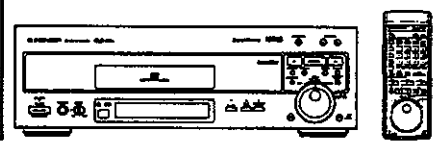
PIONEER
The Art of Entertainment

Service Manual



ORDER NO.
RRV1244

CD CDV LD PLAYER
CLD-D704

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

Type	Model	Power Requirement	Remarks
	CLD-D704		
KU	○	AC 120V	
KC	○	AC 120V	

CONTENTS

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T-IFY FEB. 1995 Printed in Japan

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.

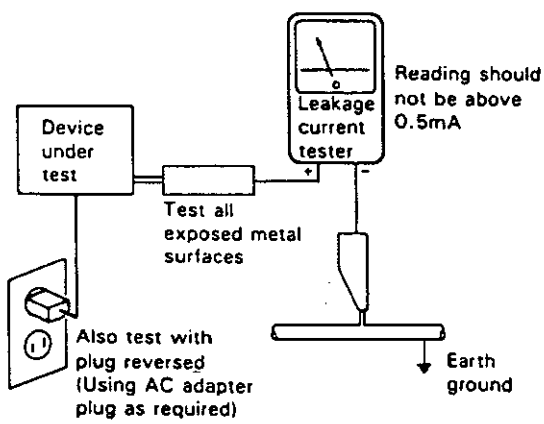
(FOR USA MODEL ONLY)

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 ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose 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

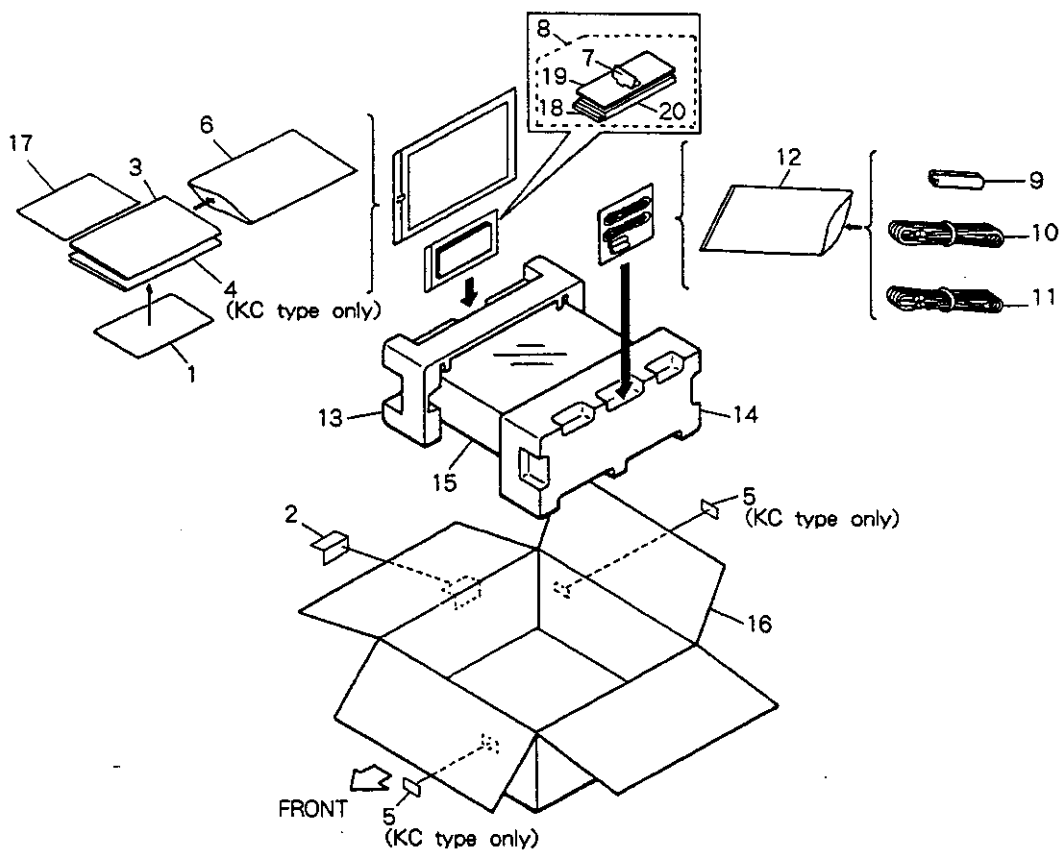
NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ 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

Parts List

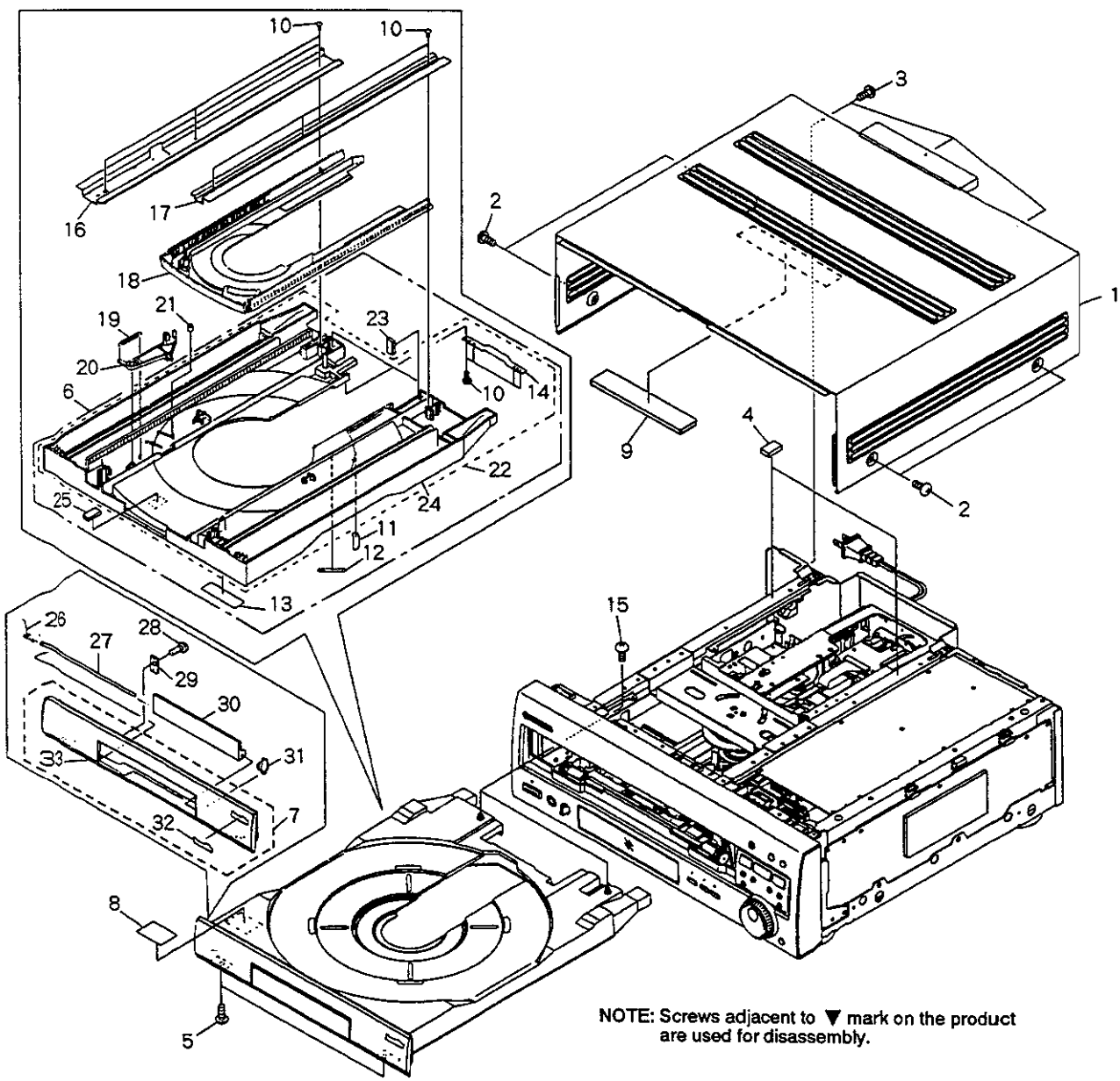
Mark	No.	Description	Part No.
	1	Caution (UC)	VRR1020
	2	Caution label	VRM1044
	3	Operating instructions (English)	VRB1142
	4	Operating instructions (French)(KC type only)	VRC1040
	5	KC label (KC type only)	VRW1402
NSP	6	Polyethylene bag	VHL-014
	7	Battery cover	DNK2286
	8	Remote control unit	VXX2257
NSP	9	Battery (AAA,R03)	VEM-022
	10	Video cable	VDE-056
	11	Connection cord	VDE-055
NSP	12	Polyethylene bag	Z21-029
	13	Pad L	VHA1126
	14	Pad R	VHA1127
	15	Mirror mat	VHL1012
	16	Packing case	VHG1437
NSP	17	Warranty card (KU type)	ARY1044
NSP	17	Warranty card (KC type)	ARY1039
	18	Filter	VNK2063
	19	Case (lower)	VNK2062
	20	Case (upper)	VNK2652



2.2 EXTERIOR AND DISC TRAY

Parts List

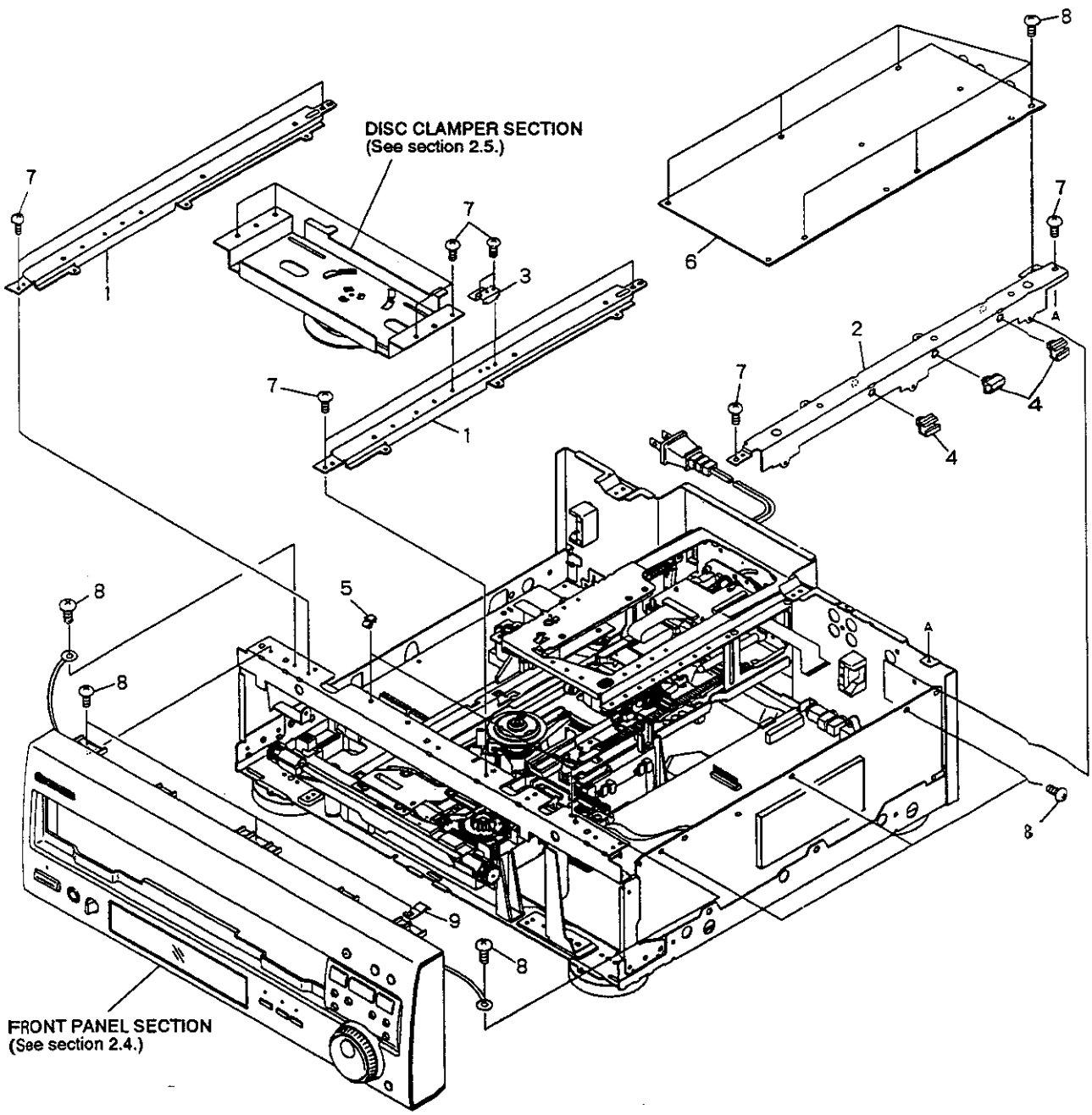
Mark	No.	Description	Part No.
	1	Bonnet S	VXX1932
	2	Screw	BCZ40P060FNI
	3	Screw	BBT30P060FCC
NSP	4	Damp cushion	VEC1602
	5	Screw	BPZ30P080FCU
	6	Tray assy - S	VXX2035
	7	Tray panel assy - S	VXX1931
NSP	8	Carry label	VRW1289
	9	65 label (KU type only)	ORW1069
	10	Screw	BPZ30P060FCU
	11	Disc pad (L)	VEC1657
	12	Disc pad (C)	VEC1658
NSP	13	Carry label	VRW1289
	14	T back	VNE1946
	15	Tray stopper screw	VBA1032
	16	Guide plate (R)	VNE1806
	17	Guide plate (L)	VNE1805
	18	CD tray	VNK2395
	19	Lock plate spring	VBH1188
	20	Lock plate	VNL1513
	21	Stop ring	VEB1091
	22	LD tray assy	VXA2085
NSP	23	Cushion	VEC1660
NSP	24	LD tray (ABS)	VNK2394
NSP	25	Damp cushion	VEC1110
	26	Door spring (FE)	VBH1223
	27	Door shaft	VLL1441
	28	Screw	IPZ20P050FMC
	29	Door holder	VNE1905
	30	CD door (ABS)	VNK2320
	31	Damper assy	VXA1999
	32	Laser disc badge	VAM1029
NSP	33	Tray panel (ABS)	VNK2319



NOTE: Screws adjacent to ▼ mark on the product are used for disassembly.

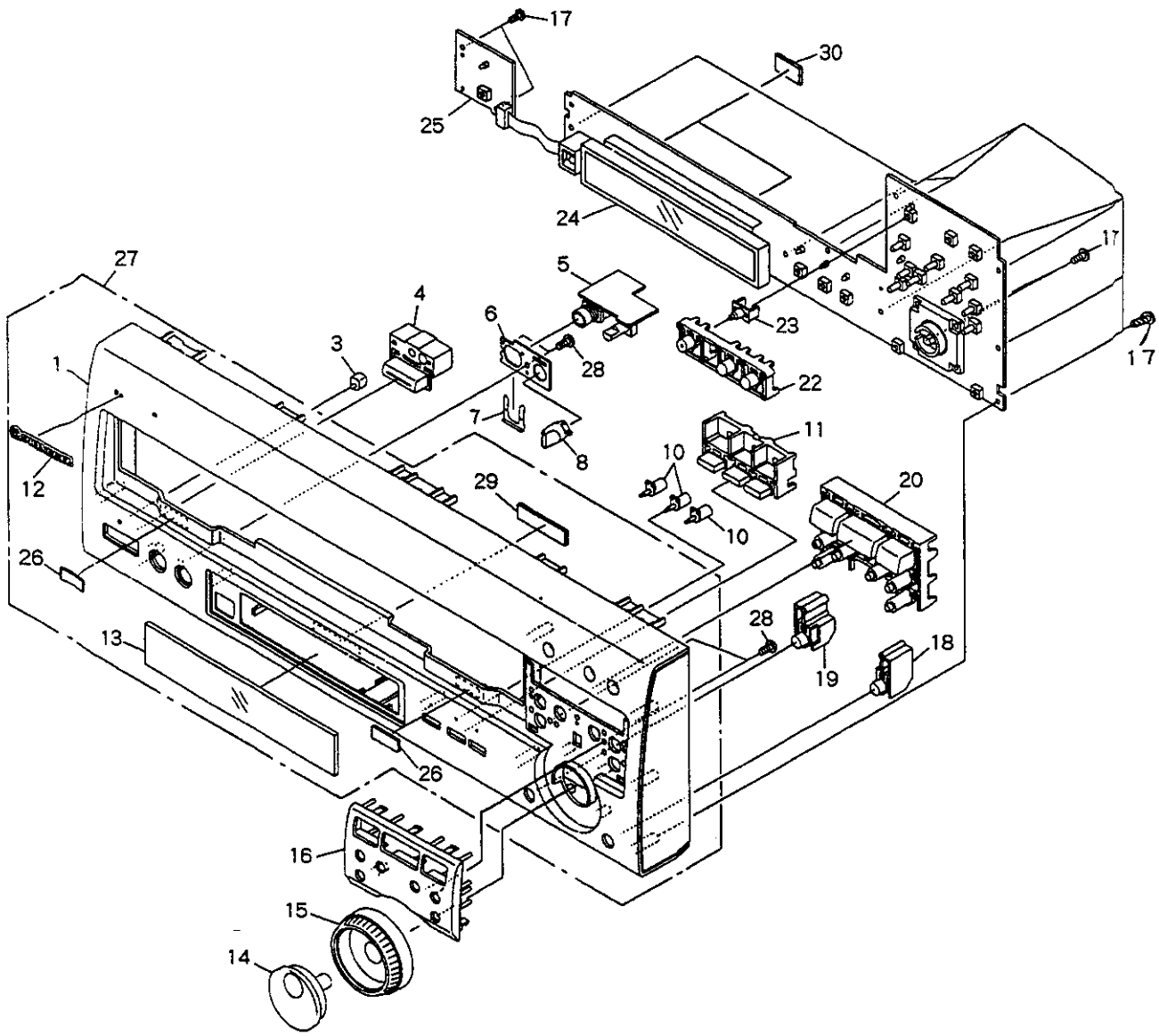
2.3 UPPER SECTION
Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Center angle	VNE1897		6	AUDB assy	VWV1419
	2	PCB holder	VNE1895		7	Screw	BBT30P080FCC
	3	Damper plate	VBK1045		8	Screw	IBZ30P080FCC
NSP	4	P plate holder	PNY - 405	NSP	9	Earth plate	VNE1518
NSP	5	Mini clamp	VEC1597				



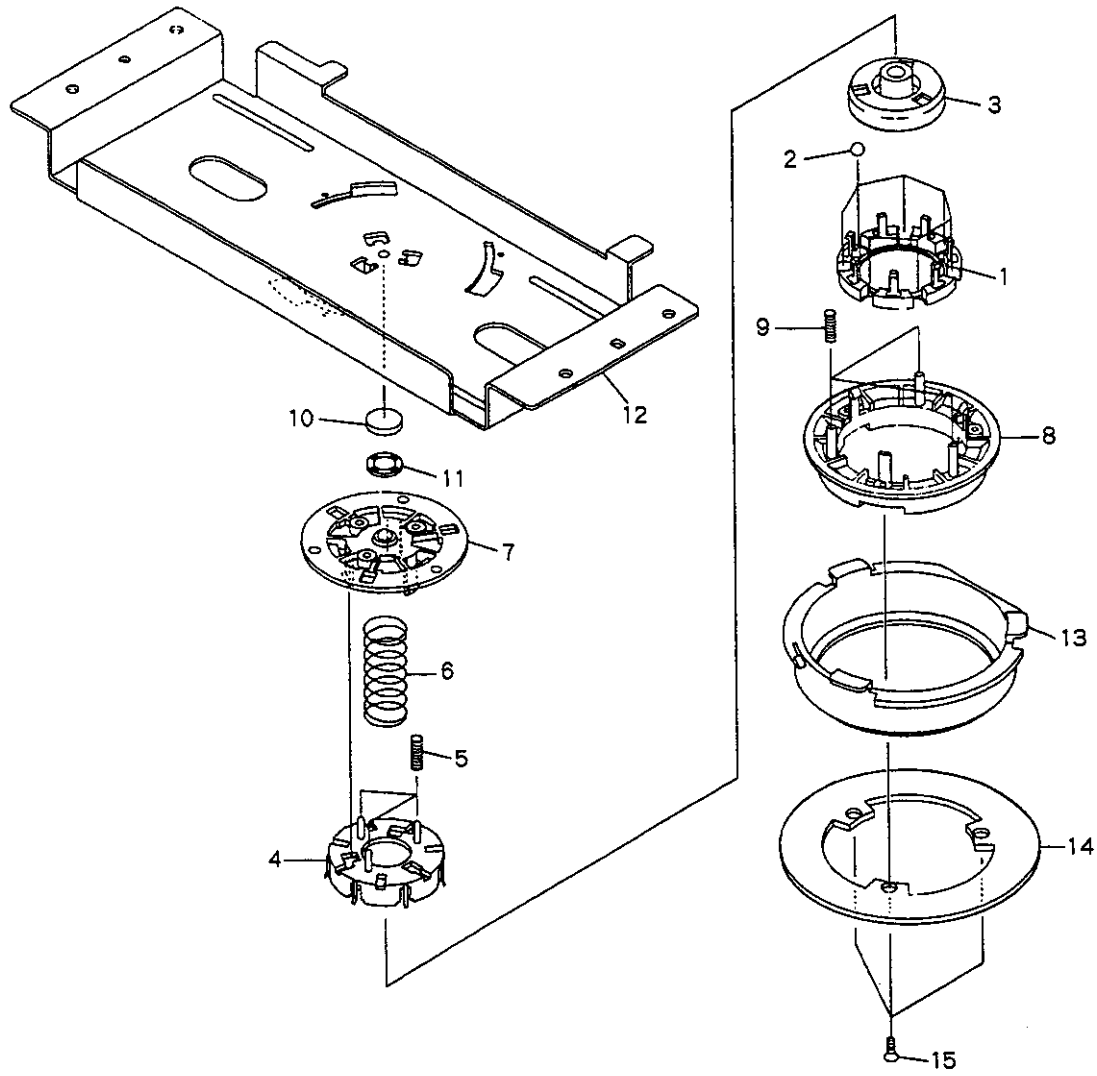
2.4 FRONT PANEL SECTION
Parts List

Mark	No.	Description	Part No.
NSP	1	Front panel	VNK3164
	2	•••••••	
	3	LED lens	PNW2019
	4	PW button	VNK2329
NSP	5	HEPB assy	VWV1424
NSP	6	Jack holder	VNE1609
	7	Snap plate	VNE1102
	8	Headphone knob	PAC1707
	9	•••••••	
	10	LED lens (O)	VNK1755
	11	L key (B)	VNK2361
	12	Name plate	VAM1032
	13	FL lens	VEC1786
	14	Jog dial	VNK2640
	15	Shuttle ring	VNK2639
	16	Sub panel	VNK2641
	17	Screw	BPZ26P080FCU
	18	Skip key R	VNK2323
	19	Skip key L	VNK2322
	20	Main key	VNK2642
	21	•••••••	
	22	L key (A)	VNK2360
	23	LED lens B	VNK2316
	24	FLKY assy	VWG1646
NSP	25	PONS assy	VWG1647
NSP	26	Damp cushion	VEC1110
	27	Front panel assy - S	VXX2266
	28	Screw	BPZ26P060FCU
NSP	29	Rubber spacer	PEB1216
	30	Cushion L	VEC1331



2.5 DISC CLAMPER SECTION
Parts List

Mark	No.	Description	Part No.
	1	Ball holder	VNL1616
	2	Ball	VNX1013
	3	LD hub	VNT1047
	4	Ball cover	VNL1602
	5	Cover spring	VBH1234
	6	LD spring	VBH1240
	7	Clamper head	VNL1603
	8	Clamper	VNL1604
	9	Clamp spring	VBH1239
	10	Rubber sheet	VEB1114
	11	Ball holder	VNL1289
	12	Center plate	VNE1898
	13	Clamper holder	VNL1605
	14	Stabilizer	VNE1906
	15	Screw	CPZ20P060FMC



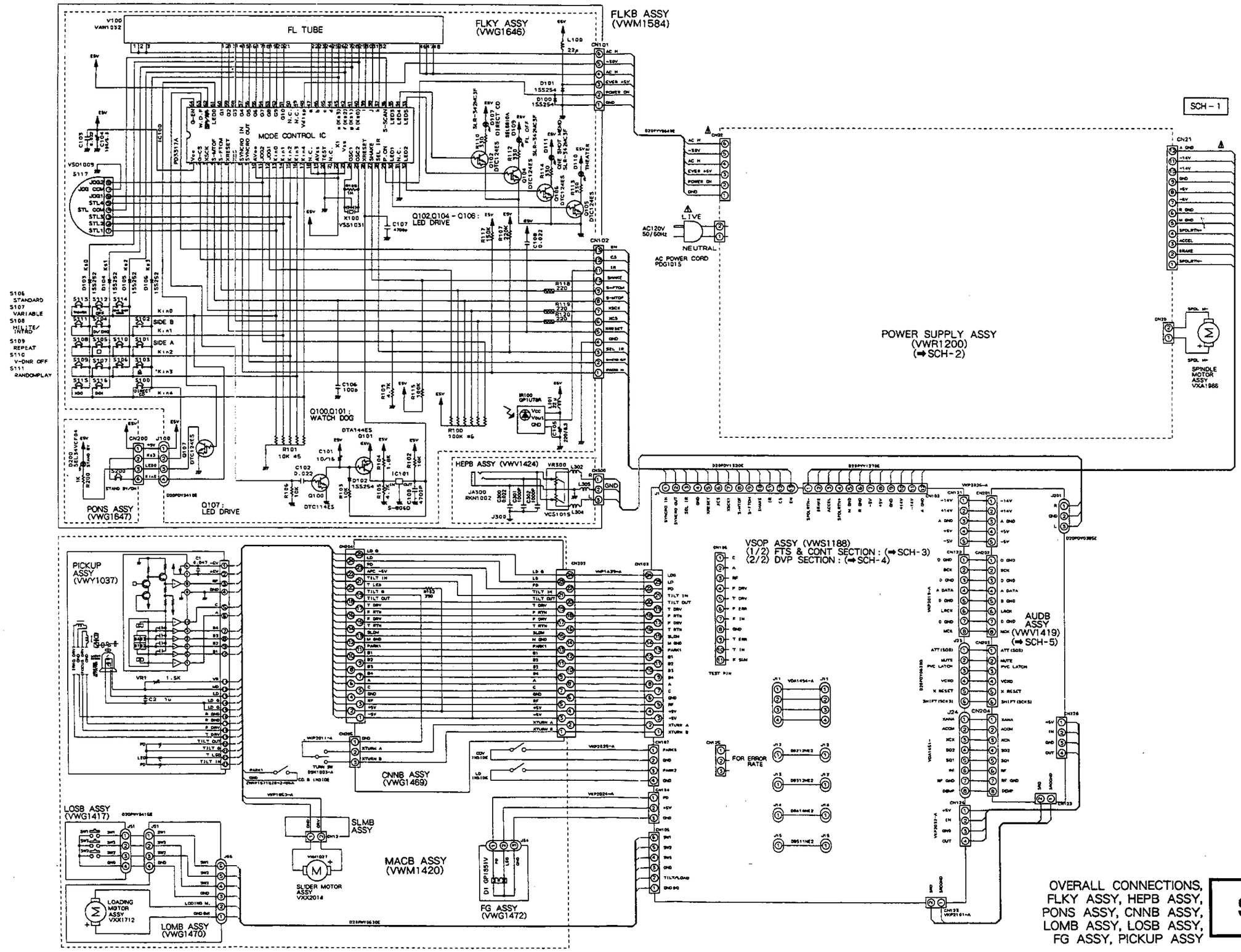
2.6 BOTTOM SECTION
Parts List

Mark	No.	Description	Part No.
NSP	1	Base chassis	VNA1347
	2	Insulator assy	VXA1996
	3	Board spacer	VEC1623
	4	PCB spacer	PNY-404
NSP	5	PCB stay	VEC1174
	6	Power supply assy	VWR1200
⚠	7	AC power cord	PDG1015
⚠	8	Cord stopper	CM - 22C
NSP	9	Rear panel (KU type)	VNA1567
NSP	9	Rear panel (KC type)	VNA1569
	10	Tray stopper	VNL1600
	11	VSOP assy	VWS1188
	12	Cord clamp L	DEC1578
	13	Carriage stopper	VNE1919
NSP	14	Damp cushion	VEC1602
	15	Screw	BBZ30P080FMC
	16	Screw	BBT30P080FCC
	17	Screw	BPZ30P140FMC
	18	Screw	BBZ30P040FMC
NSP	19	Cord holder	Z09-061
	20	Front angle	VNE1894
	21	Screw	BBZ30P060FCC
	22	Side stay	VNE1896
NSP	23	Side stay (R)	VNE1810
NSP	24	Side stay (L)	VNE1809
	25	AC cord tube	VEC1651
	26	Cord keep	VNC1004
	27	Screw	IBZ30P080FCC
NSP	28	HM spacer	VEB1215
NSP	29	Mini clamp	VEC1312
	30	Model label	VRW1508
	31	Rear panel assy S (KU type)	VXX2258
	31	Rear panel assy S (KC type)	VXX2259
	32	Clip finger	VNE1930
NSP	33	Mini clamp	VEC1597
NSP	34	Fuse caution label	VRW-548
	35	ICP caution label	VRW1401

2.7 MECHANISM SECTION
Parts List

Mark	No.	Description	Part No.
	1	Mechanism base	VNK1990
	2	Clamp cam	VNL1621
	3	Cam gear	VNL1507
	4	CD plate	VNL1576
	5	Cam sand	VNL1511
NSP	6	Carriage motor	VXM1033
	7	Roller	VNL1042
	8	Motor pulley	PNW1643
	9	L-SW lever	VNL1504
	10	C-SW lever	VNL1505
	11	R-SW lever	VNL1506
	12	Center gear	VNL1509
	13	Twin gear	VNL1508
	14	Gear pulley	VNL1510
	15	CDP spring	VBH1191
	16	CAS spring	VBH1190
	17	Shaft holder	VNE1817
	18	Rubber belt	VEB1184
	19	Synchro gear assy	VXA1822
NSP	20	LOSB assy	VWG1471
	21	Screw	BMZ26P040FMC
	22	Screw	Z39-019
NSP	23	LOMB assy	VWG1470
	24	Loading motor assy	VXX1712

3.1 OVERALL CONNECTIONS, FLKY, HEPB, PONS, CNNB, LOMB, LOSB, FG AND PICKUP ASSEMBLIES



OVERALL CONNECTIONS,
FLKY ASSY, HEPB ASSY,
PONS ASSY, CNNB ASSY,
LOMB ASSY, LOSB ASSY,
FG ASSY, PICKUP ASSY

SCH-1

OVERALL CONNECTIONS,
FLKY ASSY, HEPB ASSY,
PONS ASSY, CNNB ASSY,
LOMB ASSY, LOSB ASSY,
FG ASSY, PICKUP ASSY

SCH-1

• MECHANISM ASSY Parts List

Mark	No.	Description	Part No.
	1	Tilt base (upper)	VNB1027
	2	Rack (upper)	VNL1560
	3	Rack spring (upper)	VBH1213
	4	CA shaft (upper)	VLL1446
	5	Screw	PMZ20P070FMC
	6	Shaft support	VNL1563
	7	Support spring	VBH1236
	8	Screw	IPZ30P060FMC
	9	B cam spring	VBH1233
	10	B cam	VNL1564
	11	Lever spring	VBH1214
	12	Lever SW	DSK1003
	13	R plate assy	VNL1566
	14	Screw	BBZ26P060FMC
	15	TM rack	VNL1556
	16	Screw	CBZ26P060FMC
	17	Turn gear	VNL1565
	18	TM support	VNE1888
	19	Washer	YE20FUC
	20	Washer	WA32D080D080
	21	Head lock	VNL1580
NSP	22	CNNB assy	VWG1469
	23	TAN guide	VNE1887
	24	Rack (lower)	VNL1567
	25	Rack spring (lower)	VBH1215
	26	Screw	BBZ30P060FMC
	27	SW base	VNE1886
	28	Screw	PBZ26P060FMC
	29	Slide SW	OSH1001
	30	Screw	PMZ20P060FMC
	31	•••••••	
	32	Thrust spring	VBH1235
	33	Tilt spring	VBH1218
	34	Key lock	VBK1044
	35	CB holder	VNL1618
⚠	36	Spindle motor assy	VXA1986
	37	Screw	PMA30P050FMC
	38	Y gear	VNL1501
	39	Washer	WT26D060D025
	40	Tilt cam spring	VBH1189
	41	FG base	VNL1577
NSP	42	FG assy	VWG1472
	43	Tilt base (lower)	VNL1555
	44	MK flexible	VNP1439
	45	Screw	ABZ30P060FMC
	46	TM guide	VNL1558
	47	Screw	PPZ20P080FMC
	48	CA shaft (lower)	VLL1447
NSP	49	Spindle motor	VXM1053
NSP	50	Oil stopper washer	VBF1002
NSP	51	Turn table assy	VXA1760
NSP	52	Rubber sheet	VEB1237
	53	Centering spring	VBH1024
	54	PRC hub	VNL1612
	55	PRC table	VNL1613
	56	Screw	CPZ20P060FMC
	57	Lock lever	VNL1562
	58	Tilt cam	VNL1559
	59	Spacer	VEB1020
	60	•••••••	
	61	Screw	Z39-019
	62	•••••••	
	63	Carriage assy	VWT1100
	64	Motor base	VNE1889
NSP	65	Stop cushion	VEC1605
	66	Screw	CPZ26P080FMC

• CARRIAGE ASSY Parts List

Mark	No.	Description	Part No.
	1	TAN plate assy	VXA1981
	2	Screw	BMZ20P080FMC
	3	TAN spring (B)	VBH1217
	4	TAN lever (B)	VNL1569
	5	•••••••	
	6	TAN lever (A)	VNL1568
	7	TAN spring (A)	VBH1237
	8	Screw (S)	VBA1016
	9	Screw	PBB26P080FMC
NSP	10	Shaft holder	VNT1042
	11	Limit SW	OSH1001
	12	Screw	PMZ20P060FMC
	13	Screw	BBZ26P060FZK
	14	Screw	BPZ26P060FMC
	15	Flexible holder	VNL1579
NSP	16	Screw	PPZ20P060FZK
	17	Washer	WT17D034D050
NSP	18	Gear (C)	VNL1572
	19	Gear (B)	VNL1571
	20	Screw	PMA20P040FMC
NSP	21	Motor holder	VNL1584
	22	Gear (E)	VNL1574
	23	Gear (F)	VNL1575
	24	•••••••	
NSP	25	Gear (D)	VNL1573
NSP	26	Gear shaft	VLL1448
NSP	27	PCB board	VNP1425
NSP	28	ZH connector	B2B-ZR
NSP	29	Slider motor	VXM1027
	30	Gear (A)	VNL1570
	31	Box cover	VNL1578
	32	Housing assy	VKP1852
NSP	33	Pickup assy	VWY1037
	34	Motor holder assy-S	VXX2015
	35	Slider motor assy	VXX2014

3. SCHEMATIC AND PCB CONNECTION DIAGRAMS

NOTE FOR SCHEMATIC DIAGRAMS (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, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance:(F):±1%, (G):±2%, (K):±10%, (M):±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit : p:pF or μF unless otherwise noted.
   Ratings : capacitor (μF) / voltage (V) unless otherwise noted.
   Rated voltage : 50V except for electrolytic capacitors.
5. **COILS:**
   Unit : m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ▭ 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 ⚠ 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):

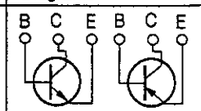
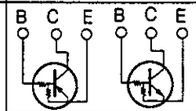
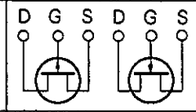
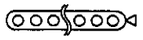
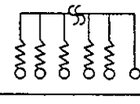
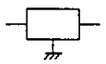
FLKY ASSY
- S100 : DIRECT CD
- S101 : SIDE A
- S102 : SIDE B
- S103 : ⏏
- S104 : ▶/▶|◀
- S105 : ■
- S106 : STANDARD
- S107 : VARIABLE
- S108 : HILITE/INTRO
- S109 : REPEAT
- S110 : V – DNR OFF
- S111 : RANDOM PLAY
- S112 : FL OFF
- S113 : FILM MODE
- S114 : ONE SHOT MEMO
- S115 : |◀◀
- S116 : ▶▶|
- S117 : JOG & SHUTTLE

PONS ASSY
- S200 : STANDBY/ON

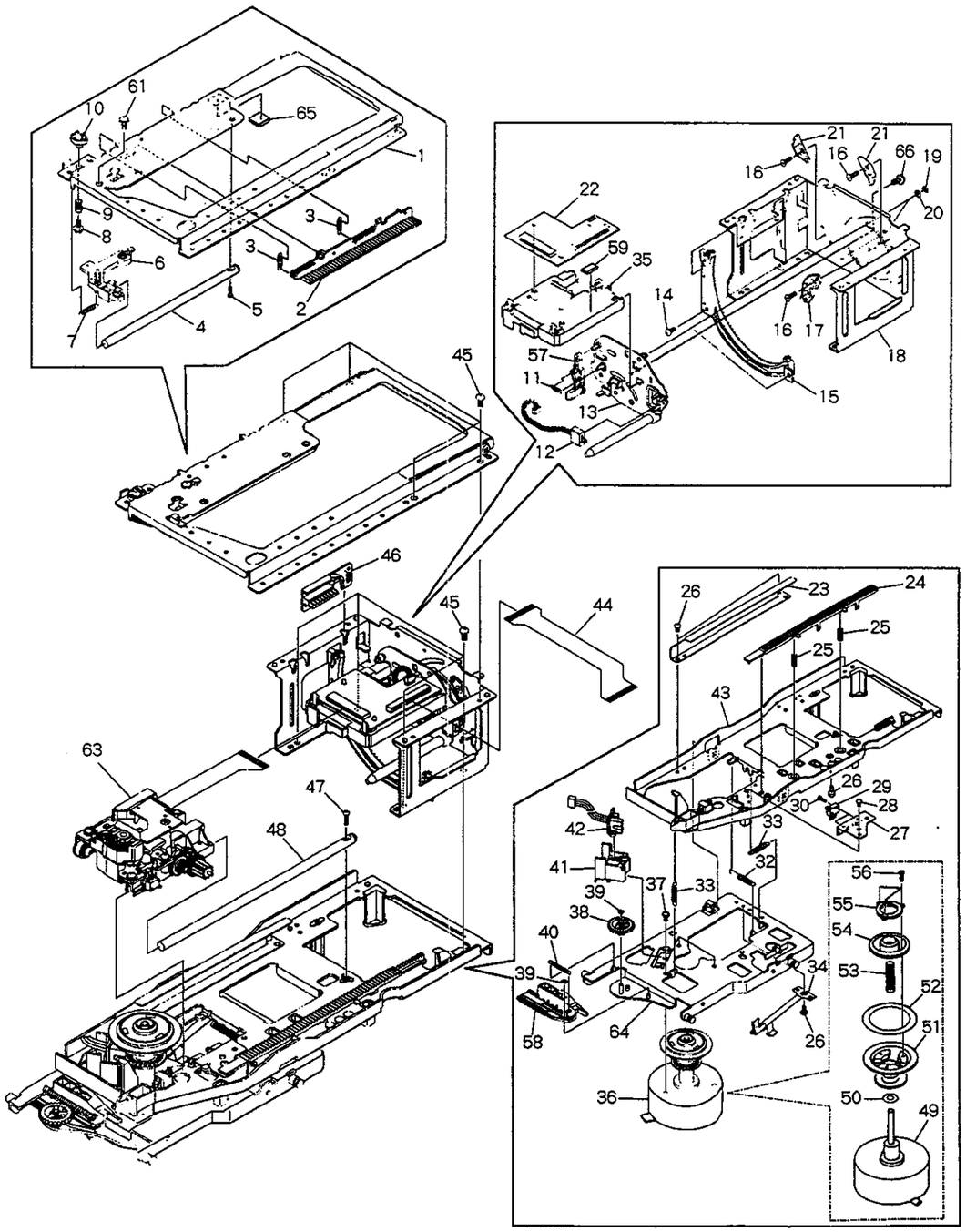
LOSB ASSY
- S1 : SW1
- S2 : SW2
- S3 : SW3

NOTE FOR PCB DIAGRAMS:

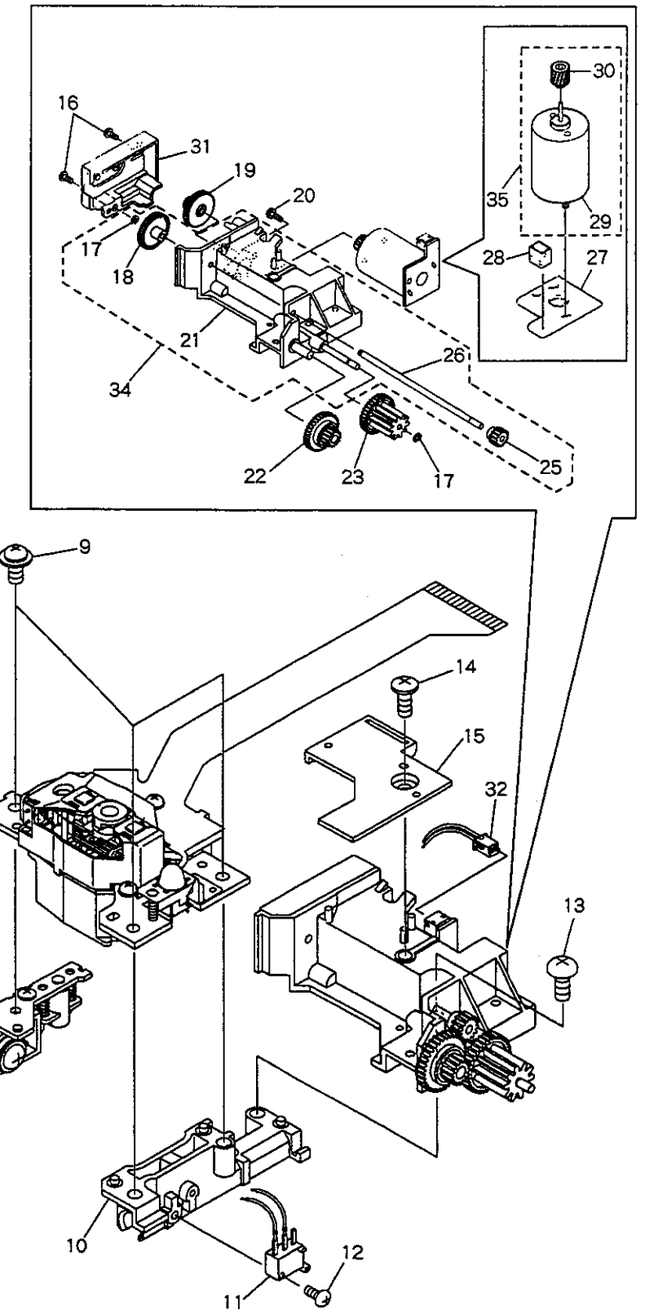
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between main parts of PCB and schematic diagrams is shown below.

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

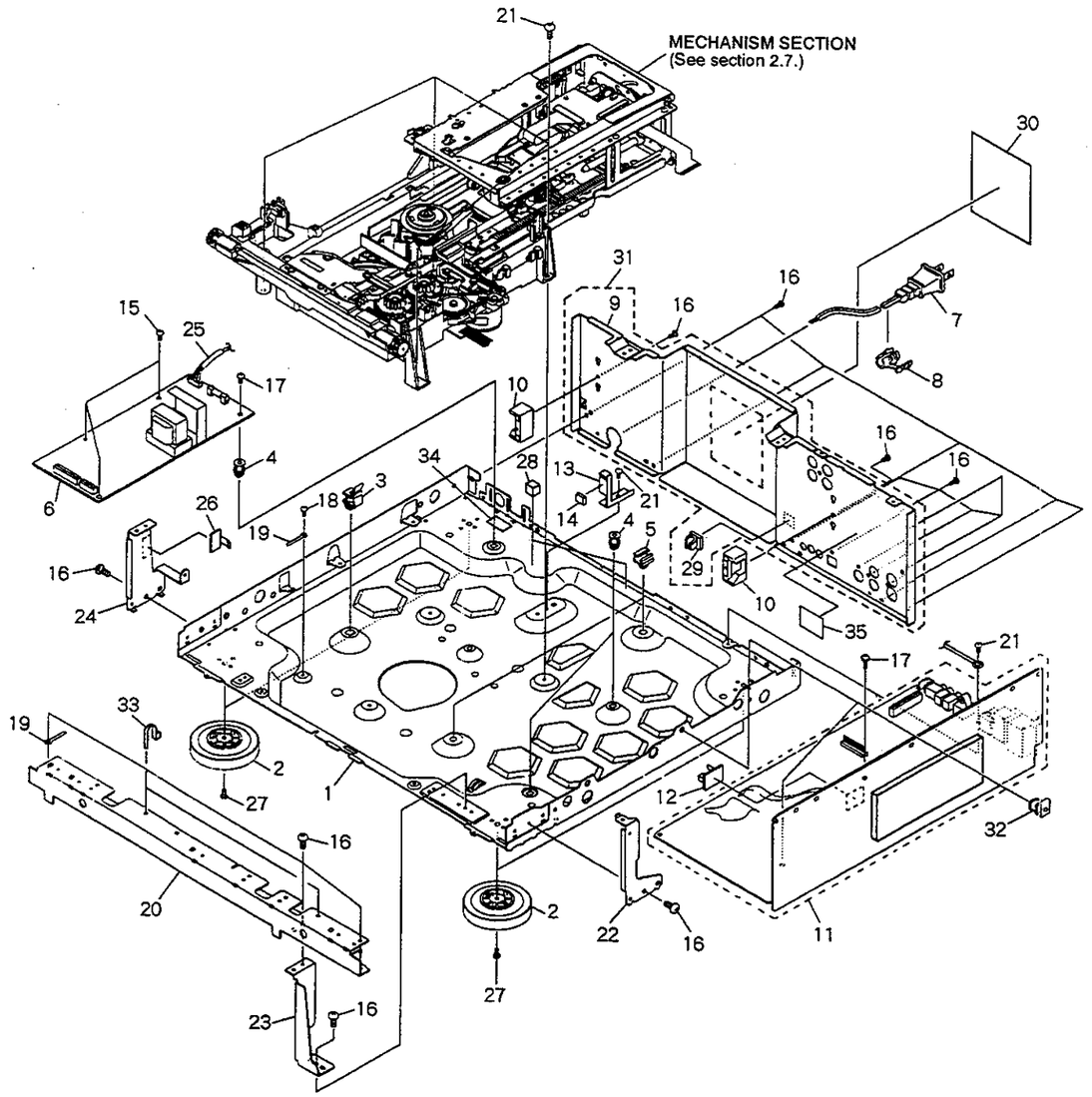
2.8 MECHANISM ASSY



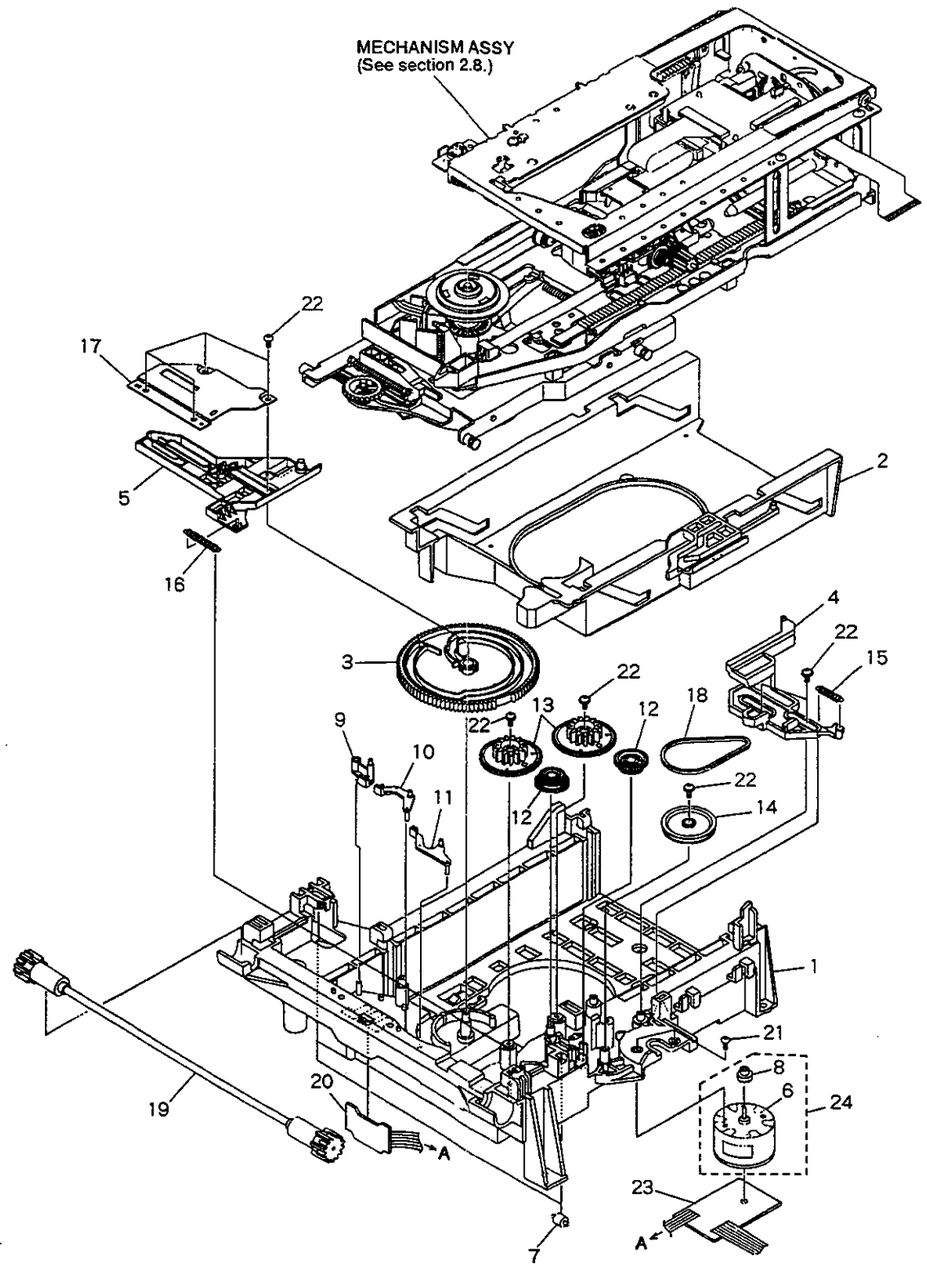
2.9 CARRIAGE ASSY



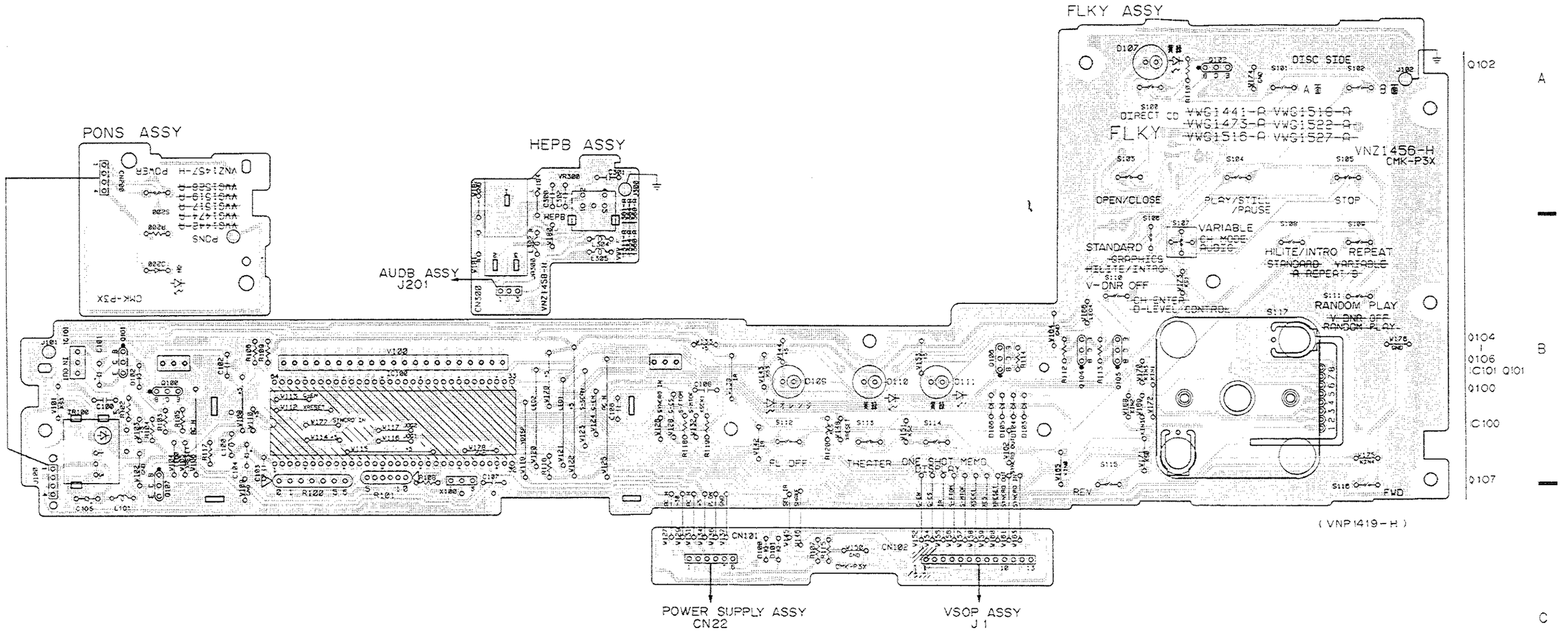
• BOTTOM SECTION

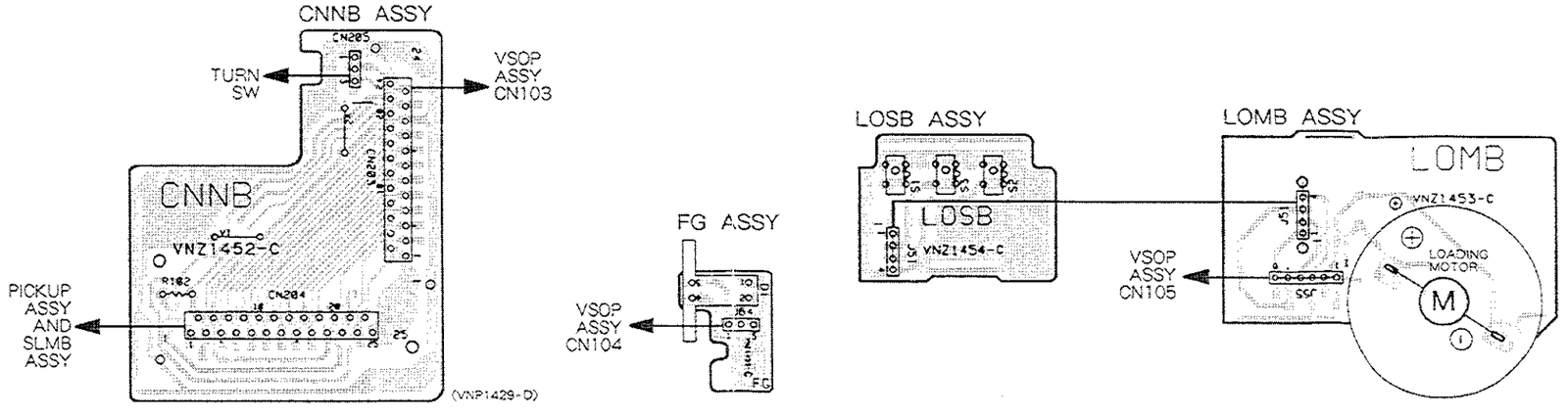


• MECHANISM SECTION



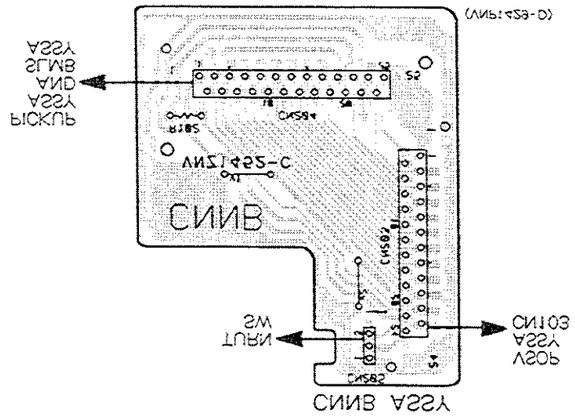
PCB - 1





• This diagram is viewed from the mounted parts side.

• This diagram is viewed from the foil side.



3.2 POWER SUPPLY ASSY

- Power supply assembly warnings
  For this power supply assembly, over current is detected by resistor and transistor.
  The ± 14V wiring is short by the thyristor and all output generation is stopped.

- When the circuit is short and the power goes OFF, unplug the unit and let it discharge for 10 – 30 seconds and then plug it again and turn on power.

- When output is stopped, a 120V charge remains for about one minute. Be careful not to touch anything.

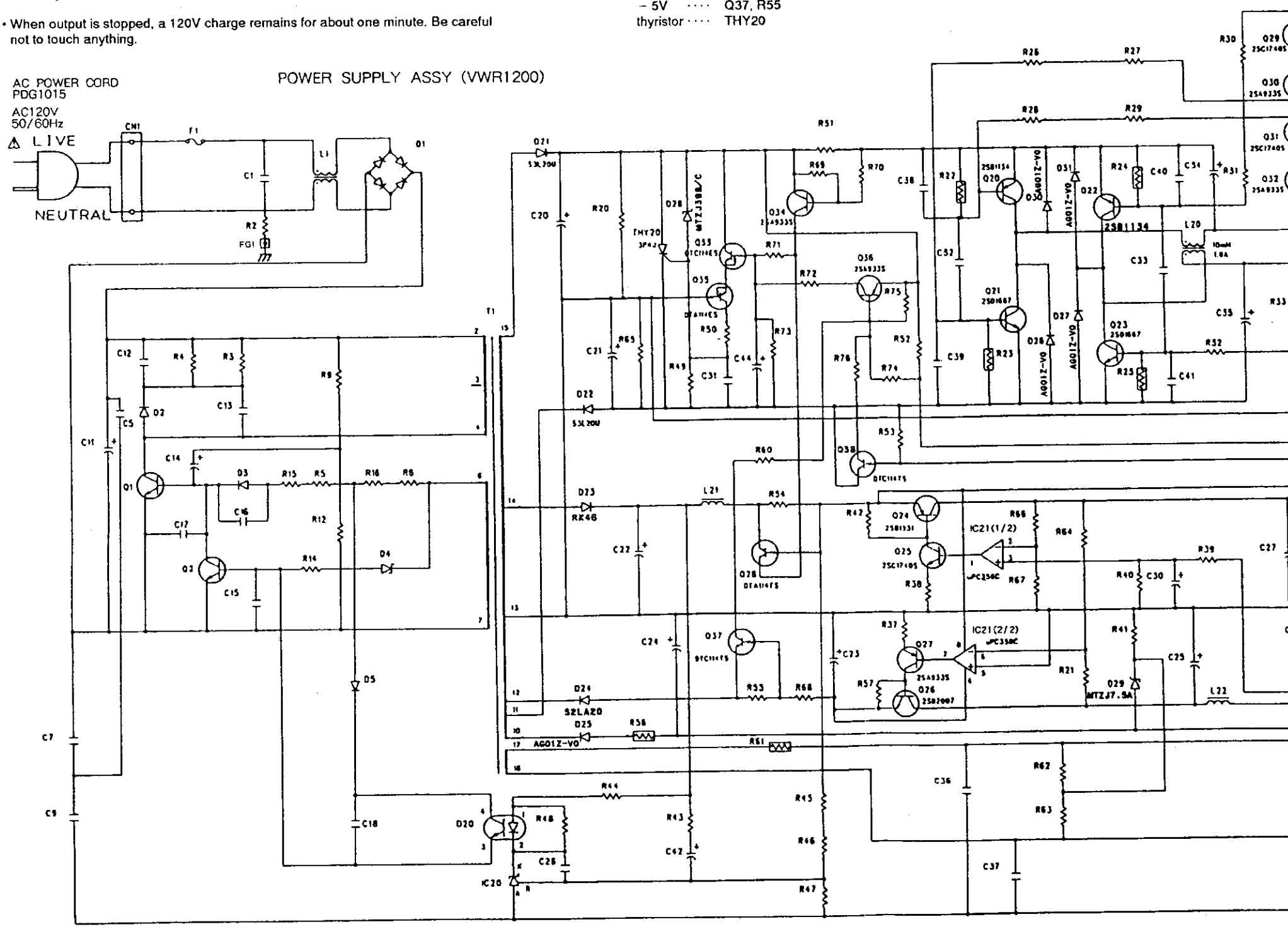
– Detection circuit (reference) –

For SPDL use	+14V	····	Q34, R51
	+14V	····	Q36, R52
	– 14V	····	Q38, R53
	+5V	····	Q28, R54
	– 5V	····	Q37, R55
	thyristor	····	THY20

- NOTE FOR FUSE REPLACEMENT

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

POWER SUPPLY ASSY (VWR1200)



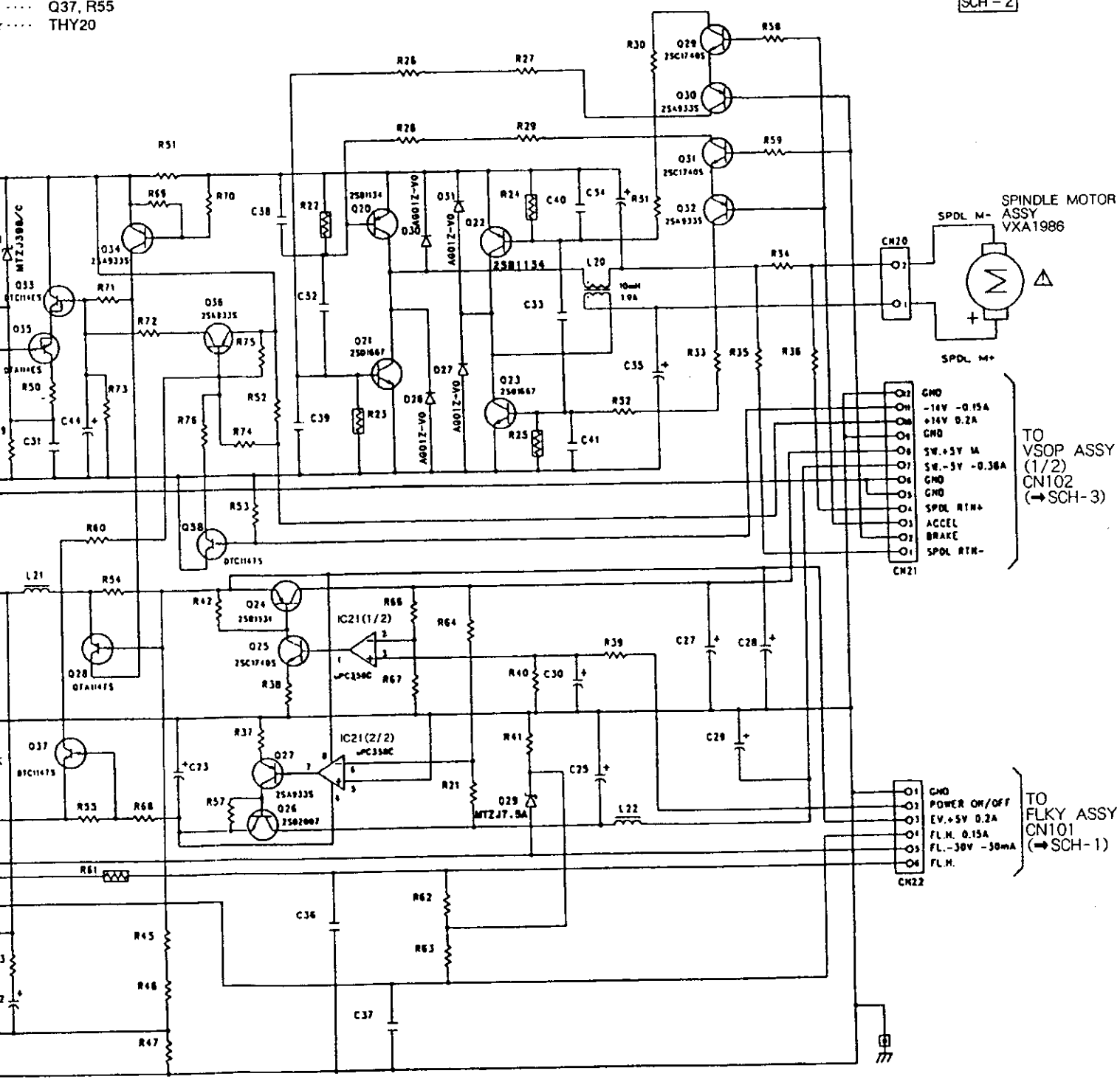
SCH-2 POWER SUPPLY ASSY

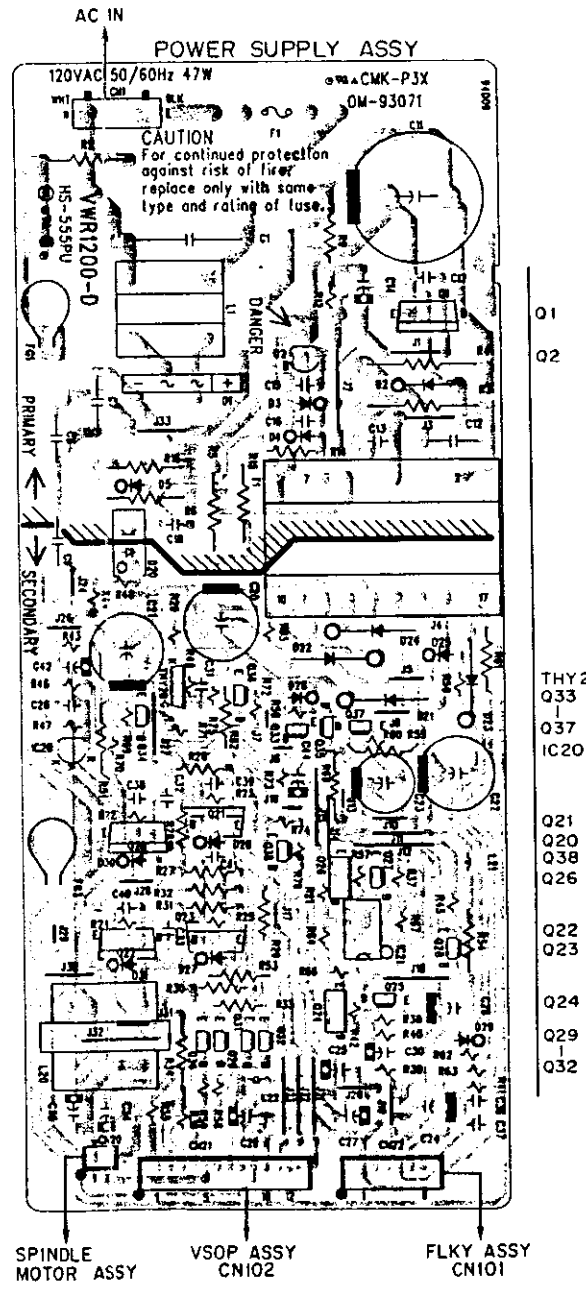
rence) –
···· Q34, R51
···· Q36, R52
···· Q38, R53
···· Q28, R54
···· Q37, R55
···· THY20

• NOTE FOR FUSE REPLACEMENT

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

SCH – 2



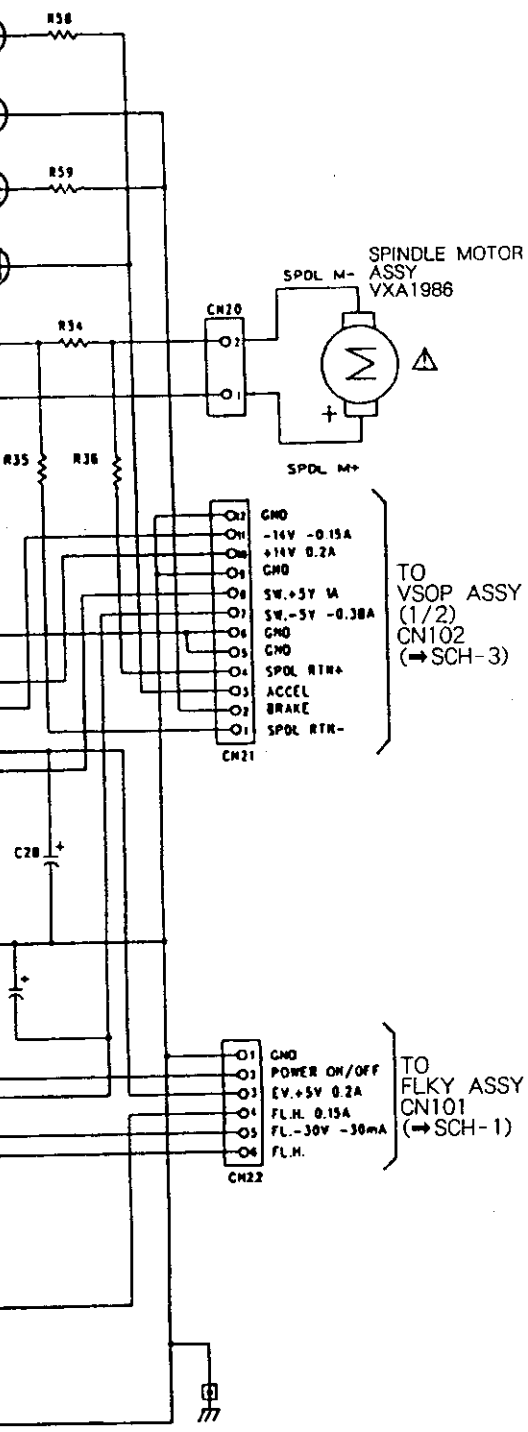


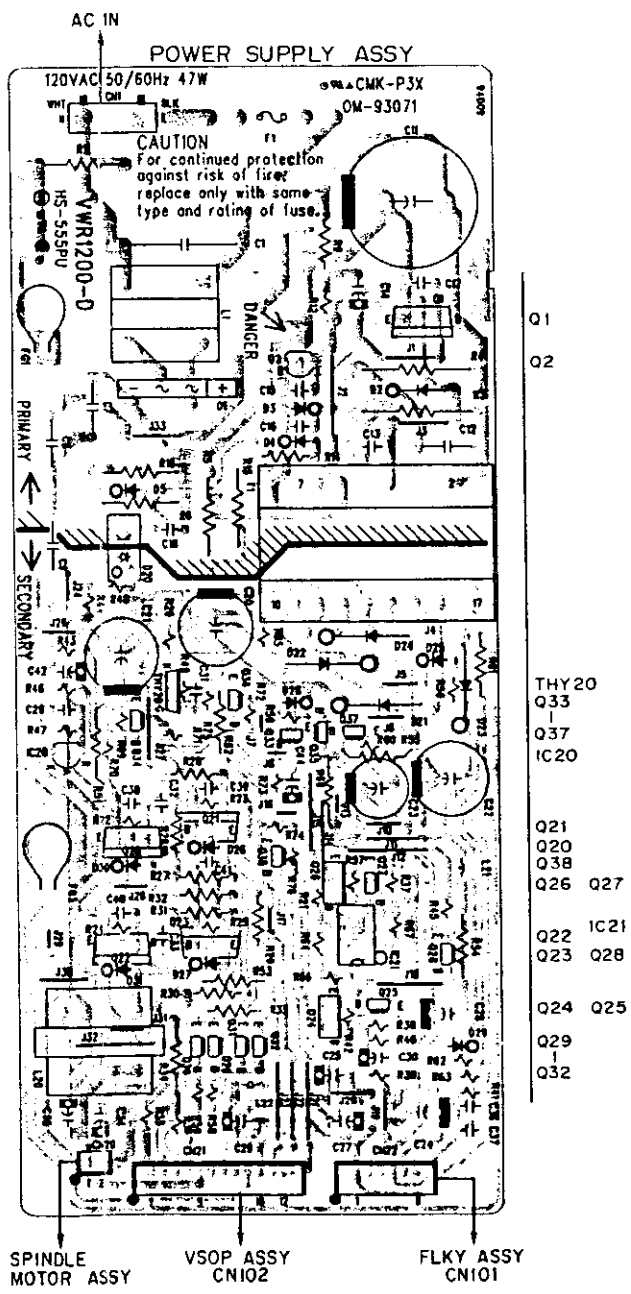
• This diagram is viewed from the mounted parts side.

POWER SUPPLY ASSY

SCH-2

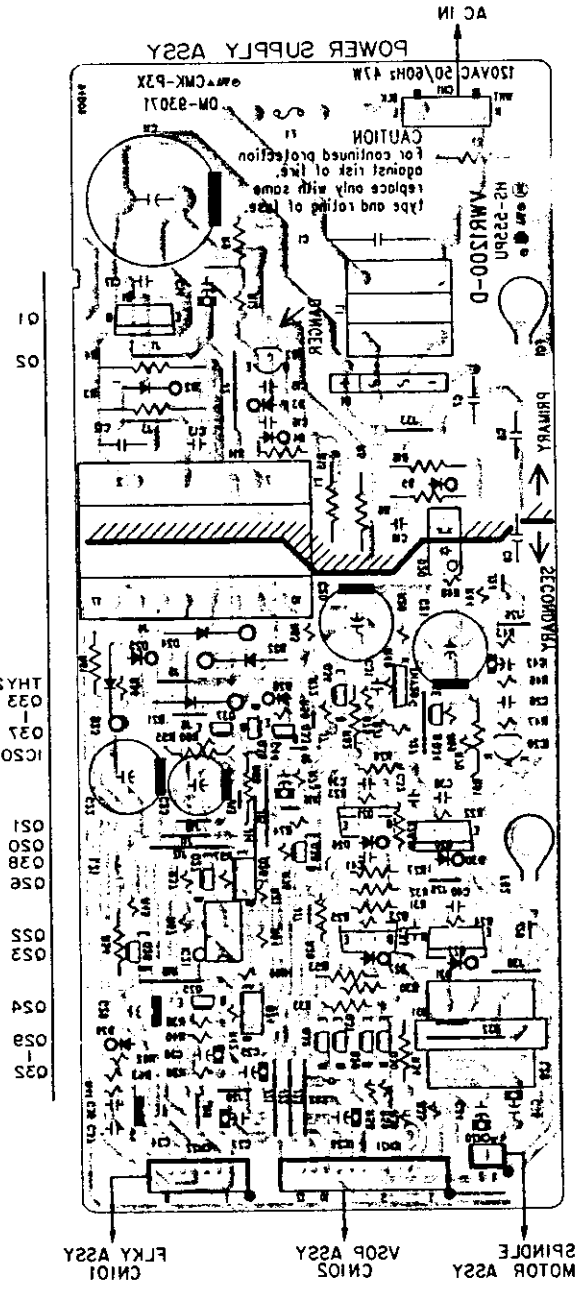
SCH – 2





● This diagram is viewed from the mounted parts side.

PCB – 2



● This diagram is viewed from the foil side.

POWER SUPPLY ASSY

SCH-2

3.3 VSOP ASSY (1/2) (FTS AND CONT SECTION)

SCH-3

VSOP ASSY (1/2)
(FTS, CONT)

VSOP ASSY (1/2) (VWS1188)
• FTS & CONT SECTION

: RF Signal Line
: TRKG Servo Loop Line
: FOCS Servo Loop Line
: SLDR Servo Lopp Line
: Audio Data Line

DSP [LC78681E]
IC802
SERVO CONTROL IC

TO LOMB ASSY
J55 (➡SCH-1)

TO FG ASSY
J64 (➡SCH-1)

TO INSIDE SW

VIDEO RF
TO DVP (➡SCH-4)

Q154 : LD EFM MUTE

Q102,Q103 :
FG SIGNAL WAVEFORMER

IC903 (2/2) :
JUMP SIGNAL
FORMER

Q903,Q904 :
TRKG ERR LIMITTER
Q905 : TRKG ERR
LIMITTER SW

Q913 : FOCUS BALANCE
SWITCHING

TRKG
DRIVE

SLDR
ERR
AMP

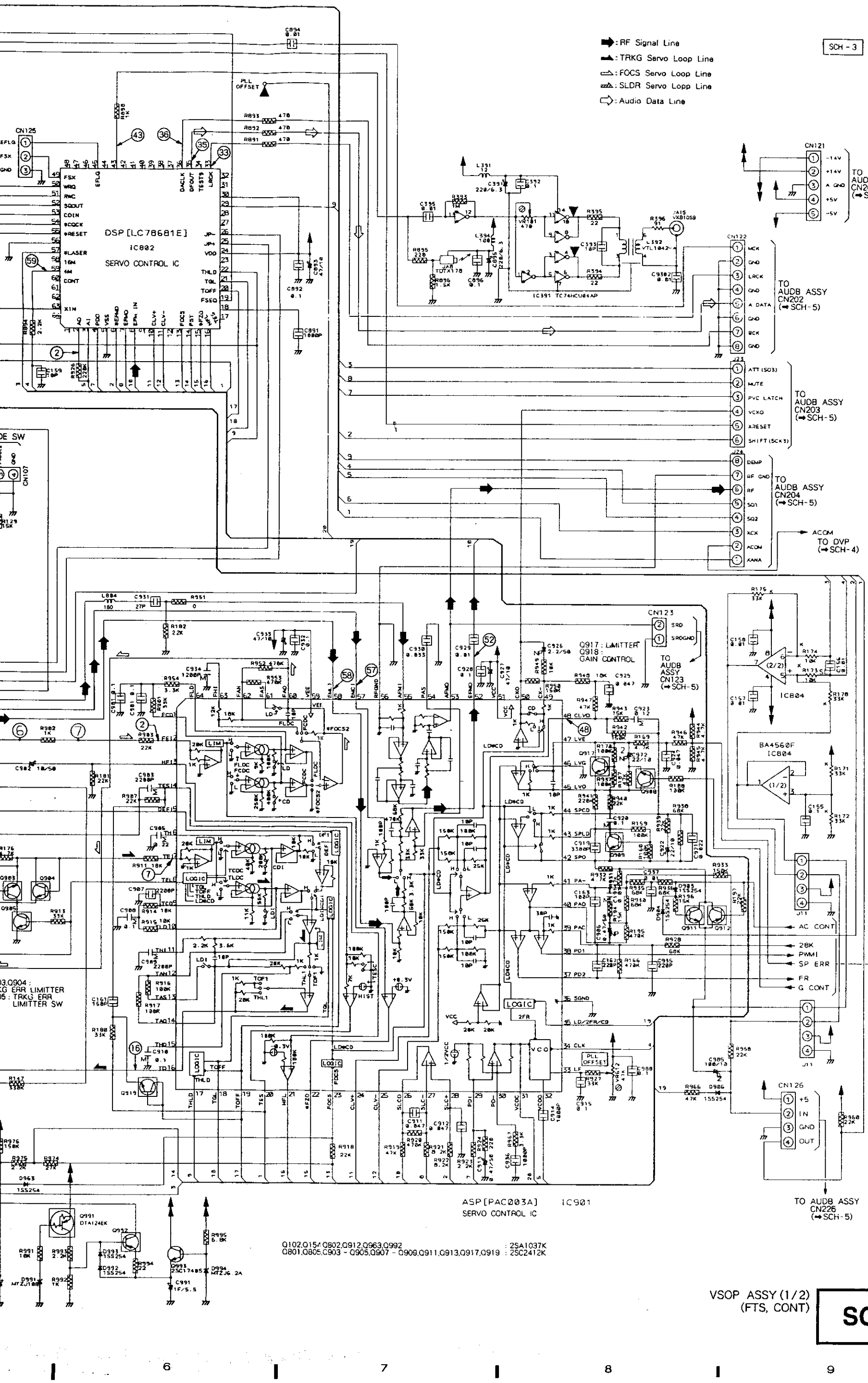
IC902 (2/2),Q962 :
FOCUS DRIVE

Q917 : LIMITTER
Q918 :
GAIN CONTROL

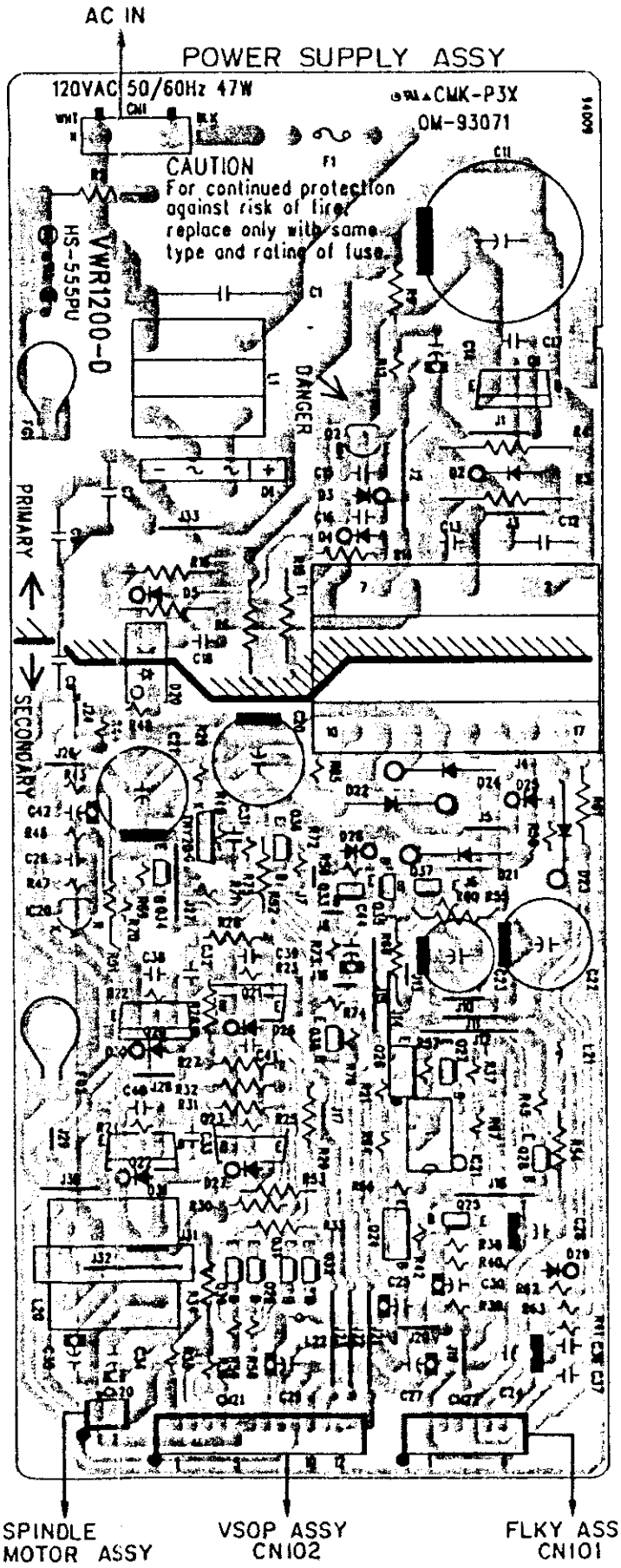
TO
AUDB
ASSY
CN123
(➡SCH-5)

ASP [PAC003A] IC901
SERVO CONTROL IC

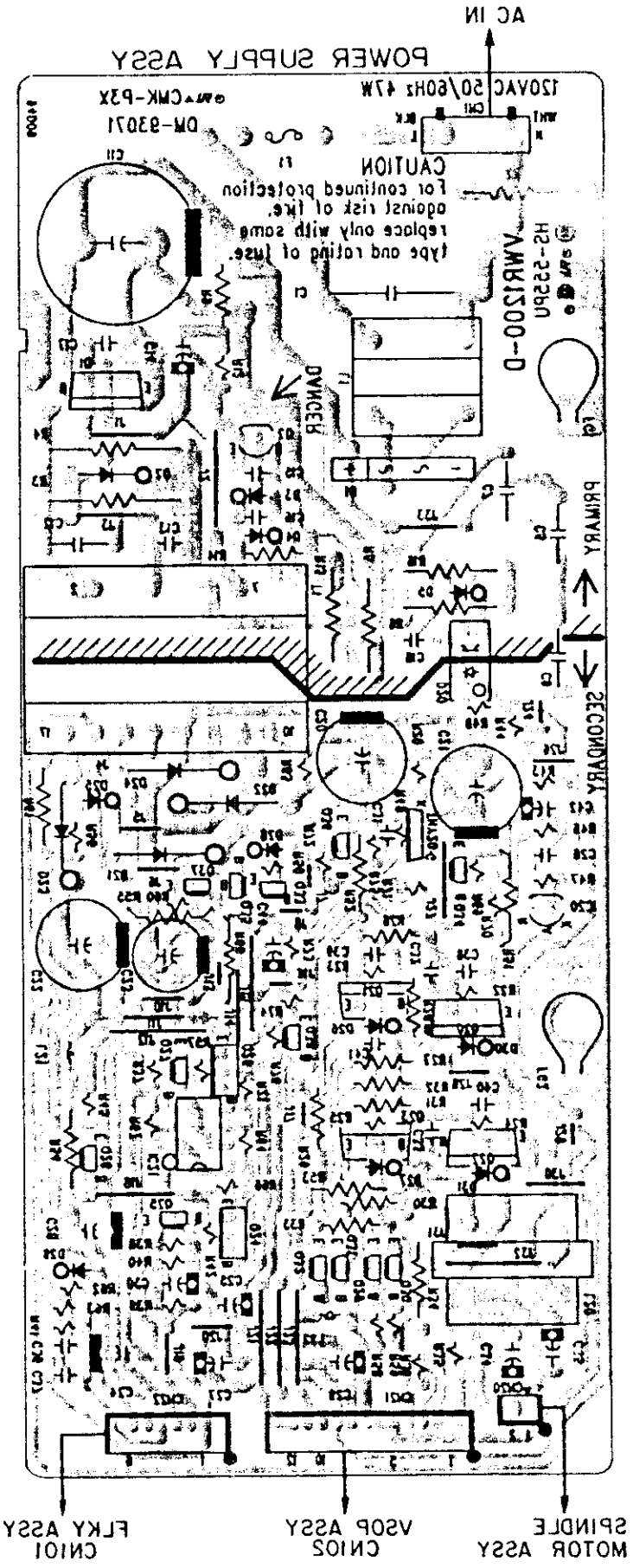
Q102,Q154,Q802,Q912,Q963,Q992 : 2SA1037K
Q801,Q805,Q903 – Q905,Q907 – Q909,Q911,Q913,Q917,Q919 : 2SC2412K


: RF Signal Line
: TRKG Servo Loop Line
: FOCS Servo Loop Line
: SLDR Servo Lopp Line
: Audio Data Line
SCH - 3
DSP [LC78681E]
IC802
SERVO CONTROL IC
IC391 TC74HCU04AP
TO AUDB ASSY CN201 (➡SCH-5)
TO AUDB ASSY CN202 (➡SCH-5)
TO AUDB ASSY CN203 (➡SCH-5)
TO AUDB ASSY CN204 (➡SCH-5)
ACOM TO OVP (➡SCH-4)
Q917 : LIMITTER
Q918 : GAIN CONTROL
TO AUDB ASSY CN123 (➡SCH-5)
TO DVP (➡SCH-4)
TO AUDB ASSY CN226 (➡SCH-5)
ASP [PAC003A] IC901
SERVO CONTROL IC
Q102,Q154,Q802,Q912,Q963,Q992 : 2SA1037K
Q801,Q805,C903 - Q905,Q907 - Q909,Q911,Q913,Q917,Q919 : 2SC2412K
VSOP ASSY (1/2)
(FTS, CONT)
SCH-3

PCB – 2



● This diagram is viewed from the mounted parts side.

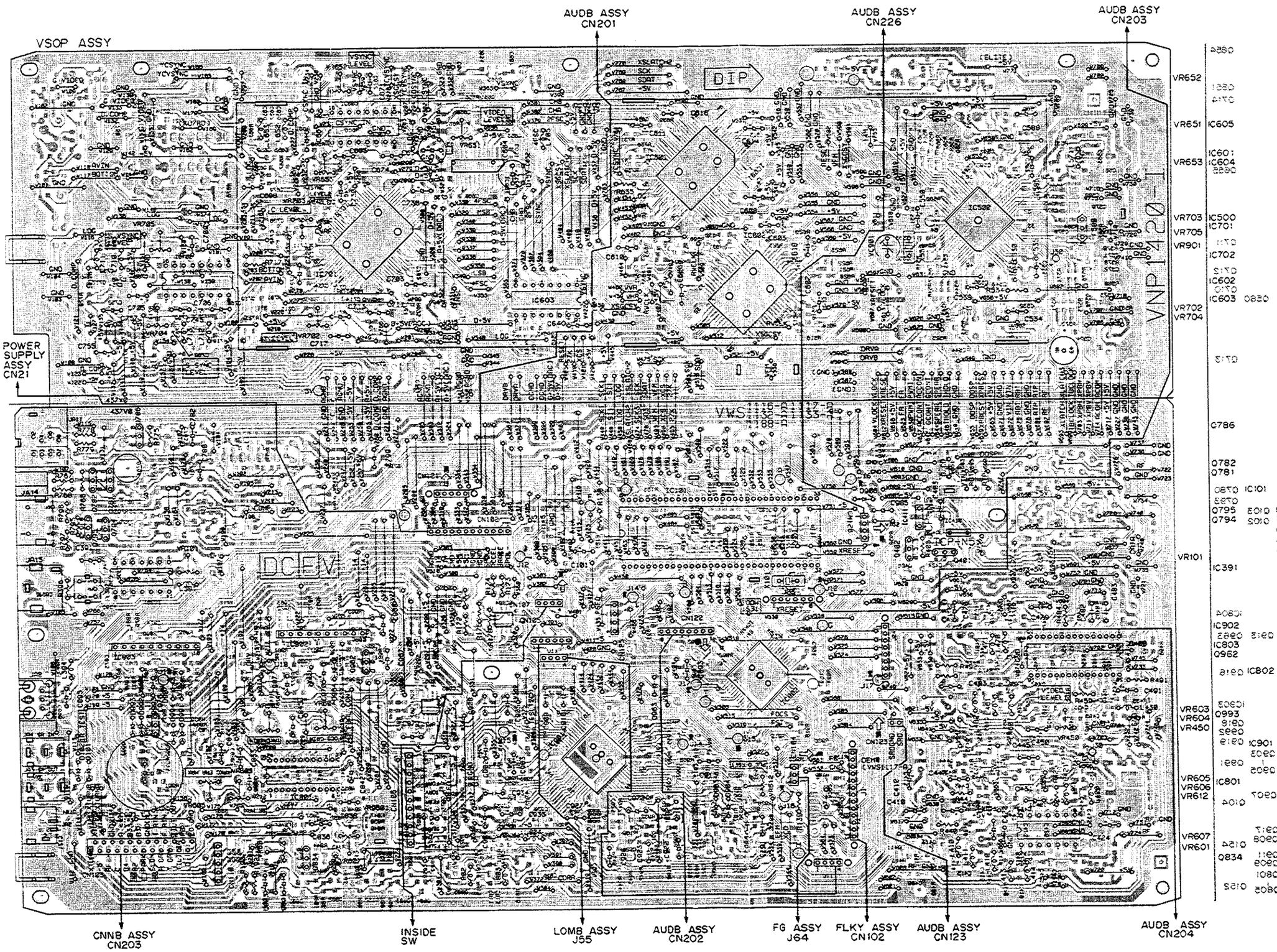


● This diagram is viewed from the foil side.

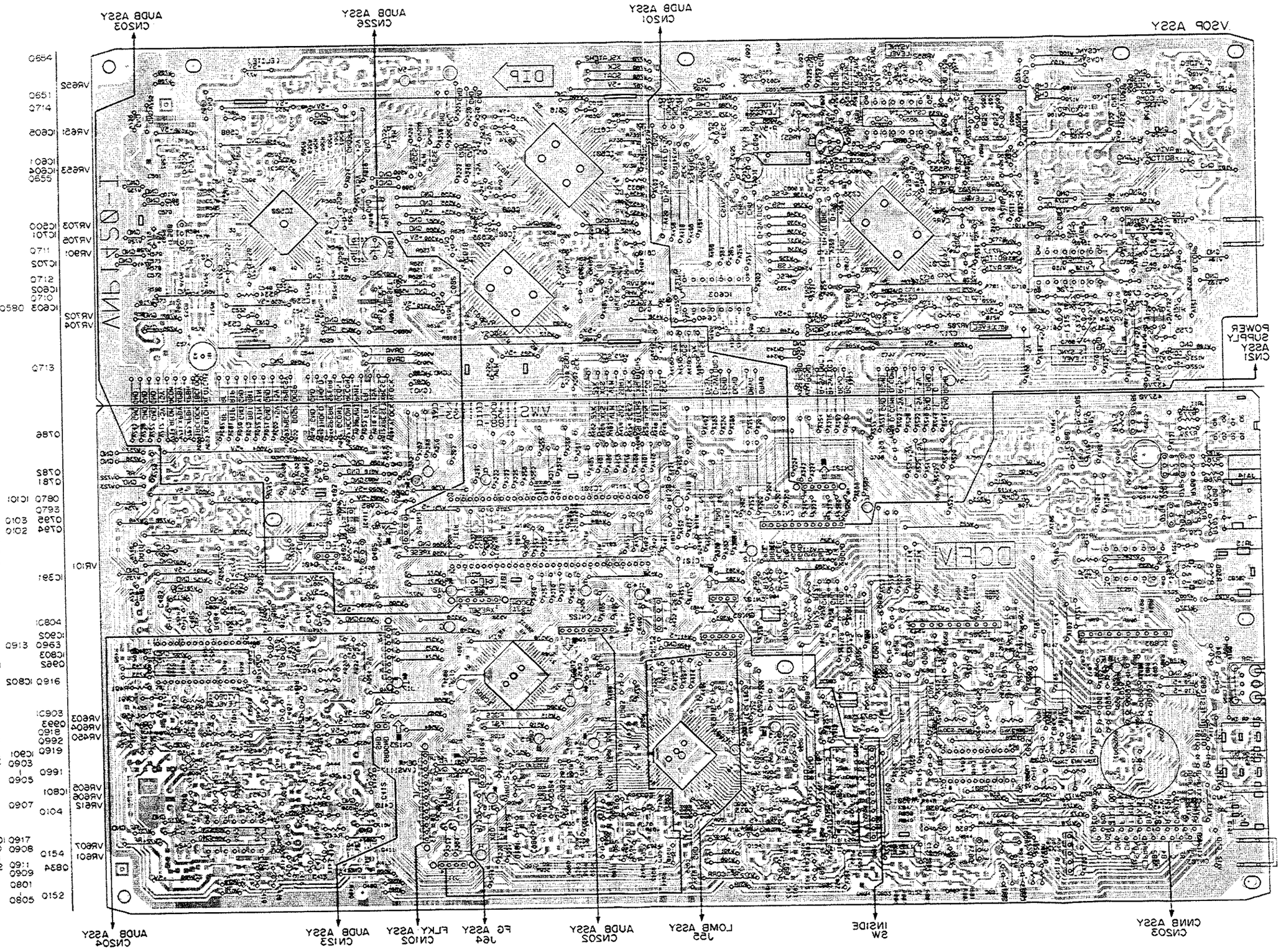
WAVEFORMS AND VOLTAGE
• FTS AND CONT SECTION

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.

IC801(PAC002A)	IC802(LC78681E)	IC803(LA6510)	IC901(PAC003A)	CN106	IC101(PD0226A)
②, ③ 1mS/Div. 16mVp-p AC mode	② 0.1μS/Div. 4.3Vp-p AC mode(D.audio)	① 2mS/Div. 1.8Vp-p DC mode	② 0.2mS/Div. 74mVp-p DC mode	①, ② 5mS/Div. 65mVp-p DC mode	⑦ 1V/Div 5ms/Div Approx. 1.2V DC mode(Sldr err)
⑦, ⑧ 1mS/Div. 67mVp-p DC mode	㉝ 10μS/Div. 4.2Vp-p AC mode(D.audio)		⑦ 0.2mS/Div. 74mVp-p DC mode	③ 0.5mS/Div. 300mVp-p AC mode	
⑨ 5mS/Div. 0.1Vp-p DC mode	㉟ 0.2μS/Div. 4.4Vp-p AC mode(D.audio)		⑯ 0.2mS/Div. 0.61Vp-p DC mode	④ 5mS/Div. 15Vp-p DC mode	
	㊱ 0.2μS/Div. 4.5Vp-p AC mode(D.audio)		㊽ 50μS/Div. 6.2Vp-p DC mode	⑤ 5mS/Div. 5.8Vp-p DC mode	
	㊸ 0.1μS/Div. 4.5Vp-p AC mode(D.audio)		㊷ 0.2μS/Div. 2.1Vp-p AC mode	⑥ 5mS/Div. 3.5Vp-p DC mode	
	㊾ 0.1μS/Div. 2Vp-p AC mode(D.audio)		㊼ 1mS/Div. 0.53Vp-p DC mode	⑨ 5mS/Div. 1.25Vp-p DC mode	
			㊽ 0.2mS/Div. 0.32Vp-p DC mode	⑪ 10mS/Div. 1.7Vp-p DC mode	



• This diagram is viewed from the mounted parts side.



● This diagram is viewed from the foil side.

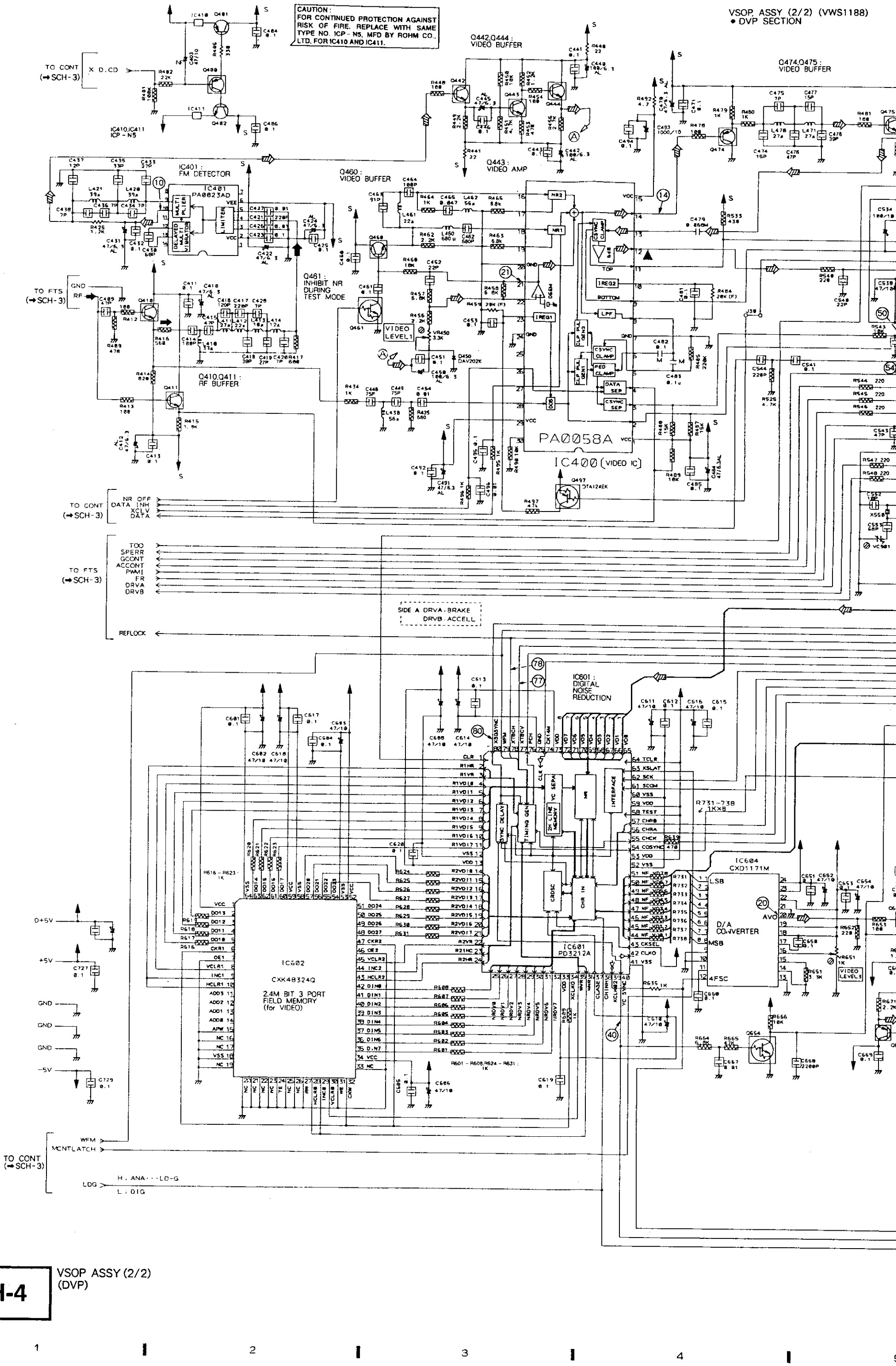
WAVEFORMS AND VOLTAGE
DVP SECTION

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

Measurement condition: Where (Color bars) is written, at time when color bar screen of disc is being played. Where (Still) is written, at time of still.

IC400(PA0058A)	IC401(PA0023AD)	IC500(PD0146A)	IC701(CXD2023Q)	IC601 (PD3212A)	IC604 (CXD1171M)
⑭ 20μS/Div. 0.9Vp-p AC mode(Color bars)	⑩ 20μS/Div. 0.24Vp-p AC mode(Color bars)	㊼ 20μS/Div. 1.7Vp-p AC mode(Color bars)	㉛ 10μS/Div. 2.1Vp-p AC mode[Color bars Still]	㊵ 0.1V/Div 20μS/Div 50μs 4μs 0.3Vp-p AC mode (Color bar still)	⑳ 0.5V/Div 10μS/Div Approx. 1.75Vp-p AC mode 63μs (Color bar still) (Before inserting H sync)
㉑ 20μS/Div. 0.9Vp-p AC mode(Color bars)		㊿ 50μS/Div. 5.2Vp-p AC mode[Color bars Still]	㊴ 5mS/Div. 0.7Vp-p AC mode[Color bars Still]	㊼ 2V/Div 50mS/Div 5Vp-p Approx. 17ms AC mode (Color bar still)	
		㊹ 50μS/Div. 2.5Vp-p AC mode[Color bars Still]		㊽ 2V/Div 20μS/Div 5Vp-p Approx. 63 μs AC mode (Color bar still)	
				㊿ 2V/Div 50μS/Div 5Vp-p AC mode (Color bar still)	

3.4 VSOP ASSY (2/2) (DVP SECTION)



SCH-4 VSOP ASSY (2/2) (DVP)

VSOP ASSY (2/2) (VWS1188)
• DVP SECTION

Q401 : 2SB1237X
Q402 : 2SD1858X
Q781,Q782,Q786,Q794,Q795 : 2SC1740S
Q400,Q474,Q580,Q655,Q712,Q713,Q780,Q793 : 2SA1037K
Q410,Q411,Q442 ~ Q444,Q460,Q475,Q651, Q710,Q711,Q714,Q796 : 2SC2412K
Q461,Q654 : DTC124EK
F580 : VTF1054
X550 : VSS1026
VC901 : VCM-008

Q474,Q475 :
VIDEO BUFFER

R571 ~ R573,R575,R576 : 220

IC500 :
DIGITAL VIDEO
PROCESSOR

R562 ~ R569 : 680

IC603 :
ON SCREEN DISPLAY

Q710,Q712 :
Y-SIGNAL
BUFFER

IC605 :
TC74HC4053AP

IC604
CXD1171M

D/A
CONVERTER

IC701
CXD2023Q

3 LINE
DIGITAL
COMB FILTER

IC702 :
TC74HC4053AP

Q711,Q713 :
C-SIGNAL
BUFFER

Q793 ~ Q795 :
VIDEO BUFFER

Q401 : 2SB1237X
Q402 : 2SD1858X
Q781,Q782,Q786,Q794,Q795 : 2SC1740S
Q400,Q474,Q580,Q655,Q712,Q713,Q780,Q793 : 2SA1037K
Q410,Q411,Q442 - Q444,Q460,Q475,Q651, Q710,Q711,Q714,Q796 : 2SC2412K
Q461,Q654 : DTC124EK
F580 : VTF1054
X550 : VSS1026
VC901 : VCM-008

SCH - 4

➡ : RF Signal Line
▨ : Video Signal Line
▬ : C Signal Line
▭ : Y Signal Line

R571 - R573,R575,R576 : 220

XRESET
SDATA
SCK3
DUPLATCH
TBC LOCK
XPBH
XPBV
TO CONT (➡SCH-3)

ACOM
TO CONT (➡SCH-3)

IC500 : DIGITAL VIDEO PROCESSOR

IC500 PD0146A
WRITE
READ
ADC
HZC
HER
BUR
TAN
PES
LPFA
LPFB
ACOM
DCO
MCT
SSG
FIFO
DGSP
TPS
SPOL
BCP
DAC
CKG
VIDEO

R562 - R569 : 560

IC603 PD0154A
IC603 : ON SCREEN DISPLAY

SCK1
SI1
XCS
TO CONT (➡SCH-3)

2FSC /256 (27K)
TO FTS (➡SCH-3)

Q710,Q712 : Y-SIGNAL BUFFER

IC605 : TC74HC4053AP

IC701 CXD2023Q
LOGICAL OPERATION
ADAPTIVE FILTER OPERATION
3 LINE DIGITAL COMB FILTER
A/D
D/A

IC702 : TC74HC4053AP

Q780-Q782 : Y-SIGNAL BUFFER

JA11 VKN1134-A

Q711,Q713 : C-SIGNAL BUFFER

Q786 : C-SIGNAL BUFFER

Q793 - Q795 : VIDEO BUFFER

VKB1064 JA14 VIDEO OUT

VSOP ASSY (2/2) (DVP)

SCH-4

3.5 AUDB ASSY

AUDB ASSY (VWV1419)

TO VSOP ASSY (1/2) CN126 (➡SCH-3)

TO VSOP ASSY (1/2) CN121 (➡SCH-3)

CN201

CN225

IC381 BA10393F

IC203 : DIGITAL FILTER

PD0116A

TO VSOP ASSY (1/2) CN122 (➡SCH-3)

CN202

TO VSOP ASSY (1/2) J23 (➡SCH-3)

CN203

TO VSOP ASSY (1/2) J24 (➡SCH-3)

CN204

IC204 TC74HCU04AP

IC209 CA0002AM AFM

DAC IC205 SAA7350GP M3

IC207 SAA7350GP M3

L.CH

Rch

Lch

IC201 : +9V REGULATOR

NJM78L09A IC201

IC202 : -9V REGULATOR

NJM79L09A IC202

Q201 – Q203 : L ch D/A CONVERTER POWER SUPPLY

Q204 – Q206 : R ch D/A CONVERTER POWER SUPPLY

2SB1566-F40

M5218AL IC210 (1/2)

IC210 (2/2)

IC210 : HEADPHONE AMP

J201

TO HEPB ASSY CN300 (➡SCH-1)

CHASSIS GND

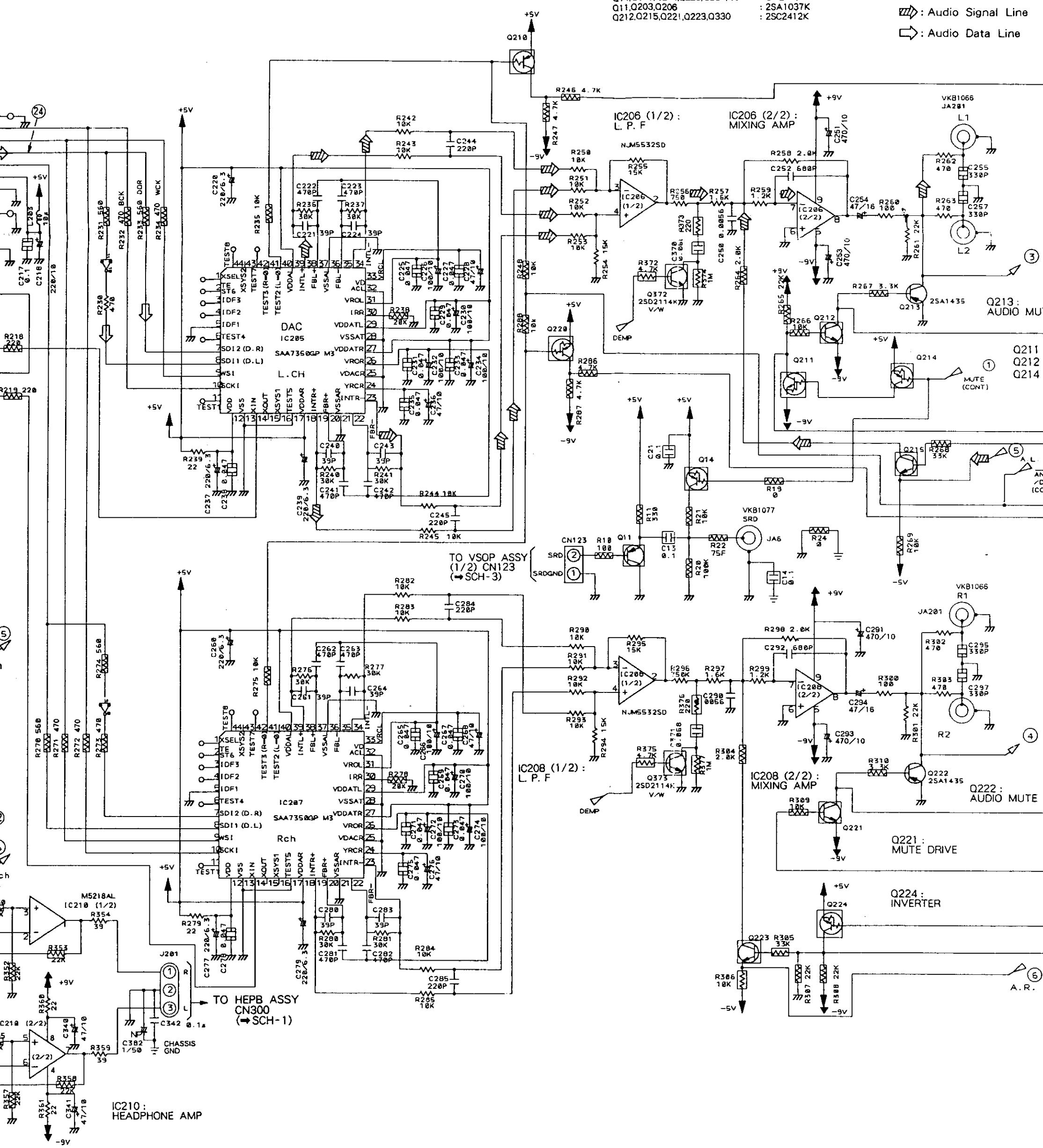
AUDB ASSY

SCH-5

ASSY (VWV1419)

Q202,Q205,Q211 : UN2212
Q14,Q210,Q214,Q220,Q224,Q371 : UN2112
Q11,Q203,Q206 : 2SA1037K
Q212,Q215,Q221,Q223,Q330 : 2SC2412K

: RF Signal Line
: Audio Signal Line
: Audio Data Line



SCH - 5

Q202,Q205,Q21' : UN2212
Q14,Q210,Q214,Q220,Q224,Q371 : UN2112
Q11,Q203,Q206 : 2SA1037K
Q212,Q215,Q221,Q223,Q330 : 2SC2412K

: RF Signal Line
: Audio Signal Line
: Audio Data Line

IC206 (1/2) : L. P. F
IC206 (2/2) : MIXING AMP
NJM5532SD
VKB1066 JA201
L1
L2
Q213 : AUDIO MUTE
Q211 : MUTE DRIVE
Q212 : INVERTER
Q214 : MUTE INVERTER
MUTE (CONT)
DEMP
Q372 2SD2114K V/W
Q220
VKB1077 SRD JA6
TO VSOP ASSY (1/2) CN123 (➡SCH-3)
CN123 SRD SRDGND
A. L. ANA /DIG (CONT)
A. R.
IC208 (1/2) : L. P. F
IC208 (2/2) : MIXING AMP
VKB1066 R1 JA201
R2
Q373 2SD2114K V/W
Q222 2SA1435
Q221 : MUTE DRIVE
Q224 : INVERTER
Q223 R305 33K
R306 10K
R307 22K
R308 22K

WAVEFORMS OF AUDIO SECTION

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

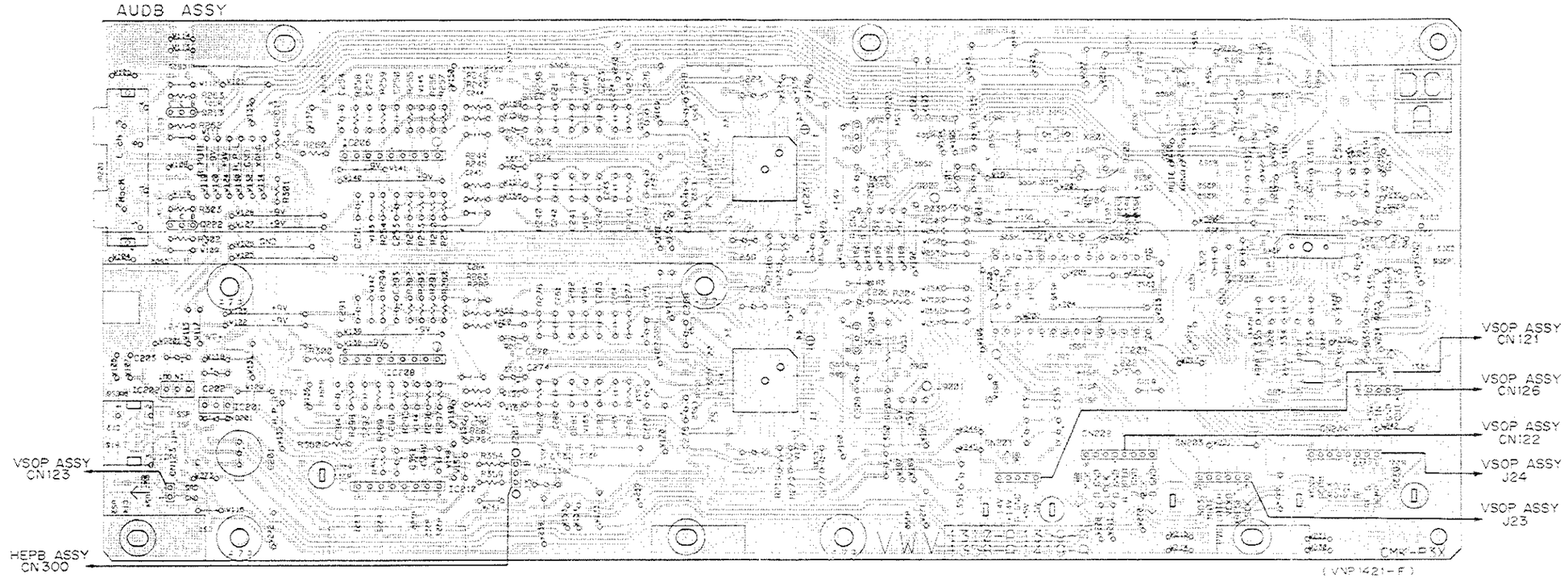
IC209 (CA0002AM)

(2) H: 5mS/Div 100mVp-p — AC mode	(21) H: 5mS/Div 1.1Vp-p 0V — DC mode AC mode
(3) H: 0.5mS/Div 1.5Vp-p — AC mode	(22) H: 0.5mS/Div 1.35Vp-p — AC mode
(4) H: 0.5mS/Div 1.1Vp-p 0V — DC mode	(23) H: 5mS/Div 100mVp-p — AC mode
(5) H: 0.5mS/Div 1.1Vp-p 0V — DC mode	
(6) H: 0.5mS/Div 1Vp-p 0V — DC mode	IC203 (PD0116A)
(12) H: 0.5mS/Div 1.5Vp-p 0V — DC mode	(1) 2V/Div 50µs/Div 5Vp-p — DC mode (D.audio)
(13) H: 0.5mS/Div. 1.5Vp-p 0V — DC mode	(2) 2V/Div 20µs/Div 5Vp-p — DC mode (POWER ON)
(19) H: 0.5mS/Div. 1Vp-p 0V — DC mode	(9) 2V/Div 20µs/Div 5Vp-p — DC mode (D.audio)
(20) H: 0.5mS/Div. 1Vp-p 0V — DC mode	(24) 2V/Div 0.2ms/Div 1Vp-p 5Vp-p 1Vp-p — DC mode (D.audio)

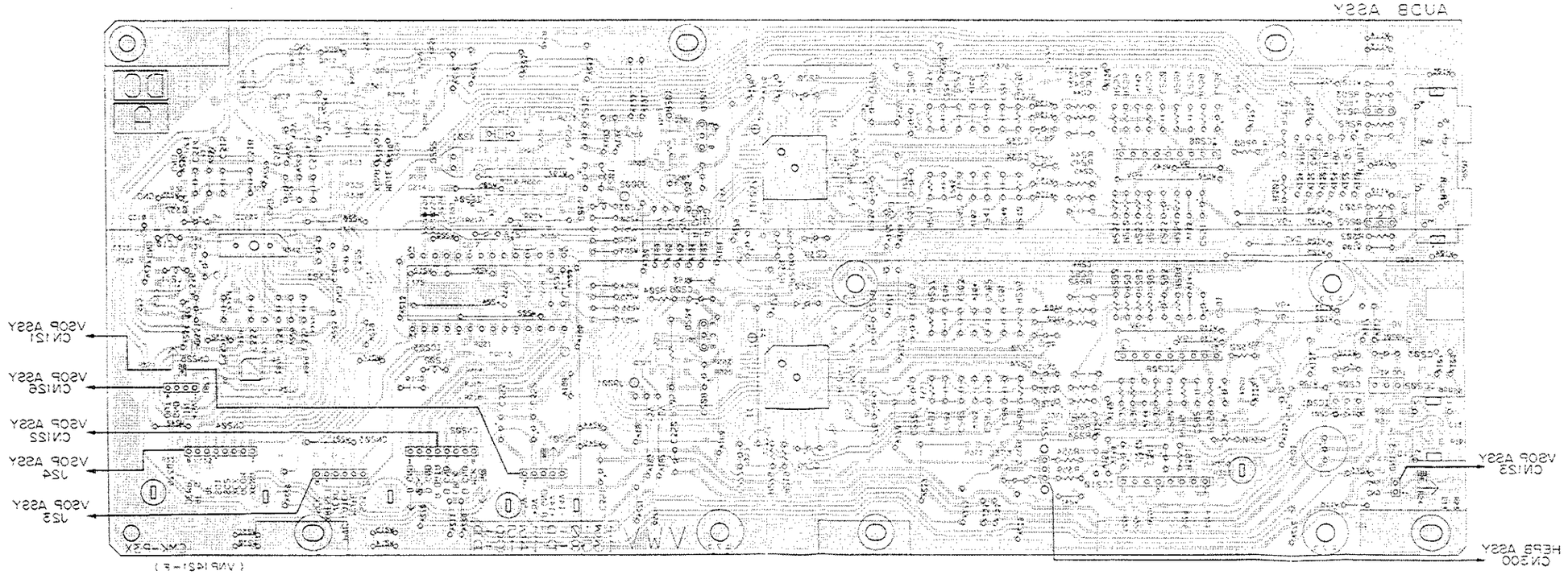
AUDB ASSY

SCH-5

AUDB ASSY



• This diagram is viewed from the mounted parts side.



• This diagram is viewed from the foil side.

4. PCB PARTS LIST

NOTES:

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

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

560 Ω → 56 × 10¹ → 561 ····· RD1/8PM 5 6 1 J
47k Ω → 47 × 10³ → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

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

5.62k Ω → 562 × 10¹ → 5621 ····· RN1/4PC 5 6 2 1 F

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
NSP		FLKB ASSY	VWM1584
		├ FLKY ASSY	VWG1646
NSP		├ PONS ASSY	VWG1647
NSP		└ HEPB ASSY	VWV1424
		VSOP ASSY	VWS1188
		AUDB ASSY	VWV1419
NSP		MACB ASSY	VWM1420
NSP		├ CNNB ASSY	VWG1469
NSP		├ LOMB ASSY	VWG1470
NSP		├ LOSB ASSY	VWG1471
NSP		└ FG ASSY	VWG1472
		POWER SUPPLY ASSY	VWR1200
FLKY ASSY			
SEMICONDUCTORS			
	IC100		PD3317A
	IC101		S-806D
	Q101		DTA144ES
	Q100		DTC114ES
	Q102, Q104-Q107		DTC124ES
	D103-D106		1SS252
	D100-D102		1SS254
	D107, D110, DI11		SLR-342MC3F
	D109		SEL6910A
COILS			
	L100, L101		LAU220J
SWITCHES			
	S100-S102, S112-S116		RSG1030
	S103-S111		RSG1034
	S117		VSD1009

Mark	No.	Description	Part No.
CAPACITORS			
	C101		CEAL100M16
	C104		CEAL101M6R3
	C105		CEAS221M6R3
	C106		CKPUYB101K50
	C102, C103, C108		CKPUYF223Z25
	C100, C107		CKPUYX472M16
RESISTORS			
	R101		RA5T103J
	R100		RA6S104J
	Other Resistors		RD1/6PM□□□J
OTHERS			
	4P CABLE HOLDER		51048-0400
	IR100	REMOTE SENSOR	GP1U78R
	V100	FL TUBE	VAW1032
	SPACER		VEC1599
	FL HOLDER		VNF1082
	X100	CERAMIC RESONATOR	VSS1031
PONS ASSY			
SEMICONDUCTOR			
	D200		SLH34VCF04
SWITCH			
	S200		RSG1030
RESISTORS			
	Other Resistors		RD1/6PM□□□J
HEPB ASSY			
COILS			
	L302, L304		VTH1020
	L305		VTH1024
CAPACITORS			
	C301, C302		CKPUYB102K50
	C300		CKPUYF223Z25

Mark	No.	Description	Part No.
RESISTOR			
	VR300	(500Ω)	VCS1015
OTHERS			
	CN300	3P JUMPER CONNECTOR	52151-0310
	JA300	HEADPHONE JACK	RKN1002
VSOP ASSY			
SEMICONDUCTORS			
	IC804, IC903		BA4560F
	IC604		CXD1171M
	IC701		CXD2023Q
	IC602		CXK48324Q
	IC410, IC411		ICP-N5
	IC803		LA6510
	IC802		LC78681E
	IC401		PA0023AD
	IC400		PA0058A
	IC801		PAC002A
	IC901		PAC003A
	IC500		PD0146A
	IC603		PD0154A
	IC101		PD0226A
	IC601		PD3212A
	IC902		TA8464K
	IC605, IC702		TC74HC4053AP
	IC391		TC74HCU04AP
	Q102, Q154, Q400, Q474, Q580		2SA1037K
	Q655, Q712, Q713, Q780, Q793		2SA1037K
	Q802, Q912, Q963, Q992		2SA1037K
	Q401, Q834		2SB1237X
	Q781, Q782, Q786, Q794, Q795		2SC1740S
	Q993		2SC1740S
	Q410, Q411, Q442-Q444, Q460		2SC2412K
	Q475, Q651, Q710, Q711, Q714		2SC2412K
	Q796, Q801, Q805, Q903-Q905		2SC2412K
	Q907-Q909, Q911, Q913, Q917		2SC2412K
	Q919		2SC2412K
	Q152, Q803, Q804		2SC3802K
	Q402		2SD1858X
	Q962		2SK184
	Q497, Q916, Q991		DTA124EK
	Q103, Q104, Q461, Q654		DTC124EK
	D101, D102, D903, D904		1SS254
	D906, D907, D963, D964		1SS254
	D992, D993		1SS254
	D450		DAN202K
	D991		MTZJ10B
	D994		MTZJ6.2A
COILS AND FILTER			
	L413		LAU100J
	L394		LAU101J
	L391, L414		LAU120J
	L802, L803		LAU121J
	L804		LAU181J

Mark	No.	Description	Part No.
	L412, L461, L710-L713		LAU220J
	L411, L470, L471, L571		LAU270J
	L652, L653		LAU270J
	L410		LAU330J
	L420, L421		LAU390J
	L430, L462		LAU560J
	L460		LAU680J
	F580		VTF1054
	L392		VTL1042
CAPACITORS			
	C562		CCSQCH050C50
	C747, C761		CCSQCH060D50
	C420, C428, C434, C436, C438		CCSQCH070D50
	C475, C656		CCSQCH070D50
	C159, C393, C552, C809, C811		CCSQCH100D50
	C120, C121, C163, C414, C464		CCSQCH101J50
	C798		CCSQCH101J50
	C437		CCSQCH120J50
	C416, C814, C846, C848		CCSQCH121J50
	C474, C477, C655, C658		CCSQCH150J50
	C161, C810		CCSQCH151J50
	C452, C540, C542, C579, C746		CCSQCH220J50
	C749, C760, C763		CCSQCH220J50
	C162, C417, C421, C544, C591		CCSQCH221J50
	C812, C935		CCSQCH221J50
	C419, C433, C659, C931		CCSQCH270J50
	C106, C107, C435, C563, C813		CCSQCH330J50
	C418, C478, C657		CCSQCH390J50
	C409, C415, C476, C543, C580		CCSQCH470J50
	C750, C764, C963		CCSQCH470J50
	C748, C762		CCSQCH560J50
	C430, C553, C561, C806		CCSQCH680J50
	C462		CCSQCH681J50
	C448, C449		CCSQCH750J50
	C463		CCSQCH910J50
	C440, C442, C450		CEAL101M6R3
	C410, C412, C422, C424, C431		CEAL470M6R3
	C445, C470, C484, C491, C671		CEAL470M6R3
	C871		CEANP100M25
	C985		CEANP101M10
	C972		CEANP220M10
	C799, C926		CEANP2R2M50
	C403, C838		CEANP470M10
	C986		CEANPR47M50
	C904		CEAS010M50
	C745, C902		CEAS100M50
	C534, C535		CEAS101M10
	C493		CEAS102M10
	C922, C976, C987		CEAS220M25
	C550, C585		CEAS221M10
	C391, C895		CEAS221M6R3
	C101, C530, C538, C588		CEAS470M10
	C602, C603, C606, C608		CEAS470M10
	C610, C611, C614, C616, C618		CEAS470M10
	C640, C652, C654, C661, C665		CEAS470M10

Mark	No.	Description	Part No.
	C674, C703, C705, C706, C709		CEAS470M10
	C711, C713, C717, C720, C730		CEAS470M10
	C735, C755, C757, C780, C782		CEAS470M10
	C801, C803, C833, C836, C842		CEAS470M10
	C844, C893, C927, C933		CEAS470M10
	C845		CEAS4R7M50
	C913		CEASR47M50
	C970		CEHAQ010M50
	C967, C968		CEHAQ100M50
	C191		CFTYA103J50
	C482, C483, C908, C910, C920		CFTYA104J50
	C923		CFTYA124J50
	C905		CFTYA224J50
	C479		CFTYA683J50
	C701, C891, C914, C936, C969		CKSQYB102K50
	C110, C668, C907		CKSQYB222K50
	C919		CKSQYB332K50
	C888		CKSQYB472K50
	C105, C122, C156-C158, C395		CKSQYF103Z50
	C426, C427, C454, C496		CKSQYF103Z50
	C570-C573, C577, C578, C581		CKSQYF103Z50
	C667, C707, C807, C834, C835		CKSQYF103Z50
	C843, C872, C876, C894, C929		CKSQYF103Z50
	C9302, C937, C961, C962		CKSQYF103Z50
	C102, C151, C155, C196-C198		CKSQYF104Z25
	C392, C404, C406, C411, C413		CKSQYF104Z25
	C423, C425, C432, C441, C443		CKSQYF104Z25
	C446, C451, C453, C460, C461		CKSQYF104Z25
	C471, C481, C485, C492		CKSQYF104Z25
	C494, C495, C531-C533, C539		CKSQYF104Z25
	C541, C551, C574, C575, C582		CKSQYF104Z25
	C589, C590, C592, C593, C601		CKSQYF104Z25
	C604, C605, C612, C613, C615		CKSQYF104Z25
	C617, C619, C620, C641		CKSQYF104Z25
	C650, C651, C653, C660, C662		CKSQYF104Z25
	C664, C666, C669, C670, C672		CKSQYF104Z25
	C694, C699, C702, C708, C712		CKSQYF104Z25
	C714-C716, C719, C723		CKSQYF104Z25
	C725-C729, C734, C736-C738		CKSQYF104Z25
	C740, C742, C752, C754, C756		CKSQYF104Z25
	C758, C759, C765-C768, C781		CKSQYF104Z25
	C783, C789, C802, C804		CKSQYF104Z25
	C831, C832, C840, C841		CKSQYF104Z25
	C873, C874, C892, C896, C901		CKSQYF104Z25
	C915, C928, C932, C981, C988		CKSQYF104Z25
	C921		CKSQYF223Z50
	C837, C930		CKSQYF333Z25
	C103, C465, C808, C815, C847		CKSQYF473Z25
	C875, C877, C911, C912		CKSQYF473Z25
	C924, C925, C964, C971		CKSQYF473Z25
	C983, C984		CKSQYF473Z25
	C934		CQMA122J50
	C903, C909		CQMA222J50
	C991	(1F/5.5V)	VCH1039
	VC901	(20P)	VCM-008

Mark	No.	Description	Part No.
RESISTORS			
	R766, R795		RD1/6PM101J
	R635		RD1/6PM102J
	R425		RD1/6PM122J
	R192, R193, R440, R441		RD1/6PM220J
	R139, R534		RD1/6PM221J
	R405		RD1/6PM331J
	R717		RD1/6PM392J
	R492		RD1/6PM4R7J
	R775		RD1/6PM681J
	R767, R768, R778, R779		RD1/6PM750J
	R796, R797		RD1/6PM750J
	R396		RD1/6PM910J
	R173, R174		RN1/6PQ1002F
	R459, R484		RN1/6PQ2002F
	R171, R172, R175, R178		RN1/6PQ3302F
	VR651, VR652, VR705		VRTB6VS102
	VR606		VRTB6VS153
	VR601, VR653, VR704		VRTB6VS222
	VR450		VRTB6VS332
	VR605		VRTB6VS333
	VR101		VRTB6VS471
	VR603, VR702, VR703		VRTB6VS472
	VR604, VR607, VR612		VRTB6VS473
	Other Resistors		RS1/10S□□□J
OTHERS			
	4P CABLE HOLDER		51048-0400
	6P CABLE HOLDER		51048-0600
	8P CABLE HOLDER		51048-0800
	13P CABLE HOLDER		51048-1300
	CN106	11P TOP POST	B11P-SHF-1AA
	CN123	KR CONNECTOR 2P	B2B-PH-K
	CN104	KR CONNECTOR 3P	B3B-PH-K
	CN125	3P TOP POST	B3F-SHF-1AA
	CN107	KR CONNECTOR 4P	B4B-PH-K
	CN126	KR CONNECTOR 4P	B4B-PH-K-R
	CN110	5P TOP POST	B5B-EH
	CN121	KR CONNECTOR 5P	B5B-PH-K-R
	J1	13P JUMPER WIRE	D20PDY1320E
	JA3, JA4	REMOTE CONTROL JACK/12V	PKN1004
	CN105	2MM PITCH JUMPER CONNECTOR 6P	SBR06S-4
	CN103	24P CONNECTOR	SLB24S-2
	JA8	OPTICAL OUTPUT JACK	TOTX178
	PCB BINDER		VEB1040
	JA15	COAXIAL PIN JACK	VKB1059
	JA14	2P PIN JACK	VKB1064
	JA11	S TERMINAL	VKN1134
	JA2	MINI JACK	VKN1165
	SHIELD CASE A		VNB9902
	SHIELD CASE B		VNB9903
	SHIELD CASE C		VNB9904
	IC HEAT SINK		VNB9921
	SCREW TERMINAL		VNB9948
	EARTH PLATE		VNF-0091
	X550	CRYSTAL RESONATOR(14.31MHz)	VSS1026
	X101	CERAMIC RESONATOR(9.00MHz)	VSS1040

Mark	No.	Description	Part No.
AUDB ASSY			
SEMICONDUCTORS			
	IC381		BA10393F
	IC209		CA0002AM
	IC210		M5218AL
	IC206, IC208		NJM5532SD
	IC201		NJM78L09A
	IC202		NJM79L09A
	IC203		PD0116A
	IC205, IC207		SAA7350GP
	IC204		TC74HCU04AP
	Q11, Q203, Q206		2SA1037K
	Q213, Q222		2SA1435
	Q201, Q204		2SB1566-F40
	Q212, Q215, Q221, Q223, Q330		2SC2412K
	Q372, Q373		2SD2114K
	Q14, Q210, Q214, Q220, Q224		UN2112
	Q371		UN2112
	Q202, Q205, Q211		UN2212
	D201		11EQS06
	D202		FC54M
COILS			
	L201, L203		LAU100J
	L202		LAU120J
	L211		LAU181J
	L210		LAU220J
CAPACITORS			
	C219		CCCCH080D50
	C221, C224, C240, C243, C261		CCCCH390J50
	C264, C280, C283		CCCCH390J50
	C244, C245, C284, C285		CCCSL221J50
	C204, C207, C310		CCSQCH101J50
	C311		CCSQCH151J50
	C324		CCSQCH180J50
	C216, C9211, C9213		CCSQCH220J50
	C325		CCSQCH270J50
	C326		CCSQCH330J50
	C313		CCSQCH390J50
	C327		CCSQCH680J50
	C312		CCSQCH820J50
	C323		CEAS100M50
	C226, C230, C232, C234, C266		CEAS101M10
	C270, C272, C274, C337		CEAS101M10
	C352, C353		CEAS101M16
	C202, C203		CEAS221M10
	C350, C351		CEAS221M16
	C220, C237, C239, C260, C277		CEAS221M6R3
	C279		CEAS221M6R3
	C206, C215, C228, C236, C268		CEAS470M10
	C276, C318, C331, C340, C341		CEAS470M10
	C205, C208, C251, C253, C291		CEAS471M10
	C293		CEAS471M10
	C336		CEASR47M50
	C382		CEJANP010M50
	C211		CEYA101M10
	C218		CEYA221M10
	C201		CEZA331M35

Mark	No.	Description	Part No.
	C254, C294		CEZA470M16
	C222, C223, C241, C242		CFTXA471J50
	C262, C263, C281, C282		CFTXA471J50
	C250, C290		CFTXA562J50
	C252, C292		CFTXA681J50
	C322		CFTYA104J50
	C316, C333		CFTYA224J50
	C317, C335		CFTYA393J50
	C255, C257, C295, C297		CKSQYB331K50
	C370, C371		CKSQYB683K25
	C375		CKSQYF102Z50
	C213, C214		CKSQYF103Z50
	C13, C14, C21, C210, C217		CKSQYF104Z25
	C319		CKSQYF104Z25
	C321, C330, C342, C381		CKSQYF104Z25
	C225, C227, C229, C231, C233		CKSQYF473Z50
	C235, C238, C265, C267, C269		CKSQYF473Z50
	C271, C273, C275, C278		CKSQYF473Z50
	C314, C315, C332, C334		CQMA472J50
RESISTORS			
	R260, R300		RD1/6PM101J
	R242-R245, R250-R253		RD1/6PM103J
	R282-R285, R290-R293		RD1/6PM103J
	R259, R299		RD1/6PM122J
	R254, R255, R294, R295		RD1/6PM153J
	R257, R297		RD1/6PM162J
	R258, R298		RD1/6PM202J
	R239, R279, R360, R361		RD1/6PM220J
	R204, R218, R219		RD1/6PM221J
	R261, R301		RD1/6PM223J
	R236, R237, R240, R241		RD1/6PM303J
	R276, R277, R280, R281		RD1/6PM303J
	R354, R359		RD1/6PM390J
	R262, R263, R302, R303		RD1/6PM471J
	R256, R296		RD1/6PM751J
	R22		RN1/10SC750D
	R201, R205		RS2LMF560J
	Other Resistors		RS1/10S□□□J
OTHERS			
	3P CABLE HOLDER		51048-0300
	CN123	KR CONNECTOR 2P	B2B-PH-K-S
	CN226	KR CONNECTOR 4P	B4B-PH-K-R
	CN201	KR CONNECTOR 5P	B5B-PH-K-R
	CN203	2MM PITCH JUMPER CONNECTOR	SBRK06S-4
	PCB BINDER		VEF1040
	JA201	4P PIN JACK	VKB1066
	JA6	1P PIN JACK	VKB1077
	X201	CRYSTAL RESONATOR(16MHz)	VSS1051

Mark	No.	Description	Part No.
CNNB ASSY			
RESISTORS			
	All Resistors		RD1/6PM□□□J
OTHERS			
	CN205	KR CONNECTOR 3P	B3B-PH-K
	CN203	24P CONNECTOR	SLEM24S-2
	CN204	25P FFC CONNECTOR	SLEM25R-2
LOMB ASSY			
OTHERS			
	4P CABLE HOLDER		51048-0400
LOSB ASSY			
SWITCHES			
	S1-S3		DSG1015
FG ASSY			
SEMICONDUCTORS			
	D1		GP1S51V
OTHERS			
	J64	HOUSING ASSY (3P)	VKP2024
POWER SUPPLY ASSY			
SEMICONDUCTORS			
	IC21		UPC358C
	Q27, Q30, Q32, Q34, Q36		2SA933S
	Q20, Q22		2SB1134
	Q24		2SB1331
	Q25, Q29, Q31		2SC1740S
	Q21, Q23		2SD1667
	Q26		2SD2007
	Q35		DTA114ES
	Q28		DTA114TS
	Q33		DTC114ES
	Q37, Q38		DTC114TS
	D25-D27, D30, D31		AG01Z-V0
	D28		MTZJ39B/C
	D29		MTZJ7.5A
	D23		RK46
	D24		S2LA20
	D21, D22		S3L20U
	THY20		3P4J
COIL			
	L20 (10μH)		VTL1008

Mark	No.	Description	Part No.
RESISTORS			
	R22-R25	(47Ω)	VCN1033
	R56	(15Ω)	VCN1034
	R61	(4.7Ω)	VCN1035

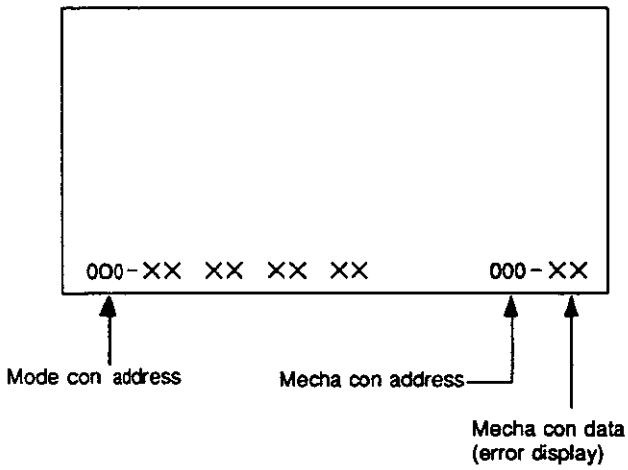
5. ERROR CODE TABLE

1) RAM DSP Functions

The interior RAM contents of the Mode Control Microcomputer (hereafter: mode con) and the Mechacontrol Microcomputer (hereafter: mecha con) can be output on a TV screen and error content can be determined. (RAM DSP function)

2) Starting RAM DSP Function

The screen shown below appears if the [ESC] and [DISPLAY] keys on the test mode remote control (GGF1067) are pressed in order.



Contents of mode con are displayed in 4byte units and contents of mecha con are displayed in 1byte units. In this condition, 1 is added to the display address if the TV/LDP key is pressed and 1 is subtracted if the CX key is pressed. Also, the mode con/mecha con address control switching is toggle displayed with the [DISPLAY] key.

Initial setting is set to 14C by pressing 3−digit display of mecha con address with [TV/LDP] key (or [CX] key). By doing so, error code appears as 2−digit mecha con data.

Explanation of information when analyzing the causes of CLD player errors.

Error	Contents	Conditions	Following Processes
00	no error	This is normal condition	
E0	undefined		
E1	undefined		
E2	undefined		
E3	undefined		
E4	spindle overcurrent detection error	When overcurrent to spindle motor is detected in play. When monitor starts and overcurrent port is "L" for 4 seconds after spindle of play or special play is slower than play for 5 seconds.	Spindle stops in free run. Play cannot be done. No recovery as long as set is not unplugged.
E5	FG abnormality error	① When frequency (5 seconds from spindle run) measured from FG is below 15 rpm when LD is started. ② When there is no 1/8 revolution even after 5 seconds have passed from acceleration finish when CD is started. ③ When frequency measured from FG is below 15 rpm even though CD: subcode/LD: Phillips code is readable or spindle is locked during play/search. In other cases, it is assumed that the above conditions appear in the FG sensor and an accurate frequency cannot be measured.	Spindle stops in free run. Free run is 90 sec. for LD and 15 sec. for CD/CDV. Play cannot be done after that. No recovery as long as set is not unplugged.
E6	partial short error	① When 1200 rpm cannot be reached even after a specific time (8 sec.) passes from spindle run when LD is started. ② When a specific frequency (416 rpm) cannot be reached even after 6 seconds pass from spindle acceleration finish when CD is started.	Spindle stops in free run. Normal operation resumes after that.
E7	undefined		
E8	R plate error	When abnormal condition is detected for 80 ms consecutively between the slider switch and the turn switch for 4 seconds after the power on.	•It does not accept except for power key. •When pressing the power key in this condition, turn it on immediately.
E9	undefined		
EA	undefined		
EB	undefined		
EC	undefined		
ED	undefined		

Error	Contents	Conditions	Following Processes
EE	undefined		
EF	undefined		
F0	undefined		
F1	picture stop detection	When Phillips code is decoded and picture stop is read.	Still (still at mecha con detection)
F2	undefined		
F3	segment play finish	When a designated address is reached.	Still or pause
F4	underfined		
F5	tray push	When tray is pushed when in open position.	Target goes to TOC lead
F6	no PH code	When Phillips code cannot be read when LD is started even if slider is moved FWD or REV slowly for 5 seconds.	Search, special play, and function are not carried out. When starting, play is carried out without initial search.
	PRD	When program area sub done can be read, but TOC section subcode cannot be read when CD is started.	Treated as CD−R segment recording disc. After initial search, only play is possible. Scanning and search are not possible.
F7	laser active error	When play inhibit or professional use is read from user's code and data track is read from sub code by LD, laser active disc is determined and play is suppressed.	Indicates "LD−ROM" on screen and stops. Play cannot be carried out unless disc is opened.
F8	loading error	① When loading operation goes over time (approx. 10 sec.). ② When assist at disc sense entry ends and is not tilt neutral. ③ When assist at set up entry ends and is not tilt neutral.	Reverses in loading direction once. Even then, if the time limit has been passed, loading is stopped.
F9	slider error	When slide assist goes over time (track count search 20 sec. forced movement 10 sec.).	Power is on, but slider does not move at all. In this situation, push power key to immediately turn power off.
FA	misclamp error	① When NG results from misclamp during set up. (Track loss often) ② When focus is not clear at time of spindle lock waiting. ③ When the spindle is stopped once before CDV A←→V area change, but stop is not carried out within 1.6 seconds, it is determined that there are two discs on each other and clamp error is set.	Open (stops at B−side)
FB	spindle error	① When spindle is not locked within 60 seconds from spindle run start during set up. ② When CAV/CLV determination is not finished within 60 seconds from spindle lock. ③ When code cannot be read for 10 − 15 continuous seconds with LD or 7 − 10 continuous seconds with CD/CDV. ④ When FG does not enter for 4 seconds and when not in recover mode at time of CD set up. At this time, it is stopped at free run.	Stop
FC	focus error	① When ND at set up entry and FLAG is standing. 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.	Open (stops at B−side)
FD	search error	① At search entry, LD is in sub code search or CD/CDV is in Phillips code search. ② When search does not end in determined time (CLV with TOC: 30 sec. others: 15 sec.) ③ In recover mode, spindle is locked, code is read and RCVCOUNT is 0.	Search is canceled and play carried out.
FE	TOC lead error	When TOC lead does not end within 15 seconds.	LD: no TOC CD: stop
FF	emergency	When recover mode is entered and return is read but cannot be carried out.	Stop

6. ADJUSTMENTS

6.1 TEST MODE

1) How to start test mode
With the VSOP ASSY test mode TP dropped to GND, the test mode is started by putting the power switch ON. (Fig. 1) After confirming that all FL indicators are lit, remove test mode TP and GND connection. Or, with power switch ON, press test mode remote control (GGF1067) ESC key and TEST key in order.

2) How to cancel test mode
Turn power switch OFF. Or, press test mode remote control ESC key.

3) Functions and key control when in test mode

Note: For keys not on player or on accompanying remote control, use test mode remote control (GGF1067)

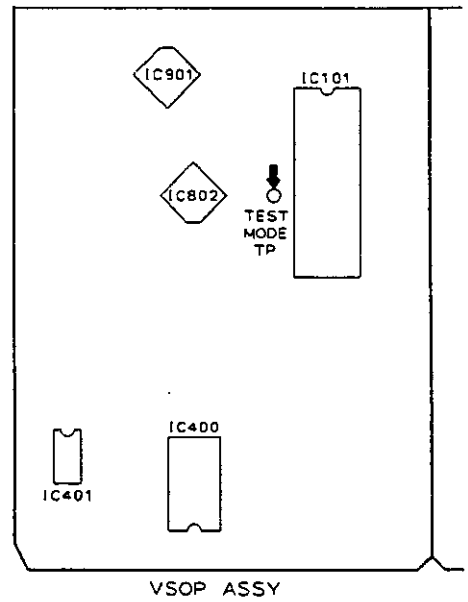


Fig. 1

• Key operation in the Test mode

Player Status	Key Operation	Function	Remarks
Tray Open	⏮/⏭ SKIP (Refer to Note 1)	⏮: Shifts the tray in the closed direction and also raises the turn table while pressing the key. ⏭: Shifts the tray in the open direction and also lowers the turn table while pressing the key.	
Tray Open	▶ PLAY	Clamps	
Clamp	▶ PLAY	Turns the disc through TRK Servo OFF	TRK-OFF
TRK Servo OFF	▶ PLAY	TRK Servo ON	TRK-ON
TRK Servo ON	▶ PLAY	TRK Servo OFF	TRK-OFF
TRK Servo ON	◀II/II▶ (STEP)	FOCS balance select	F-0/F-1
TILT Neutral	+ MULTI−SPEED	TILT Servo ON	T-□ : ON
TILT ON	−MULTI−SPEED	TILT Neutral	T-□ : N
TILT Neutral or ON	⏮/⏭ SKIP	Setting TILT Servo to OFF, can force TILT to move.	T-1 to T-E
Clamp	◀◀/▶▶ SCAN	Can force the slider to move	S-LD S-CDV S-CD S-IN
Play	II PAUSE	Still	
Play	■ STOP	Stop	
Stop	⏏ OPEN	Open	
Play	[+10] ⇩ [0] to [9] ⇩ [▶ PLAY]	Sets to SEARCH Lead Address Input mode. Designates the SEARCH lead address through keys 0 to 9. Press the CLEAR [C] key if the designated address is incorrect. Searches the designated address upon pressing the PLAY key.	

Note 1 : Press SKIP (⏮ / ⏭) Keys after the tray is set to open state by pressing Open (⏏) key. Because, in tray open state, pressing PLAY (▶) key causes it to set to clamp state and SKIP (⏮ / ⏭) keys can not function properly.

Table 1

● Player Operation in the Test Mode

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

· CD PLAYBACK

① Place the CD disc on the turn table.

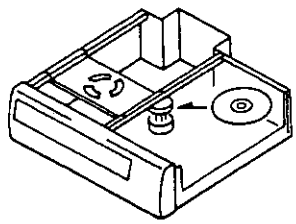


Fig. 2

② Press the PLAY (▶) key once.
(Twin gear starts to move.)

③ Push the cam plate (Fig. 3) in the direction of the arrow and wait until the CD disc is clamped.

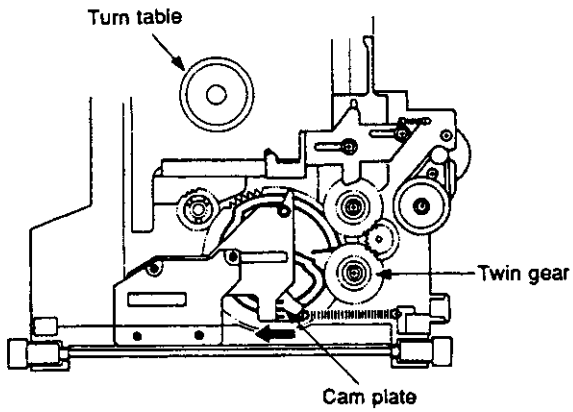
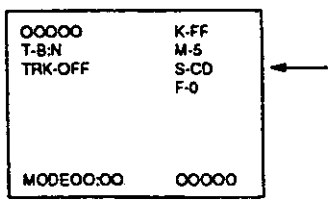


Fig. 3

④ Press the ◀◀ or ▶▶ keys to appear "S−CD"on the TV screen display.



TV screen display

Fig. 4

⑤ After pressing the PLAY (▶) key once to clamp the disc, press the PLAY (▶) key twice, disc will be normally playbacked.

· LD PLAYBACK

① Press the PLAY (▶) key once.
(Twin gear starts to move.)

② Press the SKIP REV (⏮) key to raise the turn table (spindle motor section) while pressing the cam plate (Fig. 3) in the direction of the arrow. Raise it to the position where the LD disc can be easily placed on the turn table. If the turn table is raised too high, lower it with the SKIP FWD (⏭) key.

③ Place the LD disc on the turn table and press the PLAY (▶) key once to clamp the disc.

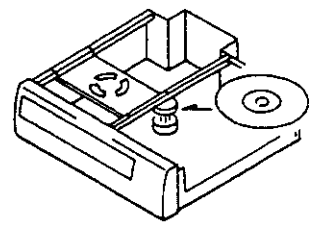
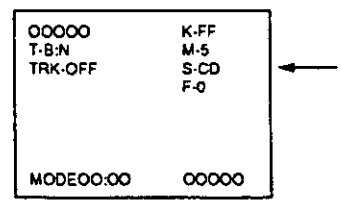


Fig. 5

④ Press the ◀◀ or ▶▶ keys to appear "S−LD"on the TV screen display.



TV screen display

Fig. 6

⑤ After pressing the PLAY (▶) key once to clamp the disc, press the PLAY (▶) key twice, disc will be normally playbacked.

6.2 ADJUSTMENT PRECAUTIONS

● Equipment and jigs needed for adjustment

- CD test disc (YEDS-7)
- LD test disc (GGV1003)
- Medium-sized blade screwdriver
- Small blade screwdriver
- Hexagonal wrench (straight type, size: 3mm)
- Resistor (10KΩ × 2, 47KΩ × 1)
- Large Phillips screwdriver
- Medium-sized Phillips screwdriver
- Two-channel oscilloscope (with delay)
- AF oscillator
- Frequency counter
- Digital voltmeter
- TV monitor
- Low pass filter

● Preparation for adjustment

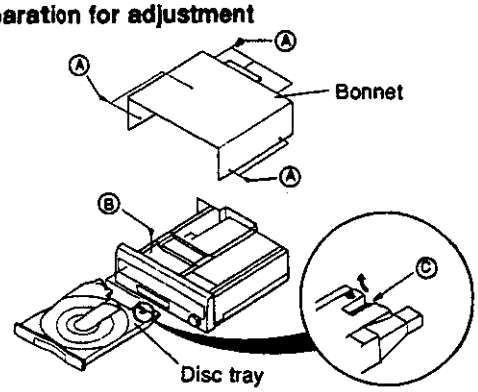


Fig. 1

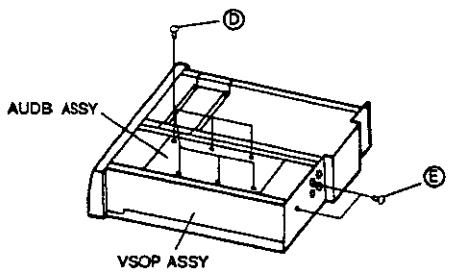


Fig. 2

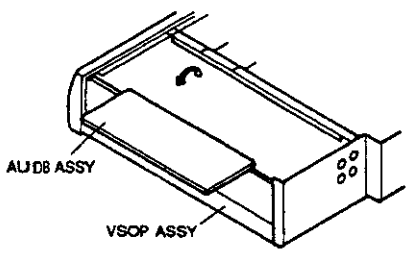


Fig. 3

● As shown in Fig. 4, fit VSOP assy into PCB holder on the chassis and by standing it against the inside of the chassis, the back side of the board (pattern side) can be diagnosed.

When carrying out 1.6.5 Electrical adjustment "3. master clock adjustment", the frequency of IC601 − ⑭ can be measured with the contact needle land that can be seen through the hole in the shield case in Fig. 4.

1. Remove the 7 screws Ⓐ that stabilize the bonnet and take off the bonnet. (Fig. 1)
2. Remove the 2 tray stopper screws Ⓑ and press the OPEN/CLOSE button to put the tray unit in the open position. (Fig. 1)
3. While pushing the hook on the right rear of the disc tray Ⓒ to the left, pull out the tray unit. (Fig. 1)
4. Remove the 6 screws Ⓓ that stabilize the AUDB ASSY. (Fig. 2)
5. Remove the 2 screws Ⓔ on the rear side. (Fig. 2)
6. Put AUDB ASSY in open position. (Fig. 3)

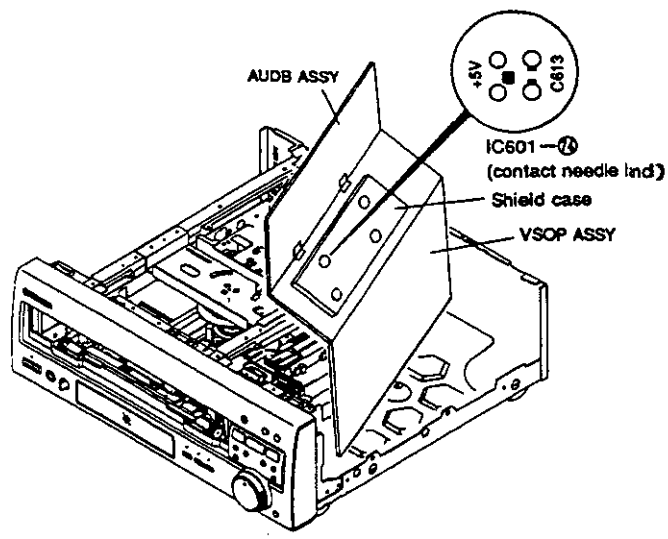


Fig. 4

● Before adjusting mechanism system

Note: Be careful not to turn centering adjustment screw and TAN adjustment screw past their adjustment range.

— Adjustment Range of Centering Adjustment Screw —

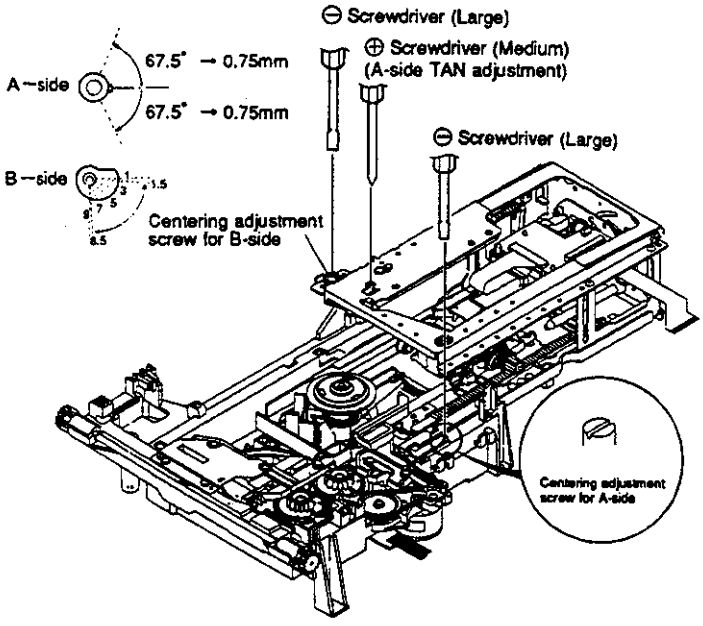


Fig. 5 Mechanism Assy Adjustment

— Adjustment Range of TAN Adjustment Screw —

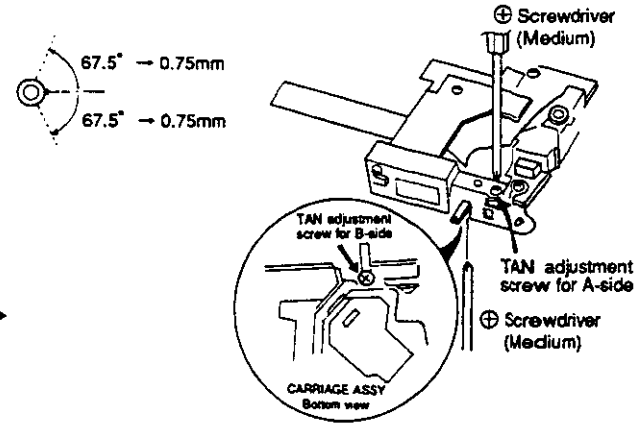


Fig. 6 Carriage Assy Adjustment

● Notes When Adjusting Centering

For both A—side and B—side, if the amplitude of the error waveform of the disc's innermost and outermost tracks at TRK — OFF are about the same, then course adjustment is not necessary.

If waveform S/N is bad and difficult to observe in "2. Coarse centering adjustment for A—Side play " and "6. Fine centering adjustment for A—Side play" use the low pass filter in diagram.

● Rack Assy Position When Adjusting Centering

When moving slider to inner position to adjust the innermost track of disc during centering adjustment, be careful not to keep the mechanism stopper and RACK Assy from bumping each other. (Fig. 7)

● Notes When Adjusting Pickup Assy

Please clean lens first when readjusting the PICKUP Assy that is on this product. Also, when changing PICKUP Assy, change whole CARRIAGE Assy (VWT1100).

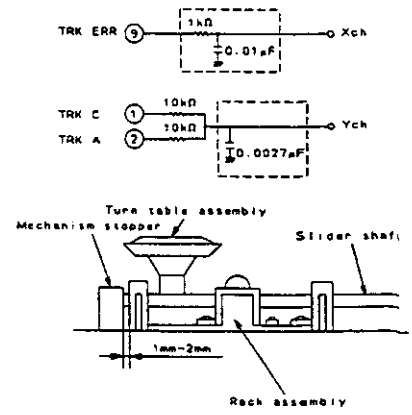


Fig.7

6.3 VSOP ASSY ADJUSTMENT LOCATION

● VSOP ASSY

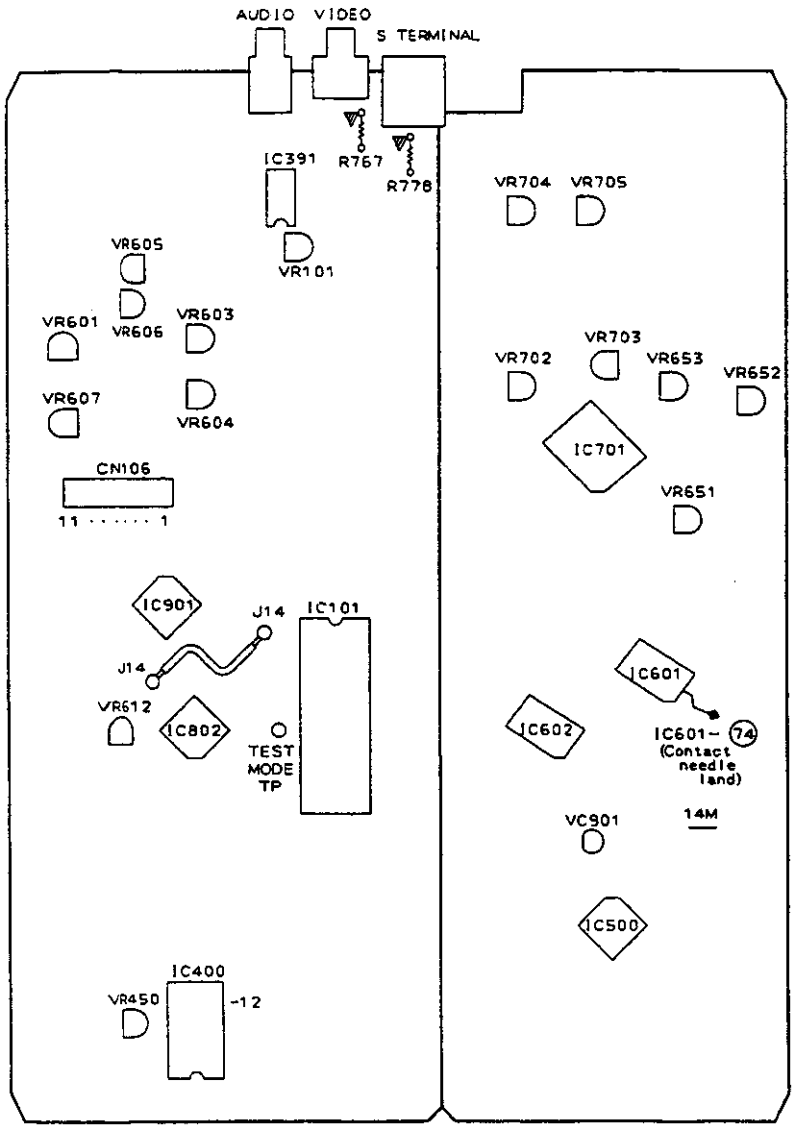
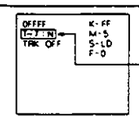
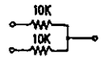
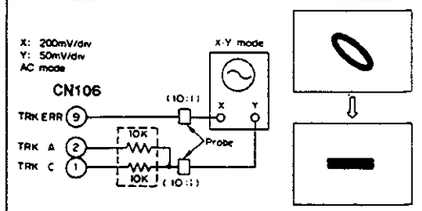
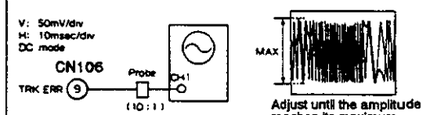
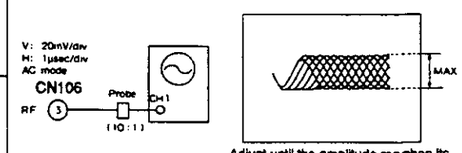
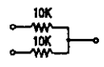
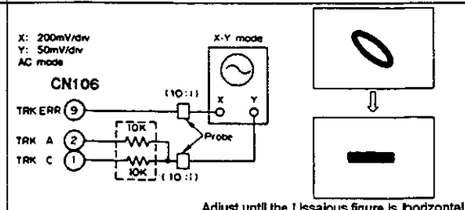
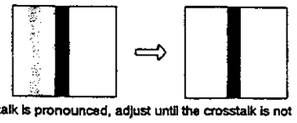
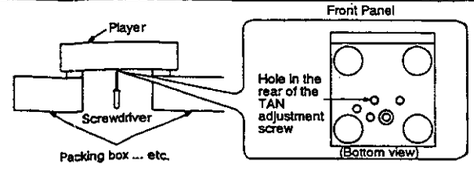


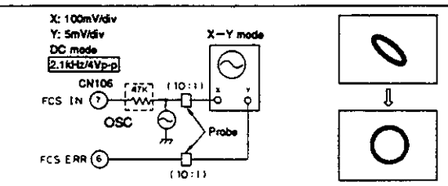
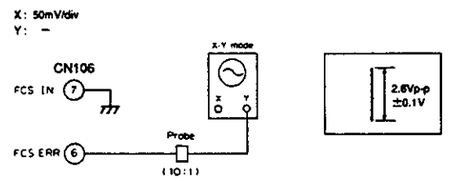
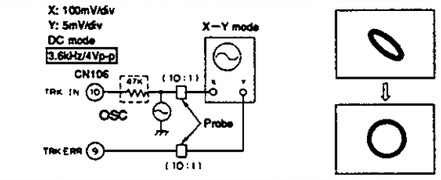
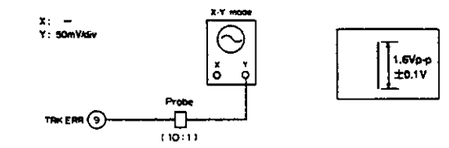
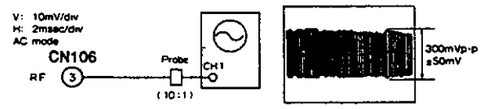
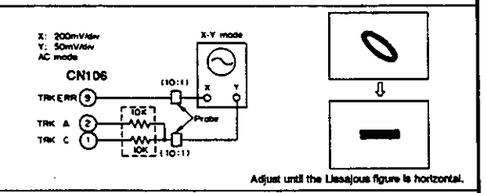
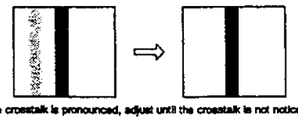
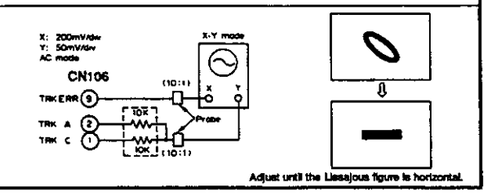
Fig. 1 Adjustment diagram of VSOP ASSY

VR607 : Tilt offset adjustment
VR605 : FCS Balance adjustment (TRK error max)
VR606 : FCS Balance adjustment (RF level max)
VR604 : FCS Servo loop gain adjustment
VR603 : TRKG Servo loop gain adjustment
VR601 : RF Level adjustment
VR612 : PLL Offset adjustment
VR101 : PHASE Adjustment
VC901 : Master clock adjustment
VR450 : Video level before A/D adjustment
VR651 : Video level adjustment
VR653 : Sync level adjustment
VR702 : Y OUT Level adjustment
VR704 : S−C SYNC Level adjustment
VR703 : C OUT Level adjustment
VR652 : V−SYNC Level adjustment
VR705 : S−V SYNC Level adjustment
(Order in adjustment)

6.4 MECHANICAL ADJUSTMENT

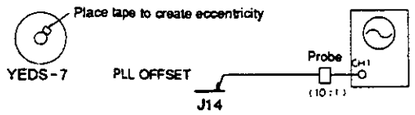
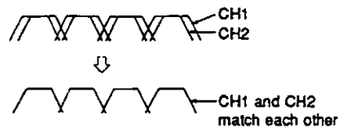
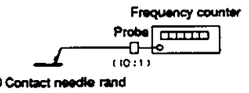
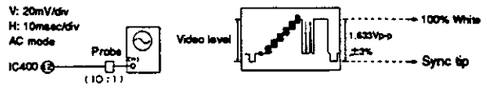
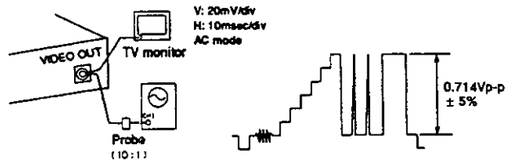
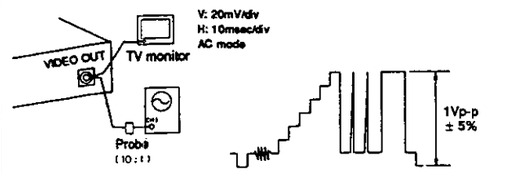
NOTE : All VRs and CNs (connectors) in the tables are parts of VSOP ASSY.

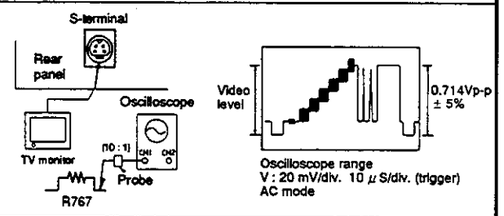
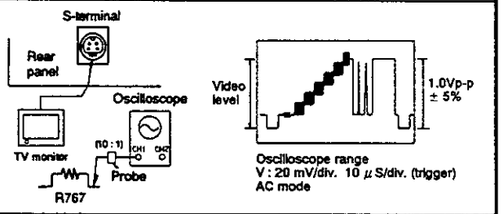
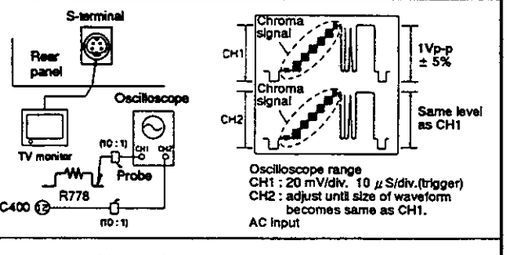
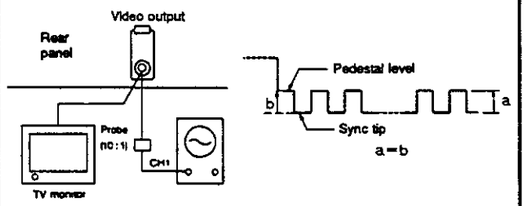
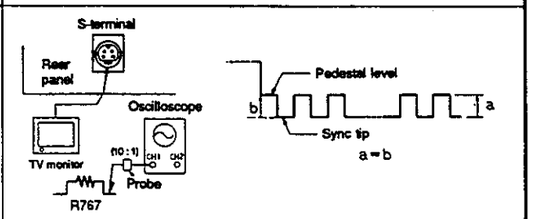
	Adjustment name	Adjustment point	Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
1	Tilt offset Check and adjustment	VR607	· TV monitor	Tilt indication on Test mode screen	· Power ON · Test mode · Disc not installed	1. Check if the tilt indication on the test mode screen is at T−6 to T−8. 2. If the tilt indication is not at T−6 to T−8, adjust VR607 until the tilt indication reaches T−6 to T−8.	 Adjusts this figure while looking at it on the test mode screen.
2	Coarse centering adjustment for A−side play	Mechanism assembly Centering adjustment screw for A−side play	· ⊖ Screwdriver (Large) · Oscilloscope · CD test disc · MIX resistor 	CN106 X : ⑨pin (TRK ERR) Y : ①+②pin (TRK SUM)	· Test mode TRK servo OFF Tilt servo ON · Innermost track of CD test disc which does not come in contact with the mechanical stopper.	Note : Be careful not to turn the centering adjustment screw past its limit. 1. Move the slider until it does not come in contact with the mechanical stopper at the slider position indication S−IN. 2. Observe TRK ERR (Xch) and TRK SUM (Ych) at the X−Y mode during TRK Servo OFF. 3. Adjust centering adjustment screw for A−side until the Lissajous' figure is horizontal.	 Adjust until the Lissajous figure is horizontal.
3	FCS balance adjustment (1) TRK ERR MAX	VR605	· Oscilloscope · CD test disc	CN106 ⑨pin (TRK ERR)	· Test mode TRK servo OFF Tilt servo ON · Inner track of CD test disc	1. Observe TRK ERR at CH1 of the oscilloscope during TRK Servo OFF. 2. Adjust VR605 until the amplitude of the waveform reaches its maximum and the envelope is very clear.	 Adjust until the amplitude reaches its maximum.
4	FCS balance adjustment (2) RF LEVEL MAX	VR606	· Oscilloscope · CD test disc	CN106 ③pin (RF)	· Test mode TRK servo ON Tilt servo ON · Inner track of CD test disc	1. Observe RF at CH1 of the oscilloscope at TRK Servo ON. 2. Adjust VR606 until the amplitude of the waveform reaches its maximum and the envelope is very clear.	 Adjust until the amplitude reaches its maximum and envelope is very clear.
5	Tangential direction angle adjustment for A−side play	Carriage assembly TAN adjustment screw for A−side play	· Oscilloscope · CD test disc · ⊕ Screwdriver (Medium)	CN106 ③pin (RF)	· Test mode TRK servo ON Tilt servo ON · Outermost track of CD test disc (position where TAN screw can be seen)	Note : Be careful not to turn the TAN adjustment screw past its limit. 1. Observe RF at CH1 of the oscilloscope at TRK Servo Close. 2. Turn TAN adjustment screw for A−side until the amplitude of the waveform reaches its maximum and the envelope is very clear. After adjustment, stabilize the screw with an adhesive.	
6	Fine centering adjustment for A−side play	Mechanism assembly Centering adjustment screw for A−side play	· Oscilloscope · CD test disc · MIX resistor 	CN106 X : ⑨pin (TRK ERR) Y : ①+②pin (TRK SUM)	· Test mode TRK servo OFF Tilt servo ON · Innermost track of CD test disc which does not come in contact with the mechanical stopper.	Note : Be careful not to turn the centering adjustment screw past its limit. Perform fine centering adjustment again by following the same procedure as in "Coarse centering adjustment for A−side play" (2). After adjustment, stabilize the screw with an adhesive.	 Adjust until the Lissajous figure is horizontal.
7	Crosstalk check and tilt offset adjustment.	VR607	· TV monitor · LD test disc	Crosstalk check screen	· Test mode TRK servo ON Tilt servo ON · LD test disc still #115	1. Search for address 115 of LD test disc and still the address. 2. Check the crosstalk. If the crosstalk is pronounced, adjust VR607 until the crosstalk is not noticeable.	 If the crosstalk is pronounced, adjust until the crosstalk is not noticeable.
	When the crosstalk is still noticeable in spite of the adjustment in (7), after carrying out the adjustment in (1) and bringing the tilt indication to T−6 to T−8, use a hexagonal wrench driver (straight type, size : 3mm) to adjust the TAN adjustment screw on the bottom side of the player through the LD test disc #115 STILL screen. Afterwards, perform the adjustment procedures from (6).						

	Adjustment name	Adjustment point		Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
8	FCS Servo loop gain adjustment (Perform with either method A or B)	A	VR604	· Oscilloscope · LD test disc · AF Oscillator · Resistor (47kΩ)	CN106 X : ⑦pin FCS IN Y : ⑥pin FCS ERR	· Test mode TRK servo ON Tilt servo ON · LD test disc #15,000still	1. Xch : Connect to ⑦pin with 47kΩ Ych : Connect to ⑥pin 2. Search #15,000 of LD test disc and still the address. 3. Connect AF oscillator between Xch and 47kΩ and adjust VR604 until Lissajous' figure is a circle.	
		B	VR604	· Oscilloscope · LD test disc · Clip etc. (Short GND—⑦pin)	CN106 X : — Y : ⑥pin FCS ERR ⑦pinGND (⑦, ⑧pin Short)	· Test mode · Stop mode · F—1	1. Ych : connect to ⑧pin. Drop ⑦pin to GND. 2. Put in LD test disc, press reverse side of skip key and bring F – 0 to F – 1. 3. Press brake and adjust VR604 until the waveform level is 2.6 Vp—p±0.1 V.	
9	TRK Servo loop gain adjustment (Perform with either method A or B)	A	VR603	· Oscilloscope · LD test disc · AF Oscillator · Resistor (47kΩ)	CN106 X : ⑩pin TRK IN Y : ⑨pin TRK ERR	· Test mode TRK servo ON Tilt servo ON · LD test disc #15,000still	1. Xch : Connect to ⑩pin with 47kΩ Ych : Connect to ⑨pin 2. Search #15,000 of LD test disc and still the address. 3. Connect AF oscillator between Xch and 47kΩ and adjust VR603 until Lissajous' figure is a circle.	
		B	VR603	· Oscilloscope · LD test disc	CN106 X : — Y : ⑨pin TRK ERR	· Test mode · TRK servo ON Tilt servo ON · F—1 · LD test disc #15,000still	1. Ych : connect to ⑨pin. 2. Search #15,000 of LD test disc and still the address. 3. Adjust VR603 until the waveform level is 1.6 Vp—p±0.1 V.	
10	RF level adjustment	VR601		· Oscilloscope · LD test disc	CN106 ③pin (RF)	· Test mode TRK servo ON Tilt servo ON · LD test disc #15,000still	1. Search for address #15,000 of LD test disc, still the address, and observe RF at CH1. 2. Adjust VR601 until RF amplitude is 300mVp—p±50 mV.	
11	Coarse centering adjustment for B—side play	Centering adjustment screw for B—side play		· Oscilloscope · LD test disc · MIX resistor 10K 10K · ⊖ Screwdriver (Large)	CH1 : CN106—9 (TRKG ERR) CH2 : CN106—1and 2 (TRKG SUM) (X-Y mode)	· Test mode #100still TRK servo ON/OFF Tilt servo ON	Note : Be careful not to turn the centering adjustment screw past its limit. 1. Move carriage Ass'y toward B—side and still with test disc #100. (TRKG ON) 2. Observe TRK ERR (Xch) and TRK SUM (Ych) at the X—Y mode during TRK Servo OFF. 3. Turn centering adjustment screw for B—side play until the Lissajous' figure is horizontal.	
12	Tangential direction angle adjustment for B—side play	TAN adjustment screw for B—side play		· Oscilloscope · LD test disc · ⊕ Screwdriver (Medium)	Video output terminal (TV monitor)	· Test mode #115still TRK servo ON Tilt servo ON	Note : Be careful not to turn the TAN adjustment screw past its limit. 1. Move carriage Ass'y toward B—side and still with test disc #115. (TRKG ON) 2. Turn TAN adjustment screw for B—side play until RF waveform amplitude is at its maximum. 3. Check to see that crosstalk on monitor screen is at its minimum.	
13	Fine centering adjustment for B—side play	Centering adjustment screw for B—side play		· Oscilloscope · LD test disc · MIX resistor 10K 10K · ⊖ Screwdriver (Large)	CH1 : CN106—9 (TRKG ERR) CH2 : CN106—1and 2 (TRKG SUM) (X-Y mode)	· Test mode #100still TRK servo ON/OFF Tilt servo ON	Perform fine adjustment again following same steps as in procedure (11) "Course centering adjustment."	

6.5 ELECTRICAL ADJUSTMENT

ADJUSTMENT TABLE OF VSOP ASSY

	Adjustment name	Adjustment point	Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
1	PLL offset adjustment	VR612	· DC Volt meter · CD test disc	J14(JP)	· Test mode Tilt servo ON/OFF TRK servo ON/OFF · Digital sound play	· Place tape on inner track of test disc (CD) to create eccentricity. · At TRK—OFF, play the innermost track of the above CD. At that time, observe PLL OFFSET voltage [J14 (JP)]. · Next, take of tape from CD, and at TRK—ON, TILT ON, play innermost track again. Adjust VR612 until PLL OFFSET voltage value is same as at time of eccentricity.	
2	PHASE adjustment	VR101	· Oscilloscope · CD test disc	IC391 ㉔、㉚	· Tilt servo ON · TRK servo OFF · Digital sound play	Connect CH1 of oscilloscope and IC391—㉔ to CH2 and ㉚ respectively. When CH2 has been inverted, adjust VR101 so that waveform phase of CH1 and CH2 match each other.	
3	Master clock adjustment	VC901	· Frequency counter	IC601—⑭ (Contact needle land) (Refer to 1.6.2 ADJUSTMENT PRE CAUTIONS)	· POWER ON · STOP	Connect IC601—⑭ (contact needle land) and frequency counter. With power ON, adjust VC901 so that frequency is 14.31818 MHz ±10Hz.	
4	Video level adjustment before A/D	VR450 (VIDEO LEV.)I	· Oscilloscope · LD test disc	· IC400 (PA0058) ⑫ pin	· Normal mode · LD test disc #19,900still	Connect IC400 ⑫pin and oscilloscope. Observe video signal during still playback LD test disc #19,000 (composite). Adjust VR450 until level from sync tip of composite test signal to 100% white becomes 1.633 Vp—p ±3%.	
5	Video level adjustment	VR651	· TV monitor · Oscilloscope · LD test disc	Video output terminal (75Ω terminated)	· Normal mode · LD test disc #19,900still	Terminate main body's video output terminal with 75Ω and connect to oscilloscope (can be connected to TV monitor). During still playback #19,900 of LD test disc, observe video signal. Adjust VR651 until level from pedestal to 100% white becomes 0.714Vp-p ± 5%.	
6	Sync level adjustment	VR653	· TV monitor · Oscilloscope · LD test disc	Video output terminal (75Ω terminated)	· Normal mode · LD test disc #19,900still	Terminate main body's video output terminal with 75Ω and connect to oscilloscope (can be connected to TV monitor). During still playback #19,900 of LD test disc, observe video signal. Adjust VR653 until level from sync tip to 100% white becomes 1.0Vp-p ± 5%.	

	Adjustment name	Adjustment point	Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
7	Y output level adjustment	VR702	· TV monitor · Oscilloscope · LD test disc	Foot of R767	· Normal mode · LD test disc #19,900still · S—terminal (75Ω terminated)	Connect foot of R767 to oscilloscope. (S—terminal is terminated with 75Ω) During still playback #19,900 of LD test disc, observe video signal. Adjust VR702 until level from sync tip to 100% white becomes 0.714Vp-p ± 5%.	
8	S—C SYNC level adjustment	VR704	· TV monitor · Oscilloscope · LD test disc	Foot of R767	· Normal mode · LD test disc #19,900still · S—terminal (75Ω terminated)	Connect foot of R767 to oscilloscope. (S—terminal is terminated with 75Ω) During still playback #19,900 of LD test disc, observe video signal. Adjust VR704 until level from sync tip to 100% white becomes 1.0Vp-p ± 5%.	
9	C output level adjustment	VR703	· TV monitor · Oscilloscope · LD test disc	Foot of R778 IC400 (PA0058A) ⑫ pin	· Normal mode · LD test disc #19,900still · S—terminal (75Ω terminated)	Terminate S—terminal with 75Ω and connect foot of R778 to CH1 of oscilloscope. Connect IC400 ⑫ pin and CH2 of oscilloscope. With oscilloscope CH2 input level knob (V/Div), adjust so that level from video signal sync tip to 100% white for CH1 and CH2 are equal. Adjust VR703 until chroma signal levels of CH1 and CH2 are same size.	
10	V—VSYNC level adjustment	VR652	· TV monitor · Oscilloscope · LD test disc	Video output terminal (75Ω terminated)	· Normal mode · LD test disc #19,900still	Terminate main body's video output terminal with 75Ω and connect to oscilloscope (can be connected to TV monitor). During still playback #19,900 of LD test disc, observe video signal with trigger by V rate. Adjust VR652 until V sector's later period parity pulse pedestal (a) and preceding period parity pulse pedestal (b) are equal.	
11	S—VSYNC level adjustment	VR705	· TV monitor · Oscilloscope · LD test disc	Foot of R767	· Normal mode · LD test disc #19,900still · S terminal (75Ω terminated)	Terminate S—terminal with 75Ω and connect foot of R767 to oscilloscope (can be connected to TV monitor). During still playback #19,900 of LD test disc, observe Y signal with trigger by V rate. Adjust VR705 until V sector's later period parity pulse pedestal (a) and preceding period parity pulse pedestal (b) are equal.	

7. IC INFORMATION

■PD3317A (FLKY ASSY : IC100)

● Mode control IC

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

● Pin function

No.	Pin name	I/O	Function
1	VCC	I	Power supply (+5V)
2	G−CS	O	Graphics sub microcomputer (PDC014A) communication request
3	XSCK	I/O	Serial communication clock
4	S−MTOF	I	Serial communication data input
5	S−FTOM	O	Serial communication data output
6	XRESET (OUT)	O	Mother board reset output
7	XCS	O	Chara. Gen. (PD0154A) communication request
8	SYNCRO IN	I	CD deck synchro input
9	SYNCRO OUT	O	CD deck synchro output
10	AVCC	I	+5V
11	JOG2	I	Jog dial data input
12	JOG1	I	Jog dial data input
13	KIN0	I	Key data input
14	KIN1		
15	KIN2		
16	KIN3		
17	KIN4		
18		I	Not used (GND)
19	AVss	I	GND
20	TEST	I	GND
21	X2	O	Not used (N. C)
22	X1	I	+5V
23	Vss	I	GND
24	OSC1	I	Oscillator (8MHz)
25	OSC2	O	
26	XRESET (IN)	I	CPU Reset (L:reset)
27	SHAKE (ACK)	I/O	Mechanism control communication request (Mode control acknowledge output)
28	SEL IR	I	Remote control input
29	P. ON	O	Mother board power supply swiching output
30	LED1	O	LED OUT : theater mode
31	(OEMNO1)	I	OEM Select port (L:PIONNER, H:MARANTZ)
32	LED2	O	LED OUT : One shot memory
33	LED5	O	LEDOUT : FL OFF
34	LED4	O	LED OUT : Direct CD
35	LED3	O	LED OUT : Graphics
36	S−SCAN	O	Shuttle scan output
37	K	O	Display segment output
38	J	O	Display segment output
39	I	O	Display segment output
40	H (Ks0)	O	Display segment output/ Key scan output
41	G (Ks1)	O	Display segment output/ Key scan output
42	F (Ks2)	O	Display segment output/ Key scan output
43	E (Ks3)	O	Display segment output/ Key scan output
44	D	O	Display segment output
45	C	O	Display segment output
46	B	O	Display segment output
47	A	O	Display segment output
48	Vdisp	I	FL Power supply (−27V)
49		O	Not used (N. C)
50		O	Not used (N. C)
51	G10	O	Display grid output
52	G9		
53	G8		
54	G7		
55	G6		
56	G5		
57	G4		
58	G3		
59	G2		
60	G1		
61	LED0	O	LED OUT : Standby
62	J/E	I	Destination select power (L : Japan H : north America)
63	W.D.F	O	Pulse output for watchdog timer
64	G−EN	I	Graphics sub microcomputer communication enable

■ PD0226A (VSOP ASSY : IC101)

● Mechanism control IC

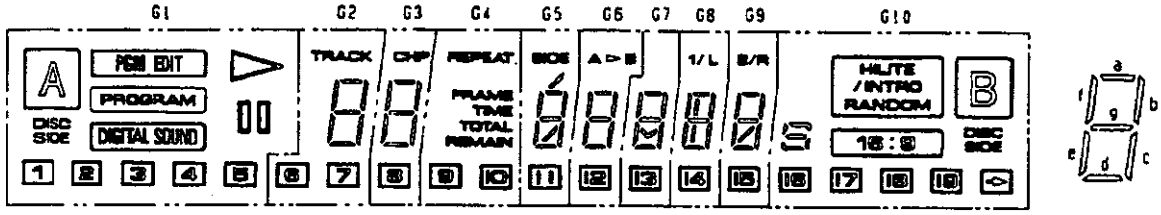
● Pin function

No.	Pin name	I/O	Function
1	+5V	I	Power connection pin Impresses 5V±10%.
2	FBAL	O	Focus balance control 1: TEMAX 0: RFMAX
3	XANA	O	Digital/analog audio switch signal output pin "H" = digital, "L" = analog
4	RF CORR	O	RF collection switch signal output pin H = gain up, CAV inner circuit gain up
5	NC	O	Not used
6	SLD POS	I	Pick up position detection switch input pin (A/D input port)
7	SLD ERR	I	Slider error signal input pin (A/D input port)
8	TILT ERR	I	Tilt sensor output signal input pin (A/D input port)
9	TABL ERR	I	Tracking balance error signal input pin (A/D input port)
10	FSEQ	I	Sub−code sync conformity detection signal input pin Conformity: H Other: L
11	WRQ	I	Sub−code Q reading OK signal input pin OK: H NG:L
12	TBAL DRV	O	Tracking Off−set control signal output pin
13	RWC	O	DSP reading/writing command signal output pin READ: L WRITE: H
14	XCD	O	LD/CD switching signal output pin LD: H CD: L
15	SQOUT	I	DSP reading command data input pin. SUBQ is read out.
16	COIN	O	DSP writing command data output pin
17	CQCK	O	DSP reading/writing command clock output pin. Start−up reading.
18	SLD DRV	O	Slider control signal output pin A−side 5V−FWD, 0V−REV (B−side is opposite), 2.5V−STOP
19	SII	I	Input pin for data from mode control IC
20	SOI	O	Serial data output to mode control IC
21	SCKI	O	Clock for serial communication with mode control IC
22	TZC	I	Tracking error zero cross signal input pin
23	SHAKE	I/O	Handshake signal pin for data communication with mode control IC
24	MUTE	O	Audio line sound mute control signal output pin MUTE: H MUTE CANCEL: L
25	PVCLATCH	O	Latch output of serial control for digital filter IC PD0116A. Latches at falling edge.
26	XPBV	I	LD/CDV play vertical synchronous signal input pin vertical synchronous: L
27	GND	I	GND grounding for A/D conversion
28	XRESET	I	Reset signal input pin "L" = reset "H" = reset cancel
29	XIN	I	9MHz clock oscillation input pin
30	XOUT	O	9MHz clock oscillation output pin
31	NC	O	Not used. Since it is for only ϕ output, it cannot be used for anything else.
32	GND	I	GND grounding
33	DETAMP	I	Spindle overcurrent detection signal input pin overcurrent: L normal: H
34	XFOK	I	Focus servo lock signal input pin lock: L unlock: H
35	MEMORY	I	Memory yes/no determination input pin memory yes: H memory no: L
36	TBCH	I	Input pin for reference H−SYNC signal from DVP
37	FG	I	Spindle motor FG signal input pin 24 outputs per rotation. Used after dividing by 3 in microcomputer.
38	DATA	I	Input pin for Phillips code decoder with built in mechanism controller
39	XPBH	I	Play H−SYNC input for Phillips code decoder
40	XPBV	I	Play V−SYNC input for Phillips code decoder
41	NC	O	Not used
42	DIRECT	O	CD direct video line power off signal output pin Video PWOFF: H normal: L
43	THOLD	I	Track jump accelerating/decelerating signal input pin accelerating/decelerating: H other: L

No.	Pin name	I/O	Function
44	XPLAY	O	Outputs mode of spindle. 0: in servo 1: other
45	XCX	O	Analog sound CX noise reduction switching signal output pin. ON: L OFF: H
46	SQ2	O	Analog voice switching signal output pin 2/R squelch: H
47	SQ1	O	Analog voice switching signal output pin 1/L squelch: H
48	DVPLATCH	O	PD0146 serial latch signal output pin. Latches at falling edge.
49	TBCLOCK	I	Spindle lock signal input pin. Lock: H Unlock: L
50	XCLV	O	CAV/CLV switching signal output pin. "H" = CAV, "L" = CLV
51	DATA INH	O	Output pin that carries out Phillips code data inhibit. H: normal L: inhibit
52	NR OFF	O	Noise reduction control by VDEM (Output pin) 0: normal 1: no NR
53	WFM	I	DVP odd/even number field determination signal input pin. odd: H even: L
54	SO3	O	Serial 3 data signal output pin
55	SCK3	O	Serial 3 clock signal output pin
56	MCNTLATCH	O	PD3212 serial latch signal output pin. Latches at falling edge.
57	LDG	O	Used when in LD−G mode. H: in LDG L: normal
58	16:9	O	16:9 switching signal output pin 16:9 "H" 4:3 (normal) "L"
59	SW1	I	Switch input pin for loading/tilt position detection
60	SW2	I	Switch input pin for loading/tilt position detection
61	SW3	I	Switch input pin for loading/tilt position detection
62	TILT DRV	O	Load/tilt control output pin 0.5V − tray IN, OUT/tilt DOWN, UP 2.5V − STOP
63	XTURNB	I	γ turn position detection signal input pin "L" = B−side "L" = A−side, turning
64	XTURNA	I	γ turn position detection signal input pin "L" = A−side "L" = B−side, turning

8. FL INFORMATION

- FL DISPLAY INFORMATION (V100 : VAW1032)



PIN ASSIGNMENT

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Assignment	F	F	F	NP	NP	NP	NP	NP	NP	NP	NP	G1	G2	G3	G4	G5

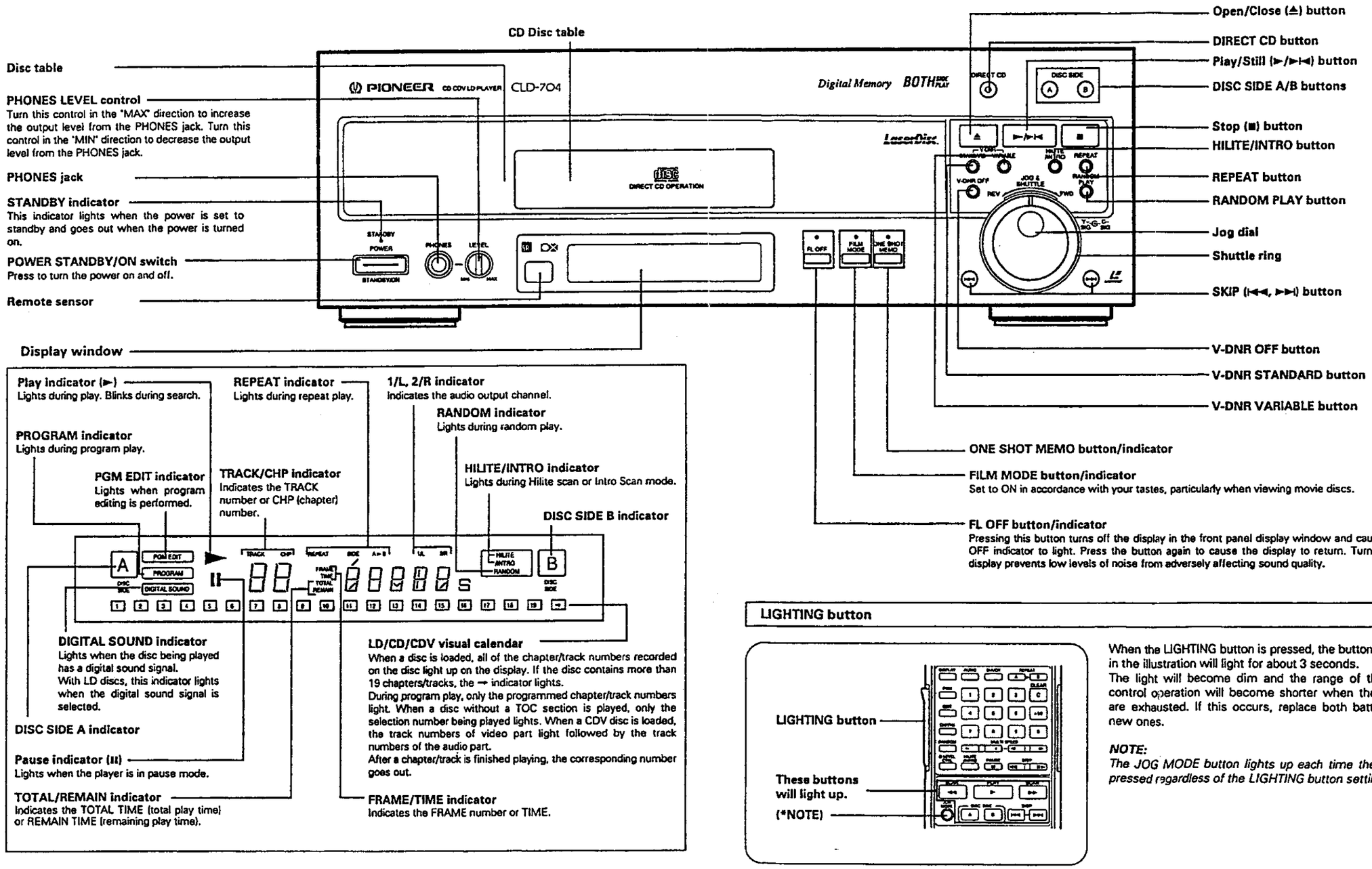
Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Assignment	G6	G7	G8	G9	G10	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11

Pin No.	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Assignment	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	F	F	F

F:Filament G1~G12:Grid a~l:Anode NP:No pin

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10
P1	A	a	a	FRAME	a	a	a	a	a	B
P2	PGM EDIT	b	b	TIME	b	b	b	b	b	HILITE /INTRO
P3	PROGRAM	c	c	TOTAL	c	c	c	c	c	RANDOM
P4	DIGITAL SOUND	d	d	REMAIN	d	d	d	d	d	
P5	▷	e	e		e	e	e	e	e	16:9
P6	▯▯	f	f		f	f	f	f	f	
P7	1	g	g		g	g	g	g	g	16
P8	2	TRACK	CHP	REPEAT	SIDE	A	∨			17
P9	3				(UPPER)	►		1/L	2/R	18
P10	4	6		9	(LOWER)	B				19
P11	5	7	8	10	11	12	13	14	15	

9. PANEL FACILITIES



LIGHTING button

When the LIGHTING button is pressed, the buttons indicated in the illustration will light for about 3 seconds.
The light will become dim and the range of the remote control operation will become shorter when the batteries are exhausted. If this occurs, replace both batteries with new ones.

NOTE:
The JOG MODE button lights up each time the button is pressed regardless of the LIGHTING button setting.

10. SPECIFICATIONS

1. General

System ..... LaserVision Disc system and Compact Disc digital audio system
Laser ..... Semiconductor laser wavelength 780 nm
Power requirements ..... AC 120 V, 60 Hz
Power consumption ..... 46 W
Weight ..... 8.4 kg (18 lbs 8 oz)
Dimensions ..... 420 (W) x 434 (D) x 140 (H) mm
16-9/16 (W) x 17-1/16 (D) x 5-1/2 (H) in
Operating temperature ..... +5°C ~ +35°C (41°F - 95°F)
Operating humidity ..... 5% ~ 85%
(There should be no condensation of moisture.)

2. Disc

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

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

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

** Actual playback time differs for each disc.*

3. Video characteristics (two pairs)

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

4. S-Video output (two pairs)

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

5. 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

Digital Audio Characteristics

Frequency response	4 Hz - 20 kHz (EIAJ)
SN ratio	116 dB (EIAJ)
Dynamic range	99 dB (EIAJ)
Total harmonic distortion	0.0017% (EIAJ)
Wow and flutter	Limit of measurement (EIAJ)

6. Other Terminals

Control input/output ..... Both miniature jacks
Optical digital output ..... Optical digital jack
Coaxial digital output ..... RCA jack
CD-DECK synchro ..... Miniature jack
AC-3 RF OUT ..... RCA jack

7. Accessories

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

	Function	Standard play Disc (CAV)	Extended play Disc (CLV)	Compact Disc with Video	Compact Disc
Basic Functions	Two-side play	YES	YES	NO	NO
	Single-side play	YES	YES	YES	YES
	Pause	YES	YES	YES	YES
	Stop	YES	YES	YES	YES
Search	Fast forward (forward and reverse)	YES	YES	YES	YES
	Chapter/Track skip	YES	YES	YES	YES
	Direct chapter/Track number search	YES	YES	YES	YES
	Frame number search	YES	NO	NO	NO
	Time number search	NO	YES	YES	YES
	Absolute time search	NO	NO	NO	YES
Program	Chapter/Track program play	YES	YES	YES	YES
	Program correction	YES	YES	YES	YES
Repeat	Repeat between 2 points	YES	YES	YES	YES
	Memory repeat	YES	YES	YES	YES
	Chapter/Track repeat	YES	YES	YES	YES
	One-side repeat	YES	YES	YES	YES
	Two-side repeat	YES	YES	NO	NO
	Program repeat	YES	YES	YES	YES
	Random repeat	YES*1	YES*1	YES	YES
	Program random repeat	YES	YES	YES	YES
Trick play	Still/Step	YES	YES	YES*5	NO
	Multi-speed (Forward/reverse 9-level variable)	YES	YES	YES*5	NO
	Jog dial/Shuttle ring	YES	YES	YES	YES
Time display	Elapsed time display	NO	YES	YES	YES
	Absolute time display	YES*1	NO	NO	YES
	Remaining track time display	NO	NO	YES	YES
	Remaining total time display	YES*1	YES*1	YES	YES
	Total number of selections, total time display	YES*1	YES*1	YES	YES
Others	CX system ON/OFF	YES*2	YES*2	NO	NO
	Auto Digital/Analog switch	YES*3	YES*3	NO	NO
	One-shot memory	YES	YES	YES*6	NO
	Audio channel selection (Stereo, 1/L, 2/R)	YES	YES	YES	YES
	Hi-Lite scan	NO	NO	YES*4	YES
	Intro scan	YES	YES	YES*5	NO
	Digital level control	YES*3	YES*3	YES	YES
	Compu program/Auto program edit	YES*1	YES*1	YES	YES

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

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

OTHER FUNCTIONS

- Display ON/OFF, Visual Calendar Display
- Direct CD, Random Playback
- Digital Audio for LaserVision Discs
- V-DNR