player, H : External input)	63	MUTE	O	Not used
24	BATTLE	O	Scoring MIC switch (L : at normal, H : at competition)	64	CDGM	O	Not used
25	THRU (DASP7)	I	H : through the digital audio L : DSP input of the digital audio	65	XCS(G)	O	Not used
26	I/O CLK1	O	I/O expander clock output	66	XCS (COLOR)	O	Not used
27	I/O DATA1	O	I/O expander data output	67	XSCK	I/O	Serial communication clock
28	N.C.	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	O	Mother board reset output
31	i			71	XCS (OSD)	O	Communication requirement output of character generator
32	k			72	DRDY (DASP7)	I	DSP (PM0007A) L : data reception OK
33	j			73	XREQ (DASP7)	I	DSP (PM0007A) L : data transmission OK
34	i			74	A/D (DASP7)	O	Transmission data switch of DSP (PM0007A) (H : address, L : data)
35	h			75	CS (DASP7)	O	DSP (PM0007A) communication requirement output
36	g			76	AVcc	I	Power supply (+5V)
37	f			77	KIN0	I	Key data input (AD input)
38	e			78	KIN1		
39	d			79	KIN2		
40	VDISP			I	FL power supply (-27V)	80	Model select

■ PM0007A (KRAB ASSY : IC101)  
· DASP IC

• Pin Arrangement (Top View)



• Block Diagram



•Pin Function

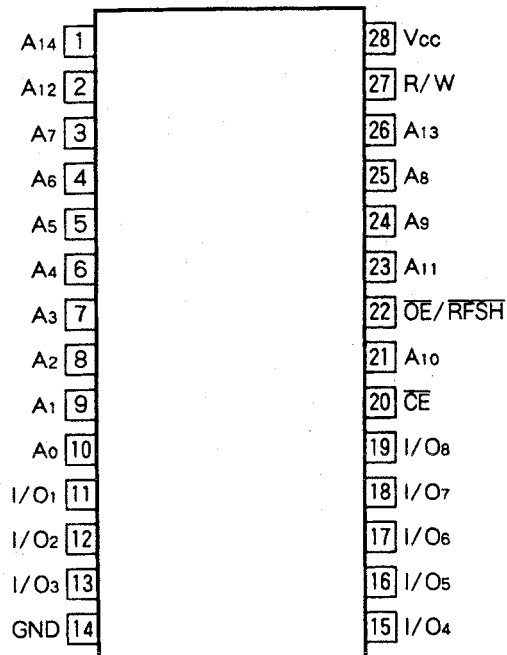
No.	Name	I/O	Function	No.	Name	I/O	Function
1	AVDD1	—	Power supply pin for A/D converter 1	41	RAMIO6	IOD	Data input/output pins for external Pseudo-SRAM
2	DVDD1	—	Power supply pin 1 for logical block	42	RAMIO7		
3	TEST1	IC	Selection input pin for test mode	43	DVDD3	—	Power supply pin 3 for logical block
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	WOUT	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		—
31	DVSS2			—	Ground pin 2 for logical block	71	ARIN
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

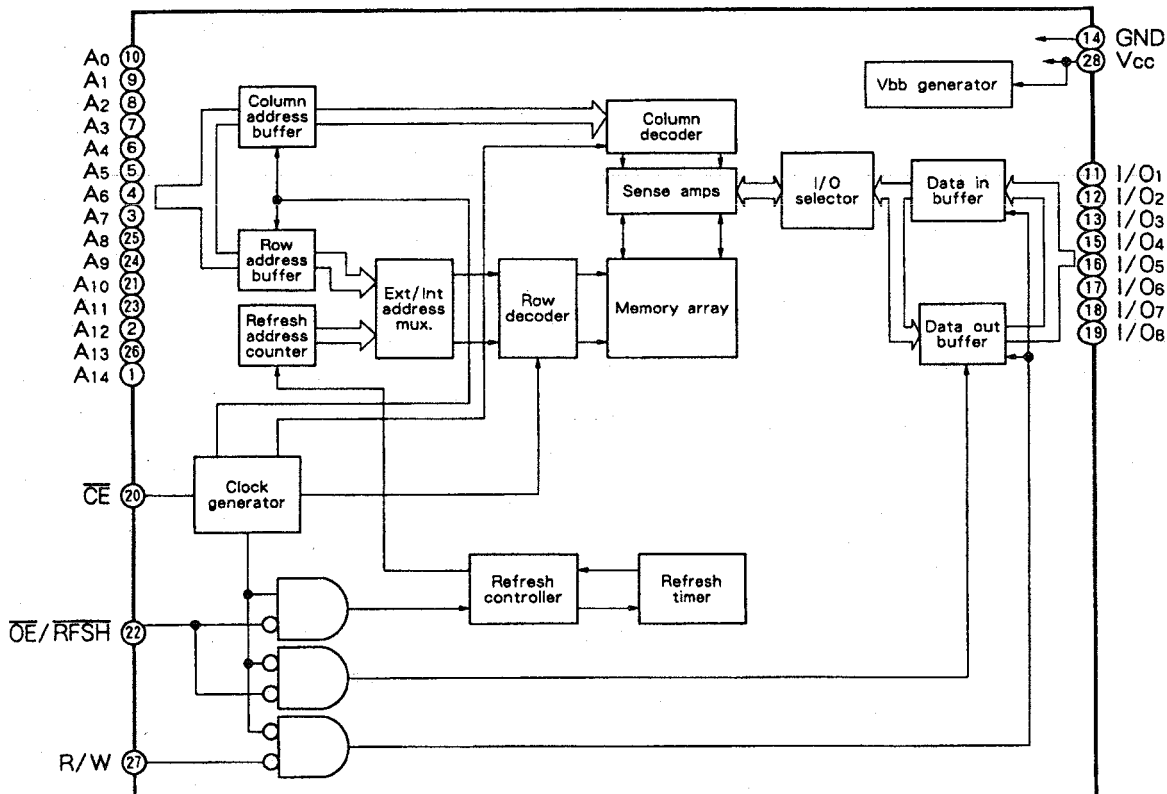
•Pin Arrangement (Top View)



•Pin Function

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

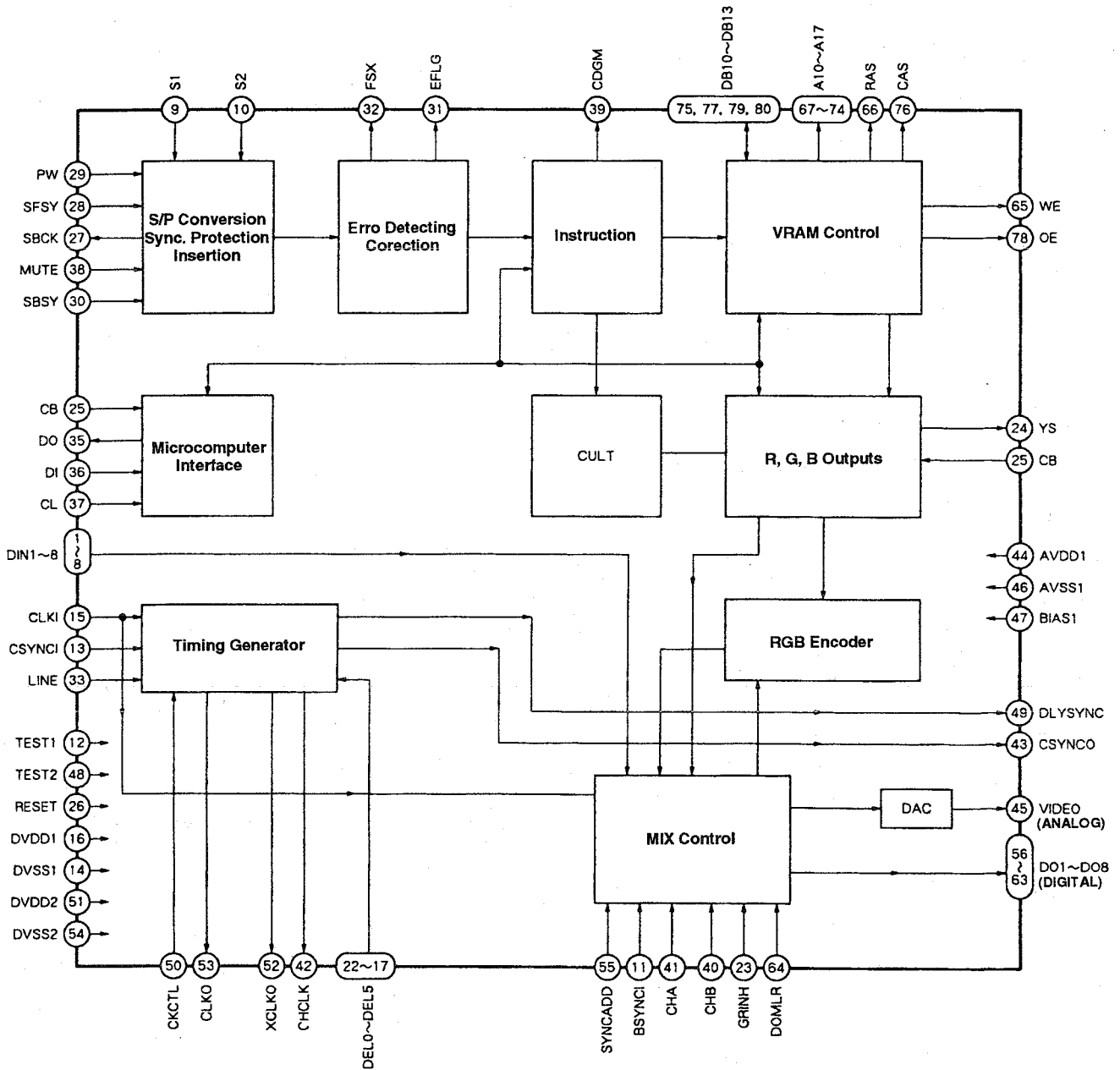
•Block Diagram



# CLD-V870

## ■ PDC016A (GRPB ASSY : IC103) • DIGITAL GRAPHIC DECODER FOR LD

### • Block Diagram





## •Pin Function

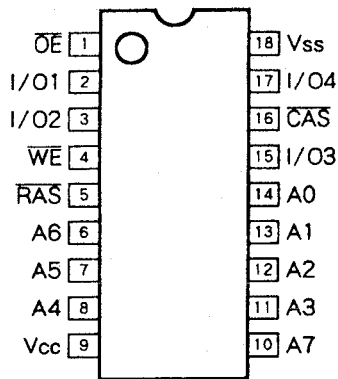
No.	Mark	Pin Name	I/O	Function															
1	DIN8	Video data input	I	Digital video data input (MSB)															
2	DIN7			Digital video data input															
3	DIN6																		
4	DIN5																		
5	DIN4																		
6	DIN3																		
7	DIN2																		
8	DIN1			Digital video data input (LSB)															
9	S1	DSP selection	I	<table border="1"> <thead> <tr> <th>S1</th> <th>S2</th> <th>Select the DSP</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>LC7861N/67</td> </tr> <tr> <td>0</td> <td>1</td> <td></td> </tr> <tr> <td>1</td> <td>0</td> <td>LC7860K/63</td> </tr> <tr> <td>1</td> <td>1</td> <td>LC7868/69/681/681KE</td> </tr> </tbody> </table>	S1	S2	Select the DSP	0	0	LC7861N/67	0	1		1	0	LC7860K/63	1	1	LC7868/69/681/681KE
S1	S2			Select the DSP															
0	0	LC7861N/67																	
0	1																		
1	0	LC7860K/63																	
1	1	LC7868/69/681/681KE																	
10	S2																		
11	BSYNCI	Ref. SYNC input	I	Reference SYNC signal input for burst phase judgment															
12	TEST1	Test input	I	Input for test Normally, fixed to "L".															
13	CSYNCI	Composite sync. signal input	I	Composite sync. signal input															
14	DVSS1	Ground	—	GND for digital section															
15	CLKI	Clock input	I	4fsc clock input (self-bias input)															
16	DVDD1	Power supply (+5V)	—	Power supply for digital section															
17	DEL5	Delay quantity setting input	I	DELAY quantity setting of the composite sync. signal (MSB)															
18	DEL4			DELAY quantity setting of the composite sync. signal															
19	DEL3																		
20	DEL2																		
21	DEL1																		
22	DELO			DELAY quantity setting of the composite sync. signal (LSB)															
23	GRINH	Graphics INH	I	Graphics display inhibit control input															
24	YS	Super inpose output	O	Super inpose control output															
25	CB	Color-bar selection	I	L : Normal mode, H : Color-bar output															
26	RESET	Reset input	I	Reset signal input															
27	SBCK	Clock output	O	Clock output of subcode R to W read out															
28	SFSY	Sync. signal input	I	Subcode block sync. signal input															
29	PW	Data input	I	Subcode R to W data input															
30	SBSY	Sync. signal input	I	Subcode block sync. signal input															
31	EFLG	Error state monitor output	O	Error state monitor signal output															
32	FSX	Error state monitor trigger	O	Error state monitor trigger signal output															
33	LINE	Line number selection	I	Line number selection input H : 263H, L : 262H (at non-inter laced)															
34	CE	Enable input	I	Control input of serial input/output data															
35	DO	Data output	O	Serial data output															
36	DI	Data input	I	Serial data input															
37	CL	Clock input	I	Clock input for serial data input/output															
38	MUTE	Mute pin	I	Control signal input which is invalidated the subcode data															
39	CDGM	Graphics data discrimination output	O	When graphics instruction is input, it becomes H. (Reset "L" is possible by command control.)															
40	CHB	OSD data input	I	OSD edge data input															

# CLD - V870

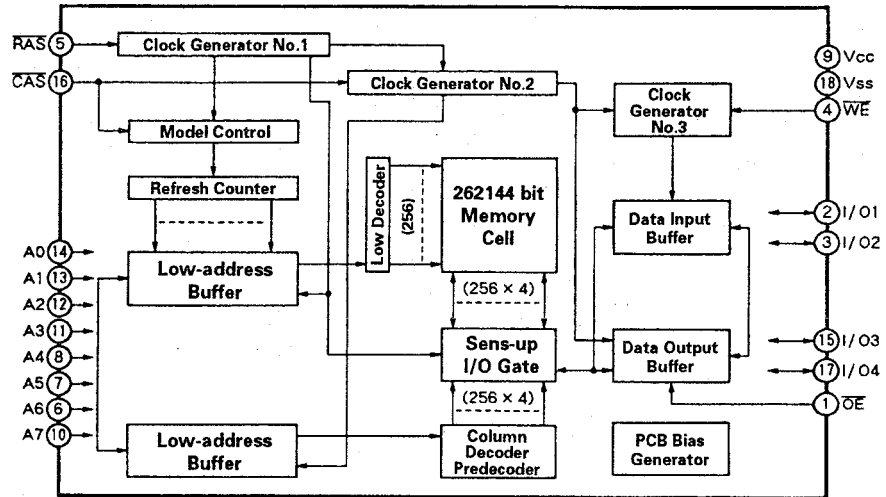
No.	Mark	Pin Name	I/O	Function
41	CHA	OSD data input	I	OSD character data input
42	CHCLK	Clock output	O	2fsc clock output (It is locked to the burst signal.)
43	CSYNCO	Composite sync. output	O	Composite sync. signal output
44	AVDD1	Power supply (+5V)	—	Power supply for analog section
45	VIDEO	Composite video signal input	O	Composite video signal output (8 bits DAC output)
46	AVSS1	Ground	—	GND for analog section
47	BIAS1	Capacitor connection pin	O	Connect a capacitor for eliminating the ripple.
48	TEST2	Test input	I	Input for test Normally, error correction logical selection (H : PQPQ, L : QPQ)
49	DLVSYNC	Delayed composite sync. output	O	Delayed composite sync. signal output
50	CKCTL	Clock polarity selection	I	BSYNCl latch selection H : FSC4, L : FSC4 (It becomes test input pin at test)
51	DVDD2	Power supply (+5V)	—	Power supply for digital section
52	XCLKO	Inverting clock output	O	4fsc inverting clock output
53	CLKO	Clock output	O	4fsc clock output
54	DVSS2	Ground	—	GND for digital section
55	SYNCADD	CSYNC selection input	I	Additive selection input of composite sync. signal to the 8 bit input data. H : Adding, L : No adding
56	DO1	Video data output	O	Digital composite video signal output (LSB)
57	DO2			Digital composite video signal output
58	DO3			
59	DO4			
60	DO5			
61	DO6			
62	DO7			
63	DO8			
64	DOMLR	Data inverting selection input	I	Inverting selection input of the video digital signal output H : Inversion (LSB→MSB), L : Not inversion
65	WE	DRAM output	O	DRAM writing enable signal output
66	RAS		O	DRAM row address strove signal output
67	A10		O	DRAM address (A0) output
68	A11			DRAM address (A1) output
69	A12			DRAM address (A2) output
70	A13			DRAM address (A3) output
71	A14			DRAM address (A4) output
72	A15			DRAM address (A5) output
73	A16			DRAM address (A6) output
74	A17			DRAM address (A7) output
75	DB10		I/O	DRAM address (D0) output
76	CAS		O	DRAM column address strove signal output
77	DB11		I/O	DRAM data (D1) input/output
78	OE		O	DRAM reading enable signal output
79	DB12		I/O	DRAM data (D2) input/output
80	DB13		I/O	DRAM data (D3) input/output

**LC32464P-80 (GRP ASSY : IC104)**  
 • 65536 WORDS × 4 bit CMOS DYNAMIC RAM

•Pin Arrangement

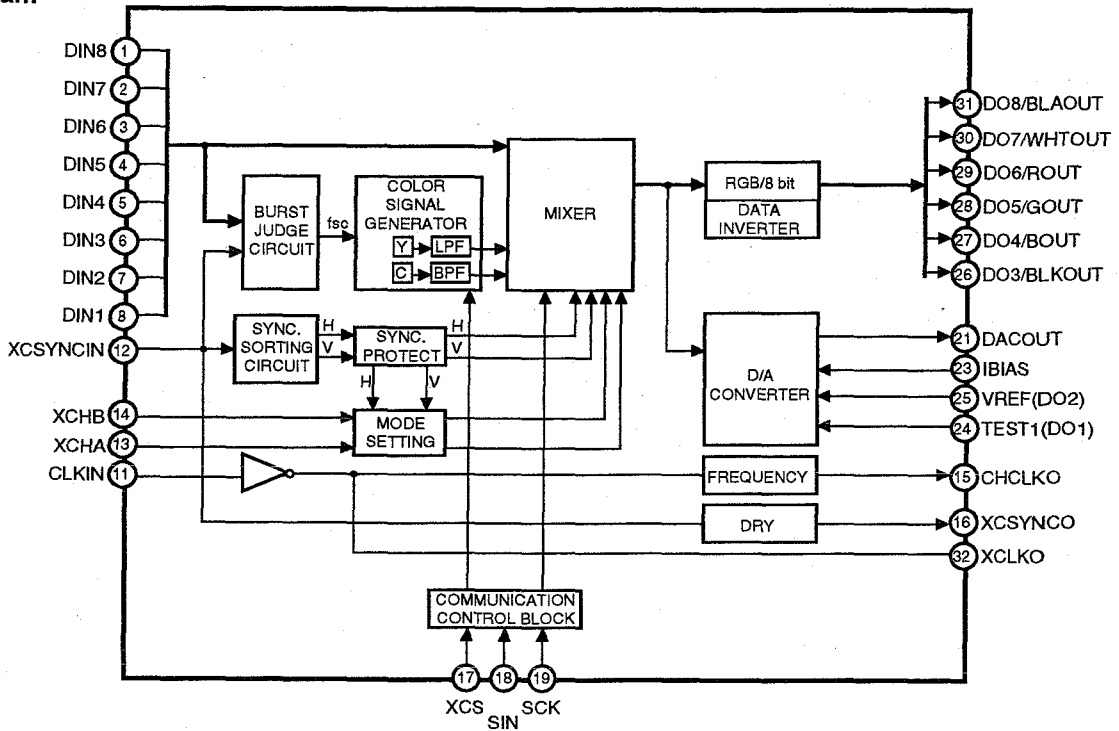


•Block Diagram



■ PD0239A (GRP B ASSY : IC201)  
 · COLOR ADDITION PROCESSOR

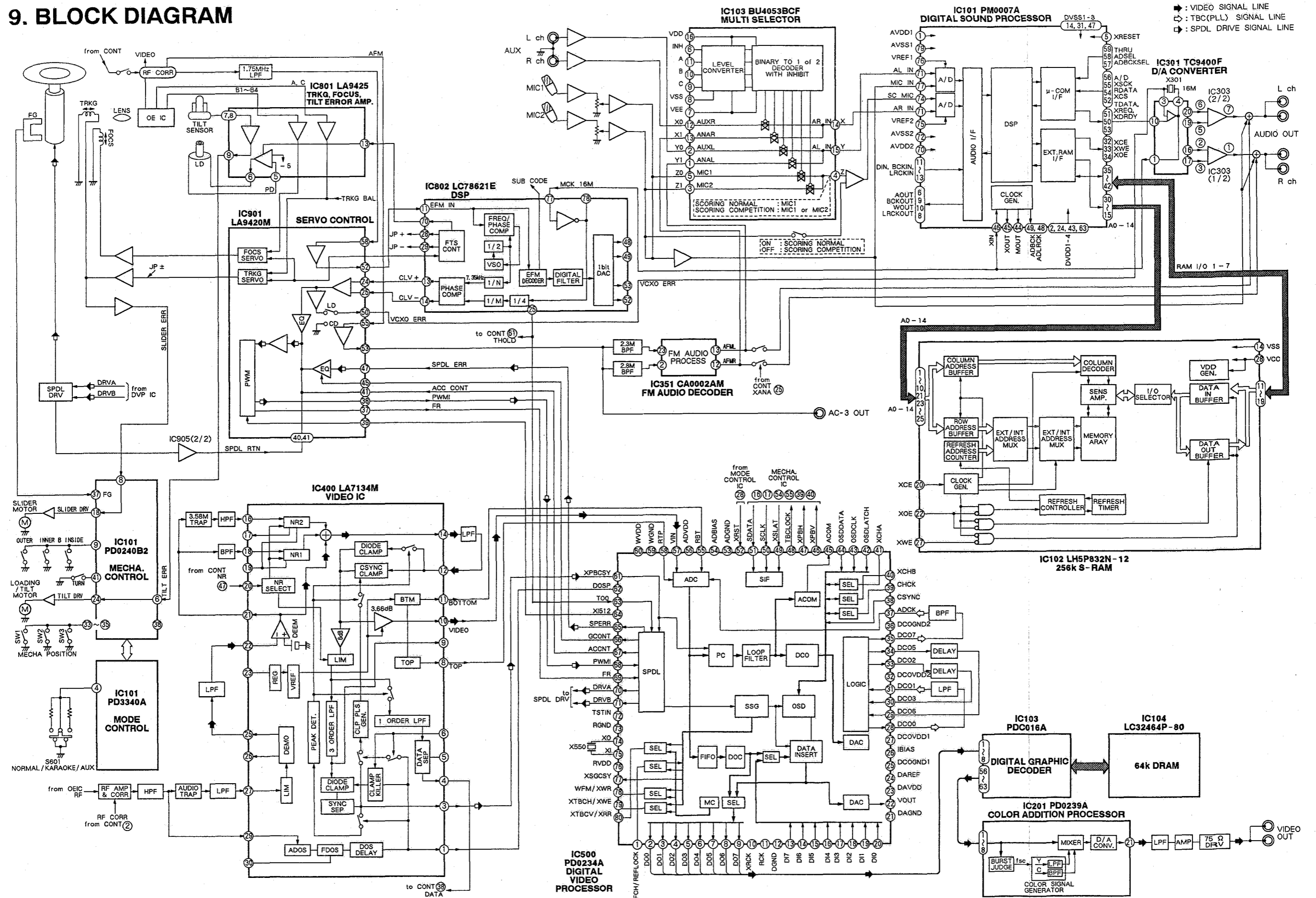
• Block Diagram



• Pin Function

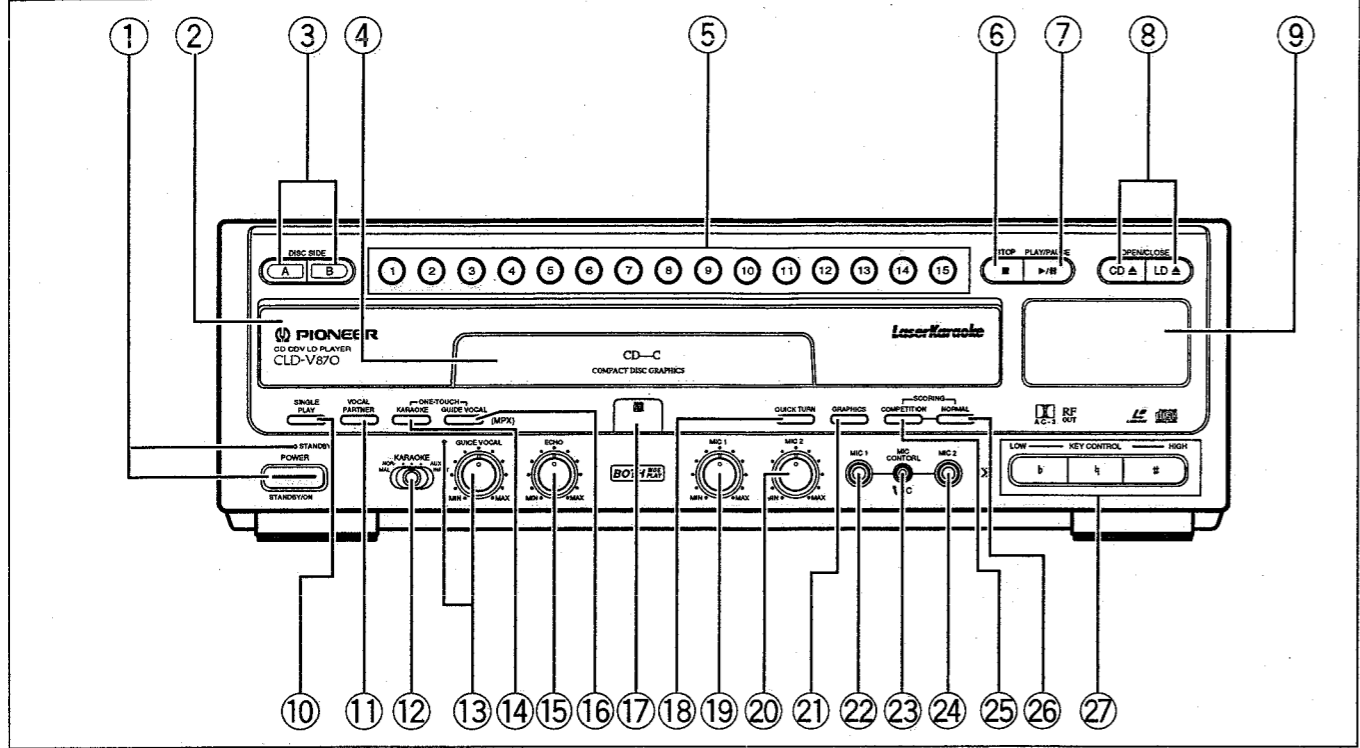
No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	DIN8	I	(MSB) Composite video data input	17	XCS	I	Chip select input Serial data conytol input
2	DIN7	I		18	SIN	I	Serial data input
3	DIN6	I		19	SCK	I	Clock input for serial data input
4	DIN5	I		20	AVDD	—	Analog section power supply for DAC (+5V)
5	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

# 9. BLOCK DIAGRAM



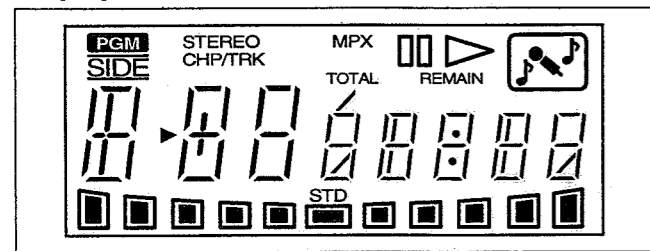
# 10. PANEL FACILITIES

Front Panel



- ① **POWER STANDBY/ON switch and STANDBY indicator**  
Press to turn the power on and off.
- ② **Disc table**
- ③ **DISC SIDE A/SIDE B buttons**
- ④ **CD Disc table**
- ⑤ **Direct music search buttons**
- ⑥ **STOP (■) button**
- ⑦ **PLAY/PAUSE (▶/⏸) button**
- ⑧ **OPEN/CLOSE (CD ▲/LD ▲) buttons**
- ⑨ **Display window**
- ⑩ **SINGLE PLAY button/indicator**
- ⑪ **VOCAL PARTNER button/indicator**
- ⑫ **NORMAL/KARAOKE/AUX INPUT selector**
- ⑬ **GUIDE VOCAL level control/indicator**
- ⑭ **ONE-TOUCH KARAOKE button/indicator**
- ⑮ **ECHO level control**
- ⑯ **ONE-TOUCH GUIDE VOCAL (MPX) button/indicator**
- ⑰ **Remote sensor**
- ⑱ **QUICK TURN ON/OFF button/indicator**
- ⑲ **MIC 1 level control**
- ⑲ **MIC 2 level control**
- ⑲ **GRAPHICS button/indicator**
- ⑲ **MIC 1 jack**
- ⑲ **MIC 2 jack**
- ⑲ **SCORING COMPETITION button**
- ⑲ **SCORING NORMAL button**
- ⑲ **KEY CONTROL buttons**

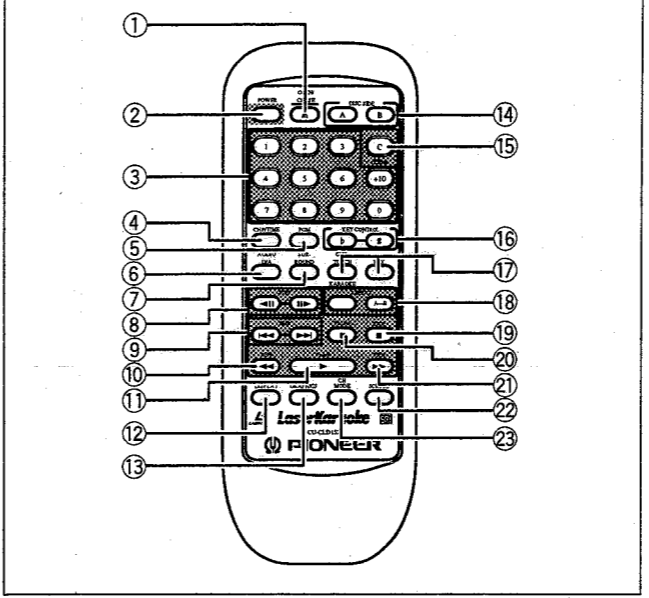
Display Window



- 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 **8 Pause indicator**
- ⑦ **3 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 **OPEN/CLOSE (▲) button**
- ② **POWER button**
- ③ **Digit buttons**
- ④ **CHP/TIME (Chapter/Time) button**
- ⑤ **PGM (Program) button**
- ⑥ **AUDIO D/A button**
- ⑦ **SURROUND button**
- ⑧ **STEP (◀|||▶) buttons**
- ⑨ **SKIP (◀◀▶▶) buttons**
- ⑩ **REV (◀◀ scan) buttons**
- ⑪ **PLAY button**
- ⑫ **DISP(Display) button**
- ⑬ **GRAPHICS button**
- ⑭ **DISC SIDE A/B buttons**
- ⑮ **CLEAR button**
- ⑯ **KEY CONTROL buttons**
- ⑰ **ONE-TOUCH KARAOKE button**
- ⑱ **MPX button**
- ⑲ **REPEAT A-B button**
- ⑲ **REPEAT button**
- ⑲ **(■) STOP button**
- ⑲ **(||) PAUSE button**
- ⑲ **FWD (▶▶ scan) button**
- ⑲ **SCROLL buttons**
- ⑲ **CH MODE button**

# 11. SPECIFICATIONS

General	
System	LaserVision Disc system and Compact Disc digital audio system
Laser	Semiconductor laser wavelength 780 nm
Power requirements	120 V AC, 60 Hz
Power consumption	41 W
Weight	6.7 kg (14 lb 12 oz)
Dimensions	420 (W) x 412 (D) x 132 (H) mm 16 -9/16 (W) x 16 -3/16 (D) x 5 -1/4 (H) in
Operating temperature	+5 °C ~ +35 °C (41 °F ~ 95 °F)
Operating humidity	5 % ~ 85 % (There should be no condensation of moisture.)

**Video characteristics (two pairs)**

Format	NTSC specifications
Video output	Level ..... 1 Vp-p nominal, sync. negative, terminated
Impedance	75 W 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
VHF adapter output (Video/Audio)	Both RCA jacks with DC jack
AC-3•RF OUT PUT	RCA jack

**Accessories**

Remote control unit	1
Size "AA" (IEC R6P) 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.