

**SAMSUNG**

## DVD PLAYER

Chassis : Milleno

DVD-N504

DVD-N505

SAMSUNG

SERVICE MANUAL

DVD-N504/N505

# **SERVICE** *Manual*

**SAMSUNG**

ELECTRONICS

### DVD PLAYER



DVD-N504



DVD-N505

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# 1. Precautions

## 1-1 Safety Precautions

1) Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

(1) Be sure that no built-in protective devices are defective or have been defeated during servicing. (1) Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any remove for servicing convenience.

(2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fish papers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

(2) Be sure that there are no cabinet openings through which adults or children might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back cover.

(3) Leakage Current Hot Check-With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use a isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1270 (40.7). With the instrument's AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinets, screw-heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis.

Any current measured must not exceed 0.5mA. Reverse the instrument power cord plug in the outlet and repeat the test. See Fig. 1-1.

Any measurements not within the limits specified herein indicate a potential shock hazard that must be eliminated before returning the instrument to the customer.

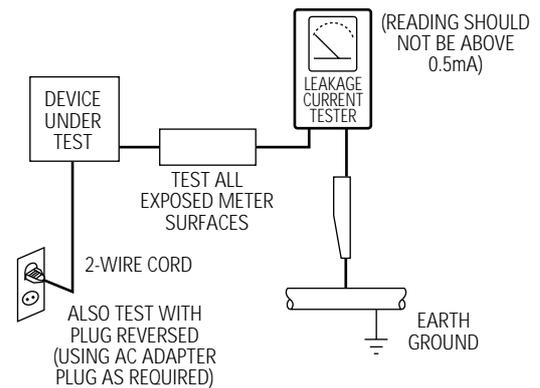


Fig. 1-1 AC Leakage Test

(4) Insulation Resistance Test Cold Check-(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the instrument. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and all exposed metallic cabinet parts on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When an exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 megohm. When there is no return path to the chassis, the reading must be infinite. If the reading is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be re-pared and rechecked before it is returned to the customer. See Fig. 1-2.

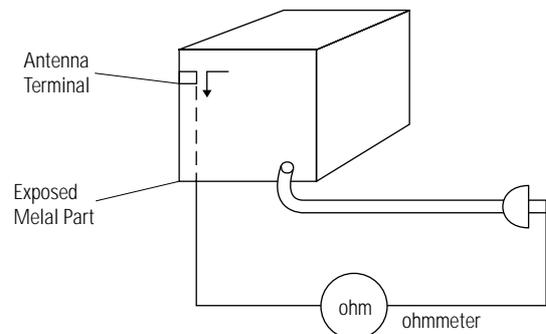


Fig. 1-2 Insulation Resistance Test

- 2) Read and comply with all caution and safety related notes non or inside the cabinet, or on the chassis.
- 3) Design Alteration Warning-Do not alter or add to the mechanical or electrical design of this instrument. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions will make you, the service, responsible for personal injury or property damage resulting therefrom.
- 4) Observe original lead dress. Take extra care to assure correct lead dress in the following areas:  
(1) near sharp edges, (2) near thermally hot parts (be sure that leads and components do not touch thermally hot parts), (3) the AC supply, (4) high voltage, and (5) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring. Do not change spacing between a component and the printed-circuit board. Check the AC power cord for damage.
- 5) Components, parts, and/or wiring that appear to have overheated or that are otherwise damaged should be replaced with components, parts and/or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.
- 6) Product Safety Notice-Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by shading, an () or a () on schematics and parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

## 1-2 Servicing Precautions

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**CAUTION :** Before servicing Instruments covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

**Note :** If unforeseen circumstance create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. Remember: Safety First.

### 1-2-1 General Servicing Precautions

- (1) a. Always unplug the instrument's AC power cord from the AC power source before (1) removing or reinstalling any component, circuit board, module or any other instrument assembly, (2) disconnecting any instrument electrical plug or other electrical connection, (3) connecting a test substitute in parallel with an electrolytic capacitor in the instrument.
- b. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.
- c. Do not apply AC power to this instrument and /or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
- d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

**Note :** Refer to the Safety Precautions section ground lead last.

- (2) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.
- (3) The components used in the unit have a specified flame resistance and dielectric strength. When replacing components, use components which have the same ratings. Components identified by shading, by (⚡) or by (⚡) in the circuit diagram are important for safety or for the characteristics of the unit. Always replace them with the exact replacement components.

- (4) An insulation tube or tape is sometimes used and some components are raised above the printed wiring board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install such elements as they were.

- (5) After servicing, always check that the removed screws, components, and wiring have been installed correctly and that the portion around the serviced part has not been damaged and so on. Further, check the insulation between the blades of the attachment plug and accessible conductive parts.

### 1-2-2 Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power ON. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts(see note) should be more than 1 Megohm.

**Note :** Accessible conductive parts include metal panels, input terminals, earphone jacks, etc.

## 1-3 ESD Precautions

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### Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity.

Such components commonly are called Electrostatically Sensitive Devices(ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

- (1) Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
- (2) After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
- (3) Use only a grounded-tip soldering iron to solder or unsolder ESD devices.
- (4) Use only an anti-static solder removal devices. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.
- (5) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.
- (6) Do not remove a replacement ESD device from its protective package until immediately before your are ready to install it.(Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

- (7) Immediately before removing the protective materials from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

**CAUTION :** Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

- (8) Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

## 1-4 Handling the optical pick-up

The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

- (1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts.)
  - (2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.
  - (3) Place your hands on the conductive sheet (This gives them the same ground as the sheet.)
  - (4) Remove the optical pick up block
  - (5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.
- ◆ Be sure to put on a wrist strap grounded to the sheet.
  - ◆ Be sure to lay a conductive sheet made of copper etc. Which is grounded to the table.

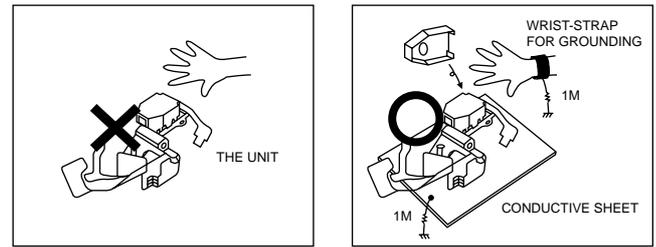


Fig.1-3

- (6) Short the short terminal on the PCB, which is inside the Pick-Up ASS'Y, before replacing the Pick-Up. (The short terminal is shorted when the Pick-Up Ass'y is being lifted or moved.)
- (7) After replacing the Pick-up, open the short terminal on the PCB.

## 1-5 Pick-up disassembly and reassembly

### 1-5-1 Disassembly

- 1) Remove the power cord.
- 2) Disassemble the Deck-Assy.
- 3) Make solder land 4 points short on Pick-up.  
(See Fig. 1-4)
- 4) Disassembly the Pick-up.

### 1-5-2 Assembly

- 1) Replace the Pick-up.
- 2) Remove the soldering 4 points on Pick-up.  
(See Fig. 1-4)
- 3) Reassemble the Deck-Assy.

**Note :** If the assembly and disassembly are not done in correct sequence, the Pick-up may be damaged.

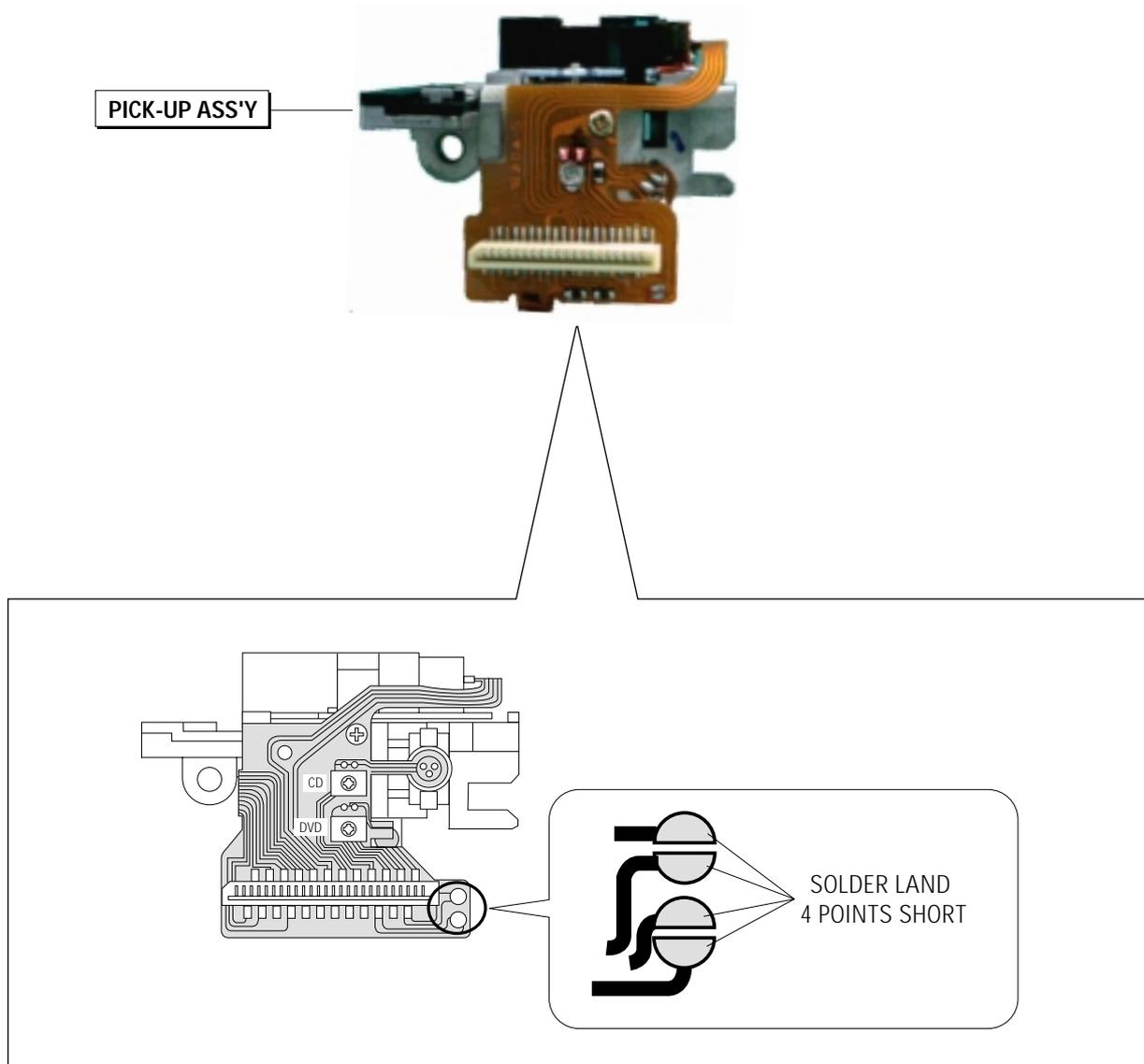


Fig. 1-4

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## 2. Disassembly and Reassembly

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### 2-1 Cabinet and PCB

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**Note : Reassembly in reverse order.**

#### 2-1-1 Top Cabinet Removal

- 1) Remove 3 Screws ❶ on the back Top Cabinet.
- 2) Lift up the Top Cabinet in direction of arrow.

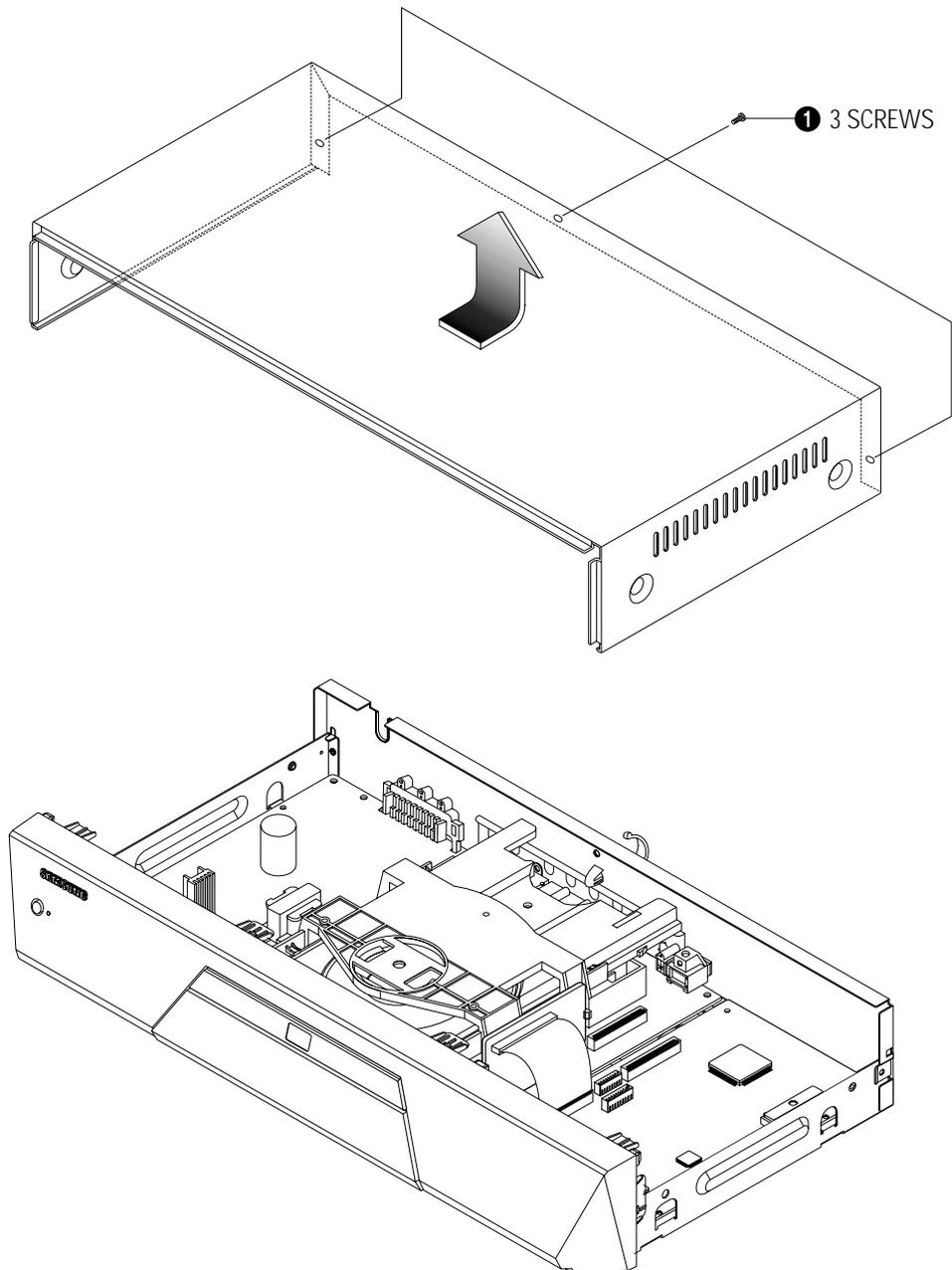


Fig. 2-1 Top Cabinet Removal

## 2-1-2 Ass'y Door-Tray Removal

- 1) Supply power and open Tray ❶.
- 2) Disassemble the Ass'y Door-Tray ❷ in direction of arrow "A".
- 3) Close Tray ❶ and power off.

**Note :** If Tray ❶ doesn't open, insert a Screw driver ❹ into the Emergency hole ❸ (as shown in detailed drawing) and then push it in the direction of arrow "B". Open Tray manually.

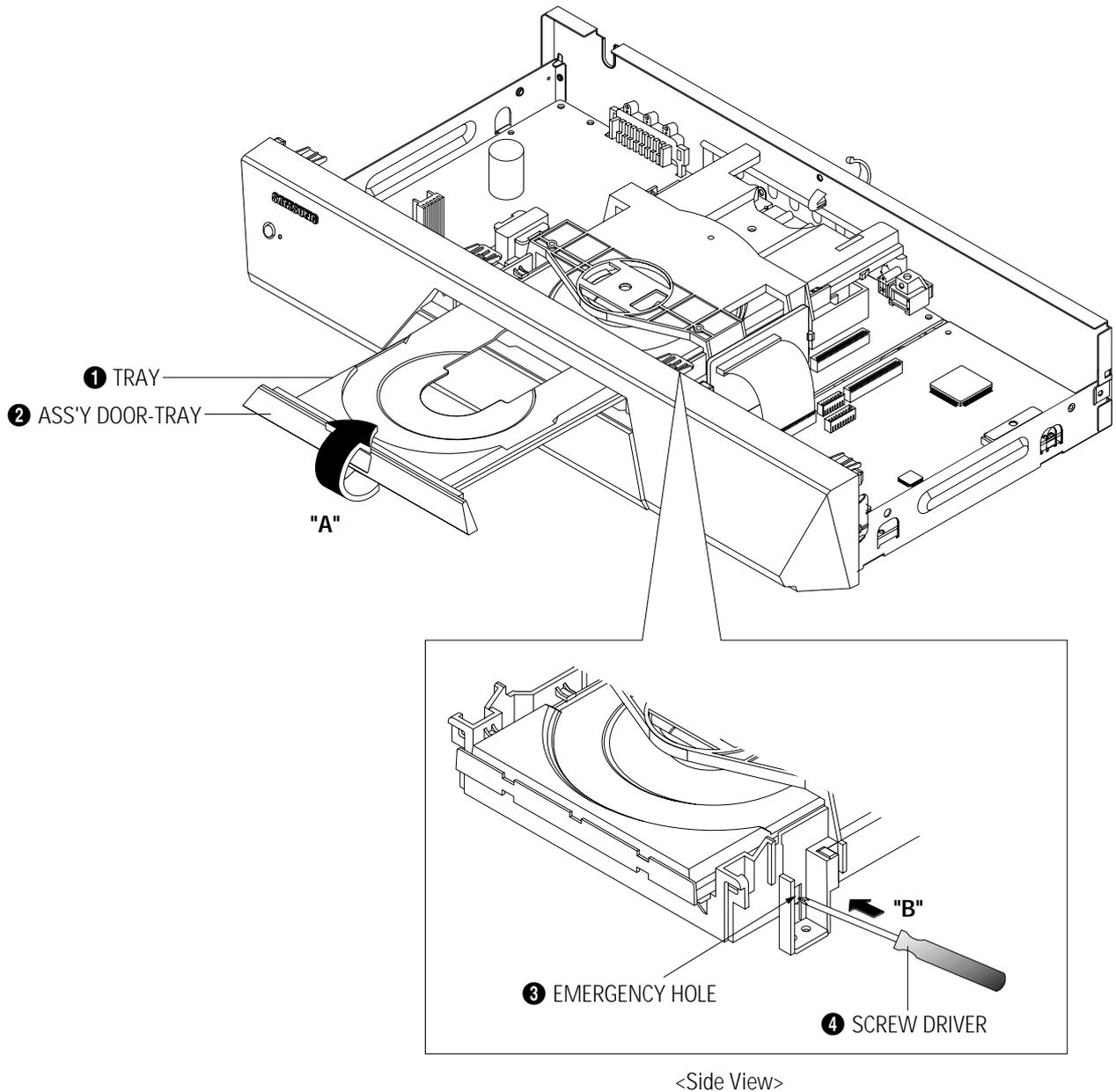


Fig. 2-2 Ass'y Door-Tray Removal

## 2-1-3 Ass'y Front-Cabinet Removal

### <DVD-N504>

- 1) Release 6 Hooks **1**, **2**, **3**, **4** and remove Ass'y Front-Cabinet **5**.
- 2) Remove 2 Screws **6** and Joy-Pad PCB **7**.

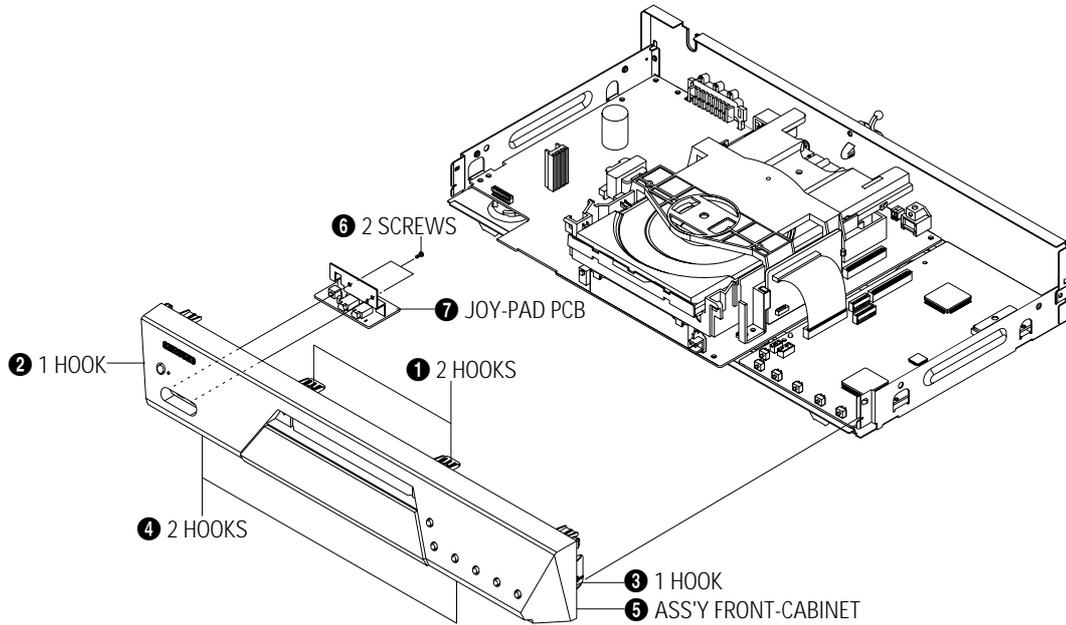


Fig. 2-3 Ass'y Front-Cabinet Removal (DVD-N504)

### <DVD-N505>

- 1) Release 6 Hooks **1**, **2**, **3**, **4** and remove Ass'y Front-Cabinet **5**.
- 2) Remove Knob-Volume **6** and Knob-Jog **7**, Knob-Shuttle **8**.
- 3) Remove 2 Screws **9**, Joy-pad **10** PCB and 5 Screws **11**, **12**, Key PCB **13**.

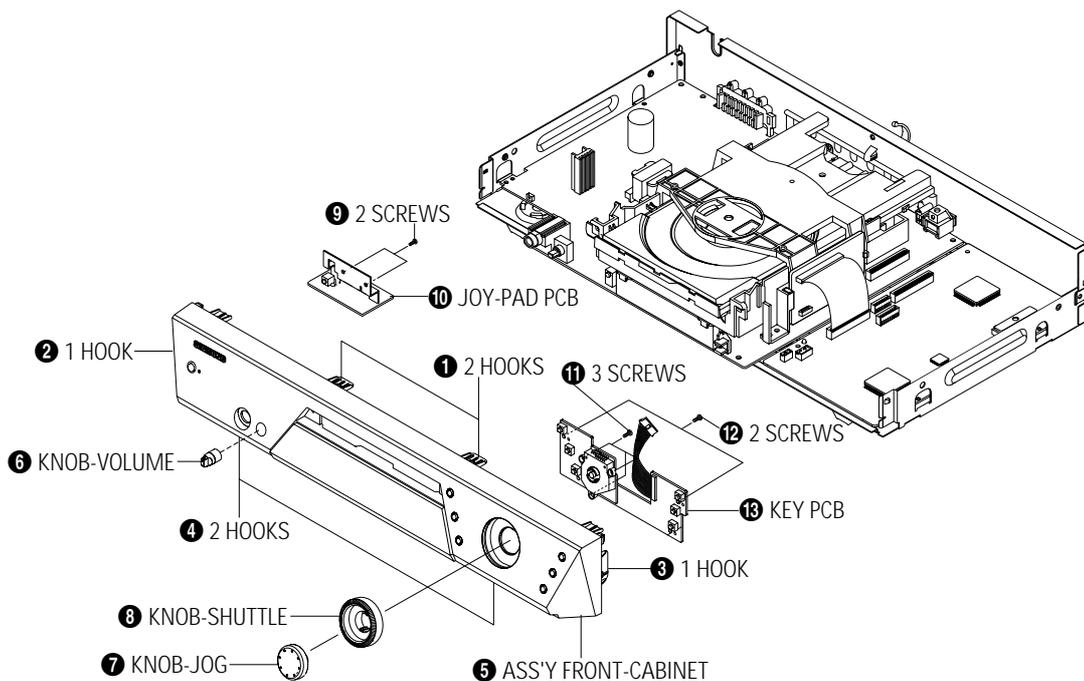


Fig. 2-4 Ass'y Front-Cabinet Removal (DVD-N505)

## 2-1-4 Ass'y Deck Removal

- 1) Disconnect Flat-Cable, Connect-Wire from DCN1, DCN2 on Main PCB.
- 2) Remove 3 Screws ❶ from the Ass'y Deck and lift it up.

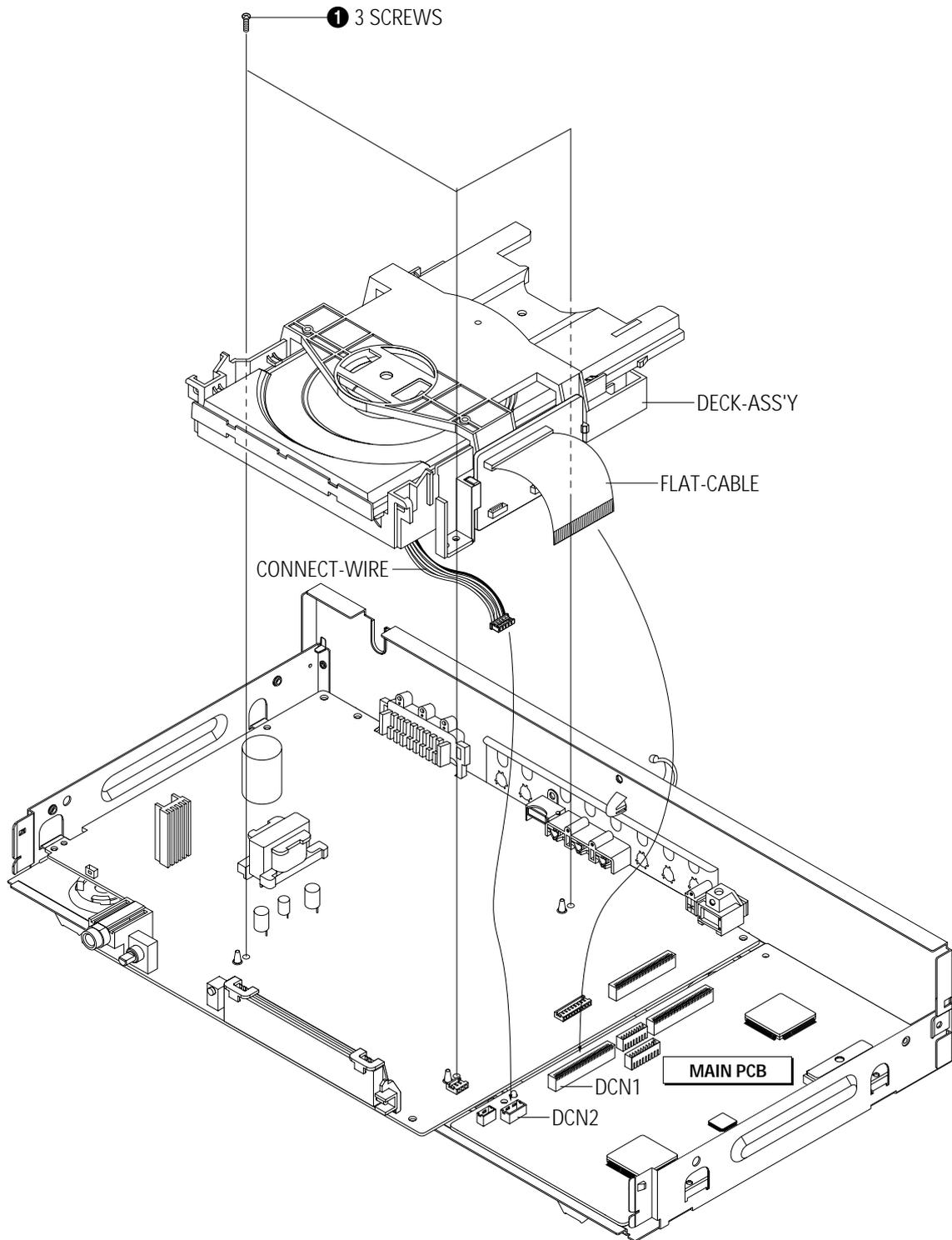


Fig. 2-5 Ass'y Deck Removal

## 2-1-5 Main PCB, Jack PCB Removal

- 1) Remove 1 Screw ❶, 2 Screws ❷ and lift up the Jack PCB ❸.
- 2) Remove 4 Screws ❹ and lift up the Main PCB ❺.

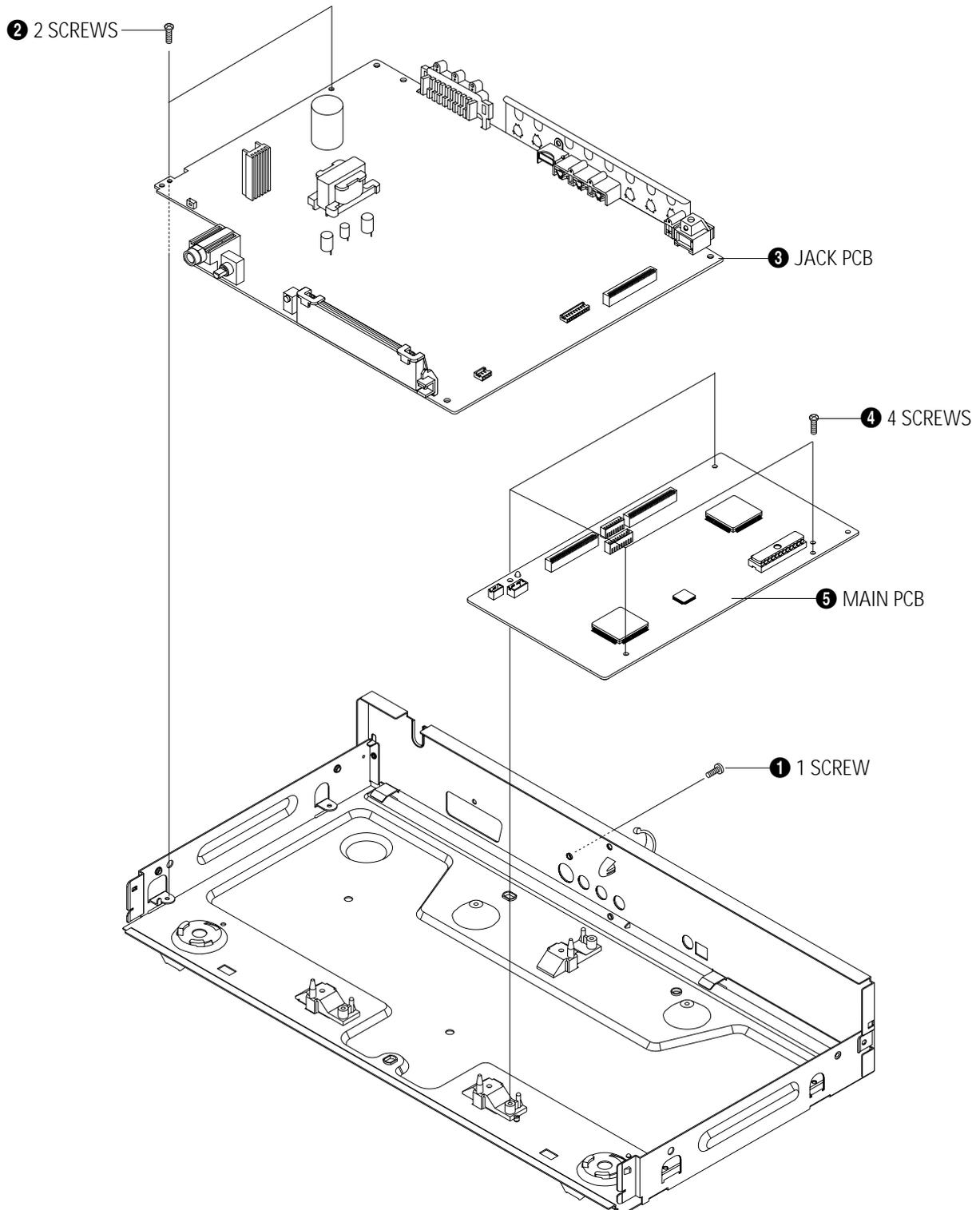


Fig. 2-6 Main PCB, Jack PCB Removal

## 2-2 PCB Location

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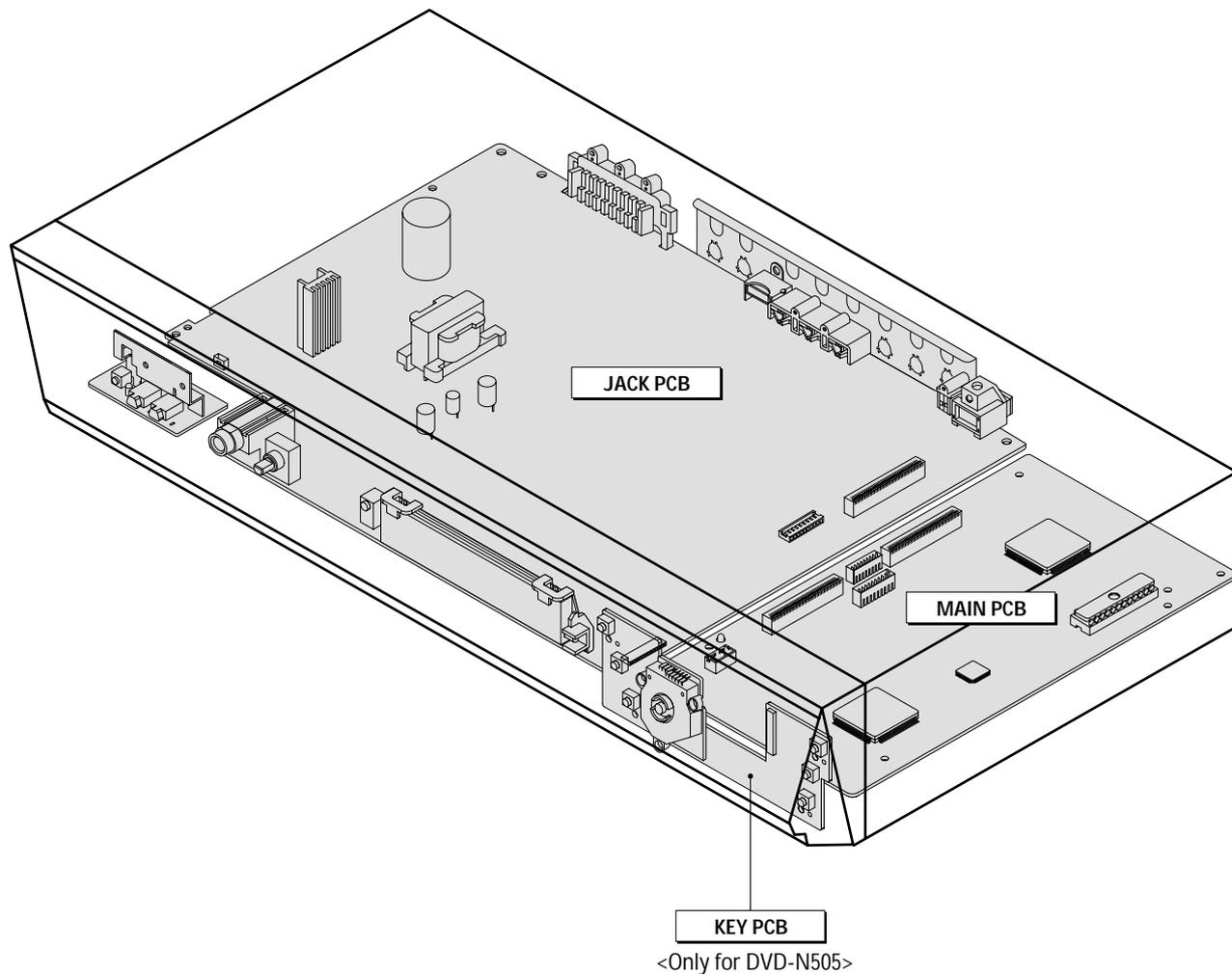
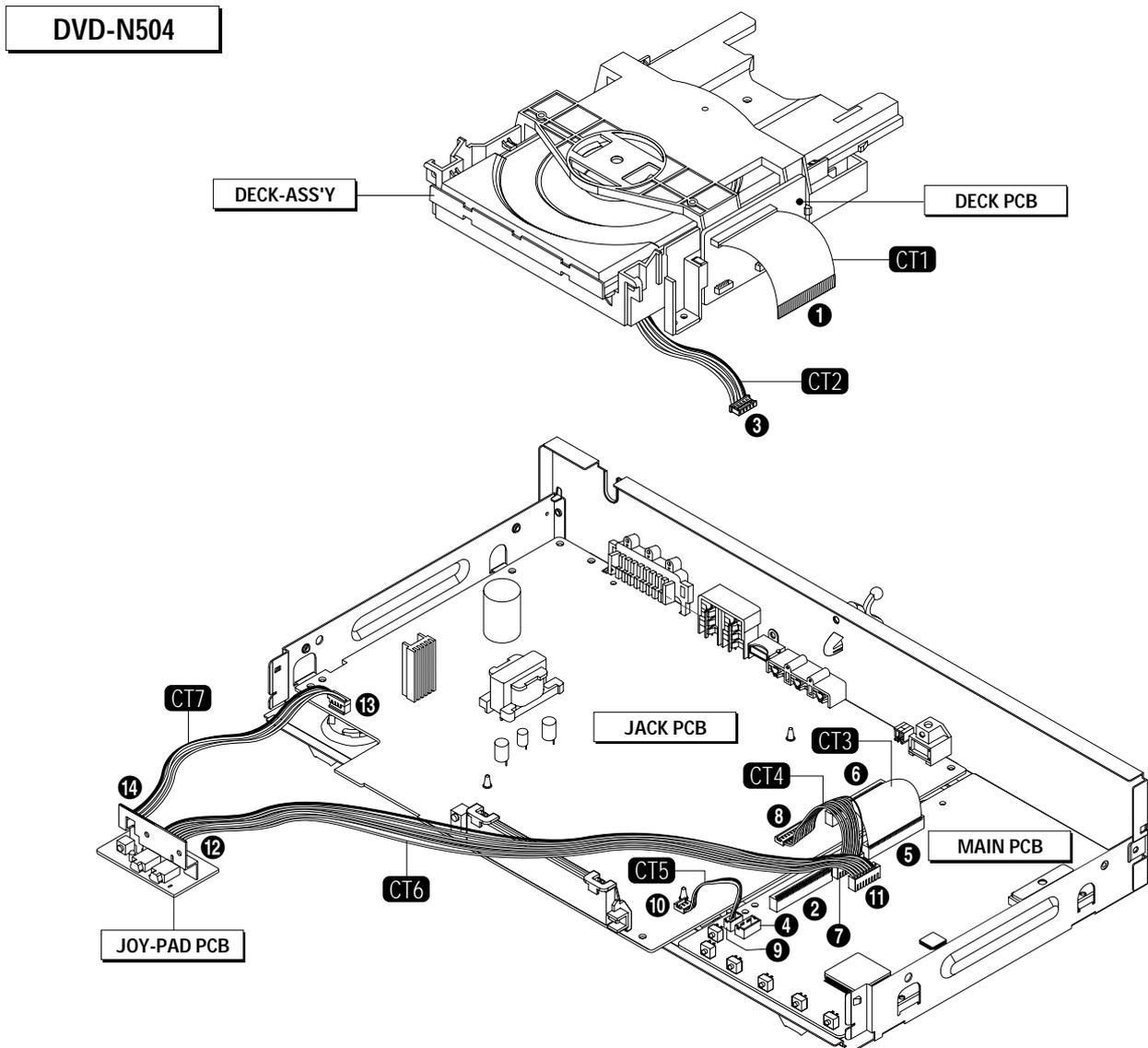


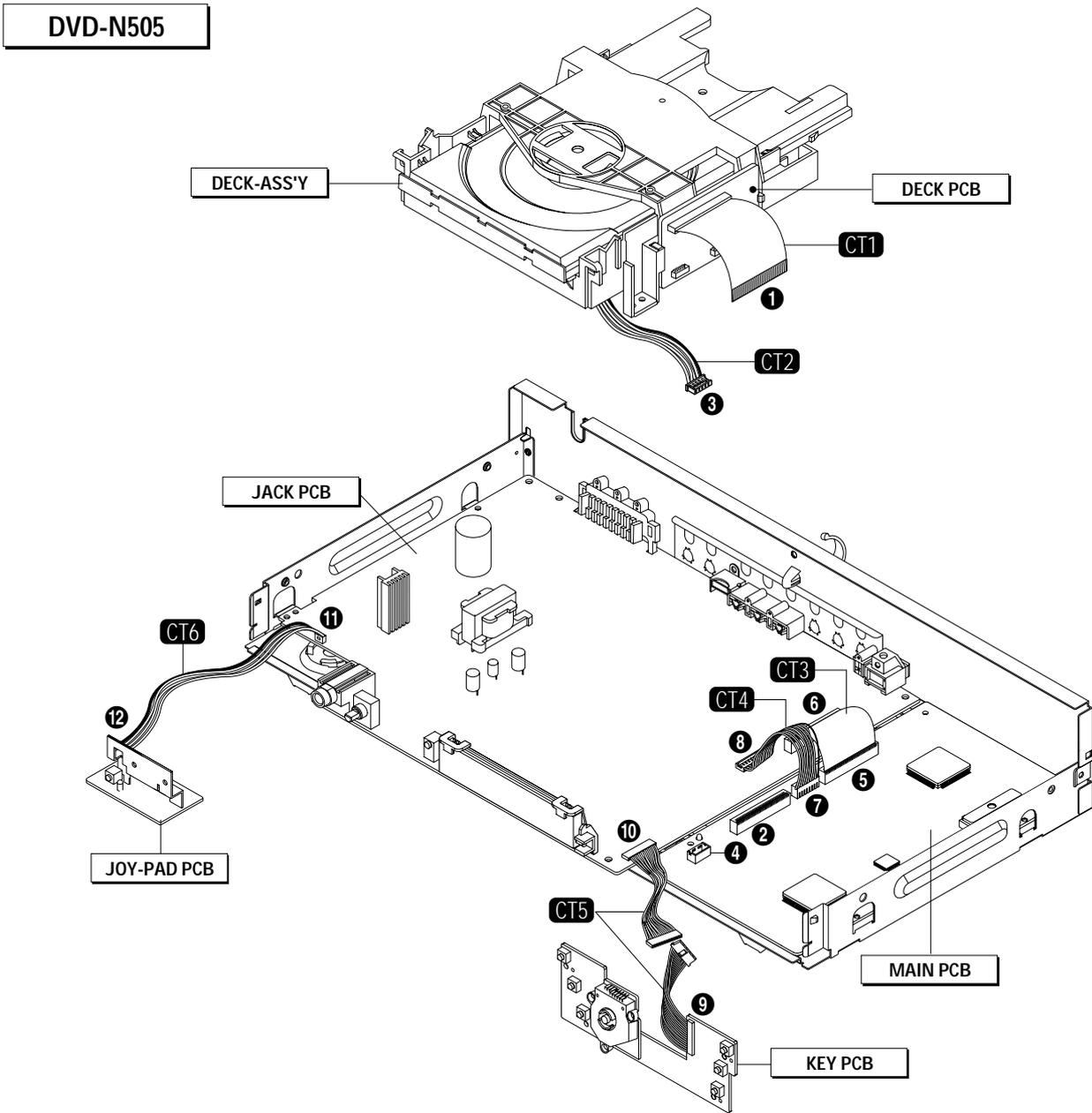
Fig. 2-7 PCB Location

## 2-3 Connector Diagram



NO.	CONNECTOR NO.	DIRECTION	CONNECTOR NO.	NO.
1	FLAT-CABLE	DECK PCB ← CT1 → MAIN PCB	DCN1	2
3	CONNECT-WIRE (HCN1)	HOUSING PCB ← CT2 → MAIN PCB	DCN2	4
5	CN8	MAIN PCB ← CT3 → JACK PCB	CN1	6
7	PCN1	MAIN PCB ← CT4 → JACK PCB	PCNS1	8
9	DCN3	MAIN PCB ← CT5 → JACK PCB	CN2	10
11	CN9	MAIN PCB ← CT6 → JOY-PAD PCB	JCNS1	12
13	JCN1	JACK PCB ← CT7 → JOY-PAD PCB	JCNS2	14

Fig. 2-8 Connector Diagram (DVD-N504)



NO.	CONNECTOR NO.	DIRECTION	CONNECTOR NO.	NO.
1	FLAT-CABLE	DECK PCB ← CT1 → MAIN PCB	DCN1	2
3	CONNECT-WIRE (HCN1)	HOUSING PCB ← CT2 → MAIN PCB	DCN2	4
5	CN8	MAIN PCB ← CT3 → JACK PCB	CN1	6
7	PCN1	MAIN PCB ← CT4 → JACK PCB	PCNS1	8
9	JCN2	KEY PCB ← CT5 → JACK PCB	CN2S	10
11	JCN1	JACK PCB ← CT6 → JOY-PAD PCB	JCNS2	12

Fig. 2-9 Connector Diagram (DVD-N505)

## 2-4 Deck

### 2-4-1 Tray Disc Removal

- 1) Insert a Screw Driver **1** into Emergency Hole **2** and push the Slider Housing **3** in the direction arrow "A".
- 2) When the Tray Disc **4** comes out a little, pull it in the direction arrow "B" by hand.
- 3) Pull the Tray Disc **4** to disassemble, while simultaneously pushing 2 Stoppers **5** (left, right) in the direction arrow "C", "D".

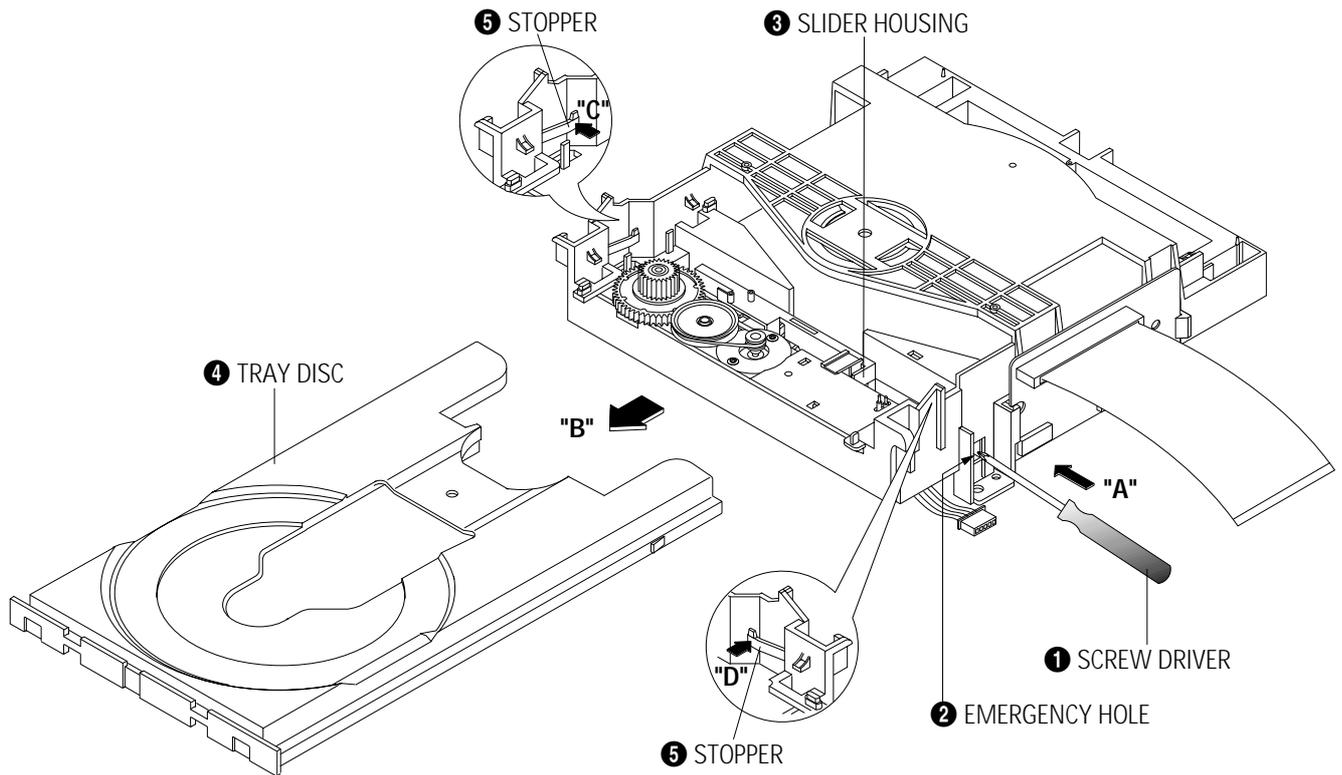


Fig. 2-10 Tray Disc Removal

## 2-4-2 Assy P/U Deck Removal

- 1) Disconnect DCN2 **1**, DCN3 **2**.
- 2) Lift down the Assy P/U Deck **3** while simultaneously pushing 2 Hooks **4**, **5** in the direction of arrow "A", "B".

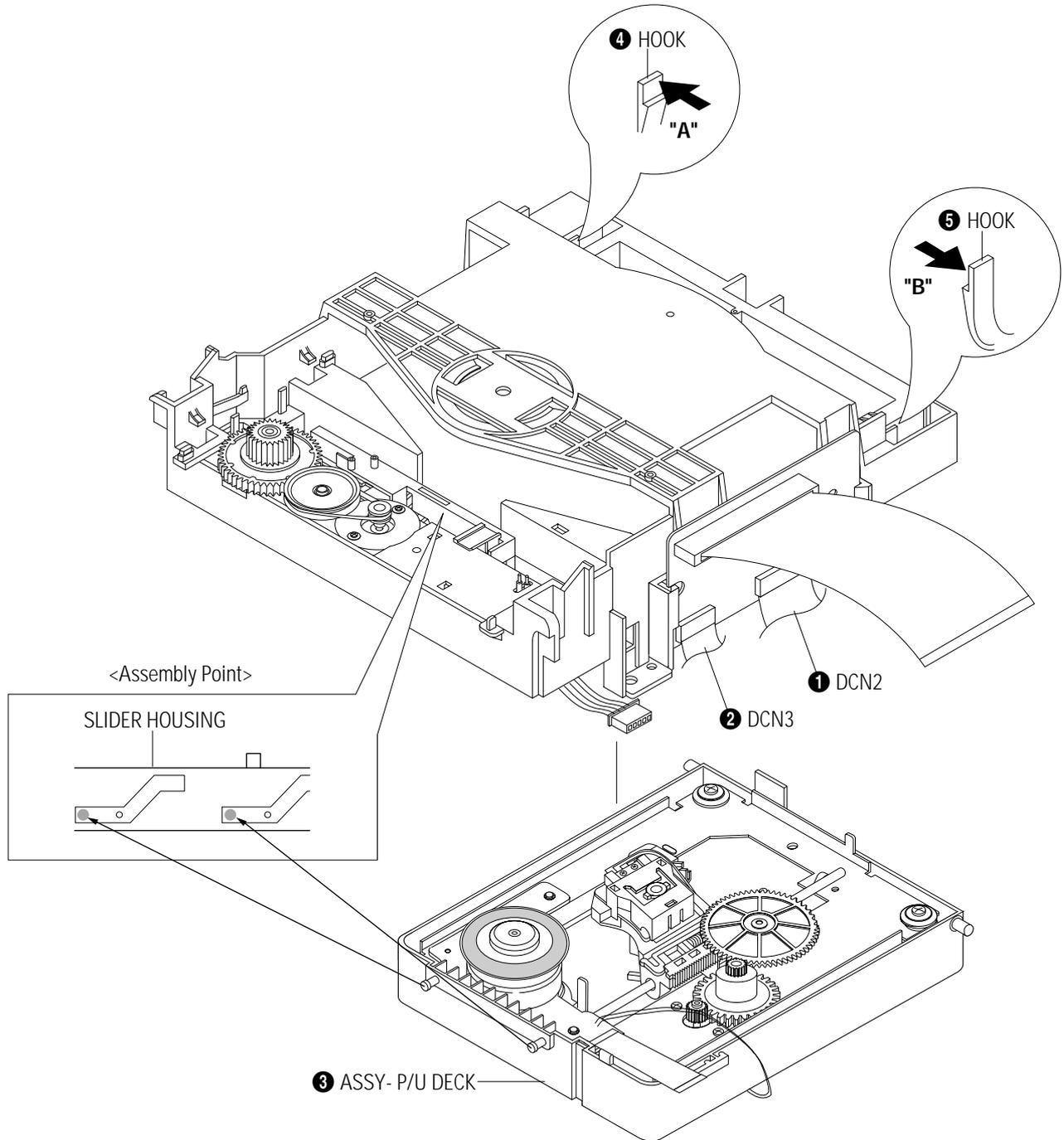


Fig. 2-11 Assy P/U Deck Removal

### 2-4-3 Housing Ass'y Removal

- 1) Remove Belt ❶.
- 2) Push the Hook ❷ in the direction arrow "A" and lift up Pulley Gear ❸.
- 3) Push the Slider Housing ❺ in the direction arrow "B" and lift up the Gear Tray ❹.
- 4) Lift up the Slider Housing ❺.
- 5) Remove the soldering ❻ of 2 points (Red, Black).
- 6) Remove 2 Screws ❼ and lift down the Motor Load Assy ❽.
- 7) Push the 3 Hooks ❾ bottom side in the direction arrow "C" and lift up the Housing PCB ❿.
- 8) Push the Hooks ⓫ and remove Deck PCB ⓬.

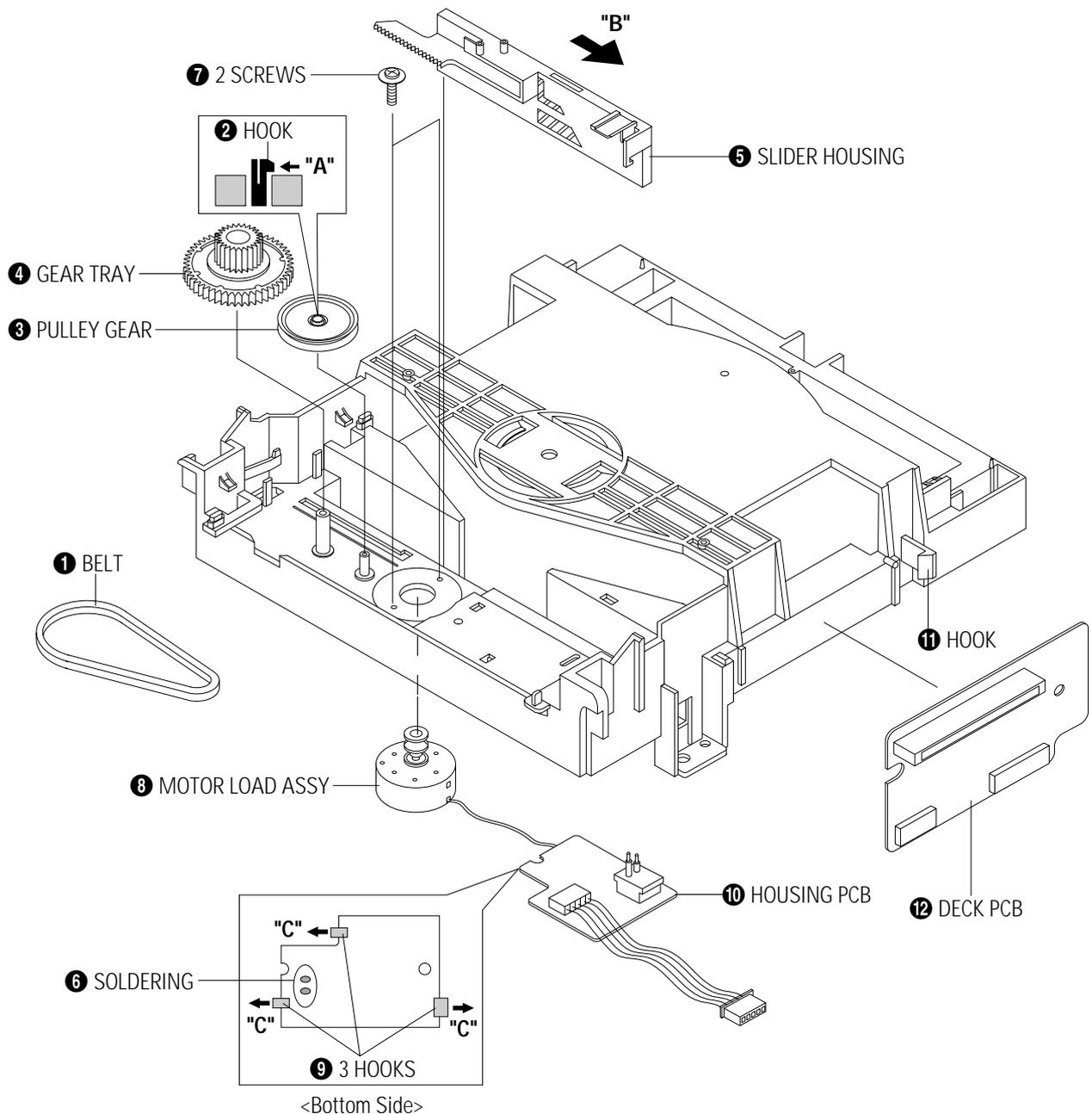


Fig. 2-12 Housing Ass'y Removal

## 2-4-4 Sub Chassis Removal

- 1) Remove the Soldering of Motor Feed (+, - wire) ❶.
- 2) Remove the 4 Screws ❷.
- 3) Lift up the Ass'y Brkt Deck ❸.

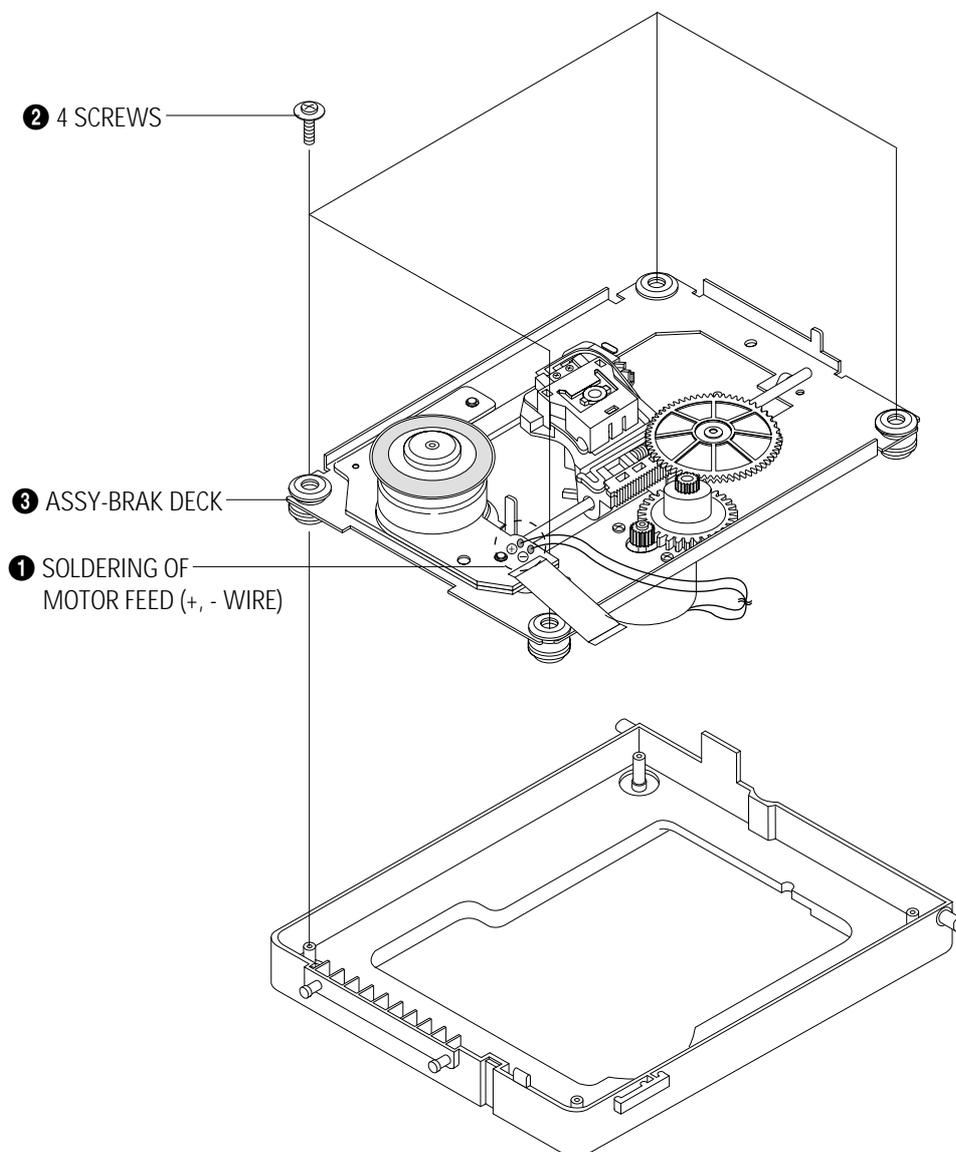


Fig. 2-13 Sub Chassis Removal

## 2-4-5 Ass'y Brkt Deck Removal

- 1) Remove Washer ①.
- 2) Remove Gear Feed B ②, Gear Feed A ③.
- 3) Remove 2 Screws ④.
- 4) Remove Shaft Pick-Up ⑤ and Pick-Up Assy ⑥.
- 5) Remove 1 Screw ⑦.
- 6) Remove 2 Screws ⑧.
- 7) Remove 3 Spring Spindle ⑨ and Motor Spindle Ass'y ⑩.

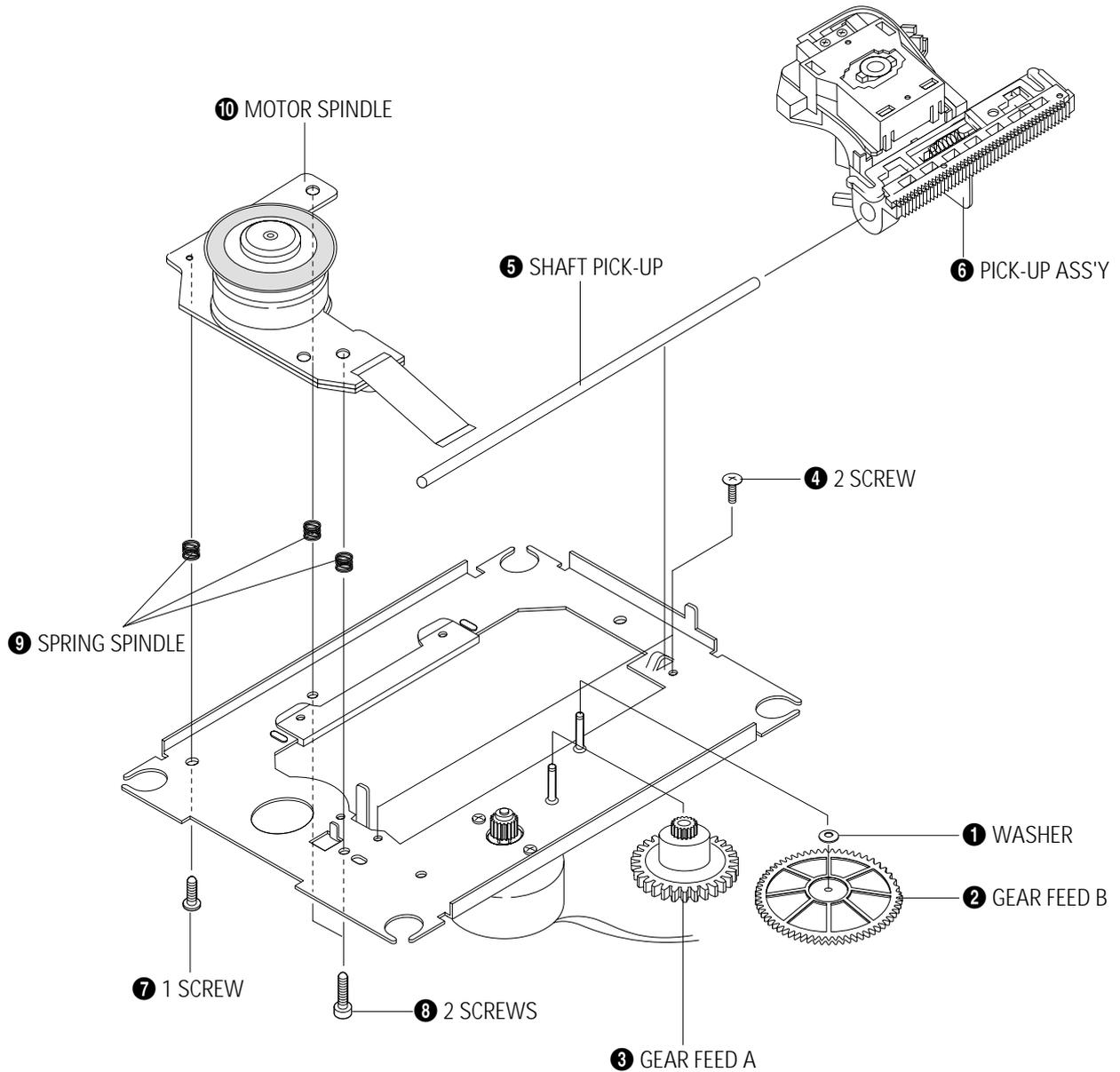
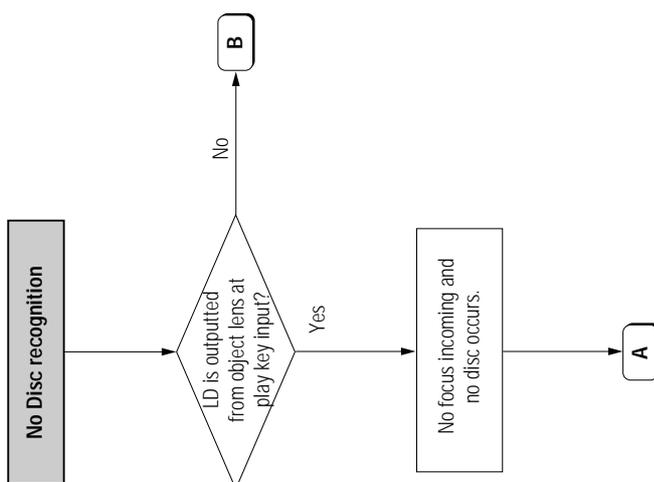
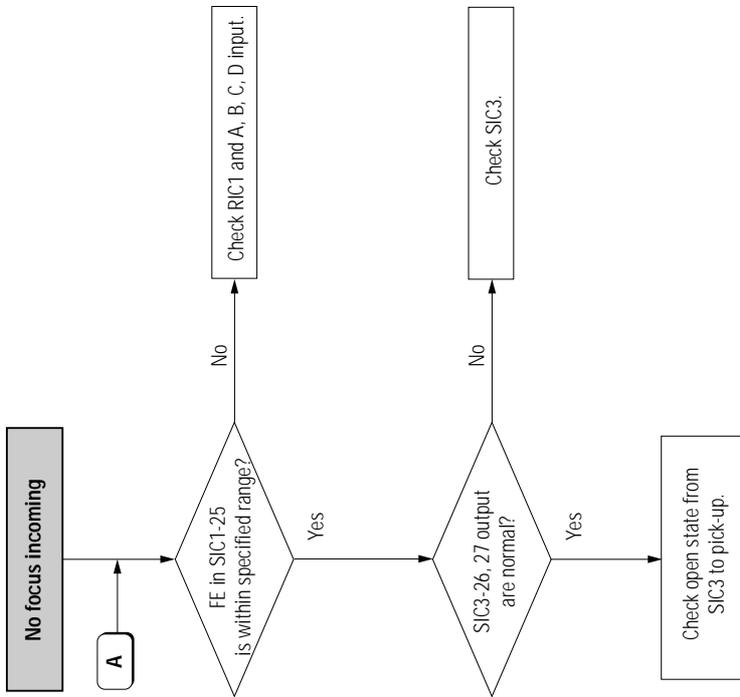
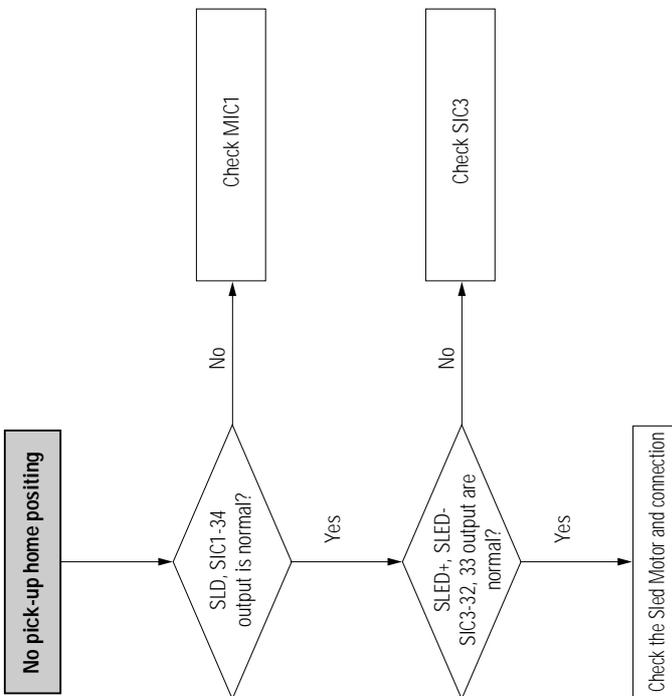
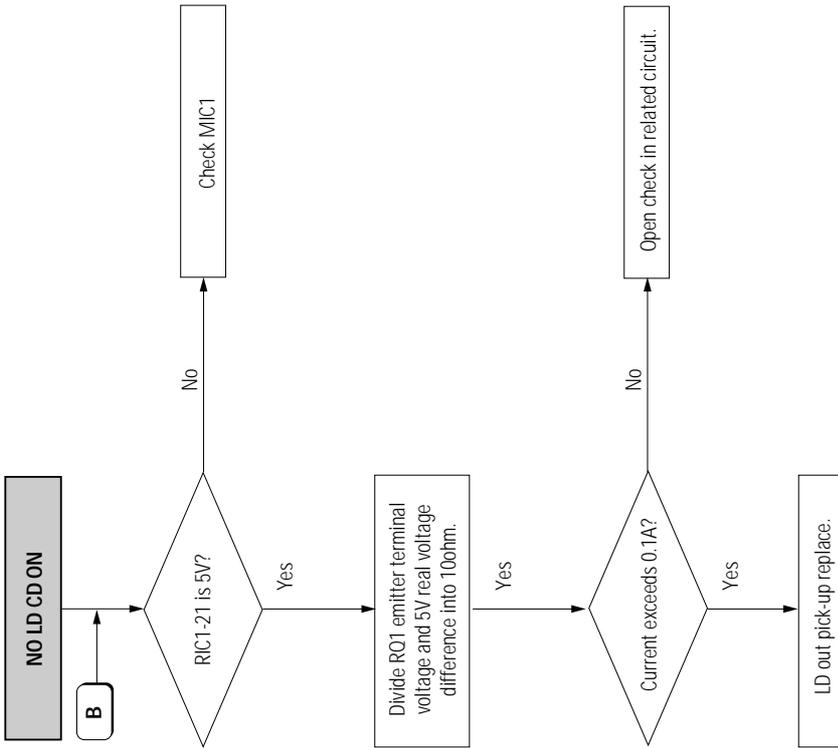


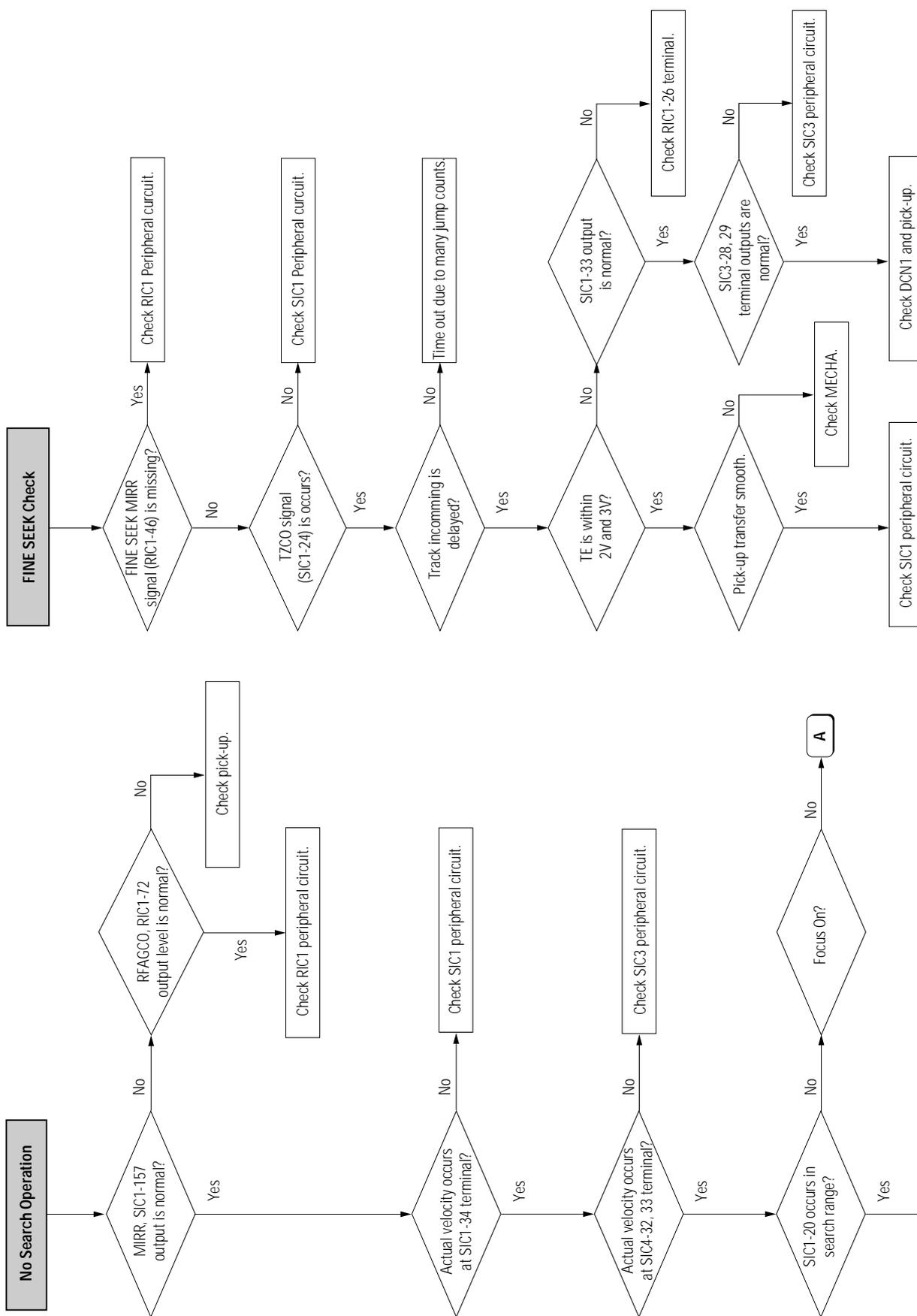
Fig. 2-14 Ass'y Brkt Deck Removal

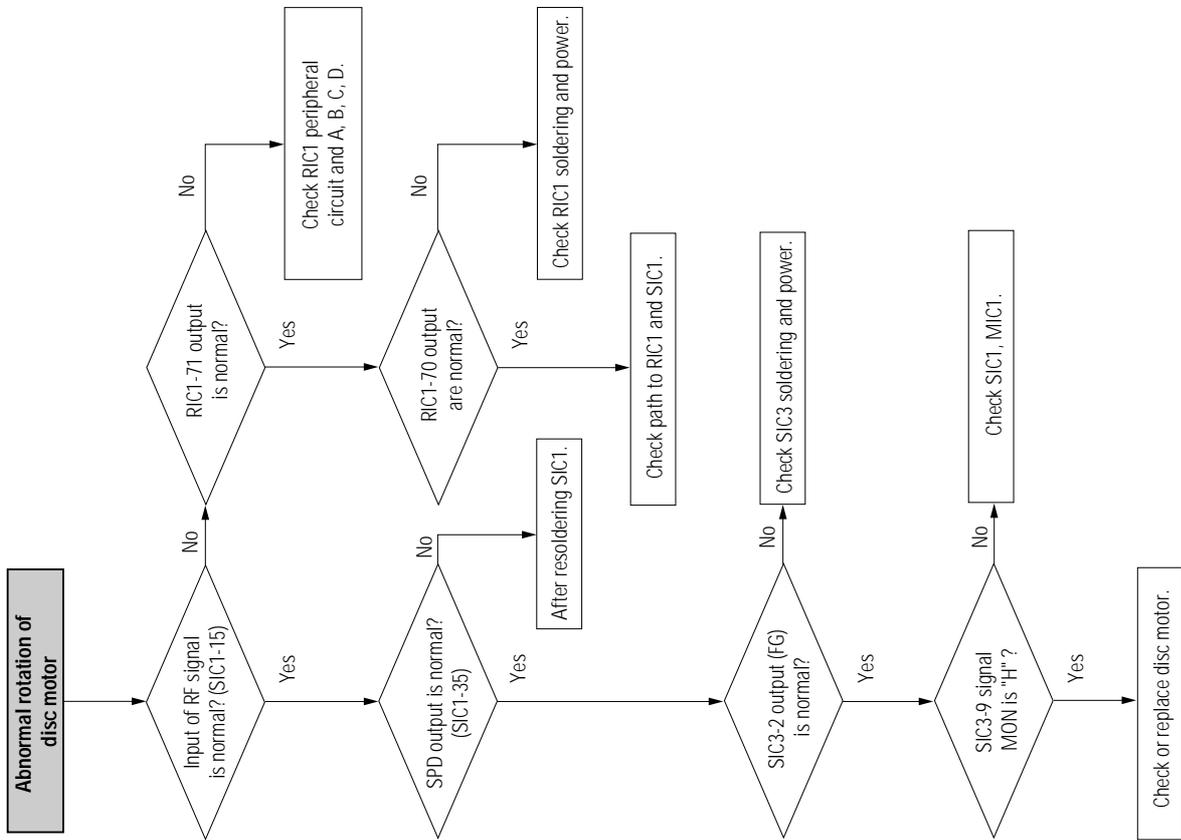
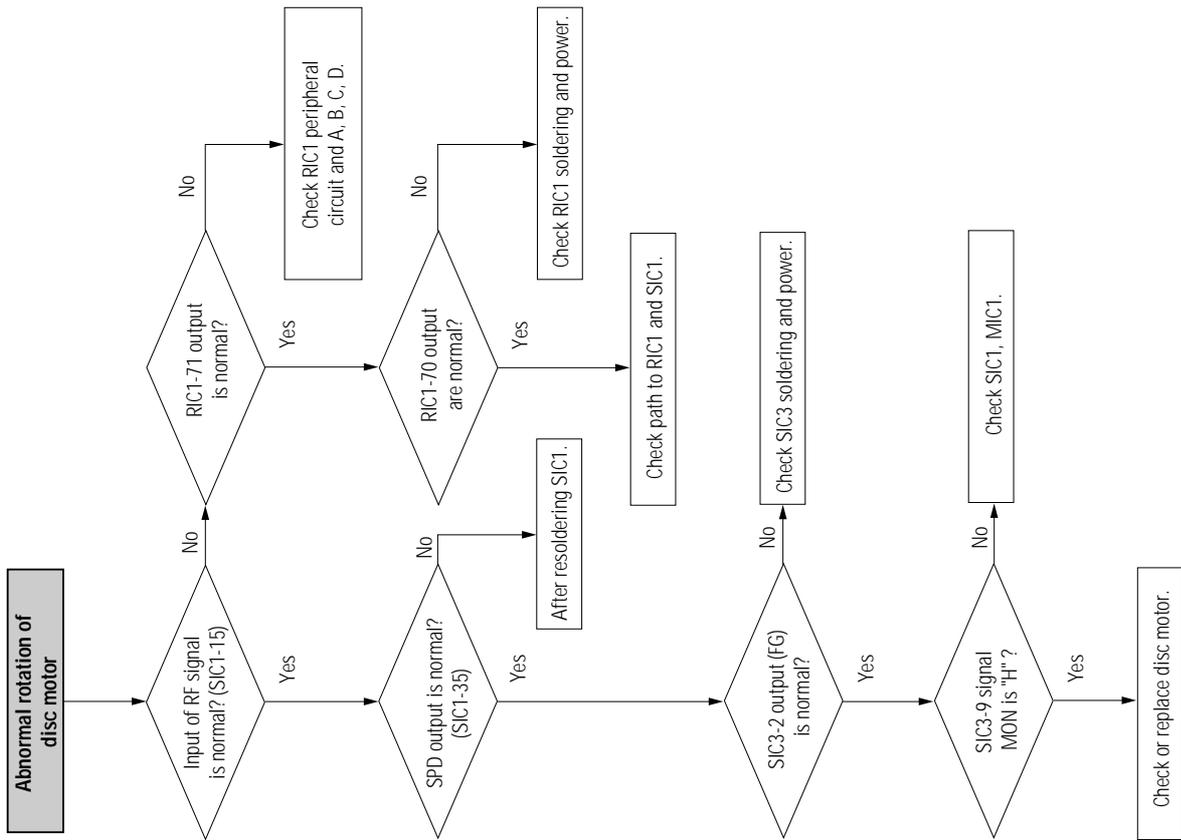
# MEMO

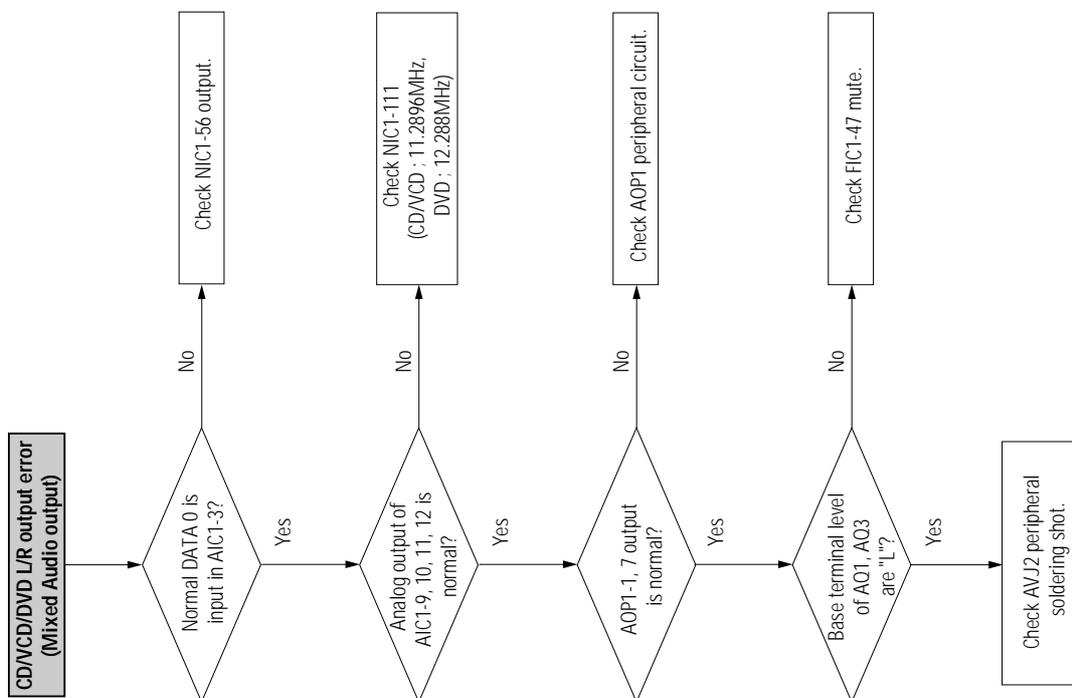
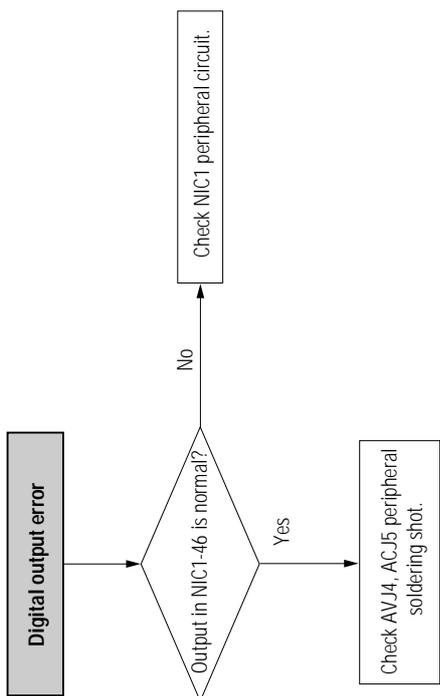
### 3. Troubleshooting

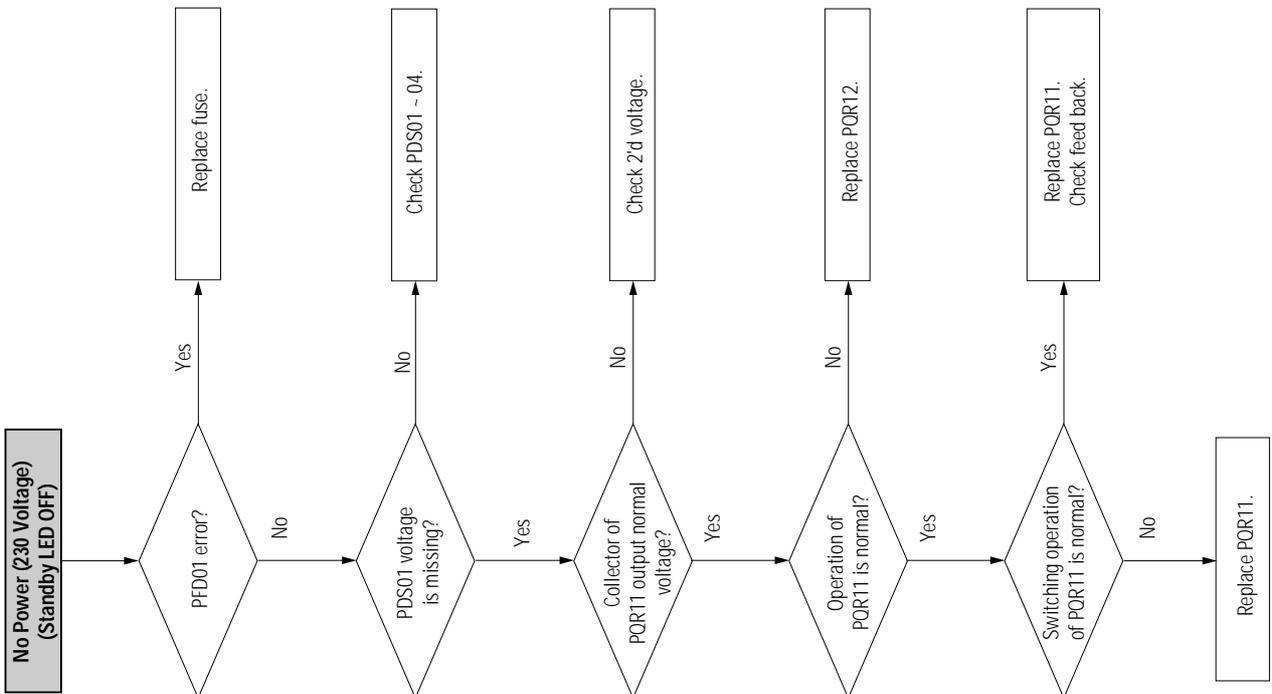
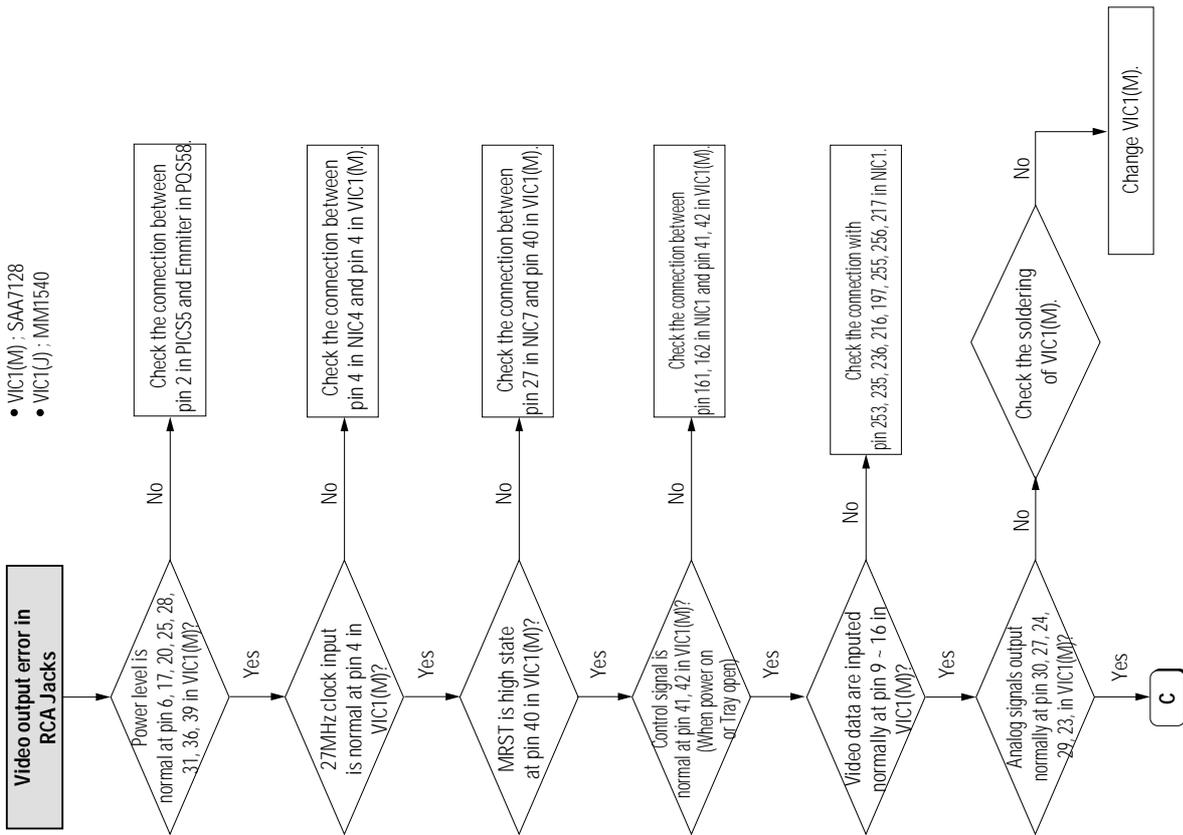


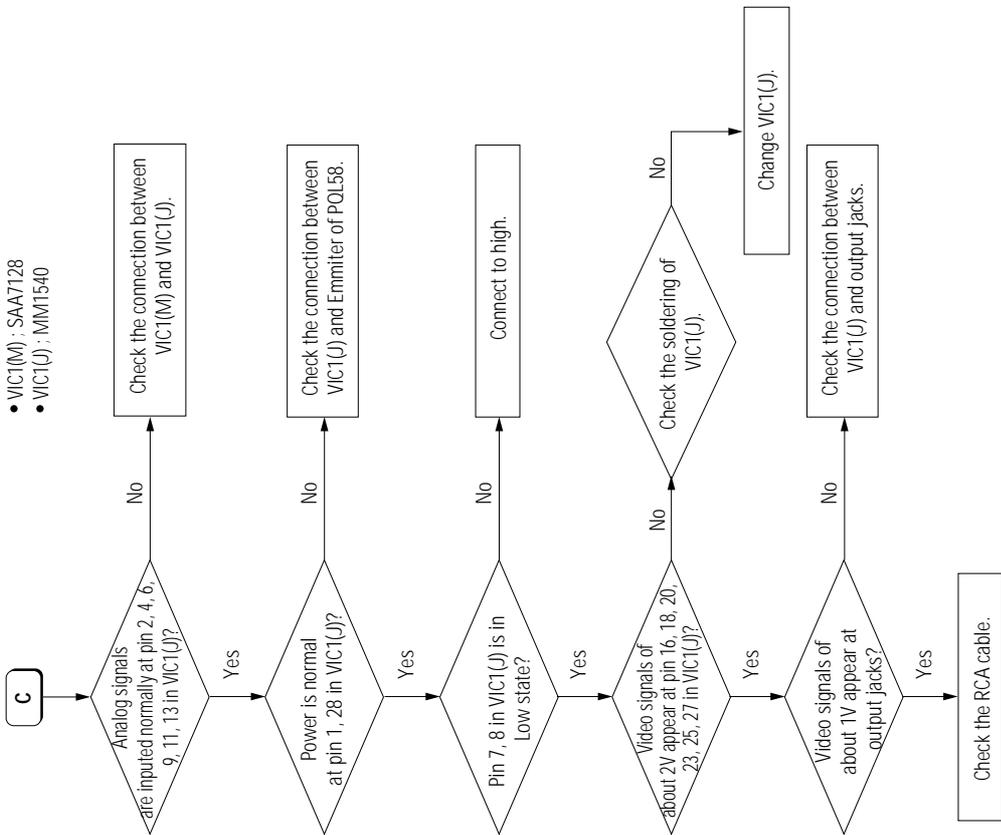
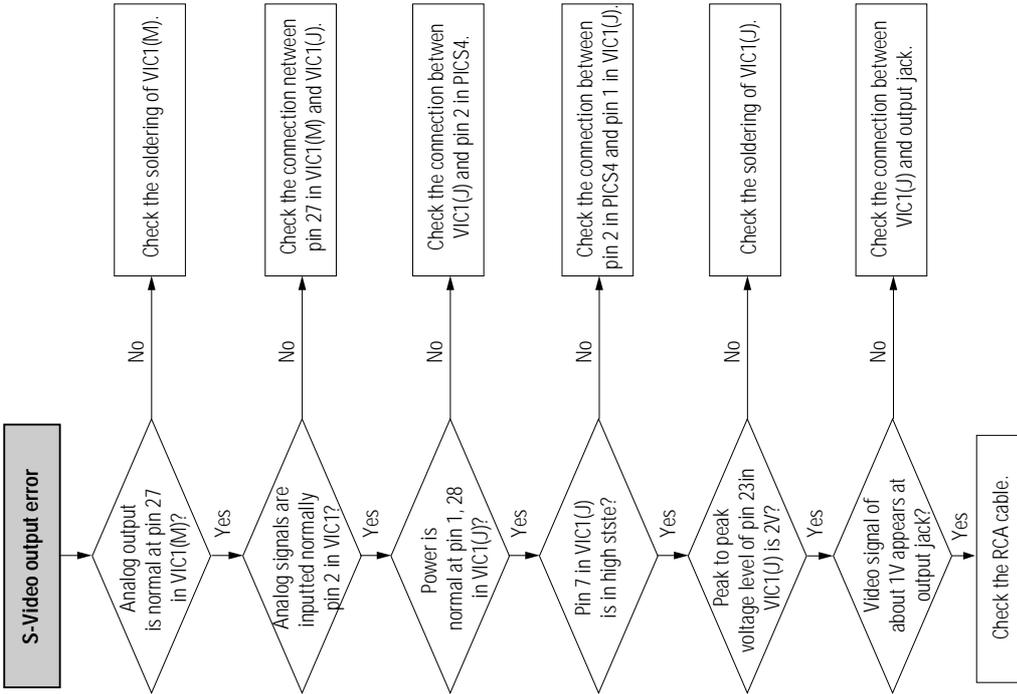


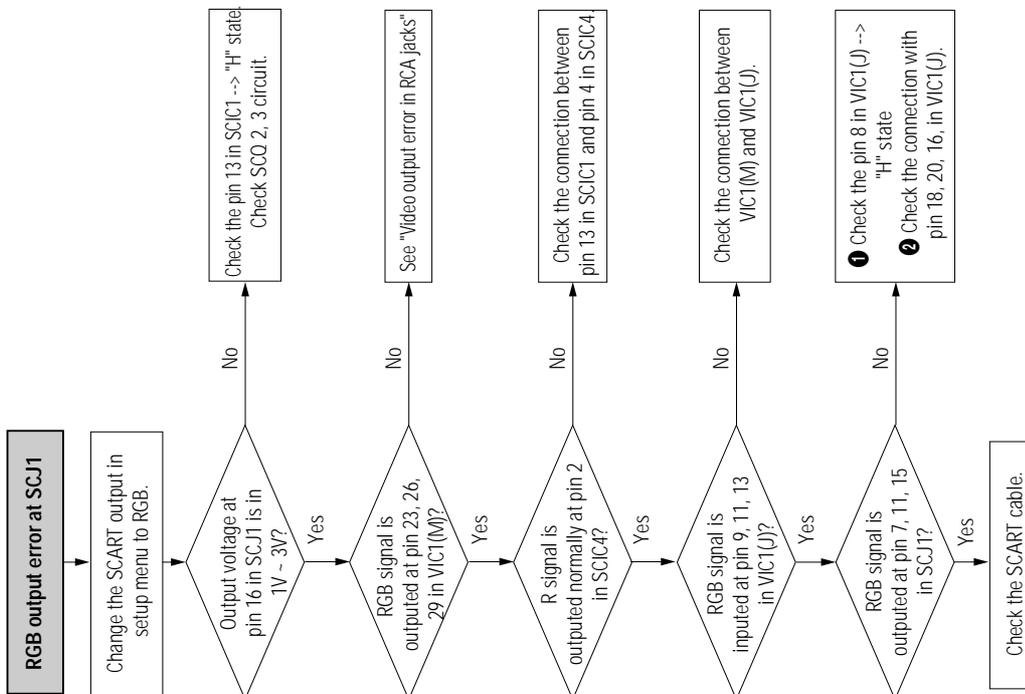












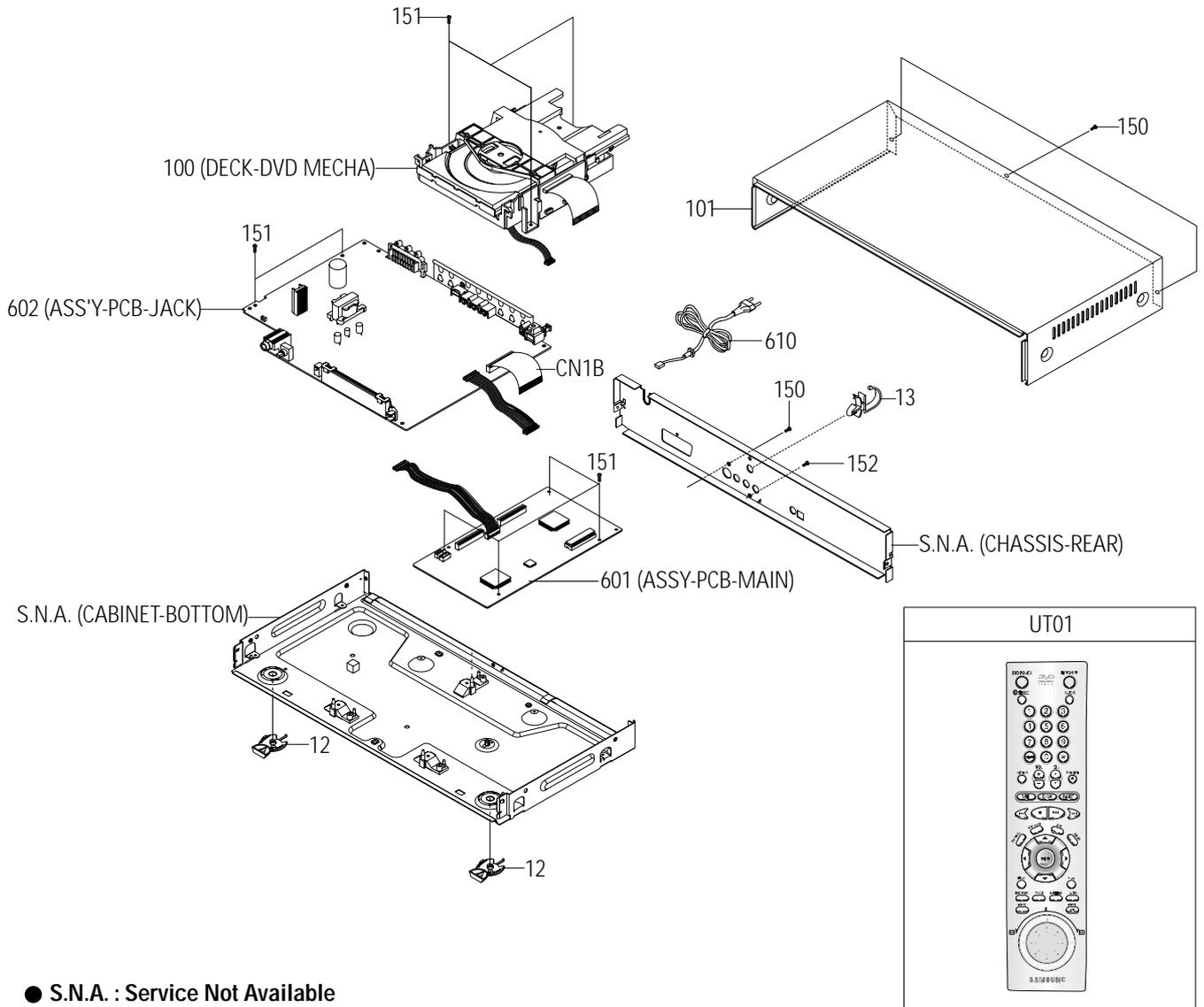
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## 4. Exploded View and Parts List

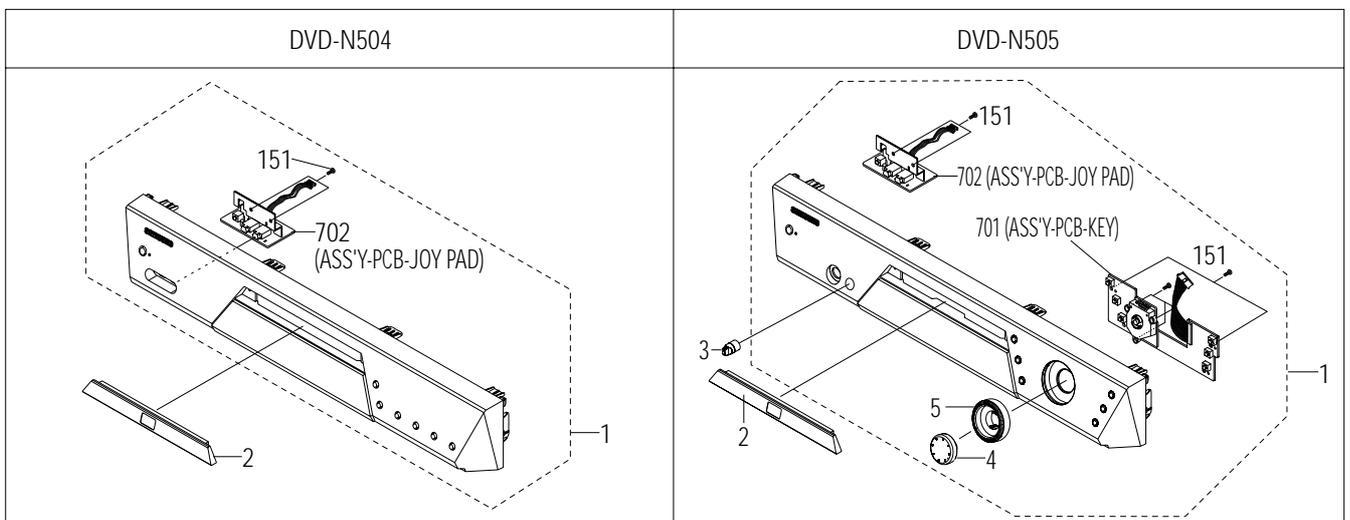
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4-2 Deck Assembly - - - - -	4-4

## 4-1 Cabinet Assembly

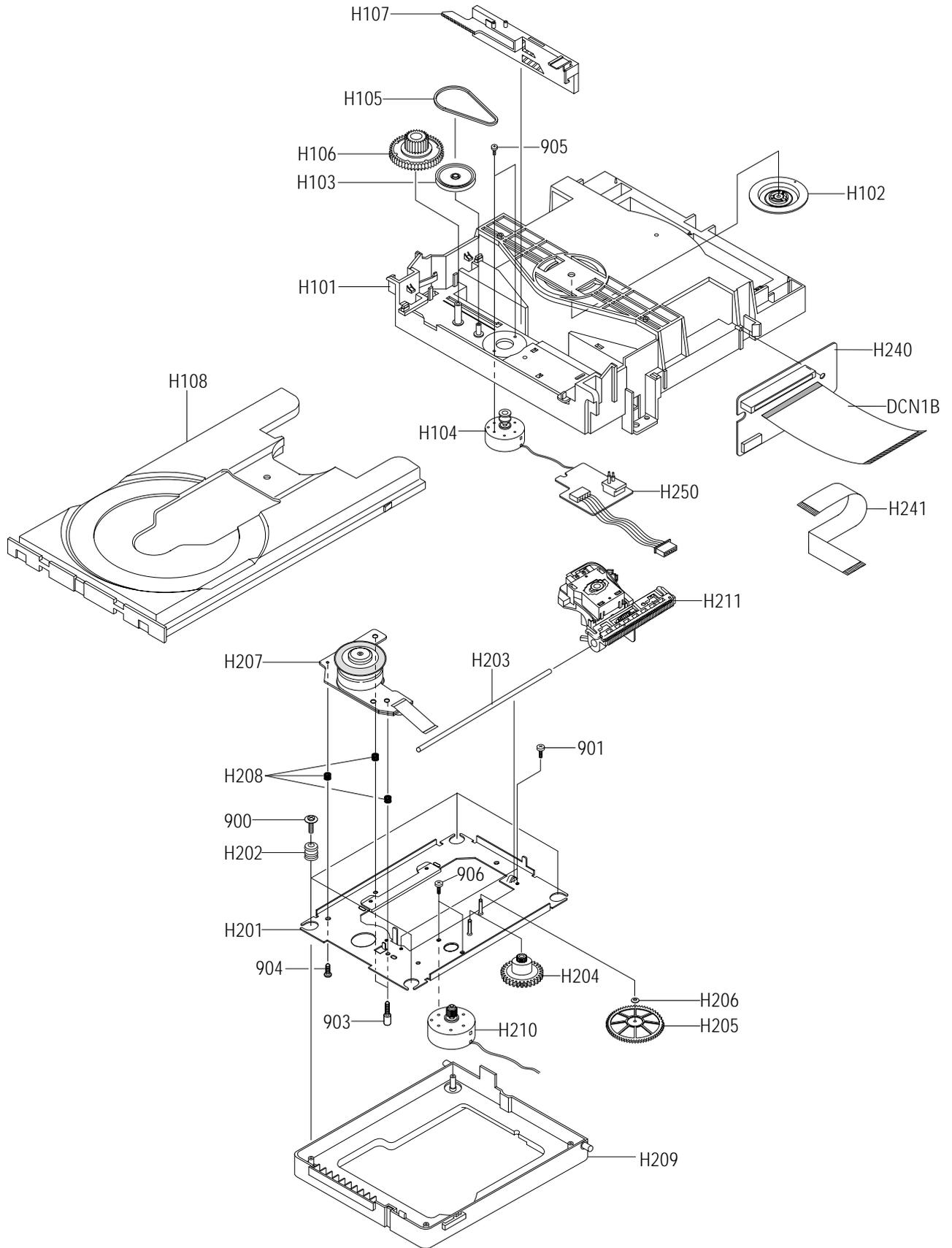


● S.N.A. : Service Not Available



Loc. No	Parts No.	Description ; Specification	Remark
1	AH97-00695C	ASSY FRONT CABINET;ABS,DVD-N504/SED,-	DVD-N504
	AH97-00696C	ASSY FRONT CABINET;ABS 94HB,DVD-N505,XEG	DVD-N505
2	AH97-00739A	ASSY-DOOR TRAY;ABS 94HB,DVD-N501,-	
3	AH64-01320B	KNOB-VOLUME;DVD-N705,ABS 94HB GRAY,-,-,-	DVD-N505 ONLY
4	AH64-01250A	KNOB-JOG;DVD-N705,ABS 94HB,-,-,-,-,-,-,-	DVD-N505 ONLY
5	AH64-01249A	KNOB-SHUTTLE;DVD-N705,ABS 94HB,-,-,-,-,-,-,-	DVD-N505 ONLY
12	AH61-00792A	FOOT-FRONT;DVD-N501,ABS 94HB,-,BLK,-,-	
13	AH65-00003A	CLAMP-CORD POWER;DVD-M101,NYLON 66,-,-,-,-	
100	AH97-00714B	ASSY-DVD DECK;DP-7,MILLENO,2LD,AUTO LINE	
101	AH64-00933B	CABINET TOP;DVD-M301/XAA,PCM T0.65,-,-,-	
150	6003-000275	SCREW-TAPTITE;BH,+ ,B,M3,L10,BLK ,SWCH101	
151	6003-000276	SCREW-TAPTITE;BH,+ ,B,M3,L10,ZPC(YEL),SWC	
152	6003-000282	SCREW-TAPTITE;BH,+ ,B,M3,L8,ZPC(BLK),SWCH	
601	AH92-01433A	ASSY PCB-MAIN;DVD-N504/SED,MAIN	DVD-N504
	AH92-01403A	ASSY PCB-MAIN;DVD-N505,MAIN	DVD-N505
602	AH92-01434A	ASSY PCB-JACK;DVD-N504,JACK	DVD-N504
	AH92-00906A	ASSY PCB-JACK;DVD-N705,JACK	DVD-N505
610	AC39-10019A	POWER-CORD;CP2	COMMON
	AC39-12022K	POWER-CORD;BS2	U.K. ONLY
701	AH92-01402A	ASSY PCB-KEY;DVD-N505,KEY	DVD-N505 ONLY
702	AH92-01064A	ASSY PCB-JOY PAD;DVD-N501,JOY PAD ASS'Y	DVD-N504
702	AH92-01432A	ASSY PCB-JOY;DVD-N505,JOY	DVD-N505
CN1B	3809-001180	CABLE-FLAT;30V,-30to+80C,80mm,35P,1.25mm	
UT01	AH59-00094D	REMOCON-ASS'Y;DVD-N705/XEF,XEF,-,-,-,-,-	

## 4-2 Deck Assembly



Loc. No	Parts No.	Description ; Specification	Remark
900	6003-001157	SCREW-TAPTITE;PWH,+,B,M2,L6,ZPC(YEL),SWR	
901	6001-001522	SCREW-MACHINE;FH,+,M2.6,L7,ZPC(YEL),SWRC	
903	6009-001245	SCREW-SPECIAL;SWRCH18A,NYLOCK,SOCKET,HEX	
904	6001-001466	SCREW-MACHINE;BH,+,M2,L6,ZPC(BLK),SWRCH1	
905	6001-001257	SCREW-MACHINE;PWH,+,M1.7,L3,ZPC(YEL),SWR	
906	AH60-00010A	SCREW-MACHINE-MOTOR;-+,SWCH18AK,M1.7,L2	
DCN1B	3809-001180	CABLE-FLAT;30V,-30to+80C,80mm,35P,1.25mm	
H101	AH61-00512A	CHASSIS-HOUSING;DP-7,ABS(SR-0320),-,-,-,-	
H102	AH66-00111B	CLAMPER-ASSY;DP-5,POM+MAGNET,-,-,-,-,-,-	
H103	AH66-00123A	PULLEY-GEAR;DP-7,POM M90-44,-,-,-,-,-,-	
H104	AH31-00024A	MOTOR-LOAD ASSY;SM-2412L2,DP-7,-,-,-,-,-	
H105	6602-001076	BELT-RECTANGULAR;CR,T1.2,4.3%,1.2X25.1,B	
H106	AH66-00124A	GEAR-TRAY;DP-7,POM,M90-44,-,-,-,-,-,-	
H107	AH66-00125A	SLIDER-HOUSING;DP-7,POM,-,-,-,-,-,-	
H108	AH63-00217A	TRAY-DISC;-ABS,-,-,-,-,BLK,DP-7	
H201	AH97-00561B	ASSY-BKRT-DECK;SECC+POM,DP-7, <sup>a</sup> ≥ <sup>a</sup> ;∞ <sup>0</sup>	
H202	AH73-00023C	RUBBER-INSULATOR;DP-7,BUTYL RUBBER,-,10	
H203	AH61-50327A	SHAFT-P/U;DP-3,SUS420J2,L84.7,OD3,-,-,-,-	
H204	AH66-00075A	GEAR-FEED A;-POM M90-44,-,-,-,-,-,-	
H205	AH66-00076A	GEAR-FEED B;-POM M90-44,-,-,-,-,-,-	
H206	AC60-30306A	WASHER-SLIT;-,-,ID2.1,OD5.0,T0.5,-,POLYS	
H207	AH31-00022A	MOTOR-SPINDLE ASSY;RSM-2610D,DP-7,-,-,-,-,	
H208	AH61-00403A	SPRING-SPINDLE;-SWPB,-,CS,PI4.9,PI0.7,-	
H209	AH61-00513A	CHASSIS-SUB;DP-7,ABS(SR-0320),-,-,-,-,-,	
H210	AH31-00016A	MOTOR-FEED ASSY;-,-,DP-5,-,-	
H211	AH97-00708A	ASSY-PICK-UP;-SOH-DM2,ASSY-PICK-UP	
H240	AH92-00963A	ASSY-MILLENO DECK PCB 2LD;DVD-M101,MILLE	
H241	3809-001252	CABLE-FLAT;30V,80C,180mm,22P,1mm,UL2896	
H250	AH92-00900A	ASSY-HOUSING PCB;DVD-M101,MILLENO DECK(B	

# MEMO