

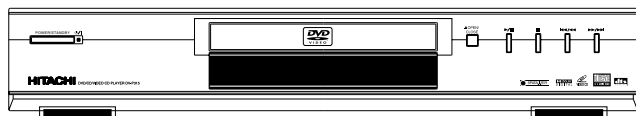
HITACHI

SERVICE MANUAL

TK

No.9101E

DV-P315U
DV-P313U



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SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

DVD PLAYER

February

2001

Digital Media Products Division, Tokai

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 removed 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 an 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, screwheads, 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.

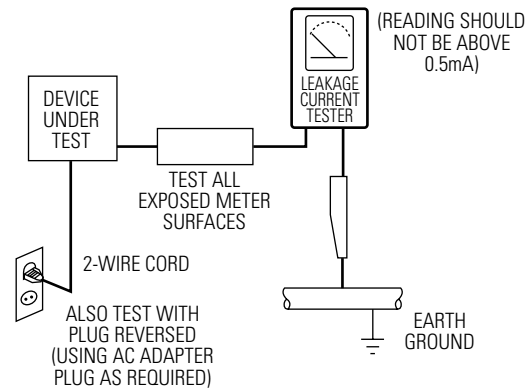


Fig. 1-1 AC Leakage Test

(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.

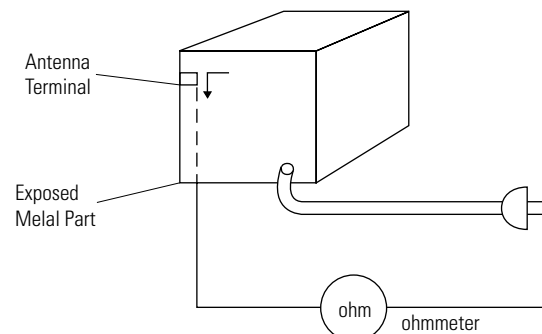


Fig. 1-2 Insulation Resistance Test

Precautions

- 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

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 circumvent 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) re-moving 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 (\triangle) or by (\triangle) 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

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.

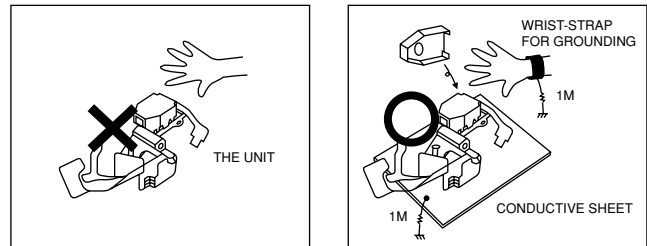


Fig.1-3

- (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 code.
- 2) Disassemble the Deck-Assy.
- 3) Solder land 2 points short on Pick-up. (See Fig. 1-4)
- 4) Disassembly the Pick-up.

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

1-5-2 Assembly

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

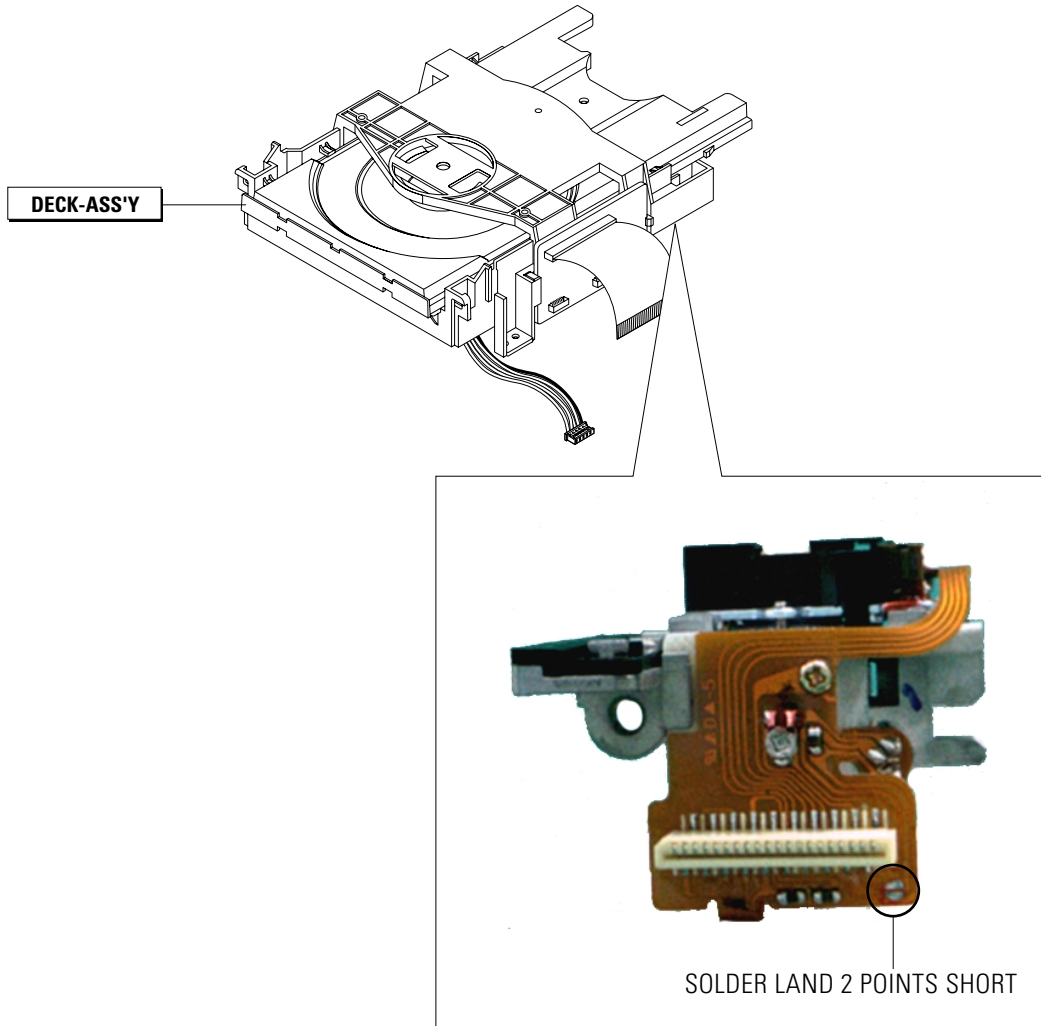


Fig. 1-4

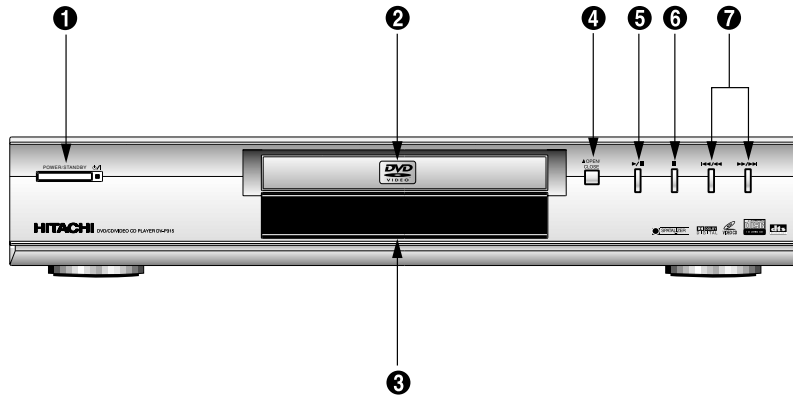
3. Product Specifications

GENERAL	Power Requirements	AC 120V, 60Hz	
	Power Consumption	15W	
	Weight	2.7kg	
	Dimensions	W 430mm X D 240mm X H 79mm	
	Operating Temperature Range	+5°C ~ +35°C	
	Operating Humidity Range	10% to 75%	
DISC	DVD (Digital Versatile Disc)	Reading Speed : 3.49 m/s Approx. Play Time (Single Sided, Single Layer Disc) : 135 min.	
	CD : 12Cm (Compact Disc)	Reading Speed : 1.2 to 1.4 m/s Maximum Play Time : 74min.	
	CD : 8Cm (Compact Disc)	Reading Speed : 1.2 to 1.4 m/s Maximum Play Time : 20min.	
	VCD : 12Cm	Reading Speed : 1.2 to 1.4 m/s Maximum Play Time : 74min. (Video + Audio)	
	Video Output	Composite Video	1 channel : 1.0Vp-p (75ohm load)
		Component Video	Y : 1.0Vp-p (75ohm load)
Pr : 0.70Vp-p (75ohm load)			
Pb : 0.70Vp-p (75ohm load)			
S-Video		Luminance Signal : 1Vp-p (75ohm load)	
	Chrominance Signal : 0.286Vp-p (75ohm load)		
Audio Output	2 Channel	L (1/L), R (2/R)	
	* Frequency Response	48kHz Sampling : 4Hz to 22kHz	
		96kHz Sampling : 4Hz to 44kHz	
	* S/N Ratio	110dB	
	* Dynamic Range	100dB	
* Total Harmonic Distortion	0.004%		

* : Nominal specification

MEMO

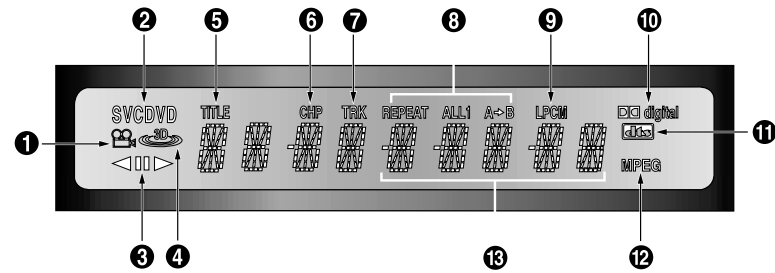
Description-Front Panel



Front Panel Controls

- ❶ **POWER/STANDBY** / I
 - When the unit is first plugged in, the indicator lights. When POWER/STANDBY / I is pressed, the lamp goes out and the player is turned on.
- ❷ **DISC TRAY**
 - Press OPEN/CLOSE to open and close the disc tray.
- ❸ **DISPLAY**
 - Operation indicators are displayed here.
- ❹ **OPEN/CLOSE**
 - Press to open and close the disc tray.
- ❺ **/ (PLAY/PAUSE)**
 - Begin or pause disc play.
- ❻ **(STOP)**
 - Stops disc play.
- ❼ **(SKIP/SEARCH)**
 - Use to skip a scene or music.
 - If this button is held down for approx. two seconds, it will switch to the search button: Thereafter, each time the button is pressed, the search speed will switch to 2X, 4X, 8X, 16X, 32X, 128X, after which SKIP will be restored.

Front Panel Display

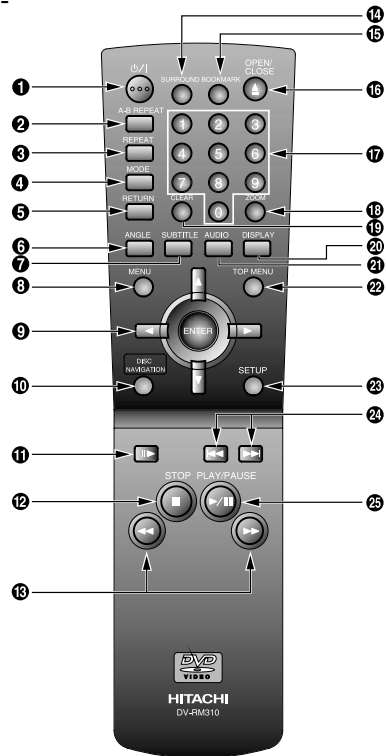


Front Panel Display

- ❶ You can now select different viewing points of the scene recorded by different cameras (Multi Angle).
Disc type indicators
Reverse playback / Pause / Forward playback
Lights when 3D sound is turned on.
DVD : Title number
DVD : Chapter number.
Video/Audio CD : Track number
Repeat play mode
Linear PCM audio output
Dolby Digital audio output
DTS (Digital Theater System) audio output(Digital only)
MPEG-2 Audio output
Displays various messages concerning operations such as PLAY, STOP, LOAD, RANDOM, ...
no DISC : No disc loaded.
OPEN : The disc tray is open.
LOAD : Player is loading disc information.

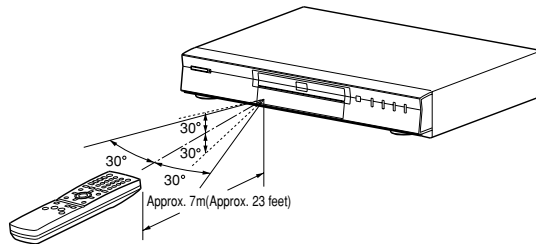
Tour of the Remote Control

- DV-P315U -



How to handle the remote control

- Operate the remote control within the following area, in a straight line from the signal detecting eye of the player and an angle of 30°.

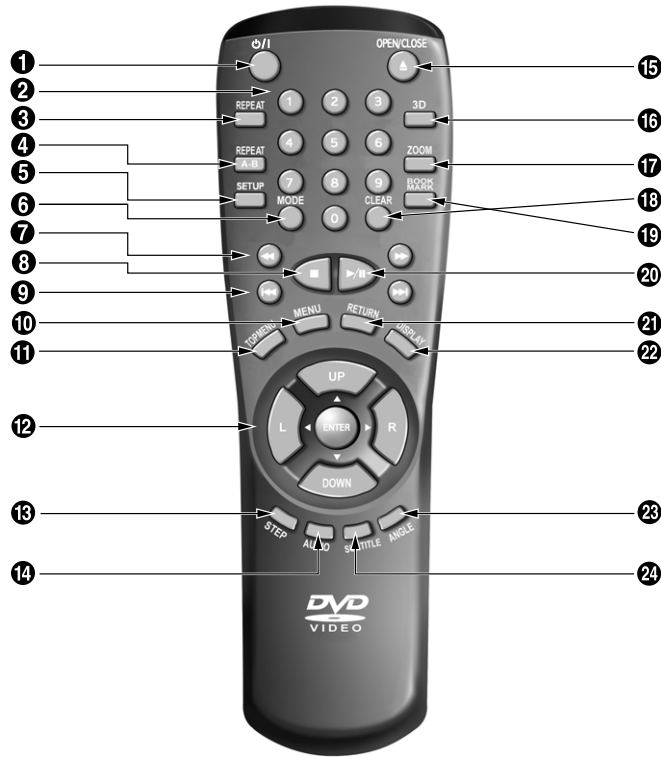


DVD Function Buttons

- 1 DVD POWER Button**
 - Turns the player on and off.
- 2 A-B REPEAT Button**
 - Marks a segment to repeat between A and B.
- 3 REPEAT Button**
 - Allows you to repeat play a title, chapter, track, or disc.
- 4 MODE Button**
 - Allows you to program a specific order.
- 5 RETURN Button**
 - Returns to a previous menu.
- 6 ANGLE Button**
 - Accesses various camera angles on a disc.
- 7 SUBTITLE Button**
 - Accesses various subtitles on a disc.
- 8 MENU Button**
 - Brings up the Menu on a disc.
- 9 ENTER/DIRECTION Button (UP/DOWN or LEFT/RIGHT Button)**
- 10 DISC NAVIGATION Button**
 - To view the first picture of each chapter(DVD) or track(VCD).
- 11 STEP Button**
 - Advances playback one frame at a time.
- 12 STOP Button**
 - To stop playback.
- 13 SEARCH Buttons**
 - Allows you to search forward/backward through a disc.
- 14 SURROUND Button**
 - To activate the 3D sound.
- 15 BOOKMARK Button**
 - To rapidly return to a location of disc.
- 16 OPEN/CLOSE Button**
 - To open or close the disc tray.
- 17 NUMBER Buttons**
- 18 ZOOM Button**
 - To magnify part of picture.
- 19 CLEAR Button**
 - Removes menus or status displays from the screen.
- 20 DISPLAY Button**
 - Displays the current disc mode.
- 21 AUDIO Button**
 - Accesses various audio functions on a disc.
- 22 TOP MENU Button**
 - Brings up the Top Menu on a disc.
- 23 SETUP Button**
 - Brings up the DVD player's Setup menu.
- 24 SKIP Buttons**
 - Skip the, Chapter, or Track.
- 25 PLAY/PAUSE Button**
 - Begin/Pause disc play.

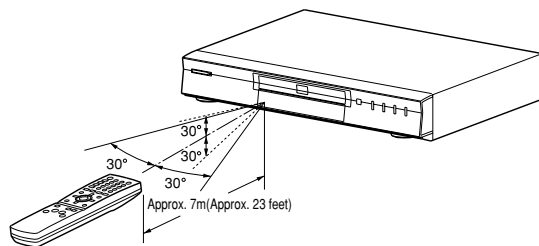
Tour of the Remote Control

— DV-P313U —



How to handle the remote control

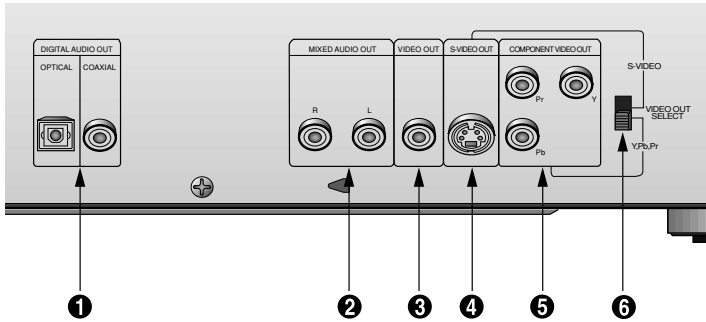
- Operate the remote control within the following area, in a straight line from the signal detecting eye of the player and an angle of 30°.



DVD Function Buttons

- 1 DVD POWER Button**
 - Turns the player on and off.
- 2 NUMBER Buttons**
- 3 REPEAT Button**
 - Allows you to repeat play a title, chapter, track, or disc.
- 4 A-B REPEAT Button**
 - Marks a segment to repeat between A and B.
- 5 SETUP Button**
 - Brings up the DVD player's Setup menu.
- 6 MODE Button**
 - Allows you to program a specific order.
- 7 SEARCH Buttons**
 - Allows you to search forward/backward through a disc.
- 8 STOP Button**
 - To stop playback.
- 9 SKIP Buttons**
 - Skip the, Chapter, or Track.
- 10 MENU Button**
 - Brings up the Menu on a disc.
- 11 TOP MENU Button**
 - Brings up the Top Menu on a disc.
- 12 ENTER/DIRECTION Button (UP/DOWN or LEFT/RIGHT Button)**
- 13 STEP Button**
 - Advances playback one frame at a time.
- 14 AUDIO Button**
 - Accesses various audio functions on a disc.
- 15 OPEN/CLOSE Button**
 - To open or close the disc tray.
- 16 3D SOUND Button**
 - To activate the 3D sound.
- 17 ZOOM Button**
 - To magnify part of picture.
- 18 CLEAR Button**
 - Removes menus or status displays from the screen.
- 19 BOOKMARK Button**
 - To rapidly return to a location of disc.
- 20 PLAY/PAUSE Button**
 - Begin/Pause disc play.
- 21 RETURN Button**
 - Returns to a previous menu.
- 22 DISPLAY Button**
 - Displays the current disc mode.
- 23 ANGLE Button**
 - Accesses various camera angles on a disc.
- 24 SUBTITLE Button**
 - Accesses various subtitles on a disc.

Description-Rear Panel



Rear Panel

1 DIGITAL AUDIO OUT JACK

- Use either an optical or coaxial digital cable to connect to a compatible Dolby Digital receiver. Use to connect to an A/V Amplifier that contains a Dolby Digital decoder or DTS decoder.

MIXED AUDIO OUT JACKS

- Connect to the Audio input jacks of your television, audio/video receiver.

VIDEO OUT JACK

- Use a video cable to connect one of the jack to the V video input on your television.

S-VIDEO OUT JACK

- Use the S-Video cable to connect this jack to the S-Video jack on your television for a higher quality picture. The S-Video must be selected in the VIDEO OUT SELECT SWITCH.

COMPONENT VIDEO OUT JACKS

- Use these jacks if you have a TV with Component Video in jacks. These jacks provide Pr, Pb and Y video. Along with S-Video, Component Video provides the best picture quality. The Y, Pb, Pr must be selected in the VIDEO OUT SELECT SWITCH.

VIDEO OUT SELECT SWITCH

- Use the switch to set video out.
- If the Y, Pb or Pr is selected, the S-Video may not work.
- If the S-Video is selected, the Y, Pb or Pr may not work.

5. Disassembly and Reassembly

5-1 Cabinet and PCB

Note : Reassembly in reverse order.

5-1-1 Top Cabinet Removal

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

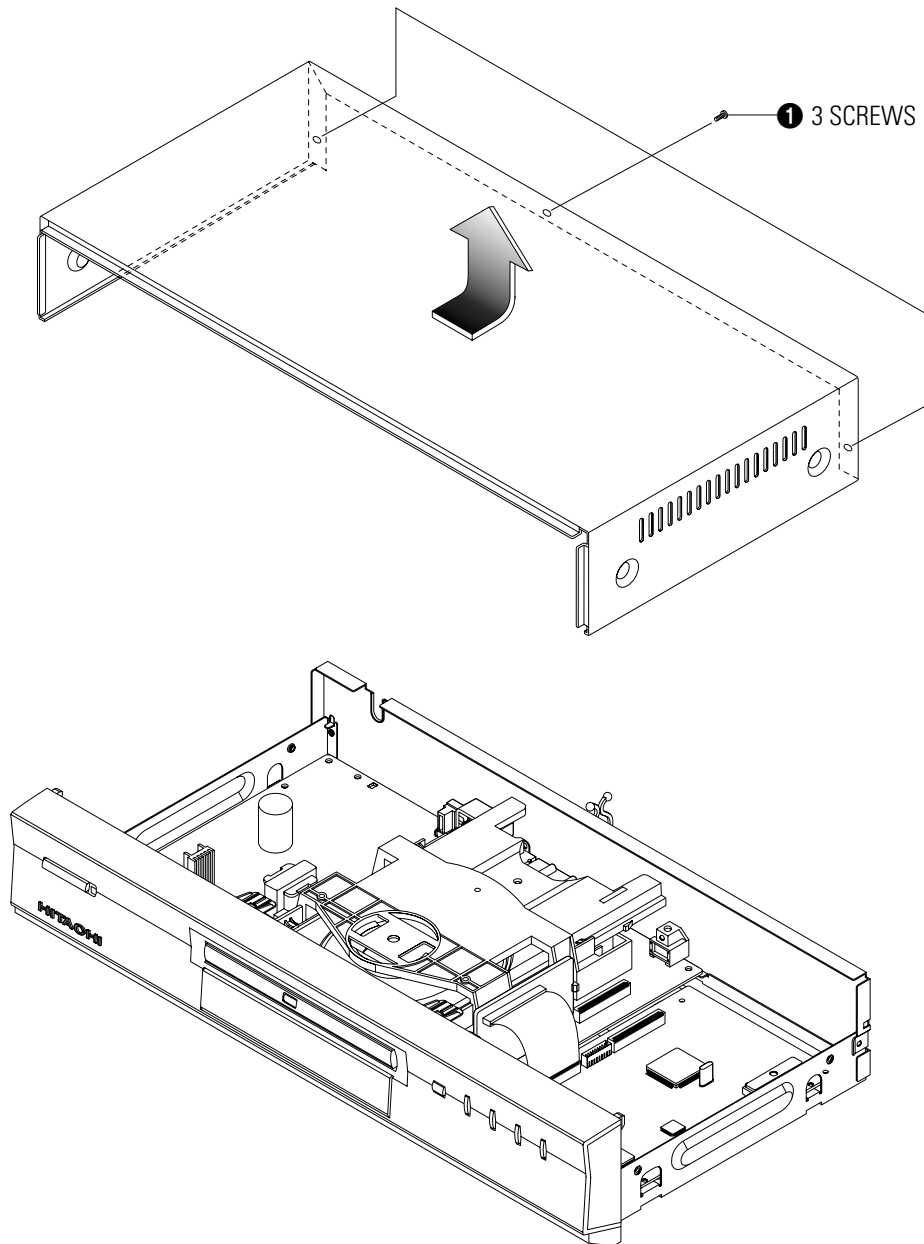


Fig. 5-1 Top Cabinet Removal

5-1-2 Door-Tray Removal

- 1) Supply power and open Tray ❶ .
- 2) Disassemble the 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.

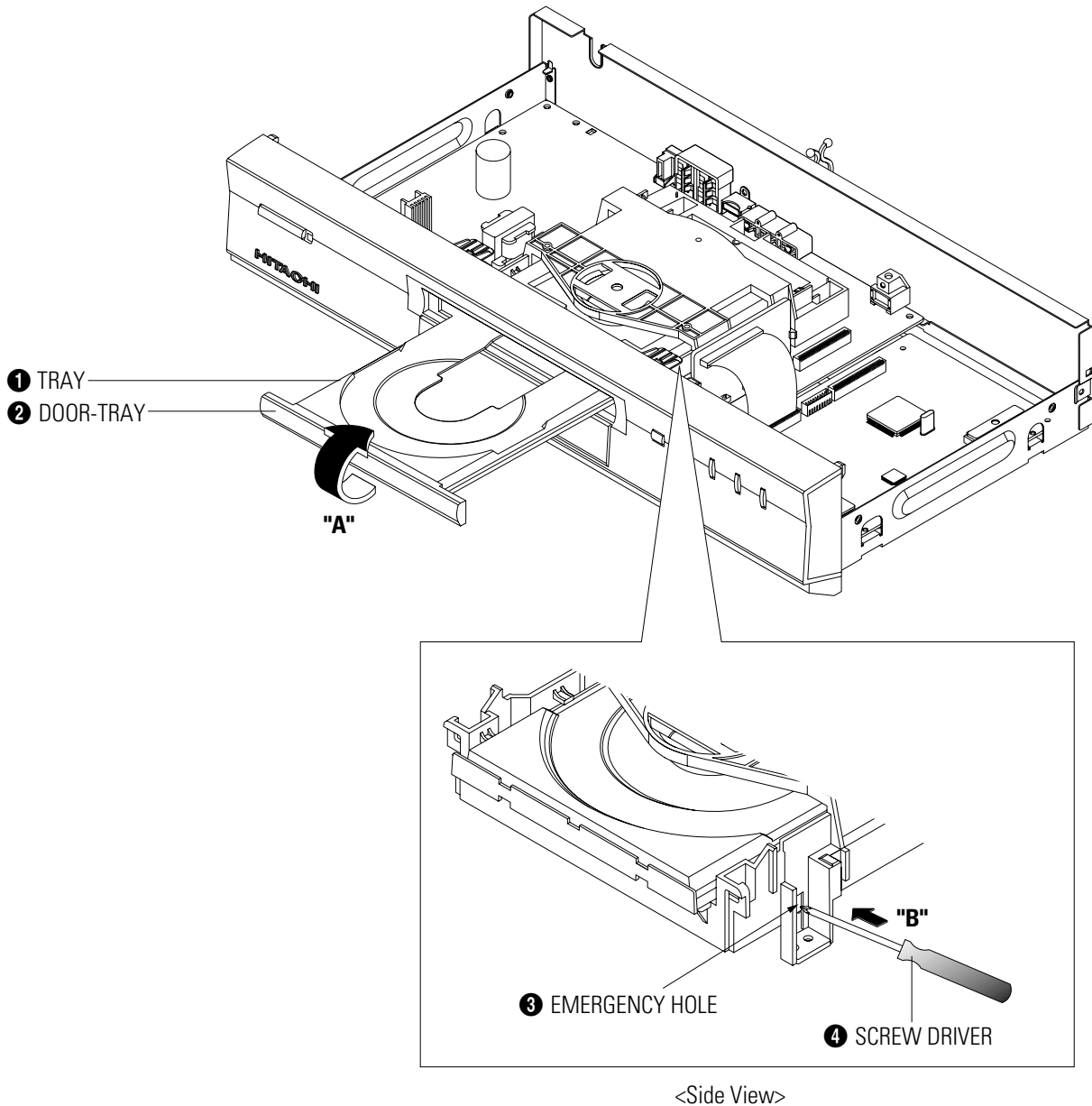


Fig. 5-2 Door-Tray Removal

5-1-3 Ass'y Front-Cabinet Removal

- 1) Remove Ass'y Front-Cabinet ❶.

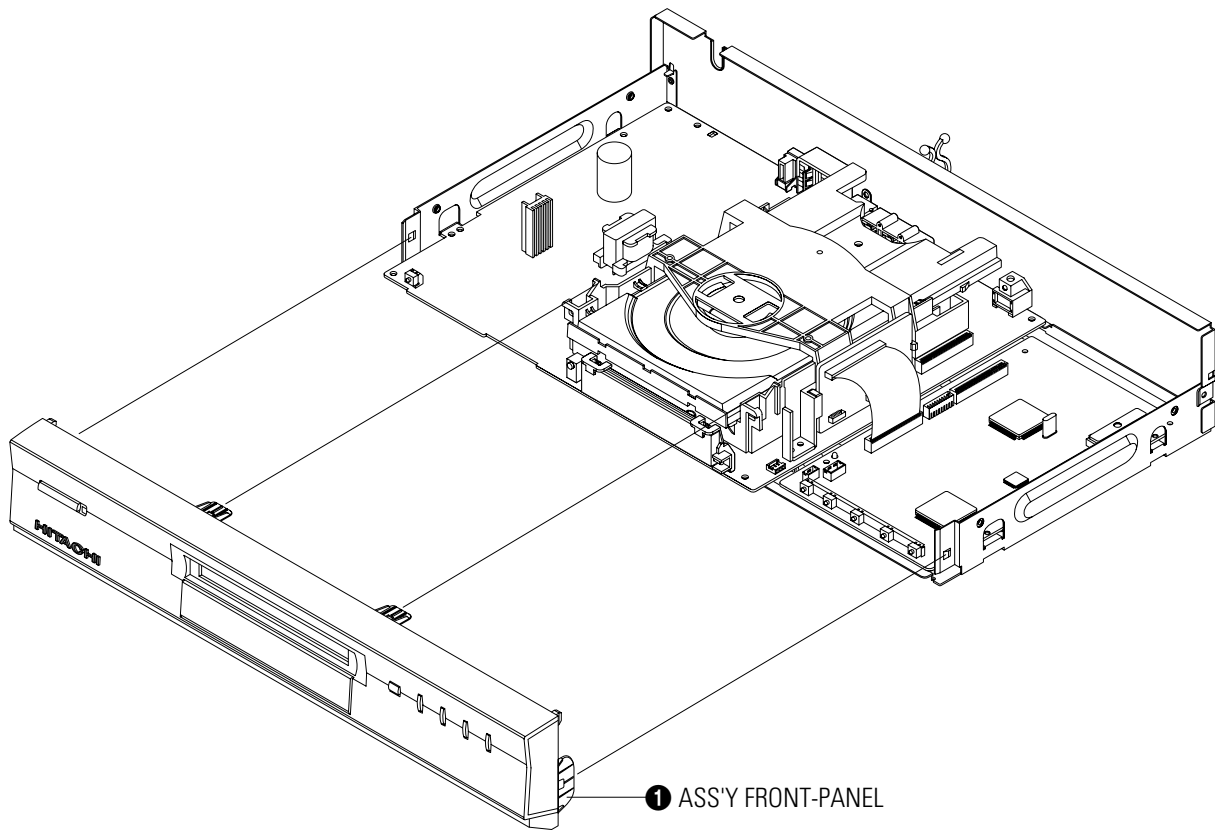


Fig. 5-3 Ass'y Front-Cabinet Removal

5-1-4 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.

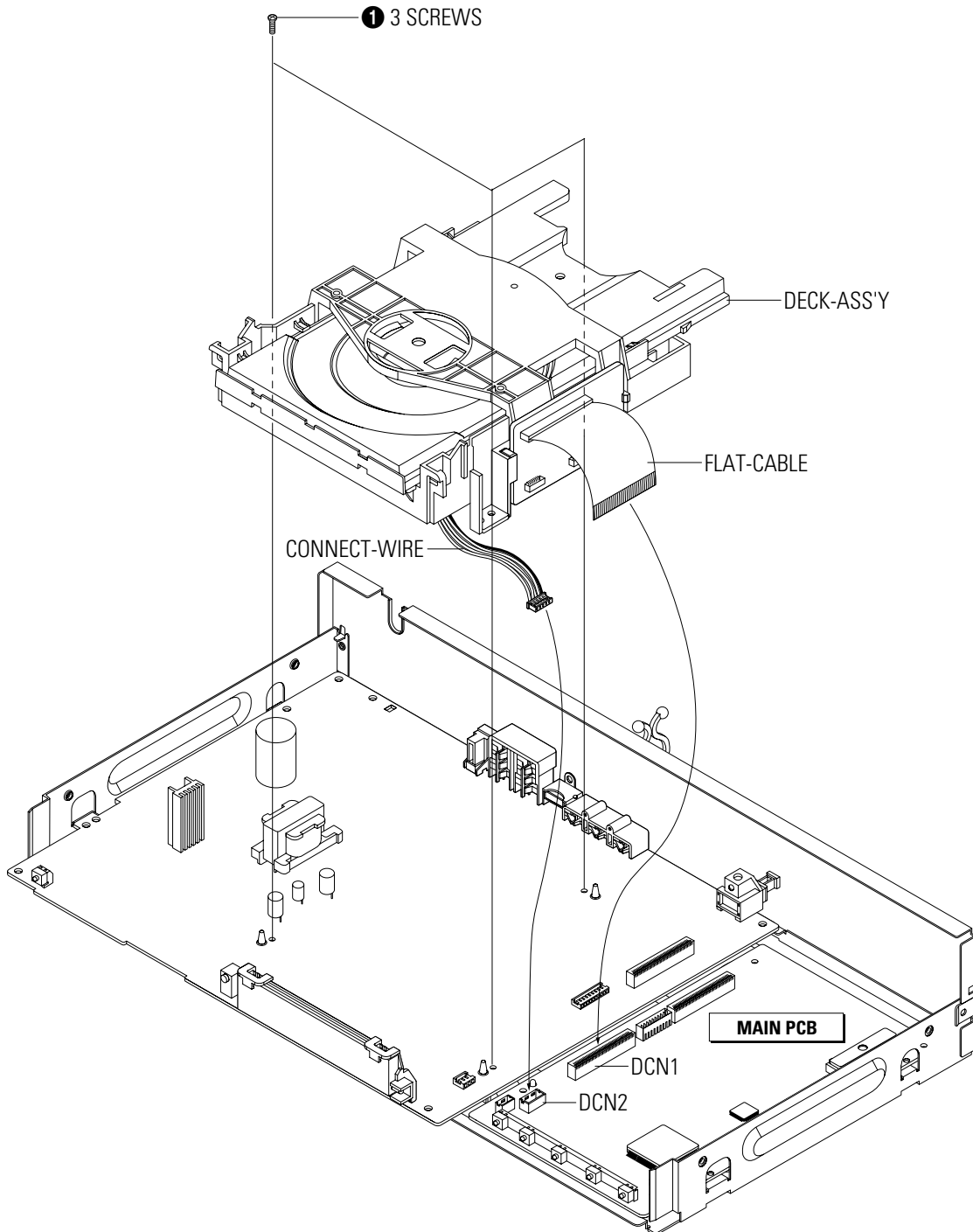


Fig. 5-4 Ass'y Deck Removal

5-1-5 Main PCB, Jack PCB Removal

- 1) Remove 2 Screws **1** and lift up the Jack PCB **2**.
- 2) Remove 3 Screws **3** and lift up the Main PCB **4**.

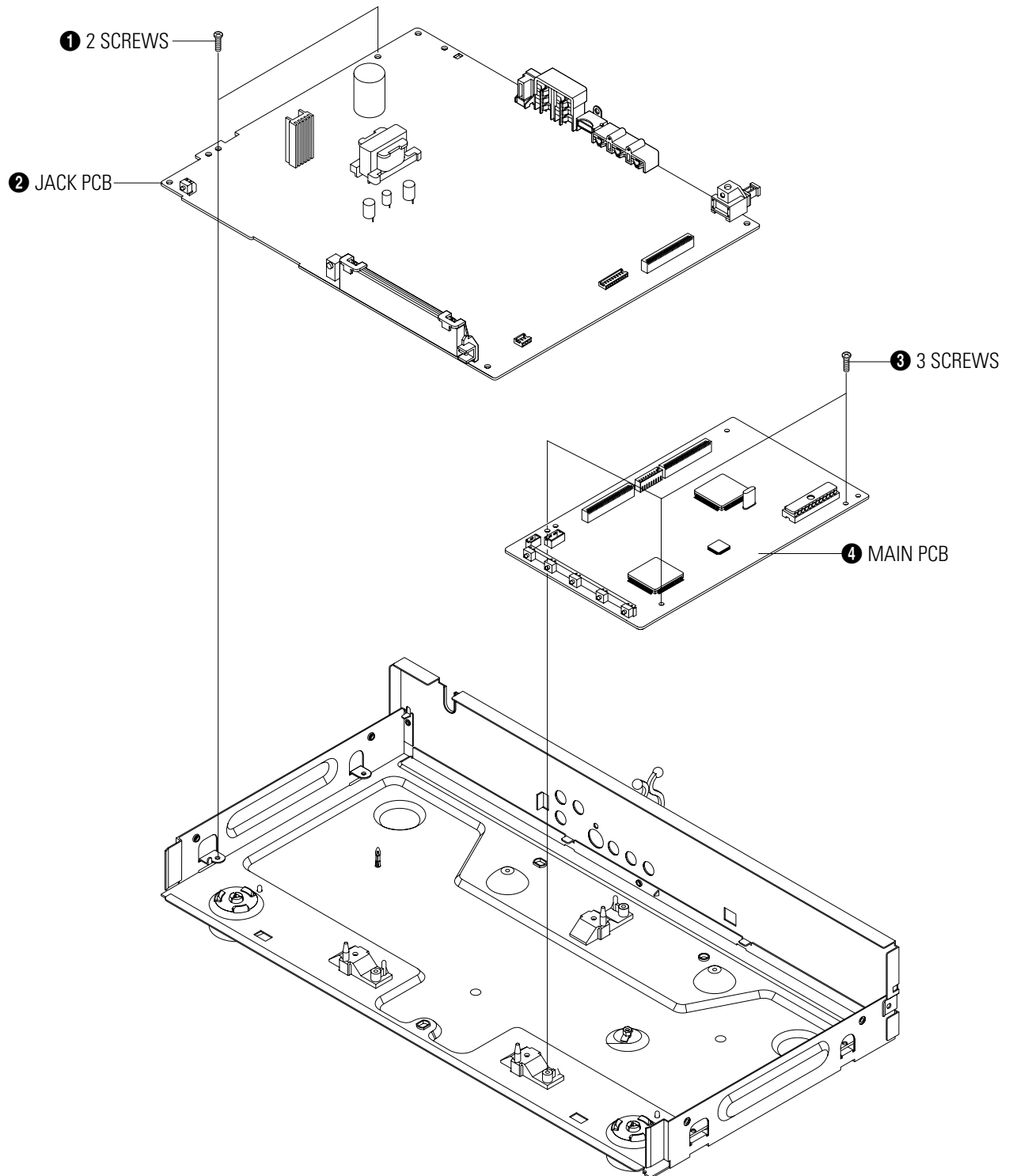


Fig. 5-5 Main PCB, Jack PCB Removal

5-2 PCB Location

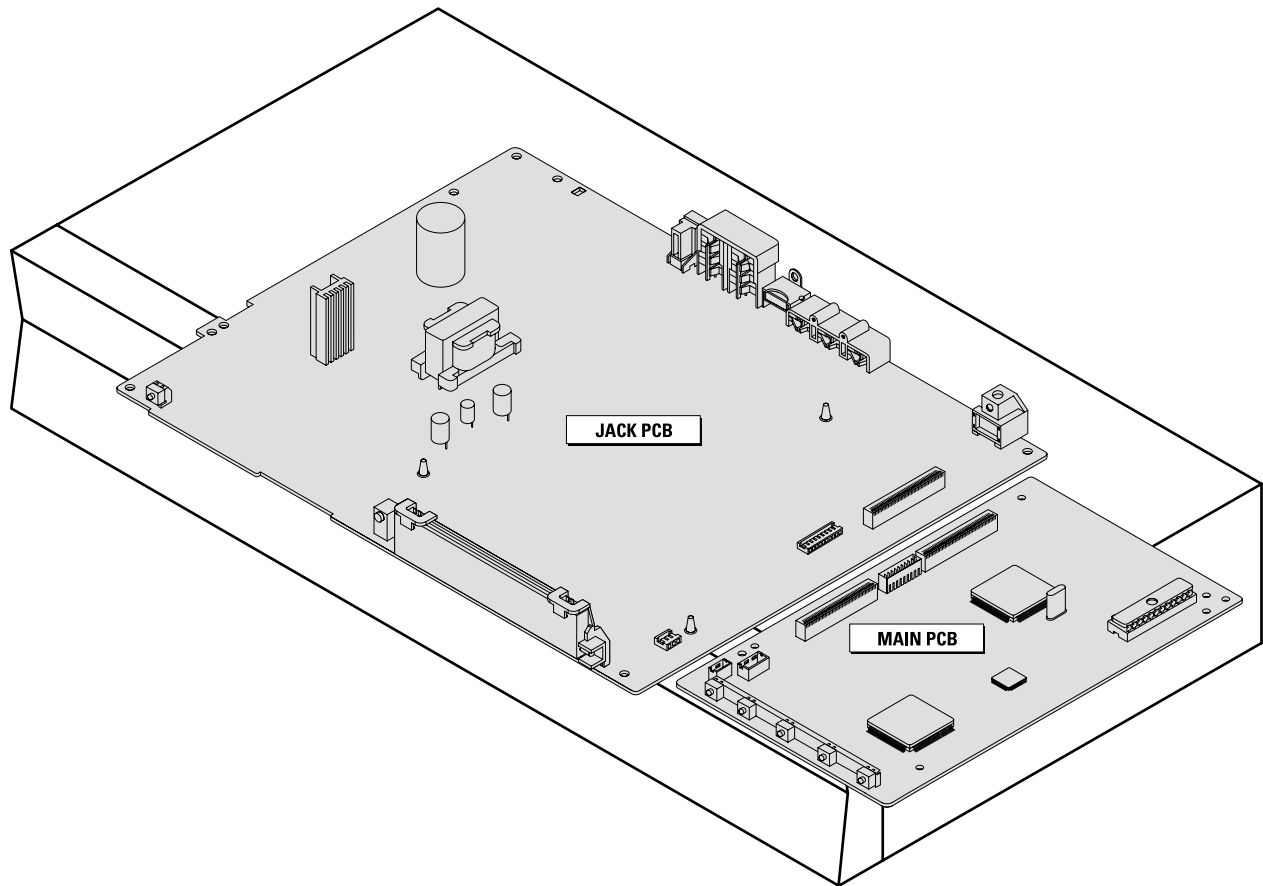
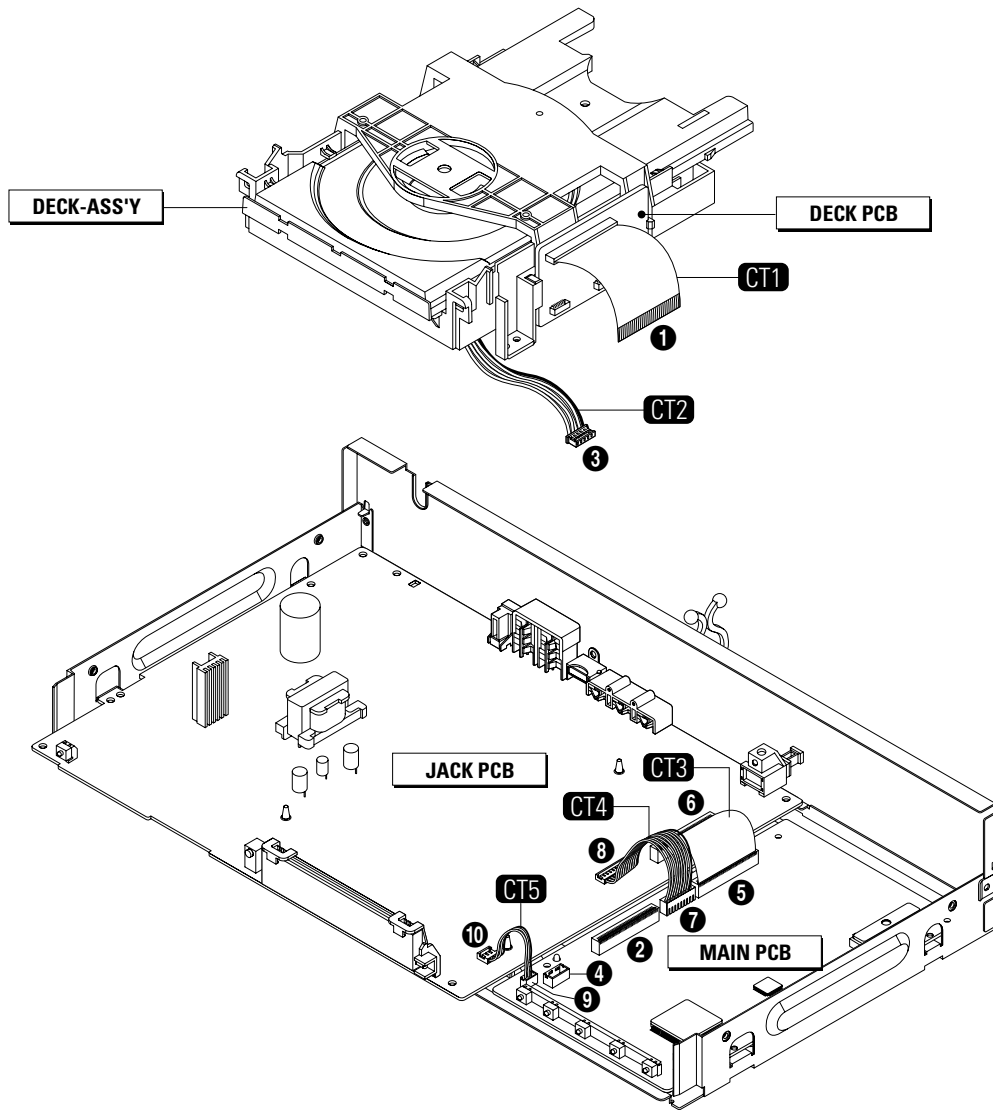


Fig. 5-6 PCB Location

5-3 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	DCN1	⑥
⑦	PCN1	MAIN PCB ← CT4 → JACK PCB	PCNS1	⑧
⑨	FCN1	MAIN PCB ← CT5 → JACK PCB	CN2-S	⑩

Fig. 5-7 Connector Diagram

5-4 Deck

5-4-1 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".

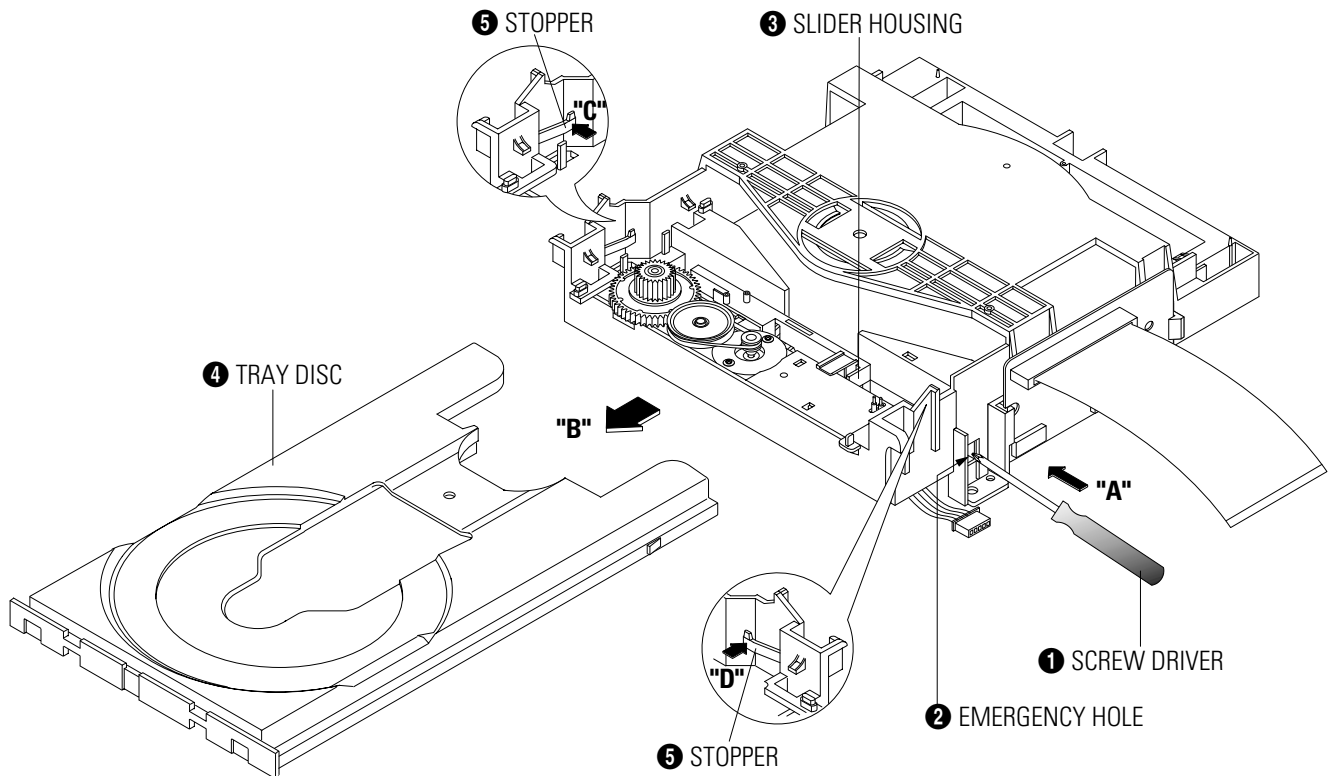


Fig. 5-8 Tray Disc Removal

5-4-2 Ass'y P/U Deck Removal

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

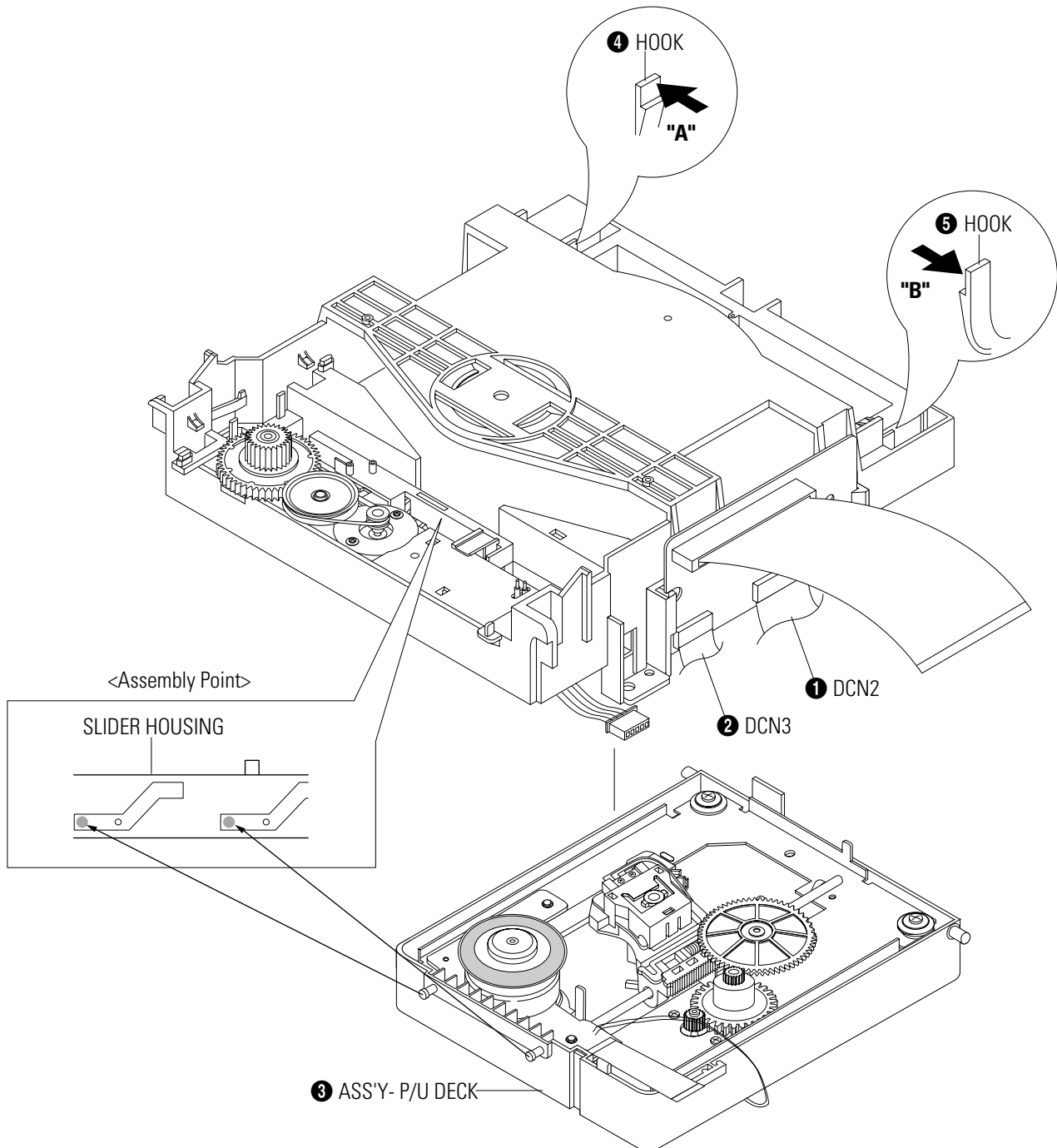


Fig. 5-9 Ass'y P/U Deck Removal

5-4-3 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 ❹ in the direction arrow "B" and lift up the Gear Tray ❺.
- 4) Lift up the Slider Housing ❹.
- 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.

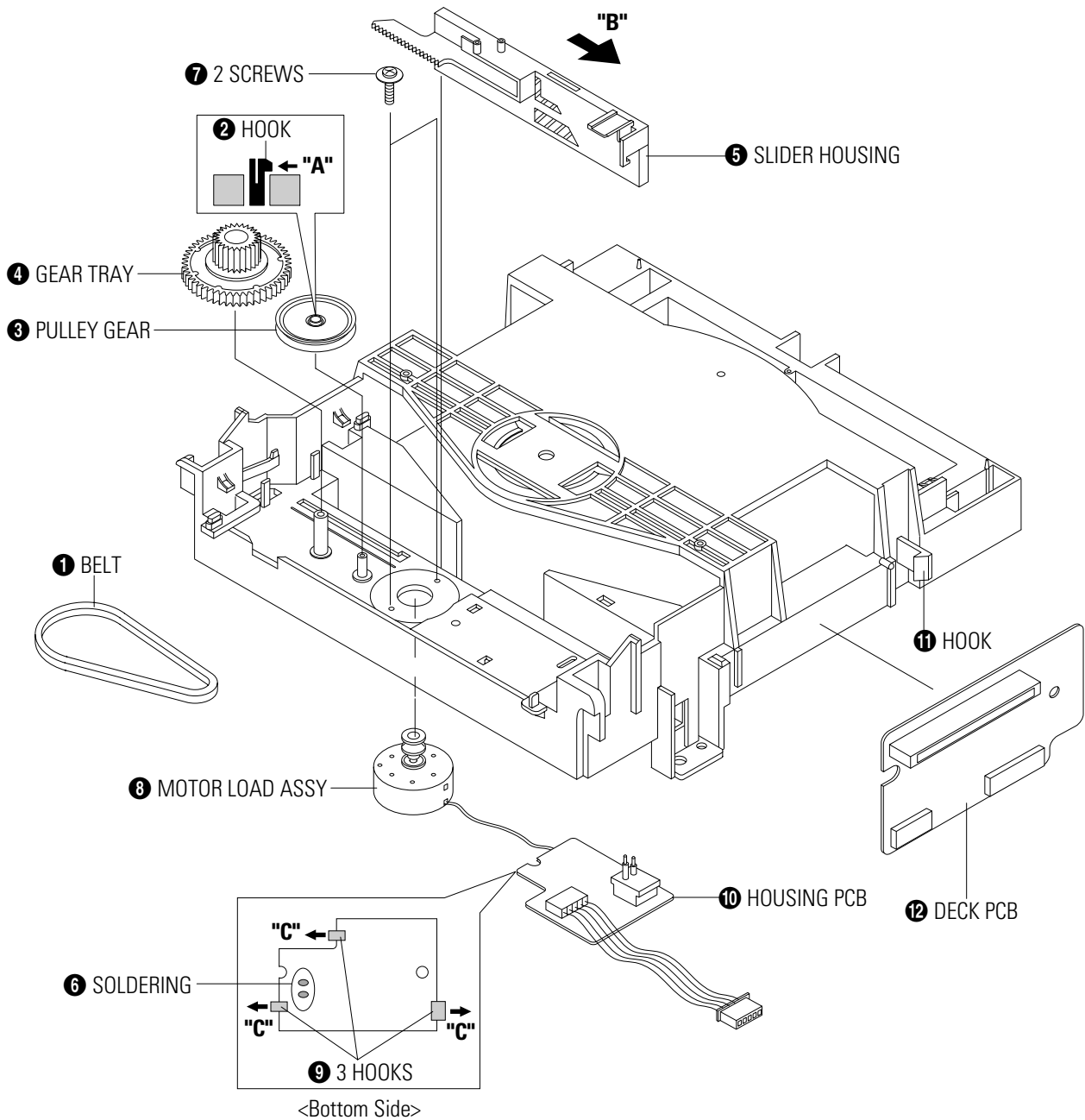


Fig. 5-10 Housing Ass'y Removal

5-4-4 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.

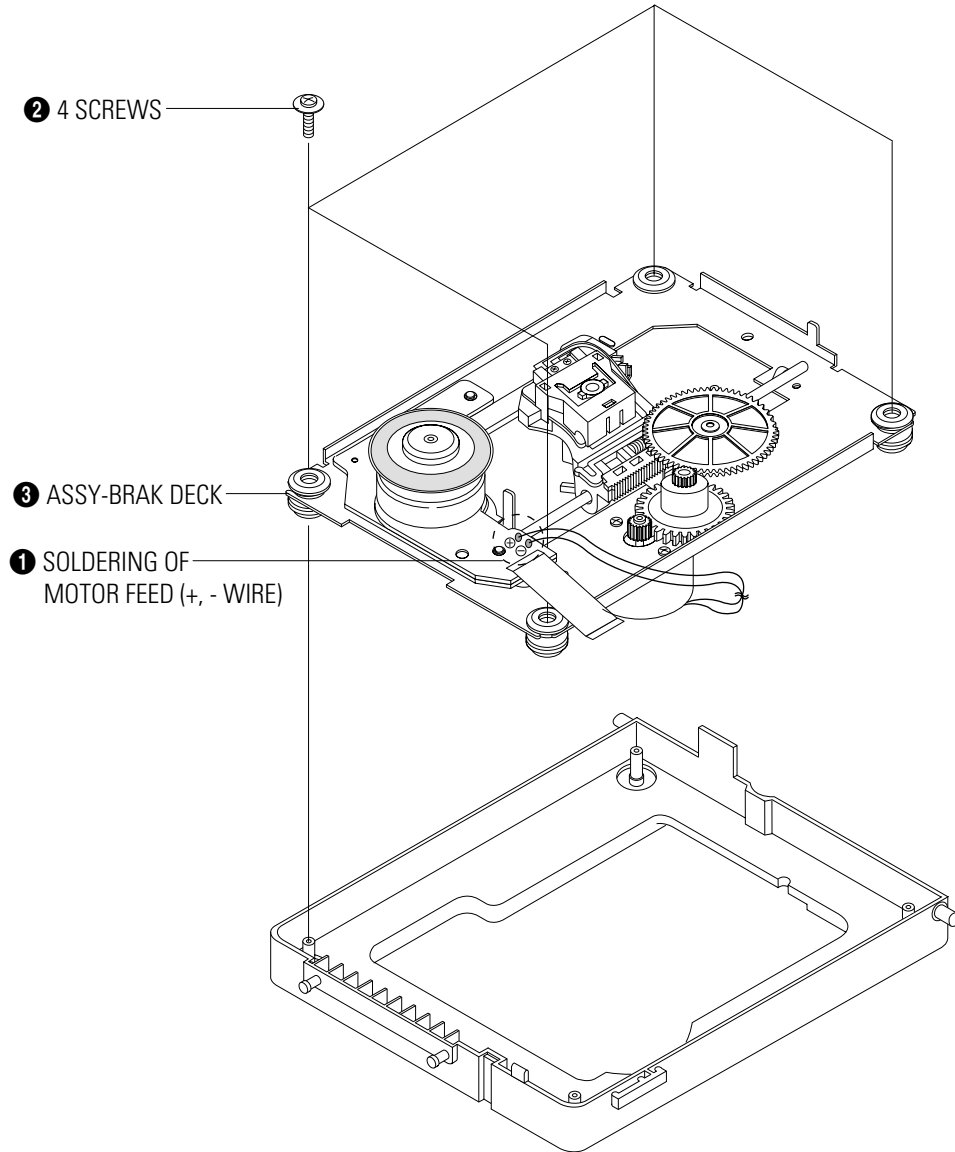


Fig. 5-11 Sub Chassis Removal

5-4-5 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**.

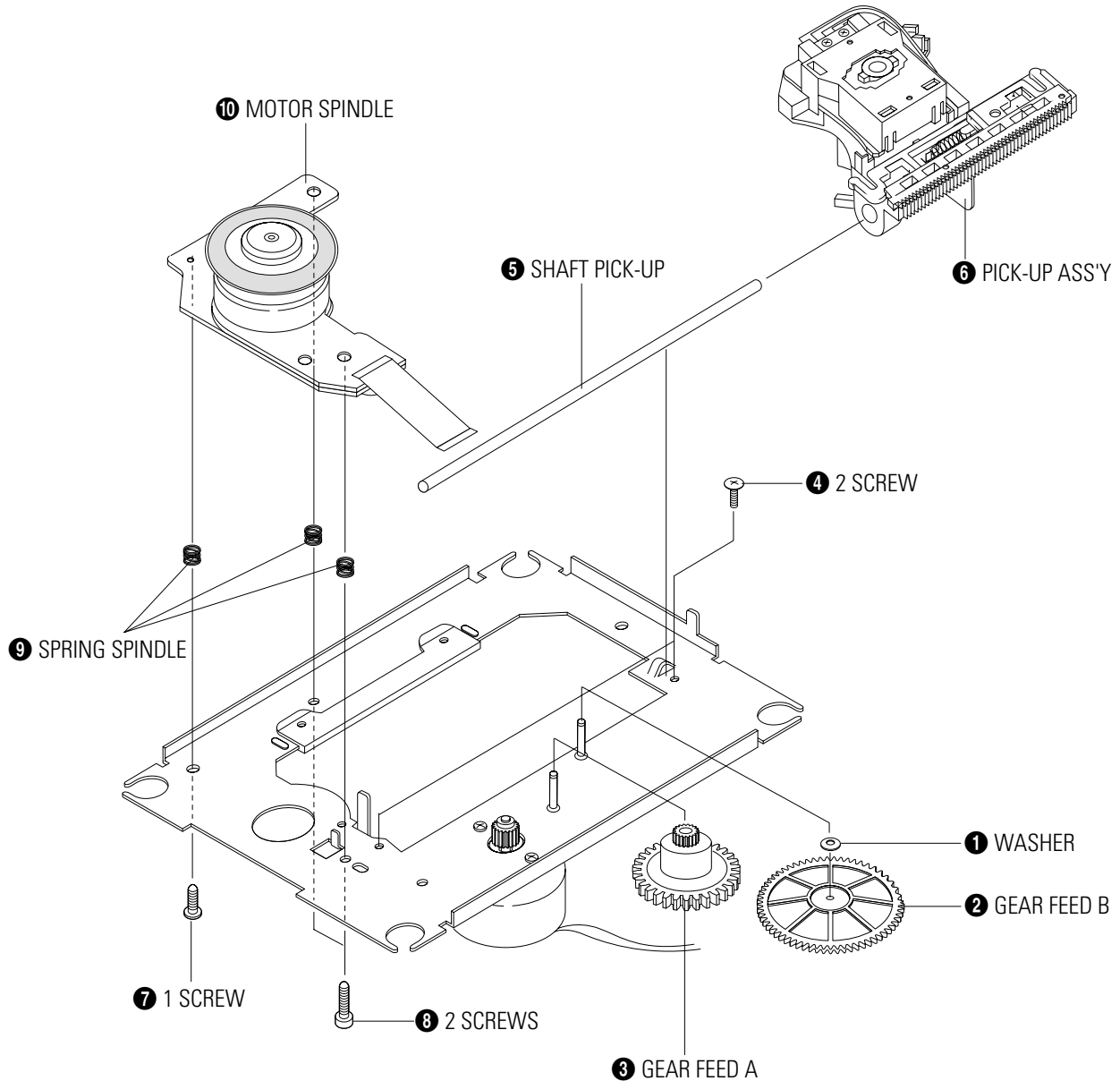
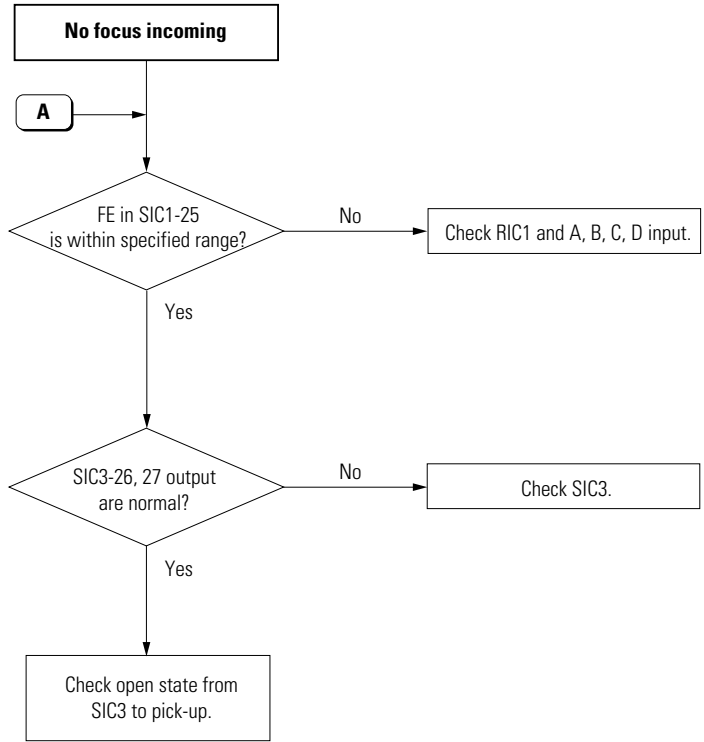
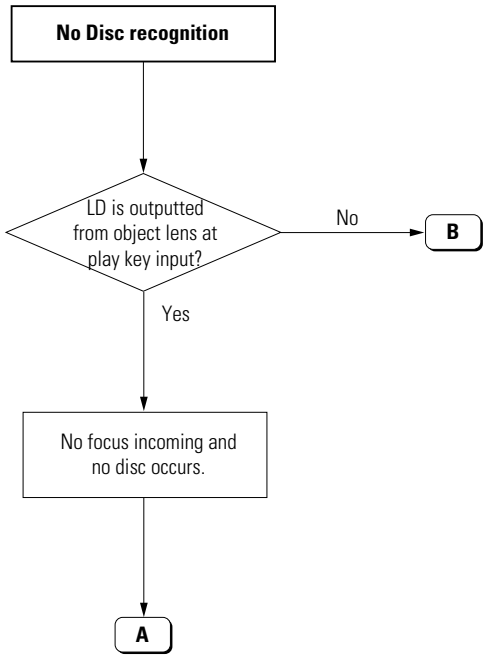
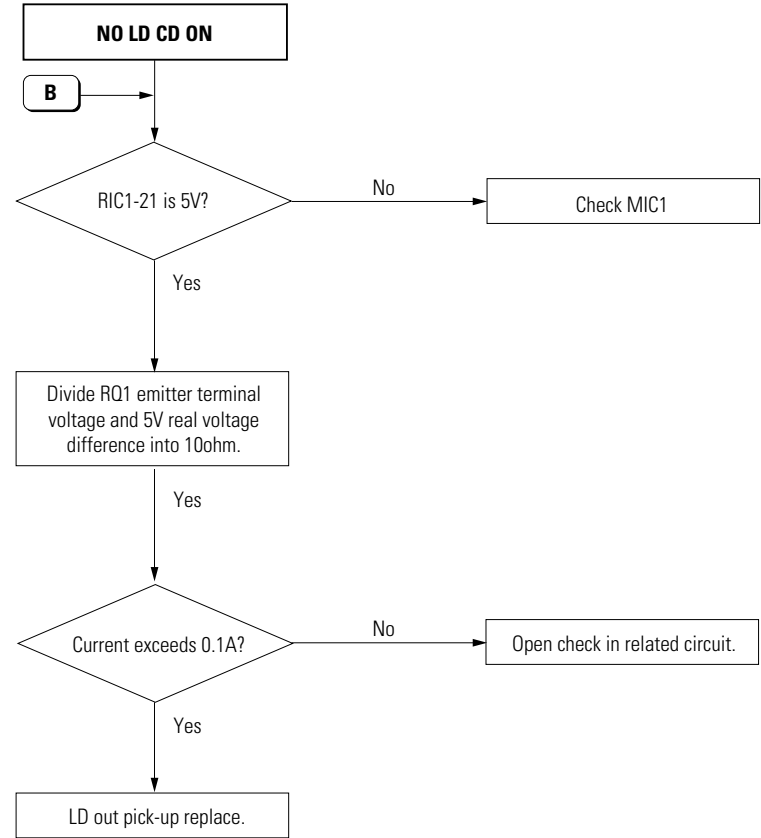
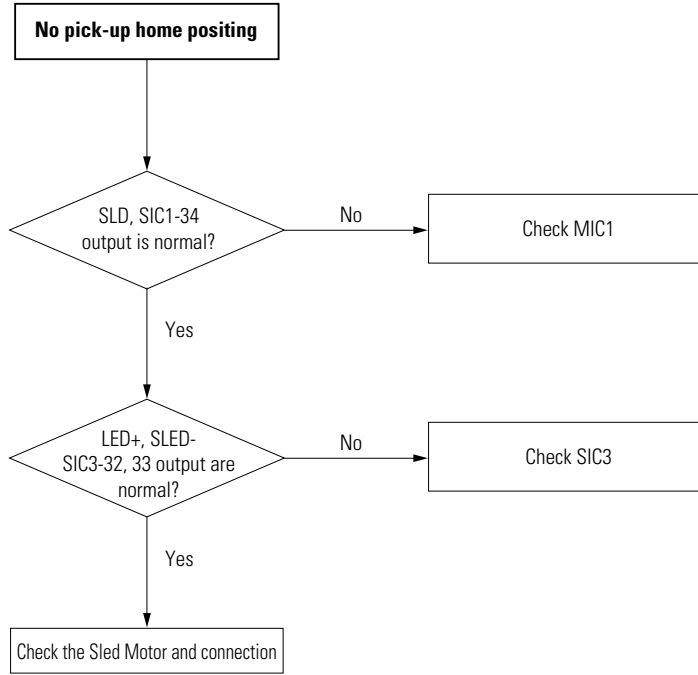
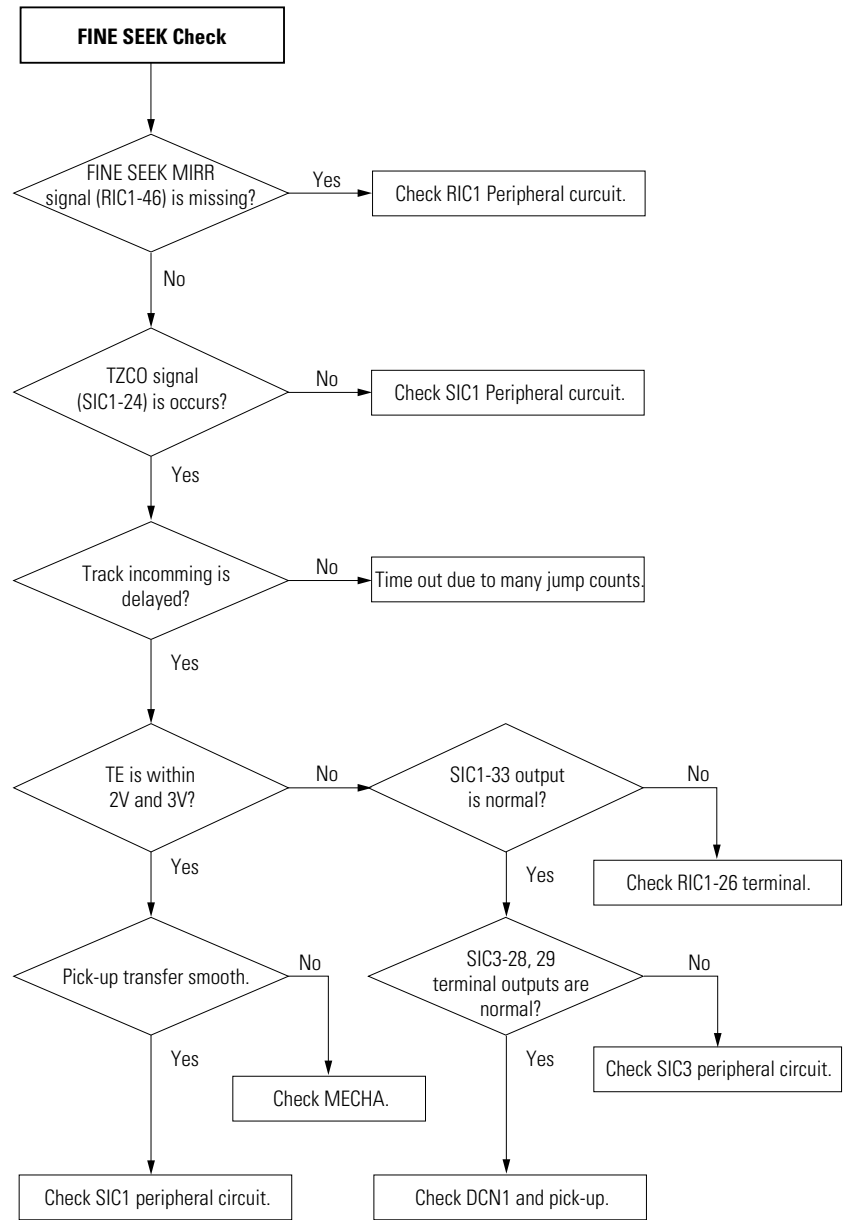
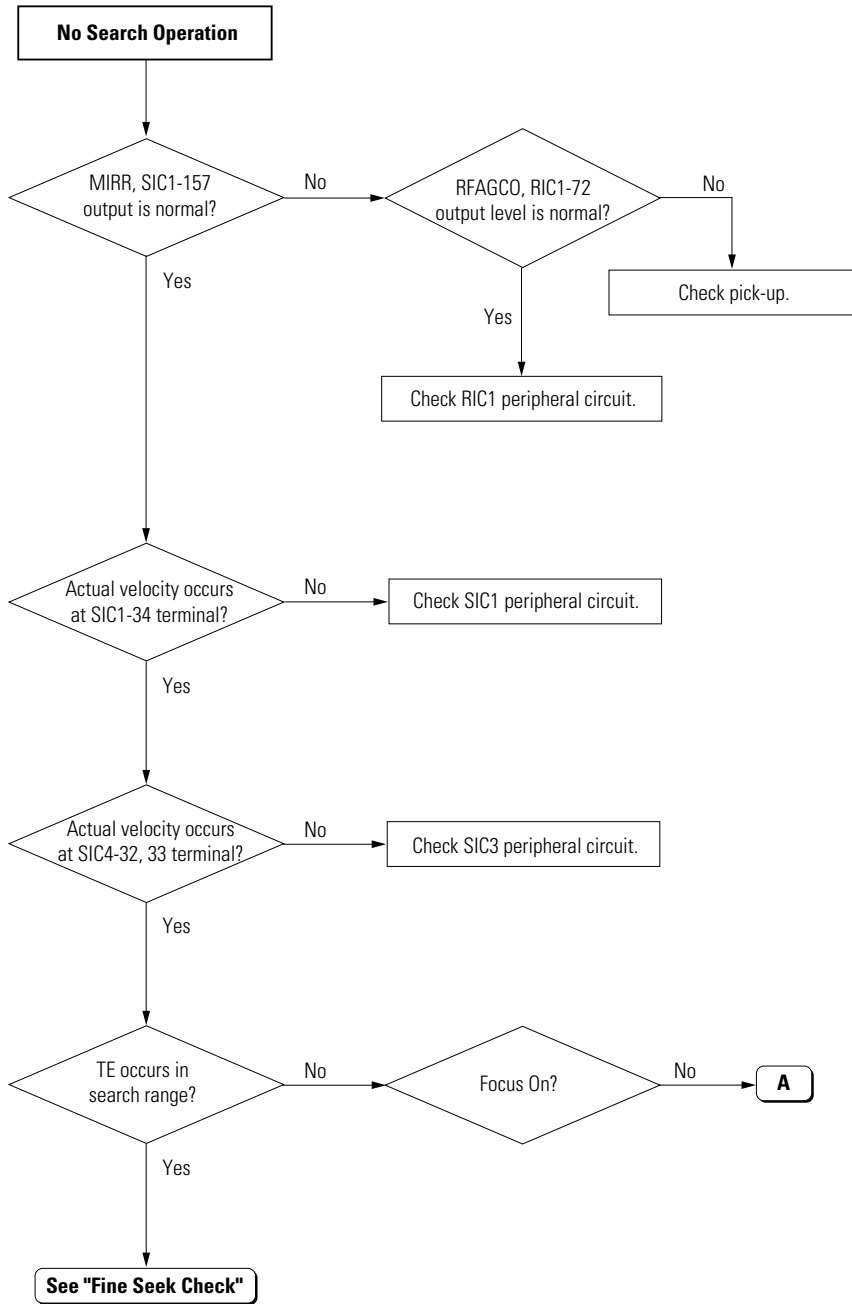


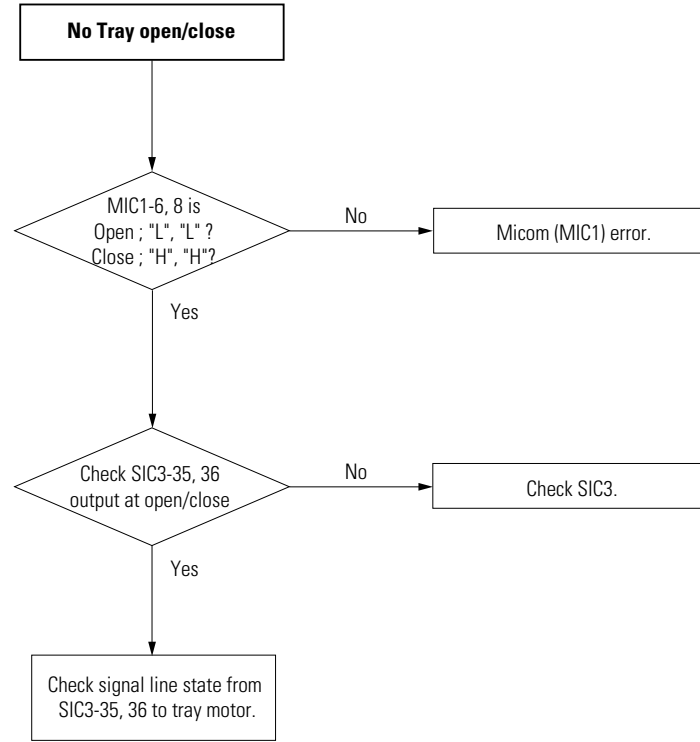
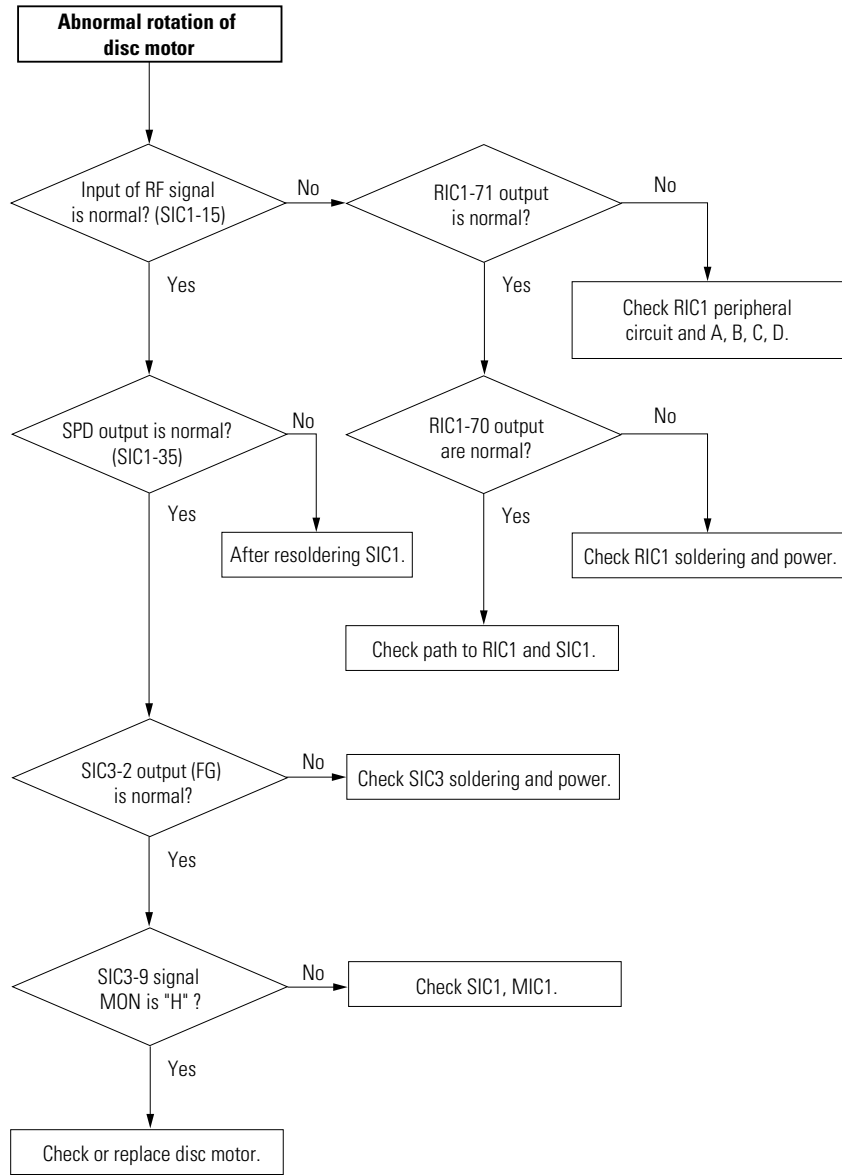
Fig. 5-12 Ass'y Brkt Deck Removal

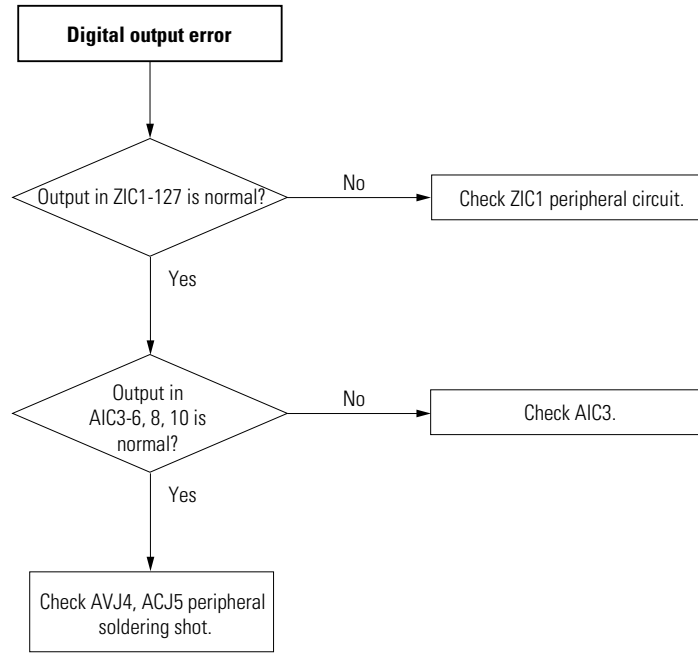
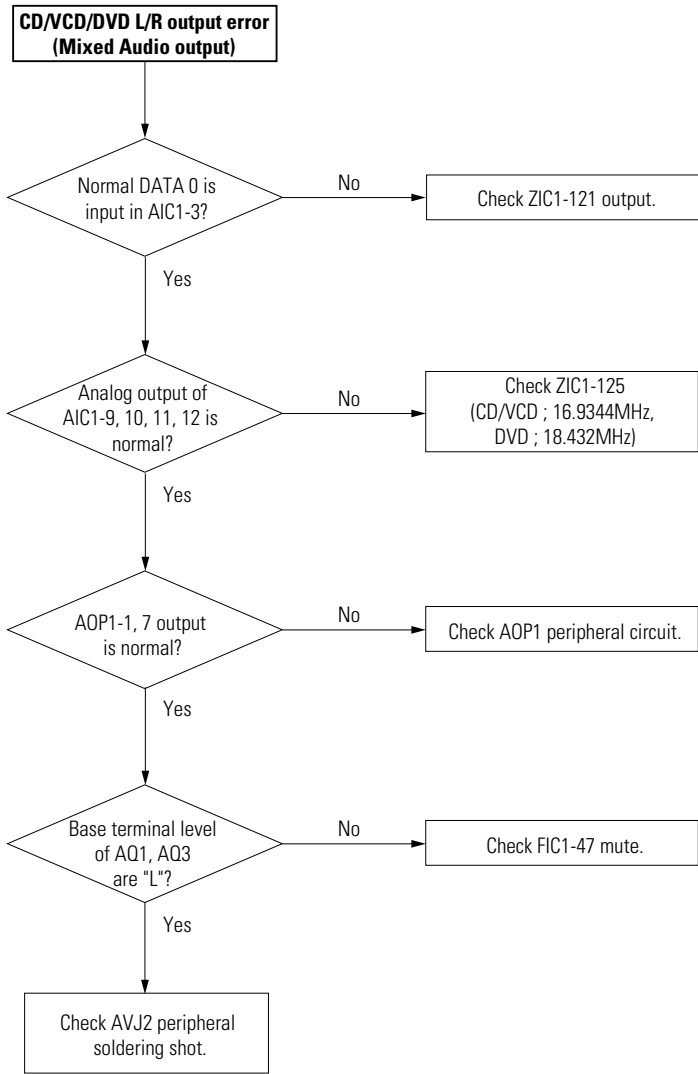


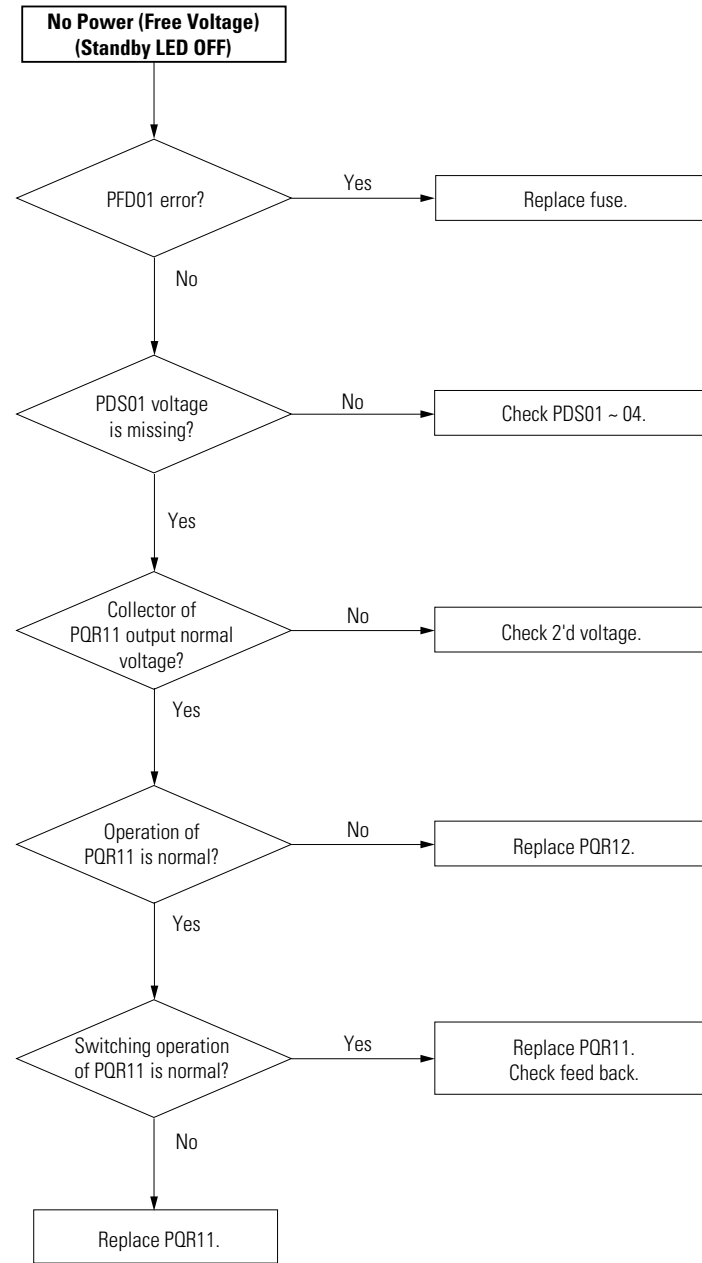
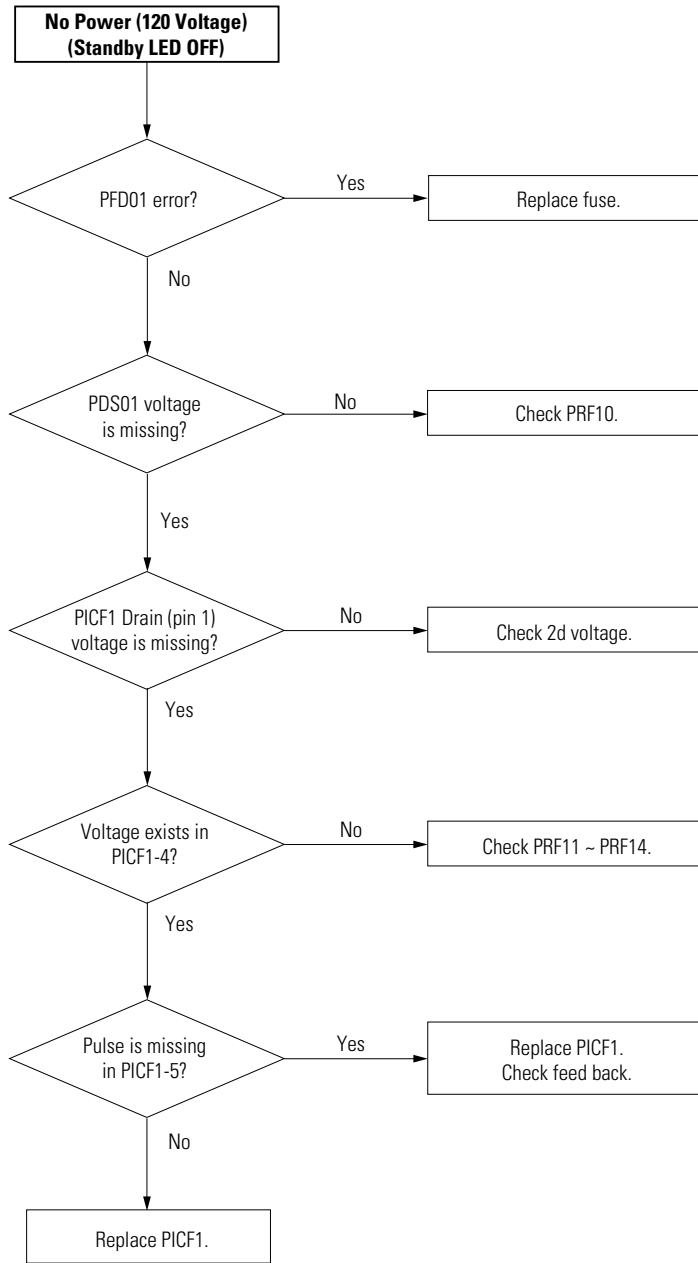
7. Troubleshooting

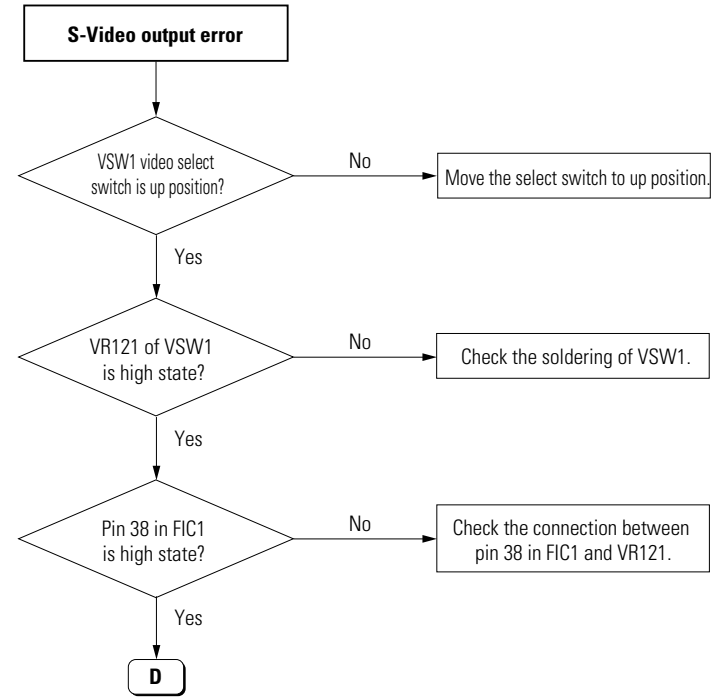
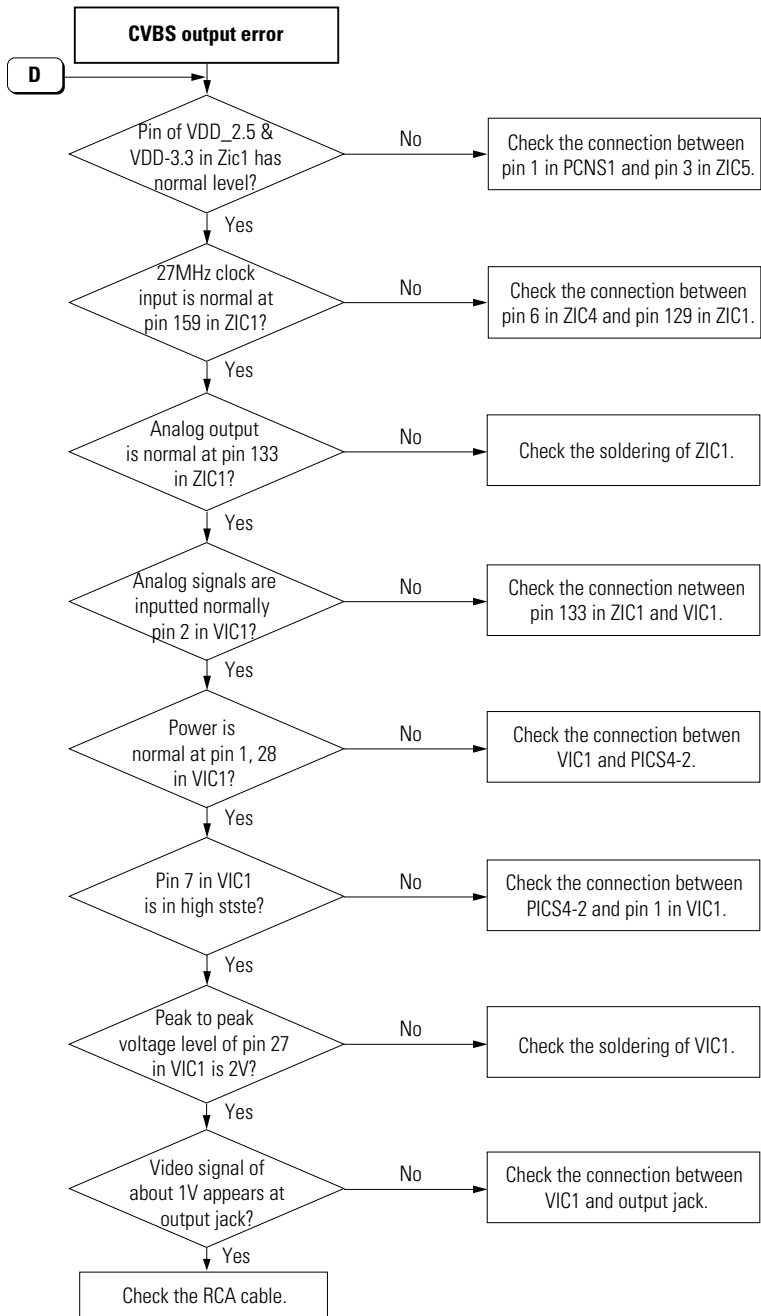


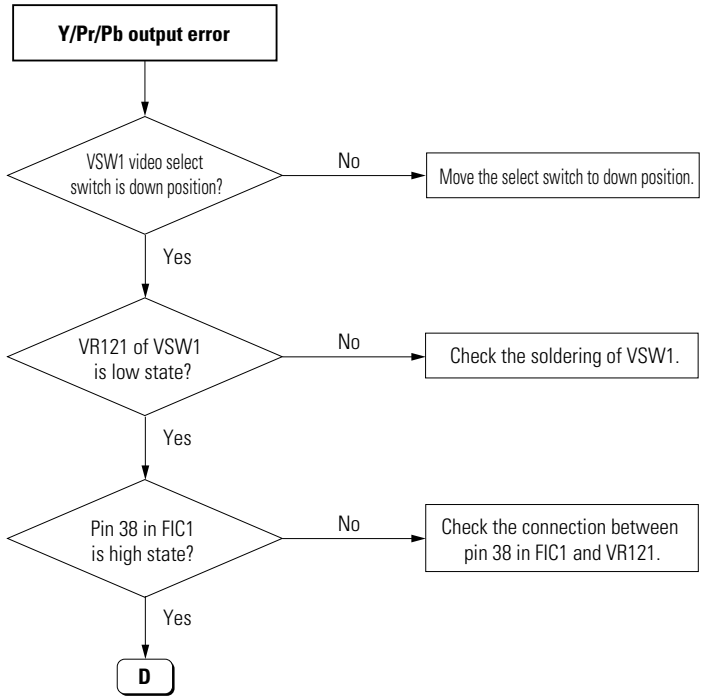












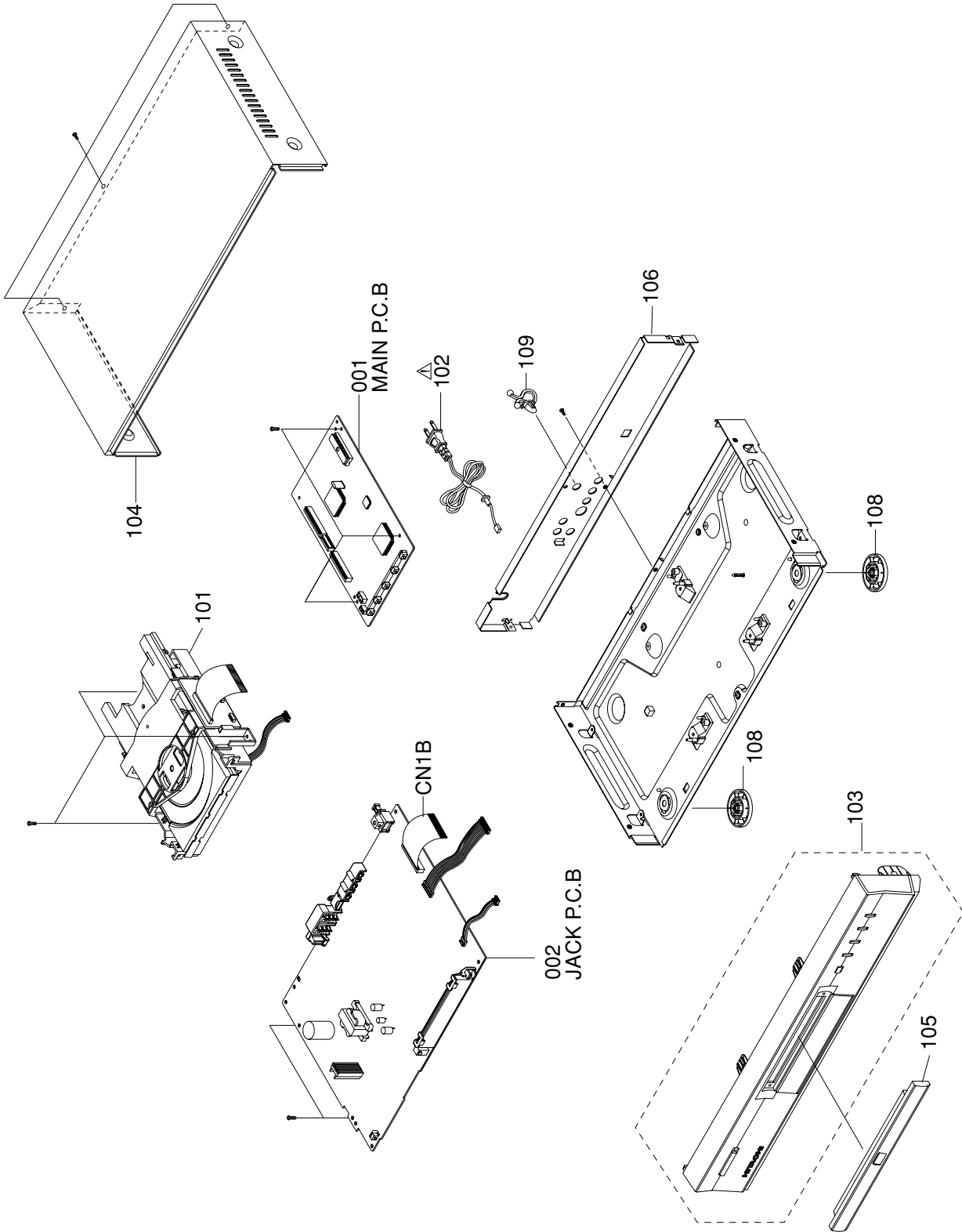
8. Exploded View

Page

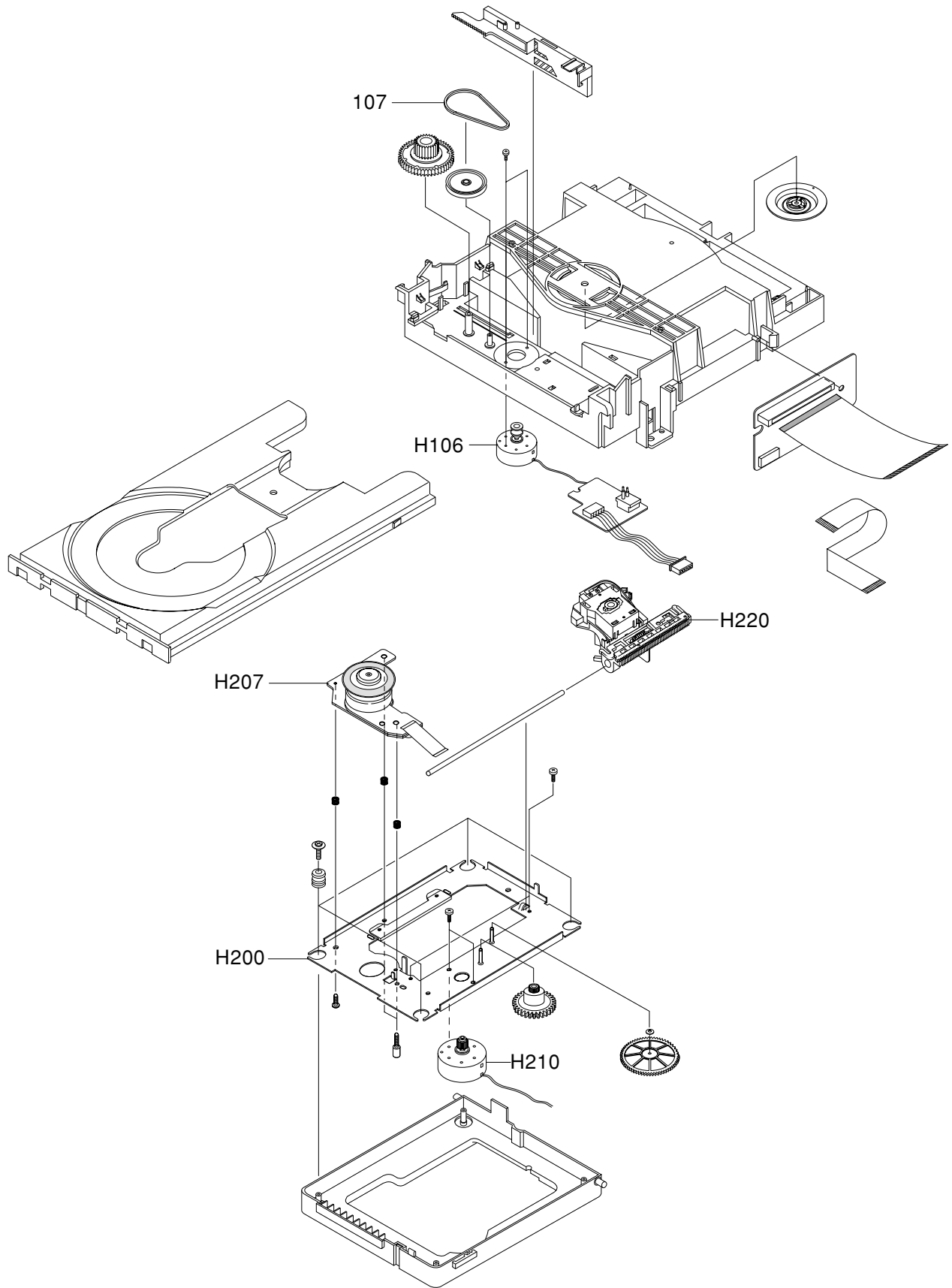
8-1 Cabinet Assembly - - - - - 8-2

8-2 Deck Assembly - - - - - 8-3

8-1 Cabinet Assembly



8-2 Deck Assembly



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9. Replacement Parts List

1. MECHANICAL PARTS LIST

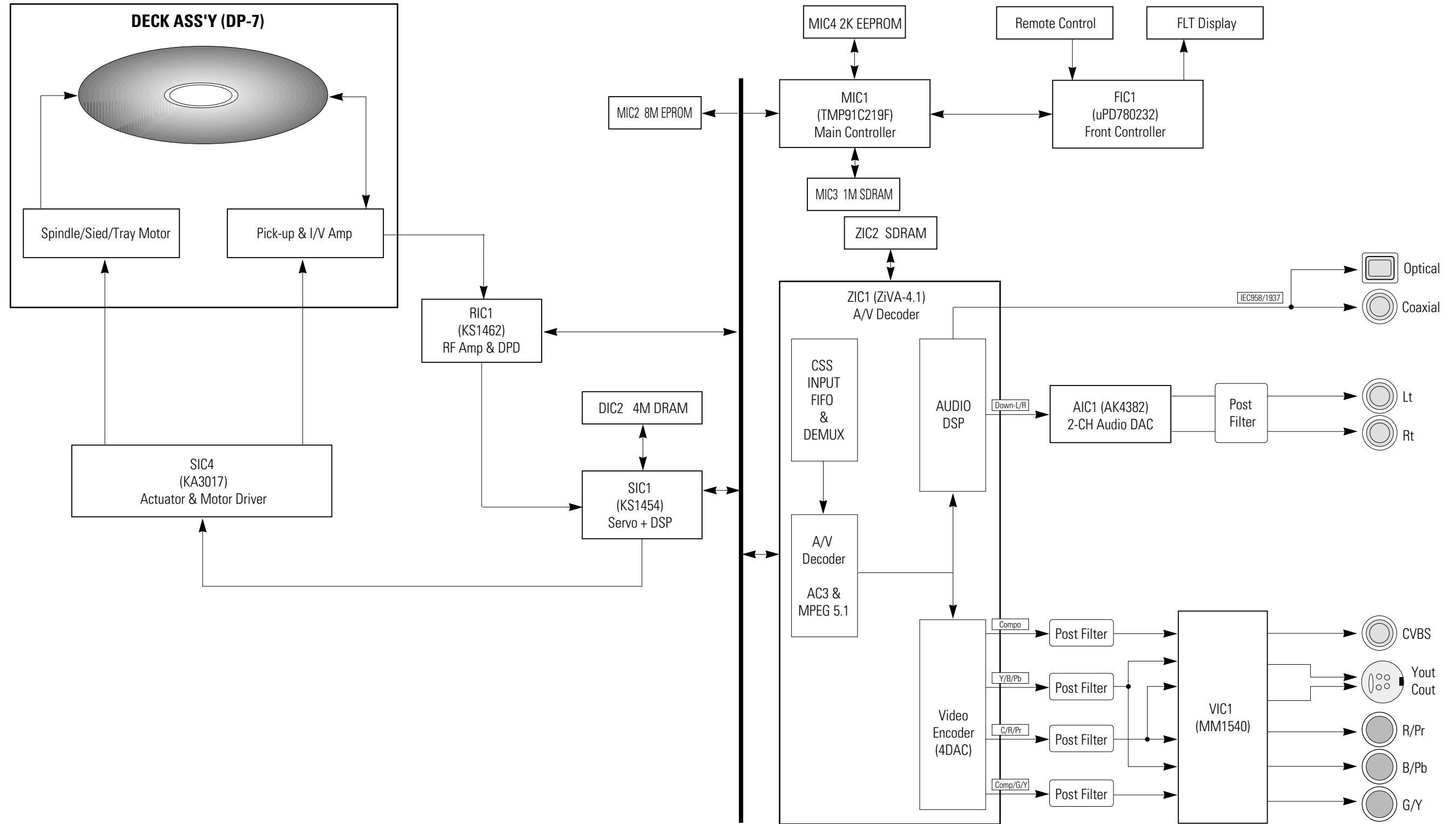
2. ELECTRICAL PARTS LIST

SYMBOL NO	P-NO	DESCRIPTION		SYMBOL NO	P-NO	DESCRIPTION	
MECHANISM SECTION							
101	TS16321	MECHA ASSY(DVD)		△PCD02	TA14311	CERAMIC DISC 3.3nF	
△102	TE13371	CORD,POWER		△PCD03	TA14311	CERAMIC DISC 33nF	
103	TJ14991	PANEL,FRONT	[P315U]	△PCR01	TA14301	CERAMIC DISC 10nF	
103	TJ14992	PANEL,FRONT	[P313U]	△PCR02	TA14311	CERAMIC DISC 3.3nF	
104	TJ15001	COVER, TOP	[P315U]	△PCS03	TA14341	CERAMIC DISC 100PF	
104	TS15001	COVER, TOP	[P313U]				
105	TJ15011	DOOR ASSY		△PER10	TA14291	CAPACITOR 150UF 200V	
				AD54	TC11651	DIODE 1N4148	
				AD55	TC11651	DIODE 1N4148	
				FD10	TC11651	DIODE 1N4148	
				PDR11	TC11651	DIODE 1N4148	
				PDR12	TC11651	DIODE 1N4148	
106	TJ15021	PANEL,REAR		△PDS01	TC11631	DIODE 1T5	
107	TJ15031	BELT,PUULEY		△PDS02	TC11631	DIODE 1T5	
108	TJ15041	FOOT,FRONT		△PDS03	TC11631	DIODE 1T5	
109	TJ15051	HOLDER,CORD		△PDS04	TC11631	DIODE 1T5	
H106	TS16341	MOTOR,LOAD					
				PDS11	TC11661	DIODE UF4007	
H200	TS16371	DECK,BRACKET		PDS51	TC11651	DIODE 1N4148	
H207	TS16351	MOTOR,SPINDLE		AIC1	TC11751	IC AK4382VT	
H210	TS16361	MOTOR,FEED		AIC3	TC11481	IC M74HCU04	
H220	TS16391	PICK UP ASSY		AOP1	TC11511	IC 4560	
001	TS16301	PWB ASSY MAIN					
				FIC1	TC11761	IC UPD780232	
002	TS16311	PWB ASSY JACK		FIC2	TC11541	IC 7545	
				FIC4	TC11791	MODULE,REMOCON	
				MIC1	TC11361	IC 95C265	
				MIC2	TC11294	EPROM	[P315U]
				MIC2	TC11295	EPROM	[P313U]
				MIC3	TC11671	IC 24257	
				MIC4	TC11681	IC 24C021	
				MIC5	TC11351	IC 7SET08	
				MIC6	TC11691	IC 7S32	
				MIC7	TC11401	IC 7SET00	
				PIC1	TC11701	IC 1365	
				△PICS1	TC11591	PHOTO COUPLER PC123	
				PICS2	TC11581	IC KA431Z	
				PICS3	TC11551	IC 7908	
				PICS4	TC11561	IC 78R08	
				PICS5	TC11781	IC 3RD13	
				RIC1	TC11711	IC KS1462	
				SIC1	TC11721	IC KS1454	
				SIC2	TC11731	IC 416C256	
				SIC3	TC11441	IC KA3017	
				SIC4	TC11741	IC 7ST08	
				VIC1	TC11771	IC 1540	
				ZIC1	TC11461	IC ZIVA4.1	
				ZIC2	TC11471	IC 3617161	
				ZIC4	TC11481	IC M74HCU04	
				△PQR11	TC11611	SEMICONDUCTOR C5039F	
				PQR12	TC11621	TRANSISTOR KTC3203	
				△PVA1	TC11641	SOMICONDUCTOR SVC471D	
				SY1	TE13881	CRYSTAL 33.8688MHZ	

Electrical Parts List

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
ZY1	TE13891	CRYSTAL 27HMZ			
MY1	TE13871	CRYSTAL 20HMZ			
△PTD1	TA14191	TRANSFORMER			
AVJ1	TE13931	JACK			
AVJ2	TE13941	JACK			
AVJ4	TE14191	JACK			
AVJ5	TE13961	CONNECTOR			
CN1	TE14011	CONNECTOR			
CN1A	TE14001	CONNECTOR			
CN8	TE13381	CONNECTOR(35P)			
DCN1A	TE14001	CONNECTOR			
FY1	TE13901	RESONATOR 5MHZ			
HSW1	TE14021	SWITCH			
△PCNS2	TE14291	CONNECTOR			
△PFD01	TE13401	FUSE			
PICS6	TE13911	FUSE 1A 50V			
PICS7	TE13911	FUSE 1A 50V			
△PLS01	TA14201	FILTER,LINE			
SVJ1	TE13951	JACK			
SW1	TE13981	SWITCH,TACT			
SW2	TE13991	SWITCH,TACT			
VFD1	TE13921	DISPLAY			
VSW1	TE13971	SWITCH,SLIDE			

10. Block Diagram

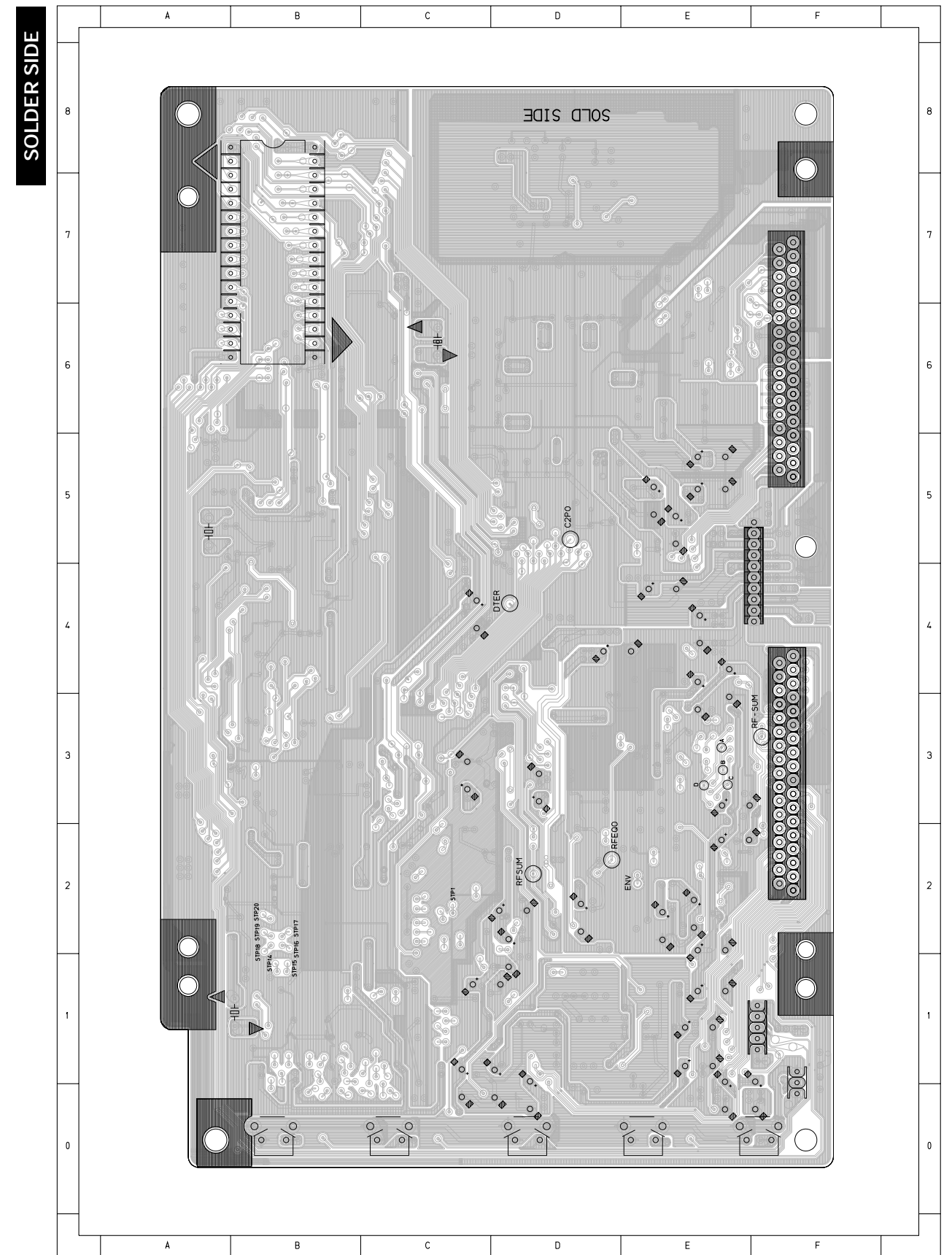
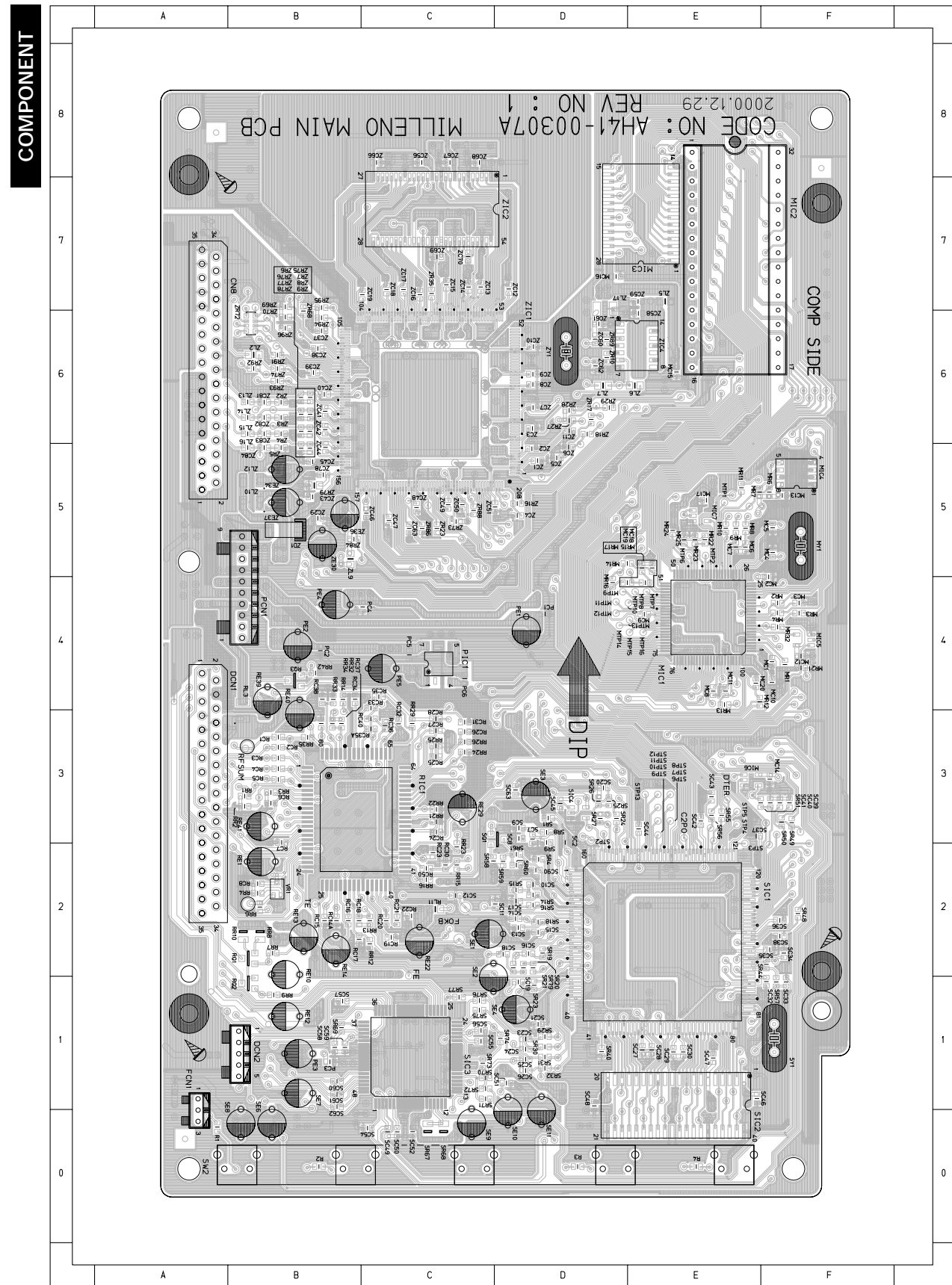


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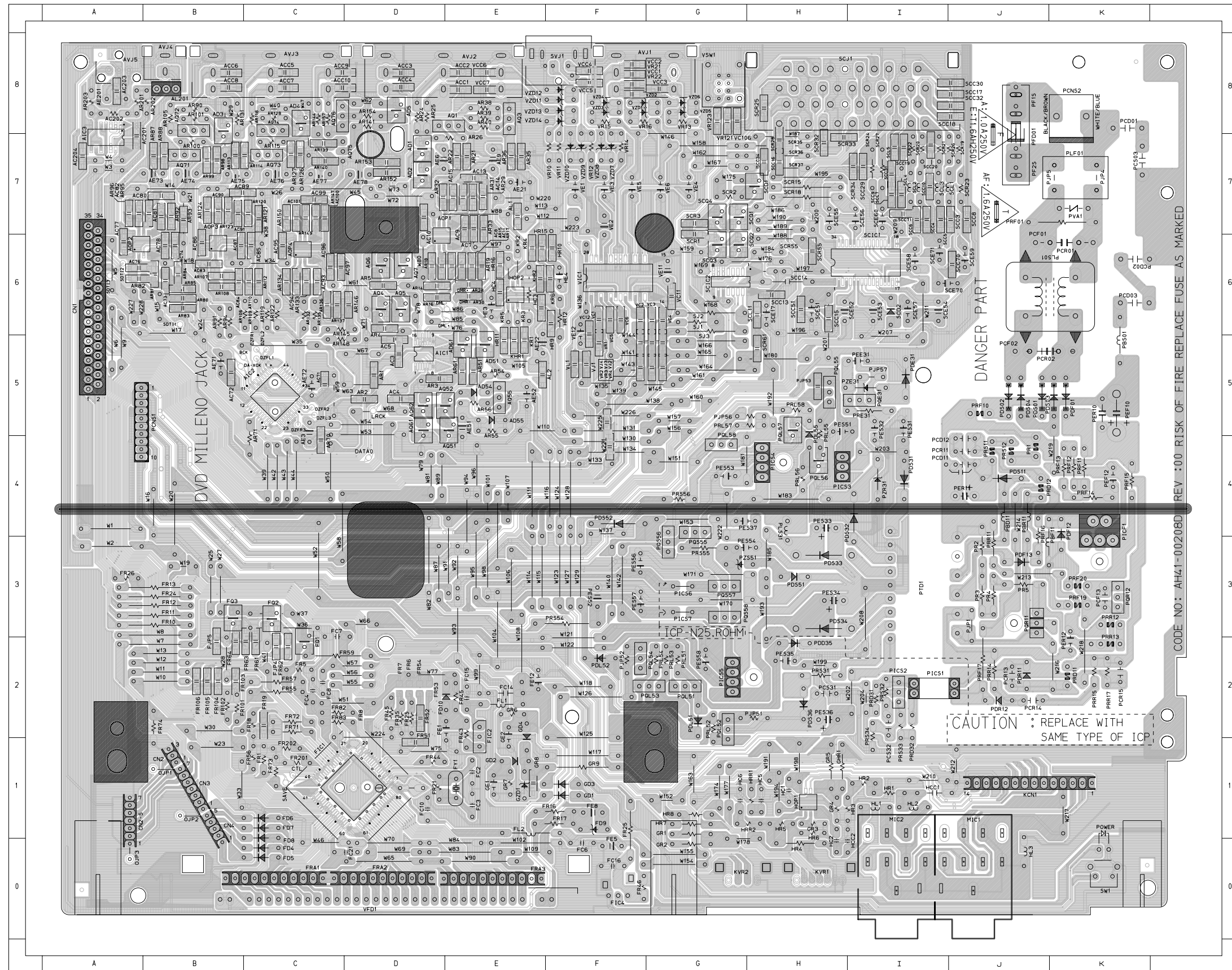
11. PCB Diagrams

11-1 Main - - - - -	11-2
11-2 Jack - - - - -	11-3
11-3 Deck - - - - -	11-4
11-4 Housing - - - - -	11-4

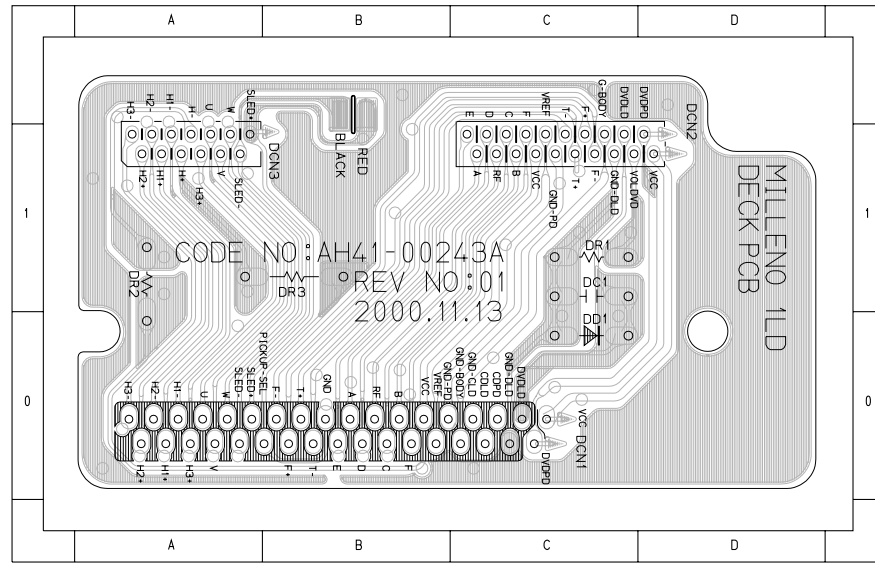
11-1 Main



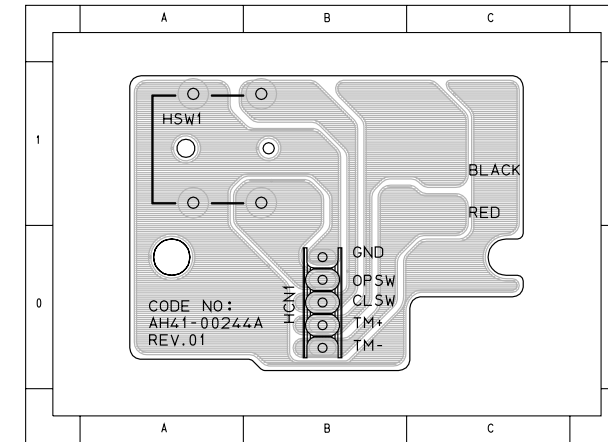
11-2 Jack



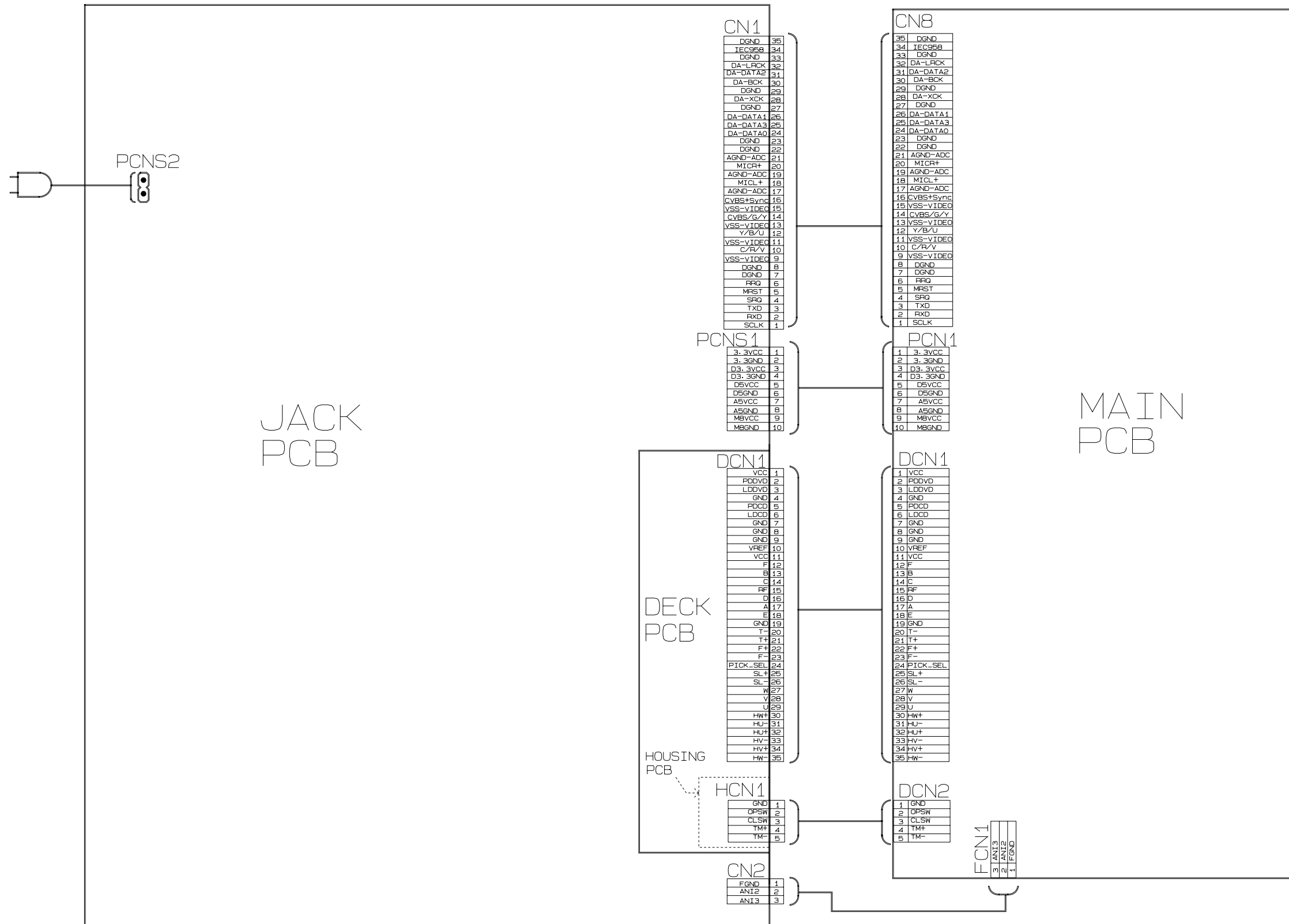
11-3 Deck



11-4 Housing



12. Wiring Diagram

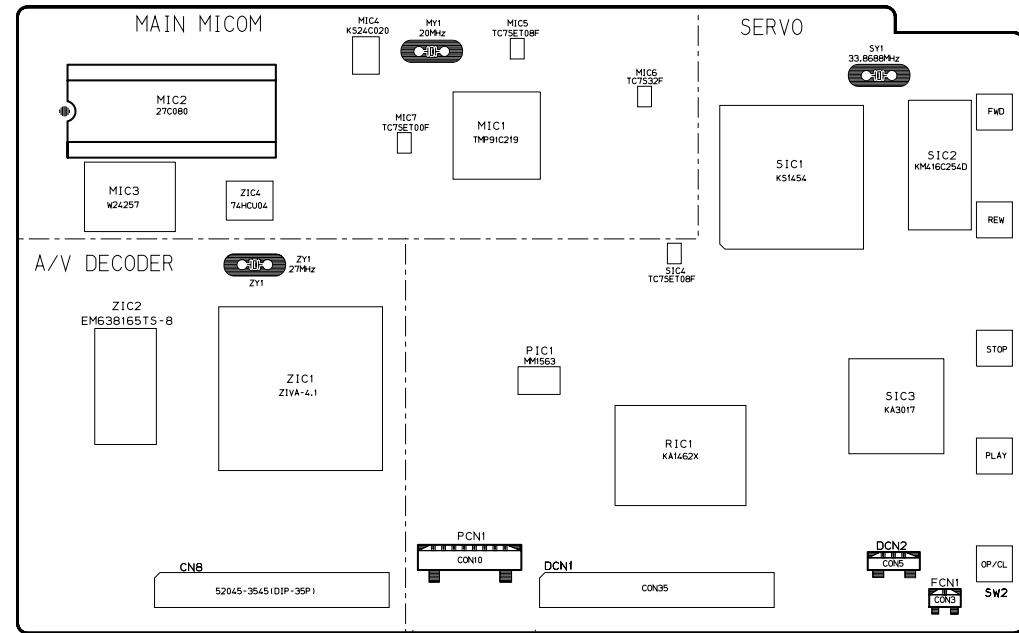


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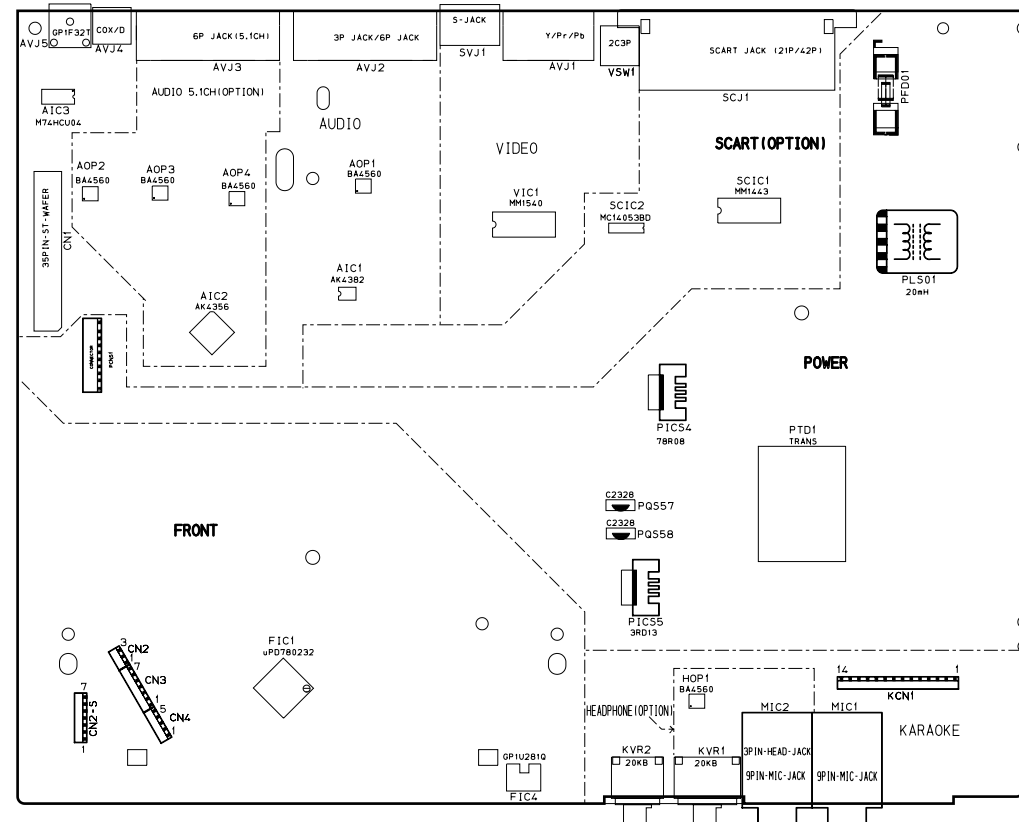
13. Schematic Diagrams

13-1 Power	-----	13-2
13-2 AV-Decoder/Main-Micom/Key	-----	13-3
13-3 Servo	-----	13-4
13-4 Video	-----	13-5
13-5 Audio	-----	13-6
13-6 Front-Micom/VFD Display	-----	13-7
13-7 Deck	-----	13-8

Block Identification of PCB

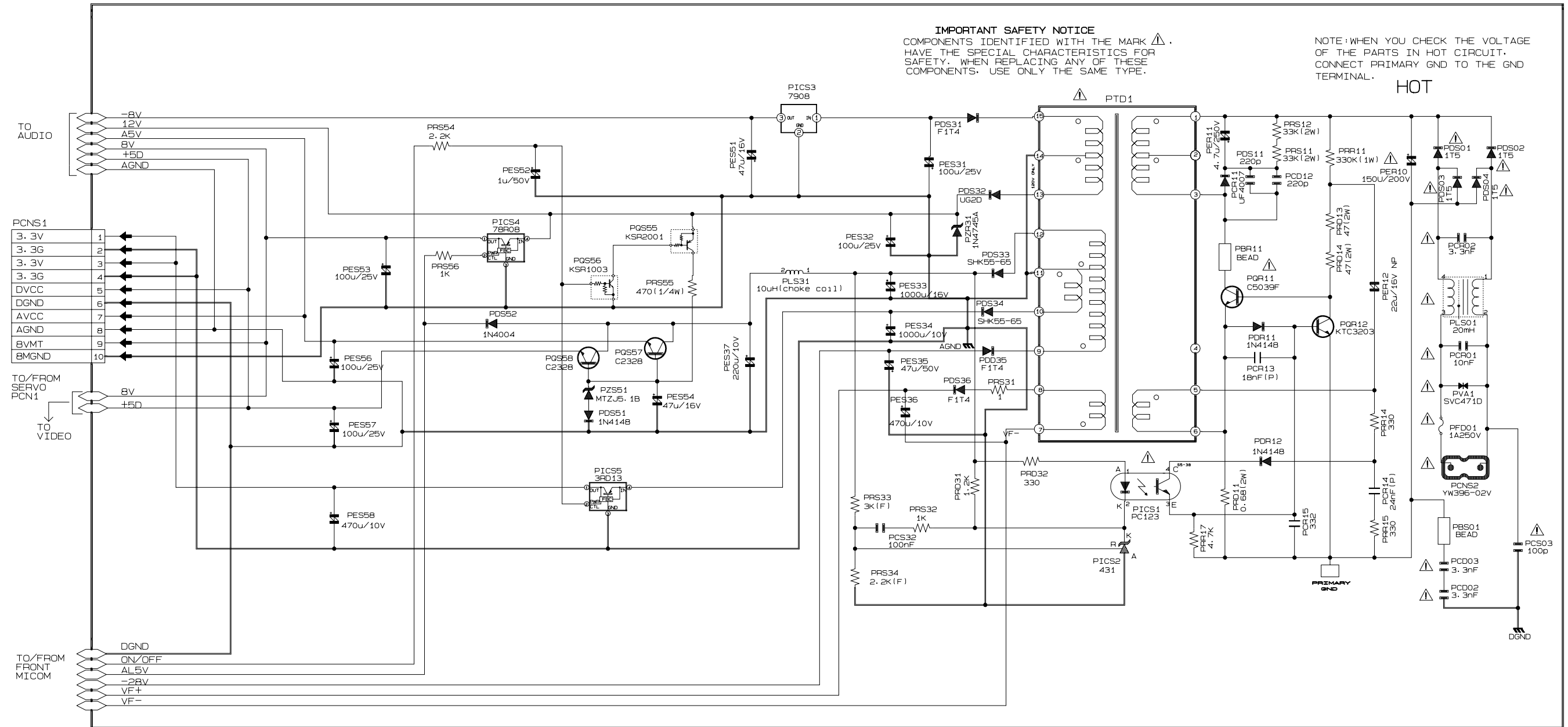


Main PCB (Component Side)

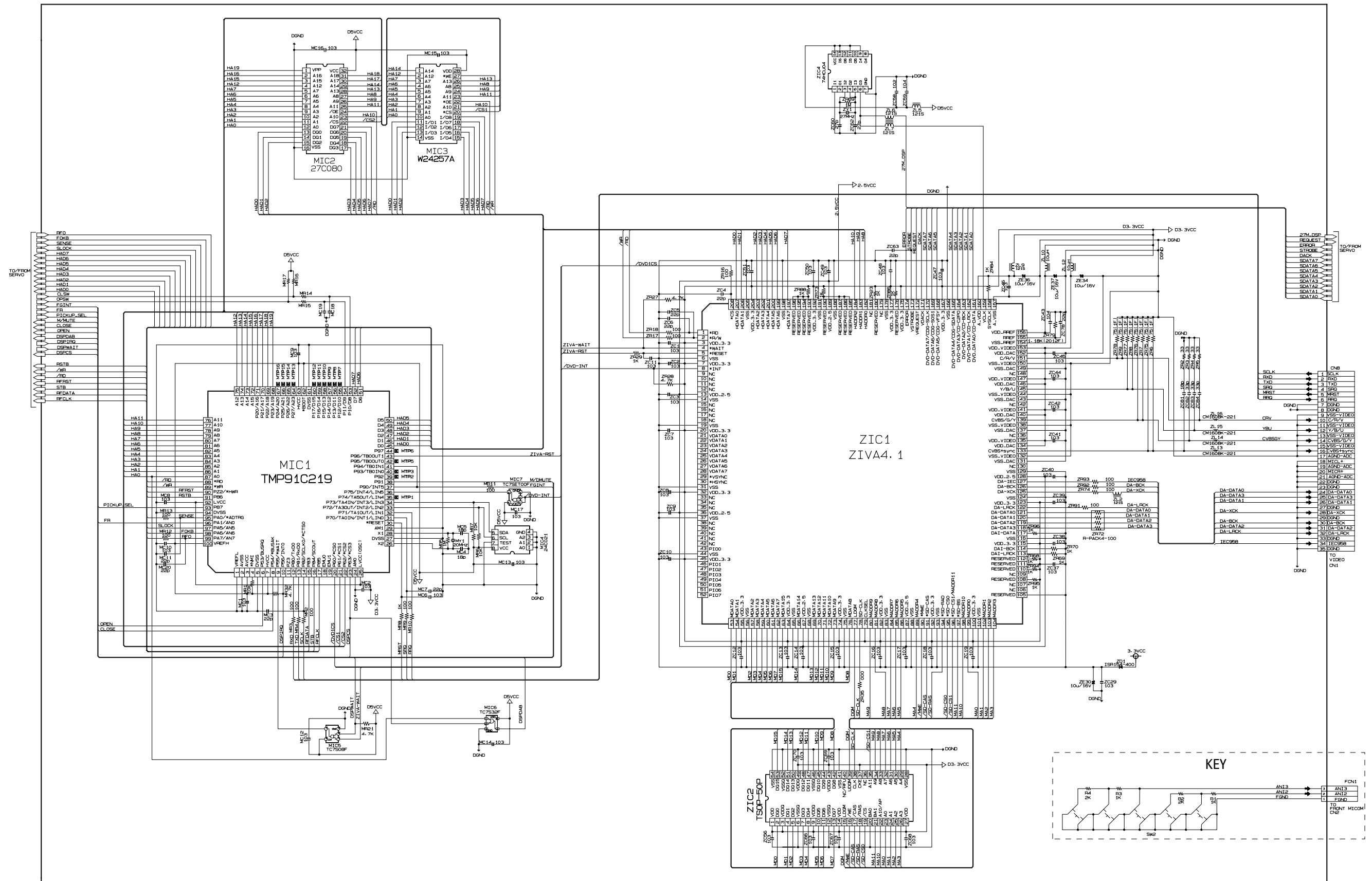


Jack PCB (Conductor Side)

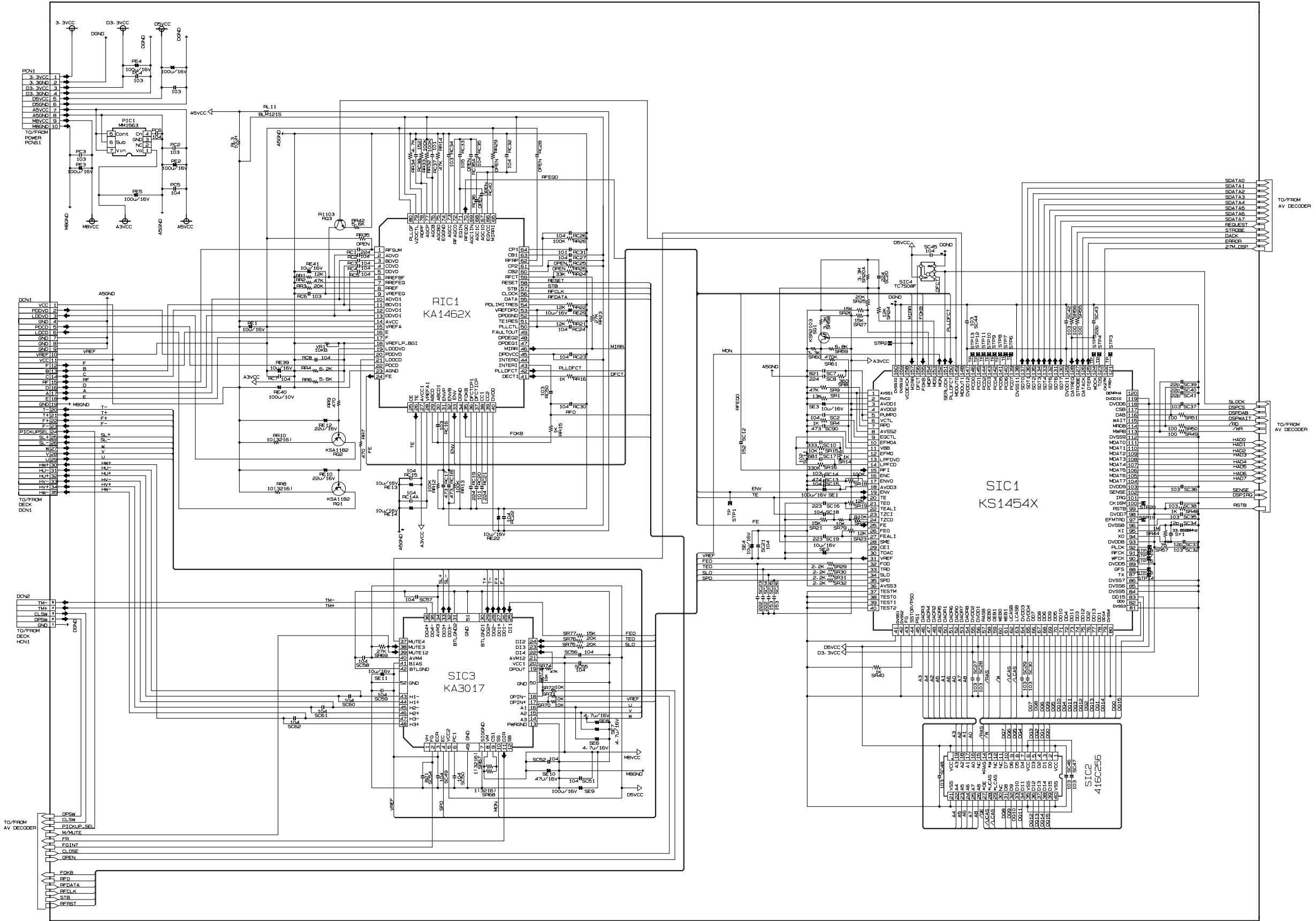
13-1 Power



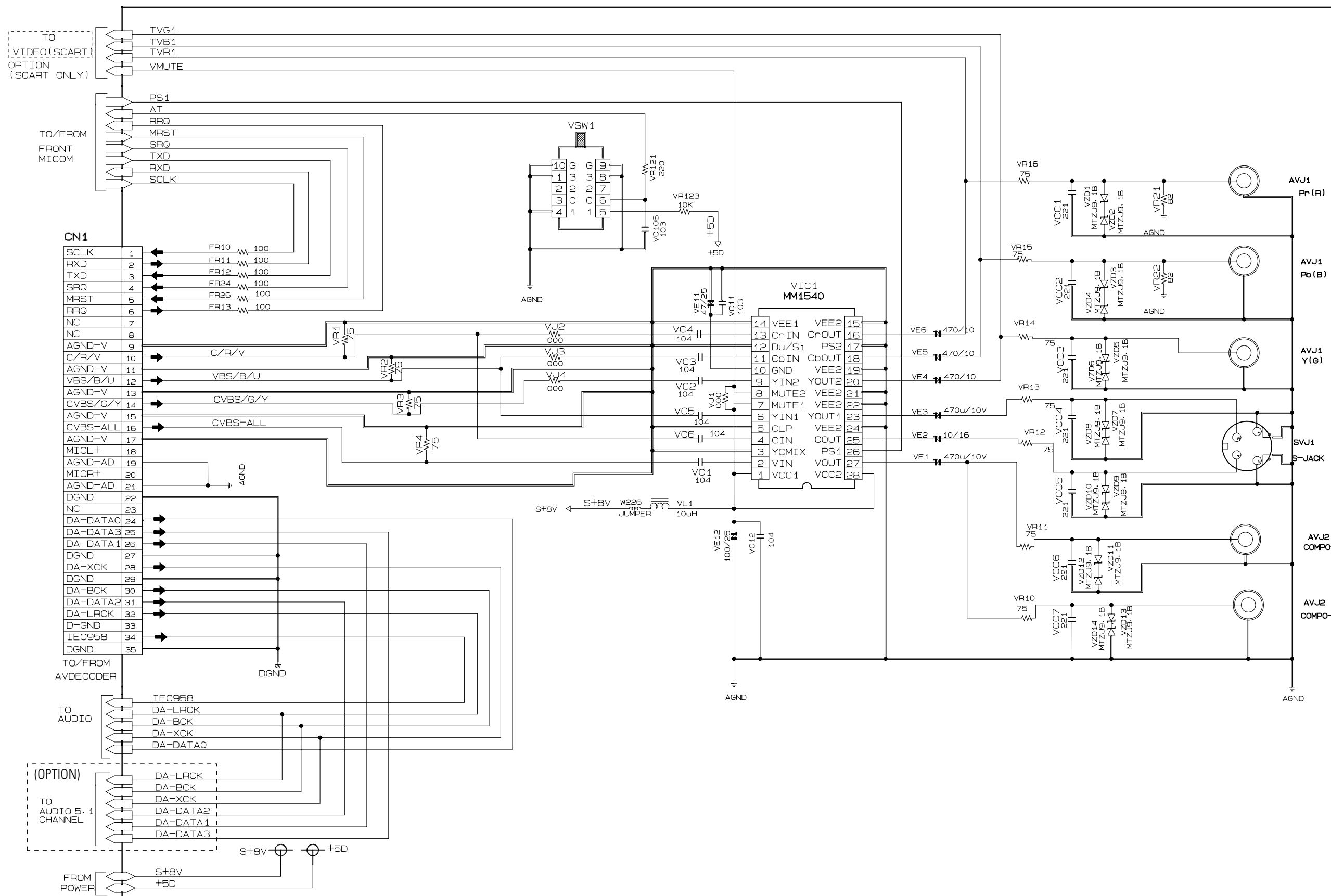
13-2 AV-Decoder/Main-Micom/Key



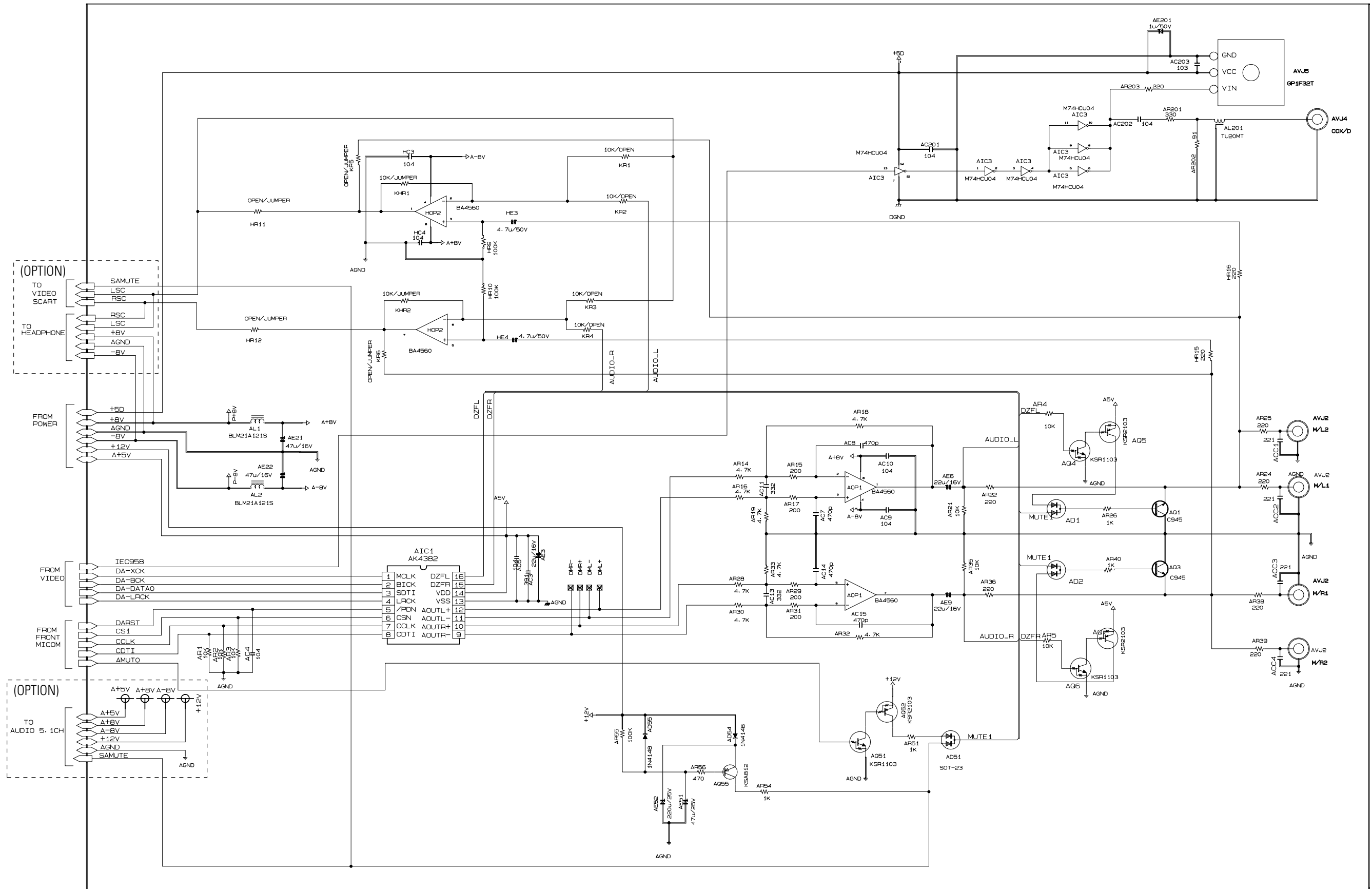
13-3 Servo



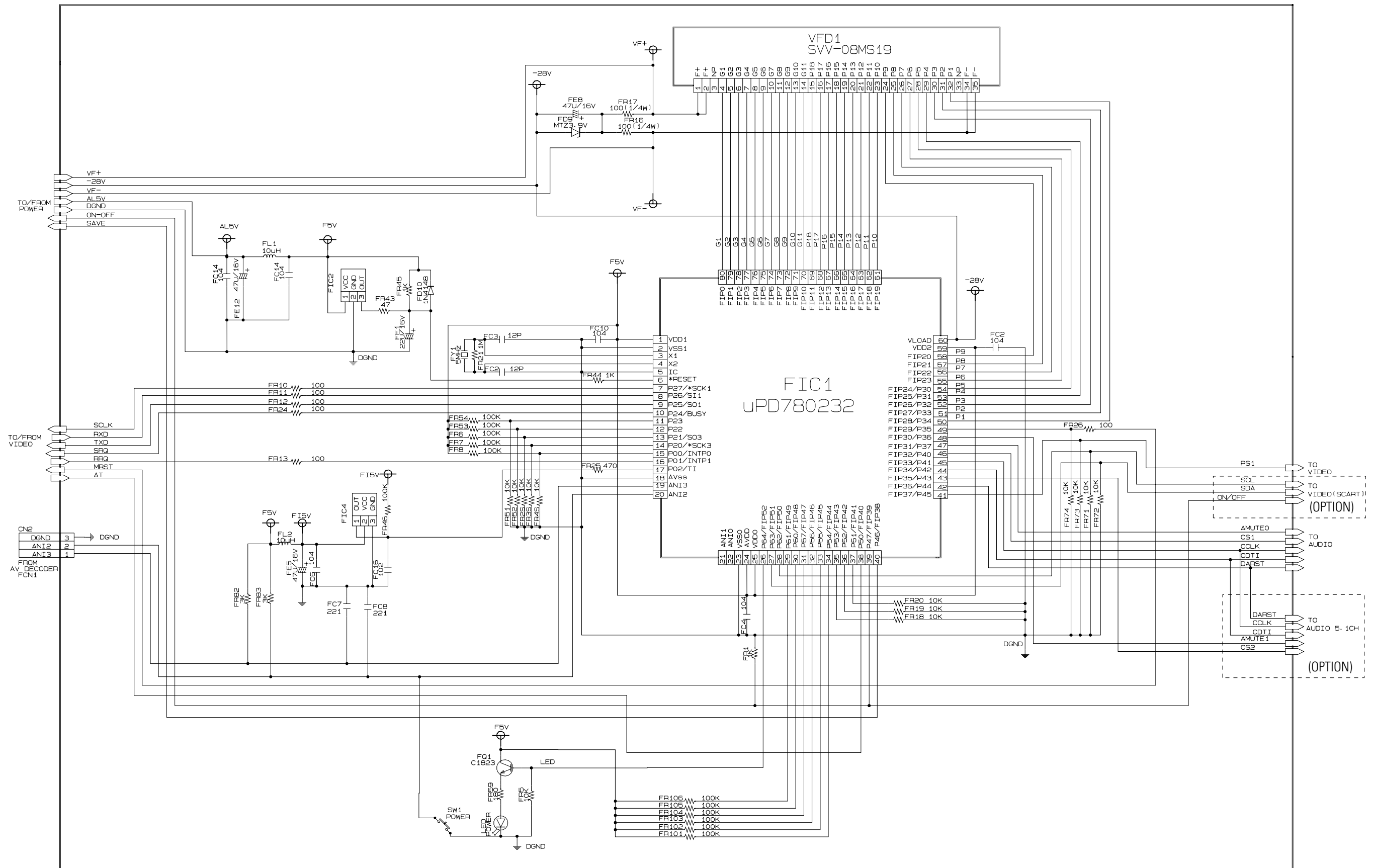
13-4 Video



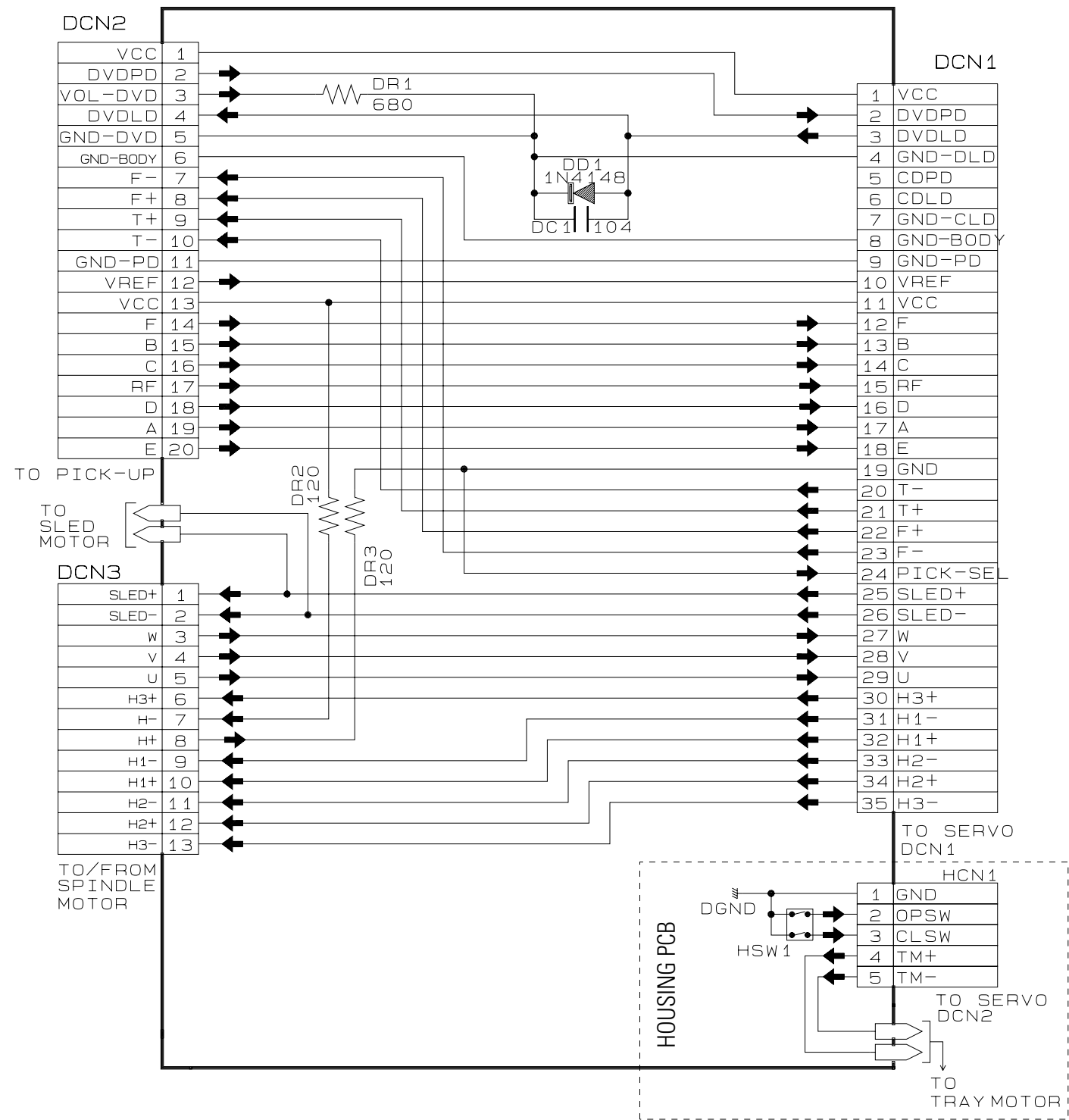
13-5 Audio



13-6 Front-Micom/VFD Display



13-7 Deck



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