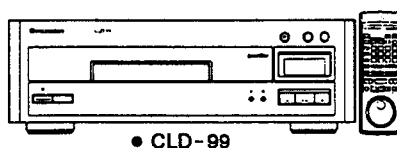


Service Manual

PIONEER®
The Art of Entertainment



• CLD-99

ORDER NO.
RRV1294

CD CDV LD PLAYER

CLD-99

CLD-79

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

| Type | Model | | Power Requirement | Remarks |
|-------|--------|--------|-------------------|---------|
| | CLD-99 | CLD-79 | | |
| KU/CA | ○ | ○ | AC120V | |

CONTENTS

| | | | |
|--|----|------------------------------|----|
| 1. SAFETY INFORMATION | 2 | 6. ADJUSTMENTS | 56 |
| 2. EXPLODED VIEWS, PACKING AND PARTS LIST | 3 | 7. IC INFORMATION | 67 |
| 3. SCHEMATIC AND PCB CONNECTION DIAGRAMS | 15 | 8. CIRCUIT DESCRIPTION | 76 |
| 4. PCB PARTS LIST | 47 | 9. BLOCK DIAGRAMS | 80 |
| 5. SELF-DIAGNOSTIC FUNCTIONS | 54 | 10. PANEL FACILITIES | 84 |
| | | 11. SPECIFICATIONS | 85 |

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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.

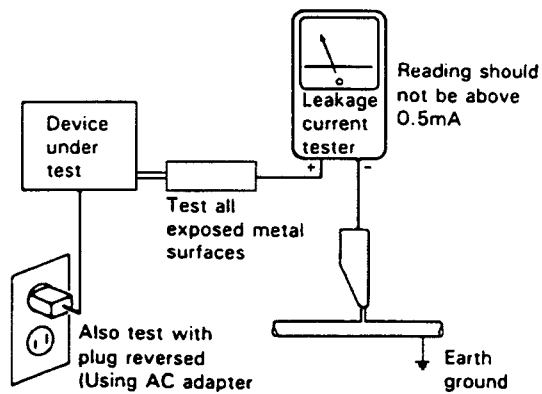
(FOR USA MODEL ONLY)

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 Δ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

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

2. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES:

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

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

2.1 EXTERIOR AND DISC TRAY SECTION

(1) CONTRAST OF CLD-99/KU/CA AND CLD-79/KU/CA

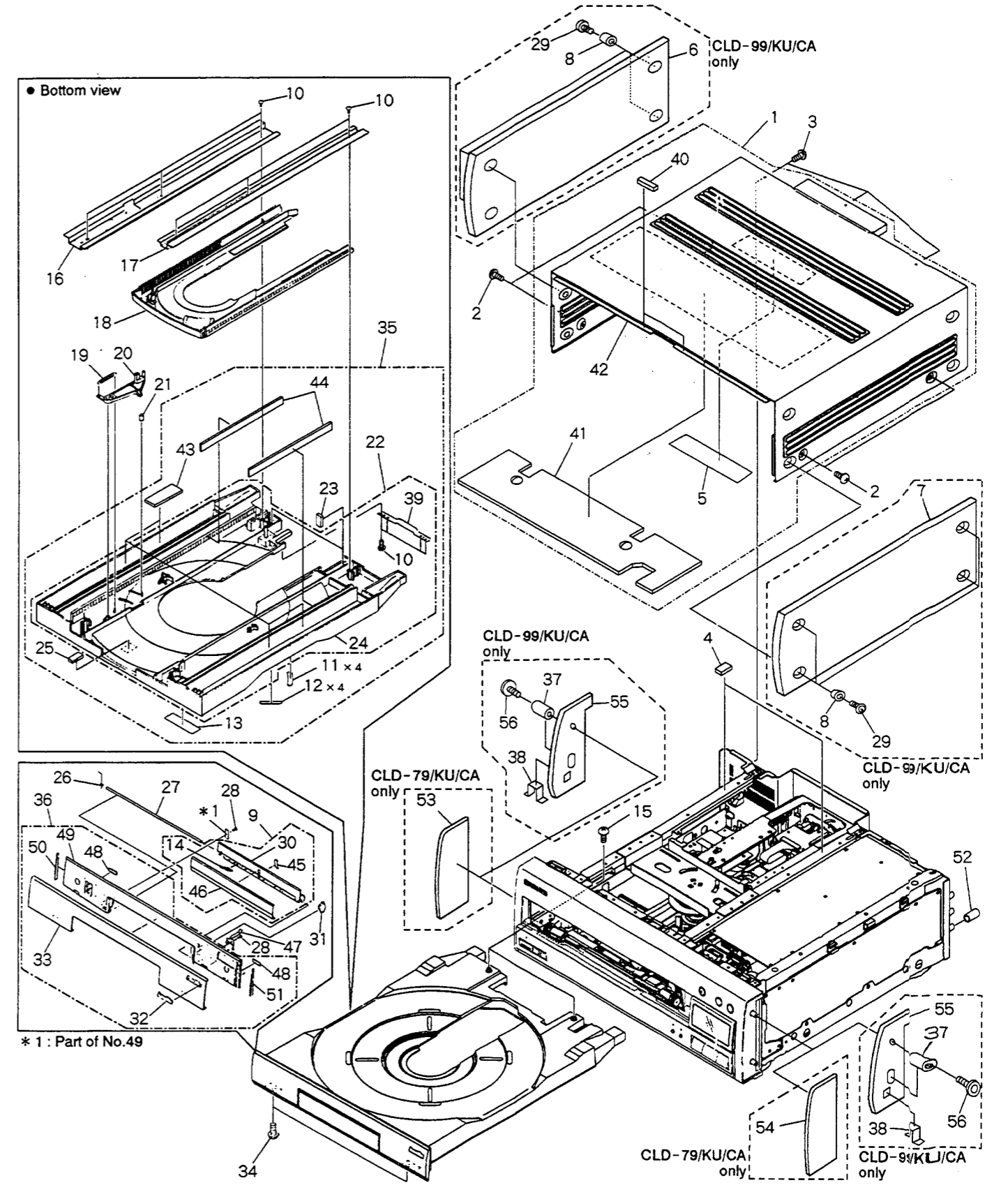
CLD-99/KU/CA and CLD-79/KU/CA have the same construction except for the following:

| Mark | No. | Symbol & Description | Part No. | |
|------|-----|----------------------|---------------|---------------|
| | | | CLD-99 /KU/CA | CLD-79 /KU/CA |
| | 1 | Bonnet assy-S | VXX2233 | VXX2272 |
| | 6 | Side wood L | VAP1024 | Not used |
| | 7 | Side wood R | VAP1025 | Not used |
| | 8 | Wood collar | PNW1238 | Not used |
| | 18 | CD tray | VNK3066 | VNK2395 |
| | 22 | LD tray assy | VXA2204 | VXA2158 |
| | 29 | Screw | VBA1043 | Not used |
| | 35 | Tray assy-S | VXX2231 | VXX2273 |
| | 37 | Collar | VLL1475 | Not used |
| | 38 | Side earth | VBK1055 | Not used |
| NSP | 42 | Bonnet | VNA1543 | VNA1355 |
| NSP | 53 | Side rubber(L) | Not used | VEB1224 |
| NSP | 54 | Side rubber(R) | Not used | VEB1225 |
| | 55 | Side maul (AL) | VAH1234 | Not used |

(2) PARTS LIST FOR CLD-99/KU/CA

| Mark | No. | Description | Part No. |
|------|-----|------------------|--------------|
| | 1 | Bonnet assy-S | VXX2233 |
| | 2 | Screw | BCZ40P060FZK |
| | 3 | Screw | BBT30P060FCC |
| NSP | 4 | Damp cushion | VEC1602 |
| | 5 | 65 label | ORW1069 |
| | 6 | Side wood L | VAP1024 |
| | 7 | Side wood R | VAP1025 |
| | 8 | Wood collar | PNW1238 |
| | 9 | CD door assy-S | VXX2232 |
| | 10 | Screw | BPZ30P060FCU |
| | 11 | Disc pad (Large) | VEC1657 |
| | 12 | Disc pad (C) | VEC1658 |
| NSP | 13 | Label | VRW1289 |
| | 14 | CD earth | VBK1051 |
| | 15 | Screw | VBA1032 |

| Mark | No. | Description | Part No. |
|------|-----|-------------------|--------------|
| | 16 | Guide plate(R) | VNE1806 |
| | 17 | Guide plate(L) | VNE1805 |
| | 18 | CD tray | VNK3066 |
| | 19 | Lock plate spring | VBH1188 |
| | 20 | Lock plate | VNL1513 |
| | 21 | Tray rubber | VEB1091 |
| | 22 | LD tray assy | VXA2204 |
| NSP | 23 | Cushion | VEC1660 |
| NSP | 24 | LD tray | VNK2897 |
| NSP | 25 | Damp cushion | VEC1110 |
| | 26 | Door spring | VBH1223 |
| | 27 | Door shaft | RLA1182 |
| | 28 | Screw | IPZ20P050FMC |
| | 29 | Screw | VBA1043 |
| NSP | 30 | CD door | VNK2842 |
| | 31 | Damper assy | VXA2112 |
| NSP | 32 | Laser disc badge | VAM1022 |
| NSP | 33 | Tray panel (AL) | VAH1232 |
| | 34 | Screw | BPZ30P060FCU |
| | 35 | Tray assy-S | VXX2231 |
| | 36 | Tray panel assy-S | VXX2228 |
| | 37 | Collar | VLL1475 |
| | 38 | Side earth | VBK1055 |
| NSP | 39 | Tray back | VNE1946 |
| NSP | 40 | Hold rubber | PEB1216 |
| NSP | 41 | Top damper | VEB1245 |
| NSP | 42 | Bonnet | VNA1543 |
| NSP | 43 | Tray damper | VEB1232 |
| NSP | 44 | Rack damper | VEB1233 |
| NSP | 45 | CD cushion | VEC1733 |
| NSP | 46 | CD door (AL) | VAH1230 |
| | 47 | LD earth | VBK1050 |
| | 48 | Cushion | VEC1497 |
| NSP | 49 | Tray panel | VNK2840 |
| NSP | 50 | Tray spacer L | VNK2947 |
| NSP | 51 | Tray spacer R | VNK2948 |
| NSP | 52 | Cap | VEC1810 |
| | 53 | | |
| | 54 | | |
| | 55 | Side maul (AL) | VAH1234 |
| | 56 | Screw | IBZ40P080FCC |



2.2 TOP VIEW AND DISC CLAMPER SECTION

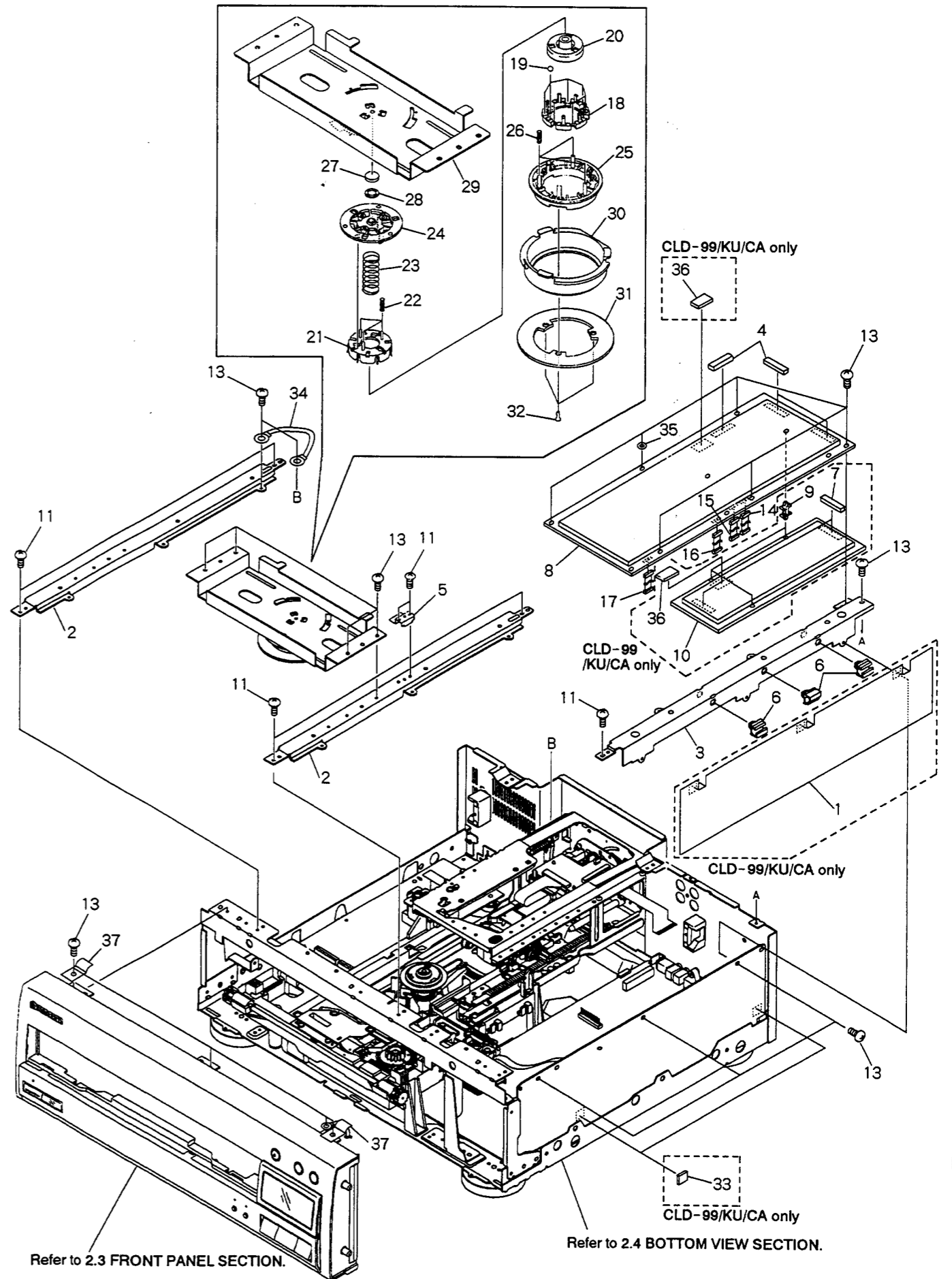
(1) CONTRAST OF CLD-99/KU/CA AND CLD-79/KU/CA

CLD-99/KU/CA and CLD-79/KU/CA have the same construction except for the following:

| Mark | No. | Symbol & Description | Part No. | |
|------|-----|----------------------|---------------|---------------|
| | | | CLD-99 /KU/CA | CLD-79 /KU/CA |
| NSP | 1 | Shield sheet | VEF1045 | Not used |
| | 3 | PCB holder | VNE1962 | VNE1895 |
| NSP | 7 | Hold rubber | VEB1216 | Not used |
| | 8 | DVDB assy | VWV1420 | VWV1421 |
| NSP | 9 | PC support | VEC1415 | Not used |
| | 10 | TDYC assy | VWV1377 | Not used |
| NSP | 33 | Support cushion | VEC1750 | Not used |
| | 36 | EMI gasket | VEC1826 | Not used |

(2) PARTS LIST FOR CLD-99/KU/CA

| Mark | No. | Description | Part No. |
|------|-----|----------------------|--------------|
| NSP | 1 | Shield sheet | VEF1045 |
| | 2 | Center angle | VNE1897 |
| | 3 | PCB holder | VNE1962 |
| | 4 | Hold rubber | VEB1226 |
| | 5 | Damper plate | VBK1045 |
| NSP | 6 | P plate holder | PNY-405 |
| NSP | 7 | Hold rubber | VEB1216 |
| | 8 | DVDB assy | VWV1420 |
| NSP | 9 | PC support | VEC1415 |
| | 10 | TDYC assy | VWV1377 |
| | 11 | Screw | BBT30P080FCC |
| | 12 | | |
| | 13 | Screw | IBZ30P080FCC |
| | 14 | Connector assy (5P) | PF05PP2B25 |
| | 15 | Connector assy (6P) | PF06PP-B25 |
| | 16 | Connector assy (13P) | PF13PP-B20 |
| | 17 | Housing assy (5P) | VKP2051 |
| | 18 | Ball guide | VNL1616 |
| | 19 | Ball | VNX1013 |
| | 20 | LD hab | VNT1047 |
| | 21 | Ball cover | VNL1602 |
| | 22 | Cover spring | VBH1234 |
| | 23 | LD spring | VBH1240 |
| | 24 | Clamper head | VNL1603 |
| | 25 | Clamper | VNL1604 |
| | 26 | Clamp spring | VBH1239 |
| | 27 | Rubber mat | VEB1114 |
| | 28 | Thrust holder | VNL1663 |
| | 29 | Center plate | VNE1898 |
| | 30 | Clamper holder | VNL1605 |
| | 31 | Stabilizer | VNE1906 |
| | 32 | Screw | CPZ20P060FMC |
| NSP | 33 | Support cushion | VEC1750 |
| NSP | 34 | Earth lead assy | VDA1479 |
| | 35 | Washer | VEC1450 |
| NSP | 36 | EMI gasket | VEC1826 |
| NSP | 37 | Earth plate | VNE1518 |



2.3 FRONT PANEL SECTION

(1) CONTRAST OF CLD-99/KU/CA AND CLD-79/KU/CA

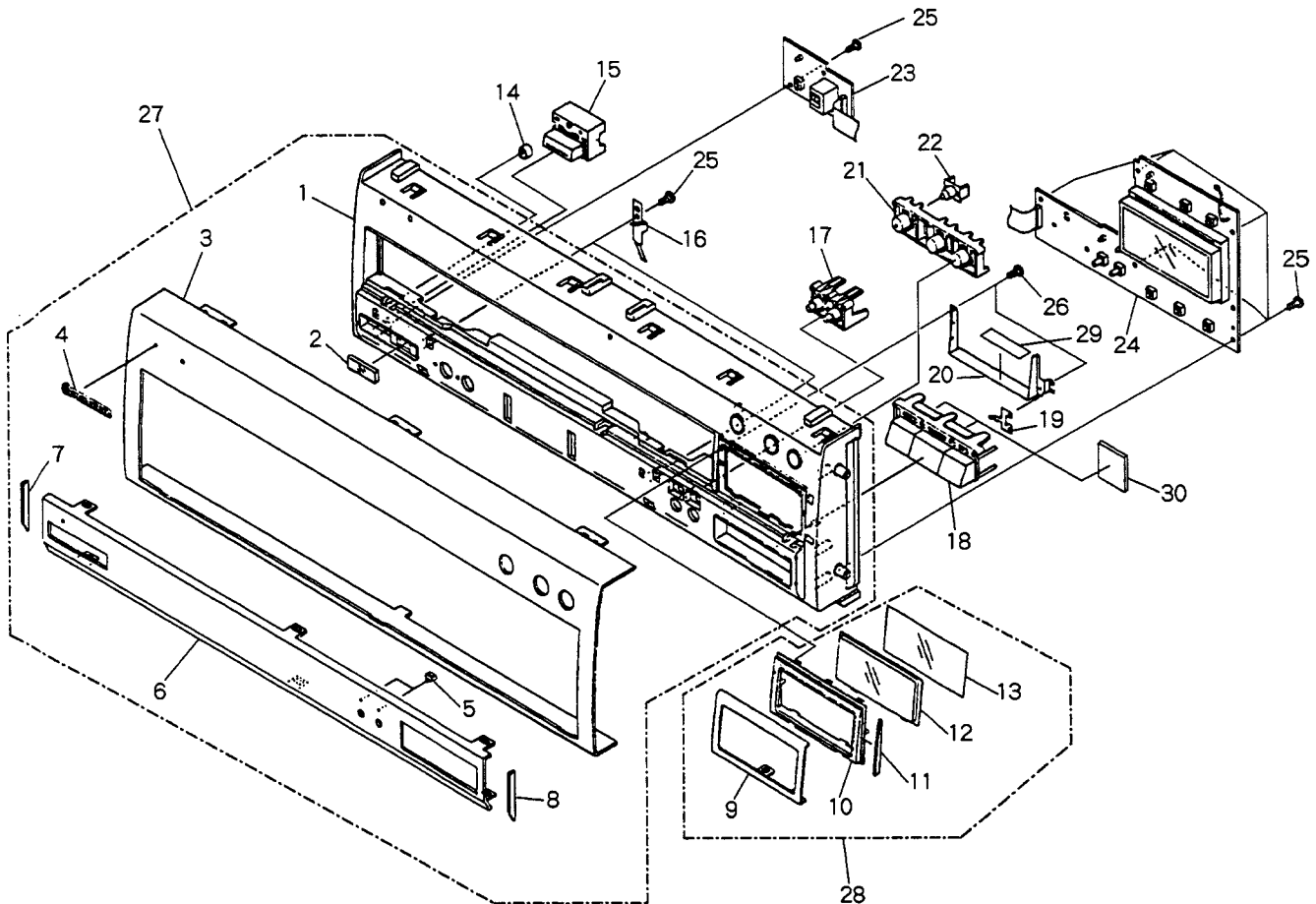
CLD-99/KU/CA and CLD-79/KU/CA have the same construction except for the following:

| Mark | No. | Symbol & Description | Part No. | |
|------|-----|----------------------|---------------|---------------|
| | | | CLD-99 /KU/CA | CLD-79 /KU/CA |
| NSP | 1 | Front panel | VNK3101 | VNK2838 |
| NSP | 3 | Front panel (AL) | VAH1227 | VAH1239 |
| | 24 | FLKY assy | VWG1644 | VWG1645 |
| | 27 | Front panel assy-S | VXX2229 | VXX2271 |

(2) PARTS LIST FOR CLD-99/KU/CA

| Mark | No. | Description | Part No. |
|------|-----|------------------|----------|
| NSP | 1 | Front panel | VNK3101 |
| | 2 | Sensor lens | RNK2085 |
| NSP | 3 | Front panel (AL) | VAH1227 |
| | 4 | Name plate | VAM1032 |
| | 5 | LED lens 1 | RNK2066 |
| NSP | 6 | Under sash | VAH1228 |
| NSP | 7 | Sash spacer L | VNK2945 |
| NSP | 8 | Sash spacer R | VNK2946 |
| NSP | 9 | Sub alum. | VAH1231 |
| NSP | 10 | Sub panel | VNK2844 |

| Mark | No. | Description | Part No. |
|------|-----|--------------------|--------------|
| NSP | 11 | Tray spacer R | VNK2948 |
| | 12 | FL lens | VNK2845 |
| | 13 | FL filter | VEC1769 |
| | 14 | LED lens | PNW2019 |
| | 15 | PW button | VNK2853 |
| | 16 | Panel earth | VBK1052 |
| | 17 | L key (B) | VNK2849 |
| | 18 | Main key | VNK2851 |
| | 19 | Sub earth | VBK1048 |
| | 20 | Back plate | VNE1961 |
| | 21 | L key (A) | VNK2847 |
| | 22 | LED lens A | VNL1659 |
| NSP | 23 | PONS assy | VWG1571 |
| | 24 | FLKY assy | VWG1644 |
| | 25 | Screw | BPZ26P080FCU |
| | 26 | Screw | BPZ20P060FCU |
| | 27 | Front panel assy-S | VXX2229 |
| | 28 | Sub panel assy-S | VXX2230 |
| | 29 | Tape | VED1008 |
| | 30 | Cushion | VEC1807 |



2.4 BOTTOM VIEW SECTION

(1) CONTRAST OF CLD-99/KU/CA AND CLD-79/KU/CA

CLD-99/KU/CA and CLD-79/KU/CA have the same construction except for the following:

| Mark | No. | Symbol & Description | Part No. | |
|------|-----|----------------------|---------------|---------------|
| | | | CLD-99 /KU/CA | CLD-79 /KU/CA |
| NSP | 1 | Base chassis | VNA1478 | VNA1347 |
| | 2 | Insulator assy | VXA1450 | VXA1996 |
| △ | 7 | AC power cord | VDG1046 | PDG1015 |
| | 8 | AC cord stopper | Not used | CM-22C |
| | 9 | Rear panel assy-S | VXX2234 | VXX2260 |
| | 11 | SACB assy | VWS1191 | VWS1189 |
| | 27 | Screw | IBZ30P150FCC | IBZ30P080FCC |
| NSP | 30 | Label | VRW1495 | VRW1509 |
| NSP | 32 | Rear panel | VNA1541 | VNA1568 |
| NSP | 35 | Shield cover | VEF1046 | Not used |
| | 37 | ICP caution label | VRW1538 | VRW1401 |

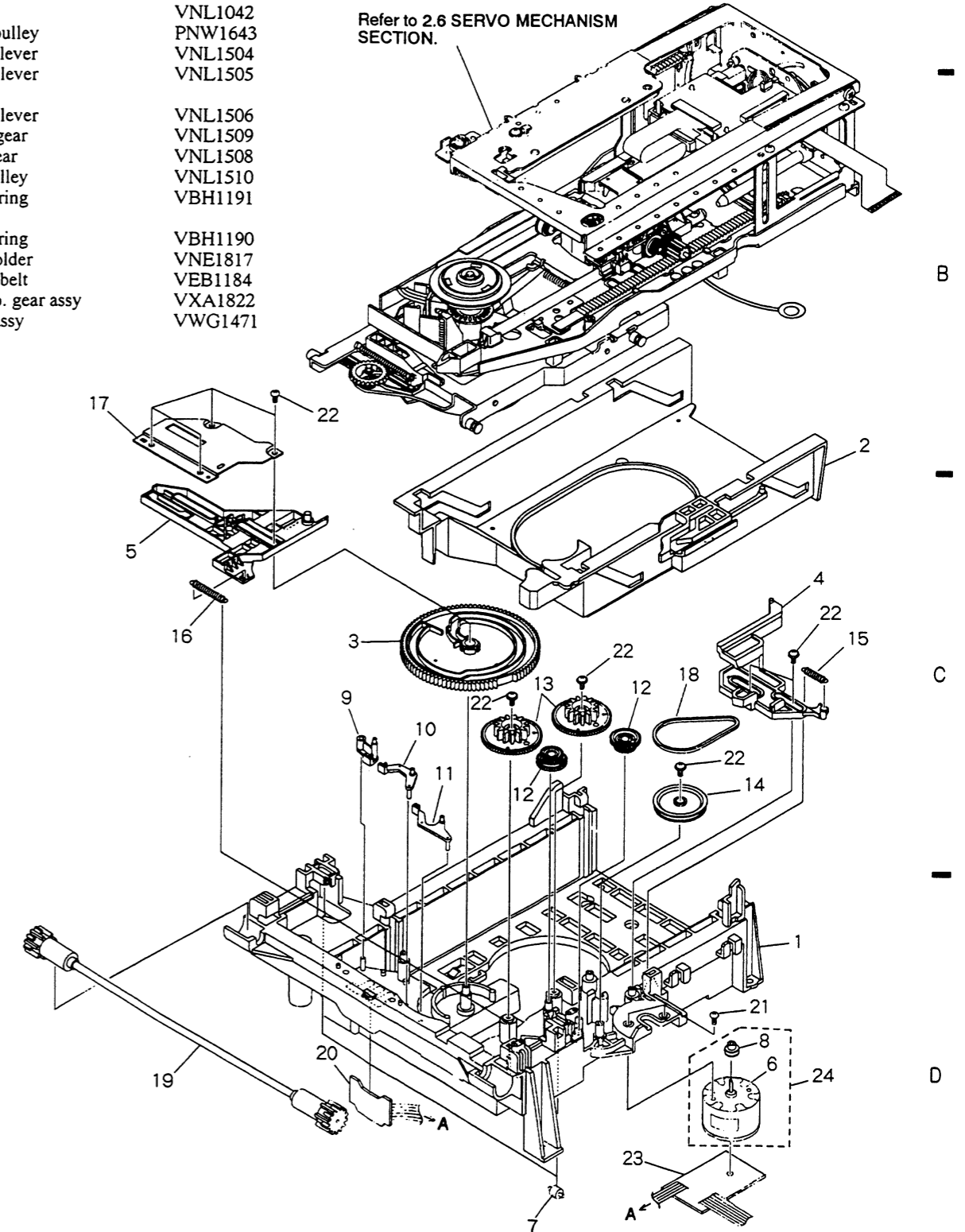
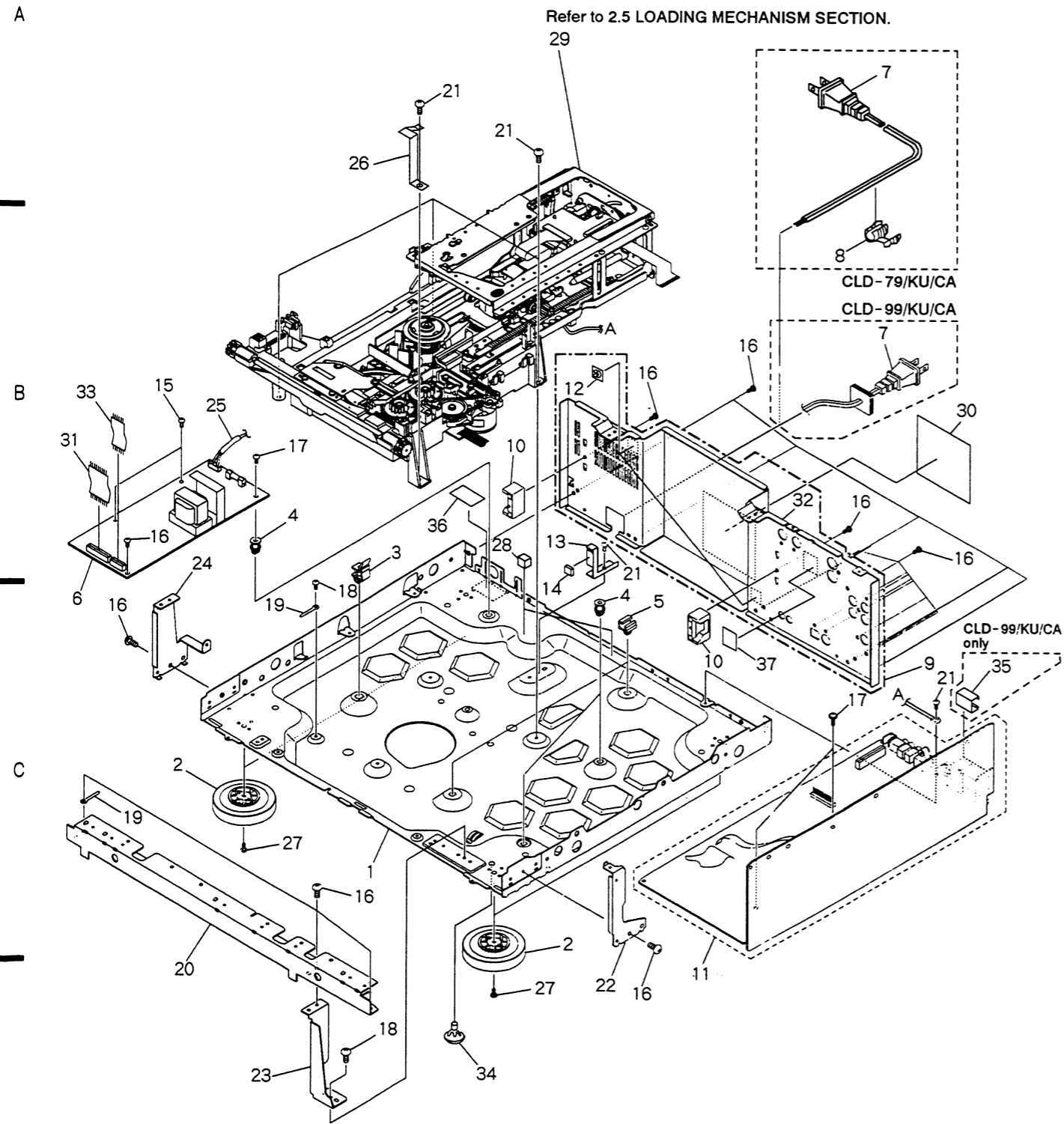
(2) PARTS LIST FOR CLD-99/KU/CA

| Mark | No. | Description | Part No. |
|------|-----|--------------------|--------------|
| NSP | 1 | Base chassis | VNA1478 |
| | 2 | Insulator assy | VXA1450 |
| | 3 | PCB spacer | VEC1623 |
| | 4 | PCB spacer | PNY-404 |
| NSP | 5 | PCB hinge | VEC1174 |
| △ | 6 | SYPS assy | VWR1200 |
| | 7 | AC power cord | VDG1046 |
| | 8 | | |
| | 9 | Rear panel assy-S | VXX2234 |
| | 10 | Tray stopper | VNL1600 |
| | 11 | SACB assy | VWS1191 |
| NSP | 12 | Mini clamp | VEC1312 |
| | 13 | Carriage stopper | VNE1919 |
| NSP | 14 | Damp cushion | VEC1602 |
| | 15 | Screw | IBZ30P080FMC |
| | 16 | Screw | BBT30P080FCC |
| | 17 | Screw | BPZ30P140FMC |
| | 18 | Screw | BBZ30P040FMC |
| NSP | 19 | Cord holder | Z09-061 |
| | 20 | Front angle | VNE1894 |
| | 21 | Screw | BBZ30P060FCC |
| | 22 | Side stay | VNE1896 |
| NSP | 23 | Side stay(R) | VNE1810 |
| NSP | 24 | Side stay(L) | VNE1809 |
| | 25 | UL tubing | VEC1651 |
| | 26 | Mecha. earth | VBK1049 |
| | 27 | Screw | IBZ30P150FCC |
| NSP | 28 | HM spacer | VEB1215 |
| NSP | 29 | Mechanism assy | VWT1101 |
| | 30 | Label | VRW1495 |
| | 31 | Flat cable 12P | D20PYY1275E |
| NSP | 32 | Rear panel | VNA1541 |
| NSP | 33 | Flat cable 6P | D20PYY0640E |
| NSP | 34 | PC support | VEC1749 |
| NSP | 35 | Shield cover | VEF1046 |
| NSP | 36 | Fuse caution label | VRW-548 |
| | 37 | ICP caution label | VRW1538 |

2.5 LOADING MECHANISM SECTION

Parts List

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



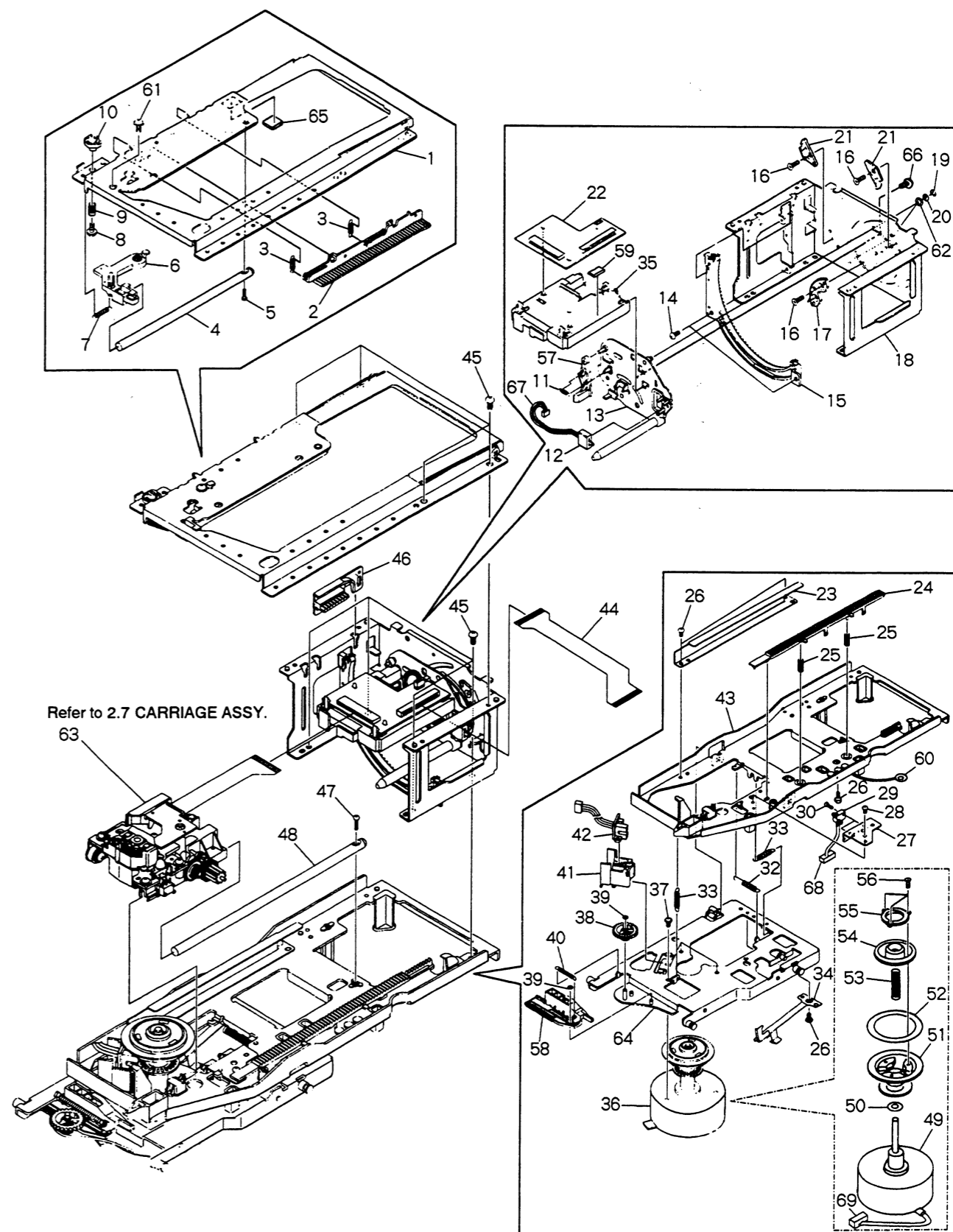
1 | 2 | 3 | 4 | 5 | 6

1 | 2 | 3 | 4 | 5 | 6 | 10

2.6 SERVO MECHANISM SECTION

Parts List

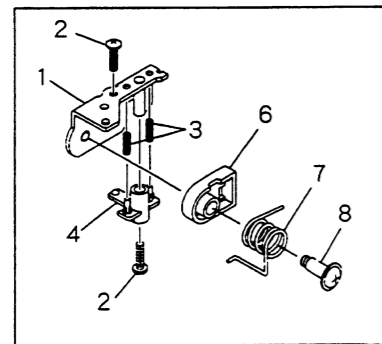
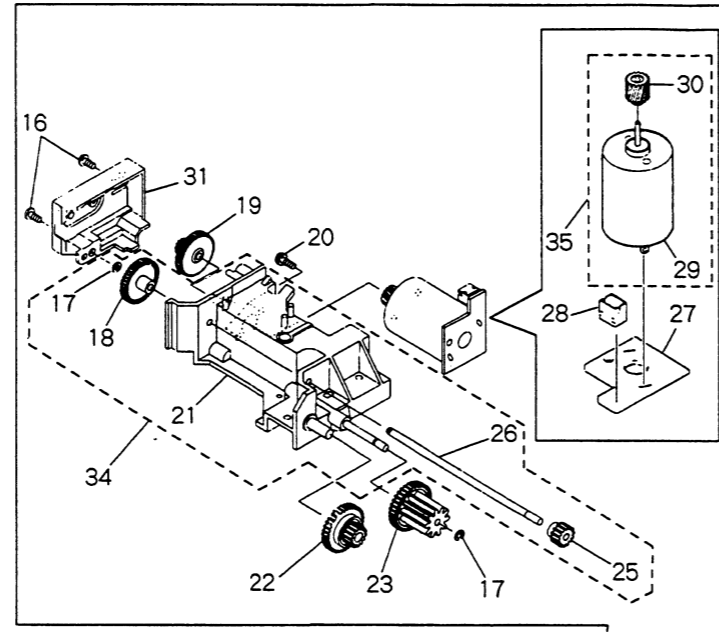
| Mark | No. | Description | Part No. | Mark | No. | Description | Part No. |
|------|-----|---------------------|--------------|------|-------------------|-----------------|----------|
| A | 1 | Tilt base (upper) | VNB1027 | NSP | 51 | Turn table assy | VXA1760 |
| | 2 | Rack (upper) | VNL1560 | NSP | 52 | Rubber sheet | VEB1237 |
| | 3 | Rack spring (upper) | VBH1213 | 53 | Centering spring | VBH1024 | |
| | 4 | CA shaft (upper) | VLL1446 | 54 | PRC hub | VNL1612 | |
| | 5 | Screw | PMZ20P070FMC | 55 | PRC table | VNL1613 | |
| | 6 | Shaft support | VNL1563 | 56 | Screw | CPZ20P060FMC | |
| | 7 | Support spring | VBH1236 | 57 | Lock lever | VNL1562 | |
| | 8 | Screw | IPZ30P060FMC | 58 | Tilt cam | VNL1559 | |
| | 9 | B cam spring | VBH1233 | 59 | Spacer | VEB1020 | |
| | 10 | B cam | VNL1564 | NSP | 60 | Earth lead unit | VDA1455 |
| B | 11 | Lever spring | VBH1214 | 61 | Screw | Z39-019 | |
| | 12 | Lever SW | DSK1003 | 62 | Washer | WA32D080D025 | |
| | 13 | R plate assy | VNL1566 | 63 | Carriage assy | VWT1100 | |
| | 14 | Screw | BBZ26P060FMC | 64 | Motor base | VNE1889 | |
| | 15 | TM rack | VNL1556 | NSP | 65 | Stop cushion | VEC1605 |
| | 16 | Screw | CBZ26P060FMC | 66 | Screw | CPZ26P080FMC | |
| | 17 | Turn gear | VNL1565 | 67 | Housing assy (3P) | VKP2011 | |
| | 18 | TM support | VNE1888 | 68 | Housing assy (4P) | VKP2025 | |
| | 19 | Washer | YE20FUC | 69 | Housing assy | VKP2020 | |
| | 20 | Washer | WA32D080D050 | | | | |
| NSP | 21 | Head lock | VNL1580 | | | | |
| | 22 | CNNB assy | VWG1469 | | | | |
| | 23 | TAN guide | VNE1887 | | | | |
| | 24 | Rack (lower) | VNL1567 | | | | |
| | 25 | Rack spring (lower) | VBH1215 | | | | |
| | 26 | Screw | BBZ30P060FMC | | | | |
| | 27 | SW base | VNE1886 | | | | |
| | 28 | Screw | PBZ26P060FMC | | | | |
| | 29 | Slide SW | OSH1001 | | | | |
| | 30 | Screw | PMZ20P060FMC | | | | |
| C | 31 | | | | | | |
| | 32 | Thrust spring | VBH1235 | | | | |
| | 33 | Tilt spring | VBH1218 | | | | |
| | 34 | Key lock | VBK1044 | | | | |
| | 35 | CB holder | VNL1618 | | | | |
| △ | 36 | Spindle motor assy | VXA1986 | | | | |
| | 37 | Screw | PMA30P050FMC | | | | |
| | 38 | Y gear | VNL1501 | | | | |
| | 39 | Washer | WT26D060D025 | | | | |
| | 40 | Tilt cam spring | VBH1189 | | | | |
| NSP | 41 | FG base | VNL1577 | | | | |
| | 42 | FG assy | VWG1472 | | | | |
| | 43 | Tilt base (lower) | VNL1555 | | | | |
| | 44 | MK flexible | VNP1439 | | | | |
| | 45 | Screw | ABZ30P060FMC | | | | |
| NSP | 46 | TM guide | VNL1558 | | | | |
| | 47 | Screw | PPZ20P080FMC | | | | |
| | 48 | CA shaft (lower) | VLL1447 | | | | |
| | 49 | Spindle motor | VXM1053 | | | | |
| | 50 | Oil stopper washer | VEB1002 | | | | |



2.7 CARRIAGE ASSY

Parts List

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



2.8 PACKING

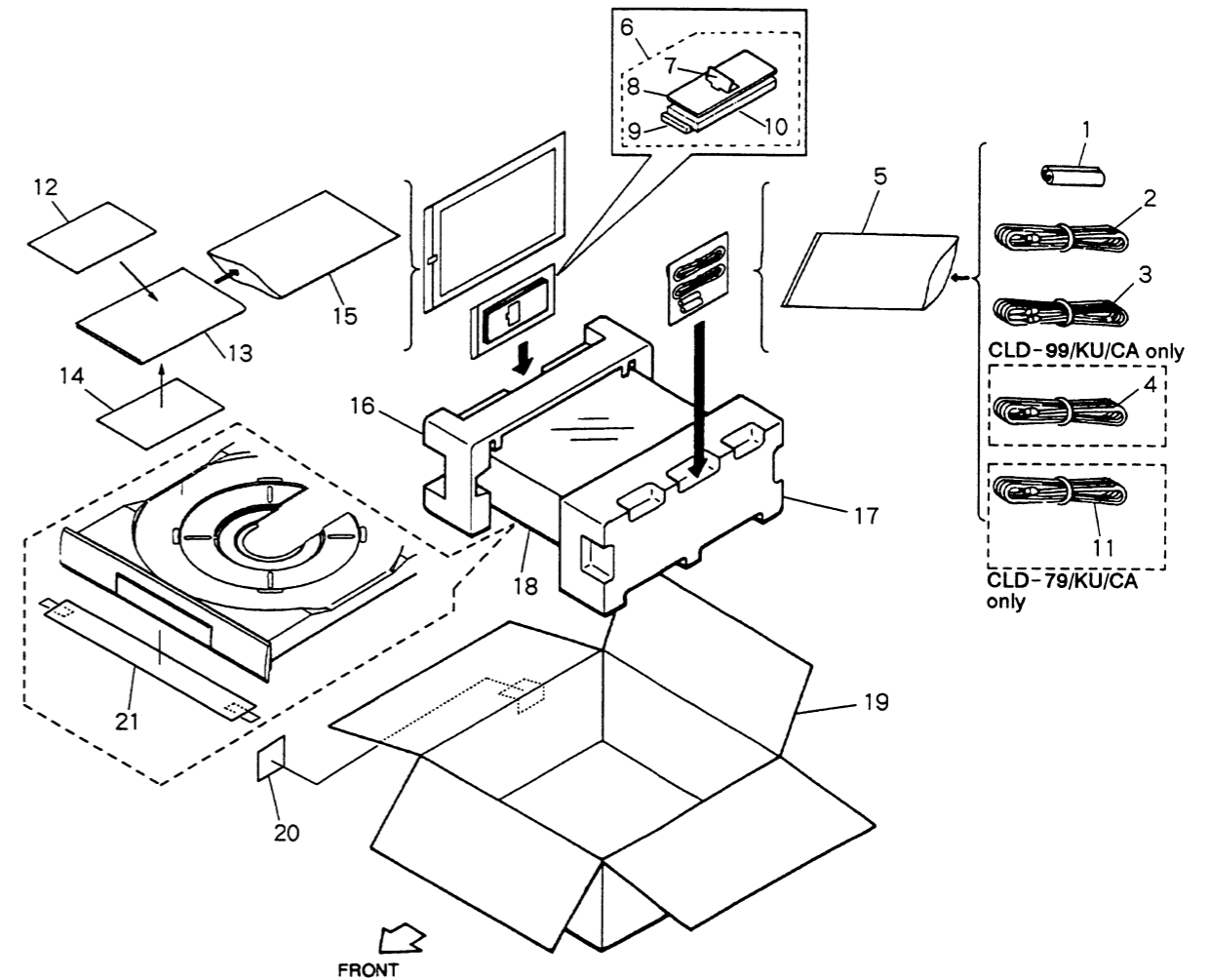
(1) CONTRAST OF CLD-99/KU/CA AND CLD-79/KU/CA

CLD-99/KU/CA and CLD-79/KU/CA have the same construction except for the following:

| Mark | No. | Symbol & Description | Part No. | |
|------|-----|------------------------|---------------|---------------|
| | | | CLD-99 /KU/CA | CLD-79 /KU/CA |
| | 2 | Video cord | VDE1003 | VDE1034 |
| | 3 | Audio cord | PDE1003 | VDE1033 |
| | 4 | S video cord | VDE1013 | Not used |
| | 6 | Remote control unit | VXX2224 | VXX2255 |
| | 11 | 4P mini DIN cable | Not used | DDE1040 |
| | 13 | Operating instructions | VRB1139 | VRB1141 |
| | 19 | Packing case | VHG1426 | VHG1440 |

(2) PARTS LIST FOR CLD-99/KU/CA

| Mark | No. | Description | Part No. |
|------|-----|----------------------------------|----------|
| NSP | 1 | Battery (R03, AAA) | VEM-022 |
| | 2 | Video cord | VDE1003 |
| | 3 | Audio cord | PDE1003 |
| | 4 | S video cord | VDE1013 |
| | 5 | Polyethylene bag (205*315*0.05) | Z21-029 |
| NSP | 6 | Remote control unit | VXX2224 |
| | 7 | Battery cover | DNK2286 |
| | 8 | Case (below) | VNK2062 |
| | 9 | Filter | VNK2063 |
| | 10 | Case (upper) | VNK3183 |
| NSP | 11 | | |
| | 12 | Warranty card | ARY1026 |
| | 13 | Operating instructions (English) | VRB1139 |
| | 14 | Caution (UC) | VRR1020 |
| | 15 | Polyethylene bag | VHL-014 |
| NSP | 16 | Pad L | VHA1163 |
| | 17 | Pad R | VHA1164 |
| | 18 | Mirror mat | VHL1012 |
| | 19 | Packing case | VHG1426 |
| | 20 | Caution label | VRM1044 |
| | 21 | Mirror mat sheet | VHL1024 |



3. SCHEMATIC AND PCB CONNECTION DIAGRAMS

3.1 OVERALL WIRING DIAGRAM, FLKY, PONS, CNNB, LOMB, LOSB AND FG ASSEMBLIES

SCH-1

A

A

B

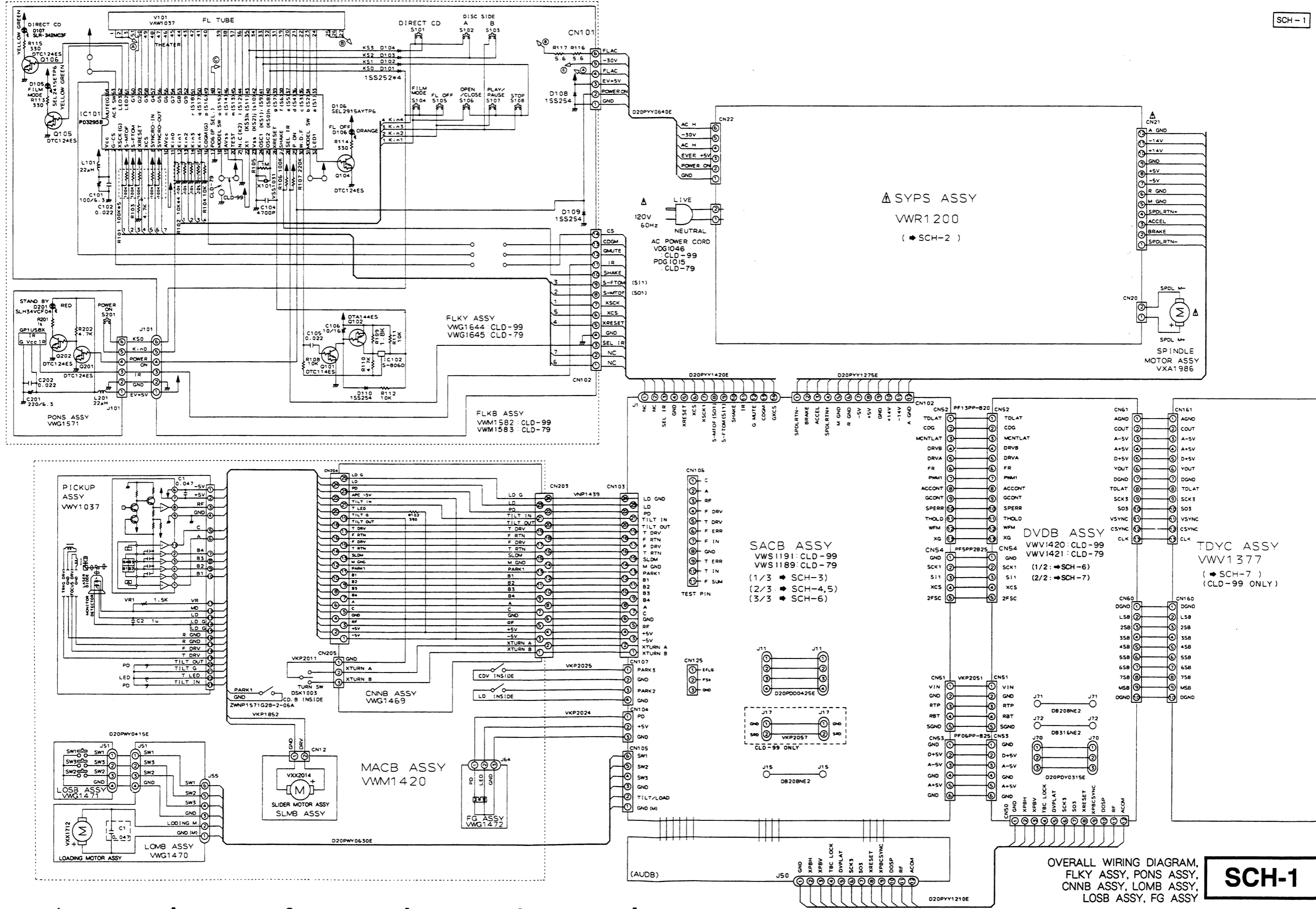
B

C

C

D

D

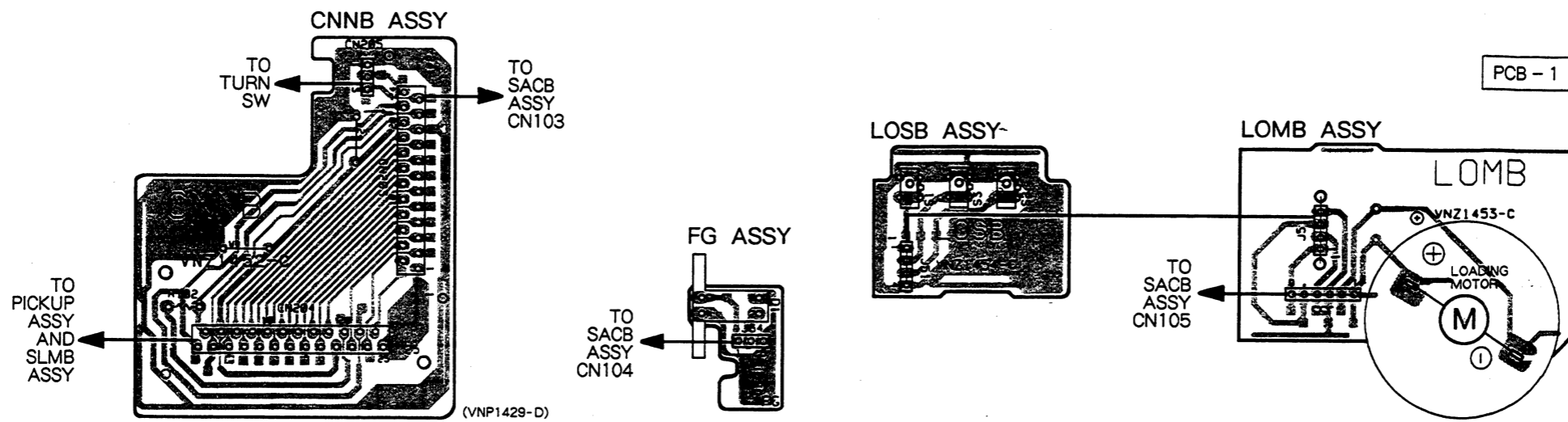


OVERALL WIRING DIAGRAM,
FLKY ASSY, PONS ASSY,
CNNB ASSY, LOMB ASSY,
LOS ASSY, FG ASSY

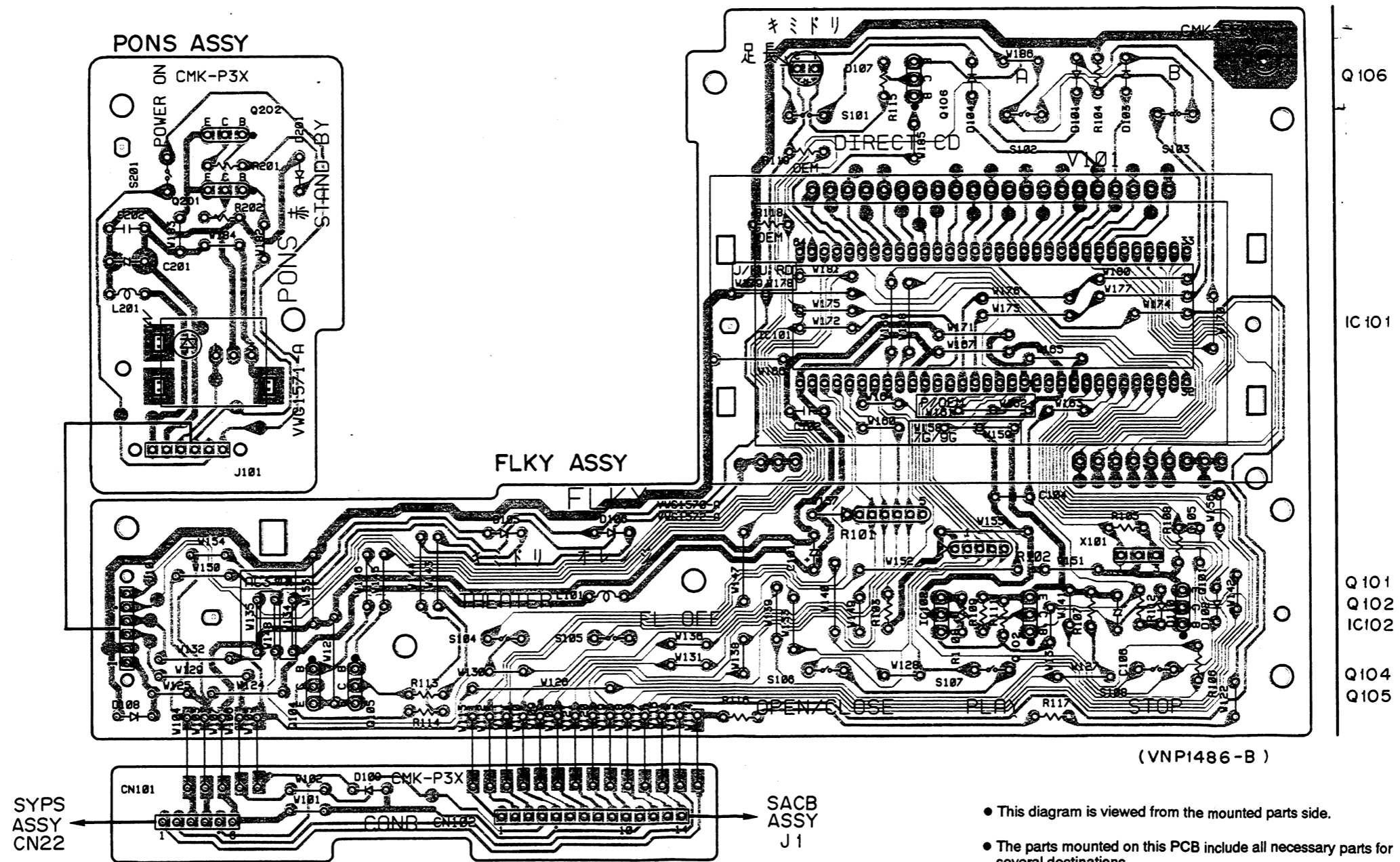
SCH-1

OVERALL WIRING DIAGRAM,
FLKY ASSY, PONS ASSY,
CNNB ASSY, LOMB ASSY,
LOS ASSY, FG ASSY

SCH-1



• This diagram is viewed from the mounted parts side.



• This diagram is viewed from the mounted parts side.

• The parts mounted on this PCB include all necessary parts for several destinations. For further information for respective destinations, be sure to check with the schematic diagram.

3.2 SYPS ASSY

• Power supply assembly warnings

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

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

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

- Detection circuit (reference) -

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

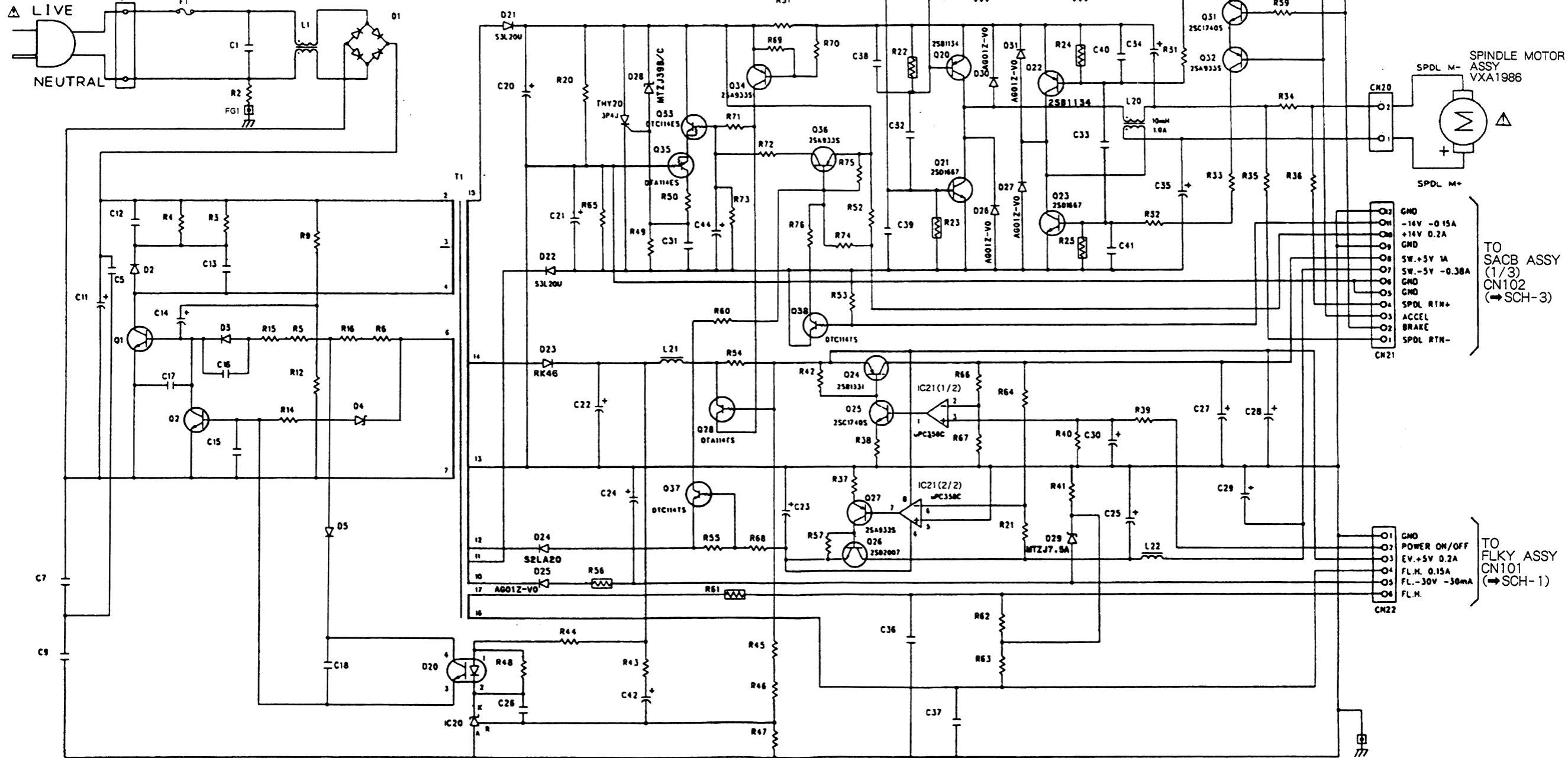
• NOTE FOR FUSE REPLACEMENT

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

SCH - 2

AC POWER CORD
VDG1046 : CLD-99/KU/CA
PDG1015 : CLD-79/KU/CA
AC120V
60Hz

SYPS ASSY (VWR1200)

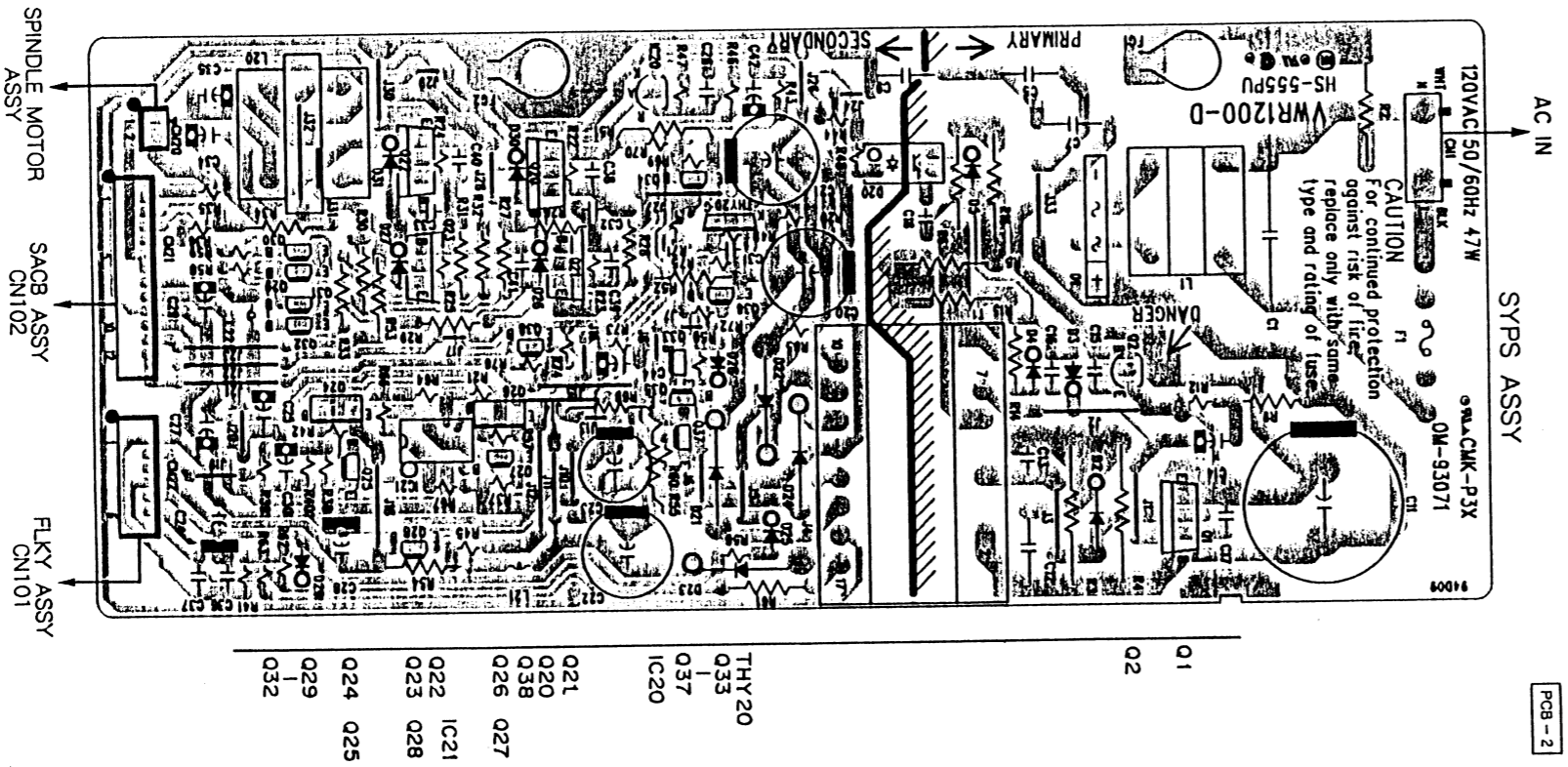


SCH-2

SYPS ASSY

SYPS ASSY

SCH-2



• This diagram is viewed from the mounted parts side.

PCB-2

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

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

5. COILS:
 Unit: mμH or μH unless otherwise noted.

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

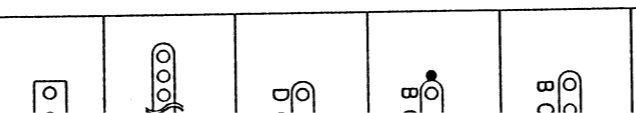
7. OTHERS:
 ● or ○ : Adjusting point.
 ▲ : Measurement point.
 ● The Δ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

8. SCH - □ ON THE SCHEMATIC DIAGRAM:
 ● SCH - □ indicates the drawing number of the schematic diagram.
 (SCH stands for schematic diagram.)

9. SWITCHES (Underline indicates switch position):
 FLKY ASSY
 S101 : DIRECT CD
 S102 : DISC SIDE A
 S103 : DISC SIDE B
 S104 : FILM MODE
 S105 : FL OFF
 S106 : OPEN/CLOSE (▲)
 S107 : PLAY/PAUSE (▶/◀)
 S108 : STOP (■)

POKS ASSY
 S201 : POWER(STANDBY/ON)
 LOSB ASSY
 S1 : SW1
 S2 : SW2
 S3 : SW3

NOTE FOR
 1. Part number diagrams:
 2. A comparison diagrams



F

E

D

C

B

A

1

2

3

4

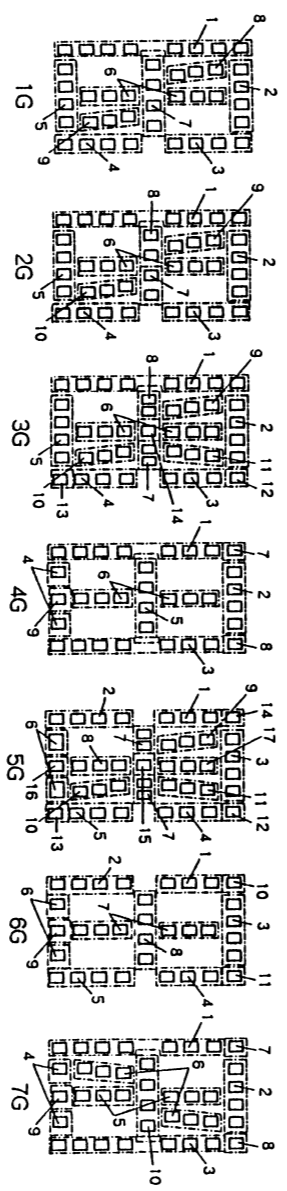
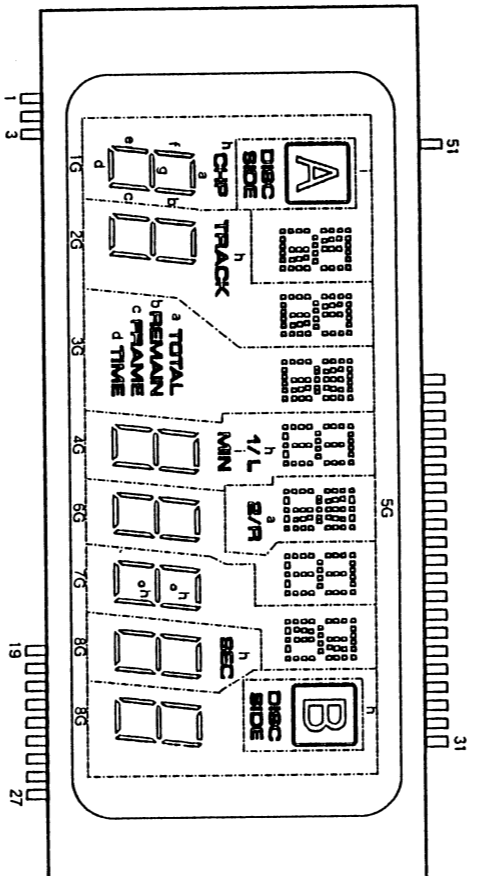
- NOTE FOR PCB DIAGRAMS:
1. Part numbers in PCB diagrams match those in the schematic diagrams.
 2. A comparison between the main parts of PCB and schematic diagrams is shown below.

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

FL INFORMATION

- VAW1037 (V101:FLKY ASSY)
- FL TUBE

• ANODE GRID ASSIGNMENT



• PIN ASSIGNMENT

| Pin No. | Assignment | Pin No. | Assignment |
|---------|------------|---------|------------|
| 1 | F1 | 28 | NL |
| 2 | F1 | 29 | NL |
| 3 | F1 | 30 | NL |
| 4 | NL | 31 | g |
| 5 | NL | 32 | h |
| 6 | NL | 33 | i |
| 7 | NL | 34 | j |
| 8 | NL | 35 | k |
| 9 | NL | 36 | l |
| 10 | NL | 37 | m |
| 11 | NL | 38 | n |
| 12 | NL | 39 | o |
| 13 | NL | 40 | p |
| 14 | NL | 41 | q |
| 15 | NL | 42 | r |
| 16 | NL | 43 | 9G |
| 17 | NL | 44 | 8G |
| 18 | NL | 45 | 7G |
| 19 | NL | 46 | 6G |
| 20 | e | 47 | 5G |
| 21 | d | 48 | 4G |
| 22 | c | 49 | 3G |
| 23 | b | 50 | 2G |
| 24 | a | 51 | 1G |
| 25 | F2 | 52 | NL |
| 26 | F2 | 53 | NL |
| 27 | F2 | 54 | NL |

F1, F2: Filament
a-f: Anode
1G-9G: Grid
NL: No lead

• ANODE GRID ASSIGNMENT & PIN ASSIGNMENT

| | 1G | 2G | 3G | 4G | 5G | 6G | 7G | 8G | 9G |
|---|----|-----------|--------|----|-----|----|----|----|-----------|
| a | a | a | TOTAL | a | 2/R | a | a | a | a |
| b | b | b | REMAIN | b | 17 | b | b | b | b |
| c | c | c | FRAME | c | 16 | c | c | c | c |
| d | d | d | TIME | d | 15 | d | d | d | d |
| e | e | e | e | e | 14 | e | e | e | e |
| f | f | f | f | f | 13 | f | f | f | f |
| g | g | g | g | g | 12 | g | g | g | g |
| h | h | CHP | TRACK | 11 | 1/L | 11 | 11 | 11 | SEC |
| i | i | DISC SIDE | 10 | 10 | 10 | 10 | 10 | 10 | DISC SIDE |
| j | j | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| k | k | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| l | l | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| m | m | 6 | 6 | 6 | 6 | 6 | 6 | 6 | |
| n | n | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| o | o | 4 | 4 | 4 | 4 | 4 | 4 | 4 | |
| p | p | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| q | q | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| r | r | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |

3.3 SACB ASSY(1/3 : FTS & CONT SECTION)

SACB ASSY (1/3)
(VWS1191 : CLD-99)
(VWS1189 : CLD-79)
• FTS & CONT SECTION

DVDB ASSY
CN54 (SCH-6)

A

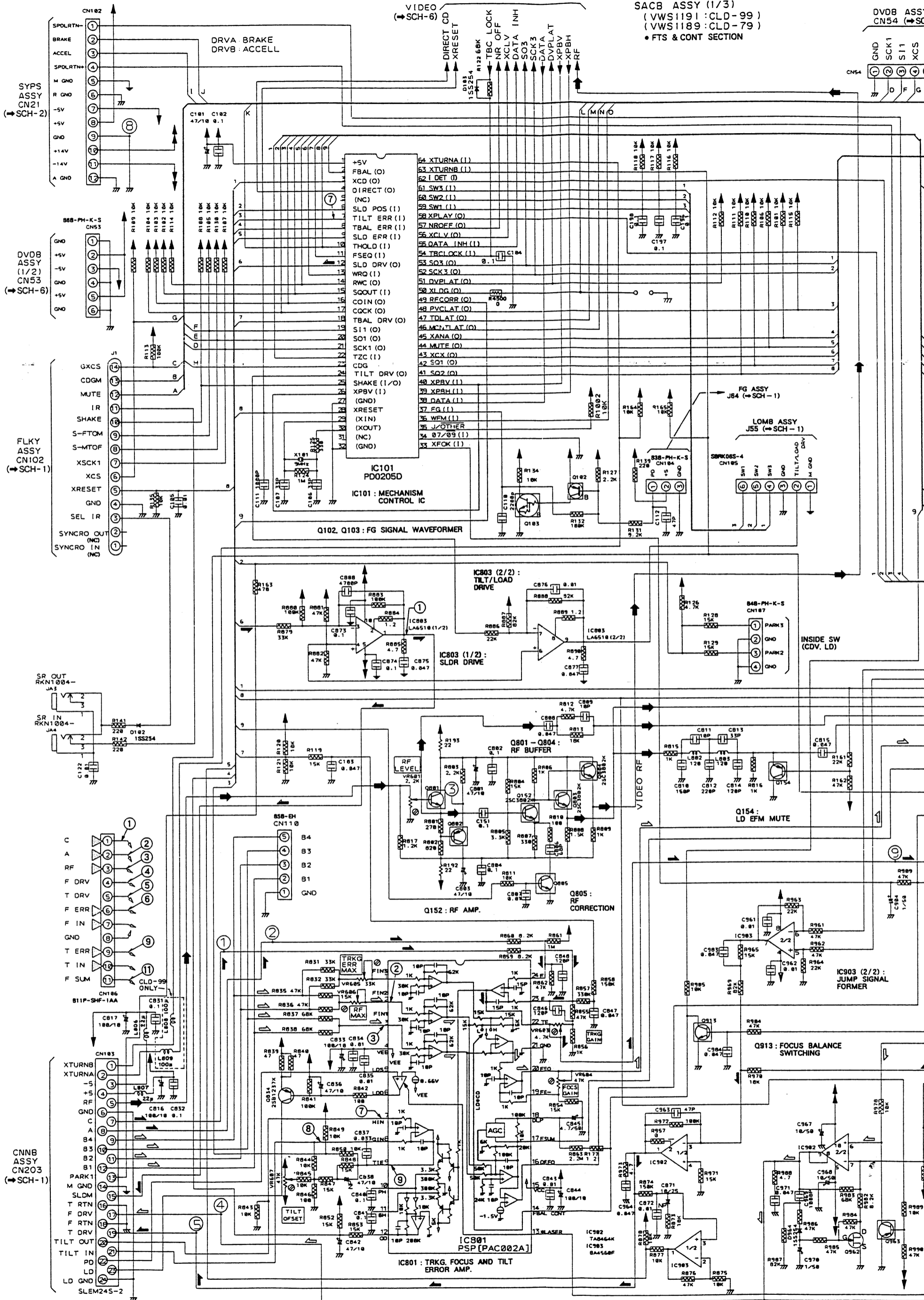
B

C

D

E

F



SCH-3

SACB ASSY
(1/3)

Q834 :
LD POWER SUPPLY

IC902 (1/2) :
TRKG DRIVE

IC903 (1/2) :
SLIDER ERROR AMP.

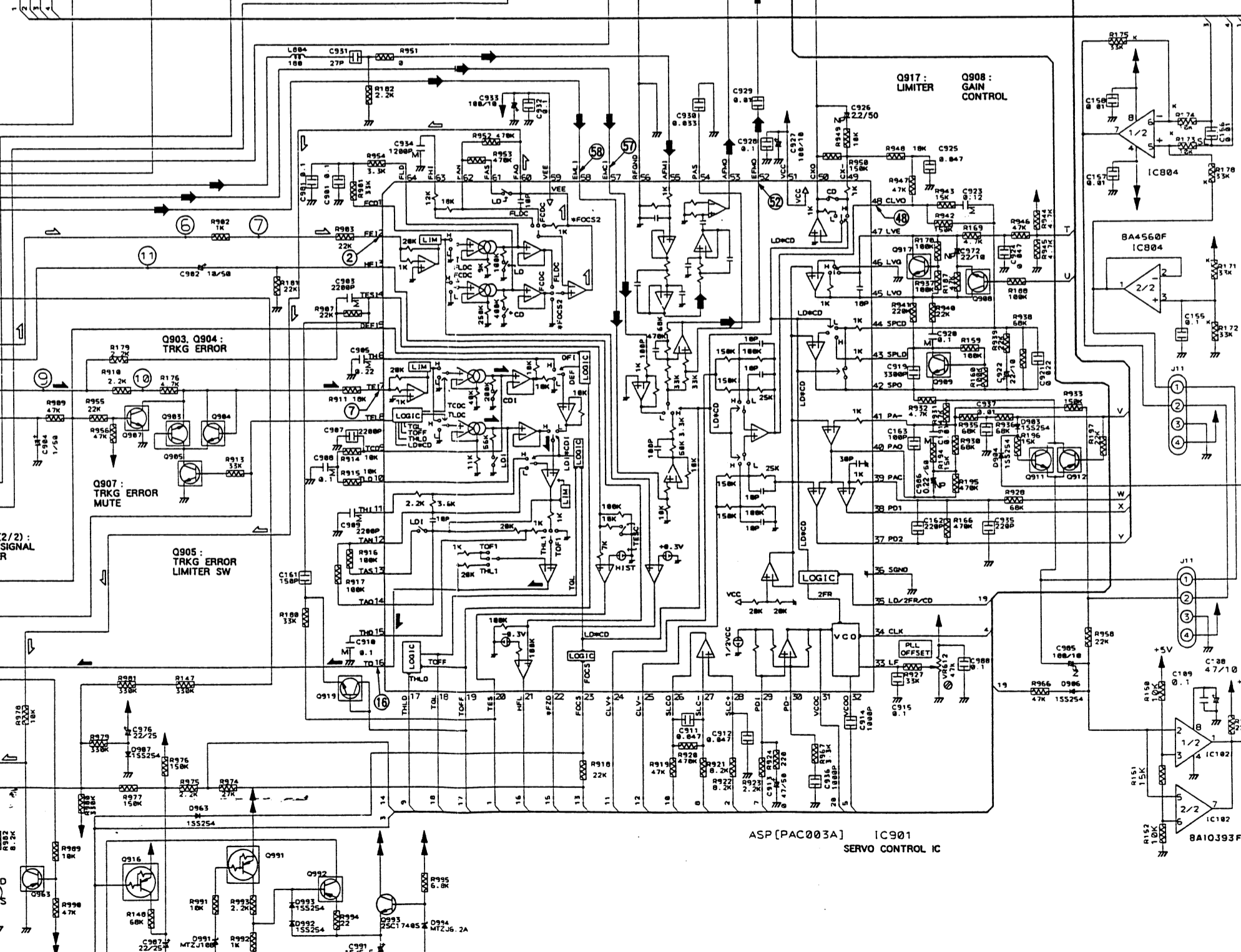
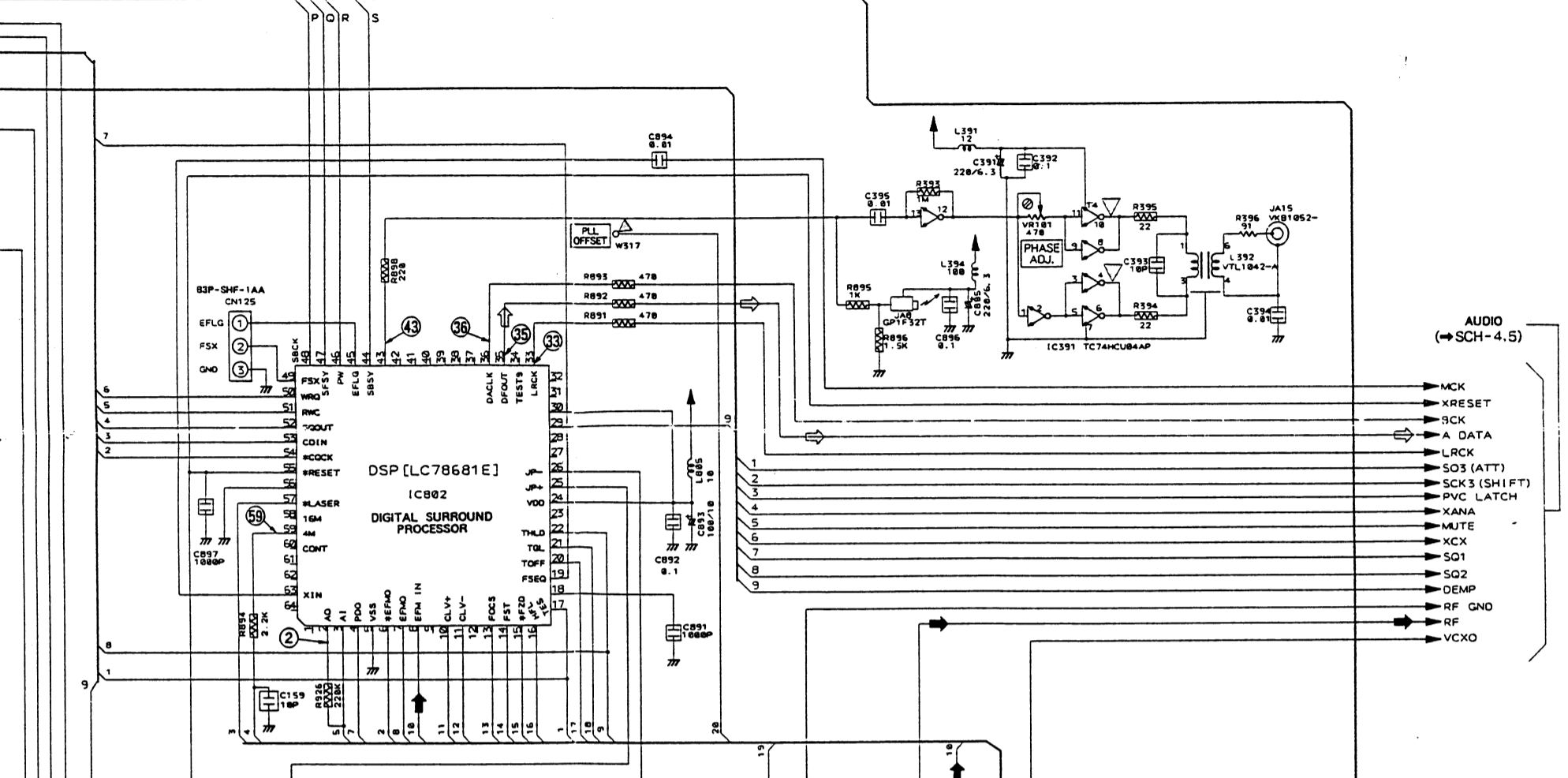
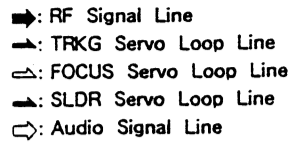
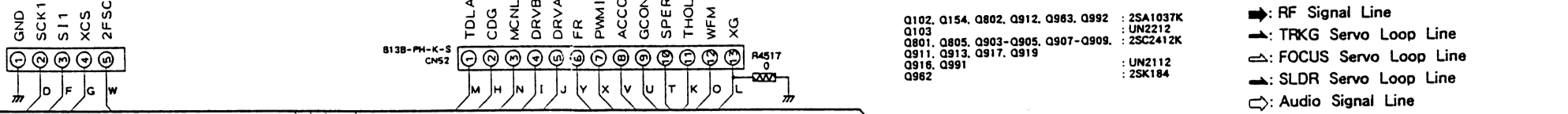
IC902 (2/2) :
FOCUS DRIVE

Q963 :
POWER ON

DV08 ASSY (1/2)
CN54 (SCH-6)

DV08 ASSY (1/2)
CN52 (SCH-6)

SCH-3



SACB ASSY (1/3)

SCH-3

WAVEFORMS AND VOLTAGE
• FTS AND CONT SECTION

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

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

| IC801(PAC002A) | IC802(LC78681E) | IC803(LA6510) | IC901(PAC003A) | CN106 | IC101 (PD0205D) |
|---|--|--------------------------------------|--|---|---|
| ②, ③ 1mS/Div. 16mVp-p AC mode | ② 0.1μS/Div. 4.3Vp-p AC mode(D.audio) | ① 2mS/Div. 1.8Vp-p DC mode | ② 0.2mS/Div. 74mVp-p DC mode | ①, ② 5mS/Div. 65mVp-p DC mode | ⑦ 1V/Div 5ms/Div Approx. 1.2V DC mode(Sidr err) |
| ⑦, ⑧ 1mS/Div. 67mVp-p DC mode | ③③ 10μS/Div. 4.2Vp-p AC mode(D.audio) | | ⑦ 0.2mS/Div. 74mVp-p DC mode | ③ 0.5mS/Div. 300mVp-p AC mode | |
| ⑨ 5mS/Div. 0.1Vp-p DC mode | ③⑤ 0.2μS/Div. 4.4Vp-p AC mode(D.audio) | | ①⑥ 0.2mS/Div. 0.61Vp-p DC mode | ④ 5mS/Div. 15Vp-p DC mode | |
| | ③⑥ 0.2μS/Div. 4.5Vp-p AC mode(D.audio) | | ④⑧ 50μS/Div. 6.2Vp-p DC mode | ⑤ 5mS/Div. 5.8Vp-p DC mode | |
| | ④③ 0.1μS/Div. 4.5Vp-p AC mode(D.audio) | | ⑤② 0.2μS/Div. 2.1Vp-p AC mode | ⑥ 5mS/Div. 3.5Vp-p DC mode | |
| | ⑤⑨ 0.1μS/Div. 2Vp-p AC mode(D.audio) | | ⑤⑦ 1mS/Div. 0.63Vp-p DC mode | ⑨ 5mS/Div. 1.25Vp-p DC mode | |
| | | | ⑤⑧ 0.2mS/Div. 0.32Vp-p DC mode | ①① 10mS/Div. 1.7Vp-p DC mode | |

WAVEFORMS OF AUDIO SECTION

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

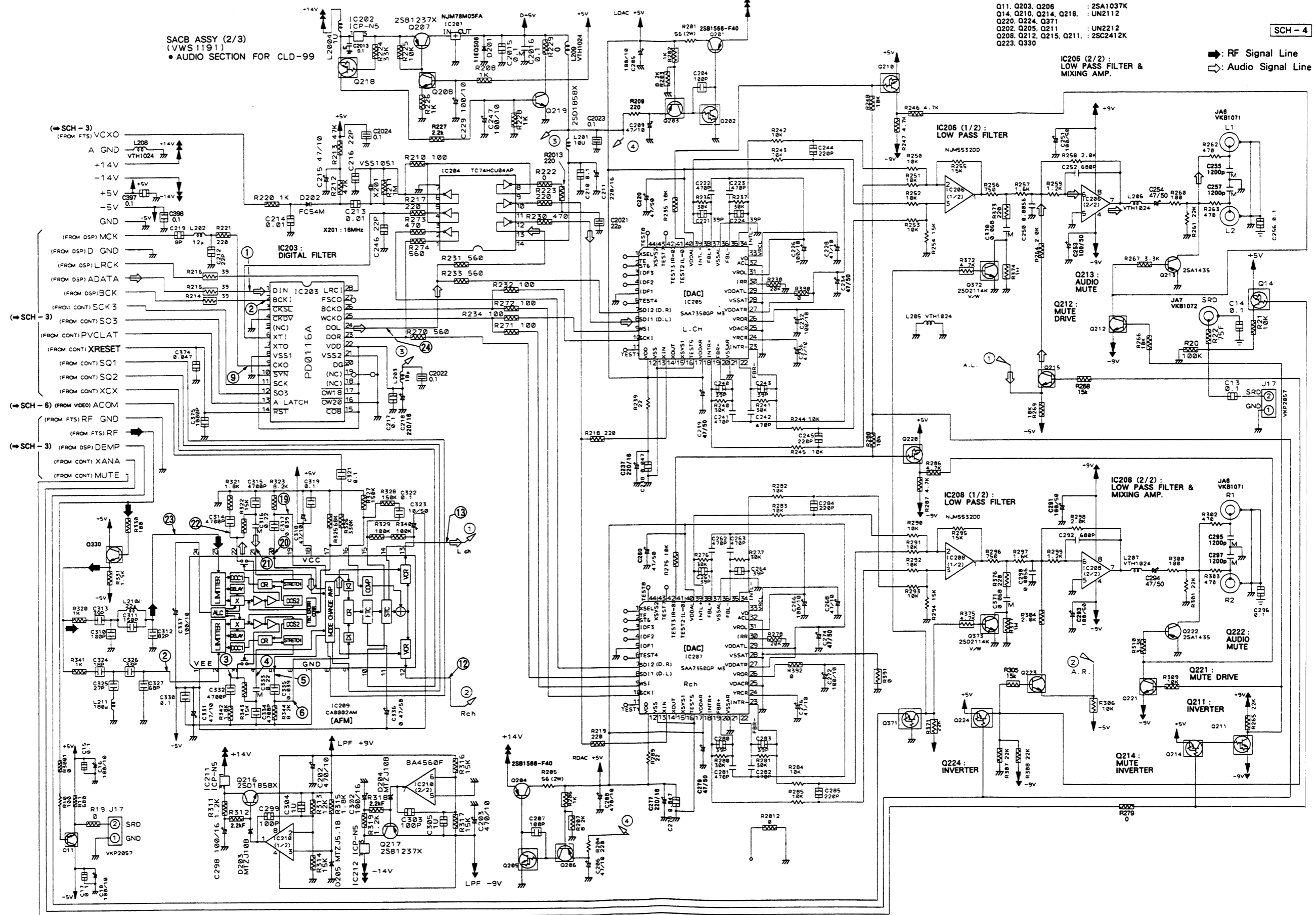
| IC209 (CA0002AM) | |
|---|---|
| <p>(2) H: 5ms/Div 100mVp-p</p> <p>AC mode</p> | <p>(21) H: 5ms/Div 1.1Vp-p</p> <p>DC mode AC mode</p> |
| <p>(3) H: 0.5ms/Div 1.5Vp-p</p> <p>AC mode</p> | <p>(22) H: 0.5ms/Div 1.35Vp-p</p> <p>AC mode</p> |
| <p>(4) H: 0.5ms/Div 1.1Vp-p</p> <p>DC mode</p> | <p>(23) H: 5ms/Div 100mVp-p</p> <p>AC mode</p> |
| <p>(5) H: 0.5ms/Div 1.1Vp-p</p> <p>DC mode</p> | |
| <p>(6) H: 0.5ms/Div 1Vp-p</p> <p>DC mode</p> | |
| IC203 (PD0116A) | |
| <p>(12) H: 0.5ms/Div 1.5Vp-p</p> <p>DC mode</p> | <p>(1) 2V/Div 50µs/Div 5Vp-p</p> <p>DC mode (D.audio)</p> |
| <p>(13) H: 0.5ms/Div 1.5Vp-p</p> <p>DC mode</p> | <p>(2) 2V/Div 20µs/Div 5Vp-p</p> <p>DC mode (POWER ON)</p> |
| <p>(19) H: 0.5ms/Div 1Vp-p</p> <p>DC mode</p> | <p>(9) 2V/Div 20µs/Div 5Vp-p</p> <p>DC mode (D.audio)</p> |
| <p>(20) H: 0.5ms/Div 1Vp-p</p> <p>DC mode</p> | <p>(24) 2V/Div 0.2ms/Div 1Vp-p 5Vp-p 1Vp-p</p> <p>DC mode (D.audio)</p> |

3.4 SACB ASSY(2/3 : AUDIO SECTION)(CLD-99/KU/CA)

- Q11, Q203, Q206 : 2SA1037K
- Q14, Q210, Q214, Q218 : UN2112
- Q220, Q224, Q371
- Q202, Q205, Q211 : UN2212
- Q208, Q212, Q215, Q211 : 2SC2412K
- Q223, Q330

SCH-4

➔ RF Signal Line
 ⇄ Audio Signal Line



SACB ASSY
 (2/3)
 (CLD-99/KU/CA)

SACB ASSY
 (2/3)
 (CLD-99/KU/CA)

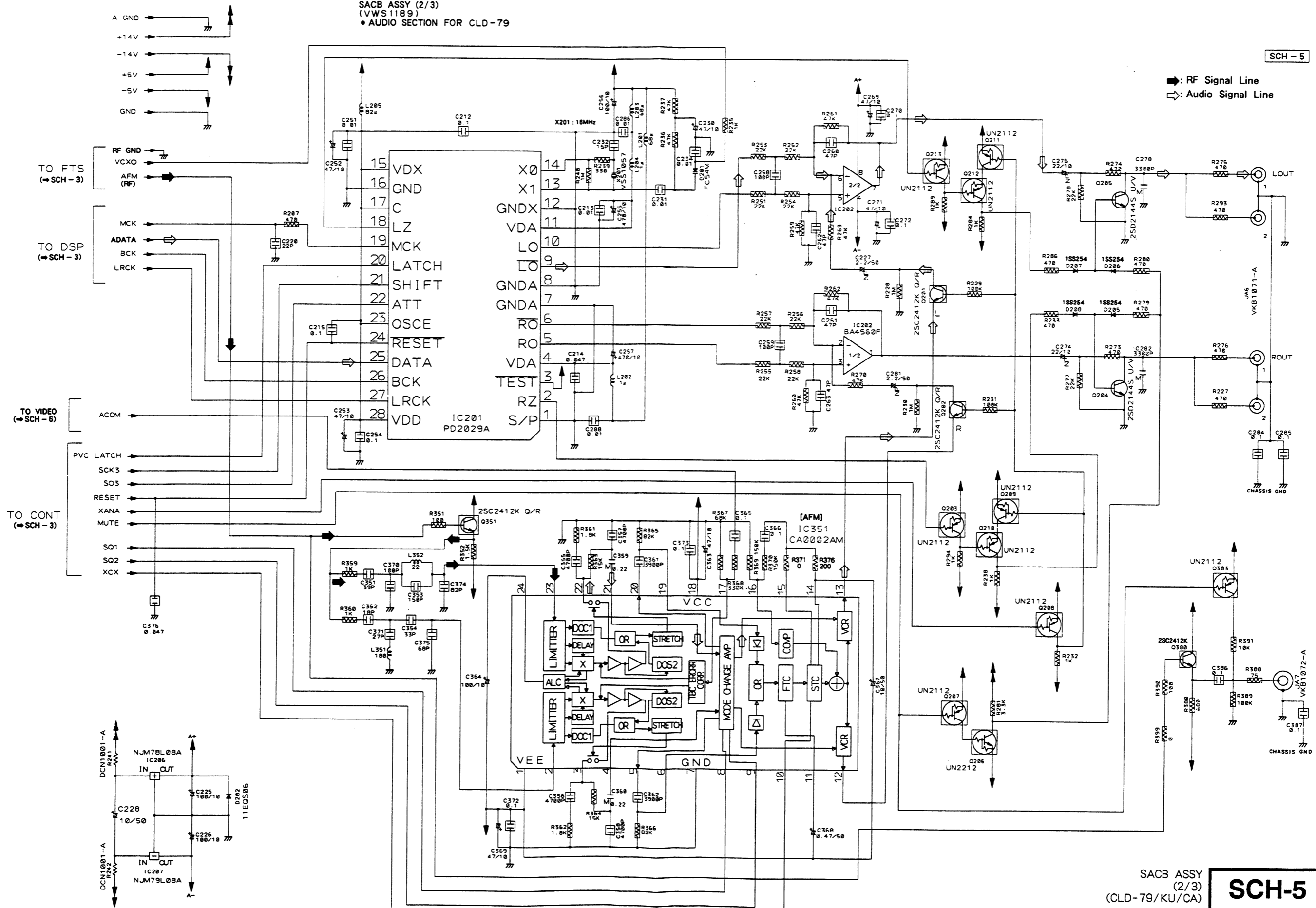
SCH-4

3.5 SACB ASSY(2/3 : AUDIO SECTION)(CLD-79/KU/CA)

SACB ASSY (2/3)
(VWS1189)
• AUDIO SECTION FOR CLD-79

SCH - 5

RF Signal Line
Audio Signal Line



SACB ASSY
(2/3)
(CLD-79/KU/CA)
SCH-5

SACB ASSY
(2/3)
(CLD-79/KU/CA)
SCH-5

FOR CLD-99/KU/CA

PCB-3

A

B

C

D

A

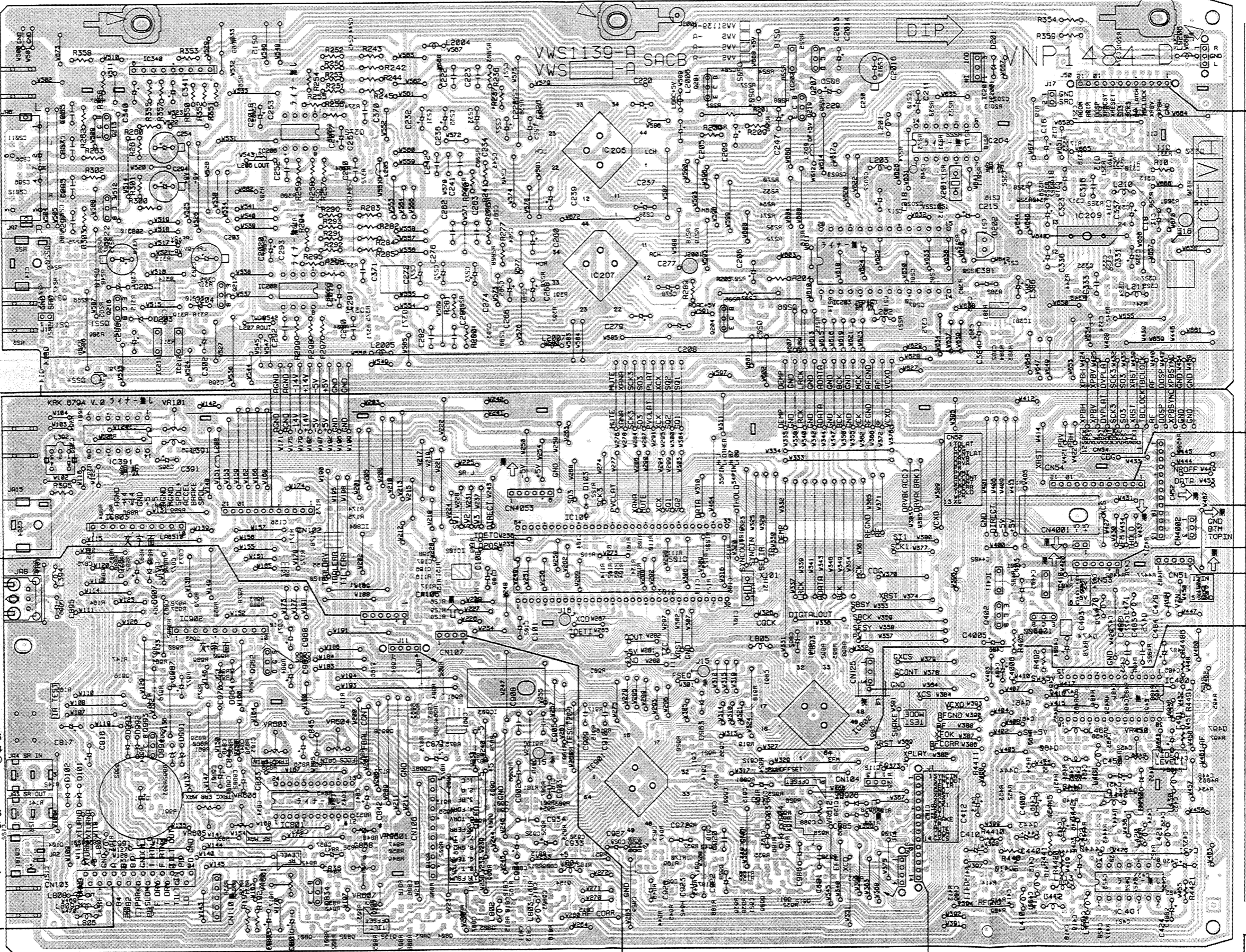
B

C

D

- 2150
- Q213
- STDIC206
- IC205
- 5550
- Q222
- 0550
- IC207
- 0150
- Q217
- IC208
- S150
- Q216
- N150
- 5750
- ISS0
- 4150
- IC211
- IC212
- 4550
- 410
- SYPS
- ASSY
- CN21
- IC391
- VR101
- 4080
- IC803
- LOMB
- ASSY
- J55
- 5010
- 5500
- IC902
- 5150
- 9662
- 5150
- 5000
- IC901
- 7050
- 4050
- IC801
- VR603
- 9993
- VR604
- VR450
- 5500
- 5150
- 5000
- 5000
- 5050
- VR605
- VR606
- VR612
- 7150
- VR607
- 4210
- 8050
- VR601
- CNNB
- ASSY
- CN203
- 5210
- 2080
- 1080

- 8150
- Q207
- IC201
- 8050
- Q201
- 8050
- 8050
- Q219
- DVDB
- ASSY
- CN50
- IC204
- 110
- 0550
- IC209
- IC203
- 8050
- Q204
- 8050
- DVDB
- ASSY
- CN54
- DVDB
- ASSY
- CN52
- DVDB
- ASSY
- CN53
- 5010
- DVDB
- ASSY
- CN51
- IC411
- 0410
- IC410
- 0410
- Q402
- Q401
- FG
- ASSY
- J64
- 8700
- 0040
- 8740
- IC400
- 1340
- IC802
- 7840
- 0340
- 4440
- 1440
- 8440
- 0440
- IC401
- 1140
- FLKY
- ASSY
- CN102



SACB ASSY

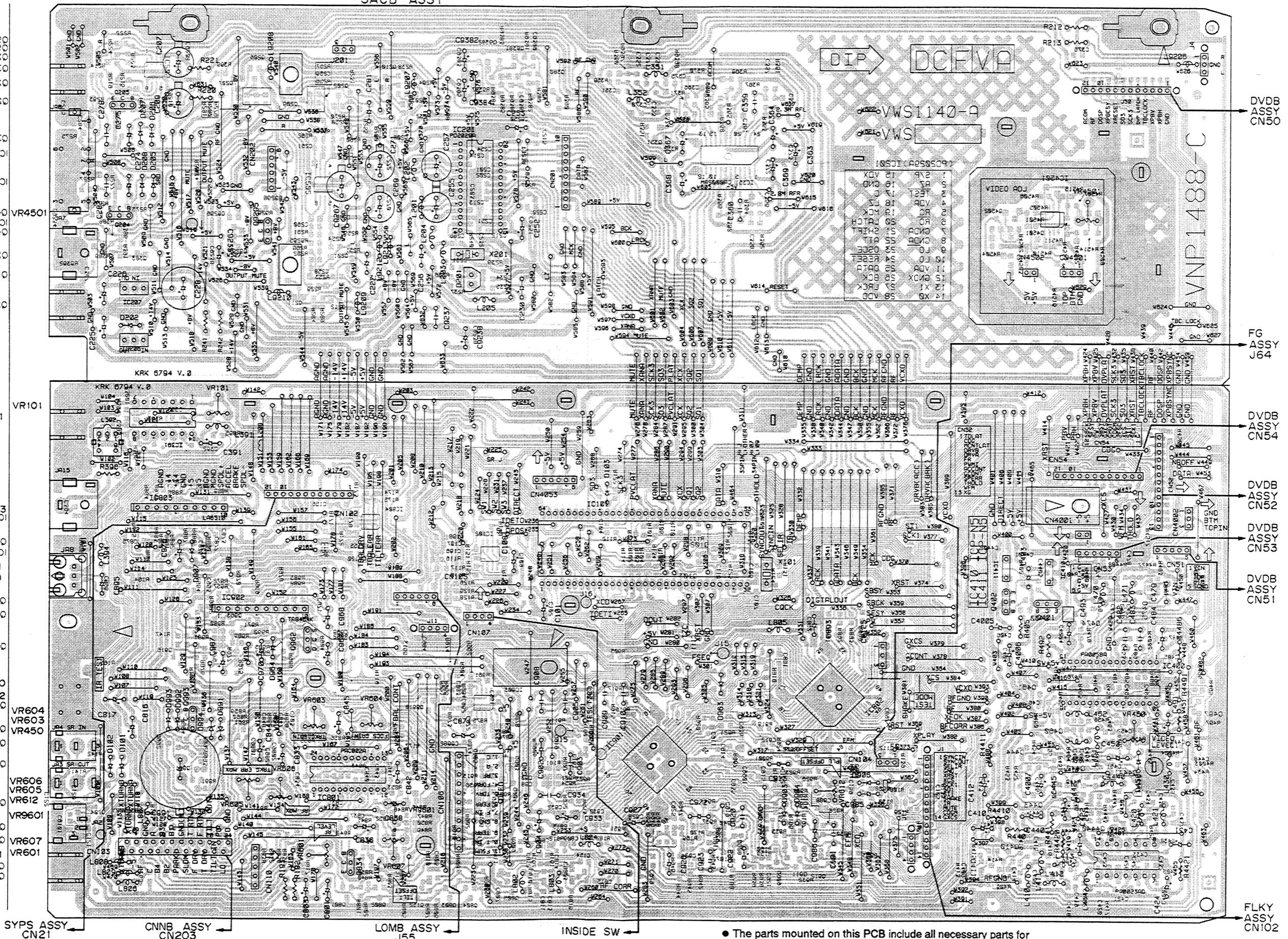
INSIDE SW

• The parts mounted on this PCB include all necessary parts for several destinations. For further information for respective destinations, be sure to check with the schematic diagram.

• This diagram is viewed from the mounted parts side.

SACB ASSY

- A
 - B
 - C
 - D
- | | | | |
|-------|-------|------|--------|
| 108 | 1080 | 1080 | 1080 |
| 80501 | 0150 | 0850 | |
| 7050 | 5050 | 5050 | |
| Q205 | 8050 | 8050 | |
| 8050 | 1850 | | |
| IC201 | 1250 | | |
| 5050 | | | |
| Q204 | 8850 | 5080 | VR4501 |
| 1080 | 1080 | 1080 | |
| 5850 | 7850 | 1050 | |
| IC207 | 5150 | 5150 | |
| IC206 | | | |
| IC391 | | | VR101 |
| IC803 | 5080 | | |
| IC101 | 5010 | 5010 | |
| IC411 | 5010 | | |
| IC410 | | | |
| Q402 | 5140 | | |
| Q401 | 5140 | | |
| Q400 | 5140 | | |
| Q962 | 5180 | 5180 | |
| 1840 | IC400 | | |
| 8180 | 5080 | 7880 | VR604 |
| Q993 | 0340 | | VR603 |
| 5880 | 5180 | 4440 | VR450 |
| 5080 | 5180 | 1440 | |
| 5880 | IC901 | | |
| 5080 | 5180 | 1440 | |
| 5880 | IC801 | | |
| 4080 | 5080 | 5440 | VR606 |
| 4080 | 5080 | 5440 | VR605 |
| 4080 | 5080 | 5440 | VR612 |
| 4080 | 5080 | 5440 | VR601 |
| 7180 | 8080 | 0140 | VR607 |
| 7180 | 8080 | 0140 | VR601 |
| Q854 | 1180 | 1140 | |
| Q880 | 1180 | 1180 | |
| S210 | | | |
| Q880 | 1080 | | |



• This diagram is viewed from the mounted parts side.

• The parts mounted on this PCB include all necessary parts for several destinations. For further information for respective destinations, be sure to check with the schematic diagram.

3.6 SACB ASSY(3/3), DVDB ASSY(1/2)(VIDEO SECTION)

WAVEFORMS OF VIDEO SECTION

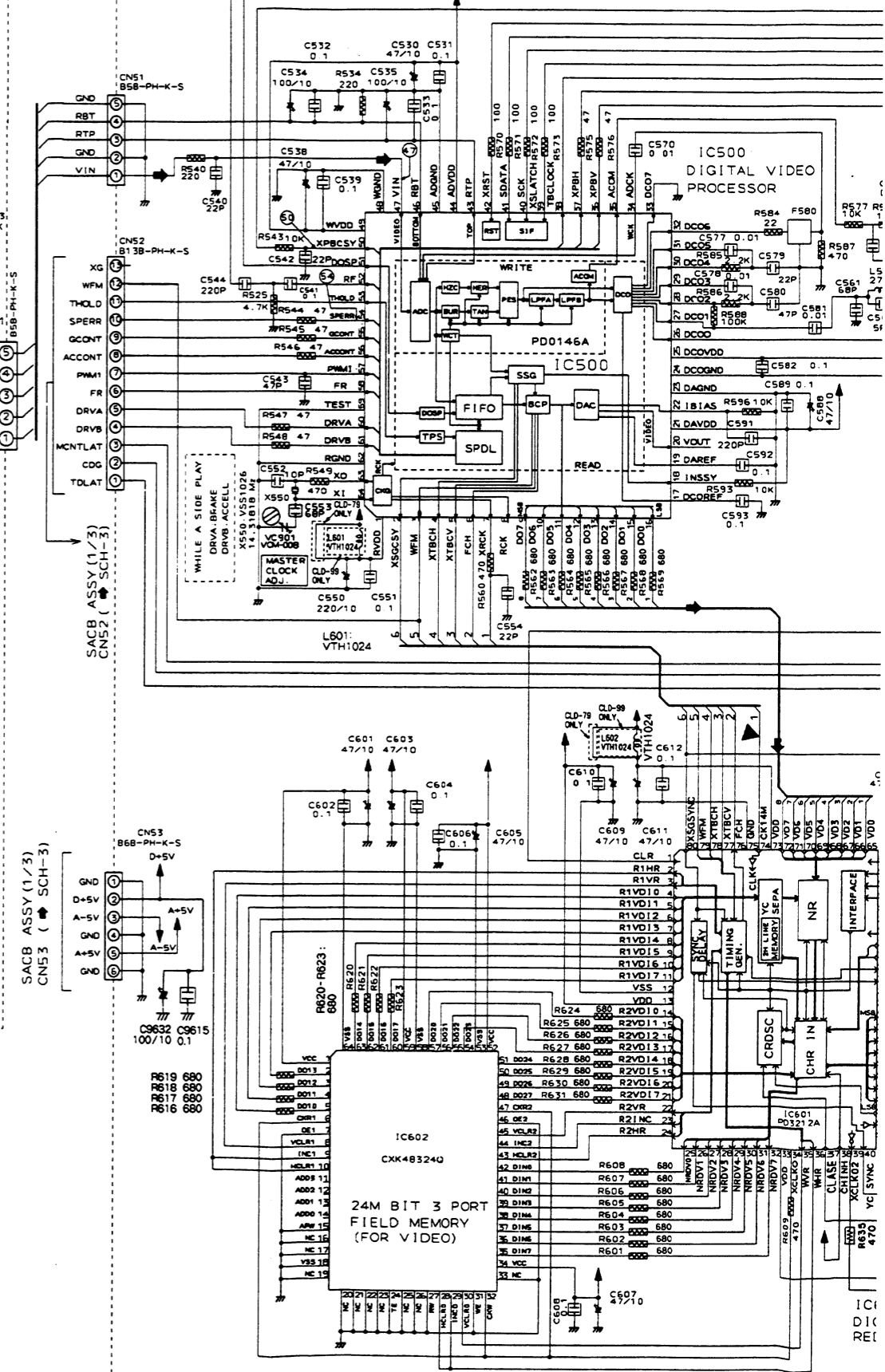
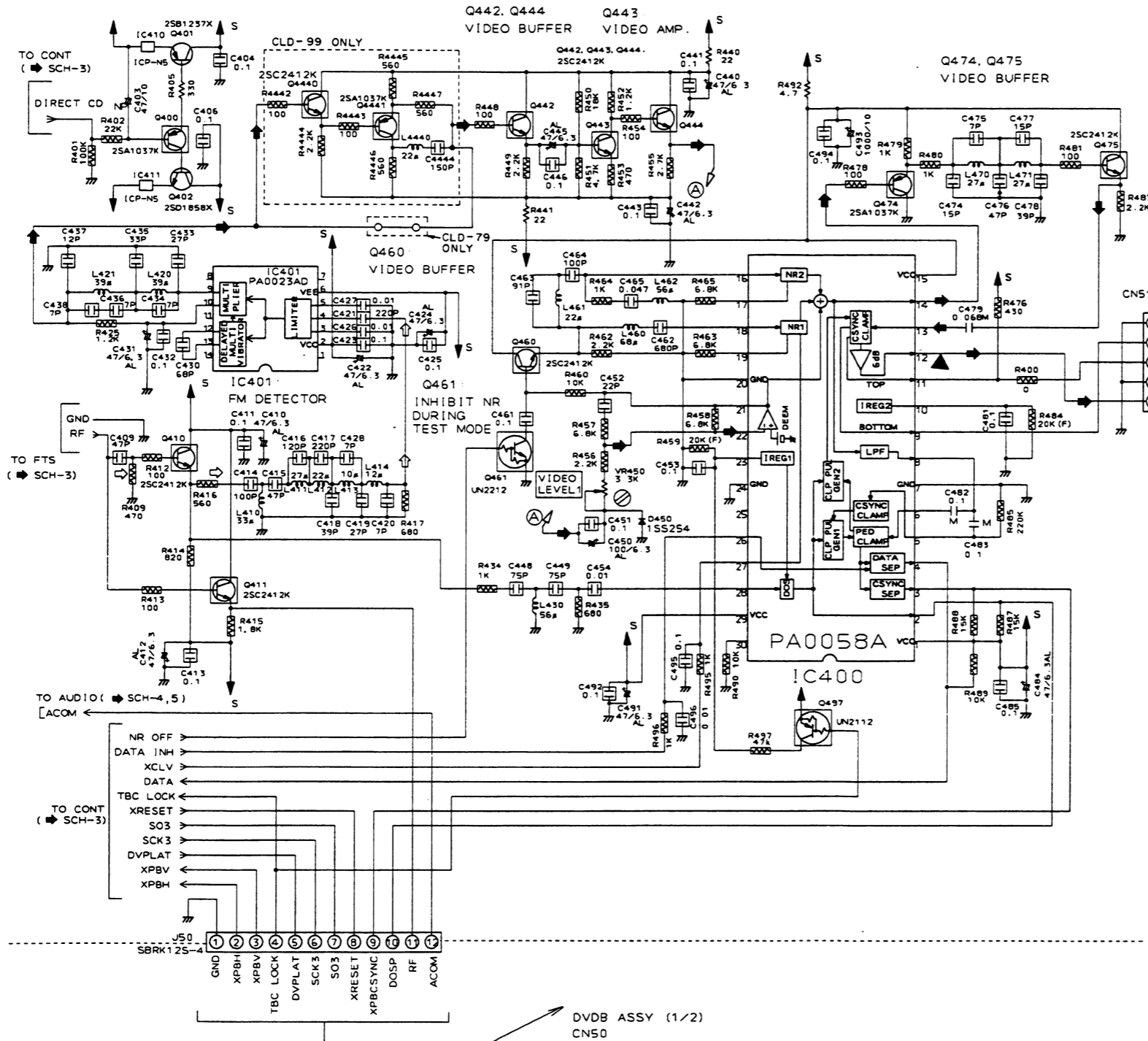
Note: (No.) in the table correspond to the pin number.

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

| | |
|-----------------|--|
| IC400(PA0058A) | |
| ⑭ | 20μS/Div. 0.9Vp-p AC mode(Color bars) |
| ⑰ | 20μS/Div. 0.9Vp-p AC mode(Color bars) |
| IC401(PA0023AD) | |
| ⑩ | 20μS/Div. 0.24Vp-p AC mode(Color bars) |
| IC500(PD0146A) | |
| ⑦ | 20μS/Div. 1.7Vp-p AC mode(Color bars) |
| ⑤⑩ | 50μS/Div. 5.2Vp-p AC mode[Color bars] [Still] |
| ⑤⑭ | 50μS/Div. 2.5Vp-p AC mode[Color bars] [Still] |

SACB ASSY (3/3) VWS1191:CLD-99
(VIDEO SECTION) VWS1189:CLD-79

DVDB ASSY (1/2) VWV1420:CLD-
VWV1421:CLD-



SCH-6 SACB ASSY (3/3),
DVDB ASSY (1/2)

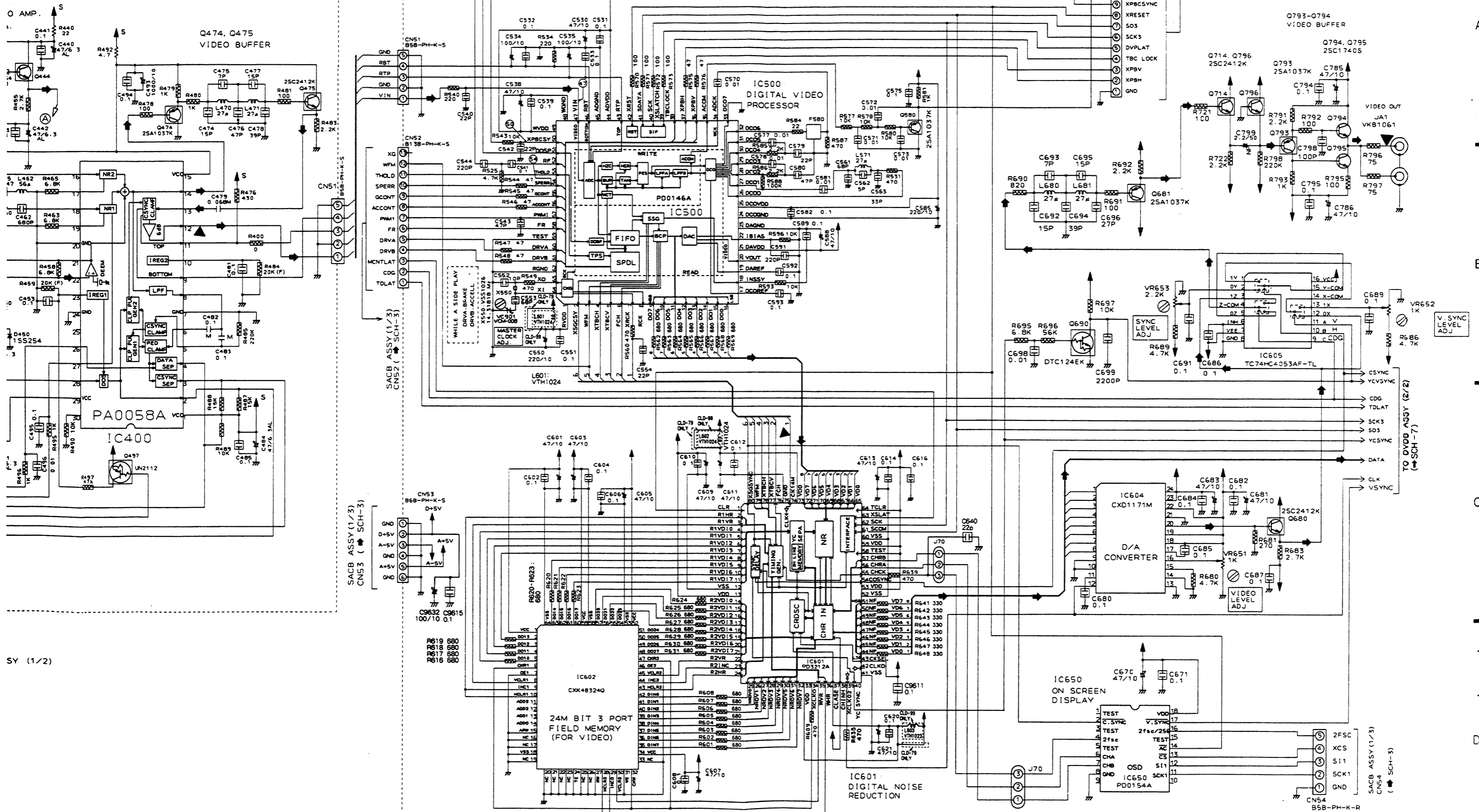
ICI
DIK
REI

VWS1191:CLD-99
VWS1189:CLD-79

DVDB ASSY (1/2) VWV1420:CLD-99
VWV1421:CLD-79

SACB ASSY (3/3)
J50

RF SIGNAL LINE
VIDEO SIGNAL LINE



SY (1/2)

SACB ASSY (3/3),
DVDB ASSY (1/2)

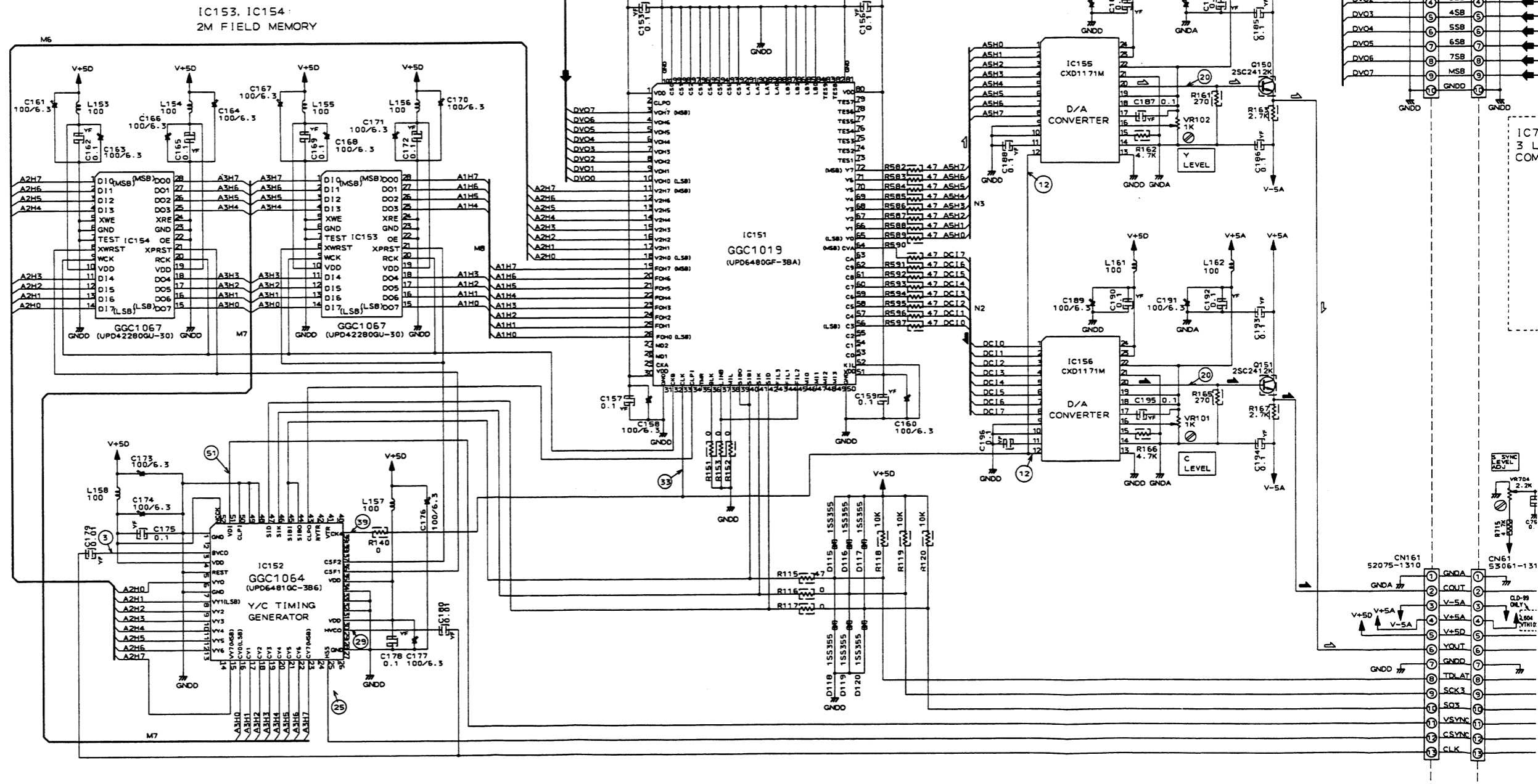
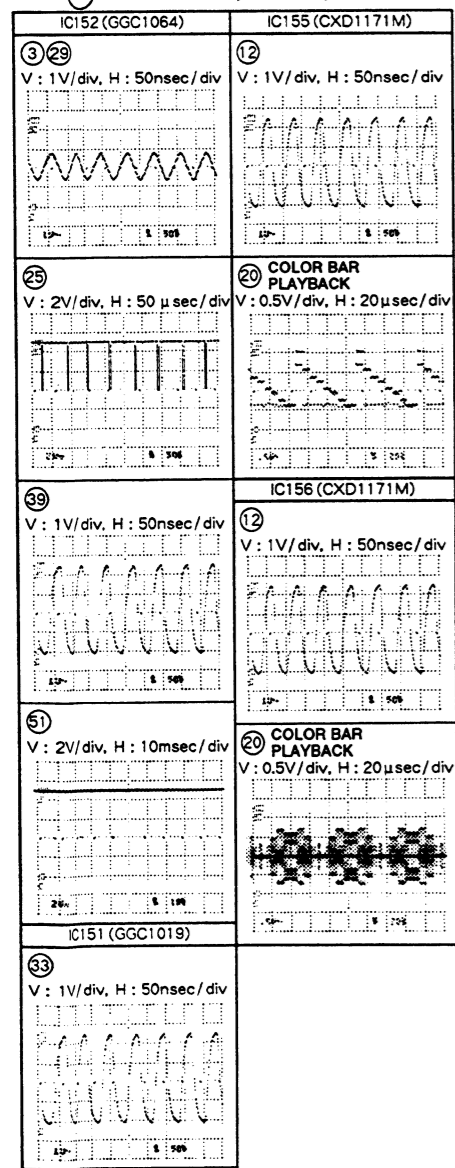
SCH-6

3.7 DVDB ASSY(2/2), TDYC ASSY

TDYC ASSY (CLD-99 ONLY)
VVV1377

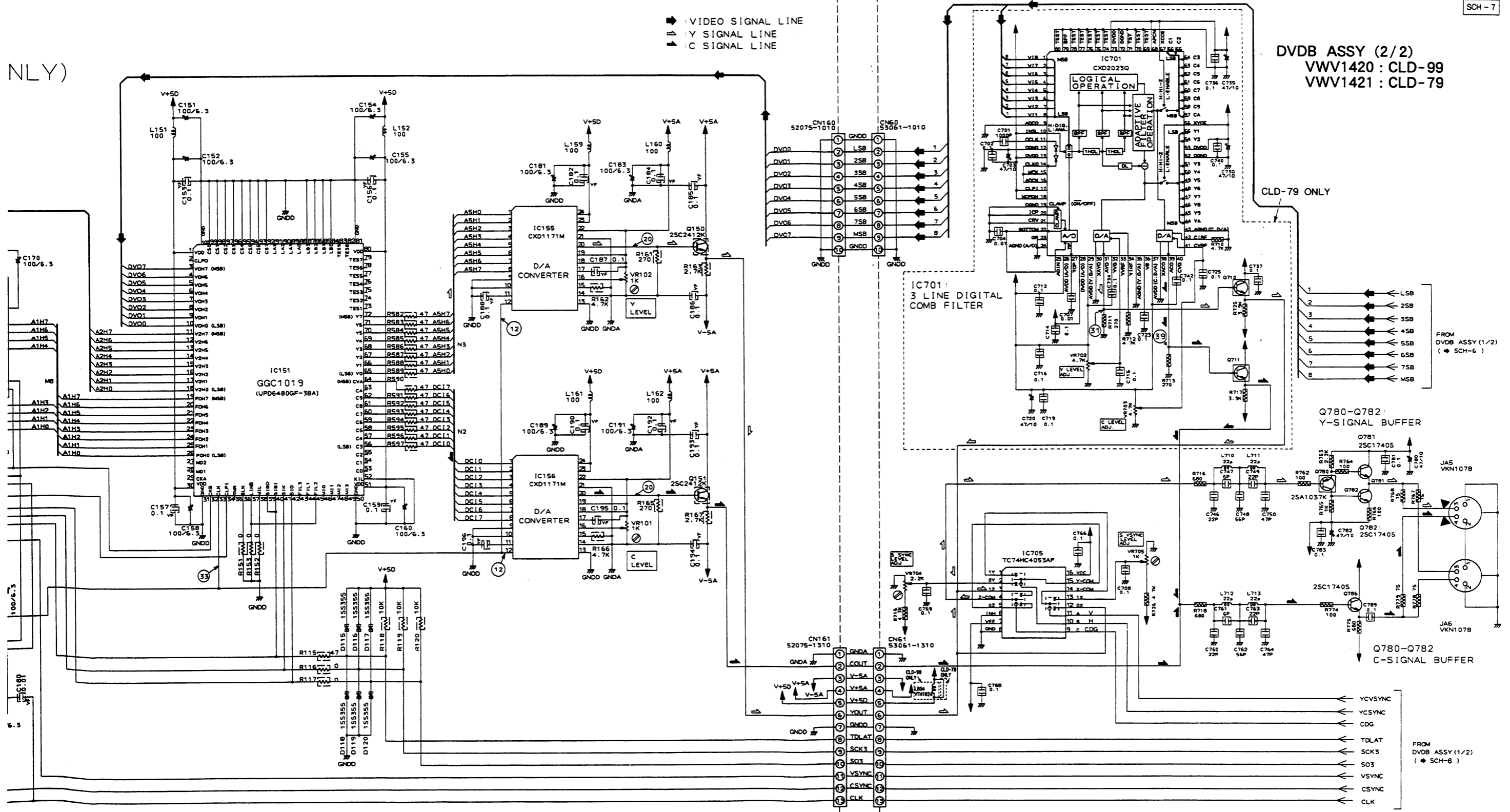
WAVEFORMS OF TDYC ASSY

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



SCH-7 DVDB ASSY
(2/2),
TDYC ASSY

NLY)



SCH-7

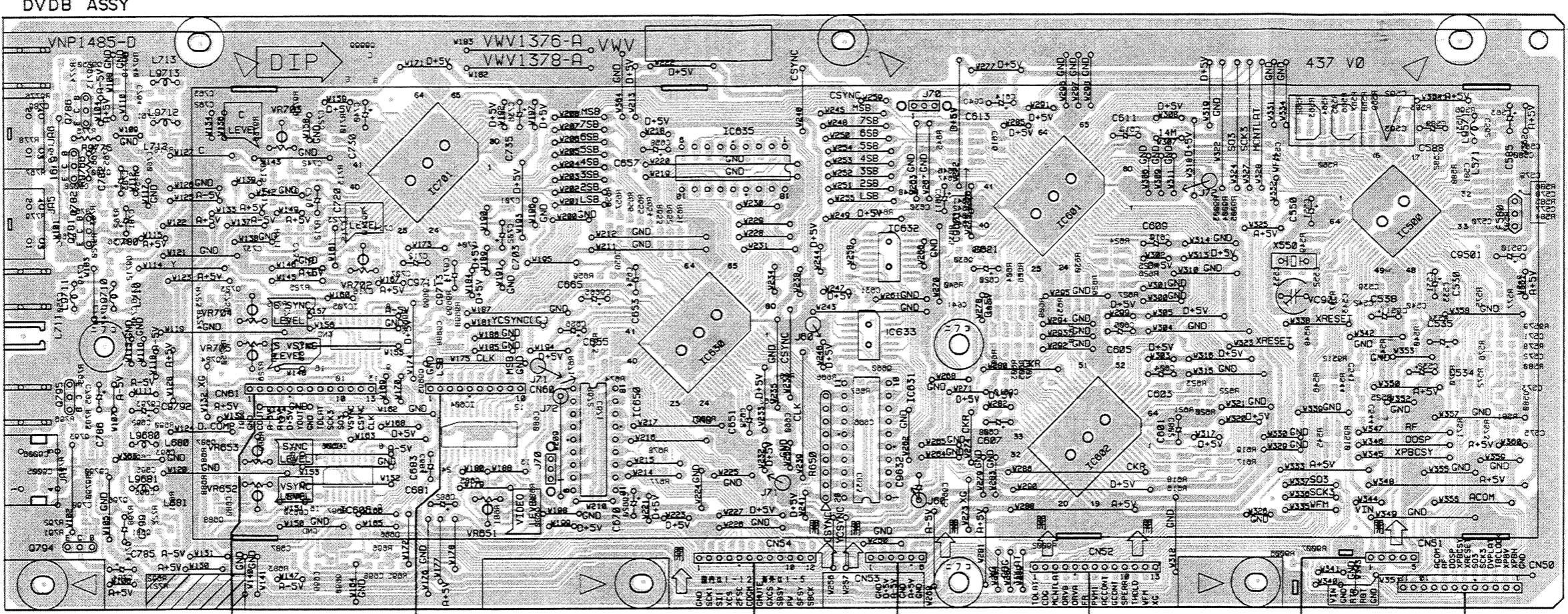
DVDB ASSY (2/2)
VWV1420 : CLD-99
VWV1421 : CLD-79

A
B
C
D

DVDB ASSY (2/2), TDYC ASSY

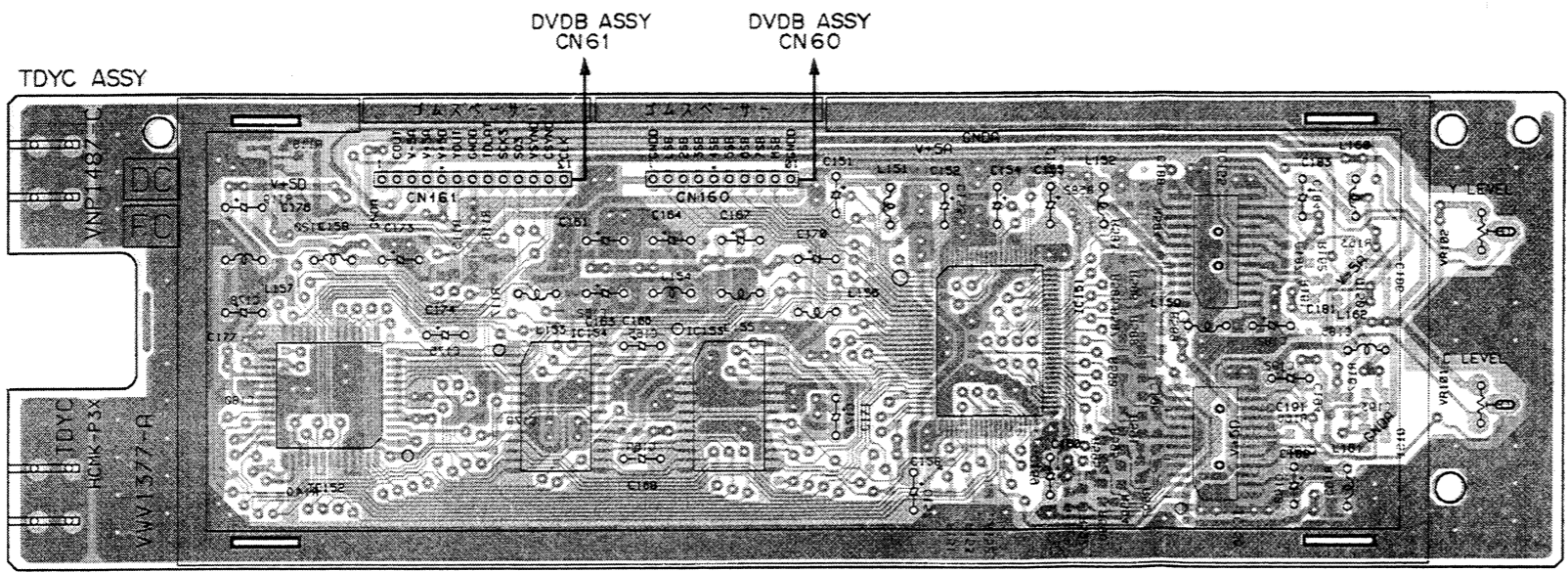
SCH-7

Q786 Q87D ASTO ESTO HTO ONO BOTDI
Q782 Q781 82TD T880 208DI
ESTO Q794 Q795 188D 888D 088D
IC 701 408DI 088D IC 650 IC 630 IC 635 IC 633 IC 631 0E8D IC 601 IC 602 IC 500 088D
VR704 VR653 VR703 VR702 VR651 TC901
VR705 VR652



TDYC ASSY CN 161 TDYC ASSY CN 160 SACB ASSY CN 54 SACB ASSY CN 53 SACB ASSY CN 52 SACB ASSY CN 51 SACB ASSY J50

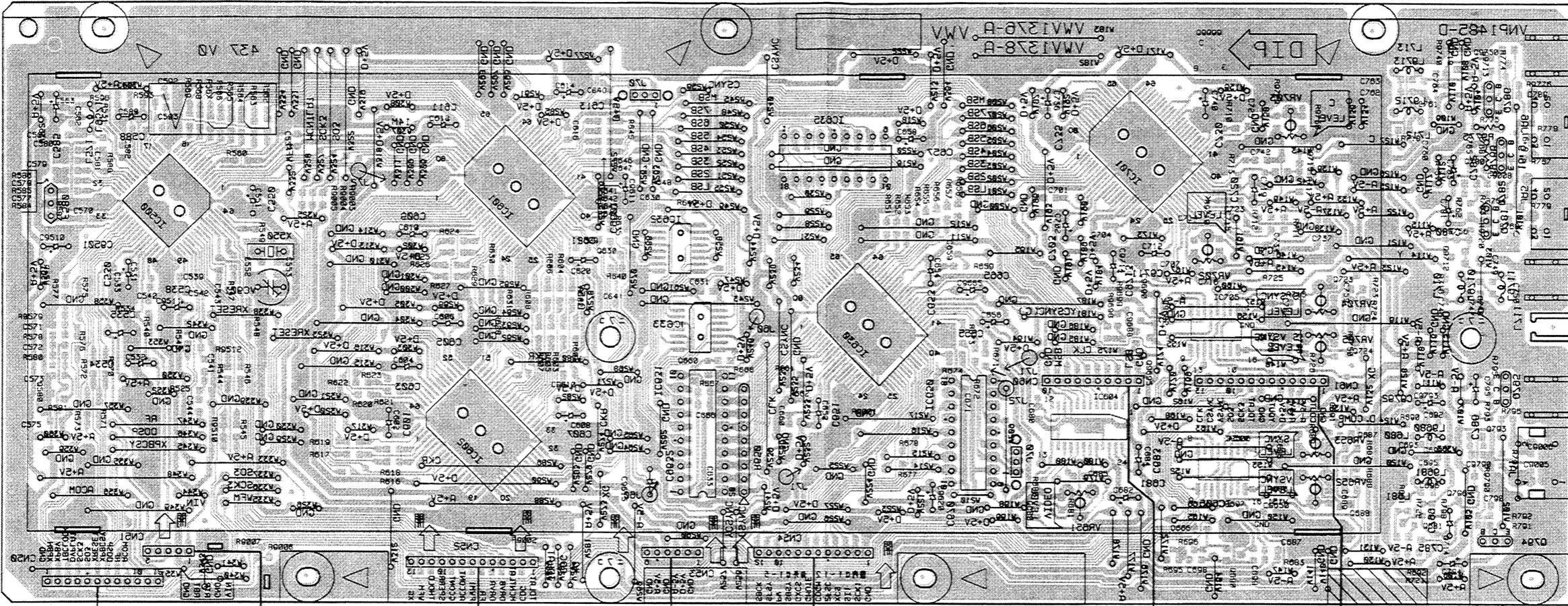
- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations. For further information for respective destinations, be sure to check with the schematic diagram.



IC152 IC154 IC153 IC151 IC155 IC156 0E1D 1E1D
VR102 VR101

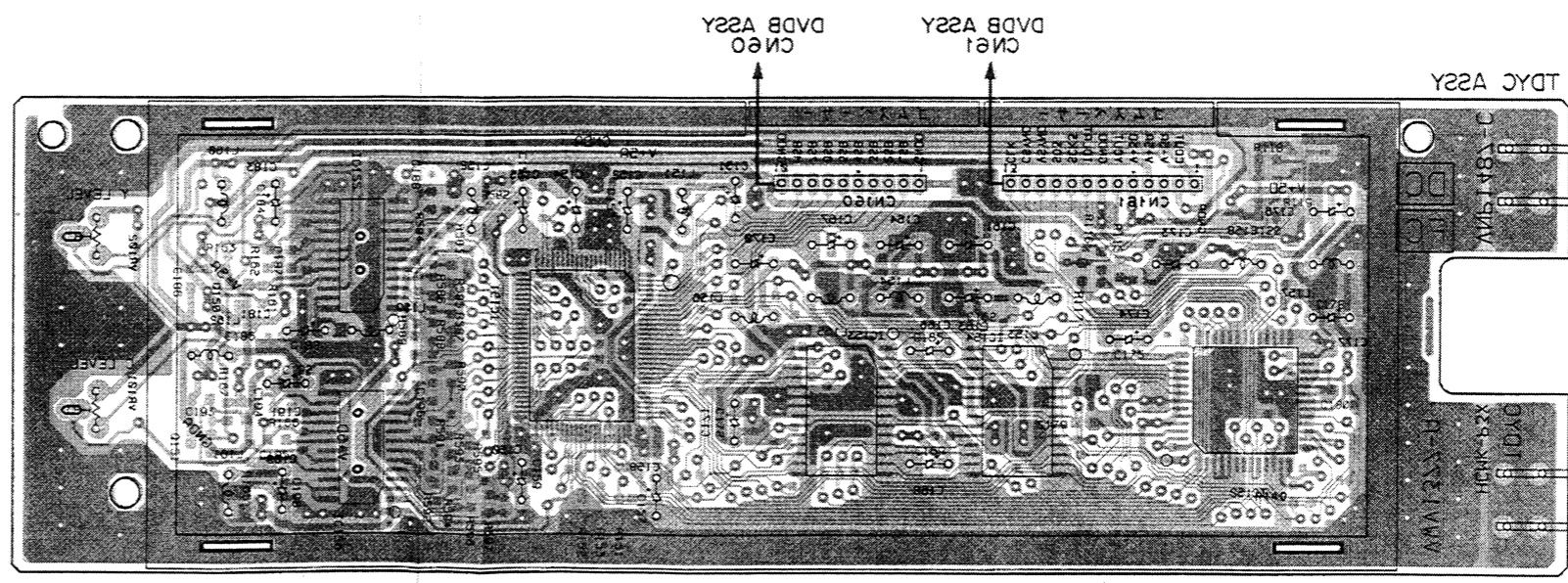
- This diagram is viewed from the pink colored foil side.
- This PCB is double sided.

IC125 IC124 IC123 IC122 IC121 IC120 IC119 IC118 IC117 IC116 IC115 IC114 IC113 IC112 IC111 IC110 IC109 IC108 IC107 IC106 IC105 IC104 IC103 IC102 IC101 IC99 IC98 IC97 IC96 IC95 IC94 IC93 IC92 IC91 IC90 IC89 IC88 IC87 IC86 IC85 IC84 IC83 IC82 IC81 IC80 IC79 IC78 IC77 IC76 IC75 IC74 IC73 IC72 IC71 IC70 IC69 IC68 IC67 IC66 IC65 IC64 IC63 IC62 IC61 IC60 IC59 IC58 IC57 IC56 IC55 IC54 IC53 IC52 IC51 IC50 IC49 IC48 IC47 IC46 IC45 IC44 IC43 IC42 IC41 IC40 IC39 IC38 IC37 IC36 IC35 IC34 IC33 IC32 IC31 IC30 IC29 IC28 IC27 IC26 IC25 IC24 IC23 IC22 IC21 IC20 IC19 IC18 IC17 IC16 IC15 IC14 IC13 IC12 IC11 IC10 IC9 IC8 IC7 IC6 IC5 IC4 IC3 IC2 IC1 IC0



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• This diagram is viewed from the foil side.



• This diagram is viewed from the gray colored foil side.
• This PCB is double sided.

IC125 IC124 IC123 IC122 IC121 IC120 IC119 IC118 IC117 IC116 IC115 IC114 IC113 IC112 IC111 IC110 IC109 IC108 IC107 IC106 IC105 IC104 IC103 IC102 IC101 IC99 IC98 IC97 IC96 IC95 IC94 IC93 IC92 IC91 IC90 IC89 IC88 IC87 IC86 IC85 IC84 IC83 IC82 IC81 IC80 IC79 IC78 IC77 IC76 IC75 IC74 IC73 IC72 IC71 IC70 IC69 IC68 IC67 IC66 IC65 IC64 IC63 IC62 IC61 IC60 IC59 IC58 IC57 IC56 IC55 IC54 IC53 IC52 IC51 IC50 IC49 IC48 IC47 IC46 IC45 IC44 IC43 IC42 IC41 IC40 IC39 IC38 IC37 IC36 IC35 IC34 IC33 IC32 IC31 IC30 IC29 IC28 IC27 IC26 IC25 IC24 IC23 IC22 IC21 IC20 IC19 IC18 IC17 IC16 IC15 IC14 IC13 IC12 IC11 IC10 IC9 IC8 IC7 IC6 IC5 IC4 IC3 IC2 IC1 IC0

4. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- 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 \rightarrow $56 \times 10^1 \rightarrow 561$ RD1/8PM $\boxed{561}J$
 47k Ω \rightarrow $47 \times 10^3 \rightarrow 473$ RD1/4PS $\boxed{473}J$
 0.5 Ω \rightarrow 0R5 RN2H $\boxed{0R5}K$
 1 Ω \rightarrow 010 RS1P $\boxed{010}K$

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

5.62k Ω \rightarrow $562 \times 10^1 \rightarrow 5621$ RN1/4PC $\boxed{5621}F$

| Mark | No. | Description | Part No. |
|---------------------------|-----|-------------------------------|----------|
| LIST OF ASSEMBLIES | | | |
| Δ | | SYPS ASSY | VWR1200 |
| | | SACB ASSY (CLD-99/KU/CA) | VWS1191 |
| | | SACB ASSY (CLD-79/KU/CA) | VWS1189 |
| | | DVDB ASSY (CLD-99/KU/CA) | VWV1420 |
| | | DVDB ASSY (CLD-79/KU/CA) | VWV1421 |
| | | TDYC ASSY (CLD-99/KU/CA ONLY) | VWV1377 |
| NSP | | FLKB ASSY (CLD-99/KU/CA) | VWM1582 |
| | | └ FLKY ASSY (CLD-99/KU/CA) | VWG1644 |
| NSP | | └ PONS ASSY | VWG1571 |
| NSP | | FLKB ASSY (CLD-79/KU/CA) | VWM1583 |
| | | └ FLKY ASSY (CLD-79/KU/CA) | VWG1645 |
| NSP | | └ PONS ASSY | VWG1571 |
| NSP | | MACB ASSY | VWM1420 |
| NSP | | └ CNNB ASSY | VWG1469 |
| NSP | | └ LOMB ASSY | VWG1470 |
| NSP | | └ LOSB ASSY | VWG1471 |
| NSP | | └ FG ASSY | VWG1472 |

SYPS ASSY

SEMICONDUCTORS

| | |
|-------------------------|-----------|
| IC21 | UPC358C |
| Q27, Q30, Q32, Q34, Q36 | 2SA933S |
| Q20, Q22 | 2SB1134 |
| Q24 | 2SB1331 |
| Q25, Q29, Q31 | 2SC1740S |
| Q21, Q23 | 2SD1667 |
| Q26 | 2SD2007 |
| Q35 | DTA114ES |
| Q28 | DTA114TS |
| Q33 | DTC114ES |
| Q37, Q38 | DTC114TS |
| D25-D27, D30, D31 | AG01Z-VO |
| D28 | MTZJ39B |
| D29 | MTZJ7. 5A |
| D23 | RK46 |

| Mark | No. | Description | Part No. |
|------------------|----------|-----------------|----------|
| | D24 | | S2LA20 |
| | D21, D22 | | S3L20U |
| | THY20 | | 3P4J |
| COIL | | | |
| | L20 | (10 μ H) | VTL1008 |
| RESISTORS | | | |
| | R22-R25 | (47 Ω) | VCN1033 |
| | R56 | (15 Ω) | VCN1034 |
| | R61 | (4.7 Ω) | VCN1035 |

SACB ASSY (CLD-99/KU/CA)

SEMICONDUCTORS

| | |
|-----------------------------------|-------------|
| IC102 | BA10393F |
| IC210, IC804, IC903 | BA4560F |
| IC209 | CA0002AM |
| IC202, IC211, IC212, IC410, IC411 | ICP-N5 |
| IC803 | LA6510 |
| IC802 | LC78681E |
| IC206, IC208 | NJM5532DD |
| IC201 | NJM78M05FA |
| IC401 | PA0023AD |
| IC400 | PA0058A |
| IC801 | PAC002A |
| IC901 | PAC003A |
| IC203 | PD0116A |
| IC101 | PD0205D |
| IC205, IC207 | SAA7350GP |
| IC902 | TA8464K |
| IC204, IC391 | TC74HCU04AP |
| Q102, Q11, Q154, Q203, Q206 | 2SA1037K |
| Q400, Q4441, Q474, Q802, Q912 | 2SA1037K |
| Q963, Q992 | 2SA1037K |
| Q213, Q222 | 2SA1435 |
| Q207, Q217, Q401, Q834 | 2SB1237X |
| Q201, Q204 | 2SB1566-F40 |
| Q993 | 2SC1740S |
| Q208, Q212, Q215, Q221, Q223 | 2SC2412K |

| Mark | No. | Description | Part No. | Mark | No. | Description | Part No. |
|-------------------|--|-------------|--|------|--|-------------|--|
| | Q330, Q410, Q411, Q442-Q444 Q4440, Q460, Q475, Q801, Q805 Q903-Q905, Q907-Q909, Q911 Q913, Q917, Q919 Q152, Q803, Q804 | | 2SC2412K 2SC2412K 2SC2412K 2SC2412K 2SC3802K | | C327, C430, C806 C462 C448, C449 C312 C463 | | CCSQCH680J50 CCSQCH681J50 CCSQCH750J50 CCSQCH820J50 CCSQCH910J50 |
| | Q216, Q219, Q402 Q372, Q373 Q962 Q14, Q210, Q214, Q218, Q220 Q224, Q371, Q497, Q916, Q991 | | 2SD1858X 2SD2114K 2SK184 UN2112 UN2112 | | C450 C410, C412, C422, C424, C431 C440, C442, C445, C484, C491 C871 C985 | | CEAL101M6R3 CEAL470M6R3 CEAL470M6R3 CEANP100M25 CEANP101M10 |
| | Q103, Q202, Q205, Q211, Q461 D201 D102, D103, D450, D903, D904 D906, D907, D963, D964 D992, D993 | | UN2212 11EQS06 1SS254 1SS254 1SS254 | | C972 C926 C403, C838 C986 C904 | | CEANP220M10 CEANP2R2M50 CEANP470M10 CEANPR22M50 CEAS010M50 |
| | D202 D203, D204, D991 D205 D994 | | FC54M MTZJ10B MTZJ5. 1B MTZJ6. 2A | | C323, C902 C16, C18, C229, C247, C337 C816, C817, C833, C844, C893 C927, C933 C298, C302 | | CEAS100M50 CEAS101M10 CEAS101M10 CEAS101M10 CEAS101M16 |
| COILS | | | | | | | |
| | L201, L203, L413, L805 L394, L808, L809 L202, L391, L414 L802, L803 L211, L804 | | LAU100J LAU101J LAU120J LAU121J LAU181J | | C493 C922, C976, C987 C391, C895 C101, C108, C215, C318, C331 C801, C803, C836, C842 | | CEAS102M10 CEAS220M25 CEAS221M6R3 CEAS470M10 CEAS470M10 |
| | L2004 L210, L412, L4440, L461 L806, L807 L411, L470, L471 L410 | | LAU1R0J LAU220J LAU220J LAU270J LAU330J | | C205, C208 C845 C336, C913 C970 C967, C968 | | CEAS471M10 CEAS4R7M50 CEASR47M50 CEHAQ010M50 CEHAQ100M50 |
| | L420, L421 L430, L462 L460 L205-L209 L392 | | LAU390J LAU560J LAU680J VTH1024 VTL1042 | | C211, C218, C237, C277 C206, C209, C226, C228, C232 C236, C266, C268, C272, C276 C251, C253, C291, C293 C202, C203 | | CEYA221M16 CEYA470M10 CEYA470M10 CEZA101M50 CEZA471M25 |
| CAPACITORS | | | | | | | |
| | C420, C428, C434, C436, C438 C475 C219 C159, C393, C809, C811 C163, C204, C207, C299, C303 | | CCSQCH070D50 CCSQCH070D50 CCSQCH080D50 CCSQCH100D50 CCSQCH101J50 | | C2013, C2016 C255, C257, C295, C297 C222, C223, C241, C242 C262, C263, C281, C282 C250, C290 | | CFTXA104J50 CFTXA122J50 CFTXA471J50 CFTXA471J50 CFTXA562J50 |
| | C310, C414, C464 C437 C416, C814, C846, C848 C474, C477 C161, C311, C4444, C810 | | CCSQCH101J50 CCSQCH120J50 CCSQCH121J50 CCSQCH150J50 CCSQCH151J50 | | C252, C292 C370, C371 C191 C482, C483, C908, C910, C920 C923 | | CFTXA681J50 CFTXA683J50 CFTYA103J50 CFTYA104J50 CFTYA124J50 |
| | C324 C2021, C212, C216, C246, C452 C162, C244, C245, C284, C285 C417, C421, C812, C935 C325, C419, C433, C931 | | CCSQCH180J50 CCSQCH220J50 CCSQCH221J50 CCSQCH221J50 CCSQCH270J50 | | C316, C333, C905 C479 C111, C375, C891, C897, C914 C936, C969 C110, C907 | | CFTYA224J50 CFTYA683J50 CKSQYB102K50 CKSQYB102K50 CKSQYB222K50 |
| | C106, C107, C326, C435, C813 C221, C224, C240, C243, C261 C264, C280, C283, C313, C418 C478 C112, C409, C415, C476, C963 | | CCSQCH330J50 CCSQCH390J50 CCSQCH390J50 CCSQCH390J50 CCSQCH470J50 | | C919 C317, C335 C314, C315, C332, C334, C888 C105, C122, C156-C158 C213, C214, C394, C395 | | CKSQYB332K50 CKSQYB393K50 CKSQYB472K50 CKSQYF103Z50 CKSQYF103Z50 |

| Mark | No. | Description | Part No. |
|------|--|---|--|
| | C426, C427, C454, C496, C807 C834, C835, C843, C872, C876 C894, C929, C937, C961, C962 C102, C104, C109, C13-C15 C151, C155, C17, C196-C198 | | CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50 CKSQYF104Z25 CKSQYF104Z25 |
| | C2015, C2022-C2024, C210, C217 C256, C296, C319, C321, C322 C330, C392, C397, C398, C404 C406, C411, C413, C423, C425 C432, C441, C443, C446, C451 | | CKSQYF104Z25 CKSQYF104Z25 CKSQYF104Z25 CKSQYF104Z25 CKSQYF104Z25 CKSQYF104Z25 |
| | C453, C461, C481, C485, C492 C494, C495, C802, C804 C831, C832, C840, C841 C873, C874, C892, C896, C901 C915, C928, C932, C981, C988 | | CKSQYF104Z25 CKSQYF104Z25 CKSQYF104Z25 CKSQYF104Z25 CKSQYF104Z25 CKSQYF104Z25 |
| | C921 C837, C930 C103, C465, C808, C815, C847 C875, C877, C911, C912 C924, C925, C964, C971 | | CKSQYF223Z50 CKSQYF333Z25 CKSQYF473Z25 CKSQYF473Z25 CKSQYF473Z25 |
| | C983, C984 C238, C278, C374 C304, C305 C934 C903, C909 | | CKSQYF473Z25 CKSQYF473Z50 CKSYF105Z16 CQMA122J50 CQMA222J50 |
| | C991 C234, C254, C274, C294 C220, C239, C260, C279 | (1F/5.5V) (47 μF/50V) (47 μF/25V) | VCH1039 VCH1148 VCH1149 |

RESISTORS

| | |
|---|---|
| R10, R260, R300 R242-R245, R250-R253 R282-R285, R290-R293 R259, R299 R254, R255, R294, R295 | RD1/6PM101J RD1/6PM103J RD1/6PM103J RD1/6PM122J RD1/6PM153J |
| R257, R297 R258, R298 R192, R193, R239, R289 R440, R441 R204, R209 | RD1/6PM162J RD1/6PM202J RD1/6PM220J RD1/6PM220J RD1/6PM221J |
| R261, R301 R236, R237, R240, R241 R276, R277, R280, R281 R405 R262, R263, R302, R303 | RD1/6PM223J RD1/6PM303J RD1/6PM303J RD1/6PM331J RD1/6PM471J |
| R492 R256, R296 R396 R22 R173, R174 | RD1/6PM4R7J RD1/6PM751J RD1/6PM910J RN1/10SC750D RN1/10SE103D |
| R459, R484 R312, R318 R171, R172, R175, R178 R201, R205 VR606 | RN1/10SE203D RN1/10SE222D RN1/10SE333D RS2LMF560J VRTB6VS153 |
| VR601 VR450 VR605 VR101 VR603 | VRTB6VS222 VRTB6VS332 VRTB6VS333 VRTB6VS471 VRTB6VS472 |

| Mark | No. | Description | Part No. |
|------|---------------------|-----------------|--------------------------|
| | VR604, VR607, VR612 | Other Resistors | VRTB6VS473 RS1/10S□□□ |

OTHERS

| | | |
|----------|---|--|
| | 4P CABLE HOLDER 12P CABLE HOLDER | 51048-0400 51048-1200 |
| CN106 | 11P TOP POST | B11P-SHF-1AA |
| CN52 | KR CONNECTOR | B13B-PH-K-S |
| CN104 | KR CONNECTOR 3P | B3B-PH-K-S |
| CN125 | 3P TOP POST | B3P-SHF-1AA |
| CN107 | KR CONNECTOR | B4B-PH-K-S |
| CN110 | 5P TOP POST | B5B-EH |
| CN51 | KR CONNECTOR | B5B-PH-K-S |
| CN54 | KR CONNECTOR | B5B-PH-K-R |
| CN53 | KR CONNECTOR | B6B-PH-K-S |
| J11 | 2mm PITCH JUMPER 4P | D20PDD0425E |
| JA8 | OPTICAL OUTPUT MODULE | GP1F32T |
| JA3, JA4 | REMOTE CONTROL JACK | RKN1004 |
| CN105 | 2mm PITCH JUMPER 6P | SBRK06S-4 |
| CN103 | 24P CONNECTOR PCB BINDER | SLEM24S-2 VEF1040 |
| JA15 | COAXIAL PIN JACK | VKB1052 |
| JA6 | 4P PIN JACK | VKB1071 |
| JA7 | 1P PIN JACK | VKB1072 |
| | CONDUCTIVE PLATE B IC HEAT SINK SCREW TERMINAL EARTH PLATE | VNE1194 VNE1921 VNE1948 VNF-091 |
| X101 | CERAMIC RESONATOR(9.00MHz) | VSS1040 |
| X201 | CRYSTAL RESONATOR(16MHz) | VSS1051 |

SACB ASSY(CLD-79/KU/CA)

SEMICONDUCTORS

| | |
|---|---|
| IC102 IC202, IC804, IC903 IC351 IC410, IC411 IC803 | BA10393F BA4560F CA0002AM ICP-N5 LA6510 |
| IC802 IC206 IC207 IC401 IC400 | LC78681E NJM78L08A NJM79L08A PA0023AD PA0058A |
| IC801 IC901 IC101 IC201 IC902 | PAC002A PAC003A PDO205D PD2029A TA8464K |
| IC391 Q102, Q154, Q400, Q474, Q802 Q912, Q963, Q992 Q401, Q834 Q993 | TC74HCU04AP 2SA1037K 2SA1037K 2SB1237X 2SC1740S |
| Q201, Q202, Q351, Q380 Q410, Q411, Q442-Q444, Q460 Q475, Q801, Q805, Q903-Q905 Q907-Q909, Q911, Q913, Q917 Q919 | 2SC2412K 2SC2412K 2SC2412K 2SC2412K 2SC2412K |

| Mark | No. | Description | Part No. | Mark | No. | Description | Part No. |
|-------------------|------------------------------|-------------|--------------|------|------------------------------|-------------|--------------|
| | Q152, Q803, Q804 | | 2SC3802K | | C871 | | CEANP100M25 |
| | Q402 | | 2SD1858X | | C985 | | CEANP101M10 |
| | Q204, Q205 | | 2SD2144S | | C274, C275, C972 | | CEANP220M10 |
| | Q962 | | 2SK184 | | C227, C281, C926 | | CEANP2R2M50 |
| | Q203, Q207-Q213, Q383, Q497 | | UN2112 | | C403, C838 | | CEANP470M10 |
| | Q916, Q991 | | UN2112 | | C986 | | CEANPR22M50 |
| | Q103, Q206, Q461 | | UN2212 | | C904 | | CEAS010M50 |
| | D202 | | 11EQS06 | | C228, C367, C902 | | CEAS100M50 |
| | D102, D103, D205-D208, D450 | | 1SS254 | | C225, C226, C256, C364 | | CEAS101M10 |
| | D903, D904, D906, D907 | | 1SS254 | | C816, C817, C833, C844, C893 | | CEAS101M10 |
| | D963, D964, D992, D993 | | 1SS254 | | C927, C933 | | CEAS101M10 |
| | D201 | | FC54M | | C493 | | CEAS102M10 |
| | D991 | | MTZJ10B | | C922, C976, C987 | | CEAS220M25 |
| | D994 | | MTZJ6. 2A | | C391, C895 | | CEAS221M6R3 |
| | | | | | C101, C108, C230, C252, C253 | | CEAS470M10 |
| COILS | | | | | | | |
| | L202, L204 | | LAU010J | | C269, C271, C363, C369, C801 | | CEAS470M10 |
| | L413, L805 | | LAU100J | | C803, C836, C842 | | CEAS470M10 |
| | L394 | | LAU101J | | C255, C257 | | CEAS471M10 |
| | L391, L414 | | LAU120J | | C845 | | CEAS47M50 |
| | L802, L803 | | LAU121J | | C368, C913 | | CEASR47M50 |
| | L351, L804 | | LAU181J | | C970 | | CEHAQ010M50 |
| | L352, L412, L461, L806, L807 | | LAU220J | | C967, C968 | | CEHAQ100M50 |
| | L411, L470, L471 | | LAU270J | | C278, C282 | | CFTXA332J50 |
| | L410 | | LAU330J | | C191 | | CFTYA103J50 |
| | L420, L421 | | LAU390J | | C482, C483, C908, C910, C920 | | CFTYA104J50 |
| | L430, L462 | | LAU560J | | C923 | | CFTYA124J50 |
| | L201, L203, L460 | | LAU680J | | C359, C360, C905 | | CFTYA224J50 |
| | L205 | | LAU820J | | C479 | | CFTYA683J50 |
| | L392 | | VTL1042 | | C111, C891, C897, C914, C936 | | CKSQYB102K50 |
| | | | | | C969 | | CKSQYB102K50 |
| CAPACITORS | | | | | | | |
| | C420, C428, C434, C436, C438 | | CCSQCH070D50 | | C110, C907 | | CKSQYB222K50 |
| | C475 | | CCSQCH070D50 | | C919 | | CKSQYB332K50 |
| | C159, C393, C809, C811 | | CCSQCH100D50 | | C361, C362 | | CKSQYB392K50 |
| | C163, C258, C259, C370, C414 | | CCSQCH101J50 | | C355-C358, C888 | | CKSQYB472K50 |
| | C464 | | CCSQCH101J50 | | C105, C122, C156-C158, C213 | | CKSQYF103Z50 |
| | C437 | | CCSQCH120J50 | | C231, C234, C251, C286, C288 | | CKSQYF103Z50 |
| | C416, C814, C846, C848 | | CCSQCH121J50 | | C394, C395, C426, C427, C454 | | CKSQYF103Z50 |
| | C232, C474, C477 | | CCSQCH150J50 | | C496, C807, C834, C835, C843 | | CKSQYF103Z50 |
| | C161, C353, C810 | | CCSQCH151J50 | | C872, C876, C894, C929, C937 | | CKSQYF103Z50 |
| | C352 | | CCSQCH180J50 | | C961, C962 | | CKSQYF103Z50 |
| | C220, C452 | | CCSQCH220J50 | | C102, C104, C109, C151, C155 | | CKSQYF104Z25 |
| | C162, C417, C421, C812, C935 | | CCSQCH221J50 | | C196-C198, C212, C215, C254 | | CKSQYF104Z25 |
| | C371, C419, C433, C931 | | CCSQCH270J50 | | C270, C272, C284, C285 | | CKSQYF104Z25 |
| | C106, C107, C354, C435, C813 | | CCSQCH330J50 | | C365, C366, C372, C373 | | CKSQYF104Z25 |
| | C351, C418, C478 | | CCSQCH390J50 | | C386, C387, C392, C404, C406 | | CKSQYF104Z25 |
| | C112, C260-C263, C409, C415 | | CCSQCH470J50 | | C411, C413, C423, C425, C432 | | CKSQYF104Z25 |
| | C476, C963 | | CCSQCH470J50 | | C441, C443, C446, C451, C453 | | CKSQYF104Z25 |
| | C375, C430, C806 | | CCSQCH680J50 | | C461, C481, C485, C492 | | CKSQYF104Z25 |
| | C462 | | CCSQCH681J50 | | C494, C495, C802, C804 | | CKSQYF104Z25 |
| | C448, C449 | | CCSQCH750J50 | | C831, C832, C840, C841 | | CKSQYF104Z25 |
| | C374 | | CCSQCH820J50 | | C873, C874, C892, C896, C901 | | CKSQYF104Z25 |
| | C463 | | CCSQCH910J50 | | C915, C928, C932, C981, C988 | | CKSQYF104Z25 |
| | C450 | | CEAL101M6R3 | | C921 | | CKSQYF223Z50 |
| | C410, C412, C422, C424, C431 | | CEAL470M6R3 | | C837, C930 | | CKSQYF333Z25 |
| | C440, C442, C445, C484, C491 | | CEAL470M6R3 | | C103, C214, C465, C808, C815 | | CKSQYF473Z25 |

| Mark | No. | Description | Part No. |
|------|------------------------------|-------------|--------------|
| | C847, C875, C877, C911, C912 | | CKSQYF473Z25 |
| | C924, C925, C964, C971 | | CKSQYF473Z25 |
| | C983, C984 | | CKSQYF473Z25 |
| | C376 | | CKSQYF473Z50 |
| | C934 | | QMA122J50 |
| | C903, C909 | | QMA222J50 |
| | C991 (1F/5.5V) | | VCH1039 |

RESISTORS

| | |
|------------------------|--------------|
| R241, R242 (4.7Ω) | DCN1001 |
| R192, R193, R440, R441 | RD1/6PM220J |
| R405 | RD1/6PM331J |
| R492 | RD1/6PM4R7J |
| R396 | RD1/6PM910J |
| R388 | RN1/10SC750D |
| R173, R174 | RN1/10SE103D |
| R459, R484 | RN1/10SE203D |
| R171, R172, R175, R178 | RN1/10SE333D |
| R259-R262 | RN1/10SE473D |
| VR606 | VRTB6VS153 |
| VR601 | VRTB6VS222 |
| VR450 | VRTB6VS332 |
| VR605 | VRTB6VS333 |
| VR101 | VRTB6VS471 |
| VR603 | VRTB6VS472 |
| VR604, VR607, VR612 | VRTB6VS473 |
| Other Resistors | RS1/10S□□□J |

OTHERS

| | | |
|----------|----------------------------|--------------|
| | 4P CABLE HOLDER | 51048-0400 |
| | 12P CABLE HOLDER | 51048-1200 |
| CN106 | 11P TOP POST | B11P-SHF-1AA |
| CN52 | KR CONNECTOR | B13B-PH-K-S |
| CN104 | KR CONNECTOR 3P | B3B-PH-K-S |
| CN125 | 3P TOP POST | B3P-SHF-1AA |
| CN107 | KR CONNECTOR | B4B-PH-K-S |
| CN110 | 5P TOP POST | B5B-EH-S |
| CN51 | KR CONNECTOR | B5B-PH-K-S |
| CN54 | KR CONNECTOR | B5B-PH-K-R |
| CN53 | KR CONNECTOR | B6B-PH-K-S |
| J11 | 2mm PITCH JUMPER 4P | D20PDD0425E |
| JA8 | OPTICAL OUTPUT MODULE | GP1F32T |
| JA3, JA4 | REMOTE CONTROL JACK | RKN1004 |
| CN105 | 2mm PITCH JUMPER 6P | SBRK06S-4 |
| CN103 | 24P CONNECTOR | SLEM24S-2 |
| | PCB BINDER | VEF1040 |
| JA15 | COAXIAL PIN JACK | VKB1052 |
| JA6 | 4P PIN JACK | VKB1071 |
| JA7 | 1P PIN JACK | VKB1072 |
| | IC HEAT SINK | VNE1921 |
| | SCREW TERMINAL | VNE1948 |
| | EARTH PLATE | VNF-091 |
| X101 | CERAMIC RESONATOR(9.00MHz) | VSS1040 |
| X201 | CRYSTAL RESONATOR(16MHz) | VSS1057 |

Mark No. Description Part No.
DVDB ASSY(CLD-99/KU/CA)

SEMICONDUCTORS

| | |
|------------------------------|--------------|
| IC604 | CXD1171M |
| IC602 | CKX48324Q |
| IC500 | PD0146A |
| IC650 | PD0154A |
| IC601 | PD3212A |
| IC605, IC705 | TC74HC4053AF |
| Q580, Q681, Q780, Q793 | 2SA1037K |
| Q781, Q782, Q786, Q794, Q795 | 2SC1740S |
| Q680, Q714, Q796 | 2SC2412K |
| Q690 | UN2212 |

COILS AND FILTER

| | |
|------------------|---------|
| L710-L713 | LFA220J |
| L571, L680, L681 | LFA270K |
| F580 | VTF1054 |
| L601-L604 | VTH1024 |

CAPACITORS

| | |
|------------------------------|--------------|
| C562 | CCSQCHO50C50 |
| C747, C761 | CCSQCHO60D50 |
| C693 | CCSQCHO70D50 |
| C552 | CCSQCH100D50 |
| C798 | CCSQCH101J50 |
| C692, C695 | CCSQCH150J50 |
| C540, C542, C554, C579, C640 | CCSQCH220J50 |
| C746, C749, C760, C763 | CCSQCH220J50 |
| C544, C591 | CCSQCH221J50 |
| C696 | CCSQCH270J50 |
| C563 | CCSQCH330J50 |
| C694 | CCSQCH390J50 |
| C543, C580, C750, C764 | CCSQCH470J50 |
| C748, C762 | CCSQCH560J50 |
| C553, C561 | CCSQCH680J50 |
| C799 | CEANP2R2M50 |
| C534, C535, C9632 | CEAS101M10 |
| C550, C585 | CEAS221M10 |
| C530, C538, C588, C601, C603 | CEAS470M10 |
| C605, C607, C609, C611, C613 | CEAS470M10 |
| C621, C670, C681, C683, C780 | CEAS470M10 |
| C782, C785, C786 | CEAS470M10 |
| C699 | CKSQYB222K50 |
| C570-C573, C577, C578, C581 | CKSQYF103Z50 |
| C698 | CKSQYF103Z50 |
| C531-C533, C539, C541, C551 | CKSQYF104Z25 |
| C575, C582, C589, C592, C593 | CKSQYF104Z25 |
| C602, C604, C606, C608, C610 | CKSQYF104Z25 |
| C612, C614, C616, C620, C671 | CKSQYF104Z25 |
| C680, C682, C684-C687, C689 | CKSQYF104Z25 |
| C691, C708, C759, C766, C768 | CKSQYF104Z25 |
| C781, C783, C789, C794, C795 | CKSQYF104Z25 |
| C9611, C9615 | CKSQYF104Z25 |
| VC901 (20pF) | VCM-008 |

RESISTORS

| | |
|---------------------|-------------|
| VR651, VR652, VR705 | VRTB6VS102 |
| VR653, VR704 | VRTB6VS222 |
| Other Resistors | RS1/10S□□□J |

| Mark | No. | Description | Part No. |
|---------------|-----|------------------------------|-------------|
| OTHERS | | | |
| | | 3P CABLE HOLDER | 51048-0300 |
| CN52 | | KR CONNECTOR | B13B-PH-K-S |
| CN51 | | KR CONNECTOR | B5B-PH-K-S |
| CN54 | | KR CONNECTOR | B5B-PH-K-R |
| CN53 | | KR CONNECTOR | B6B-PH-K-S |
| | | PCB BINDER | VEF1040 |
| JAI | | 2P PIN JACK | VKB1061 |
| | | 4P MINI DIN SOCKET | VKN1078 |
| | | SCREW TERMINAL | VNE1948 |
| | | SHIELD CASE A | VNE1956 |
| | | SHIELD CASE B | VNE1957 |
| | | SHIELD CASE C | VNE1958 |
| X550 | | CRYSTAL RESONATOR(14. 31MHz) | VSS1026 |

DVDB ASSY(CLD- 79/KU/CA)

SEMICONDUCTORS

| | |
|------------------------------|--------------|
| IC604 | CXD1171M |
| IC701 | CXD2023Q |
| IC602 | CXK48324Q |
| IC500 | PD0146A |
| IC650 | PD0154A |
| IC601 | PD3212A |
| IC605, IC705 | TC74HC4053AF |
| Q580, Q681, Q780, Q793 | 2SA1037K |
| Q781, Q782, Q786, Q794, Q795 | 2SC1740S |
| Q680, Q710, Q711, Q714, Q796 | 2SC2412K |
| Q690 | UN2212 |

COILS AND FILTER

| | |
|------------------|---------|
| L710-L713 | LFA220J |
| L571, L680, L681 | LFA270K |
| F580 | VTF1054 |

CAPACITORS

| | |
|------------------------------|--------------|
| C562 | CCSQCH050C50 |
| C747, C761 | CCSQCH060D50 |
| C693 | CCSQCH070D50 |
| C552 | CCSQCH100D50 |
| C798 | CCSQCH101J50 |
| C692, C695 | CCSQCH150J50 |
| C542, C554, C579, C640, C746 | CCSQCH220J50 |
| C749, C760, C763 | CCSQCH220J50 |
| C544, C591 | CCSQCH221J50 |
| C696 | CCSQCH270J50 |
| C563 | CCSQCH330J50 |
| C694 | CCSQCH390J50 |
| C540 | CCSQCH430J50 |
| C543, C580, C750, C764 | CCSQCH470J50 |
| C748, C762 | CCSQCH560J50 |
| C553, C561 | CCSQCH680J50 |
| C799 | CEANP2R2M50 |
| C534, C535, C9632 | CEAS101M10 |
| C550, C585 | CEAS221M10 |
| C530, C538, C588, C601, C603 | CEAS470M10 |

| Mark | No. | Description | Part No. |
|------|-----|--------------------------------|--------------|
| | | C605, C607, C609, C611, C613 | CEAS470M10 |
| | | C621, C670, C681, C683, C703 | CEAS470M10 |
| | | C720, C730, C735, C780, C782 | CEAS470M10 |
| | | C785, C786 | CEAS470M10 |
| | | C701 | CKSQYB102K50 |
| | | C699 | CKSQYB222K50 |
| | | C570-C573, C577, C578, C581 | CKSQYF103Z50 |
| | | C698, C704, C707 | CKSQYF103Z50 |
| | | C531-C533, C539, C541, C551 | CKSQYF104Z25 |
| | | C575, C582, C589, C592, C593 | CKSQYF104Z25 |
| | | C602, C604, C606, C608, C610 | CKSQYF104Z25 |
| | | C612, C614, C616, C620, C671 | CKSQYF104Z25 |
| | | C680, C682, C684-C687, C689 | CKSQYF104Z25 |
| | | C691, C702, C708, C712 | CKSQYF104Z25 |
| | | C714-C716, C719, C723, C725 | CKSQYF104Z25 |
| | | C734, C736, C737, C740, C742 | CKSQYF104Z25 |
| | | C759, C766, C768, C781, C783 | CKSQYF104Z25 |
| | | C789, C794, C795, C9611, C9615 | CKSQYF104Z25 |
| | | VC901 (20pF) | VCN-008 |

RESISTORS

| | |
|---------------------|-------------|
| VR651, VR652, VR705 | VRTB6VS102 |
| VR653, VR704 | VRTB6VS222 |
| VR702, VR703 | VRTB6VS472 |
| Other Resistors | RS1/10S□□□J |

OTHERS

| | | |
|------|------------------------------|-------------|
| | 3P CABLE HOLDER | 51048-0300 |
| CN52 | KR CONNECTOR | B13B-PH-K-S |
| CN51 | KR CONNECTOR | B5B-PH-K-S |
| CN54 | KR CONNECTOR | B5B-PH-K-R |
| CN53 | KR CONNECTOR | B6B-PH-K-S |
| | PCB BINDER | VEF1040 |
| JAI | 2P PIN JACK | VKB1061 |
| | 4P MINI DIN SOCKET | VKN1078 |
| | SCREW TERMINAL | VNE1948 |
| | SHIELD CASE A | VNE1956 |
| | SHIELD CASE B | VNE1957 |
| | SHIELD CASE C | VNE1958 |
| X550 | CRYSTAL RESONATOR(14. 31MHz) | VSS1026 |

TDYC ASSY(CLD- 99/KU/CA ONLY)

SEMICONDUCTORS

| | |
|------------------------------|----------|
| IC155, IC156 | CXD1171M |
| IC153, IC154 (UPD42280GU-30) | GGC1067 |
| IC151 (UPD6480GF-3BA) | GGC1019 |
| IC152 (UPD6481GC-3B6) | GGC1064 |
| Q150, Q151 | 2SC2412K |

COILS

| | |
|-----------|---------|
| L151-L162 | LFA101J |
|-----------|---------|

CAPACITORS

| | |
|------------------------------|-------------|
| C151, C152, C154, C155, C158 | CEAL101M6R3 |
| C160, C161, C163, C164 | CEAL101M6R3 |
| C166-C168, C170, C171 | CEAL101M6R3 |
| C173, C174, C176, C177, C181 | CEAL101M6R3 |
| C183, C189, C191 | CEAL101M6R3 |

| Mark | No. | Description | Part No. |
|------|-----|------------------------------|--------------|
| | | C179, C180 | CKSQYF103Z50 |
| | | C153, C156, C157, C159, C162 | CKSQYF104Z25 |
| | | C165, C169, C172, C175, C178 | CKSQYF104Z25 |
| | | C182, C184-C188, C190 | CKSQYF104Z25 |
| | | C192-C196 | CKSQYF104Z25 |

RESISTORS

| | |
|--------------------|-------------|
| VR101, VR102 (1kΩ) | RCP1044 |
| Other Resistors | RS1/10S□□□J |

OTHERS

| | |
|----------------|---------|
| SCREW TERMINAL | VNE1841 |
| SHIELD CASE D | VNE1959 |
| SHIELD CASE E | VNE1960 |

FLKB ASSY

OTHERS

| | |
|---------------|---------|
| PC board FLKB | VNP1486 |
|---------------|---------|

FLKY ASSY

FLKY assy of CLD-79/KU/CA is the same as that of CLD-99/KU/CA.

SEMICONDUCTORS

| | |
|-----------|--------------|
| IC101 | PD3295B |
| IC102 | S-806D |
| Q102 | DTA144ES |
| Q101 | DTC114ES |
| Q104-Q106 | DTC124ES |
| D101-D104 | 1SS252 |
| D108-D110 | 1SS254 |
| D105 | SEL2415ETP6 |
| D106 | SEL2915AYTP6 |
| D107 | SLR-342MC3F |

COIL

| | |
|------|---------|
| L101 | LAU220J |
|------|---------|

SWITCHES

| | |
|----------------------|---------|
| S101-S103, S106-S108 | RSG1030 |
| S104, S105 | RSG1034 |

CAPACITORS

| | |
|------------|--------------|
| C106 | CEAL100M16 |
| C101 | CEAL101M6R3 |
| C102, C105 | CKPUYF223Z25 |
| C104 | CKPUYX472M16 |

RESISTORS

| | |
|-----------------|-------------|
| R102 | RA4T103J |
| R101 | RA5T104J |
| R116, R117 | RD1/2VM5R6J |
| Other Resistors | RD1/6PM□□□J |

OTHERS

| | |
|------------------------------|-------------|
| 6P CABLE HOLDER | 51048-0600 |
| J101 2mm PITCH JUMPER 6P | D20PDD0620E |
| V101 FL TUBE | VAW1037 |
| FL HOLDER | VNK2854 |
| X101 CERAMIC RESONATOR(8MHz) | VSS1031 |

| Mark | No. | Description | Part No. |
|------|-----|-------------|----------|
|------|-----|-------------|----------|

PONS ASSY

SEMICONDUCTORS

| | |
|------------|------------|
| Q201, Q202 | DTC124ES |
| D201 | SLH34VCF04 |

COIL

| | |
|------|---------|
| L201 | LAU220J |
|------|---------|

SWITCH

| | |
|------|---------|
| S201 | RSG1030 |
|------|---------|

CAPACITORS

| | |
|------|--------------|
| C201 | CEJA221M6R3 |
| C202 | CKPUYF223Z25 |

RESISTORS

| | |
|---------------|-------------|
| All Resistors | RD1/6PM□□□J |
|---------------|-------------|

OTHERS

| | |
|-----------------|------------|
| 6P CABLE HOLDER | 51048-0600 |
| REMOTE SENSOR | GP1U58X |

MACB ASSY

OTHERS

| | |
|---------------|---------|
| PC board MACB | VNP1429 |
|---------------|---------|

CNNB ASSY

RESISTORS

| | |
|---------------|-------------|
| All Resistors | RD1/6PM□□□J |
|---------------|-------------|

OTHERS

| | |
|-------------------------------|------------|
| CN205 KR CONNECTOR 3P | B3B-PH-K-S |
| CN203 24P CONNECTOR | SLEM24S-2 |
| CN204 25P FFC CONNECTOR(SIDE) | SLEM25R-2 |

LOMB ASSY

OTHERS

| | |
|-----------------|------------|
| 4P CABLE HOLDER | 51048-0400 |
|-----------------|------------|

LOSB ASSY

SWITCHES

| | |
|-------|---------|
| S1-S3 | DSG1015 |
|-------|---------|

FG ASSY

OTHERS

| | |
|----------------------|---------|
| D1 PHOTO DIODE | GP1S51V |
| J64 HOUSING ASSY(3P) | VKP2024 |

5. SELF-DIAGNOSTIC FUNCTIONS

5.1 SELF-DIAGNOSTIC FUNCTIONS

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

After an error occurs, even if the error code goes off, you can display the error code again by holding down the **CLEAR** key for 10 seconds (except a loading error **L *** display). At that time, partial error is displayed with the mechanism switch information. However, if the power cord is unplugged, the error code information is lost.

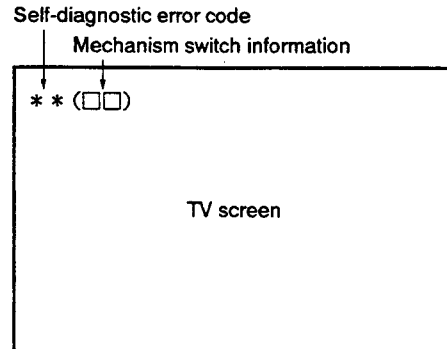


Fig. 1 TV screen display

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

| Self-diagnostic error code | Contents | Conditions | Probable cause |
|----------------------------|--------------------------------------|---|--|
| H0 | Spindle overcurrent detection error. | In the play state, overcurrent was detected in the spindle motor. Monitoring starts 5 seconds after the start of play or special playback mode, this error is detected if the overcurrent port is "L" for 4 seconds. | <ul style="list-style-type: none"> • Motor NG • Clamper rubbing |
| U0 | FG abnormality error | <ol style="list-style-type: none"> ① At LD start-up, the rate of rotation calculated from the FG was less than 15 rpm for 5 consecutive seconds from the spindle run command. ② At CD start-up, there was less than 1/8th rotation even after 5 seconds had passed since the end of acceleration. ③ During play search, CD : subcodes are being read/LD : Phillips codes are being read and the spindle is locked, but a state in which the rate of rotation calculated from the FG was less than 15 rpm continued for 5 seconds or more. In the above case, it is judged that an abnormality has occurred in the FG sensor and that accurate rotation rate calculation has become impossible. | <ul style="list-style-type: none"> • FG sensor abnormality, FG signal not coming to mechanism controller • FG sensor clogged • Rubbing between FG sensor and slit • Turntable dropped • FG slit deposition NG |
| H1 | Partial short error | <ol style="list-style-type: none"> ① At LD start-up, the speed did not reach 1200 rpm within a certain time (12 seconds) after the spindle run command. ② At CD start-up, a certain speed (313 rpm) was not reached within 6 seconds from the end of spindle acceleration. | <ul style="list-style-type: none"> • Spindle motor NG • Commutator NG • Bearing too tight • Power supply NG |
| H2 | Power supply abnormality error | <p>– 5V power supply abnormality detected.</p> <p>The power supply abnormality port is constantly monitored and if its signal stays high for about 1 second consecutively, the power supply is judged to be abnormal.</p> | <ul style="list-style-type: none"> • – 5V not fed from SYPS assy • Parts shorted |
| A * | R plate error | When abnormality condition is detected for 80 ms consecutively between the slider switch and the turn switch for 4 seconds after the power on. | |
| L * | Loading error | <ol style="list-style-type: none"> ① When loading operation goes over time (approx. 10 sec.). ② When assist at disc sense entry ends and is not tilt neutral. ③ When assist at set up entry ends and is not tilt neutral. | <ul style="list-style-type: none"> • Tilt switch 1, 2, 3 abnormal, so tilt/loading state not read in correctly • Tilt/loading mechanism mechanically locked • Drive IC NG • Power supply NG |
| E * | Slider error | During slider movement, a time over-run occurred (track count search 20 seconds, mandatory movement 10 seconds) | <ul style="list-style-type: none"> • Slider ceased being able to run • The slider mechanism is mechanically locked and can no longer move to its target. • Slider position switch NG • Flexible cable pulled out • Drive IC NG • Power supply abnormal |

| Self-diagnostic error code | Contents | Conditions | Probable cause |
|----------------------------|------------------|--|---|
| U1 | Miss clamp error | ① During LD setup, after 1/8th rotation, the track count during 1/8 rotation exceeded 511. ② During start-up, the focus was lost once and refocusing was attempted, but the focus could not be locked. ③ When spindle is not stopped within 2 seconds before CDV changes A to V (or V to A), clamp error is set by judging the double disc. ④ The FG pulse did not come for three times or more within 800 ms from the start of LD start-up. ⑤ When the disc clamp operation did not end within 5 seconds. | • Disc sandwiched • Disc shifted • Spindle motor NG • Disc scratched or dirty defocused during start-up • Two discs loaded • PU actuator NG • Tilt sensor NG • Tilt neutral NG (tilt base NG) |
| P * | Spindle error | ① During TOC reading with an LD, the spindle servo was not locked within 60 seconds from the start of the spindle run. ② When CAV/CLV determination is not finished within 60 seconds from spindle servo lock. ③ The codes could not be read for 10 – 15 seconds consecutively for an LD or 7 – 10 seconds for a CD/CDV and the spindle servo was not locked. ④ The speed exceeded 2100 rpm during LD start-up. | P0: •PH code, SUB-Q code can not be read •VCO, PLL offset out of adjustment •Disc defect P5: •PAL disc, mirror disc, etc. PLAY •No RF P6: •Spindle servo does not lock •Spindle motor NG |
| F * | Focus error | ① In the "no disc" state, a setup command was received from the mode controller. ② When LD is out of focus when slider is moved to starting position during set up. In case of CD/CDV is NG even after three focus tries. ③ During start-up, the maximum slider servo duty continued for 3 loops or more. | F5: •CD, LD on top of each other •LD scratched or dirty defocused during slider movement •Disc NG •Slider position switch NG F6: •Inner edge of disc scratched or dirty •Slider ran into inner edge mechanical stopper |

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

* After an error occurs, even if the error code goes off, you can display the error code again by holding down the CLEAR key for 10 seconds. At that time, partial error is displayed with the mechanism switch information.

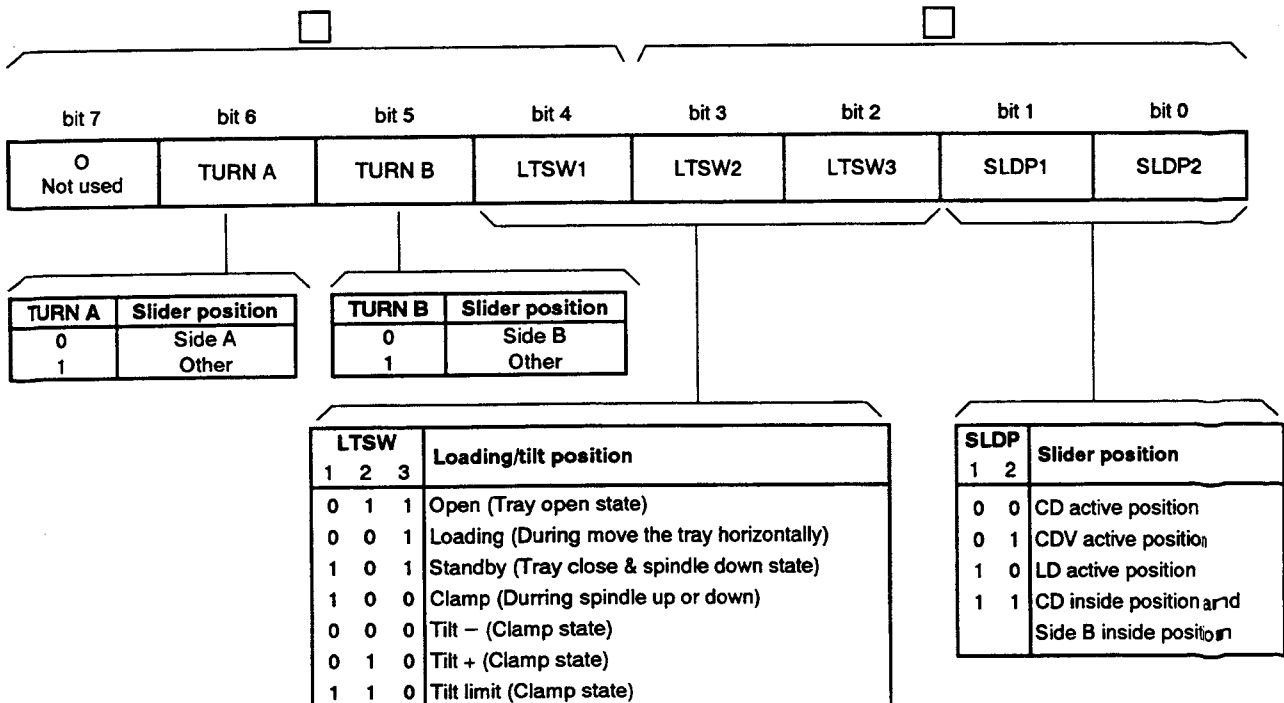
Mechanism mode contents (meanig of * for L * etc.)

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

5.2 FORMAT OF THE MECHANISM SWITCH INFORMATION WHICH IS TRANSMITTED TO THE MODE CONTROL IN THE ERROR OCCURENCE

• Mechanism switch information (□□)

Mechanism control → Mode control
 Communication byte address 6 (COMBUF5)
 (Mode control displays this value as it is.)



6. ADJUSTMENTS

6.1 TEST MODE

1) How to start the test mode

On the SACB assy, Short circuit the test mode JP and GND JP, the test mode is started by pressing the power switch ON. (Fig. 1)

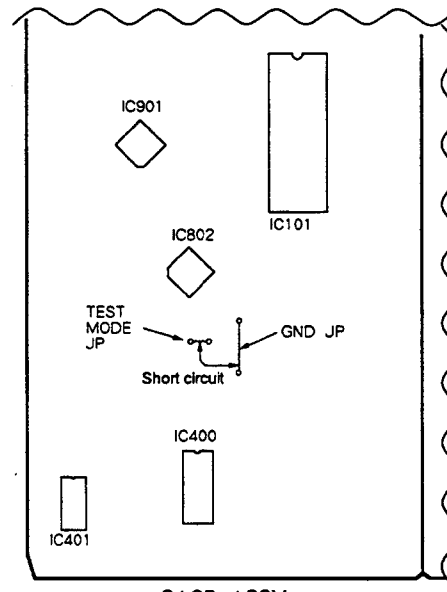
After confirming that all FL indicators are lit, remove test mode JP and GND JP connection. If you have test mode remote control unit (GGF1067), press **ESC** key and **TEST** key in order with power switch ON.

2) How to cancel the test mode

Turn power switch OFF. Or, press test mode remote control **ESC** key.

3) Functions and key control when in test mode

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



SACB ASSY
Fig. 1

• Key Operation in the Test Mode

| Player Status | Key Operation | Function | TV Screen Display |
|--------------------|-----------------------------------|---|---------------------------------------|
| Tray Open | ⏪ / ⏩ SKIP (Refer to Note 1) | ⏪ : Shifts the tray in the closed direction and also raises the turn table while pressing the key. ⏩ : Shifts the tray in the open direction and also lowers the turn table while pressing the key. | |
| Tray Open | ▶ PLAY | Clamps | |
| Clamp | ▶ PLAY | Turns the disc through TRK Servo OFF | TRK - OFF |
| TRK Servo OFF | ▶ PLAY | TRK Servo ON | TRK - ON |
| TRK Servo ON | ▶ PLAY | TRK Servo OFF | TRK - OFF |
| TRK Servo ON | ◀ / ▶ (STEP) | FOCS balance select | F - 0 / F - 1 |
| TILT Neutral | + MULTI - SPEED | TILT Servo ON | T - □ : ON |
| TILT ON | - MULTI - SPEED | TILT Neutral | T - □ : N |
| TILT Neutral or ON | ⏪ / ⏩ SKIP | Setting TILT Servo to OFF, can force TILT to move. | T - 1 to T - E |
| Clamp | ◀ / ▶ SCAN | Can force the slider to move | S - LD S - CDV S - CD S - IN |
| Play | 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 (⏪ / ⏩) keys after the tray is set to open state by pressing OPEN (▲) key.

Because, in tray open state, pressing PLAY (▶) key causes is to set to clamp state and SKIP (⏪ / ⏩) keys can not function properly.

Table 1

• **Player Operation in the Test Mode**
(Disc tray is removed)

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

• **CD PLAYBACK**

- ① Place the CD disc on the turn table.

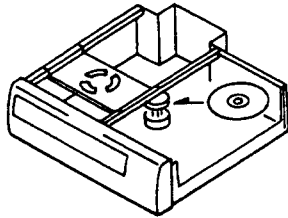


Fig. 2

- ② Press the PLAY (▶) key once.
(Twin gear starts to move.)
- ③ Push the cam plate (Fig.3) in the direction of the arrow and wait until the CD disc is clamped.

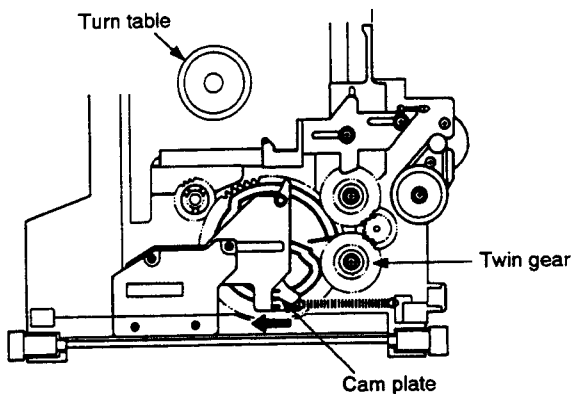
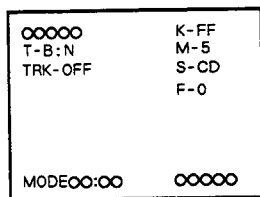


Fig. 3

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



TV screen display

Fig. 4

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

• **LD PLAYBACK**

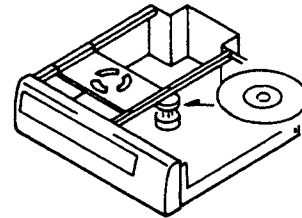
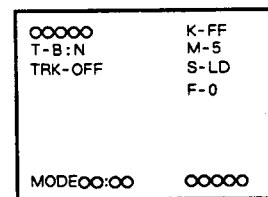


Fig. 5

- ① Press the PLAY (▶) key once.
(Twin gear starts to move.)
- ② Press the SKIP REV (◀◀) key to raise the turn table (spindle motor section) while pressing the cam plate (Fig. 3) in the direction of the arrow.
Raise it to the position where the LD disc can be easily placed on the turn table.
If the turn table is raised too high, lower it with the SKIP FWD (▶▶) key.
- ③ Place the LD disc on the turn table and press the PLAY (▶) key once to clamp the disc.
- ④ Press the ◀◀ or ▶▶ keys to appear "S - LD" on the TV screen display.



TV screen display

Fig. 6

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

6.2 ADJUSTMENT PRECAUTIONS

• Equipment and Jigs Needed for Adjustment

- CD test disc (STD - 901 or STD - 902)
- LD test disc (GGV1003)
- (-) Phillips screwdriver (Large)
- (-) Phillips screwdriver (Medium)
- (-) Phillips screwdriver (Small)
- (+) screwdriver (Large)
- (+) screwdriver (Medium)
- Hexagonal wrench (straight type, size : 3mm)
- Resistor ($10k\Omega \times 2$, $47k\Omega \times 1$)
- Two-channel oscilloscope (with delay)
- AF oscillator
- Frequency counter
- Digital voltmeter
- TV monitor
- Low-pass filter

• Preparation for Adjustment

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

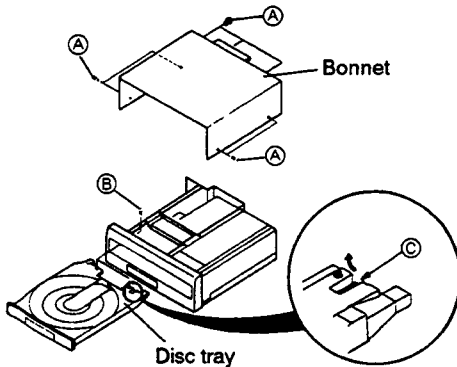


Fig. 7

4. Remove the six screws (D) stabilize the DVDB assy. (Fig. 8)
5. Remove the four screws (E) on the rear panel. (Fig. 8)

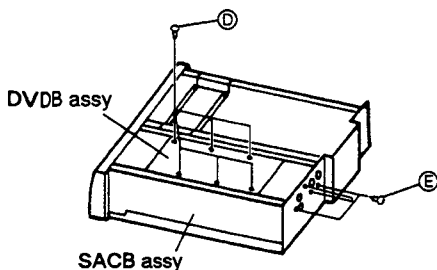


Fig. 8

6. Set the DVDB and TDYC assemblies to the open state. (Fig. 9)

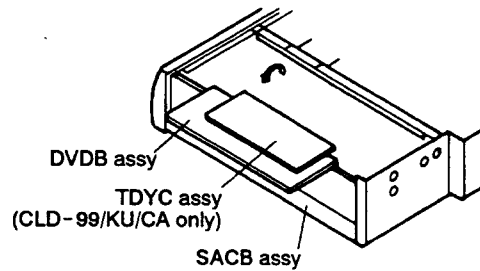


Fig. 9

- As shown in Fig. 10, fit the SACB assy between PCB spacer and PCB support on the chassis and standing it against the inside of the chassis, the back of the PCB (pattern side) can be diagnosed.

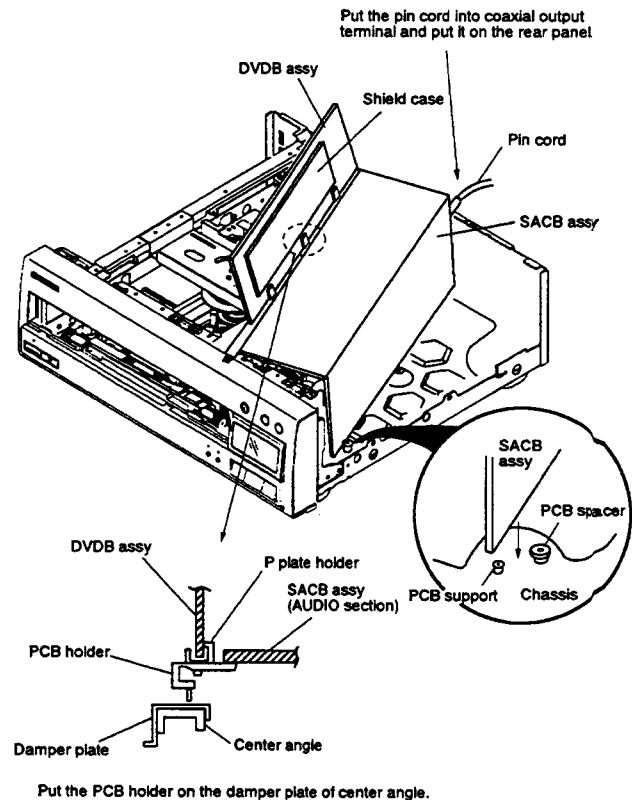


Fig. 10

● Before Adjusting Mechanism System

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

- Adjustment Range of Centering Adjustment Screw -

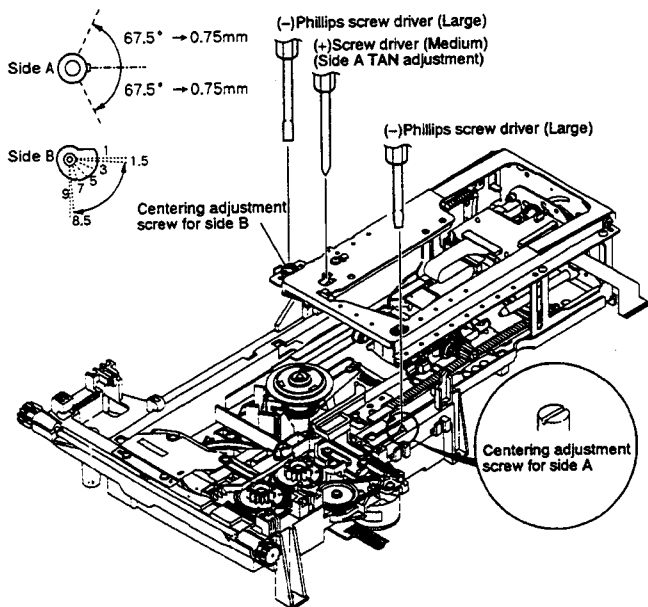


Fig. 11 Mechanism assy adjustment

- Adjustment Range of TAN Adjustment Screw -

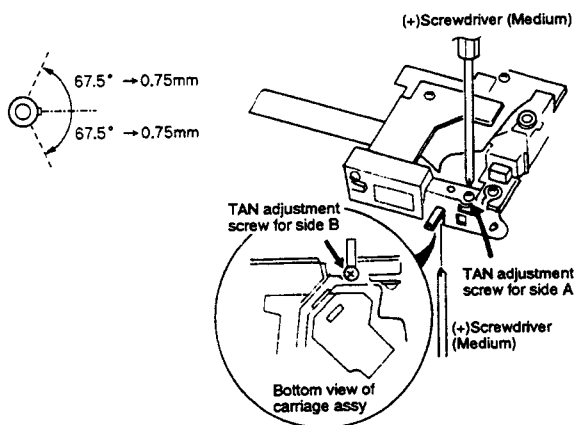


Fig. 12 Carriage assy adjustment

● Notes When Adjusting Centering

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

If waveform S/N is bad and difficult to observe in "2. Coarse centering adjustment for side A" and "6. Fine centering adjustment for side A" use the low-pass filter in diagram. (Fig. 13)

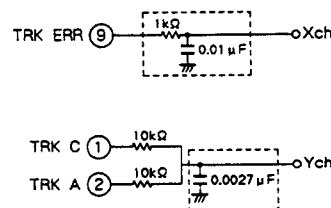


Fig. 13 Low-pass filter

● RACK Assy Position When Adjusting Centering

When moving slider to inner position to adjust the innermost track of disc during centering adjustment, be careful not to keep the mechanism stopper and RACK assy from bumping each other. (Fig. 14)

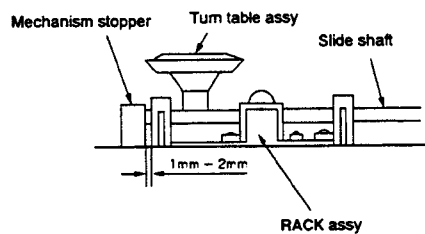


Fig. 14 Rack assy position when adjusting centering

● Notes When Adjusting Pickup Assy

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

6.3 ADJUSTMENT LOCATIONS

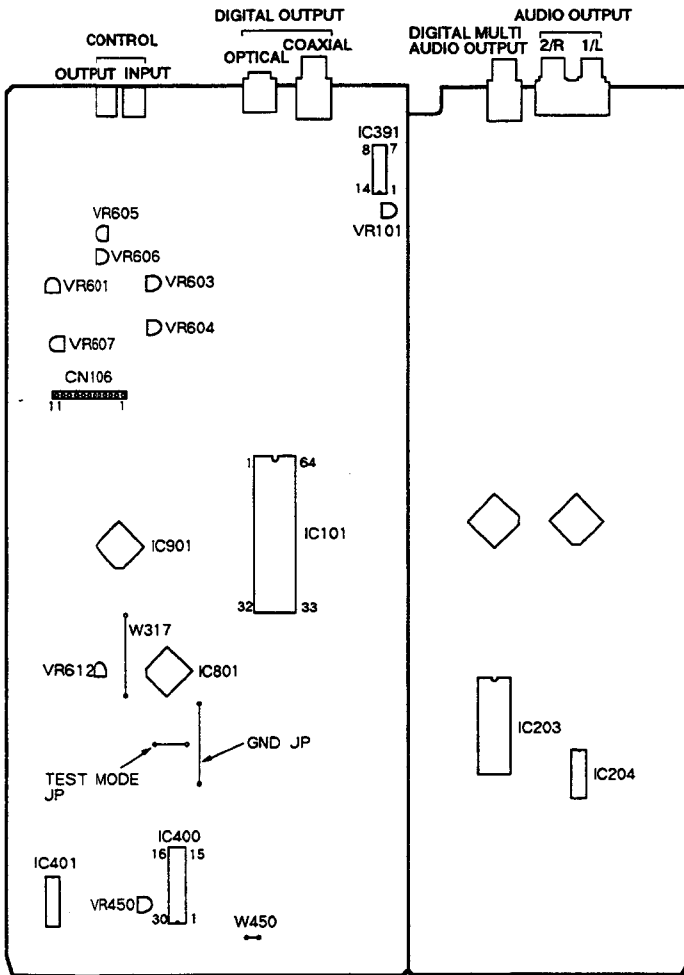


Fig. 15 Adjustment diagram of SACB assy

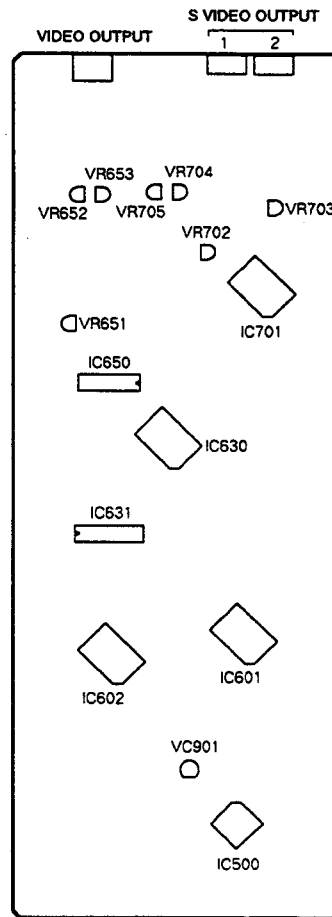


Fig. 16 Adjustment diagram of DVDB assy

• CLD-99/KU/CA only

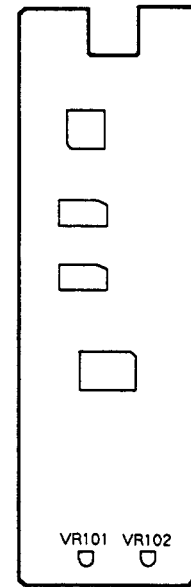


Fig. 17 Adjustment diagram of TDYC assy

6.4 ADJUSTMENT METHOD

1) MECHANICAL ADJUSTMENT

Note : All VRs and CNs (connectors) in the tables are parts of SACB assy.

| Step | 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 for side A | Mechanism assy Centering adjustment screw for side A | • Screwdriver(Large) • Oscilloscope • CD test disc • MIX resistor | CN106 X : pin 9 (TRK ERR) Y : pin 1+2 (TRK SUM) | • Test mode TRK servo OFF, Tilt servo ON • Innermost track of CD test disc which does not come in contact with the mechanical stopper. | Note : Be careful not to turn the centering adjustment screw past its limit. 1. Move the slider until it does not come in contact with the mechanical stopper at the slider position indication S-IN. 2. Observe TRK ERR (X ch) and TRK SUM (Y ch) at the X-Y mode during TRK servo OFF. 3. Adjust centering adjustment screw for side A until the Lissajous figure is horizontal. | |
| 3 | FCS balance adjustment (1) TRK ERR MAX | VR605 | • Oscilloscope • CD test disc | CN106 pin 9 (TRK ERR) | • Test mode TRK servo OFF, Tilt servo ON • Inner track of CD test disc | 1. Observe TRK ERR at CH 1 of the oscilloscope during TRK servo OFF. 2. Adjust VR605 until the amplitude of the waveform reaches its maximum and the envelope is very clear. | |
| 4 | FCS balance adjustment (2) RF level MAX | VR606 | • Oscilloscope • CD test disc | CN106 pin 3 (RF) | • Test mode TRK servo ON, Tilt servo ON • Inner track of CD test disc | 1. Observe RF at CH 1 of the oscilloscope during TRK servo ON. 2. Adjust VR606 until the amplitude of the waveform reaches its maximum and the envelope is very clear. | |
| 5 | Tangential direction angle adjustment for side A | Carriage assy TAN adjustment screw for side A | • Oscilloscope • CD test disc • Screwdriver (Medium) | CN106 pin 3 (RF) | • Test mode TRK servo ON, Tilt servo ON • Outermost track of CD test disc (position where TAN adjustment screw can be seen) | Note : Be careful not to turn the centering adjustment screw past its limit. 1. Observe RF at CH 1 of the oscilloscope during TRK servo ON. 2. Turn TAN adjustment screw for side A until the amplitude of the waveform reaches its maximum and the envelope is clear. After adjustment, stabilize the screw with an adhesive. | |
| 6 | Fine centering adjustment for side A | Mechanism assy centering adjustment screw for side A | • Oscilloscope • CD test disc • MIX resistor | CN106 X : pin 9 (TRK ERR) Y : pin 1+2 (TRK SUM) | • Test mode TRK servo OFF, Tilt servo ON • Innermost track of CD test disc which does not come in contact with the mechanical stopper. | Note : Be careful not to turn the centering adjustment screw past its limit. Perform fine centering adjustment again by following the same procedure as in step 2. After adjustment, stabilize the screw with an adhesive. | |
| 7 | Crosstalk and tilt offset adjustment | VR607 | • TV monitor • LD test disc | Crosstalk check screen | • Test mode TRK servo ON, Tilt servo ON • LD test disc #115 STILL | 1. Search for address #115 of LD test disc and still the address. 2. Check the crosstalk. If the crosstalk is pronounced, adjust VR607 until the crosstalk is not noticeable. | |
| | When the crosstalk is still noticeable in spite of the adjustment in step 7, after carrying out the adjustment in step 1 and bringing the tilt indication to T-6 to T-8, use a hexagonal wrench (straight type, size : 3mm) to adjust the TAN adjustment screw on the bottom side of the player through the LD test disc #115 STILL screen. Afterwards, perform the adjustment procedure from step 6. | | | | | | |

| Step | Adjustment name | Adjustment point | Measuring equipment and jigs | Measurement point | Player condition | Adjustment procedure | Waveform and connection diagram |
|------|---|--|---|--|--|---|--|
| 8 | FCS servo loop gain adjustment (Perform with either method A or B) | A VR604 | <ul style="list-style-type: none"> Oscilloscope LD test disc AF oscillator Resistor (47kΩ) | CN106 X: pin 7 (FCS IN) Y: pin 6 (FCS ERR) | <ul style="list-style-type: none"> Test mode TRK servo ON, Tilt servo ON LD test disc #15,000 STILL | <ol style="list-style-type: none"> Xch : Connect to pin 7 with 47k Ω . Ych : Connect to pin 6. Search #15,000 of LD test disc and still the address. Connect AF oscillator between X ch and 47k Ω and adjust VR604 until Lissajous figure is circle. | |
| | | B VR604 | <ul style="list-style-type: none"> Oscilloscope LD test disc Clip etc. (short circuit GND and pin 7) | CN106 X: — Y: pin 6 (FCS ERR) pin 7 GND (short circuit pins 7 and 8.) | <ul style="list-style-type: none"> Test mode Stop mode F - 1 | <ol style="list-style-type: none"> Ych : Connect to pin 6. Short circuit pin 7 to GND (pin 8). Put in LD test disc, press reverse side of skip key bring F - 0 to F - 1. Press PLAY key and adjust VR604 until the waveform level is 2.6Vp-p ± 0.1V. | |
| 9 | TRK servo loop gain adjustment (Perform with either method A or B) | A VR603 | <ul style="list-style-type: none"> Oscilloscope LD test disc AF oscillator Resistor (47kΩ) | CN106 X: pin 10 (TRK IN) Y: pin 9 (TRK ERR) | <ul style="list-style-type: none"> Test mode TRK servo ON, Tilt servo ON LD test disc #15,000 STILL | <ol style="list-style-type: none"> Xch : Connect to pin 10 with 47k Ω . Ych : Connect to pin 9. Search #15,000 of LD test disc and still the address. Connect AF oscillator between X ch and 47k Ω and adjust VR603 until Lissajous figure is circle. | |
| | | B VR603 | <ul style="list-style-type: none"> Oscilloscope LD test disc | CN106 X: — Y: pin 9 (TRK ERR) | <ul style="list-style-type: none"> Test mode TRK servo ON, Tilt servo ON F - 1 LD test disc #15,000 STILL | <ol style="list-style-type: none"> Ych : Connect to pin 9. Search #15,000 of LD test disc and still the address. Adjust VR603 until the waveform level is 1.6Vp-p ± 0.1V. | |
| 10 | RF level adjustment | VR601 | <ul style="list-style-type: none"> Oscilloscope LD test disc | CN106 pin 3 (RF) | <ul style="list-style-type: none"> Test mode TRK servo ON, Tilt servo ON LD test disc #15,000 STILL | <ol style="list-style-type: none"> Search for address #15,000 of LD test disc, still the address, and observe RF at CH 1. Adjust VR601 until RF amplitude is 300mVp-p ± 50mV. | |
| 11 | Coarse centering adjustment for side B play | Centering adjustment screw for side B play | <ul style="list-style-type: none"> Oscilloscope LD test disc MIX resistor ⊖ Screwdriver (Large) | CN106 X : pin 9 (TRK ERR) Y : pin 1+2 (TRK SUM) (X - Y mode) | <ul style="list-style-type: none"> Test mode TRK servo ON/OFF, Tilt servo ON LD test disc #100 STILL | <p>Note : Be careful not to turn the centering adjustment screw past its limit.</p> <ol style="list-style-type: none"> Move the carriage assy toward side B and still with test disc #100. (TRK servo ON) Observe TRK ERR (Xch) and TRK SUM (Ych) at the X-Y mode during TRK servo OFF. Turn centering adjustment screw for side B until the Lissajous figure is horizontal. | <p>Adjust until the Lissajous figure is horizontal.</p> |
| 12 | Tangential direction angle adjustment for side B play | TAN adjustment screw for side B play | <ul style="list-style-type: none"> Oscilloscope LD test disc ⊕ Screwdriver (Medium) | Video output terminal (TV monitor) | <ul style="list-style-type: none"> Test mode TRK servo ON, Tilt servo ON LD test disc #115 STILL | <p>Note : Be careful not to turn the TAN adjustment screw past its limit.</p> <ol style="list-style-type: none"> Move the carriage assy toward side B and still with test disc #115. (TRK servo ON) Turn TAN adjustment screw for side B until RF waveform amplitude becomes maximum. Check to see that crosstalk on monitor screen is at its minimum. | <p>If the crosstalk is pronounced, adjust until the crosstalk is not noticeable.</p> |
| 13 | Fine centering adjustment for side B play | Centering adjustment screw for side B play | <ul style="list-style-type: none"> Oscilloscope LD test disc MIX resistor ⊖ Screwdriver (Large) | CN106 X : pin 9 (TRK ERR) Y : pin 1+2 (TRK SUM) (X - Y mode) | <ul style="list-style-type: none"> Test mode TRK servo ON/OFF, Tilt servo ON LD test disc #100 STILL | <p>Perform fine adjustment again following same steps as in procedure "11. Coarse centering adjustment for side B play".</p> | <p>Adjust until the Lissajous figure is horizontal.</p> |

2) ELECTRICAL ADJUSTMENT

Note : Be careful of Step No. because of adjustment procedure of CLD-99/KU/CA is different from CLD-79/KU/CA.

| Step | Adjustment name | Adjustment point | Measuring equipment and jigs | Measurement point | Player condition | Adjustment procedure | Waveform and connection diagram | |
|------|-----------------------|-----------------------------------|--|--|--|---|--|--|
| 1 | PLL offset adjustment | VR612 (SACB assy) | • DC voltmeter • CD test disc | W317 (Jumper) (SACB assy) | • Test mode/Normal mode • Tilt servo ON, • TRK servo OFF • Digital sound play | • Place tape on the inner track of CD test disc to create eccentricity. • At track servo OFF, play the innermost track of the above CD. At that time, observe PLL OFFSET voltage (W317 jumper). • Next, take off tape from CD, and play the innermost track again in the normal play. Adjust VR612 until PLL OFFSET voltage value is same as at the time of eccentricity. | | |
| 2 | Phase adjustment | VR101 (SACB assy) | • Oscilloscope • CD test disc | IC391 - pin4, 10 (SACB assy) | • Normal mode • Digital sound play | Connect CH1 of oscilloscope and pin 4 of IC391 to CH2 and pin 10 respectively. When CH2 has been inverted, adjust VR101 so that the waveform phase of CH1 and CH2 match each other (± 5%). | | |
| 3 | 2 | Video level adjustment before A/D | VR450 (VIDEO LEV.1) (SACB assy) | • Oscilloscope • LD test disc | IC400 (PA0058A) - pin 12 or W450 (Jumper) (SACB assy) | • Normal mode • LD test disc • #19,900 STILL | Connect pin 12 of IC400 and oscilloscope. Observe the video signal during still playback LD test disc #19,900 (composite). Adjust VR450 until level from sync tip to 100% white becomes 1.633Vp-p ± 3%. | |
| 4 | 3 | Master clock adjustment | VC901 (DVDB assy) | • Frequency counter | IC601 - pin 74 (contact needle land) (DVDB ASSY) | • POWER ON • STOP | Connect pin 74 of IC601 (contact needle land) and frequency counter. Adjust VC901 so that the frequency becomes 14.31818MHz ± 10Hz in the power ON (stop). | |
| 5 | 4 | Video level adjustment | VR651 (DVDB assy) | • TV monitor • Oscilloscope • LD test disc | Video output terminal (75 Ω terminated) | • Normal mode • LD test disc • #19,900 STILL | Connect video output terminal and oscilloscope. (video output terminal is terminated with 75 Ω.) (It is possible to terminate video output terminal with 75 Ω by connecting TV monitor.) Observe the video signal during still playback LD test disc #19,900 and adjust VR651 until level from pedestal to 100% white becomes 0.714Vp-p ± 5%. | |
| 6 | 5 | V - SYNC level adjustment | VR652 (DVDB assy) | • TV monitor • Oscilloscope • LD test disc | Video output terminal (75 Ω terminated) | • Normal mode • LD test disc • #19,900 STILL | Connect video output terminal and oscilloscope. (video output terminal is terminated with 75 Ω.) (It is possible to terminate video output terminal with 75 Ω by connecting TV monitor.) During still playback #19,900 of LD test disc, observe video signal with trigger by V rate. Adjust VR652 until V sector's later period parity pulse pedestal (a) and preceding period parity pulse pedestal (b) are equal (± 5%). | |
| 7 | 6 | SYNC level adjustment | VR653 (DVDB assy) | • TV monitor • Oscilloscope • LD test disc | Video output terminal (75 Ω terminated) | • Normal mode • LD test disc • #19,900 STILL | Connect video output terminal and oscilloscope. (video output terminal is terminated with 75 Ω.) (It is possible to terminate video output terminal with 75 Ω by connecting TV monitor.) Observe the video signal during still playback LD test disc #19,900 and adjust VR653 until level from sync tip to pedestal becomes 0.286Vp-p ± 5%. | |
| 8 | 9 | S - C SYNC level adjustment | VR704 (DVDB assy) | • TV monitor • Oscilloscope • LD test disc | Leg of C output pin of S terminal | • Normal mode • LD test disc • #19,900 STILL • S terminal is 75 Ω terminated | Connect C output pin of S terminal and oscilloscope. (S terminal is terminated with 75 Ω.) Observe the video signal during still playback LD test disc #19,900 and adjust VR704 until level from sync tip to pedestal becomes 0.286Vp-p ± 5%. | |
| 9 | 10 | S - V SYNC level adjustment | VR705 (DVDB assy) | • TV monitor • Oscilloscope • LD test disc | Leg of Y output pin of S terminal | • Normal mode • LD test disc • #19,900 STILL • S terminal is 75 Ω terminated | Connect Y output pin of S terminal and oscilloscope. (S terminal is terminated with 75 Ω.) During still playback #19,900 of LD test disc, observe Y signal with trigger by V rate. Adjust VR705 until V sector's later period parity pulse pedestal (a) and preceding period parity pulse pedestal (b) are equal (± 5%). | |
| 10 | 8 | C output level adjustment | CLD-99/KU/CA: VR101 (TDYC assy) CLD-79/KU/CA: VR703 (DVDB assy) | • TV monitor • Oscilloscope • LD test disc | Leg of C output pin of S terminal | • Normal mode • LD test disc • #19,900 STILL • S terminal is 75 Ω terminated | Connect C output pin of S terminal and oscilloscope. (S terminal is terminated with 75 Ω.) Observe the video signal during still playback LD test disc #19,900 and adjust VR101 until the burst level becomes 0.286Vp-p ± 5%. | |
| 11 | 7 | Y output level adjustment | CLD-99/KU/CA: VR102 (TDYC assy) CLD-79/KU/CA: VR702 (DVDB assy) | • TV monitor • Oscilloscope • LD test disc | Leg of Y output pin of S terminal | • Normal mode • LD test disc • #19,900 STILL • S terminal is 75 Ω terminated | Connect Y output pin of S terminal and oscilloscope. (S terminal is terminated with 75 Ω.) Observe the video signal during still playback LD test disc #19,900 and adjust VR102 until level from sync tip to 100% white becomes 0.714Vp-p ± 5%. | |

7. IC INFORMATION

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

■ PD0205D (IC101 : SACB assy)

•Mechanism Control Microcomputer

• Pin Function

| No. | Pin name | I/O | Function |
|-----|----------|-------|---|
| 1 | VCC | I | Power connection pin. Apply 5V ± 10%. |
| 2 | FBAL | O | Focus balance control. "L"=RFMAX, "H"=TEMAX |
| 3 | XCD | O | LD/CD switch signal output. "L"=CD, "H"=LD |
| 4 | DIRECT | O | Power OFF signal output of CD direct video section. "L"=Normal, "H"=Video PW OFF |
| 5 | SRDDISC | O | AC3 pin OFF signal output. "L"=Normal, "H"=AC3 disc |
| 6 | SLDPOS | I A/D | Pickup position detection switch input. Divides the resistance among the switches, reads the value of the A/D input, and detects the position. |
| 7 | TILTERR | I A/D | The signal is A/D converted and is input as the tilt servo control. Controls the tilt motor until the signal is 2.5V. |
| 8 | TBALERR | I A/D | Tracking balance error signal input. The signal is A/D converted and is input as the tracking offset control. |
| 9 | SLDERR | I A/D | The signal is A/D converted and is input as the slider servo control. Controls the slider motor until the signal is 2.5V. |
| 10 | THOLD | I | Track jump during accelerating/decelerating signal input. "L"=other, "H"=during accelerating/decelerating |
| 11 | FSEQ | I | Subcode sync. conformity detection signal input. "L"=Not conformity, "H"=Conformity |
| 12 | SLDRV | O PWM | Slider control signal output. 5V=FWD, 0V=REV, 2.5V=STOP Cycle:910 μsec, 3-value control H, L, Z |
| 13 | WRQ | I | Subcode Q reading OK signal input. "L"=NG, "H"=OK If the subcode Q data is passed for CRC check, this pin becomes H. |
| 14 | RWC | O | DSP reading/writing command signal output. "L"=READ, "H"=WRITE |
| 15 | SQOUT | I | Command data input from DSP. SUBQ is read out. |
| 16 | COIN | O | Command data output to DSP. |
| 17 | CQCK | O | DSP reading/writing command clock output. Read at start-up. |
| 18 | TBALDRV | O PWM | Outputs the tracking offset after PWM and is used in auto tracking offset. Cycle:910 μsec, 3-value control H, L, Z |
| 19 | SI1 | I | Data input from mode control IC. |
| 20 | SO1 | O | Serial data output to mode control IC. |
| 21 | SCK1 | I/O | Clock for serial communication with mode control IC. In the input mode except during serial communication with mode control IC. |
| 22 | TZC | I INT | Tracking error zero cross signal input. In the miss clamp detection, monitor this signal in track count search. |
| 23 | CDG | O | Output pin during CD-G playback. "L"=other, "H"=during CD-G playback |
| 24 | TILDRV | I/O | LOAD/TILT control output. 0.5V:Tray IN, OUT/Tilt DOWN, UP, 2.5V:STOP Outputs the tilt drive after PWM and is used in tilt servo. |
| 25 | SHAKE | I/O | Hand shake signal for data communication with 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 vertical sync. signal input. "L"=V-SYNC ongoing |
| 27 | CN/ss | I | GND for A/D conversion. |
| 28 | XRESET | I | Reset signal input. "L"=Reset, "H"=Cancel reset by controlling mode control IC. |
| 29 | XIN | I | 9MHz clock oscillation input. |
| 30 | XOUT | O | 9MHz clock oscillation output. |
| 31 | N.C. | O | Not used. |
| 32 | GND | I | Ground. |

| No. | Pin name | I/O | Function |
|-----|----------|-----|---|
| 33 | XFOK | I | Focus servo lock signal input. "L"=Lock, "H"=Unlock Use for detecting the focus servo lock. |
| 34 | XO9 | I | Model switch port. "L"=CLD-D99, CLD-99, "H"=CLD-79 |
| 35 | XFORE | I | Model switch port. "H"=Japan, "L"=Others |
| 36 | WFM | I | DVP odd/even number field determination signal input. "L"=Even, "H"=Odd |
| 37 | FG | I | Spindle motor FG signal input. 24 pulses per signal, divided into thirds and used inside the microcomputer. |
| 38 | DATA | I | Input pin for Phillips code decoder with built in mechanism controller. |
| 39 | XPBH | I | Playback H-SYNC input for Phillips code decode. |
| 40 | XPBV | I | Playback V-SYNC input for Phillips code decode. |
| 41 | SQ2 | O | Analog audio switch signal output. 2/R "L"=Normal, "H"=Mute |
| 42 | SQ1 | O | Analog audio switch signal output. 1/L "L"=Normal, "H"=Mute |
| 43 | XCX | O | Analog audio CX noise reduction switch signal output. "L"=CX ON, "H"=CX OFF |
| 44 | MUTE | O | Audio mute control signal output of audio section.. "L"=Cancel MUTE, "H"=MUTE |
| 45 | XANA | O | Digital/analog audio switch signal output. "L"=Analog, "H"=Digital |
| 46 | MCNTLAT | O | PD3212A serial latch signal output. Latches at falling edge. |
| 47 | TDLAT | O | GGC1019 (UPD6480GF-3BA) and GGC1064 (UPD6481GC-3B6) serial latch signal output. "L"=during communication, "H"=other |
| 48 | DGFLAT | O | PD0116A serial latch output. Latches at falling edge. |
| 49 | RFCORR | O | RF correction switch signal output. "H"=Gain up, CAV inner circuit gain up |
| 50 | XLDG | O | Graphic code detection output. "L"=other, "H"=Detects the graphic code and selects the graphic mode. |
| 51 | DVPLAT | O | PD0146A serial latch signal output. Latches at falling edge. |
| 52 | SCK3 | O | Serial 3 clock signal output. |
| 53 | SO3 | O | Serial 3 data signal output. With the serial signal as the common signal, divides the signals into three types of latch signals (DVPLAT, TDLAT and DGFLAT). |
| 54 | SLOCK | I | Spindle lock signal input. "L"=Unlock, "H"=Lock |
| 55 | DATAINH | O | Output pin that carries out Phillips code data inhibit. "L"=Inhibit, "H"=Permit |
| 56 | XCLV | O | CAV/CLV switch signal output. "H"=CAV, "L"=CLV |
| 57 | NRINH | O | NR control pin. "L"=Normal, "H"=no NR |
| 58 | XPLAY | O | Output pin during spindle servo. "L"=During servo, "H"=Acceleration, brake, during STOP |
| 59 | SW1 | I | Switch input for loading/tilt position detection. |
| 60 | SW2 | | |
| 61 | SW3 | | |
| 62 | DETAMP | I | Spindle overcurrent detection signal input. "L"=Overcurrent, "H"=Normal |
| 63 | XTURNB | I | γ turn position detection signal input. "L"=Side B, "H"=Side A, during turn |
| 64 | XTURNA | I | γ turn position detection signal input. "L"=Side A, "H"=Side B, during turn |

■ PD3295B (IC101 : FLKY assy)

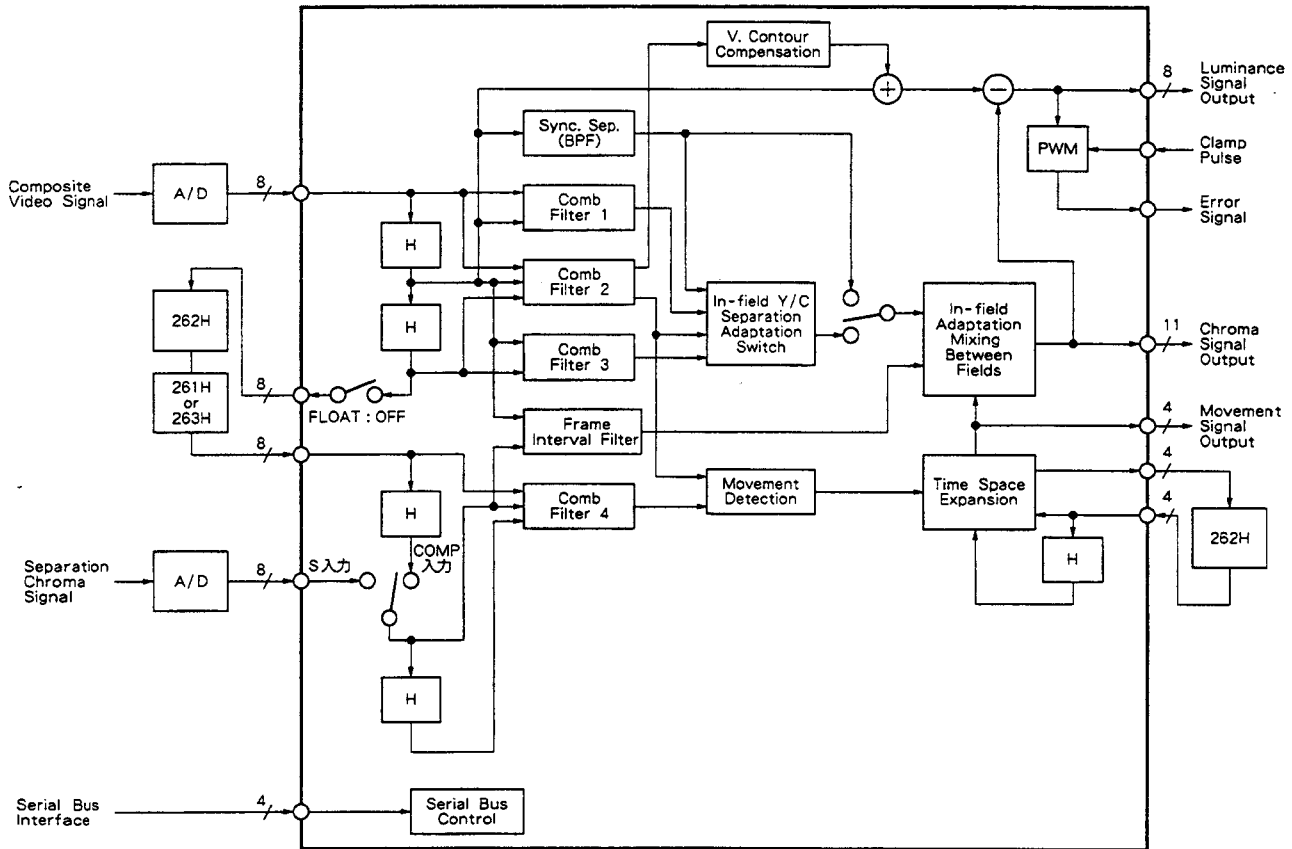
• Mode Control Microcomputer

● Pin Function

| No. | Pin name | I/O | Function | No. | Pin name | I/O | Function |
|-----|--------------|-----|---|-----|----------|-----|--|
| 1 | VCC | I | Power supply voltage (+5V). | 31 | J/KU | I | Destination switch port (L : Japan, H : Others). |
| 2 | G-CS | O | Graphics decoder communication requirement output. | 32 | LED1 | O | LED output : FL OFF |
| | | | | 33 | A | O | Display segment output. |
| 3 | XSCK | I/O | Serial communication clock. | 34 | B | | |
| 4 | S-MTOF | I | Serial communication data input. | 35 | C | | |
| 5 | S-FTOM | O | Serial communication data output. | 36 | D | | |
| 6 | XRESET (OUT) | O | Reset output of the SACB assy. | 37 | E | | |
| | | | | 38 | F | | |
| 7 | XCS | O | Character generator (PD0154A) communication requirement output. | 39 | G | | |
| 8 | SYNCHRO | I | CD deck synchro input. | 40 | H (Ks0) | O | Display segment output / Key scan output. |
| 9 | SYNCHRO | O | CD deck synchro output. | 41 | I (Ks1) | | |
| 10 | AVCC | I | +5V. | 42 | J (Ks2) | | |
| 11 | KIN0 | I | Key data input. | 43 | K (Ks3) | O | Display segment output. |
| 12 | KIN1 | | | 44 | L | | |
| 13 | KIN2 | | | 45 | M | | |
| 14 | KIN3 | | | 46 | N | | |
| 15 | KIN4 | | | 47 | O | | |
| 16 | CDGM | I | Graphics decoder and graphics mode input. | 48 | Vdisp | I | FL power supply voltage (- 27V). |
| 17 | PO6 | I | Not used (GND). | 49 | P | O | Display segment output. |
| | | | | 50 | Q | | |
| 18 | 7G/9G | I | Model switch port. (L:CLD-79, H:CLD-D99, CLD-99) | 51 | R | O | Display grid output. |
| 19 | AVss | I | GND. | 52 | G9 | | |
| 20 | TEST | I | GND. | 53 | G8 | | |
| 21 | X2 | O | Not used (N.C.). | 54 | G7 | | |
| 22 | X1 | I | +5V. | 55 | G6 | | |
| 23 | Vss | I | GND. | 56 | G5 | | |
| 24 | OSC1 | I | Oscillator (8MHz). | 57 | G4 | | |
| 25 | OSC2 | O | | 58 | G3 | | |
| 26 | XRESET(IN) | I | CPU reset (L : Reset). | 59 | G2 | | |
| 27 | SHAKE (ACK) | I/O | Mecha. control communication requirement input. (Mode control communication permission output). | 60 | G1 | | |
| | | | | 61 | LED2 | | |
| 28 | SEL IR | I | Remote control input. | 62 | LED3 | O | LED output : Theater mode |
| 29 | P. ON | O | Power supply source switch output of the SACB assy. | 63 | AC-3 | I | AC-3 switch port (L : Uncorrespondence, H:Correspondence). |
| 30 | W.D.F | O | Pulse output for WATCH DOG. | 64 | MUTE | O | Graphics decoder and data mute output. |

■ GGC1019 (UPD6480GF-3BA)(IC151 : TDYC assy)(CLD- 99 ONLY)
-Y/C Separation and Movement Detection for EDTV

● Block Diagram



● Pin Function

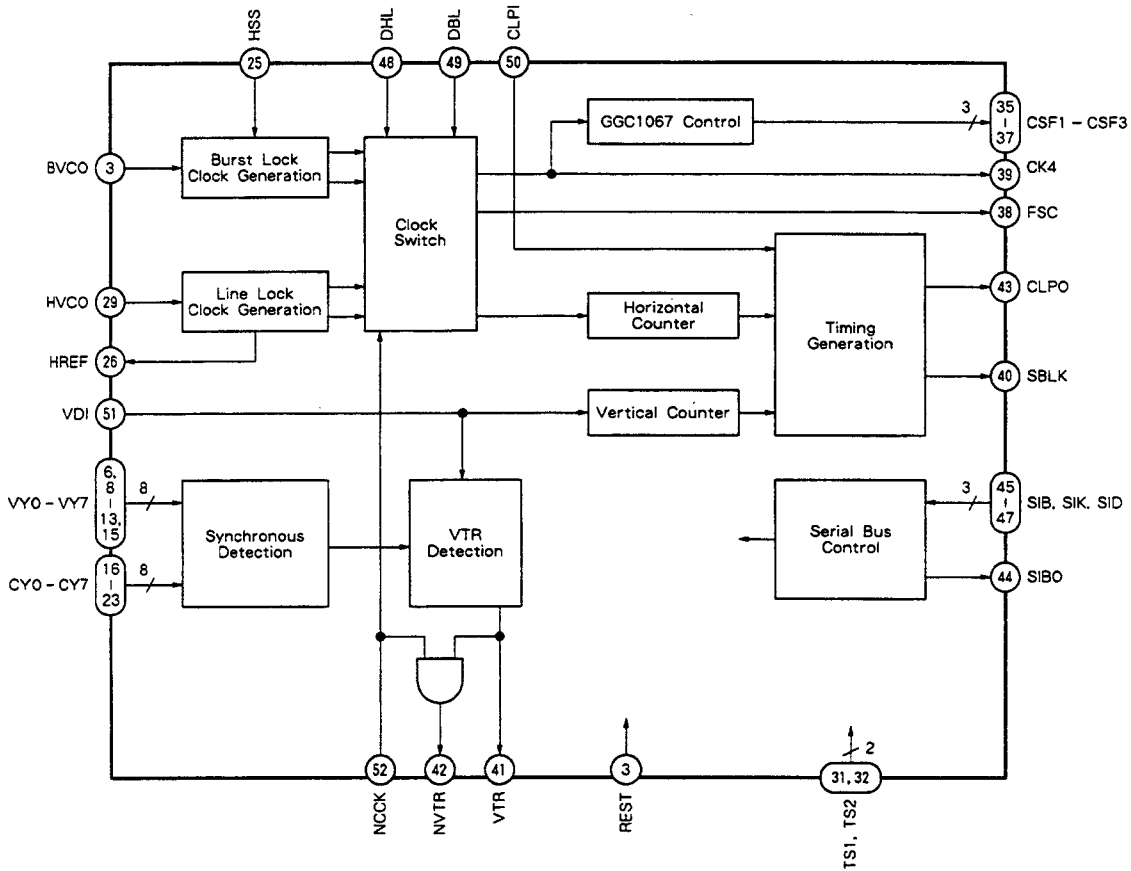
| No. | Pin | Pin Name | I/O | Function |
|-----------|--------------|---|--------|--|
| 1 | VDD | Power supply | - | Supplies a 5V (typical) operating power voltage. |
| 2 | CLPO | Clamp D/A output | O | Outputs the difference between the clamp level and the video (pedestal) level in PWM. The pulse width changes between 1/16 and 15/16 in a 4.4 μs cycle. |
| 3 10 | V0H7 V0H0 | Video input (0H delay) /Luminance input | I (SB) | Input an 8-bit signal which is obtained through A/D conversion of the video signal. In S-terminal mode, these pins accept the luminance signal. The pedestal level is of 64 levels. (V0H7 : MSB, V0H0 : LSB) |
| 11 18 | V2H7 V2H0 | Video output (2H delay) /Burst-added main signal output | O (SB) | Output a signal which is obtained by delaying the video signal by 2H. In S-terminal mode, these pins output the signal which is obtained by adding the burst of the chroma signal, which is supplied to pins 92 to 99 (CS), to the main signal. (V2H7 : MSB, V2H0 : LSB) |
| 19 26 | F0H7 F0H0 | Video input (1-frame delay) | I (SB) | Input a signal which is obtained by delaying the video signal by 1 frame. In S-terminal mode, these pins accept the signal which is obtained by delaying the main signal by 1 frame, for Δ Y detection between frames. (F0H7 : MSB, F0H0 : LSB) |
| 27, 28 | MD2, MD1 | S-terminal mode output | O | Output a signal to control the delay of memory connected to an external device or the output enable in S-terminal mode. S-terminal mode : MD2="H", MD1="L" |
| 29 | CKA | Clock output | O | Used as the clock for memory connected to an external device or for A/D conversion. It has a delay of 10 ns (typical) with respect to the input at pin 33 (CLK). |
| 30 | VDD | Power supply | - | Supplies a 5V (typical) operating power voltage. |
| 31 | GND | Ground | - | 0V potential for ground. |
| 32 | CKB | Clock output | O | Used as the clock for memory banks connected to an external device or for A/D conversion. It has a delay of 10 ns (typical) with respect to the input at pin 33 (CLK). |

| No. | Pin | Pin Name | I/O | Function |
|----------|--------------|--|------------|--|
| 33 | CLK | Clock input | I | Input a clock of 4 fsc (14.31818 MHz). |
| 34 | CLPI | Clamp pulse input | I | Reads the video signal 13 clock pulses before at the falling edge of an active "H" clamp pulse and compares it with the clamp level (64 levels). |
| 35 | TMR | Test input | I | Input pin for testing. To be connected to VDD or open. |
| 36 | BLK | Blanking input | I | Input a signal which is "H" for blanking, three clock pulses after the main signal. During blanking, the vertical contour compensation and synchronization protection are turned off, and Y/C separation is set to Frequency Separation mode. |
| 37 | LINE | Y/C separation forced line input | I | Set it to "H" to fix the Y/C separation to In-field Y/C Separation mode. |
| 38 | MIL | Forced movement input of movement output | I | Set it to "H" to forcibly set movement detection output at pins 46 to 49 (MI) to "H". |
| 39 | SIBO | Serial bus busy output | O | Supplies a busy signal for serial bus acknowledge return. Wire-connected with pin 40 (SIBI), this pin outputs "L" for the return. |
| 40 | SIBI | Serial bus busy input | I | Input a busy signal for serial bus data reception. Data reading starts when the signal at this pin is "L", and the initial status of data reading is resumed when "H". |
| 41 | SIK | Serial bus clock input | I | Input the clock signal for serial bus data reception. The input data at pin 42 (SID) are read at the rising edge of this clock. |
| 42 | SID | Serial bus data input | I | Input serial bus data. It reads data in synchronization with the input clock at pin 41 (SIK). |
| 43 | FIL3 | Filter selection 3 | I | Switches the filters for ΔY detection between frames. Normally to be connected to GND or open. |
| 44 | FIL1 | Filter selection 1 | I | Set to "H" to switch from In-field Y/C Separation mode to Frequency Separation mode. Normally connect this pin to TIG interleave detection output. |
| 45 | FIL2 | Filter selection 2 | I | Switches the bandwidth of the chroma signal for in-field Y/C separation. Narrow bandwidth is selected when the signal at this pin is "H". Normally to set it to "L". |
| 46 49 | MI0 MI3 | Movement detection output | O (SB) | Expand the movement signal and output it with a delay of 13 clock pulses with respect to the main signal. (MI3 : MSB, MI0 : LSB) |
| 50 | GND | Ground | - | 0V potential for ground. |
| 51 | VDD | Power supply | - | Supplies a 5V (typical) operating power voltage. |
| 52 | KIL | Killer input | I | Set this pin to "H" to output the luminance without subtracting the chroma from the main signal. |
| 53 63 | Co CA | Chroma output | O (2'S) | Outputs the chroma which is obtained through Y/C separation of the video signal, with a delay of 17 clock pulses with respect to the main signal. The gain is $\times 2$ for composite inputs or $\times 1$ in S-terminal mode. The gain in each case can be halved by the serial bus. (CA : MSB [SIGN], Co : LSB) |
| 64 | CVA | Chroma inverse output | O | Outputs the inverse of the MSB of the chroma output at pin 63 (CA). Use this pin for the MSB when connecting D/A to the chroma outputs. |
| 65 72 | Y0 Y7 | Luminance output | O (SB) | Output the luminance which is obtained through Y/C separation of the video signal, with a delay of 17 clock pulses with respect to the main signal. (Y7 : MSB, Y0 : LSB) |
| 73 75 | TES1 TES3 | Test input | I | Input pins for testing. To be connected to GND or open. |
| 74 79 | TES4 TES7 | Test output | O | Output pins for testing. |
| 80 | VDD | Power supply | - | Supplies a 5V (typical) operating power voltage. |
| 81 | GND | Ground | - | 0V potential for ground. |
| 82 | TES8 | Test output | O | Output pin for testing. |
| 83 | TES9 | Test input | I | Input pin for testing. To be connected to GND or open. |
| 84 87 | LB0 LB3 | Movement expansion input | I (SB) | Accept the output for movement expansion being supplied from pins 88 to 91 (LA) with a delay of 262H. (LB3 : MSB, LB0 : LSB) |
| 88 91 | LA0 LA3 | Movement expansion output | O (SB) | Output pins to expand the movement signal. (LA3 : MSB, LA0 : LSB) |
| 92 99 | CS7 CS0 | Chroma input | I (SB) | Accept the chroma signal in S-terminal mode. Connect them to GND when S-terminal mode is not used. (CS7 : MSB, CS0 : LSB) |
| 100 | GND | Ground | - | 0V potential for ground. |

Notes : (SB) : Data are in the form of straight binary codes.
(2'S) : Data are in the form of two's complement codes.

■ GGC1064 (UPD6481GC-3B6)(IC152 : TDYC assy)(CLD- 99 ONLY)
 •Timing Generation for Three-dimensional Y/C Separation

• Block Diagram

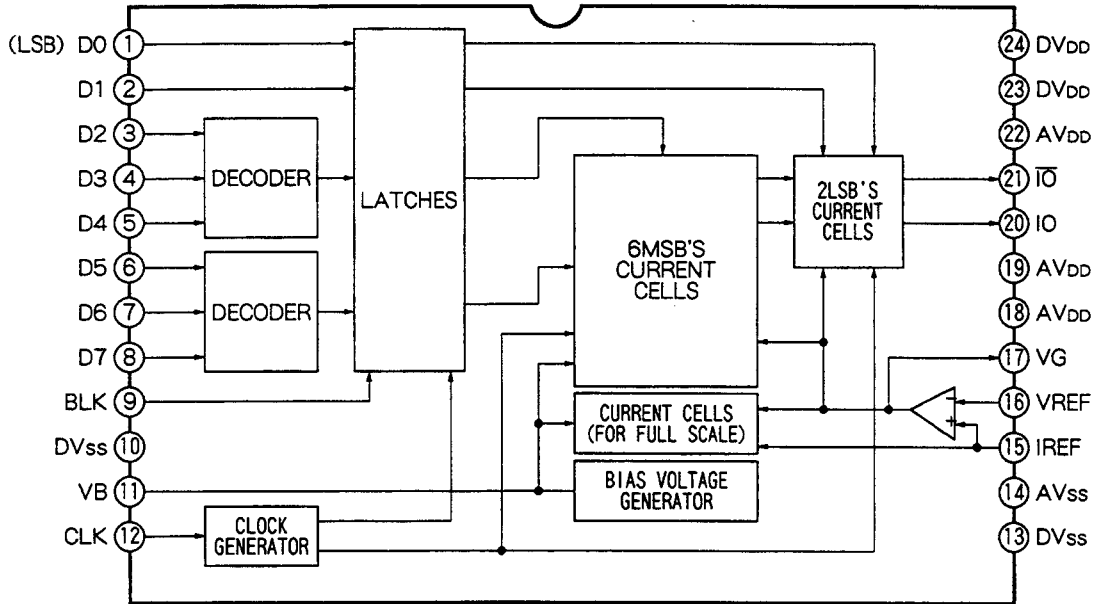


• Pin Function

| No. | Pin name | I/O | Function |
|----------|-----------------|-----|---|
| 1 | GND | — | 0V : potential for ground |
| 2 | BXT | O | Output for testing. 4fsc is output. |
| 3 | BVCO | I | Input the VCO oscillation clock of burst lock PLL. 4fsc (14.3MHz) is input. |
| 4 | V _{DD} | — | +5V (TYP.) Apply a power voltage. |
| 5 | REST | I | Input pin for forced reset. Normally, to be connected GND or open. |
| 6 | VY0 | I | Input the Y signal with burst signal. Output from YCS III . (VY0 : LSB) |
| 7 | GND | — | 0V : potential for ground |
| 8 13 | VY1 VY6 | I | Input the Y signal with burst signal. Output from YCS III . |
| 14 | N.C. | — | No connection. |
| 15 | VY7 | I | Input the Y signal with burst signal. Output from YCS III . (VY7 : MSB) |
| 16 23 | CY0 CY7 | I | Input the signal with a delay of 1 field (262H) with respect to VY inputs. (CY0 : LSB, CY7 : MSB) |
| 24 | HOEB | I | Input for testing. |
| 25 | HSS | I | Input the horizontal frequency for AFC loop. |
| 26 | HREF | O | Output the reference signal to line lock PLL. 910fH (14.3MHz) signal which is input from HVCO pin divide into 910 and fH (15.734kHz) is output. |
| 27 | GND | — | 0V : potential for ground |
| 28 | HXT | O | Output for testing. 910fH is output. |
| 29 | HVCO | I | Input the VCO oscillation clock of line lock PLL. 910fH(14.3MHz) is input. |
| 30 | V _{DD} | — | +5V (TYP.) Apply a power voltage. |
| 31 | TS2 | I | Input for testing. Normally, to be connected GND or open. |
| 32 | TS1 | I | Input for testing. Normally, to be connected GND or open. |
| 33 | GND | — | 0V : potential for ground |
| 34 | V _{DD} | — | +5V (TYP.) Apply a power voltage. |
| 35 37 | CSF1 CSF3 | O | Memory control output for GGC1019 (UPD6480GF - 3BA). |
| 38 | FSC | O | Output to FSC pin of YCP II . Reference phase output of fsc (3.58MHz). |
| 39 | CK4 | O | 4fsc (14.3MHz) clock for system. |
| 40 | SBLK | O | Input the signal (for sync protection of YCS III) to BLK pin of YCS III . (Active is High.) |
| 41 | VTR | O | Hi-level is output by detecting the non standard signal. Input to line pin of YCS III . |
| 42 | NVTR | O | Hi-level is output when detecting the non standard signal in the three-dimensional Y/C separation mode. Low-level is always output in the luminance signal NR mode. |
| 43 | CLPO | O | Pulse output for clamping the video signal of A/D immediately. (Active is High.) |
| 44 | SIBO | O | Busy output for ACK answer of serial bus. |
| 45 | SIB | I | Busy input of serial bus. |
| 46 | SIK | I | Clock input of serial bus. |
| 47 | SID | I | Data input of serial bus. |
| 48 | DHL | I | System clock is forced became line lock clock in the Hi-level. It becomes auto switch in the Low-level. |
| 49 | DBL | I | System clock is forced became burst lock clock in the Hi-level. It becomes auto switch in the Low-level. |
| 50 | CLPI | I | Input the clamp pulse. (Active is High.) |
| 51 | VDI | I | Input the vertical synchronizing pulse which is sync. separated fro the video signal. (Active is Low.) |
| 52 | NCKK | I | H : Three-dimensional Y/C separation mode, L : Luminance signal NR mode |

■ CXD1171M (IC604 : DVDB assy)
•8-bit 40 MSPS D/A Converter

• Block Diagram

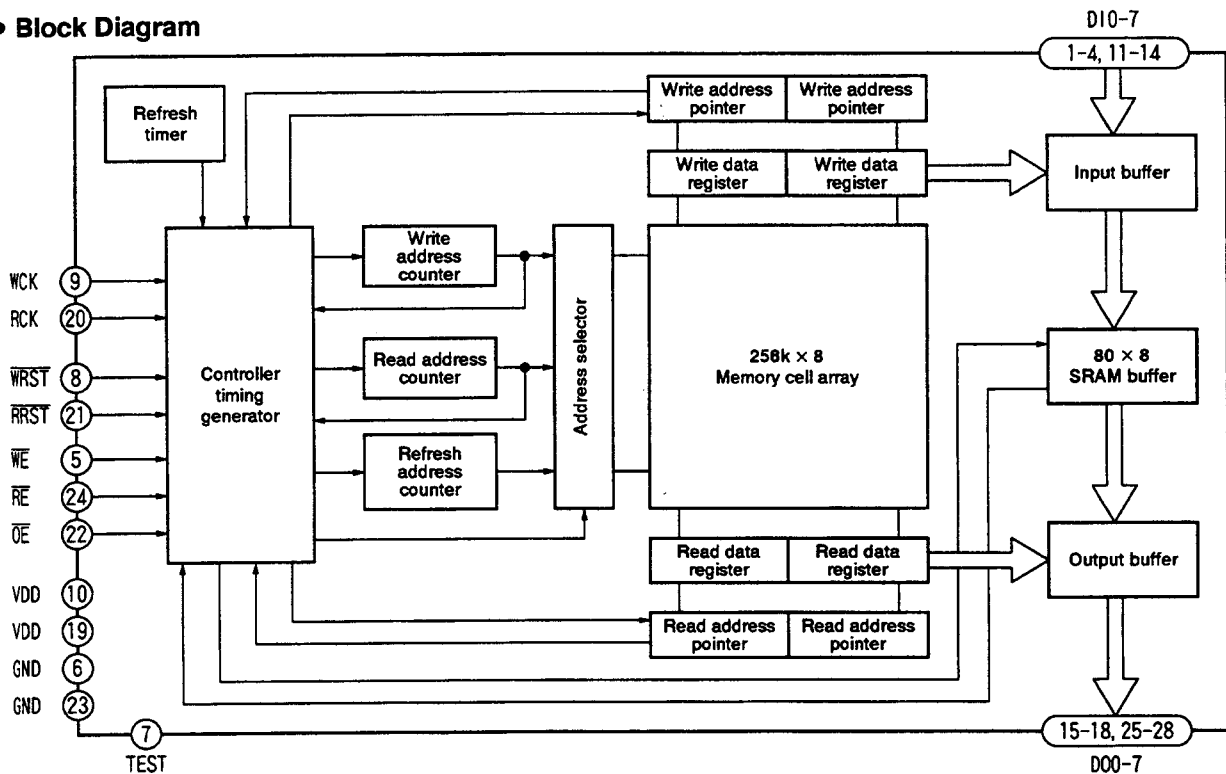


• Pin Function

| No. | Pin name | Function |
|------------|----------|---|
| 1~8 | D0~D7 | Digital input. |
| 9 | BLK | Blanking pin. "H" for no signal (output 0V), "L" for output. |
| 11 | VB | Connect a 0.1 μ F degrees of capacitor. |
| 12 | CLK | Clock pin. Input pins are all compatible with TTL - CMOS. |
| 10, 13 | DVss | Digital GND. |
| 14 | AVss | Analog GND. |
| 15 | IREF | Connect a "16R" (16 times) resistor against to output resistance value "R". |
| 16 | VREF | Set the output full scale value. |
| 17 | VG | Connect a 0.1 μ F degrees of capacitor. |
| 18, 19, 22 | AVDD | Analog VDD |
| 20 | IO | Current output pin. Produce the output by connecting resistor. |
| 21 | IO | Inversion current output pin. Normally, connect to analog GND. |
| 23, 24 | DVDD | Digital VDD |

■ UPD42280GU-30 (IC153, IC154 : TDYC assy)(CLD-99 ONLY)
·2M Fieldmemory IC

● Block Diagram



● Pin Function

| No. | Pin Name | I/O | Function | No. | Pin Name | I/O | Function |
|-----|----------|-----|---|-----|----------|-----|--|
| 1 | DI0 | I | Write data inputs. Data acceptance is done at the rising edge after the WCK input cycle, and setup and hold time (t _{DS} , t _{DH}) are defined. | 15 | DO7 | O | Read data outputs. The access time is determined from the rising edge before the RCK cycle and defined as t _{AC} . These are 3-state outputs. |
| 2 | DI1 | | | 16 | DO6 | | |
| 3 | DI2 | | | 17 | DO5 | | |
| 4 | DI3 | | | 18 | DO4 | | |
| 5 | WE | I | Write operation control input. When at the high level, internal write operations are inhibited and the write address pointer stops and remains at the current location. | 19 | VDD | — | +5V power supply |
| 6 | GND | — | Ground | 20 | RCK | I | Read clock input. A read operation is done in synchronization with read clock and, when RE is at the low level, the read address pointer is simultaneously incremented. |
| 7 | TEST | I | For testing. To be fixed at the low level. | 21 | RRST | I | Reset input to initialize the read address. Reset signal acceptance is done at the rising edge before the RCK input cycle, and setup and hold time (t _{RS} , t _{RH}) are defined. |
| 8 | WRST | I | Reset input to initialize the write address. Reset signal acceptance is done at the rising edge before the WCK input cycle, and setup and hold time (t _{RS} , t _{RH}) are defined. | 22 | OE | I | Read data control input. When at the high level, DO0 - 7 are set to high impedance. Regardless of the input level of the OE signal, the read address pointer is incremented in synchronization with RCK. |
| 9 | WCK | I | Write clock input. A write operation is done in synchronization with write clock when WE is at the low level, and the write address pointer is incremented at the same time. | 23 | GND | — | Ground |
| 10 | VDD | — | +5V power supply | 24 | RE | I | Read operation control input. When at the high level, internal read operations are enabled, but the read address pointer stops and remains at the current location. |
| 11 | DI4 | I | Write data inputs. Data acceptance is done at the rising edge after the WCK input cycle, and setup and hold time (t _{DS} , t _{DH}) are defined. | 25 | DO3 | O | Read data outputs. The access time is determined from the rising edge before the RCK cycle and defined as t _{AC} . These are 3-state outputs. |
| 12 | DI5 | | | 26 | DO2 | | |
| 13 | DI6 | | | 27 | DO1 | | |
| 14 | DI7 | | | 28 | DO0 | | |

8. CIRCUIT DESCRIPTION

8.1 MODE CONTROL

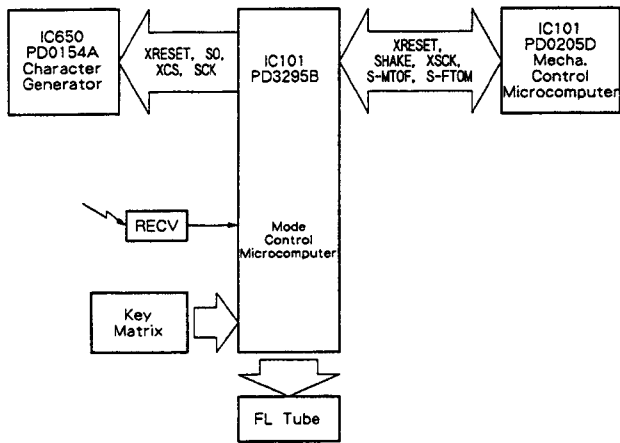


Fig. 1 Mode control block diagram

8.1.1 Microcomputer Interface

The microcomputer system of this model consists of two chips, an 8-bit microcomputer (IC101 : PD0205D) which controls the mechanism and an 8-bit microcomputer (IC101 : PD3295B) 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 (IC650 : PD0154A).

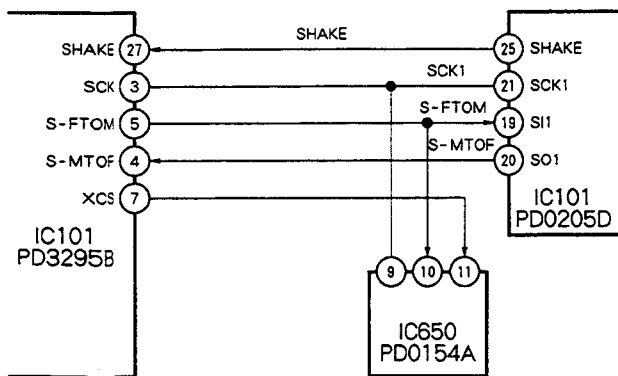


Fig. 2 Serial interface connection diagram

8.1.2 Microcomputer Communication Sequence

1. The PD0205D sets the SHAKE terminal (pin 25) to "L" for several microseconds as a request to the PD3295B for the start of a communication.
 2. When the PD3295B receives the communication start request, it sets the SHAKE terminal (pin 27) to "L" and informs the PD0205D that it is ready for communication.
 3. The PD0205D then sets SCK1 (pin 21), which has been used as an input port, to output mode. The PD3295B sets SCK (pin 3) to the input mode, connecting the communication lines between the microcomputers.
 4. The PD0205D sends the transfer clock (562.5kHz) in 8 bits. The data are then sent and received in synchronization with this clock.
 5. When PD3295B receives data of 8 bits, it sets the SHAKE terminal (pin 27) to "H" and reports that a single communication is completed.
 6. The PD0205D sets SCK1 (pin 21) to input mode, and the PD3295B sets SCK (pin 3) to output mode. The communication line is thereby disconnected and a single communication is completed.
- The communication takes place within a cycle between 10 and 30 ms. Twelve bytes of data are transmitted at one time.

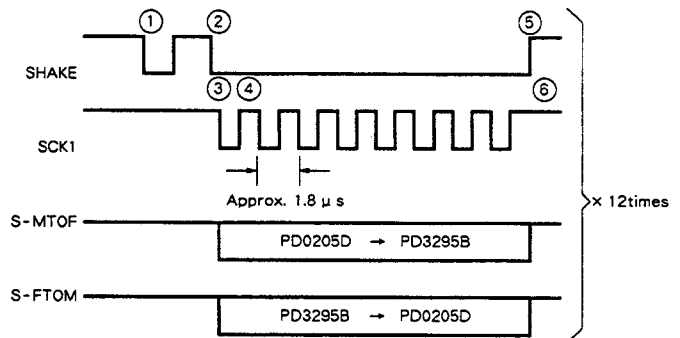


Fig. 3 Timing chart of the microcomputer interface

- The handshake is done on a single line. Both the PD0205D and PD3295B 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 PD3295B will send the reset signal to the PD0205D to reset it to its initial state. This will also happen when the communication is not executed for 300 ms or longer.

8.1.3 Direct CD

When playing a compact disc, the following operations are executed by setting the Direct CD switch to ON.

(Microcomputer control)

- ① The switch incorporated with a lamp lights up and Direct CD mode is initiated.
- ② Power to certain blocks of the video system that are not used for CD playback is turned off. (No indication is issued.)
- ③ The slider park position is set to the position to start a CD.
- ④ The small tray for CDs is extruded when Tray-Close status is switched to Open status.

These operations decrease the time until the CD play starts after the PLAY button is pressed to approx. two-third. In addition, turning off the unnecessary blocks enables pure audio playback.

If you set the Direct CD switch to ON when the tray is open, the switch incorporated with a lamp flashes from the time the tray begins to close until disc distinguishing finishes. When disc distinguishing is completed, the switch lights for a CD, a CLD or no disc. For an LD, the switch goes dark and Direct CD mode is automatically released. The Direct CD switch cannot be turned ON during LD playback.

When playing a CDV disc, the video system is temporarily turned on for the video portion, without releasing Direct CD mode. The normal Direct CD mode is retrieved when the playback of the video portion is finished.

8.1.4 Outline of the Mode-Control System

(1) Description of the Mode Microcomputer

The mode microcomputer performs the following operations.

- ① Main unit key/remote control signal processing
Reading the key switch signal from the main unit and remote control signals, it executes the specified operations.
- ② FL display
It performs display on the FL tubes (VAW1037).
- ③ Screen display
It controls the character generator IC (PD0154A) and superimposes characters on the screen.
- ④ Control of the mechanism-control microcomputer
It directs the mechanism-control microcomputer (PD0205D) for operations and simultaneously accepts some information, including the time and level data.
- ⑤ Management of system reset
If any trouble occurs in communication with the mechanism-control microcomputer, it resets the system to the default condition.

(2) Film Mode

This is a mode specially designed for playing back a movie program from an LD. By setting the Film Mode switch to ON while an open/stop or play operation is being executed, the following operations are executed.

- ① The Film Mode LED lights and Film Mode is initiated.
- ② The FL-OFF LED simultaneously lights and the FL display is turned off.
- ③ The screen displays other than the input displays (program, search, etc.) go out in 2 seconds after the key is pressed.
- ④ One-shot memory in the reverse operation is deactivated.
- ⑤ TOC reading at the playback beginning and reverse operation is deactivated.

These operations decrease the reverse time, enabling smooth reverse operation of movie programs. The time to switch from stop status to playback is also decreased, making this mode effective also as a quick start mode. Film mode is automatically released when a CD is played.

(3) V-DNR (picture-quality control)

The mode-control IC (PD3295B) sends the NR-control steps to the mechanism-control IC (PD0205D).

The control values can be changed in a total of 10 steps from 0 to 9 individually for Y and C of the video signal.

The relationships between the steps and NR values are shown below.

| Step | Y-NR | C-NR |
|------|----------------|----------------|
| 0 | OFF | OFF |
| 1 | Minimum value | Minimum value |
| ... | ... | ... |
| 5 | Standard value | Standard value |
| ... | ... | ... |
| 9 | Maximum value | Maximum value |

The mode-control IC sends step 0 for both Y and C in OFF mode and sends step 5 both for Y and C in STANDARD mode.

In Select mode, any step from 0 to 9 can be selected with the shuttle ring and sent to the mechanism-control IC.

(4) V-DNR, 3D

The mode-control IC (PD3295B) sends the three-dimensional Y/C control steps to the mechanism-control IC (PD0205D).

The settings of the three-dimensional Y/C and the contour compensation can be changed in a total of 10 steps from 0 to 9.

The mechanism-control IC determines the three-dimensional Y/C setting according to these steps.

The relationships between the steps and settings are shown below.

| Step | 3D. Y/C | SHARPNESS |
|------|----------------|----------------|
| 0 | OFF | OFF |
| 1 | Minimum value | Minimum value |
| ... | ... | ... |
| 5 | Standard value | Standard value |
| ... | ... | ... |
| 9 | Maximum value | Maximum value |

The mode-control IC sends step 5 both for the three-dimensional Y/C and contour compensation in OFF and STANDARD mode.

In Select mode, both three-dimensional Y/C and contour compensation can be set to any step from 0 to 9 with the shuttle ring and sent to the mechanism-control IC.

**8.2 Movement-adaptable
three-dimensional Y/C separation**

The digital video signal supplied to pins 3 to 10 of the three-dimensional IC [IC151: GGC1019 (UPD6480GF-3BA)] is directly output from pins 11 to 18, is delayed for 1 frame by two field buffers and becomes a C signal after accepting an arithmetic operation with a newly supplied signal (Fig. 4).

The input signal is simultaneously separated by the line comb filter into Y and C signals before and after a delay of 1 frame (Figs. 6 and 7).

The differences before and after the delay are used to switch three-dimensional and two-dimensional mixing modes as the reference for movement detection.

The Y and C signals before the delay are also used as the 3-line Y/C separation signals in 2-dimensional operations.

In three-dimensional operations, the Y signal passes through the vertical contour compensation circuit in the form of a composite signal, and is output after the C signal is subtracted by three-dimensional separation.

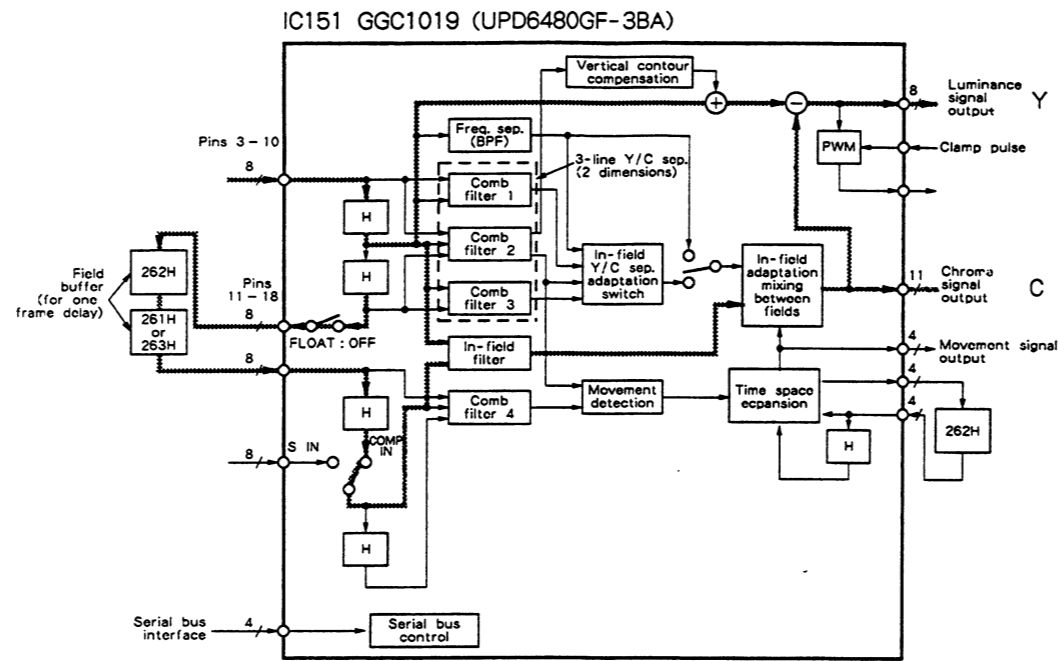


Fig. 4

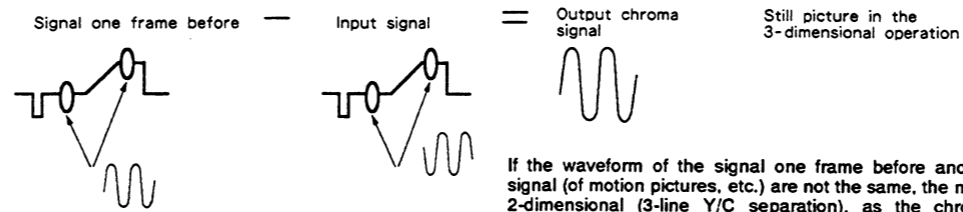


Fig. 5

If the waveform of the signal one frame before and that of the input signal (of motion pictures, etc.) are not the same, the mode is switched to 2-dimensional (3-line Y/C separation), as the chroma may not be accurately separated in 3-dimensional mode.

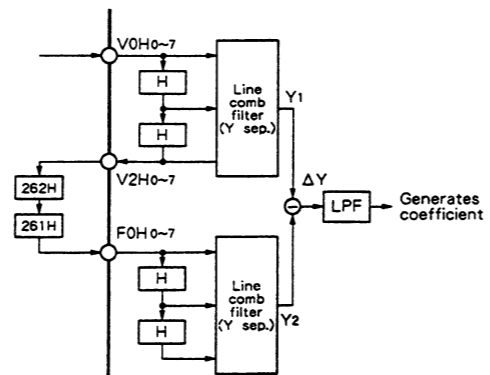


Fig. 6 Y difference detection circuit

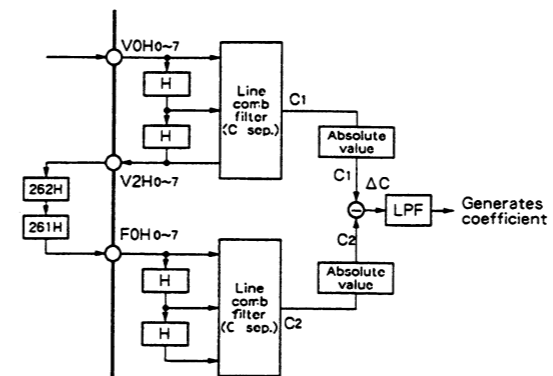
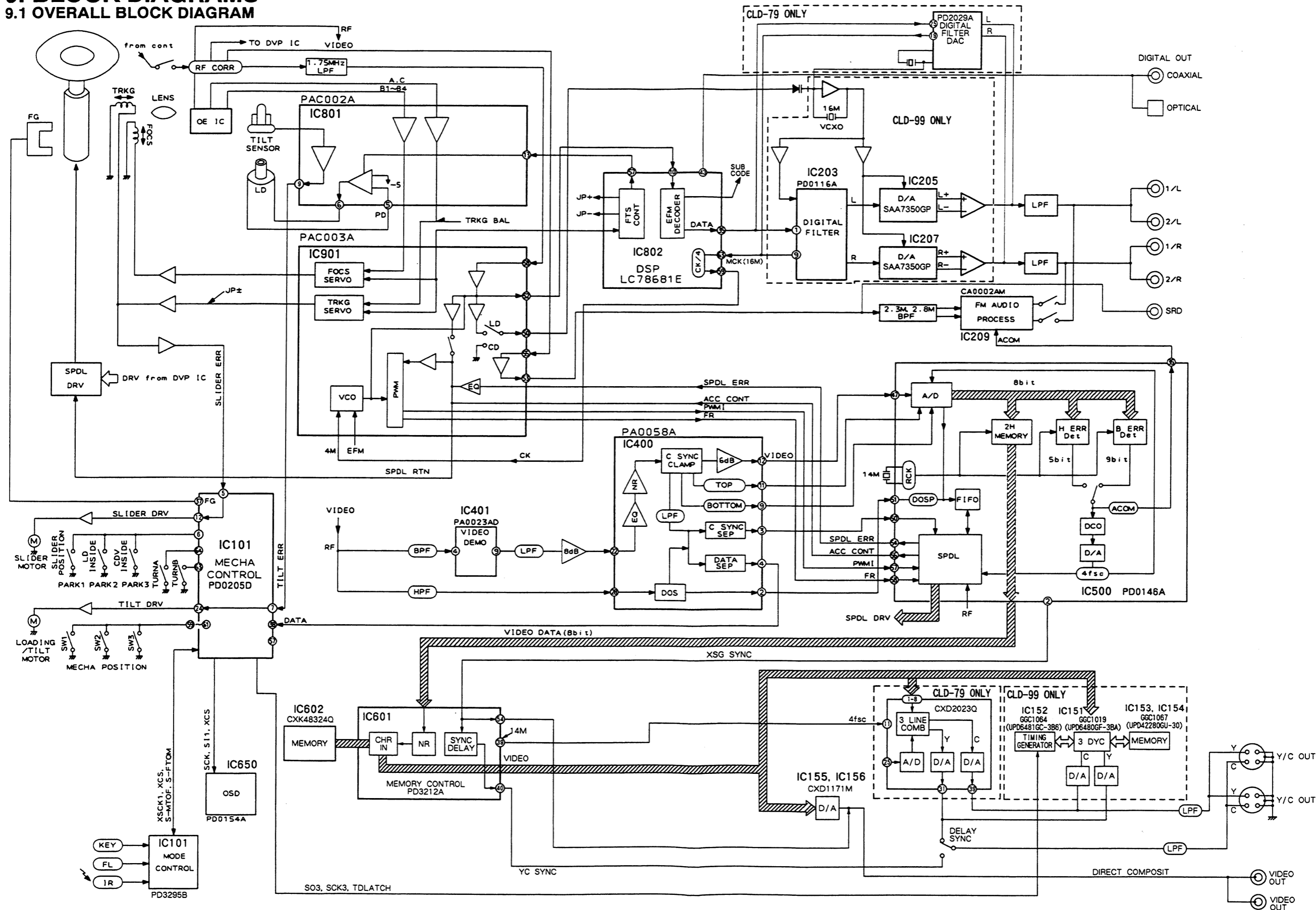


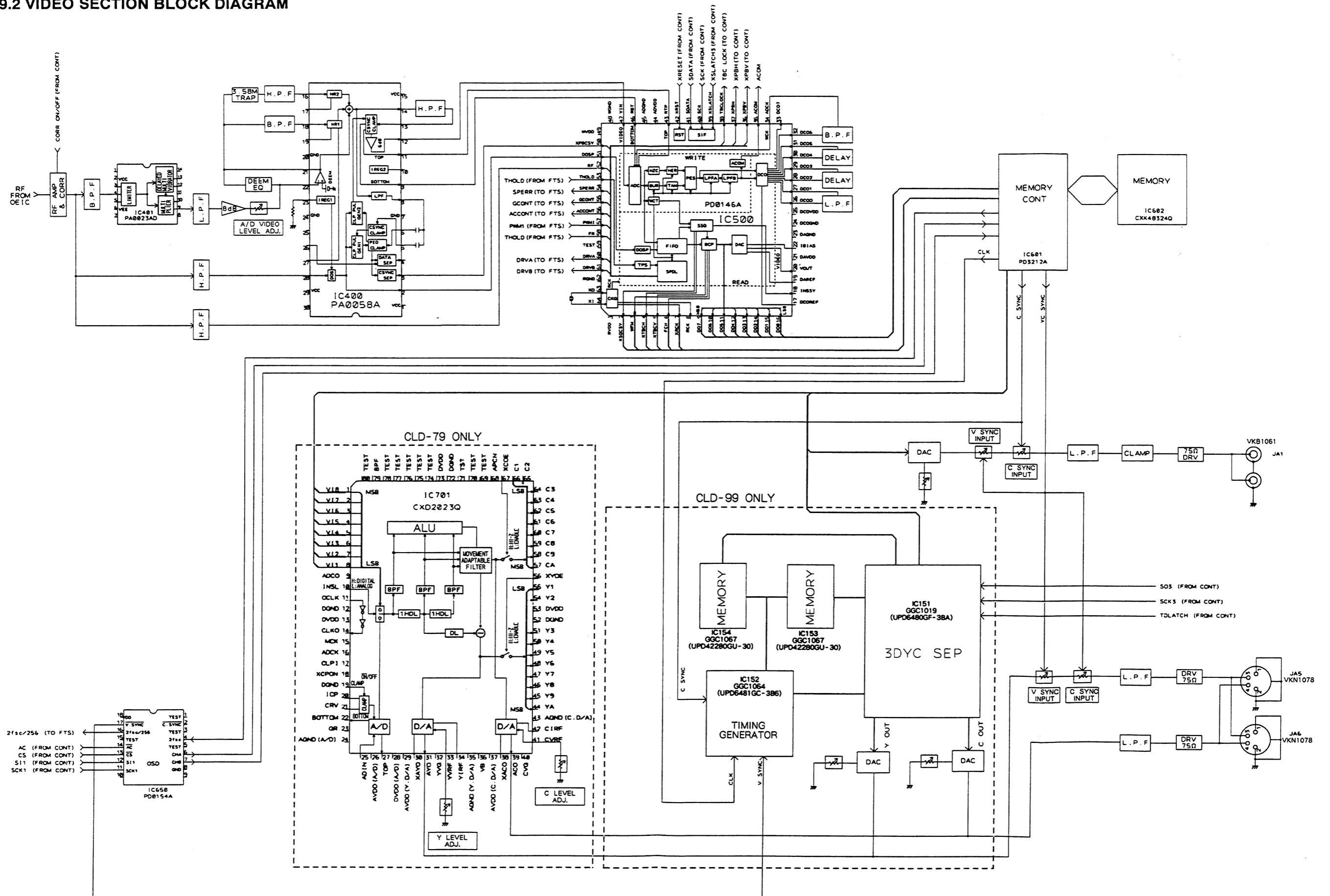
Fig. 7 C difference detection circuit

9. BLOCK DIAGRAMS

9.1 OVERALL BLOCK DIAGRAM

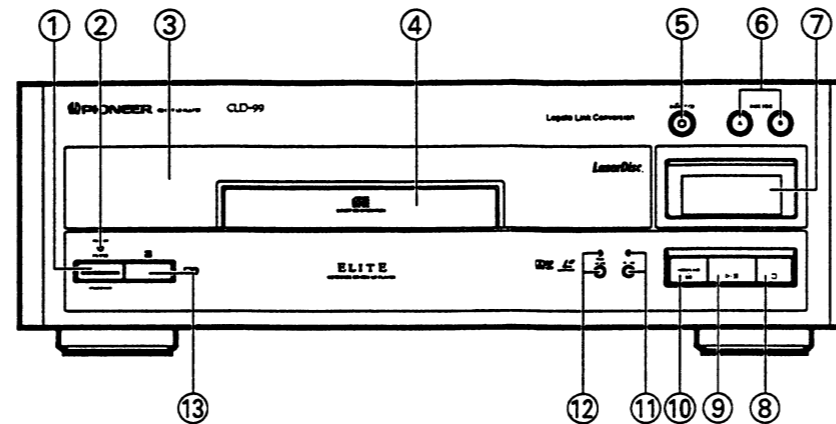


9.2 VIDEO SECTION BLOCK DIAGRAM



10. PANEL FACILITIES

FRONT PANEL



① POWER STANDBY/ON switch
Press to switch power ON/OFF (STANDBY).

② STANDBY indicator
This lights to indicate power standby.
When power is switched ON, it goes out.

③ Disc table

④ CD disc table

⑤ DIRECT CD button/indicator

⑥ DISC SIDE A/B button

⑦ Display window

⑧ Stop button (■)

⑨ Play/Pause button (▶/⏸)

Press when power is OFF, and if there is a disc in the table, power is switched on and play starts.

⑩ OPEN/CLOSE button (▲)

Press when power is OFF, and power is switched ON and the disc table opens.

⑪ FL OFF display button/indicator

When you press the button, the indicator on top of the button lights and the display window switches OFF. Switching off the display prevents low level noise from adversely affecting sound quality. Press again to switch the display ON.

⑫ FILM MODE button/indicator

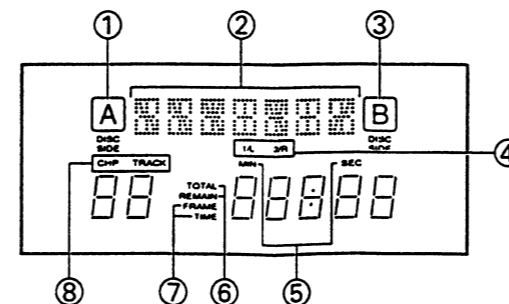
Switch ON if desired when watching a movie disc.

When you switch it ON:

- The display window turns OFF. You can switch it ON/OFF with the FL OFF display button ⑪.
- Screen display switches OFF.
- When changing disc sides, the picture is usually the memorized picture, but when using the Film mode, the screen is black.

⑬ Remote control sensor

DISPLAY



① Side A indicator

② Function operation indicator
Indicates functions and operations. Refer to function explanations for details concerning indications.

③ Side B indicator

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

⑤ MIN/SEC indicator

Indicates play time in minutes and seconds.

⑥ TOTAL/REMAIN indicator

Indicates remaining play time (REMAIN) and the total play time of the side (TOTAL).

⑦ FRAME/TIME indicator

Indicates frame number and elapsed play time.

⑧ Chapter/Track indicator

Indicates chapter number and track number.

11. SPECIFICATIONS

11.1 CLD-99

1. General

System LaserVision Disc system and
Compact Disc digital audio system
Laser Semiconductor laser wavelength 780 nm
Power requirements AC 120V, 60 Hz
Power consumption 48 W
Weight 10.6kg (23lb 6oz)
Dimensions 459 (W) x 432 (D) x 145 (H) mm
17-5/16 (W) x 17 (D) x 15-11/16 (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
30 cm standard play disc 1 hour/both sides
30 cm extended play disc 2 hours/both sides
20 cm standard play disc 28 min/both sides
14 min/one side
20 cm 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 30 cm disc)

Compact Discs

DISC Diameter: 5-inch, 3-inch, Thickness: 1.2 mm
Rotation direction (pickup side) Counterclockwise
Linear speed 1.2 ~ 1.4 m/sec
*Maximum playing time 74 min. 12 cm discs
20 min. 8 cm discs
(For stereo playback)

Compact Discs with Video

DISC Diameter: 12 cm, Thickness: 1.2 mm
Rotation direction (pickup side) Counterclockwise
Linear speed Audio portion : 1.2 ~ 1.4 m/sec
Video portion : 11 ~ 12 m/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 75 Ω unbalanced
Jacks Both RCA jacks

4. S-Video output (two pairs)

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

5. Audio characteristics (two pairs)

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

Digital Audio Characteristics

| | |
|---------------------------|-----------------------------|
| Frequency response | 4 Hz - 20 kHz |
| SN ratio | 117 dB (EIAJ) |
| Dynamic range | 99 dB (EIAJ) |
| Total harmonic distortion | 0.0017 % |
| Wow and flutter | Limit of measurement (EIAJ) |

6. Other Terminals

Control input/output Both miniature jacks
Optical digital output Optical digital jack
Coaxial digital output RCA jack
AC-3 • RF output RCA jack

7. Accessories

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

11.2 CLD-79

1. General

System LaserVision Disc system and
Compact Disc digital audio system
Laser Semiconductor laser wavelength 780 nm
Power requirements AC 120 V, 60Hz
Power consumption 46 W
Weight 8.7 kg (19lb 3oz)
Dimensions 420 (W) x 432 (D) x 140 (H) mm
16-9/16 (W) x 17 (D) x 5-8/16 (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
30 cm standard play disc 1 hour/both sides
30 cm extended play disc 2 hours/both sides
20 cm standard play disc 28 min/both sides
14 min/one side
20 cm 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 30 cm disc)

Compact Discs

DISC Diameter: 5-inch, 3-inch, Thickness: 1.2 mm
Rotation direction (pickup side) Counterclockwise
Linear speed 1.2 ~ 1.4 m/sec
*Maximum playing time 74 min. 12 cm discs
20 min. 8 cm discs
(For stereo playback)

Compact Discs with Video

DISC Diameter: 12 cm, Thickness: 1.2 mm
Rotation direction (pickup side) Counterclockwise
Linear speed Audio portion : 1.2 ~ 1.4 m/sec
Video portion : 11 ~ 12 m/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 75 Ω unbalanced
Jacks Both RCA jacks

4. S-Video output (two pairs)

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

5. Audio characteristics (two pairs)

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

Digital Audio Characteristics

| | |
|---------------------------|-----------------------------|
| Frequency response | 4 Hz - 20 kHz |
| SN ratio | 115 dB (EIAJ) |
| Dynamic range | 98 dB (EIAJ) |
| Total harmonic distortion | 0.0025 % |
| Wow and flutter | Limit of measurement (EIAJ) |

6. Other Terminals

Control input/output Both miniature jacks
Optical digital output Optical digital jack
Coaxial digital output RCA jack
AC-3 · RF output RCA jack

7. Accessories

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