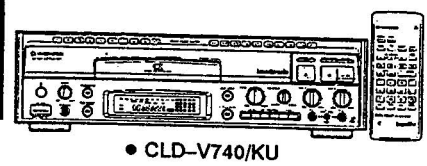
PIONEER®
The Art of Entertainment

Service Manual



• CLD–V740/KU

ORDER NO.
ARP2803

CD CDV LD PLAYER

CLD-V740
CLD-1720K

CLD–V740 AND CLD–1720K HAVE THE FOLLOWING :

Type	Model		Power Requirement	Remarks
	CLD–V740	CLD–1720K		
KU	O	–	AC120V only	
KC	O	–	AC120V only	
SD	–	O	AC110V, 120–127V, 220V, 240V (switchable)	

- **This manual is applicable to the following : CLD–V740/KU and KC ; CLD–1720K/SD.**
- **For the following : CLD–V740/KC; CLD–1720K/SD, refer to page 55.**
- **For the disassembly and mechanism descriptions, refer to the service manual ARP2528 for CLD–S201 and CLD–S250.**

CONTENTS

1. SAFETY INFORMATION 2
2. EXPLODED VIEWS, PACKING AND PARTS LIST 3
3. SCHEMATIC AND PCB CONNECTION DIAGRAMS 16
4. PCB PARTS LIST 41
5. ADJUSTMENTS 46
6. FL INFORMATION 53
7. IC INFORMATION 54
8. FOR CLD–V740/KC AND CLD–1720K/SD 55
9. CONNECTIONS 56
10. PANEL FACILITIES 58
11. SPECIFICATIONS 60

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 300 Allstate Parkway Markham, Ontario L3R 0P2 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

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1. SAFETY INFORMATION

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

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

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

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

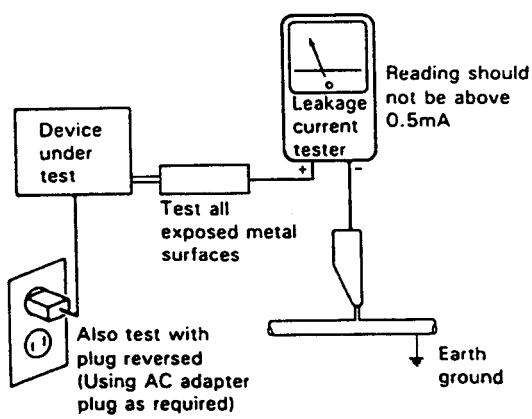
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

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

LEAKAGE CURRENT CHECK

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



AC Leakage Test

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

2. PRODUCT SAFETY NOTICE

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

Electrical components having such features are identified by marking with a ⚠ 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.

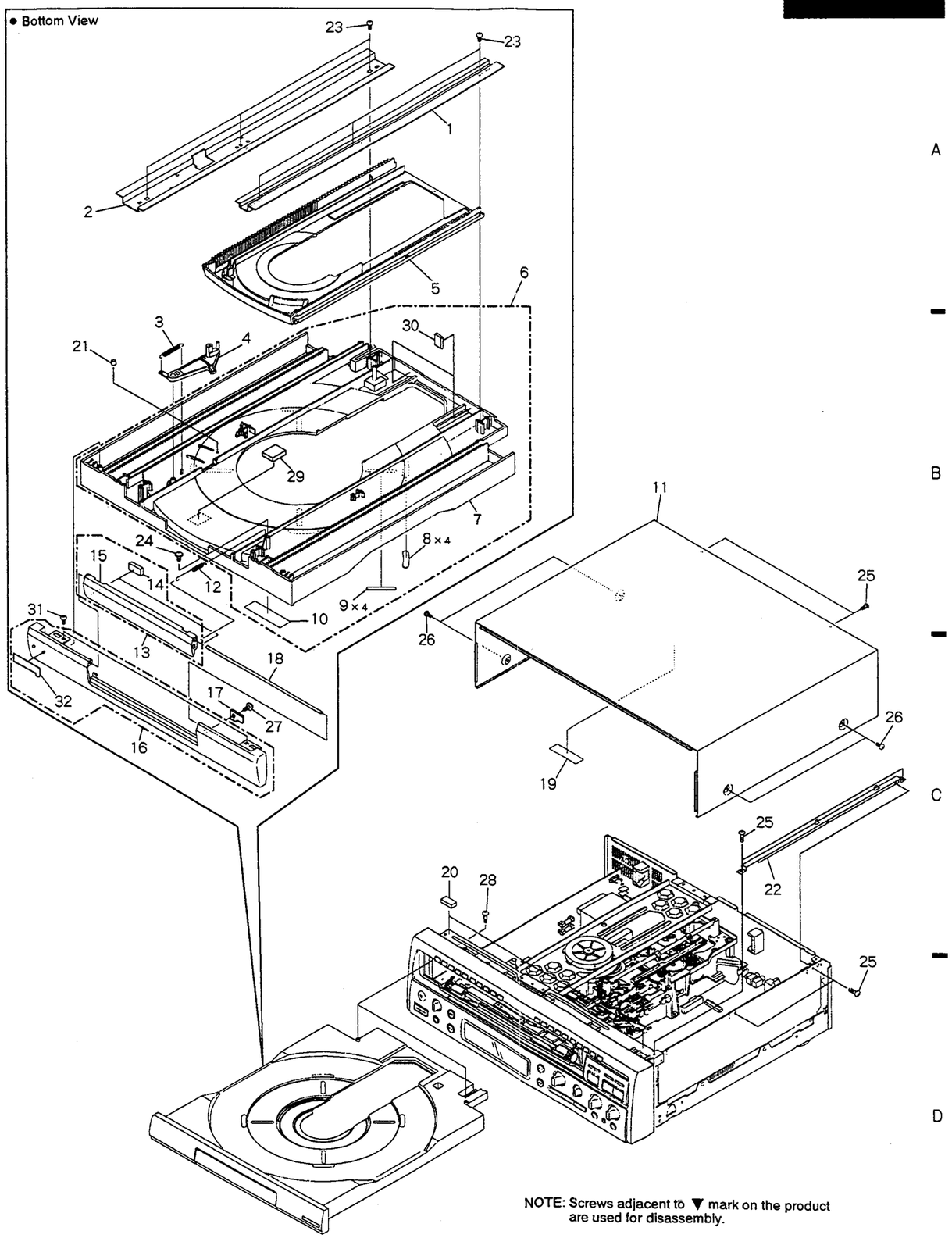
2. EXPLODED VIEWS, PACKING AND PARTS LIST

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

(1) EXTERIOR SECTION

Parts List

Mark	No.	Description	Part No.
	1	Guide plate (L)	VNE1805
	2	Guide plate (R)	VNE1806
	3	Lock plate spring	VBH1188
	4	Lock plate	VNL1513
	5	CD tray	VNK1992
	6	Tray assembly-S	VXX1885
NSP	7	LD tray	VNK1991
	8	Disc pad (Large)	VEC1191
	9	Disc pad (C)	VEC1380
NSP	10	Carry label	VRW1289
	11	Bonnet S	VXX1898
	12	Door spring	VBH1202
	13	CD door assembly-S	VXX1779
	14	Cushion	VEC1578
NSP	15	CD door	VNK2075
	16	Tray panel assembly	VXA1970
	17	Door holder	VNE1812
	18	Door shaft	VLL1441
NSP	19	65 label	ORW1069
NSP	20	Spacer	VEC1585
	21	Tray rubber	VEB1091
NSP	22	PCB holder	VNE1830
	23	Screw	BPZ30P060FCU
	24	Screw	VBA1034
	25	Screw	BBZ30P080FCC
	26	Screw	BCZ40P060FZK
	27	Screw	IPZ20P050FMC
	28	Screw	VBA1032
NSP	29	Damp cushion	VEC1110
NSP	30	Cushion	VEC1618
	31	Screw	BPZ30P080FCU
	32	Karaoke badge	VAM1034

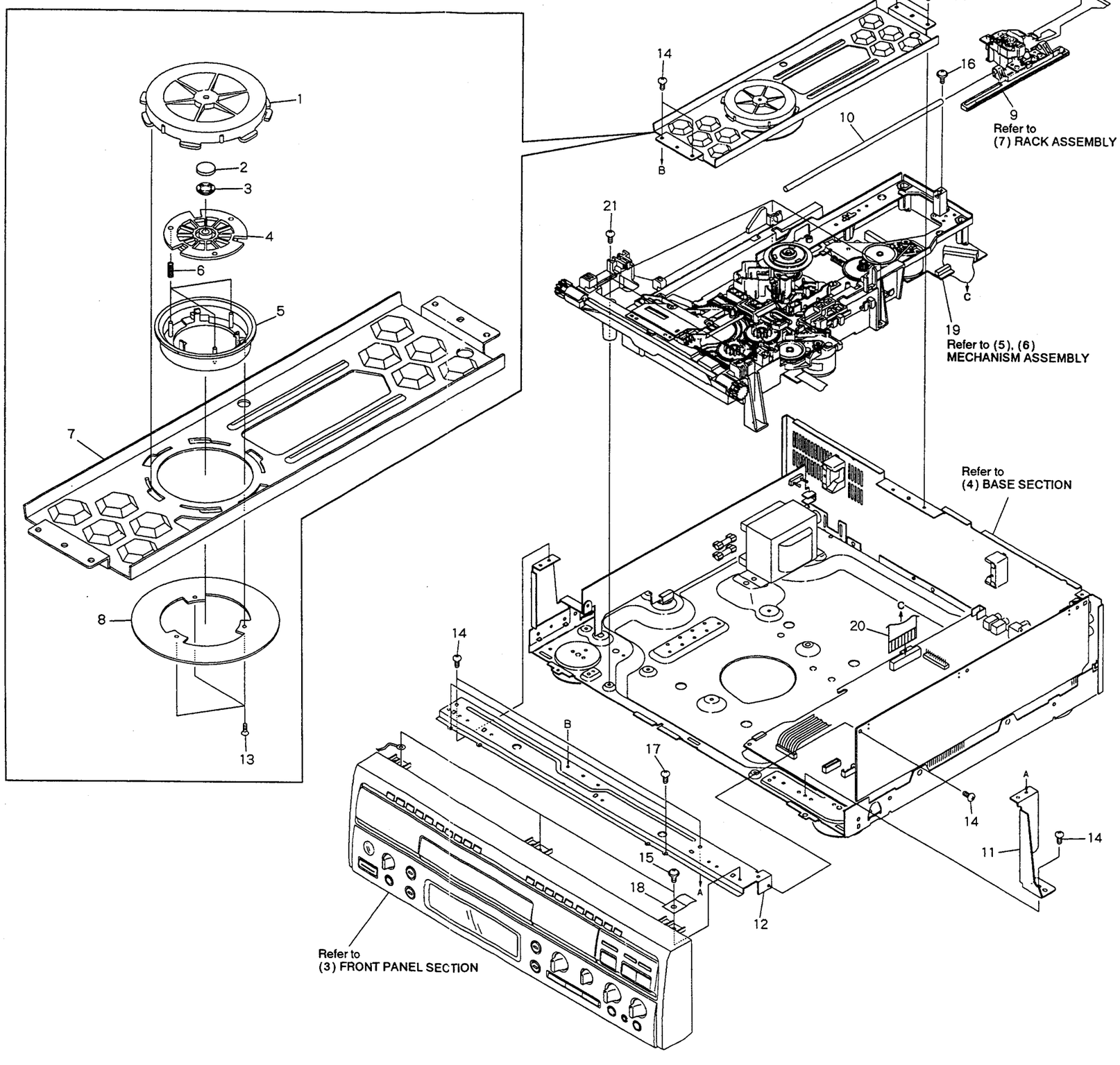


NOTE: Screws adjacent to ▼ mark on the product are used for disassembly.

(2) TOP VIEW SECTION

Parts List

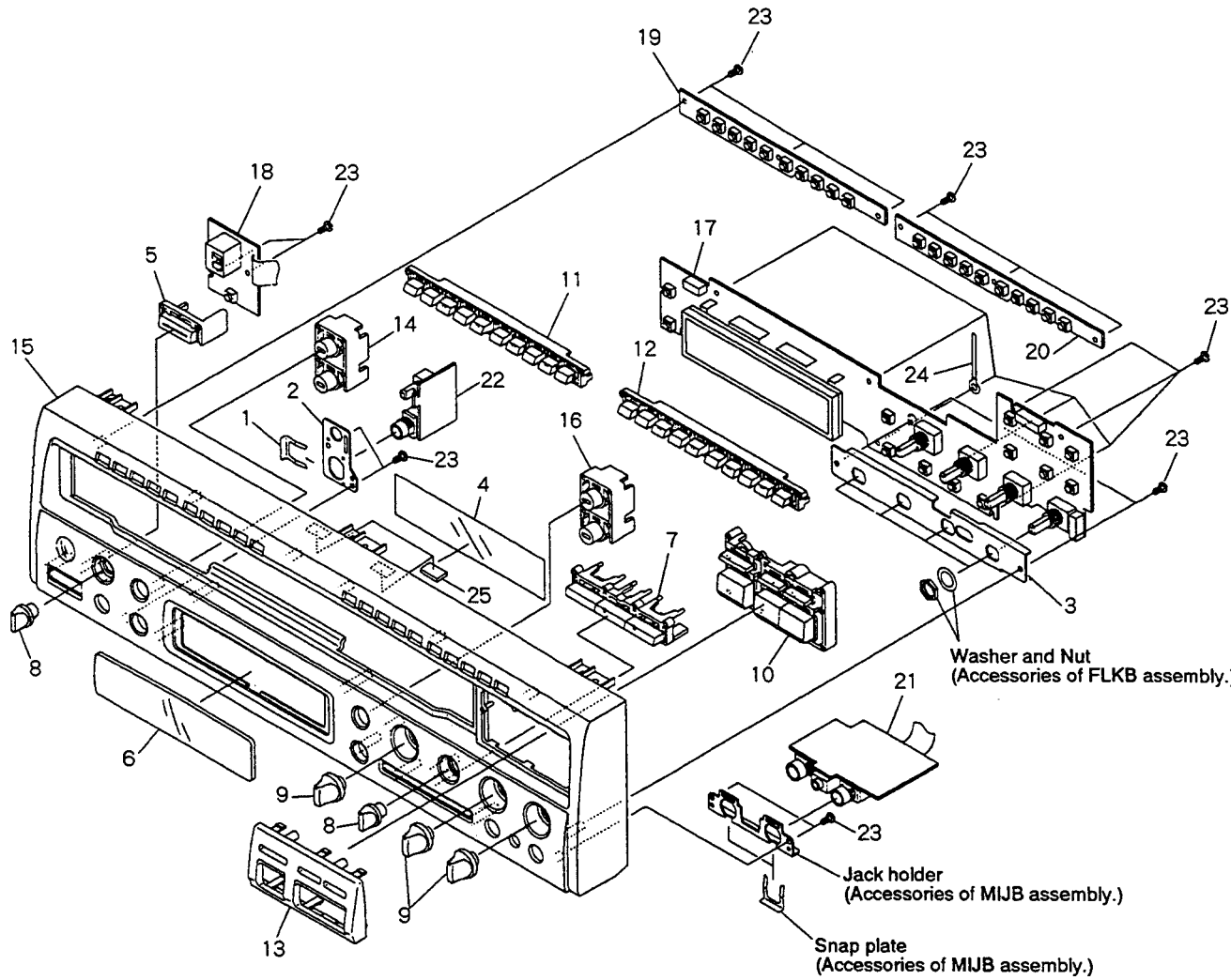
Mark	No.	Description	Part No.
	1	Clamper holder	VNL1514
	2	Rubber mat	VEB1114
	3	Thrust holder	VNL1289
	4	Clamper head	VNL1516
	5	Clamper	VNL1515
	6	Clamper spring	VBH1192
	7	Clamper arm	VNE1804
	8	Stabilizer	VNE1807
	9	Rack assembly	VWT1103
	10	Carriage shaft	VLL1434
NSP	11	Side stay (R)	VNE1810
NSP	12	Front angle	VNE1808
	13	Screw	CPZ20P050FMC
	14	Screw	BBZ30P080FCC
	15	Screw	IBZ30P060FCC
	16	Screw	IPZ30P060FMC
	17	Screw	PCZ30P060FMC
NSP	18	Earth plate	VNE1518
NSP	19	Mechanism assembly	VWT1081
	20	Flexible cable	VDA1409
	21	Screw	BBZ30P060FMC



(3) FRONT PANEL SECTION

Parts List

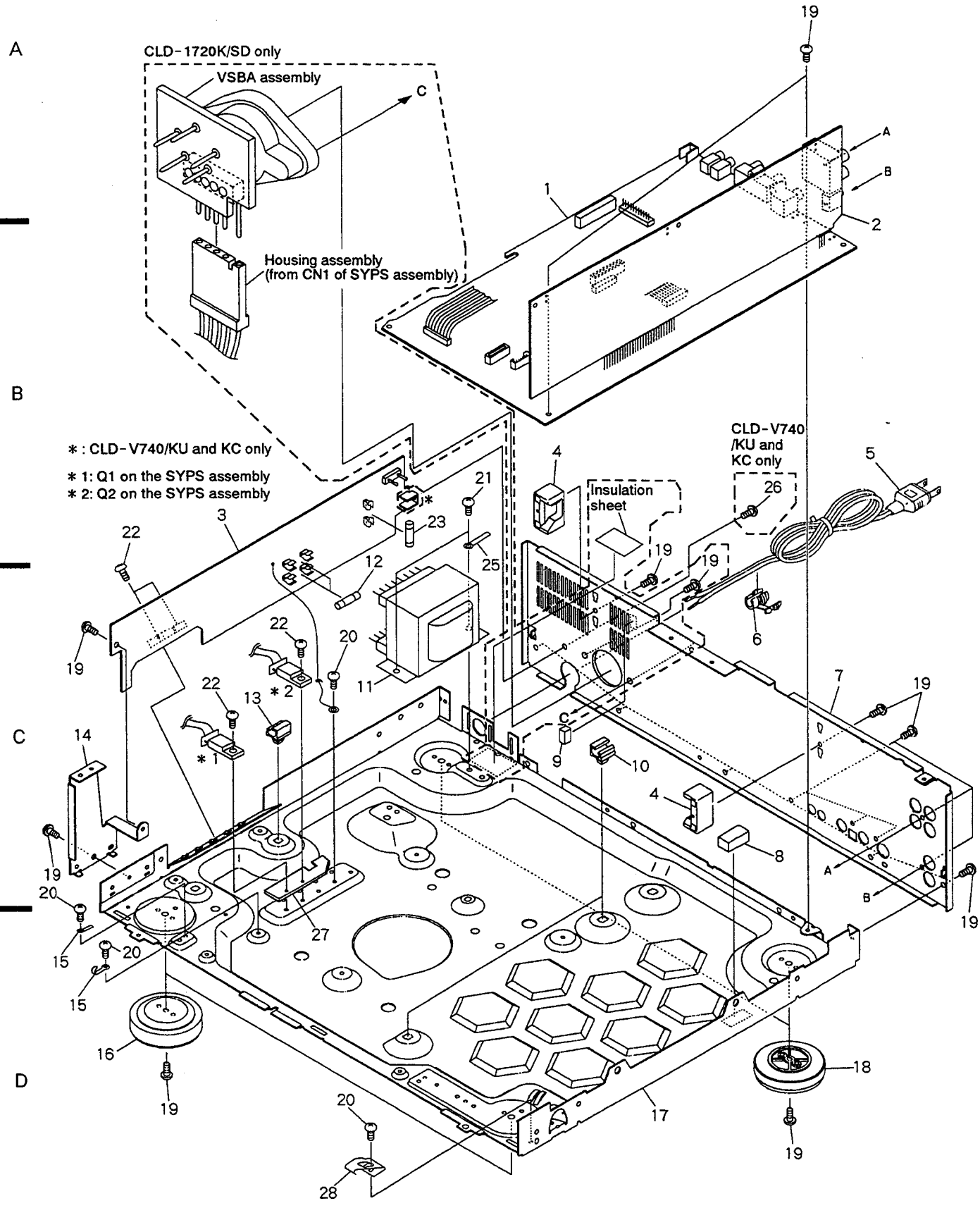
Mark	No.	Description	Part No.
	1	Snap plate	VNE1102
	2	Jack holder (L)	VNE1818
	3	Volume holder	VNE1823
	4	FL filter	VNK1659
	5	PW button	VNK2002
	6	FL lens	VNK2070
	7	Key con. button	VNK2278
	8	VR knob (S)	VNK2221
	9	VR knob (L)	VNK2220
	10	Main key assembly	VXA1975
	11	Ten key (L)	VNK2279
	12	Ten key (R)	VNK2280
	13	Sub panel	VNK2276
	14	L key (L) assembly	VXA1971
	15	Front panel assembly	VXA1967
	16	L key (R) assembly	VXA1972
NSP	17	FLKB assembly	VWG1450
NSP	18	IRKB assembly	VWG1435
NSP	19	FDKB assembly	VWG1436
NSP	20	SDKB assembly	VWG1437
NSP	21	MIJB assembly	VWV1303
NSP	22	HEPB assembly	VWV1304
	23	Screw	BPZ26P060FCU
NSP	24	Cord clamper	Z09-061
	25	Cushion	VEC1621



(4) BASE SECTION

Parts List

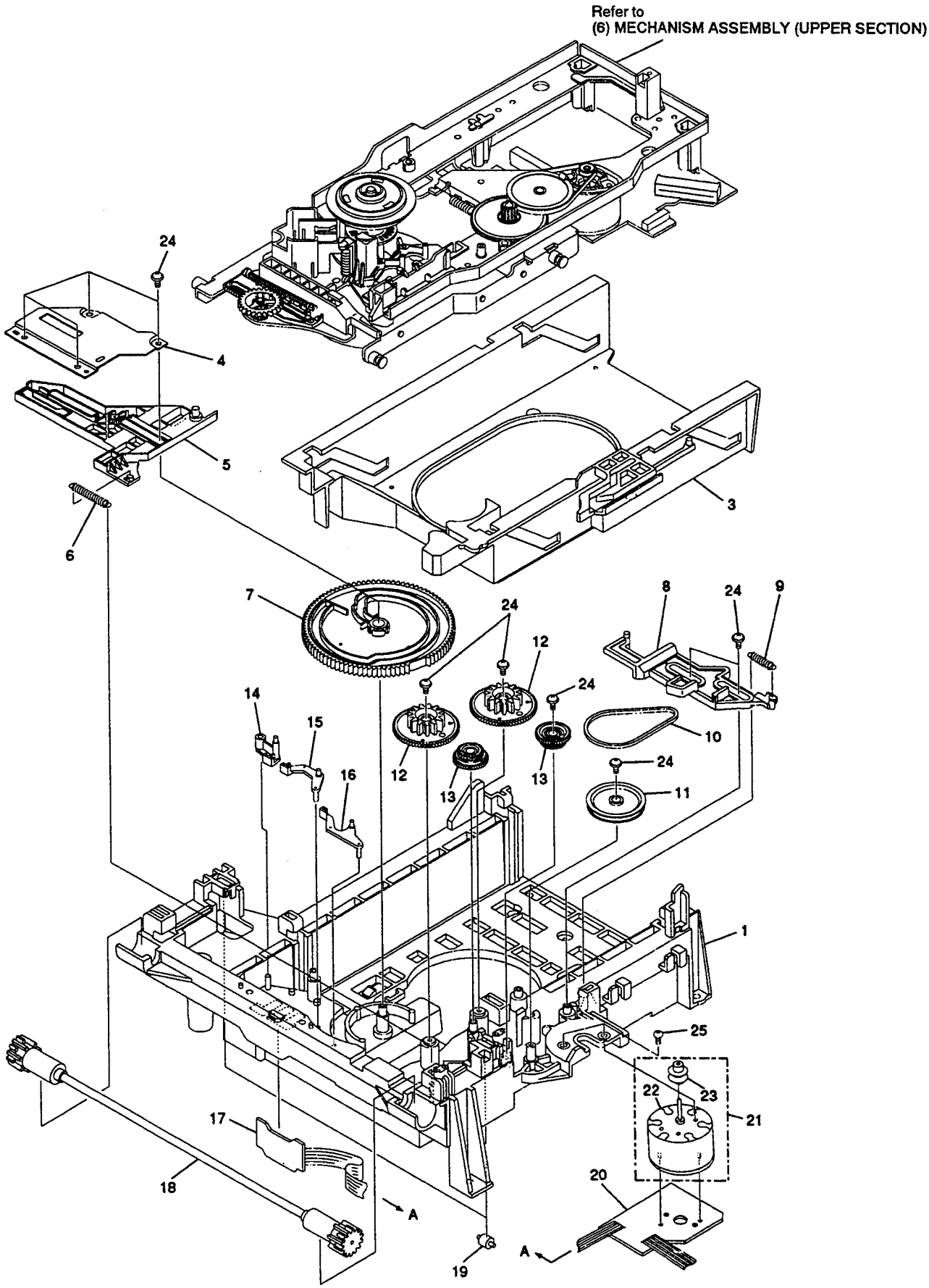
Mark	No.	Description	Part No.
NSP	1	MAIN assembly	VWX1191
NSP	2	AUDIO assembly	VWV1323
◉	3	SYPS assembly	VWR1160
	4	Tray stopper	VNL1519
⚠	5	AC power cord	PDG1015
⚠	6	Strain relief	CM-22C
NSP	7	Rear panel	VNA1337
	8	PCB cushion	VEC1573
NSP	9	Support cushion	VEC1601
NSP	10	PCB hinge	VEC1174
⚠	11	Power transformer	VTT1119
⚠	12	Fuse (FU1, FU2) (3A)	VEK1021
NSP	13	P. plate holder	PNY-405
NSP	14	Side stay (L)	VNE1809
NSP	15	Cord clamper	Z09-061
	16	Insulator	PNW1912
NSP	17	Base chassis	VNA1255
	18	Insulator assembly	VXA1881
	19	Screw	BBZ30P080FCC
	20	Screw	BBZ30P040FMC
	21	Screw	BCZ40P060FZK
	22	Screw	BCZ30P080FMC
⚠	23	Fuse (FU3)(1A)	VEK1014
	24	• • • • •	
NSP	25	Cord clamper	Z09-060
	26	Screw	BCZ30P060FCC
NSP	27	Heat sink	VNE1854
NSP	28	Earth plate	VNE1859


CLD-1720K/SD only
VSBA assembly
C
Housing assembly
(from CN1 of SYPS assembly)
* : CLD-V740/KU and KC only
* 1: Q1 on the SYPS assembly
* 2: Q2 on the SYPS assembly
Insulation sheet
CLD-V740 /KU and KC only
A
B
C
D

(5) MECHANISM ASSEMBLY (LOWER SECTION)

Parts List

Mark	No.	Description	Part No.
	1	Mechanism base	VNK1990
	2	• • • • •	
	3	Clamp cam	VNL1500
	4	Shaft holder	VNE1817
	5	Cam plate	VNL1511
	6	CAS spring	VBH1190
	7	Cam gear	VNL1507
	8	CD plate	VNL1512
	9	CDP spring	VBH1191
	10	Rubber belt	VEB1184
	11	Gear pulley	VNL1510
	12	Twin gear	VNL1508
	13	Center gear	VNL1509
	14	L-SW lever	VNL1504
	15	C-SW lever	VNL1505
	16	R-SW lever	VNL1506
NSP	17	LOSB assembly	VWG1307
	18	Synchro gear assembly	VXA1822
	19	Roller	VNL1042
NSP	20	LOMB assembly	VWG1308
	21	Loading motor assembly	VXX1712
NSP	22	Slider motor	VXM1033
	23	Motor pulley	PNW1643
	24	Screw	Z39-019
	25	Screw	BMZ26P040FMC


Refer to
(6) MECHANISM ASSEMBLY (UPPER SECTION)
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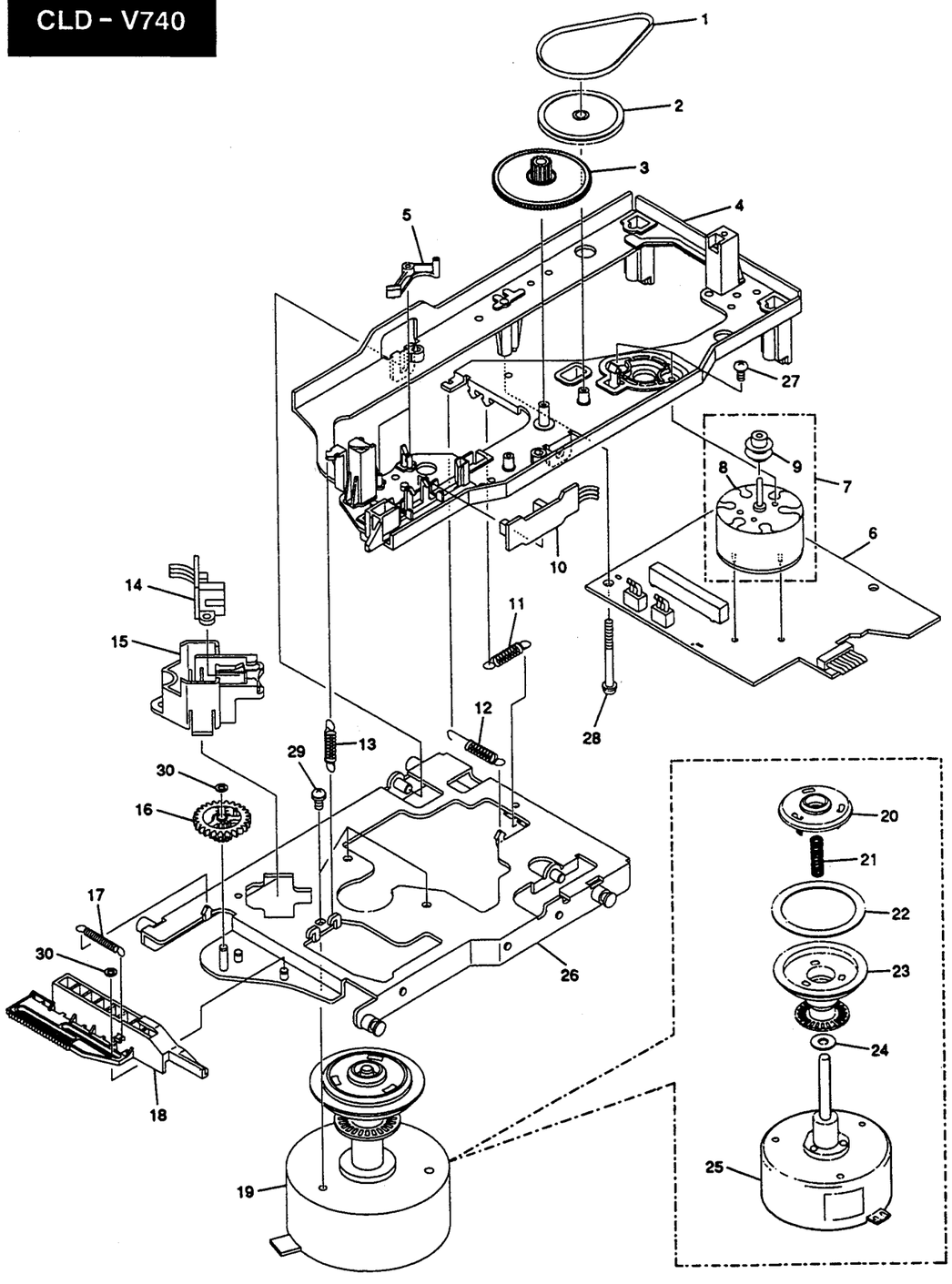
(6) MECHANISM ASSEMBLY (UPPER SECTION)

Parts List

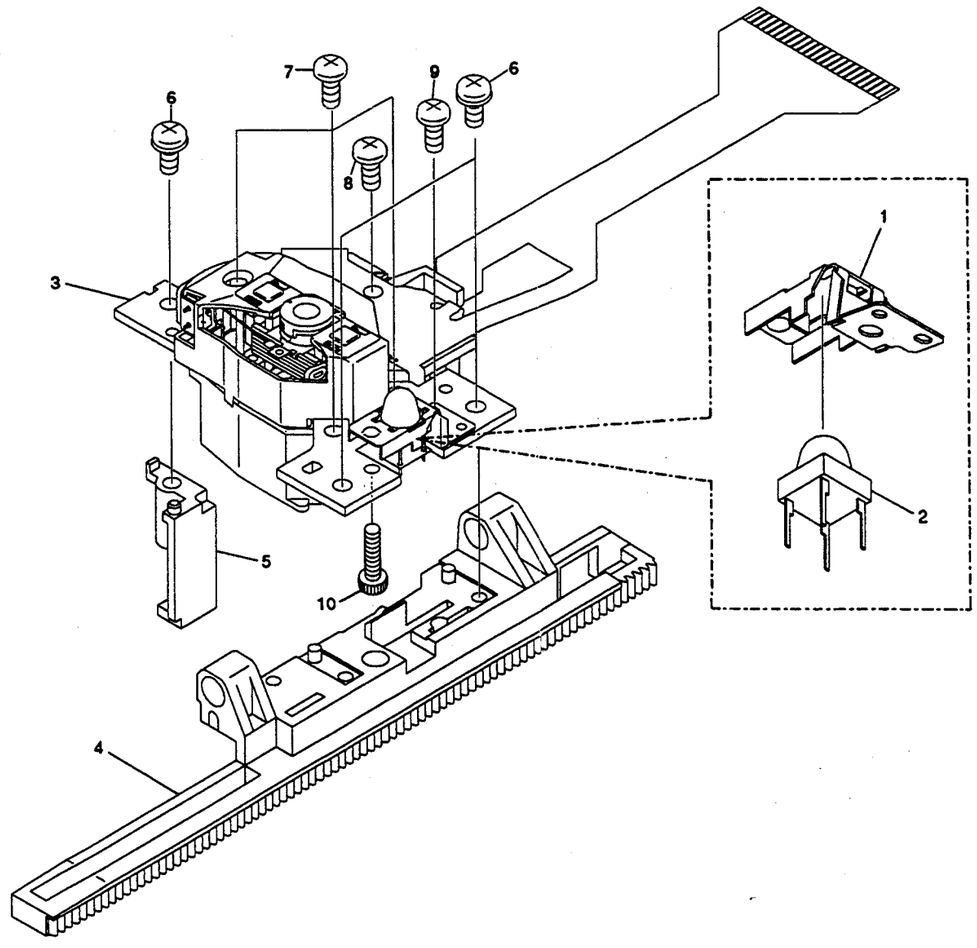
Mark	No.	Description	Part No.
	1	CA belt	VEB1077
	2	CA pulley (2)	VNL1496
	3	CA gear (3)	VNL1497
	4	Tilt base	VNL1499
	5	CA-SW lever	VNL1498
NSP	6	CAMB assembly	VWG1306
	7	CRG motor assembly	VXX1261
NSP	8	Slider motor	VXM1033
	9	CA pulley (1)	VNL1197
NSP	10	PKSB assembly	VWG1305
	11	Radial spring	VBH1201
	12	Thrust spring	VBH1200
	13	Tilt tension spring	VBH1187
NSP	14	FG assembly	VWG1304
	15	FG base	VNL1503
	16	Y gear	VNL1501
	17	Tilt cam spring	VBH1189
	18	Tilt cam	VNL1502
	19	Spindle motor assembly	VXA2010
	20	Centering hub	VNL1174
	21	Centering spring	VBH1083
NSP	22	Rubber sheet	VEB1103
NSP	23	Turn table assembly	VXA1283
NSP	24	Oil stopper	VBF1002
NSP	25	Spindle motor	VXM1055
	26	Motor base	VNE1803
	27	Screw	BMZ26P040FMC
	28	Screw	ABZ30P300FMC
	29	Screw	PMA30P050FMC
	30	Washer	WT26D060D025



(7) RACK ASSEMBLY

Parts List

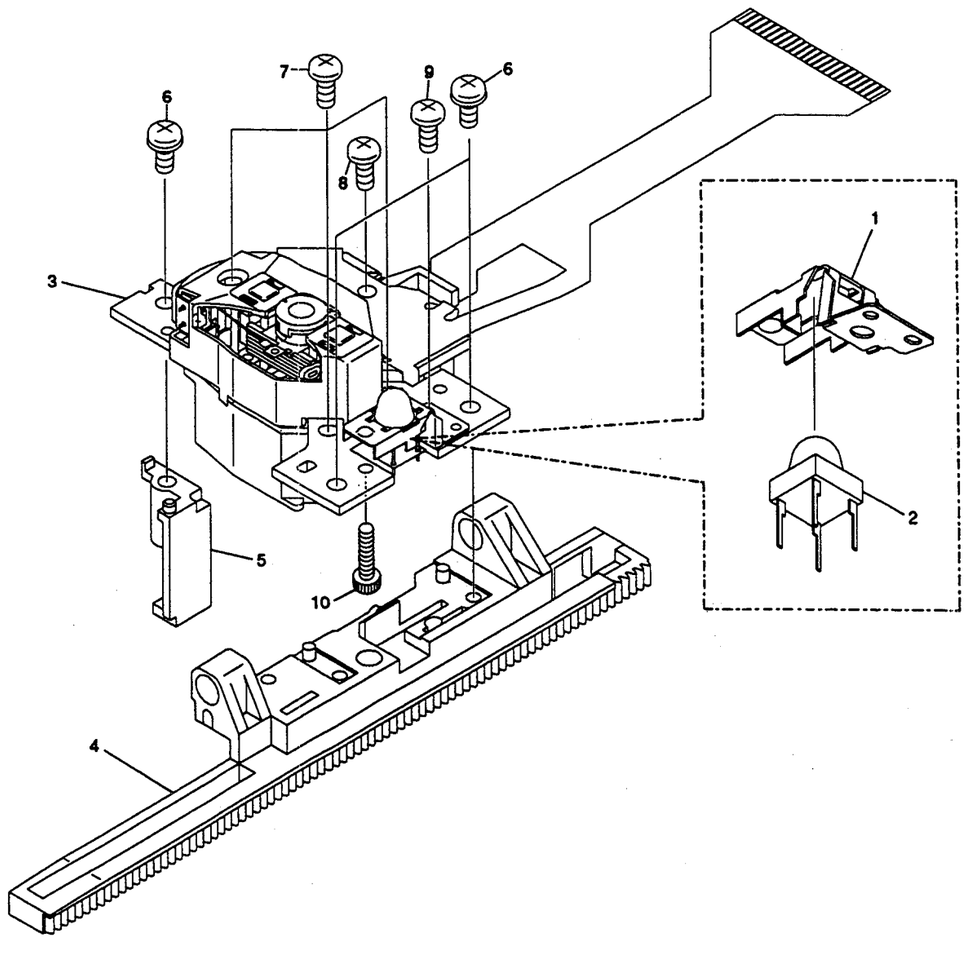
Mark	No.	Description	Part No.
NSP	1	Sensor stay	VBK1036
NSP	2	Tilt sensor	SG-302
NSP	3	Pickup assembly	VWY1030
	4	Rack	VNL1495
	5	Tan. base	VNL1494
	6	Screw	PBB26P080FMC
	7	Screw	PMA20P060FMC
	8	Screw	PMA20P080FMC
	9	Screw	PMH20P040FMC
	10	Screw	SMZ20H120FZK



(7) RACK ASSEMBLY

Parts List

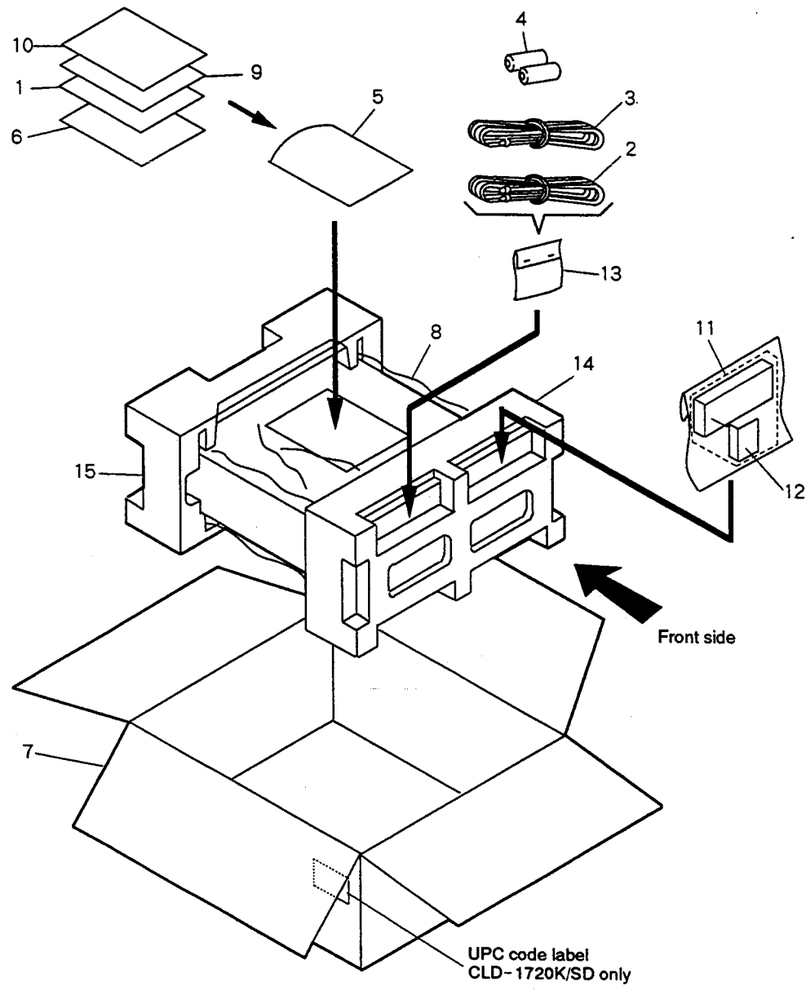
Mark	No.	Description	Part No.
NSP	1	Sensor stay	VBK1036
NSP	2	Tilt sensor	SG-302
NSP	3	Pickup assembly	VWY1030
	4	Rack	VNL1495
	5	Tan. base	VNL1494
	6	Screw	PBB26P080FMC
	7	Screw	PMA20P060FMC
	8	Screw	PMA20P080FMC
	9	Screw	PMH20P040FMC
	10	Screw	SMZ20H120FZK



(8) PACKING

Parts List

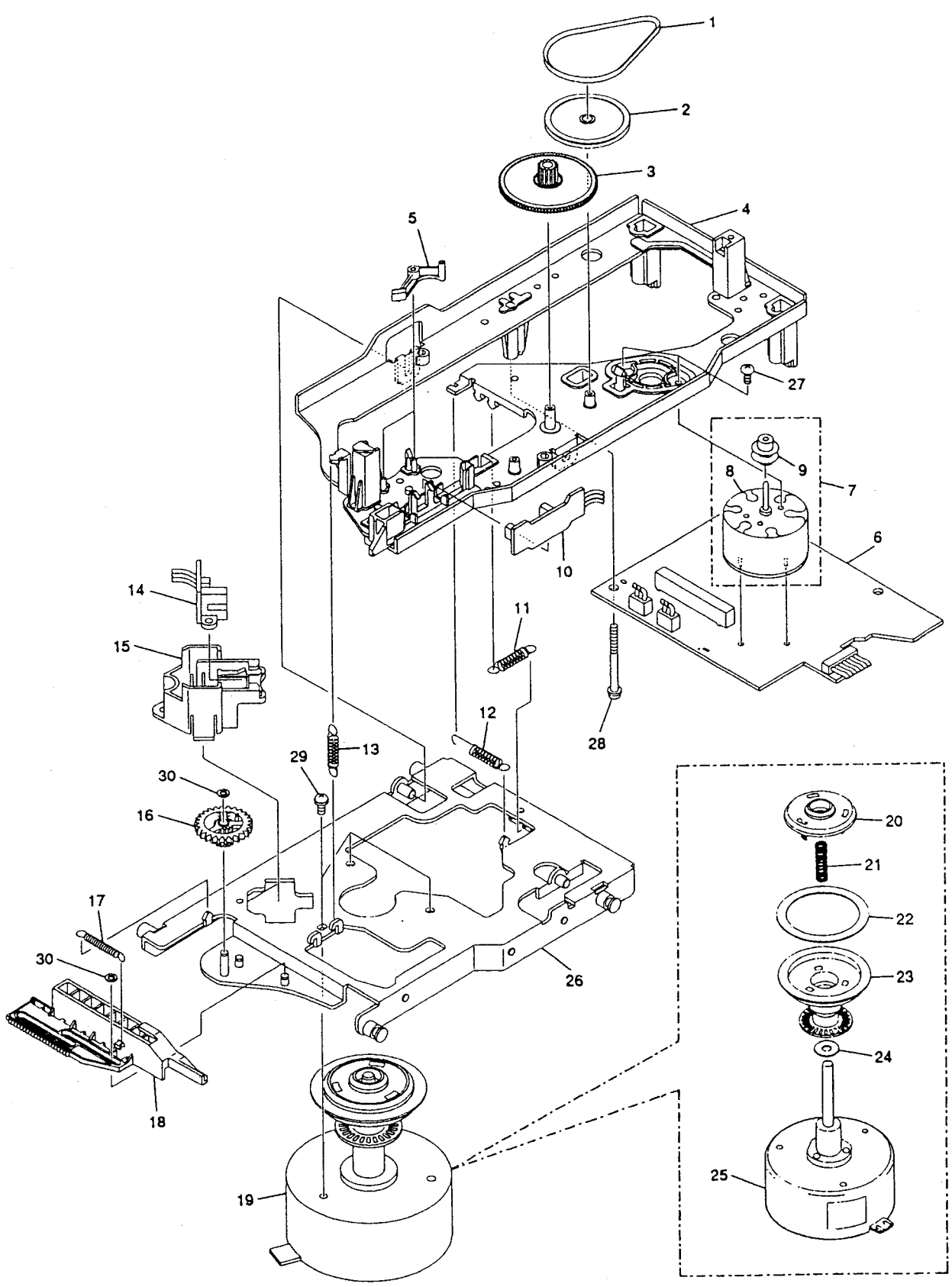
Mark	No.	Description	Part No.
NSP	1	Warranty card	ARY1044
	2	Cord with plug (AUDIO)	VDE-055
	3	Cord with plug (VIDEO)	VDE-056
NSP	4	Battery (R03, AAA)	VEM-022
NSP	5	Vinyl bag	VHL-014
	6	Operating instructions (English)	VRB1089
	7	Packing case	VHG1279
	8	Mirror mat	VHL1006
NSP	9	Caution card (UC)	VRM1026
NSP	10	Caution card	VRR1009
	11	Remote control unit (CU-CLD046)	VXX1603
	12	Baterry cover	VNK1293
NSP	13	Vinyl bag	Z21-029
	14	Pad (F)	VHA1112
	15	Pad (R)	VHA1113

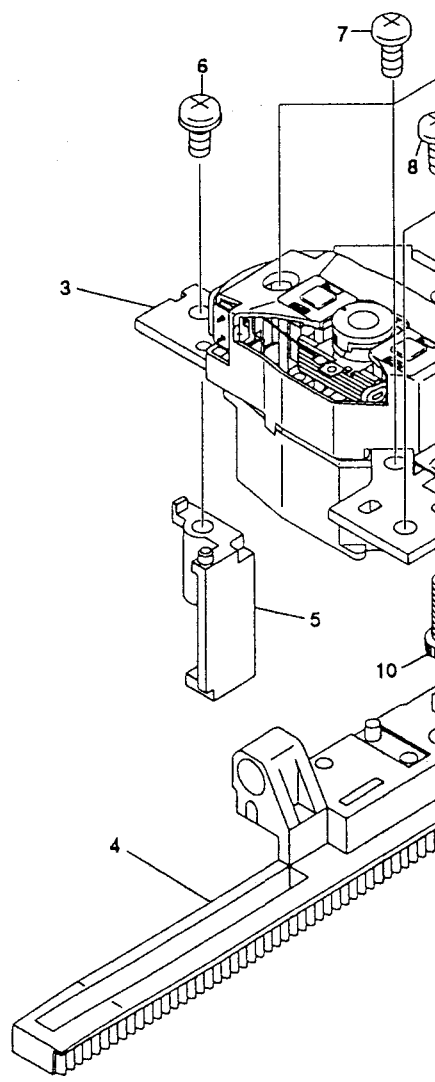


(7) RACK ASSEMBLY

Parts List

Mark	No.	Description	Part No.
NSP	1	Sensor stay	VBK1036
NSP	2	Tilt sensor	SG-302
NSP	3	Pickup assembly	VWY103(
	4	Rack	VNL1495
	5	Tan. base	VNL1494
	6	Screw	PBB26P0
	7	Screw	PMA20P(
	8	Screw	PMA20P(
	9	Screw	PMH20P(
	10	Screw	SMZ20H1





(7) RACK ASSEMBLY

Parts List

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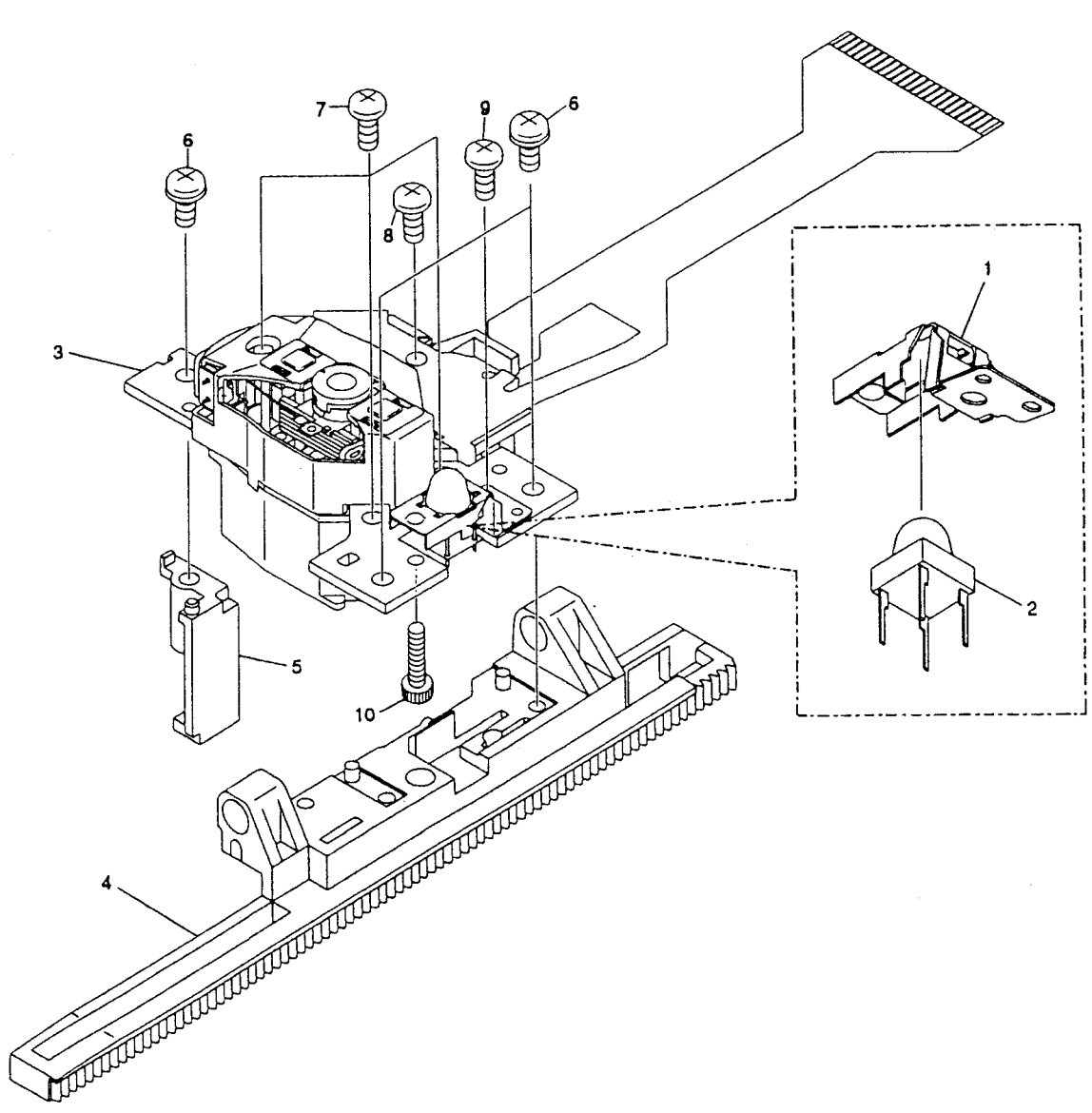
NSP	2	Tilt sensor	SG-302
NSP	3	Pickup assembly	VWY1030
	4	Rack	VNL1495
	5	Tan. base	VNL1494
	6	Screw	PBB26P080FMC
	7	Screw	PMA20P060FMC
	8	Screw	PMA20P080FMC
	9	Screw	PMH20P040FMC
	10	Screw	SMZ20H120FZK



(8) PACKING

Parts List

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	3	Cord with plug (VIDEO)	VDE-056
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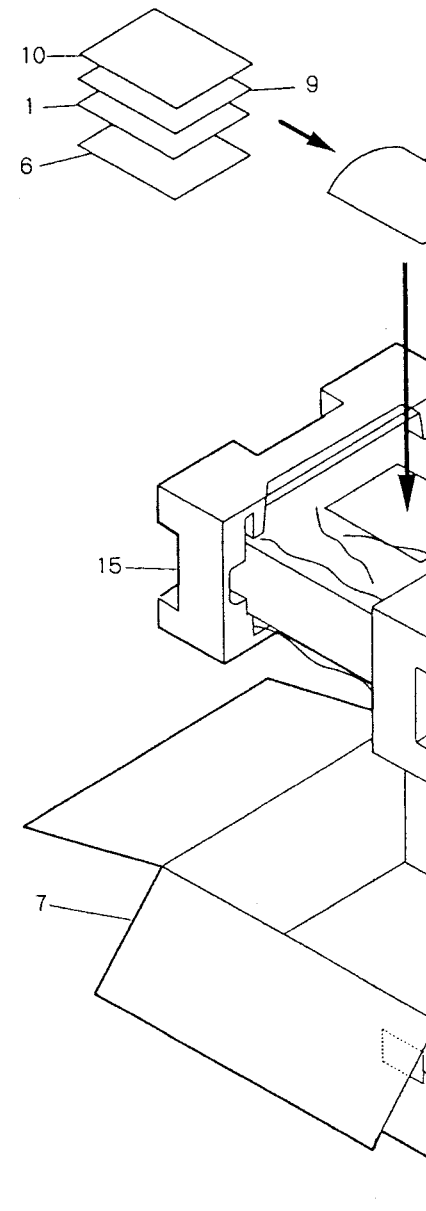
NSP	5	Vinyl bag	VHL-014
	6	Operating instructions (English)	VRB1089
	7	Packing case	VHG1279
	8	Mirror mat	VHL1006
NSP	9	Caution card (UC)	VRM1026



(8) PACKING

Parts List

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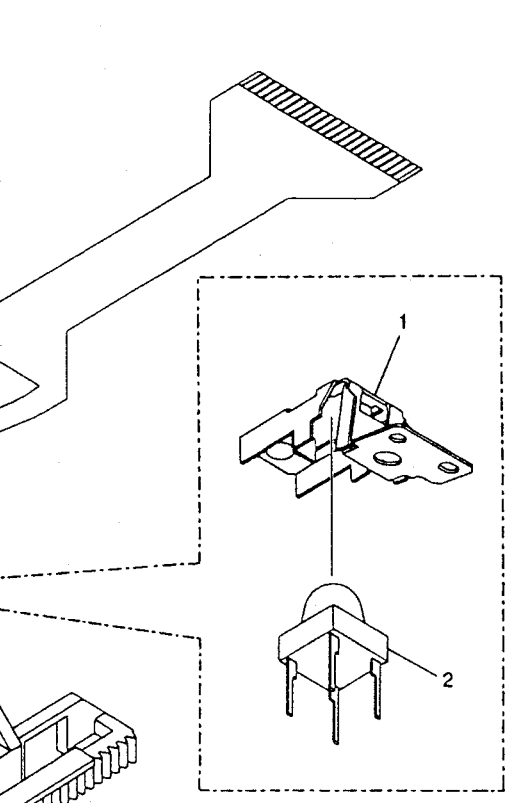
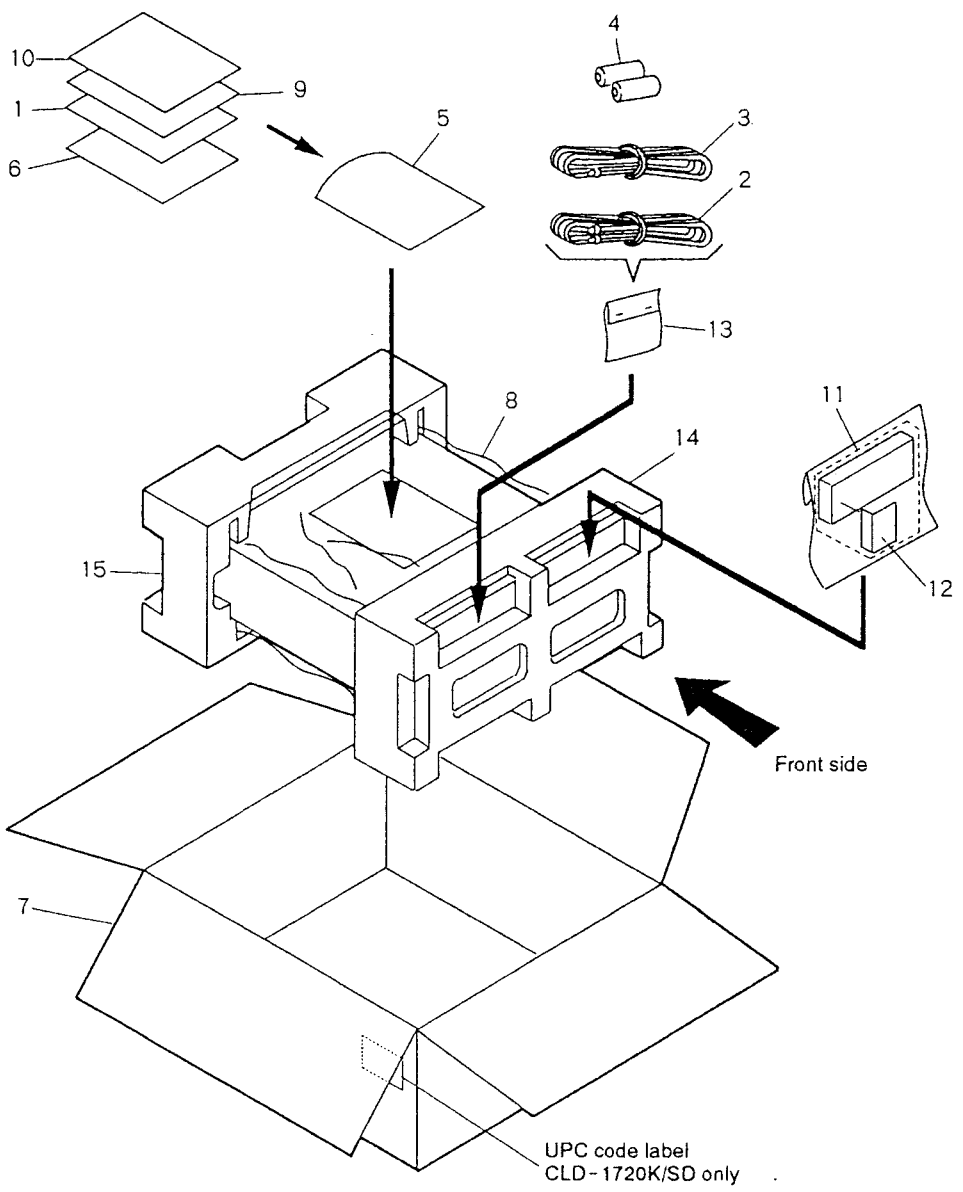
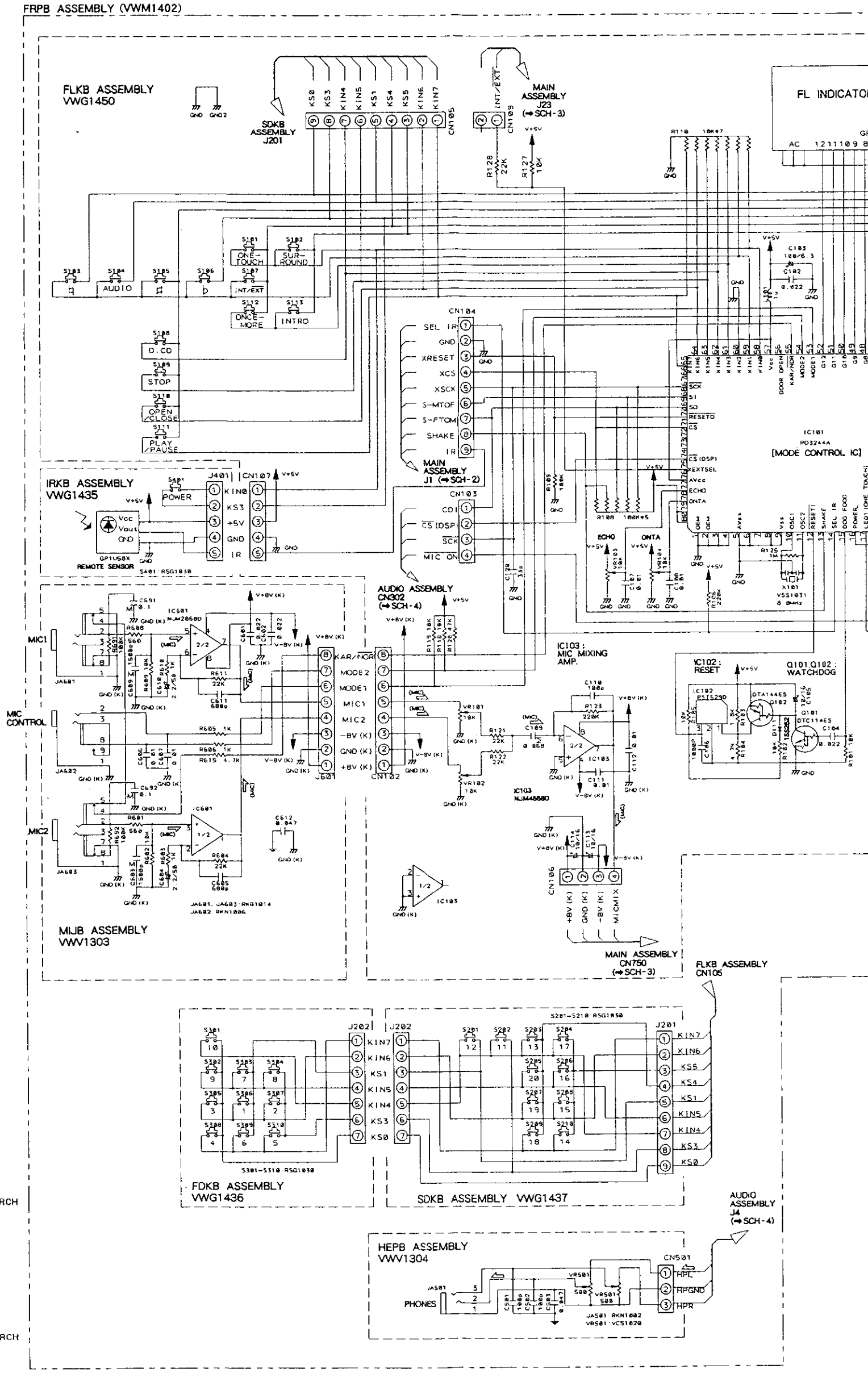
	11	Remote control unit (CU-CLD046)	VXX1603
	12	Baterry cover	VNK1293
NSP	13	Vinyl bag	Z21-029
	14	Pad (F)	VHA1112
	15	Pad (R)	VHA1113





3. SCHEMATIC AND PCB CONNECTION DIAGRAMS

3.1 IRKB, FDKB, SDKB, FLKB, MIJB, HEPB, SYPS, VSBA, FG, PKSB, CAMB, LOSB, LOMB AND PICKUP ASSEMBLIES



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):

VSBA ASSEMBLY
VOLTAGE SELECTOR : AC 110V/120~127V/220V/240V

PKSB ASSEMBLY
- S4 :PARK OUT
- S5 :PARK IN

LOSB ASSEMBLY
- S1 :TILT LOADING1
- S2 :TILT LOADING2
- S3 :TILT LOADING3

AUDIO ASSEMBLY
- S301 :ATTENUATOR

FLKB ASSEMBLY
- S101 :ONE-TOUCH KARAOKE
- S102 :SURROUND
- S103 : ♮ □ KEY CONTROL
- S104 :AUDIO MODE
- S105 : ♯ KEY CONTROL
- S106 : ♭
- S107 :AUX INPUT
- S108 :DIRECT CD
- S109 :STOP (■)
- S110 :OPEN/CLOSE (⏏)
- S111 :PLAY/PAUSE (▶/❚❚)
- S112 :ONCE MORE
- S113 :INTRO

IRKB ASSEMBLY
- S401 :POWER STANDBY / ON

FDKB ASSEMBLY	SDKB ASSEMBLY	
S301 :10	S201 :12	DIRECT MUSIC SEARCH
S302 :9	S202 :11	
S303 :7	S203 :13	
S304 :8	S204 :17	
S305 :3	S205 :20	
S306 :1	S206 :16	
S307 :2	S207 :19	
S308 :4	S208 :15	
S309 :6	S209 :18	
S310 :5	S210 :14	

CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE WITH SAME TYPE NO. ICP-N20, MFD BY ROHM CO., LTD, FOR IC203.

➡:RF Signal Route
➡:Tracking Servo Loop Line
⇨:Focus Servo Loop Line
▨⇨:Spindle Servo Loop Line
⌓:Audio Signal Route (L ch)
(MIC)⌓:Audio Signal Route (MIC)

Q21-Q24 : SPINDLE PRE DRIVE

Q25- SPIN DRIV

PWSB ASSEMBLY
VWM1404 : CLD-1720K/SD ONLY

SYPS ASSEMBLY
VWR1160 : CLD-V740/KU, KC
VWR1187 : CLD-1720K/SD

IC1 : EVER +5V REGULATOR

FL INDICATOR V101 VAW1029

GRID AC 12 11 10 9 8 7 6 5 4 3 2 1 AC

SEGMENT a b c d e f g h i j k l m

MAIN ASSEMBLY J23 (➡SCH-3)

CN101 J33 (6) AC (5) AC (4) -27V (3) GND (2) EVER +5V (1) POWER ON

CN104 IR GND SET XCS XSCK TOF TOM BAKE IR

CN103 CDI DSP SCK C ON

IC101 PD3244A [MODE CONTROL IC]

IC103 : MIC MIXING AMP.

IC103 NJM4558D

IC102 : RESET IC102 BS15250

Q101,Q102 : WATCHDOG

Q103-Q106 : LED DRIVE

DTC124ES DTC124ES DTC124ES DTC124ES EXT ONE TOUCH SURROUND DIRECT CD

CN106 +8V (K) GND (K) -8V (K) MICMIX

MAIN ASSEMBLY CN750 (➡SCH-3)

FLKB ASSEMBLY CN105

S201-S219 : RSG1050

J201 KIN7 KIN6 KS5 KS4 KS1 KIN5 KIN4 KS3 KS0

B ASSEMBLY VWG1437

AUDIO ASSEMBLY J4 (➡SCH-4)

CN501 HPL HPGND HPR

JAS01 : RKN1002
VR501 : VCS1020

CLD-V740/KU, KC

NEUTRAL LIVE AC POWER CORD PDG1015

FU3 125V 1A VEK1014

POWER TRANSFORMER VTT1119

FU1 (SD) 250V 3.15A
FU2 (KU/KC) 125V 3A
FU3 (KU/KC) 125V 3A
(SD) 250V 3.15A

FU1, FU2
VEK1021 : CLD-V740/KU, KC
REK-105 : CLD-1720K/SD

CLD-1720K/SD

PDG1013 NEUTRAL LIVE AC POWER CORD REK-100 FU3 250V 1A

VSBA ASSEMBLY CN2 WHT YEL BRN BLU VLT

VWR1138

VTT1110 POWER TRANSFORMER

HEPB ASSEMBLY CN501 HPL GND HPR

FLKB ASSEMBLY CN109 INT/EXT

FLKB ASSEMBLY CN104 SEL IR GND XRESET XCS XSCK S-MTOF S-FTOM SHAKE IR

MOTHER ASSEMBLY VWM1403

MAIN ASSEMBLY VWX1191
• FTS & CONT SECTION (➡SCH-2)
• VIDEO & TBC SECTION (➡SCH-3)

S301 OFF ON EXT IN ATTENUATOR

JA10

JA6 1 2 1/L AUDIO OUT 2/R

VDA1409

CN403 -5V +5V RF GND C A B4 B3 B2 B1 VR MD LD LD G LD G R GND R GND F DRV T DRV TILT OUT TILT G TILT IN T LED

CN401

Q10 2SC1740S R10 1.8K R11 47K [RF BUFFER]

PICKUP ASSEMBLY VWY1030-

TRKG DRV GND FOCUS DRV GND

VR1 1.5K C2 1u

-5V +5V RF GND C A B4 B3 B2 B1 VR MD LD LD G LD G R GND R GND F DRV T DRV TILT OUT TILT G T LED TILT IN

LOSB ASSEMBLY VWG1307

S1 S3 S2 GND SW1 SW3 SW2 GND

LOADING MOTOR ASSEMBLY VXA1712

C1 0.047

LOMB ASSEMBLY VWG1308 LOADING M- GND (M)

MACB ASSEMBLY VWM1250

IRKB ASSY
FLKB ASS
SYPS AS
PKSB ASSY

CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE WITH SAME TYPE NO. ICP-N20, MFD BY ROHM CO., LTD, FOR IC203.

CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE WITH SAME TYPE NO. ICP-N15.,MFD BY ROHM CO., LTD, FOR IC201, IC202 AND IC204.

SCH-1

:RF Signal Route
:Tracking Servo Loop Line
:Focus Servo Loop Line
:Spindle Servo Loop Line
:Audio Signal Route (L ch)
:Audio Signal Route (MIC)

Q21-Q24 : SPINDLE PRE DRIVE

Q25-Q28 : SPINDLE DRIVE

IC2(1/2),Q1,Q2,Q4 : +5V REGULATOR

IC2(2/2),Q3,Q5 : -5V REGULATOR

IC201-IC204 : IC PROTECTOR

IC1 : EVER +5V REGULATOR

PWSB ASSEMBLY
VWM1404 : CLD-1720K/SD ONLY

SYPS ASSEMBLY
VWR1160 : CLD-V740/KU, KC
VWR1187 : CLD-1720K/SD

V101
VAW1029

SEGMENT
a b c d e f g h i j k l m AC

CN101

CLD-V740/KU, KC

NEUTRAL
LIVE
AC POWER CORD
PDG1015

POWER TRANSFORMER
VTT1119

CLD-1720K/SD

PDG1013
NEUTRAL
LIVE
AC POWER CORD
REK-100
VSBA ASSEMBLY
VWR1188
POWER TRANSFORMER
VTT1118

FU1, FU2
VEK1021 : CLD-V740/KU, KC
REK-105 : CLD-1720K/SD

SPINDLE MOTOR ASSEMBLY
VXA2010

HEPB ASSEMBLY
CN501

FLKB ASSEMBLY
CN109

FLKB ASSEMBLY
CN104

FLKB ASSEMBLY
CN106

FLKB ASSEMBLY
CN103

CN102

MOTHER ASSEMBLY
VWM1403

MAIN ASSEMBLY
VWX1191
• FTS & CONT SECTION (➡SCH-2)
• VIDEO & TBC SECTION (➡SCH-3)

AUDIO ASSEMBLY
VWV1323
(➡SCH-4)

ATTENUATOR

VDA1409

CAMB ASSEMBLY
VWG1306
CAMB

CARRIAGE MOTOR ASSEMBLY
VXX1261

[RF BUFFER]

PICKUP ASSEMBLY
VWY1030-

MACB ASSEMBLY
VWM1250

LOSB ASSEMBLY
VWG1307

LOMB ASSEMBLY
VWG1308

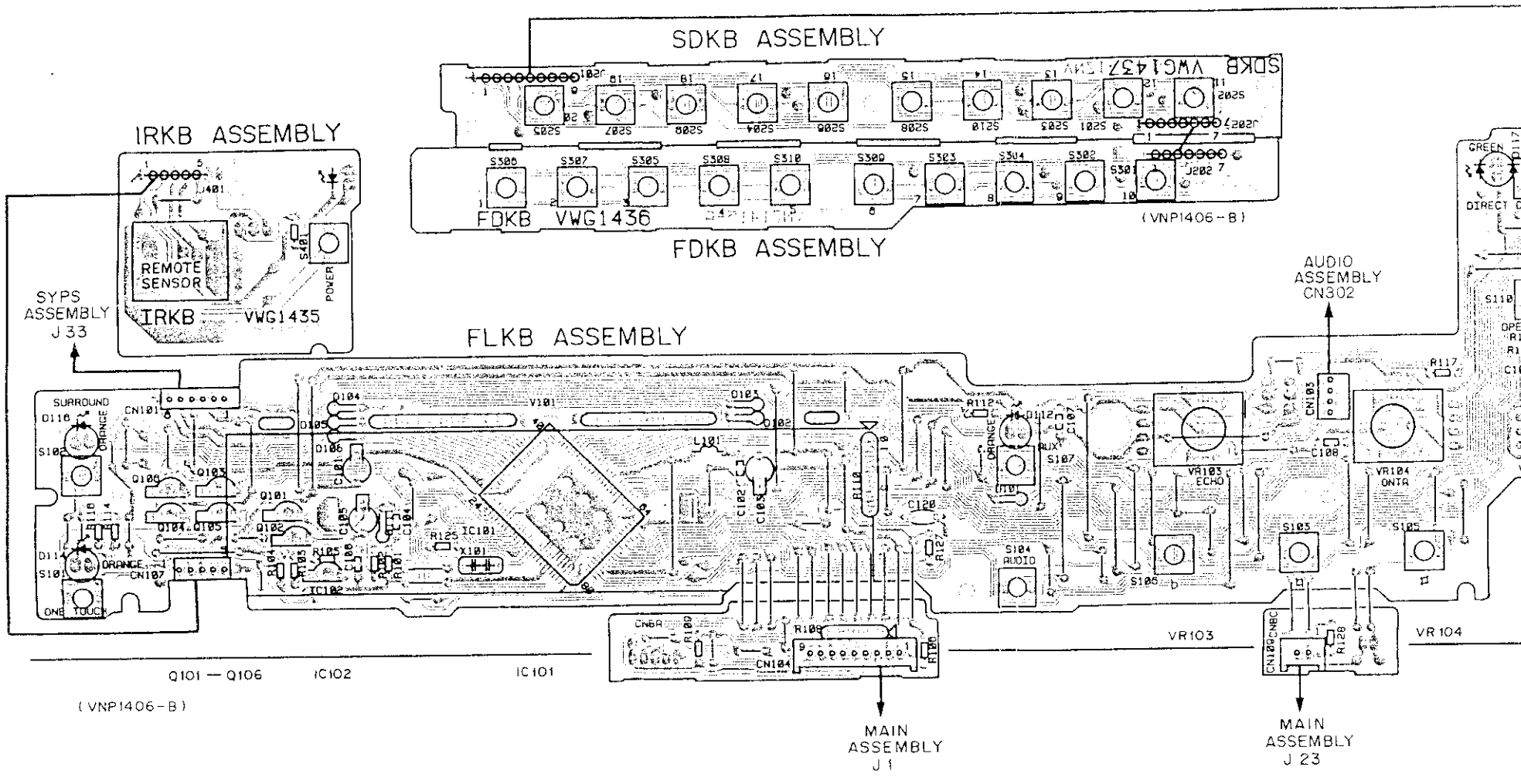
LOADING MOTOR ASSEMBLY
VXX1712

FG ASSEMBLY
VWG1304

PKSB ASSEMBLY
VWG1305

IRKB ASSY, FDKB ASSY, SDKB ASSY,
FLKB ASSY, MIJB ASSY, HEPB ASSY,
SYPS ASSY, VSBA ASSY, FG ASSY,
PKSB ASSY, CAMB ASSY, LOSB ASSY,
LOMB ASSY, PICKUP ASSY

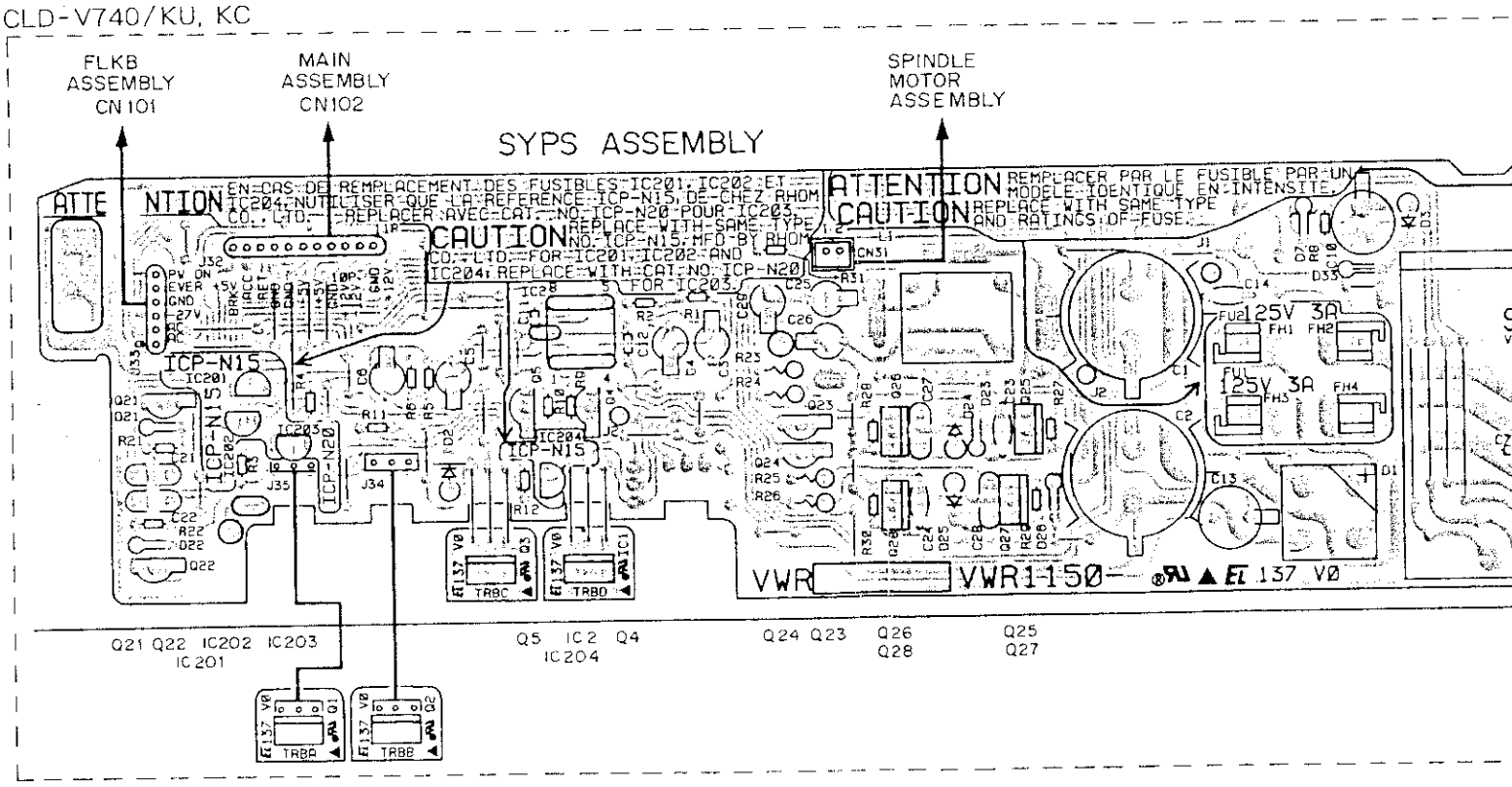
SCH-1



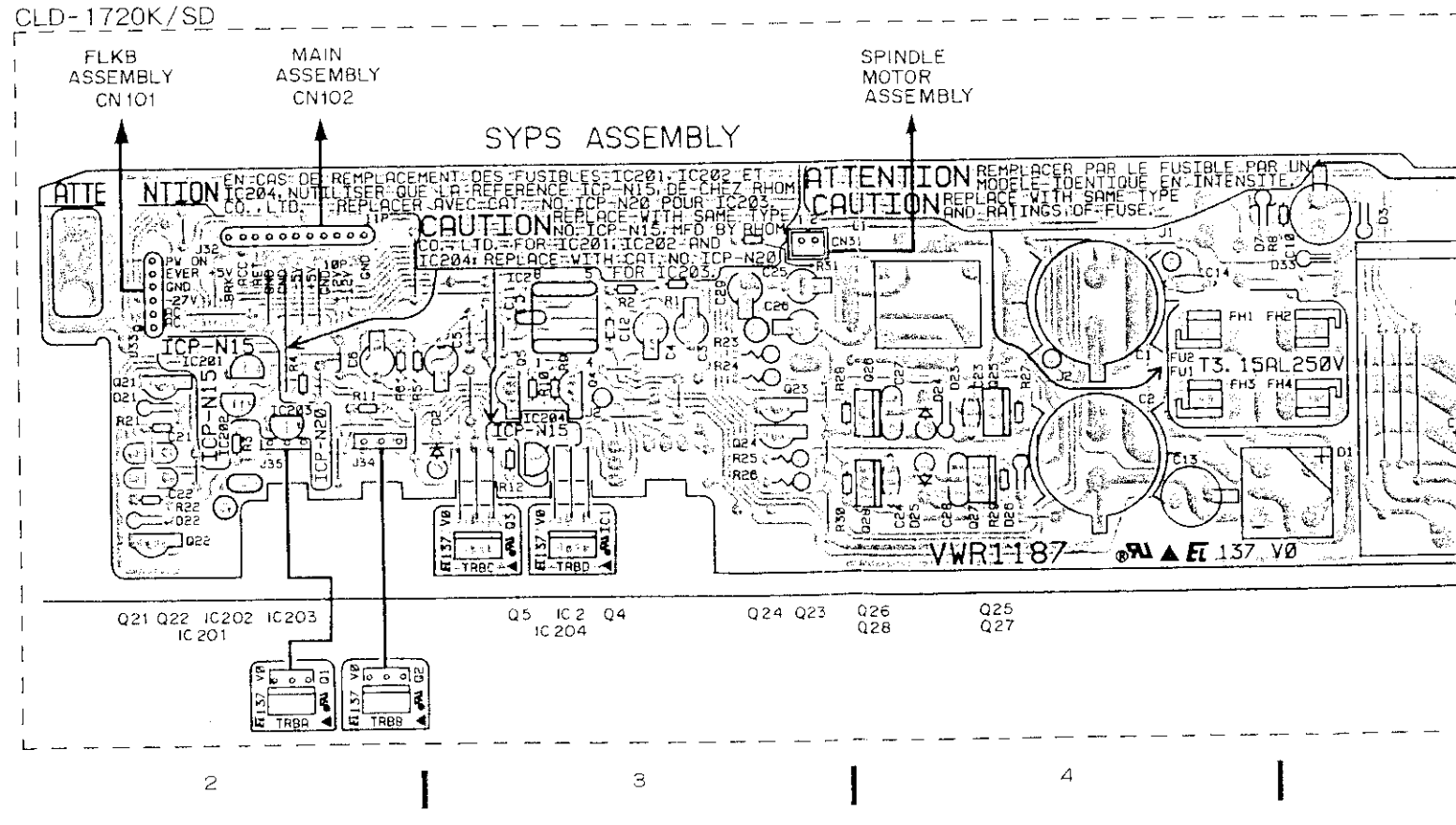
P.C.B. pattern diagram Indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor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

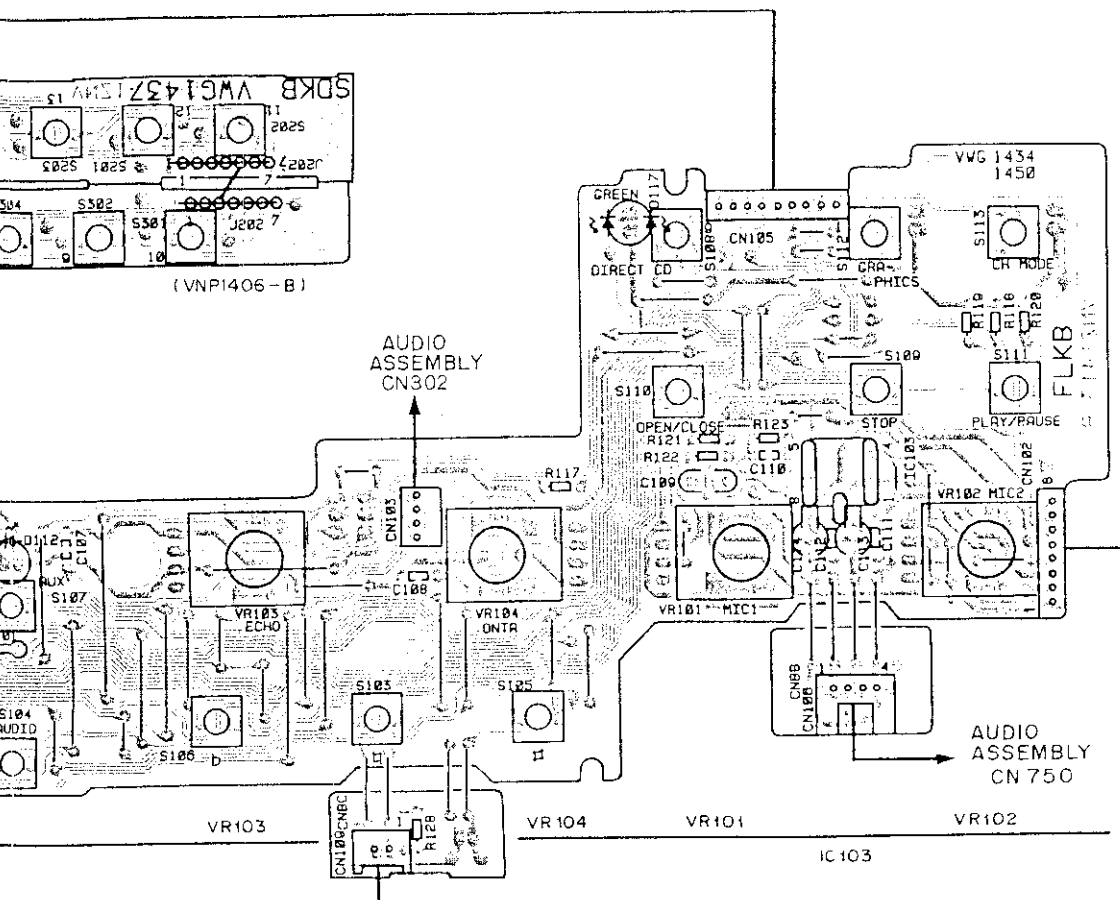
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

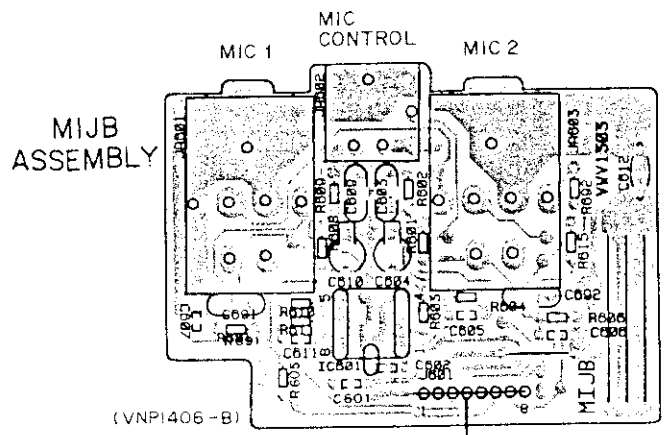
CLD-V740/KU, KC

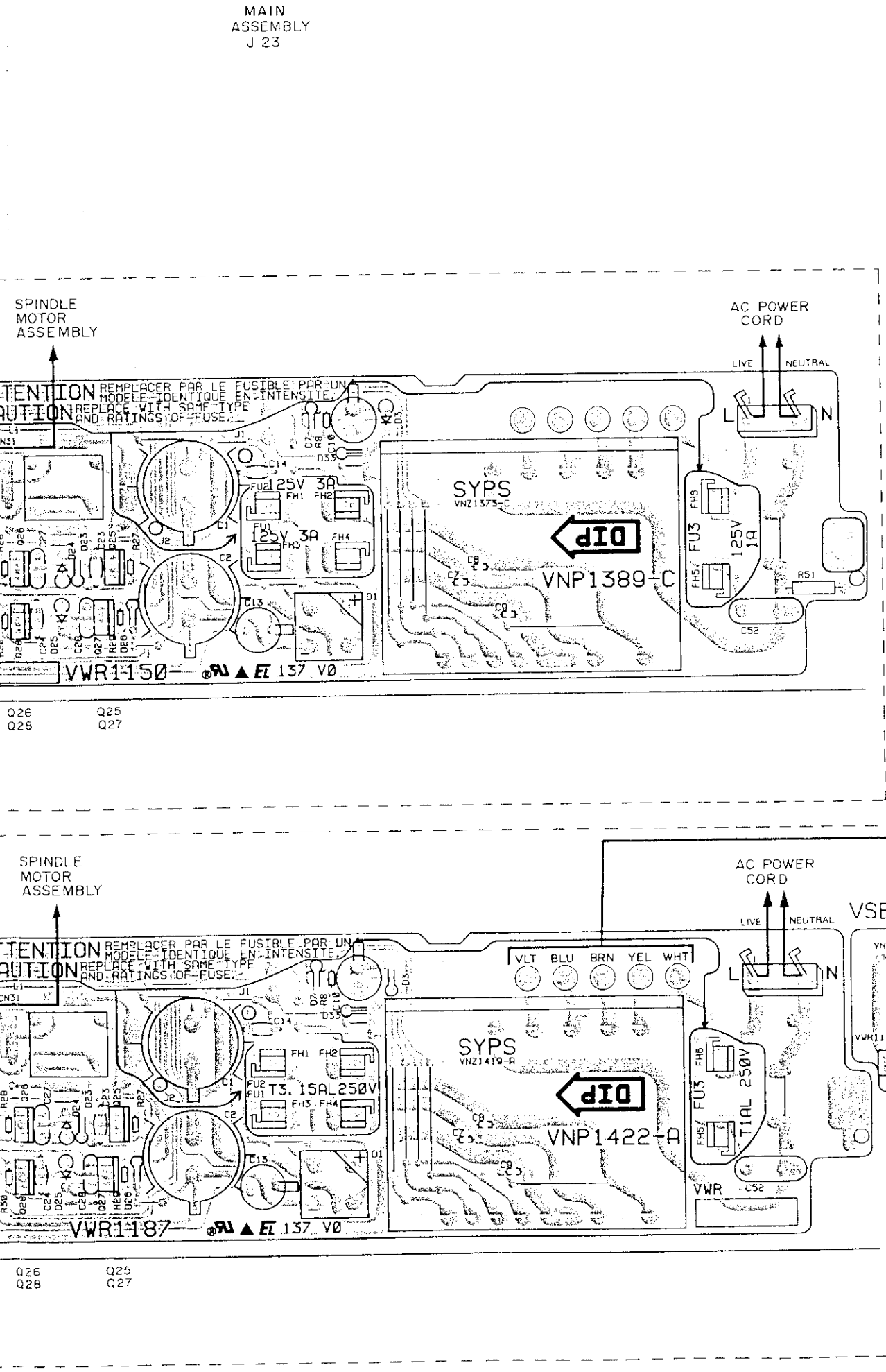


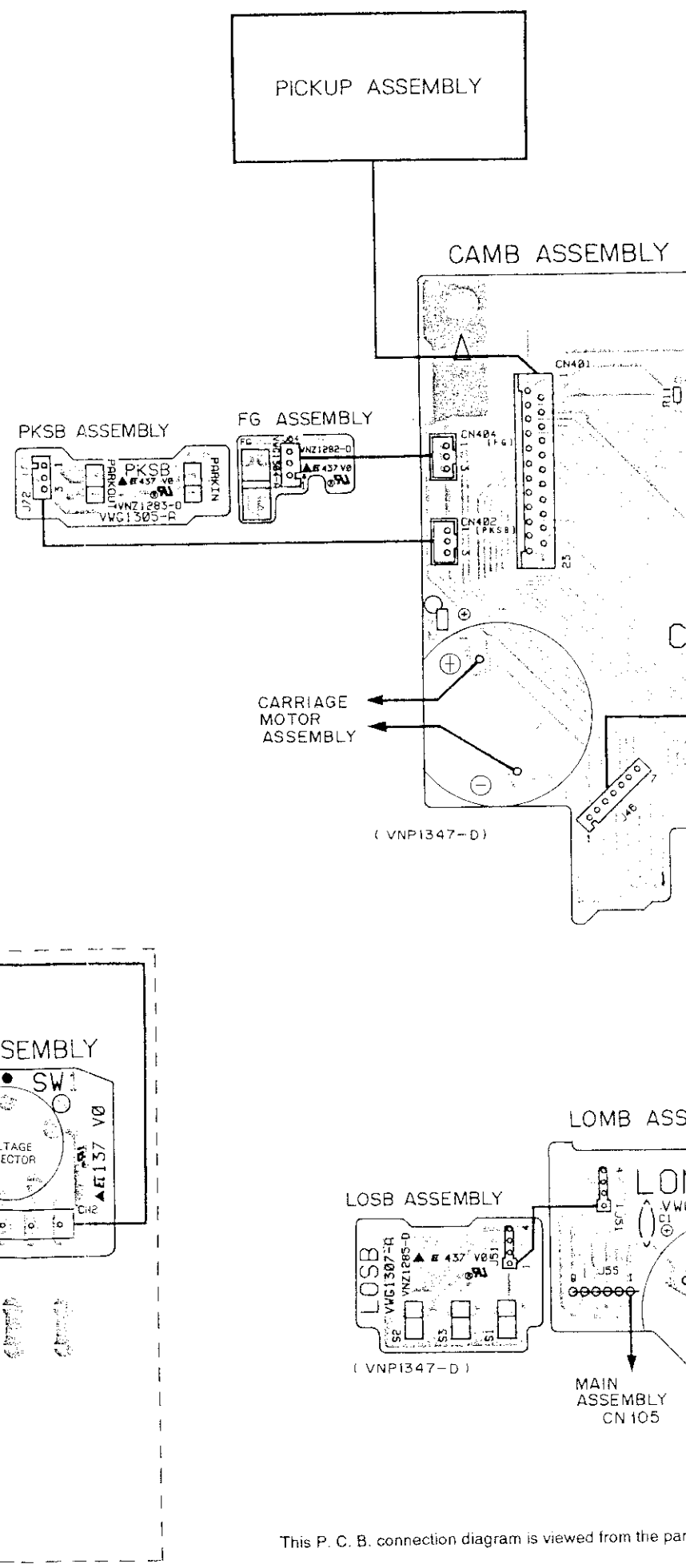
CLD-1720K/SD



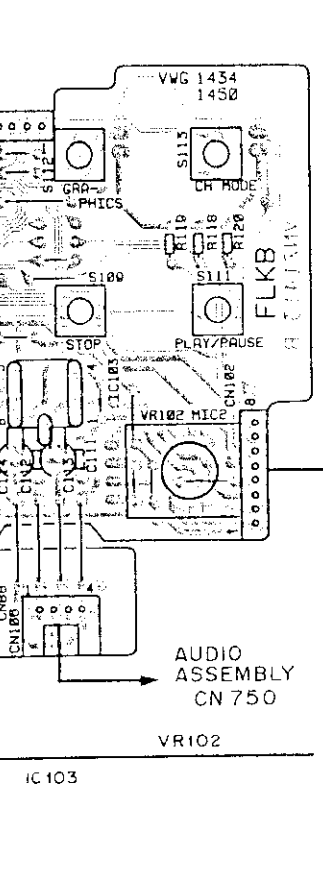


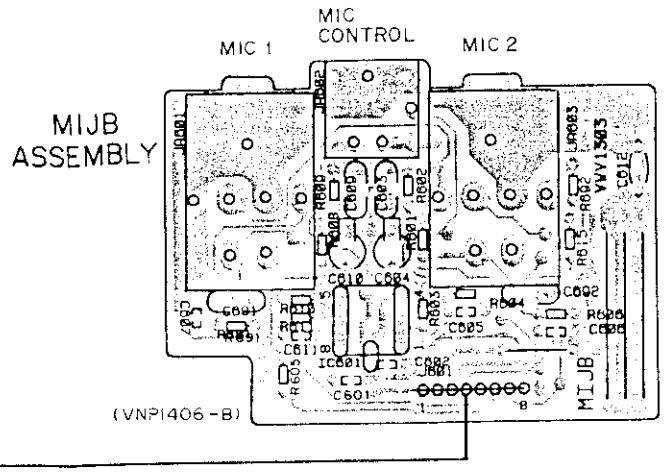


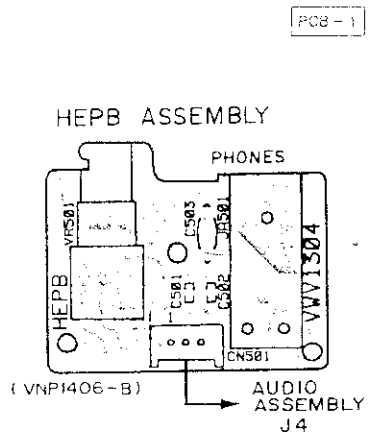


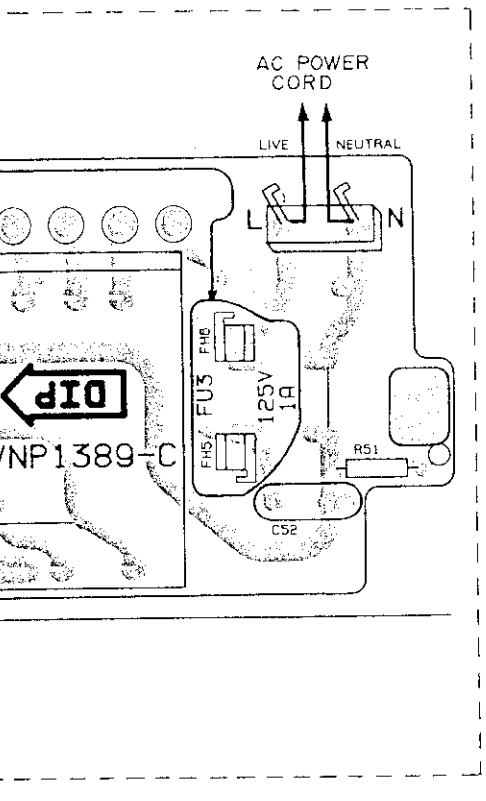


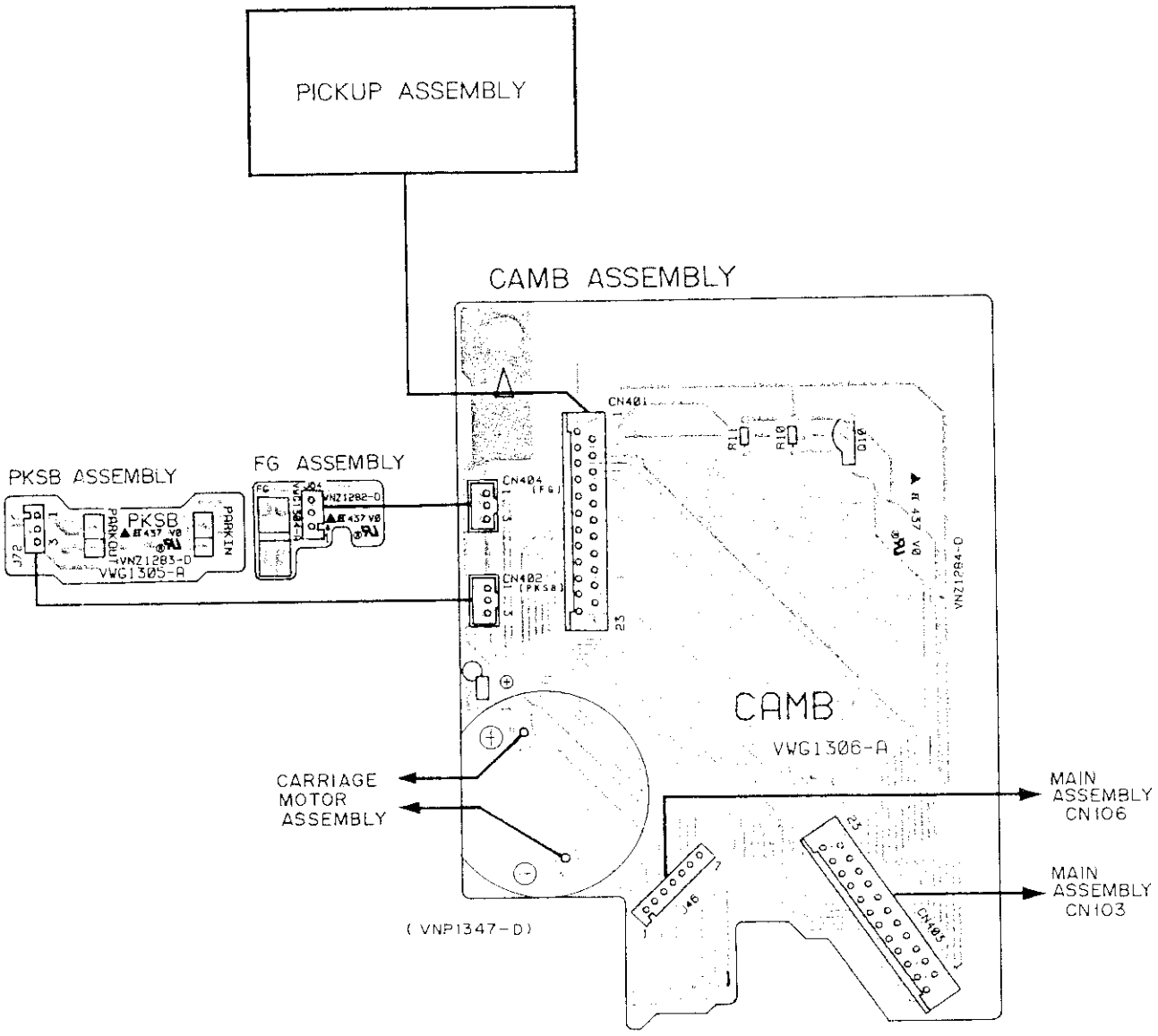
This P. C. B. connection diagram is viewed from the par

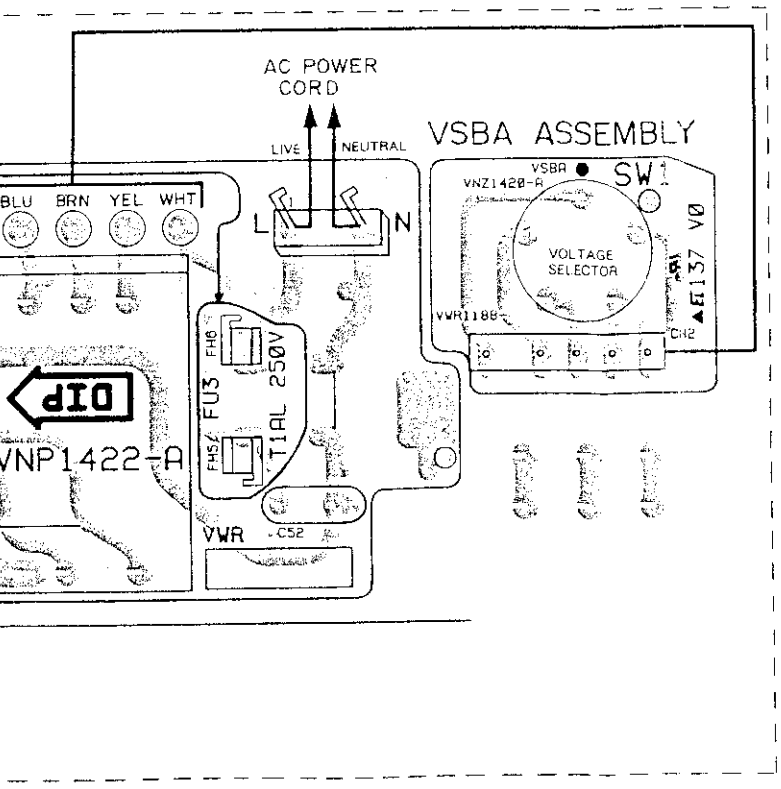


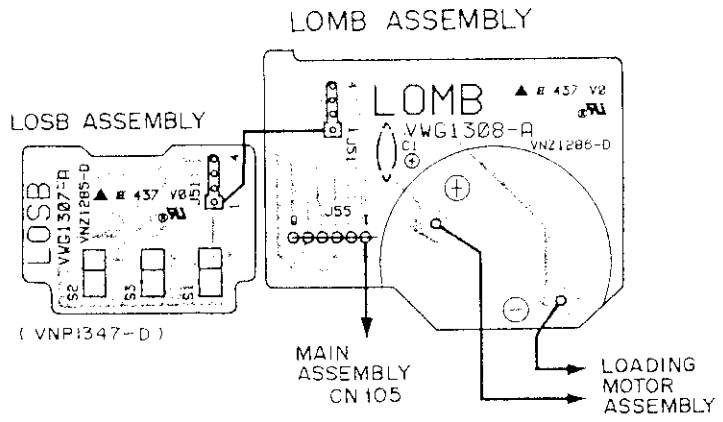




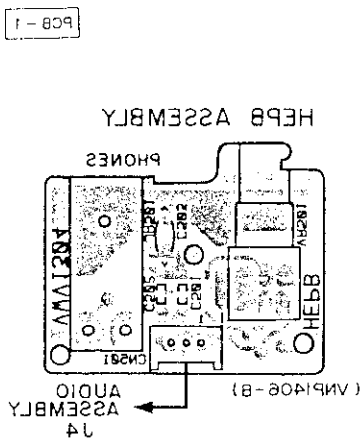


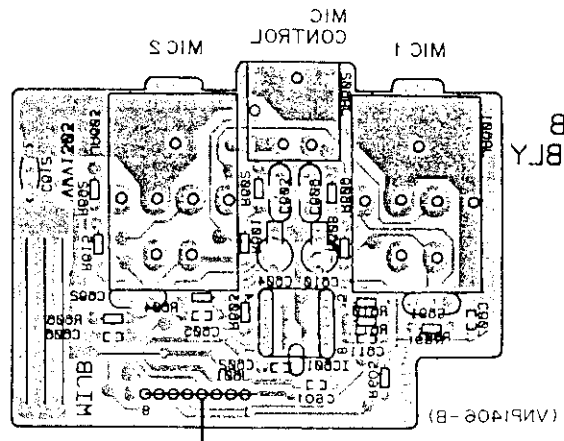


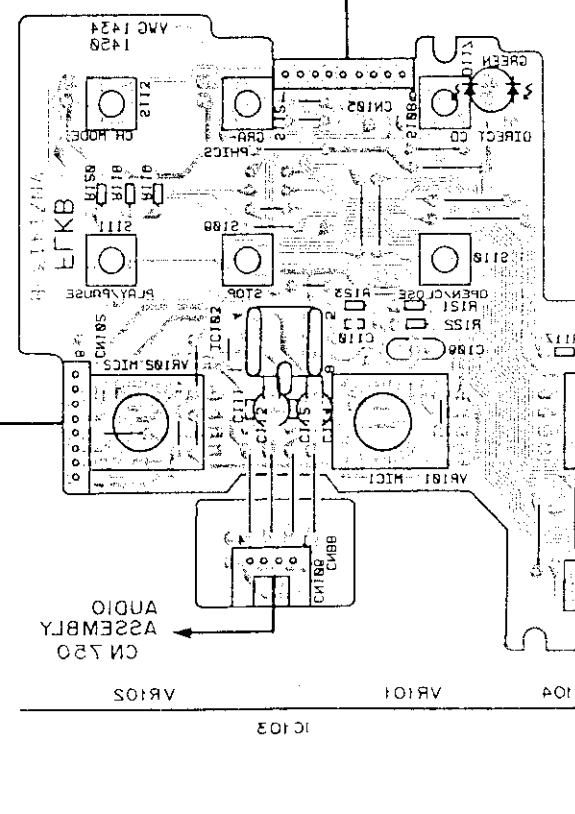


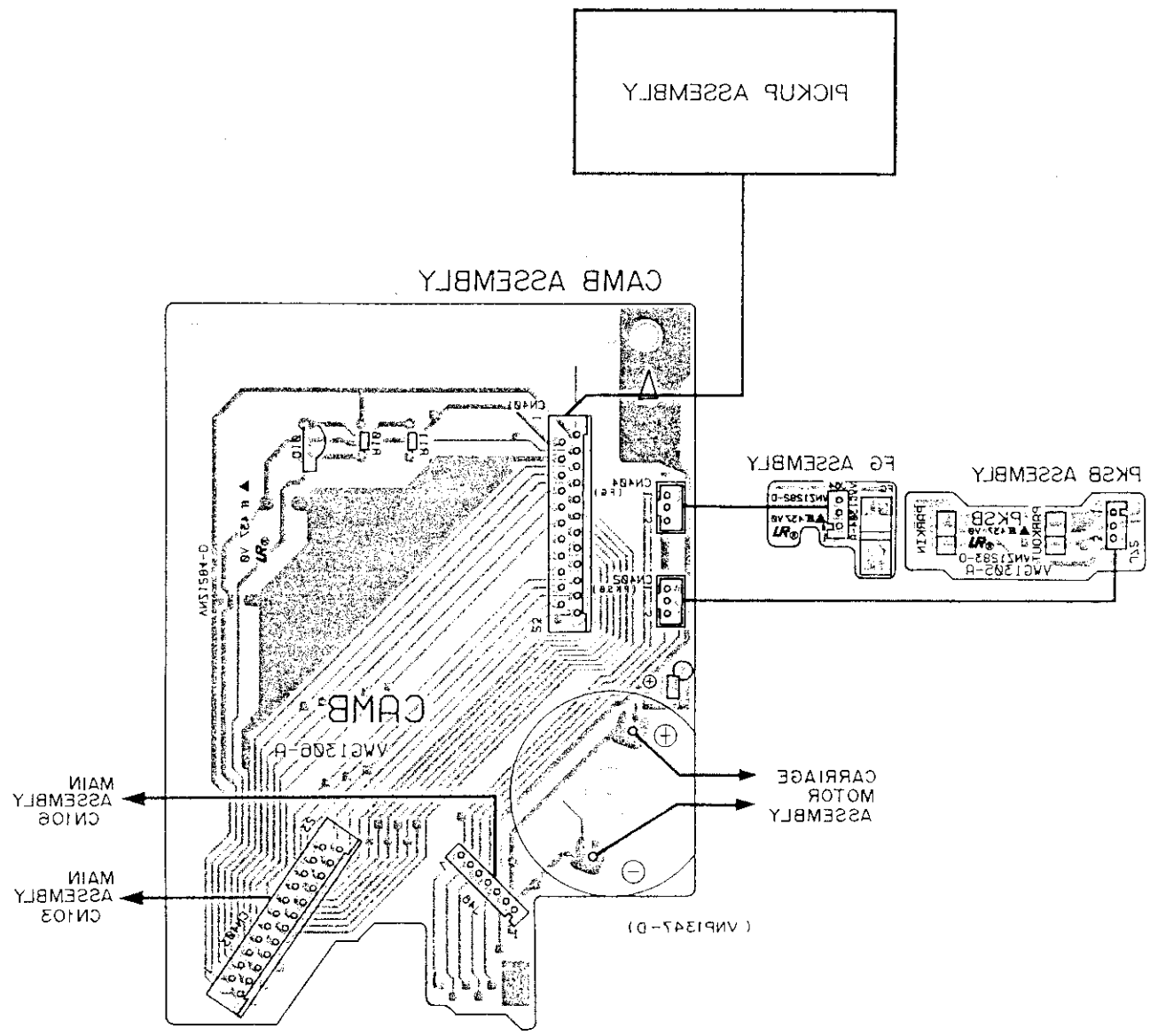


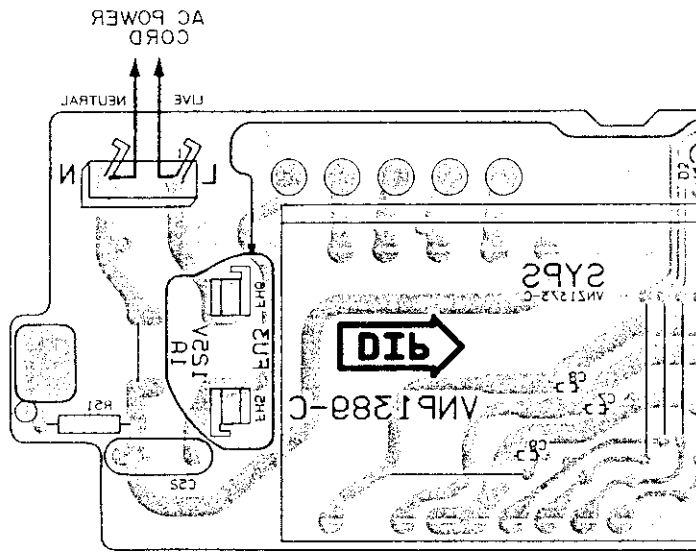
This P. C. B. connection diagram is viewed from the parts mounted side.

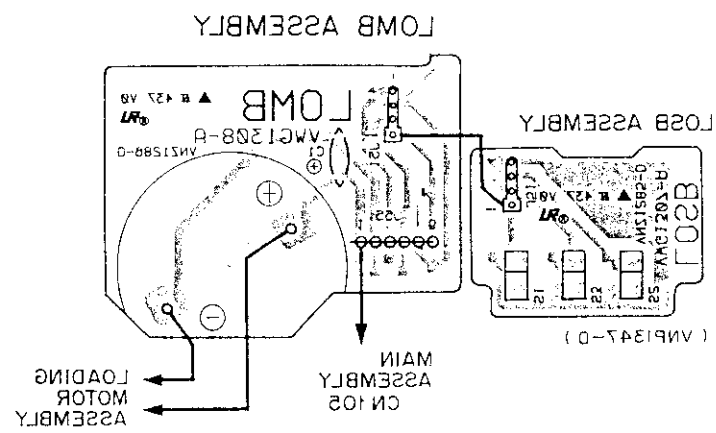


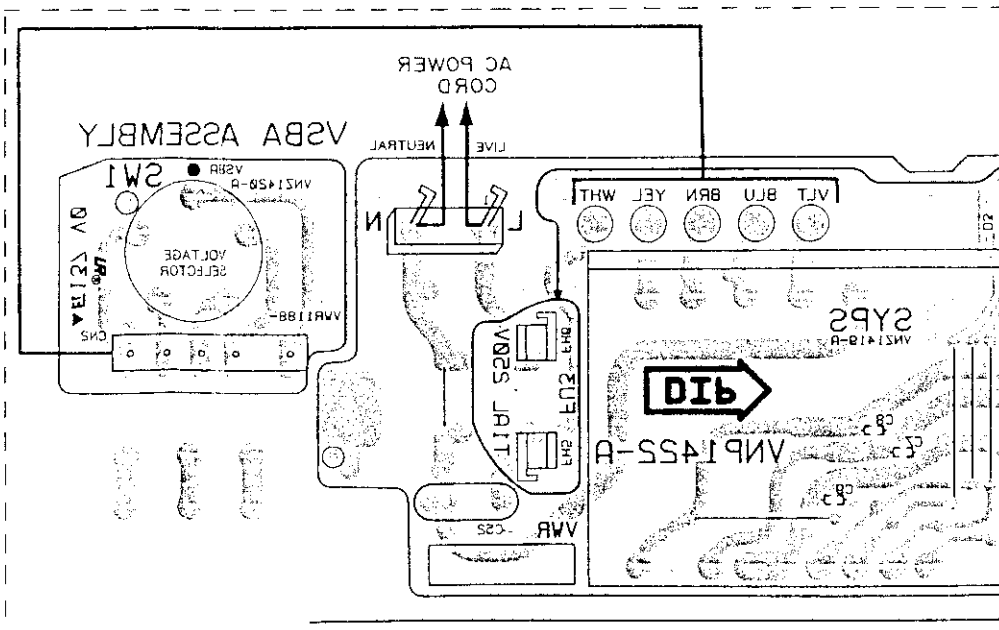












This P. C. B. connection diagram is viewed from the foil side.

CN101
CD MOTOR ASSEMBLY

CN103
MAIN ASSEMBLY

CN104
PICK-UP ASSEMBLY

CN105
SPINDLE MOTOR ASSEMBLY

CN106
AC POWER CORD

CN107
SYSTEM ASSEMBLY

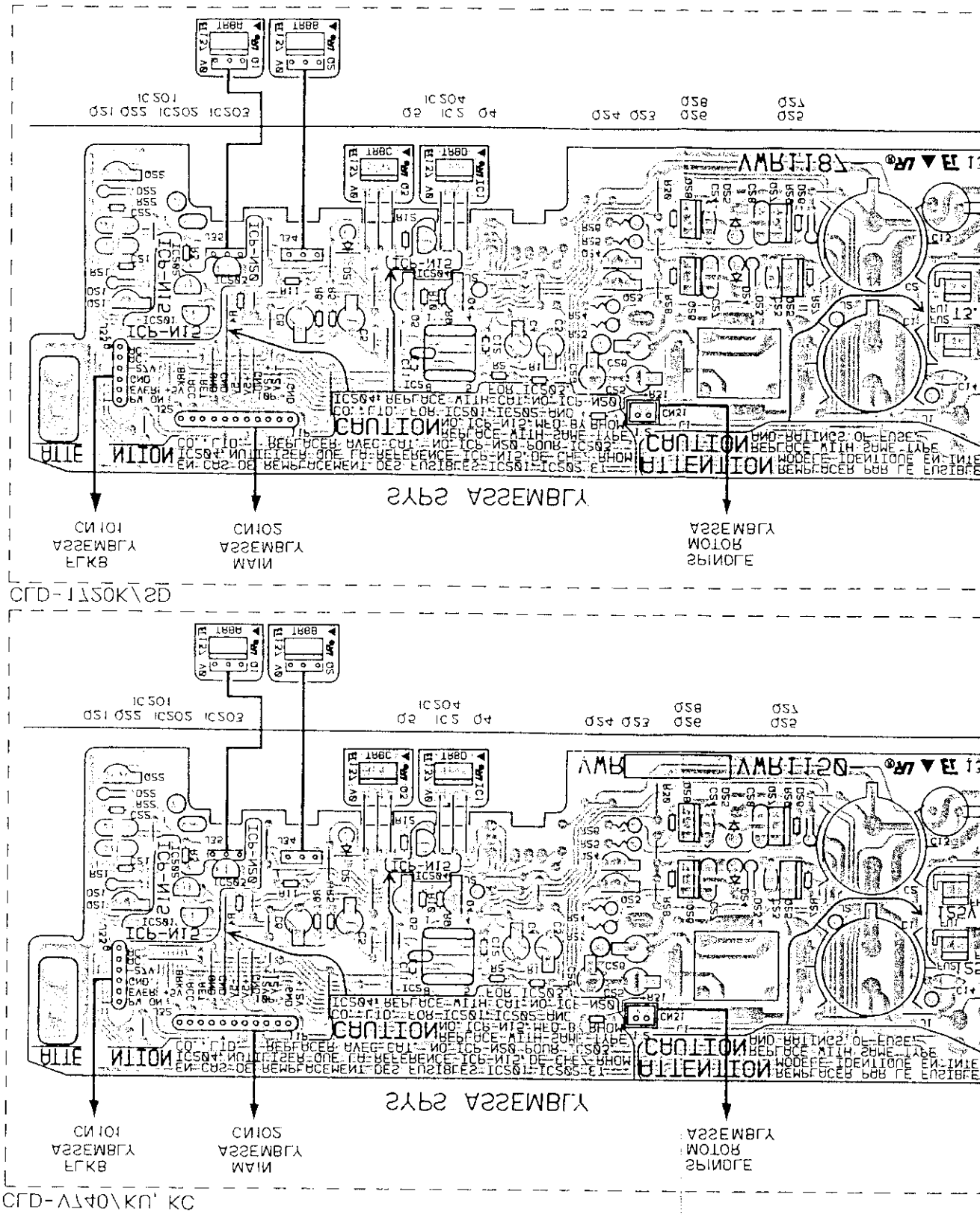
CN108
AUDIO ASSEMBLY

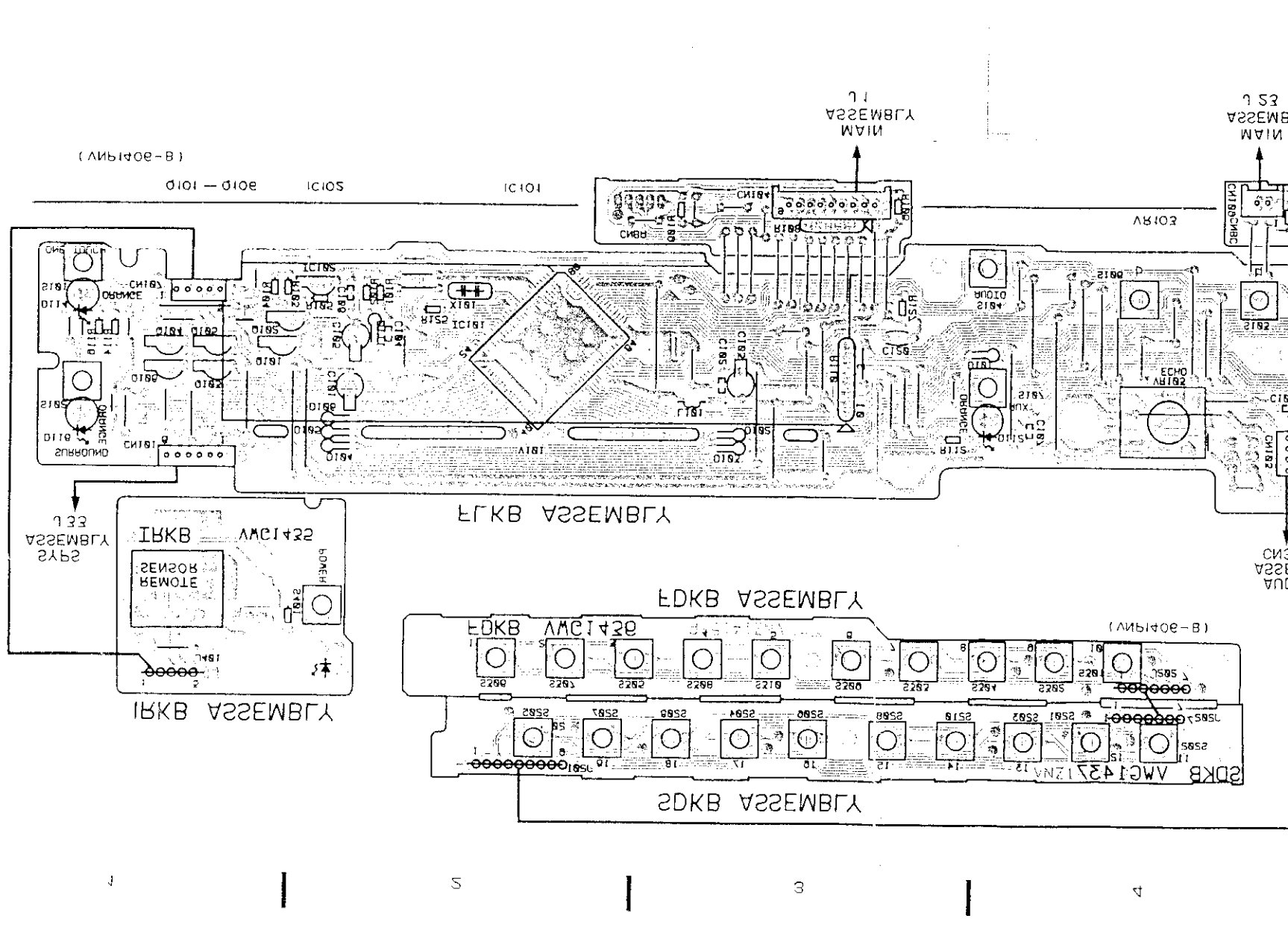
CN109
MAIN ASSEMBLY

CN110
FLKB ASSEMBLY

CN111
FDKB ASSEMBLY

CN112
SDKB ASSEMBLY


CN101
ASSEMBLY
EARS
CN105
ASSEMBLY
MAIN
ASSEMBLY
MOTOR
SPINDLE
SYS ASSEMBLY
CAUTION


IRKB ASSEMBLY
SENSOR
REMOTE
FRONT
LEDB ASSEMBLY
SDKB ASSEMBLY

• Waveforms

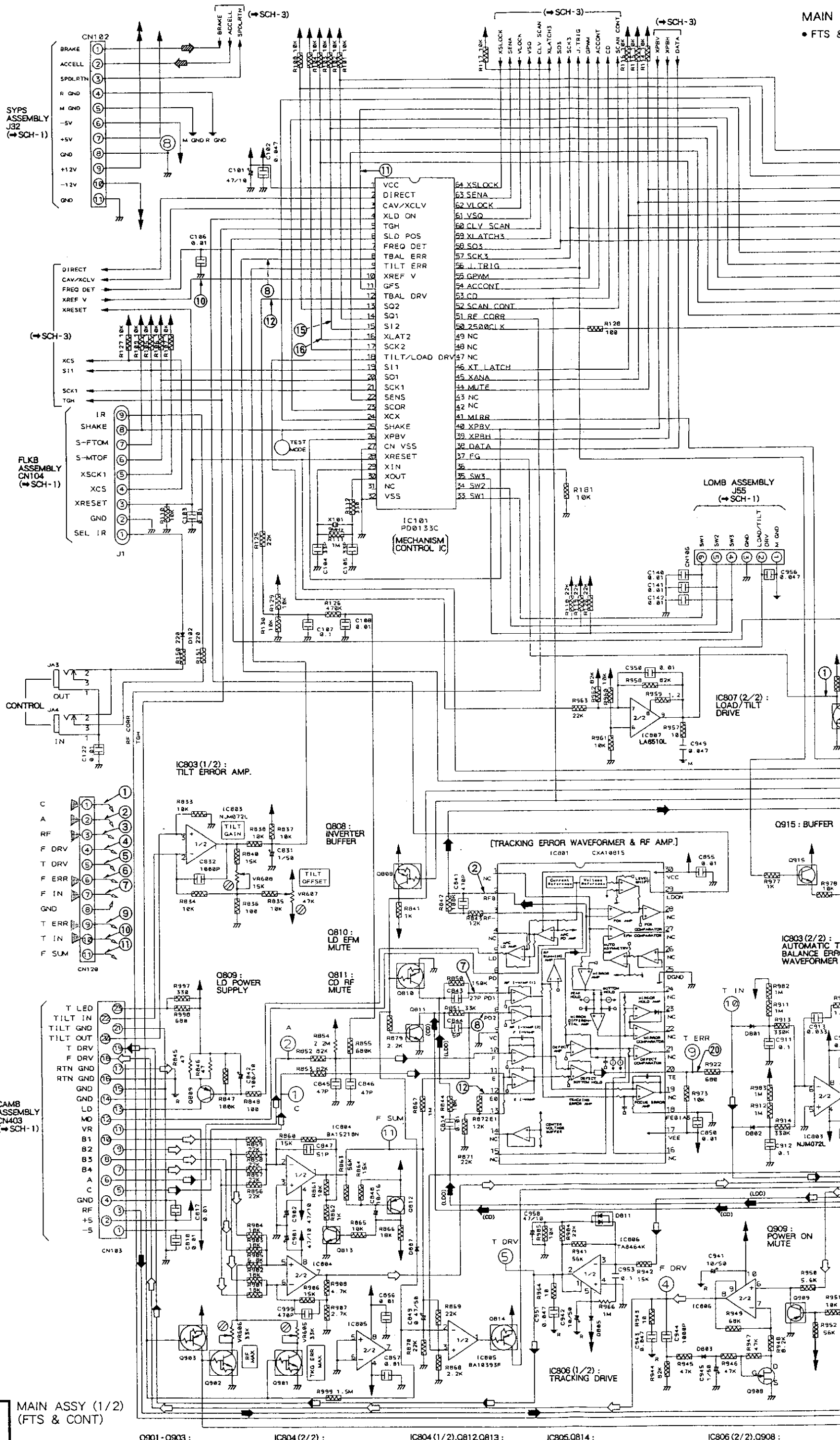
FTS AND CONT SECTION

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

Waveforms are at the PLAY mode.

IC101 (PD0133C)	IC801 (CXA1081S)	IC802 (CXA1372S)	CN120	Others Point
(8) H:5mS/div 2Vp-p 0V DC mode	(2) H:10mS/div 1.7Vp-p AC mode	(1) H:10mS/div 50mVp-p 0V DC mode	(1) H:10mS/div 130mVp-p AC mode	(1) Q615 Collector H:1mS/div 5Vp-p 0V DC mode
(10) H:10mS/div 5Vp-p DC mode 0V	(7) H:5mS/div 50mVp-p 0V DC mode	(11) H:1mS/div 1.2Vp-p DC mode 0V	(2) H:10mS/div 130mVp-p AC mode	(2) Q805 Emitter H:5mS/div 2Vp-p 0V DC mode
(11) H:10mS/div 5Vp-p DC mode 0V	(8) H:10mS/div 40mVp-p 0V DC mode	(17) H:1mS/div 0V DC mode 2.5Vp-p	(3) H:5mS/div 330mVp-p AC mode	(3) Q807 Collector H:5mS/div 1Vp-p 0V DC mode
(12) H:0.5mS/div 2.3Vp-p 0V DC mode	(12) H:10mS/div 200mVp-p AC mode		(4) H:10mS/div 7.5Vp-p AC mode	
(15) H:10mS/div 5Vp-p DC mode 0V	(20) H:10mS/div 0.35Vp-p 0V DC mode		(5) H:10mS/div 13.6Vp-p AC mode	
(16) H:2mS/div 4.7Vp-p DC mode 0V			(6) H:10mS/div 2.3Vp-p AC mode	
			(7) H:10mS/div 2.3Vp-p AC mode	
			(9) H:10mS/div 1.3Vp-p AC mode	
			(10) H:10mS/div 1.3Vp-p AC mode	
			(11) H:10mS/div 1Vp-p AC mode	

3.2 MAIN ASSEMBLY (1/2)



SCH-2 MAIN ASSY (1/2) (FTS & CONT)

MAIN ASSEMBLY (1/2) : VWX1191

• FTS & CONT SECTION

(➡SCH-3)

VLOCK, VSQ, CLV SCAN, XLATCH3, SO3, SCK3, J.TRIG, GPWM, ACCONT, CO, SCAN CONT

(➡SCH-3)

XPBV, XPBH, DATA

SQ1
SQ2
XCK
MUTE
XDIGITAL/ANALOG
XT LATCH
SCK3
SO3
GFS
SCOR
S12
SCK2
SENS
XLAT2
2500CLK

AUDIO ASSEMBLY
(➡SCH-4)

1SR35-100AVL	D805
1SS254	D102
2SA1037K	Q613
2SC2412K	Q801
DTA124EK	Q808
DTC124EK	Q615
2SA1399	Q809
2SK184	Q908
DA204K	D810

R126 100

R181 10K

LOMB ASSEMBLY
J55
(➡SCH-1)

SW1, SW2, SW3, GND, LOAD/TILT DRV, M GND

CN105

CAMB ASSEMBLY
J46
(➡SCH-1)

LED, PD, INNER, OUTER, GND, SLD DRV, M GND

CN106

Q613-Q615 :
FG SIGNAL
WAVEFORMER

IC807 (2/2) :
LOAD/TILT
DRIVE

(IC807 LA6510L)

Q912,Q913 :
MIRR KILLING
SW

Q915 : BUFFER

D886

TRACKING ERROR WAVEFORMER & RF AMP.]

(IC801 CXA1081S)

IC803 (2/2) :
AUTOMATIC TRACKING
BALANCE ERROR
WAVEFORMER

(IC803 NJM072L)

T IN

T ERR

F DRV

FEBIAS

MIRR

ASY

(IC802 CXA1372S) [FTS CONTROL]

TTL → I²L

I²L→TTL

TRKG GAIN

FOCS GAIN

F IN

F ERR

Q911 :
TRACKING GAIN
SWITCHING

Q909 :
POWER ON
MUTE

IC806 (1/2) :
TRACKING DRIVE

IC806 TA8464K

IC806 (2/2),Q908 :
FOCUS DRIVE

RF

RF LEVEL

Q801,Q802 :
RF BUFFER

Q803 :
RF AMP.

Q804 :
RF CORRECTION

Q805 :
RF BUFFER

Q807 :
EFM BUFFER

IC807 (1/2) :
SLIDER DRIVE

(IC807 LA6518L)

(➡SCH-3)
RF (VIDEO)

IC805,Q814 :
MIRR COMPARATOR

4 5 6 7 8

Y (1/2) : VWX1191

CTION

:RF Signal Route
(CD) :RF Signal Route (CD)
(LDD) :RF Signal Route (LDD)
:Tracking Servo Loop Line
:Focus Servo Loop Line
:Spindle Servo Loop Line

AUDIO ASSEMBLY (➡SCH-4)
SQ1
SQ2
XCK
MUTE
XDIGITAL/ANALOG
XT LATCH
SCK3
SO3
GFS
SCOR
SI2
SCK2
SENS
XLAT2
2S00CLK

1SR35-100AVL	D805
1SS254	D102 801 802 803 806 807
2SA1037K	Q613 614 802 812 909 916
2SC2412K	Q801 803 804 805 807 811 813 915
DTA124EK	Q808 810 814 903 913
DTC124EK	Q615 901 902 911 912 914
2SA1359	Q809
2SK184	Q908
DA204K	D810 811

CAMB ASSEMBLY J46 (➡SCH-1)
LED
PD
INNER
OUTER
GND
SLD DRV
M GND
CN106

AUDIO ASSEMBLY (➡SCH-4)
FOK
XRST
MIRR
ASY
SEIN
CNIN
DATO
XLT
CLK

J9
AUDIO ASSEMBLY J9 (➡SCH-4)
-5V
+5V
GND
+1.2V
-1.2V
GND
RF
GND
EFM
GND

Q912,Q913 : MIRR KILLING SW

Q914 : CHARACTERISTIC SWITCHING for ONE TRACK JUMP

Q911 : TRACKING GAIN SWITCHING

Q807 : EFM BUFFER

IC802 CXA1372S [FTS CONTROL]

IC807 LA6510L

(➡SCH-3)
RF (VIDEO)

Q801,Q802 : RF BUFFER
Q803 : RF AMP.
Q804 : RF CORRECTION
Q805 : RF BUFFER
IC807(1/2) : SLIDER DRIVE

MAIN ASSY (1/2) (FTS & CONT)

SCH-2

3.3 MAIN ASSEMBLY (2/2)

MAIN ASSEMBLY (2/2) : VWX1191
• VIDEO & TBC SECTION

MAIN ASSY (2/2) (VIDEO & TBC)

SCH-3

IC404 :
CCD CLOCK VCO

IC404
PA0017

LIM GND C1 C2 VEE VOUT VCC ADJ VIN

C485 33P, R473 100, R475 6.8K, C487 0.047, C489 100/10, R474 560, C486 0.01, C488 0.047, C490 100/10, VR481 4.7K

VCO CENTER FREQ.ADJ.

DTA124EK	Q 403 606 610
DTC124EK	Q 612 615
2SA1037K	Q 456 496 511 561 608
2SC2412K	Q 431 432 497 498 499
	Q 500 541 582 583 601
	Q 602 603 604 605 607 609
	Q 617 620
2SB1237K	Q 401
2SD1858K	Q 402
1SS254	D 401

Q432 :
CCD PRE-FILTER
BUFFER

C448 0.047, L441 27, Q432, R442 1K, C450 10P, C451 27P, R443 1K

IC403
TL8722P
[CCD]

C471 0.47/50, C472 0.47/50, C473 4.7/16, C476 470/10, C477 0.01, C475 1/50, C474 4.7/16, C480 0.1, C484 470/10, C482 0.047, C481 0.1, C479 0.1, D401, DCN1001

Q601 :
VSP ERROR
BUFFER

R674 1K, R675 4.7K, C650 470/10, C651 0.047, C636 0.01YF, C602 100P CH

Q617 :
REFERENCE
VIDEO BUFFER

C635 18P CH, R673 1.5K, R672 33K, R671 10K, R670 8.2K, C634 18P CH, R688 680K, R687 2.2K, R668 470, C633 18P CH, R667 10K, R669 1.5K, R764 100

XSGBLK, XSGCSYNC, AGND, COLORBACK, XSGHD, XTBCLOCK, FSC, XSGVSYNC, XPBVSYNC, SHIFT ENABLE, VLOCK, VSQ, OGND, CLVSCAN

Q602 :
TBC GAIN
SWITCHING

Q603,Q604 :
TRAPEZOID
WAVEFORMER

IC602 (2/2) :
CCD ERROR AMP.

R626 820K, R692 820K, R625 1K, R624 5.6K, R623 27K, C615 0.01YF, C616 0.01YF, IC602 BA15218N

Q602, R604 150K, C604 0.01YF, R610 33K, R603 10K, C603 1/50, R601 100K, R602 1M, C606 1000P, R605 220, R606 2.7K, Q603, Q604, R607 2.7K, C608 1500P, R612 470K, R609 33K, C609 33P, R608 68K, R611 820K, C605 1000P

BE OUT, BE LPF IN, BE LPF OUT, VREF, PFC CAP, TRAPE CAP, T HOLD CONT, H ERR HOLD CAP, T BASE ERR, T AMPS Tr

Q496 :
VIDEO
BUFFER

Q500 :
CCD POST-FILTER
BUFFER

Q497 :
VIDEO
BUFFER

VIDEO LEVEL

R497 2.2K, C497 10P, C499 22/10, Q500, VR482 2.2K, Q497, R496 68, Q496, R498 470, L496 18, R499 10K, R508 470, R500 1K, R507 1K, R501 560, C496 39P, C498 82P, C506 0.1

Q511 :
BUFFER

Q498,Q499 :
C-SIGNAL FILTER

R516 1K, Q511, R515 1.8K, C509 150P, C508 10P, C510 27P, R504 1.5K, C503 0.1, Q498, L497 100, R502 680, Q499, R506 2.2K, C504 0.047, C501 47/10, C505 0.1, C502 47/10, R503 2.7K

R762 10K, R763 100

C544 0.047, C542 47/10, C543 0.1, Q541, R542 100, R543 5.6K, C548 0.047, C545 68P, C546 47P, L541 12

IC405
PD0175A

VDD1 PBWILL PBV REFV PBH REFH CHA CHB TEST OUT4 TEST OUT3 SCAN TESTIN2 REFIN TESTINT PBIN VDD2
VSS1 OSCIN OSCOUT AC CS SIN SCK VSQ TEST OUT1 TEST OUT2 VSS2 LECHA LEBK VIDEO OUT

Q541 :
VIDEO
BUFFER

C547 33P, C549 33P, C550 33P

IC405 :
CHARACTER
GENARATOR

R514 100

R665 4.7K, C632 100 CH, R666 47K

DRIVE1 DRIVE2 XPBHD LATCH SDATA SCLOCK J TRIG XPBCSYNC SCAN CONT 140nS SHIFT XRESET OSC IN OSC OUT

R662 1M, R661 220, C629 0.047, C631 18P CH, X601 VSS1026, C630 18P CH, VC901 VCM-008

LOGIC BLOCK

SYNC SIGNAL GEN
REF H GEN
REF SC GEN
PBH TIMING GEN
LOCK DETECTOR

PFC

PFCREFH PFCHD PFCOUT PFCVDD PFCMD TRAPESTART TRAPESELECT HERRORS/HP CLOCK INH

IC601
PM3002
(TBC SERVO & SYNC GENERATOR)

SPINDLE DRIVE LOGIC

COLOR CONTROLE ERRCUT SPINDLERUN

SERIAL-PARALEL DECORDER

R645

BOTH SW 10&11 CLOSE AT CDV

SW10 SW11 SW9 SW12 SW13 SW14 SW15 SW16 SW3 SW4 SW5 SW6 SW7 SW8

TAMP1 TAMP2 TAMP3 TAMP4 TAMP5 TAMP6 TAMP7 SAMP1 SAMP2 SAMP3 COMP1 COMP2 COMP3

CD ACTIVE, SIDEA, 8inch, 5inch, 6.8K, 4.7K 8BP, 2K, 10K, 68K, 100K, 10K, 2.7K, 20K, 20K, FSC/128

AUDIO ASSEMBLY J21 (→SCH-4)

J21 : L.MTOA, L.ATOM, GND, R.MTOA, R.ATOM

V+8V, R754 22K, Q750

J23 : INT/EXT — FLKB ASSEMBLY CN109 (→SCH-1)

Q750 :
INVERTER
BUFFER

Q610 :
BUFFER

CAV/CLV DATA XPBV XCS SI1 SCK1 XREFV XSLOCK SENA VLOCK VSQ CLV SCAN BRAKE ACCELL XPBH XLATCH3 SO3 SCK3 JTRIG SCAN CONT XRESET TGH

(→SCH-2)

SCH-3

:RF Signal Route
:Spindle Servo Loop Line
:Video Signal Route
:Audio Signal Route (L ch)
:Audio Signal Route (MIC)

DTA124EK	Q 483 606 618
DTC124EK	Q 612 615
2SA1837K	Q 456 496 511 581 608
2SC2412K	Q 431 432 497 498 499
	Q 500 541 582 583 601
	Q 602 603 604 605 607 609
	Q 617 620
2SB1237K	Q 401
2SD1858K	Q 402
1SS254	D 401

IC602 (2/2) : CCD ERROR AMP.

Q607,Q608 : REFERENCE VOLTAGE GENERATOR

CCD ERR → AUDIO ASSEMBLY (→SCH-4)

Q601 : VSP ERROR BUFFER

Q602 : TBC GAIN SWITCHING

Q603,Q604 : TRAPEZOID WAVEFORMER

Q605,Q606,Q620 : TBC ERROR DETECTION

Q617 : REFERENCE VIDEO BUFFER

LOGIC BLOCK
SYNC SIGNAL GEN
REF H GEN
REF SC GEN
PBH TIMING GEN
LOCK DETECTOR

PFC

IC601
PM3002
(TBC SERVO & SYNC GENERATOR)

SPINDLE DRIVE LOGIC

SERIAL-PARALEL DECORDER

IC602
BA15218N

Q611,Q612 : CD/LD SPINDLE LOOP SWITCHING

Q610 : BUFFER

Q609 : VCXO SW

IC602(1/2) : VCXO ERROR AMP.

(→SCH-2)

MAIN ASSY (2/2)
(VIDEO & TBC)

SCH-3

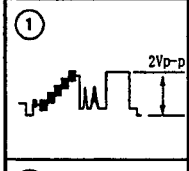
• Waveforms

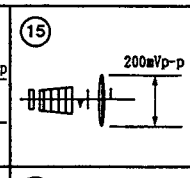
VIDEO AND TBC SECTION

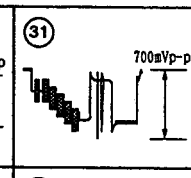
Note: (No.) in the table correspond to the pin number.

Waveforms are at the PLAY mode.

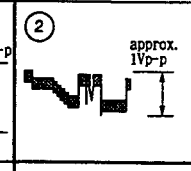
IC401 (PA5013A)



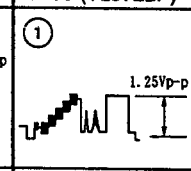




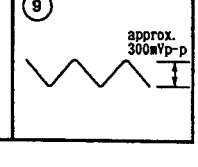
IC402 (PM0001)



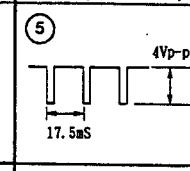
IC403 (TL8722P)



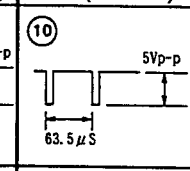
IC404 (PA0017)



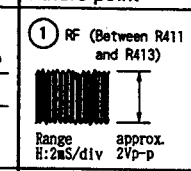
IC405 (PD0175A)



IC601 (PM3002)



Others point

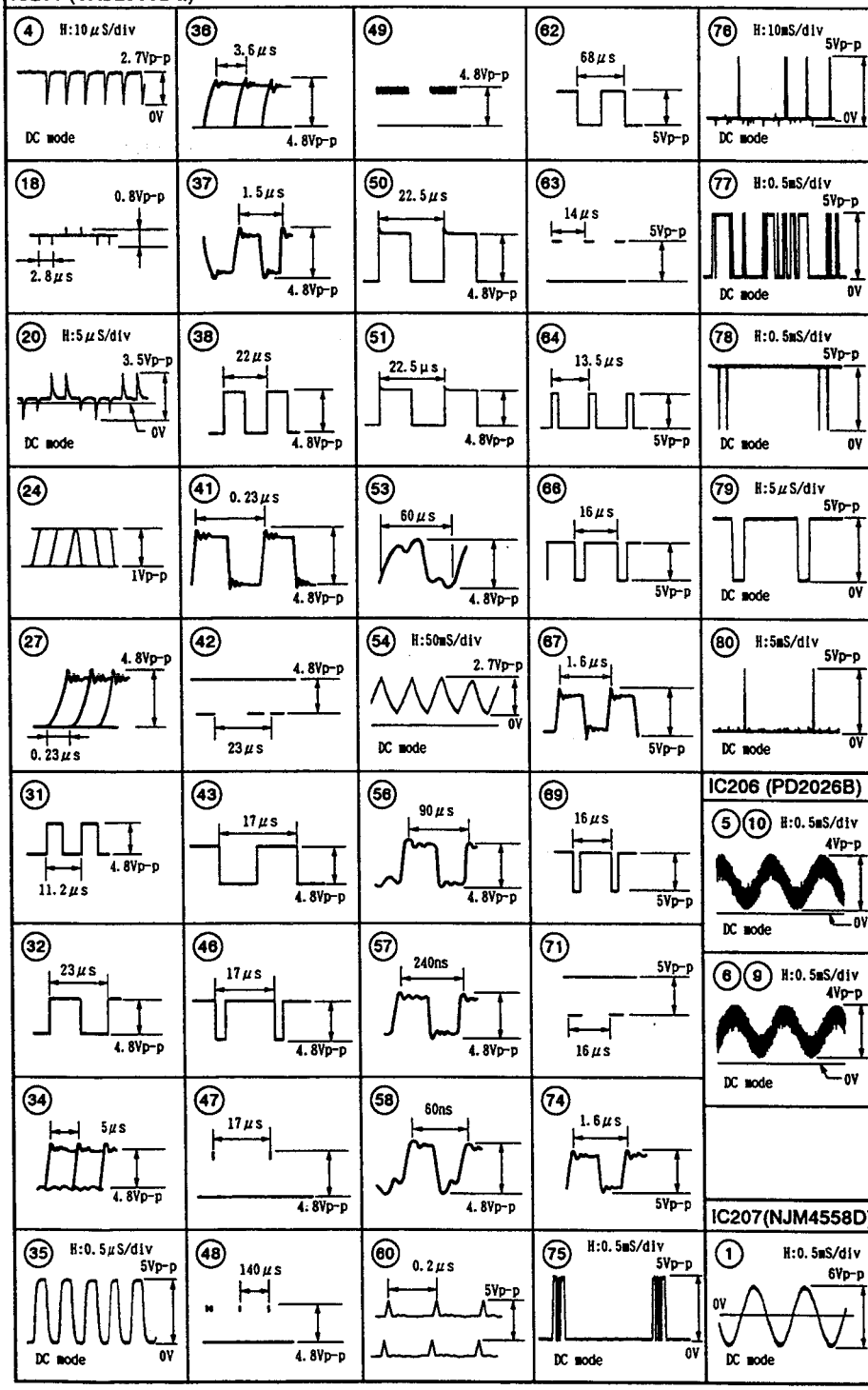


• Waveforms

AUDIO ASSEMBLY

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

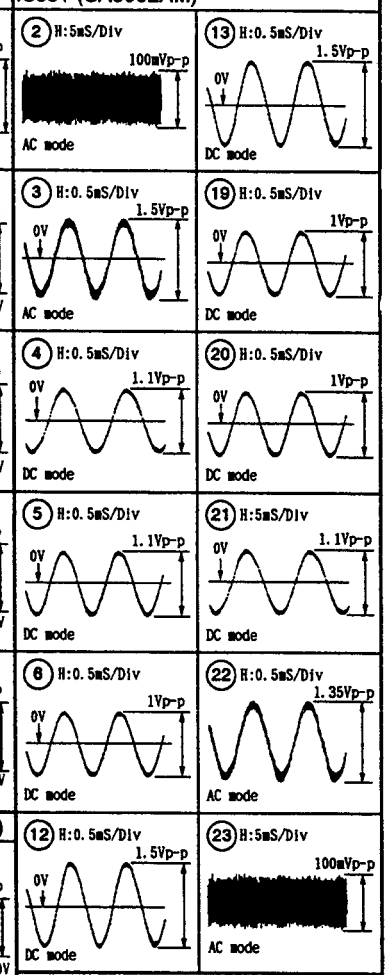
IC201 (CXD2500BQ)



IC206 (PD2026B)

IC207(NJM4558D)

IC351 (CA0002AM)



Note: Waveforms and voltages are at the PLAY mode.

IC351 (CA0002AM)

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

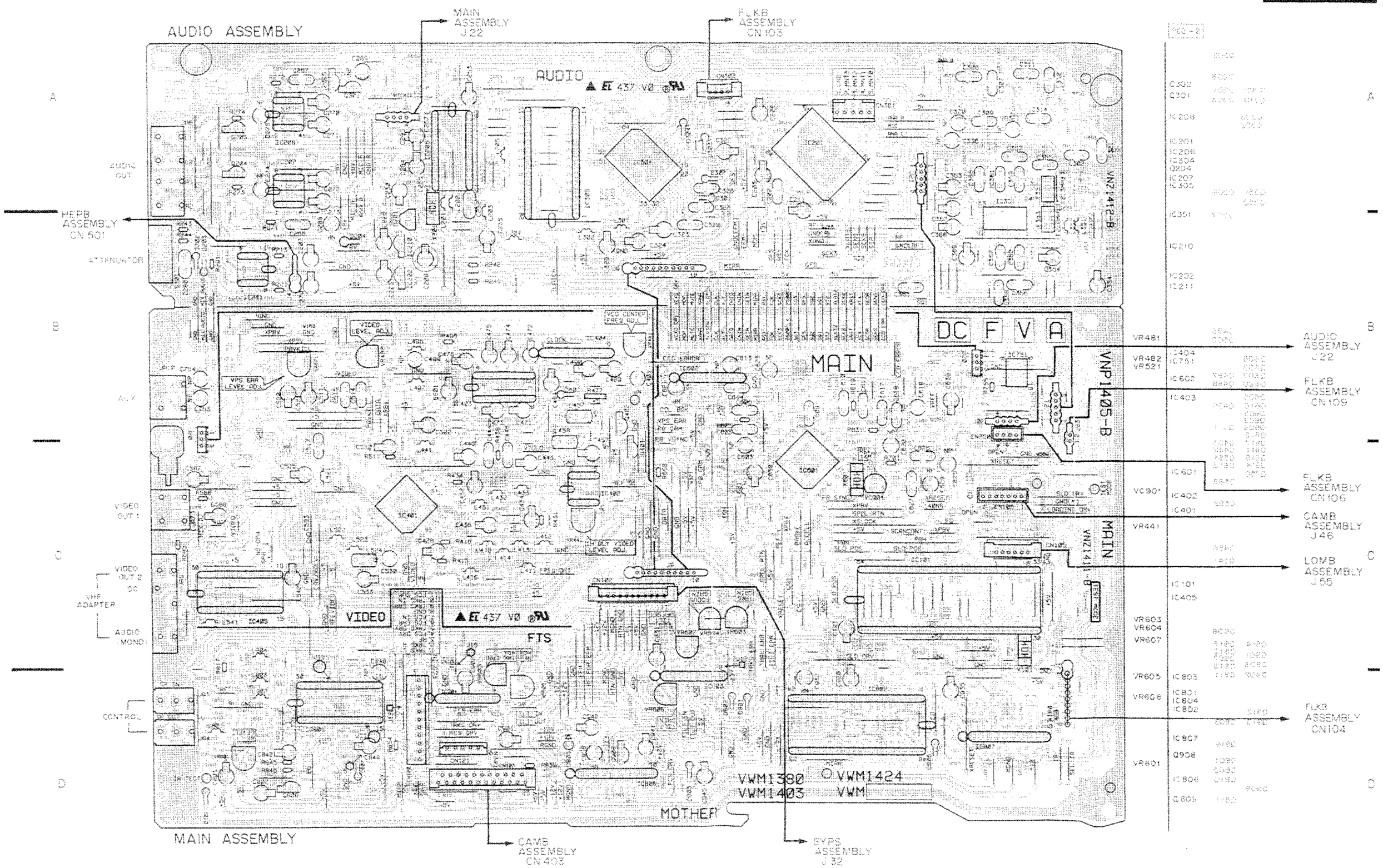
*: Refer to waveform

Note: Waveforms and voltages are at the PLAY mode.

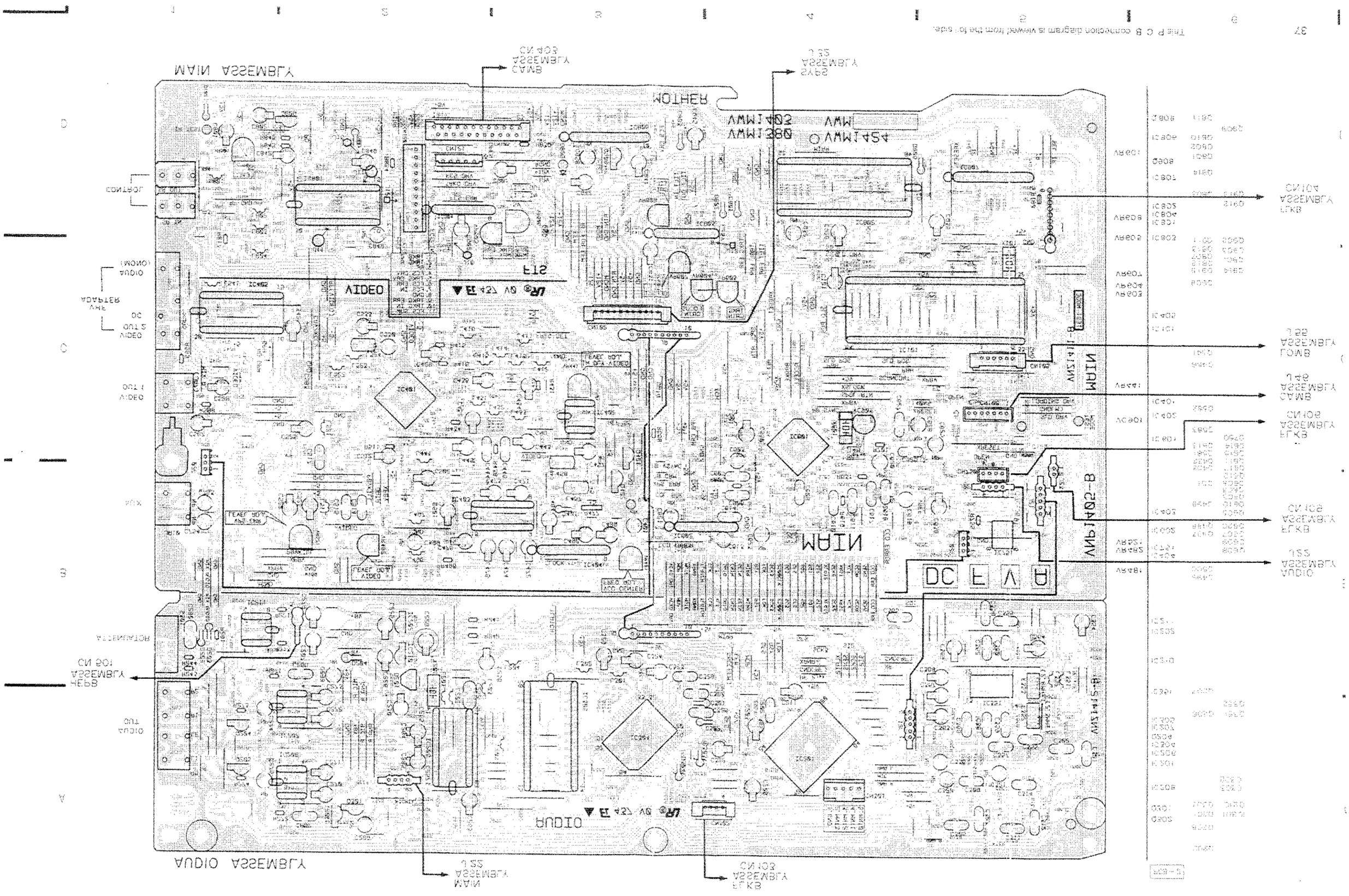
IC201 (CXD2500BQ)

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

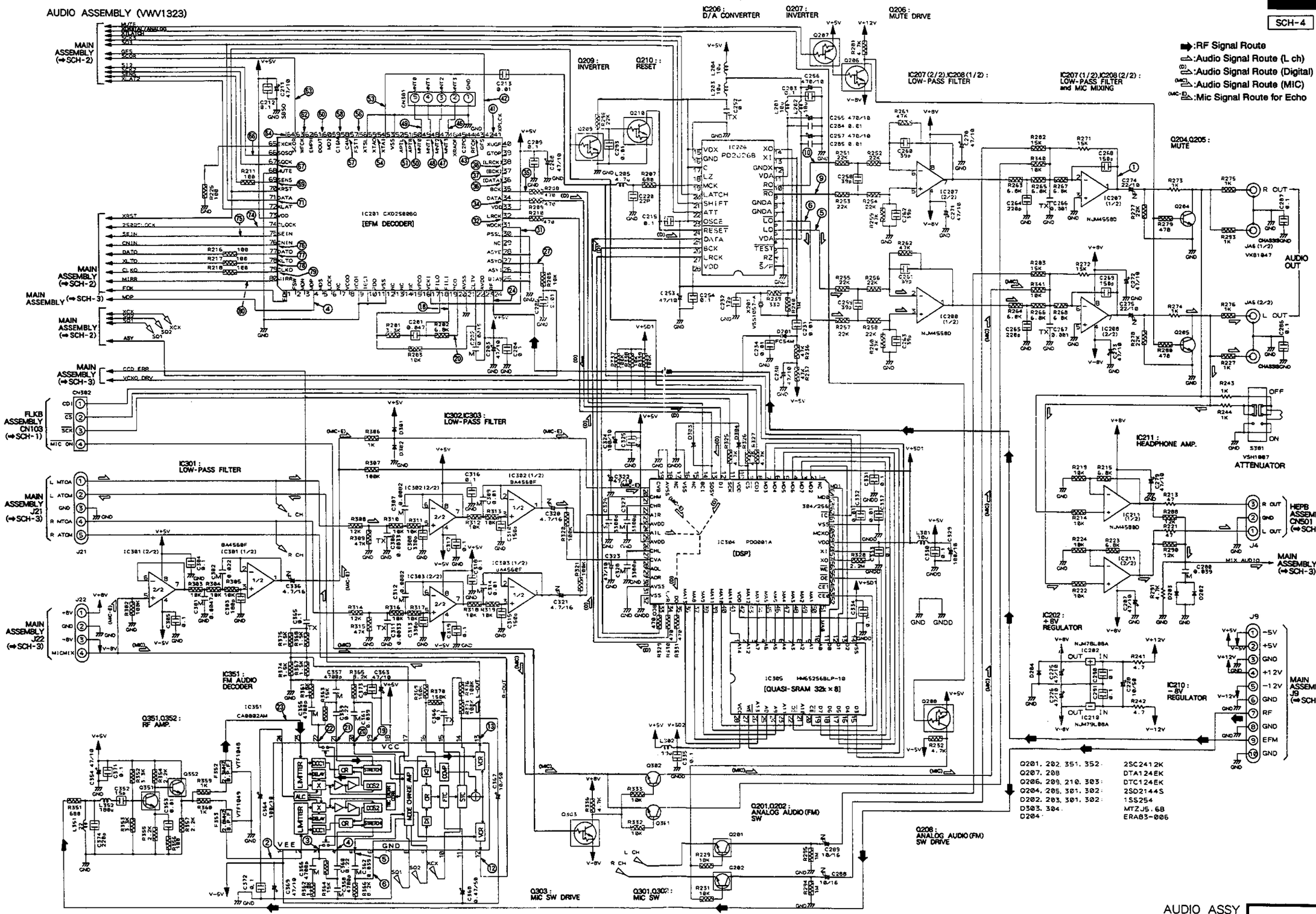
*: Refer to waveform



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


MAIN ASSEMBLY
MOTHER
CN104 ASSEMBLY CAMB
CN103 ASSEMBLY SYS
CN105 ASSEMBLY LCMB
CN106 ASSEMBLY LCKB
CN108 ASSEMBLY CAMB
CN107 ASSEMBLY SUB
CN102 ASSEMBLY VIDEO
CN101 ASSEMBLY HEAD
CONTROL
AUDIO (MONO)
VIDEO OUT 2
DC
ADAPTER
VIDEO OUT 1
AUDIO OUT
AUDIO ASSEMBLY
CN103 ASSEMBLY MAIN
CN104 ASSEMBLY SYS
CN105 ASSEMBLY LCKB
MAIN
AUDIO
VIDEO
DC IN 12V
AV-8
AV-8U
AV-8S
AV-8E
AV-8P
AV-8A
AV-8B
AV-8C
AV-8D
AV-8F
AV-8G
AV-8H
AV-8J
AV-8K
AV-8L
AV-8M
AV-8N
AV-8R
AV-8T
AV-8V
AV-8W
AV-8X
AV-8Y
AV-8Z
AV-8AA
AV-8AB
AV-8AC
AV-8AD
AV-8AE
AV-8AF
AV-8AG
AV-8AH
AV-8AJ
AV-8AK
AV-8AL
AV-8AM
AV-8AN
AV-8AP
AV-8AR
AV-8AS
AV-8AT
AV-8AU
AV-8AV
AV-8AW
AV-8AX
AV-8AY
AV-8AZ
AV-8BA
AV-8BB
AV-8BC
AV-8BD
AV-8BE
AV-8BF
AV-8BG
AV-8BH
AV-8BJ
AV-8BK
AV-8BL
AV-8BM
AV-8BN
AV-8BP
AV-8BR
AV-8BS
AV-8BT
AV-8BU
AV-8BV
AV-8BW
AV-8BX
AV-8BY
AV-8BZ
AV-8CA
AV-8CB
AV-8CC
AV-8CD
AV-8CE
AV-8CF
AV-8CG
AV-8CH
AV-8CJ
AV-8CK
AV-8CL
AV-8CM
AV-8CN
AV-8CP
AV-8CR
AV-8CS
AV-8CT
AV-8CU
AV-8CV
AV-8CW
AV-8CX
AV-8CY
AV-8CZ
AV-8DA
AV-8DB
AV-8DC
AV-8DD
AV-8DE
AV-8DF
AV-8DG
AV-8DH
AV-8DJ
AV-8DK
AV-8DL
AV-8DM
AV-8DN
AV-8DP
AV-8DR
AV-8DS
AV-8DT
AV-8DU
AV-8DV
AV-8DW
AV-8DX
AV-8DY
AV-8DZ
AV-8EA
AV-8EB
AV-8EC
AV-8ED
AV-8EE
AV-8EF
AV-8EG
AV-8EH
AV-8EJ
AV-8EK
AV-8EL
AV-8EM
AV-8EN
AV-8EP
AV-8ER
AV-8ES
AV-8ET
AV-8EU
AV-8EV
AV-8EW
AV-8EX
AV-8EY
AV-8EZ
AV-8FA
AV-8FB
AV-8FC
AV-8FD
AV-8FE
AV-8FF
AV-8FG
AV-8FH
AV-8FJ
AV-8FK
AV-8FL
AV-8FM
AV-8FN
AV-8FP
AV-8FR
AV-8FS
AV-8FT
AV-8FU
AV-8FV
AV-8FW
AV-8FX
AV-8FY
AV-8FZ
AV-8GA
AV-8GB
AV-8GC
AV-8GD
AV-8GE
AV-8GF
AV-8GG
AV-8GH
AV-8GJ
AV-8GK
AV-8GL
AV-8GM
AV-8GN
AV-8GP
AV-8GR
AV-8GS
AV-8GT
AV-8GU
AV-8GV
AV-8GW
AV-8GX
AV-8GY
AV-8GZ
AV-8HA
AV-8HB
AV-8HC
AV-8HD
AV-8HE
AV-8HF
AV-8HG
AV-8HH
AV-8HJ
AV-8HK
AV-8HL
AV-8HM
AV-8HN
AV-8HP
AV-8HR
AV-8HS
AV-8HT
AV-8HU
AV-8HV
AV-8HW
AV-8HX
AV-8HY
AV-8HZ
AV-8JA
AV-8JB
AV-8JC
AV-8JD
AV-8JE
AV-8JF
AV-8JG
AV-8JH
AV-8JJ
AV-8JK
AV-8JL
AV-8JM
AV-8JN
AV-8JP
AV-8JR
AV-8JS
AV-8JT
AV-8JU
AV-8JV
AV-8JW
AV-8JX
AV-8JY
AV-8JZ
AV-8KA
AV-8KB
AV-8KC
AV-8KD
AV-8KE
AV-8KF
AV-8KG
AV-8KH
AV-8KJ
AV-8KK
AV-8KL
AV-8KM
AV-8KN
AV-8KP
AV-8KR
AV-8KS
AV-8KT
AV-8KU
AV-8KV
AV-8KW
AV-8KX
AV-8KY
AV-8KZ
AV-8LA
AV-8LB
AV-8LC
AV-8LD
AV-8LE
AV-8LF
AV-8LG
AV-8LH
AV-8LJ
AV-8LK
AV-8LL
AV-8LM
AV-8LN
AV-8LP
AV-8LR
AV-8LS
AV-8LT
AV-8LU
AV-8LV
AV-8LW
AV-8LX
AV-8LY
AV-8LZ
AV-8MA
AV-8MB
AV-8MC
AV-8MD
AV-8ME
AV-8MF
AV-8MG
AV-8MH
AV-8MJ
AV-8MK
AV-8ML
AV-8MM
AV-8MN
AV-8MP
AV-8MR
AV-8MS
AV-8MT
AV-8MU
AV-8MV
AV-8MW
AV-8MX
AV-8MY
AV-8MZ
AV-8NA
AV-8NB
AV-8NC
AV-8ND
AV-8NE
AV-8NF
AV-8NG
AV-8NH
AV-8NJ
AV-8NK
AV-8NL
AV-8NM
AV-8NN
AV-8NP
AV-8NR
AV-8NS
AV-8NT
AV-8NU
AV-8NV
AV-8NW
AV-8NX
AV-8NY
AV-8NZ
AV-8PA
AV-8PB
AV-8PC
AV-8PD
AV-8PE
AV-8PF
AV-8PG
AV-8PH
AV-8PJ
AV-8PK
AV-8PL
AV-8PM
AV-8PN
AV-8PP
AV-8PR
AV-8PS
AV-8PT
AV-8PU
AV-8PV
AV-8PW
AV-8PX
AV-8PY
AV-8PZ
AV-8QA
AV-8QB
AV-8QC
AV-8QD
AV-8QE
AV-8QF
AV-8QG
AV-8QH
AV-8QJ
AV-8QK
AV-8QL
AV-8QM
AV-8QN
AV-8QP
AV-8QR
AV-8QS
AV-8QT
AV-8QU
AV-8QV
AV-8QW
AV-8QX
AV-8QY
AV-8QZ
AV-8RA
AV-8RB
AV-8RC
AV-8RD
AV-8RE
AV-8RF
AV-8RG
AV-8RH
AV-8RJ
AV-8RK
AV-8RL
AV-8RM
AV-8RN
AV-8RP
AV-8RR
AV-8RS
AV-8RT
AV-8RU
AV-8RV
AV-8RW
AV-8RX
AV-8RY
AV-8RZ
AV-8SA
AV-8SB
AV-8SC
AV-8SD
AV-8SE
AV-8SF
AV-8SG
AV-8SH
AV-8SJ
AV-8SK
AV-8SL
AV-8SM
AV-8SN
AV-8SP
AV-8SR
AV-8SS
AV-8ST
AV-8SU
AV-8SV
AV-8SW
AV-8SX
AV-8SY
AV-8SZ
AV-8TA
AV-8TB
AV-8TC
AV-8TD
AV-8TE
AV-8TF
AV-8TG
AV-8TH
AV-8TJ
AV-8TK
AV-8TL
AV-8TM
AV-8TN
AV-8TP
AV-8TR
AV-8TS
AV-8TT
AV-8TU
AV-8TV
AV-8TW
AV-8TX
AV-8TY
AV-8TZ
AV-8UA
AV-8UB
AV-8UC
AV-8UD
AV-8UE
AV-8UF
AV-8UG
AV-8UH
AV-8UJ
AV-8UK
AV-8UL
AV-8UM
AV-8UN
AV-8UP
AV-8UR
AV-8US
AV-8UT
AV-8UU
AV-8UV
AV-8UW
AV-8UX
AV-8UY
AV-8UZ
AV-8VA
AV-8VB
AV-8VC
AV-8VD
AV-8VE
AV-8VF
AV-8VG
AV-8VH
AV-8VJ
AV-8VK
AV-8VL
AV-8VM
AV-8VN
AV-8VP
AV-8VR
AV-8VS
AV-8VT
AV-8VU
AV-8VV
AV-8VW
AV-8VX
AV-8VY
AV-8VZ
AV-8WA
AV-8WB
AV-8WC
AV-8WD
AV-8WE
AV-8WF
AV-8WG
AV-8WH
AV-8WJ
AV-8WK
AV-8WL
AV-8WM
AV-8WN
AV-8WP
AV-8WR
AV-8WS
AV-8WT
AV-8WU
AV-8WV
AV-8WW
AV-8WX
AV-8WY
AV-8WZ
AV-8XA
AV-8XB
AV-8XC
AV-8XD
AV-8XE
AV-8XF
AV-8XG
AV-8XH
AV-8XJ
AV-8XK
AV-8XL
AV-8XM
AV-8XN
AV-8XP
AV-8XR
AV-8XS
AV-8XT
AV-8XU
AV-8XV
AV-8XW
AV-8XX
AV-8XY
AV-8XZ
AV-8YA
AV-8YB
AV-8YC
AV-8YD
AV-8YE
AV-8YF
AV-8YG
AV-8YH
AV-8YJ
AV-8YK
AV-8YL
AV-8YM
AV-8YN
AV-8YP
AV-8YR
AV-8YS
AV-8YT
AV-8YU
AV-8YV
AV-8YW
AV-8YX
AV-8YY
AV-8YZ
AV-8ZA
AV-8ZB
AV-8ZC
AV-8ZD
AV-8ZE
AV-8ZF
AV-8ZG
AV-8ZH
AV-8ZJ
AV-8ZK
AV-8ZL
AV-8ZM
AV-8ZN
AV-8ZP
AV-8ZR
AV-8ZS
AV-8ZT
AV-8ZU
AV-8ZV
AV-8ZW
AV-8ZX
AV-8ZY
AV-8ZZ

3.4 AUDIO ASSEMBLY



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			
◉		FRPB ASSEMBLY	VWM1402
NSP		├ IRKB ASSEMBLY	VWG1435
NSP		├ FDKB ASSEMBLY	VWG1436
NSP		├ SDKB ASSEMBLY	VWG1437
NSP		├ FLKB ASSEMBLY	VWG1450
NSP		├ MIJB ASSEMBLY	VWV1303
NSP		└ HEPB ASSEMBLY	VWV1304
◉		MOTHER ASSEMBLY	VWM1403
NSP		├ AUDIO ASSEMBLY	VWV1323
NSP		└ MAIN ASSEMBLY	VWX1191
◉		SYPS ASSEMBLY	VWR1160
◉		MACB ASSEMBLY	VWM1250
NSP		├ FG ASSEMBLY	VWG1304
NSP		├ PKSB ASSEMBLY	VWG1305
NSP		├ CAMB ASSEMBLY	VWG1306
NSP		├ LOSB ASSEMBLY	VWG1307
NSP		└ LOMB ASSEMBLY	VWG1308
IRKB ASSEMBLY			
SWITCH			
	S401		RSG1030
OTHERS			
	REMOTE SENSOR		GP1U58X
FDKB ASSEMBLY			
SWITCHES			
	S301-S310		RSG1030
SDKB ASSEMBLY			
SWITCHES			
	S201-S210		RSG1030

Mark	No.	Description	Part No.
FLKB ASSEMBLY			
SEMICONDUCTORS			
	IC103		NJM4558D
	IC101		PD3244A
	IC102		PST529D
	Q102		DTA144ES
	Q101, Q103-Q106		DTC124ES
	D101-D106, D111		1SS252
	D117		SEL3410ELC05
	D112, D114, D116		VEL1017
SWITCHES			
	S101-S113		RSG1030
COIL			
	L101		LAU010K
CAPACITORS			
	C120		CCCCH330J50
	C105		CEAL100M16
	C101		CEAL100M50
	C103		CEAL101M6R3
	C113, C114		CEJA100M16
	C109		CFTXA683J50
	C110		CKPUYB101K50
	C106		CKPUYB102K50
	C102, C104		CKPUYF223Z25
	C107, C108, C111, C112		CKPUYY103N16
RESISTORS			
	VR101-VR104		VCS1027
	R108		RA5T104J
	R110		RA7T103J
	Other resistors		RD1/6PM□□□J
OTHERS			
	CN103	2mm PITCH BOTTOM CONNECTOR	BTMK04S
	CN107	2mm PITCH BOTTOM CONNECTOR	BTMK05S
	CN101	2mm PITCH BOTTOM CONNECTOR	BTMK06S
	CN102	2mm PITCH BOTTOM CONNECTOR	BTMK08S
	CN105	2mm PITCH BOTTOM CONNECTOR	BTMK09S
	V101	FL INDICATOR	VAW1029
	SPACER		VEC1599
	FL HOLDER		VNF1078
	X101	CERAMIC RESONATOR(8MHz)	VSS1031

Mark	No.	Description	Part No.
MIJB ASSEMBLY			
SEMICONDUCTOR			
	IC601		NJM2068D
CAPACITORS			
	C604, C610		CEJA2R2M50
	C612		CKCYF473Z50
	C605, C611		CKPUYB681K50
	C601, C602		CKPUYF223Z25
	C606, C607		CKPUYY103N16
	C691, C692		CQMA104J50
	C603, C609		CQMA152J50
RESISTORS			
	All resistors		RD1/6PM□□□J
OTHERS			
	JA601, JA603	HEADPHONE JACK	RKB1014
	JA602	HEADPHONE JACK	RKN1006
	SNAP PLATE		VNE1102
	JACK HOLDER		VNE1822
HEPB ASSEMBLY			
RESISTOR			
	VR501		VCS1020
CAPACITORS			
	C503		CKCYF473Z50
	C501, C502		CKPUYB101K50
OTHERS			
	JA501	HEADPHONE JACK	RKN1002
AUDIO ASSEMBLY			
SEMICONDUCTORS			
	IC301-IC303		BA4560F
	IC351		CA0002AM
	IC201		CXD2500BQ
	IC305		HM65256BLP-10
	IC207, IC208		NJM4558D
	IC211		NJM4580D
	IC202		NJM78L08A
	IC210		NJM79L08A
	IC206		PD2026B
	IC304		PDQ001A
	Q201, Q202, Q351, Q352		2SC2412K
	Q204, Q205, Q301, Q302		2SD2144S
	Q207, Q208		DTA124EK
	Q206, Q209, Q210, Q303		DTC124EK
	D202, D203, D301, D302		1SS254
	D204		ERA83-006
	D201		FC54M
	D303, D304		MTZJ5.6B
SWITCH			
	S301		VSH1007

Mark	No.	Description	Part No.
COILS AND FILTERS			
	L201-L204, L301, L302		LAU100J
	L352		LAU181J
	L351		LAU220J
	L205		LAU4R7K
	F352		VTF1048
	F353		VTF1049
CAPACITORS			
	C352		CCSQCH150J50
	C268, C269, C310, C315		CCSQCH151J50
	C232		CCSQCH180J50
	C303		CCSQCH181J50
	C220		CCSQCH220J50
	C264, C265, C374		CCSQCH221J50
	C308, C313		CCSQCH331J50
	C258-C263		CCSQCH390J50
	C288, C289		CEANP100M16
	C274, C275		CEANP220M10
	C324, C329, C364		CEAS101M10
	C203, C207, C208, C211, C225, C226, C230, C253, C270-C273, C279, C322, C323, C354, C363, C369		CEAS470M10
	C228, C367		CEHAQ100M50
	C320, C321, C336		CEJANP4R7M16
	C368		CEJAR47M50
	C266, C267		CFTXA102J50
	C252, C365, C366		CFTXA104J50
	C202		CFTXA152J50
	C306, C311, C326-C328		CFTXA332J50
	C280, C361, C362		CFTXA393J50
	C309, C314		CFTYA103J50
	C302		CFTYA223J50
	C359, C360		CFTYA224J50
	C284, C285		CKPUYY103N16
	C206, C213, C231, C234, C293, C332, C337, C353		CKSQYF103Z50
	C204, C209, C212, C215, C254, C283, C286, C287, C290, C291, C304, C305, C316-C319, C325, C330, C331, C333-C335, C371-C373		CKSQYF104Z25
	C201		CKSQYF473Z25
	C301, C355-C358		CQMA472J50
	C307, C312		CQMA822J50
	C255-C257		VCH1116
RESISTORS			
	R243, R244, R273, R274		RD1/6PM102J
	R271, R272		RD1/6PM153J
	R213, R221		RD1/6PM470J
	R291		RD1/6PM472J
	R241, R242		RD1/6PM4R7J
	Other resistors		RS1/10S□□□J
OTHERS			
	CN301	5P TOP POST	B5P-SHF
	3P CABLE HOLDER		51048-0300
	JA6	4P PIN JACK	VKB1047
	X201	CRYSTAL RESONATOR(16MHz)	VSS1057

Mark	No.	Description	Part No.

MAIN ASSEMBLY

SEMICONDUCTORS

	IC805	BA10393F
	IC602, IC804	BA15218N
	IC750	BA4560F
	IC751	BU4053BF
	IC801	CXA1081S
	IC802	CXA1372S
	IC807	LA6510L
	IC803	NJM072L
	IC404	PA0017
	IC401	PA5013A
	IC101	PD0133C
	IC405	PD0175A
	IC402	PM0001
	IC601	PM3002
	IC806	TA8464K
	IC403	TL8722P
	Q456, Q496, Q511, Q581, Q608, Q611, Q613, Q614, Q802, Q812, Q909	2SA1037K
	Q809	2SA1399
	Q401	2SB1237X
	Q431, Q432, Q497-Q500, Q541, Q582, Q583, Q601-Q605, Q607, Q609, Q617, Q620, Q801, Q803-Q805, Q807, Q811, Q813, Q915	2SC2412K
	Q402	2SD1858X
	Q908	2SK184
	Q403, Q606, Q610, Q808, Q810, Q814, Q903, Q913	DTA124EK
	Q612, Q615, Q750, Q901, Q902, Q911, Q912, Q914	DTC124EK
	D805	1SR35-100AVL
	D102, D401, D801-D803, D806, D807	1SS254
	D810, D811	DA204K

COILS

	L414, L415, L521, L541	LAU120J
	L801	LAU150J
	L802, L804	LAU151J
	L496	LAU180J
	L497, L803	LAU181J
	L412, L413, L523	LAU220J
	L441	LAU270J
	L411, L416	LAU330J
	L433	LAU390J
	L431	LAU430J
	L522	LAU560J
	L432	LAU620J
	L511	LAU820J
	L458	LFA221J
	L457, L524	LFA561J

Mark	No.	Description	Part No.

CAPACITORS

	C816, C844	CCSQCH050C50
	C441	CCSQCH070D50
	C438, C450, C497, C500	CCSQCH100D50
	C461, C528, C602, C632, C809, C811	CCSQCH101J50
	C418	CCSQCH120J50
	C456	CCSQCH121J50
	C413, C509	CCSQCH151J50
	C415, C417, C612, C630, C631, C633-C635	CCSQCH180J50
	C423, C424, C516	CCSQCH220J50
	C411, C414	CCSQCH221J50
	C437, C451, C510, C810, C843	CCSQCH270J50
	C463, C751, C752, C918, C930, C957	CCSQCH271J50
	C104, C105, C462, C485, C547, C549, C550, C609	CCSQCH330J50
	C416, C433, C440, C496, C524	CCSQCH390J50
	C412, C419, C420, C439, C455, C546, C845, C846	CCSQCH470J50
	C566, C841, C998, C999	CCSQCH471J50
	C847	CCSQCH510J50
	C447	CCSQCH560J50
	C545, C806, C808, C812	CCSQCH680J50
	C498	CCSQCH820J50
	C529, C536	CCSQCH910J50
	C603, C753, C754	CEANP010M50
	C530, C848	CEANP100M16
	C499, C613, C620, C621, C623	CEANP220M10
	C401, C619	CEANP2R2M50
	C436, C475, C945	CEAS010M50
	C434, C445, C457, C489, C490, C842	CEAS101M10
	C101, C428, C452, C501, C502, C512, C521, C525, C533, C542, C587, C588, C638, C801, C802, C901, C902	CEAS470M10
	C476, C484	CEAS471M10
	C522, C831, C941, C942	CEHAQ100M50
	C443, C473, C474, C625, C628, C926, C932	CEJANP4R7M16
	C471, C472, C849, C935	CEJAR47M50
	C605, C606	CFTXA102J50
	C446, C618	CFTXA103J50
	C514	CFTXA104J50
	C608	CFTXA152J50
	C610	CFTXA223J50
	C614, C626	CFTXA332J50
	C617	CFTXA563J50
	C515, C517	CFTXA683J50
	C607, C832, C940, C944	CKSQYB102K50
	C913, C925, C929, C936	CKSQYB333K25
	C920, C923	CKSQYB562K50
	C103, C106, C108, C109, C122, C140-C142, C425, C426, C458-C460, C477, C486, C532, C535, C567, C604, C615, C616, C636, C637, C639, C700, C755, C756, C803, C804, C807, C814, C817, C818, C850, C855-C857, C904, C914, C915, C917, C928, C931, C933, C934, C937-C939, C946, C950, C997	CKSQYF103Z50

Mark	No.	Description	Part No.
	C107, C403, C404, C429, C435, C442, C479, C480, C481, C503, C505, C506, C511, C513, C526, C531, C543, C584, C586, C805, C813, C911, C912, C919, C922, C924, C927, C947, C952, C959		CKSQYF104Z25
	C102, C407, C408, C427, C448, C466, C467, C482, C487, C488, C504, C527, C544, C548, C601, C629, C815, C943, C948, C949, C951, C956		CKSQYF473Z25
	C627		CQMA222J50
	C444, C611		CQMA272J50
	C958		VCH1115
	C650		VCH1116
	VC901		VCM-008
RESISTORS			
	VR601		RCP1019
	VR481, VR521		RCP1020
	VR441		RCP1046
	VR606		VCP1062
	VR608		VRTB6VS153
	VR482		VRTB6VS222
	VR605		VRTB6VS333
	VR603, VR604, VR607		VRTB6VS473
	R477		DCN1001
	R755		RD1/6PM103J
	R605, R817		RD1/6PM221J
	R619, R631, R854		RD1/6PM225J
	R845, R846		RD1/6PM470J
	R668		RD1/6PM471J
	R431		RD1/6PM510J
	R496		RD1/6PM680J
	R585, R588		RD1/6PM750J
	R701		RD1/6PM824J
	R438		RN1/6PQ1203F
	R511		RN1/6PQ2002F
	R415, R416		RN1/6PQ2402F
	R434		RN1/6PQ5101F
	Other resistors		RS1/10S□□□J
OTHERS			
	CN120	11P TOP POST	B11P-SHF-1AA
	CN121	5P TOP POST	B5B-EH
	CN106	KR CONNECTOR	B7B-PH-K
	CN103	FFC CONNECTOR(23P)	HLEM23S
	CN105	2mm PITCH JUMPER CONNECTOR	SBRK06S
	9P CABLE HOLDER		51048-0900
	JA3, JA4	REMOTE CONTROL JACK	PKN1004
	PCB BINDER		VEF1040
	JA5	RF PIN JACK	VKB1029
	JA7	1P PIN JACK	VKB1048
	JA10	2P PIN JACK	VKB1060
	SCREW TERMINAL		VNE1841
	EARTH PLATE		VNF-091
	X601	CRYSTAL RESONATOR(14.318MHz)	VSS1026
	X101	CERAMIC RESONATOR(9MHz)	VSS1040

Mark	No.	Description	Part No.
SYPS ASSEMBLY			
SEMICONDUCTORS			
⚠	IC201, IC202, IC204		ICP-N15
⚠	IC203		ICP-N20
⚠	IC2		NJM4558D
⚠	IC1		NJM78M05FA
	Q5, Q22, Q23		2SA933S
⚠	Q1, Q2, Q25, Q27		2SB1185
	Q4, Q21, Q24		2SC1740S
⚠	Q3, Q26, Q28		2SD1762
⚠	D23, D26		10ELS2
⚠	D3, D33		11ES2
⚠	D24, D25		1SR35-100AVL
⚠	D21, D22		1SS254
⚠	D2		ERA83-006
	D7		MTZJ11B
⚠	D1		S2VB20
COIL			
⚠	L1		L1043
CAPACITORS			
	C10, C29		CEAS101M50
	C13		CEAS102M16
	C25, C26		CEAS2R2M50
	C3-C6		CEAS470M10
⚠	C14		CGCYX473M25
	C23, C24		CGCYX473M25
	C11, C12		CKPUYF103Z25
⚠	C7-C9		CKPUYF223Z25
	C27, C28		CQMA223J50
	C21, C22		CQMA272J50
⚠	C52		RCG-009
⚠	C2		VCH1053
⚠	C1		VCH1054
RESISTORS			
⚠	R27-R30		DCN1003
⚠	R51		RD1/2PM225J
⚠	R23-R26		RD1/2VM221J
	Other resistors		RD1/6PM□□□J
OTHERS			
	CN31	KR CONNECTOR	B2B-PH-K
	6P CABLE HOLDER		51048-0600
	12P CABLE HOLDER		51048-1200
⚠	PCB BINDER		VEF1040
	POWER SUPPLY TERMINAL		VKC-019
⚠	FUSE HOLDER		VKR1001
⚠	SCREW TERMINAL		VNE1646
FG ASSEMBLY			
SEMICONDUCTOR			
	D1		GP1S51V
OTHERS			
	HOUSING ASSEMBLY		VKP1950

Mark	No.	Description	Part No.

PKSB ASSEMBLY

SWITCHES

	S4, S5		DSG1015

OTHERS

	HOUSING ASSEMBLY		VKP1951

CAMB ASSEMBLY

SEMICONDUCTOR

	Q10		2SC1740S

RESISTORS

	R10		RD1/6PM182J
	R11		RD1/6PM470J

OTHERS

	CN404	KR CONNECTOR 3P	B3B-PH-K
	CN402	KR CONNECTOR	B3B-PH-K-R
	CN403	FFC CONNECTOR 23P	HLEM23R
	CN401	23P TOP CONNECTOR	VKN1073
	HOUSING ASSEMBLY		VKP1949

LOSB ASSEMBLY

SWITCHES

	S1-S3		DSG1015

LOMB ASSEMBLY

CAPACITOR

	C1		CGCYX473M25

OTHERS

	J51	2mm PITCH JUMPER 4P	D20PWW0415G
	J55	2mm PITCH JUMPER 6P	D20PWY0615G

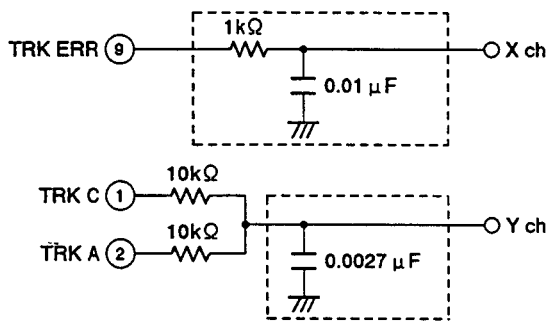
5. ADJUSTMENTS

(1) PRELIMINARIES

• Jigs for Adjustment

- CD test disc (STD - 901 or STD - 902)
- LD test disc (GGV1003)
- (−) screwdriver (medium)
- (−) screwdriver (small)
- Hexagonal wrench driver (straight type, size: 3mm)
- Resistors (10kΩ × 2, 47kΩ)
- Dual - trace oscilloscope (with delay)
- AF oscillator
- Frequency counter
- TV monitor
- Low-pass filter

Use the low-pass filters below in the coarse centering adjustment 2. and fine centering adjustment 6. when the S/N of the waveform is hard to observe.



• Rack Assembly During Centering Adjustment

The S - IN position (without hitting the mechanism stopper) of the rack assembly during centering adjustment is indicated below.

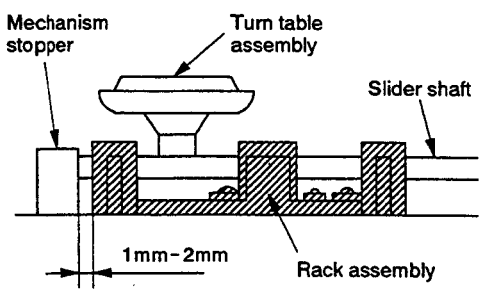


Fig. 1 Right side view

• Adjustment Locations

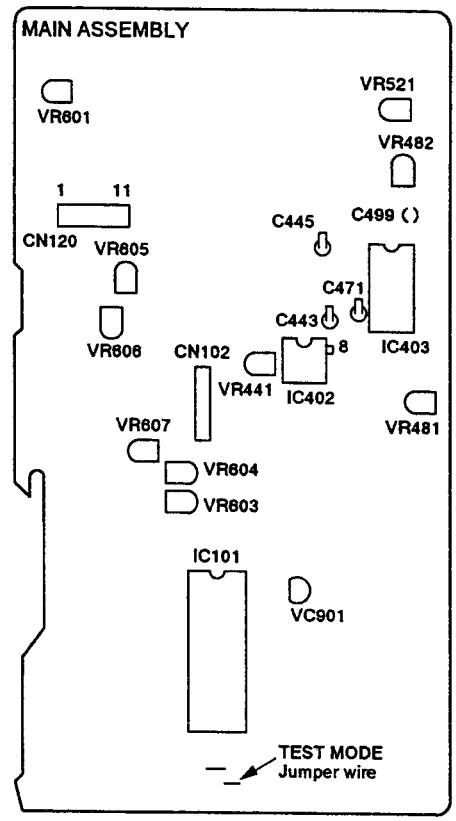
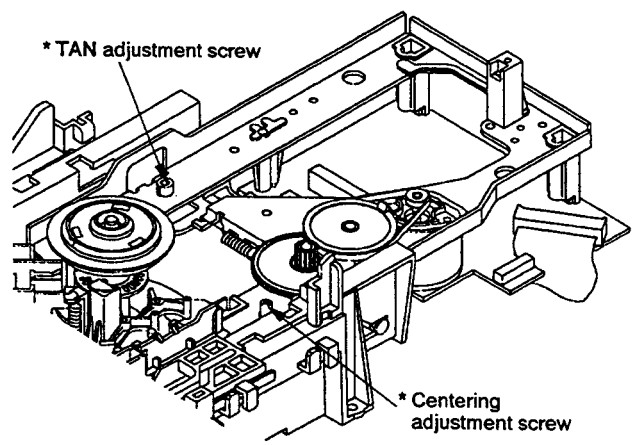


Fig. 2 MAIN assembly section



* : As the adjustment range of both the TAN and centering adjustment screws is only ± 90° form the center, do not turn the screws beyond this range.

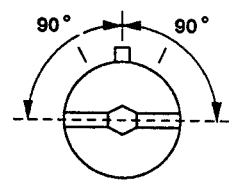


Fig. 3 TILT base section

• Test Mode

1) Activating the Test Mode
   1. While power is ON, connect the Test mode jumper wire (Fig. 2) to the GND for about one second.
   2. After checking whether the FL display device is fully lit, disconnect the Test mode jumper wire from GND.
2) Canceling the Test Mode
   1. Turn the power OFF.

• Key operation in the Test mode

Player Status	Key Operation	Function	Remarks
Tray Open	I◀◀ / ▶▶I SKIP (Refer to Note 1)	I◀◀: Shifts the tray in the closed direction and also raises the turn table while it is held down. ▶▶I: Shifts the tray in the open direction and also lowers the turn table while it is held down.	
Tray Open	▶ Play	Clamps	
Clamp	▶ Play	Turns the disc through TRK Servo Open	TRK-OFF
TRK Servo Open	▶ Play	TRK Servo Close	TRK-ON
TILT Neutral	+MULTI-SPEED or # (sharp)	TILT Servo Close	T-□:ON
TILT ON	-MULTI-SPEED or ♭ (flat)	TILT Neutral	T-□:N
TILT Neutral or ON	I◀◀ / ▶▶I 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	❙❙ PAUSE	Still	
Play	■ STOP	Stop	
Stop	▲ OPEN	Open	
Play	[+10] ⇩ [0] to [9] ⇩ [▶ PLAY]	Set 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.	

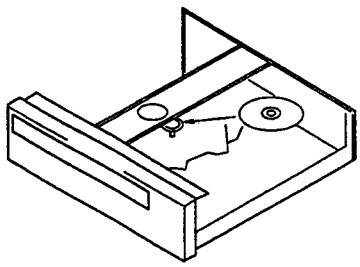
Note 1: Press SKIP (I◀◀ / ▶▶I) keys after the tray is set to open state by pressing OPEN (▲) key.
In tray open state, pressing PLAY (▶) key causes is to TILT control state and SKIP keys cannot function properly.

• 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.



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

③ Push the cam plate (Fig. 4) in the direction of the arrow and wait until the CD disc is clamped.

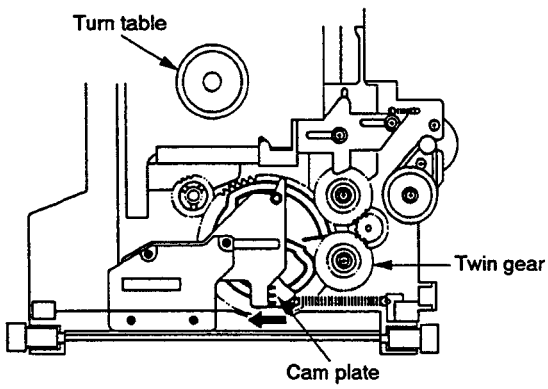
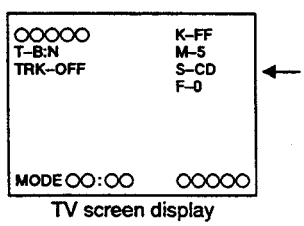


Fig. 4

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

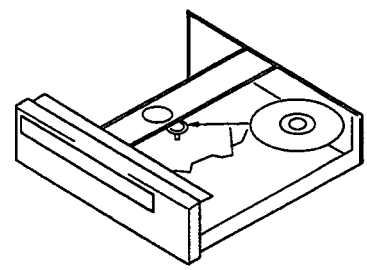


TV screen display

⑤ Press the PLAY (▶) key twice, disc will be normally playbacked.

• LD PLAYBACK

① Place the LD disc on the turn table.

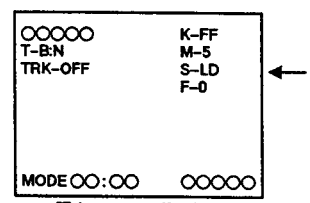


② Press the PLAY (▶) key once. (Twin gear starts to move.)

③ Press the SKIP REV (|◀◀) key to raise the turn table (spindle motor section) while pressing the cam plate (Fig. 4) 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.

④ Place the LD disc on the turn table and press the PLAY (▶) key once to clamp the disc.

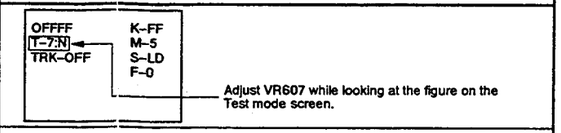
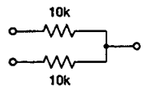
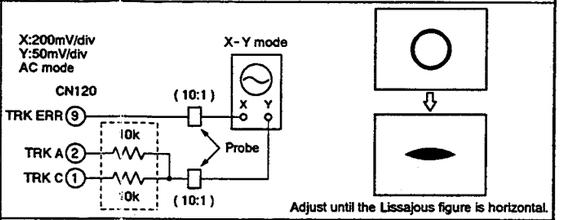
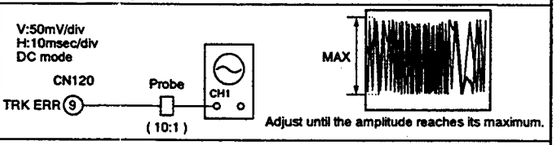
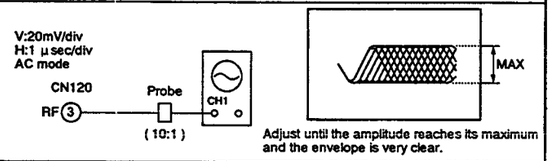
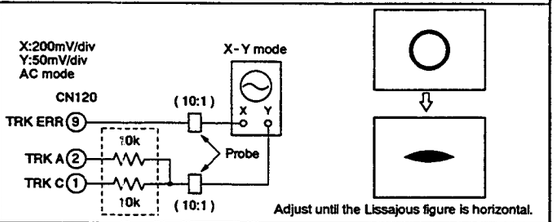
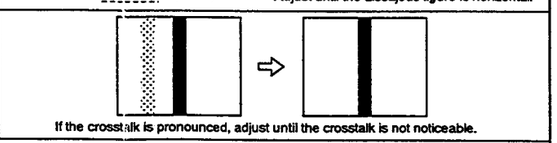
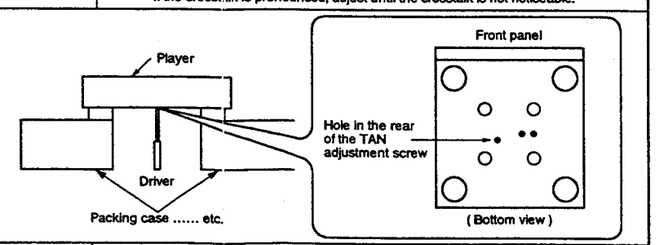
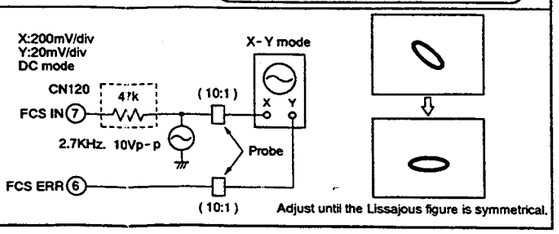
⑤ Press the [◀◀] or [▶▶] keys to appear "S - LD" on the TV screen display.

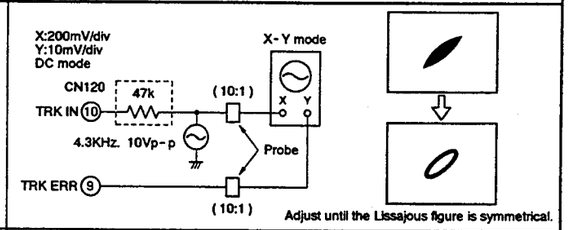
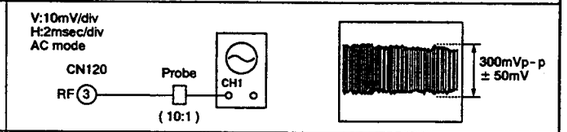
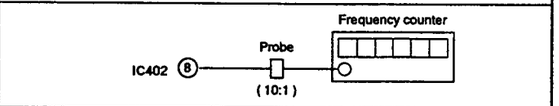
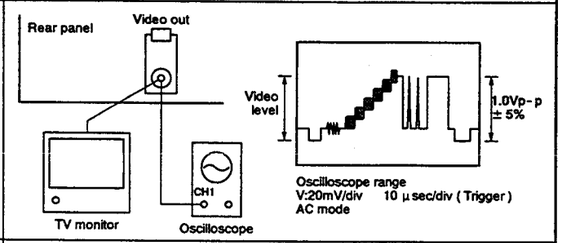
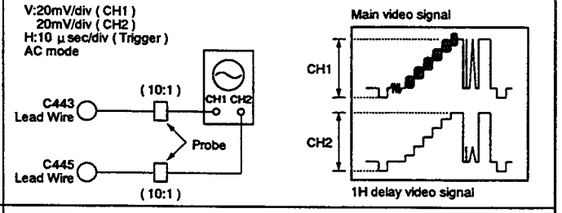
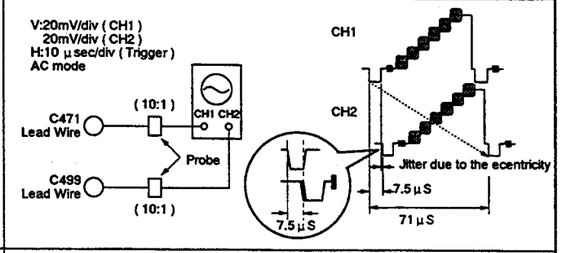
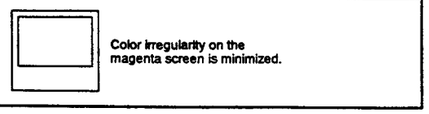


TV screen display

⑥ Press the PLAY (▶) key twice, disc will be normally playbacked.

(2) ADJUSTMENT TABLE

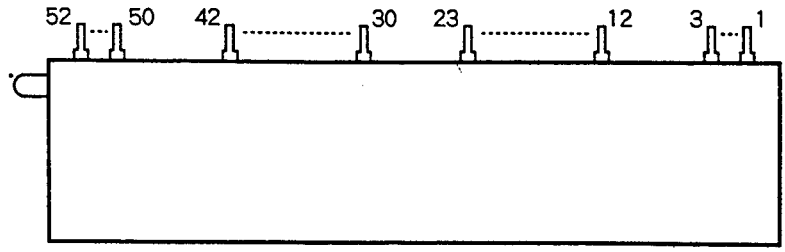
	Adjustment name	Adjustment point	Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
1	Tilt Offset Check and Adjustment	VR607	• TV monitor	Tilt indication on Test mode screen	• Power ON • Test mode • Disc not installed	1. Check if the tilt 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.	
2	Coarse centering adjustment	Tilt base centering adjustment screw	• Oscilloscope • STD-901 or STD-902 • MIX resistor 	CN120 X: ⑨ Pin (TRK ERR) Y: ①+② Pin (TRK SUM)	• Test mode TRK Servo Open Tilt Servo ON • Innermost track of STD-901 or STD-902 which does not come in contact with the mechanical stopper.	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 Open. 3. Turn the centering adjustment screw until the Lissajous figure is horizontal.	
3	FCS balance adjustment (1) TRK ERR MAX	VR605	• Oscilloscope • STD-901 or STD-902	CN120 ⑨ Pin (TRK ERR)	• Test mode TRK Servo Open Tilt Servo ON • Inner track of STD-901 or STD-902	1. Observe TRK ERR at CH1 of the oscilloscope during TRK Servo Open. 2. Adjust VR605 until the amplitude of the waveform reaches its maximum.	
4	FCS balance adjustment (2) RF MAX	VR606	• Oscilloscope • STD-901 or STD-902	CN120 ③ Pin (RF)	• Test mode TRK Servo Close Tilt Servo ON • Inner track of STD-901 or STD-902	1. Close the TRK Servo and observe RF at CH1 of the oscilloscope. 2. Adjust VR606 until the amplitude of the waveform reaches its maximum and the envelope is very clear.	
5	Tangential direction angle adjustment	Tilt base TAN adjustment screw	• Oscilloscope • STD-901 or STD-902	CN120 ③ Pin (RF)	• Test mode TRK Servo Close Tilt Servo ON • Inner track of STD-901 or STD-902	1. Observe RF at CH1 of the oscilloscope during TRK Servo Close. 2. Adjust the TAN adjustment screw until the amplitude of the waveform reaches its maximum and the envelope is very clear.	
6	Fine centering adjustment	Tilt base Centering adjustment screw	• Oscilloscope • STD-901 or STD-902	CN120 X: ⑨ Pin (TRK ERR) Y: ①+② Pin (TRK SUM)	• Test mode TRK Servo Open Tilt Servo ON • Innermost track of STD-901 or STD-902 which does not come in contact with the mechanical stopper.	Perform fine centering adjustment by following the same procedure as in "(2) Coarse centering adjustment".	
7	Crosstalk check and Tilt offset adjustment	VR607	• TV monitor • GGV1003	Crosstalk check screen	• Test mode TRK Servo Close Tilt Servo ON • GGV1003 #115 STILL	1. Search for address 115 of GGV1003 and still the address. 2. Check the crosstalk . If the crosstalk is pronounced, adjust VR607 until the crosstalk is not noticeable.	
7	When the crosstalk is still noticeable in spite of the adjustment in (7), use a hexagonal wrench driver (straight type, size: 3 mm) to adjust the TAN adjustment screw on the bottom side of the player through the GGV1003 #115 STILL screen. Afterwards, perform the adjustment procedures from (6).						
8	FCS Servo loop gain adjustment	VR604	• Oscilloscope • GGV1003 • AF Oscillator • Resistor (47kΩ)	CN120 X: ⑦ Pin (FCS IN) Y: ⑥ Pin (FCS ERR)	• Test mode TRK Servo Close Tilt Servo ON • GGV1003 #15,000 STILL	1. Search for address 15,000 of GGV1003 and still the address. 2. Xch: Connect the resistor (47kΩ) to the channel and connect to FCS IN. Ych: Connect to FCS ERR. 3. Connect the AF oscillator between Xch and the 47kΩ resistor, and adjust VR604 until the Lissajous figure is symmetrical.	

	Adjustment name	Adjustment point	Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
9	TRK Servo loop gain adjustment	VR603	• Oscilloscope • GGV1003 • AF Oscillator • Resistor (47kΩ)	CN120 X: ⑩ Pin (TRK IN) Y: ⑨ Pin (TRK ERR)	• Test mode Stop mode or TRK Servo Close Tilt Servo ON • GGV1003 #15,000 STILL	1. Xch: Connect the 47kΩ resistor to channel and connect to TRK IN. Ych: Connect to TRK ERR. 2. Connect the AF oscillator between Xch and the 47kΩ resistor and note the tilt angle against the horizon with the disc in the stopped state. 3. Search for address 15,000 of GGV1003 and still the address. 4. Set the disc PLAY mode (TRK servo closed, TILT on). Adjust VR603 so that the tilt angle of the waveform will be the same as the tilt angle noted in step 3.	
10	RF level adjustment	VR601	• Oscilloscope • GGV1003	CN120 ③ Pin (RF)	• Test mode TRK Servo Close Tilt Servo ON • GGV1003 #15,000 STILL	1. Search for address 15,000 of GGV1003 and still the address. Observe RF at CH1 of the oscilloscope. 2. Adjust VR601 until the RF amplitude is 300mV ± 50mVp-p.	
11	REF-H adjustment	VC901	• Frequency counter	IC402 (PM0001) ⑧ Pin	• Power ON • Stop mode	Adjust FSC (3.579545 MHz) ± 10Hz.	
12	Video level adjustment	VR482	• TV monitor • Oscilloscope • GGV1003	Video output terminal	• Normal mode • GGV1003 #19,900 STILL	Connect a 75Ω resistor to the VIDEO output terminal (possibly by connecting to the monitor) and adjust until the sync tip to 100% white level is 1Vp-p ± 5% at the composite TEST signal.	
13	1H DLY video level adjustment	VR441	• Oscilloscope • GGV1003	CH1: C443 lead wire CH2: C445 lead wire	• Normal mode • GGV1003 #19,900 STILL	Adjust until the sync tip to 100% white level at the composite TEST signal is the same as in CH1 and CH2.	
14	VCO center frequency adjustment	VR481	• Oscilloscope • GGV1003	CH1: C471 lead wire CH2: C499 lead wire	• Normal mode • GGV1003 #5,100 STILL	Place a trigger in CH1 and adjust until the center of the CH2 video signal jitter is 71 µsec (1H + 7.5 µsec) ± 0.2 µsec compared to the CH1 video signal.	
15	VPS error level adjustment	VR521	• TV monitor • GGV1003	TV monitor	• Normal mode • GGV1003 #7,201-#8,100 PLAY (Magenta screen)	Adjust until the color irregularity on the magenta screen is minimized.	

6. FL INFORMATION

● VAW1029 (V101)

PIN LOCATION



PIN ASSIGNMENT

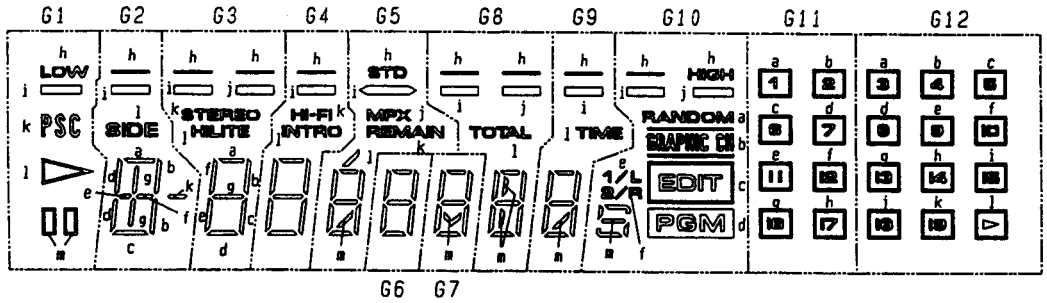
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Assignment	F	F	F	NP	NP	NP	NP	NP	NP	NP	NP	G12	G11	G10	G9	G8	G7	G6

Pin No.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Assignment	G5	G4	G3	G2	G1	NP	NP	NP	NP	NP	NP	a	b	c	d	e	f	g

Pin No.	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
Assignment	h	i	j	k	l	m	NP	NP	NP	NP	NP	NP	NP	F	F	F

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

ANODE GRID ASSIGNMENT & PIN ASSIGNMENT



ANODE GRID ASSIGNMENT

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
a			a	a	a	a	a	a	a	RANDOM	1	3
b			b	b	b	b	b	b	b		2	4
c			c	c	c	c	c	c	c	EDIT	6	5
d			d	d	d	d	d	d	d	PGM	7	8
e			e	e	e	e	e	e	e	1/L	11	9
f			f	f	f	f	f	f	f	2/R	12	10
g			g	g	g	g	g	g	g		16	13
h	LOW				STD					HIGH	17	14
i												15
j					MPX							18
k	PSC		STEREO	HI-FI	REMAIN							19
l		SIDE	HILITE	INTRO	(UP)			TOTAL	TIME			
m					(LOW)							

7. IC INFORMATION

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

■ PD3244A (IC101)

• Mode Control IC

• Pin Function

No.	Name	I/O	Function	No.	Name	I/O	Function
1	OEMSEL 1	I	L : PIONEER, H : Song interval production for OEM (Mic picture appears on the screen.)	41	G1	O	Display grid output
				42	G2		
				43	G3		
2	OEMSEL 2	I	L : PIONEER, H : Correspond to TEAC (Remote control unit)	44	G4		
				45	G5		
				46	G6		
3	P06	I	Not used (GND)	47	G7		
4	P07			48	G8		
5	AVSS	I	GND	49	G9		
6	TEST	I	Not used (GND)	50	G10		
7	X2	O	Not used (OPEN)	51	G11		
8	X1	I	Not used (GND)	52	G12		
9	VSS	I	GND	53	MODE1	O	MIC control terminal input 1
10	OSC1	I	Main system clock oscillation (8MHz)	54	MODE2	O	MIC control terminal input 2
11	OSC2	O		55	KAR_NOR	O	Karaoke / Normal changeover switch input (H : Karaoke, L : Normal)
12	xRESET IN	I	CPU reset. (L : reset)				
13	SHAKE	I	Serial communication requirement of the mechanism control.	56	P77	O	Not used (OPEN)
				57	VCC	I	+5V
14	SEL IR	I	Remote control input	58	KIN0	I	Key data input
15	DOGFOOD	O	Pulse output for watchdog.	59	KIN1		
16	POWERON	O	Switching output of the mother board power supply.	60	KIN2		Not used (GND)
				61	KIN3		Key data input
17	LED(ONETCH)	O	LED output : ONE - TOUCH KARAOKE indication.	62	KIN4		
				63	KIN5		
18	LED(SURRND)	O	LED output : SURROUND indication.	64	KIN6		
19	P16	I	GND	65	KIN7		
20	P33	O	N.C. (OPEN)	66	P90	O	Not used (OPEN)
21	LED(AUX_SEL)	O	LED output : AUX INPUT indication.	67	xS - CLOCK	I/O	Serial communication clock (Mechanism control, Character generator and DSP).
22	xMIC_ON	O	MIC audio ON/OFF switch (L : MIC active)				
23	LED(DRCTCD)	O	LED output : DIRECT CD indication.	68	S - MTOF	I	Serial communication data input (Mechanism control).
24	P47	O	N.C. (OPEN)	69	S - FTOM	O	Serial communication data output (Mechanism control, character generator and DSP).
25	P46						
26	KSCAN5	O	Key scan output				
27	KSCAN3/SEG M	O	Key scan output / Display segment output	70	xRESET OUT	O	Mother board reset output
28	KSCAN3/SEG L			71	xCS	O	CS output for character generator (PD0175A) (L : enable)
29	KSCAN2/SEG K						
30	KSCAN1/SEG J			72	P96	O	Not used (OPEN)
31	KSCAN0/SEG I			73	P97		
32	SEG H	O	Display segment output	74	xCSDSP	O	CS output for DSP (PDQ001A) (L : enable)
33	SEG G						
34	SEG F			75	xEXTSEL	O	External input changeover switch output (H : Internal, L : External).
35	SEG E						
36	SEG D			76	AVCC	I	+5V
37	SEG C			77	ECHO	I	Control voltage input:ECHO control (0 - 5V)
38	SEG B			78	ONTA	I	Control voltage input:BALANCE control(0 -5V)
39	SEG A			79	P02	I	Not used (+5V pull up)
40	VDISP	I	- 27V	80	P03		

Note ; H: High LEVEL, L : Low LEVEL, Z : High IMP.

8. FOR CLD–V740/KC AND CLD–1720K/SD

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

CONTRAST OF MISCELLANEOUS PARTS

CLD–V740/KC, CLD–1720K/SD and CLD–V740/KU have the same construction except for the following :

Mark	Symbol & Description	Part No.			Remarks
		CLD–V740/KU	CLD–V740/KC	CLD–1720K/SD	
◉	PWSB assembly	• • • • •	• • • • •	VWM1404	
◉	SYPS assembly	VWR1160	VWR1160	VWR1187	
◉	VSBA assembly	• • • • •	• • • • •	VWR1188	Refer to 2.(4).
⚠	AC power cord	PDG1015	PDG1015	PDG1013	
⚠	Power transformer (AC120V)	VTT1119	VTT1119	• • • • •	
⚠	Power transformer (AC110V/120-127V/220V/240V)	• • • • •	• • • • •	VTT1118	
⚠	Strain relief	CM-22C	CM-22C	CM-22B	
⚠	Fuse (FU3:1A)	VEK1014	VEK1014	REK-100	
⚠	Fuse (FU1, FU2:3A)	VEK1021	VEK1021	• • • • •	
⚠	Fuse (FU1, FU2:3.15A)	• • • • •	• • • • •	REK-105	
NSP	Insulation sheet	• • • • •	• • • • •	VEC1406	Refer to 2.(4).
NSP	Rear panel	VNA1337	VNA1338	VNA1336	
	UPC code label	• • • • •	• • • • •	VRW1343	Refer to 2.(8).
	Tray panel assembly	VXA1970	VXA1970	VXA1969	
	Packing case	VHG1279	VHG1280	VHG1278	
	Operating instructions (French)	• • • • •	VRC1021	• • • • •	
	Operating instructions (Chinese)	• • • • •	• • • • •	VRC1020	
	Operating instructions (Spanish)	• • • • •	• • • • •	VRK1006	
NSP	Warranty card	ARY1044	ARY1039	ARW1020	

PWSB ASSEMBLY
├SYPS ASSEMBLY
└VSBA ASSEMBLY

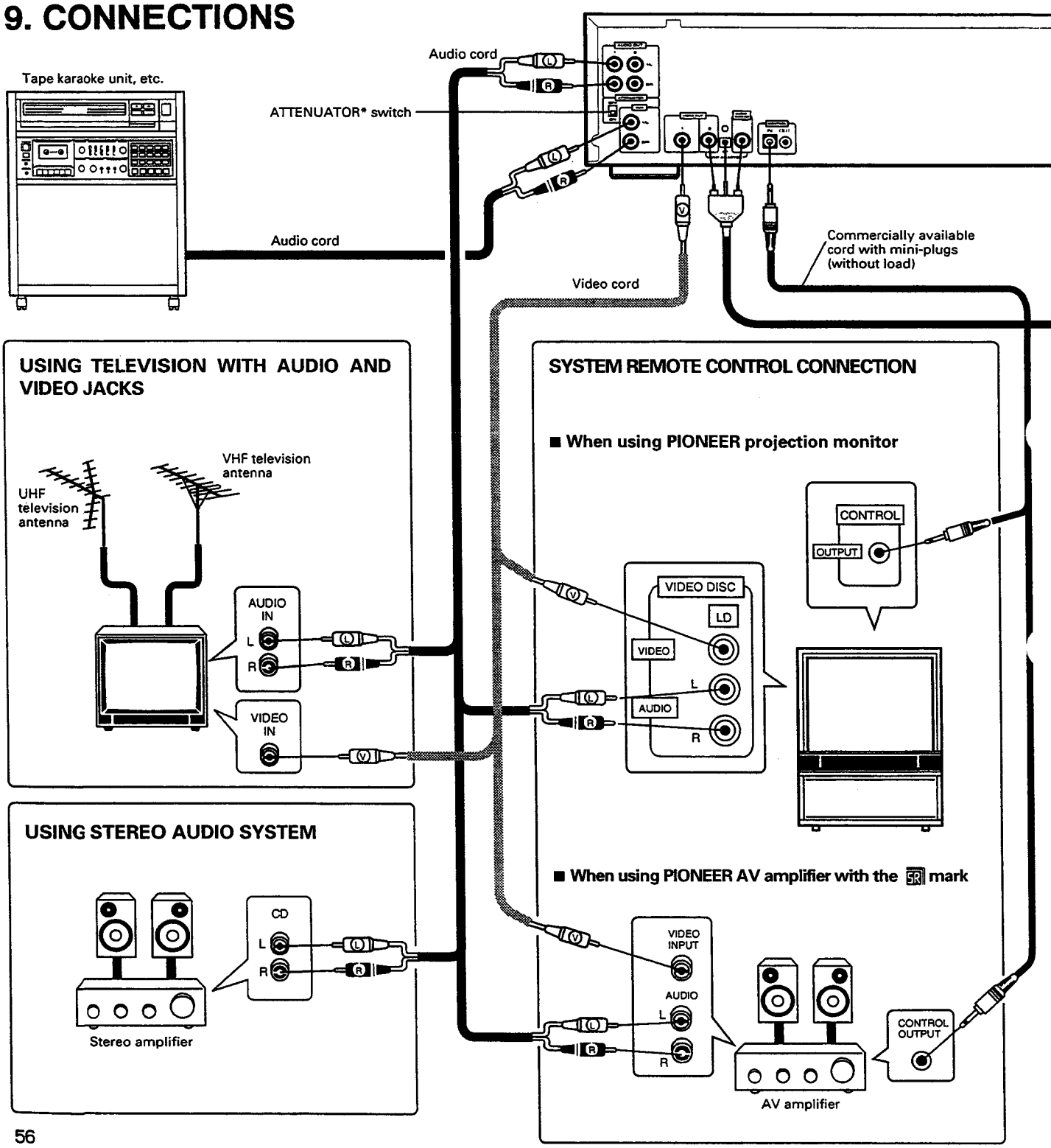
• PCB PARTS LIST

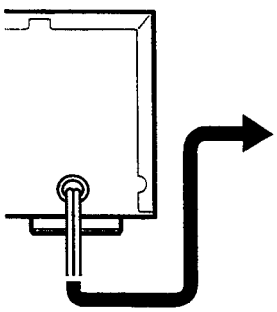
Mark	No.	Description	Part No.
SYPS ASSEMBLY			
SEMICONDUCTORS			
⚠	IC201, IC202, IC204		ICP-N15
⚠	IC203		ICP-N20
⚠	IC2		NJM4558D
⚠	IC1		NJM78M05FA
	Q5, Q22, Q23		2SA933S
⚠	Q1, Q2, Q25, Q27		2SB1185
	Q4, Q21, Q24		2SC1740S
⚠	Q3, Q26, Q28		2SD1762
⚠	D23, D26		10ELS2
⚠	D3, D33		11ES2
⚠	D24, D25		1SR35-100AVL
⚠	D21, D22		1SS254
⚠	D2		ERA83-006
	D7		MTZJ11B
⚠	D1		S2VB20
COIL			
⚠	L1		L1043
CAPACITORS			
	C10, C29		CEAS101M50
	C13		CEAS102M16
	C25, C26		CEAS2R2M50
	C3-C6		CEAS470M10
	C27, C28		CFTYA223J50
⚠	C14		CGCYX473M25
	C23, C24		CGCYX473M25
	C11, C12		CKPUYF103Z25
⚠	C7-C9		CKPUYF223Z25
	C21, C22		CQMA272J50
⚠	C52		RCG-009
⚠	C2		VCH1053
⚠	C1		VCH1054
RESISTORS			
⚠	R27-R30		DCN1003
⚠	R23-R26		RD1/2VM221J
	Other resistors		RD1/6PM□□□J

Mark	No.	Description	Part No.
OTHERS			
	CN31	KR CONNECTOR	B2B-PH-K
		6P CABLE HOLDER	51048-0600
		12P CABLE HOLDER	51048-1200
⚠		PCB BINDER	VEF1040
		POWER SUPPLY TERMINAL	VKC-019
⚠		FUSE HOLDER	VKR1001

Mark	No.	Description	Part No.
VSBA ASSEMBLY			
SWITCH			
		VOLTAGE SELECTOR	VSB1007

9. CONNECTIONS

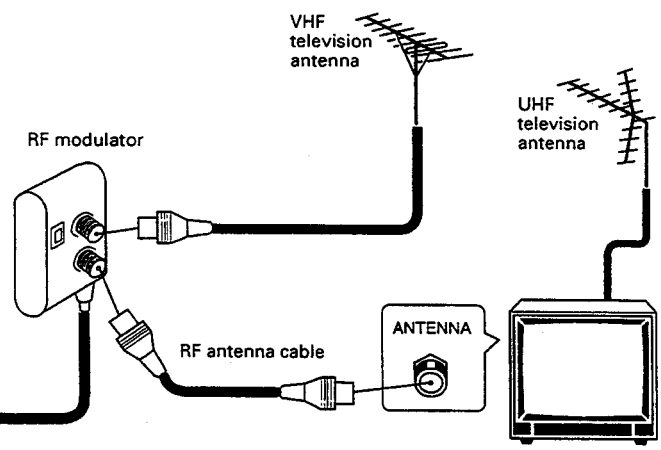




Plug the power cords into AC outlet.
Plug the AC power cords of the player, stereo amplifier and TV set into an AC outlet.
When the power cord of this unit is connected to an AC outlet, power is supplied to the unit's internal memory (such as the last memory) even when the POWER switch is off (STANDBY). Therefore, be sure to connect the power cord directly to a wall outlet. If the power cord is connected to an outlet such as a switched outlet on an amplifier, the various memory contents will be erased whenever the amplifier's power switch is turned off.

RF modulator JA-RF3L (Optional RF modulator is sold in the U.S. and Canada only.)

USING TELEVISION WITHOUT AUDIO AND VIDEO JACKS



1. Detach the antenna cable from the antenna terminal of your TV set, and connect the cable to the IN terminal of the RF modulator.
2. Connect the OUT terminal of the RF modulator to the antenna terminal of your TV set.
3. Connect the socket (3-pin) of the RF modulator to the VHF ADAPTER jacks.

NOTE:
Push the plug in firmly. If the plug is not properly inserted, it may result in snow on the screen or noise.

When the sound from a LaserDisc or Compact Disc is output from a television speaker it becomes monaural sound. (This is the same as stereo television).

USING TELEVISION WITH AUDIO AND VIDEO JACKS

Monitor television connections
Connect the VIDEO OUT jack of the player to the video input jack of the monitor television.

- The television speakers can be used by connecting the television audio input jacks and the player AUDIO OUT jacks. However, connection to a stereo amplifier is recommended to obtain superior audio playback quality for Compact Discs and LaserDiscs. Do not change the television antenna and VCR connections.
- **ATTENUATOR switch (*)**
  When the television speakers are used, the sound may be distorted. In this case, set ATTENUATOR to ON to reduce the distortion.

Stereo amplifier connections
Connect the AUDIO OUT jacks to the stereo amplifier AUX, CD, LD, VDP or other jacks.

- Do not connect these jacks to your amplifier PHONO input jacks.

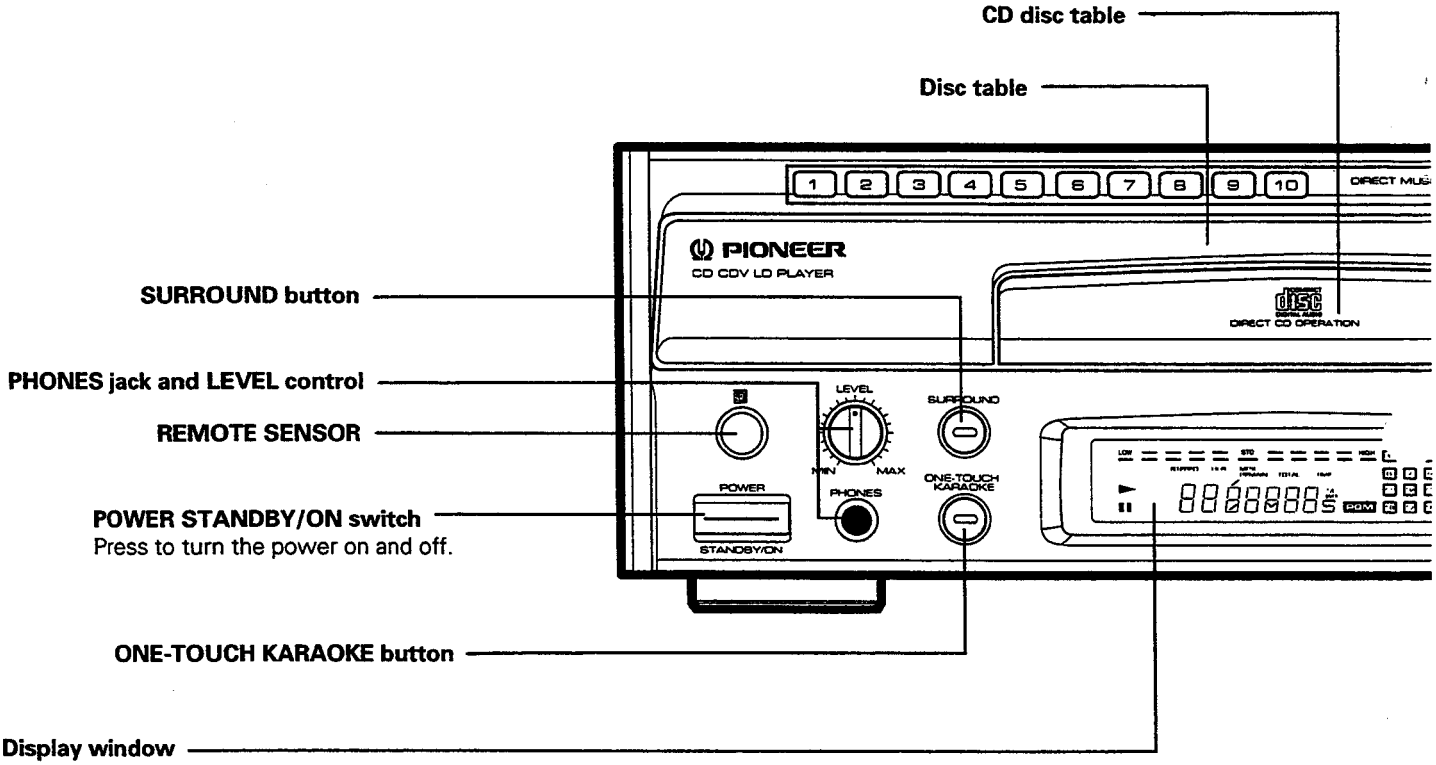
Power cord connections
Connect the power cord to an AC wall outlet after connecting all components.

NOTES:

- *Stripe patterns may appear when a LaserDisc is played on a television. Move the antenna cable away from the power cord to avoid this.*
- *Be sure to turn off the power of this player when you watch a TV broadcast.*
- *When the television speakers are used, the sound may be distorted. In this case, set ATTENUATOR to ON to reduce the distortion.*
- *With some televisions, when CD is played in Direct CD mode, no sound will be heard. Therefore, when using television speakers, turn off DIRECT CD.*

10. PANEL FACILITIES

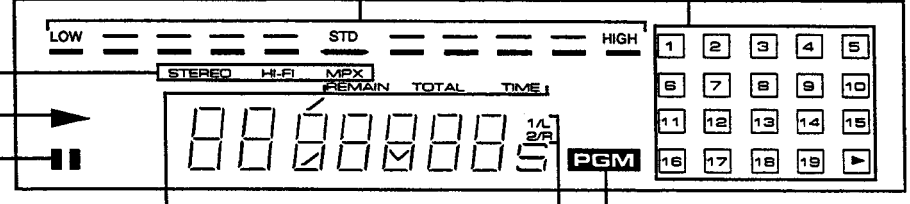
- Most of the buttons on the front panel are used for Karaoke play.



Visual calendar
When a disc is loaded, all of the chapter/track numbers recorded on the disc light up on the display. If the disc contains more than 19 chapters/tracks, the ► indicator lights.
During program play, only the programmed chapter/track numbers light. When a disc without a TOC section is played, only the selection number being played lights.
When a CDV disc is loaded, the track numbers of the video part light followed by the track numbers of the audio part.
After a chapter/track is finished playing, the corresponding number goes out.

Key control indicator
Indicates the current pitch position.

Audio mode indicators
Indicates audio mode (HI-FI MPX/ MPX/STEREO) being selected.



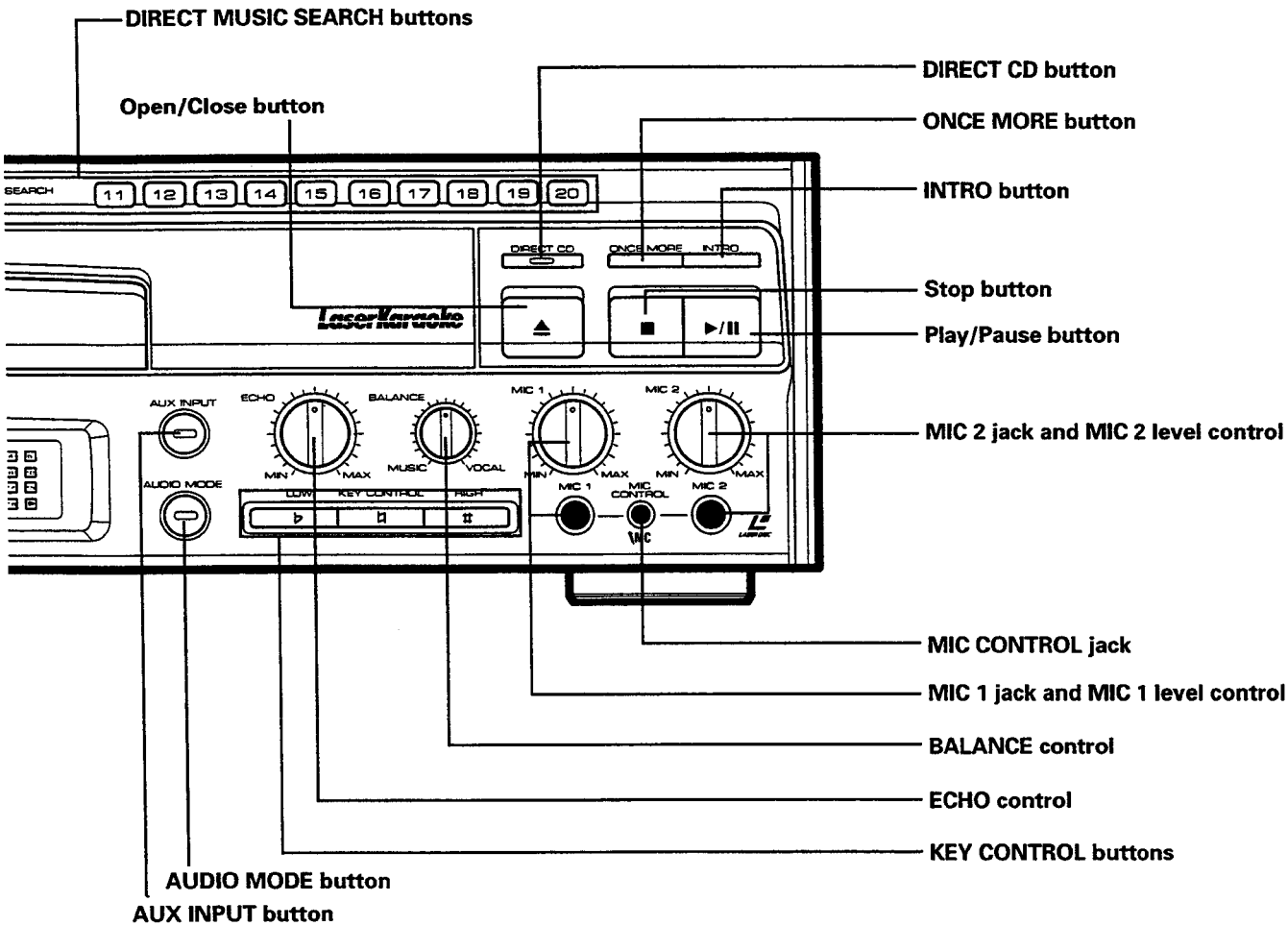
II Pause indicator
Lights when the player is in pause mode.

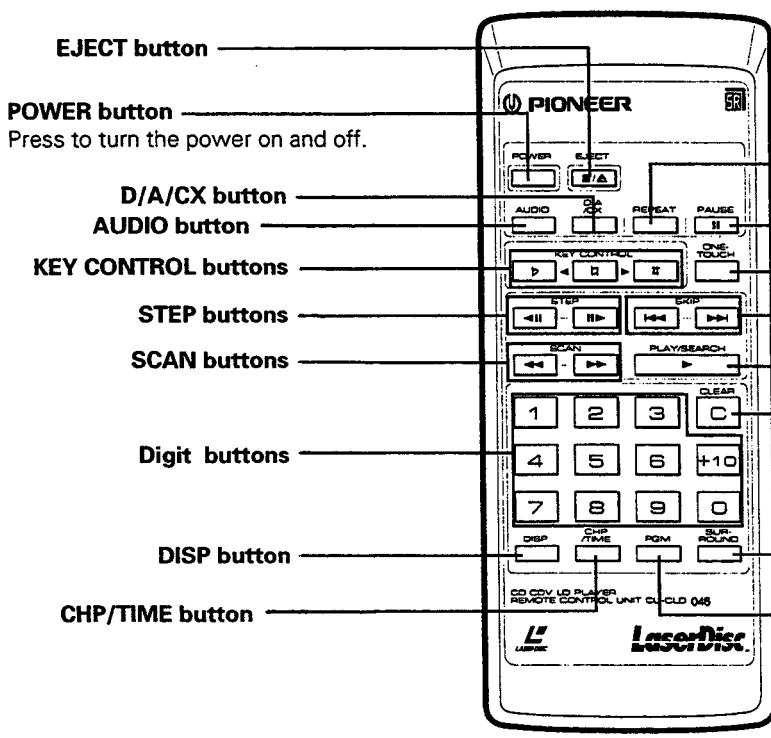
► Play indicator
Lights during play. Blinks during search.

REMAIN/TOTAL/TIME indicator
Indicates the REMAIN time (remaining play time), TOTAL time (total play time) or TIME (elapsed play time).

PGM indicator
Lights during program play.

1/L, 2/R indicator
Indicates the audio output channel.


DIRECT MUSIC SEARCH buttons
Open/Close button
DIRECT CD button
ONCE MORE button
INTRO button
Stop button
Play/Pause button
MIC 2 jack and MIC 2 level control
MIC CONTROL jack
MIC 1 jack and MIC 1 level control
BALANCE control
ECHO control
KEY CONTROL buttons
AUDIO MODE button
AUX INPUT button
SEARCH
11 12 13 14 15 16 17 18 19 20
DIRECT CD
ONCE MORE
INTRO
LaserKaraoke
AUX INPUT
ECHO
BALANCE
MIC 1
MIC 2
MIN
MAX
MUSIC
VOCAL
AUDIO MODE
LOW
KEY CONTROL
HIGH
MIC CONTROL


EJECT button
POWER button
Press to turn the power on and off.
D/A/CX button
AUDIO button
KEY CONTROL buttons
STEP buttons
SCAN buttons
Digit buttons
DISP button
CHP/TIME button
REPEAT button
PAUSE button
ONE-TOUCH button
SKIP buttons
PLAY/SEARCH button
CLEAR button
Used to clear the repeat mode or program mode. This button is also for use in correcting input digits.
SURROUND button
PGM button
PIONEER
POWER
EJECT
AUDIO
REPEAT
PAUSE
ONE TOUCH
STEP
SKIP
SCAN
PLAY/SEARCH
CLEAR
DISP
CHP /TIME
PGM
SUR-ROUND
LaserDisc

11. SPECIFICATIONS

1. General

System ..... LaserVision Disc system and Compact Disc digital audio system
Laser ..... Semiconductor laser wavelength 780 nm
Power requirements
CLD-V740 ..... AC 120 V, 60 Hz
CLD-1720K ..... AC 110/120~127/220/240 V (Switchable), 50/60 Hz
Power consumption
CLD-V740 ..... 42 W
CLD-1720K ..... 42 W
Weight ..... 7.5 kg (16 lbs 7 oz)
Dimensions ..... 420 (W) x 392 (D) x 122 (H) mm
16-9/16 (W) x 15-7/16 (D) x 4-13/16 (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
Jack ..... RCA jack

4. 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

5. Other Terminals

Microphone input 2
MIC control input ..... miniature jack
Headphones output 1
Control input/output ..... Both miniature jacks
VHF adapter output (Video/Audio) ..... Both RCA jacks with DC jack

6. Accessories

Remote control unit (CU-CLD046) 1
Size "AAA" (IEC R03) dry cell batteries 2
Video cord 1
Audio cord 1
Operating instructions 1
Warranty card 1

7. Functions

Remote control unit operations (CU-CLD046)

	Function	Standard play Disc (CAV)	Extended play Disc (CLV)	Compact Disc with Video	Compact Disc
Basic Functions	Pause	YES	YES	YES	YES
	Stop	YES	YES	YES	YES
	Eject	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	Chapter/Track repeat	YES	YES	YES	YES
	One-side repeat	YES	YES	YES	YES
	Program repeat	YES	YES	YES	YES
Trick play	Still/Step	YES	NO	NO	NO
Time display	Elapsed time display	NO	YES	YES	YES
	Absolute time display	YES*1	NO	NO	YES
	Remaining track time display	NO	NO	YES	YES
	Remaining total time display	YES*1	YES*1	YES	YES
	Total number of selections, total time display	YES*1	YES*1	YES	YES
Others	CX system ON/OFF	YES*2	YES*2	NO	NO
	AUTO DIGITAL/ANALOG switch	YES*3	YES*3	NO	NO
	Audio channel selection (Stereo, 1/L, 2/R)	YES*4	YES*4	YES*4	YES*4
	Intro Scan	YES	YES	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 Only NORMAL mode

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

SERVICE INFORMATION

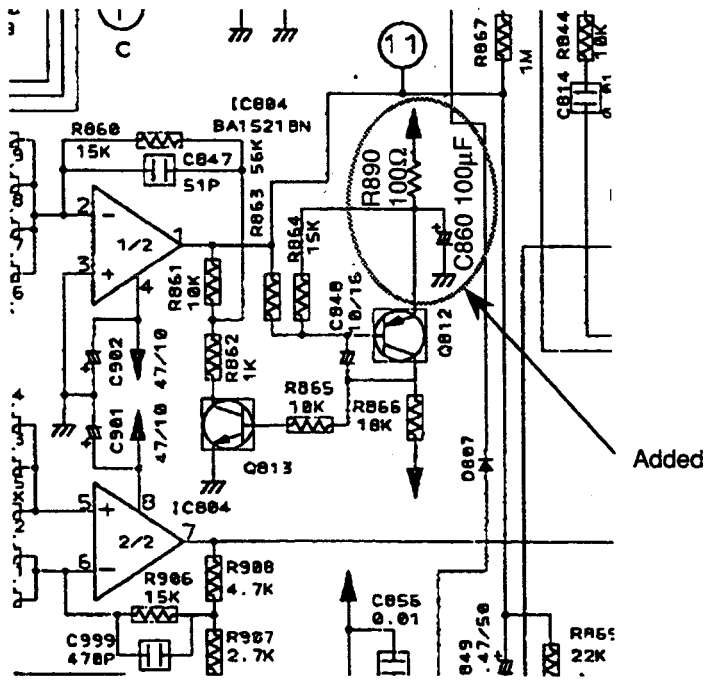
PIONEER
The Art of Entertainment

No. : SI-V48182
Date: Apr.15,1994

MODEL NO.	*	SER. NO.	MODEL NO.	*	SER. NO.	MODEL NO.	*	SER. NO.
CLD-V740/KC	A	3403401-						
CLD-V740/KU	↓	NH3606501-						
CLD-1720K-A/SDX1IN		NG2605001-						
CLD-1720K/SD		NG2646501-						

#	DETAIL OF CHANGE(S)	#	REASON FOR CHANGES
1	Addition of a resistor and a capacitor in MAIN Assy	1	To prevent mis-search in the adjustment state

MAIN Assy



SERVICE MANUAL

MODEL:CLD-V740
CLD-1720K
S/M NO.:ARP2803
PAGE : 27

MODEL:
S/M NO.:
PAGE:

MODEL:
S/M NO.:
PAGE:

MODEL:
S/M NO.:
PAGE:

Ref. *	Ref. #	CURRENT PARTS SYMBOL/DESCRIPTION	CURRENT PARTS PART NUMBER	CODE	NEW PARTS PART NUMBER	NEW PARTS SYMBOL/DESCRIPTION
A	1		Added	-	CEAS101M10	C860(100μF)
A	1		Added	-	RD1/6PM101J	R890(100Ω)

PIONEER ELECTRONIC CORPORATION

(SPC48-399,TB-16547 SPC-HK 104)

Y. Imamizu

Y.IMAMIZU, MANAGER
HE Engineering Section
Service Dep.

3884

PIONEER®
The Art of Entertainment

Service Manual

SERVICE GUIDE

ORDER NO.
ARP2528

CD CDV LD PLAYER

CLD-S201
CLD-S250

CONTENTS

1. DISASSEMBLY 2
2. DESCRIPTION OF MECHANISM 7
2.1 OUTLINE OF MECHANISM 7
2.2 DESCRIPTION OF OPERATION 11
3. DESCRIPTION OF THE SYSTEM CONTROL 20
3.1 MICRO COMPUTER INTERFACE 21
3.2 MICRO COMPUTER COMMUNICATION SEQUENCE 21
3.3 OUTLINE OF THE MECHANISM CONTROL SYSTEM 22
3.4 FLOW CHARTS OF VARIOUS OPERATIONS 30
3.5 OUTLINE OF THE MODE CONTROL SYSTEM 37

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 300 Allstate Parkway Markham, Ontario L3R 0P2 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

AO MAY 1992 Printed in Japan

3889

1. DISASSEMBLY

• Removing the Tray Unit

1. Set DIRECT CD to OFF (indicator lamp goes OFF).
2. Remove the two fixing screws Ⓩ (Fig. 1–1).
3. Press the OPEN/CLOSE button to set the tray unit to its OPEN position.

* When manually setting the tray unit to its OPEN position, refer to Notes 1 and 2.

4. Pull out the tray unit while pressing the hook Ⓐ (Fig. 1–1), located on the rear right side of the tray unit, to the left.

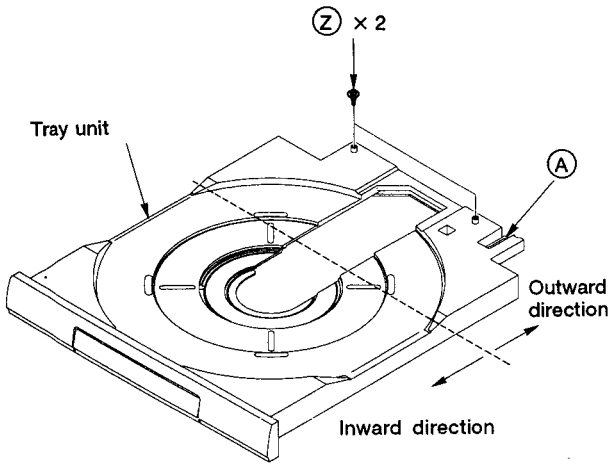


Fig. 1–1

Note 1. Manually setting the tray unit to its OPEN position

1. Remove the clamper unit Ⓑ (Fig. 1–2) by loosening its four screws.

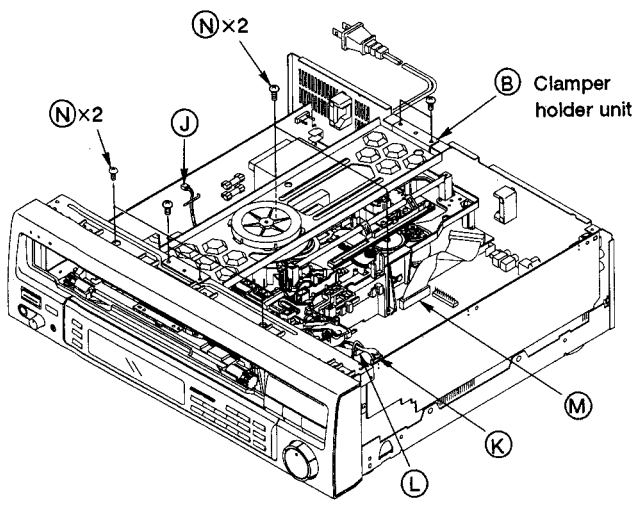


Fig. 1–2

2. Make sure that the position of the lens in the pickup assembly is such that the lens stops outside the position indicated by the dotted line in Fig. 1–1.
When the lens stops inside the dotted line, slowly press the Ⓠ portion of the rack assembly (Fig. 1–3) to move the lens in the pickup assembly until the lens is outside the position indicated by the dotted line in Fig. 1–1.
Note that by not going through this process, opening the CD tray and removing the tray ASS'Y would be more time-consuming.

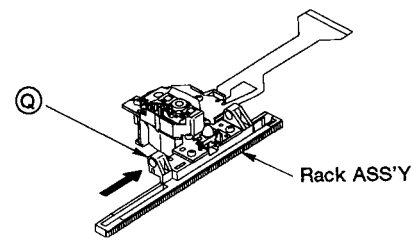


Fig. 1–3

3. Insert your hand through the right side of the tray unit and turn the gear pulley Ⓒ (Fig. 1–4) in a clockwise direction until the servo-mechanism unit Ⓓ (Fig. 1–5) lowers. Keep turning the pulley until the tray unit starts to move towards the front.

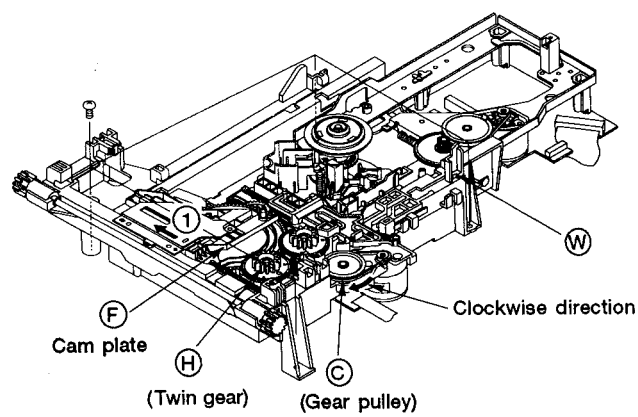


Fig. 1–4

4. Slowly pull out the tray unit to the OPEN position.

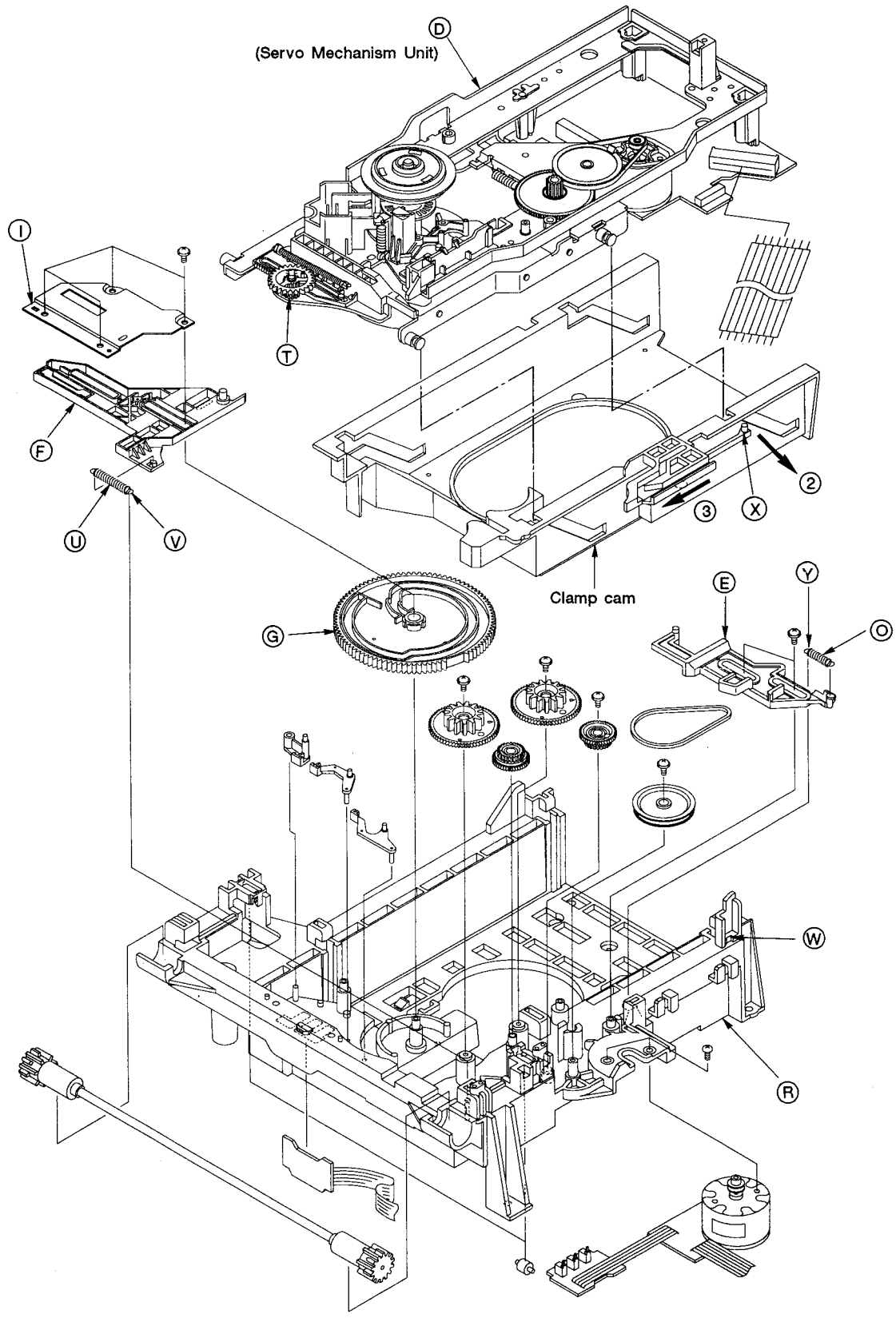


Fig. 1-5

Note 2. Setting the tray unit to its OPEN position when the CD tray is completely or partially OPEN

1. Remove the clamper unit Ⓑ (Fig. 1–2) by loosening its four screws.
2. Slowly push in the CD tray to the CLOSE position.
3. Slowly press the Ⓠ portion of the rack assembly (Fig. 1–3) to move the lens in the pickup assembly until the lens is outside the position indicated by the dotted line in Fig. 1–1.
4. Insert your hand through the right side of the tray unit and turn the gear pulley Ⓒ (Fig. 1–4) in a counterclockwise direction until the servo-mechanism unit Ⓓ (Fig. 1–5) starts to move upward. Keep turning the pulley until the clamp position is reached (the LD tray and CD tray become one unit).
5. When the clamp position has been reached, turn the gear pulley Ⓒ (Fig. 1–4) in a clockwise direction until the servo-mechanism unit Ⓓ lowers. Keep turning the pulley until the tray unit starts to move towards the front.
6. Slowly pull out the tray unit to the OPEN position.

• Attaching the Tray Unit

1. Make sure that the CD plate Ⓔ is positioned to the left (LD Tray mode) as in Fig. 1–6. When the CD plate Ⓔ is positioned to the right (CD Tray mode) as in Fig. 1–6, perform steps 1) to 2).
1) Turn the power ON. While DIRECT CD is OFF, push cam plate Ⓕ (Fig. 1-6) towards the direction of the arrow ①.
2) Wait until the cam gear Ⓖ (Fig. 1–6) turns, the servo-mechanism unit Ⓓ (Fig. 1–5) goes upward, and the pickup assembly stops moving.
2. Press the OPEN/CLOSE button to open the tray unit, or pull out the power cord from the AC outlet and turn the twin gear Ⓗ (Fig. 1–4) in a counterclockwise direction until the cam gear Ⓖ (Fig. 1–6) can no longer turn.
3. Keeping the tray unit parallel with the front panel, slowly insert the tray unit through the opening of the front panel.

Note that if you insert the tray unit in the front panel when the tray unit and the front panel are not parallel with each other, the tray unit might get stuck while being inserted.

• Removing the Servo-Mechanism Unit

1. Remove the clamper unit Ⓑ (Fig. 1–2) by loosening its four screws, and remove the tray unit.
2. Remove the four connectors Ⓙ to Ⓜ (Fig. 1–2).
3. Remove the four fixing screws Ⓝ of the mechanism base and remove the whole servo-mechanism unit from its casing.
4. Remove the Ⓨ side of the CDP spring Ⓞ (Fig. 1–5) as well as the CD plate Ⓔ by loosening the CD plate's two screws.
5. Remove the lead wire from the lead wire hook Ⓢ (Fig. 1–7) for the spindle motor at the rear of the mechanism base Ⓡ .

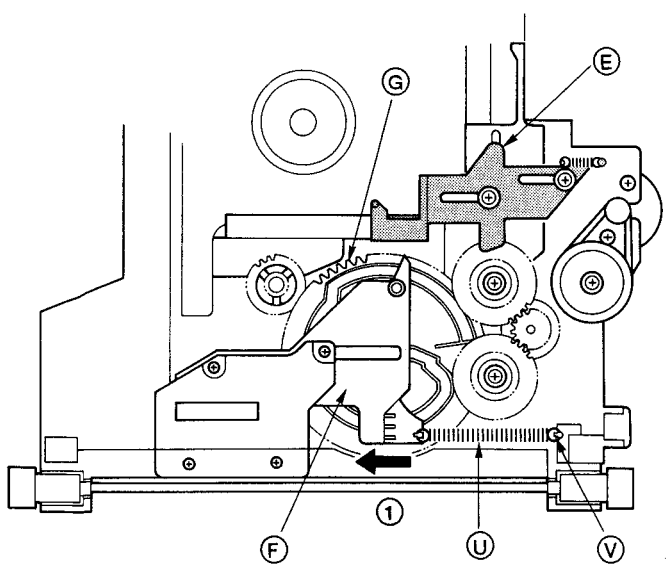


Fig. 1–6

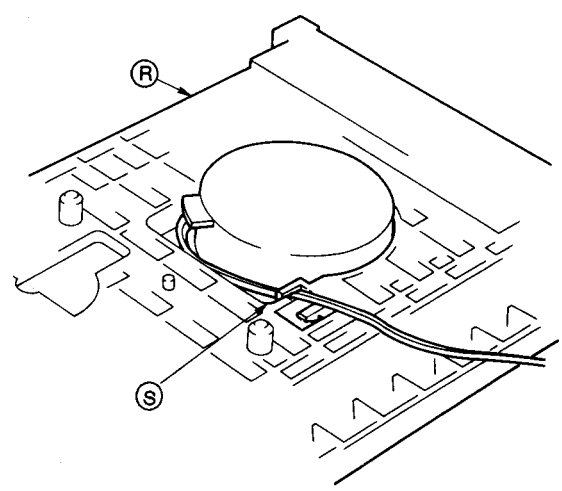


Fig. 1–7

6. While pushing the cam plate Ⓕ (Fig. 1–4) towards the direction of the arrow ①, turn the twin gear Ⓗ (Fig. 1–4) in a clockwise direction.
7. Stop turning the twin gear Ⓗ (Fig. 1–4) when the servo-mechanism unit Ⓓ (Fig. 1–5) has gone upward and the Y-gear Ⓣ is engaged with the cam gear Ⓖ by three to five teeth.
8. While bending the clamp cam hook Ⓧ (Fig. 1–5) in the direction of the arrow ②, move the hook to its "built-in position" Ⓦ (Fig. 1–4) towards the rear.
9. Lift the servo-mechanism unit Ⓓ straight up and remove the unit from the clamp cam (Fig. 1–5).

• Attaching the Servo-Mechanism Unit

1. Return the clamp cam and other parts to their original positions (when the servo-mechanism unit was removed).
2. While turning the Y-gear Ⓣ in a clockwise direction by three to five teeth (Fig. 1–8) in the same manner as when the Y-gear was removed, attach the servo-mechanism unit from above to the clamp cam (Fig. 1–5).
3. While bending the clamp cam hook Ⓧ in the direction of the arrow ② , move the hook in the direction of the arrow ③ (Fig. 1–5).
4. While the servo-mechanism unit is raised, hook the lead wire from the spindle motor to hook Ⓢ (Fig. 1–7) on the rear of the mechanism base Ⓡ .
5. Turn the twin gear Ⓗ (Fig. 1–4) in a counterclockwise direction until the servo-mechanism unit lowers, the cam gear Ⓖ (Fig. 1–5) stops turning, and the twin gear Ⓗ (Fig. 1–4) runs idle.

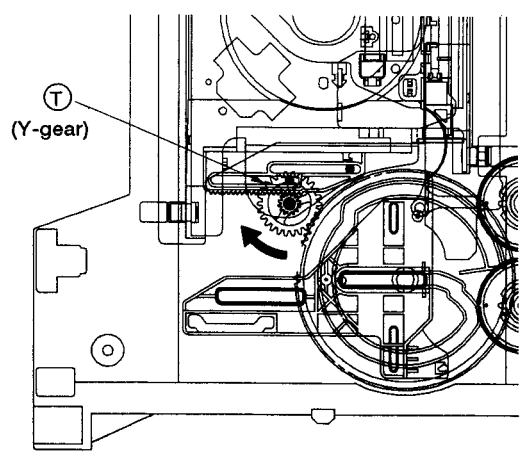


Fig. 1–8

• Attaching the Cam Gear and Cam Plate

1. Bring the clamp cam (Fig. 1–5) close towards you (while the servo-mechanism unit is being lowered).
2. Insert the cam gear Ⓖ upon directing the rib horizontally as shown in Fig. 1–9.

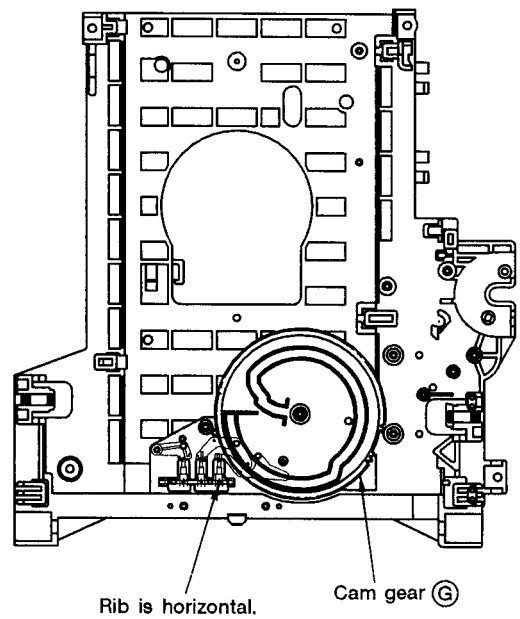


Fig. 1–9

3. Attach the CAS spring, Ⓤ (Fig. 1–6) to the cam plate Ⓕ , and hook the Ⓥ side of the CAS spring to the spring-latching part of the mechanism base.

4. Slightly turn the cam gear Ⓖ in a counterclockwise direction until the cam gear reaches the position shown in Fig. 1–10.

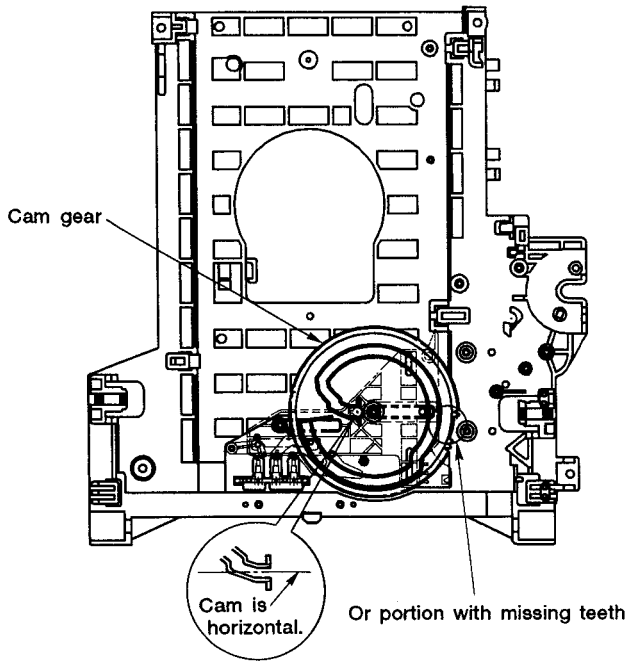


Fig. 1–10

5. Attach the cam plate Ⓕ on the cam gear Ⓖ when the plate has moved to the rightmost position (Fig. 1–6).
6. Fix the shaft holder Ⓘ using four screws (Fig. 1–5).

• Matching the Position of the Gears

1. Attach the center gear Ⓟ , twin gears Ⓗ1 and Ⓗ2, and Y-gear Ⓣ in the positions indicated in Fig. 1–11.

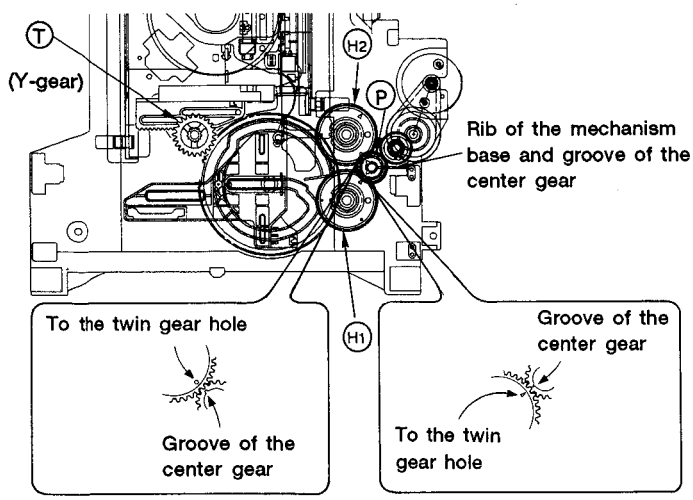


Fig. 1–11

• Attaching the CD Plate

1. Upon attaching the CD spring Ⓞ (Fig. 1–5) to the CD plate Ⓔ , hook the Ⓨ side of the CD spring to the mechanism base hook.
2. Attach the CD plate Ⓔ (from the left side) into the position shown in Fig. 1–6.

2. DESCRIPTION OF MECHANISM

2.1 OUTLINE OF MECHANISM

The mechanism consists of the following four independent units:

① Loading mechanism unit (Fig. 2–2)
② Servo-mechanism unit (Fig. 2–3)
③ Tray unit (Fig. 2–4)
④ Clamper unit (Fig. 2–6)

The tray unit only moves in the horizontal direction (forward and backward) due to the ascending and descending movements of the servo-mechanism unit, while the clamper unit is fixed inside a casing. These are some of the distinct features of the mechanism. Moreover, a CD tray is added to the LD tray in the tray unit, a feature not found in previous models.

The major components of each unit are described below.

① Loading Mechanism Unit (Refer to Fig. 2–2)

The loading mechanism unit consists of the following: a DC motor (carriage motor) which is the drive source of the mechanical base, a clamp cam which guides the ascending and descending movements of the servo-mechanism unit, a tray unit, a cam gear which engages the movement of the loading mechanism unit with that of the tray unit, a cam plate, and gears for reducing speed during operation. A detection system for each operation mode of the mechanism is included in the loading mechanism unit through the switch circuit board assembly and is connected together with the power supply of the DC motor.

By attaching the servo-mechanism unit and tray unit to the loading mechanism unit, the operations of the mechanism are completed without using the casing and other supporting components (Fig. 2–2) (excluding the operations of the clamper unit and clamp).

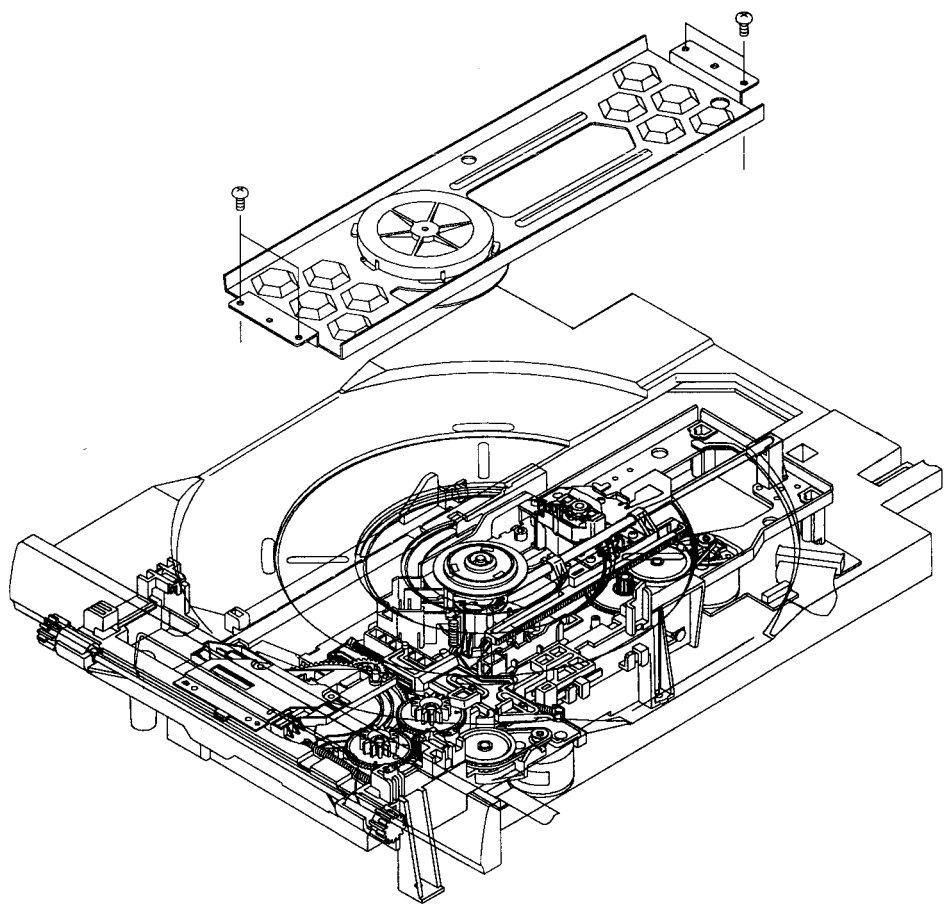


Fig. 2–1

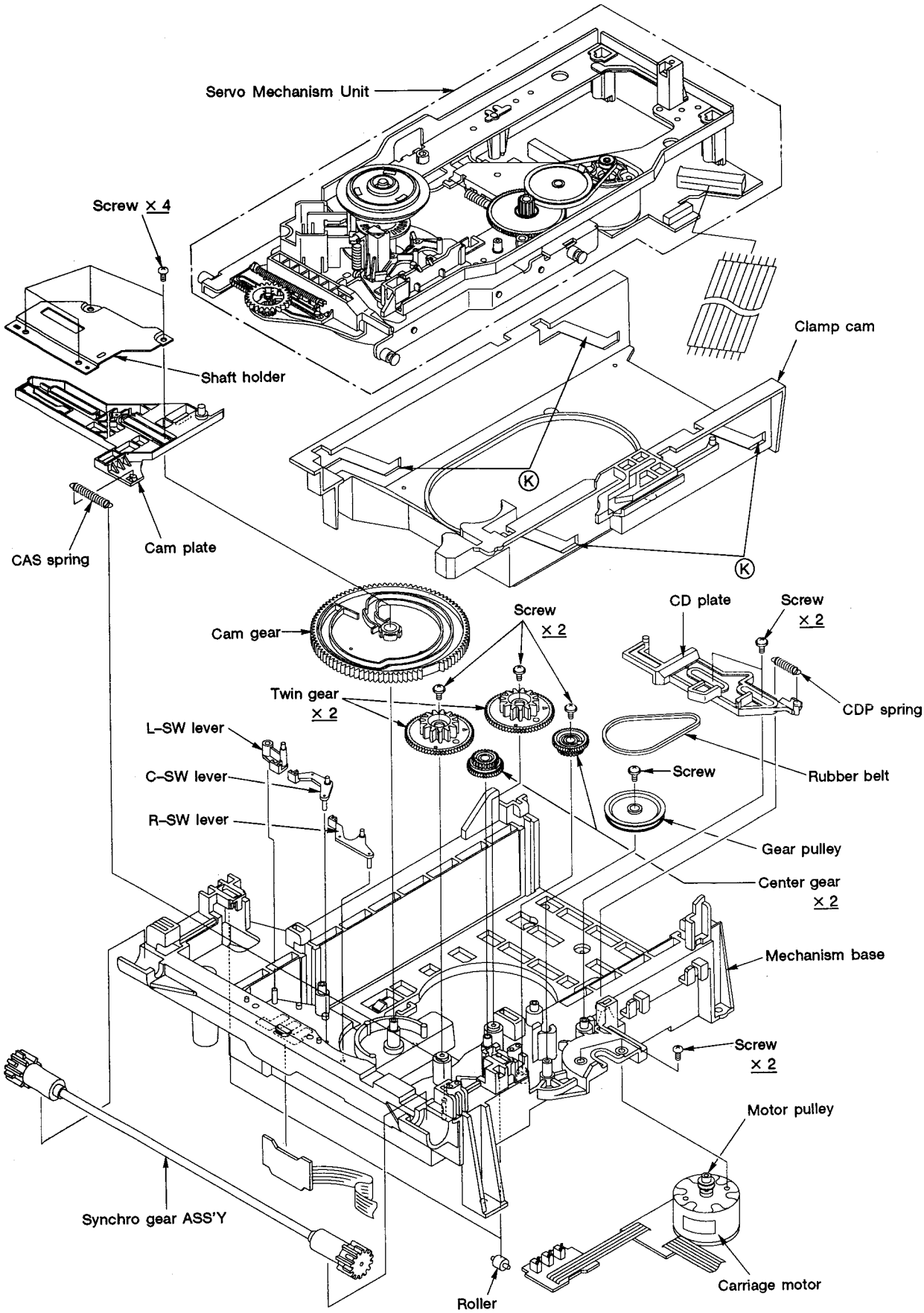


Fig. 2-2 Loading Mechanism unit

② Servo-Mechanism Unit (Refer to Fig. 2–3)

The servo-mechanism unit is mainly divided into two parts: one is related to the tilt base, while the other is related to the motor base.

The tilt base consists mainly of the following: a rack assembly which includes the pickup assembly, a carriage shaft for the guide of the rack assembly, a DC motor (shared with the loading mechanism unit) for driving the rack assembly, and various gears. Similar to the loading mechanism unit, a detection system for the pickup assembly is included through the switch circuit board assembly and is connected to the exterior of the servo-mechanism unit, together with the signal lines from the DC motor power supply and pickup assembly, via the CAMB assembly.

The motor base consists of the following: a spindle motor assembly, a tilt cam which guides the tilt operation of the tilt base, and a Y-gear which engages the loading mechanism unit with the tilt cam.

The tilt base is set on top of the motor base. Both bases are fixed with screws in every direction (up/down, left/right, and front/rear).

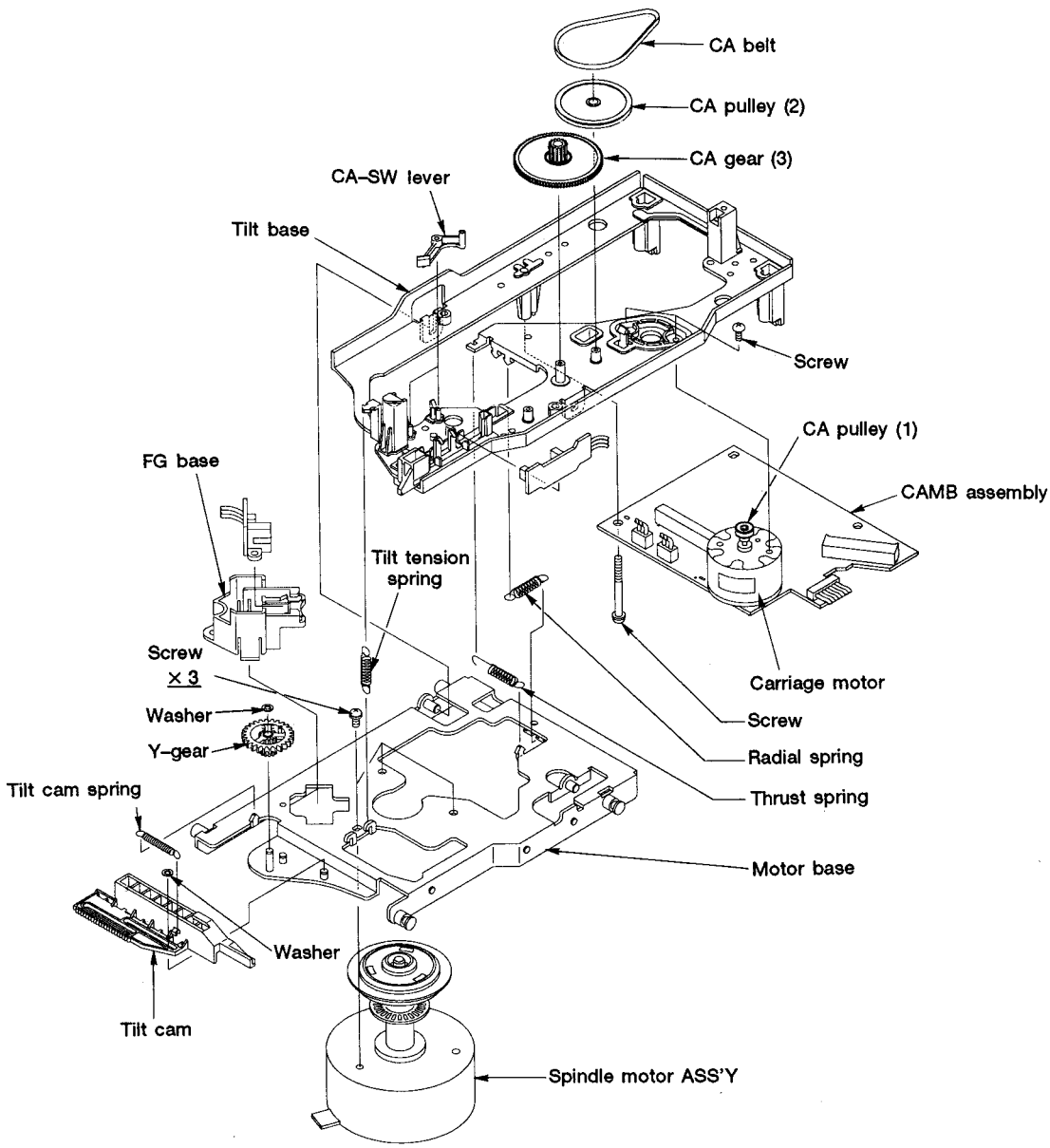


Fig. 2–3 Servo Mechanism unit

③ Tray Unit (Refer to Fig. 2–4 and Fig. 2–5)

Two guide plates (left and right) are attached on the bottom side of the LD tray. In between the guide plates is a lock plate used in CD/LD tray operation switching and a lock plate spring.

As a support system to the tray unit, two protruding portions Ⓐ (Fig. 2–5) are located on the front, left of the mechanism base, and a cam groove Ⓑ (Fig. 2–4) is located on the bottom side for the left/right movements of the LD tray. Rollers Ⓒ (Fig. 2–5) are located on the left and right of the mechanism base, and a synchro gear assembly Ⓓ exists for the up/down movements of the LD tray. The synchro gear assembly ensures left/right synchronization. As for the CD tray, a protruding rib Ⓔ (Fig. 2–4) is located on the bottom side of the LD tray for the left/right movements, while guide plates are located on the left and right of the rib for the up/down movements.

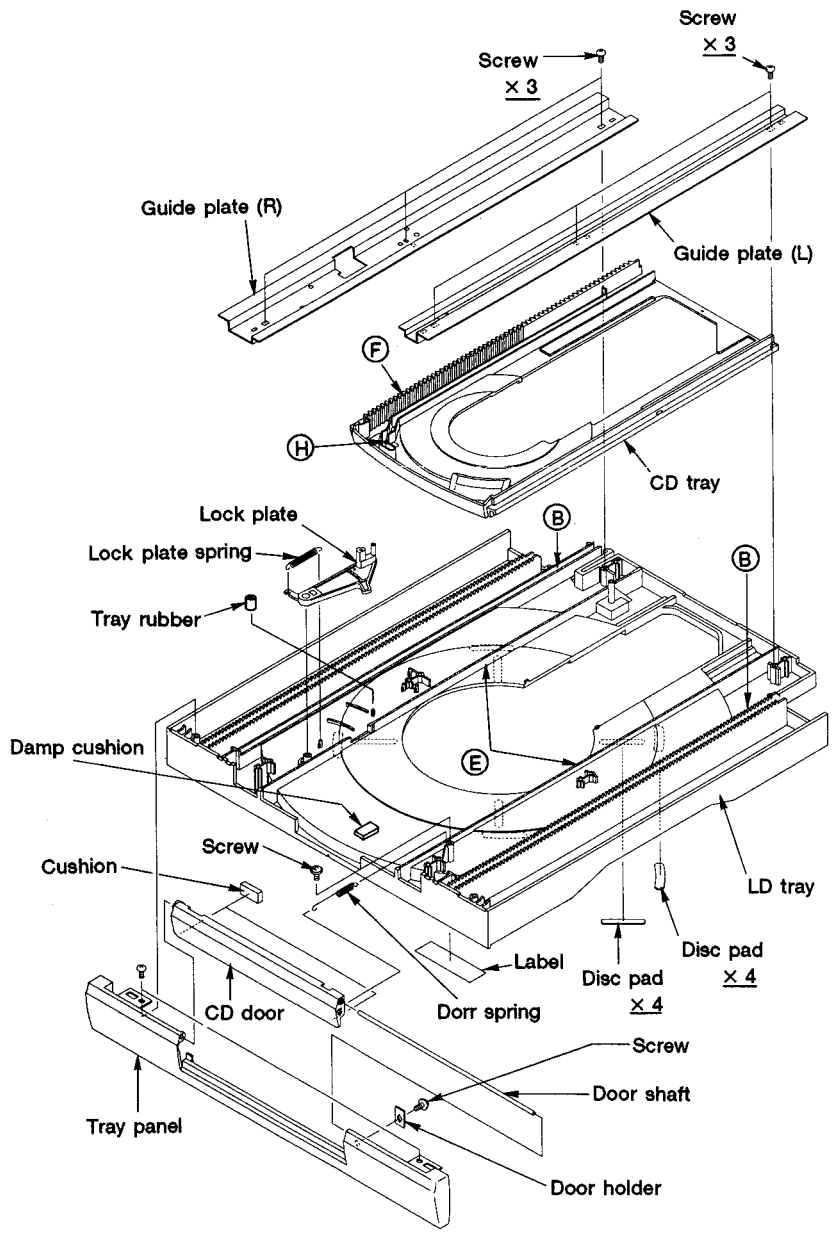


Fig. 2-4 Tray unit (Bottom view)

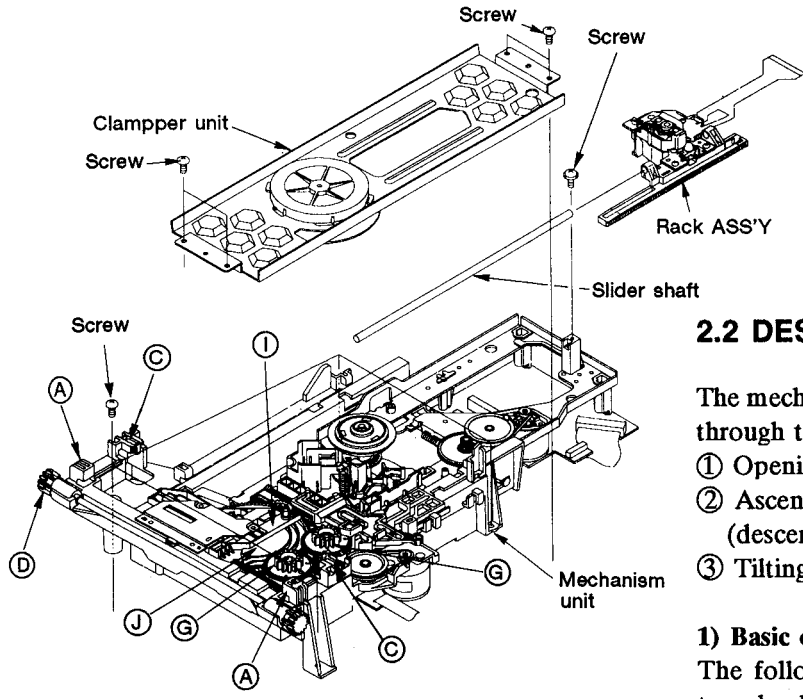


Fig. 2-5 Mechanical unit

④ Clamper Unit (Refer to Fig. 2-6)

A clamper head and three clamper springs are temporarily fixed onto the clamper. The clamper is fixed as a unit by the clamper holder via the clamper arm. The clamp is held in place by later attaching a stabilizer.

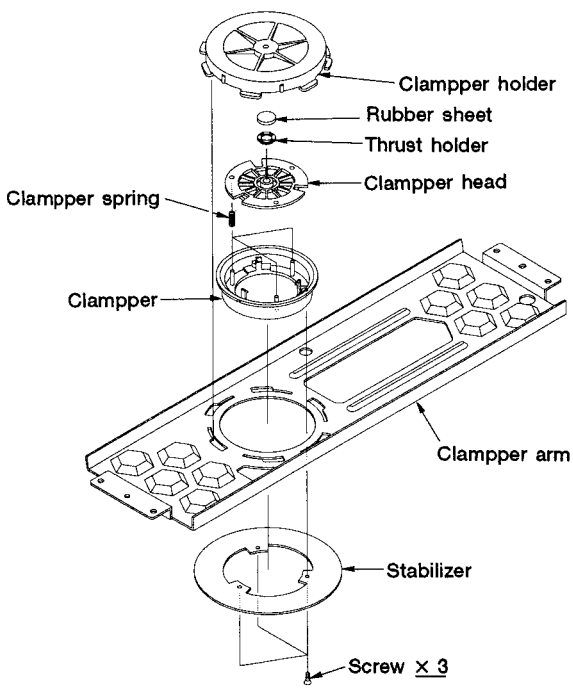


Fig. 2-6 Clampper unit

2.2 DESCRIPTION OF OPERATION

The mechanism performs the following operation modes through the loading motor:

① Opening/closing of tray unit
② Ascending/descending of servo-mechanism unit (descending: disc clamp)
③ Tilting of servo-mechanism unit

1) Basic operations

The following describes operations from ejecting the tray, loading the disc, to playback.

① Loading the Tray

While the rack gear Ⓕ (Fig. 2-4) and twin gear Ⓖ (Fig. 2-5) the bottom side of the CD tray are engaged, the cam gear Ⓙ is engaged with the twin gear Ⓖ. by moving the cam plate Ⓘ through the cam Ⓗ (Fig.2-4) on the bottom side of the CD tray. (The rack gear on the bottom side of the CD tray is separated from the twin gear.)

② Ascending of the Servo-Mechanism Unit

The clamp cam is moved towards the rear by engaging the cam and boss on the back side of the cam gear to the clamp cam (Fig. 2-7). The servo-mechanism assembly ascends through the cam Ⓚ (Fig. 2-2) on the clamp cam.

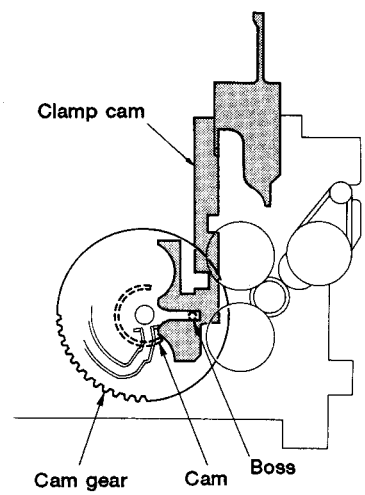


Fig. 2-7

③ Clamping the Disc
While the servo-mechanism unit is ascending, the disc on the tray is lifted and the clamper waiting on top is pushed up. Clamping force is generated (Fig. 2–6) from the force of the clamp spring between the clamper and clamper head.

④ Tilting the Servo-Mechanism Unit
The Y-gear on the motor base, from ascending of the servo-mechanism unit to clamping, and cam gear are engaged to drive the tilt cam (Fig. 2–8). Since support points from the tilt base are provided on the slanted side Ⓛ (Fig. 2–8) of the tilt cam, tilting is performed by the left/right movements of the tilt cam.

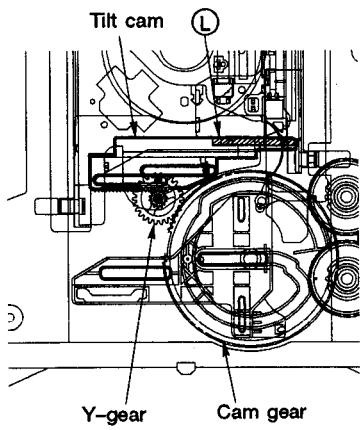


Fig. 2–8

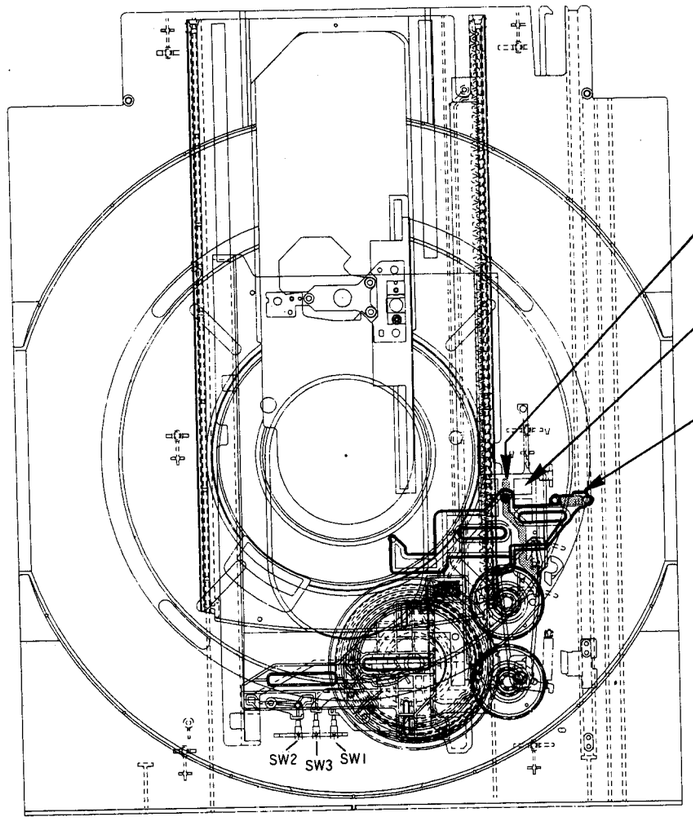
2) LD/CD Tray Identification → Eject Operations

① Selecting the LD Tray (Refer to Fig. 2–9)
To unclamp (when the servo-mechanism unit is lowered), the clamp cam moves in reverse (towards the front panel). Since the CD plate is forced to the left by the CD spring (Fig. 2–9 ⓐ), the plate is inserted in the (LD) direction of the cam on the upper right side of the clamp cam. The lock plate on the tray is turned to the left by the lock plate spring (Fig. 2–9 ⓑ) and the CD tray and LD tray become one whole unit.

② Ejecting the LD Tray → Pause (Refer to Fig. 2–9)
After the clamp cam operation, the LD tray, which has become one whole unit with the CD tray, is ejected. While the LD tray is being ejected, the pin on the bottom side of the LD tray comes in contact with the cam (Fig. 2–9 ⓒ) on the right side of the cam plate. The cam plate is then moved to the right from a specified position by the CAS spring and the switch is detected by the cam on the bottom side of the cam plate via the left switch lever.

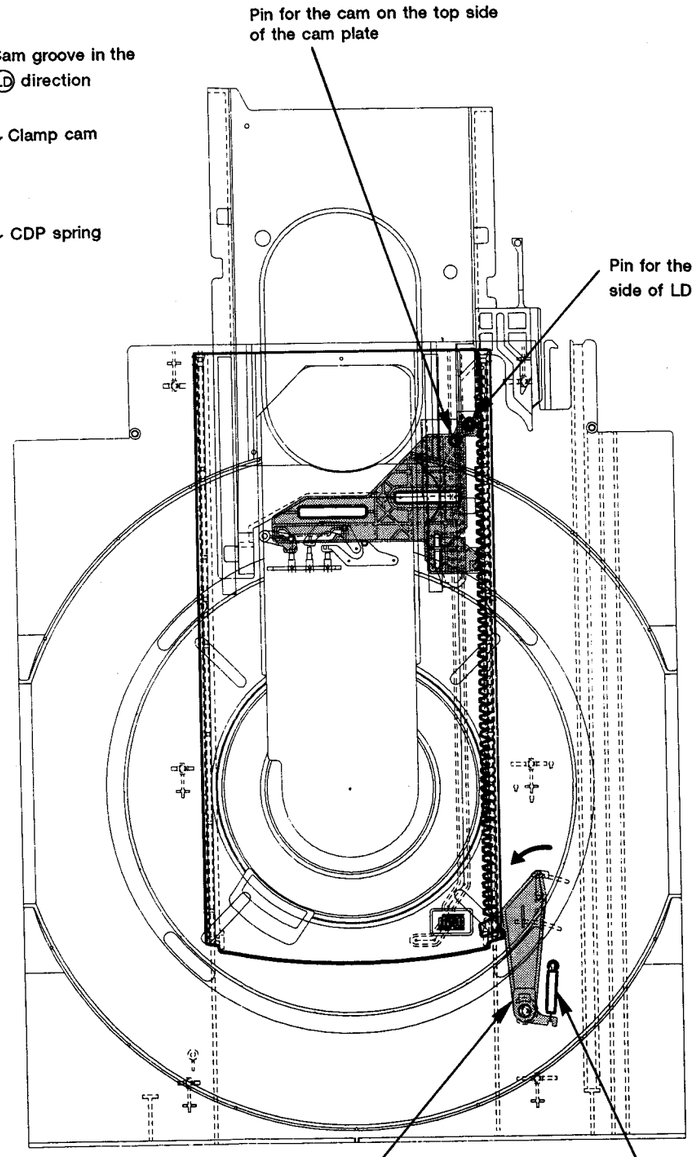
③ Selecting the CD Tray (Refer to Fig. 2–10)
Similar to "Selecting the LD tray" ①, when the CD plate is forced to the left, the rack assembly which has become one whole unit with the pickup assembly hits the lead edge of the CD plate in the CD mode (CD in playback position) and enters in the ⓒⓓ direction of the clamp cam (Fig. 2–10 ⓐ). The lock plate is then turned to the right and the CD tray is separated from the LD tray. At the same time, the LD tray is fixed to the mechanism base by the lock plate (Figs. 2–10 ⓑ and 2–10 ⓒ).

④ Ejecting the CD Tray to Pause (Refer to Fig. 2–10)
In this case, the LD tray is fixed and only the CD tray is ejected and moved towards the front. When the CD tray has moved into the specified position Ⓐ, the cam plate is moved to the right by the cam on the bottom side of the CD tray and the switch is detected as in "Ejecting the LD tray to Pause"② (Fig. 2–10 ⓒ and 2–10 ⓓ).



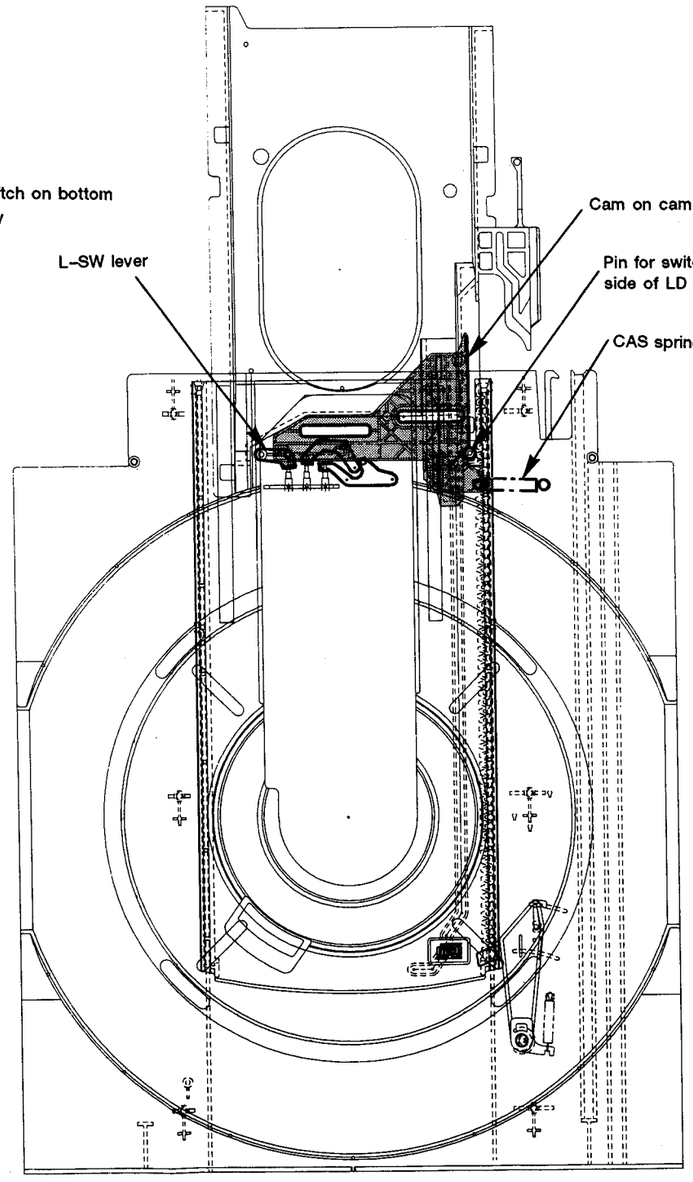
Detection of <<Tray Loading Completed>> switch
(SW1 — ON → OFF)

Fig. 2-9 ⓐ When Loading the Tray



<Tray Open Completed> switch detection check
(fixes the cam plate)

Fig. 2-9 ⓑ During EJECT



Detection of <<Tray Open Completed>> switch
(SW 3 — ON → OFF)

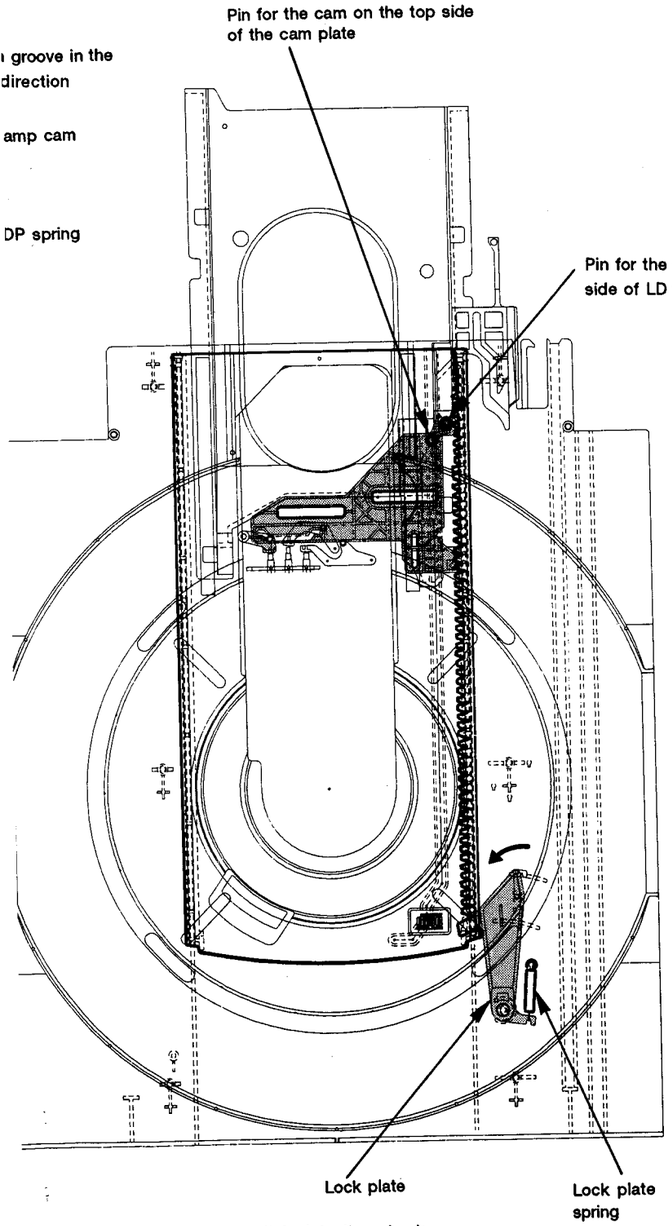
Fig. 2-9 ⓒ EJECT <Open Switch> Detection

Schematic Diagram of LD Tray Open/Close Operation

groove in the
direction

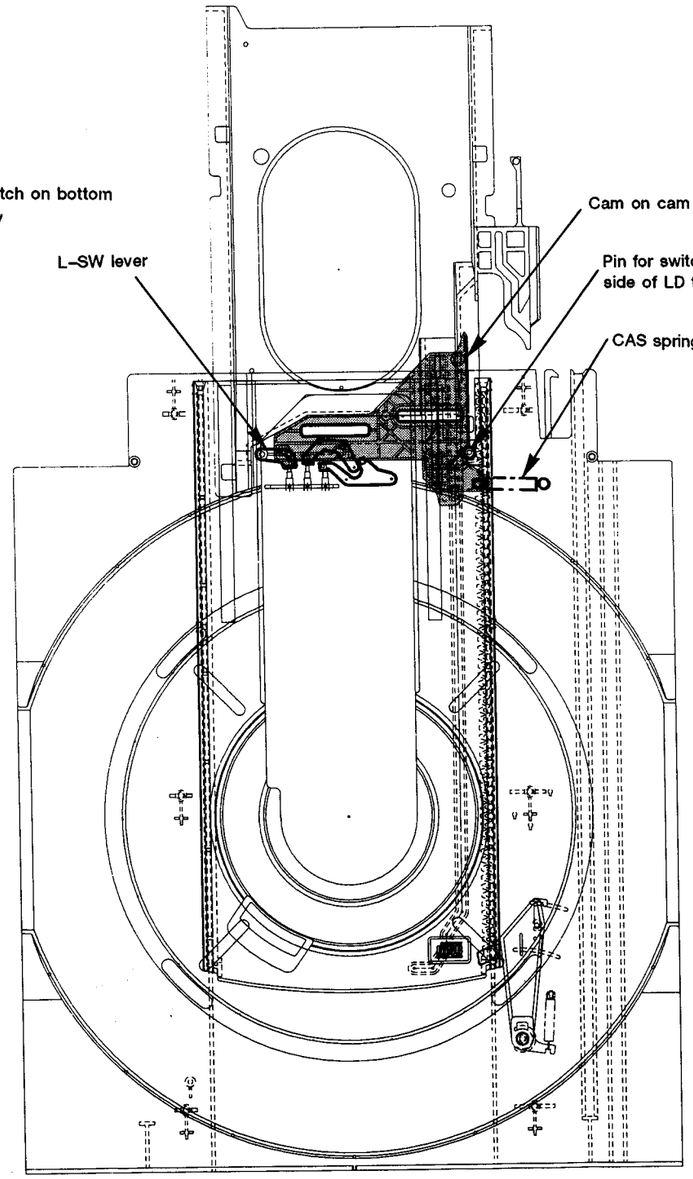
amp cam

DP spring



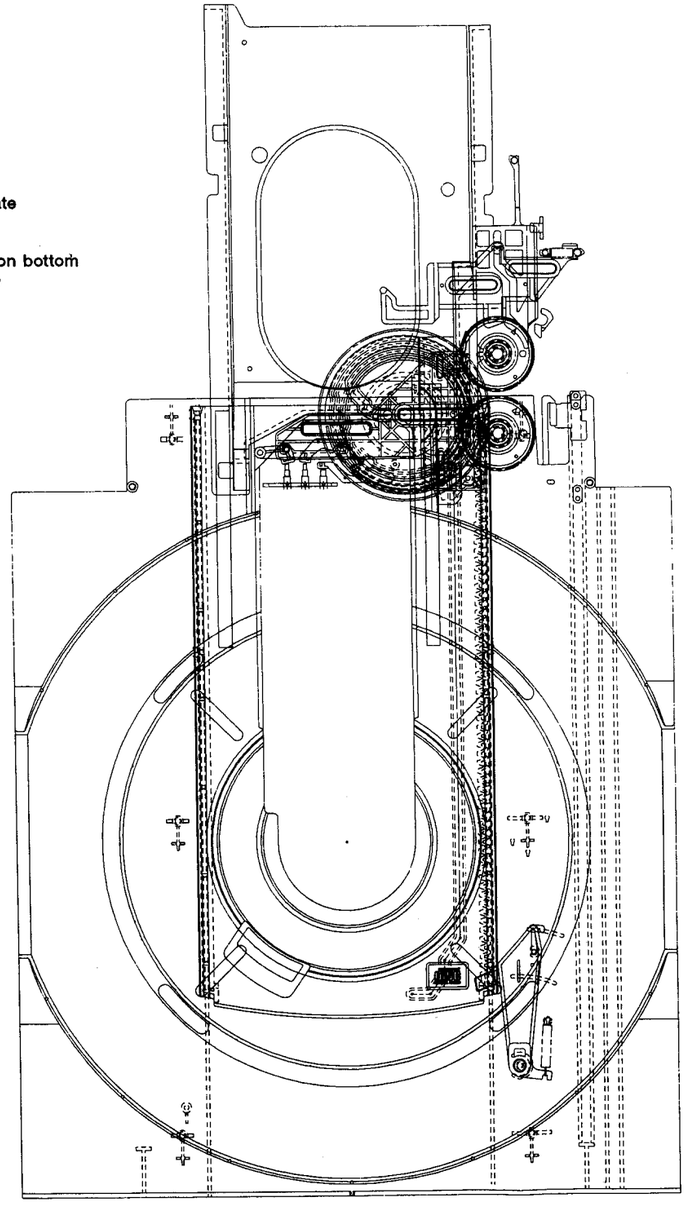
<Tray Open Completed> switch detection check
(fixes the cam plate)

Fig. 2-9 ⓑ During EJECT



Detection of <<Tray Open Completed>> switch
(SW 3 — ON → OFF)

Fig. 2-9 ⓒ EJECT <Open Switch> Detection



Tray stopper (cam plate END)

Fig. 2-9 ⓓ Full OPEN

Schematic Diagram of LD Tray Open/Close Operation

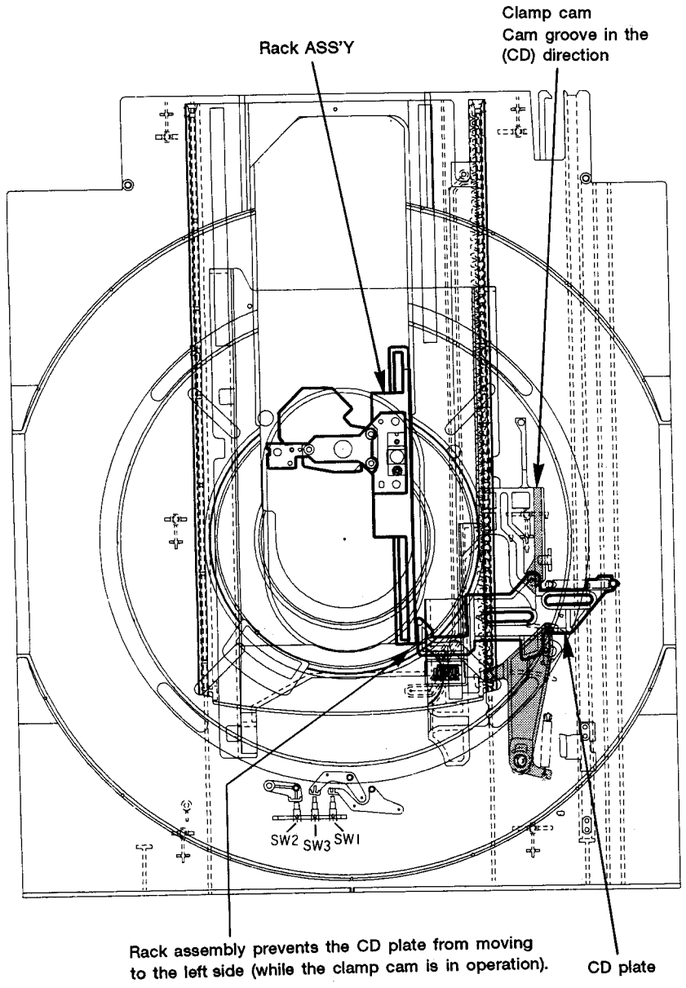


Fig. 2–10 ⓐ Detection of the CD Mode when Loading the Tray

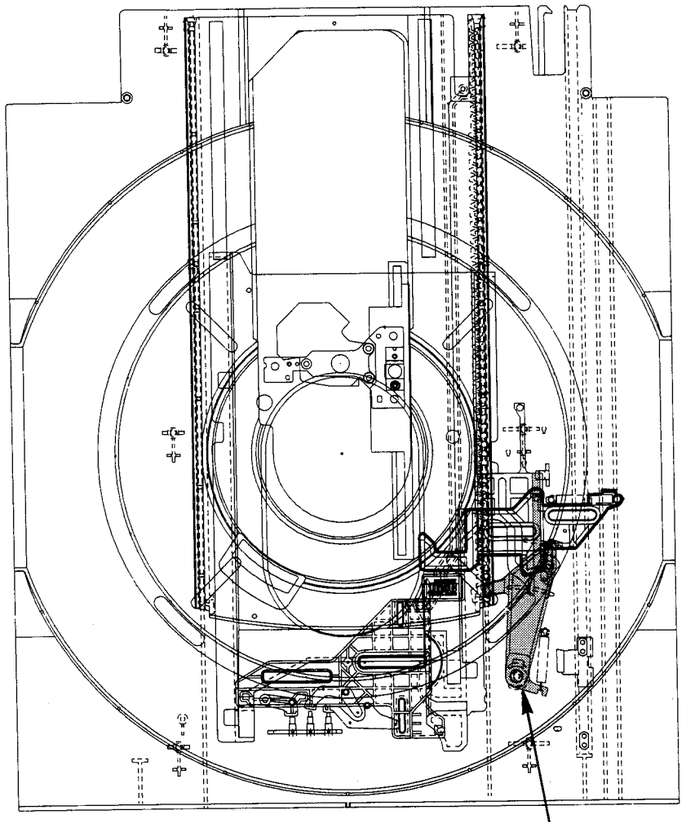


Fig. 2–10 ⓑ When Loading the Tray

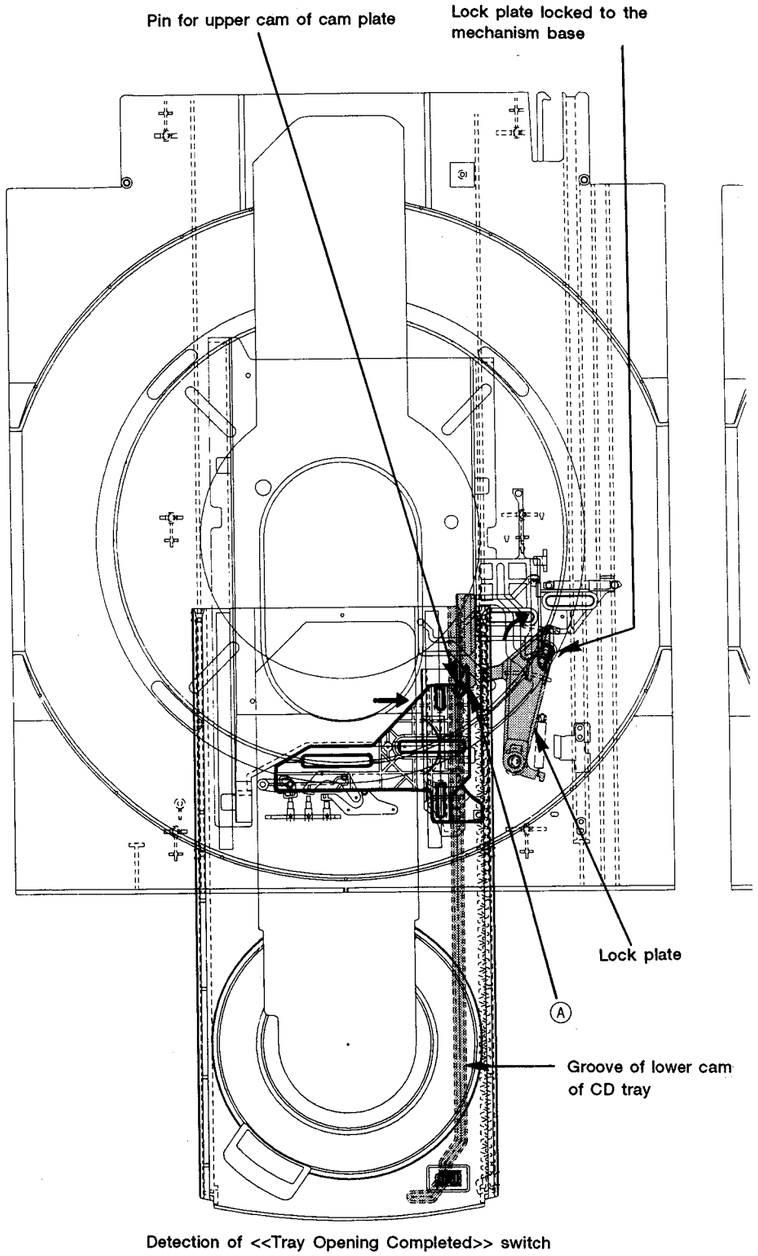
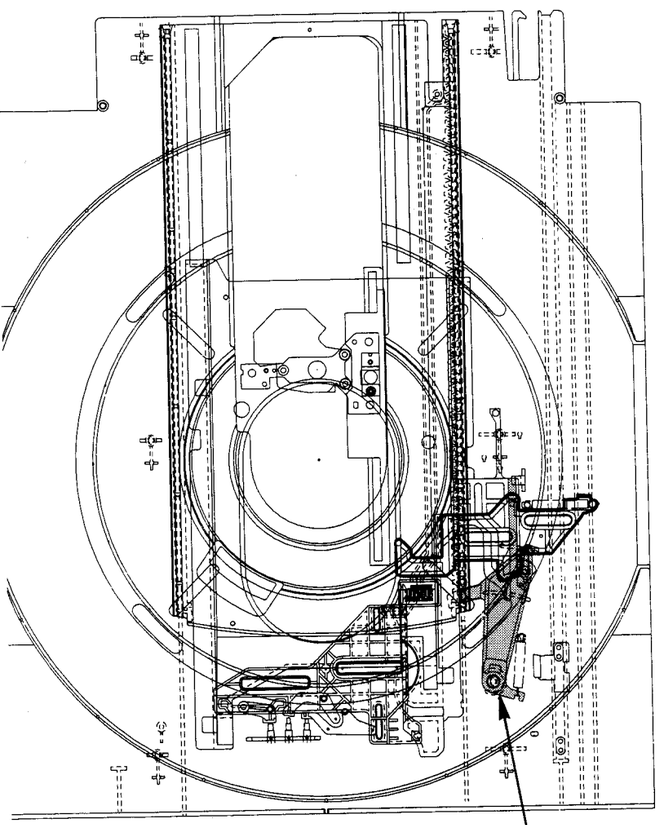


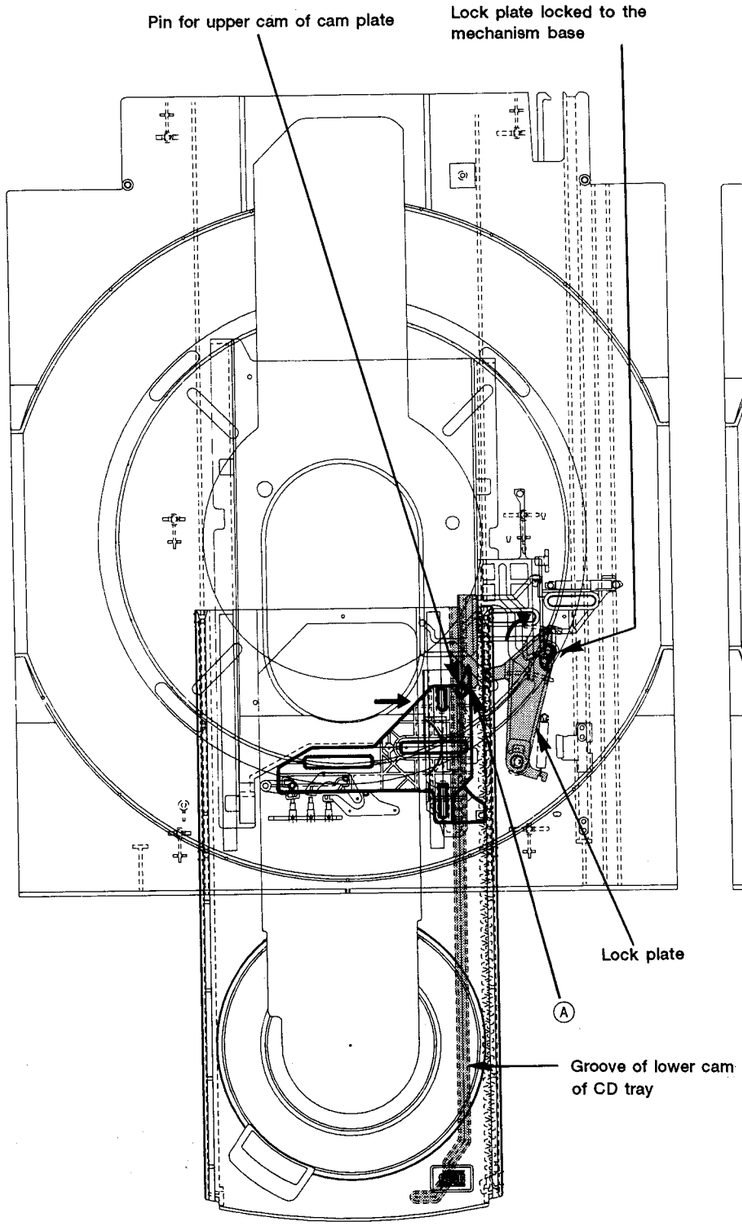
Fig. 2–10 ⓒ Detection of EJECT <OPEN SW>



Detection of <<Tray loading completed>> switch
(SW 1 – ON → OFF)

Lock plate

Fig. 2-10 ⓑ When Loading the Tray



Detection of <<Tray Opening Completed>> switch
(SW 3 – ON → OFF)

Fig. 2-10 ⓒ Detection of EJECT <OPEN SW>

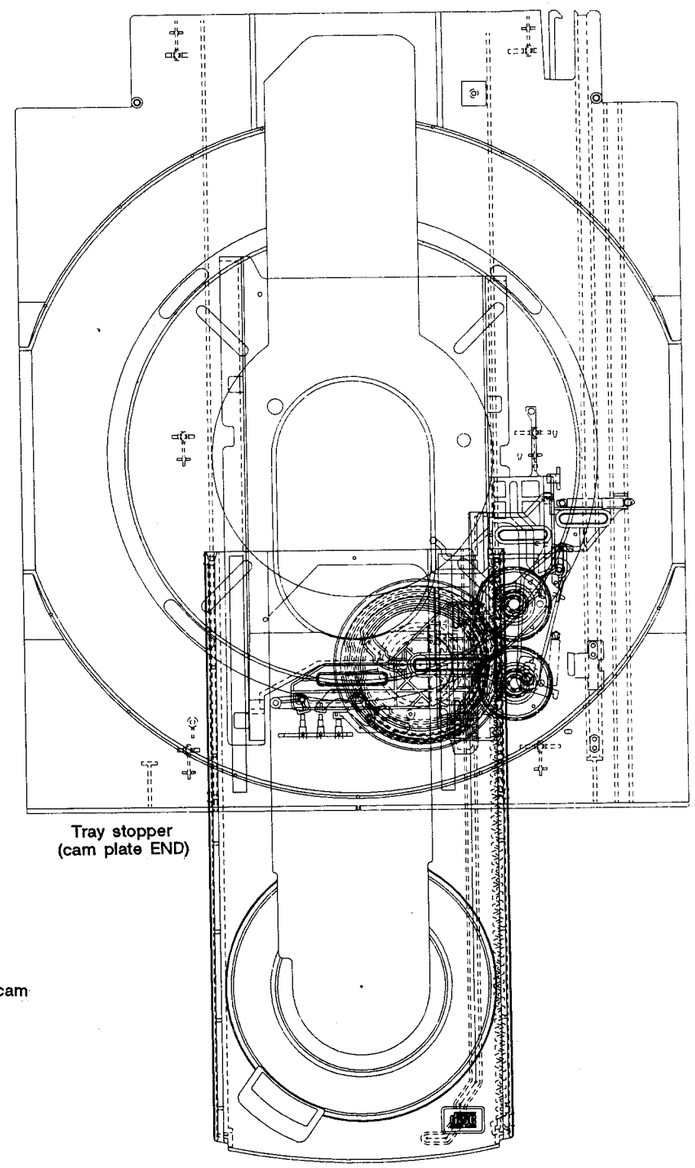


Fig. 2-10 ⓓ Full OPEN

3) Each mode of Mechanism

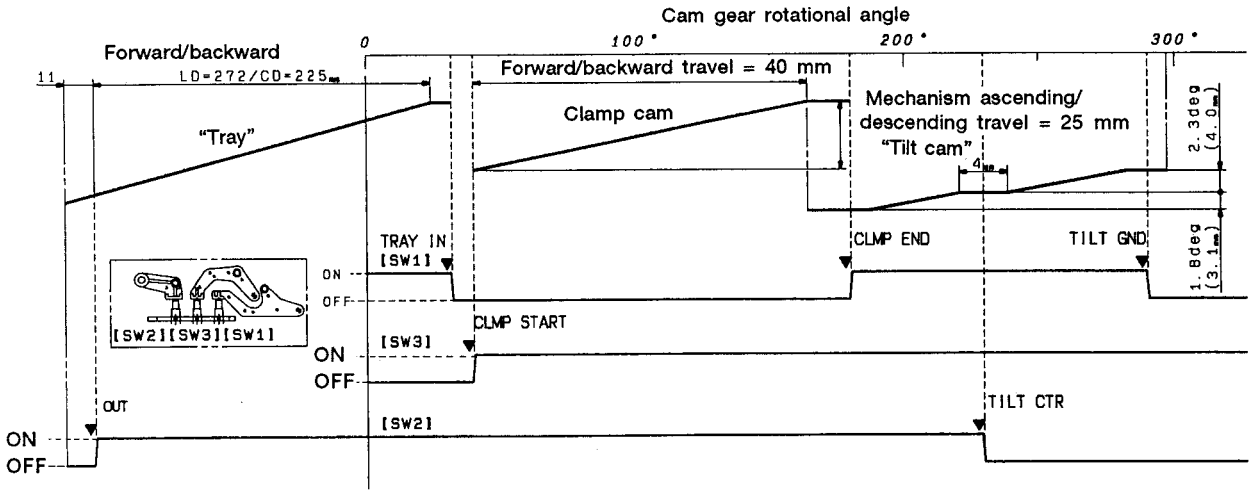


Fig. 2-11 Each mode of Mechanism

3. DESCRIPTION OF THE SYSTEM CONTROL

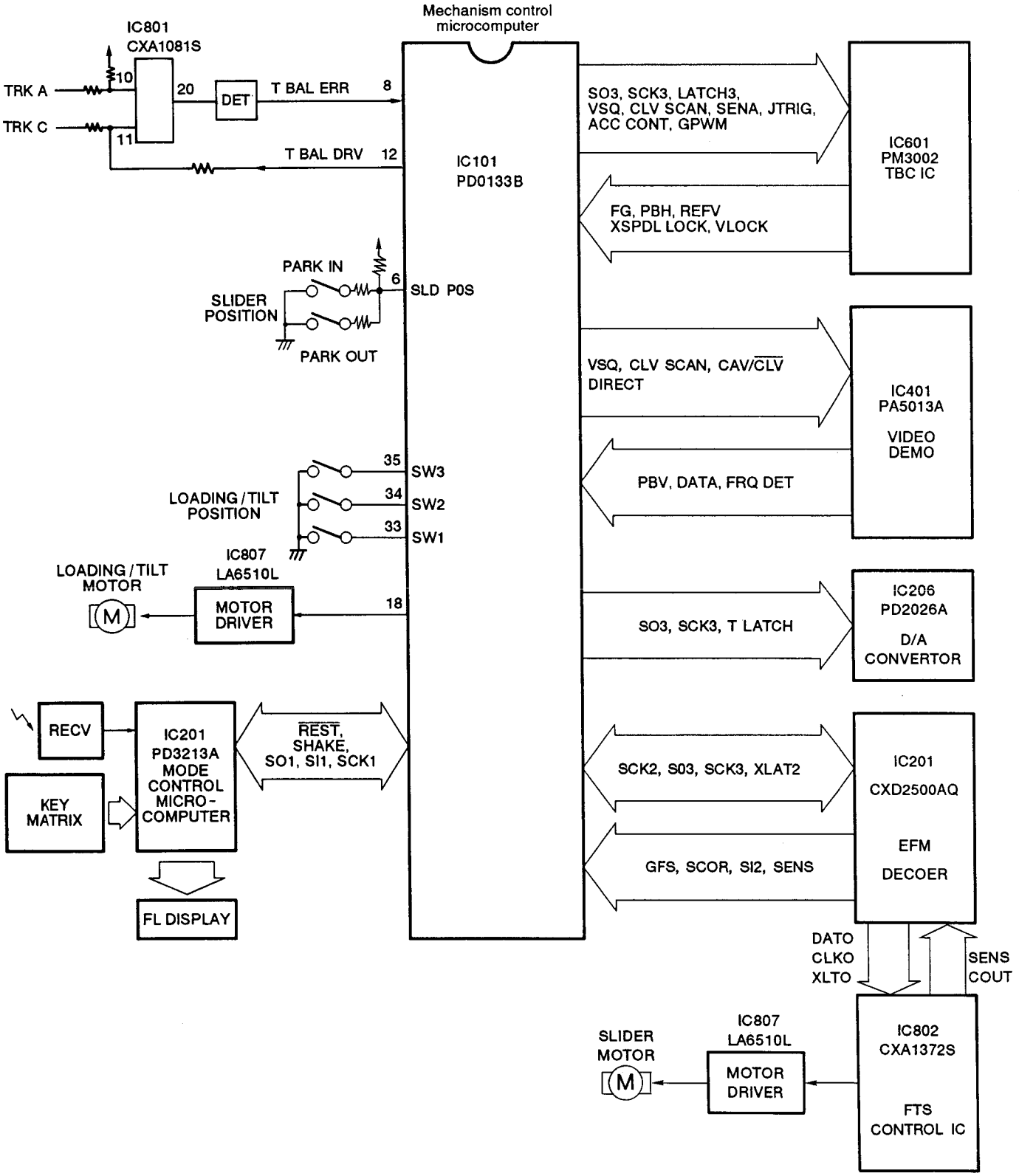


Fig. 3–1 Block diagram of the control system

3.1 MICROCOMPUTER INTERFACE

The microcomputer system of this model consists of two chips, an 8-bit microcomputer (IC101: PD0133B) which controls the mechanism and a 4-bit microcomputer (IC201: PD3213A) which controls the operations and displays.
These two microcomputers are connected via a serial interface. The communication lines are also used for controlling the character generator IC (IC405: PD0093A).

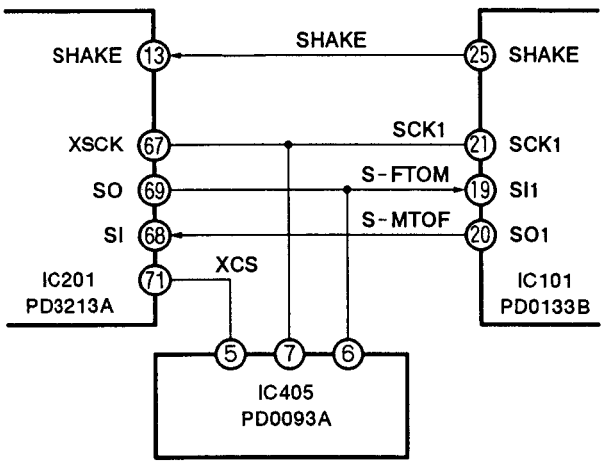


Fig. 3-2 Serial interface connection

3.2 MICROCOMPUTER COMMUNICATION SEQUENCE

1. The PD0133B sets the SHAKE terminal (pin 25) to "L" for several microseconds as a request to the PD3213A for the start of a communication.
2. When the PD3213A receives the communication start request, it sets the SHAKE terminal (pin 13) to "L" and informs the PD0133B that it is ready for communication.
3. The PD0133B then sets SCK1 (pin 21), which has been used as an input port, to output mode. The PD3213A sets XSCK (pin 67) to the input mode, connecting the communication lines between the microcomputers.
4. The PD0133B sends the transfer clock (500KHz) in 8 bits. The data are then sent and received in synchronization with this clock.
5. When PD3213A receives data of 8 bits, it sets the SHAKE terminal (pin 13) to "H" and reports that a single communication is completed.
6. The PD0133B sets SCK1 (pin 21) to input mode, and the PD3213A sets XSCK (pin 67) to output mode. The communication line is thereby disconnected and a single communication is completed.

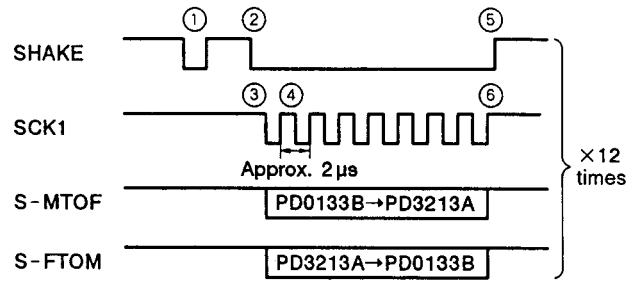


Fig. 3-3 Timing chart of the microcomputer interface

- The communication takes place within a cycle between 10 and 30 ms. Twelve bytes of data are transmitted at one time.
- The handshake is done on a single line. Both the PD0133B and the PD3213A use a single port for both input and output. The port is set to output mode when the output is "L" .In other conditions, it will be set to input mode (high impedance). Before "L" is output, both ports mutually confirm that the SHAKE terminal is "H" .This is to prevent signal interference between tray output signals.
- The communication data is appended with a check code to prevent transfer errors. If sixteen consecutive transfer errors are detected, the PD3213A will send the reset signal to the PD0133B to reset it to its initial state. This will also happen when the communication is not executed for 300 ms or longer.

3.3 OUTLINE OF THE MECHANISM CONTROL SYSTEM

1) Processing immediately after power ON

When power is applied, the mechanism-control microcomputer (IC101: PD0133B) will execute initialization in the following sequence upon reset cancellation (pin 28: L to H).

1. The internal RAM and ports are initialized.
2. The CXD2500AQ is initialized.
3. The tray position is detected.
4. The FTS-IC CXA1372S is initialized.
5. The TBC-IC PM3002 is initialized.
6. Communication with the PD3213A is confirmed. (If any trouble is found, the subsequent initialization procedures will not be performed.)
7. The pickup position is initialized.
8. Disc rotation stops.
9. Loading mode is initialized.

After all the initialization procedures are completed, normal operations can begin.

2) Control of the loading motor

Driving of the loading motor is controlled by a PWM signal supplied via the OP amplifier (IC807) from pin 18 of the mechanism-control CPU (IC101) in the CONT section. The voltage applied to the loading motor is switched according to the duty of the PWM signal as follows. The PWM cycle is approximately 910μsec.

- **Loading/clamp operation**

For the disc tray open/close and disc clamp and stop operations, the motor is operated while the position of the cam gear is detected by the loading/tilt-position detection switch connected to pins 33 through 35 of the IC101.

- **Tilt servo operation**

When an LD disc or a CDV disc (video portion) is played back and when a CDV disc is started up, the loading motor is used for the tilt servo. The loading motor is driven by a PWM drive in this mode as well.

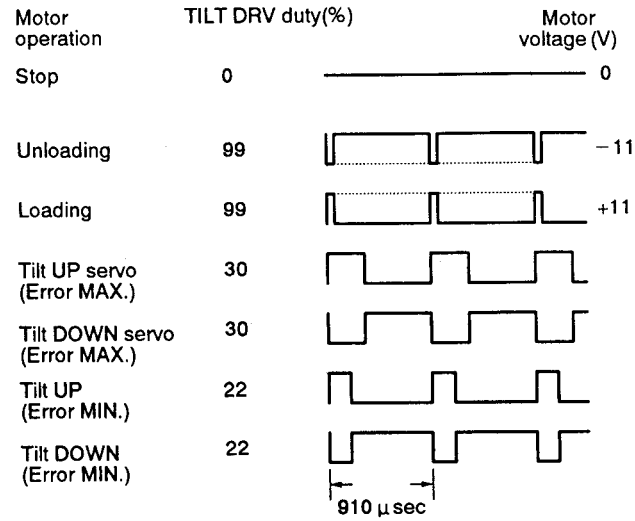


Fig. 3-4

The tilt servo operates the loading motor so that the input voltage at pin 9 (TILT ERR) of the IC101 becomes 2.5 V.

The tilt servo operates in the following ranges during normal playback.

CAV disc (12-inch) : Frames 0 – 40999
(8-inch) : Frames 0 – 16999
CLV disc (12-inch) : 0 min. – 44 min. 59 sec.
(8-inch) : 0 min. – 13 min. 59 sec.
CDV disc (video portion) : 0 min. 0 sec. – (Recording time – 1 min. 23 sec.)
CD disc : The tilt servo is ON only at start-up.

If some trouble occurs with the disc or tilt sensor circuit which prevents the input voltage at the TILT terminal from being within the specified range even if the pickup inclines to more than ±2° (degrees), the loading motor will be stopped upon detection of the state of the mechanism switch.

The tilt servo switches the duty of the PWM signal in 2 levels according to the error value. When the error value is small (1.25 V – 3.75 V), a PWM signal for small duty 22% is output, and when the error value is large (0 V – 1.25 V, 3.75 – 5 V), a PWM signal for large duty 30% is output. (See Fig. 3-4.)

• Automatic tracking balance operation

The tracking balance error signal is obtained firstly by detecting the waves, for both the top and bottom sides at the time of TRK open, of the tracking error signals output from CXA10815 (IC801 ⑳ pin) then by adding them. This error signal, after being smoothened and level-converted, is input as the TBAL ERR into the IC101 (8) pin. After the duty pulse, that is based upon this error is output from the IC101 (12) pin and smoothened, it is then added to the IC801 (11) pin TRK C side so that the tracking balance becomes 0V center. Every time a disc is started up the tracking balance is obtained in between the tracking open distance and then maintains the voltage thereafter. It always operates at the time of tracking open in the test mode.

3) Slider motor control

The mechanism-control IC (IC101) controls the drive signal output from pin 20 of the FTS servo IC CXA1372S (IC802) by the serial command.

The voltage applied to the slider motor is switched according to the duty of the PWM signal as follows. The PWM cycle is 36mS.

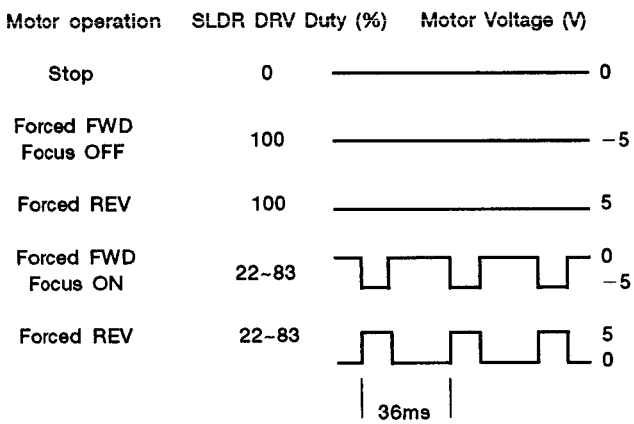


Fig. 3-5

4) Audio control

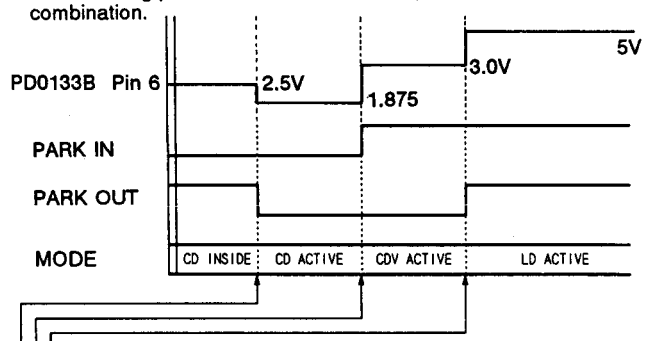
Digital audio channel switching is performed by the CXD2500AQ by using a command from the microcomputer.

DIGITAL 45	SQ1 14	SQ2 13	L-ch Line Out	R-ch Line Out
L	L	L	Analog L ch	Analog R ch
	H	L	Analog L ch	Analog L ch
	L	H	Analog R ch	Analog R ch
	H	H	Mute	Mute
H	L	L	Digital L ch	Digital R ch
			Digital L ch	Digital L ch
			Digital R ch	Digital R ch
			Digital − 12dB-L	Digital − 12dB-L

Table 3-1

• SLDR POSITION

* The following positions can be detected by using two switches in combination.



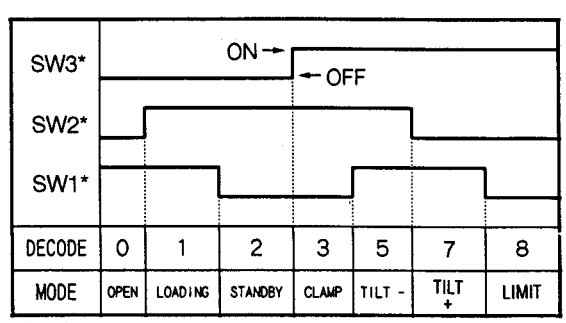
LD Inside position — Indicates the starting position of the active program area of an LD disc(R55-R55.8).

CDV Inside position — Indicates the starting position of the video portion of a CDV disc(R38.1-R38.9).

CD Inside position — Indicates the starting position of the active program area of a CD disc(R26-R27.1).

R:The distance from the center of the spindle motor.

Fig. 3-6



*For the places where SW1 – SW3 are attached, refer to Figure 2-10 (a).

Fig. 3-7 LOADING / TILT POSITION

5) Direct CD Mode

When the direct CD switch is turned ON for CD playback, the following operations are performed (controlled by a microcomputer).

1. The power supply to the video system which is not required for CD playback is turned OFF. (No picture is obtained.)
2. The self-illuminating switch lights, and direct CD mode is activated.
3. The slider changes its park position for starting up a CD.
4. If the tray is in the closed condition, the CD tray will also open when the tray opens.

With these operations, the time required from the pressing of the PLAY button to the start of the CD playback can be shortened to 2/3. In addition, purer audio playback is possible by turning off the unnecessary power supply. Direct CD mode cannot be activated in LD playback or when an LD is set.

When LD playback is started in direct CD mode, the mode is automatically canceled to enable normal LD play back. Direct CD mode can be selected in playing back the video portion as well as the audio portion of the CDV disk.

Disc	Direct CD	Video System Power	Tray Open
CD	ON	OFF	CD Tray
CD	OFF	ON	LD Tray
LD	OFF	ON	LD Tray
CDV video portion	OFF	ON	LD Tray
CDV video portion	ON	ON	CD Tray
CDV audio portion	ON	OFF	CD Tray
CDV audio portion	OFF	ON	LD Tray

Table 3-2

6) CLV Clear Scan

Clear scan without picture distortion is possible also for CLV discs by using the shuttle ring (either on the player or the remote control unit).

The conventional color-lock scan and the clear scan can be switched depending on the angle of the shuttle ring rotation. In a clear-scan operation, scanning is performed while outputting digital audio at −12 dB (the same as scanning on CD). (No audio is output when analog audio is selected.)

The principle of the operation is as follows.

1. When clear scan mode is activated, the specified number of tracks is skipped in a multitrack jump operation.
2. Measures the time lag (phase difference) between PB − V and REF − V and when the measured value is within a certain range, decreases REF − H by 7 H until the phase difference between PB − V and REF − V is lost (VLOCK), then cancels squelch, displaying the video portion of the disc for a certain period. Returns to step 1 and repeats steps 1 and 2.

When the time lag between PB − V and REF − V exceeds a certain range, performs a 1-track jump (2-track jump in the REV direction) and measures the lag again. When the measured value is within a certain range, decreases REF − H by 7 H waiting for VLOCK between PB − V and REF − V. Otherwise, repeats a 1-track jump and time-lag measurement.

If the time lag does not enter a certain range even after repeating the 1-track jump and time-lag measurement operation three times, a multitrack jump is performed for a larger skip and is repeated step 2 from the beginning.

If the lag persists in not entering a certain range, VLOCK wait state is activated.

* Gray-background video is output when no disc video is supplied.
* Digital audio to be played during clear scan is output while the disc video is being supplied and in VLOCK wait state.
* For CAV discs, nearly the same operation is performed.
* PB − V (playback V) means V − sync of the playback video signal.
* REF − V (reference V) means V − sync used as the reference.
* VLOCK means the signal generated when the PB − V and REF − V are in a certain range.

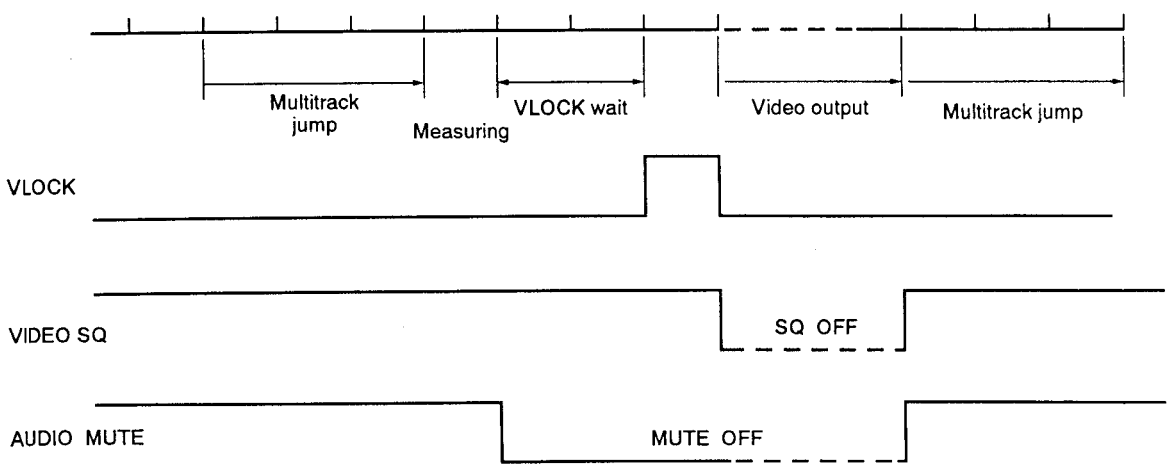
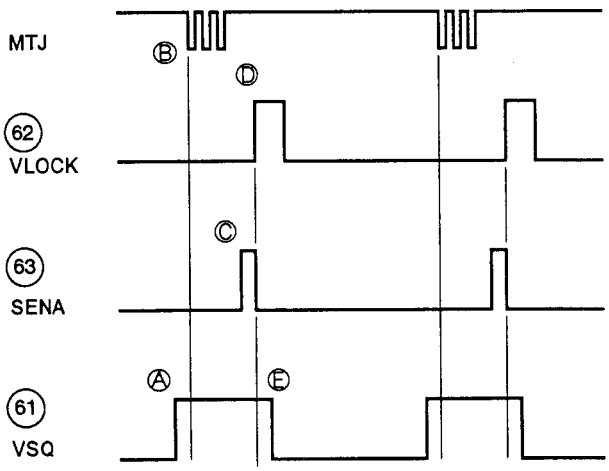


Fig. 3–8

● Timing Chart of the Clear Scan

CAV

32 × 2 × 3 jump



The audio mute signal is applied at the same time with VSQ but is canceled before VSQ is canceled.

- Ⓐ :Activates video squelch.
- Ⓑ :Executes a multitrack jump 32 × 2 × 3.
- Ⓒ :Decreases Reference H to match the playback V-sync phase and the reference V-sync phase. Shift enable (SENA)ON.
- Ⓓ :As the phases have matched (VLOCK).
- Ⓔ :Cancels video squelch and plays the disc for a certain time.

CLV

Compared with CAV, a longer time is required to match the phases after a jump operation. Ⓒ

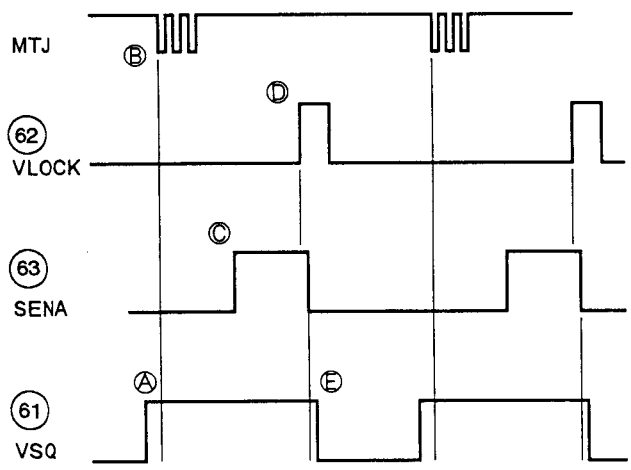
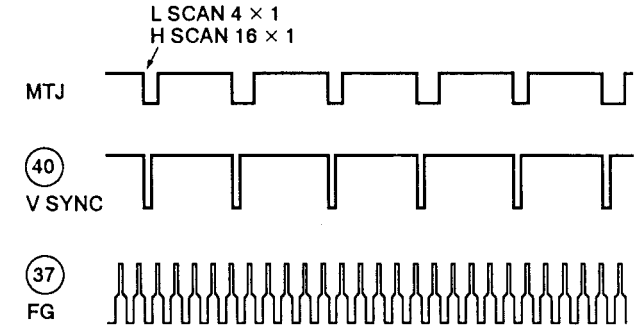


Fig. 3-9

● Timing Chart of the Normal Scan

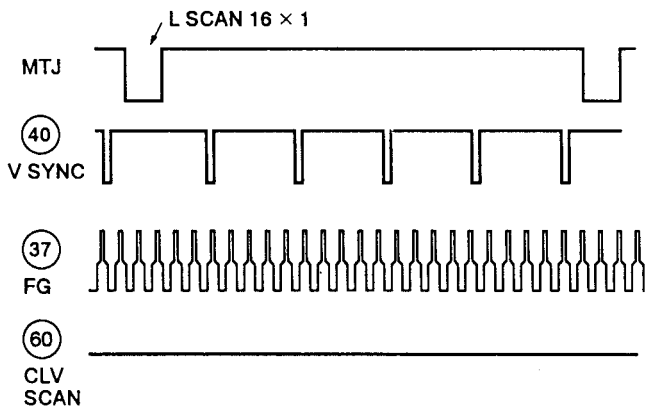
CAV

Performs a multitrack jump in synchronization with the playback V SYNC.



CLV

Performs a multitrack jump in synchronization with FG.



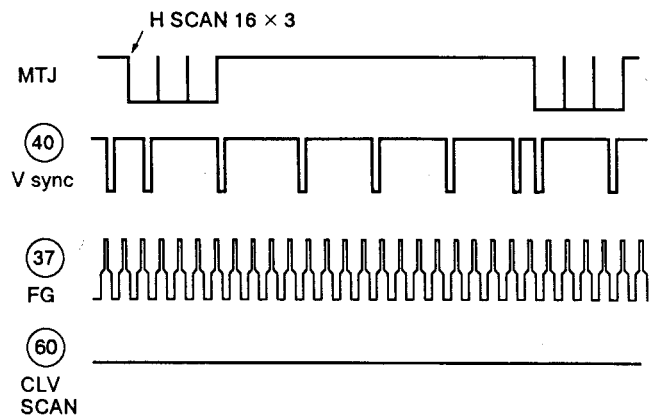


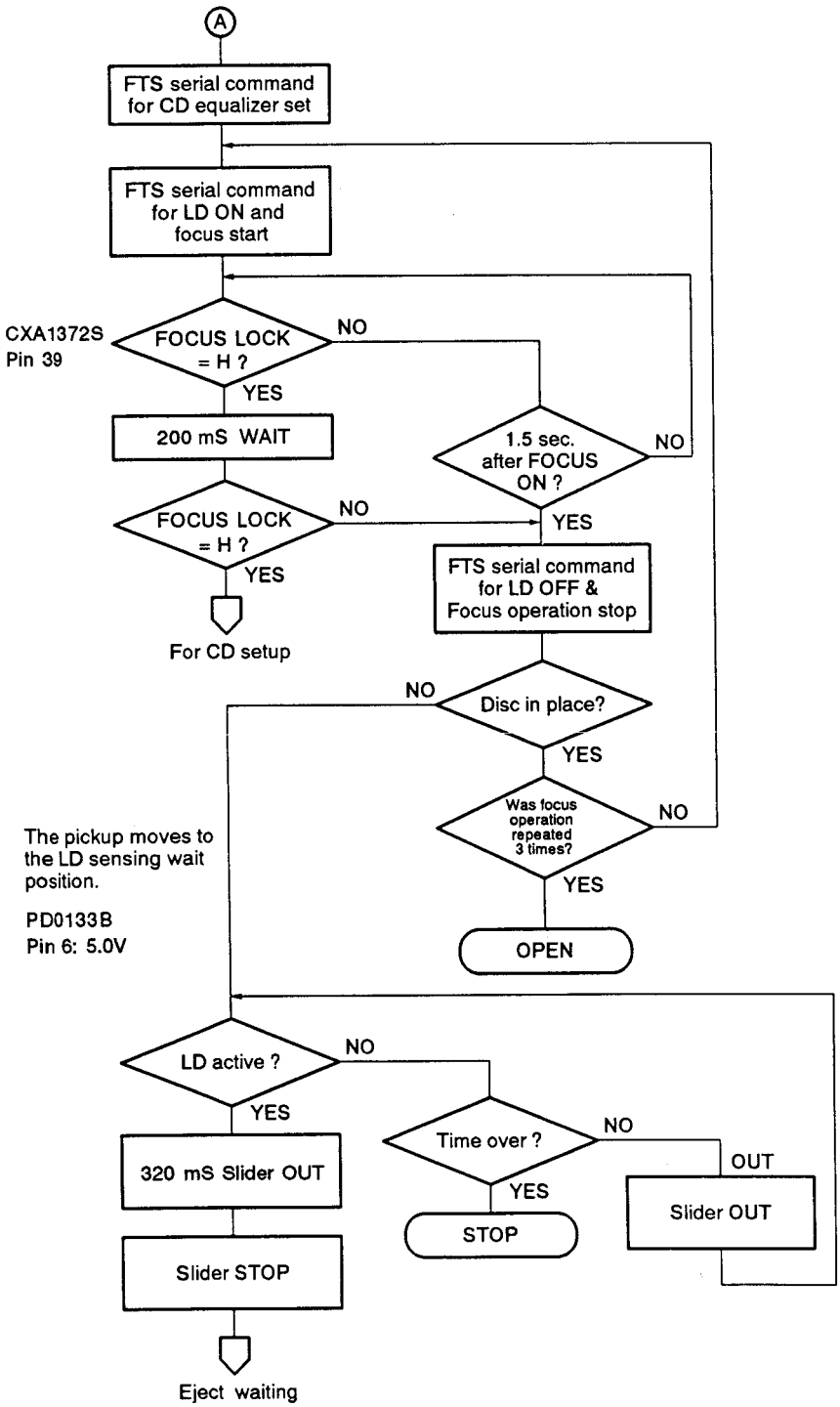
Fig. 3-10

7) Description of the Mechanism-control IC (IC101: PD0133B)

No.	Pin name	I/O	Function
1	VCC	–	Power supply connection pin. Set to 5 V ±10%.
2	DIRECT	O	CD DIRECT video system power OFF signal output pin "H" = video system power OFF, "L" = ON
3	CAV/XCLV	O	CAV/CLV switching signal output pin "H" = CAV, "L" = CLV Connected to Pin 6 of PA5013A and used as a VIDEO NR switching signal.
4	XLD ON	O	Laser video ON/OFF switching signal output L: ON, H: OFF
5	TGH	O	Tracking operation control signal output pin The control signal supports ON/OFF of the tracking servo-mechanism operation. "H" = OFF, "L" = ON
6	SLDR POS	I	Pick-up position detection switch input pin (analog signal) Divides the resistance among the switches, reads the value of the A/D input, and detects the position.
7	FREQ DET	I	RF detection signal input pin (analog signal) Inputs the A/D conversion of the RF detection output and is used in the spindle luff servo-mechanism. Voltage and frequency are proportional.
8	TBAL ERR	I	Tracking balance error signal input pin (analog signal) Signal is A/D converted and is input as the tracking offset control.
9	TILT ERR	I	Tilt sensor output signal input pin (analog signal) Inputs (0 to 5 V) the tilt sensor output amplified to a 40 to 50 dB signal. The signal is A/D converted and is input as the tilt sensor control. Controls the tilt motor until the signal is 2.5 V.
10	XREF-V	I	Clear scan reference V-SYNC signal input pin
11	GFS	I	CD (EFM signal) frame lock signal input pin Connected to Pin 12 of the EFM decoder IC: CXD2500AQ. "H" = Lock, "L" = Unlock GFS is an abbreviation for Good Frame Sync.
12	TBAL DRV	O	Tracking offset control signal output pin Outputs the tracking offset after PWM and is used in auto tracking offset. Cycle: 910 µsec; 3-value control H, L, Z.
13	SQ2	O	Analog audio switching signal output pin 2/R Squelch: H
14	SQ1	O	Analog audio switching signal output pin 1/L Squelch: H When in digital audio mode, the signal is output through the control of the EFM decoder IC: CXD2500AQ.
15	SI2	I	EFM decoder IC: CXD2500AQ subcode input pin Reads the subcodes of SCK2 and the signal.
16	XLAT2	O	EFM decoder IC: CXD2500AQ control latch signal output pin Sends the control command using SO3 and 2500CLK.
17	SCK2	O	EFM decoder IC: CXD2500AQ subcode read clock signal output pin Sets the clock to 96 and reads the subcode.

No.	Pin name	I/O	Function
18	TILT/ LOAD DRV	O	Loading and tilt control signal output pin Output in PWM format to control loading and tilt servo-mechanism.
19	S-FTOM	I	Input pin of data from the mode control IC Serial Used with the data signal to the carriage generating IC.
20	S-MTOF	O	Serial data output to the mode control IC Serial
21	SCK1	I/O	Clock for serial communication with the mode control IC In the input mode except during serial communication with the mode control IC Used with the clock signal to the carriage generating IC
22	SENS	I	SENS signal input pin All of the following signals from 2500 are switched and are output to the signal: SEIN, FZC, A.S, TZC, XBUSY, FOK, GFS, COMP, COUT, and OV64.
23	SCOR	I	Subcode SYNC signal input pin Inputs the subcode signal from the EFM decoder IC: CXD2500AQ when the signal is "H." Supervises the disc playback depending on the presence of the signal.
24	XCX	O	Analog audio CX noise reduction switching signal output pin ON: L, OFF: H
25	SHAKE	I/O	Pin of hand shake signal for data communication with the mode control IC This pin is a bi-directional data path which sends the data transfer timing through the I/O mode switching of the respective microcomputers.
26	XPBV	I	LD/CDV playback V-SYNC signal input pin IC basically operates in sync hronization (rising and leading edges) with the signal. Setting the signal as standard in the special CAV playback mode, generates jump timing. "L"= V-SYNC ongoing
27	CN VSS	–	GND for A/D conversion
28	XRESET	I	Reset signal input pin "L" = Reset, "H" = Cancel reset
29	XTAL IN	I	9 MHz clock generation input pin
30	XTAL OUT	O	9 MHz clock generation output pin
31	N. C.	O	Not used
32	VSS	–	GND
33	SW1	I	Loading/tilt position detection switch input pin
34	SW2	I	Loading/tilt position detection switch input pin
35	SW3	I	Loading/tilt position detection switch input pin
36	N.C.	I	Not used Processing needed when used for input
37	FG	I	Spindle motor-FG signal input pin 24 pulses per signal Divided into thirds and used inside the microcomputer.
38	DATA	I	Input pin for Philips code decoder in the mechanism controller
39	XPBH	I	Playback H-SYNC input for Philips code decoder
40	XPBV	I	Playback V-SYNC input for Philips code decoder

No.	Pin name	I/O	Function
41	GI. MIRR	O	False MIRR signal output pin to jump 1 track for LD.
42	N.C.	–	Not used
43	N.C.	–	Not used
44	MUTE	O	Audio system audio mute control output pin "H" = MUTE ON, "L" = MUTE OFF
45	XANA	O	Digital/analog audio switching signal output pin "H" = digital, "L" = analog Signals output by the line out and headphone are switched by the signal.
46	XT LATCH	O	DAC & Digital PD2026 serial control latch signal output pin
47	N.C.	–	Not used
48	N.C.	–	Not used
49	N.C.	–	Not used
50	2500CLK	O	2500 command clock signal output pin The commands for 2500 are the following: 2500CLK; SO3 and XLAT2.
51	RFCORR	O	RF correction switching signal output pin "H" = gain up. Increases gain (#8000 to #8100) within the CAV.
52	SCAN CONT	O	TBC control signal output pin H: multi-track jump ongoing, L: others
53	CD	O	CD/LD switching signal output pin H: CD, CDV-A, L: LD, CDV-V
54	ACC CONT	O	Spindle acceleration signal output pin H= acceleration, L= deceleration, Z= CD, stop, and play
55	GPWM	O	Spindle gain switching duty pulse signal output pin CLV inner circumference: L, outer circumference: H, CAV: L, CDV: H
56	J.TRIG	O	Track jump signal output pin Used for single track jump H: start of track, L: others, Width of "H": approx. 20 µsec
57	SCK3	O	Serial 3 clock signal output pin Reads the leading edge "H" = within 2 µsec, "L" = within 20 µsec
58	SO3	O	Serial 3 data signal output pin With the serial signal as the common signal, divides the signals into three types of latch signals (XLAT3, XLAT2, and XT LATCH). LSB first
59	XLATCH3	O	Spindle servo-mechanism IC latch signal output pin
60	CLV SCAN	O	CLV V-SYNC scan mode signal output pin
61	VSQ	O	Video output switching signal output pin "H" = squelch, "L" = playback video
62	VLOCK	I	V-SYNC lock detection signal input pin. Is used in CLV clear scan and is set to "H" for a period of time if the REF-V is in phase with PBV.
63	SENA	O	Shift enable signal output pin. Is used in CLV clear scan. Thinning out H, is set to "H" while REF-V approaches PBV.
64	XSLOCK	I	Spindle lock signal input pin L: lock, H: unlock



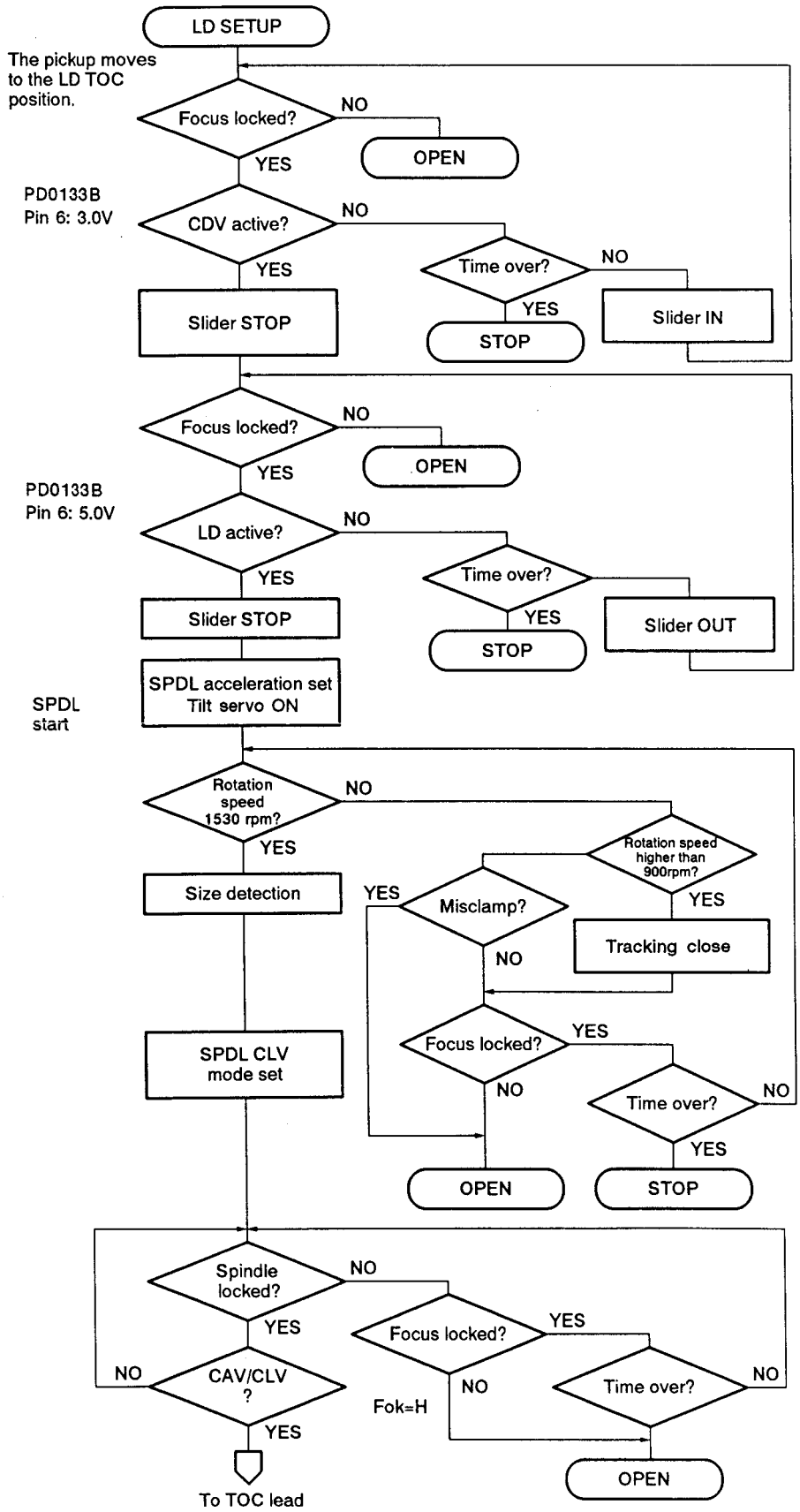
- Pickup position for CD focusing ≒ R30
- CD focusing is the same as LD focusing.
  R:Distance from the center of the spindle motor.

- R65, the LD sensing position
  R:Distance from the center of the spindle motor.

- Timer for 10 seconds
  Timer indicates the time over.

Fig. 3-12

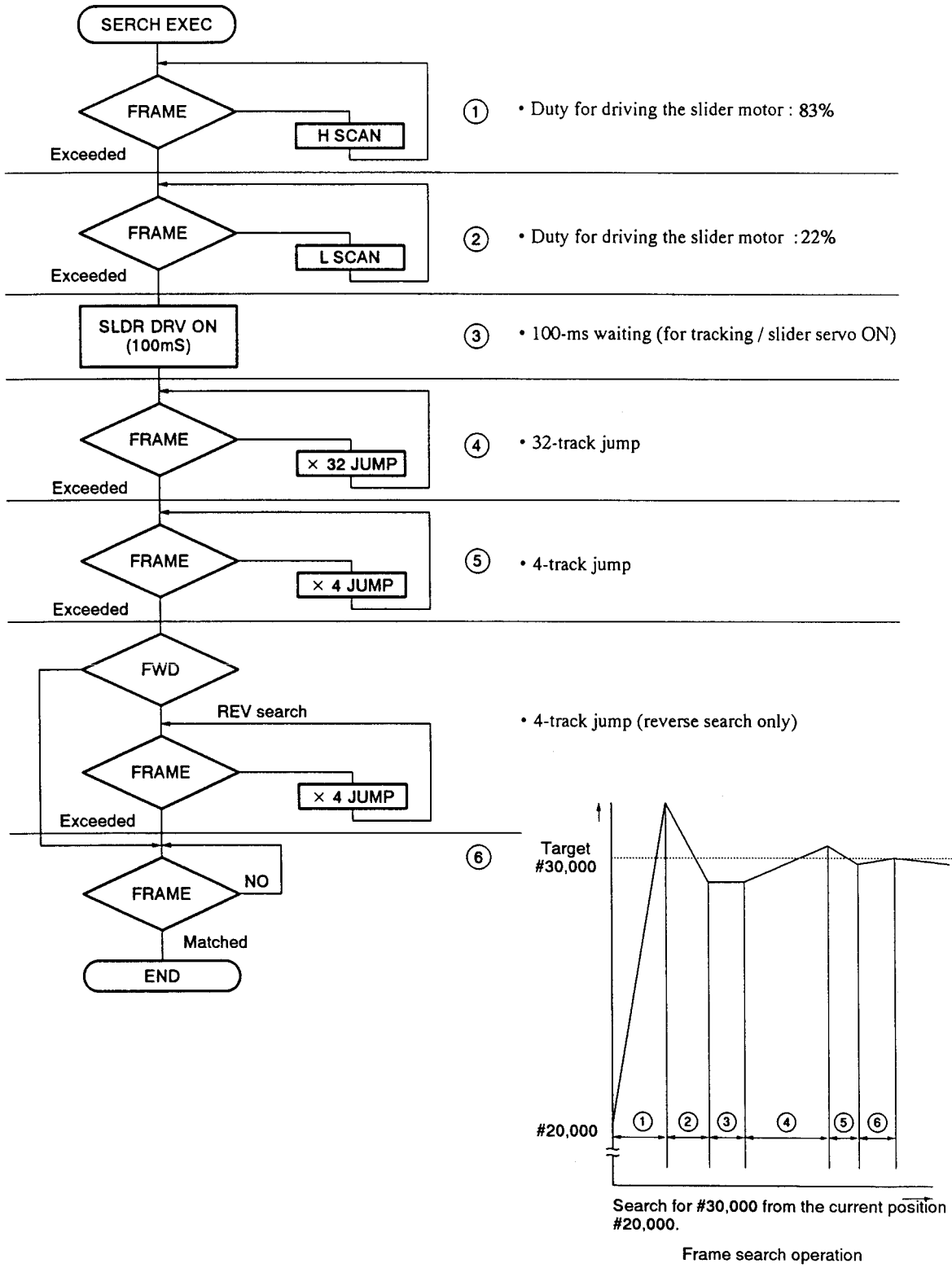
Flow of the LD Setup Operation



- If focus is lost while the pickup is moving to the spindle startup position, the tray opens, judging it to be CD and LD disc-stacking error.
- Timer for approx. 10 seconds
  Timer indicates the time over.
- Timer for approx. 10 seconds.
- Tracking servo open mode is active until disc rotation exceeds 900 rpm.
- The disc rotation is forcibly accelerated until it reaches 1530 rpm, and the disc size is determined by the time required to reach 1200rpm.
- If 800 or more tracks are crossed in a single rotation of the disc, the tray opens, regarding it to be a misclamp.
- If focus is lost during the startup operation, the tray opens, assuming a damaged disc or the flip side of a single-sided disc.
- If the spindle is not locked within 60 seconds after beginning SPDL acceleration, the operation stops.

Fig. 3-13

Flow of the Frame Search Operation



Frame search operation

Fig. 3-14

● Player Operation Modes

MODE 1 – OPEN

Step	Operation
0	Clears internal registers, sets the spindle to STOP and waits for focus OFF.
1	↓
2	
3	
4	
5	
6	
7	
8	
9	Starts to move the slider to the LD sensing position.
A	Waits for the spindle to stop.
B	Waits for the slider to reach the LD sensing position.
C	Starts unloading.
D	Performs unloading until the OUT SW activates.
E	Sets the 100 ms timer.
F	Waits for 100 ms.
	Completed

MODE 2 – STANDBY

Step	Operation
0	Clears internal registers, sets the spindle to STOP and waits for focus OFF.
1	↓
2	
3	
4	
5	
6	
7	
8	
9	Starts to move the slider to the LD sensing position.
A	Waits for the spindle to stop.
B	Waits for the slider to reach the LD sensing position.
C	Starts to move the tilt to the neutral position.
D	Waits for the tilt to reach the neutral position.
	Completed

MODE 3 – STOP

Step	Operation
0	Clears internal registers, sets the spindle to STOP and waits for focus OFF.
1	↓
2	
3	
4	
5	
6	
7	
8	
9	Starts to move the slider to the LD sensing position.
A	Waits for the spindle to stop.
B	Waits for the slider to reach the LD sensing position.
C	Starts to move the tilt to the neutral position.
D	↓
E	Waits for the tilt to reach the neutral position.
	Completed

MODE 4 – DISC SENSING

Step	Operation
0	Waits for the tilt to be neutral. Normal → LD sensing CD direct mode → CD sensing
1	Starts to move the slider to the LD sensing position. Clears the focus-try counter.
2	Waits until the slider reaches the LD sensing position.
3	Tries focusing. Focus unlocked Focus locked → LD presence assured. Completed.
4	Focus OFF
5	Starts to move the slider to the CD sensing position.
6	Waits until the slider reaches the CD sensing position.
7	Tries focusing. Focus unlocked Focus locked → CD presence assured. Completed.
8	Focus OFF
9	Starts to move the slider to the LD sensing position. Clears the focus-try counter.
A	Starts to move the slider to the LD sensing position.
B	Checks for CD direct mode. CD direct mode. Normal
C	Tries focusing. Focus unlocked Focus locked → LD presence assured. Completed.
D	Focus OFF
E	No disc assured. Completed.

MODE 5 – SETUP

Step	Operation
0	Waits for the tilt to be neutral. Sets the slider target position. CD: Starts to move the slider to the CD TOC position. LD: Starts to move the slider to the LD TOC position.
1	Checks focus. Simultaneously checks for disc stacking (LD + CD) Focus locked (OK): Waits until the slider reaches the target position. Focus unloked (NG): LD → Ends with the focus error status. CD → Ends with the focus error after three unsuccessful tries.
2	Sets the spindle. CD set / CDV set / LD set Sets the 60-second timer. Starts to run the spindle.
3	Checks focus. Focus locked (OK): Waits until the spindle locks while checking for misclamping. → Sets the 60-second timer. Time over. Ends with the spindle error status. Focus unlocked (NG): Ends with the clamping error status.
4	LD Distinguishes CAV / CLV. Not distinguished Distinguished CD, CDV
5	Checks focus. Focus locked (OK): Waits the codes to be read. → Slowly moves the slider to the inner or outer periphery until the PGM area code is read. After reading the code, sets the 60-second timer and returns to step 4. Time over. Ends with the code error. Focus unlocked (NG): Ends with the focus error.
6	Completed.

MODE 6 – TOC READ

Step	Operation
0	Diverges depending on the disc type.
	LD / CD, CDV
1	Clears 1st address. Sets the 15-second timer.
2	Moves to the lead-in area and checks the focus time.
	A 24-bit code read. / Not read
	Lead-in area / PGM area, lead-out area
	↓ / 32-track REV jump / Playback
3	Moves to the PGM area and checks the focus time.
	A 24-bit code read. / Not read
	PGM area / Lead-in area
	↓ / 16-track FWD jump / Playback
4	Moves to the lead-in area and checks the focus time.
	A 24-bit code read. / Not read
	Lead-in area / PGM area
	↓ / 4-track REV jump / Playback
5	Plays to the PGM area and checks the focus time.
	A 24-bit code read. / Not read
	PGM area / Lead-in
	Sets the 0.5-second timer. ↓ / Playback
6	Stores the 1st address (CH, time) in memory and checks the focus time.
	After 0.5 seconds, checks for CH and the seconds.
	Sets the 0.5-second timer. ↓
7	Checks for TOC (subcodes) and checks the focus time.
	TOC available ↓ / Ends with no TOC if no subcode can be read in 0.5 seconds.
8	Sets the15-second timer.
9	Waits until TOC is read. / Time over. / TOC reading completed
	PGM area / Lead-in area. Subcode NG. / Ends with the TOC error status. / Ends.
	↓ / Playback
A	Subcode OK and focus check NG.
	32-track REV jump ↓ / Playback
B	Subcode OK and focus check NG
	32-track REV jump ↓ / Playback
C	Subcode OK and focus check NG
	32-track REV jump ↓ / Playback
D	Subcode OK and focus check NG
	32-track REV jump ↓ / Playback
E	Returns to step 9.

MODE 8 – SEARCH

Step	Operation
0	Focus ON / Focus OFF
	Sets the 15-second timer. / Ends with the recovery error.
	Diverges depending on the disc search target.
	CDV / CD / LD
	Track search / (Absolute time wait)
	A↔V / A↔V V↔A
	↓
1	Clears the focus-try counter and starts the spindle STOP operation. Starts to move the slider.
	To A→V CDV TOC position. / To V→A CD TOC position.
2	Waits until the slider reaches the specified position.
	Waits for spindle STOP. → Ends with the disc stack (clamp) error if the spindle does not stop in 1.6 seconds.
	Focus locked (Sets the 15-second timer.) / Tries focusing.
	Sets the spindle for CD audio. / Sets the spindle for CDV video. / Ends with the recovery error after four unsuccessful tries.
3	Waits until the spindle locks.
	Waits until the subcode is read. ↓
4	Sets the 10-time track counter.
5	Drives the slider while counting tracks.
6	When the lag from the target address is more than 1 minute. / When the slider comes close to the target within about 1 minute.
	Drives the slider.
7	Drives the slider to cross the target address (H SCAN).
8	Drives the slider to cross the target address (L SCAN). ↓
9	Performs 32-track jumps to cross the target address.
A	Performs 4-track jumps to cross the target address. Sets the 5-second timer.
B	Performs 4-track jumps to reach the front of the target address. / Time check NG → Ends with the search error.
C	Plays until the target address is reached.
	Time out / Reached
	LD,CDV-V / CD, CDV-A / LD,CDV-V / CD, CDV-A
	Ends with the search error. / Spindle locked / Unlocked / REV 1 jump
	Completed / LD / CDV-V
	To step B / REV jump
D	Performs 4-track jumps to a point before the target address. Time check NG → Ends with the search error.
E	Plays until the target address is reached.
F	If another new search target is specified during search, waits the spindle to lock and returns to step 0.

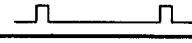
3.5 OUTLINE OF THE MODE CONTROL SYSTEM

1)Description of the Mode Microcomputer (IC201)

The mode microcomputer performs the following processing:

1. Key data/remote control signal processing
   Accepts the key switch and remote control signals and processes them for the specified keys.
2. FL (fluorescent) display operation
   Operates the FL tube (VAW1026) display.
3. Screen-display control
   Controls the character generator IC (IC405: PD0093A and superimposes characters on the screen.
   The blue-background screen is also controlled.
4. Mechanism-control IC control
   Gives operational instructions to the mechanism conrol microcomputer (IC101: PD0133B) and simultaneously reads the time data, etc.
5. System reset management
   If any problem occurs in communication with the mechanism-control IC, activates system reset to return the IC to its initial state.

- **Description of the Mode microcomputer (IC201: PD3213A)**

Pin	Pin name	Signal name	I/O	Function
01	P04/AN4	NC	I	Not used
02	P05/AN5	NC	I	Not used
03	P06/AN6	NC	I	Not used
04	P07/AN7	NC	I	Not used
05	AVss	AVss	–	Connected to standard power supply (Vss) for A/D conversion
06	TEST	TEST	I	Test pin Connected to Vss
07	X2	X2	O	Subclock Release
08	X1	X1	I	Subclock Connected to Vcc
09	Vss	Vss	–	Ground
10	OSC1	OSC1	I	System clock Connects 8 MHz ceramic lock
11	OSC2	OSC2	O	System clock Connects 8 MHz ceramic lock
12	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$	I	Reset
13	P10/IRQ0	SHAKE	I/O	Communication timing clock with mechanism control
14	P11/$\overline{\text{IRP1}}$	SEL IR	I	Remote control signal (including SR)
15	P12/$\overline{\text{IRQ2}}$	W.D.F	O	For watchdog timer Pulse output 
16	P13/$\overline{\text{IRQ3}}$	POWER On	O	Power ON  Power OFF
17	P14/IRQ4	NC	O	Not used
18	P15/$\overline{\text{IRQ5}}$	NC	O	Not used
19	P16/EVENT	NC	I	Not used
20	P33/FS27	NC	O	Not used

Pin	Pin name	Signal name	I/O	Function
21	P32/FS26	NC	O	Not used
22	P31/FS25	NC	O	Not used
23	P30/FS24	STANBY LED	O	Standby LED drive output
24	P47/FS23	NC	O	Not used
25	P46/FS22	NC	O	Not used
26	P45/FS21	NC	O	Not used
27	P44/FS20	NC	O	Not used
28	P43/FS19	seg 1 / KS3	O	FL segment l output and key scan 3 output
29	P42/FS18	seg k / KS2	O	FL segment k output and key scan 2 output
30	P41/FS17	seg j / KS1	O	FL segment j output and key scan 1 output
31	P40/FS16	seg i / KS0	O	FL segment i output and key scan 0 output
32	P50/FS15	seg h	O	FL segment h output
33	P51/FS14	seg g	O	FL segment g output
34	P52/FS13	seg f	O	FL segment f output
35	P53/FS12	seg e	O	FL segment e output
36	P54/FS11	seg d	O	FL segment d output
37	P55/FS10	seg c	O	FL segment c output
38	P56/FS9	seg b	O	FL segment b output
39	P57/FS8	seg a	O	FL segment a output
40	P17/Vdisp	-30V	–	FL drive power supply
41	P60/FD0/FS7	G9	O	FL grid 9 output
42	P61/FD1/FS6	G8	O	FL grid 8 output
43	P62/FD2/FS5	G7	O	FL grid 7 output
44	P63/FD3/FS4	G6	O	FL grid 6 output
45	P64/FD4/FS3	G5	O	FL grid 5 output
46	P65/FD5/FS2	G4	O	FL grid 4 output
47	P66/FD6/FS1	G3	O	FL grid 3 output
48	P67/FD7/FS0	G2	O	FL grid 2 output
49	P70/FD8	G1	O	FL grid 1 output
50	P71/FD9	NC	O	Not used
51	P72/FD10	NC	O	Not used
52	P73/FD11	NC	O	Not used
53	P74/FD12	NC	O	Not used
54	P75/FD13	D.CD LED	O	DIRECT CD LED drive output
55	P76/FD14	S-SCAN	I/O	SHUTTER SCAN output
56	P77/FS15	NC	O	Not used
57	Vcc	Vcc	–	Power supply

Pin	Pin name	Signal name	I/O	Function
58	P80	KIN0	I	Key input 0
59	P81	KIN1	I	Key input 1
60	P82	KIN2	I	Key input 2
61	P83	KIN3	I	Key input 3
62	P84	KIN4	I	Key input 4
63	P85	KIN5	I	Key input 5
64	P86	KIN6	I	Key input 6
65	P87	NC	–	Not used
66	P90/PWM	SYNCRO OUT	O	SYNCHRO REC output
67	P91/SCK1	XSCK	I/O	Communication clock with mechanism control/OSD
68	P92/SI1	SI	I	Receive data from mechanism control
69	P93/SO1	SO	O	Send data to mechanism control/OSD
70	P94/SCK2	XRESET	O	RESET output from other than mechanism control/OSD
71	P95/SI2/CS	XCS	O	OSD chip select
72	P96/SO2	SYNCRO IN	I	SYNCHRO REC input
73	P97/UD	NC	O	Not used
74	PA0	NC	O	Not used
75	PA1	NC	O	Not used
76	AVcc	AVcc	–	Connection to Vcc of standard power supply for A/D conversion
77	P00/AN0	NC	I	Not used
78	P01/AN1	NC	I	Not used
79	P02/AN2	NC	I	Not used
80	P03/AN3	NC	I	Not used

2) Hilite Scan

The middle (regarded as the hilite or climax) of each recording on a disc is played back for about 8 seconds.

During a hilite scan operation, the Hilite/intro FL indication lights, and the Hilite indication appears on the screen.

When the Hilite/Intro key on the player is pressed, the following operations are performed depending on the player's status.

1. When the key is pressed during disc playback, the time (e.g. 1 min. 30 sec.) from the beginning of the recording when the key is pressed is stored in memory and 8 seconds from that specified time (e.g. 1 min. 30 sec. to 1 min. 38 sec.) for all the recordings from track 1 to the end are played back.
2. When the key is pressed in stop, tray-open or search modes, the parts from 1 min. 00 sec. to 1 min. 08 sec. of all the recordings on the disc are played back.
3. When the key is pressed during CDV video portion playback, an introduction scan is executed for the video portion, and the highlight scan is performed for the audio portion as in 2 above.
4. When the key is pressed during playback of the audio portion of a CDV, an introduction scan is executed for the video portion, and the highlight scan is performed for the audio portion as in 1 above.

This function is enabled only for CDs and the audio portions of CDV discs. For LDs and the video portions of CDV discs, introduction scanning is performed.