

**Technical Service Data**

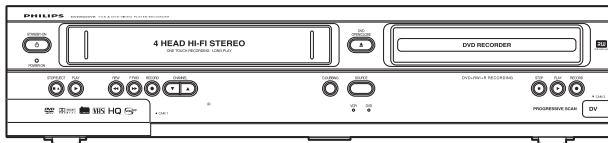
Service Solutions Group  
Technical Publications Dept.  
P.O. Box 555, 401 E. Old Andrew Johnson Hwy.  
Jefferson City, TN 37760

**Sec. 1A: Main Section**  
( DVDR600VR/37, MRV700VR/17 )  
**Specifications**  
**Operating Instructions**  
**Adjustment Procedures**  
**Schematic Diagrams and CBA's**  
**Exploded Views**  
**Cabinet & Electrical Parts Lists**

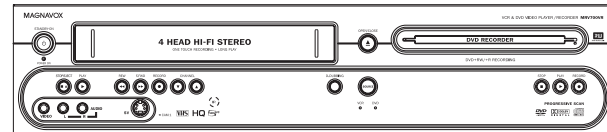
**Sec. 2: Deck Mechanism Section**

**Sec. 3: DVD+RW Basic Engine**  
VAD8041 12NC:3122 785 14850  
For repair information on the Basic Engine.

# DVD Recorder & Video Cassette Recorder Service Manual



**PHILIPS**  
Model: DVDR600VR/37



**MAGNAVOX**  
Model: MRV700VR/17

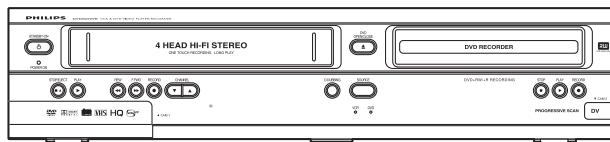
## DVD Recorder & Video Cassette Recorder

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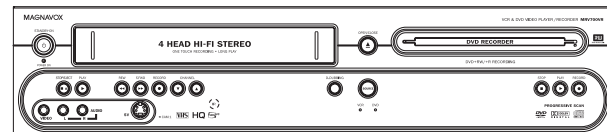
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**Model: DVDR600VR/37**



**MAGNAVOX**  
**Model: MRV700VR/17**

## DVD Recorder & Video Cassette Recorder



# IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company\*\* Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

\*\* Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

## WARNING

Critical components having special safety characteristics are identified with a  by the Ref. No. in the parts list and enclosed within a broken line\* (where several critical components are grouped in one area) along with the safety symbol  on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

\* Broken Line 

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# TABLE OF CONTENTS

## [ Main Section ]

	Page
SPECIFICATIONS .....	1-1-1
IMPORTANT SAFETY PRECAUTIONS .....	1-2-1
STANDARD NOTES FOR SERVICING .....	1-3-1
FUNCTION INDICATOR SYMBOLS .....	1-4-1
PREPARATION FOR SERVICING .....	1-5-1
OPERATING CONTROLS AND FUNCTIONS .....	1-6-1
REMOTE CONTROL OPERATION .....	1-7-1
CABINET DISASSEMBLY INSTRUCTIONS .....	1-8-1
HOW TO INITIALIZE THE DVD RECORDER .....	1-8-8
ELECTRICAL ADJUSTMENT INSTRUCTIONS .....	1-9-1
Adjustment Points and Test Points .....	1-9-2
FIRMWARE RENEWAL MODE .....	1-10-1
REWORK PROCEDURE IEEE UNIQUE NUMBER .....	1-10-2
BLOCK DIAGRAMS	
Servo/System Control Block Diagram .....	1-11-1
Sub System Control Block Diagram .....	1-11-2
Video Block Diagram .....	1-11-3
Video Input/Output Select Block Diagram .....	1-11-4
Audio Block Diagram .....	1-11-5
Audio Input/Output Select Block Diagram .....	1-11-6
Hi-Fi Audio Block Diagram .....	1-11-7
Power Supply Block Diagram .....	1-11-8
SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS	
Main 1/7 Schematic Diagram Parts Location Guide <VCR Section> .....	1-12-2
Main 1/7 Schematic Diagram <VCR Section> .....	1-12-3
Main 2/7, Sensor, Function & Jack-B Schematic Diagram <VCR Section> .....	1-12-5
Main 3/7 Schematic Diagram <VCR Section> .....	1-12-7
Main 4/7 Schematic Diagram <VCR Section> .....	1-12-9
Main 4/7 Schematic Diagram Parts Location Guide <VCR Section> .....	1-12-11
Main 5/7 Schematic Diagram Parts Location Guide <VCR Section> .....	1-12-12
Main 5/7 Schematic Diagram <VCR Section> .....	1-12-13
Main 6/7 Schematic Diagram <VCR Section> .....	1-12-15
Main 6/7 Schematic Diagram Parts Location Guide <VCR Section> .....	1-12-17
Main 7/7 Schematic Diagram Parts Location Guide <VCR Section> .....	1-12-18
Main 7/7 & DVD Open/Close Schematic Diagram <VCR Section> .....	1-12-19
Main CBA Parts Location Guide <VCR Section> .....	1-12-21
Main CBA Top View <VCR Section> .....	1-12-23
Main CBA Bottom View <VCR Section> .....	1-12-25
Function CBA Top/Bottom View <VCR Section> .....	1-12-27
Jack-B CBA Top/Bottom View <VCR Section> .....	1-12-27
Front Schematic Diagram <VCR Section> .....	1-12-29
Front CBA Top/Bottom View <VCR Section> .....	1-12-31
Jack-A Schematic Diagram <VCR Section> .....	1-12-33
Jack-A CBA Top/Bottom View <VCR Section> .....	1-12-33
Power Supply Schematic Diagram <VCR Section> .....	1-12-35
Power Supply CBA Top View <VCR Section> .....	1-12-37
Power Supply CBA Bottom View <VCR Section> .....	1-12-39
Junction-A CBA Top/Bottom View <VCR Section> .....	1-12-40
Junction-B CBA Top/Bottom View <VCR Section> .....	1-12-40
CPU 1/2 Schematic Diagram <DVD Section> .....	1-12-41
CPU 2/2 Schematic Diagram <DVD Section> .....	1-12-43
Digital Board Unit 1/10 Schematic Diagram <DVD Section> .....	1-12-45
Digital Board Unit 2/10 Schematic Diagram <DVD Section> .....	1-12-47
Digital Board Unit 3/10 Schematic Diagram <DVD Section> .....	1-12-49
Digital Board Unit 4/10 Schematic Diagram <DVD Section> .....	1-12-51
Digital Board Unit 5/10 Schematic Diagram <DVD Section> .....	1-12-53
Digital Board Unit 6/10 Schematic Diagram <DVD Section> .....	1-12-55
Digital Board Unit 7/10 Schematic Diagram <DVD Section> .....	1-12-57
Digital Board Unit 8/10 Schematic Diagram <DVD Section> .....	1-12-59
Digital Board Unit 9/10 Schematic Diagram <DVD Section> .....	1-12-61
Digital Board Unit 10/10 Schematic Diagram <DVD Section> .....	1-12-63
Digital Board Unit Top View <DVD Section> .....	1-12-65
Digital Board Unit Bottom View <DVD Section> .....	1-12-67
Digital Board Unit Test Point View <DVD Section> .....	1-12-69
WAVEFORMS .....	1-13-1
WIRING DIAGRAM .....	1-14-1
SYSTEM CONTROL TIMING CHARTS .....	1-15-1
IC PIN FUNCTION DESCRIPTIONS .....	1-16-1
LEAD IDENTIFICATIONS .....	1-17-1
ELECTRICAL PARTS LIST .....	1-18-1
EXPLODED VIEWS .....	1-19-1
MECHANICAL PARTS LIST .....	1-20-1

# SPECIFICATIONS

## < VCR Section >

Description	Unit	Minimum	Nominal	Maximum	Remark
<b>1. Video</b>					
1-1. Video Output (PB)	Vp-p	0.8	1.0	1.2	SP Mode
1-2. Video Output (R/P)	Vp-p	0.8	1.0	1.2	
1-3. Video S/N Y (R/P)	dB	40	48		SP Mode
1-4. Video Color S/N AM (R/P)	dB	38	44		SP Mode
1-5. Video Color S/N PM (R/P)	dB	36	40		SP Mode
1-6. Resolution (R/P)	Line	220	240		SP Mode
<b>2. Servo</b>					
2-1. Jitter Low (R/P)	μsec		0.05	0.15	SP Mode
2-2. Wow & Flutter (R/P)	%		0.15	0.35	SP Mode
<b>3. Normal Audio</b>					
3-1. Output (PB)	dBV	-10	-6	-2	SP Mode
3-2. Output (R/P)	dBV	-10	-6	-2	SP Mode
3-3. S/N (R/P)	dB	40	44		SP Mode
3-4. Distortion (R/P)	%		1.5	5.0	SP Mode
3-5. Freq. Response (R/P) at 100Hz	dB	-9.5	-3.5	2.5	SP Mode
(-20dB ref. 1kHz) at 8kHz	dB	-6.5	-0.5	5.5	SP Mode
<b>4. Tuner</b>					
4-1. Video output (E-E)	Vp-p	0.8	1.0	1.2	E-E Mode
4-2. Video S/N (E-E)	dB	40	46		E-E Mode
4-3. Audio output (E-E)	dBV	-10	-6	-2	E-E Mode
4-4. Audio S/N (E-E)	dB	40	44		E-E Mode
<b>5. Hi-Fi Audio</b>					
5-1. Output (PB)	dBV	-12	-8	-4	SP Mode
5-2. Output (R/P)	dBV	-12	-8	-4	SP Mode
5-3. S/N (A WTD)	dB		70		SP Mode
5-4. Freq. Response at 20Hz	dB	-4	0	+4	SP Mode
at 20kHz	dB	-4	0	+4	SP Mode
<b>Other Specifications</b>					
<b>Operating Temperature</b>	41°F ( 5°C ) to 104°F ( 40°C )				
<b>Relative Humidity</b>	30% to 80%				
<b>Power Requirements</b>	AC 120 V +/- 10%, 60 Hz +/- 0.5%				
<b>Power Consumption</b>	Power on: 43 W, Power off: 9.0 W				
<b>Dimensions</b>	17.1" (W) x 3.9" (H) x 10.3" (D) / 435 mm (W) x 100 mm (H) x 262 mm (D)				
<b>Weight</b>	11.0 lbs. (5.0 kg)				

### Test Tape ..... VFMS0001H6

**Note:** Nominal specs represent the design specs. All units should be able to approximate these. Some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition that still might be considered acceptable. In no case should a unit fail to meet limit specs.

## < DVD Section >

ITEM	CONDITIONS	UNIT	NOMINAL	LIMIT
<b>1. VIDEO</b>				
1-1. Video Output	75 ohm load	Vp-p	1.0	
1-2. S-Video Output				
Y (Luminance)	75 ohm load	Vp-p	1.0	
C (Chrominance)	75 ohm load	Vp-p	0.300	
1-3. Component Output				
Y (Luminance)	75 ohm load	Vp-p	1.0	
Pb (Chrominance)	75 ohm load	Vp-p	0.7	
Pr (Chrominance)	75 ohm load	Vp-p	0.7	
<b>2. AUDIO</b>				
2-1. Frequency Response				
DVD	fs = 96 kHz	Hz	4 ~ 44 k	
	fs = 48 kHz	Hz	4 ~ 22 k	
Video CD	fs = 44.1 kHz	Hz	4 ~ 20 k	
Audio CD	fs = 44.1 kHz	Hz	4 ~ 20 k	
2-2. Signal/Noise Ratio	1 kHz	dB	80	
2-3. Dynamic Range	1 kHz	dB	80	
2-4. Crosstalk	1 kHz	dB	80	
2-5. Distortion/Noise	1 kHz	dB	80	

### NOTES:

1. All Items are measured without pre-emphasis unless otherwise specified.
2. Power supply : AC120 V 60 Hz
3. Load imp. : 100 k ohm
4. Ambient temperature : 5 °C ~ 40 °C

# IMPORTANT SAFETY PRECAUTIONS

## 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 a **▲** on schematics and in 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. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

## Precautions during Servicing

- A.** Parts identified by the **▲** symbol are critical for safety. Replace only with part number specified.
- B.** In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.  
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.
- C.** Use specified internal wiring. Note especially:
  - 1) Wires covered with PVC tubing
  - 2) Double insulated wires
  - 3) High voltage leads
- D.** Use specified insulating materials for hazardous live parts. Note especially:
  - 1) Insulation tape
  - 2) PVC tubing
  - 3) Spacers
  - 4) Insulators for transistors
- E.** When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.
- F.** Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
- G.** Check that replaced wires do not contact sharp edges or pointed parts.
- H.** When a power cord has been replaced, check that 5 - 6 kg of force in any direction will not loosen it.
- I.** Also check areas surrounding repaired locations.
- J.** Be careful that foreign objects (screws, solder droplets, etc.) do not remain inside the set.
- K.** Crimp type wire connector  
The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.  
Replacement procedure
  - 1) Remove the old connector by cutting the wires at a point close to the connector.  
**Important:** Do not re-use a connector. (Discard it.)
  - 2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.
  - 3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.
  - 4) Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.
- L.** When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

## Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

### 1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance ( $d$ ) and ( $d'$ ) between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

**Table 1: Ratings for selected area**

AC Line Voltage	Clearance Distance ( $d$ ), ( $d'$ )
120 V	$\geq 3.2\text{mm}$ (0.126 inches)

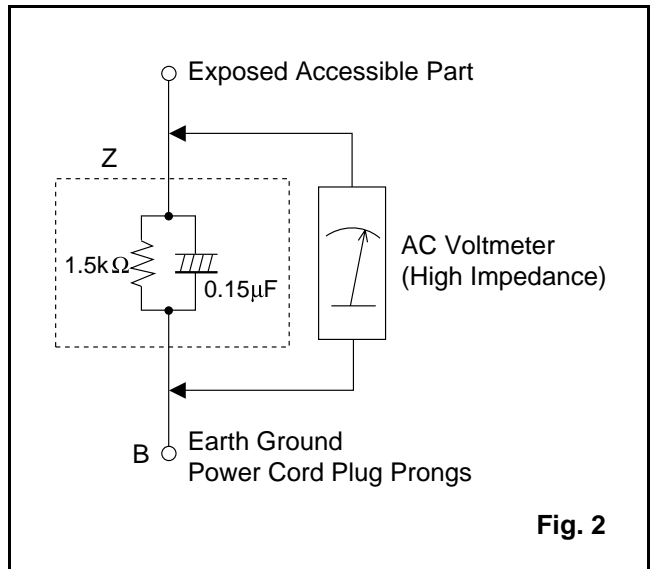
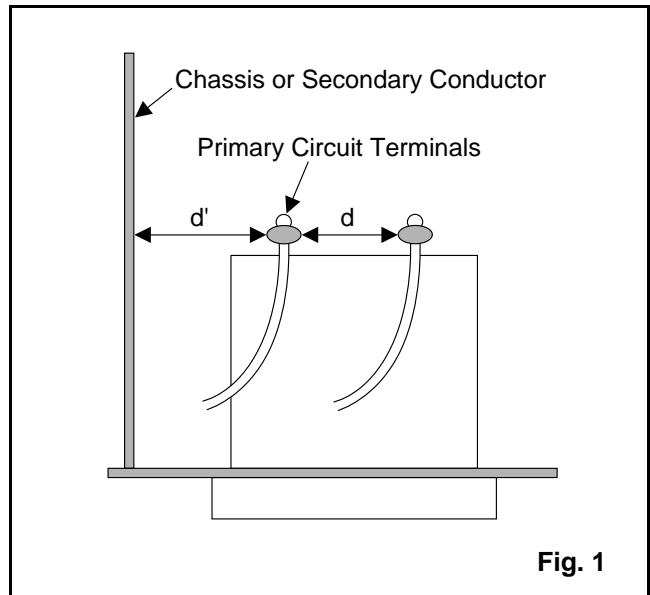
**Note:** This table is unofficial and for reference only.  
Be sure to confirm the precise values.

### 2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

#### Measuring Method (Power ON) :

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load Z. See Fig. 2 and the following table.



**Table 2: Leakage current ratings for selected areas**

AC Line Voltage	Load Z	Leakage Current ( $i$ )	Earth Ground (B) to:
120 V	0.15 $\mu\text{F}$ CAP. & 1.5k $\Omega$ RES. Connected in parallel	$i \leq 0.5\text{mA}$ Peak	Exposed accessible parts

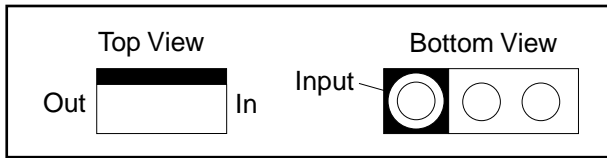
**Note:** This table is unofficial and for reference only. Be sure to confirm the precise values.



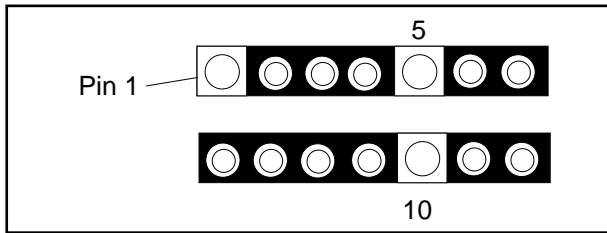
# STANDARD NOTES FOR SERVICING

## Circuit Board Indications

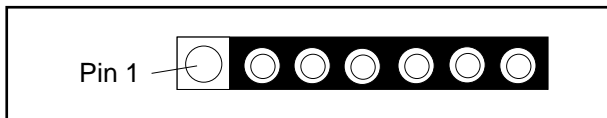
1. The output pin of the 3 pin Regulator ICs is indicated as shown.



2. For other ICs, pin 1 and every fifth pin are indicated as shown.

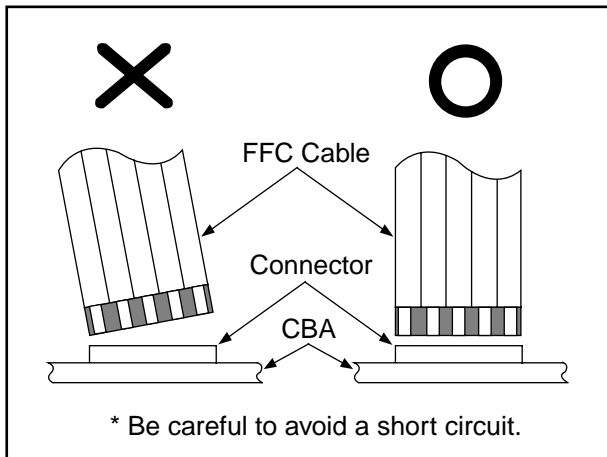


3. The 1st pin of every male connector is indicated as shown.



## Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.



## Pb (Lead) Free Solder

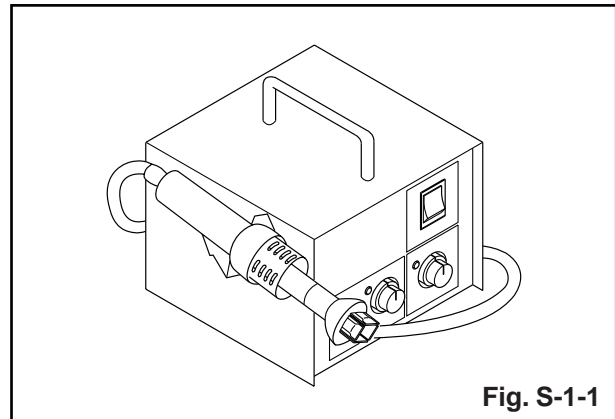
When soldering, be sure to use the Pb free solder.

## How to Remove / Install Flat Pack-IC

### 1. Removal

**With Hot-Air Flat Pack-IC Desoldering Machine:**

- (1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

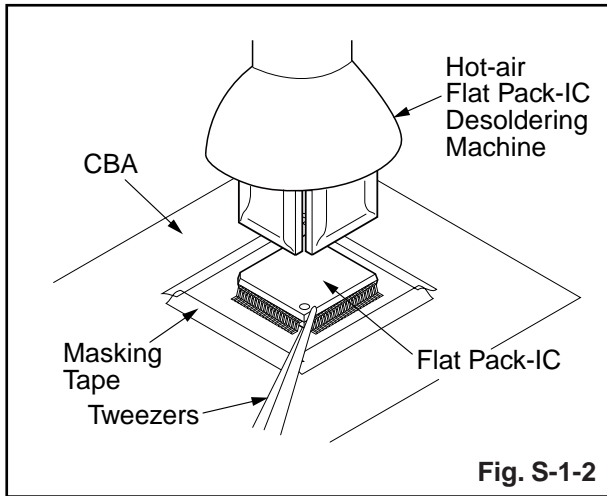


- (2) Remove the flat pack-IC with tweezers while applying the hot air.
- (3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
- (4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

### Caution:

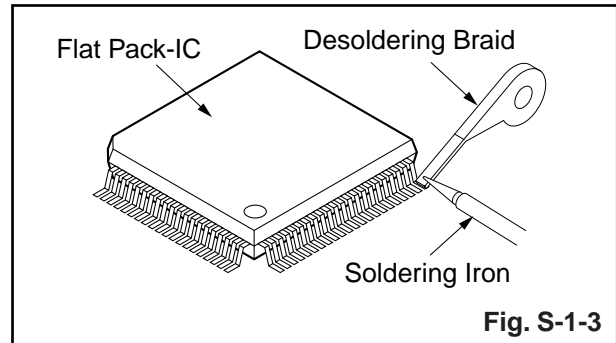
1. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.
2. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)

- The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

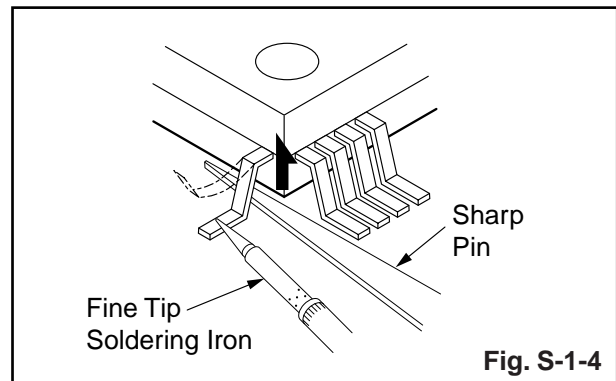


### With Soldering Iron:

- Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)



- Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)



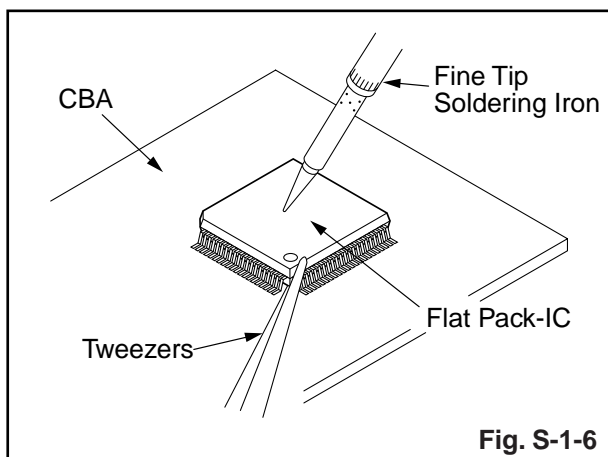
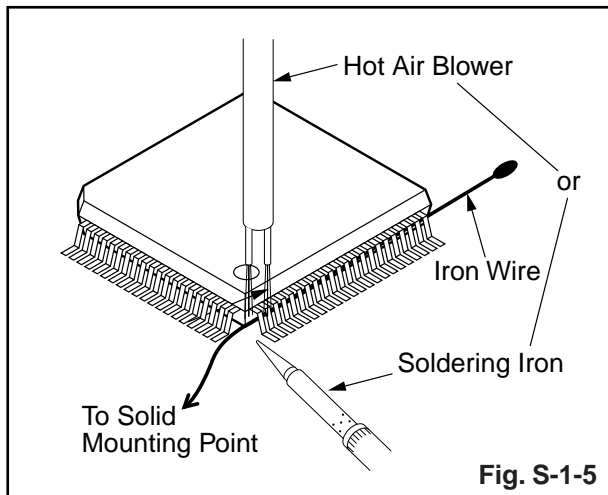
- Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
- Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

### With Iron Wire:

- (1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)
- (2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.
- (3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5.
- (4) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
- (5) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

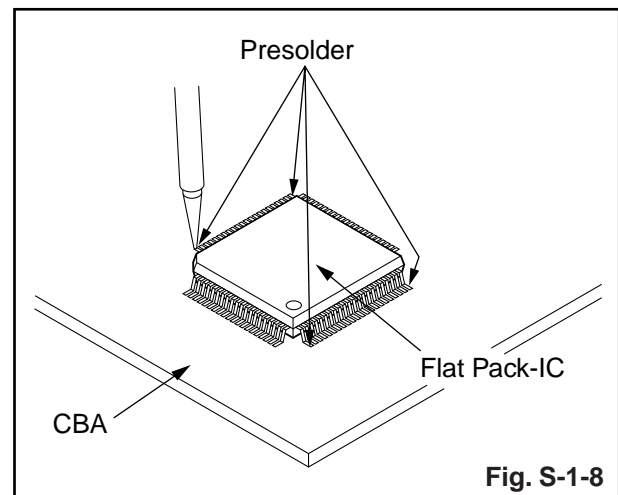
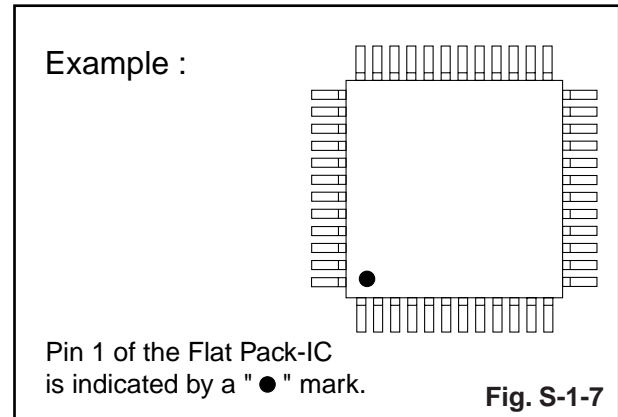
### Note:

When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.



## 2. Installation

- (1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.
- (2) The "●" mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then presolder the four corners of the flat pack-IC. (See Fig. S-1-8.)
- (3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.



# Instructions for Handling Semi-conductors

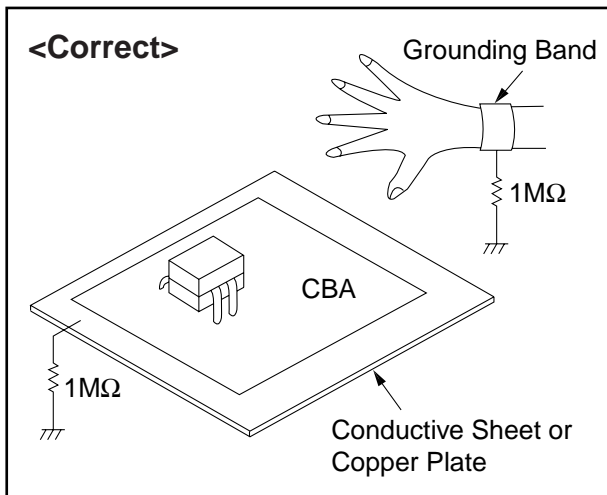
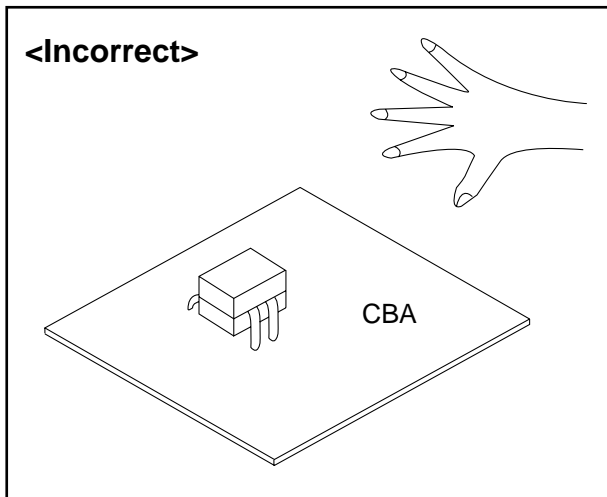
Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

## 1. Ground for Human Body

Be sure to wear a grounding band ( $1M\Omega$ ) that is properly grounded to remove any static electricity that may be charged on the body.

## 2. Ground for Workbench

(1) Be sure to place a conductive sheet or copper plate with proper grounding ( $1M\Omega$ ) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing.



# FUNCTION INDICATOR SYMBOLS

## < VCR Section >

### Note:

If a mechanical malfunction occurs, the power is turned off. When the power comes on again after that by pressing [STANDBY-ON] button, an error message is displayed on the TV screen for 5 seconds.

Led Mode	Indicator Active
When reel or capstan mechanism is not functioning correctly	"▲ R" is displayed on a TV screen. (Refer to Fig. 1.)
When tape loading mechanism is not functioning correctly	"▲ T" is displayed on a TV screen. (Refer to Fig. 2.)
When cassette loading mechanism is not functioning correctly	"▲ C" is displayed on a TV screen. (Refer to Fig. 3.)
When the drum is not working properly	"▲ D" is displayed on a TV screen. (Refer to Fig. 4.)
P-ON+5V Power safety detection	"▲ P" is displayed on a TV screen. (Refer to Fig. 5.)

### TV screen

When reel or capstan mechanism is not functioning correctly

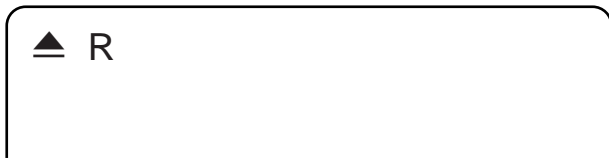


Fig. 1

When the drum is not working properly



Fig. 4

When tape loading mechanism is not functioning correctly



Fig. 2

P-ON+5V Power safety detection

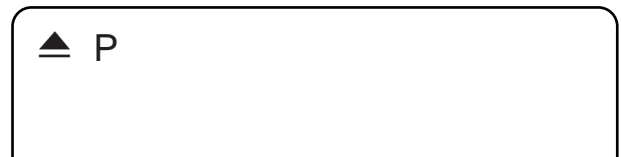


Fig. 5

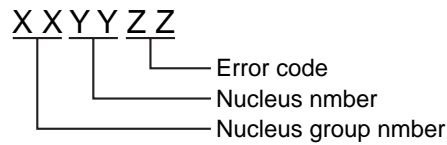
When cassette loading mechanism is not functioning correctly



Fig. 3

## < DVD Section >

**Note:** If an error occurs, a message with the error number appears on the screen.



Description	Error No.	Error Description
Sends the device id and the module ids and revisions of the Domino IC to the stdout port.	010000	Getting the information succeeded.
Generates a test-image of a selected video standard on selected video output on the digital board. When no input is given, the default values will be used. Use nucleus DS_ANAB_VideoRouting to route the video signal on the analogue board output.	010100	Generating the test image succeeded.
	010101	Failed to set up DENC.
	010102	Invalid user input.
	010103	Test image not supported.
Switches the test-image off.	010200	Stopping the test image generation succeeded.
Generate an audio sine signal on the audio output of the digital board.	010300	The sine signal was successfully generated.
	010301	Generating the sine test audio failed.
Stop generating the audio sine signal.	010400	Switching off the audio sine signal succeeded.
	010401	Failed to stop sine test audio.
Generate an audio sine signal on the audio output of the digital board for 4 seconds.	010500	The sine signal burst was successfully generated.
	010501	Generating the sine burst failed.
	010502	Failed to stop the sine burst.
Mute the audio outputs of the digital board.	010600	Muting the audio succeeded.
De-mute the audio outputs of the digital board.	010700	De-muting the audio succeeded.
Check the connection to the DV-LED on the digital board by switching it on.	010800	Switching the DV-LED on succeeded.
Switch off the DV-LED on the digital board.	010900	Switching the DV-LED off succeeded
Peek a value on a specified address.	011200	Peeking on the specified address succeeded.
	011201	No address input.
	011202	Invalid address.
Poke a value on a specified address.	011300	Poking the specified address succeeded.
	011301	No address input.
	011302	Invalid address/data.
Check the communication between the IIC controller of the Chrysalis and the EEPROM.	030000	Something is properly read so the communication is OK.
	030004	The communication with the NVRAM failed.
	030005	The IIC bus initialisation failed.
Check whether the EEPROM can be written to and read from.	030100	The write-read test succeeded.
	030101	The IIC bus initialisation failed.
	030102	The communication with the NVRAM failed.
	030103	The read back value is different from the written value.
Make the EEPROM empty, containing all zeroes.	030200	The clearing of the NVRAM succeeded.
	030201	There was an IIC error.
	030202	Clearing the NVRAM failed.
Modifies one or more locations in NVRAM and updates the checksum of the section modified.	030300	Modifying the NVRAM contents succeeded.
	030301	Unable to initialise NVM.
	030302	Modifying the NVRAM contents failed.
	030303	Length out of range.
	030304	Unable to decode length.
	030305	Offset out of range.
	030306	unable to decode offset.
	030307	Unknown location specified.
	030308	No location is specified.
	030309	Number of values incorrect.
	030310	Error creating checksum.
030311	Invalid data.	

Description	Error No.	Error Description
Read out one or more locations in the NVRAM.	030400	Value read.
	030401	Unable to initialise NVM.
	030402	Reading the NVRAM contents failed.
	030403	Length out of range.
	030404	Unable to decode length.
	030405	Offset out of range.
	030406	Unable to decode offset.
	030407	Unknown location specified.
Write to a specific memory address.	040200	Writing to the SDRAM succeeded.
	040201	No address input.
	040202	No data input.
	040203	Address is not dividable by 4.
	040204	Invalid data.
	040205	Address out of range.
	040206	Invalid address.
Read from a specific memory address.	040300	Reading from the SDRAM succeeded.
	040301	No address input.
	040302	Address is not dividable by 4.
	040303	Address out of range.
Get the device (revision) type information of the FLASH IC. (manufacturer and device ID)	050000	Getting the information from the FLASH succeeded.
	050100	The FLASH write-read test succeeded.
Check whether the FLASH can be written to and read from.	050101	Wrong BALO signature.
	050102	Wrong CONS signature.
	050103	Invalid CONS base.
	050104	Invalid CONS end address.
	050105	All bits in the TEST region are filled with 0.
	050106	The WriteRead test failed.
	050107	The Write Failed.
Read from a specific memory address.	050200	Reading the FLASH succeeded.
	050201	No address input.
	050202	Invalid address.
	050203	Address is out of range.
	050204	Address is not dividable by 2.
Check the checksum of the application partitions by recalculating and comparing partition checksums.	050300	The checksum is valid, the test succeeded.
	050301	Wrong BSTB signature.
	050302	Wrong BSTB checksum.
	050303	Wrong BALO signature.
	050304	Wrong BALO checksum.
	050305	Wrong CONS signature.
	050306	Wrong CONS checksum.
	050307	Invalid BALO end address.
	050308	Invalid CONS base.
050309	Invalid CONS end address.	
Calculate the checksum over all memory addresses. Used to check entire FLASH contents.	050400	Calculating the checksum over all addresses succeeded.
Calculate a checksum over a selected number of address locations.	050500	Calculating the checksum over selected addresses succeeded.
Get the device (revision) type information of the VIP IC.	060000	Getting the information from the VIP succeeded.
	060001	The IIC bus initialisation failed.
	060002	The communication with the VIP failed.
Check the communication between the IIC controller of the Domino and the VIP IC.	060100	Communicating with the VIP succeeded.
	060001	The IIC bus initialisation failed.
	060002	The communication with the VIP failed.
Switch the clock output on.	060200	Switching the clock output on succeeded.
	060201	Switching the clock output on failed.

Description	Error No.	Error Description
Switch the clock output off.	060300	Switching the clock output off succeeded.
	060301	Switching the clock output off failed.
Select an input video path to be switched to the analogue output of the VIP.	060400	Selecting the input of the VIP succeeded.
	060401	The user provided wrong input.
	060402	The VIP was not accessible.
	060405	This mode not available on SAA7118.
Get the device (revision) type information of the 1394 Physical layer IC.	070100	Getting the information from the physical layer IC succeeded.
	070101	Missing PHY clock.
	070102	Time-out error.
	070103	1394 chip is not IEEE 1394a-2000 compliant.
Check the accessibility of the 1394 Physical layer IC by writing to and reading from a specific address.	070300	Communicating with the physical layer IC succeeded.
	070301	Missing PHY clock.
	070302	Time-out error.
Route a DV stream containing an audio and video signal through the physical IC to the Domino. This will be loopthrough to the video output of Domino.	070400	Routing the signals succeeded.
	070405	Failed to initialise DENC.
Check whether a DV node can be detected by the hardware.	070500	The node was detected OK.
	070504	No node was detected.
Check the device type of the DENC in use.	080100	Communicating with the progressive scan DENC-IC succeeded.
	080101	The IIC bus initialisation failed.
	080102	No valid DENC detected.
Check the communication between the IIC controller of the Domino and the DENC-IC.	080100	Communicating with the progressive scan DENC-IC succeeded.
	080104	Communicating with the DENC failed.
	080105	The IIC bus initialisation failed.
Generate a test image and make it present on the DENC-IC.	080200	The generation of the test image succeeded.
	080201	The IIC bus initialisation failed.
	080202	Unable to initialise the DENC.
	080203	The generation of the test image failed.
Switch off the generated test image.	080300	Turning off the test image succeeded.
	080301	The IIC bus initialisation failed.
	080302	The test image could not be turned off.
Turn on MacroVision.	081000	Turning on MacroVision succeeded.
	081001	The IIC bus initialisation failed.
	081002	Unable to access DENC.
Turn off MacroVision.	081000	Turning off MacroVision succeeded.
	081001	The IIC bus initialisation failed.
	081002	Unable to access DENC.
Check the communication between the digital board and the recorder drive by issuing an Inquiry command over ATAPI bus.	090000	Communicating with recorder drive succeeded.
	090001	Recorder drive init fails.
	090002	Recorder drive command fails.
Reset the basic engine.	090100	Resetting the Basic Engine succeeded.
	090101	Recorder drive init fails.
Return the self-test results through the service port.	090200	Self test succeeded, no errors.
Get the version of the basic engine and that of the optical unit.	090300	BE version OK.
	090301	Recorder drive init fails.
	090302	Recorder drive command fails.
Open the tray of the basic engine.	090400	The command executed successfully.
	090401	Recorder drive init fails.
	090402	Recorder drive command fails.
Close the tray of the basic engine.	090500	The command executed successfully.
	090501	Recorder drive init fails.
	090502	Recorder drive command fails.



Description	Error No.	Error Description
Write data to and read data from a DVD+RW disc through the basic engine for verification of the writing.	090600	The command executed successfully.
	090601	Sanyo drive init fails.
	090602	Failed to close tray.
	090603	Failed to get disc type.
	090604	Not DVD+RW disc.
	090605	Buffer wait failed.
	090606	Write command failed. Sensekey = XX,YY,ZZ.
	090607	Failed to synchronize cache. Sensekey = XX,YY,ZZ.
	090608	Read command failed. Sensekey = XX,YY,ZZ.
	090609	Data read back is different from written data.
Write data to and read data from a DVD+R disc through the basic engine for verification of the writing.	090700	The command executed successfully.
	090701	Sanyo drive init fails.
	090702	Failed to close tray.
	090703	Failed to get disc type.
	090704	Not DVD+R disc.
	090705	Buffer wait failed.
	090706	Write command failed. Sensekey = XX,YY,ZZ.
	090707	Failed to synchronize cache. Sensekey = XX,YY,ZZ.
	090708	Read command failed. Sensekey = XX,YY,ZZ.
	090709	Data read back is different from written data.
	090710	Failed to read back NWA.
090711	Disc full, insert new DVD+R.	
Retrieve the statistical information from the basic engine.	090800	The command executed successfully.
	090801	There was a time-out while communicating.
	090802	The Basic Engine returned an unexpected result.
	090803	The BE returned an error code.
	090804	No acknowledge received from BE.
	090805	Communicating with the Basic Engine failed.
090806	The BE returned no info.	
Reset the statistical information in the basic engine.	090900	The command executed successfully.
	090901	There was a time-out while communicating.
	090902	The Basic Engine returned an unexpected result.
	090903	The BE returned an error code.
	090904	No acknowledge received from BE.
	090905	Communicating with the Basic Engine failed.
Get the error log from the basic engine.	091000	The command executed successfully.
	091001	There was a time-out while communicating.
	091002	The Basic Engine returned an unexpected result.
	091003	The BE returned an error code.
	091004	No acknowledge received from BE.
	091005	Communicating with the Basic Engine failed.
	091006	The BE returned no info.
Reset the error log in the basic engine.	091100	The command executed successfully.
	091101	There was a time-out while communicating.
	091102	The Basic Engine returned an unexpected result.
	091103	The BE returned an error code.
	091104	No acknowledge received from BE.
	091105	Communicating with the Basic Engine failed.

Description	Error No.	Error Description
<p>This test measures the average jitter and bler values. A formatted DVD must be loaded into the engine before executing this nucleus.</p>	091200	Optimising jitter succeeded.
	091201	There was a time-out while communicating.
	091202	The Basic Engine returned an unexpected result.
	091203	The Basic Engine returned an error code.
	091204	No acknowledge received from BE.
	091205	Unable to send tray in.
	091206	Unable to read the disc.
	091207	No disc is loaded.
	091208	Unknown disc is loaded.
	091209	Unable to enter service mode.
<p>Check whether there is a disc inside the BE.</p>	092100	There was a disc inside the set.
	092101	Unable to load the tray.
	092102	Error received from BE.
<p>Read the TOC from the disc. This gives a good indication if the BE works properly.</p>	092400	A disc is loaded, TOC info if echoed.
	092401	Unable to load the tray.
	092402	The BE has not returned TOC info.
	092403	Error received from BE.
<p>Enables Automatic Pattern Verification tool on DVD+RW disc. Start, stop and type of pattern to be used can be configured by the user. Return pass/fail result.</p>	092600	The command executed successfully.
	092601	Not enough input parameters.
	092602	Invalid start address.
	092603	Invalid End address.
	092604	Invalid pattern.
	092605	Sanyo drive init fails.
	092606	Failed to close tray.
	092607	Failed to get disc type.
	092608	Not DVD+RW disc.
	092609	Buffer wait failed.
	092610	Write command failed. Sensekey = XX,YY,ZZ.
	092611	Failed to synchronize chase. Sensekey = XX,YY,ZZ.
	092612	Read command failed. Sensekey = XX,YY,ZZ.
	092613	Data read back is different from written data.
<p>Enables Automatic Pattern Verification tool on DVD+R disc. Start, stop and type of pattern to be used can be configured by the user. Return pass/fail result. Note that the nucleus does not check that the write address is the correct next available address according to the DVD+R disc. This must be taken care of by the user, otherwise the write command will fail.</p>	092700	The command executed successfully.
	092701	Not enough input parameters.
	092702	Invalid start address.
	092703	Invalid End address.
	092704	Invalid pattern.
	092705	Sanyo drive init fails.
	092706	Failed to close tray.
	092707	Failed to get disc type.
	092708	Not DVD+R disc.
	092709	Buffer wait failed.
	092710	Write command failed. Sensekey = XX,YY,ZZ.
	092711	Failed to synchronize chase. Sensekey = XX,YY,ZZ.
	092712	Read command failed. Sensekey = XX,YY,ZZ.
092713	Data read back is different from written data.	
<p>Set the region code in the AV3.</p>	092800	The command executed successfully.
	092801	There was a time-out while communicating.
	092802	The Basic Engine returned an unexpected result.
	092803	The BE returned an error code.
	092804	No acknowledge received from BE.
	092805	Communicating with the Basic Engine failed.
	092806	The user provided wrong input.

Description	Error No.	Error Description
Read the region code from the AV3.	092900	The command executed successfully.
	092901	There was a time-out while communicating.
	092902	The Basic Engine returned an unexpected result.
	092903	The BE returned an error code.
	092904	No acknowledge received from BE.
	092905	Communicating with the Basic Engine failed.
Reset the region counter in the AV3.	093000	The command executed successfully.
	093001	There was a time-out while communicating.
	093002	The Basic Engine returned an unexpected result.
	093003	The BE returned an error code.
	093004	No acknowledge received from BE.
	093005	Communicating with the Basic Engine failed.
Adjust the DVD-M (with the OPU) with PCBA. (So adjusts the two PCBS to each other)	093100	The command executed successfully.
	093101	There was a time-out while communicating.
	093102	The Basic Engine returned an unexpected result.
	093103	The BE returned an error code.
	093104	No acknowledge received from BE.
	093105	Communicating with the Basic Engine failed.
	093106	Unable to enter service mode.
	093107	This nucleus is not supported by the engine.
Check the communication between the digital board and the DCB by issuing an echo command.	100000	Communicating with the DCB succeeded.
	100001	DCB could not be accessed by the analogue board.
	100002	There was no response from the analogue board.
	100003	The error code returned from the analogue board is unknown.
	100004	There was no response from the front panel.
Get the version of the DCB	100100	Retrieving the version of the DCB succeeded.
	100101	DCB could not be accessed by the analogue board.
	100102	There was no response from the analogue board.
	100103	The error code returned from the analogue board is unknown.
Light the entire display of the DCB, and clear the display after confirmation. User confirmation is necessary. The REC and PLAY keys on the local keyboard are used for this confirmation. The PLAY key confirms that the test pattern is OK and the REC key indicates an error. The STOP key is used to exit this nucleus at any time. The keyboard can also be used for the same purpose. The O or o key confirms that the test pattern is OK and the N or n key indicates the user wants to go to the next test or that there is an error. The rest of the keys of the keyboard are used to exit this nucleus at any time.	100200	Lighting the entire display succeeded.
	100201	DCB could not be accessed by the analogue board.
	100202	There was no response from the analogue board.
	100203	The error code returned from the analogue board is unknown.
	100206	The DCB did not light all labels.
	100207	The user skipped the rest of the test.
	100208	The user returned an unknown confirmation.
Check all keys of the keyboard by confirming the key-code displayed of each key. The PLAY key is used to confirm this nucleus. However, this key is also part of the keyboard test itself. Also the REC and STOP keys are used to exit the test. With the REC key the user signals a failure, while the STOP key signals the abortion of the test by the user. To use one of these three keys for confirmation, failure or abortion, the user needs to hold the key pressed down for more than one second. Pressing the keyboard will also stop the test at any time.	100400	All the keys on the keyboard have been pressed.
	100401	DCB could not be accessed by the analogue board.
	100402	There was no response from the analogue board.
	100403	The error code returned from the analogue board is unknown.
	100404	Not all the keys were pressed.
	100405	Invalid key code returned.
	100406	DCB Keyboard; test failed.
	100407	DCB Keyboard; test aborted.
	100408	Failed to clear FP buffer.
	100409	Test stopped from service port.

Description	Error No.	Error Description
Check the interface between the remote control and the DCB by checking the key-code displayed. At least one key must be tested. The test can be exited by pressing the STOP-,REC-, or PLAY-key on the local keyboard. The user should press PLAY to indicate a successful test. The REC-key is pressed if the test failed, and STOP can be pressed to abort the test. The keyboard can also be used for the same purpose .The O or o key stops the test and the N or n key indicates an error. The rest of the keys of the keyboard are used to abort this test at any time.	100500	Remote Control test succeeded.
	100501	DCB could not be accessed by the analogue board.
	100502	There was no response from the analogue board.
	100503	The error code returned from the analogue board is unknown.
	100504	DCB Remote control; no user input received.
	100505	DCB Remote control; test failed.
	100506	DCB Remote control; test aborted.
	100507	Failed to clear FP buffer.
Switch the record LED on, and after confirmation off. The user confirms by pressing the REC key, STOP key, or the PLAY key on the local keyboard. The PLAY key confirms that the LED is on and the REC key indicates an error. The STOP key signals the abortion of the test by the user. The keyboard can also be used for the same purpose . The O or o key confirms that the test pattern is OK and the N or n key indicates an error or that the user wants to go to the next test. The rest of the keys of the keyboard are used to exit this nucleus at any time. After that the nucleus switches the LED off.	100600	Switching Led on succeeded.
	100601	DCB could not be accessed by the analogue board.
	100602	There was no response from the analogue board.
	100603	The DCB did not light all the leds.
	100604	The user skipped the rest of the test.
	100605	The user returned an unknown confirmation:
	100606	The error code returned from the analogue board is unknown.
Check the communication between the digital board and the analogue board by issuing some echo string.	110000	Communicating with the analogue board succeeded.
	110001	The test returned the wrong string.
	110002	Communicating with the analogue board failed.
	110103	The analogue board returned an unexpected result.
	110104	Receiving character failed.
Check the communication between the digital board and the NVRAM on the analogue board.	110100	Communicating with the NVRAM on the analogue board succeeded.
	110101	The analogue board could not communicate with the NVRAM.
	110102	Communicating with the analogue board failed.
	110103	The analogue board returned an unexpected result.
	110104	The write-read test failed.
Check the communication between the digital board and the tuner on the analogue board.	110200	Communicating with the tuner on the analogue board succeeded.
	110201	The analogue board could not communicate with the tuner.
	110202	Communicating with the analogue board failed.
	110203	The analogue board returned an unexpected result.
Check the communication between the digital board and the data slicer on the analogue board.	110300	Communicating with the data slicer on the analogue board succeeded.
	110301	The analogue board could not communicate with the data slicer.
	110302	Communicating with the analogue board failed.
	110303	The analogue board returned an unexpected result.
Check the communication between the digital board and the sound processor on the analogue board.	110400	Communicating with the sound procesor on the analogue board succeeded.
	110401	The analogue board could not communicate with the sound processor.
	110402	Communicating with the analogue board failed.
	110403	The analogue board returned an unexpected result.
Check the communication between the digital board and the A/V-selector on the analogue board.	110500	Communicating with the A/V selector on the analogue board succeeded.
	110501	The analogue board could not communicate with the A/V selector.
	110502	Communicating with the analogue board failed.
	110503	The analogue board returned an unexpected result.
Get the hardware version of the analogue board.	110600	Reading the hardware version succeeded.
	110601	The segment containing the hardware version could not be found.
	110602	Communicating with the analogue board failed.
	110603	The analogue board returned an unexpected result.
Get the software version of the boot software of the analogue board.	110700	Reading the boot-software version succeeded.
	110701	The segment containing the boot-software version could not be found.
	110702	Communicating with the analogue board failed.
	110703	The analogue board returned an unexpected result.

Description	Error No.	Error Description
Get the software version of the download software of the analogue board.	110800	Reading the download-software version succeeded.
	110801	The segment containing the download-software version could not be found.
	110802	Communicating with the analogue board failed.
	110803	The analogue board returned an unexpected result.
Get the software version of the application software of the analogue board.	110900	Reading the application-software version succeeded.
	110901	The segment containing the application-software version could not be found.
	110902	Communicating with the analogue board failed.
	110903	The analogue board returned an unexpected result.
Get the software version of the diagnostic software of the analogue board.	111000	Reading the diagnostics-software version succeeded.
	111001	The segment containing the diagnostics-software version could not be found.
	111002	Communicating with the analogue board failed.
	111003	The analogue board returned an unexpected result.
Check the checksum of the several partitions by recalculating and comparing partition checksums.	111100	Checksum calculation succeeded.
	111101	Either the segment could not be found or the checksum was not correct.
	111102	Communicating with the analogue board failed.
	111103	Communicating with the analogue board failed.
	111104	The analogue board returned an unexpected result.
Perform the routing of the video paths on the analogue board.	111200	Routing the video on the analogue board succeeded.
	111201	Routing the video on the analogue board failed.
	111202	The user provided wrong input.
	111203	Communicating with the analogue board failed.
	111204	The analogue board returned an unexpected result.
Perform the routing of the audio paths on the analogue board.	111300	Routing the audio on the analogue board succeeded.
	111301	Routing the audio on the analogue board failed.
	111302	The user provided wrong input.
	111303	Communicating with the analogue board failed.
	111304	The analogue board returned an unexpected result.
Set the tuner to receive a valid audio and video signal	111400	Setting the tuner channel succeeded.
	111401	Setting the tuner channel failed.
	111402	The user provided wrong input.
	111403	Communicating with the analogue board failed.
	111404	The analogue board returned an unexpected result.
Perform an IIC write and read action on the analogue board	111500	Reading and writing IIC on the analogue board succeeded.
	111501	Reading or writing IIC on the analogue board failed.
	111502	The user provided wrong input.
	111503	Communicating with the analogue board failed.
	111504	The analogue board returned an unexpected result.
Set the clock to the value passed through in the YYYY MM DD HH MM SS format.	111600	Adjusting the clock succeeded.
	111601	Adjusting the clock failed.
	111602	The user provided wrong input.
	111603	Communicating with the analogue board failed.
	111604	The analogue board returned an unexpected result.
Generate a 1 kHz signal on pin 7 (INT) of the clock IC.	111700	Generating the signal on the designated pin succeeded.
	111701	Generating the signal on the designated pin failed.
	111702	Communicating with the analogue board failed.
	111703	The analogue board returned an unexpected result.
Store the clock IC correction value in NVRAM.	111800	Storing the correction value for the clock in NVRAM succeeded.
	111801	Storing the correction value for the clock in NVRAM failed.
	111802	Invalid input; default value stored.
	111803	Communicating with the analogue board failed.
	111804	The analogue board returned an unexpected result.
	111805	The user provided wrong input.

Description	Error No.	Error Description
Store the reference voltage for the tuner in NVRAM.	111900	Storing the reference voltage for the tuner in NVRAM succeeded.
	111901	Storing the reference voltage for the tuner in NVRAM failed.
	111902	The user provided wrong input.
	111903	Communicating with the analogue board failed.
	111904	The analogue board returned an unexpected result.
Store the frequency table in NVRAM. The frequency table is passed through the error-string provided to the nucleus.	112000	Downloading the frequency table in NVRAM succeeded.
	112001	Downloading the frequency table in NVRAM failed.
	112002	The user provided wrong input.
	112003	Communicating with the analogue board failed.
	112004	The analogue board returned an unexpected result.
Store the external presets in NVRAM.	112100	Storing the external presets in NVRAM succeeded.
	112101	Storing the external presets in NVRAM failed.
	112102	Communicating with the analogue board failed.
	112103	The analogue board returned an unexpected result.
Measure the audio signal corresponding to 0dB per channel and store it as correction value in NVRAM	112200	Storing the bargraph adjustment values in NVRAM succeeded.
	112201	Storing the bargraph adjustment values in NVRAM failed.
	112202	Communicating with the analogue board failed.
	112203	The analogue board returned an unexpected result.
Check communication to VCR module via SIO interface	112300	Communication to VCR succeeded.
	112201	Communicating with the analogue board failed..
	112302	Wrong SIO CRC received.
	112303	No SIO data received.
	112304	The analogue board returned an unexpected result.
Get the hardware version and type of the digital board.	120000	Getting the hardware version and type of the digital board succeeded.
Get the version of the boot stub software on the digital board.	120100	Getting the Boot software version succeeded.
Get the version of the download software on the digital board.	120200	Getting the Download software version succeeded.
Get the version of the application software on the digital board.	120300	Getting the Application software version succeeded.
	120301	Invalid CONS base address.
Upload the contents of the NVRAM on the analogue board or the digital board to the service PC, by using the X-modem protocol.	120500	Download succeeded.
	120501	User input is not valid.
	120502	Something went wrong while copying the data from NVRAM to SDRAM .
	120503	Something went wrong while transferring the data.
	120504	User cancelled the upload.
Download a file with the contents of the NVRAM for the analogue board or the digital board from the service PC to the recorder, by using the X-modem protocol.	120600	Download succeeded.
	120601	The write to NVRAM failed.
	120602	Timeout. Too many retries.
	120603	A file was sent with a wrong header.
	120604	User cancelled the download.
	120605	User input is not valid.
	120606	Unknown Error.
Set the IEEE 1394 unique ID.	120700	Setting the unique DV ID succeeded.
	120701	User input is not valid.
	120702	Setting the unique DV ID failed.
	120703	Write succeeded, but checksum is corrupt.
	120704	Error initialising I2C.
Get the IEEE1394 unique ID.	120800	Getting the unique DV ID succeeded.
	120801	Getting the unique DV ID failed.

Description	Error No.	Error Description
Perform an IIC write action on the digital board.	120900	Writing the data over IIC succeeded.
	120901	No input specified.
	120902	Invalid Bus ID number.
	120903	No IIC address.
	120904	Invalid IIC address.
	120905	No number of bytes input.
	120906	Invalid number of bytes.
	120907	No Data.
	120908	Number of bytes must be > 0 and < 18.
	120909	Invalid Data.
	120910	Not enough data bytes.
	120911	IIC Write failed.
120912	IIC init failed.	
Perform an IIC read action on the digital board.	121000	Reading the data over IIC succeeded.
	121001	No input specified.
	121002	Invalid Bus ID number.
	121003	No IIC address.
	121004	Invalid IIC address.
	121005	No number of bytes input.
	121006	Invalid number of bytes.
	121007	Number of bytes must be > 0 and < 101.
	121008	IIC Read failed.
121009	IIC init failed.	
Perform an UART write action on the digital board on a specified UART.	121100	Writing the bytes to the UART succeeded.
	121101	The user provided wrong input.
	121102	Writing to the UART failed.
Perform an UART read action on the digital board on a specified UART	121200	Reading the data from the UART succeeded.
	121201	The user provided wrong input.
	121202	Reading the data from the UART failed.
The video signal, which is determined by the user input, is routed from the input to the output. Input is set with the routing nucleus 1112. All outputs are enabled. Audio loophrough is also enabled by this nucleus.	121300	Video LoophroughStart succeeded.
	121302	Invalid input parameters.
	121303	Failed to initialise DENC.
	121304	Failed to initialise VIP.
	121305	DSW not ready for this setting yet.
Stop routing the audio/video input to all the outputs..	121400	VideoLoophroughStop succeeded.
Set the slash version of the system.	121700	Setting the slash version succeeded.
	121701	Invalid slash version, default version is set.
	121702	Setting the slash version failed.
	121703	The user provided wrong input.
	121705	No DS errCode known for analogue board error:
	121706	There was no response from the analogue board.
Get the slash version of the system.	121800	Getting the slash version succeeded.
	121801	Getting the slash version failed.
	121802	The IIC write failed.
	121803	The IIC read failed.
	121804	There was no response from the analogue board.
	121805	No DS errCode known for analogue board error:
(Re-) Virginize the recorder. User data in the NVRAM of the analogue board is cleared.	121900	Virginization succeeded.
	121901	Virginization on the Analogue Board failed.
	121903	No DS errCode known for analogue board error:
	121904	There was no response from the analogue board.
Turn on the virgin mode functionality (e.g. the auto channel search upon startup).	122000	Turning on the virgin mode succeeded.
	122001	urning on VirginMode on the Analogue Board failed.
	122003	No DS errCode known for analogue board error:
	122004	There was no response from the analogue board.

Description	Error No.	Error Description
Turn off the virgin mode functionality (e.g. the auto channel search upon startup).	122100	Turning off the virgin mode succeeded.
	122101	Turning off VirginMode on the Analogue Board failed.
	122103	No DS errCode known for analogue board error:
	122104	There was no response from the analogue board.



# PREPARATION FOR SERVICING

## How to Enter the Service Mode

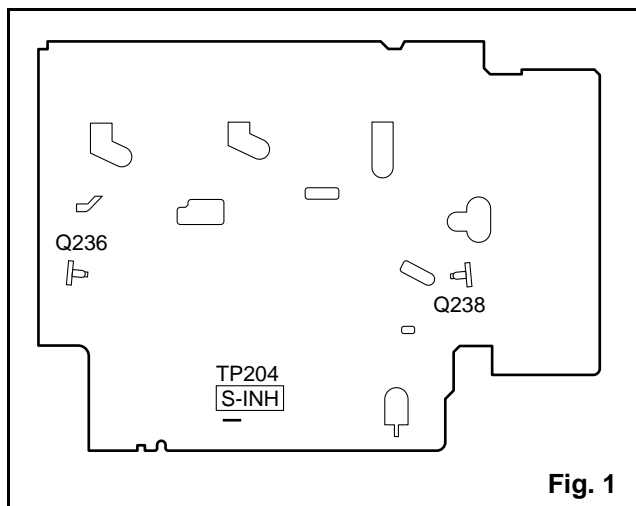
### About Optical Sensors

#### **Caution:**

An optical sensor system is used for the Tape Start and End Sensors on this equipment. Carefully read and follow the instructions below. Otherwise the unit may operate erratically.

#### **What to do for preparation**

Insert a tape into the Deck Mechanism Assembly and press the PLAY button. The tape will be loaded into the Deck Mechanism Assembly. Make sure the power is on, connect TP204 (S-INH) to GND. This will stop the function of Tape Start Sensor, Tape End Sensor and Reel Sensors. (If these TPs are connected before plugging in the unit, the function of the sensors will stay valid.) See Fig. 1.



**Note:** Because the Tape End Sensors are inactive, do not run a tape all the way to the start or the end of the tape to avoid tape damage.

# OPERATING CONTROLS AND FUNCTIONS

## [ DVDR600VR/37 ]

### Cassette Compartment

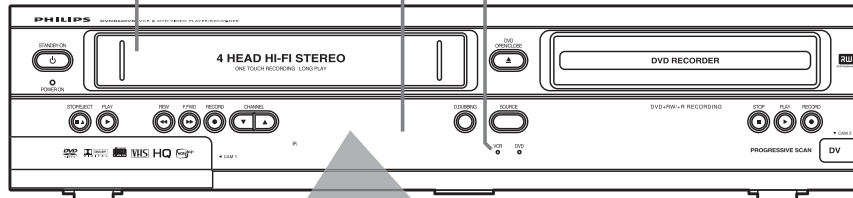
Insert a video cassette here.

### VCR Display Panel

Messages about current VCR operations appear here. See Display Messages below.

### VCR light (Orange)

This light appears when the Recorder is in VCR mode. You can only watch videotapes when the VCR light is on.



Appears during recording; flashes when recording is paused

Indicates a videotape is in the Recorder

Appears if videotape play is paused or during slow motion videotape play

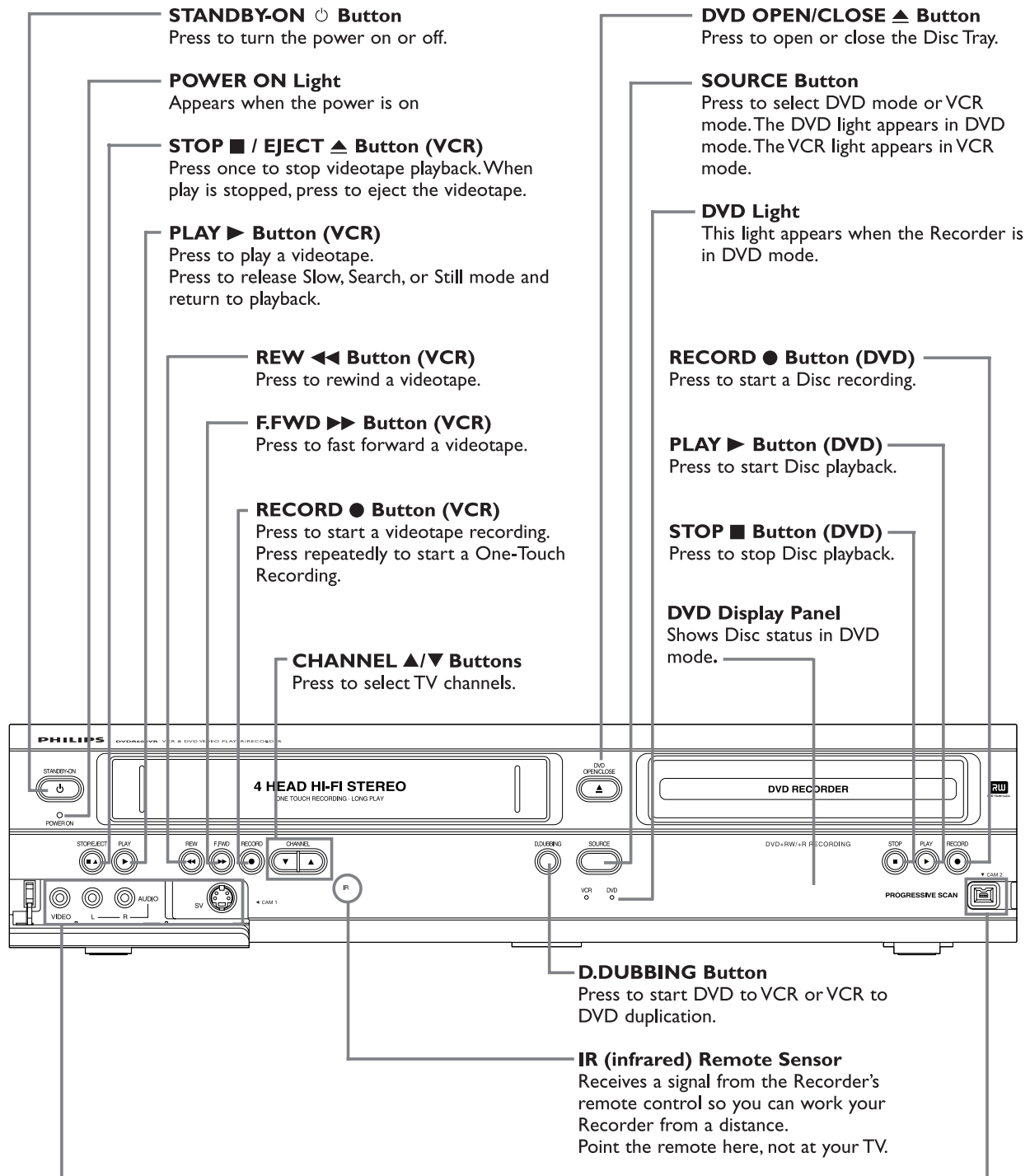
Appears during videotape play

Indicates the elapsed playing time of a videotape; also displays the remaining time for an OTR

Appears during DVD to VCR or VCR to DVD duplication

Indicates the selected tape speed





**CAM1 jacks**  
**SV (S-Video), VIDEO and AUDIO In**  
**CAM2 jack**  
**DV (digital video)**

To access these jacks, flip down the door or rubber flap that covers the jacks. Use these jacks when connecting a Camcorder or other equipment to the Recorder. When recording material that is playing on the other equipment, choose the CAM channel that corresponds to the jack to which the equipment is connected.  
If your Personal Computer has an IEEE 1394 Firewire connector, you may connect it to the Recorder's DV IN jack. Limited applications are available.

**ANTENNA IN jack**

Connect your antenna or Cable TV signal here.

**VIDEO OUT jack (yellow)**

Connect the yellow video cable (supplied) here and to the TV's Video In jack. This supplies the picture for both VCR and DVD modes.

**EXT2 Jacks**

**VIDEO IN jack (yellow)**

Connect a video cable from an optional Camcorder, VCR, or DVD Player here.

**AUDIO IN Jacks / Left (white) and Right (red)**

Connect audio cables coming from the audio out jacks of a camcorder, another VCR, another DVD Player, or Stereo here. This will be useful if you want to copy a videotape or watch material that is playing on other equipment.

**COMPONENT VIDEO OUT (Y Pb Pr) jacks (red, green, blue)**

Connect component video cables (not supplied) here and to the Component Video In jacks of a TV.

**EXT2 S-VIDEO IN jack**

Use an S-video cable (not supplied) to connect this jack to the S-Video Out jack of optional additional equipment.

**EXT2 S-VIDEO OUT jack**

Connect an S-Video cable here and to a TV's S-Video In jack.

**EXT1 jacks**

**AUDIO IN jacks / Left (white) and Right (red)**

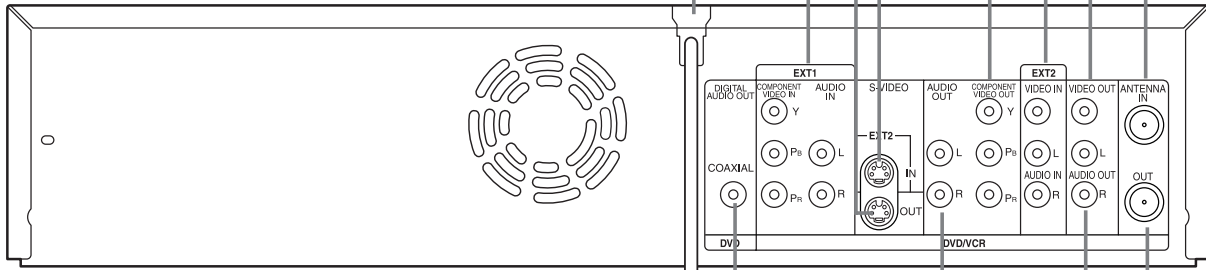
Connect audio cables here and to the AUDIO OUT jacks of other equipment.

**COMPONENT VIDEO IN (Y Pb Pr) jacks (red, green, blue)**

Connect these jacks to the Component Video Out jacks of optional video equipment (for example, a DVD Player).

**AC Power Cord**

Connect to a standard AC outlet to supply power to the Recorder.



**DVD COAXIAL DIGITAL AUDIO OUT Jack**

Connect a coaxial digital audio cable (not supplied) here and to the Coaxial Digital Audio In jack of a Stereo. This supplies audio only for DVD mode.

**AUDIO OUT Jacks / Left (white) and Right (red)**

Connect audio cables here and to the Audio In jacks of a TV or Stereo. These jacks supply audio for both DVD and VCR modes. Use these for a second connection to another TV, etc.

**AUDIO OUT Jacks / Left (white) and Right (red)**

Connect the supplied audio cables here and to the Audio In jacks of a TV or Stereo. These jacks provide audio for both DVD and VCR modes.

**(Antenna) OUT Jack**

Use the supplied RF coaxial cable to connect this jack to the ANTENNA IN jack on your TV, Cable Box, or Satellite Receiver.

**Helpful Hints**

- Use the same EXT (external) number for each pair of audio and video connections. For example, if you use EXT 2 S-VIDEO IN, use the EXT 2 AUDIO IN jacks.
- Do not touch the inner pins of the jacks. Electrostatic discharge may damage the unit permanently.
- You only need one audio and one video connection to a TV. You might not use all the jacks.

# [ MRV700VR/17 ]

## Cassette Compartment

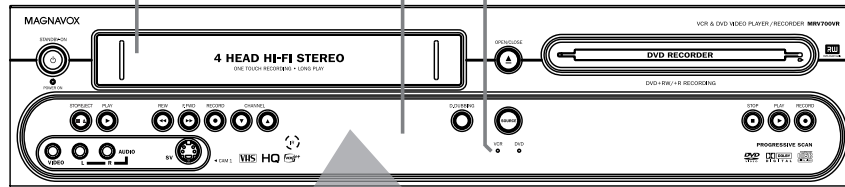
Insert a video cassette here.

### VCR Display Panel

Messages about current VCR operations appear here. See Display Messages below.

### VCR light (Orange)

This light appears when the Recorder is in VCR mode. You can only watch videotapes when the VCR light is on.



Appears during recording; flashes when recording is paused

Indicates a videotape is in the Recorder

Appears if videotape play is paused or during slow motion videotape play

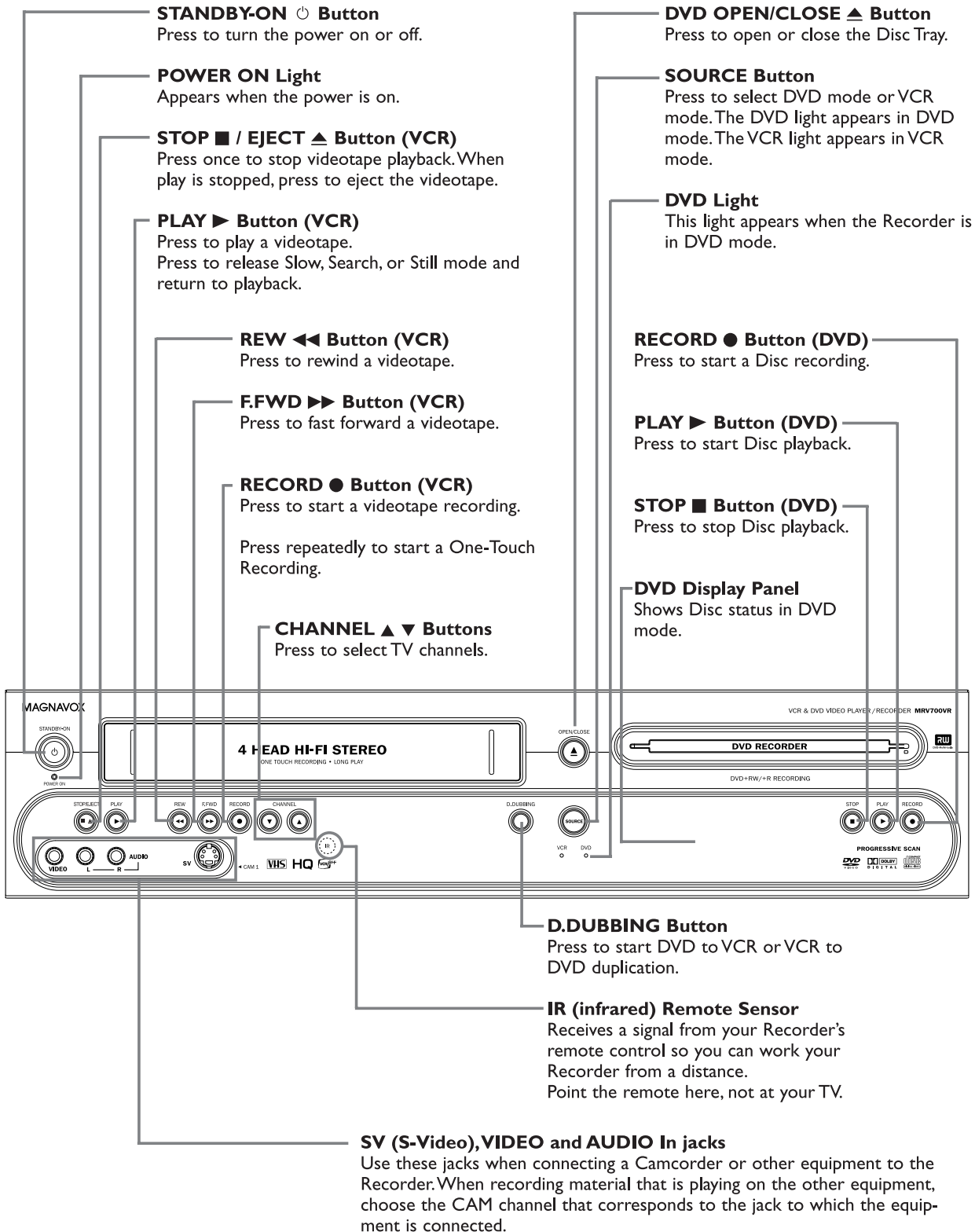
Appears during videotape play

Indicates the elapsed playing time of a videotape; also displays the remaining time for an OTR

Appears during DVD to VCR or VCR to DVD duplication

Indicates the selected tape speed





**ANTENNA IN jack**

Connect your antenna or Cable TV signal here.

**VIDEO OUT jack (yellow)**

Connect the yellow video cable (supplied) here and to the TV's Video In jack. This supplies the picture for both VCR and DVD modes.

**EXT2 Jacks**

**VIDEO IN jack (yellow)**

Connect a video cable from an optional Camcorder, VCR, or DVD Player here.

**AUDIO IN Jacks / Left (white) and Right (red)**

Connect audio cables coming from the audio out jacks of a camcorder, another VCR, another DVD Player, or Stereo here. This will be useful if you want to copy a videotape or watch material that is playing on other equipment.

**COMPONENT VIDEO OUT (Y Pb Pr) jacks (red, green, blue)**

Connect component video cables (not supplied) here and to the Component Video In jacks of a TV.

**EXT2 S-VIDEO IN jack**

Use an S-video cable (not supplied) to connect this jack to the S-Video Out jack of optional additional equipment.

**EXT2 S-VIDEO OUT jack**

Connect an S-Video cable here and to a TV's S-Video In jack.

**EXT1 jacks**

**AUDIO IN jacks / Left (white) and Right (red)**

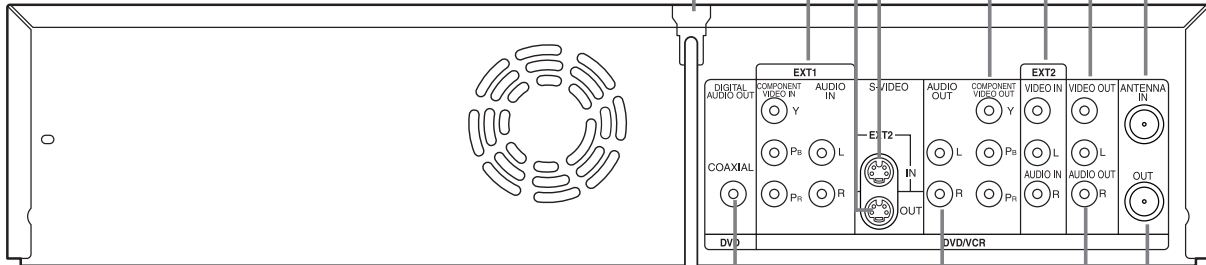
Connect audio cables here and to the AUDIO OUT jacks of other equipment.

**COMPONENT VIDEO IN (Y Pb Pr) jacks (red, green, blue)**

Connect these jacks to the Component Video Out jacks of optional video equipment (for example, a DVD Player).

**AC Power Cord**

Connect to a standard AC outlet to supply power to the Recorder.



**DVD COAXIAL DIGITAL AUDIO OUT Jack**

Connect a coaxial digital audio cable (not supplied) here and to the Coaxial Digital Audio In jack of a Stereo. This supplies audio only for DVD mode.

**AUDIO OUT Jacks / Left (white) and Right (red)**

Connect audio cables here and to the Audio In jacks of a TV or Stereo. These jacks supply audio for both DVD and VCR modes. Use these for a second connection to another TV, etc.

**AUDIO OUT Jacks / Left (white) and Right (red)**

Connect the supplied audio cables here and to the Audio In jacks of a TV or Stereo. These jacks provide audio for both DVD and VCR modes.

**(Antenna) OUT Jack**

Use the supplied RF coaxial cable to connect this jack to the ANTENNA IN jack on your TV, Cable Box, or Satellite Receiver.

**Helpful Hints**

- Use the same EXT (external) number for each pair of audio and video connections. For example, if you use EXT 2 S-VIDEO IN, use the EXT 2 AUDIO IN jacks.
- Do not touch the inner pins of the jacks. Electrostatic discharge may damage the unit permanently.
- You only need one audio and one video connection to a TV. You might not use all the jacks.

# REMOTE CONTROL OPERATION

## [ DVDR600VR/37 ]

### Number Buttons

Use to select TV channels. If you have Cable TV, channels 1-125 are available. If you have an antenna, channels 2-69 are available. In DVD mode, press to select a Track or Chapter for playback.

### VCR Button

Press to activate the remote control in VCR mode. Press to select the VCR output mode.

### SELECT Button

In DVD mode, press to adjust timer recording settings. Press to choose Interlaced or Progressive Scan.

### Previous ◀◀ Button

In DVD mode, press to return to the beginning of the current Chapter/Track. Press repeatedly to return to previous Chapters/Tracks. Press and hold for two seconds to search backward during play. In VCR mode, press to search a videotape.

### REC MODE Button

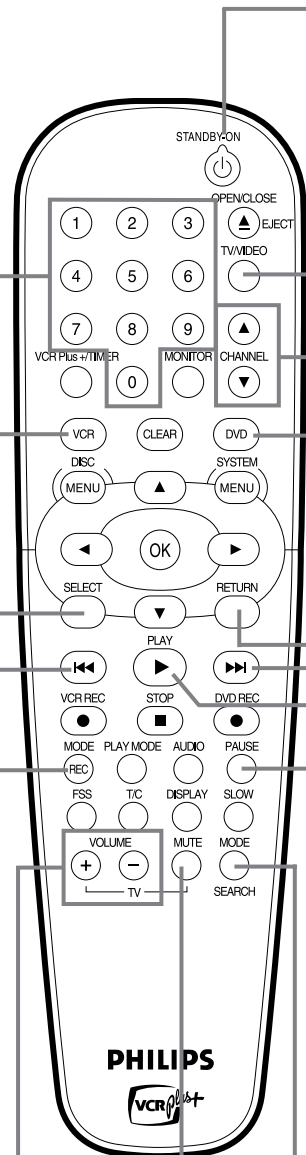
Press to select a Disc or videotape recording speed. This determines the quality of the recording and the length of time you can record.

### TV VOLUME +/- Buttons

Press to adjust the volume of some Philips TVs. The TV VOLUME +/- buttons do not work with all TVs.

### TV MUTE Button

Press to mute the sound on some Philips TVs. The TV MUTE button does not work with all TVs.



### STANDBY-ON ⏻ Button

Press to turn on or off the power of the Recorder.

### TV/VIDEO Button

Press to switch between TV and Video positions. In Video position, watch a Disc/video-tape or watch/record TV programs (changing channels at the Recorder).

Use TV position to watch TV channels (changing channels at the TV) or watch one program while recording another.

### CHANNEL ▲/▼ Buttons

Press to change TV channels at the Recorder in Monitor or VCR mode.

Press to adjust videotape tracking.

### DVD Button

Press to activate the remote control in DVD mode. Press to select the DVD output mode.

### RETURN Button

Press to go to a previous menu on a Video CD or some DVDs.

### Next ▶▶ Button

In DVD mode, press to skip to the next Chapter or Track during play. Press and hold for two seconds to search forward during play. In VCR mode, press to search a videotape.

### PLAY ▶ Button

Press to begin Disc or videotape playback.

### PAUSE Button

Press to pause Disc or videotape play or recording (except OTR).

### SEARCH MODE Button

In VCR mode, press for a Time Search or an Index Search.



**VCR Plus+/TIMER button**

Press to set a timer recording with the VCR Plus+ programming system. Press to access or remove the Timer Recording menu in DVD mode.

**DISC MENU Button**

Press to access or remove a DVD Disc menu in DVD mode.

**OK Button**

Press to acknowledge or approve a menu selection.

**▲▼◀▶ Buttons**

Press to select menu items.

**STOP ■ Button**

Press to stop playback or recording.

**VCR REC ● Button**

Press to begin VCR recording. Press repeatedly to start a One-Touch Recording on a videotape.

**PLAY MODE Button**

Press during Disc play to choose a Repeat, Shuffle, or Scan mode.

**FSS Button**

**(Favorite Scene Selection)**  
Press to display or remove the Favorite Scene Selection menu during playback of a DVD+R or DVD+RW.

**T/C Button**

**(Title/Chapter)**  
Press to select "T" (Title/Track) or "C" (Chapter) in the Menu Bar. Then press ▲▼ to select the Title/Track/Chapter you want to play. This button has no effect during Monitor mode.

**OPEN/CLOSE/EJECT ▲ Button**

Press to open or close the Disc tray in DVD mode. Press to eject a videotape in VCR mode.

**MONITOR Button**

Press to choose Disc mode or Monitor mode. In Disc mode, use the Index Picture Screen or view Disc playback. In Monitor mode, watch TV channels through the Recorder or make a Disc recording.

**CLEAR Button**

In DVD mode, press to delete the last entry of information into a menu. Press to clear a timer recording. In VCR mode, press to reset the videotape counter.

**SYSTEM MENU Button**

Press to access or remove the Recorder's Setup menu. This also puts the Recorder in DVD mode automatically.

**DVD REC ● Button**

Press to start a Disc recording. Press repeatedly to start a One-Touch Recording on a DVD+R or DVD+RW.

**AUDIO Button**

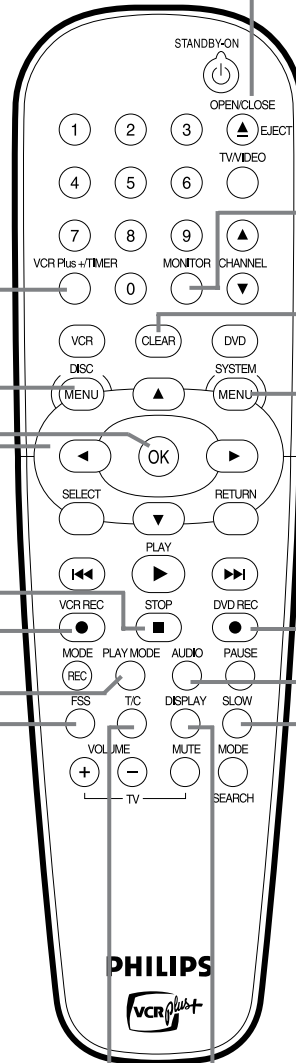
In DVD mode, press to select a different audio language during DVD play. Multiple languages must be available on the DVD. In VCR mode, press to select HIFI or MONO.

**SLOW Button**

Press to view a videotape in slow motion.

**DISPLAY Button**

In VCR mode, press to see status displays.

**Helpful Hints**

- When VCR REC ● is pressed in DVD mode, the Recorder switches to VCR mode and starts recording on the videotape.
- When DVD REC ● is pressed in VCR mode, the Recorder switches to DVD mode and starts recording on the DVD+R/DVD+RW.

# [ MRV700VR/17 ]

## TV/VIDEO Button

Press to switch between TV and Video positions. In Video position, watch a Disc/video-tape or watch/record TV programs (changing channels at the Recorder).

Use TV position to watch TV channels (changing channels at the TV) or watch one program while recording another.

## PREV/REV I◀◀ Button

In DVD mode, press to return to the beginning of the current Chapter/Track. Press repeatedly to return to previous Chapters/Tracks. Press and hold for two seconds to search backward during play. In VCR mode, press to search a videotape.

## PAUSE II Button

Press to pause Disc or videotape play or recording (except OTR).

## VCR Button

Press to activate the remote control in VCR mode. Press to select the VCR output mode.

## SELECT Button

In DVD mode, press to adjust timer recording settings. Press to choose Interlaced or Progressive Scan.

## Number Buttons

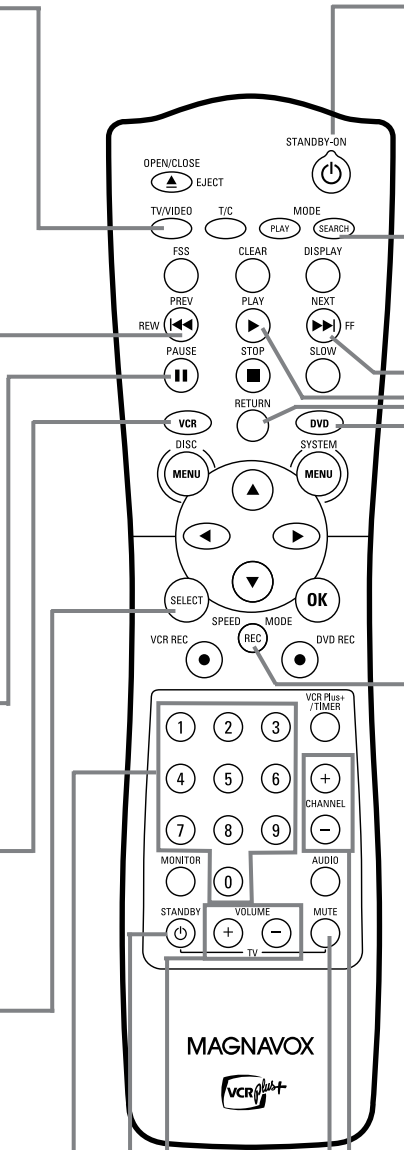
Use to select TV channels. If you have Cable TV, channels 1-125 are available. If you have an antenna, channels 2-69 are available. In DVD mode, press to select a Track or Chapter for playback.

## TV STANDBY ⏻ Button

Press to turn on or off the power of some Magnavox TVs.

## TV VOLUME +/- Buttons

Press to adjust the volume of some Magnavox TVs. The TV VOLUME +/- buttons do not work with all TVs.



## STANDBY-ON ⏻ Button

Press to turn on or off the power of the Recorder.

## SEARCH MODE Button

In VCR mode, press for a Time Search or an Index Search.

## NEXT/FF ▶▶ Button

In DVD mode, press to skip to the next Chapter or Track during play. Press and hold for two seconds to search forward during play. In VCR mode, press to search a videotape.

## PLAY ▶ Button

Press to begin Disc or videotape playback.

## RETURN Button

Press to go to a previous menu on a Video CD or some DVDs.

## DVD Button

Press to activate the remote control in DVD mode. Press to select the DVD output mode.

## REC SPEED/MODE Button

Press to select a Disc or videotape recording speed. This determines the quality of the recording and the length of time you can record.

## CHANNEL +/- Buttons

Press to change TV channels at the Recorder in Monitor or VCR mode. Press to adjust videotape tracking during.

## TV MUTE Button

Press to mute the sound on some Magnavox TVs. The TV MUTE button does not work with all TVs.

**OPEN/CLOSE/EJECT ▲ Button**

Press to open or close the Disc tray in DVD mode. Press to eject a videotape in VCR mode.

**T/C Button (Title/Chapter)**

Press to select "T" (Title/Track) or "C" (Chapter) in the Menu Bar. Then press ▲▼ to select the Title/Track/Chapter you want to play. This button has no effect during Monitor mode.

**FSS Button (Favorite Scene Selection)**

Press to display or remove the Favorite Scene Selection menu during playback of a DVD+R or DVD+RW.

**STOP ■ Button**

Press to stop playback or recording.

**DISC MENU Button**

Press to access or remove a DVD Disc menu in DVD mode.

**▲▼◀▶ Buttons**

Press to select menu items.

**VCR REC ● Button**

Press to begin VCR recording. Press repeatedly to start a One-Touch Recording on a videotape.

**MONITOR Button**

Press to choose Disc mode or Monitor mode. In Disc mode, use the Index Picture Screen or view Disc playback. In Monitor mode, watch TV channels through the Recorder or make a Disc recording.

**PLAY MODE Button**

Press during Disc play to choose a Repeat, Shuffle, or Scan mode.

**CLEAR Button**

In DVD mode, press to delete the last entry of information into a menu. Press to clear a timer recording. In VCR mode, press to reset the videotape counter.

**DISPLAY Button**

In VCR mode, press to see status displays.

**SLOW Button**

Press to view a videotape in slow motion.

**SYSTEM MENU Button**

Press to access or remove the Recorder's Setup menu. This also puts the Recorder in DVD mode automatically.

**OK Button**

Press to acknowledge or approve a menu selection.

**DVD REC ● Button**

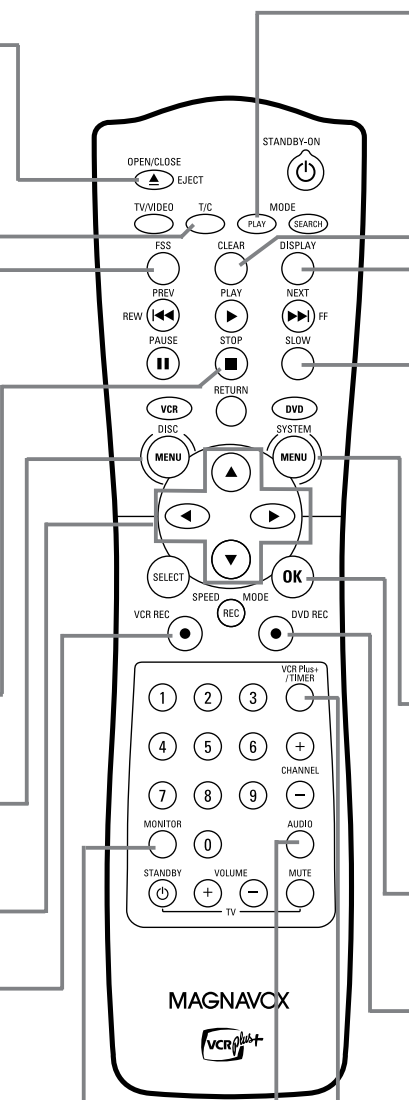
Press to start a Disc recording. Press repeatedly to start a One-Touch Recording on a DVD+R or DVD+RW.

**VCR Plus+/TIMER button**

Press to set a timer recording with the VCR Plus+ programming system. Press to access or remove the Timer Recording menu in DVD mode.

**AUDIO Button**

In DVD mode, press to select a different audio language during DVD play. Multiple languages must be available on the DVD. In VCR mode, press to select HI-FI or MONO.



**Helpful Hints**

- When VCR REC ● is pressed in DVD mode, the Recorder switches to VCR mode and starts recording on the videotape.
- When DVD REC ● is pressed in VCR mode, the Recorder switches to DVD mode and starts recording on the DVD+R/DVD+RW.

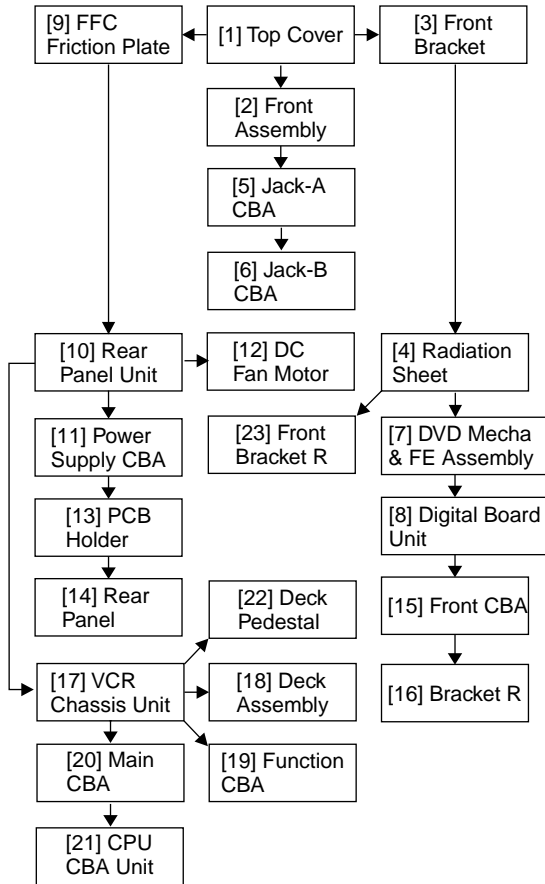
# CABINET DISASSEMBLY INSTRUCTIONS

## Comparison Chart of Models and Marks

Model	Mark
DVDR600VR/37	A
MRV700VR/17	B

## 1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.



## 2. Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	Note
[1]	Top Cover	D1	6(S-1)	---
[2]	Front Assembly	D2	*2(L-1), Tray Panel, *5(L-2), *3(L-3), *CN204, *CN205	1 1-1 1-2 1-3 1-4 1-5 1-6 1-7
[3]	Front Bracket	D2	2(S-2), 2(S-3)	---
[4]	Radiation Sheet	D2	-----	---
[5]	Jack-A CBA	D3	3(S-5)	---
[6]	Jack-B CBA	D3	2(S-6)	---
[7]	DVD Mecha & FE Assembly	D4	2(S-7), 2(S-8), *CN207, *CN208, *CN211, *CN213, Connector 1109, Connector 1704	---
[8]	Digital Board Unit	D4	4(S-9), Connector 1102	---
[9]	FFC Friction Plate	D5	2(S-10)	---
[10]	Rear Panel Unit	D5	5(S-11), 3(S-12), (S- 13), *CN209, *CN210	---
[11]	Power Supply CBA	D6	4(S-14), AC Cord, Earth Plate	---
[12]	DC Fan Motor	D6	2(S-15)	---
[13]	PCB Holder	D6	3(S-16)	---
[14]	Rear Panel	D6	-----	---
[15]	Front CBA	D7	3(S-17), *CN214	---
[16]	Bracket R	D7	2(S-18)	---
[17]	VCR Chassis Unit	D7	5(S-19), 5(S-20), (S-21)	---

ID/ LOC. No.	PART	REMOVAL				
		Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	Note		
[18]	Deck Assembly	D8	(S-22), (S-23), Desolder	2 3		
[19]	Function CBA	D8	Desolder	---		
[20]	Main CBA	D8	-----	---		
[21]	CPU CBA Unit	D8	4(S-24), *CN215, *CN216	---		
[22]	Deck Pedestal	D9	8(S-25)	---		
[23]	Front Bracket R	D9	(S-26), 2(S-27), iLink Cable [ A ]	---		
		(1)	(2)	(3)	(4)	(5)

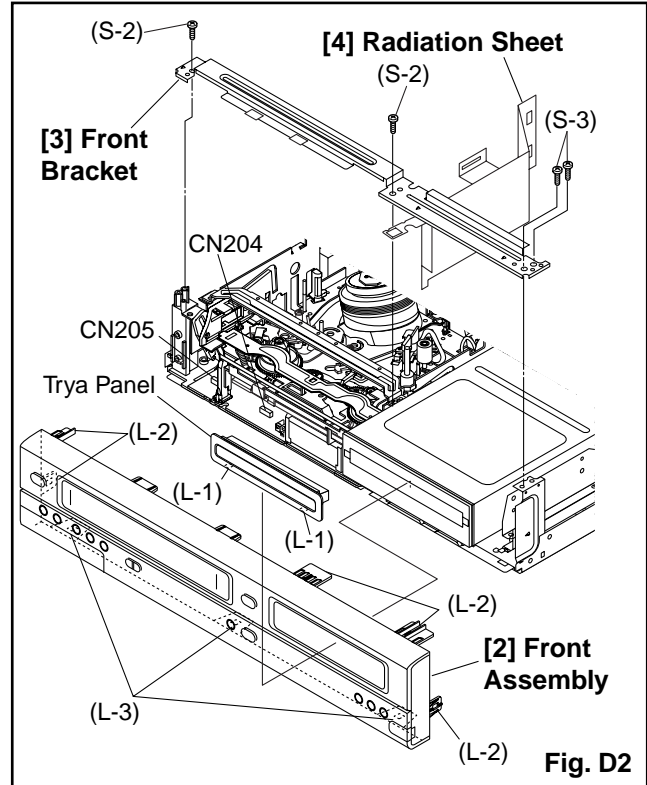
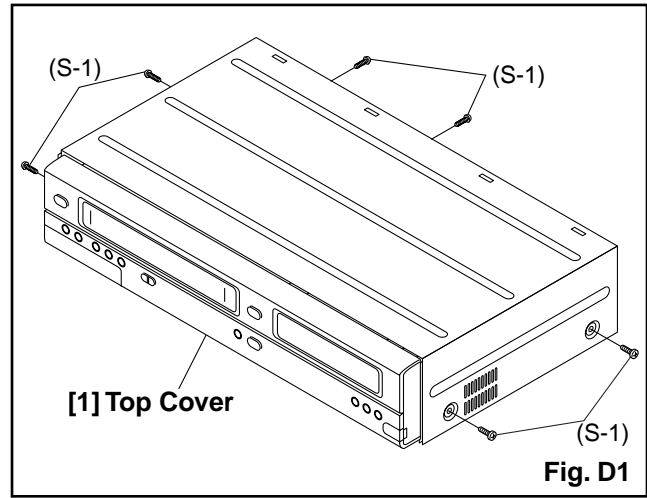
**Note:**

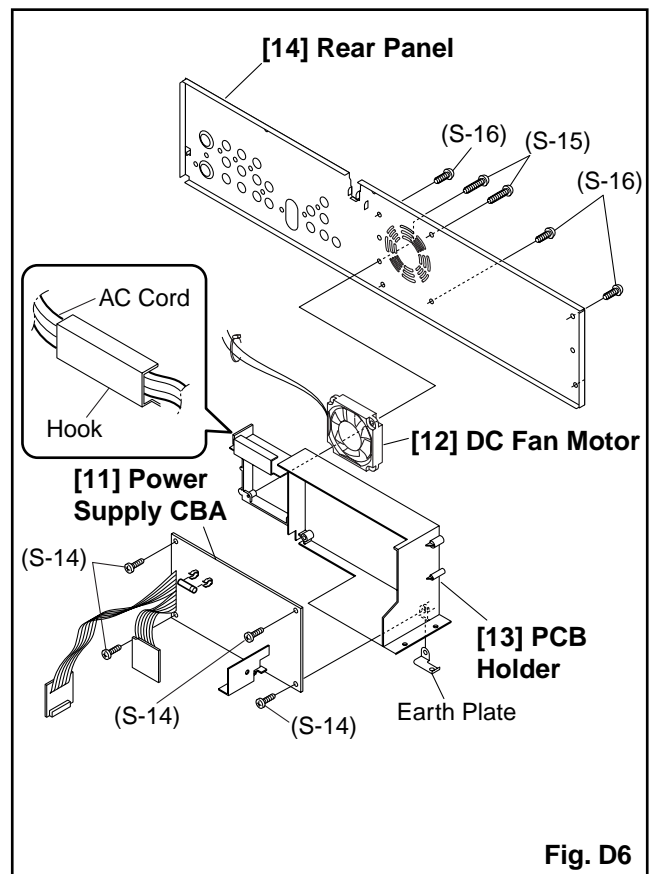
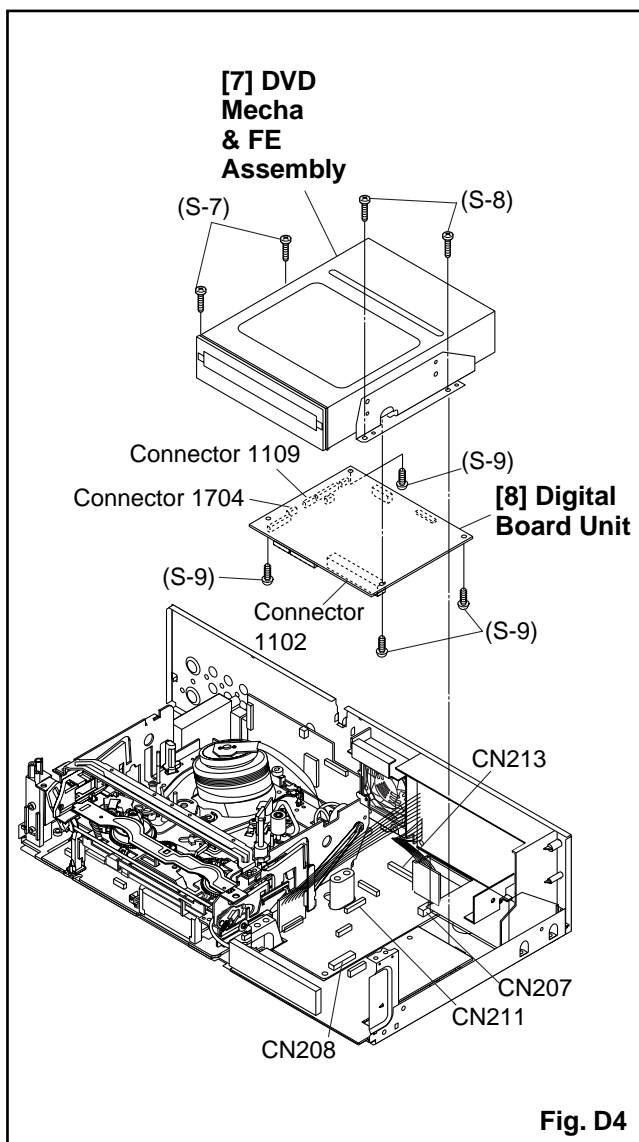
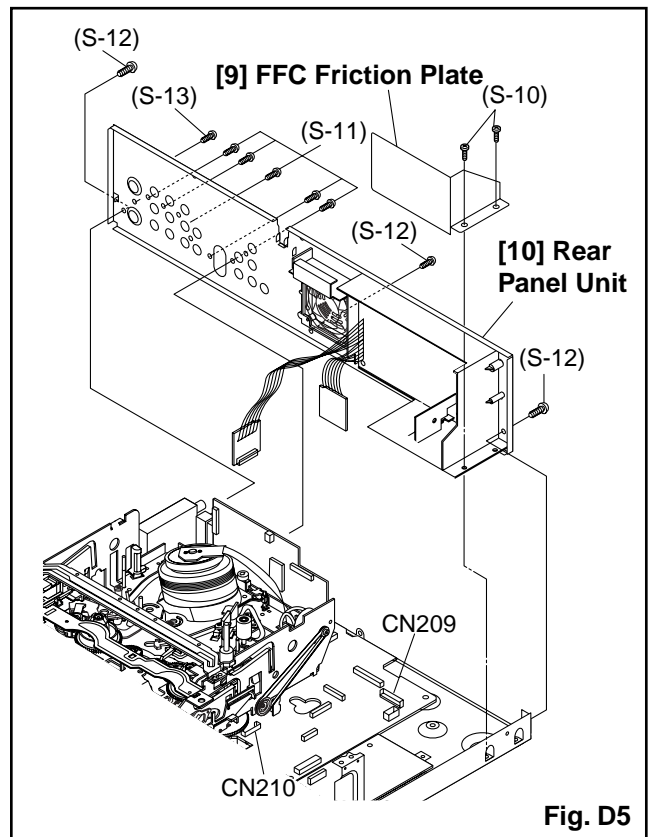
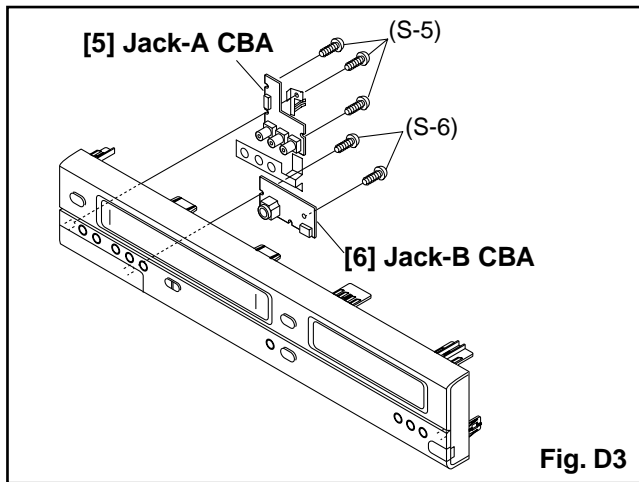
- (1): Identification (location) No. of parts in the figures
- (2): Name of the part
- (3): Figure Number for reference
- (4): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.  
P=Spring, L=Locking Tab, S=Screw, CN=Connector  
\*=Unhook, Unlock, Release, Unplug, or Desolder  
e.g. 6(S-1) = six Screws (S-1),  
5(L-1) = five Locking Tabs (L-1)
- (5): Refer to "Reference Notes."

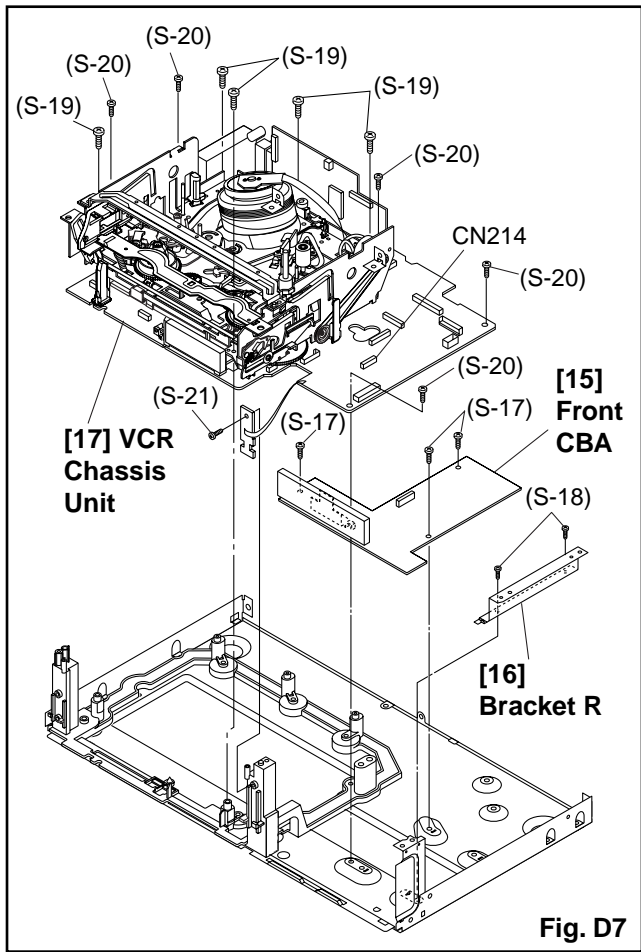
**Reference Notes**

- CAUTION 1: Locking Tabs (L-1), (L-2) and (L-3) are fragile. Be careful not to break them.
- 1-1. Connect the wall plug to an AC outlet and press the [OPEN/CLOSE] button to open the tray.
  - 1-2. Remove the Tray Panel by releasing two locking tabs (L-1).
  - 1-3. Press the [OPEN/CLOSE] button again to close the tray.
  - 1-4. Press the [POWER] button to turn the power off.
  - 1-5. Unplug the AC cord.
  - 1-6. Disconnect connectors CN204 and CN205.
  - 1-7. Release five Locking Tabs (L-2). Then release three Locking Tabs (L-3), and remove the Front Unit.
  2. When reassembling, solder wire jumpers as shown in Fig. D8.
  3. Before installing the Deck Assembly, be sure to place the pin of LD-SW on Main CBA as shown in Fig. D8. Then, install the Deck Assembly while

aligning the hole of Cam Gear with the pin of LD-SW, the shaft of Cam Gear with the hole of LD-SW as shown in Fig. D8.







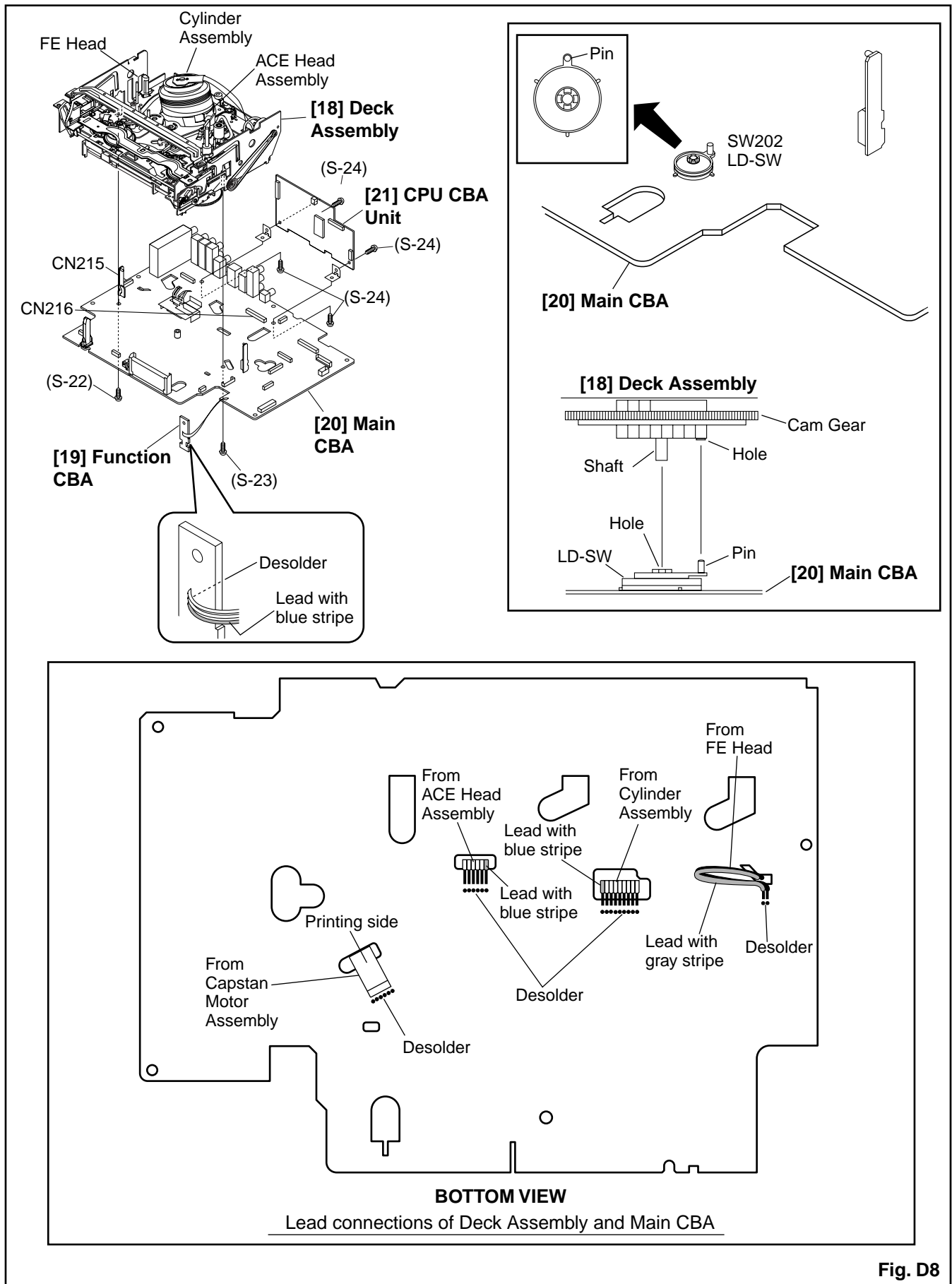
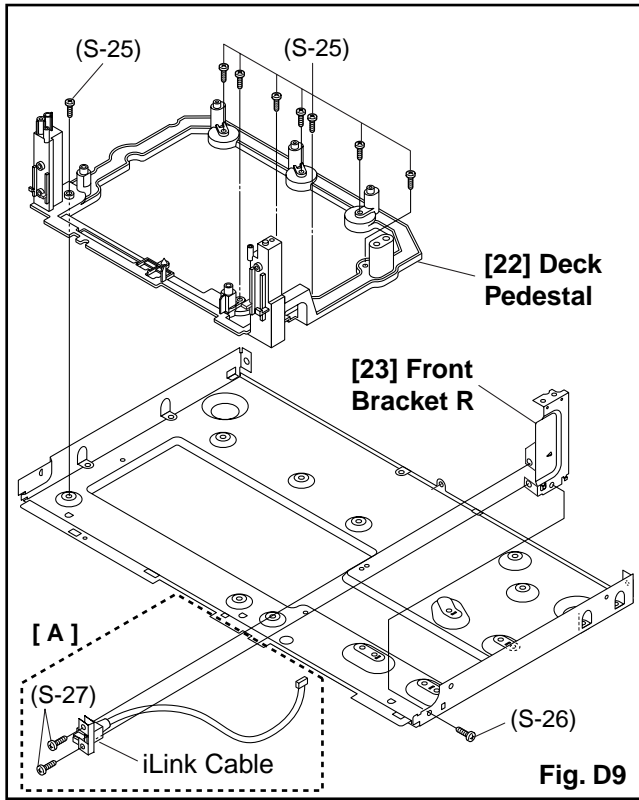


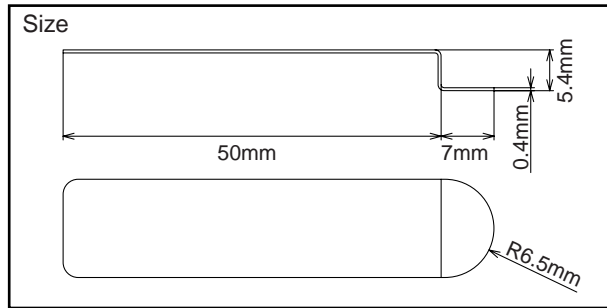
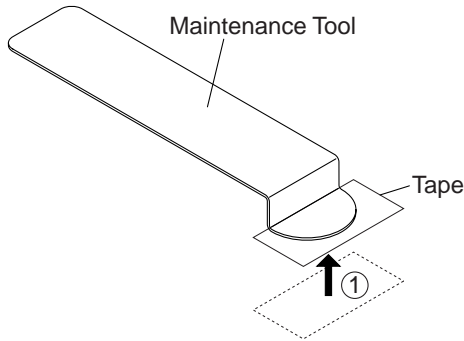
Fig. D8



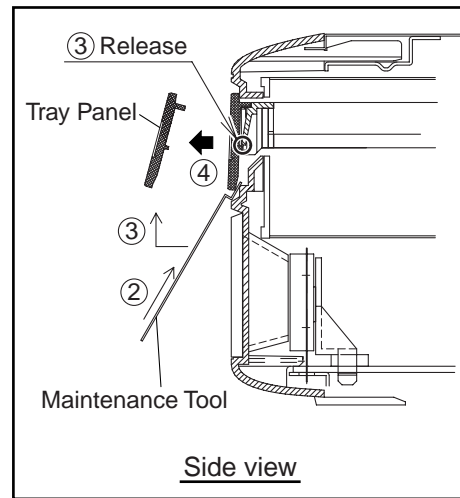
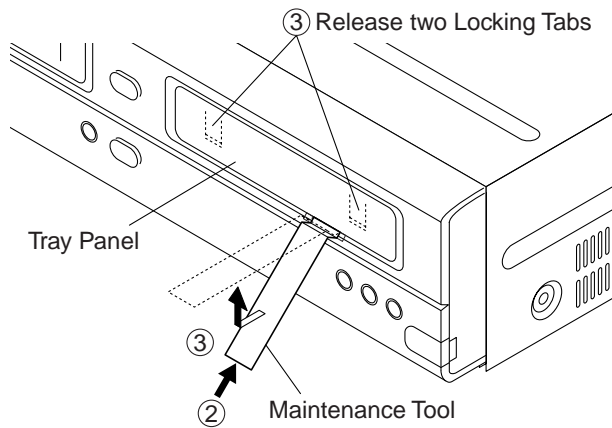


# HOW TO EJECT MANUALLY

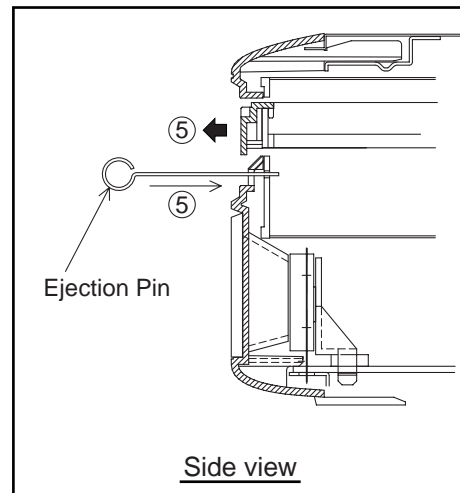
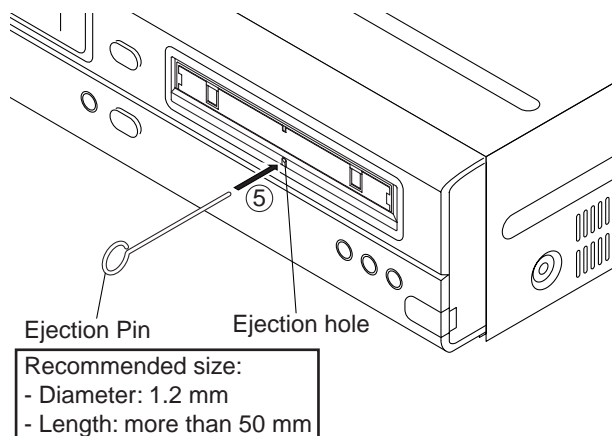
1. Put tape on the Maintenance Tool. (Please use a metallic plate as shown below as a maintenance tool.)



2. Insert the Maintenance Tool under the Tray Panel as shown.
3. Pull out and raise the Maintenance Tool up as shown to release two locking tabs of the Tray Panel.
4. Remove the Tray Panel.



5. Insert the Ejection Pin straightly into the ejection hole to open the tray.  
 (Recommended size of the Ejection Pin: diameter; 1.2 mm, length; more than 50mm)



# HOW TO INITIALIZE THE DVD RECORDER

To put the program back at the factory-default, initialize the DVD recorder using the following procedure.

1. Press and hold the [DVD STOP ■] button on the DVD recorder.
2. Insert the AC plug to an AC outlet.
3. Release [DVD STOP ■] button after 5 or 6 seconds.

# ELECTRICAL ADJUSTMENT INSTRUCTIONS

**General Note:** "CBA" is an abbreviation for "Circuit Board Assembly."

**NOTE:**

1. Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to do these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.
2. To perform these alignment / confirmation procedures, make sure that the tracking control is set in the center position: Press either "CHANNEL ▼" or "CHANNEL ▲" button on the front panel first, then the "PLAY" button on the front panel.

## Test Equipment Required

1. Oscilloscope: Dual-trace with 10:1 probe, V-Range: 0.001~50V/Div., F-Range: DC~AC-20MHz
2. Alignment Tape (VFMS0001H6)

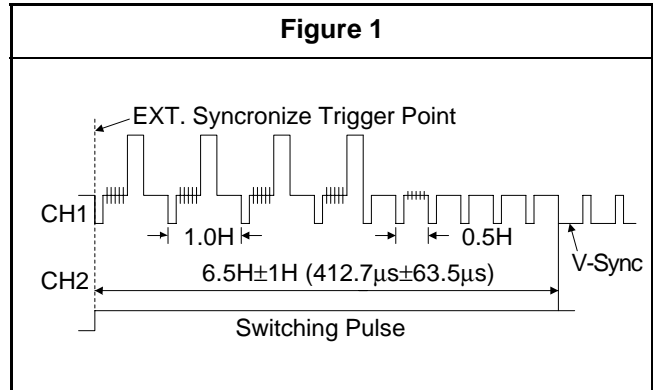
## Head Switching Position Adjustment

**Purpose:**

To determine the Head Switching position during playback.

**Symptom of Misadjustment:**

May cause Head Switching noise or vertical jitter in the picture.

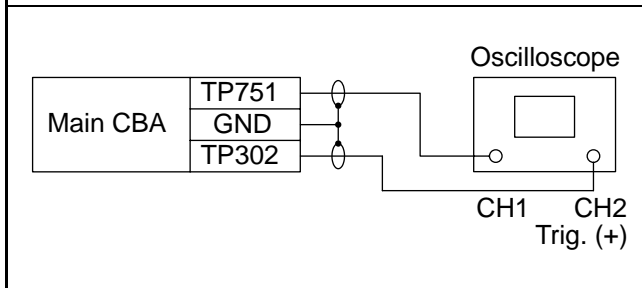


**Reference Notes:**

Playback the Alignment tape and adjust VR201 so that the V-sync front edge of the CH1 video output waveform is at the  $6.5H \pm 1H$  ( $412.7\mu s \pm 63.5\mu s$ ) delayed position from the rising edge of the CH2 head switching pulse waveform.

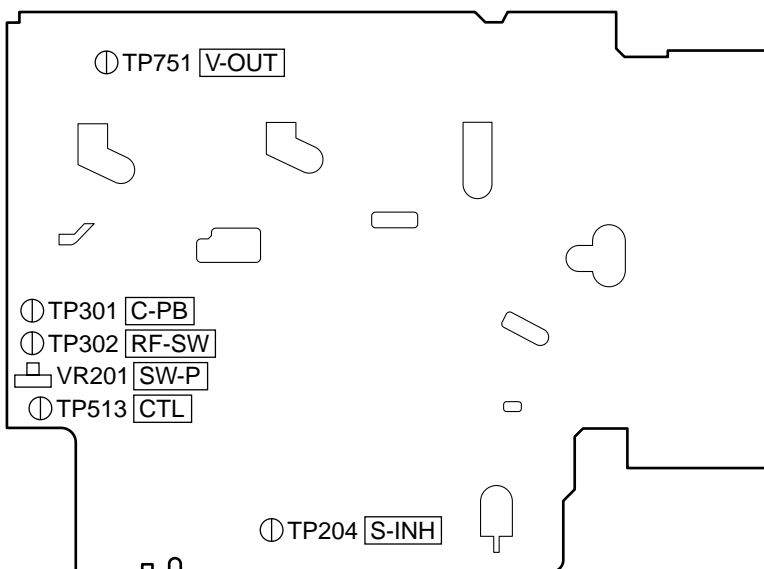
Test point	Adj. Point	Mode	Input
TP751(V-OUT) TP302(RF-SW) GND	VR201 (Switching Point) (MAIN CBA)	PLAY (SP)	----
Tape	Measurement Equipment	Spec.	
VFMS0001H6	Oscilloscope	$6.5H \pm 1H$ ( $412.7\mu s \pm 63.5\mu s$ )	

**Connections of Measurement Equipment**



# Adjustment Points and Test Points

## Main CBA Top View

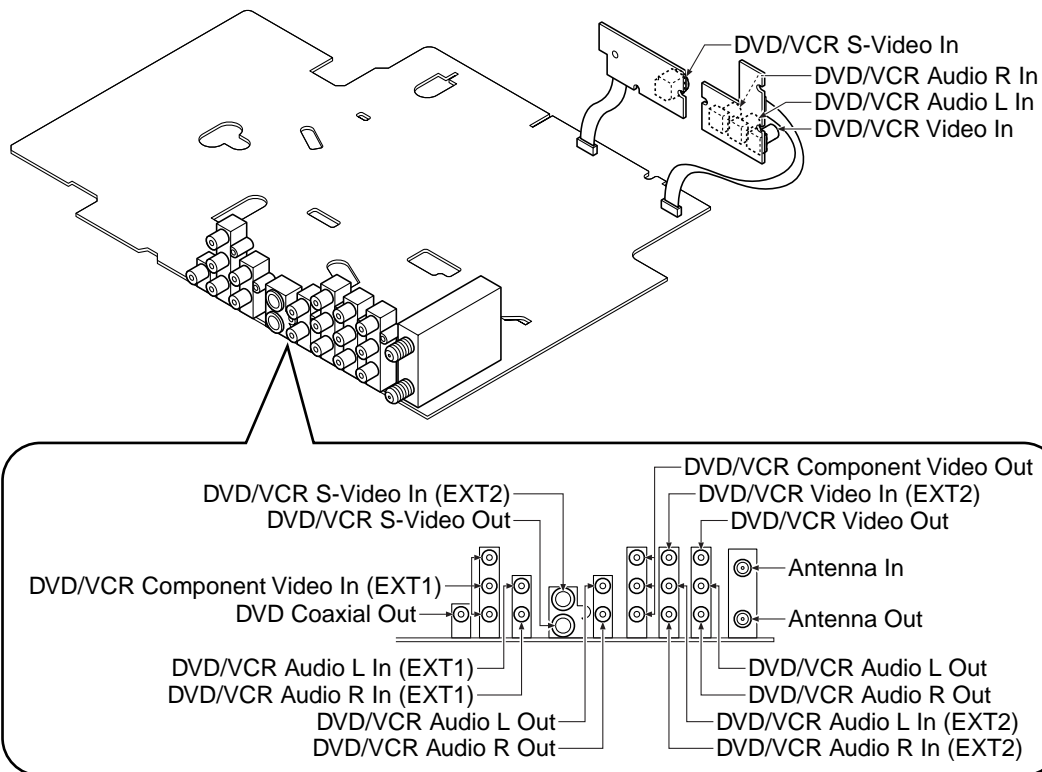


### TEST POINT INFORMATION

⓪: Indicates a test point with a jumper wire across a hole in the PCB.

### TEST POINTS NOT USED IN ELECTRICAL ADJUSTMENTS

Test Point	Used in:	Page No.
TP301	Mechanical Alignment Procedures	2-3-3, 2-3-4
TP302	Mechanical Alignment Procedures	2-3-3, 2-3-4
TP513	Mechanical Alignment Procedures	2-3-3
TP204	Preparation for Servicing	1-5-1



# FIRMWARE RENEWAL MODE

1. Make a copy of the data for update to a CD-R or CD-RW.
2. Set the disc made in Step 1 on the tray and close.
3. Turn on the DVD recorder while pushing [DVD OPEN/CLOSE ▲] button and [DVD RECORD ●] button at the same time. Update of F/W will begin after "FORCED DOWN" is displayed on DVD FLD.
4. Update of F/W will be performed automatically and the DVD recorder will be in the standby mode. Then press [DVD OPEN/CLOSE ▲] button on the DVD recorder and remove the disc.

# REWORK PROCEDURE IEEE UNIQUE NUMBER

The procedure describes how to upgrade sets with a unique number after repair. This unique number is stored in the NVRAM of the FEBE board at the end of the production line.

This procedure is only valid or necessary when:

- The FEBE board is replaced
- NVRAM on the FEBE board is replaced
- NVRAM is cleared

In all other cases the repaired set retains its unique number.

The procedure defines several means to re-assure the unique number depending on the possibilities of repair or the state the faulty set is in.

1. Connect defective digital board to PC via serial cable.
2. Start up hyper terminal or any other serial terminal via the correct settings (DSW command mode interface).
3. Read out existing unique number via 1208.

```
DS:> 1208
```

4. Press [ENTER] button on the remote control unit.

```
120800: The DvldNumber is: *****  
Test OK @
```

5. Note read out.
6. Program new digital board via nucleus 1207.

```
DS:> 1207 *****
```

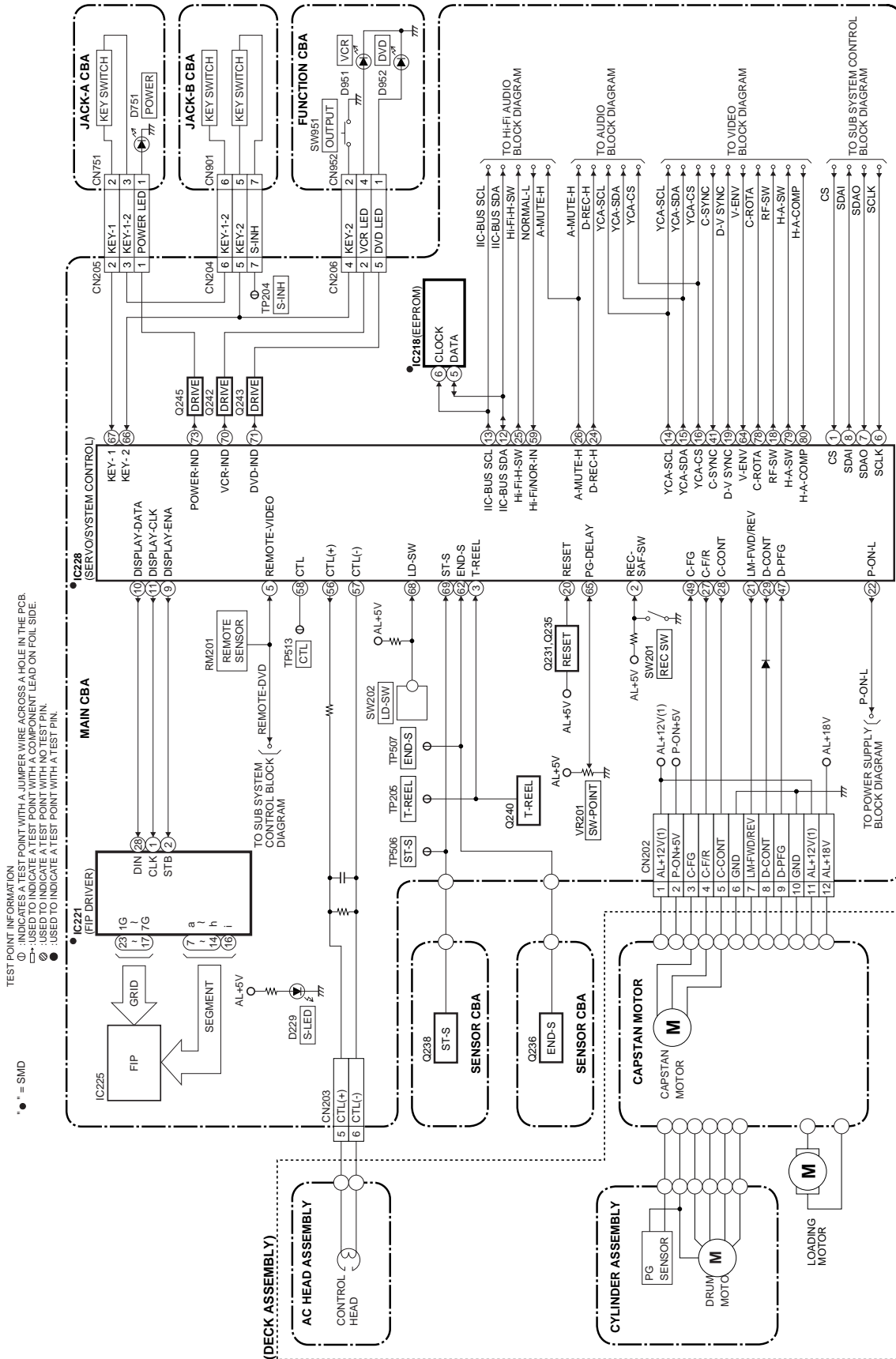
7. Press [ENTER] button on the remote control unit.

```
120700: Test OK @
```

8. The set has now the original unique number.

# BLOCK DIAGRAMS

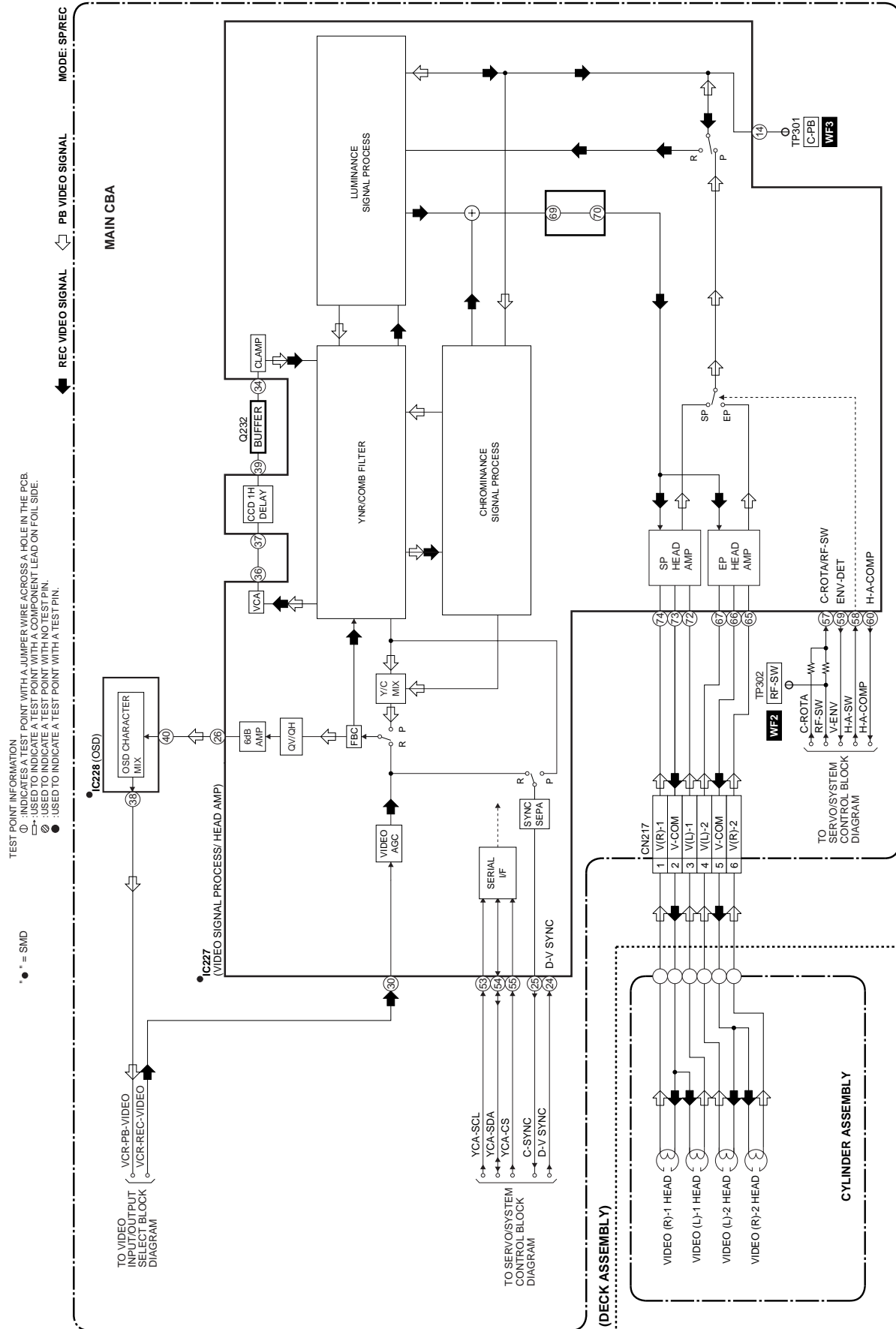
## Servo / System Control Block Diagram



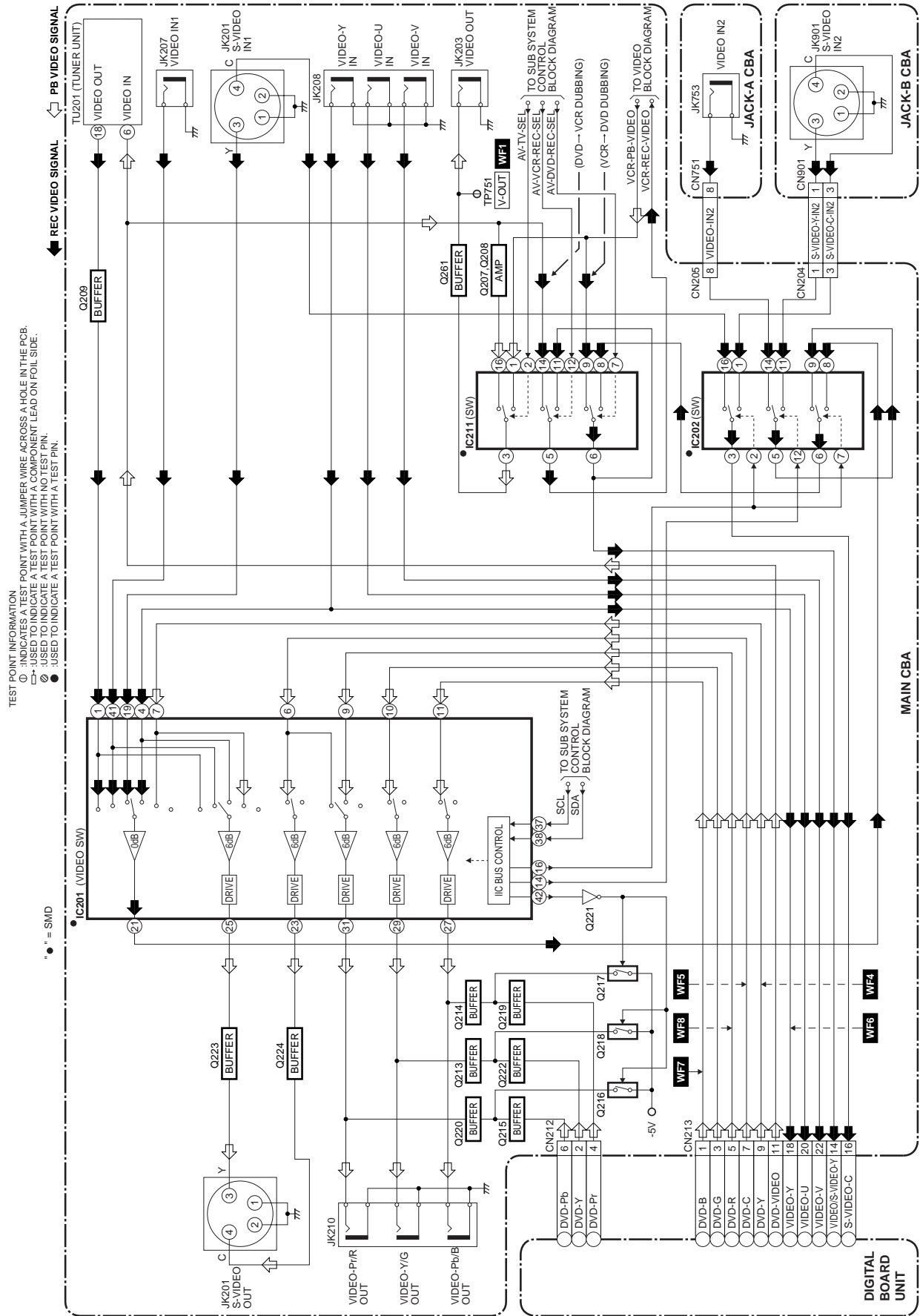




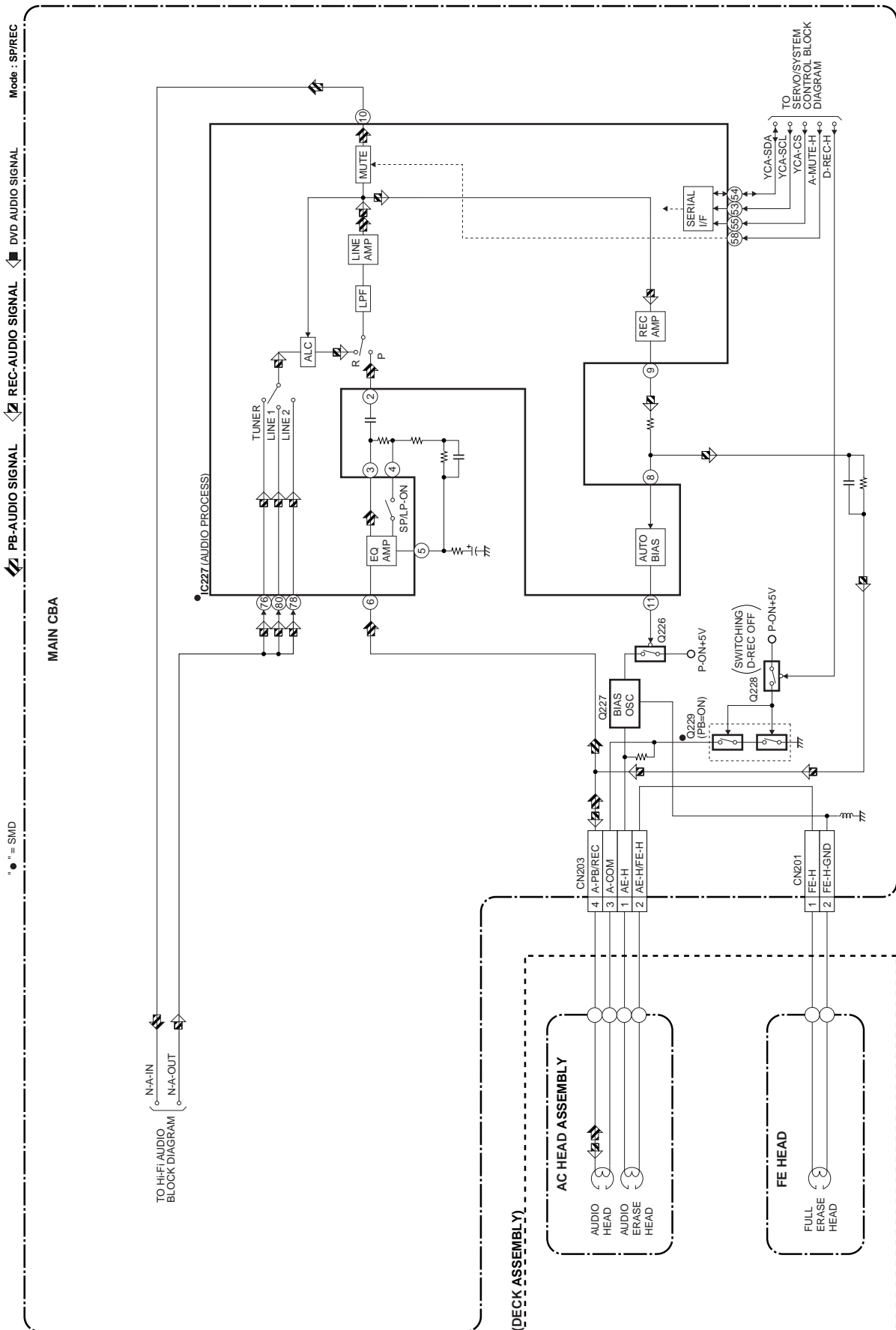
# Video Block Diagram



# Video Input/Output Select Block Diagram



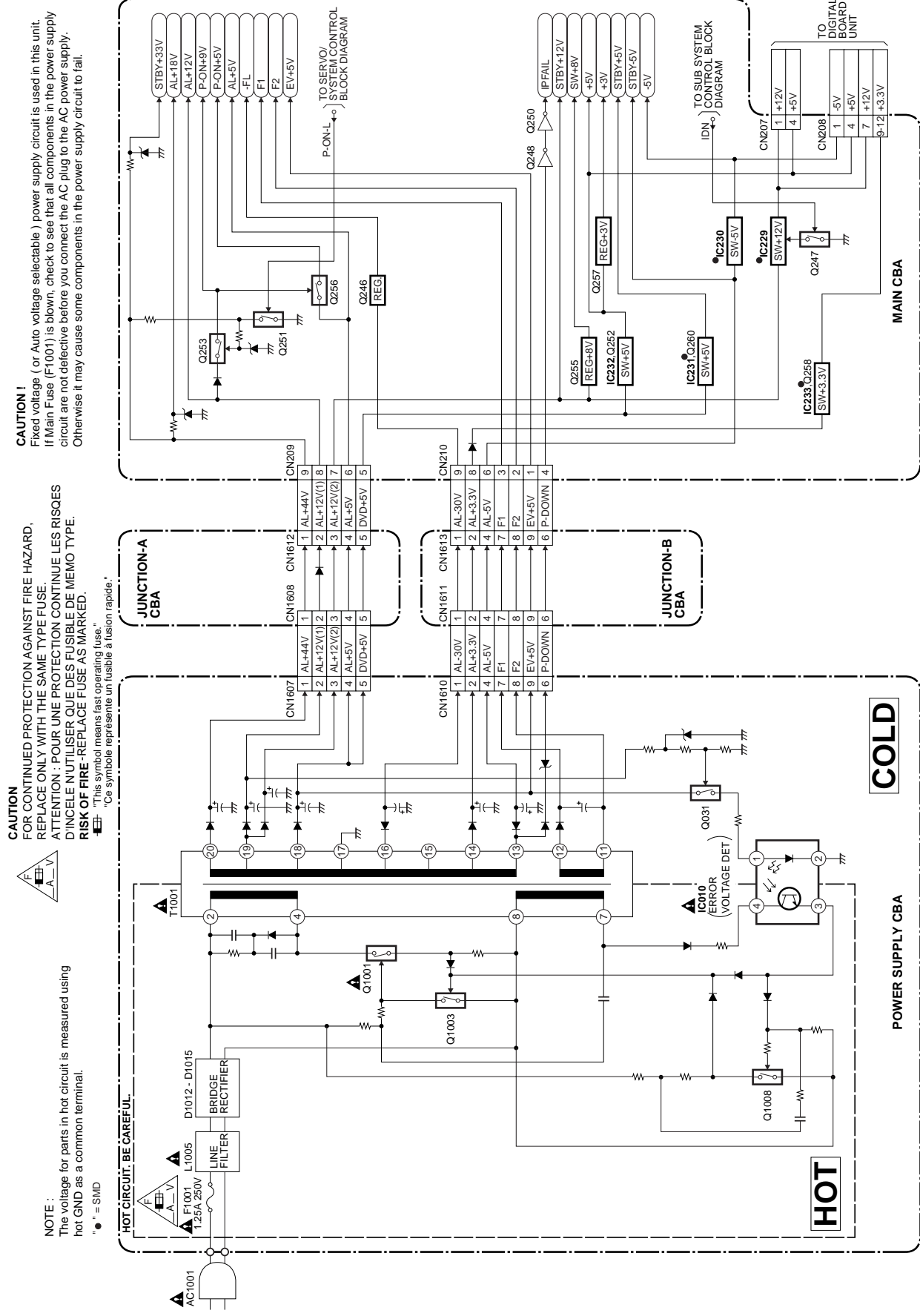
# Audio Block Diagram







# Power Supply Block Diagram



**CAUTION !**  
Fixed voltage ( or Auto voltage selectable ) power supply circuit is used in this unit.  
If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.  
Otherwise it may cause some components in the power supply circuit to fail.

**CAUTION**  
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,  
REPLACE ONLY WITH THE SAME TYPE FUSE.  
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQUES  
D'INCENDIE UTILISER UN FUSIBLE DE MEMO TYPE.  
**RISK OF FIRE-REPLACE FUSE AS MARKED.**

**NOTE :**  
The voltage for parts in hot circuit is measured using hot GND as a common terminal.  
"●" = SMD  
"⚡" This symbol means fast operating fuse.  
"Ce symbole représente un fusible à fusion rapide."

# SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

## Standard Notes

### WARNING

Critical components having special safety characteristics are identified with a **▲** by the Ref. No. in the parts list and enclosed within a broken line (where several critical components are grouped in one area) along with the safety symbol **▲** on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips Consumer Electronics Company. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

\* Broken Line : 

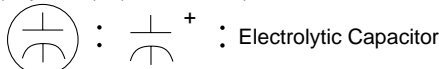
### Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 - 80%	20°C	-25~+85°C
(SR)	±15%	20°C	-25~+85°C
(Z)	±22.5%	20°C	-25~+85°C

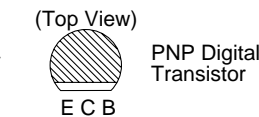
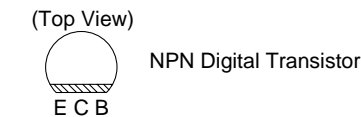
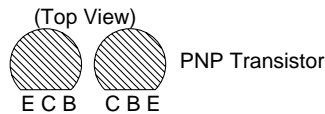
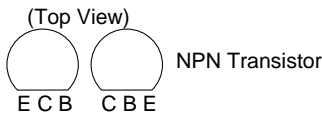
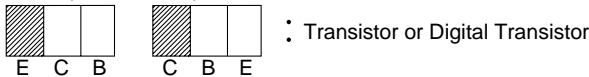
Capacitors and transistors are represented by the following symbols.

### < PCB Symbols >

(Top View) (Bottom View)

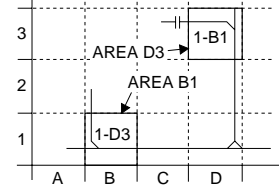
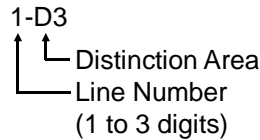


(Bottom View)



## Notes:

- Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
- To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.
- How to read converged lines.



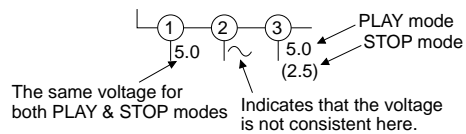
Examples:

- "1-D3" means that line number "1" goes to area "D3."
- "1-B1" means that line number "1" goes to area "B1."

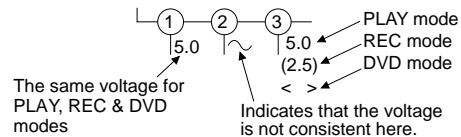
- All resistance values are indicated in ohms ( $K=10^3$ ,  $M=10^6$ ).
- Resistor wattages are 1/4W or 1/6W unless otherwise specified.
- All capacitance values are indicated in  $\mu F$  ( $P=10^{-6} \mu F$ ).
- All voltages are DC voltages unless otherwise specified.
- Voltage indications PLAY and REC modes on the schematics are as shown below.

### < DVD Section >

Unit: Volts

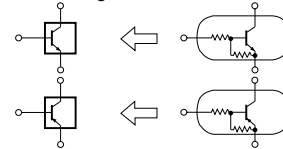


### < VCR Section >



### < Schematic Diagram Symbols >

Digital Transistor



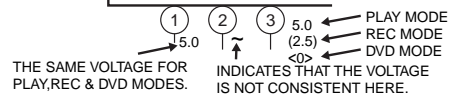


## Main 1/7 Schematic Diagram Parts Location Guide < VCR Section >

Ref No.	Position	Ref No.	Position
CAPACITORS		RESISTORS	
C494	A-1	R499	B-1
C498	D-1	R500	D-1
C500	D-1	R502	D-1
C501	D-1	R505	D-1
C502	D-3	R512	D-3
C504	D-3	R513	D-4
C506	E-3	R514	E-4
C508	E-3	R517	E-4
C510	D-4	R518	E-4
C512	D-4	R521	C-4
C513	E-3	R522	D-4
C515	E-3	R523	C-4
C516	F-4	R524	B-3
C518	F-4	R525	B-4
C520	E-4	R526	B-3
C523	D-4	R527	B-3
C524	D-4	R528	F-3
C525	C-4	R535	A-2
C527	C-4	R540	A-1
C529	C-4	R541	B-2
C530	C-4	R542	B-4
C531	C-4	R543	B-1
C533	C-4	R544	C-1
C535	B-4	R561	C-1
C543	E-4	R565	C-4
C612	C-1	R567	C-1
DIODES		R569	C-1
D226	E-4	R571	C-1
D229	A-1	R572	E-2
ICS		R582	B-4
IC218	B-1	R675	D-4
IC228	C-3	SWITCH	
COILS		SW201	A-2
L222	A-1	VARIABLE RESISTOR	
L224	E-3	VR201	B-4
L226	E-3	CRYSTAL OSCILLATORS	
TRANSISTORS		X201	D-3
Q231	D-1	TEST POINTS	
Q235	D-1	TP205	B-2
Q240	A-2	TP513	B-4
RESISTORS			
JC103	B-2		

# Main 1/7 Schematic Diagram < VCR Section >

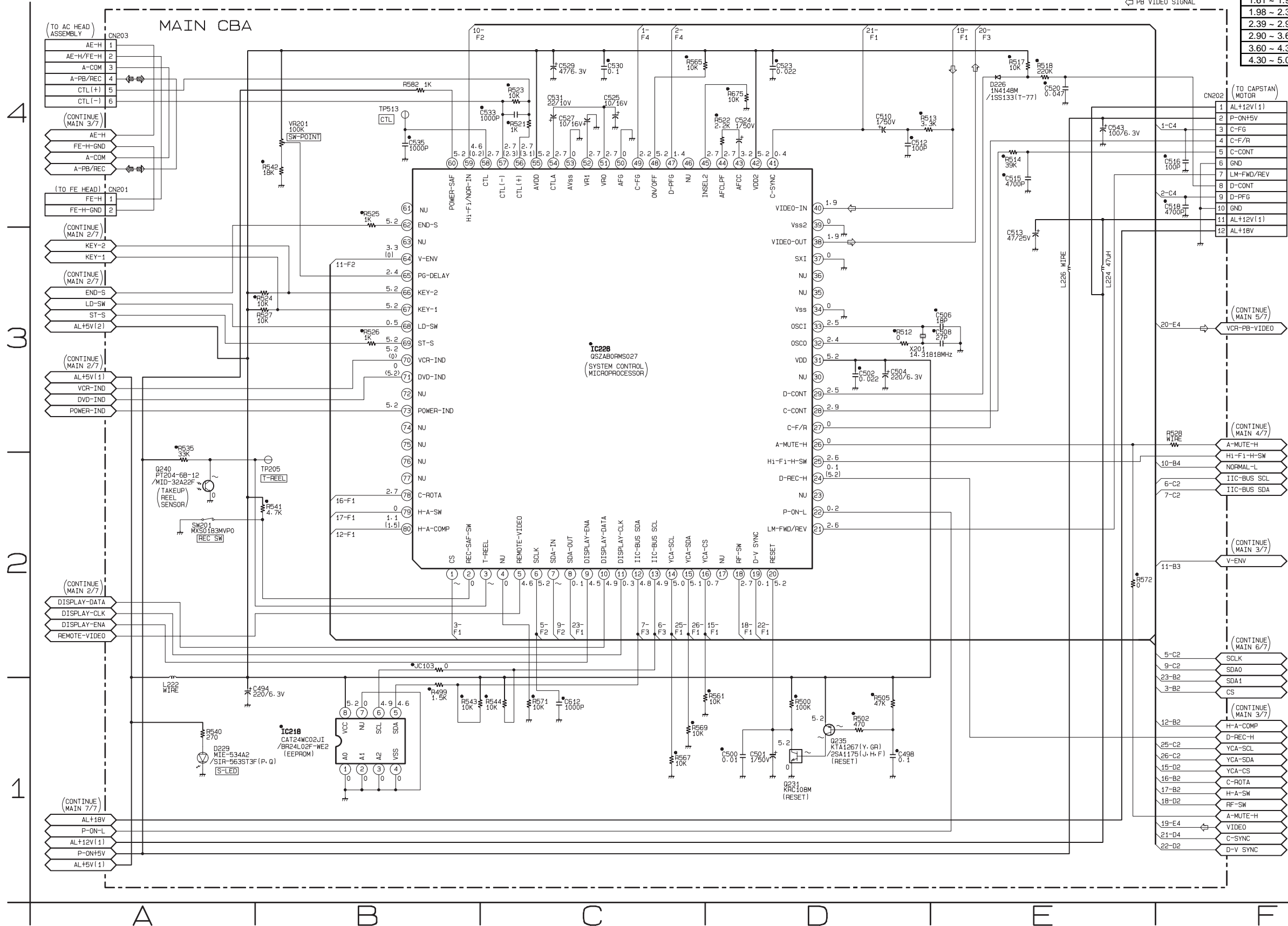
Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:



"•" = SMD

## IC501 KEY VOLTAGE CHART

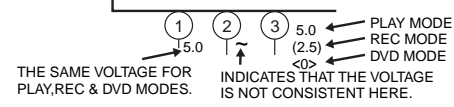
Pin No.	KEY 1 (67 PIN)	KEY 2 (66 PIN)
0.00 ~ 0.51V	STANDBY	OUTPUT
0.51 ~ 0.92V	STOP/EJECT	CH UP
0.92 ~ 1.27V	PLAY	CH DOWN/S-INH
1.27 ~ 1.61V	REW	-----
1.61 ~ 1.98V	FF	-----
1.98 ~ 2.39V	REC	-----
2.39 ~ 2.90V	-----	-----
2.90 ~ 3.60V	-----	-----
3.60 ~ 4.30V	-----	-----
4.30 ~ 5.00V	KEY OFF	KEY OFF



# Main 2/7, Sensor, Function & Jack-B Schematic Diagram < VCR Section >

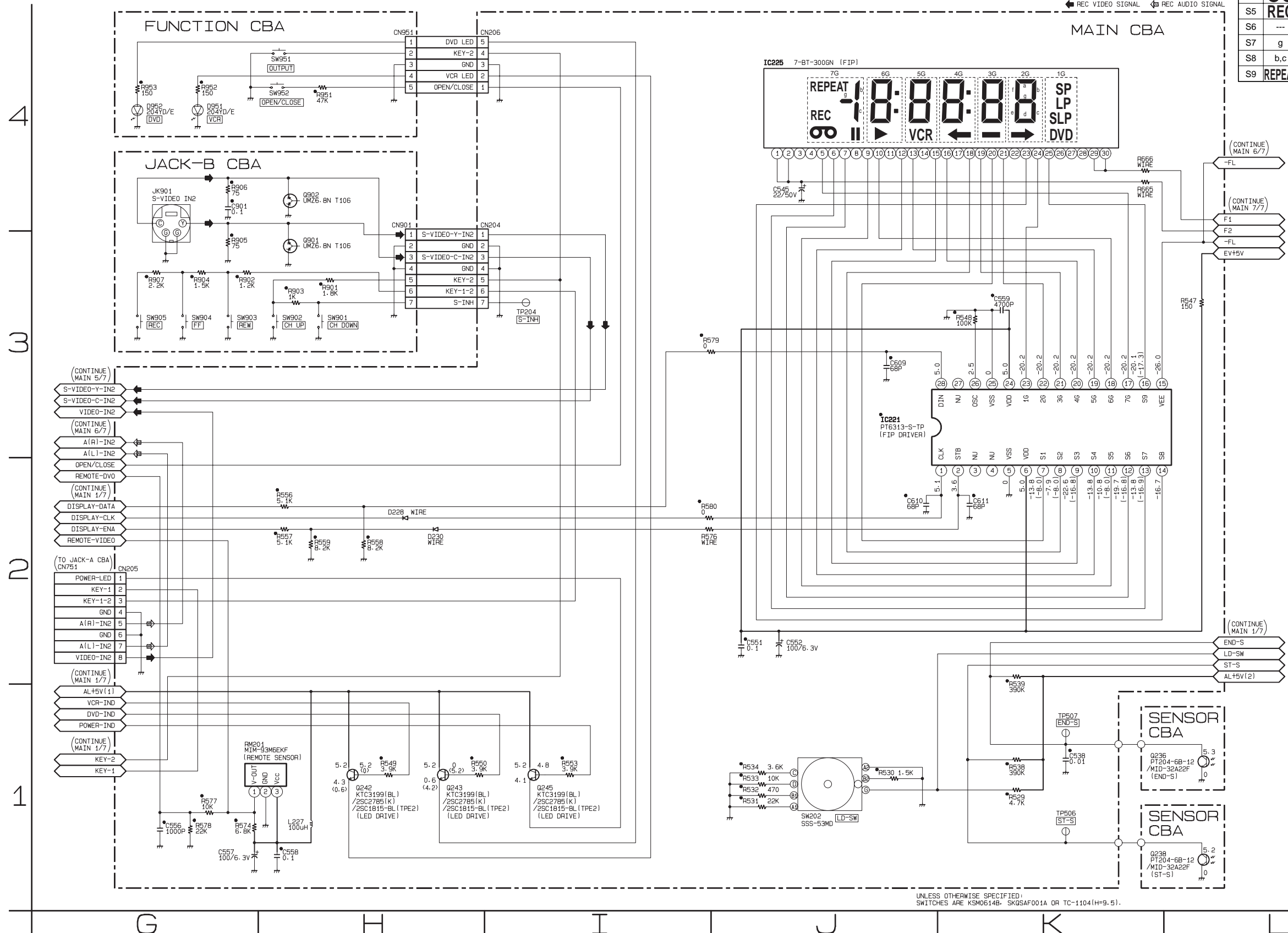
• = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:



IC225 MATRIX CHART

	7G	6G	5G	4G	3G	2G	1G
S1	---	a	a	a	a	a	---
S2	■	b	b	b	b	b	SP
S3	---	f	f	f	f	f	LP
S4	∞	g	g	g	g	g	---
S5	REC	c	c	c	c	c	SLP
S6	---	e	e	e	e	e	---
S7	g	d	d	d	d	d	---
S8	b,c	---	---	---	---	---	---
S9	REPEAT	▶	VCR	◀	▶	▶	DVD



MAIN 2/7 Schematic Diagram Parts Location Guide

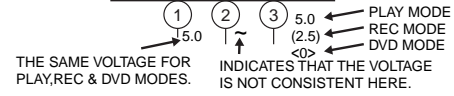
Ref No.	Position
CAPACITORS	
C538	K-1
C545	J-4
C551	J-2
C552	J-2
C556	G-1
C557	G-1
C558	H-1
C559	K-3
C609	J-3
C610	J-2
C611	K-2
CONNECTORS	
CN204	I-4
CN205	G-2
DIODES	
D228	H-2
D230	H-2
ICS	
IC221	J-3
IC225	J-4
COILS	
L227	H-1
TRANSISTORS	
Q242	H-1
Q243	H-1
Q245	I-1
RESISTORS	
R529	K-1
R530	J-1
R531	J-1
R532	J-1
R533	J-1
R534	J-1
R538	K-1
R539	K-2
R547	L-3
R548	K-3
R549	H-1
R550	H-1
R553	I-1
R556	H-2
R557	H-2
R558	H-2
R559	H-2
SWITCHES	
SW202	J-1
MISCELLANEOUS	
RM201	H-1
TEST POINTS	
TP204	I-3
TP506	K-1
TP507	K-1

UNLESS OTHERWISE SPECIFIED, SWITCHES ARE KSM0614B, SKQSAF001A OR TC-1104(H=9.5).

# Main 3/7 Schematic Diagram < VCR Section >

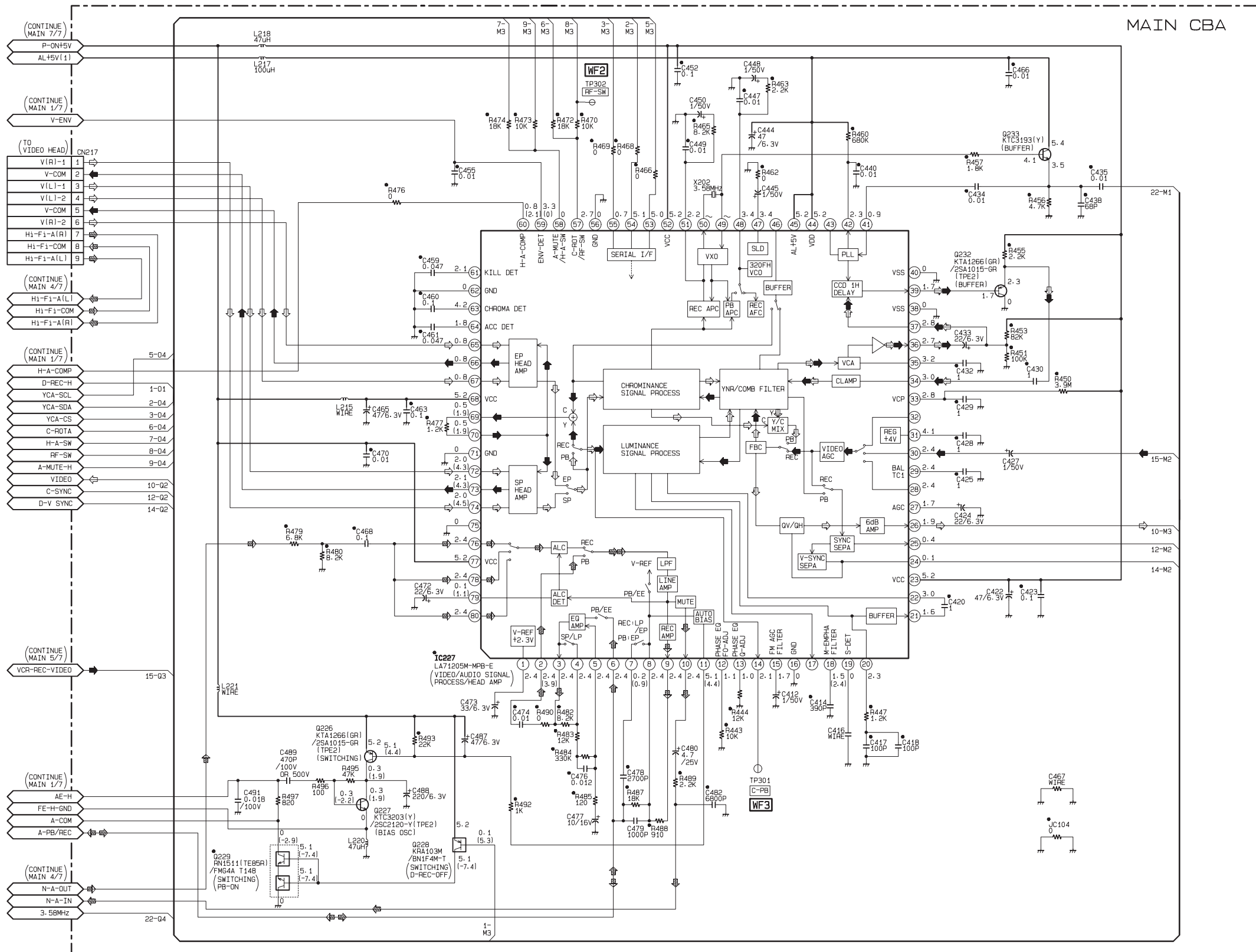
Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:

● = SMD



REC VIDEO SIGNAL (ANALOG) PB VIDEO SIGNAL (ANALOG) REC AUDIO SIGNAL (ANALOG) PB AUDIO SIGNAL (ANALOG)

MAIN CBA

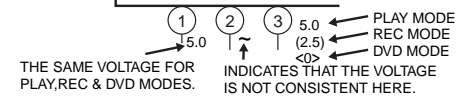


MAIN 3/7 Schematic Diagram Parts Location Guide

Ref No.	Position	Ref No.	Position
CAPACITORS		COILS	
C412	P-2	L220	N-1
C414	P-2	L221	N-2
C416	P-1	TRANSISTORS	
C417	P-1	Q226	N-1
C418	P-1	Q227	N-1
C420	Q-2	Q228	N-1
C422	Q-2	Q229	N-1
C423	Q-2	Q232	Q-3
C424	Q-2	Q233	Q-4
C425	Q-3	RESISTORS	
C427	Q-3	JC104	Q-1
C428	Q-3	R443	P-1
C429	Q-3	R444	P-2
C430	Q-3	R447	P-2
C432	Q-3	R450	Q-3
C433	Q-3	R451	Q-3
C434	Q-4	R453	Q-3
C435	Q-4	R455	Q-3
C438	Q-4	R456	Q-4
C440	P-4	R457	Q-4
C444	P-4	R460	P-4
C445	P-4	R462	P-4
C447	P-4	R463	P-4
C448	P-4	R465	P-4
C449	O-4	R466	O-4
C450	P-4	R468	O-4
C452	O-4	R469	O-4
C455	O-4	R470	O-4
C459	N-3	R472	O-4
C460	N-3	R473	O-4
C461	N-3	R474	O-4
C463	N-3	R476	N-4
C465	N-3	R477	N-3
C466	Q-3	R479	N-2
C467	Q-1	R480	N-2
C468	N-2	R482	O-2
C470	N-3	R483	O-1
C472	N-2	R484	O-1
C473	O-2	R485	O-1
C474	O-2	R487	O-1
C476	O-1	R488	O-1
C477	O-1	R489	O-1
C478	O-1	R490	O-2
C479	O-1	R492	O-1
C480	O-1	R493	N-1
C482	P-1	R495	N-1
C487	O-1	R496	N-1
C488	N-1	R497	N-1
C489	N-1	R665	K-4
C491	N-1	R666	K-4
ICS		CRYSTAL OSCILLATOR	
IC227	O-2	X202	P-4
COILS		TEST POINT	
L215	N-3	TP301	P-1
L217	N-4	TP302	O-4
L218	N-4		

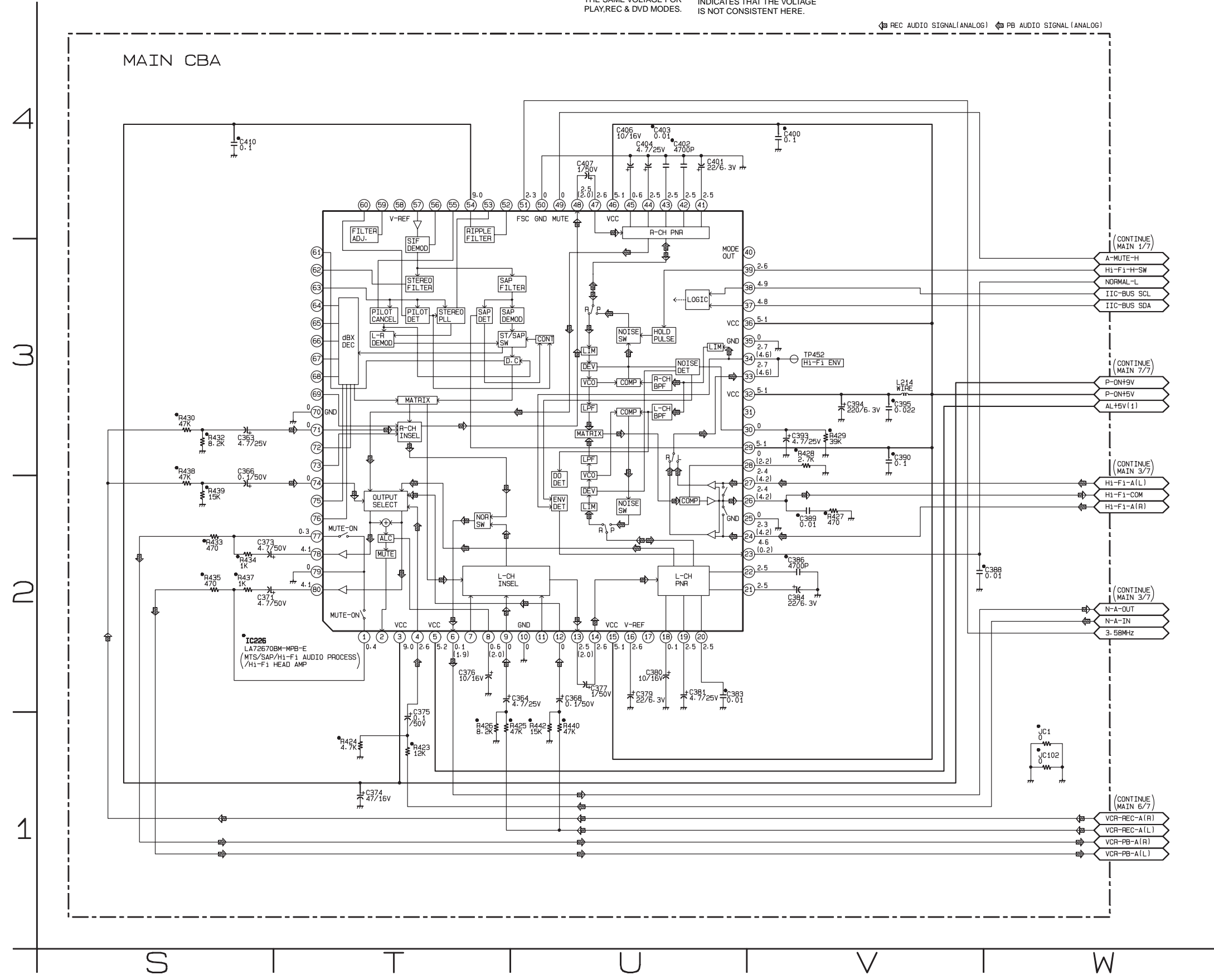
# Main 4/7 Schematic Diagram < VCR Section >

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:



• = SMD

REC AUDIO SIGNAL (ANALOG) PB AUDIO SIGNAL (ANALOG)



## Main 4/7 Schematic Diagram Parts Location Guide < VCR Section >

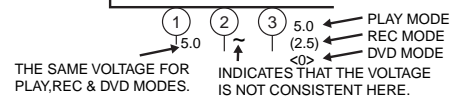
Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS	
C363	S-3	C407	U-4
C364	U-2	C410	S-4
C366	S-2	ICS	
C368	U-2	IC226	S-2
C371	S-2	COILS	
C373	S-2	L214	V-2
C374	T-1	RESISTORS	
C375	T-1	JC1	W-1
C376	T-2	JC102	W-1
C377	U-2	R423	T-1
C379	U-2	R424	T-1
C380	U-2	R425	U-1
C381	U-2	R426	T-1
C383	U-2	R427	V-2
C384	V-2	R428	V-2
C386	V-2	R429	V-2
C388	W-2	R430	S-3
C389	V-2	R432	S-3
C390	V-3	R433	S-2
C393	V-3	R434	S-2
C394	V-3	R435	S-2
C395	V-3	R437	S-2
C400	V-4	R438	S-2
C401	U-4	R439	S-2
C402	U-4	R440	U-1
C403	U-4	R442	U-1
C404	U-4	TEST POINT	
C406	U-4	TP452	V-3

## Main 5/7 Schematic Diagram Parts Location Guide < VCR Section >

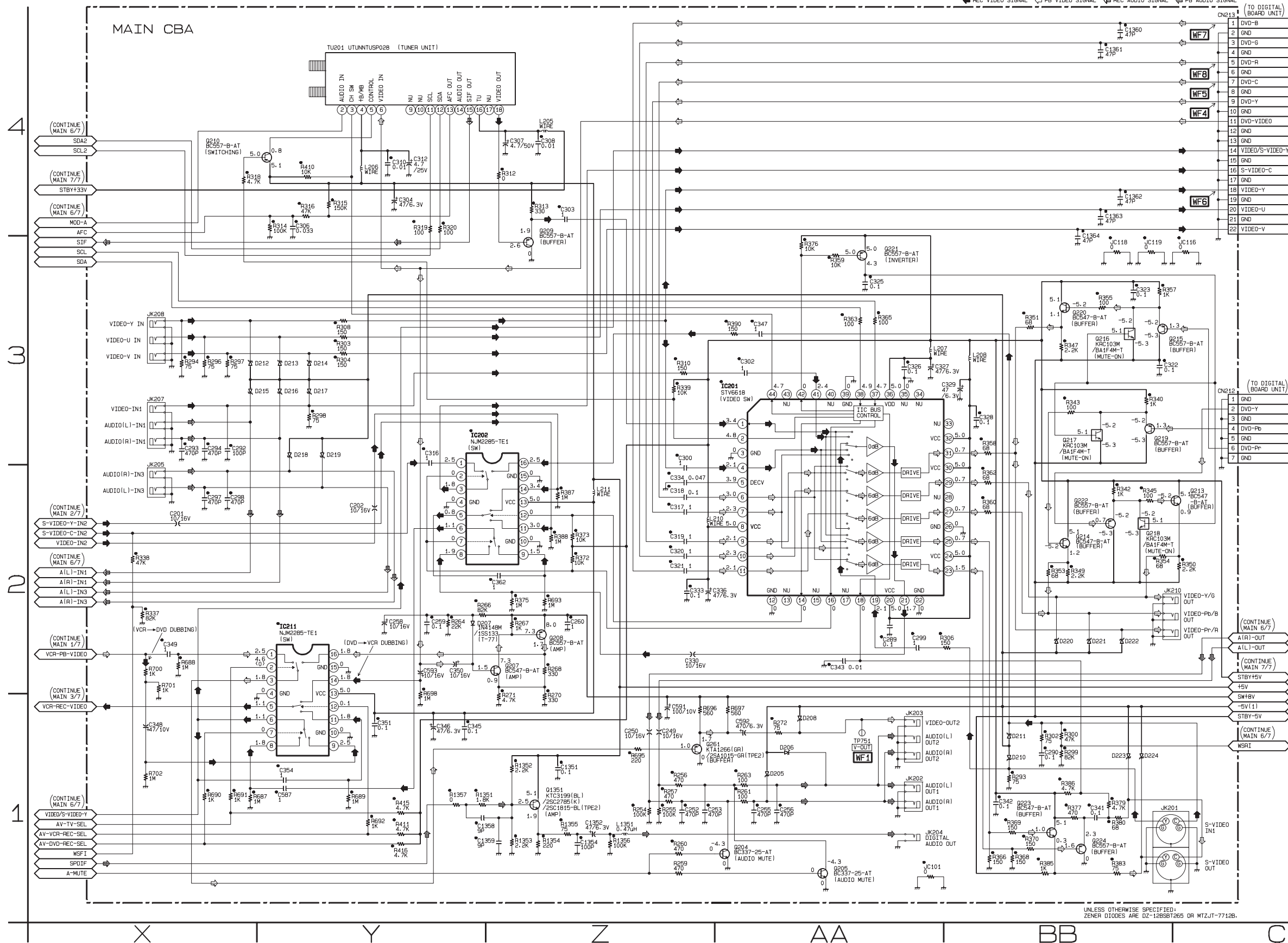
Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS		COILS		RESISTORS		RESISTORS	
C201	X-2	C345	Y-1	L206	Y-4	R294	X-3	R376	AA-3
C202	Y-2	C346	Y-1	L207	AA-3	R296	X-3	R377	BB-1
C249	Z-1	C347	AA-3	L208	BB-3	R297	X-3	R379	BB-1
C250	Z-1	C348	X-1	L210	Z-2	R298	Y-3	R380	BB-1
C252	Z-1	C349	X-2	L211	Z-2	R299	BB-1	R383	BB-1
C253	Z-3	C350	Y-2	L1351	Z-1	R300	BB-1	R385	BB-1
C255	AA-1	C351	Y-1	TRANSISTORS		R302	BB-1	R386	BB-1
C256	AA-1	C354	Y-1	Q204	AA-1	R303	Y-3	R387	Z-2
C258	Y-2	C587	Y-1	Q205	AA-1	R304	Y-3	R388	Z-2
C259	Y-2	C591	Z-1	Q207	Z-2	R306	BB-2	R390	AA-3
C260	Z-2	C592	AA-1	Q208	Z-2	R308	Y-3	R410	Y-4
C289	AA-2	C593	Y-2	Q209	Z-3	R310	Z-3	R411	Y-1
C290	BB-1	C1351	Z-1	Q210	Y-4	R312	Z-4	R415	Y-1
C292	X-3	C1352	Z-1	Q213	CC-2	R313	Z-4	R416	Y-1
C293	X-3	C1354	Z-1	Q214	BB-2	R314	Y-4	R687	X-1
C294	X-3	C1358	Y-1	Q215	BB-3	R315	Y-4	R688	X-2
C297	X-2	C1359	Z-1	Q216	BB-3	R316	Y-4	R689	Y-1
C298	X-2	C1360	BB-4	Q217	BB-3	R318	X-4	R690	X-1
C299	AA-2	C1361	BB-4	Q218	BB-2	R319	Y-4	R691	X-1
C300	Z-2	C1362	BB-4	Q219	BB-3	R320	Y-4	R692	Y-1
C302	AA-3	C1363	BB-4	Q220	BB-3	R337	X-2	R693	Z-2
C303	Z-4	C1364	BB-4	Q221	AA-3	R338	X-2	R695	Z-1
C304	Y-4	DIODES		Q222	BB-2	R339	Z-3	R696	Z-1
C306	Y-4	D205	AA-1	Q223	BB-1	R340	BB-3	R697	AA-1
C307	Z-4	D206	AA-1	Q224	BB-1	R342	BB-2	R698	Y-1
C308	Z-4	D207	Y-2	Q261	Z-1	R343	BB-3	R700	X-2
C310	Y-4	D208	AA-1	Q1351	Z-1	R345	BB-2	R701	X-2
C312	Y-4	D210	BB-1	RESISTORS		R347	BB-3	R702	X-1
C316	Y-3	D211	BB-1	JC101	AA-1	R349	BB-2	R1351	Y-1
C317	Z-2	D212	X-3	JC116	CC-3	R350	CC-2	R1352	Z-1
C318	Z-2	D213	Y-3	JC118	BB-3	R351	BB-3	R1353	Z-1
C319	Z-2	D214	Y-3	JC119	BB-3	R353	BB-2	R1354	Z-1
C320	Z-2	D215	X-3	R254	Z-1	R354	BB-2	R1355	Z-1
C321	Z-2	D216	Y-3	R255	Z-1	R355	BB-3	R1356	Z-1
C322	BB-3	D217	Y-3	R256	Z-1	R357	BB-3	R1357	Y-1
C323	BB-3	D218	Y-3	R257	Z-1	R358	BB-3	MISCELLANEOUS	
C325	AA-3	D219	Y-3	R259	Z-1	R359	AA-3	JK201	BB-1
C326	AA-3	D220	BB-2	R260	Z-1	R360	BB-2	JK202	AA-1
C327	AA-3	D221	BB-2	R261	AA-1	R362	BB-2	JK203	AA-1
C328	BB-3	D222	BB-2	R263	AA-1	R363	AA-3	JK204	AA-1
C329	BB-3	D223	BB-1	R264	Y-2	R365	AA-3	JK205	AA-2
C330	Z-2	D224	BB-1	R266	Y-2	R366	BB-1	JK207	AA-3
C333	Z-2	ICS		R267	Z-2	R368	BB-1	JK208	AA-3
C334	Z-2	IC201	AA-2	R268	Z-2	R369	BB-1	JK210	BB-2
C336	Z-2	IC202	Z-2	R270	Z-1	R370	BB-1	TU201	Y-4
C341	BB-1	IC211	Y-1	R271	Z-1	R372	Z-2	TEST POINT	
C342	BB-1	COILS		R272	AA-1	R373	Z-2	TP751	AA-1
C343	AA-2	L205	Z-4	R293	BB-1	R375	Z-2		

# Main 5/7 Schematic Diagram < VCR Section >

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:



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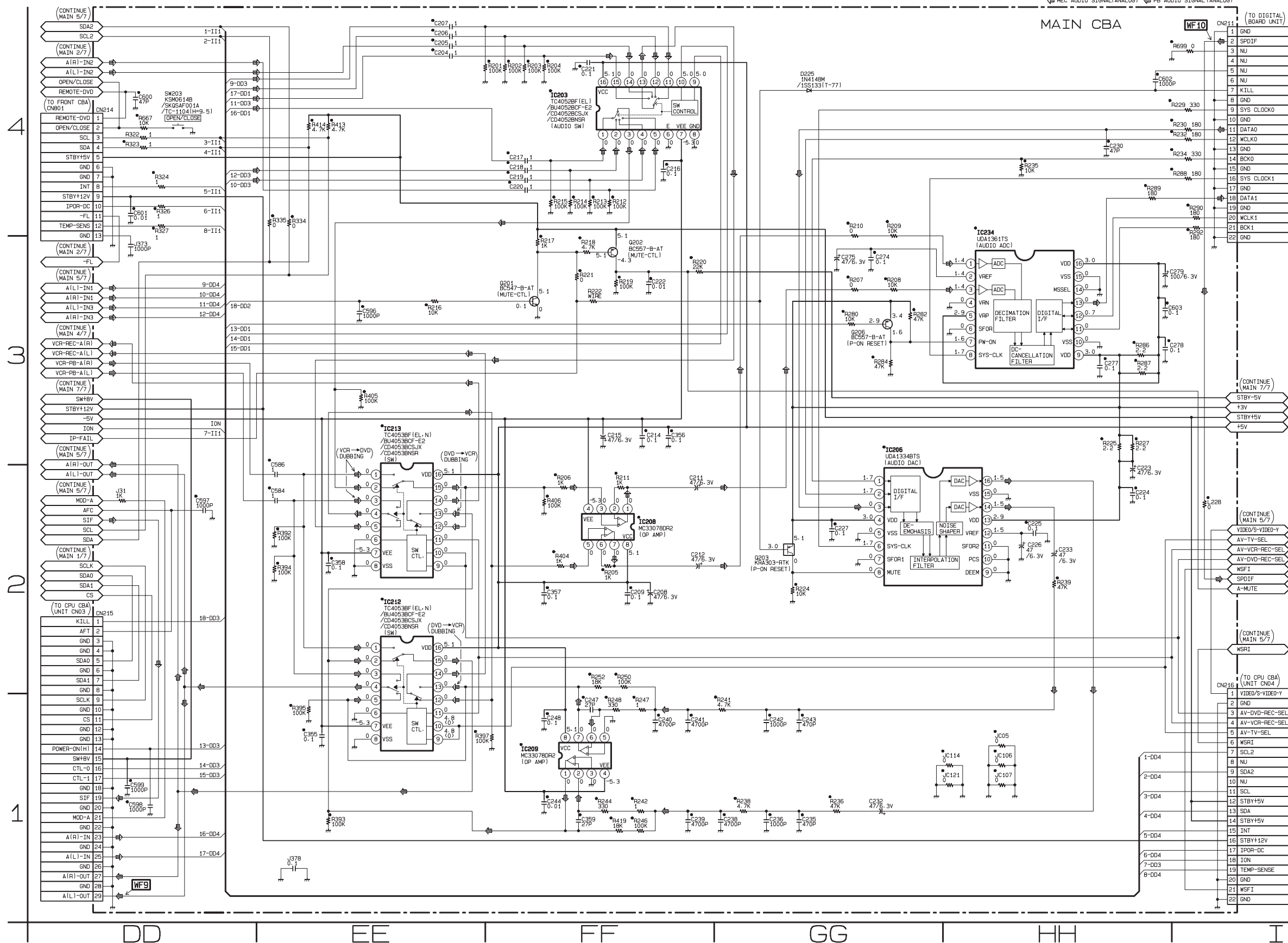
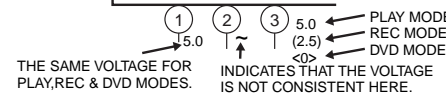




# Main 6/7 Schematic Diagram < VCR Section >

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:

"•" = SMD



## Main 6/7 Schematic Diagram Parts Location Guide < VCR Section >

Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS		RESISTORS		RESISTORS	
C204	EE-4	C355	EE-1	J31	DD-2	R244	FF-1
C205	EE-4	C356	FF-3	JC05	HH-1	R246	FF-1
C206	EE-4	C357	FF-2	JC106	HH-1	R247	FF-1
C207	EE-4	C358	EE-1	JC107	HH-1	R248	FF-1
C208	FF-2	C359	FF-1	JC114	HH-1	R250	FF-2
C209	FF-2	C584	EE-2	JC121	HH-1	R252	FF-2
C211	FF-2	C586	EE-2	R201	FF-4	R280	GG-3
C212	FF-2	C596	EE-3	R202	FF-4	R282	GG-3
C214	FF-3	C597	DD-2	R203	FF-4	R284	GG-3
C215	FF-3	C598	DD-1	R204	FF-4	R286	HH-3
C216	FF-4	C599	DD-1	R205	FF-2	R287	HH-3
C217	FF-4	C600	DD-4	R206	FF-2	R288	II-4
C218	FF-4	C601	DD-4	R207	GG-3	R289	HH-4
C219	FF-4	C602	HH-4	R208	GG-3	R290	II-4
C220	FF-4	C603	HH-3	R209	GG-4	R292	II-4
C221	FF-4	J373	DD-3	R210	GG-4	R322	DD-4
C222	FF-3	J378	EE-1	R211	FF-2	R323	DD-4
C223	HH-2	CONNECTORS		R212	FF-4	R324	DD-4
C224	HH-2	CN211	II-4	R213	FF-4	R326	DD-4
C225	HH-2	CN212	CC-3	R214	FF-4	R327	DD-4
C226	HH-2	CN213	CC-4	R215	FF-4	R334	EE-4
C227	GG-2	CN214	DD-4	R216	EE-3	R335	EE-4
C230	HH-4	CN215	DD-1	R217	FF-3	R392	EE-2
C232	GG-1	CN216	II-1	R218	FF-3	R393	EE-1
C233	HH-2	DIODE		R219	FF-3	R394	EE-2
C235	GG-1	D225	GG-4	R220	FF-3	R395	EE-1
C236	GG-1	ICS		R221	FF-3	R397	FF-1
C238	GG-1	IC203	FF-4	R222	FF-3	R404	FF-2
C239	FF-1	IC206	GG-2	R224	GG-2	R405	EE-3
C240	FF-1	IC208	FF-2	R225	HH-3	R406	FF-2
C241	FF-1	IC209	FF-1	R227	HH-3	R413	EE-4
C242	GG-1	IC212	EE-2	R229	II-4	R414	EE-4
C243	GG-1	IC213	EE-2	R230	II-4	R419	FF-1
C244	FF-1	IC234	HH-3	R232	II-4	R667	DD-4
C247	FF-1	COILS		R234	II-4	R699	II-4
C248	FF-1	L228	II-2	R235	HH-4	SWITCHES	
C274	GG-3	TRANSISTORS		R236	GG-1	SW203	DD-4
C275	GG-3	Q201	FF-3	R238	GG-1		
C277	HH-3	Q202	FF-3	R239	HH-2		
C278	HH-3	Q203	GG-2	R241	GG-1		
C279	HH-3	Q206	GG-3	R242	FF-1		

## Main 7/7 Schematic Diagram Parts Location Guide < VCR Section >

Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		ICS		RESISTORS	
C554	NN-3	IC230	MM-1	R607	KK-3
C561	NN-1	IC231	KK-3	R608	KK-3
C563	MM-3	IC232	LL-3	R609	LL-1
C565	MM-4	IC233	LL-2	R611	LL-1
C567	LL-2	TRANSISTORS		R612	LL-1
C570	KK-2	Q246	KK-2	R613	KK-1
C571	LL-2	Q247	NN-2	R614	LL-1
C573	LL-1	Q248	LL-1	R615	LL-2
C574	MM-1	Q250	LL-1	R616	LL-3
C575	LL-2	Q251	MM-4	R617	LL-3
C577	LL-3	Q252	LL-3	R618	LL-3
C578	LL-3	Q253	NN-4	R619	MM-3
C579	LL-3	Q255	NN-2	R620	LL-3
C582	KK-4	Q256	NN-4	R622	NN-2
C583	MM-2	Q257	NN-3	R623	NN-2
C589	KK-2	Q258	LL-2	R624	NN-2
C594	NN-1	Q260	LL-4	R625	KK-4
C595	NN-1	RESISTORS		R626	KK-4
C605	MM-3	JC117	JJ-2	R627	MM-2
C606	NN-3	R583	MM-4	R628	MM-2
C607	JJ-4	R584	NN-4	R629	MM-4
C608	JJ-1	R586	LL-2	R630	NN-4
CONNECTORS		R588	NN-4	R660	NN-3
CN207	OO-2	R590	NN-1	R662	NN-4
CN208	OO-3	R591	KK-2	R663	NN-4
CN209	JJ-3	R593	MM-3	R664	JJ-1
CN210	JJ-2	R594	LL-2	R668	JJ-1
DIODES		R595	MM-3	R669	JJ-1
D233	KK-1	R596	LL-2	R671	JJ-2
D237	NN-4	R597	LL-2	R672	JJ-2
D238	LL-1	R598	LL-2	R673	KK-2
D239	MM-2	R599	KK-3	MISCELLANEOUS	
D242	KK-2	R600	NN-3	F201	KK-1
D243	NN-4	R601	NN-2	F202	JJ-1
D247	NN-4	R602	MM-4	F203	KK-2
D248	NN-4	R603	MM-4	F204	JJ-3
D250	NN-3	R604	MM-4	F205	MM-3
ICS		R605	LL-4	F206	LL-4
IC229	KK-3	R606	KK-3		

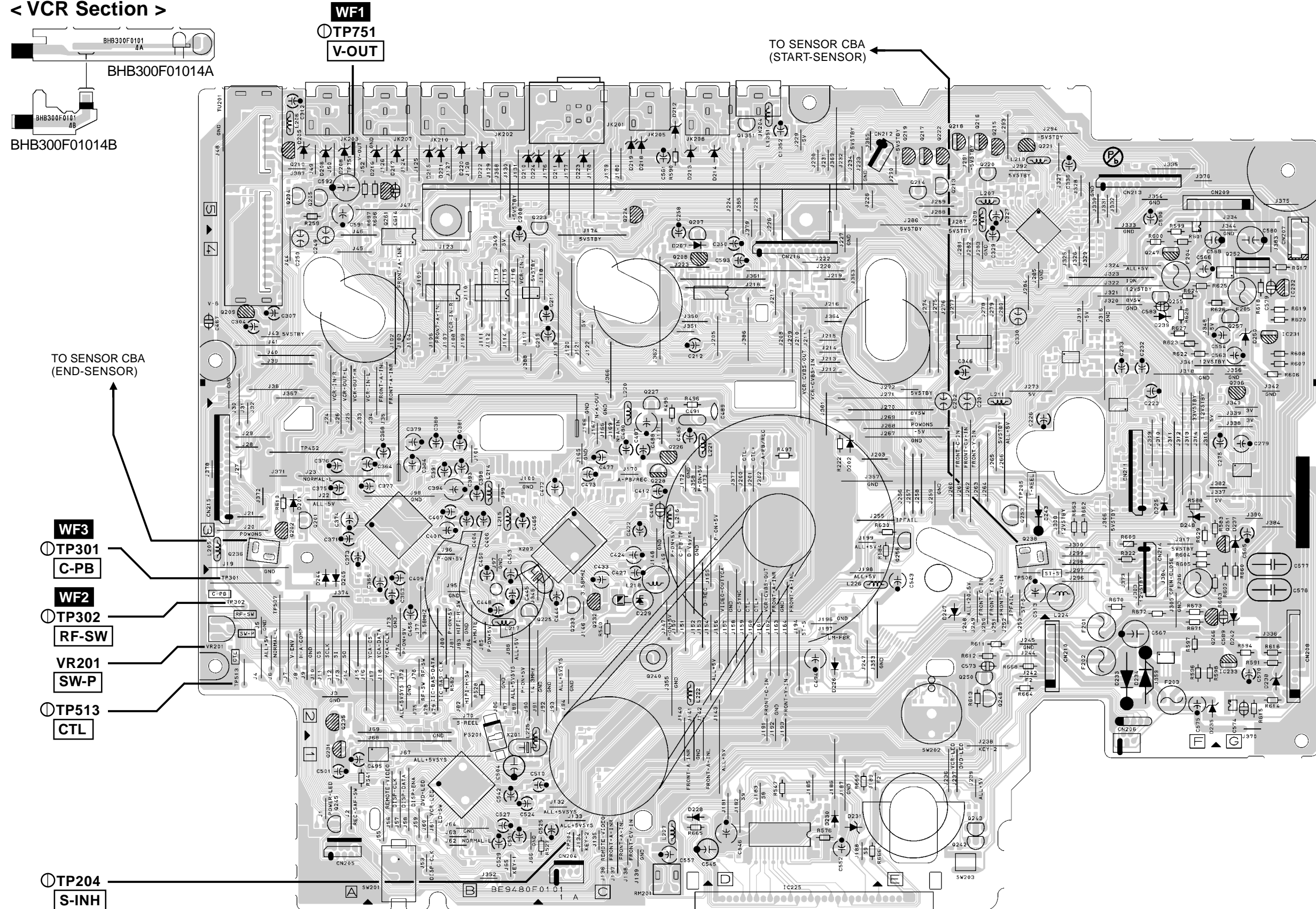


### Main CBA Parts Location Guide < VCR Section >

Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS		CAPACITORS		CAPACITORS		DIODES		TRANSISTORS		RESISTORS		RESISTORS		RESISTORS		RESISTORS		RESISTORS	
C201	E-3	C319	F-5	C429	C-2	C561	C-5	D214	D-5	Q205	A-5	R213	A-4	R319	A-5	R434	A-2	R542	A-2	R666	D-1
C202	E-3	C320	F-5	C430	C-2	C563	F-4	D215	B-5	Q206	G-4	R214	B-5	R320	A-5	R435	A-3	R543	B-2	R667	E-1
C204	B-4	C321	F-5	C432	C-2	C565	G-3	D216	B-5	Q207	C-5	R215	B-4	R322	F-3	R437	A-3	R544	B-2	R668	E-2
C205	B-4	C322	F-5	C433	C-3	C567	F-2	D217	B-5	Q208	C-4	R216	A-3	R323	F-3	R438	A-2	R547	D-1	R669	D-1
C206	B-4	C323	E-5	C434	C-2	C570	G-2	D218	C-5	Q209	A-4	R217	A-3	R324	F-3	R439	B-2	R548	D-1	R671	F-2
C207	B-5	C325	E-5	C435	B-2	C571	F-2	D219	C-5	Q210	A-5	R218	A-3	R326	F-3	R440	B-3	R549	E-1	R672	F-2
C208	B-5	C326	E-5	C438	C-2	C573	E-2	D220	B-5	Q213	E-5	R219	A-5	R327	F-2	R442	B-3	R550	E-1	R673	F-2
C209	B-5	C327	E-5	C440	C-2	C574	G-2	D221	B-5	Q214	E-5	R220	A-5	R334	D-5	R443	C-3	R553	A-1	R675	C-1
C211	C4	C328	E-4	C444	C-2	C575	F-2	D222	B-5	Q215	E-5	R221	A-3	R335	D-5	R444	C-3	R556	B-1	R687	D-4
C212	C-4	C329	E-4	C445	B-2	C577	G-3	D223	C-5	Q216	E-5	R222	D-3	R337	E-4	R447	D-3	R557	B-1	R688	D-4
C214	B-4	C330	E-4	C447	B-2	C578	G-2	D224	B-5	Q217	E-5	R224	F-3	R338	E-4	R450	C-2	R558	D-1	R689	C-4
C215	C-4	C333	F-5	C448	B-2	C579	G-4	D225	F-3	Q218	E-5	R225	F-4	R339	D-5	R451	C-2	R559	D-1	R690	C-4
C216	A-4	C334	F-5	C449	B-3	C582	G-4	D226	D-2	Q219	E-5	R227	F-4	R340	E-5	R453	C-2	R561	B-1	R691	D-4
C217	B-4	C336	F-5	C450	B-3	C583	F-4	D228	C-1	Q220	E-5	R229	F-3	R342	E-5	R455	C-2	R565	C-2	R692	D-5
C218	B-5	C341	C-5	C452	B-3	C584	A-4	D229	C-2	Q221	E-5	R230	F-3	R343	E-5	R456	C-2	R567	B-2	R693	E-4
C219	A-5	C342	C-4	C455	B-3	C586	B-4	D230	D-1	Q222	E-5	R232	F-3	R345	E-5	R457	C-2	R569	B-1	R695	B-5
C220	B-4	C343	C-5	C459	B-3	C587	D-4	D233	F-2	Q223	B-5	R234	F-3	R347	E-5	R460	C-2	R571	B-2	R696	B-5
C221	B-5	C345	E-4	C460	B-3	C589	G-2	D237	G-3	Q224	C-5	R235	F-3	R349	E-5	R462	B-2	R572	B-2	R697	B-5
C222	A-4	C346	E-4	C461	B-3	C591	A-5	D238	G-2	Q226	C-3	R236	F-4	R350	E-5	R463	B-2	R574	C-1	R698	D-4
C223	F-3	C347	C-5	C463	B-3	C592	A-5	D239	F-4	Q227	C-4	R238	F-4	R351	E-5	R465	B-2	R576	D-1	R699	F-3
C224	F-4	C349	D-4	C465	B-3	C593	D-4	D242	G-2	Q228	C-3	R239	F-4	R353	E-5	R466	B-2	R577	C-1	R1351	D-5
C225	E-3	C350	D-4	C466	C-2	C594	G-2	D243	F-3	Q229	D-3	R241	F-4	R354	E-5	R468	B-2	R578	C-1	R1352	D-5
C226	E-3	C351	D-4	C467	A-4	C595	G-2	D247	E-2	Q231	A-1	R242	E-4	R355	E-5	R469	B-3	R579	D-1	R1353	D-5
C227	F-2	C354	C-4	C468	C-3	C596	A-3	D248	F-3	Q232	C-2	R244	E-4	R357	E-5	R470	A-2	R580	D-1	R1354	D-5
C230	F-3	C355	B-4	C470	C-3	C597	A-3	D250	G-4	Q233	C-2	R246	E-4	R358	E-4	R472	B-1	R582	B-2	R1355	D-5
C232	F-4	C356	B-4	C472	C-3	C598	A-3	ICs		Q235	A-2	R247	E-4	R359	E-5	R473	B-2	R583	G-3	R1356	D-5
C233	F-4	C357	B-4	C473	C-3	C599	A-3	IC201	F-4	Q240	C-2	R248	E-4	R360	E-4	R474	B-2	R584	E-3	R1357	F-3
C235	F-4	C358	B-4	C474	C-4	C600	F-3	IC202	E-4	Q242	E-1	R250	E-4	R362	E-4	R476	B-3	R586	F-2	SWITCHES	
C236	F-4	C359	F-4	C476	C-4	C601	F-2	IC203	B-4	Q243	E-1	R252	E-4	R363	E-5	R477	C-3	R588	F-3	SW201	A-1
C238	F-4	C362	E-4	C477	C-3	C602	F-3	IC206	F-3	Q245	A-1	R254	A-4	R365	E-5	R479	C-3	R590	C-5	SW202	E-1
C239	F-4	C363	B-2	C478	C-4	C603	G-3	IC208	C-4	Q246	F-2	R255	A-4	R366	E-4	R480	C-3	R591	G-2	SW203	E-1
C240	E-4	C364	B-3	C479	C-4	C605	F-4	IC209	E-4	Q247	F-4	R256	A-5	R368	E-4	R482	C-3	R593	G-4	VARIABLE RESISTOR	
C241	E-4	C366	B-2	C480	C-3	C606	F-4	IC211	C-4	Q248	E-2	R257	A-5	R369	C-5	R483	C-4	R594	G-2	VR201	A-2
C242	F-4	C368	B-3	C482	C-4	C607	F-4	IC212	B-4	Q250	E-2	R259	A-5	R370	C-5	R484	C-4	R595	G-4	CRYSTAL OSCILLATORS	
C243	F-4	C371	A-3	C487	C-3	C609	D-1	IC213	B-4	Q251	G-3	R260	A-5	R372	F-4	R485	C-4	R596	F-2	X201	B-2
C244	F-4	C373	A-3	C488	C-3	C610	D-1	IC218	B-1	Q252	G-4	R261	A-5	R373	F-4	R487	C-4	R597	F-2	X202	B-3
C247	F-4	C374	A-3	C489	D-3	C611	D-1	IC221	D-1	Q253	E-3	R263	A-5	R375	E-4	R488	C-3	R598	F-2	MISCELLANEOUS	
C248	E-4	C375	A-3	C491	C-3	C612	A-2	IC225	D-1	Q255	F-4	R264	C-4	R376	E-5	R489	C-3	R599	F-4	F201	F-2
C249	A-4	C376	A-3	C494	D-2	C1351	D-5	IC226	A-3	Q256	E-3	R266	C-4	R377	C-5	R490	C-4	R600	F-4	F202	F-2
C250	A-4	C377	B-3	C498	A-2	C1352	D-5	IC227	C-3	Q257	G-4	R267	C-4	R379	C-5	R492	C-3	R601	F-4	F203	F-2
C252	A-5	C379	B-3	C500	A-1	C1354	D-5	IC228	B-1	Q258	F-2	R268	D-5	R380	C-5	R493	C-3	R602	G-2	F204	F-4
C253	A-5	C380	B-3	C501	A-1	C1358	D-5	IC229	F-5	Q260	G-4	R270	D-5	R383	C-5	R495	C-3	R603	G-2	F205	G-4
C255	A-5	C381	B-3	C502	B-1	C1359	D-5	IC230	G-2	Q261	B-5	R271	D-5	R385	B-5	R496	C-3	R604	F-3	F206	F-2
C256	A-5	C383	B-3	C504	B-1	C1360	F-5	IC231	G-4	Q1351	D-5	R272	A-5	R386	C-5	R497	D-3	R605	F-3	JK201	C-5
C258	C-5	C384	B-3	C506	C-1	C1361	F-4	IC232	G-4	RESISTORS		R280	F-4	R387	E-4	R499	B-1	R606	G-4	JK202	B-5
C259	C-4	C386	B-3	C508	C-1	C1362	F-5	IC233	G-2	J31	A-3	R282	G-4	R388	E-3	R500	A-1	R607	G-4	JK203	A-5
C260	C-4	C388	B-3	C510	B-1	C1363	F-5	IC234	G-3	JC1	A-2	R284	G-4	R390	C-4	R502	A-2	R608	G-4	JK204	D-5
C274	F-3	C389	B-3	C512	C-1	C1364	F-5	COILS		JC05	A-3	R286	G-3	R392	B-4	R505	A-2	R609	F-3	JK205	C-5
C275	G-3	C390	B-3	C513	E-2	J373	F-3	L205	A-3	JC101	D-5	R287	G-3	R393	C-4	R512	C-1	R611	E-2	JK207	B-5
C277	G-3	C393	B-3	C515	D-2	J378	A-3	L206	A-5	JC102	B-3	R288	F-3	R394	B-4	R513	C-1	R612	E-2	JK208	C-5
C278	G-3	C394	B-3	C516	B-1	CONNECTORS		L207	E-5	JC103	B-1	R289	F-3	R395	B-4	R514	D-2	R613	G-2	JK210	B-5
C279	G-3	C395	B-3	C518	C-2	CN204	C-1	L208	E-5	JC104	B-2	R290	F-3	R397	B-4	R517	D-2	R614	G-2	RM201	C-1
C289	F-4	C400	B-3	C520	D-2	CN205	A-1	RESISTORS		JC106	A-3	R292	F-3	R404	B-4	R518	D-2	R615	G-2	TU201	A-5
C290	C-5	C401	B-3	C523	B-1	CN207	G-4	L210	E-5	JC107	E-3	R293	B-5	R405	B-4	R521	B-1	R616	G-4	TEST POINTS	
C292	B-5	C402	B-3	C524	B-1	CN208	G-2	L211	E-4	JC114	F-4	R294	C-5	R406	B-4	R522	B-1	R617	G-4	TP204	C-1
C293	B-5	C403	B-3	C525	C-1	CN209	F-5	L214	B-3	JC116	F-5	R296	C-5	R410	A-5	R523	B-1	R618	G-4	TP205	E-3
C294	B-5	C404	B-3	C527	B-1	CN210	F-2	L215	B-3	JC117	G-5	R297	D-5	R411	C-4	R524	C-1	R619	G-4	TP301	A-2
C297	C-5	C406	B-3	C529	B-1	CN211	F-3	L217	B-2	JC118	F-5	R298	B-5	R413	E-5	R525	A-1	R620	F-4	TP302	A-2
C298	C-5	C407	B-3	C530	B-1	CN212	D-5	L218	C-2	JC119	F-5	R299	C-4	R414	E-5	R526	B-1	R622	F-4	TP452	A-3
C299	F-4	C410	B-2	C531	B-1	CN213	F-4	L220	C-4	JC121	A-4	R300	C-5	R415	D-5	R527	C-1	R623	F-4	TP506	E-2
C300	F-5	C412	C-3	C533	B-1	CN214	F-3	L221	D-3	R201	B-5	R302	C-5	R416	D-5	R528	B-2	R624	F-4	TP507	A-2
C302	E-5	C414	C-3	C535	A-2	CN215	A-3	L222	C-2	R202	B-4	R303	C-5	R419	E-4	R529	C-1	R625	F-4	TP513	A-2
C303	A-4	C416	C-3	C538	A-2	CN216	D-4	L224	F-2	R203	B-4	R304	D-5	R423	A-3	R530	E-2	R626	F-4	TP751	A-5
C304	A-4	C417	D-3	C543	E-2	DIODES		L226	D-2	R204	B-5	R306	B-5	R424	A-3	R531	E-2	R627	F-4		
C306	A-5	C418	D-3	C545	C-1	D205	A-5	L227	C-1	R205	B-4	R308	C-5	R425	A-3	R532	E-2	R628	F-4		
C307	A-4	C420	C-3	C551	D-1	D206	A-5	L228	F-3	R206	B-4	R310	B-5	R426	A-3	R533	E-2	R629	F-3		
C308	A-4	C422	C-3	C552	D-1	D207	C-4	L1351	D-5	R207	F-3	R312	A-4	R427	B-3	R534	E-2	R630	E-3		
C310	A-5	C423	C-3	C554	F-4	D208	A-5	TRANSISTORS		R208	G-4	R313	A-4	R428	B-3	R535	E-3	R660	G-2		
C312	A-5	C424	C-3	C556	C-1	D210	B-5	Q201	A-3	R209	F-3	R314	A-5	R429	B-3	R538	D-2	R662	F-3		
C316	E-4	C425	C-3	C557	C-1	D211	C-5	Q202	A-3	R210	F-3	R315	A-4	R430	A-2	R539	A-2	R663	F-3		

# Main CBA Top View < VCR Section >

## Sensor CBA Top View < VCR Section >



Main CBA Bottom View < VCR Section >

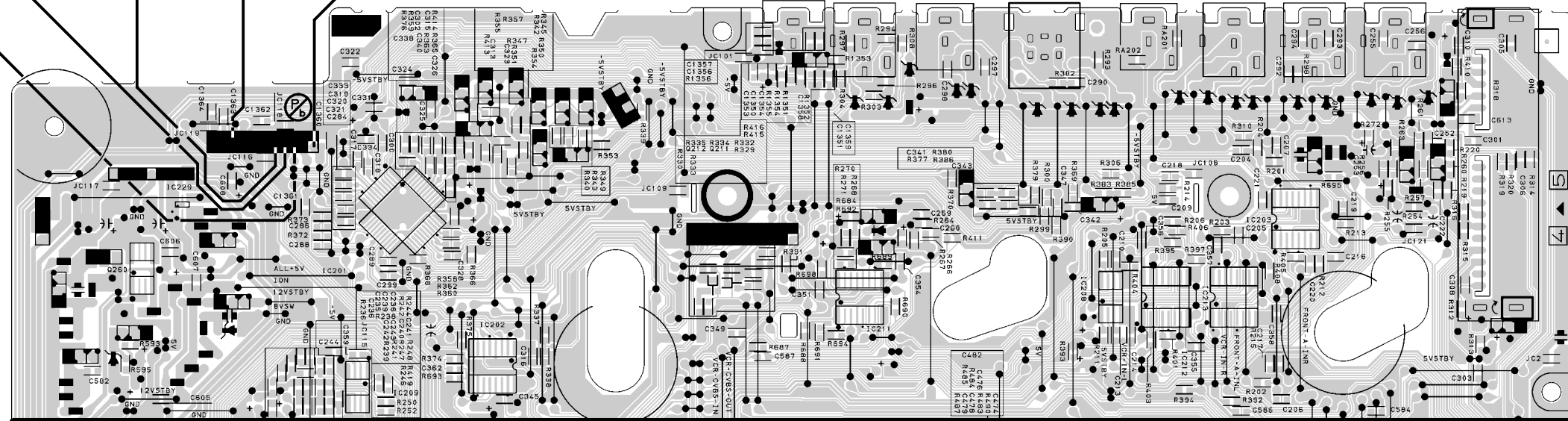
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PIN 5 OF  
CN213

**WF5**  
PIN 7 OF  
CN213

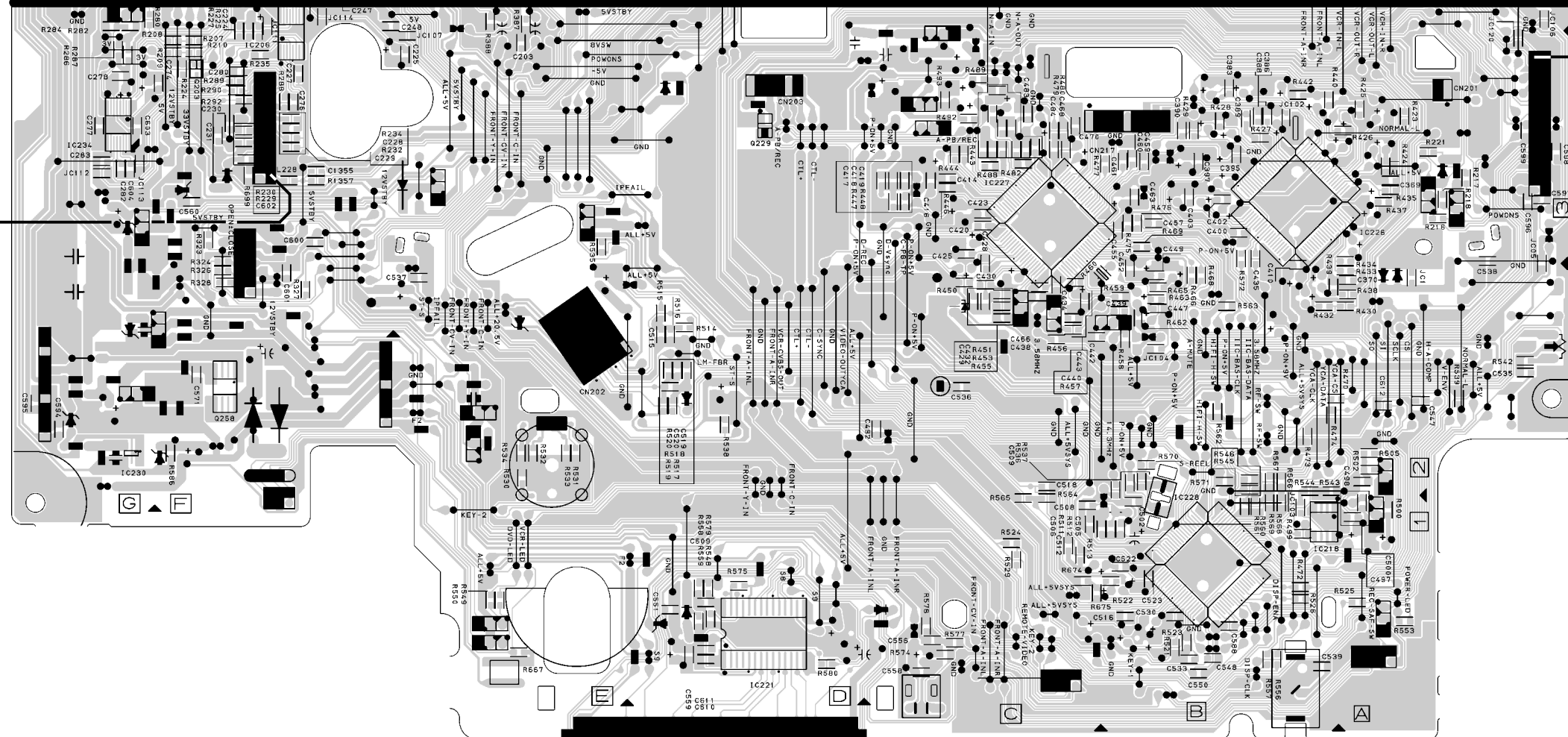
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PIN 9 OF  
CN213

**WF6**  
PIN 18 OF  
CN213

**WF7**  
PIN 1 OF  
CN213



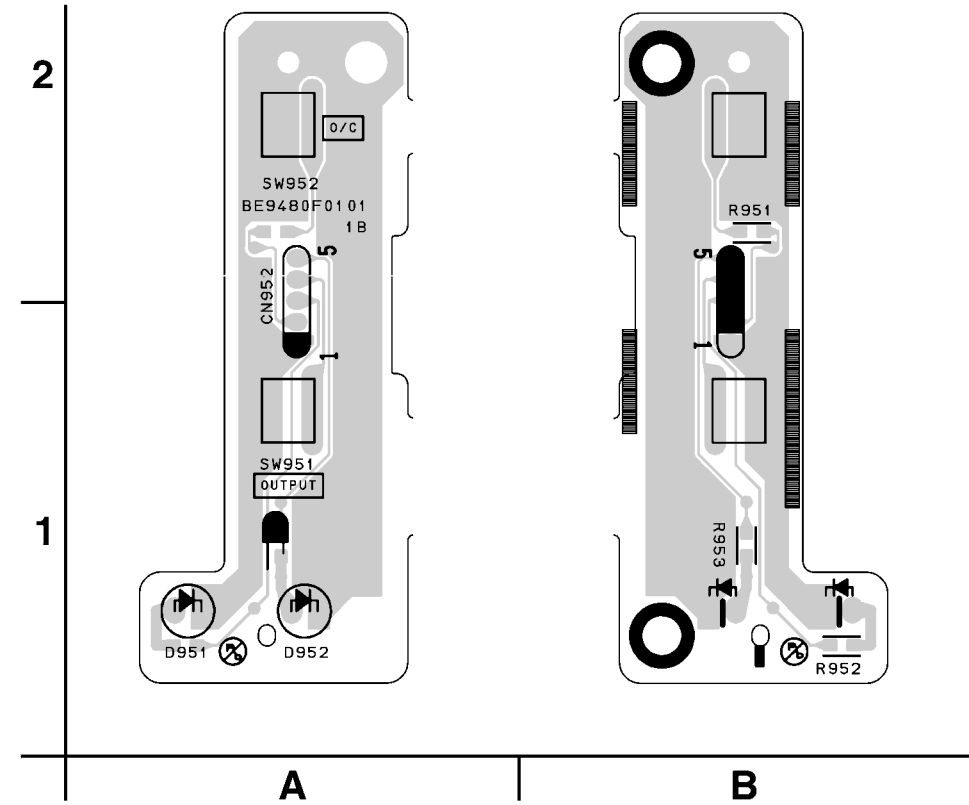
**WF10**  
PIN 2 OF  
CN211



**WF9**  
PIN 29 OF  
CN215

Function CBA Top View  
< VCR Section >

Function CBA Bottom View  
< VCR Section >



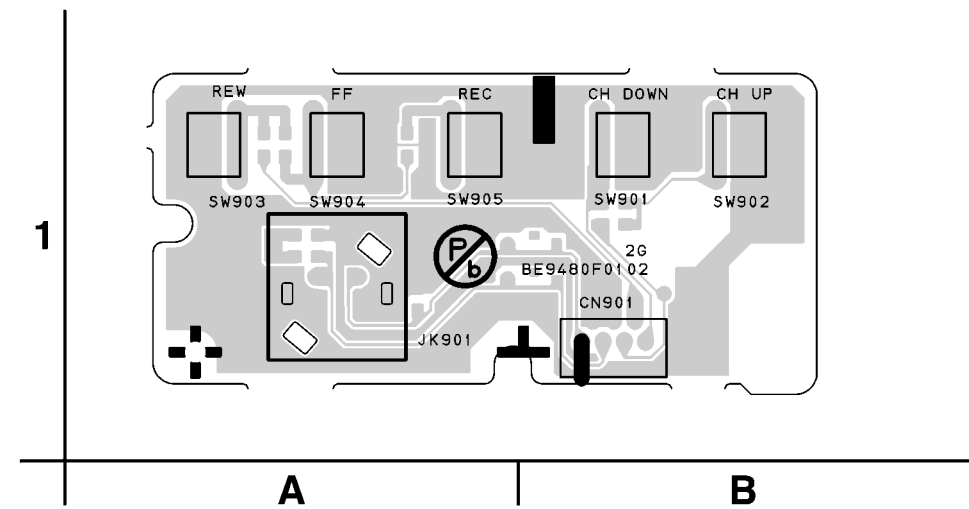
FUNCTION CBA  
PARTS LOCATION GUIDE

Ref No.	Position
DIODES	
D951	A-1
D952	A-1
RESISTORS	
R951	B-2
R952	B-1
R953	B-1
SWITCHES	
SW951	A-1
SW952	A-2

BE9480F01011B

Jack-B CBA Top View < VCR Section >

Jack-B CBA Bottom View < VCR Section >



JACK-B CBA  
PARTS LOCATION GUIDE

Ref No.	Position
CAPACITOR	
C901	A-1
CONNECTOR	
CN901	B-1
TRANSISTORS	
Q901	B-1
Q902	B-1
RESISTORS	
R901	B-1
R902	A-1
R903	B-1
R904	A-1
R905	A-1
R906	A-1
R907	A-1
SWITCHES	
SW901	B-1
SW902	B-1
SW903	A-1
SW904	A-1
SW905	A-1
MISCELLANEOUS	
JK901	A-1

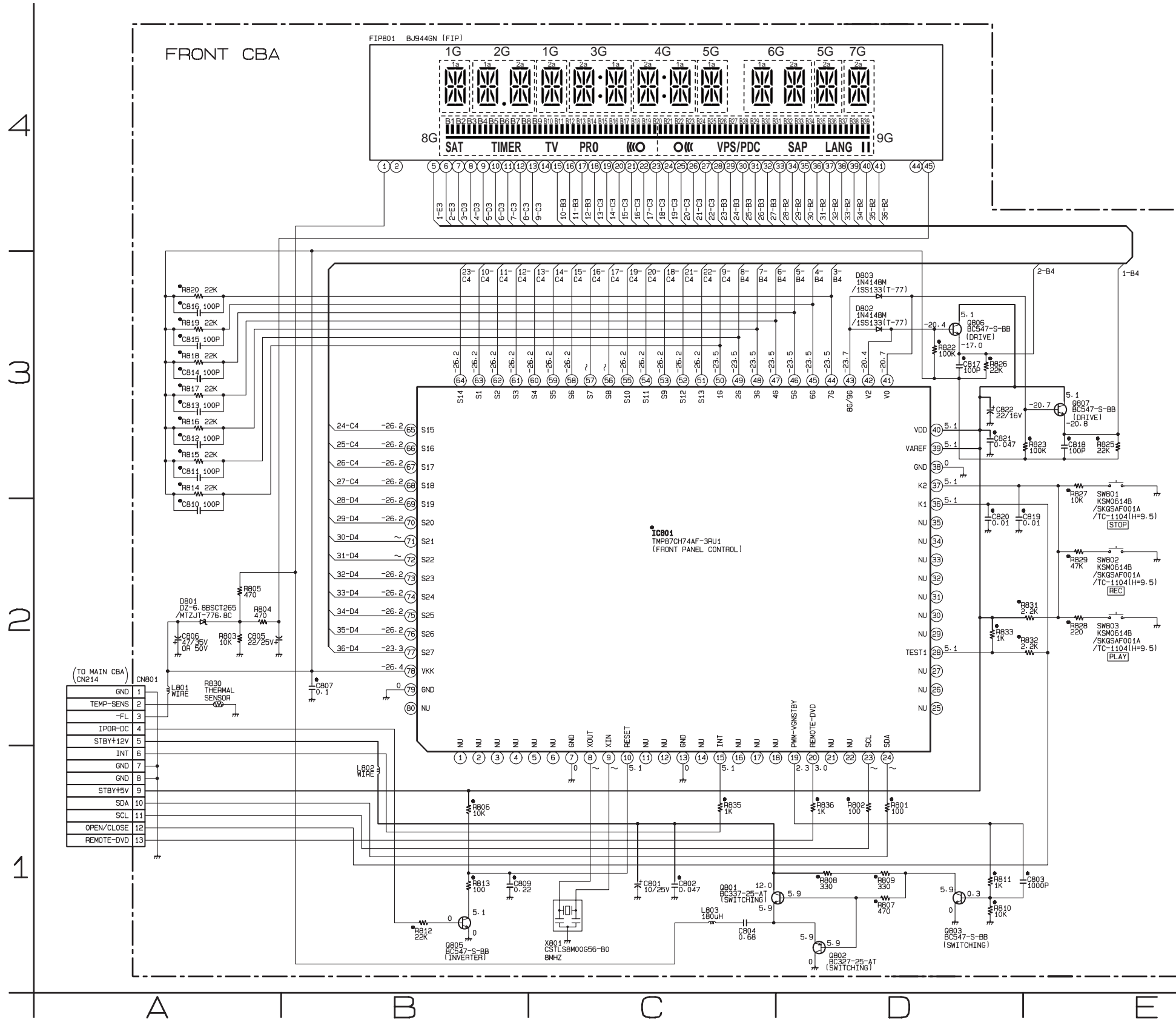
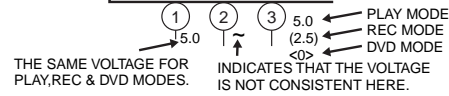
BE9480F01022G



# Front Schematic Diagram < VCR Section >

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:

• = SMD



FIP801 MATRIX CHART

	1G	2G	3G	4G	5G	6G	7G	8G	9G
S1	2a	2a	2a	2a	2a	2a	2a	B1	B21
S2	2j, 2p	2j, 2p	2j, 2p	2j, 2p	2j, 2p	2j, 2p	2j, 2p	B2	B22
S3	2h	2h	2h	2h	2h	2h	2h	B3	B23
S4	2k	2k	2k	2k	2k	2k	2k	B4	B24
S5	2b	2b	2b	2b	2b	2b	2b	B5	B25
S6	2f	2f	2f	2f	2f	2f	2f	B6	B26
S7	2m	2m	2m	2m	2m	2m	2m	B7	B27
S8	2g	2g	2g	2g	2g	2g	2g	B8	B28
S9	2c	2c	2c	2c	2c	2c	2c	B9	B29
S10	2e	2e	2e	2e	2e	2e	2e	---	---
S11	2r	2r	2r	2r	2r	2r	2r	⓪	⓪
S12	2n	2n	2n	2n	2n	2n	2n	B10	B30
S13	2d	2d	2d	2d	2d	2d	2d	B11	B31
S14	---	•	•	•	---	---	---	B12	B32
S15	1a	1a	1a	1a	1a	1a	1a	---	B13
S16	1j, 1p	1j, 1p	1j, 1p	1j, 1p	1j, 1p	1j, 1p	---	B14	B34
S17	1h	1h	1h	1h	1h	1h	---	B15	B35
S18	1k	1k	1k	1k	1k	1k	---	B16	B36
S19	1b	1b	1b	1b	1b	1b	---	B17	B37
S20	1f	1f	1f	1f	1f	1f	---	B18	B38
S21	1m	1m	1m	1m	1m	1m	---	B19	B39
S22	1g	1g	1g	1g	1g	1g	---	B20	B20
S23	1c	1c	1c	1c	1c	1c	---	---	---
S24	1e	1e	1e	1e	1e	1e	---	SAT	VPS/PDC
S25	1r	1r	1r	1r	1r	1r	---	TIMER	SAP
S26	1m	1m	1m	1m	1m	1m	---	TV	LANG I
S27	1d	1d	1d	1d	1d	1d	---	PRO	I

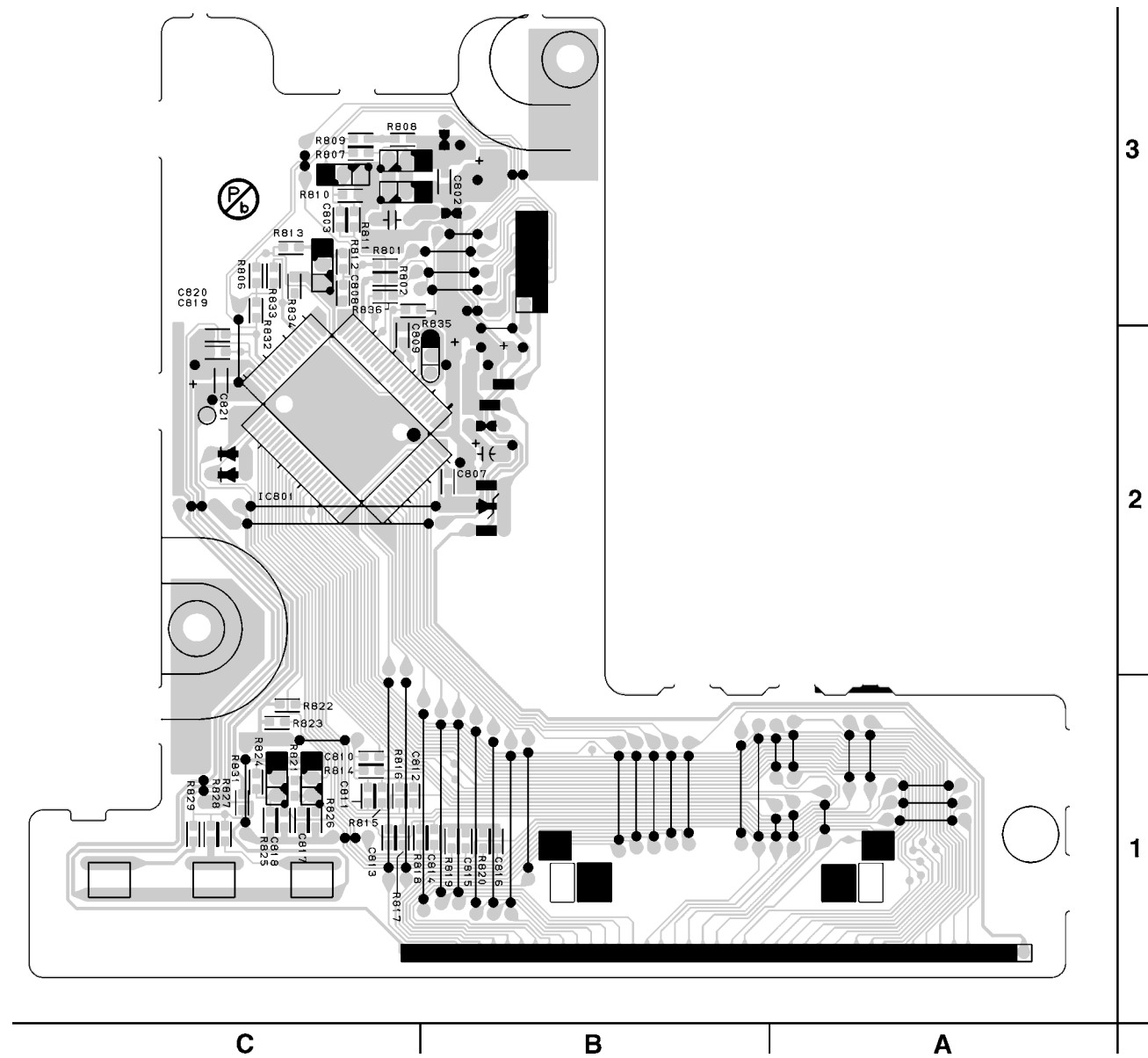
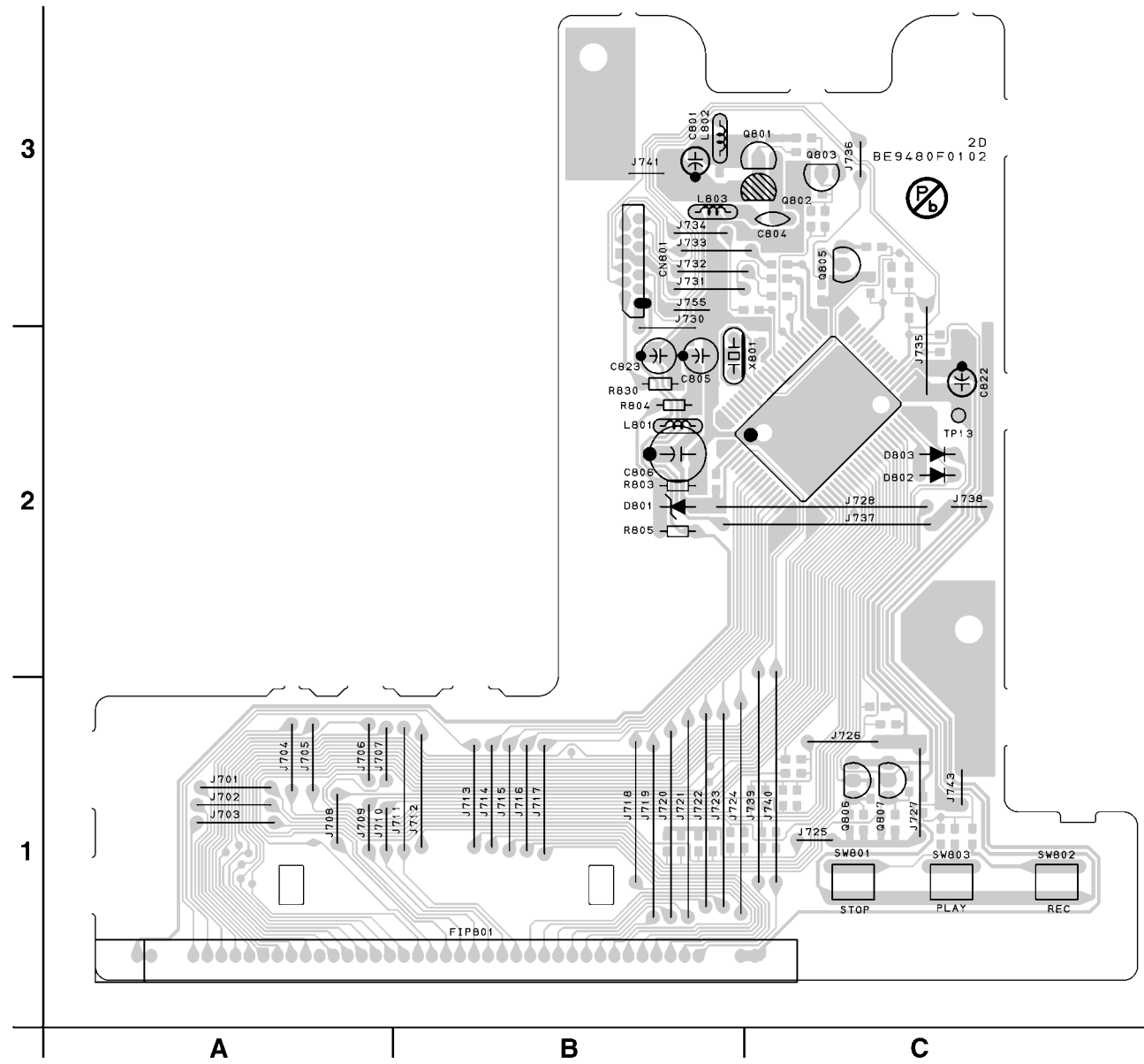


FRONT SCHEMATIC DIAGRAM PARTS LOCATION GUIDE

Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		COILS		RESISTORS	
C801	C-1	L801	A-2	R819	A-3
C802	C-1	L802	B-1	R820	A-3
C803	E-1	L803	C-1	R822	E-3
C804	D-1	TRANSISTORS		R823	E-3
C805	B-2	Q801	D+1	R825	F-3
C806	A-2	Q802	D-1	R826	E-3
C807	B-2	Q803	D-1	R827	E-3
C809	C-1	Q805	B-1	R828	E-2
C810	A-2	Q806	E-3	R829	E-2
C811	A-3	Q807	E-3	R830	A-2
C812	A-3	RESISTORS		R831	E-2
C813	A-3	R801	D-1	R832	E-2
C814	A-3	R802	D-1	R833	E-2
C815	A-3	R803	A-2	R835	C-1
C816	A-3	R804	B-2	R836	D-1
C817	E-3	R805	A-2	SWITCHES	
C818	E-3	R806	B-1	SW801	E-3
C819	E-2	R807	D-1	SW802	E-2
C820	E-2	R808	D-1	SW803	E-2
C821	E-3	R809	D-1	CRYSTAL OSCILLATOR	
C822	E-3	R810	E-1	X801	C-1
CONNECTOR		R811	E-1	MISCELLANEOUS	
CN801	A-2	R812	B-1	FIP801	C-4
DIODES		R813	B-1		
D801	A-2	R814	A-3		
D802	D-3	R815	A-3		
D803	D-3	R816	A-3		
IC		R817	A-3		
IC801	C-2	R818	A-3		

Front CBA Top View < VCR Section >

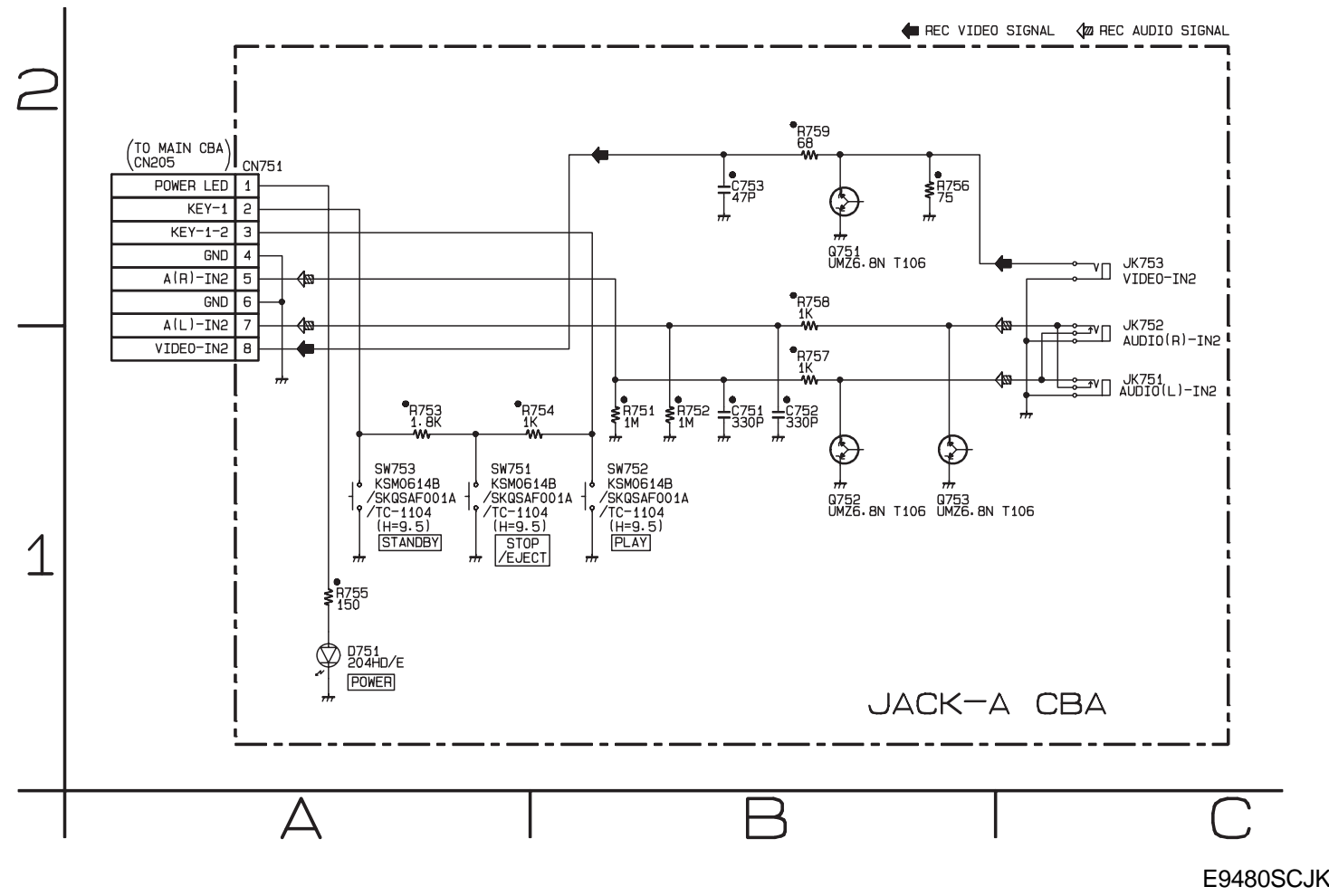
Front CBA Bottom View < VCR Section >



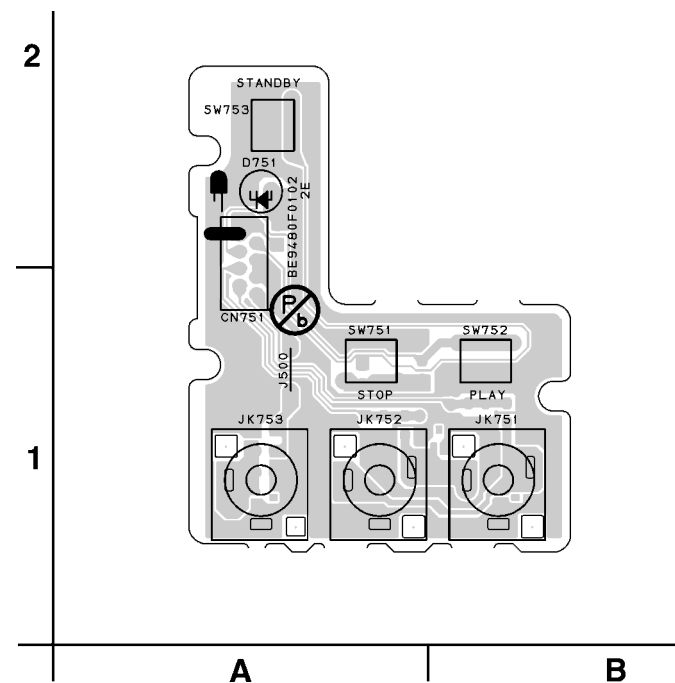
FRONT CBA PARTS LOCATION GUIDE

Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS		CAPACITORS		IC		TRANSISTORS		RESISTORS		RESISTORS		RESISTORS	
C801	B-3	C811	C-1	C820	C-3	IC801	C-2	Q805	C-3	R806	C-3	R815	C-1	R826	C-1
C802	B-3	C812	C-1	C821	C-2	COILS		Q806	C-1	R807	C-3	R816	C-1	R827	C-1
C803	C-3	C813	C-1	C822	C-2	L801	B-2	Q807	C-1	R808	C-3	R817	C-1	R828	C-1
C804	C-3	C814	B-1	CONNECTOR		L802	B-3	RESISTORS		R809	C-3	R818	C-1	R829	C-1
C805	B-2	C815	B-1	CN801	B-3	L803	B-3	R801	C-3	R810	C-3	R819	B-1	R830	B-2
C806	B-2	C816	B-1	DIODES		TRANSISTORS		R802	C-3	R811	C-3	R820	B-1	R831	C-1
C807	B-2	C817	C-1	D801	B-2	Q801	C-3	R803	B-2	R812	C-3	R822	C-1	R832	C-2
C809	C-2	C818	C-1	D802	C-2	Q802	C-3	R804	B-2	R813	C-3	R823	C-1	R833	C-3
C810	C-1	C819	C-3	D803	C-2	Q803	C-3	R805	B-2	R814	C-1	R825	C-1	R835	B-2
														FIP801	B-1

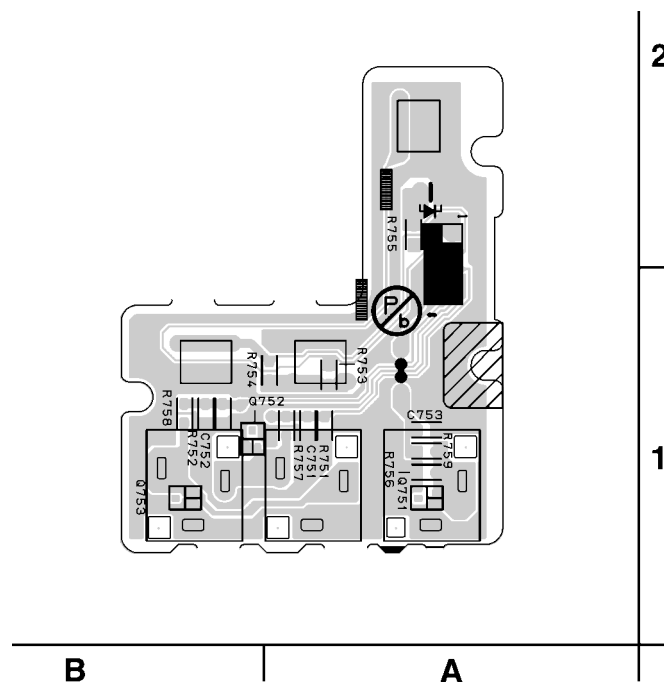
### Jack-A Schematic Diagram < VCR Section >



### Jack-A CBA Top View < VCR Section >



### Jack-A CBA Bottom View < VCR Section >



### Power Supply Schematic Diagram

#### Parts Location Guide < VCR Section >

Ref No.	Position	Ref No.	Position	Ref No.	Position	
CAPACITORS			DIODES			
C1001	D-4	D1012	A-4	R1004	E-3	
C1002	D-4	D1013	A-4	R1005	E-2	
C1003	D-4	D1014	B-4	R1006	C-1	
C1004	D-3	D1015	B-4	R1007	D-1	
C1005	D-3	D1016	C-3	R1008	D-1	
C1006	D-3	D1017	C-3	R1009	D-1	
C1008	D-3	D1018	C-3	R1010	D-1	
C1010	D-2	D1019	B-2	R1011	D-1	
C1011	D-2	D1021	B-2	R1012	D-1	
C1012	D-2	D1022	B-2	R1013	D-1	
C1013	D-1	D1023	B-2	R1014	D-1	
C1014	D-1	D1024	D-2	R1015	C-3	
C1015	A-3	D1025	D-2	R1016	B-3	
C1016	C-3	D1026	D-2	R1017	B-3	
C1017	B-3	D1029	E-4	R1018	B-3	
C1018	C-3	D1030	D-4	R1019	B-3	
C1019	A-3	IC		R1020	C-3	
C1020	C-3	IC010	C-1	R1021	B-3	
C1021	B-2	COILS		R1022	B-2	
C1022	B-2	L1001	D-4	R1023	B-2	
C1023	B-2	L1002	D-4	R1024	B-2	
C1024	B-1	L1003	D-3	R1025	B-2	
C1026	D-4	L1004	D-3	R1026	B-2	
C1027	D-4	L1005	A-4	R1027	B-2	
DIODES			L1006	D-3	R1028	B-1
D1001	D-4	L1007	C-3	R1029	B-4	
D1002	D-4	L1008	D-2	R1030	D-2	
D1003	D-3	L1009	D-2	R1031	D-2	
D1004	D-3	TRANSISTORS		R1033	B-2	
D1005	D-4	Q031	D-1	MISCELLANEOUS		
D1006	D-3	Q1001	C-3	AC1001	A-4	
D1007	B-3	Q1003	B-3	F1001	A-4	
D1008	D-2	Q1008	B-2	GP1001	A-3	
D1009	D-2	RESISTORS		SA1001	A-4	
D1010	D-1	R1002	D-4	T1001	C-4	
D1011	D-1	R1003	E-4			

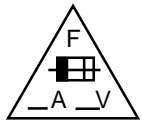
### JACK-A SCHEMATIC DIAGRAM PARTS LOCATION GUIDE

Ref No.	Position	Ref No.	Position
CAPACITORS		RESISTORS	
C751	B-1	R754	B-1
C752	B-1	R755	A-1
C753	B-2	R756	B-2
CONNECTOR		R757	B-1
CN751	A-2	R758	B-2
DIODE		R759	B-2
D751	A-1	SWITCHES	
TRANSISTORS		SW751	A-1
Q751	B-2	SW752	B-1
Q752	B-1	SW753	A-1
Q753	B-1	MISCELLANEOUS	
RESISTORS		JK751	C-2
R751	B-1	JK752	C-1
R752	B-1	JK753	C-2
R753	A-1		

### JACK-A CBA PARTS LOCATION GUIDE

Ref No.	Position	Ref No.	Position
CAPACITORS		RESISTORS	
C751	A-1	R754	B-1
C752	B-1	R755	A-2
C753	A-1	R756	A-1
CONNECTOR		R757	A-1
CN751	A-1	R758	B-1
DIODE		R759	A-1
D751	A-2	SWITCHES	
TRANSISTORS		SW751	A-1
Q751	A-1	SW752	B-1
Q752	A-1	SW753	A-2
Q753	B-1	MISCELLANEOUS	
RESISTORS		JK751	B-1
R751	A-1	JK752	A-1
R752	B-1	JK753	A-1
R753	A-1		

# Power Supply Schematic Diagram < VCR Section >



### CAUTION

FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.  
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQUES D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.

### RISK OF FIRE-REPLACE FUSE AS MARKED.

"This symbol means fast operating fuse."  
"Ce symbole représente un fusible à fusion rapide."

### CAUTION !

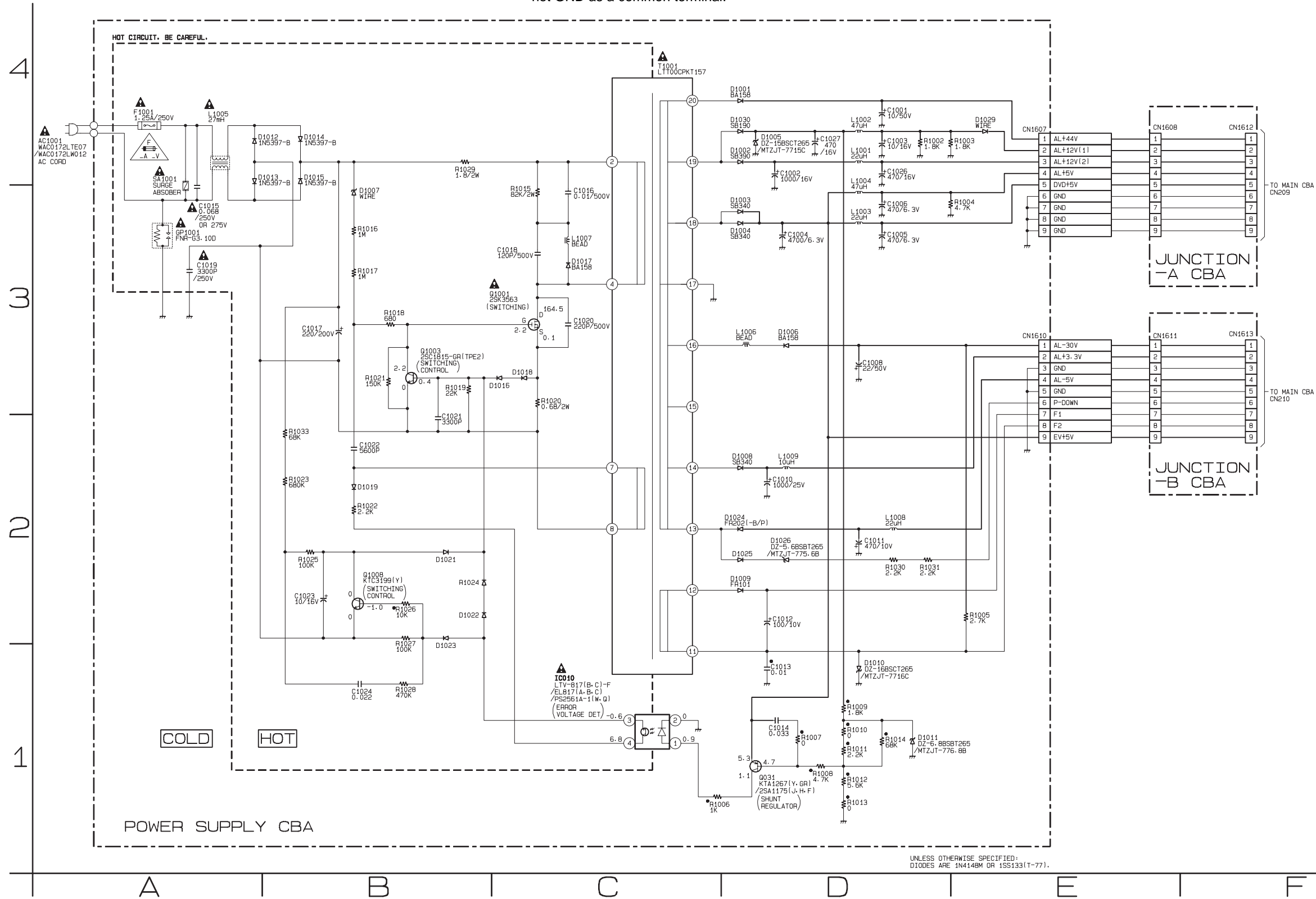
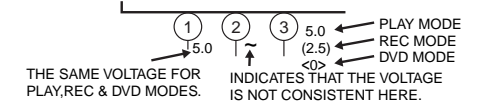
Fixed voltage ( or Auto voltage selectable ) power supply circuit is used in this unit. If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

### NOTE :

The voltage for parts in hot circuit is measured using hot GND as a common terminal.

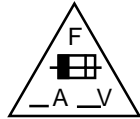
Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:

"•" = SMD



UNLESS OTHERWISE SPECIFIED: DIODES ARE 1N4148M OR 1SS133(T-77).

## Power Supply CBA Top View < VCR Section >



### CAUTION

FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,  
REPLACE ONLY WITH THE SAME TYPE FUSE.

ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQUES  
D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.

**RISK OF FIRE-REPLACE FUSE AS MARKED.**

"This symbol means fast operating fuse."

"Ce symbole représente un fusible à fusion rapide."

**BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE USED. ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.**

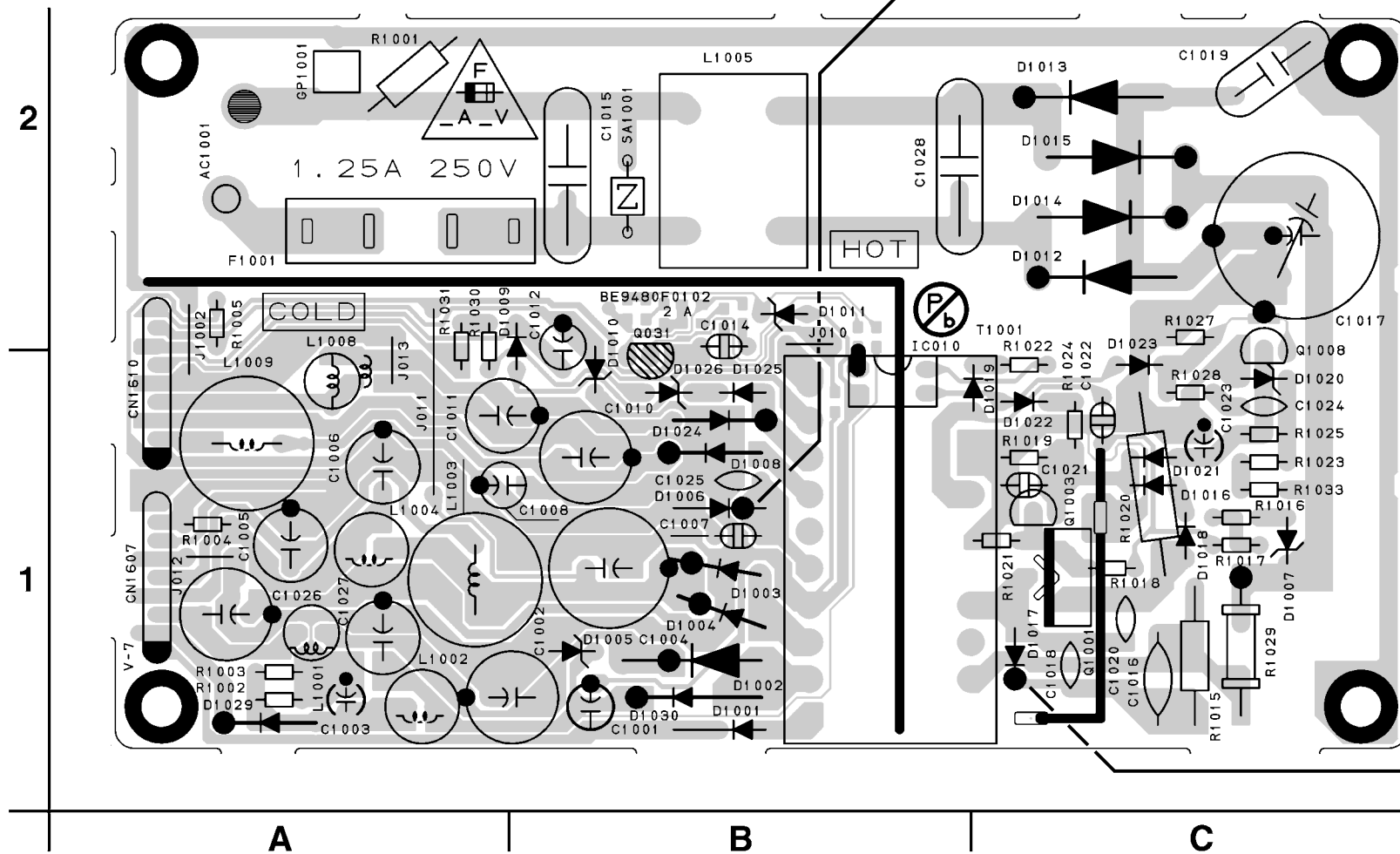
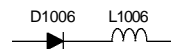
### CAUTION !

Fixed voltage ( or Auto voltage selectable ) power supply circuit is used in this unit. If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

### NOTE:

The voltage for parts in hot circuit is measured using hot GND as a common terminal.

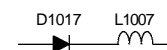
Note:  
L1006 is positioned on the Cathode side of D1006 as shown below.



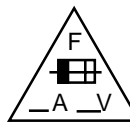
POWER CBA PARTS LOCATION GUIDE

Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		DIODES		RESISTORS	
C1001	B-1	D1012	C-2	R1004	A-1
C1002	B-1	D1013	C-2	R1005	A-2
C1003	A-1	D1014	C-2	R1006	B-2
C1004	B-1	D1015	C-2	R1007	B-2
C1005	A-1	D1016	C-1	R1008	B-2
C1006	A-1	D1017	C-1	R1009	B-2
C1008	B-1	D1018	C-1	R1010	B-2
C1010	B-1	D1019	C-1	R1011	B-2
C1011	A-1	D1021	C-1	R1012	B-2
C1012	B-2	D1022	C-1	R1013	B-2
C1013	B-1	D1023	C-1	R1014	A-2
C1014	B-2	D1024	B-41	R1015	C-1
C1015	B-2	D1025	B-1	R1016	C-1
C1016	C-1	D1026	B-1	R1017	C-1
C1017	C-2	D1029	A-1	R1018	C-1
C1018	C-1	D1030	B-1	R1019	C-1
C1019	C-2			R1020	C-1
C1020	C-1	IC1010	B-1	R1021	C-1
C1021	C-1			R1022	C-1
C1022	C-1	COILS		R1023	C-1
C1023	C-1	L1001	A-1	R1024	C-1
C1024	C-1	L1002	A-1	R1025	C-1
C1026	A-1	L1003	A-1	R1026	C-2
C1027	A-1	L1004	A-1	R1027	C-2
		L1005	B-2	R1028	C-1
		L1006	B-1	R1029	C-1
		L1007	C-1	R1030	A-2
		L1008	A-2	R1031	A-2
		L1009	A-1	R1033	C-1
		TRANSISTORS		MISCELLANEOUS	
		Q031	B-2	AC1001	A-2
		Q1001	C-1	F1001	A-2
		Q1003	C-1	GP1001	A-2
		Q1008	C-1	SA1001	B-2
		RESISTORS		T1001	C-2
		R1002	A-1		
		R1003	A-1		

Note:  
L1007 is positioned on the Cathode side of D1017 as shown below.



# Power Supply CBA Bottom View < VCR Section >



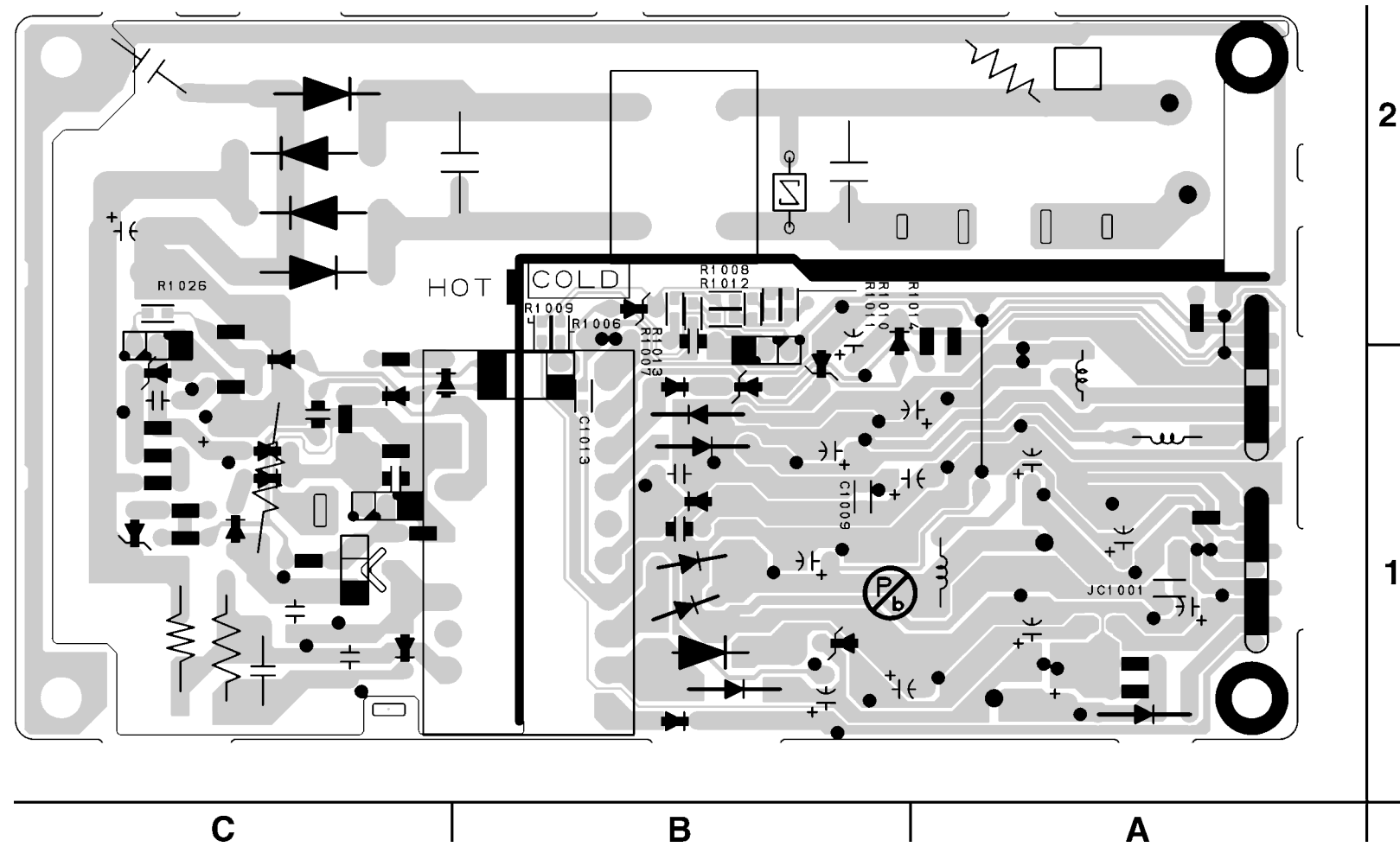
**CAUTION**  
 FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,  
 REPLACE ONLY WITH THE SAME TYPE FUSE.  
 ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQUES  
 D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.  
**RISK OF FIRE-REPLACE FUSE AS MARKED.**

"This symbol means fast operating fuse."  
 "Ce symbole représente un fusible à fusion rapide."

**CAUTION !**  
 Fixed voltage ( or Auto voltage selectable ) power supply circuit is used in this unit.  
 If Main Fuse (F1001) is blown, check to see that all components in the power supply  
 circuit are not defective before you connect the AC plug to the AC power supply.  
 Otherwise it may cause some components in the power supply circuit to fail.

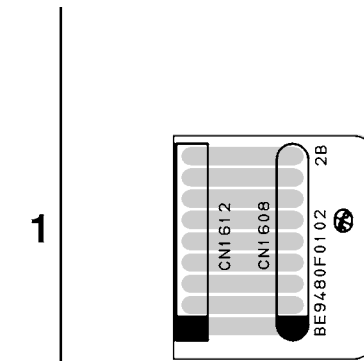
**NOTE :**  
 The voltage for parts in hot circuit is measured  
 using hot GND as a common terminal.

**BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER  
 SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE USED.  
 ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT  
 SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY  
 CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.**

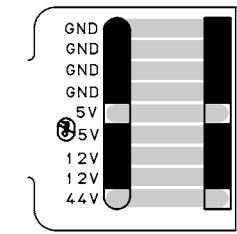


BE9480F01022A

**Junction-A CBA  
 Top View  
 < VCR Section >**

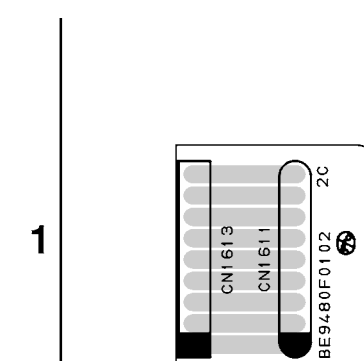


**Junction-A CBA  
 Bottom View  
 < VCR Section >**

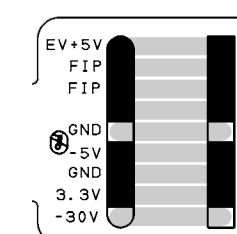


BE9480F01022B

**Junction-B CBA  
 Top View  
 < VCR Section >**



**Junction-B CBA  
 Bottom View  
 < VCR Section >**

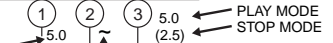


BE9480F01022C

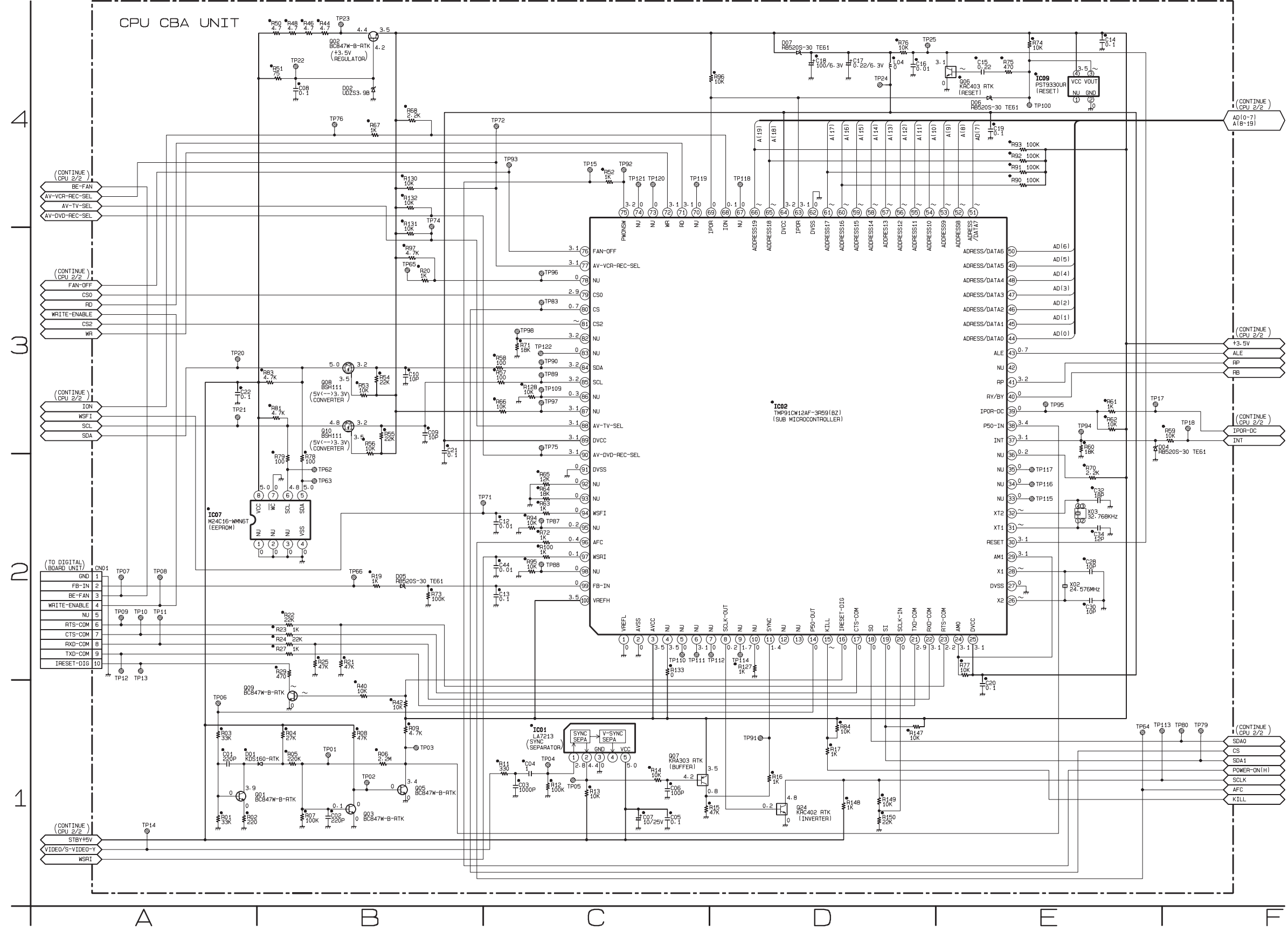
# CPU 1/2 Schematic Diagram < DVD Section >

● = SMD

Voltage indications for PLAY and STOP modes on the Schematic Diagrams are as shown below:

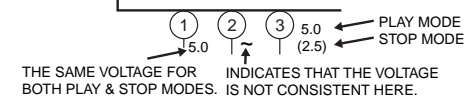


THE SAME VOLTAGE FOR BOTH PLAY & STOP MODES IS NOT CONSISTENT HERE.

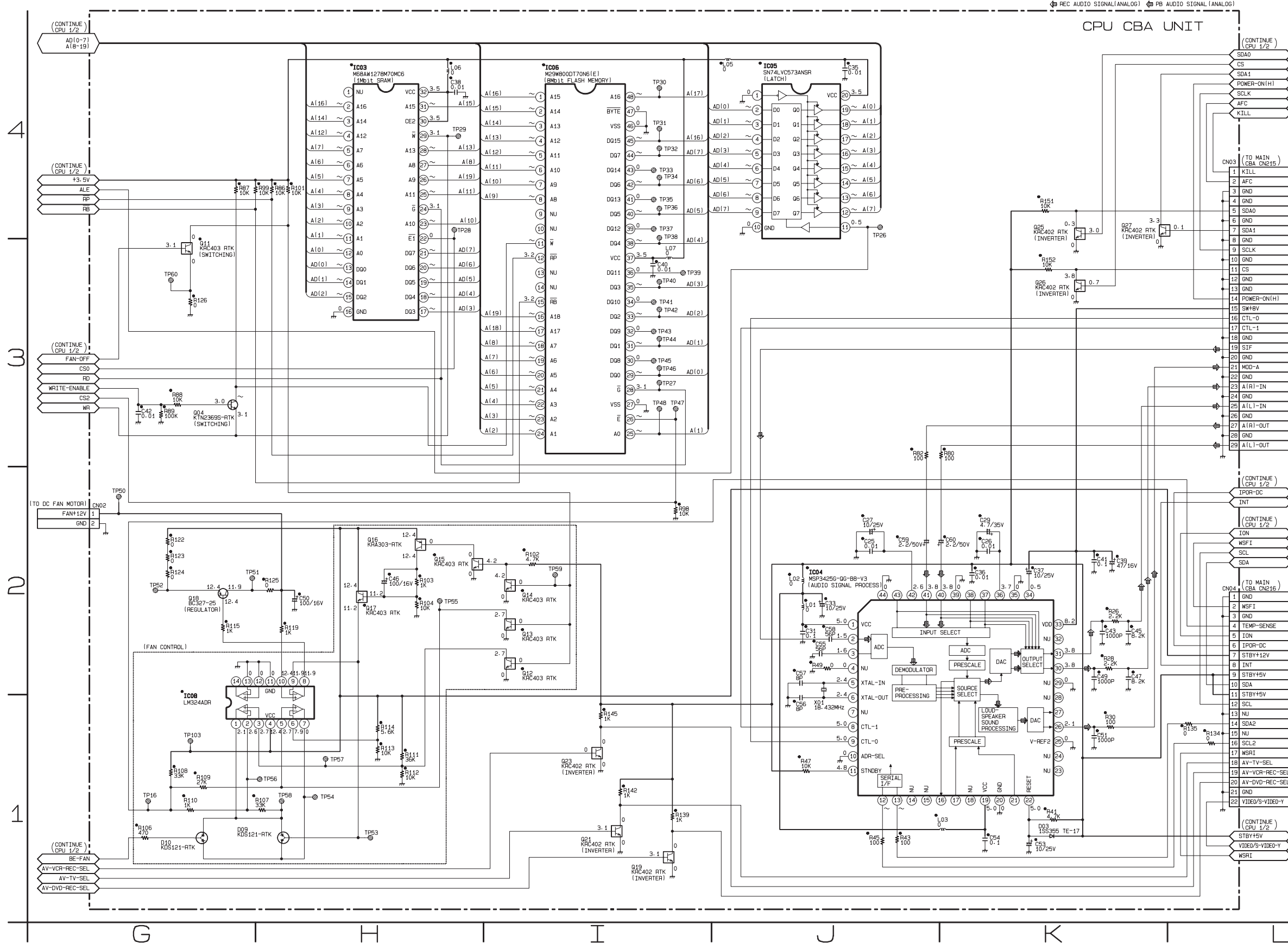


# CPU 2/2 Schematic Diagram < DVD Section >

Voltage indications for PLAY and STOP modes on the Schematic Diagrams are as shown below:

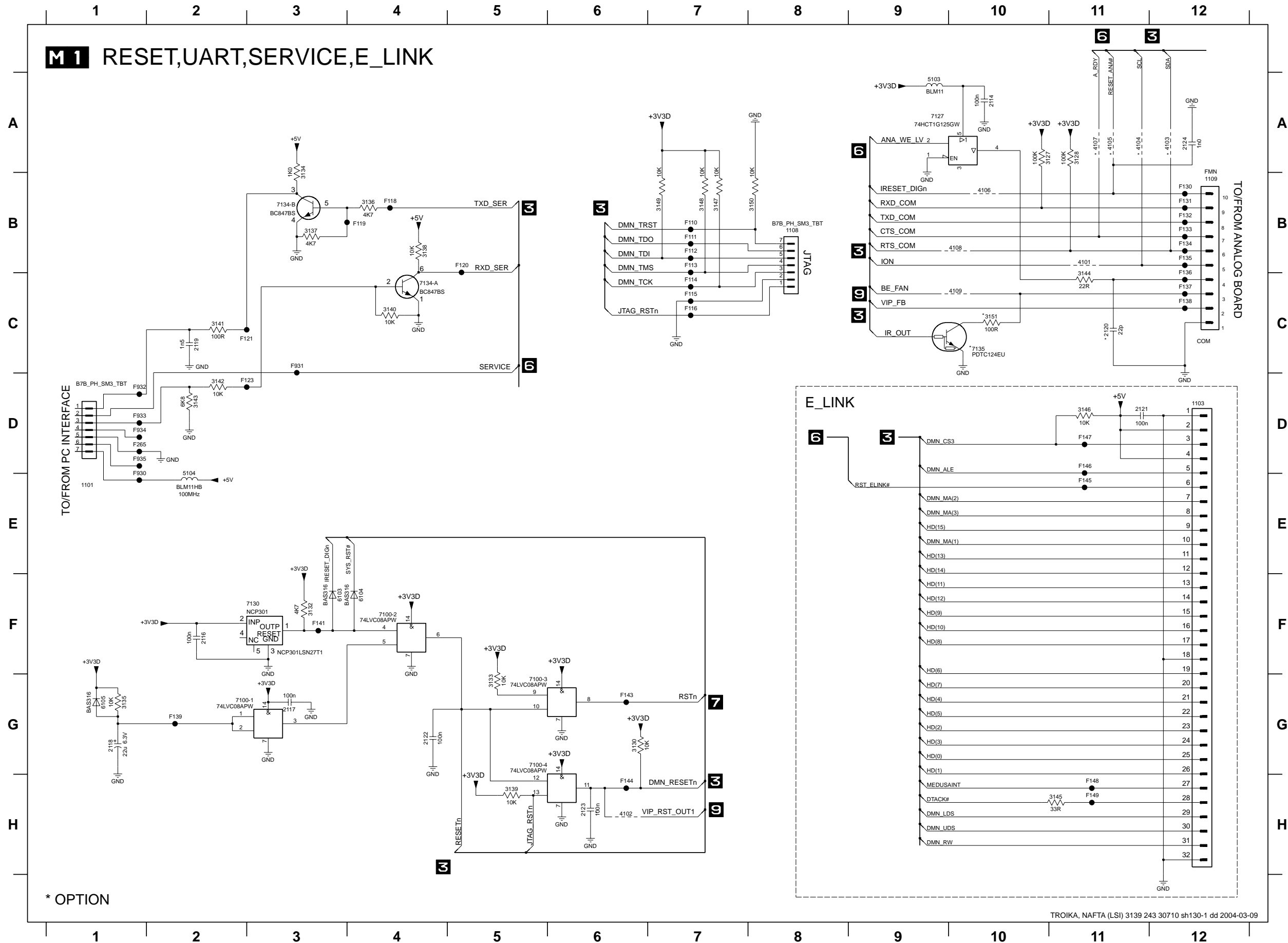


"●" = SMD



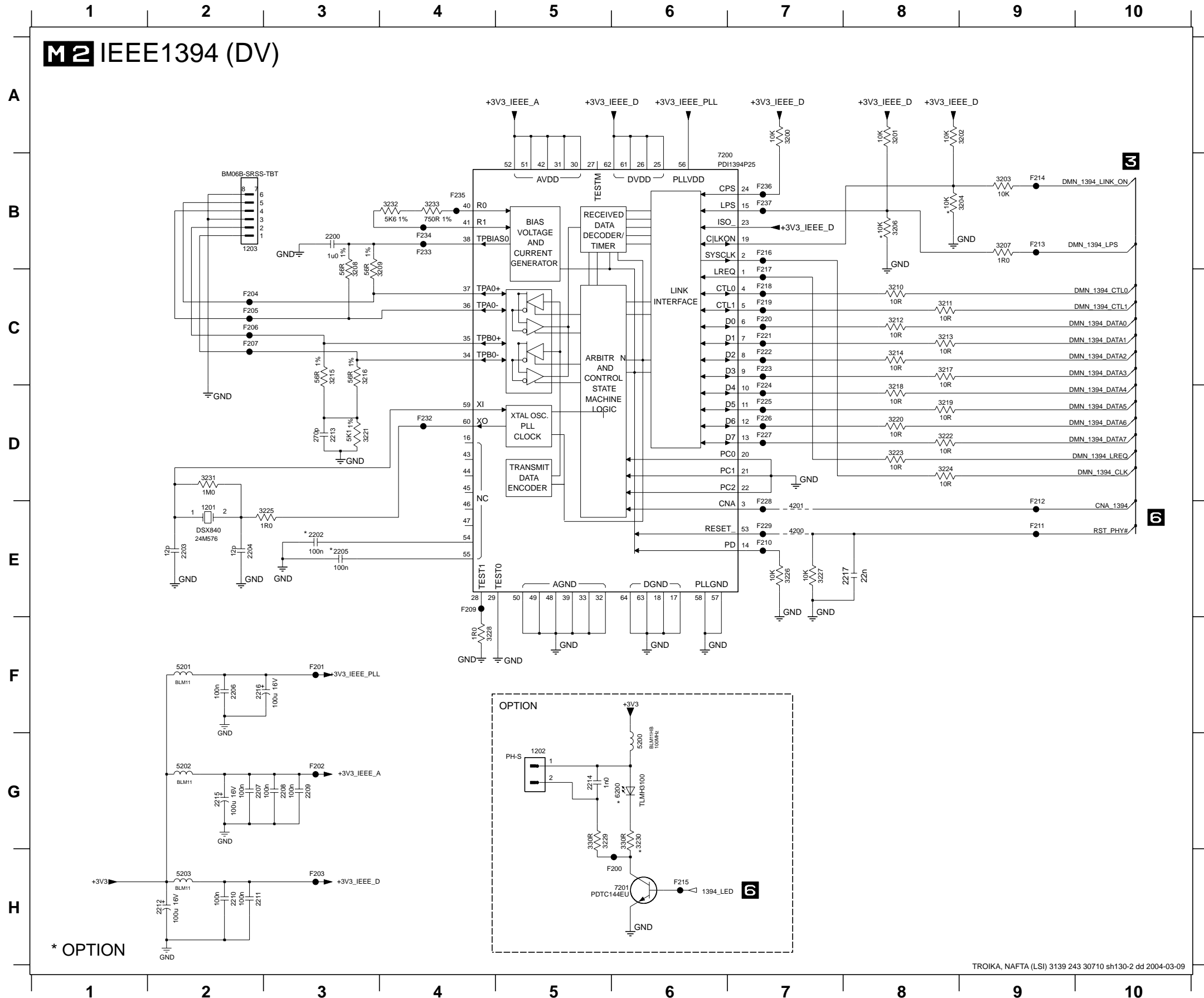


# Digital Board Unit 1/10 Schematic Diagram < DVD Section >



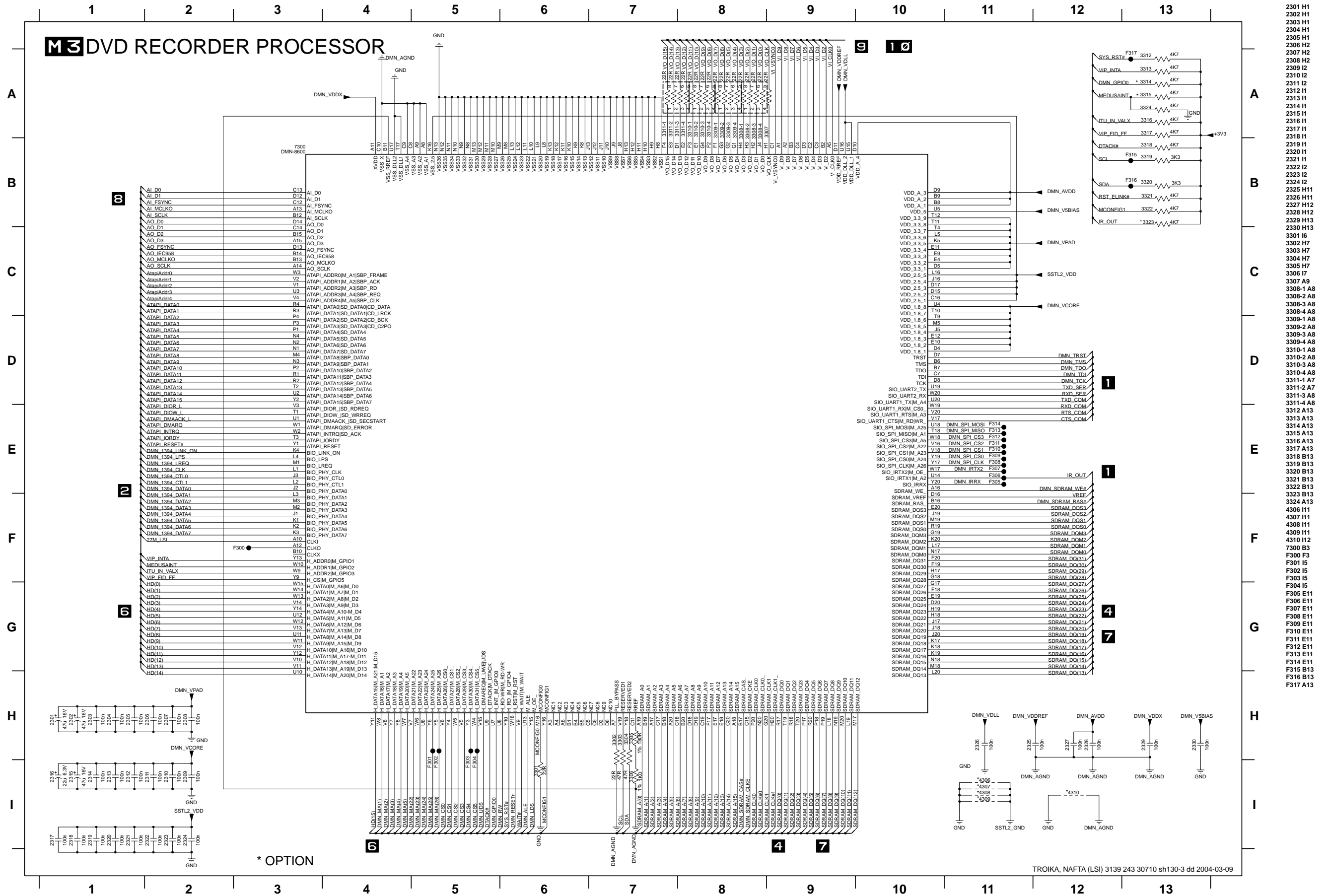
- 1101 E1
- 1103 D12
- 1108 B8
- 1109 B12
- 2114 A10
- 2116 F2
- 2117 G3
- 2118 G1
- 2119 C2
- 2120 C11
- 2121 D11
- 2122 G4
- 2123 H6
- 2124 A12
- 3127 A10
- 3128 A11
- 3130 G6
- 3132 F3
- 3133 G5
- 3134 A3
- 3135 G1
- 3136 B4
- 3137 B3
- 3138 B4
- 3139 H5
- 3140 C4
- 3141 C2
- 3142 D2
- 3143 D2
- 3144 C11
- 3145 H11
- 3146 D11
- 3147 B7
- 3148 B7
- 3149 B7
- 3150 B8
- 3151 C10
- 4101 B11
- 4102 H6
- 4103 A12
- 4104 A11
- 4105 A11
- 4106 B10
- 4107 A11
- 4108 B10
- 4109 C10
- 5103 A9
- 5104 E2
- 6103 F3
- 6104 F4
- 6105 G1
- 7100-1 G3
- 7100-2 F4
- 7100-3 G5
- 7100-4 G5
- 7127 A9
- 7130 F2
- 7134-A C4
- 7134-B B3
- 7135 C10
- F110 B7
- F111 B7
- F112 B7
- F113 B7
- F114 C7
- F115 C7
- F116 C7
- F118 B4
- F119 B4
- F120 B5
- F121 C2
- F123 D3
- F130 B12
- F131 B12
- F132 B12
- F133 B12
- F134 B12
- F135 B12
- F136 C12
- F137 C12
- F138 C12
- F139 G2
- F141 F3
- F143 G6
- F144 H6
- F145 E11
- F146 D11
- F147 D11
- F148 H11
- F149 H11
- F265 D1
- F930 E1
- F931 C3
- F932 D1
- F933 D1
- F934 D1
- F935 D1

# Digital Board Unit 2/10 Schematic Diagram < DVD Section >

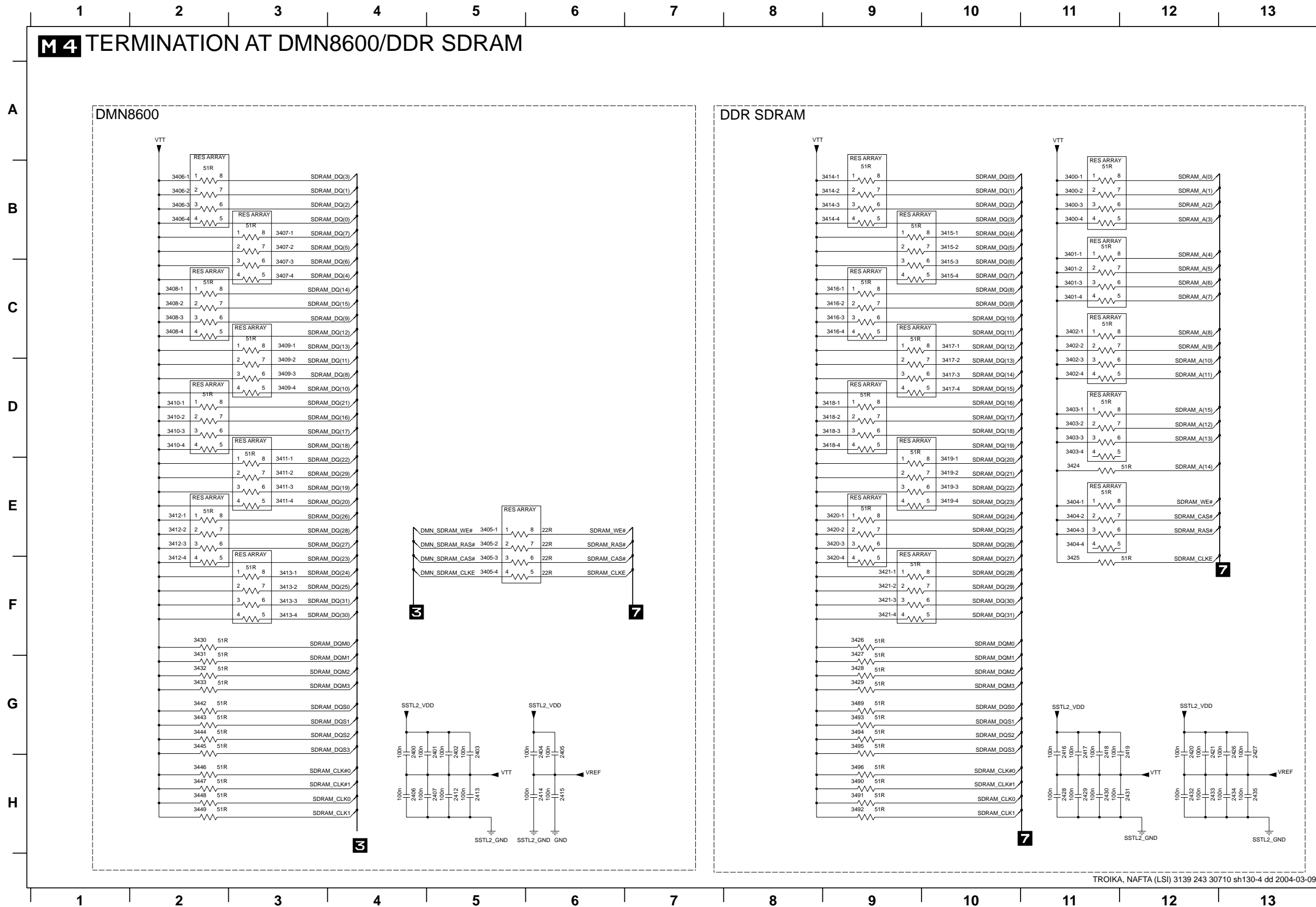


- 1201 E2
- 1202 G5
- 1203 B2
- 2200 B3
- 2202 E3
- 2203 E2
- 2204 E2
- 2205 E3
- 2206 F2
- 2207 G2
- 2208 G3
- 2209 G3
- 2210 H2
- 2211 H2
- 2212 H2
- 2213 D3
- 2214 G5
- 2215 G2
- 2216 F2
- 2217 E8
- 3200 A7
- 3201 A8
- 3202 A8
- 3203 B9
- 3204 B8
- 3206 B8
- 3207 B9
- 3208 B3
- 3209 B3
- 3210 C8
- 3211 C8
- 3212 C8
- 3213 C8
- 3214 C8
- 3215 C3
- 3216 C3
- 3217 C8
- 3218 D8
- 3219 D8
- 3220 D8
- 3221 D3
- 3222 D8
- 3223 D8
- 3224 D8
- 3225 E3
- 3226 E7
- 3227 E7
- 3228 F4
- 3229 G5
- 3230 G6
- 3231 D2
- 3232 B4
- 3233 B4
- 4200 E7
- 4201 E7
- 5200 G6
- 5201 F2
- 5202 G2
- 5203 H2
- 6200 G6
- 7200 B6
- 7201 H6
- F200 H6
- F201 F3
- F202 G3
- F203 H3
- F204 C2
- F205 C2
- F206 C2
- F207 C2
- F209 E4
- F210 E7
- F211 E9
- F212 E9
- F213 B9
- F214 B9
- F215 H6
- F216 B7
- F217 C7
- F218 C7
- F219 C7
- F220 C7
- F221 C7
- F222 C7
- F223 C7
- F224 D7
- F225 D7
- F226 D7
- F227 D7
- F228 E7
- F229 E7
- F232 D4
- F233 B4
- F234 B4
- F235 B4
- F236 B7
- F237 B7

# Digital Board Unit 3/10 Schematic Diagram < DVD Section >

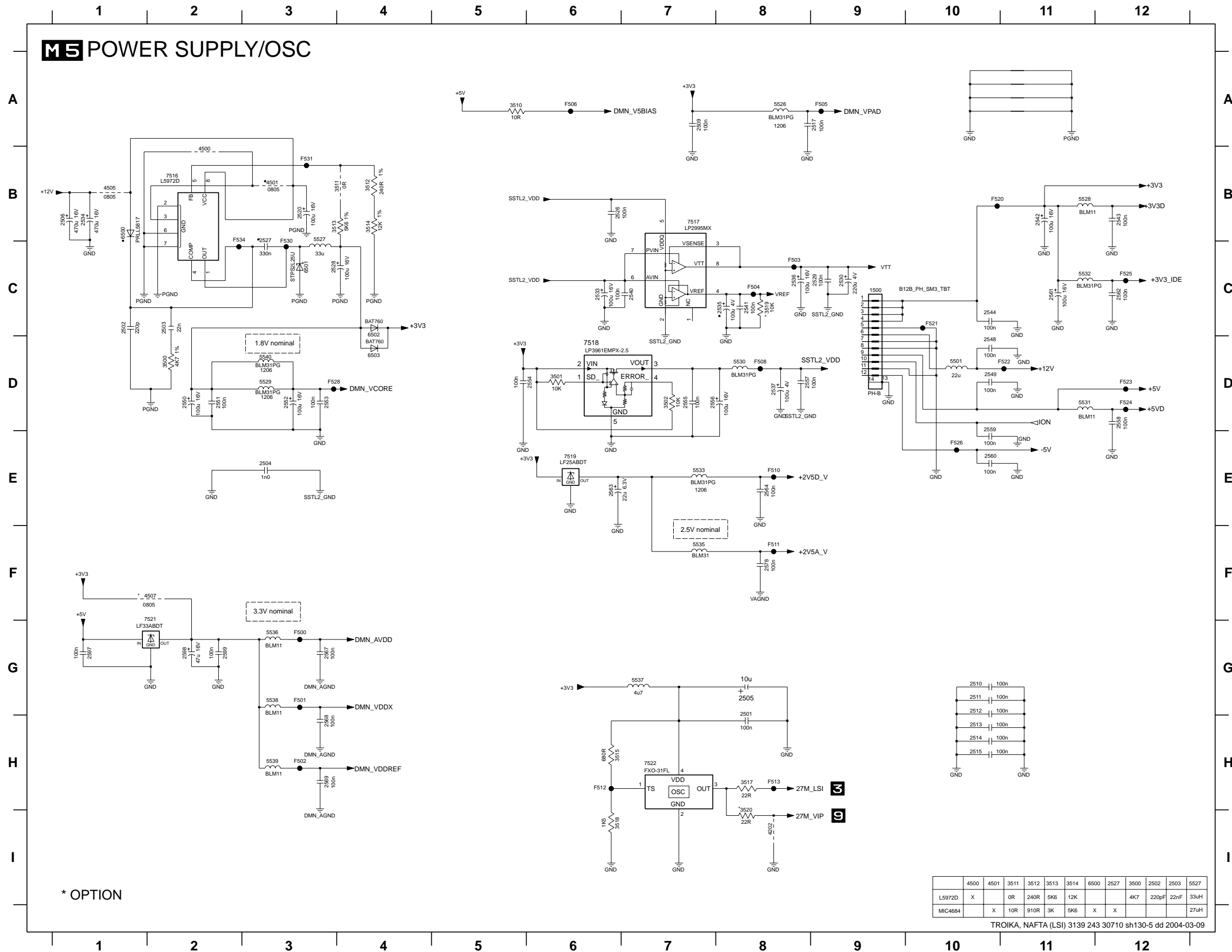


# Digital Board Unit 4/10 Schematic Diagram < DVD Section >



- 2400 G4
- 2401 G5
- 2402 G5
- 2403 G5
- 2404 G6
- 2405 G6
- 2406 H4
- 2407 H5
- 2412 H5
- 2413 H5
- 2414 H6
- 2415 H6
- 2416 G11
- 2417 G11
- 2418 G11
- 2419 G12
- 2420 G12
- 2421 G12
- 2426 G13
- 2427 G13
- 2428 H11
- 2429 H11
- 2430 H11
- 2431 H12
- 2432 H12
- 2433 H12
- 2434 H13
- 2435 H13
- 3400-1 B11
- 3400-2 B11
- 3400-3 B11
- 3400-4 B11
- 3401-1 B11
- 3401-2 C11
- 3401-3 C11
- 3401-4 C11
- 3402-1 C11
- 3402-2 C11
- 3402-3 D11
- 3402-4 D11
- 3403-1 D11
- 3403-2 D11
- 3403-3 D11
- 3403-4 D11
- 3404-1 E11
- 3404-2 E11
- 3404-3 E11
- 3404-4 E11
- 3405-1 E5
- 3405-2 E5
- 3405-3 F5
- 3405-4 F5
- 3406-1 B2
- 3406-2 B2
- 3406-3 B2
- 3406-4 B2
- 3407-1 B3
- 3407-2 B3
- 3407-3 C3
- 3407-4 C3
- 3408-1 C2
- 3408-2 C2
- 3408-3 C2
- 3408-4 C2
- 3409-1 C3
- 3409-2 D3
- 3409-3 D3
- 3409-4 D3
- 3410-1 D2
- 3410-2 D2
- 3410-3 D2
- 3410-4 D2
- 3411-1 E3
- 3411-2 E3
- 3411-3 E3
- 3411-4 E3
- 3412-1 E2
- 3412-2 E2
- 3412-3 E2
- 3412-4 F2
- 3413-1 F3
- 3413-2 F3
- 3413-3 F3
- 3413-4 F3
- 3414-1 B9
- 3414-2 B9
- 3414-3 B9
- 3414-4 B9
- 3415-1 B10
- 3415-2 B10
- 3415-3 C10
- 3415-4 C10
- 3416-1 C9
- 3416-2 C9
- 3416-3 C9
- 3416-4 C9
- 3417-1 C10
- 3417-2 D10
- 3417-3 D10
- 3417-4 D10
- 3418-1 D9
- 3418-2 D9
- 3418-3 D9
- 3418-4 D9
- 3419-1 E10
- 3419-2 E10
- 3419-3 E10
- 3419-4 E10
- 3420-1 E9
- 3420-2 E9
- 3420-3 E9
- 3420-4 F9
- 3421-1 F9
- 3421-2 F9
- 3421-3 F9
- 3421-4 F9
- 3422 G9
- 3423 G9
- 3424 G9
- 3425 F11
- 3426 F9
- 3427 G9
- 3428 G9
- 3429 G9
- 3430 F2
- 3431 G2
- 3432 G2
- 3433 G2
- 3434 G2
- 3435 G2
- 3446 H2
- 3447 H2
- 3448 H2
- 3449 H2
- 3489 G9
- 3490 H9
- 3491 H9
- 3492 H9
- 3493 G9
- 3494 G9
- 3495 G9
- 3496 H9

# Digital Board Unit 5/10 Schematic Diagram < DVD Section >

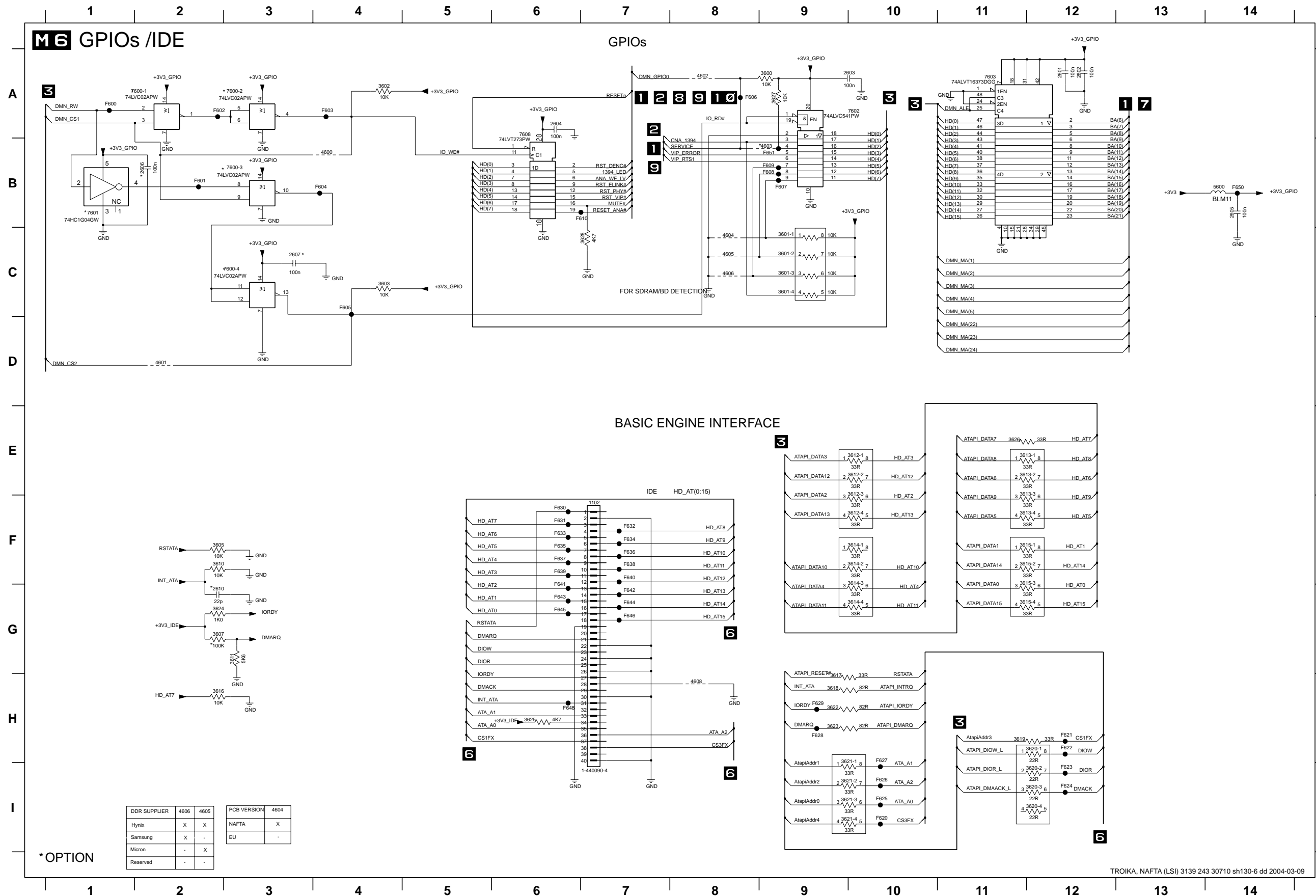


- 1500 C9
- 2501 H8
- 2502 C1
- 2503 C2
- 2504 E3
- 2505 G8
- 2506 B1
- 2509 A7
- 2510 G10
- 2511 G10
- 2512 G10
- 2513 H10
- 2514 H10
- 2515 H10
- 2517 A9
- 2520 B3
- 2526 B6
- 2527 C3
- 2528 C3
- 2529 C9
- 2530 C9
- 2533 C6
- 2534 B1
- 2535 C8
- 2536 C8
- 2537 D8
- 2540 C7
- 2541 C8
- 2542 B11
- 2543 B12
- 2544 C10
- 2548 D10
- 2549 D10
- 2551 D2
- 2552 D3
- 2553 D3
- 2554 D6
- 2555 D7
- 2556 D7
- 2557 D8
- 2558 D12
- 2559 D10
- 2560 E10
- 2561 C11
- 2562 C12
- 2563 E6
- 2564 E8
- 2567 G3
- 2568 H3
- 2569 H3
- 2578 F8
- 2597 G1
- 2598 G2
- 2599 G2
- 3500 D2
- 3501 D6
- 3502 D7
- 3510 A5
- 3511 B4
- 3512 B4
- 3513 B3
- 3514 B4
- 3515 H6
- 3517 H8
- 3518 I6
- 3519 C9
- 3520 I8
- 4202 I8
- 4500 B2
- 4501 B3
- 4505 B1
- 4507 F2
- 5501 D10
- 5526 A8
- 5527 C3
- 5528 B11
- 5529 D3
- 5530 D8
- 5531 D11
- 5532 C11
- 5533 E7
- 5535 F7
- 5536 G3
- 5537 G7
- 5538 G3
- 5539 H3
- 5540 D3
- 6500 B1
- 6501 C3
- 6502 C4
- 6503 D4
- 7516 B2
- 7517 B7
- 7518 D6
- 7519 E6
- 7521 G2
- 7522 H7
- F500 G3
- F501 G3
- F502 H3
- F503 C8
- F504 C8
- F505 A9
- F506 A6
- F508 D8
- F510 E8
- F511 F8
- F512 H6
- F513 H8
- F520 B10
- F521 C10
- F522 D11
- F523 D12
- F524 D12
- F525 C12
- F526 E10
- F528 D3
- F530 C3
- F531 B3
- F534 C2

	4500	4501	3511	3512	3513	3514	6500	2527	3500	2502	2503	5527
L5972D	X		0R	240R	5K6	12K			4K7	220pF	22nF	33uH
MIC4684		X	10R	910R	3K	5K6	X	X				27uH

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# Digital Board Unit 6/10 Schematic Diagram < DVD Section >



- 1102 F7
- 2601 A12
- 2602 A12
- 2603 A10
- 2604 A6
- 2605 B14
- 2606 B2
- 2607 C3
- 2610 G2
- 3600 A9
- 3601-1 C9
- 3601-2 C9
- 3601-3 C9
- 3601-4 C9
- 3602 A4
- 3603 C4
- 3605 F2
- 3607 G2
- 3610 F2
- 3611 G3
- 3612-1 E10
- 3612-2 E10
- 3612-3 F10
- 3612-4 F10
- 3613-1 E12
- 3613-2 E12
- 3613-3 F12
- 3613-4 F12
- 3614-1 F10
- 3614-2 F10
- 3614-3 G10
- 3614-4 G10
- 3615-1 F12
- 3615-2 F12
- 3615-3 G12
- 3615-4 G12
- 3616 H2
- 3617 H9
- 3618 H9
- 3619 H11
- 3620-1 H12
- 3620-2 H12
- 3620-3 H12
- 3620-4 H12
- 3621-1 H10
- 3621-2 H10
- 3621-3 H10
- 3621-4 H10
- 3622 H9
- 3623 H9
- 3624 G2
- 3625 H6
- 3626 E11
- 3627 A9
- 3628 C7
- 4600 B4
- 4601 D2
- 4602 A8
- 4603 B9
- 4604 C8
- 4605 C8
- 4606 C8
- 4608 H8
- 5600 B14
- 7600-1 A2
- 7600-2 A3
- 7600-3 B3
- 7600-4 C3
- 7601 B1
- 7602 A10
- 7603 A11
- 7608 A6
- F600 A1
- F601 B2
- F602 A2
- F603 A4
- F604 B4
- F605 C4
- F606 A8
- F607 B9
- F608 B9
- F609 B9
- F610 B7
- F620 H10
- F621 H12
- F622 H12
- F623 H12
- F624 H12
- F625 H10
- F626 H10
- F627 H10
- F628 H9
- F629 H9
- F630 F6
- F631 F6
- F632 F7
- F633 F7
- F634 F7
- F635 F6
- F636 F7
- F637 F6
- F638 F7
- F639 F6
- F640 F7
- F641 G6
- F642 G7
- F643 G6
- F644 G7
- F645 G6
- F646 G7
- F648 H6
- F650 B14
- F651 B9

DDR SUPPLIER	4606	4605
Hynix	X	X
Samsung	X	-
Micron	-	X
Reserved	-	-

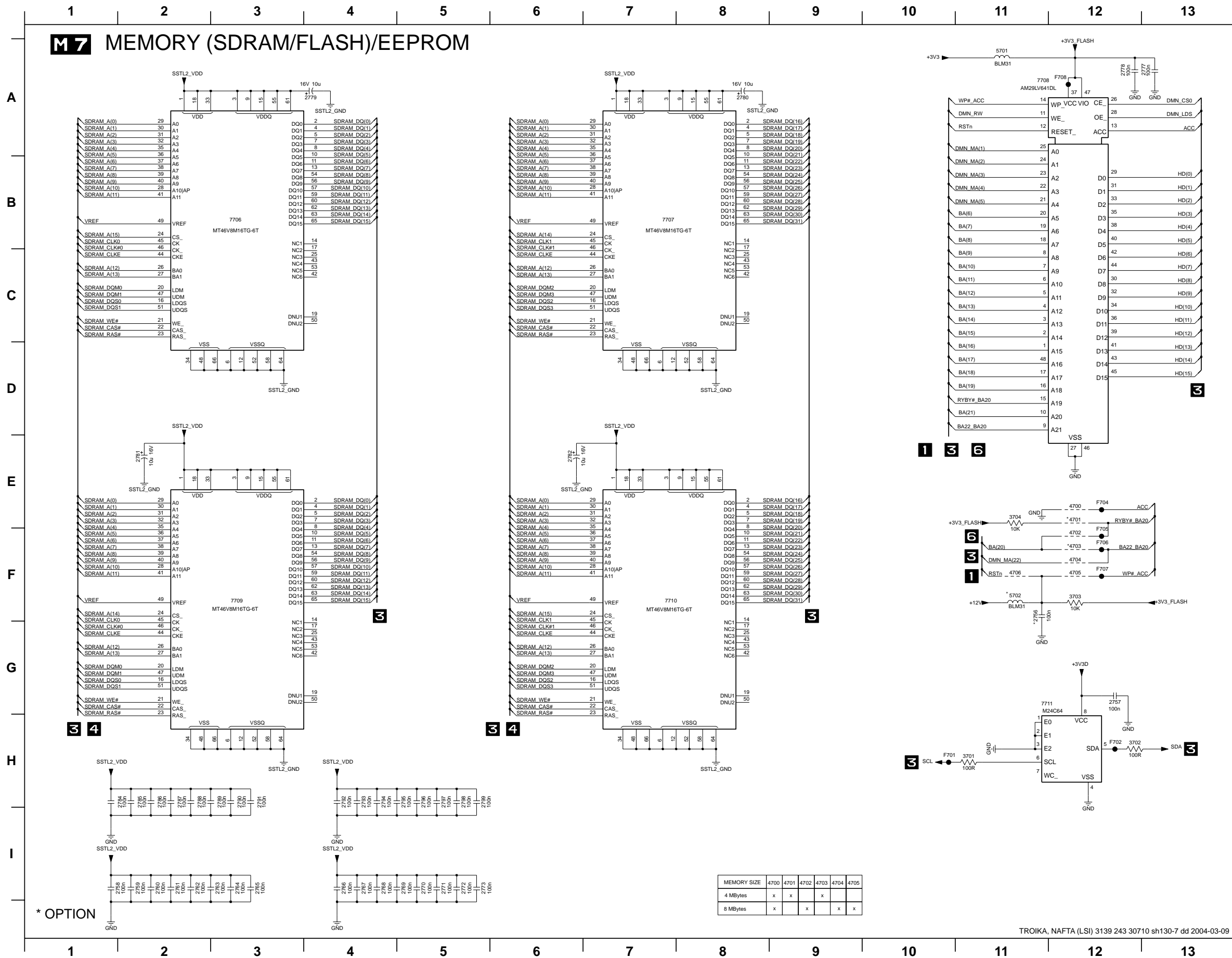
PCB VERSION	4604
NAFTA	X
EU	-

\* OPTION

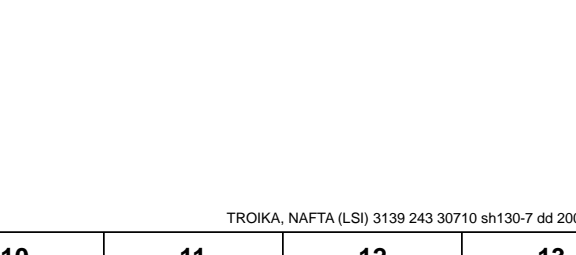
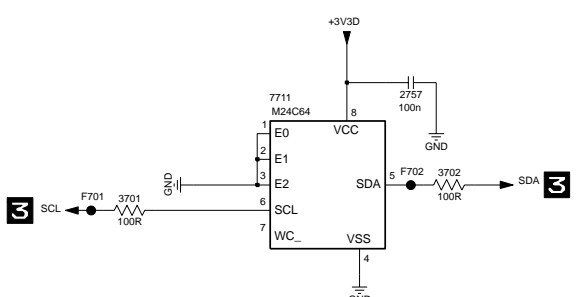
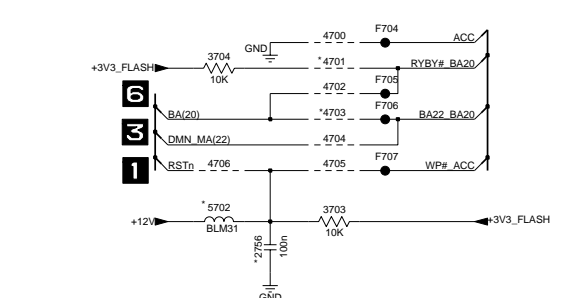
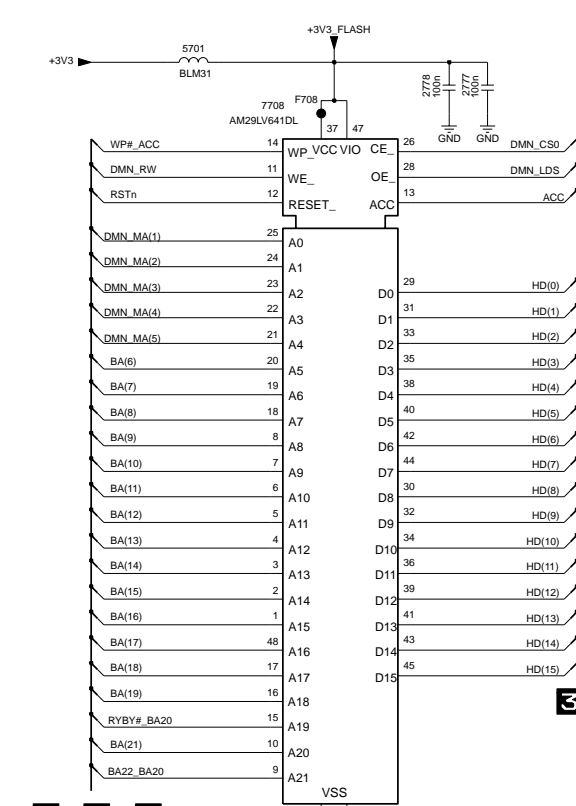
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# Digital Board Unit 7/10 Schematic Diagram < DVD Section >

## M7 MEMORY (SDRAM/FLASH)/EEPROM

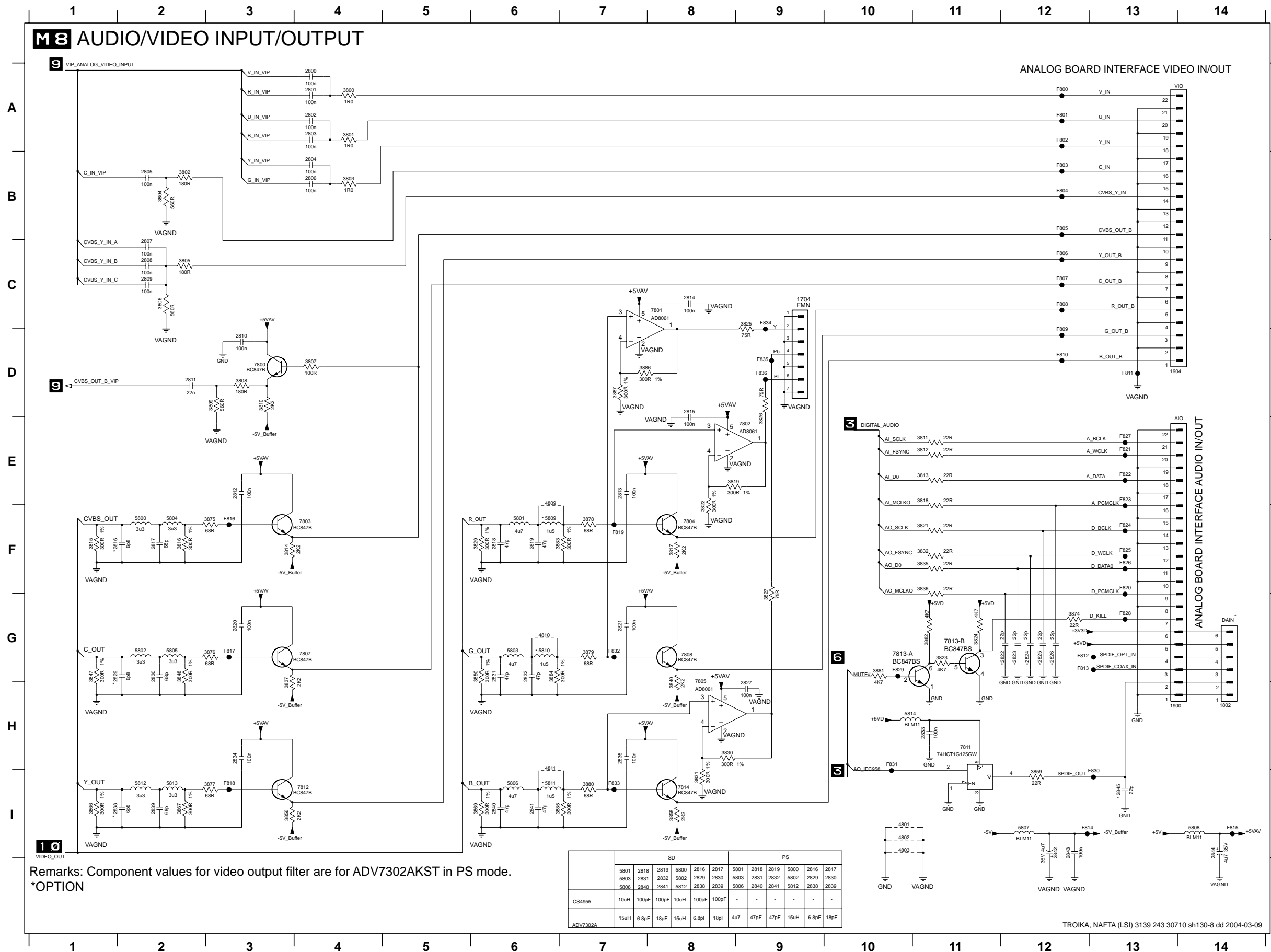


- 2756 F11
- 2757 G12
- 2758 I1
- 2759 I2
- 2760 I2
- 2761 I2
- 2762 I2
- 2763 I3
- 2764 I3
- 2765 I3
- 2766 I4
- 2767 I4
- 2768 I4
- 2769 I5
- 2770 I5
- 2771 I5
- 2772 I5
- 2773 I5
- 2777 A12
- 2778 A12
- 2779 A4
- 2780 A8
- 2781 E2
- 2782 E6
- 2784 H1
- 2785 H2
- 2786 H2
- 2787 H2
- 2788 H2
- 2789 H3
- 2790 H3
- 2791 H3
- 2792 H4
- 2793 H4
- 2794 H4
- 2795 H5
- 2796 H5
- 2797 H5
- 2798 H5
- 2799 H5
- 3701 H11
- 3702 H12
- 3703 F12
- 3704 E11
- 4700 E12
- 4701 E12
- 4702 F12
- 4703 F12
- 4704 F12
- 4705 F12
- 4706 F11
- 5701 A11
- 5702 F11
- 7706 B3
- 7707 B7
- 7708 A11
- 7709 F3
- 7710 F8
- 7711 G11
- F701 H10
- F702 H12
- F704 E12
- F705 F12
- F706 F12
- F707 F12
- F708 A12



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# Digital Board Unit 8/10 Schematic Diagram < DVD Section >



## M8 AUDIO/VIDEO INPUT/OUTPUT

### ANALOG BOARD INTERFACE VIDEO IN/OUT

### ANALOG BOARD INTERFACE AUDIO IN/OUT

Remarks: Component values for video output filter are for ADV7302AKST in PS mode.  
\*OPTION

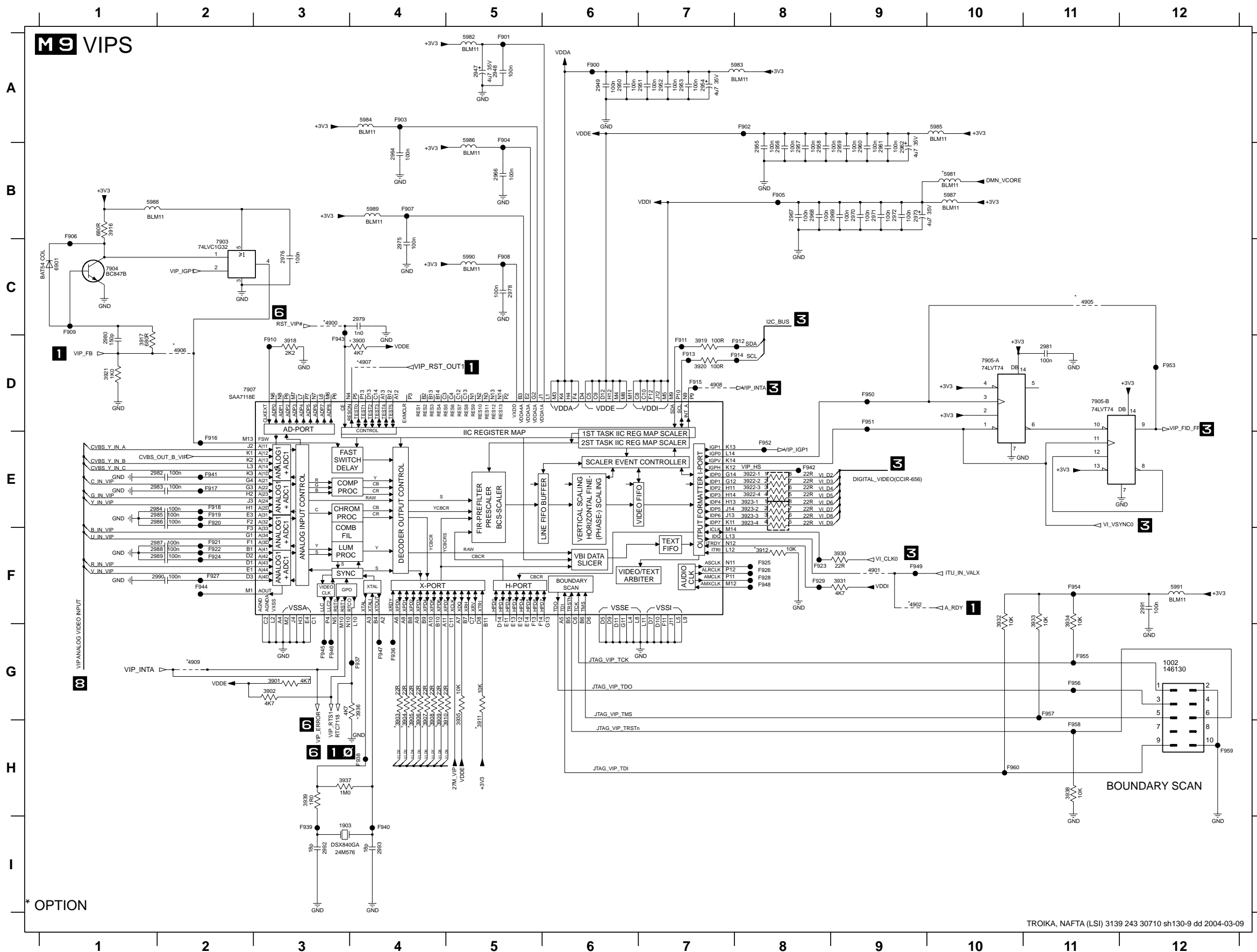
	SD						PS					
	5801	2818	2819	5800	2816	2817	5801	2818	2819	5800	2816	2817
CS4955	10uH	100pF	100pF	10uH	100pF	100pF	-	-	-	-	-	-
ADV7302A	15uH	6.8pF	18pF	15uH	6.8pF	18pF	4u7	47pF	47pF	15uH	6.8pF	18pF

- 1704 C9
- 1802 H14
- 1900 H13
- 1904 D13
- 2800 A4
- 2801 A4
- 2802 A4
- 2803 A4
- 2804 B4
- 2805 B2
- 2806 B4
- 2807 C2
- 2808 C2
- 2809 C2
- 2810 D3
- 2811 D2
- 2812 E3
- 2813 E7
- 2814 C8
- 2815 D8
- 2816 F1
- 2817 F2
- 2818 F6
- 2819 F6
- 2820 G3
- 2821 G7
- 2822 G12
- 2823 G12
- 2824 G12
- 2825 G12
- 2826 G12
- 2827 H9
- 2829 G1
- 2830 G2
- 2831 G6
- 2832 G6
- 2833 H11
- 2834 H3
- 2835 H7
- 2838 I1
- 2839 I2
- 2840 I6
- 2841 I6
- 2842 I12
- 2843 I12
- 2844 I14
- 2845 I13
- 3800 A4
- 3801 A4
- 3802 B2
- 3803 B4
- 3804 B2
- 3805 C2
- 3806 C2
- 3807 D4
- 3808 D3
- 3809 D3
- 3810 D3
- 3811 E11
- 3812 E11
- 3813 E11
- 3814 F3
- 3815 F1
- 3816 F2
- 3817 F8
- 3818 E11
- 3819 E8
- 3821 F11
- 3822 F8
- 3823 G11
- 3824 G11
- 3825 C9
- 3826 E9
- 3827 G9
- 3829 F6
- 3830 H8
- 3831 I8
- 3832 F11
- 3835 F11
- 3836 F11
- 3837 H3
- 3840 H8
- 3841 G1
- 3848 G2
- 3850 G6
- 3856 I3
- 3858 I8
- 3859 I12
- 3866 I1
- 3867 I2
- 3869 I6
- 3874 G12
- 3875 F3
- 3877 I3
- 3878 F7
- 3879 G7
- 3880 I7
- 3881 G10
- 3882 G11
- 3883 F7
- 3884 G6
- 3885 I7
- 3886 D7
- 3887 D7
- 4801 H0
- 4802 H0
- 4803 H0
- 4809 E6
- 4810 G6
- 4811 H6
- 5800 F2
- 5801 F6
- 5802 G2
- 5803 G6
- 5804 F2
- 5805 G2
- 5806 I6
- 5807 H2
- 5808 H4
- 5809 F6
- 5810 G6
- 5811 I6
- 5812 I2
- 5813 I2
- 5814 H10
- 7800 D3
- 7801 C8
- 7802 E9
- 7803 F4
- 7804 F8
- 7805 H8
- 7807 G4
- 7808 G8
- 7811 H11
- 7812 I4
- 7813-A G10
- 7813-B G11
- 7814 I8
- 7815 I8
- 7816 I2
- 7817 F2
- 7818 F2
- 7819 F6
- 7820 G12
- 7821 G12
- 7822 G12
- 7823 G12
- 7824 G12
- 7825 G12
- 7826 G12
- 7827 H9
- 7829 G1
- 7830 G2
- 7831 G6
- 7832 G6
- 7833 H11
- 7834 H3
- 7835 H7
- 7838 I1
- 7839 I2
- 7840 I6
- 7841 I6
- 7842 I12
- 7843 I12
- 7844 I14
- 7845 I13
- 7825 F13
- 7826 F13
- 7827 E13
- 7828 G13
- 7829 G10
- 7830 H3
- 7831 H10
- 7832 G7
- 7833 I7
- 7834 C9
- 7835 D9
- 7836 D9

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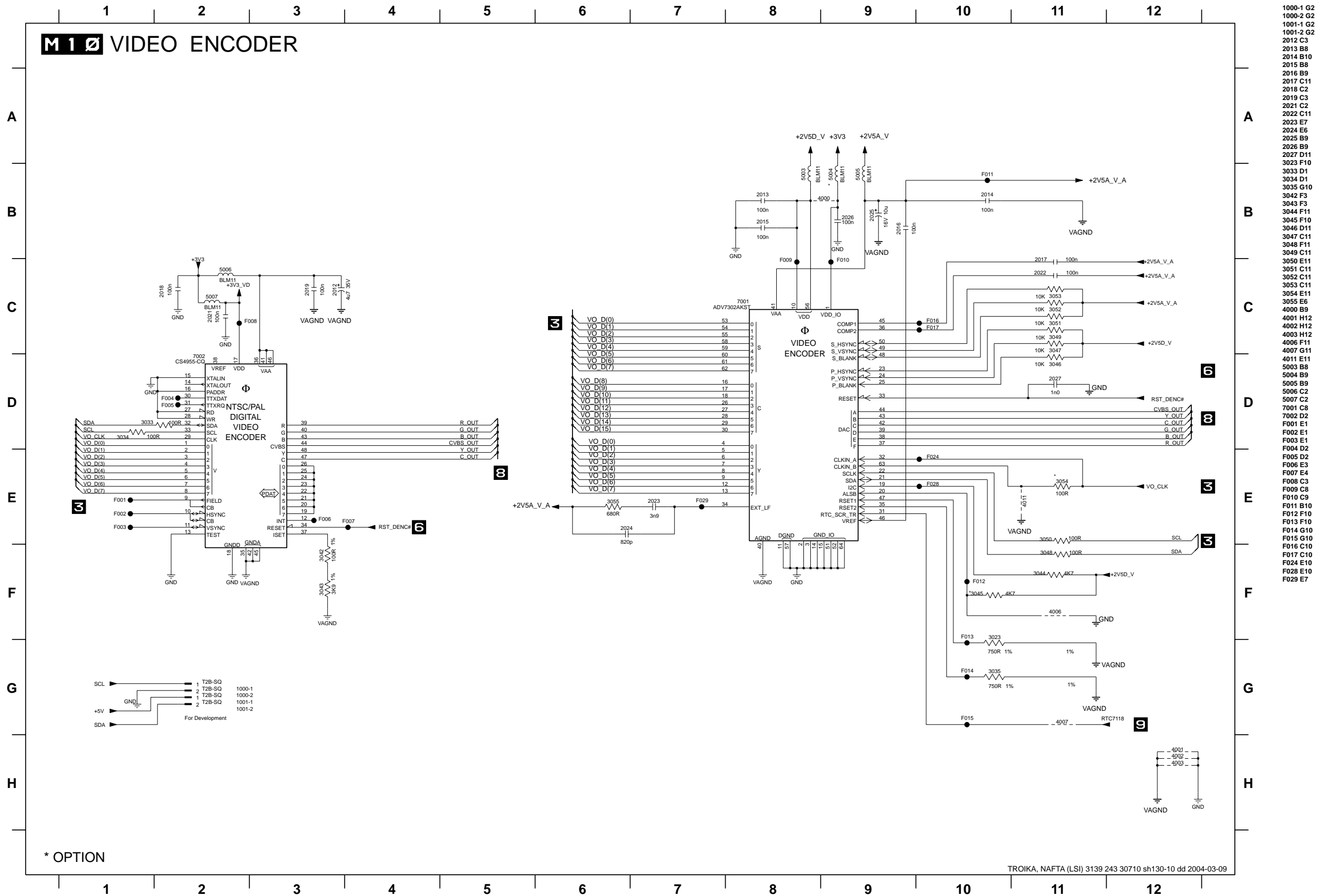
# Digital Board Unit 9/10 Schematic Diagram < DVD Section >



- 1002 G12
- 1903 I3
- 2947 A5
- 2948 A5
- 2949 A6
- 2950 A6
- 2951 A6
- 2952 A7
- 2953 A7
- 2954 A7
- 2955 B8
- 2956 B8
- 2957 B8
- 2958 B8
- 2959 B9
- 2960 B9
- 2961 B9
- 2962 B9
- 2964 B4
- 2966 B5
- 2967 B8
- 2968 B8
- 2969 B8
- 2970 B9
- 2971 B9
- 2972 B9
- 2973 B9
- 2975 C4
- 2976 C5
- 2978 C3
- 2979 C4
- 2980 D1
- 2981 D11
- 2982 E1
- 2983 E1
- 2984 E1
- 2985 E1
- 2986 E1
- 2987 F1
- 2988 F1
- 2989 F1
- 2990 F2
- 2991 F2
- 2992 I3
- 2993 I4
- 3900 D4
- 3901 G3
- 3902 G3
- 3903 G4
- 3904 G4
- 3905 G4
- 3906 G4
- 3907 G4
- 3908 G4
- 3909 G4
- 3910 G5
- 3911 H5
- 3912 F8
- 3916 B1
- 3917 D1
- 3918 D3
- 3919 D7
- 3920 D7
- 3921 D1
- 3922-1 E8
- 3922-2 E8
- 3922-3 E8
- 3922-4 E8
- 3923-1 E8
- 3923-2 E8
- 3923-3 E8
- 3923-4 E8
- 3924 E8
- 3925 E8
- 3926 E8
- 3927 F10
- 3928 F11
- 3929 F11
- 3930 F9
- 3931 F9
- 3932 F10
- 3933 F11
- 3934 F11
- 3935 G5
- 3936 G4
- 3937 H3
- 3938 H11
- 3939 H3
- 4900 C3
- 4901 F9
- 4902 F9
- 4905 C11
- 4906 D2
- 4907 D4
- 4908 D7
- 4909 G2
- 5881 B10
- 5882 A5
- 5883 A8
- 5884 A4
- 5885 A10
- 5886 A5
- 5887 B10
- 5888 B1
- 5889 B4
- 5890 C5
- 5891 F12
- 6901 C1
- 7903 C2
- 7904 C1
- 7905-A D10
- 7905-B D11
- 7907 D3
- F900 A6
- F901 A5
- F902 A8
- F903 A4
- F904 A5
- F905 B8
- F906 B1
- F907 B4
- F908 C5
- F909 C1
- F910 D3
- F911 D7
- F912 D8
- F913 D7
- F914 D8
- F915 D7
- F916 E2
- F917 E2
- F918 E2
- F919 E2
- F920 E2
- F921 F2
- F922 F8
- F923 F8
- F924 F2
- F925 F8
- F926 F8
- F927 F2
- F928 F8
- F929 F8
- F930 G4
- F931 G4
- F932 H4
- F933 I3
- F934 I4
- F935 I4
- F936 G4
- F937 G4
- F938 H4
- F939 I3
- F940 I4
- F941 E2
- F942 E8
- F943 D3
- F944 F2
- F945 G3
- F946 G3
- F947 G4
- F948 F8
- F949 F9
- F950 D9
- F951 D9
- F952 E8
- F953 D12
- F954 G11
- F955 G11
- F956 G11
- F957 H11
- F958 H11
- F959 H12
- F960 H10

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# Digital Board Unit 10/10 Schematic Diagram < DVD Section >



- 1000-1 G2
- 1000-2 G2
- 1001-1 G2
- 1001-2 G2
- 2012 C3
- 2013 B8
- 2014 B10
- 2015 B8
- 2016 B9
- 2017 C11
- 2018 C2
- 2019 C3
- 2021 C2
- 2022 C11
- 2023 E7
- 2024 E6
- 2025 B9
- 2026 B9
- 2027 D11
- 2028 F10
- 3033 D1
- 3034 D1
- 3035 G10
- 3042 F3
- 3043 F3
- 3044 F11
- 3045 F10
- 3046 D11
- 3047 C11
- 3048 F11
- 3049 C11
- 3050 E11
- 3051 C11
- 3052 C11
- 3053 C11
- 3054 E11
- 3055 E6
- 4000 B9
- 4001 H12
- 4002 H12
- 4003 H12
- 4006 F11
- 4007 G11
- 4011 E11
- 5003 B8
- 5004 B9
- 5005 B9
- 5006 C2
- 5007 C2
- 7001 C8
- 7002 D2
- F001 E1
- F002 E1
- F003 E1
- F004 D2
- F005 D2
- F006 E3
- F007 E4
- F008 C3
- F009 C8
- F010 C9
- F011 B10
- F012 F10
- F013 F10
- F014 G10
- F015 G10
- F016 C10
- F017 C10
- F024 E10
- F028 E10
- F029 E7

\* OPTION

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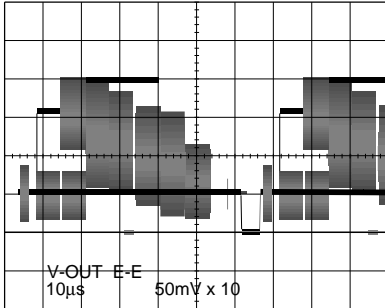


# WAVEFORMS

**NOTE:**

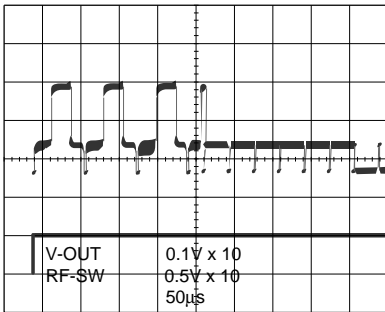
Input: COLOR BAR SIGNAL (WITH 1KHz AUDIO SIGNAL)

**WF1** TP751



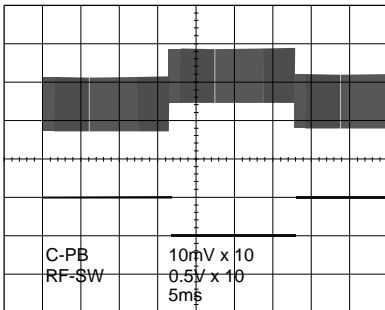
**WF1** UPPER TP751

**WF2** LOWER TP302

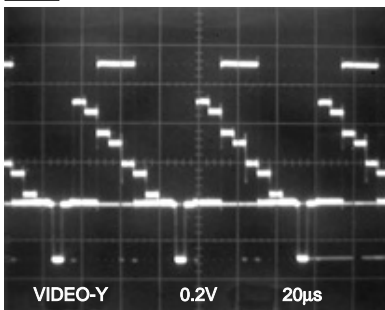


**WF3** UPPER TP301

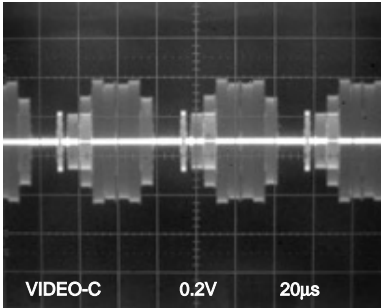
**WF2** LOWER TP302



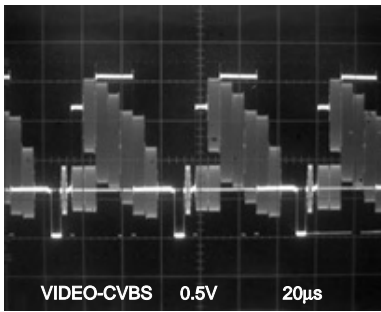
**WF4** Pin 9 of CN213



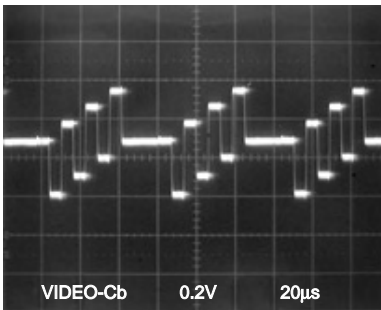
**WF5** Pin 7 of CN213



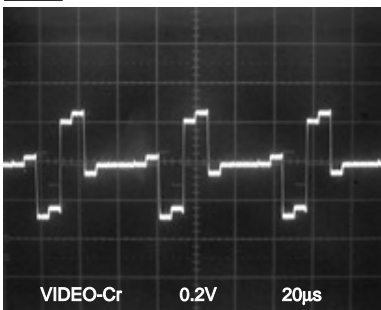
**WF6** Pin 18 of CN213



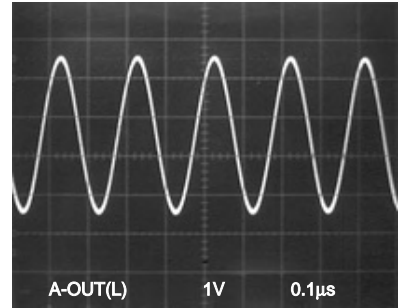
**WF7** Pin 1 of CN213



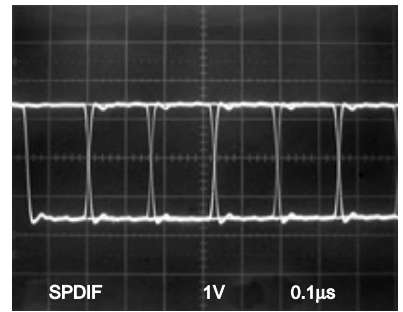
**WF8** Pin 5 of CN213



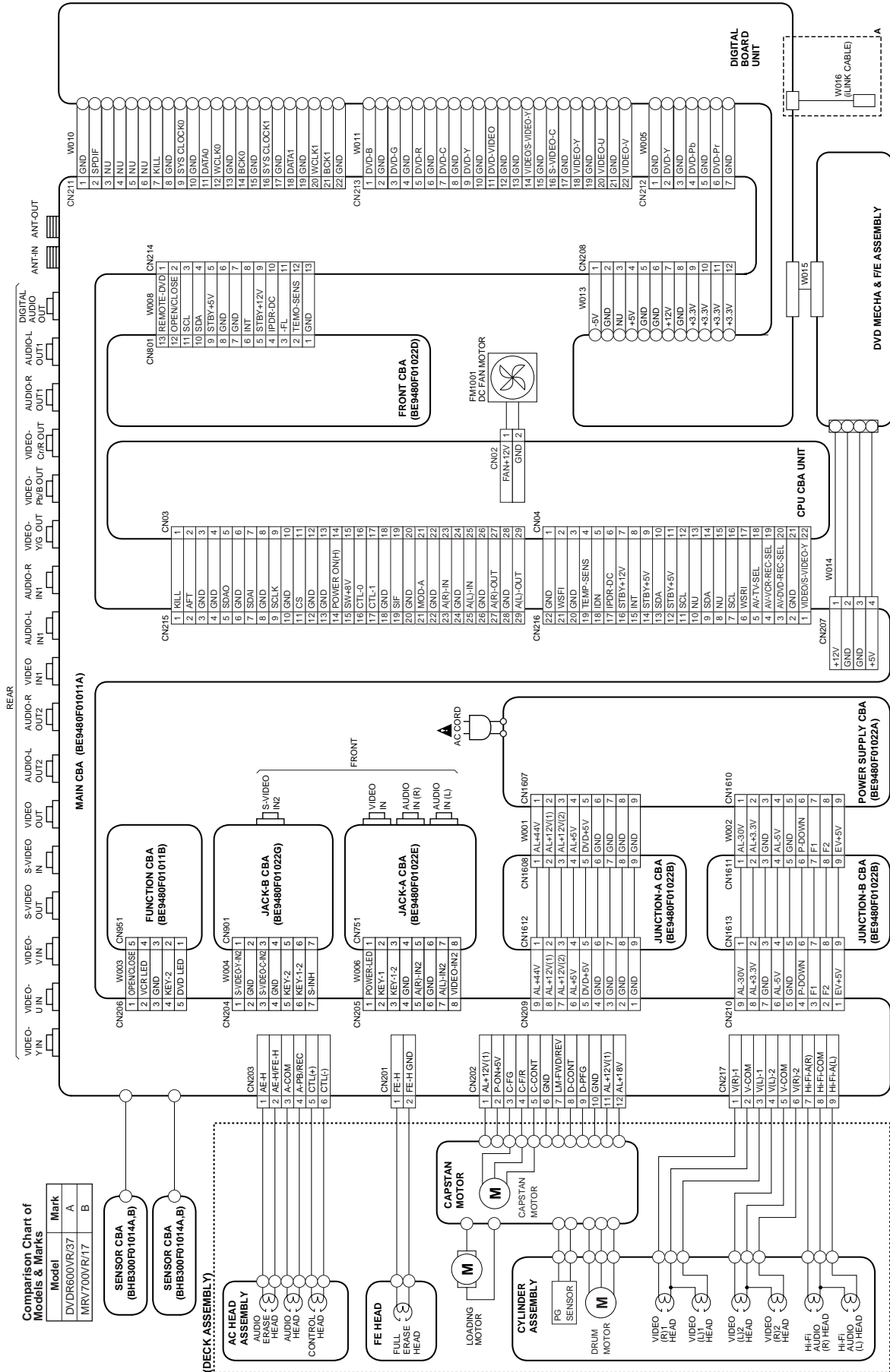
**WF9** Pin 29 of CN215



**WF10** Pin 2 of CN211



# WIRING DIAGRAM



# SYSTEM CONTROL TIMING CHARTS

## [ VCR Section ]

### Mode SW : LD-SW

LD-SW Position detection A/D Input voltage Limit (Calculated voltage)	Symbol
3.76V~4.50V (4.12V)	EJ
4.51V~5.00V (5.00V)	CL
0.00V~0.25V (0.00V)	SB
1.06V~1.50V (1.21V)	TL
0.66V~1.05V (0.91V)	FB
1.99V~2.60V (2.17V)	SF
1.51V~1.98V (1.80V)	SM
3.20V~3.75V (3.40V)	AU
0.26V~0.65V (0.44V)	AL
4.51V~5.00V (5.00V)	SS
2.61V~3.19V (2.97V)	RS

↑ Note:

#### Note:

EJ → RS: Loading FWD (LM-FWD/REV "H")

RS → EJ: Loading REV (LM-FWD/REV "L")

Stop (A) = Loading

Stop (B) = Unloading

#### Note:

Symbol	Loading Status
EJ	Eject
CL	Eject ~ REW Reel
SB	REW Reel ~ Stop(B)
TL	Stop(B) ~ Brake Cancel
FB	Brake Cancel ~ FF / REW
SF	FF / REW ~ Stop(M), (FF / REW)
SM	Stop(M), (FF / REW) ~ Stop(A)
AU	Stop(A) ~ Play / REC
AL	Play / REC ~ Still / Slow
SS	Still / Slow ~ RS (REW Search)
RS	RS (REW Search)



# Still/Slow Control Frame Advance Timing Chart

## 1) SP Mode

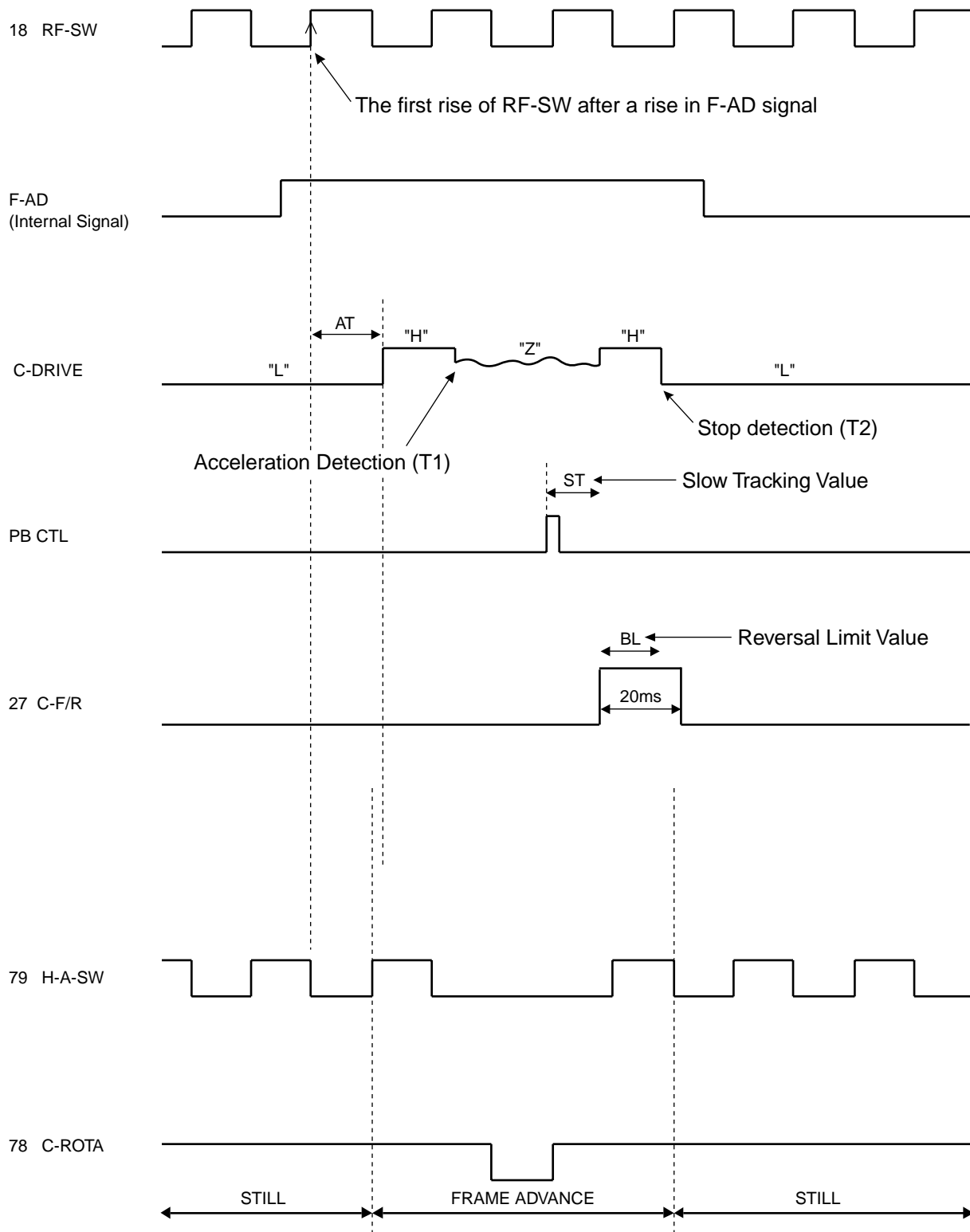


Fig. 1

## 2) LP/SLP Mode

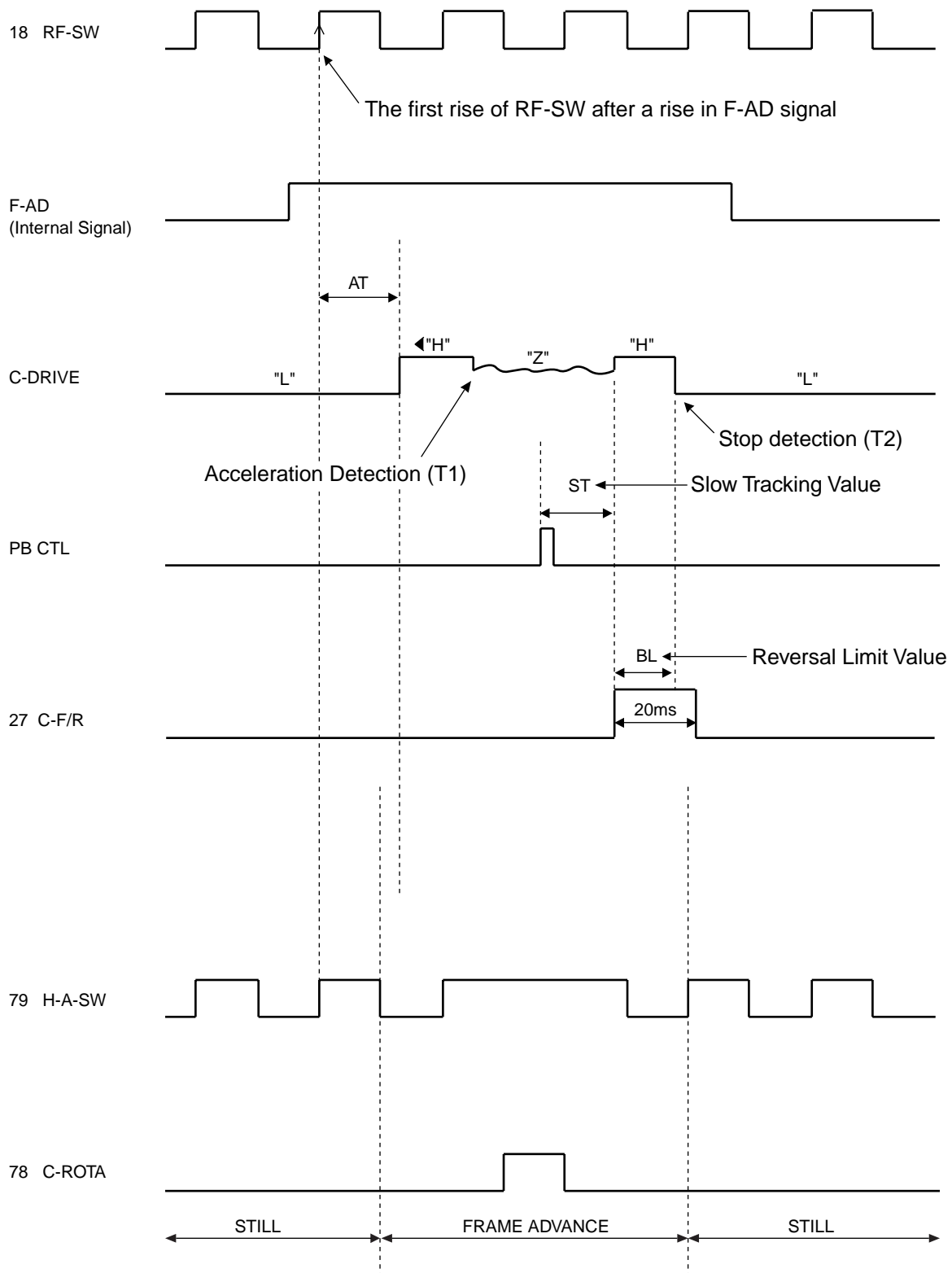


Fig. 2

1. EJECT (POWER OFF) -> CASSETTE IN (POWER ON) -> STOP(B) -> STOP(A) -> PLAY -> RS -> FS -> PLAY -> STILL -> PLAY -> STOP(A)

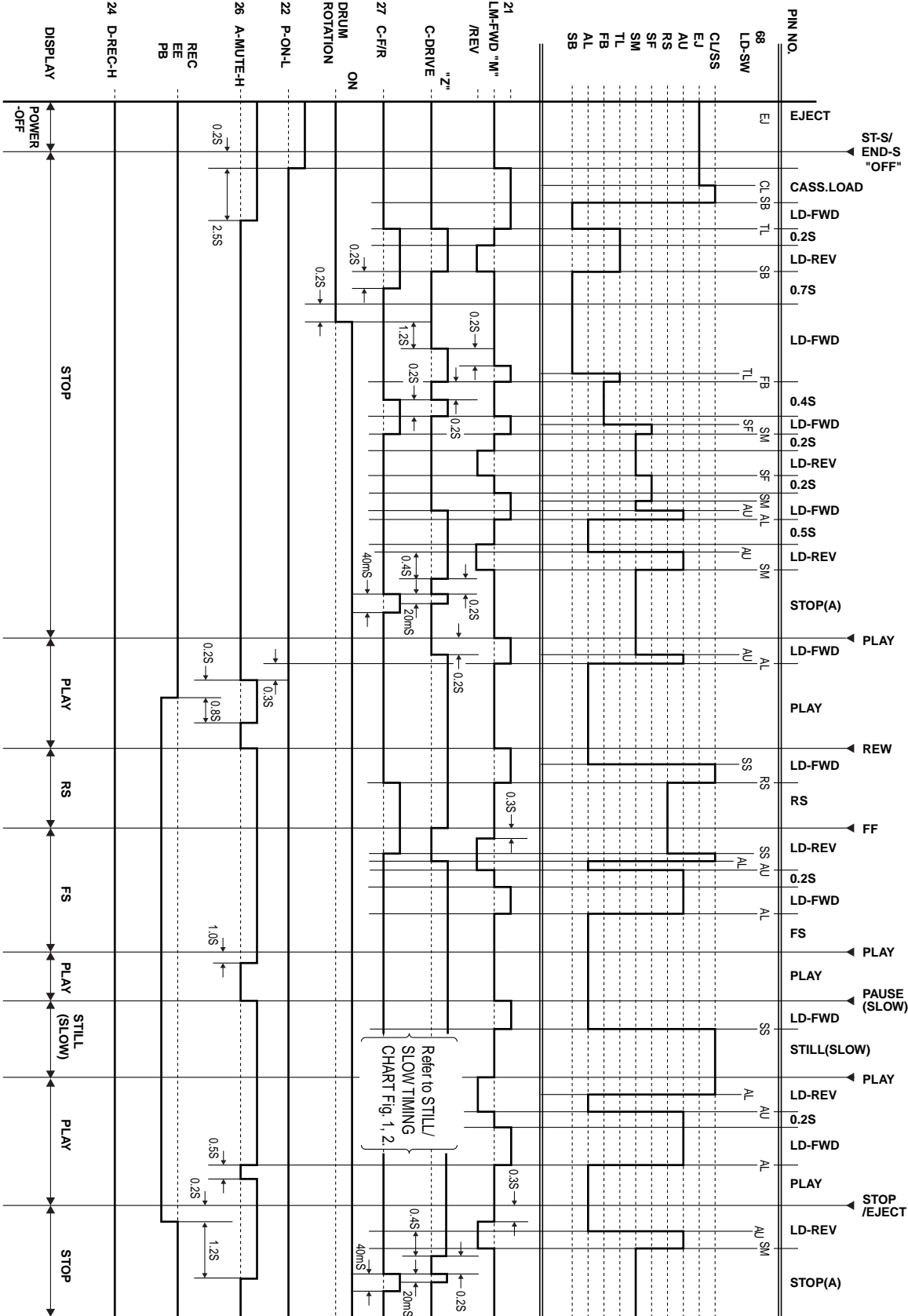


Fig. 3

2. STOP(A) -> FF -> STOP(A) -> REW -> STOP(A) -> REC -> PAUSE -> PAUSE or REC -> STOP(A) -> EJECT

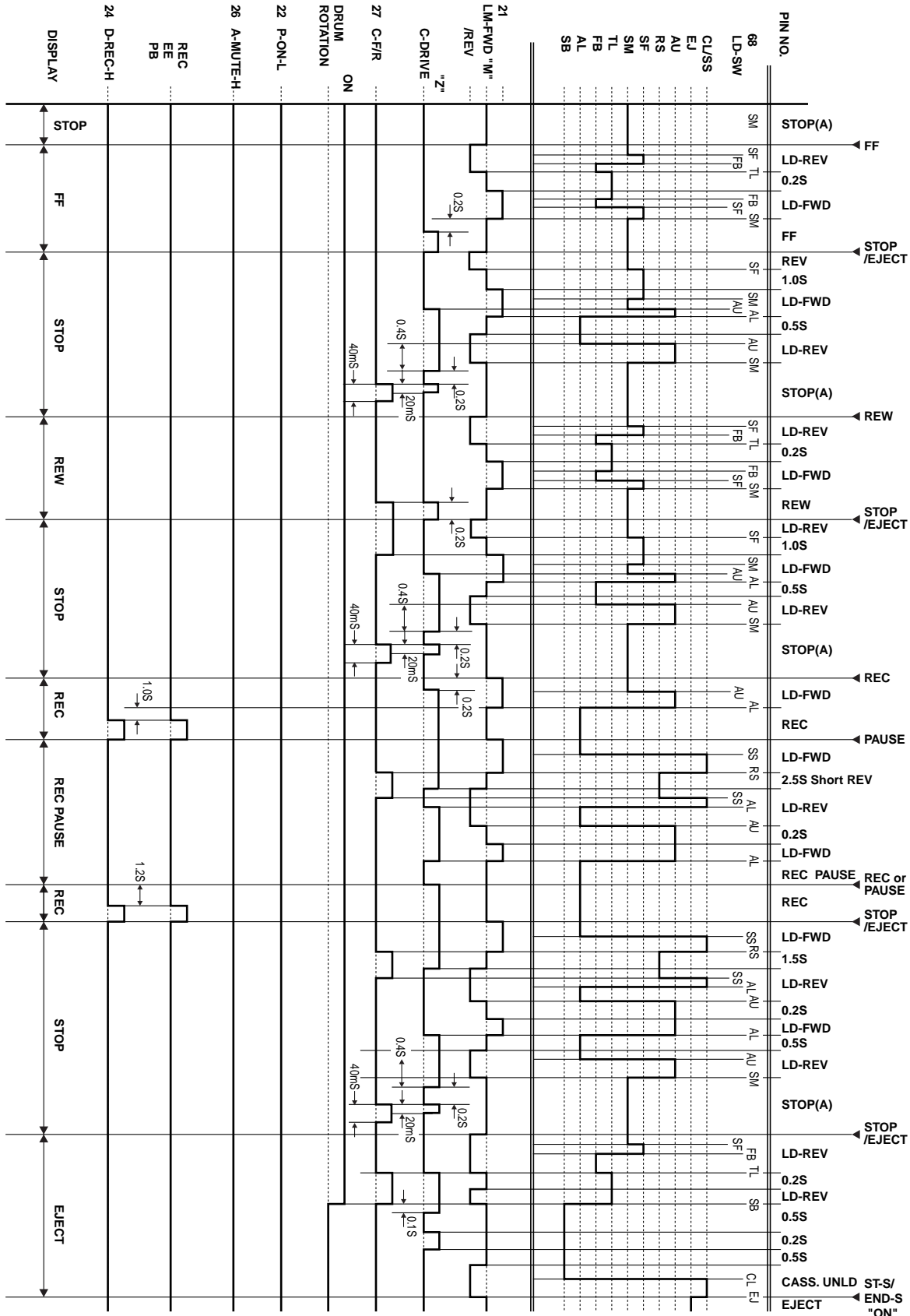
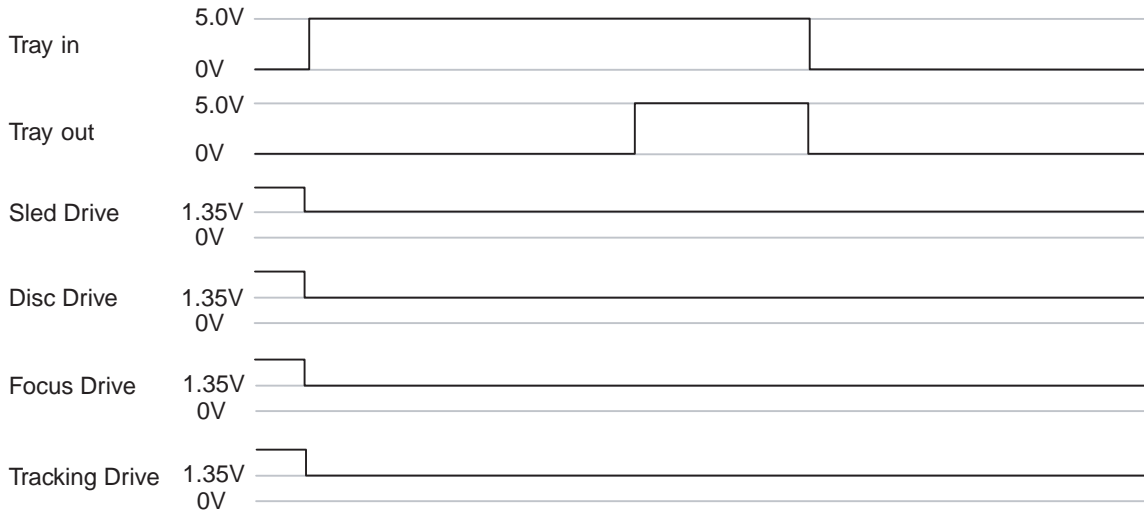


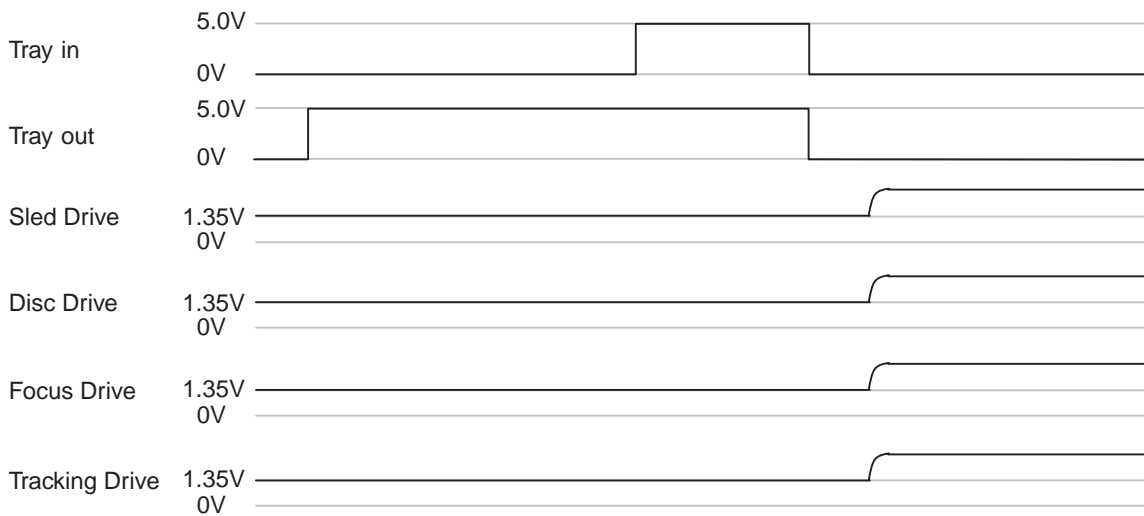
Fig. 4

# [ DVD Section ]

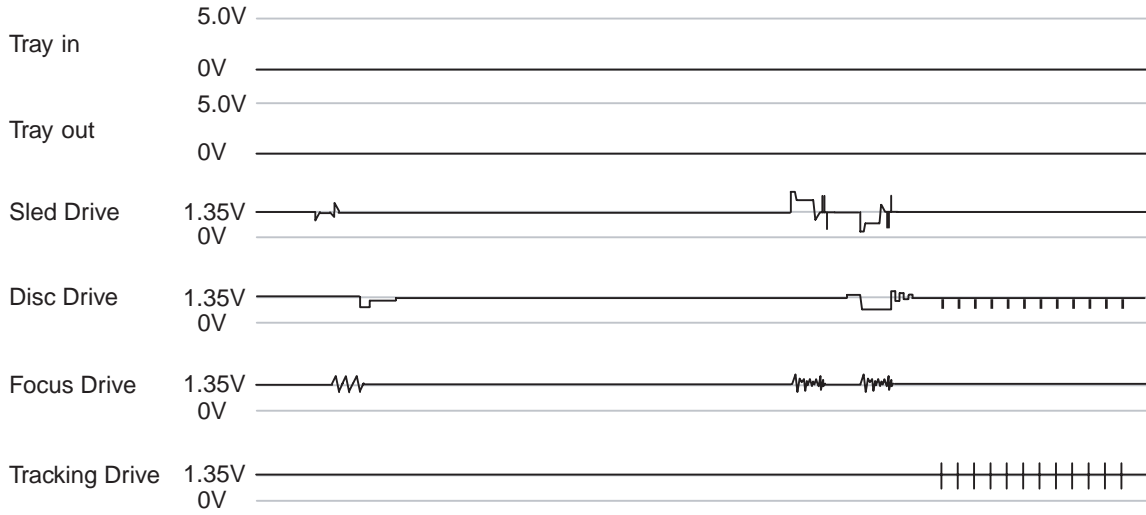
## Tray in



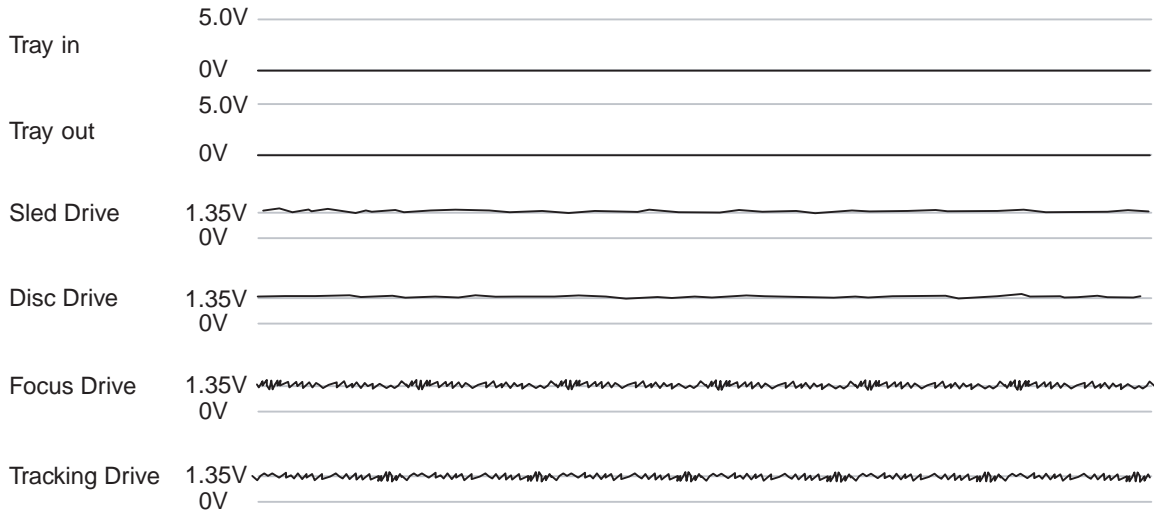
## Tray out



## Spin up



## Playing



# IC PIN FUNCTION DESCRIPTIONS

## [ VCR Section ]

### IC228 ( SYSTEM CONTROL MICROPROCESOR )

“H” ≥ 4.5V, “L” ≤ 1.0V

Pin No.	IN/OUT	Signal Name	Function	Active Level
1	IN	CS	Communication of Select with Sub Micro Controller	L
2	IN	REC-SAF-SW	Recording Safety SW Detect (With Record tab = "L"/ With out Record tab = "H")	H
3	IN	T-REEL	Take Up Reel Rotation Signal	PULSE
4	-	N.U.	Not Used	-
5	IN	REMOTE-VIDEO	Remote Control Sensor	L
6	IN	S-CLK	Communication of Clock with Sub Micro Controller	H/L
7	IN	SDA-IN	Communication of Data from Sub Micro Controller	H/L
8	OUT	SDA-OUT	Communication of Data to Sub Micro Controller	H/L
9	OUT	DISPLAY-ENA	FL Display Driver IC Enable Control Output Signal	L
10	OUT	DISPLAY-DATA	FL Display Driver IC Data Control Output Signal	H/L
11	OUT	DISPLAY-CLK	FL Display Driver IC Clock Control Output Signal	H/L
12	IN/OUT	IIC-BUS-SDA	IIC BUS Control Data	H/L
13	OUT	IIC-BUS-SCL	IIC BUS Control Clock	H/L
14	OUT	YCA-SCL	YCA IC Control Clock	H/L
15	OUT	YCA-SDA	YCA IC Control Data	H/L
16	OUT	YCA-CS	YCA IC Control Chip Select	H
17	-	N.U.	Not Used	-
18	OUT	RF-SW	Video Head Switching Pulse	H/L
19	OUT	D-V SYNC	Dummy V-sync Output	H/Hi-z

Pin No.	IN/OUT	Signal Name	Function	Active Level
20	IN	RESET	System Reset Signal (Reset="L")	L
21	OUT	LM-FWD/REV	Loading Motor FWD/REV Output	H/Z/L
22	OUT	P-ON-L	Power On Signal to Low	L
23	-	N.U.	Not Used	-
24	OUT	D-REC-H	Delayed Record Signal	H
25	OUT	Hi-Fi-H-SW	HiFi Audio Head Switching Pulse	H/L
26	OUT	A-MUTE-H	Audio Mute Control Signal (Mute = "H")	H
27	OUT	C-F/R	Capstan Motor FWD/REV Control Signal (FWD="L"/REV="H")	H/L
28	OUT	C-CONT	Capstan Motor Control Signal	PWM
29	OUT	D-CONT	Drum Motor Control Signal	PWM
30	-	N.U.	Not Used	-
31	-	VDD	VDD (AL+5V)	-
32	OUT	OSCO	Main Clock Output 14.31818MHz	-
33	IN	OSCI	Main Clock Input 14.31818MHz	-
34	-	VSS	VSS (GND)	-
35	-	N.U.	Not Used	-
36	-	N.U.	Not Used	-
37	IN	SXI	Operation Mode Selecting Input Signal	-
38	OUT	VIDEO-OUT	Composite Video Signal Output	-
39	-	Vss2	Vss2 (GND)	-
40	IN	VIDEO-IN	Composite Video Signal Input	-
41	IN	C-SYNC	Composite Synchronized Pulse	PULSE
42	-	VDD2	VDD2 (AL+5V)	-
43	IN	AFCC	Low Path Filter Input Signal For AFC	-
44	OUT	AFCLPF	Low Path Filter Output Signal For AFC	-
45	OUT	INSEL2	Input Select	H/L
46	-	N.U.	Not Used	-

Pin No.	IN/ OUT	Signal Name	Function	Active Level
47	IN	D-PFG	Drum PG/FG Input Signal	PULSE
48	IN	ON/OFF	On/Off Switching Signal	-
49	IN	C-FG	Capstan Motor Rotation Detection Pulse	PULSE
50	-	AFG	GND	-
51	OUT	VRO	Servo Standard Voltage Output	-
52	IN	VRI	Servo Standard Voltage Input	-
53	-	AVss	AVSS (GND)	-
54	IN	CTLA	CTL Amp. AC GND	-
55	-	AVDD	AVDD (AL+5V)	-
56	IN/ OUT	CTL (+)	Playback/Record Control Signal (+)	-
57	IN/ OUT	CTL (-)	Playback/Record Control Signal (-)	-
58	OUT	CTL	Amp. Output Control Signal for Test Point	-
59	IN	HiFi/ NOR-IN	Audio Mode Input HiFi="L"/ Normal="H"	A/D
60	IN	POWER-SAF	P-ON+5V Power Detection Input Signal	A/D
61	-	N.U.	Not Used	-
62	IN	END-S	Tape End Position Detect Signal	A/D
63	-	N.U.	Not Used	-
64	IN	V-ENV	Video Envelope Comparator Signal	A/D
65	IN	PG-DELAY	Video Head Switching Pulse Signal Adjusted Voltage	A/D
66	IN	KEY-2	A/D Key Data Signal 2	A/D
67	IN	KEY-1	A/D Key Data Signal 1	A/D
68	IN	LD-SW	Deck Mode Position Detector Signal	A/D
69	IN	ST-S	Tape Start Position Detector Signal	A/D
70	OUT	VCR-IND	VCR Mode LED Signal Output	H
71	OUT	DVD-IND	DVD Mode LED Signal Output	H
72	-	N.U.	Not Used	-
73	OUT	POWER-IND	Power LED Signal Output	H
74	-	N.U.	Not Used	-

Pin No.	IN/ OUT	Signal Name	Function	Active Level
75	-	N.U.	Not Used	-
76	-	N.U.	Not Used	-
77	-	N.U.	Not Used	-
78	OUT	C-ROTA	Color Phase Rotary Changeover Signal	H/L
79	OUT	H-A-SW	Video Head Amp Switching Pulse	H/L
80	IN	H-A-COMP	Head Amp Comparator Signal	H/L

**Notes:**

Abbreviation for Active Level:

PWM -----Pulse Wide Modulation

A/D-----Analog - Digital Converter



## IC801 ( FRONT PANEL CONTROL )

Pin No.	IN/ OUT	Signal Name	Name Function
1	-	N.U.	Not Used
2	-	N.U.	Not Used
3	-	N.U.	Not Used
4	-	N.U.	Not Used
5	-	N.U.	Not Used
6	-	N.U.	Not Used
7	-	GND	Ground
8	OUT	XOUT	External Clock Output
9	IN	XIN	External Clock Input
10	IN/ OUT	RESET	Reset Signal Input / Watchdog Timer Output / Address Trap Reset Output / System Clock Reset Output
11	-	N.U.	Not Used
12	-	N.U.	Not Used
13	-	GND	Ground
14	-	N.U.	Not Used
15	IN	INT	External Interrupt "0" Input
16	-	N.U.	Not Used
17	-	N.U.	Not Used
18	-	N.U.	Not Used
19	IN/ OUT	PWM-VGNSTBY	PWM (Pulse Width Modulation) Output
20	IN	REMOTE-DVD	Remote Signal Input
21	-	N.U.	Not Used
22	-	N.U.	Not Used
23	IN/ OUT	SCL	IIC BUS Control Clock
24	IN/ OUT	SDA	IIC BUS Control Data
25	-	N.U.	Not Used
26	-	N.U.	Not Used
27	-	N.U.	Not Used
28	IN	TEST1	Terminal for Shipment Examination (Always "L")
29	-	N.U.	Not Used
30	-	N.U.	Not Used
31	-	N.U.	Not Used
32	-	N.U.	Not Used

Pin No.	IN/ OUT	Signal Name	Name Function
33	-	N.U.	Not Used
34	-	N.U.	Not Used
35	-	N.U.	Not Used
36	IN	K1	Key Data 1 Input
37	IN	K2	Key Data 2 Input
38	-	GND	Ground
39	-	VAREF	GND
40	-	VDD	+5V Power Supply
41	OUT	V0	VFT Output (High Electricity Output)
42		V2	
43		8G/9G	
44		7G	
45		6G	
46		5G	
47		4G	
48		3G	
49		2G	
50		1G	
51		S13	
52		S12	
53		S9	
54		S11	
55		S10	
56		S8	

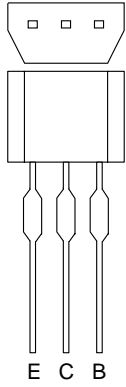
Pin No.	IN/ OUT	Signal Name	Name Function
57	OUT	S7	VFT Output (Middle Electricity Output)
58		S6	
59		S5	
60		S4	
61		S3	
62		S2	
63		S1	
64		S14	
65		S15	
66		S16	
67		S17	
68		S18	
69		S19	
70		S20	
71		S21	
72		S22	
73		S23	
74		S24	
75		S25	
76		S26	
77	S27		
78	-	VKK	Indicator Panel Drive Power Supply
79	-	GND	Ground
80	-	N.U.	Not Used

## [ DVD Section ]

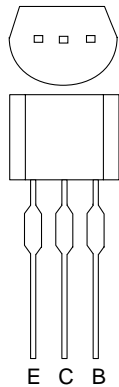
### IC221 ( FIP DRIVER )

Pin No.	IN/ OUT	Signal Name	Name Function
1	IN	CLK	Clock Input
2	IN	STB	Serial Interface Strobe
3	-	N.U.	Not Used
4	-	N.U.	Not Used
5	-	VSS	GND
6	-	VDD	Power Supply
7	OUT	S1	Segment Output
8		S2	
9		S3	
10		S4	
11		S5	
12		S6	
13		S7	
14		S8	
15	-	VEE	Pull Down Level
16	OUT	S9	Segment Output
17	OUT	7G	Grid Output
18		6G	
19		5G	
20		4G	
21		3G	
22		2G	
23		1G	
24	-	VDD	Power Supply
25	-	VSS	GND
26	IN	OSC	Oscillator Input
27	-	N.U.	Not Used
28	IN	DIN	Serial Data Input

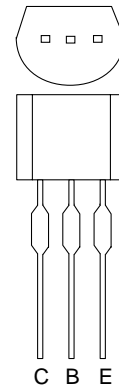
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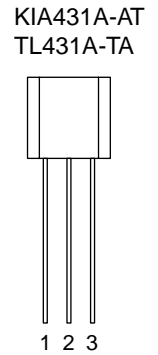
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2SC2785(K)  
BN1F4M-T  
KRA103M  
KRC108M  
KTA1266(GR)  
KTA1267(GR,Y)  
KTC3193(Y)  
KTC3199(BL,Y)



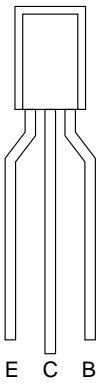
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2SC1815-BL(TPE2)  
2SC1815-GR(TPE2)  
2SC2120-Y(TPE2)  
KTC3198(GR,Y)  
KTC3203(Y)



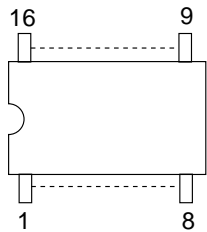
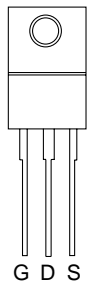
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BC557-B-AT



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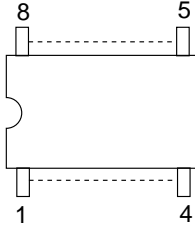


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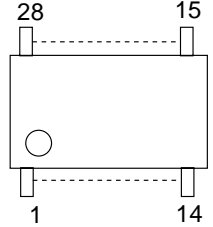


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TC4053BF(N)

MC33078DR2

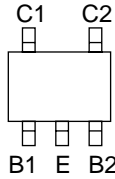


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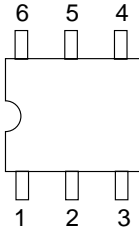


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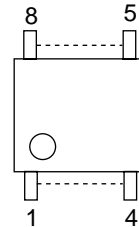


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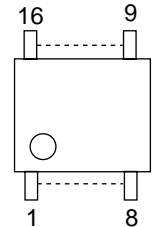


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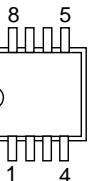
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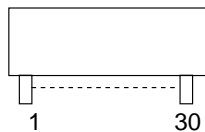
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UDA1361TS



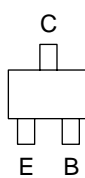
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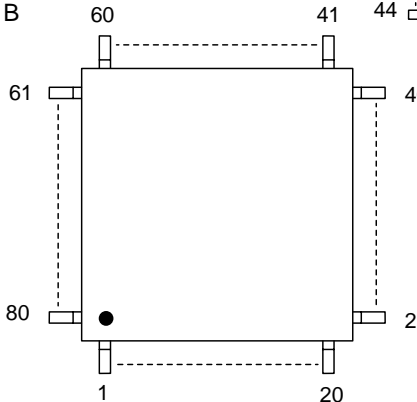


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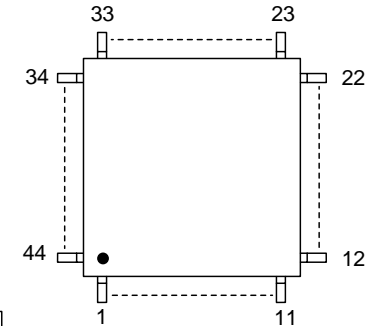


A C  
K E

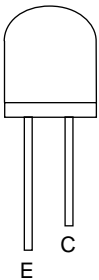
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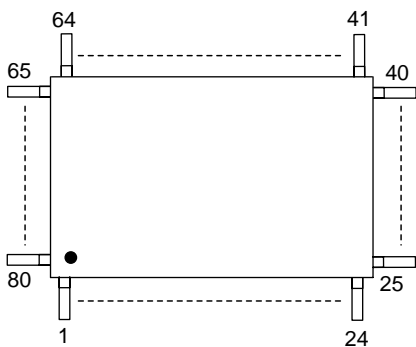
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Note:  
A: Anode  
K: Cathode  
E: Emitter  
C: Collector  
B: Base  
R: Reference  
S: Source  
G: Gate  
D: Drain

# ELECTRICAL PARTS LIST

**PRODUCT SAFETY NOTE:** Products marked with a **▲** have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

To order parts call the TOLL FREE Philips Sales Center number: **1 - 800 - 851 - 8885**  
(In Canada) **1 - 800 - 363 - PART.**  
**1 - 800 - 535 - 3715 (Fax).**

## NOTES:

- Parts that are not assigned part numbers (---- or blank) are not normally available.
- "●" = SMD

## CPU CBA UNIT

Ref. No.	▲	Description	ID No.	Part No.
		CPU CBA UNIT	1VMN20220	9965 000 25430

## DIGITAL BOARD UNIT

Ref. No.	▲	Description	ID No.	Part No.
		DIGITAL BOARD UNIT	1VSA10574	4835 214 38229

## MCV CBA

Ref. No.	▲	Description	ID No.	Part No.
		MCV CBA Consists of the following:	1VSA10561	9965 000 25434
		MAIN CBA (MCV-A) FUNCTION CBA (MCV-B) SENSOR CBA	1VSA10578	9965 000 14801

## MAIN CBA

Ref. No.	▲	Description	ID No.	Part No.
		MAIN CBA (MCV-A) Consists of the following::	-----	
<b>CAPACITORS</b>				
C201		ELECTROLYTIC CAP. 10µF/16V ±20% NP	CP1CMASNC100	---- --
C202		ELECTROLYTIC CAP. 10µF/16V ±20% NP	CP1CMASNC100	---- --
●C204		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C205		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C206		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C207		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C208		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C209		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
C211		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
C212		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C214		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634

Ref. No.	▲	Description	ID No.	Part No.
C215		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C216		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
●C217		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C218		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C219		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C220		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C221		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
●C222		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C223		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C224		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
●C225		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
C226		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C227		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
●C230		CHIP CERAMIC CAP.(1608) 47pF/50V ±5% (CH) or CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1JU3CH470 CHD1JU3CG470	4835 122 87148 4835 122 87034
C232		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
C233		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C235		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
●C236		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C238		CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
●C239		CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
●C240		CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
●C241		CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
●C242		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C243		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
		CHIP CERAMIC CAP. 27pF/50V ±5% (CG)	CHD1JU3CG270	4835 122 87029
●C244		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
●C247		CHIP CERAMIC CAP. 27pF/50V ±5% (CH) or CHIP CERAMIC CAP. 27pF/50V ±5% (CG)	CHD1JU3CH270 CHD1JU3CG270	4835 122 87029
●C248		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
C249		ELECTROLYTIC CAP. 10µF/16V ±20% NP	CP1CMASNC100	---- --
C250		ELECTROLYTIC CAP. 10µF/16V ±20% NP	CP1CMASNC100	---- --
●C252		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
●C253		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
●C255		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203

Ref. No.	Description	ID No.	Part No.
●C256	CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
C258	ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
●C259	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C260	CHIP CERAMIC CAP. 1μF/10V +80/-20% (F)	CHD1AZ30F105	4835 122 87639
●C274	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C275	ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C277	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C278	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C279	ELECTROLYTIC CAP. 100μF/6.3V H7	CE0KMAVSL101	4835 124 47127
●C289	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C290	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C292	CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CH) or	CHD1JJ3CH101	4835 122 87193
	CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CG)	CHD1JJ3CG101	4835 122 87193
●C293	CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87193
●C294	CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
●C297	CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
●C298	CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
●C299	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C300	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C302	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C303	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C304	ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C306	CHIP CERAMIC CAP.(1608) 0.033μF/50V ±10% (B) or	CHD1JK30B333	4835 122 87384
	CHIP CERAMIC CAP.(1608) 0.033μF/25V ±10% (B)	CHD1EK30B333	4835 122 87221
C307	ELECTROLYTIC CAP. 4.7μF/50V ±20% H7	CE1JMAVSL4R7	4835 124 97061
●C308	CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
●C310	CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C312	ELECTROLYTIC CAP. 4.7μF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407
●C316	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C317	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C318	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C319	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C320	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C321	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C322	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634

Ref. No.	Description	ID No.	Part No.
●C323	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C325	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C326	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C327	ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C328	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C329	ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
C330	ELECTROLYTIC CAP. 10μF/16V ±20% NP	CP1CMASNC100	--- ---
●C333	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C334	CHIP CERAMIC CAP.(1608) 0.047μF/50V ±10% (B) or	CHD1JK30B473	4835 122 87162
	CHIP CERAMIC CAP.(1608) 0.047μF/25V ±10% (B)	CHD1EK30B473	4835 122 87185
C336	ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C341	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C342	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C343	CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
●C345	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C346	ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C347	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C348	ELECTROLYTIC CAP. 47μF/16V ±20% H7	CE1CMAVSL470	4835 124 47073
●C349	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C350	ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
●C351	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C354	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C355	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C356	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C357	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C358	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
	CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C359	CHIP CERAMIC CAP. 27pF/50V ±5% (CH) or	CHD1JJ3CH270	4835 122 87029
	CHIP CERAMIC CAP. 27pF/50V ±5% (CG)	CHD1JJ3CG270	4835 122 87029
●C362	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C363	ELECTROLYTIC CAP. 4.7μF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407

Ref. No.	▲	Description	ID No.	Part No.
C364		ELECTROLYTIC CAP. 4.7μF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407
C366		ELECTROLYTIC CAP. 0.1μF/50V ±20% H7	CE1JMAVSLR10	4835 124 47048
C368		ELECTROLYTIC CAP. 0.1μF/50V ±20% H7	CE1JMAVSLR10	4835 124 47048
C371		ELECTROLYTIC CAP. 4.7μF/50V ±20% H7	CE1JMAVSL4R7	4835 124 97061
C373		ELECTROLYTIC CAP. 4.7μF/50V ±20% H7	CE1JMAVSL4R7	4835 124 97061
C374		ELECTROLYTIC CAP. 47μF/16V ±20% H7	CE1CMAVSL470	4835 124 47073
C375		ELECTROLYTIC CAP. 0.1μF/50V ±20% H7	CE1JMAVSLR10	4835 124 47048
C376		ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C377		ELECTROLYTIC CAP. 1μF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
C379		ELECTROLYTIC CAP. 22μF/6.3V ±20% H7	CE0KMAVSL220	4835 124 47238
C380		ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C381		ELECTROLYTIC CAP. 4.7μF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407
●C383		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C384		ELECTROLYTIC CAP. 22μF/6.3V ±20% H7	CE0KMAVSL220	4835 124 47238
●C386		CHIP CERAMIC CAP.(MELF) 4700pF/16V ±10% (Y)	CZM1CK30Y472	4835 122 87646
●C388		CHIP CERAMIC CAP.(MELF) 0.01μF/16V ±80/-20% (F)	CZM1CZ30F103	4835 122 87647
●C389		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
●C390		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104	4835 122 87213
C393		ELECTROLYTIC CAP. 4.7μF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407
C394		ELECTROLYTIC CAP. 220μF/6.3V ±20% H7	CE0KMAVSL221	4835 124 47168
●C395		CHIP CERAMIC CAP.(1608) 0.022μF/50V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.022μF/25V ±10% (B)	CHD1JK30B223	4835 122 87209
●C400		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104	4835 122 87213
C401		ELECTROLYTIC CAP. 22μF/6.3V ±20% H7	CE0KMAVSL220	4835 124 47238
●C402		CHIP CERAMIC CAP.(MELF) 4700pF/16V ±10% (Y)	CZM1CK30Y472	4835 122 87646
●C403		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C404		ELECTROLYTIC CAP. 4.7μF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407
C406		ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C407		ELECTROLYTIC CAP. 1μF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C410		CHIP CERAMIC CAP.(1608) 0.1μF/50V ±80/-20% (F) or CHIP CERAMIC CAP.(1608) 0.1μF/25V ±80/-20% (F) or CHIP CERAMIC CAP. 0.1μF/50V ±80/-20% (FZ)	CHD1JZ30F104	4835 122 87645
C412		ELECTROLYTIC CAP. 1μF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C414		CHIP CERAMIC CAP.(1608) 390pF/50V ±5% (CH) or CHIP CERAMIC CAP. 390pF/50V ±5% (CG)	CHD1J3CG391	4835 122 87268
C416		PCB JUMPER D0.6-P5.0	JW5.0T	---
●C417		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CH) or CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CG)	CHD1J3CH101	4835 122 87193
●C418		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CH) or CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CG)	CHD1J3CG101	4835 122 87193
●C420		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C422		ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C423		CHIP CERAMIC CAP.(1608) 0.1μF/50V ±80/-20% (F) or	CHD1JZ30F104	4835 122 87645

Ref. No.	▲	Description	ID No.	Part No.
		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±80/-20% (F) or	CHD1EZ30F104	4835 122 87213
		CHIP CERAMIC CAP. 0.1μF/50V ±80/-20% (FZ)	CHD1JZ3FZ104	4835 122 87645
C424		ELECTROLYTIC CAP. 22μF/6.3V ±20% H7	CE0KMAVSL220	4835 124 47238
●C425		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C427		ELECTROLYTIC CAP. 1μF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C428		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C429		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C430		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C432		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C433		ELECTROLYTIC CAP. 22μF/6.3V ±20% H7	CE0KMAVSL220	4835 124 47238
●C434		CHIP CERAMIC CAP.(MELF) 0.01μF/16V ±80/-20% (F)	CZM1CZ30F103	4835 122 87647
●C435		CHIP CERAMIC CAP.(MELF) 0.01μF/16V ±80/-20% (F)	CZM1CZ30F103	4835 122 87647
●C438		CHIP CERAMIC CAP.(1608) 68pF/50V ±5% (CH) or CHIP CERAMIC CAP. 68pF/50V ±5% (CG)	CHD1J3CH680	4835 122 87057
●C440		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C444		ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
C445		ELECTROLYTIC CAP. 1μF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C447		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C448		ELECTROLYTIC CAP. 1μF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C449		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C450		ELECTROLYTIC CAP. 1μF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C452		CHIP CERAMIC CAP.(1608) 0.1μF/50V ±80/-20% (F) or CHIP CERAMIC CAP.(1608) 0.1μF/25V ±80/-20% (F) or CHIP CERAMIC CAP. 0.1μF/50V ±80/-20% (FZ)	CHD1JZ30F104	4835 122 87645
●C455		CHIP CERAMIC CAP.(MELF) 0.01μF/16V ±80/-20% (F)	CZM1CZ30F103	4835 122 87647
●C459		CHIP CERAMIC CAP.(1608) 0.047μF/50V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.047μF/25V ±10% (B)	CHD1JK30B473	4835 122 87162
●C460		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104	4835 122 87213
●C461		CHIP CERAMIC CAP.(1608) 0.047μF/50V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.047μF/25V ±10% (B)	CHD1JK30B473	4835 122 87162
●C463		CHIP CERAMIC CAP.(1608) 0.1μF/50V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP. 0.1μF/50V ±80/-20% (FZ)	CHD1JZ30F104	4835 122 87645
C465		ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C466		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C467		PCB JUMPER D0.6-P5.0	JW5.0T	---
●C468		CHIP CERAMIC CAP.(1608) 0.1μF/50V ±80/-20% (F) or CHIP CERAMIC CAP.(1608) 0.1μF/25V ±80/-20% (F) or CHIP CERAMIC CAP. 0.1μF/50V ±80/-20% (FZ)	CHD1JZ30F104	4835 122 87645
●C470		CHIP CERAMIC CAP.(MELF) 0.01μF/16V ±80/-20% (F)	CZM1CZ30F103	4835 122 87647
C472		ELECTROLYTIC CAP. 22μF/6.3V ±20% H7	CE0KMAVSL220	4835 124 47238
C473		ELECTROLYTIC CAP. 33μF/6.3V ±20% H7	CE0KMAVSL330	4835 124 47169
●C474		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
●C476		CHIP CERAMIC CAP.(1608) 0.012μF/50V ±10% (B)	CHD1JK30B123	4835 122 87661

Ref. No.	Description	ID No.	Part No.
C477	ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
●C478	CHIP CERAMIC CAP.(1608) 2700pF/50V ±10% (B)	CHD1JK30B272	4835 122 87098
●C479	CHIP CERAMIC CAP.(MELF) 1000pF/35V ±10% (Y)	CZM1GK30Y102	4835 122 87648
C480	ELECTROLYTIC CAP. 4.7μF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407
●C482	CHIP CERAMIC CAP.(1608) 6800pF/50V ±10% (B)	CHD1JK30B682	4835 122 87278
C487	ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
C488	ELECTROLYTIC CAP. 220μF/6.3V ±20% H7	CE0KMAVSL221	4835 124 47168
C489	CERAMIC CAP. 470pF/100V ±10% (B) or CERAMIC CAP. 470pF/500V ±10% (B)	CCD2AKP0B471 CCD2JKS0B471	4835 122 47673 4835 122 47211
C491	FILM CAP.(P) 0.018μF/100V ±5% or FILM CAP.(P) 0.018μF/50V ±5%	CA2A183MS029 CA1J183MS029	4835 121 47682 4822 121 42701
C494	ELECTROLYTIC CAP. 220μF/6.3V ±20% H7	CE0KMAVSL221	4835 124 47168
●C498	CHIP CERAMIC CAP.(1608) 0.1μF/50V +80/-20% (F) or CHIP CERAMIC CAP.(1608) 0.1μF/25V +80/-20% (F) or CHIP CERAMIC CAP. 0.1μF/50V +80/-20% (FZ)	CHD1JZ30F104 CHD1EZ30F104 CHD1JZ3FZ104	4835 122 87645 4835 122 87213 4835 122 87645
●C500	CHIP CERAMIC CAP.(1608) 0.01μF/50V +80/-20% (F)	CHD1JK30B103	4835 122 87255
C501	ELECTROLYTIC CAP. 1μF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C502	CHIP CERAMIC CAP.(1608) 0.022μF/50V +80/-20% (F) or CHIP CERAMIC CAP.(1608) 0.022μF/25V +80/-20% (F)	CHD1JK30B223 CHD1EK30B223	4835 122 87209 4835 122 87152
C504	ELECTROLYTIC CAP. 220μF/6.3V ±20% H7	CE0KMAVSL221	4835 124 47186
●C506	CHIP CERAMIC CAP.(MELF) 18pF/50V ±5% (SL) or CHIP CERAMIC CAP. 18pF/50V ±5% (CH) or CHIP CERAMIC CAP. 18pF/50V ±5% (CG)	CZM1JJ3SL180 CHD1JJ3CH180 CHD1JJ3CG180	4835 122 87664 4835 122 87143 4835 122 87143
●C508	CHIP CERAMIC CAP. 27pF/50V ±5% (CH) or CHIP CERAMIC CAP. 27pF/50V ±5% (CG)	CHD1JJ3CH270 CHD1JJ3CG270	4835 122 87029 4835 122 87029
C510	ELECTROLYTIC CAP. 1μF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C512	CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CH) or CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CG)	CHD1JJ3CH101 CHD1JJ3CG101	4835 122 87193 4835 122 87193
C513	ELECTROLYTIC CAP. 47μF/25V ±20% H7	CE1EMAVSL470	4835 124 47084
●C515	CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
●C516	CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CH) or CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CG)	CHD1JJ3CH101 CHD1JJ3CG101	4835 122 87193 4835 122 87193
●C518	CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
●C520	CHIP CERAMIC CAP.(1608) 0.047μF/50V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.047μF/25V ±10% (B)	CHD1JK30B473 CHD1EK30B473	4835 122 87162 4835 122 87185
●C523	CHIP CERAMIC CAP.(1608) 0.022μF/50V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.022μF/25V ±10% (B)	CHD1JK30B223 CHD1EK30B223	4835 122 87209 4835 122 87152
C524	ELECTROLYTIC CAP. 1μF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
C525	ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C527	ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C529	ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C530	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
C531	ELECTROLYTIC CAP. 22μF/10V ±20% H7	CE1AMAVSL220	4835 124 47307
●C533	CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C535	CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153

Ref. No.	Description	ID No.	Part No.
●C538	CHIP CERAMIC CAP.(MELF) 0.01μF/16V +80/-20% (F)	CZM1CZ30F103	4835 122 87647
C543	ELECTROLYTIC CAP. 100μF/6.3V H7	CE0KMAVSL101	4835 124 47127
C545	ELECTROLYTIC CAP. 22μF/50V ±20% H7	CE1JMAVSL220	4835 124 97073
●C551	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
C552	ELECTROLYTIC CAP. 100μF/6.3V H7	CE0KMAVSL101	4835 124 47127
C554	ELECTROLYTIC CAP. 100μF/6.3V H7	CE0KMAVSL101	4835 124 47127
●C556	CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
C557	ELECTROLYTIC CAP. 100μF/6.3V H7	CE0KMAVSL101	4835 124 47127
●C558	CHIP CERAMIC CAP.(1608) 0.1μF/50V +80/-20% (F) or CHIP CERAMIC CAP.(1608) 0.1μF/25V +80/-20% (F) or CHIP CERAMIC CAP. 0.1μF/50V +80/-20% (FZ)	CHD1JZ30F104 CHD1EZ30F104 CHD1JZ3FZ104	4835 122 87645 4835 122 87213 4835 122 87645
●C559	CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
C561	ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C563	ELECTROLYTIC CAP. 100μF/6.3V H7	CE0KMAVSL101	4835 124 47127
C565	ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C567	ELECTROLYTIC CAP. 470μF/6.3V ±20% or ELECTROLYTIC CAP. 470μF/6.3V ±20%	CE0KMASDL471 CE0KMASTL471	4835 124 47239 4835 124 47239
C570	ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
●C571	CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
C573	CERAMIC CAP.(AX) 0.1μF/50V +80/-20% (F)	CCA1JZTFZ104	4835 122 47731
C574	CERAMIC CAP.(AX) 0.1μF/25V ±10% (B)	CCA1EKT0B104	4835 122 47682
C575	ELECTROLYTIC CAP. 100μF/6.3V H7	CE0KMAVSL101	4835 124 47127
C577	METALIZED PLYESTER CAP. 1μF/100V ±5%	CT2A105MS065	9965 000 25443
C578	METALIZED PLYESTER CAP. 1μF/100V ±5%	CT2A105MS065	9965 000 25443
C579	CERAMIC CAP.(AX) 1000pF/50V ±10% (B)	CCA1JKT0B102	4835 122 47004
●C582	CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
C583	CERAMIC CAP.(AX) 0.1μF/25V ±10% (B)	CCA1EKT0B104	4835 122 47682
●C584	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C586	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C587	CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C589	CERAMIC CAP.(AX) 0.1μF/25V ±10% (B)	CCA1EKT0B104	4835 122 47682
C591	ELECTROLYTIC CAP. 100μF/10V ±20% H7	CE1AMAVSL101	4822 124 40178
C592	ELECTROLYTIC CAP. 470μF/6.3V ±20% or ELECTROLYTIC CAP. 470μF/6.3V ±20%	CE0KMASDL471 CE0KMASTL471	4835 124 47239 4835 124 47239
C593	ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
●C594	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
●C595	CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
●C596	CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C597	CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C598	CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C599	CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C600	CHIP CERAMIC CAP.(1608) 47pF/50V ±5% (CH) or CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1JJ3CH470 CHD1JJ3CG470	4835 122 87148 4835 122 87034
●C601	CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255

Ref. No.	Description	ID No.	Part No.
●C602	CHIP CERAMIC CAP(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C603	CHIP CERAMIC CAP(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
●C605	CHIP CERAMIC CAP(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
●C606	CHIP CERAMIC CAP(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
●C607	CHIP CERAMIC CAP(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
●C608	CHIP CERAMIC CAP(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
●C609	CHIP CERAMIC CAP(1608) 68pF/50V ±5% (CH) or CHIP CERAMIC CAP. 68pF/50V ±5% (CG)	CHD1J33CH680 CHD1J33CG680	4835 122 87057 4835 122 87057
●C610	CHIP CERAMIC CAP(1608) 68pF/50V ±5% (CH) or CHIP CERAMIC CAP. 68pF/50V ±5% (CG)	CHD1J33CH680 CHD1J33CG680	4835 122 87057 4835 122 87057
●C611	CHIP CERAMIC CAP(1608) 68pF/50V ±5% (CH) or CHIP CERAMIC CAP. 68pF/50V ±5% (CG)	CHD1J33CH680 CHD1J33CG680	4835 122 87057 4835 122 87057
●C612	CHIP CERAMIC CAP(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C1351	CHIP CERAMIC CAP(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
C1352	ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C1354	CHIP CERAMIC CAP(1608) 100pF/50V ±5% (CH) or CHIP CERAMIC CAP(1608) 100pF/50V ±5% (CG)	CHD1J33CH101 CHD1J33CG101	4835 122 87193 4835 122 87193
●C1358	CHIP CERAMIC CAP. 9pF/50V ±0.5% (CH)	CHD1JD3CH9R0	4835 122 87433
●C1359	CHIP CERAMIC CAP. 9pF/50V ±0.5% (CH)	CHD1JD3CH9R0	4835 122 87433
●C1360	CHIP CERAMIC CAP(1608) 47pF/50V ±5% (CH) or CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1J33CH470 CHD1J33CG470	4835 122 87148 4835 122 87034
●C1361	CHIP CERAMIC CAP(1608) 47pF/50V ±5% (CH) or CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1J33CH470 CHD1J33CG470	4835 122 87148 4835 122 87034
●C1362	CHIP CERAMIC CAP(1608) 47pF/50V ±5% (CH) or CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1J33CH470 CHD1J33CG470	4835 122 87148 4835 122 87034
●C1363	CHIP CERAMIC CAP(1608) 47pF/50V ±5% (CH) or CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1J33CH470 CHD1J33CG470	4835 122 87148 4835 122 87034
●C1364	CHIP CERAMIC CAP(1608) 47pF/50V ±5% (CH) or CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1J33CH470 CHD1J33CG470	4835 122 87148 4835 122 87034
<b>CONNECTORS</b>			
CN204	FFC/FPC CONNECTOR, 7P 00-6232-007-006-800 or FMN CONNECTOR, TOP 7P 07FMN-BTK	JC62G07TM010 JCFNG07JG001	--- --- --- --- --- ---
CN205	FFC/FPC CONNECTOR, 8P 00-6232-008-006-800 or FMN CONNECTOR, TOP 8P 08FMN-BTRK	JC62G08TM010 JCFNG08JG002	--- --- --- --- --- ---
CN207	CONNECTOR BASE 4P B4B-XH-A	J3XHC04JG007	--- --- ---
CN208	CONNECTOR BASE, TOP 12P B12B-PH-K-S	J3PHC12JG001	--- --- ---
CN209	CONNECTOR BASE, 9P TUC-P09P-B1	J3TUA09TG001	--- --- ---
CN210	CONNECTOR BASE, 9P TUC-P09P-B1	J3TUA09TG001	--- --- ---

Ref. No.	Description	ID No.	Part No.
CN211	FFC/FPC CONNECTOR, 22P 00-6232-022-006-800 or FMN CONNECTOR, TOP 22P 22FMN-BTRK	JC62G22TM010 JCFNG22JG002	--- --- --- --- --- ---
CN212	FMN CONNECTOR, TOP 7P 07FMN-BTRK	JCFNG07JG002	--- --- ---
CN213	FFC/FPC CONNECTOR, 22P 00-6232-022-006-800 or FMN CONNECTOR, TOP 22P 22FMN-BTRK	JC62G22TM010 JCFNG22JG002	--- --- --- --- --- ---
CN214	FFC/FPC CONNECTOR, 13P 00-6232-013-006-800 or FMN CONNECTOR, TOP 13P 13FMN-BTK	JC62G13TM010 JCFNG13JG001	--- --- --- --- --- ---
CN215	FFC/FPC CONNECTOR, 29P 00-6232-029-006-800 or FMN CONNECTOR, TOP 29P 29FMN-BTK-A	JC62G29TM010 JCFNG29JG001	--- --- --- --- --- ---
CN216	FFC/FPC CONNECTOR, 22P 00-6232-022-006-800 or FMN CONNECTOR, TOP 22P 22FMN-BTRK	JC62G22TM010 JCFNG22JG002	--- --- --- --- --- ---
<b>DIODES</b>			
D205	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D206	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D207	SWITCHING DIODE 1N4148M or SWITCHING DIODE 1SS133(T-77)	NDT201N4148M QDTZ001SS133	4835 130 37048 4835 130 37235
D208	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D210	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D211	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D212	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D213	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D214	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D215	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D216	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D217	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D218	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D219	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D220	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D221	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D222	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D223	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D224	ZENER DIODE DZ-12BSBT265 or ZENER DIODE MTZJF-7712B	NDTB00DZ12BS QDTB00MTZJ12	9965 000 25451 4835 130 37705
D225	SWITCHING DIODE 1N4148M or SWITCHING DIODE 1SS133(T-77)	NDT201N4148M QDTZ001SS133	4835 130 37048 4835 130 37235
D226	SWITCHING DIODE 1N4148M or SWITCHING DIODE 1SS133(T-77)	NDT201N4148M QDTZ001SS133	4835 130 37048 4835 130 37235
D228	PCB JUMPER D0.6-P5.0	JW5.0T	--- --- ---
D229	LED MIE-534A2 or LED SIR-563ST3F P or LED SIR-563ST3F Q	NPZZM1E534A2 QPQPS1R563ST QPQPS1R563ST	4835 130 87168 4835 130 87163 4835 130 87162
D230	PCB JUMPER D0.6-P5.0	JW5.0T	--- --- ---
D233	SCHOTTKY BARRIER DIODE SB350	NDQZ000SB350	4835 130 38074
D237	ZENER DIODE DZ-10BSBT265 or ZENER DIODE MTZJF-7710B	NDTB00DZ10BS QDTB00MTZJ10	4835 130 38054 4835 130 37956



Ref. No.	▲	Description	ID No.	Part No.
D238		ZENER DIODE DZ-6.8BSC1265 or ZENER DIODE MTZJT-776.8C	NDC0DZ6R8BS QDTCOMTZJ6R8	4835 130 38027 4835 130 37881
D239		ZENER DIODE DZ-9.1BSC1265 or ZENER DIODE MTZJT-779.1C	NDC0DZ9R1BS QDTCOMTZJ9R1	4835 130 38028 4835 130 37506
D242		ZENER DIODE DZ-27BSD1265 or ZENER DIODE MTZJT-7727D	NDDT00DZ27BS QDTD00MTZJ27	9965 000 25454 9965 000 25455
D243		RECTIFIER DIODE 1N4005 or RECTIFIER DIODE 1N4005	NDQZ001N4005 NDWZ001N4005	4835 130 37047 4835 130 37047
D247		ZENER DIODE DZ-18BSB1265 or ZENER DIODE MTZJT-7718B	NDTB00DZ18BS QDTB00MTZJ18	4835 130 38031 4835 130 37784
D248		ZENER DIODE DZ-33BSD1265 or ZENER DIODE MTZJT-7733D	NDDT00DZ33BS QDTD00MTZJ33	4835 130 38061 4835 130 37694
D250		ZENER DIODE DZ-3.6BSB1265 or ZENER DIODE MTZJT-773.6B	NDTB0DZ3R6BS QDTB0MTZJ3R6	9965 000 25456 4835 130 38076
<b>ICS</b>				
●IC201		IC, VIDEO SW STV6618	NSZBA0RSS221	9965 000 25458
●IC202		IC, SW NJM2285-TE1	QSZBA0TJR077	9965 000 25459
●IC203		IC, AUDIO SW TC4052BF(EL) or IC, AUDIO SW BU4052BCF-E2 or IC, AUDIO SW CD4052BCSJX or IC, AUDIO SW CD4052BNSR	QSZBA0TTS096 QSZBA0TRM024 NSZBA0TF3079 NSZBA0TTY091	4835 209 47641 4835 209 47639 9965 000 23425 4835 209 47638
●IC206		IC, AUDIO DAC UDA1334BTS	NSZBA0TPH026	9965 000 25460
●IC208		IC, OP AMP MC33078DR2	NSZBA0TN2004	4835 209 47637
●IC209		IC, OP AMP MC33078DR2	NSZBA0TN2004	4835 209 47637
●IC211		IC, SW NJM2285-TE1	QSZBA0TJR077	9965 000 25459
●IC212		IC, SW TC4053BF(EL.N) or IC, SW BU4053BCF-E2 or IC, SW CD4053BCSJX or IC, SW CD4053BNSR	QSZBA0TTS131 QSMDA0TRM010 NSZBA0TF3071 NSZBA0TTY093	4835 209 47549 CK31 992 R 4835 209 47611 4835 209 47611
●IC213		IC, SW TC4053BF(EL.N) or IC, SW BU4053BCF-E2 or IC, SW CD4053BCSJX or IC, SW CD4053BNSR	QSZBA0TTS131 QSMDA0TRM010 NSZBA0TF3071 NSZBA0TTY093	4835 209 47549 CK31 992 R 4835 209 47611 4835 209 47611
●IC218		IC, EEPROM CAT24WC02J1 or IC, EEPROM BR24L02F-WE2	NSZBA0SBG001 QSZBA0TRM068	4835 209 47596 4835 209 47636
●IC221		IC, FIP DRIVER PT6313-S-TP	NSZBA0TG2006	9965 000 19575
IC225		IC, FIP 7-BT-300GN	TVFD1C0FT043	9965 000 25463
●IC226		IC, MTS/SAP/HI-FI AUDIO PROCESS/HI-FI HEAD AMP LA72670BM-MPB-E	QSZBA0RSY039	4835 209 47634
●IC227		IC, VIDEO/AUDIO/SIGNAL PROCESS/HEAD AMP LA71205M-MPB-E	QSZBA0RSY037	4835 209 47629
●IC228		IC, SYSTEM CONTROL MICROPROCESSOR MN101D08DEG1	QSZAB0RMS027	9965 000 25464
●IC229		IC, +12V SWITCHING RTQ035N03 TR	QF2ZTQ035N03	9965 000 25465
●IC230		IC, -5V SWITCHING RTQ045N03 TR	QF2ZTQ045N03	9965 000 25466
IC231		IC, SHUNT REGULATOR KIA431A-AT or IC, SHUNT REGULATOR TL431A-TA	NSZBA0TJY018 NSZBA0TQ2003	4835 209 47618 4835 209 47621
IC232		IC, SHUNT REGULATOR KIA431A-AT or IC, SHUNT REGULATOR TL431A-TA	NSZBA0TJY018 NSZBA0TQ2003	4835 209 47618 4835 209 47621
IC233		IC, SHUNT REGULATOR KIA431A-AT or IC, SHUNT REGULATOR TL431A-TA	NSZBA0TJY018 NSZBA0TQ2003	4835 209 47618 4835 209 47621
●IC234		IC, AUDIO ADC UDA1361TS	NSZBA0TPH025	9965 000 25468
<b>COILS</b>				
L205		PCB JUMPER D0.6-P5.0	JW5.0T	---
L206		PCB JUMPER D0.6-P5.0	JW5.0T	---
L207		PCB JUMPER D0.6-P5.0	JW5.0T	---
L208		PCB JUMPER D0.6-P5.0	JW5.0T	---
L210		PCB JUMPER D0.6-P5.0	JW5.0T	---
L211		PCB JUMPER D0.6-P5.0	JW5.0T	---
L214		PCB JUMPER D0.6-P5.0	JW5.0T	---
L215		PCB JUMPER D0.6-P5.0	JW5.0T	---
L217		INDUCTOR(100μH K) LAP02TA101K	LLAXKATTU101	4835 157 57369
L218		CHOKE COIL 47μH-K or CHOKE COIL 47μH-K or CHOKE COIL 47μH-K	LLBD00PKV007 LLBD00PKV005 LLBD00PKT001	4835 157 58208 4835 157 58208 4835 157 58208
L220		INDUCTOR 47μH-K-5FT	LLARKBSTU470	4835 157 57375
L221		PCB JUMPER D0.6-P5.0	JW5.0T	---
L222		PCB JUMPER D0.6-P5.0	JW5.0T	---
L224		CHOKE COIL 47μH-K or CHOKE COIL 47μH-K or	LLBD00PKV007 LLBD00PKV005	4835 157 58208 4835 157 58208

Ref. No.	▲	Description	ID No.	Part No.
		CHOKE COIL 47μH-K	LLBD00PKT001	4835 157 58208
L226		PCB JUMPER D0.6-P5.0	JW5.0T	---
L227		INDUCTOR(100μH K) LAP02TA101K	LLAXKATTU101	4835 157 57369
●L228		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
L1351		INDUCTOR(0.47μH K) LAP02TAR47K	LLAXKATTUR47	4835 157 58018
<b>TRANSISTORS</b>				
Q201		MUTE-CTL BC547-B-AT	NQSB000BC547	9965 000 25523
Q202		MUTE-CTL BC557-B-AT	NQSB000BC557	9965 000 25473
Q203		P-ON RESET KRA303-RTK "PNP"	NQ1Z00KRA303	9965 000 25474
Q204		AUDIO MUTE BC337-25-AT	NQS8000BC337	9965 000 25475
Q205		AUDIO MUTE BC337-25-AT	NQS8000BC337	9965 000 25475
Q206		P-ON RESET BC557-B-AT	NQSB000BC557	9965 000 25473
Q207		AMP BC547-B-AT	NQSB000BC547	9965 000 25523
Q208		AMP BC557-B-AT	NQSB000BC557	9965 000 25473
Q209		BUFFER BC557-B-AT	NQSB000BC557	9965 000 25473
Q210		SWITCHING BC557-B-AT	NQSB000BC557	9965 000 25473
Q213		BUFFER BC547-B-AT	NQSB000BC547	9965 000 25523
Q214		BUFFER BC547-B-AT	NQSB000BC547	9965 000 25523
Q215		BUFFER BC557-B-AT	NQSB000BC557	9965 000 25473
Q216		MUTE-ON KRC103M "NPN" or MUTE-ON BA1F4M-T	NQSZ0KRC103M QSSZ00BA1F4M	4835 130 47909 4835 130 48204
Q217		MUTE-ON KRC103M "NPN" or MUTE-ON BA1F4M-T	NQSZ0KRC103M QSSZ00BA1F4M	4835 130 47909 4835 130 48204
Q218		MUTE-ON KRC103M "NPN" or MUTE-ON BA1F4M-T	NQSZ0KRC103M QSSZ00BA1F4M	4835 130 47909 4835 130 48204
Q219		BUFFER BC557-B-AT	NQSB000BC557	9965 000 25473
Q220		BUFFER BC547-B-AT	NQSB000BC547	9965 000 25523
Q221		INVERTER BC557-B-AT	NQSB000BC557	9965 000 25473
Q222		BUFFER BC557-B-AT	NQSB000BC557	9965 000 25473
Q223		BUFFER BC547-B-AT	NQSB000BC547	9965 000 25523
Q224		BUFFER BC557-B-AT	NQSB000BC557	9965 000 25473
Q226		SWITCHING KTA1266(GR) "PNP" or SWITCHING 2SA1015-GR(TPE2) "PNP"	NQS40KTA1266 QSS102SA1015	4835 130 47422 4835 130 47399
Q227		BIAS OSC KTC3203(Y) "NPN" or BIAS OSC 2SC2120-Y(TPE2) "NPN"	NQSY0KTC3203 QSSY02SC2120	4835 130 48126 4835 130 48047
Q228		SWITCHING D-REC-OFF KRA103M "PNP" or SWITCHING D-REC-OFF BN1F4M-T	NQSZ0KRA103M QSSZ00BN1F4M	4835 130 47907 4835 130 48201
●Q229		SWITCHING PB-ON RN1511(TE85R) or SWITCHING PB-ON FMG4A T148	QQZ200RN1511 QQZ2000FMG4A	9965 000 12361 9965 000 16623
Q231		RESET KRC108M "NPN"	NQSZ0KRC108M	4835 130 48057
Q232		BUFFER KTA1266(GR) "PNP" or BUFFER 2SA1015-GR(TPE2) "PNP"	NQS40KTA1266 QSS102SA1015	4835 130 47422 4835 130 47399
Q233		BUFFER KTC3193(Y) "NPN"	NQSY0KTC3193	4835 130 48016
Q235		RESET KTA1267(Y) "PNP" or RESET KTA1267(GR) "PNP" or RESET 2SA1175(J) "PNP" or RESET 2SA1175(H) "PNP" or RESET 2SA1175(F) "PNP"	NQSY0KTA1267 NQS10KTA1267 QSSJ02SA1175 QSSH02SA1175 QSSF02SA1175	4835 130 47913 4835 130 47913 4835 130 47645 4835 130 47645 4835 130 47645
Q240		TAKEUP REEL SENSOR PT204-6B-12 or TAKEUP REEL SENSOR MID-32A22F	NPWZT2046B12 NPWZ1D32A22F	4835 130 48222 4835 130 48231
Q242		LED DRIVE KTC3199(BL) "NPN" or LED DRIVE 2SC2785(K) "NPN" or LED DRIVE 2SC1815-BL(TPE2) "NPN"	NQS50KTC3199 QSSK02SC2785 QSS202SC1815	4835 130 47914 4835 130 47722 4835 130 47358
Q243		LED DRIVE KTC3199(BL) "NPN" or LED DRIVE 2SC2785(K) "NPN" or LED DRIVE 2SC1815-BL(TPE2) "NPN"	NQS50KTC3199 QSSK02SC2785 QSS202SC1815	4835 130 47914 4835 130 47722 4835 130 47358
Q245		LED DRIVE KTC3199(BL) "NPN" or LED DRIVE 2SC2785(K) "NPN" or LED DRIVE 2SC1815-BL(TPE2) "NPN"	NQS50KTC3199 QSSK02SC2785 QSS202SC1815	4835 130 47914 4835 130 47722 4835 130 47358
Q246		-FL SWITCHING BC557-B-AT	NQSB000BC557	9965 000 25473
Q247		SWITCHING KRC103M "NPN" or SWITCHING BA1F4M-T	NQSZ0KRC103M QSSZ00BA1F4M	4835 130 47909 4835 130 48204
Q248		SWITCHING BC547-B-AT	NQSB000BC547	9965 000 25523
Q250		SWITCHING BC547-B-AT	NQSB000BC547	9965 000 25523
Q251		SWITCHING KRC103M "NPN" or SWITCHING BA1F4M-T	NQSZ0KRC103M QSSZ00BA1F4M	4835 130 47909 4835 130 48204
Q252		+5V SWITCHING 2SK2095N	QFWZ2SK2095N	9965 000 25476
Q253		+9V SWITCHING KTC3198(Y) "NPN" or	NQSY0KTC3198	4835 130 47946

Ref. No.	▲	Description	ID No.	Part No.
		+9V SWITCHING KTC3198(GR) "NPN" or	NQS40KTC3198	4835 130 47946
		+9V SWITCHING 2SC536NF-NPA-AT "NPN" or	QQSFCS536NPA	4835 130 48202
		+9V SWITCHING 2SC536NG-NPA-AT "NPN"	QQSGCS536NPA	4835 130 48203
Q255		+8V REG. BC546-B-AT	NQSB000BC546	9965 000 25477
Q256		P-ON+5V SWITCHING KTC3203(Y) "NPN" or	NQSY0KTC3203	4835 130 48126
		P-ON+5V SWITCHING 2SC2120-Y(TPE2) "NPN"	QQSY02SC2120	4835 130 48047
Q257		+3V REG. KTC3199(BL) "NPN" or	NQS50KTC3199	4835 130 47914
		+3V REG. 2SC2785(K) "NPN" or	QQSK02SC2785	4835 130 47722
		+3V REG. 2SC1815-BL(TPE2) "NPN"	QQS202SC1815	4835 130 47358
Q258		+3.3V SWITCHING RSS09N03L02TB	QFZ290N03L02	9965 000 25478
Q260		+5V SWITCHING RSS09N03L02TB	QFZ290N03L02	9965 000 25478
Q261		BUFFER KTA1266(GR) "PNP" or	NQS40KTA1266	4835 130 47422
		BUFFER 2SA1015-GR(TPE2) "PNP"	QQS102SA1015	4835 130 47399
Q1351		AMP KTC3199(BL) "NPN" or	NQS50KTC3199	4835 130 47914
		AMP 2SC2785(K) "NPN" or	QQSK02SC2785	4835 130 47722
		AMP 2SC1815-BL(TPE2) "NPN"	QQS202SC1815	4835 130 47358
<b>RESISTORS</b>				
●R201		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R202		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R203		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R204		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R205		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R206		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R207		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R208		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R209		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R210		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R211		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R212		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R213		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R214		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R215		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R216		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R217		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R218		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R219		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R220		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R221		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
R222		PCB JUMPER DO.6-P5.0	JW5.0T	----
●R224		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R225		CHIP RES.(1608) 1/10W 2.2 Ω ±5%	RRXAJR5Z02R2	4835 111 17648
●R227		CHIP RES.(1608) 1/10W 2.2 Ω ±5%	RRXAJR5Z02R2	4835 111 17648
●R229		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R230		CHIP RES.(1608) 1/10W 180 Ω ±5%	RRXAJR5Z0181	4835 111 17509
●R232		CHIP RES.(1608) 1/10W 180 Ω ±5%	RRXAJR5Z0181	4835 111 17509
●R234		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R235		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R236		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R238		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R239		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R241		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R242		CHIP RES.(1608) 1/10W 1 Ω ±5%	RRXAJR5Z01R0	4835 111 17647
●R244		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R246		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R247		CHIP RES.(1608) 1/10W 1 Ω ±5%	RRXAJR5Z01R0	4835 111 17647
●R248		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R250		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R252		CHIP RES.(1608) 1/10W 18k Ω ±5%	RRXAJR5Z0183	4835 111 37232
●R254		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R255		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R256		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R257		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
R259		CARBON RES. 1/6W 70 Ω ±5% or	RCX6JATZ0471	4835 111 37193
		CARBON RES. 1/4W 470 Ω ±5%	RCX4JATZ0471	4835 110 57167
●R260		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R261		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R263		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432

Ref. No.	▲	Description	ID No.	Part No.
●R264		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R266		CHIP RES.(1608) 1/10W 82k Ω ±5%	RRXAJR5Z0823	4835 111 17173
●R267		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R268		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R270		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R271		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R272		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R280		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R282		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R284		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R286		CHIP RES.(1608) 1/10W 2.2 Ω ±5%	RRXAJR5Z02R2	4835 111 17648
●R287		CHIP RES.(1608) 1/10W 2.2 Ω ±5%	RRXAJR5Z02R2	4835 111 17648
●R288		CHIP RES.(1608) 1/10W 180 Ω ±5%	RRXAJR5Z0181	4835 111 17509
●R289		CHIP RES.(1608) 1/10W 180 Ω ±5%	RRXAJR5Z0181	4835 111 17509
●R290		CHIP RES.(1608) 1/10W 180 Ω ±5%	RRXAJR5Z0181	4835 111 17509
●R292		CHIP RES.(1608) 1/10W 180 Ω ±5%	RRXAJR5Z0181	4835 111 17509
●R293		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R294		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R296		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R297		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R298		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R299		CHIP RES.(1608) 1/10W 82k Ω ±5%	RRXAJR5Z0823	4835 111 17173
●R300		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R302		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R303		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R304		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R306		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R308		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R310		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R312		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R313		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R314		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R315		CHIP RES.(1608) 1/10W 150k Ω ±5%	RRXAJR5Z0154	4835 111 37419
●R316		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R318		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R319		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R320		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
R322		CARBON RES. 1/6W 1 Ω ±5% or	RCX6JATZ01R0	4835 110 57216
		CARBON RES. 1/4W 1 Ω ±5%	RCX4JATZ01R0	4835 110 57229
●R323		CHIP RES.(1608) 1/10W 1 Ω ±5%	RRXAJR5Z01R0	4835 111 17647
●R324		CHIP RES.(1608) 1/10W 1 Ω ±5%	RRXAJR5Z01R0	4835 111 17647
●R326		CHIP RES.(1608) 1/10W 1 Ω ±5%	RRXAJR5Z01R0	4835 111 17647
●R327		CHIP RES.(1608) 1/10W 1 Ω ±5%	RRXAJR5Z01R0	4835 111 17647
●R334		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R335		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R337		CHIP RES.(1608) 1/10W 82k Ω ±5%	RRXAJR5Z0823	4835 111 17173
●R338		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R339		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R340		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R342		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R343		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R345		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R347		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R349		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R350		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R351		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R353		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R354		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R355		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R357		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R358		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R359		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R360		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R362		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R363		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R365		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R366		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R368		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R369		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334

Ref. No.	▲	Description	ID No.	Part No.
●R370		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R372		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R373		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R375		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R376		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R377		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R379		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R380		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R383		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R385		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R386		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R387		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R388		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R390		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R392		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R393		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R394		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R395		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R397		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R404		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R405		CHIP RES.(1608) 1/10W 100k Ω ±2%	RRXAGR5Z0104	4835 111 37416
●R406		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R410		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R411		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R413		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R414		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R415		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R416		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R419		CHIP RES.(1608) 1/10W 18k Ω ±5%	RRXAJR5Z0183	4835 111 37232
●R423		CHIP RES.(1608) 1/10W 12k Ω ±5%	RRXAJR5Z0123	4835 111 17148
●R424		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R425		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R426		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R427		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R428		CHIP RES.(1608) 1/10W 2.7k Ω ±5%	RRXAJR5Z0272	4835 111 37243
●R429		CHIP RES.(1608) 1/10W 39k Ω ±5%	RRXAJR5Z0393	4835 111 37255
●R430		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R432		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R433		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R434		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R435		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R437		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R438		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R439		CHIP RES.(1608) 1/10W 15k Ω ±5%	RRXAJR5Z0153	4835 111 37458
●R440		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R442		CHIP RES.(1608) 1/10W 15k Ω ±5%	RRXAJR5Z0153	4835 111 37458
●R443		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R444		CHIP RES.(1608) 1/10W 12k Ω ±5%	RRXAJR5Z0123	4835 111 17148
●R447		CHIP RES.(1608) 1/10W 1.2k Ω ±5%	RRXAJR5Z0122	4835 111 37222
●R450		CHIP RES.(1608) 1/10W 3.9M Ω ±5%	RRXAJR5Z0395	4835 111 17518
●R451		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R453		CHIP RES.(1608) 1/10W 82k Ω ±5%	RRXAJR5Z0823	4835 111 17173
●R455		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R456		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R457		CHIP RES.(1608) 1/10W 1.8k Ω ±5%	RRXAJR5Z0182	4835 111 37231
●R460		CHIP RES.(1608) 1/10W 680k Ω ±5%	RRXAJR5Z0684	4835 111 17414
●R462		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R463		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R465		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R466		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R468		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R469		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R470		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R472		CHIP RES.(1608) 1/10W 18k Ω ±5%	RRXAJR5Z0183	4835 111 37232
●R473		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R474		CHIP RES.(1608) 1/10W 18k Ω ±5%	RRXAJR5Z0183	4835 111 37232
●R476		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R477		CHIP RES. 1/10W 1.2k Ω ±5% or	RRXAFR5H1201	4835 111 17394
		CHIP RES.(1608) 1/10W 1.2k Ω ±1%	RRXAFR5Z1201	4835 111 17394

Ref. No.	▲	Description	ID No.	Part No.
●R479		CHIP RES.(1608) 1/10W 6.8k Ω ±5%	RRXAJR5Z0682	4835 111 37272
●R480		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R482		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R483		CHIP RES.(1608) 1/10W 12k Ω ±5%	RRXAJR5Z0123	4835 111 17148
●R484		CHIP RES.(1608) 1/10W 330k Ω ±5%	RRXAJR5Z0334	4835 111 17404
●R485		CHIP RES.(1608) 1/10W 120 Ω ±5%	RRXAJR5Z0121	4835 111 17069
●R487		CHIP RES.(1608) 1/10W 18k Ω ±5%	RRXAJR5Z0183	4835 111 37232
●R488		CHIP RES.(1608) 1/10W 910 Ω ±5%	RRXAJR5Z0911	4835 111 37337
●R489		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R490		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R492		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R493		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
R495		CARBON RES. 1/6W 47k Ω ±5% or	RCX6JATZ0473	4835 110 57189
		CARBON RES. 1/4W 47k Ω ±5%	RCX4JATZ0473	4835 110 57189
R496		CARBON RES. 1/6W 100 Ω ±5% or	RCX6JATZ0101	4835 111 37161
		CARBON RES. 1/4W 100 Ω ±5%	RCX4JATZ0101	4835 110 57003
R497		CARBON RES. 1/6W 820 Ω ±5% or	RCX6JATZ0821	4835 110 57059
		CARBON RES. 1/4W 820 Ω ±5%	RCX4JATZ0821	4835 110 57059
●R499		CHIP RES.(1608) 1/10W 1.5k Ω ±5%	RRXAJR5Z0152	4835 111 37437
●R500		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R502		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R505		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R512		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R513		CHIP RES.(1608) 1/10W 3.3k Ω ±5%	RRXAJR5Z0332	4835 111 17162
●R514		CHIP RES.(1608) 1/10W 39k Ω ±5%	RRXAJR5Z0393	4835 111 37255
●R517		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R518		CHIP RES.(1608) 1/10W 220k Ω ±5%	RRXAJR5Z0224	4835 111 37235
●R521		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R522		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R523		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R524		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R525		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R526		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
R527		CARBON RES. 1/4W 10k Ω ±5%	RCX4JATZ0103	4835 110 57026
R528		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
●R529		CHIP RES.(1608) 1/10W 4.7k Ω ±1% or	RRXAFR5H4701	4835 111 37426
		CHIP RES.(1608) 1/10W 4.7k Ω ±1%	RRXAFR5Z4701	4835 111 37426
●R530		CHIP RES.(1608) 1/10W 1.5k Ω ±1% or	RRXAFR5H1501	4835 111 17152
		CHIP RES.(1608) 1/10W 1.5k Ω ±1%	RRXAFR5Z1501	4835 111 17152
●R531		CHIP RES.(1608) 1/10W 22k Ω ±1% or	RRXAFR5H2202	4835 111 17383
		CHIP RES.(1608) 1/10W 22k Ω ±1%	RRXAFR5Z2202	4835 111 17287
●R532		CHIP RES.(1608) 1/10W 470 Ω ±1% or	RRXAFR5H4700	4835 111 17165
		CHIP RES.(1608) 1/10W 470 Ω ±1%	RRXAFR5Z4700	4835 111 17165
●R533		CHIP RES.(1608) 1/10W 10k Ω ±1% or	RRXAFR5H1002	4835 111 27027
		CHIP RES.(1608) 1/10W 10k Ω ±1%	RRXAFR5Z1002	4835 111 27027
●R534		CHIP RES.(1608) 1/10W 3.6k Ω ±1% or	RRXAFR5H3601	4835 111 17486
		CHIP RES.(1608) 1/10W 3.6k Ω ±1%	RRXAFR5Z3601	4835 111 17486
●R535		CHIP RES.(1608) 1/10W 33k Ω ±5%	RRXAJR5Z0333	4835 111 37248
●R538		CHIP RES.(1608) 1/10W 390k Ω ±5%	RRXAJR5Z0394	4835 111 37256
●R539		CHIP RES.(1608) 1/10W 390k Ω ±5%	RRXAJR5Z0394	4835 111 37256
R540		CARBON RES. 1/4W 270 Ω ±5%	RCX4JATZ0271	4835 110 57041
R541		CARBON RES. 1/6W 4.7k Ω ±5% or	RCX6JATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±5%	RCX4JATZ0472	4835 110 57051
●R542		CHIP RES.(1608) 1/10W 18k Ω ±5%	RRXAJR5Z0183	4835 111 37232
●R543		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R544		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
R547		CARBON RES. 1/6W 150 Ω ±5% or	RCX6JATZ0151	4835 111 37167
		CARBON RES. 1/4W 150 Ω ±5%	RCX4JATZ0151	4835 110 57031
●R548		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R549		CHIP RES.(1608) 1/10W 3.9k Ω ±5%	RRXAJR5Z0392	4835 111 37254
●R550		CHIP RES.(1608) 1/10W 3.9k Ω ±5%	RRXAJR5Z0392	4835 111 37254
●R553		CHIP RES.(1608) 1/10W 3.9k Ω ±5%	RRXAJR5Z0392	4835 111 37254
●R556		CHIP RES.(1608) 1/10W 5.1k Ω ±5%	RRXAJR5Z0512	4835 111 37264
●R557		CHIP RES.(1608) 1/10W 5.1k Ω ±5%	RRXAJR5Z0512	4835 111 37264
●R558		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R559		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R561		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R565		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R567		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216

Ref. No.	▲	Description	ID No.	Part No.
●R569		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R571		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R572		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R574		CHIP RES.(1608) 1/10W 6.8k Ω ±5%	RRXAJR5Z0682	4835 111 37272
R576		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
●R577		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R578		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R579		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R580		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
R582		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R583		CARBON RES. 1/4W 10k Ω ±5%	RCX4JATZ0103	4835 110 57026
R584		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
●R586		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
R588		CARBON RES. 1/4W 1.8k Ω ±5%	RCX4JATZ0182	4835 110 57033
R590		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R591		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
●R593		CHIP RES.(1608) 1/10W 270 Ω ±5%	RRXAJR5Z0271	4835 111 37424
R594		CARBON RES. 1/6W 220 Ω ±5% or	RCX6JATZ0221	4835 111 37175
		CARBON RES. 1/4W 220 Ω ±5%	RCX4JATZ0221	4835 110 57037
●R595		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
R596		CARBON RES. 1/6W 8.2k Ω ±2% or	RCX6GATZ0822	4835 111 37209
		CARBON RES. 1/4W 8.2k Ω ±2%	RCX4GATZ0822	4835 110 57264
R597		CARBON RES. 1/6W 1k Ω ±2% or	RCX6GATZ0102	4835 111 37162
		CARBON RES. 1/4W 1k Ω ±2%	RCX4GATZ0102	4835 110 57195
R598		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
R599		CARBON RES. 1/6W 3.3k Ω ±5% or	RCX6JATZ0332	4835 111 37185
		CARBON RES. 1/4W 3.3k Ω ±5%	RCX4JATZ0332	4835 110 57046
R600		CARBON RES. 1/6W 100k Ω ±5% or	RCX6JATZ0104	4835 110 57068
		CARBON RES. 1/4W 100k Ω ±5%	RCX4JATZ0104	4835 110 57185
R601		CARBON RES. 1/6W 220k Ω ±5% or	RCX6JATZ0224	4835 110 57208
		CARBON RES. 1/4W 220k Ω ±5%	RCX4JATZ0224	4835 110 57208
R602		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R603		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R604		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R605		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R606		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
R607		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
R608		CARBON RES. 1/6W 68k Ω ±5% or	RCX6JATZ0683	4835 111 37205
		CARBON RES. 1/4W 68k Ω ±5%	RCX4JATZ0683	4835 110 57168
R609		CARBON RES. 1/4W 10k Ω ±5%	RCX4JATZ0103	4835 110 57026
R611		CARBON RES. 1/4W 10k Ω ±5%	RCX4JATZ0103	4835 110 57026
R612		CARBON RES. 1/6W 10 Ω ±5% or	RCX6JATZ0100	4835 111 37159
		CARBON RES. 1/4W 10 Ω ±5%	RCX4JATZ0100	4835 110 57002
R613		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
R614		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R615		CARBON RES. 1/6W 47k Ω ±5% or	RCX6JATZ0473	4835 110 57189
		CARBON RES. 1/4W 47k Ω ±5%	RCX4JATZ0473	4835 110 57189
R616		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R617		CARBON RES. 1/6W 220 Ω ±5% or	RCX6JATZ0221	4835 111 37175
		CARBON RES. 1/4W 220 Ω ±5%	RCX4JATZ0221	4835 110 57037
R618		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
R619		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
R620		CARBON RES. 1/6W 68k Ω ±5% or	RCX6JATZ0683	4835 111 37205
		CARBON RES. 1/4W 68k Ω ±5%	RCX4JATZ0683	4835 110 57168
R622		CARBON RES. 1/6W 33 Ω ±5% or	RCX6JATZ0330	4835 111 17451
		CARBON RES. 1/4W 33 Ω ±5%	RCX4JATZ0330	4835 110 57044
R623		CARBON RES. 1/6W 47 Ω ±5% or	RCX6JATZ0470	4835 111 37192
		CARBON RES. 1/4W 47 Ω ±5%	RCX4JATZ0470	4835 110 57019
R624		CARBON RES. 1/6W 33 Ω ±5% or	RCX6JATZ0330	4835 111 17451
		CARBON RES. 1/4W 33 Ω ±5%	RCX4JATZ0330	4835 110 57044
R625		CARBON RES. 1/6W 470 Ω ±5% or	RCX6JATZ0471	4835 111 37193
		CARBON RES. 1/4W 470 Ω ±5%	RCX4JATZ0471	4835 110 57167

Ref. No.	▲	Description	ID No.	Part No.
R626		CARBON RES. 1/6W 470 Ω ±5% or	RCX6JATZ0471	4835 111 37193
		CARBON RES. 1/4W 470 Ω ±5%	RCX4JATZ0471	4835 110 57167
R627		CARBON RES. 1/6W 680 Ω ±5% or	RCX6JATZ0681	4835 111 37203
		CARBON RES. 1/4W 680 Ω ±5%	RCX4JATZ0681	4835 110 57054
R628		CARBON RES. 1/6W 680 Ω ±5% or	RCX6JATZ0681	4835 111 37203
		CARBON RES. 1/4W 680 Ω ±5%	RCX4JATZ0681	4835 110 57054
R629		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R630		CARBON RES. 1/6W 150 Ω ±5% or	RCX6JATZ0151	4835 111 37167
		CARBON RES. 1/4W 150 Ω ±5%	RCX4JATZ0151	4835 110 57031
R660		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
R662		CARBON RES. 1/4W 8.2k Ω ±5%	RCX4JATZ0822	4835 110 57264
R663		CARBON RES. 1/4W 8.2k Ω ±5%	RCX4JATZ0822	4835 110 57264
R664		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
R665		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
R666		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
●R667		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
R668		CARBON RES. 1/4W 22 Ω ±5%	RCX4JATZ0220	4835 110 57036
R669		CARBON RES. 1/4W 22 Ω ±5%	RCX4JATZ0220	4835 110 57036
R671		CARBON RES. 1/6W 100 Ω ±5% or	RCX6JATZ0101	4835 111 37161
		CARBON RES. 1/4W 100 Ω ±5%	RCX4JATZ0101	4835 110 57003
R672		CARBON RES. 1/6W 1.5k Ω ±5% or	RCX6JATZ0152	4835 111 37306
		CARBON RES. 1/4W 1.5k Ω ±5%	RCX4JATZ0152	4835 110 57186
R673		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
●R675		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R687		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R688		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R689		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R690		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R691		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R692		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R693		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R695		CHIP RES.(1608) 1/10W 220 Ω ±5%	RRXAJR5Z0221	4835 111 37371
R696		CARBON RES. 1/4W 560 Ω ±5%	RCX4JATZ0561	4835 110 57052
R697		CARBON RES. 1/4W 560 Ω ±5%	RCX4JATZ0561	4835 110 57052
●R698		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R699		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
R700		CARBON RES. 1/6W 1k Ω ±5% or	RCX6JATZ0102	4835 111 37162
		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R701		CARBON RES. 1/6W 1k Ω ±5% or	RCX6JATZ0102	4835 111 37162
		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R702		CARBON RES. 1/6W 1M Ω ±5% or	RCX6JATZ0105	4835 110 57272
		CARBON RES. 1/4W 1M Ω ±5%	RCX4JATZ0105	4835 110 57272
●R1351		CHIP RES.(1608) 1/10W 1.8k Ω ±5%	RRXAJR5Z0182	4835 111 37231
●R1352		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R1353		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R1354		CHIP RES.(1608) 1/10W 220 Ω ±5%	RRXAJR5Z0221	4835 111 37371
●R1355		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R1356		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R1357		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
<b>SWITCHES</b>				
SW201		LEAF SWITCH MXS01830MVPO	SSC0101MCE03	4835 276 17354
SW202		ROTARY MODE SWITCH SSS-53MD	SSR0106KB003	4835 276 17357
SW203		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
<b>MISCELLANEOUS</b>				
2B16		BUSH, LED(F)	0VM409508	--- -- ---
2B17		SHIELD ASSEMBLY	0VM413279	--- -- ---
2B40		HOLDER, F.I.P.	0VM416304	--- -- ---
F201		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
F202		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
F203		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
F204		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
F205		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
F206		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
FM1001		DC FAN MOTOR 2410-RL-04W-B20-C02	NMEZR12NM004	9965 000 25457
J31		CARBON RES. 1/6W 1k Ω ±5% or	RCX6JATZ0102	4835 111 37162
		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025

Ref. No.	▲	Description	ID No.	Part No.
J373		CERAMIC CAP.(AX) 1000pF/50V ±10% (B)	CCA1JKT0B102	4835 122 47004
J378		CERAMIC CAP.(AX) 0.1µF/25V ±10% (B)	CCA1EKT0B104	4835 122 47682
●JC1		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC05		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC106		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC107		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC101		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC102		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC103		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC104		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC114		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC116		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC117		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC118		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC119		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC121		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
JK201		S TYPE JACK(2P) MDC-021V-AA LF	JYEL040LY004	9965 000 25469
JK202		RCA JACK MSP-382V-12 PBSN	JXRL020LY063	9965 000 15321
JK203		RCA JACK 3P MSP-213-V1-432 PBSN	JXRL030LY048	4835 265 97523*
JK204		RCA JACK(BLACK) MSP-281V2-B	JXRL010LY062	4835 265 97515
JK205		RCA JACK MSP-382V-12 PBSN	JXRL020LY063	9965 000 15321
JK207		RCA JACK 3P MSP-213-V1-432 PBSN	JXRL030LY048	4835 265 97523*
JK208		RCA JACK MSP-213V1-652 PBSN or	JXRL030LY061	4835 265 97516
		RCA JACK MSP-213V1-652-B NI L	JXRL030LY116	4835 265 97516
JK210		RCA JACK MSP-213V1-652 PBSN or	JXRL030LY061	4835 265 97516
		RCA JACK MSP-213V1-652-B NI L	JXRL030LY116	4835 265 97516
RM201		INFRARED RECEIVER MODULE MIM-93M6EKF	USESJRSUNT08	9965 000 25479
TP204		PCB JUMPER D0.6-P5.5	JW5.5T	----
TP205		PCB JUMPER D0.6-P10.0	JW10.0T	----
TP301		PCB JUMPER D0.6-P20.0	JW20.0T	----
TP302		PCB JUMPER D0.6-P10.0	JW10.0T	----
TP452		PCB JUMPER D0.6-P21.5	JW21.5T	----
TP506		PCB JUMPER D0.6-P5.0	JW5.0T	----
TP507		PCB JUMPER D0.6-P25.0	JW25.0T	----
TP513		PCB JUMPER D0.6-P7.5	JW7.5T	----
TP751		PCB JUMPER D0.6-P10.0	JW10.0T	----
TUJ201		TUNER VH025AG	UTUNNTUSP028	9965 000 25480
VR201		CARBON P.O.T. 100k Ω B	VRCB104HH014	4835 100 97191
W003		PARALLEL WIRE, 5P AWG26#2651/P2.0/140	WX1E9480-003	----
W004		FFC CABLE 7P FFC/P1.00/100	WX1E9480-004	----
W005		FFC CABLE 7P FFC/P1.00/220	WX1E9480-005	----
W006		FFC CABLE 8P FFC/P1.00/150	WX1E9480-006	----
W008		FFC CABLE 13P FFC/P1.00/100	WX1E9480-008	----
W010		FFC CABLE 22P FFC/P1.00/120	WX1E9480-010	----
W011		FFC CABLE 22P FFC/P1.00/250	WX1E9480-011	----
W013		WIRE ASSEMBLY 12P UL1007 AWG26/120	WX1E9480-013	----
W014		WIRE ASSEMBLY 4P UL1007 AWG22/120	WX1E9480-014	9965 000 25487
W020		WIRE 1P WIRE 1P AWG26/90	WX1E9480-020	----
X201		CRYSTAL OSCILLATOR 14.31818MHZ or	FXD146LDS003	4835 242 77305
		CRYSTAL OSCILLATOR 14.31M(20/15/50/49S)	FXC146LLN004	4835 242 77305
X202		CRYSTAL OSCILLATOR 3.579545MHz(20PPM) or	FXC355LLN003	4835 242 77093
		CRYSTAL OSCILLATOR 3.579545MHz(20PPM) or	FXC355LCHE01	4835 242 77093
		CRYSTAL OSCILLATOR 3.579545MHz(20PPM)	FXC355LDS001	4835 242 77093

## FUNCTION CBA

Ref. No.	▲	Description	ID No.	Part No.
		FUNCTION CBA (MCV-B) Consists of the following:	-----	
<b>DIODES</b>				
D951		LED(YELLOW) 204YD/E	NPQZ00204YDE	4835 130 87169
D952		LED(YELLOW) 204YD/E	NPQZ00204YDE	4835 130 87169
<b>RESISTORS</b>				
●R951		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427

Ref. No.	▲	Description	ID No.	Part No.
●R952		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R953		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
<b>SWITCHES</b>				
SW951		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
SW952		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356

## SENSOR CBA

Ref. No.	▲	Description	ID No.	Part No.
		SENSOR CBA Consists of the following:	1VSA10578	9965 000 14801
<b>TRANSISTORS</b>				
Q236		PHOTO TRANSISTOR PT204-6B-12 or	NPWZT2046B12	4835 130 48222
		PHOTO TRANSISTOR MID-32A22F	NPWZ1D32A22F	4835 130 48231
Q238		PHOTO TRANSISTOR PT204-6B-12 or	NPWZT2046B12	4835 130 48222
		PHOTO TRANSISTOR MID-32A22F	NPWZ1D32A22F	4835 130 48231

## PSV CBA

Ref. No.	▲	Description	ID No.	Part No.
		PSV CBA Consists of the following:	1VSA10556	9965 000 25435
		POWER SUPPLY CBA (PSV-A)	-----	
		JUNCTION-A CBA (PSV-B)	-----	
		JUNCTION-B CBA (PSV-C)	-----	
		FRONT CBA (PSV-D)	-----	
		JACK-A CBA (PSV-E)	-----	
		JACK-B CBA (PSV-G)	-----	

## POWER SUPPLY CBA

Ref. No.	▲	Description	ID No.	Part No.
		POWER SUPPLY CBA (PSV-A) Consists of the following:	-----	
<b>CAPACITORS</b>				
C1001		ELECTROLYTIC CAP. 10µF/50V ±20% H7	CE1JMASSL100	4835 124 47202
C1002		ELECTROLYTIC CAP. 1000µF/16V ±20% or	CE1CMZPDL102	4835 124 47005
		ELECTROLYTIC CAP. 1000µF/16V ±20%	CE1CMZPTL102	4835 124 47005
C1003		ELECTROLYTIC CAP. 10µF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C1004		ELECTROLYTIC CAP. 4700µF/6.3V ±20%	CE0KMZPTL472	4835 121 47192
C1005		ELECTROLYTIC CAP. 470µF/6.3V ±20% or	CE0KMASDL471	4835 124 47239
		ELECTROLYTIC CAP. 470µF/6.3V ±20%	CE0KMASTL471	4835 124 47239
C1006		ELECTROLYTIC CAP. 470µF/6.3V ±20% or	CE0KMASDL471	4835 124 47239
		ELECTROLYTIC CAP. 470µF/6.3V ±20%	CE0KMASTL471	4835 124 47239
C1008		ELECTROLYTIC CAP. 22µF/50V ±20% or	CE1JMASDL220	4835 124 47051
		ELECTROLYTIC CAP. 22µF/50V ±20%	CE1JMASTL220	4835 124 47051
C1010		ELECTROLYTIC CAP. 1000µF/25V ±20% or	CE1EMZPDL102	4835 124 47007
		ELECTROLYTIC CAP. 1000µF/25V ±20%	CE1EMZPTL102	4835 124 47007
C1011		ELECTROLYTIC CAP. 470µF/10V ±20% or	CE1AMASDL471	4835 124 47286
		ELECTROLYTIC CAP. 470µF/10V ±20%	CE1AMASTL471	4835 124 47286
C1012		ELECTROLYTIC CAP. 100µF/10V ±20% H7	CE1AMASSL101	4835 124 47323
●C1013		CHIP CERAMIC CAP. 0.01µF/50V ±10% (B) or	CHD1JKB0B103	4835 122 87255
		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C1014		CERAMIC CAP.(AX) 0.033µF/50V ±10% (B)	CA1J333TU011	4822 121 42772
C1015	▲	METALLIZED FILM CAP. 0.068µF/275V ±10% or	CT2E683HJE14	4835 121 47725
	▲	METALLIZED FILM CAP. 0.068µF/275V ±10% or	CT2E683HJE06	4835 121 47725
	▲	METALLIZED FILM CAP. 0.068µF/250V ±10% or	CT2E683DC011	4835 121 47724
	▲	METALLIZED FILM CAP. 0.068µF/250V ±20% or	CT2E683MS037	4835 121 47724

Ref. No.	▲	Description	ID No.	Part No.
	▲	METALLIZED FILM CAP. 0.068μF/275V ±10%	CT2E683DC015	4835 121 47725
C1016		CERAMIC CAP. 0.01μF/500V ±10% (B)	CCD2JKP0B103	4835 122 47423
C1017		ELECTROLYTIC CAP. 220μF/200V ±20%	CA2D221S6008	4835 124 47022
C1018		CERAMIC CAP. 120pF/500V ±10% (B)	CCD2JKP0B121	4835 122 47408
C1019	▲	SAFETY CAP. 3300pF/250V or	CCG2EMA0F332	4835 125 97024
	▲	SAFETY CAP. 3300pF/250V	CCD2EMA0E332	4835 125 97036
C1020		CERAMIC CAP. 220pF/500V ±10% (B)	CCD2JKP0B221	4835 122 47031
C1021		CERAMIC CAP.(AX) 3300pF/16V ±10% (X)	CCA1CKT0X332	4835 122 47475
C1022		CERAMIC CAP.(AX) 5600pF/16V ±10% (X)	CCA1CKT0X562	4835 122 47729
C1023		ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C1024		CERAMIC CAP. 0.022μF/50V +80/-20% (YV)	CCD1JZSYV223	4835 122 47013
C1026		ELECTROLYTIC CAP. 470μF/16V ±20% or	CE1CMASDL471	4835 124 47286
		ELECTROLYTIC CAP. 470μF/16V ±20%	CE1CMASDL471	4835 220 17118
C1027		ELECTROLYTIC CAP. 470μF/16V ±20% or	CE1CMASDL471	4835 124 47286
		ELECTROLYTIC CAP. 470μF/16V ±20%	CE1CMASDL471	4835 220 17118
<b>DIODES</b>				
D1001		RECTIFIER DIODE BA158 or	NDQZ000BA158	4835 130 37976
		RECTIFIER DIODE BA158	NDWZ000BA158	4835 130 37976
D1002		SCHOTTKY BARRIER DIODE SB390 or	NDQZ000SB390	9965 000 19668
		SCHOTTKY BARRIER DIODE SB390	NDWZ000SB390	9965 000 19668
D1003		SCHOTTKY BARRIER DIODE SB340 or	NDQZ000SB340	4835 130 37887
		SCHOTTKY BARRIER DIODE SB340	NDWZ000SB340	4835 130 37887
D1004		SCHOTTKY BARRIER DIODE SB340 or	NDQZ000SB340	4835 130 37887
		SCHOTTKY BARRIER DIODE SB340	NDWZ000SB340	4835 130 37887
D1005		ZENER DIODE DZ-15BSCT265 or	NDTC00DZ15BS	4835 130 38029
		ZENER DIODE MTZJF-7715C	QDTC00MTZJ15	4835 130 37595
D1006		RECTIFIER DIODE BA158 or	NDQZ000BA158	4835 130 37976
		RECTIFIER DIODE BA158	NDWZ000BA158	4835 130 37976
D1007		PCB JUMPER D0.6-P5.0	JW5.0T	--- -- ---
D1008		SCHOTTKY BARRIER DIODE SB340 or	NDQZ000SB340	4835 130 37887
		SCHOTTKY BARRIER DIODE SB340	NDWZ000SB340	4835 130 37887
D1009		RECTIFIER DIODE FR101	NDWZ000FR101	4835 130 38062
D1010		ZENER DIODE DZ-16BSCT265 or	NDTC00DZ16BS	4835 130 37624
		ZENER DIODE MTZJT-7716C	QDTC00MTZJ16	9965 000 25505
D1011		ZENER DIODE DZ-6.8BSBT265 or	NDTBODZ6R8BS	4835 130 38027
		ZENER DIODE MTZJT-776.8B	QDTBOMTZJ6R8	4835 130 37881
D1012		DIODE 1N5397-B	NDLZ001N5397	4835 130 38014
D1013		DIODE 1N5397-B	NDLZ001N5397	4835 130 38014
D1014		DIODE 1N5397-B	NDLZ001N5397	4835 130 38014
D1015		DIODE 1N5397-B	NDLZ001N5397	4835 130 38014
D1016		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1017		RECTIFIER DIODE BA158 or	NDQZ000BA158	4835 130 37976
		RECTIFIER DIODE BA158	NDWZ000BA158	4835 130 37976
D1018		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1019		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1021		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1022		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1023		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1024		RECTIFIER DIODE FR202-B/P or	NDQZ000FR202	4835 130 38058
		FAST RECOVERY DIODE FR202	NDWZ000FR202	4835 130 38058
D1025		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1026		ZENER DIODE DZ-5.6BSBT265 or	NDTBODZ5R6BS	4835 130 38026
		ZENER DIODE MTZJT-775.6B	QDTBOMTZJ5R6	4835 130 37329
D1029		PCB JUMPER D0.6-P10.0	JW10.0T	--- -- ---
D1030		SCHOTTKY BARRIER DIODE SB190	NDWZ000SB190	4835 130 38075
<b>ICS</b>				
IC010	▲	IC, ERROR VOLTAGE DET LTV-817B-F or	NPEB0LTV817F	4835 130 37977
	▲	IC, ERROR VOLTAGE DET LTV-817C-F or	NPEC0LTV817F	4835 130 37977

Ref. No.	▲	Description	ID No.	Part No.
	▲	IC, ERROR VOLTAGE DET EL817A or	NPEA000EL817	9965 000 19672
	▲	IC, ERROR VOLTAGE DET EL817B or	NPEB000EL817	4835 209 47615
	▲	IC, ERROR VOLTAGE DET EL817C or	NPEC000EL817	4835 209 47615
	▲	IC, ERROR VOLTAGE DET PS2561A-1(W) or	QPEWPS2561A1	9965 000 25506
	▲	IC, ERROR VOLTAGE DET PS2561A-1(Q)	QPEQPS2561A1	9965 000 25506
<b>COILS</b>				
L1001		CHOKE COIL 22μH-K or	LLBD00PKV006	4835 157 58024
		CHOKE COIL 22μH-K	LLBD00PKT002	4835 157 58024
L1002		CHOKE COIL 47μH-K or	LLBD00PKV007	4835 157 58208
		CHOKE COIL 47μH-K or	LLBD00PKV005	4835 157 58208
		CHOKE COIL 47μH-K	LLBD00PKT001	4835 157 58208
L1003		RADIAL LEADED INDUCTOR LHPF13BB220M	LLC220MTU022	9965 000 25507
L1004		CHOKE COIL 47μH-K or	LLBD00PKV007	4835 157 58208
		CHOKE COIL 47μH-K or	LLBD00PKV005	4835 157 58208
		CHOKE COIL 47μH-K	LLBD00PKT001	4835 157 58208
L1005	▲	LINE FILTER 27MH CGS-LF0059A	LLBG00ZSA010	4835 157 58286
L1006		BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001	--- -- ---
L1007		BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001	--- -- ---
L1008		CHOKE COIL 22μH-K or	LLBD00PKV006	4835 157 58024
		CHOKE COIL 22μH-K	LLBD00PKT002	4835 157 58024
L1009		RADIAL LEADED INDUCTOR LHPF13BB100M	LLC100MTU022	9965 000 25509
<b>TRANSISTORS</b>				
Q031		IC, SHUNT REGULATOR KTA1267(Y) "PNP" or	NQSY0KTA1267	4835 130 47913
		IC, SHUNT REGULATOR KTA1267(GR) "PNP" or	NQS10KTA1267	4835 130 47913
		IC, SHUNT REGULATOR 2SA1175(J) "PNP" or	QQSJ02SA1175	4835 130 47645
		IC, SHUNT REGULATOR 2SA1175(H) "PNP" or	QQSH02SA1175	4835 130 47645
		IC, SHUNT REGULATOR 2SA1175(F) "PNP"	QQSF02SA1175	4835 130 47645
Q1001	▲	SWITCHING 2SK3563	QFVW02SK3563	4835 130 48244
Q1003		SWITCHING CONTROL 2SC1815-GR(TPE2) "NPN"	QQS102SC1815	4835 130 47358
Q1008		SWITCHING CONTROL KTC3199(Y) "NPN"	NQSY0KTC3199	4835 130 47914
<b>RESISTORS</b>				
R1002		CARBON RES. 1/4W 1.8k Ω ±5%	RCX4JATZ0182	4835 110 57033
R1003		CARBON RES. 1/4W 1.8k Ω ±5%	RCX4JATZ0182	4835 110 57033
R1004		CARBON RES. 1/4W 4.7k Ω ±5%	RCX4JATZ0472	4835 110 57051
R1005		CARBON RES. 1/4W 2.7k Ω ±5%	RCX4JATZ0272	4835 110 57006
●R1006		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJB5Z0102	4835 111 17068
●R1007		CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000	--- -- ---
●R1008		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJB5Z0472	4835 111 17166
●R1009		CHIP RES.(1608) 1/10W 1.8k Ω ±5%	RRXAJB5Z0182	4835 111 17154
●R1010		CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000	--- -- ---
●R1011		CHIP RES.(1608) 1/10W 2.2k Ω ±1% or	RRXAFB5H2201	4835 111 17156
		CHIP RES.(1608) 1/10W 2.2k Ω ±1%	RRXAFR5Z2201	4835 111 17156
●R1012		CHIP RES.(1608) 1/10W 5.6k Ω ±1% or	RRXAFB5H5601	4835 111 17168
		CHIP RES. 1/10W 5.6k Ω	RRXAFR5Z5601	4835 111 17168
●R1013		CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000	--- -- ---
●R1014		CHIP RES.(1608) 1/10W 68k Ω ±5%	RRXAJB5Z0683	4835 111 17172
R1015		METAL OXIDE FILM RES. 2W 82k Ω ±5% or	RN02823ZU001	4835 116 57809
		METAL OXIDE FILM RES. 2W 82k Ω ±5%	RN02823KE010	4835 116 57809
R1016		CARBON RES. 1/4W 1M Ω ±5%	RCX4JATZ0105	4835 110 57272
R1017		CARBON RES. 1/4W 1M Ω ±5%	RCX4JATZ0105	4835 110 57272
R1018		CARBON RES. 1/6W 680 Ω ±2% or	RCX6GATZ0681	4835 111 37203
		CARBON RES. 1/4W 680 Ω ±2%	RCX4GATZ0681	4835 110 57054
R1019		CARBON RES. 1/6W 22k Ω ±5% or	RCX6JATZ0223	4835 111 37177
		CARBON RES. 1/4W 22k Ω ±5%	RCX4JATZ0223	4835 110 57038
R1020		METAL OXIDE FILM RES. 2W 0.68 Ω ±5% or	RN02R68ZU001	4835 116 67298
		METAL OXIDE FILM RES. 2W 0.68 Ω ±5%	RN02R68KE009	4835 116 67321
R1021		CARBON RES. 1/6W 150k Ω ±5% or	RCX6JATZ0154	4835 111 37316
		CARBON RES. 1/4W 150k Ω ±5%	RCX4JATZ0154	4835 110 57206
R1022		CARBON RES. 1/6W 2.2k Ω ±5% or	RCX6JATZ0222	4835 111 37176
		CARBON RES. 1/4W 2.2k Ω ±5%	RCX4JATZ0222	4835 110 57079

Ref. No.	▲	Description	ID No.	Part No.
R1023		CARBON RES. 1/4W 680k $\Omega$ $\pm$ 5%	RCX4JATZ0684	4835 110 57227
R1024		SWITCHING DIODE 1N4148M or SWITCHING DIODE 1SS133(T-77)	NDTZ01N4148M QDTZ001SS133	4835 130 37048 4835 130 37235
R1025		CARBON RES. 1/6W 100k $\Omega$ $\pm$ 5% or CARBON RES. 1/4W 100k $\Omega$ $\pm$ 5%	RCX6JATZ0104 RCX4JATZ0104	4835 110 57068 4835 110 57185
●R1026		CHIP RES.(1608) 1/10W 10k $\Omega$ $\pm$ 5%	RRXAJB5Z0103	4835 111 27027
R1027		CARBON RES. 1/6W 100k $\Omega$ $\pm$ 5% or CARBON RES. 1/4W 100k $\Omega$ $\pm$ 5%	RCX6JATZ0104 RCX4JATZ0104	4835 110 57068 4835 110 57185
R1028		CARBON RES. 1/6W 470k $\Omega$ $\pm$ 5% or CARBON RES. 1/4W 470k $\Omega$ $\pm$ 5%	RCX6JATZ0474 RCX4JATZ0474	4835 110 57225 4835 110 57225
R1029		METAL OXIDE FILM RES. 2W 1.8 $\Omega$ $\pm$ 5% or METAL OXIDE FILM RES. 2W 1.8 $\Omega$ $\pm$ 5% or METAL OXIDE FILM RES. 2W 1.8 $\Omega$ $\pm$ 5%	RN021R8DP004 RN021R8ZU001 RN021R8KE010	4835 116 67311 4835 116 67311 4835 116 67311
R1030		CARBON RES. 1/6W 2.2k $\Omega$ $\pm$ 5% or CARBON RES. 1/4W 2.2k $\Omega$ $\pm$ 5%	RCX6JATZ0222 RCX4JATZ0222	4835 111 37176 4835 110 57079
R1031		CARBON RES. 1/6W 2.2k $\Omega$ $\pm$ 5% or CARBON RES. 1/4W 2.2k $\Omega$ $\pm$ 5%	RCX6JATZ0222 RCX4JATZ0222	4835 111 37176 4835 110 57079
R1033		CARBON RES. 1/4W 68k $\Omega$ $\pm$ 5%	RCX4JATZ0683	4835 110 57168
<b>MISCELLANEOUS</b>				
2B18		HEATSINK V2600PZ	0VM409007A	--- --- ---
2L019		SCREW, S-TIGHT M3X8 BIND HEAD+	GBMS3080	--- --- ---
AC1001	▲	AC CORD A0A0280-018 or ▲ AC CORD PB8K9F9110A-05A	WAC0172LTE07 WAC0172LW012	4835 321 17163 4835 321 17163
F1001	▲	FUSE SIC 1.25A 250V U/C or ▲ FUSE 1.25A/250V	PAGK20CW3122 PAGG20CAG122	4835 253 97174 4835 253 97174
FH1001		FUSE HOLDER MSF-015 or FUSE HOLDER DFH-001	XH01Z00LY001 XH01Z00RP001	--- --- --- --- --- ---
FH1002		FUSE HOLDER MSF-015 or FUSE HOLDER DFH-001	XH01Z00LY001 XH01Z00RP001	--- --- --- --- --- ---
GP1001	▲	GAP. FNR-G3.10D	FAZ000LD6005	4835 252 27025
SA1001	▲	SURGE ABSORBER 470V+10PER or ▲ SURGE ABSORBER CNR-10D471K	NVQZ10D471KB NVQZR10D471K	4835 252 27024 4835 252 27024
T1001	▲	SWITCHING TRANS. 4729-S02	LTT00CPKT157	9965 000 25514
W001		PARALLEL WIRE, 9P AWG26#2651/P2.0/ 90	WX1E9480-001	--- --- ---
W002		PARALLEL WIRE, 9P AWG26#2651/P2.0/ 200	WX1E9480-002	--- --- ---

## JUNCTION-A CBA

Ref. No.	▲	Description	ID No.	Part No.
		JUNCTION-A CBA (PSV-B) Consists of the following:	-----	
<b>CONNECTOR</b>				
CN1612		CONNECTOR, 9P TUC-P09X-B1	JCTUS09TG001	--- --- ---

## JUNCTION-B CBA

Ref. No.	▲	Description	ID No.	Part No.
		JUNCTION-B CBA (PSV-C) Consists of the following:	-----	
<b>CONNECTOR</b>				
CN1613		CONNECTOR, 9P TUC-P09X-B1	JCTUS09TG001	--- --- ---

## FRONT CBA

Ref. No.	▲	Description	ID No.	Part No.
		FRONT CBA (PSV-D) Consists of the following:	-----	
<b>CAPACITORS</b>				
C801		ELECTROLYTIC CAP. 10 $\mu$ F/25V $\pm$ 20% H7	CE1EMAVSL100	4822 124 41291
●C802		CHIP CERAMIC CAP(1608) 0.047 $\mu$ F/50V $\pm$ 10% (B) or CHIP CERAMIC CAP(1608) 0.047 $\mu$ F/25V $\pm$ 10% (B)	CHD1JK30B473 CHD1EK30B473	4835 122 87162 4835 122 87185
●C803		CHIP CERAMIC CAP. 1000pF/50V $\pm$ 10% (B) or CHIP CERAMIC CAP(1608) 1000pF/50V $\pm$ 10% (B)	CHD1JKB0B102 CHD1JK30B102	4835 122 87443 4835 122 87153
C804		TF CAP. ECQV1H684JL	CT1J684MS042	9965 000 25517

Ref. No.	▲	Description	ID No.	Part No.
C805		ELECTROLYTIC CAP. 22 $\mu$ F/25V $\pm$ 20% H7	CE1EMAVSL220	9965 000 25518
C806		ELECTROLYTIC CAP. 47 $\mu$ F/35V $\pm$ 20% H7 or ELECTROLYTIC CAP. 47 $\mu$ F/50V $\pm$ 20% H7	CE1GMASL470 CE1JMASL470	4835 124 97066 4835 124 47507
●C807		CHIP CERAMIC CAP.(1608) 0.1 $\mu$ F/25V $\pm$ 10% (B) or CHIP CERAMIC CAP.(1608) 0.1 $\mu$ F/16V $\pm$ 10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
●C809		CHIP CERAMIC CAP.(1608) 0.22 $\mu$ F/16V $\pm$ 10% (B) or CHIP CERAMIC CAP.(1608) 0.22 $\mu$ F/25V $\pm$ 10% (B)	CHD1CK30B224 CHD1EK30B224	4835 122 87135 4835 122 87152
●C810		CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CH) or CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CG)	CHD1JJ3CH101 CHD1JJ3CG101	4835 122 87193 4835 122 87193
●C811		CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CH) or CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CG)	CHD1JJ3CH101 CHD1JJ3CG101	4835 122 87193 4835 122 87193
●C812		CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CH) or CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CG)	CHD1JJ3CH101 CHD1JJ3CG101	4835 122 87193 4835 122 87193
●C813		CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CH) or CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CG)	CHD1JJ3CH101 CHD1JJ3CG101	4835 122 87193 4835 122 87193
●C814		CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CH) or CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CG)	CHD1JJ3CH101 CHD1JJ3CG101	4835 122 87193 4835 122 87193
●C815		CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CH) or CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CG)	CHD1JJ3CH101 CHD1JJ3CG101	4835 122 87193 4835 122 87193
●C816		CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CH) or CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CG)	CHD1JJ3CH101 CHD1JJ3CG101	4835 122 87193 4835 122 87193
●C817		CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CH) or CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CG)	CHD1JJ3CH101 CHD1JJ3CG101	4835 122 87193 4835 122 87193
●C818		CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CH) or CHIP CERAMIC CAP.(1608) 100pF/50V $\pm$ 5%(CG)	CHD1JJ3CH101 CHD1JJ3CG101	4835 122 87193 4835 122 87193
●C819		CHIP CERAMIC CAP.(1608) 0.01 $\mu$ F/50V $\pm$ 10% (B)	CHD1JK30B103	4835 122 87255
●C820		CHIP CERAMIC CAP.(1608) 0.01 $\mu$ F/50V $\pm$ 10% (B)	CHD1JK30B103	4835 122 87255
●C821		CHIP CERAMIC CAP.(1608) 0.047 $\mu$ F/50V $\pm$ 10% (B) or CHIP CERAMIC CAP.(1608) 0.047 $\mu$ F/25V $\pm$ 10% (B)	CHD1JK30B473 CHD1EK30B473	4835 122 87162 4835 122 87185
C822		ELECTROLYTIC CAP. 22 $\mu$ F/16V $\pm$ 20% H7	CE1CMAVSL220	4835 124 47175
<b>CONNECTORS</b>				
CN801		FFC/FPC CONNECTOR, 13P 00-6232- 013-006-800 or FMN CONNECTOR, TOP 13P 13FMN- BTK	JC62G13TM010 JCFNG13JG001	--- --- --- --- --- ---
<b>DIODES</b>				
D801		ZENER DIODE DZ-6.8BSCT265 or ZENER DIODE MTZJF-776.8C	NDTC0DZ6R8BS QDTC0MTZJ6R8	4835 130 38027 4835 130 37881
D802		SWITCHING DIODE 1N4148M or SWITCHING DIODE 1SS133(T-77)	NDTZ01N4148M QDTZ001SS133	4835 130 37048 4835 130 37235
D803		SWITCHING DIODE 1N4148M or SWITCHING DIODE 1SS133(T-77)	NDTZ01N4148M QDTZ001SS133	4835 130 37048 4835 130 37235
<b>IC</b>				
●IC801		IC, FRONT PANEL CONTROL TMP87CH74AF-3RU1(Z)	QSZAA0RTS015	4835 209 47642
<b>COILS</b>				
L801		PCB JUMPER D0.6-P5.0	JW5.0T	--- --- ---
L802		PCB JUMPER D0.6-P5.0	JW5.0T	--- --- ---
L803		INDUCTOR 180 $\mu$ H-K-26T	LLAXKATTU181	4835 157 57372
<b>TRANSISTORS</b>				
Q801		SWITCHING BC337-25-AT	NQS8000BC337	9965 000 25475
Q802		SWITCHING BC327-25-AT	NQS8000BC327	3198 020 43430

Ref. No.	▲	Description	ID No.	Part No.
Q803		SWITCHING BC547-S-BB	NQSB000BC547	9965 000 25523
Q805		INVERTER BC547-S-BB	NQSB000BC547	9965 000 25523
Q806		DRIVE BC547-S-BB	NQSB000BC547	9965 000 25523
Q807		DRIVE BC547-S-BB	NQSB000BC547	9965 000 25523
<b>RESISTORS</b>				
●R801		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R802		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
R803		CARBON RES. 1/6W 10k Ω ±5%	RCX6JATZ0103	4835 111 37163
R804		CARBON RES. 1/6W 470 Ω ±5%	RCX6JATZ0471	4835 111 37193
R805		CARBON RES. 1/6W 470 Ω ±5%	RCX6JATZ0471	4835 111 37193
●R806		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R807		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R808		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R809		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R810		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R811		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R812		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R813		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R814		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R815		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R816		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R817		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R818		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R819		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R820		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R822		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R823		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R825		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R826		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R827		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R828		CHIP RES.(1608) 1/10W 220 Ω ±5%	RRXAJR5Z0221	4835 111 37371
●R829		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
R830		THERMAL SENSOR LT/1/6CT26A103J1000	RTX6103KA008	4835 276 17358
●R831		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R832		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R833		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R835		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R836		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
<b>SWITCHES</b>				
SW801		TACT SWITCH KSM0614B or TACT SWITCH SKQSAF001A or TACT SWITCH TC-1104(H=9.5)	SST0101HH013 SST0101AL041 SST0101DNG01	4835 276 17282 4835 276 17282 4835 276 17356
SW802		TACT SWITCH KSM0614B or TACT SWITCH SKQSAF001A or TACT SWITCH TC-1104(H=9.5)	SST0101HH013 SST0101AL041 SST0101DNG01	4835 276 17282 4835 276 17282 4835 276 17356
SW803		TACT SWITCH KSM0614B or TACT SWITCH SKQSAF001A or TACT SWITCH TC-1104(H=9.5)	SST0101HH013 SST0101AL041 SST0101DNG01	4835 276 17282 4835 276 17282 4835 276 17356
2B41		HOLDER, F.I.P. 2 H5341UD	OVM407372	----
FIP801		V.FD BJ944GN	TVFD1C0FT046	9965 000 25520
X801		CERAMIC RESONATOR CSTLS8M00G56-B0	FY0805PMR002	9965 000 25524

## JACK-A CBA

Ref. No.	▲	Description	ID No.	Part No.
		JACK-A CBA (PSV/E) Consists of the following:	-----	
<b>CAPACITORS</b>				
●C751		CHIP CERAMIC CAP. 330pF/50V ±10% (B)	CHD1JK30B331	4835 122 87032
●C752		CHIP CERAMIC CAP. 330pF/50V ±10% (B)	CHD1JK30B331	4835 122 87032
●C753		CHIP CERAMIC CAP.(1608) 47pF/50V ±5% (CH) or CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1J3CH470 CHD1J3CG470	4835 122 87148 4835 122 87034
<b>CONNECTORS</b>				
CN751		FFC/FPC CONNECTOR, 8P 00-6232-008-006-800 or	JC62G08TM010	----

Ref. No.	▲	Description	ID No.	Part No.
		FMN CONNECTOR, TOP 8P 08FMN-BTRK	JCFNG08JG002	----
<b>DIODE</b>				
D751		LED(RED) 204HD/E	NPQZ00204HDE	4835 130 87166
<b>TRANSISTORS</b>				
Q751		ZENER DIODE UMZ6.8N T106	QD1Z0UMZ6R8N	9965 000 25531
Q752		ZENER DIODE UMZ6.8N T106	QD1Z0UMZ6R8N	9965 000 25531
Q753		ZENER DIODE UMZ6.8N T106	QD1Z0UMZ6R8N	9965 000 25531
<b>RESISTORS</b>				
●R751		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R752		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R753		CHIP RES.(1608) 1/10W 1.8k Ω ±5%	RRXAJR5Z0182	4835 111 37231
●R754		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R755		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R756		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R757		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R758		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R759		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
<b>SWITCHES</b>				
SW751		TACT SWITCH KSM0614B or TACT SWITCH SKQSAF001A or TACT SWITCH TC-1104(H=9.5)	SST0101HH013 SST0101AL041 SST0101DNG01	4835 276 17282 4835 276 17282 4835 276 17356
SW752		TACT SWITCH KSM0614B or TACT SWITCH SKQSAF001A or TACT SWITCH TC-1104(H=9.5)	SST0101HH013 SST0101AL041 SST0101DNG01	4835 276 17282 4835 276 17282 4835 276 17356
SW753		TACT SWITCH KSM0614B or TACT SWITCH SKQSAF001A or TACT SWITCH TC-1104(H=9.5)	SST0101HH013 SST0101AL041 SST0101DNG01	4835 276 17282 4835 276 17282 4835 276 17356
JK751		RCA PIN JACK RJ-1169*02-1300B	JYRJ010JD001	9965 000 25528
JK752		RCA PIN JACK RJ-1169*03-1300B	JYRJ010JD002	9965 000 25529
JK753		RCA PIN JACK RJ-1169*04-1300A	JYRJ010JD003	9965 000 25530

## JACK-B CBA

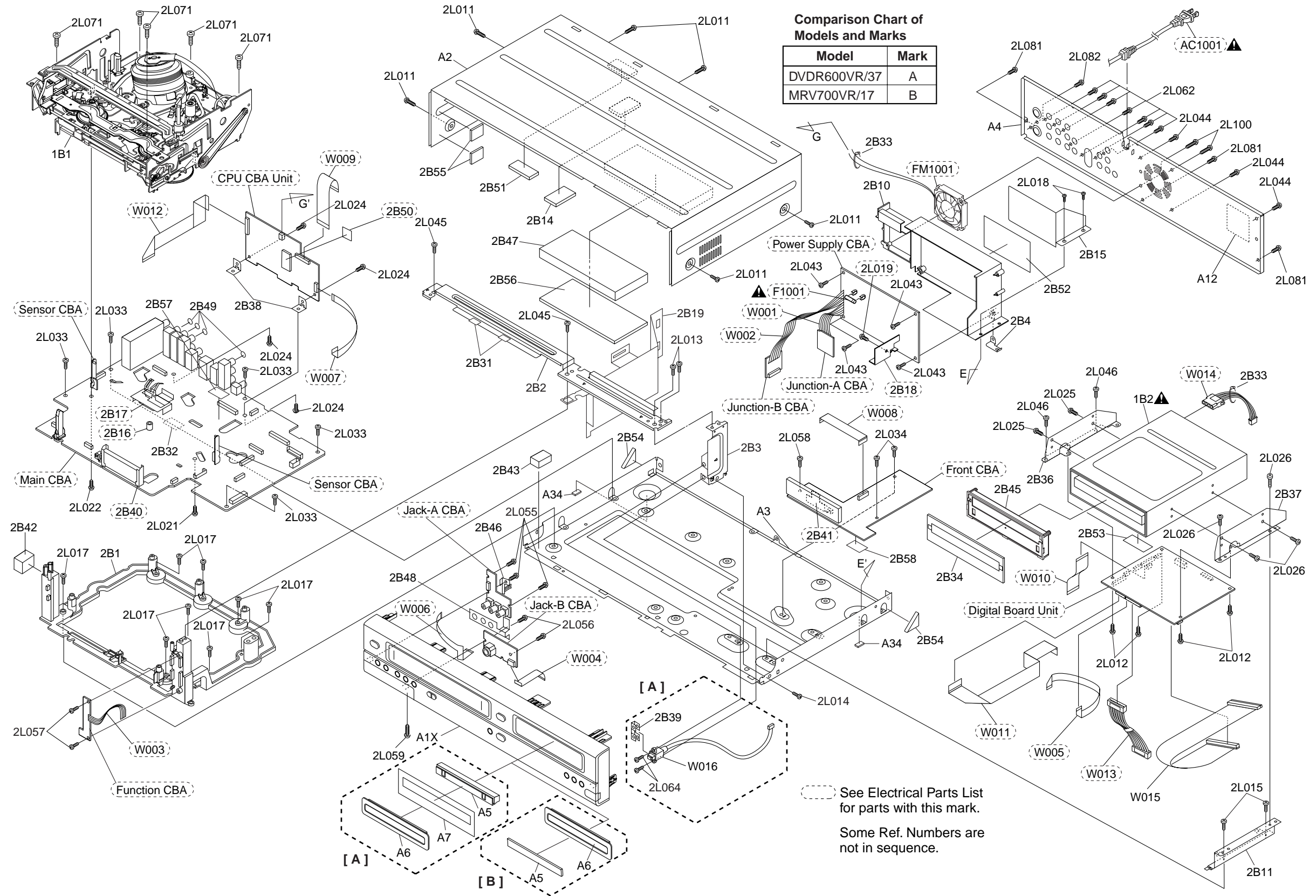
Ref. No.	▲	Description	ID No.	Part No.
		JACK-B CBA (PSV-G) Consists of the following:	-----	
<b>CAPACITORS</b>				
●C901		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1EK30B104 CHD1CK30B104	4835 122 87213 4835 122 87634
<b>CONNECTOR</b>				
CN901		FFC/FPC CONNECTOR 7P 00 6232 007 104 800	JC62G07UG022	9965 000 25532
<b>TRANSISTORS</b>				
Q901		ZENER DIODE UMZ6.8N T106	QD1Z0UMZ6R8N	9965 000 25531
Q902		ZENER DIODE UMZ6.8N T106	QD1Z0UMZ6R8N	9965 000 25531
<b>RESISTORS</b>				
●R901		CHIP RES.(1608) 1/10W 1.8k Ω ±5%	RRXAJR5Z0182	4835 111 37231
●R902		CHIP RES.(1608) 1/10W 1.2k Ω ±5%	RRXAJR5Z0122	4835 111 37222
●R903		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R904		CHIP RES.(1608) 1/10W 1.5k Ω ±5%	RRXAJR5Z0152	4835 111 37437
●R905		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R906		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R907		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
<b>SWITCHES</b>				
SW901		TACT SWITCH KSM0614B or TACT SWITCH SKQSAF001A or TACT SWITCH TC-1104(H=9.5)	SST0101HH013 SST0101AL041 SST0101DNG01	4835 276 17282 4835 276 17282 4835 276 17356
SW902		TACT SWITCH KSM0614B or TACT SWITCH SKQSAF001A or TACT SWITCH TC-1104(H=9.5)	SST0101HH013 SST0101AL041 SST0101DNG01	4835 276 17282 4835 276 17282 4835 276 17356
SW903		TACT SWITCH KSM0614B or TACT SWITCH SKQSAF001A or TACT SWITCH TC-1104(H=9.5)	SST0101HH013 SST0101AL041 SST0101DNG01	4835 276 17282 4835 276 17282 4835 276 17356
SW904		TACT SWITCH KSM0614B or TACT SWITCH SKQSAF001A	SST0101HH013 SST0101AL041	4835 276 17282 4835 276 17282
SW904		TACT SWITCH KSM0614B or TACT SWITCH SKQSAF001A	SST0101HH013 SST0101AL041	4835 276 17282 4835 276 17282
SW904		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356



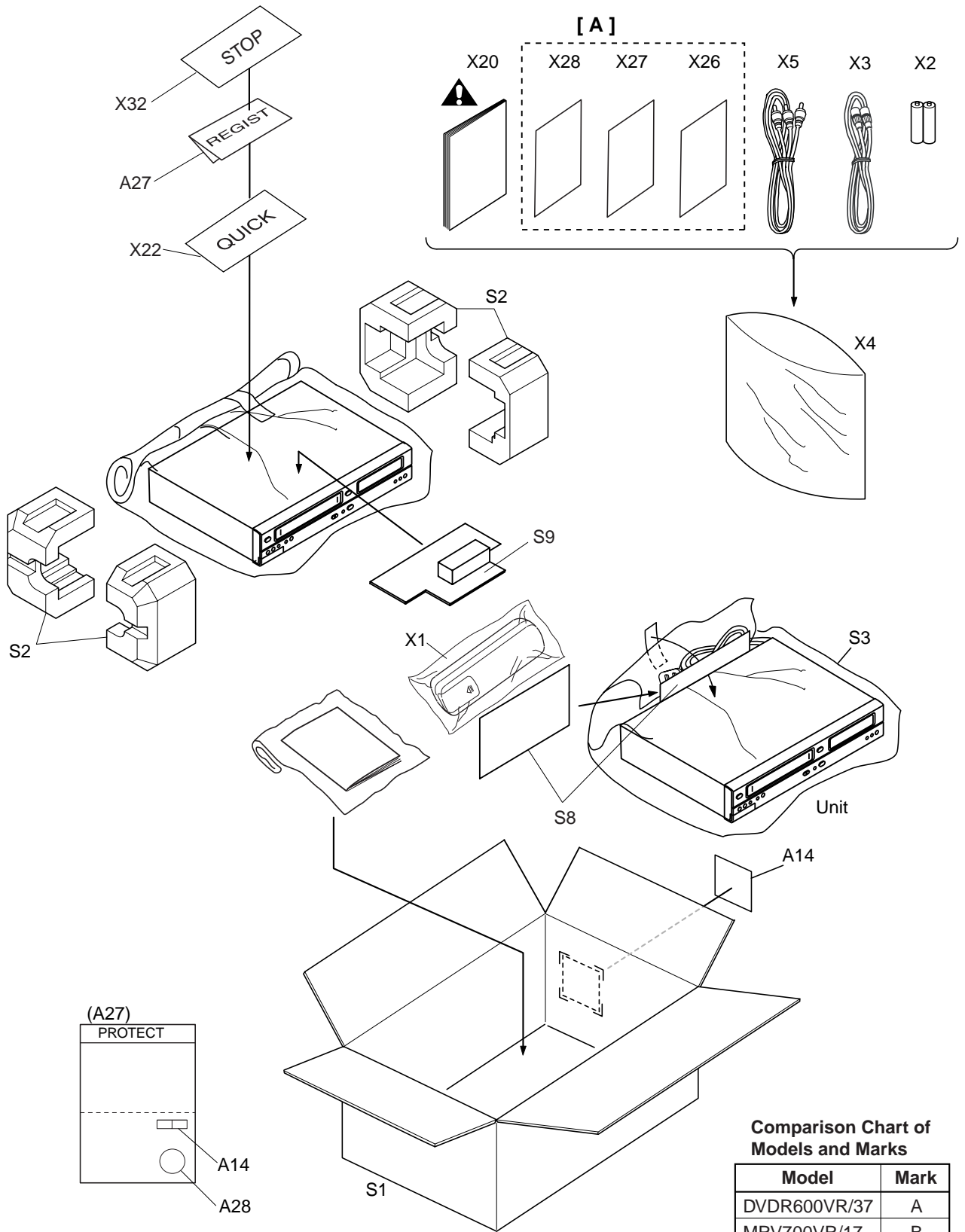
Ref. No.	▲	Description	ID No.	Part No.
SW905		TACT SWITCH KSM0614B	SST0101HH013	4835 276 17282
SW905		TACT SWITCH SKQSAF001A	SST0101AL041	4835 276 17282
SW905		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
<b>MISCELLANEOUS</b>				
JK901		S TYPE JACK MDC1-03D-002	JXEJ040RP001	9965 000 25533

# EXPLODED VIEWS

## Cabinet



# Packing



# MECHANICAL PARTS LIST

**PRODUCT SAFETY NOTE:** Products marked with a **▲** have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

**NOTE:** Parts that are not assigned part numbers (---- - or blank) are not normally available.

**To order parts call the TOLL FREE Philips Sales Center number: 1 - 800 - 851 - 8885 (In Canada) 1 - 800 - 363 - PART. 1 - 800 - 535 - 3715 (Fax).**

## Comparison Chart of Models and Marks

Model	Mark
DVDR600VR/37	A
MRV700VR/17	B

Ref. No.	▲	Mark	Description	ID No.	Part No.
A1X		A	FRONT ASSEMBLY	1VM220129	9965 000 25422
A1X		B	FRONT ASSEMBLY	1VM220134	4835 444 47234
A2			TOP COVER	0VM101356	4835 444 27022
A3			MAIN CHASSIS	1VM120046	----
A4			PANEL, REAR	0VM204539	4835 444 47233
A5		A	TRAY PANEL HOLDER	1VM320073	9965 000 25423
A5		B	DECORATION COVER	1VM320033	4835 444 67283
A6		A	TRAY PANEL	1VM320058	9965 000 25424
A6		B	TRAY PANEL	1VM220025	4835 444 67281
A7		A	PANEL SHEET	1VM421005	----
A12		A	MODEL NO. LABEL	-----	----
A12		B	MODEL NO. LABEL	-----	----
A14			LABEL, BAR CODE	-----	----
A14		A	BARCODE LABEL	-----	----
A14		B	BARCODE LABEL	-----	----
A27		A	REGISTRATION CARD	0VMN04105	----
A27		B	REGISTRATION CARD	0VMN04129	----
A28			LABEL, IMPORTANT	-----	----
A34			FOOT	0VM403657	4835 462 47084
1B1			DECK ASSEMBLY CZD013/VM2260	N2260FL	9965 000 24110
1B2	▲		DVD MECHA & FE ASSEMBLY	1VMN20219	4835 691 17095
2B1			DECK PEDESTAL	0VM101373	4835 462 17024
2B2			FRONT BRACKET	0VM204534	----
2B3		A	FRONT BRACKET R	1VM420840	----
2B3		B	FRONT BRACKET R	0VM416269	----
2B4			EARTH PLATE	0VM416272	----
2B10			HOLDER,PCB	0VM101354	----
2B11			BRACKET R	0VM416268	----
2B14			CUSHION,RUBBER	0VM416664	----
2B15		A	FFC FRICTION PLATE	1VM420747A	----
2B15		B	FFC FRICTION PLATE	1VM420747	----
2B19			RADIATION SHIET	1VM320507	----
2B31			TAPE, HIMELON	0VM413956	----
2B32			DOUBLE SIDE TAPE	0VM412870	----
2B33			LEAD CLAMPER GT-80M or	XF00080HL001	----
			LEAD CLAMPER 100MM	1790356	----
2B34			FOAM RUBBER SEALING	1VM320543	----
2B36			MECHA BRACKET L	0VM416288	----
2B37			MECHA BRACKET R	0VM416289	----
2B38			L ANGLE	0VM416713	----
2B39		A	DV EARTH PLATE	1VM420858	----

Ref. No.	▲	Mark	Description	ID No.	Part No.
2B42			RUBBER CUSHION(B)	1VM421022	----
2B43			RUBBER CUSHION(C)	1VM420832	----
2B45			DUST COVER(B SUPPLY) 3103 604 0114	1VM220205	4835 444 67282
2B46			EARTH PLATE(B)	1VM320498	----
2B47			CUSHION	1VM420831	----
2B48			EARTH PLATE(C)	1VM320522	----
2B49			RCA EARTH	0VM413582	----
2B51			CUSHION(B)	1VM421006	----
2B52			FIBER, HOLDER	1VM421013	----
2B53			TAPE, HIMELON	0VM415649	----
2B54			RUBBER CUSHION(D)	1VM420881	----
2B55			SIDE BOARD	1VM421021	----
2B56			CUSHION C	1VM421041	----
2B57			TAPE, HIMELON(B)	0VM414456	----
2B58			INSULATION PLATE	1VM421073	----
2L011			SCREW, C-TIGHT M3X5 BIND HEAD +	GBCC3050	----
2L012			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	----
2L013			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	----
2L014			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	----
2L015			SCREW, S-TIGHT M3X5 BIND HEAD+	GBMS3050	----
2L017			SCREW, S-TIGHT M3X8 BIND HEAD+	GBMS3080	----
2L018			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	----
2L021			SCREW, P-TIGHT M3X8 BIND HEAD+	GBCP3080	----
2L022			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	----
2L024			SCREW, SEMS M3X8 PAN HEAD +	CPM33080	----
2L025			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	----
2L026			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	----
2L033			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	----
2L034			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	----
2L043			P-TIGHT SCREW 3X8 BIND +	GBMP3080	----
2L044			P-TIGHT SCREW 3X8 BIND +	GBMP3080	----
2L045			P-TIGHT SCREW 3X8 BIND +	GBMP3080	----
2L046			P-TIGHT SCREW 3X8 BIND +	GBMP3080	----
2L055			P-TIGHT SCREW 3X8 BIND +	GBMP3080	----
2L056			P-TIGHT SCREW 3X8 BIND +	GBMP3080	----
2L057			P-TIGHT SCREW 3X8 BIND +	GBMP3080	----
2L058			P-TIGHT SCREW 3X8 BIND +	GBMP3080	----
2L059			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	----
2L062			SCREW, B-TIGHT M3X8 BIND HEAD +	GBKB3080	----
2L064		A	SCREW, S-TIGHT M3X8 BIND HEAD+	GBMS3080	----
2L071			SCREW, P-TIGHT M3X10 WASHER HEAD+	GCMP3100	----
2L081			SCREW, S-TIGHT M3X5 BIND HEAD +	GBKS3050	----
2L082			SCREW, S-TIGHT M3X5 BIND HEAD +	GBKS3050	----
2L100			P-TIGHT SCREW M3X34	1VM420034	----
W015			IDE CABLE 40P UL2651 AWG28/180	WX1E9480-015	9965 000 25427
W016		A	ILINK CABLE CA-2011-033-A04	WX1E9480-016	9965 000 25428
<b>PACKING</b>					
S1		A	GIFT BOX CARTON	1VM320370	----
S1		B	GIFT BOX CARTON	1VM320371	----
S2		A	SIDE PAD	1VM120048	----
S2		B	SIDE PAD	1VM120051	----
S3			SET BAG	0DM400731	----
S8			REMOCON PAD	1VM420910	----

Ref. No.	▲	Mark	Description	ID No.	Part No.
S9			TOP PAD	1VM420911	--- ---
<b>ACCESSORIES</b>					
X1		A	REMOTE CONTROL UNIT DUAL REMOCON	NA724UD	9965 000 25429
X1		B	REMOTE CONTROL UNIT DUAL REMOCON	NA510UD	4835 218 37367
X2			DRY BATTERY 2PACK R6-B500/01S	XB0M142CZB01	
X3			RF CABLE 2.5C-2V	WPZ0901TM002	4835 321 17157
X4			ACCESSORY BAG	0VM415576	--- ---
X5			AV CORD TSCKA-Y/RW100 or	WPZ0102TM015	4835 321 17148
			AV CORD RCA(M*2)TO RCA(M*2)	WPZ0102LTE01	4835 321 17148
X20	▲	A	OWNER'S MANUAL	1VMN20183A	8239 300 33912
X20	▲	B	OWNER'S MANUAL	1VMN20247	8239 300 34951
X22		A	QUICK GUIDE	1VMN20182	8239 300 33901
X22		B	QUICK GUIDE	1VMN20248	8239 300 34961
X26		A	ADDENDUM SHEET	1VMN20350	
X27		A	ADDENDUM SHEET (B)	1VMN20354	
X28		A	ADDENDUM SHEET(C)	1VMN20365	
X32		A	STOP SHEET	0VMN03202A	--- ---
X32		B	STOP SHEET	0VMN03201A	--- ---

**Technical Service Data**

Service Solutions Group  
Technical Publications Dept.  
P.O. Box 555, 401 E. Old Andrew Johnson Hwy.  
Jefferson City, TN 37760

**Sec. 2: Deck Mechanism Section**

**Standard Maintenance**  
**Disassembly / Assembly of Mechanism**  
**Adjustment / Alignment for Mechanism**  
**Deck Exploded Views**  
**Deck Parts List**

# VCR

## Service Manual

# VHS Color Video Cassette Recorder



# IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company\*\* Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

\*\* Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

## WARNING

Critical components having special safety characteristics are identified with a  by the Ref. No. in the parts list and enclosed within a broken line\* (where several critical components are grouped in one area) along with the safety symbol  on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

\* Broken Line 

# TABLE OF CONTENTS

## [ Deck Mechanism Section ]

	<b>Page</b>
STANDARD MAINTENANCE .....	2-1-1
SERVICE FIXTURE & TOOLS .....	2-2-1
MECHANICAL ALIGNMENT PROCEDURES .....	2-3-1
DISASSEMBLY / ASSEMBLY PROCEDURES OF DECK MECHANISM .....	2-4-1
ALIGNMENT PROCEDURES OF MECHANISM .....	2-5-1
DECK EXPLODED VIEW .....	2-6-1
DECK PARTS LIST .....	2-7-1

### Comparison Chart of Models and Marks

Model	Deck Part No.	Mark
MC132EMG/17	N2226FT	A
MVR440MG/17	N2240FL	B
MVR450MG/17	N2240FL	C
MVR650MG/17	N2260FL	D
DVP620VR/17	N2260FL	E
DVP620VR/07	N2260FL	F
MDV540VR/17	N2260FL	G
19MDTR20/17	N2266FT	H
20MC4304/17	N2266FT	I
27MC4304/17	N2266FT	J
27MDTR20/17	N2266FT	K



# STANDARD MAINTENANCE

## Service Schedule of Components

H: Hours    ○: Check    ●: Change

Deck		Periodic Service Schedule			
Ref.No.	Part Name	1,000 H	2,000 H	3,000 H	4,000 H
B2	Cylinder Assembly	○	●	○	●
B3	Loading Motor Assembly			●	
B8	Pulley Assembly		●		●
B587	Tension Lever Assembly		●		●
B31	ACE Head Assembly			●	
B573, B574	Reel (SP)(D2), Reel (TU)(D2)			●	
B37	Capstan Motor		●		●
B52	Cap Belt		●		●
B73	FE Head			●	
B133, B134	Idler Gear, Idler Arm		●		●
B410	Pinch Arm(A) Assembly		●		●
B414	M Brake (SP) Assembly		●		●
B416	M Brake (TU) Assembly		●		●
B525	LDG Belt		●		●
B569 (2 head only)	Cam Holder		●		●
B593 (4 head, 4 head HiFi only)	Cam Holder Assembly		●		●

### Notes:

1. Clean all parts for the tape transport (Upper Drum with Video Head / Pinch Roller / ACE Head / FE Head) using 90% Isopropyl Alcohol.
2. After cleaning the parts, do all DECK ADJUSTMENTS.
3. For the reference numbers listed above, refer to Deck Exploded Views.

## Cleaning

### Cleaning of Video Head

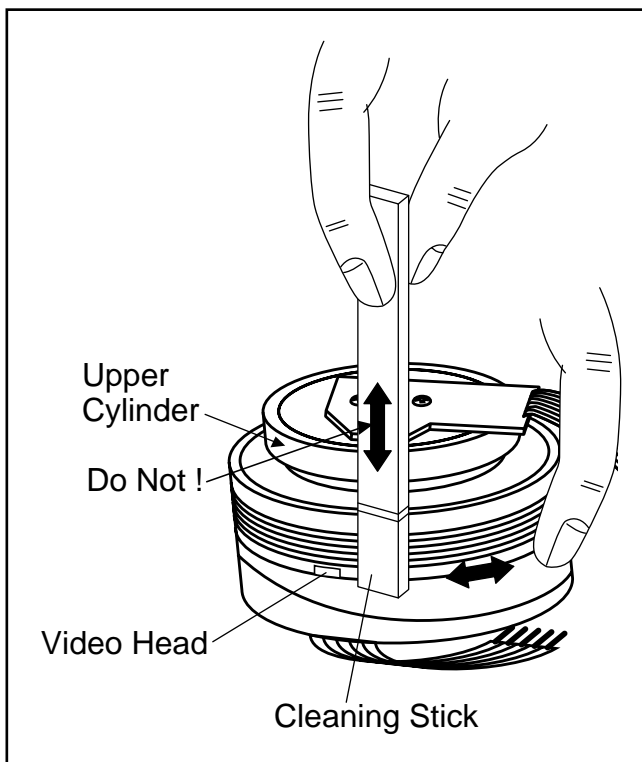
Clean the head with a head cleaning stick or chamois cloth.

#### Procedure

1. Remove the top cabinet.
2. Put on a glove (thin type) to avoid touching the upper and lower drum with your bare hand.
3. Put a few drops of 90% Isopropyl alcohol on the head cleaning stick or on the chamois cloth and, by slightly pressing it against the head tip, turn the upper drum to the right and to the left.

#### Notes:

1. The video head surface is made of very hard material, but since it is very thin, avoid cleaning it vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit.
3. Do not reuse a stained head cleaning stick or a stained chamois cloth.



### Cleaning of ACE Head

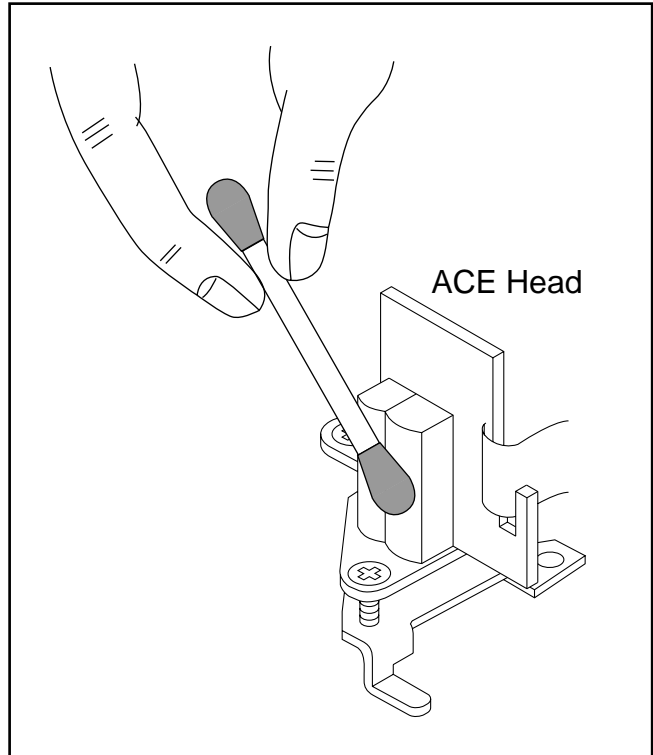
Clean the head with a cotton swab.

#### Procedure

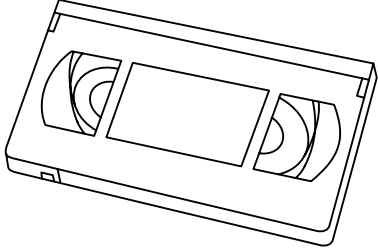
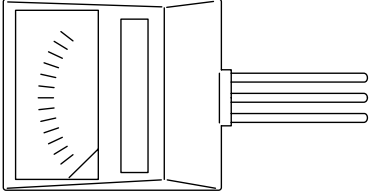
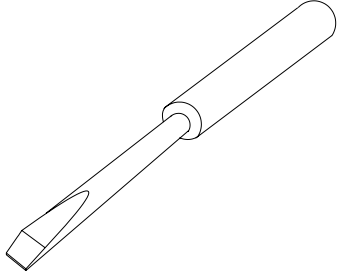
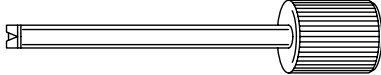
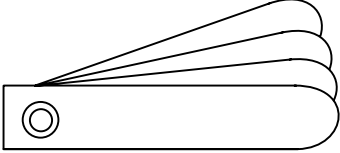
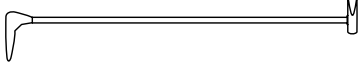
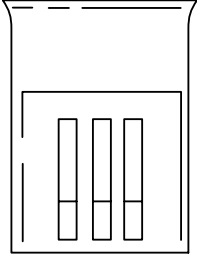
1. Remove the top cabinet.
2. Dip the cotton swab in 90% isopropyl alcohol and clean the ACE Head. Be careful not to damage the upper drum and other tape running parts.

#### Notes:

1. Avoid cleaning the ACE Head vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit or damage may occur.



# SERVICE FIXTURE AND TOOLS

<p><b>4835 310 57025</b> <b>VFMS0001H6</b> <b>Alignment Tape</b></p>  <p>A rectangular alignment tape with two circular windows on the left side.</p>	<p><b>4835 310 57043</b> <b>Back Tension Meter</b> <b>(Made in USA)</b></p>  <p>A rectangular device with a scale on the left and three parallel rods extending from the right.</p>	<p><b>Flat Screw Driver</b> <b>(Purchase Locally)</b></p>  <p>A long-handled screwdriver with a flat, tapered tip.</p>
<p><b>4835 310 57027</b> <b>Post Adjustment Screwdriver</b></p>  <p>A screwdriver with a long handle and a small, cylindrical tip.</p>	<p><b>Metric Thickness Gauges</b> <b>(Purchase Locally)</b></p>  <p>A set of three overlapping, fan-shaped gauges with a circular hole on the left.</p>	<p><b>Lock Screw Driver</b> <b>(Purchase Locally)</b></p>  <p>A long-handled screwdriver with a hook-shaped tip.</p>
<p><b>4835 310 57034</b> <b>Head Cleaning Stick</b></p>  <p>A rectangular package containing three vertical sticks.</p>		

# MECHANICAL ALIGNMENT PROCEDURES

Explanation of alignment for the tape to correctly run starts on the next page. Refer to the information below on this page if a tape gets stuck, for example, in the mechanism due to some electrical trouble of the unit.

## Service Information

### A. Method for Manual Tape Loading/Unloading

To load a cassette tape manually:

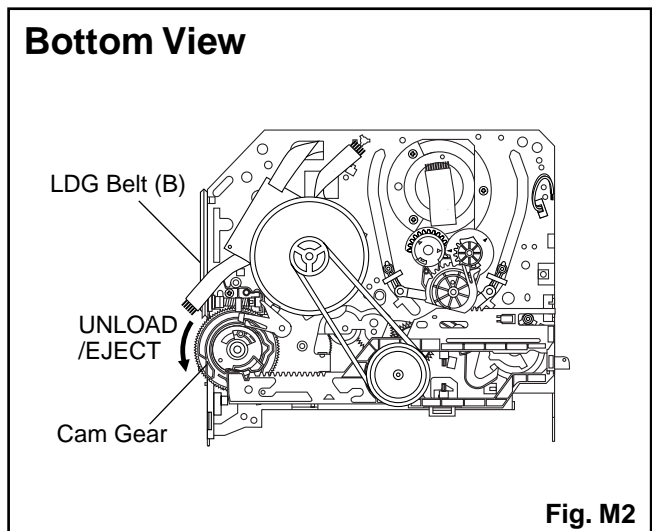
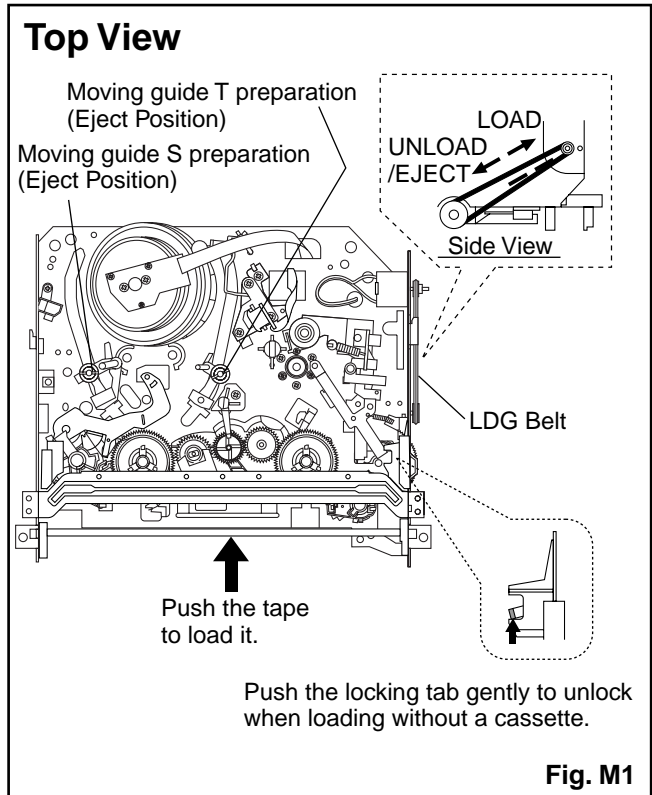
1. Disconnect the AC plug.
2. Remove the Top Case and Front Assembly.
3. Insert a cassette tape. Though the tape will not be automatically loaded, make sure that the cassette tape is all the way in at the inlet of the Cassette Holder. To confirm this, lightly push the cassette tape further in and see if the tape comes back out, by a spring motion, just as much as you have pushed in.
4. Turn the LDG Belt in the appropriate direction shown in Fig. M1 for a minute or two to complete this task.

To unload a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Case and Front Assembly.
3. Make sure that the Moving guide preparations are in the Eject Position.
4. Turn the LDG Belt in the appropriate direction shown in Fig. M1 until the Moving guide preparations come to the Eject Position. Stop turning when the preparations begin clicking or can not be moved further. However, the tape will be left wound around the cylinder.
5. Turn the LDG Belt in the appropriate direction continuously, and the cassette tape will be ejected. Allow a minute or two to complete this task.

### B. Method to place the Cassette Holder in the tape-loaded position without a cassette tape

1. Disconnect the AC Plug.
2. Remove the Top Case and Front Assembly.
3. Turn the LDG Belt in the appropriate direction shown in Fig. M1. Release the locking tabs shown in Fig. M1 and continue turning the LDG Belt until the Cassette Holder comes to the tape-loaded position. Allow a minute or two to complete this task.



# 1. Tape Interchangeability Alignment

Note:

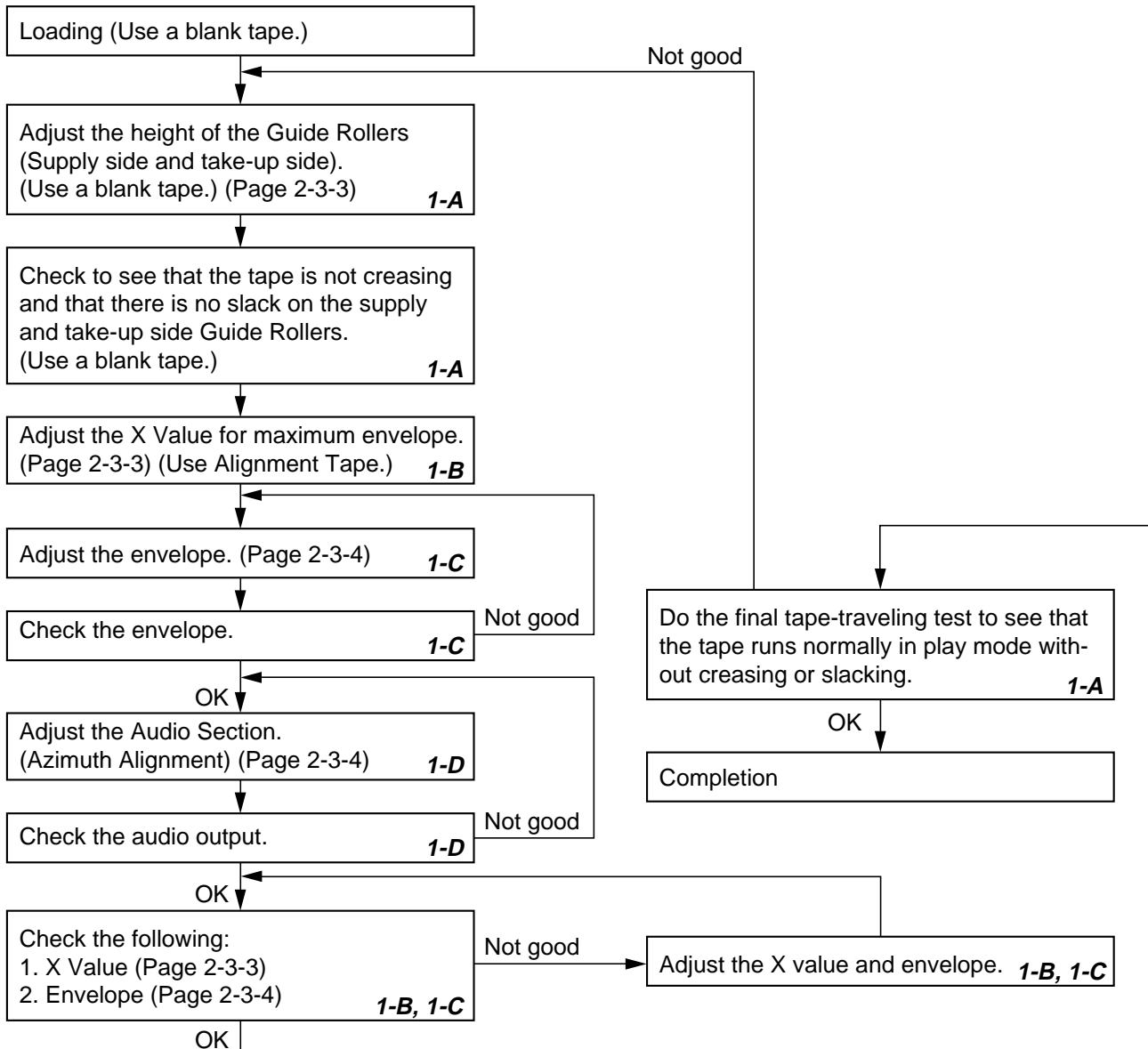
To do these alignment procedures, make sure that the Tracking Control Circuit is set to the preset position every time a tape is loaded or unloaded. (Refer to page 2-3-4, procedure 1-C, step 2.)

## Equipment required:

- Dual Trace Oscilloscope
- VHS Alignment Tape (VFMS0001H6)
- Guide Roller Adj. Screwdriver
- Flat Screwdriver (Purchase Locally)

Note: Before starting this Mechanical Alignment, do all Electrical Adjustment procedures.

### Flowchart of Alignment for tape traveling



## 1-A. Preliminary/Final Checking and Alignment of Tape Path

### Purpose:

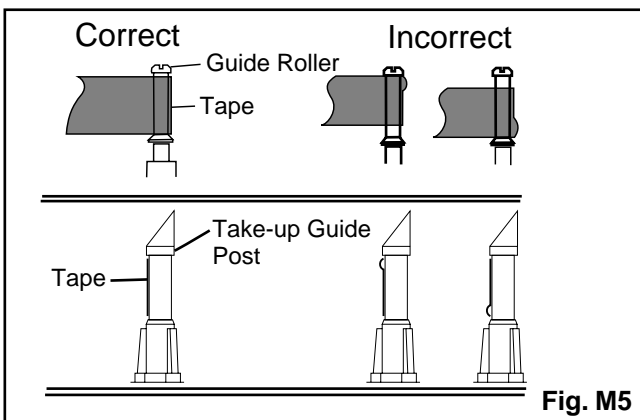
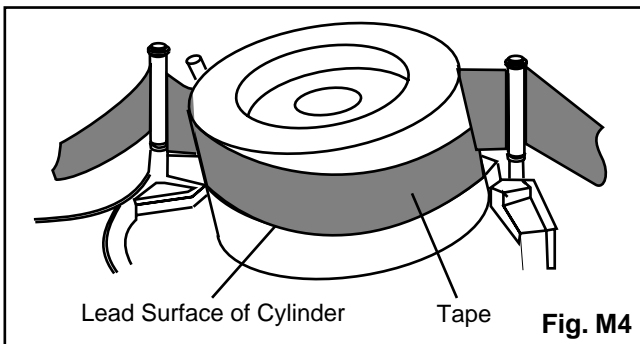
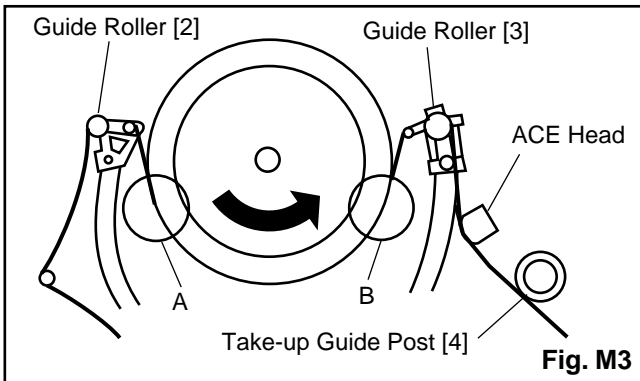
To make sure that the tape path is well stabilized.

### Symptom of Misalignment:

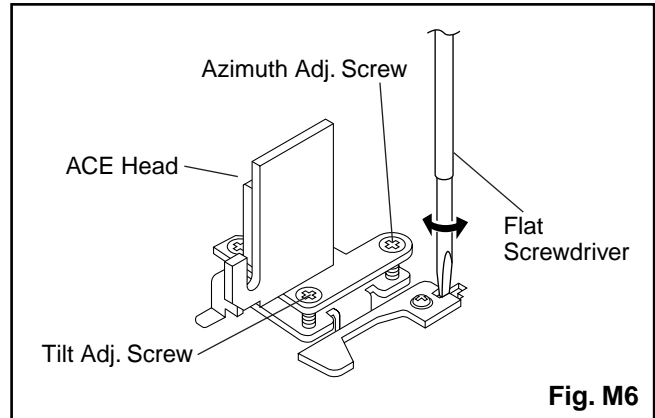
If the tape path is unstable, the tape will be damaged.

**Note:** Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

1. Playback a blank cassette tape and check to see that the tape runs without creasing at Guide Rollers [2] and [3], and at points A and B on the lead surface. (Refer to Fig. M3 and M4.)
2. If creasing is apparent, align the height of the guide rollers by turning the top of Guide Rollers [2] and [3] with a Guide Roller Adj. Screwdriver. (Refer to Fig. M3 and M5.)



3. Check to see that the tape runs without creasing at Take-up Guide Post [4] or without snaking between Guide Roller [3] and ACE Head. (Fig. M3 and M5)
4. If creasing or snaking is apparent, adjust the Tilt Adj. Screw of the ACE Head. (Fig. M6)



## 1-B. X Value Alignment

### Purpose:

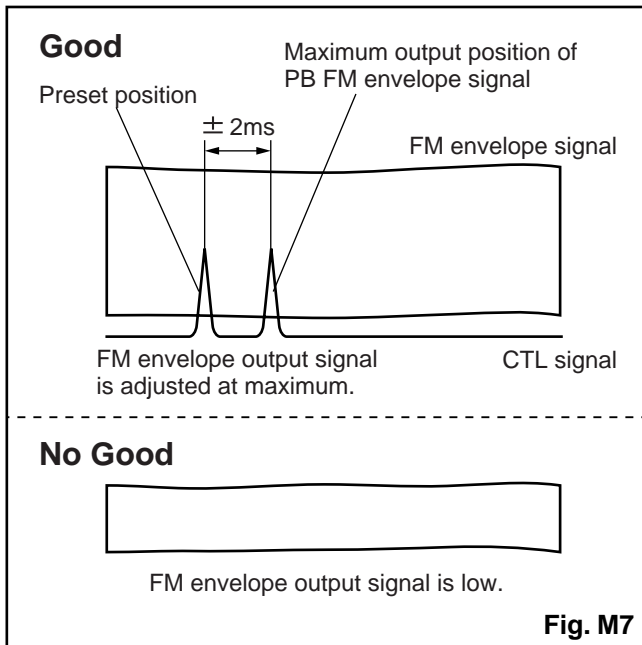
To obtain maximum PB FM envelope signal at the preset position of the Tracking Control Circuit, align the Horizontal Position of the ACE Head.

### Symptom of Misalignment:

If the Horizontal Position of the ACE Head is not properly aligned, maximum PB FM envelope cannot be obtained at the preset position of the Tracking Control Circuit.

1. Connect the oscilloscope to TP (C-PB and CTL) on the Main CBA. Use TP (RF-SW) as a trigger.
2. Playback the Gray Scale of the Alignment Tape (VFMS0001H6) and confirm that the PB FM signal is present.
3. Set the Tracking Control Circuit to the preset position by pressing CH UP button on the remote control unit then "PLAY" button on the unit. (Refer to note on bottom of page 2-3-4.)
4. Use the Flat Screwdriver so that the PB FM signal at TP (C-PB) is maximum. (Fig. M6)

- To shift the CTL waveform, press CH UP or CH DOWN button on the remote control unit. Then make sure that the maximum output position of PB FM envelope signal become within  $\pm 2\text{ms}$  from preset position.



- Set the Tracking Control Circuit to the preset position by pressing CH UP button on the remote control unit. and then "PLAY" button.

### 1-C. Checking/Adjustment of Envelope Waveform

#### Purpose:

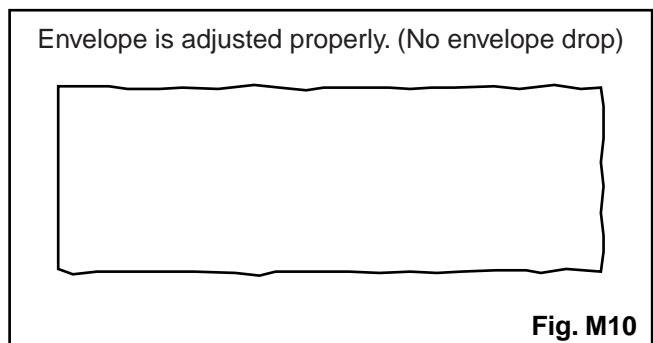
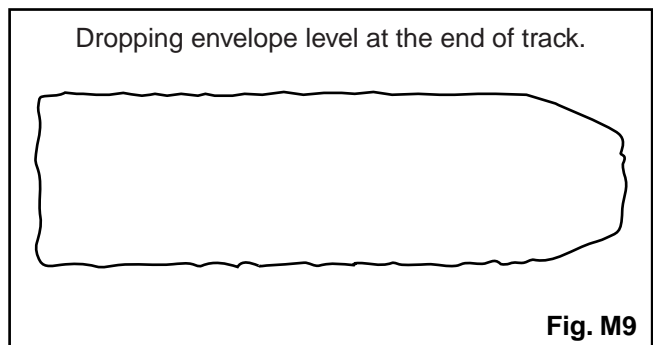
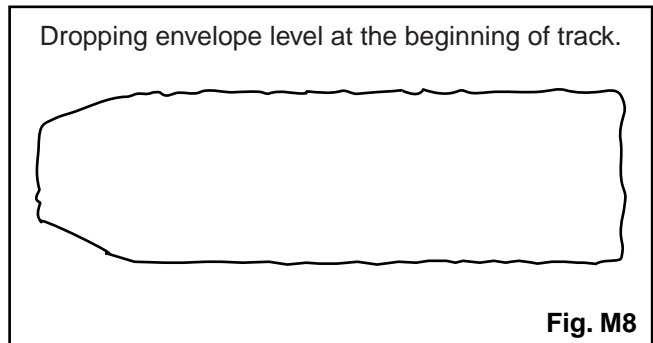
To achieve a satisfactory picture, adjust the PB FM envelope becomes as flat as possible.

#### Symptom of Misalignment:

If the envelope output is poor, noise will appear in the picture. The tracking will then lose precision and the playback picture will be distorted by any slight variation of the Tracking Control Circuit.

- Connect the oscilloscope to TP (C-PB) on the Main CBA. Use TP (RF-SW) as a trigger.
- Playback the Gray Scale on the Alignment Tape (VFMS0001H6). Set the Tracking Control Circuit to the preset position by pressing CH UP button and then "PLAY" button on the unit. Adjust the height of Guide Rollers [2] and [3] (Fig. M3, Page 2-3-3) watching the oscilloscope display so that the envelope becomes as flat as possible. To do this adjustment, turn the top of the Guide Roller with the Guide Roller Adj. Screwdriver.
- If the envelope is as shown in Fig. M7, adjust the height of Guide Roller [2] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.

- If the envelope is as shown in Fig. M8, adjust the height of Guide Roller [3] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.
- When Guide Rollers [2] and [3] (Refer to Fig. M3) are aligned properly, there is no envelope drop either at the beginning or end of track as shown in Fig. M9.



Note: Upon completion of the adjustment of Guide Rollers [2] and [3] (Refer to Fig. M3), check the X Value by pushing the CH UP or DOWN buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure preset position. The number of pushes CH UP button to achieve 1/2 level of envelope should match the number of pushes CH DOWN button from center. If required, redo the "X Value Alignment."

## **1-D. Azimuth Alignment of Audio/Control/ Erase Head**

### **Purpose:**

To correct the Azimuth alignment so that the Audio/Control/Erase Head meets tape tracks properly.

### **Symptom of Misalignment:**

If the position of the Audio/Control/Erase Head is not properly aligned, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Playback the alignment tape (VFMS0001H6) and confirm that the audio signal output level is 6kHz.
3. Adjust Azimuth Adj. Screw so that the output level on the AC Voltmeter or the waveform on the oscilloscope is at maximum. (Fig. M6)



# DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM

Before following the procedures described below, be sure to remove the deck assembly from the cabinet. (Refer to CABINET DISASSEMBLY INSTRUCTIONS of Main Section.)

All the following procedures, including those for adjustment and replacement of parts, should be done in Eject mode; see the positions of [41] and [42] in Fig. DM1 on page 2-4-3. When reassembling, follow the steps in reverse order.

**Comparison Chart of Models and Marks**

Model	Deck Part No.	Mark	Model	Deck Part No.	Mark
MC132EMG/17	N2226FT	A	MDV540VR/17	N2260FL	G
MVR440MG/17	N2240FL	B	19MDTR20/17	N2266FT	H
MVR450MG/17	N2240FL	C	20MC4304/17	N2266FT	I
MVR650MG/17	N2260FL	D	27MC4304/17	N2266FT	J
DVP620VR/17	N2260FL	E	27MDTR20/17	N2266FT	K
DVP620VR/07	N2260FL	F			

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Guide Holder A	T	DM3	2(S-1)	
[2]	[1]	Cassette Holder Assembly	T	DM4	(S-10) --- [ A,H,I,J,K ]	
[3]	[2]	Slider (SP)	T	DM5	(S-1A), *(L-1)	
[4]	[2]	Slider (TU)	T	DM5	*(L-2)	
[5]	[4]	Lock Lever	T	DM5	*(L-3), *(P-1)	
[6]	[2]	Cassette Plate	T	DM5		
[7]	[7]	Cylinder Assembly	T	DM1, DM6	Desolder, 3(S-2)	
[8]	[8]	Loading Motor Assembly	T	DM1, DM7	Desolder, LDG Belt, 2(S-3)	
[9]	[9]	ACE Head Assembly	T	DM1, DM7	(S-4)	
[10]	[2]	Tape Guide Arm Assembly	T	DM1, DM8-1	*(P-2)	
[11]	[10]	C Door Opener	T	DM1, DM8-1	(S-4A), *(L-4)	
[12]	[11]	Pinch Arm (B)	T	DM1, DM8-1, DM8-2	*(P-3)	
[13]	[12]	Pinch Arm (A) Assembly	T	DM1, DM8-1, DM8-2		
[14]	[14]	FE Head	T	DM1, DM9	(S-5)	
[15]	[15]	Prism	T	DM1, DM9	(S-6)	
[16]	[2],[15]	Sensor Gear	T	DM1, DM9		
[17]	[2]	Slider Shaft	T	DM10	*(L-5)	
[18]	[17]	C Drive Lever (SP)	T	DM10		
[19]	[17]	C Drive Lever (TU)	T	DM10	(S-7), *(P-4)	
[20]	[7],[8],[10]	Capstan Motor	B	DM2, DM11	3(S-8), Cap Belt	
[21]	[21]	Clutch Assembly	B	DM2, DM12	(C-1)	

STEP /LOC. No.	START-ING No.	PART	REMOVAL			INSTALLATION
			Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION	
[22]	[22]	Cam Holder(F) --- [ A ] Cam Holder Assembly --- [ B,C,D,E,F,G,H,I,J,K ]	B	DM2, DM12	*(L-6)	
[23]	[23]	Cam Gear (B)	B	DM2, DM12	(C-2), *(P-5)	
[24]	[24]	Mode Gear	B	DM2, DM13-1	(C-3)	
[25]	[21],[23], [24]	Mode Lever	B	DM2, DM13-1, DM13-2	(C-4), *(L-8)	
[26]	[22]	Worm Holder	B	DM2, DM13-1	(S-9), *(L-9), *(L-10)	
[27]	[26]	Pulley Assembly	B	DM2, DM13-1		
[28]	[25],[26]	Cam Gear (A)	B	DM2, DM13-1, DM13-2		
[29]	[25]	Idler Gear	B	DM1, DM14		
[30]	[29]	Idler Arm	B	DM1, DM14	*(L-11)	
[31]	[25]	BT Arm	B	DM2, DM14	*(P-6)	
[32]	[25]	Loading Arm (SP) Assembly	B	DM2, DM14		(+)Refer to Alignment Sec.Page 2-5-1
[33]	[32]	Loading Arm (TU) Assembly	B	DM2, DM14		(+)Refer to Alignment Sec.Page 2-5-1
[34]	[2],[25]	M Brake (TU) Assembly	T	DM1, DM15	*(P-7), Brake Belt	
[35]	[2],[25]	M Brake (SP) Assembly	T	DM1, DM15	*(P-8)	
[36]	[35]	Tension Lever Assembly	T	DM1, DM15		
[37]	[36]	T Lever Holder	T	DM15	*(L-12)	
[38]	[34]	Reel (TU)(D2)	T	DM1, DM15		
[39]	[38]	M Gear	T	DM1, DM15		
[40]	[36]	Reel (SP)(D2)	T	DM1, DM15		
[41]	[32],[36]	Moving Guide S Preparation	T	DM1, DM16		
[42]	[33]	Moving Guide T Preparation	T	DM1, DM16		
[43]	[19]	TG Post Assembly	T	DM1, DM16	*(L-13)	
[44]	[28]	Rack Assembly	R	DM17		(+)Refer to Alignment Sec.Page 2-5-1
[45]	[44]	F Door Opener	R	DM17	*(P-9) --- [ A,H,I,J,K ]	
[46]	[46]	Cleaner Assembly	T	DM1, DM6		
[47]	[46]	CL Post	T	DM6	*(L-14)	

↓  
(1)

↓  
(2)

↓  
(3)

↓  
(4)

↓  
(5)

↓  
(6)

↓  
(7)

- (1): Follow steps in sequence. When reassembling, follow the steps in reverse order.  
These numbers are also used as identification (location) No. of parts in the figures.
- (2): Indicates the part to start disassembling with in order to disassemble the part in column (1).
- (3): Name of the part
- (4): Location of the part: T=Top B=Bottom R=Right L=Left
- (5): Figure Number
- (6): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.  
P=Spring, W=Washer, C=Cut Washer, S=Screw, \*=Unhook, Unlock, Release, Unplug, or Desolder  
e.g., 2(L-2) = two Locking Tabs (L-2).
- (7): Adjustment Information for Installation  
(+):Refer to Deck Exploded Views for lubrication.

# Top View

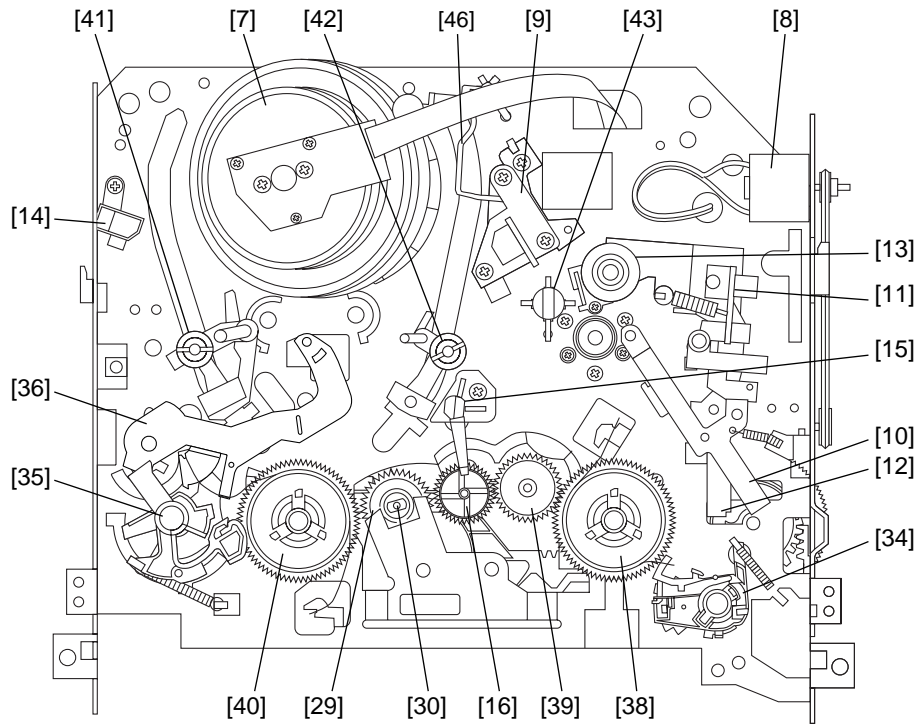


Fig. DM1

# Bottom View

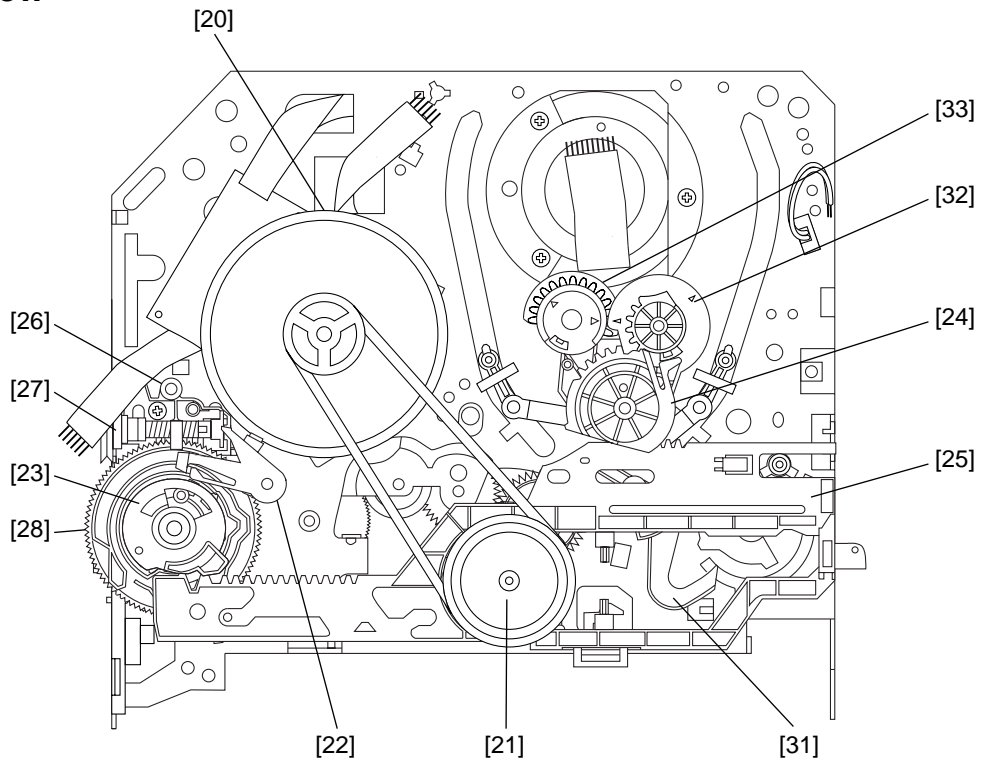
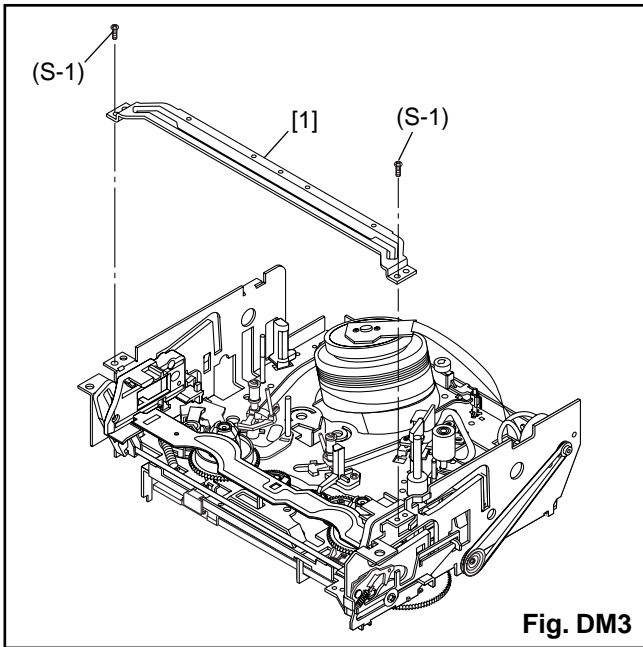
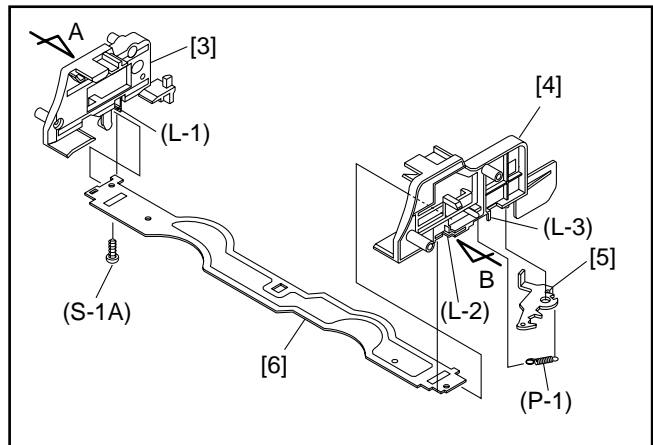


Fig. DM2

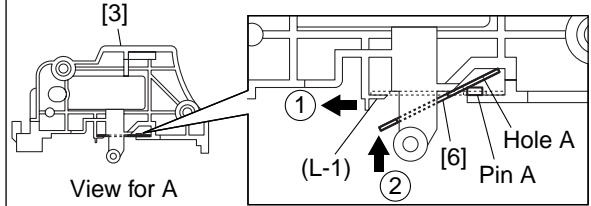


**Fig. DM3**



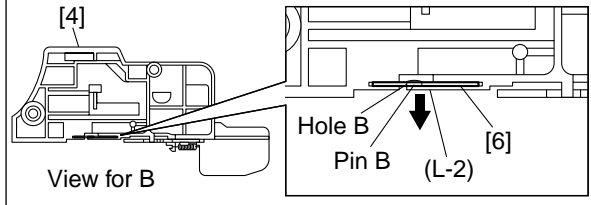
**Installation of [3] and [6]**

First, insert [6] diagonally in [3] as shown below. Then, install [6] in [3] while pushing (L-1) in a direction of arrow. After installing [6] in [3], confirm that pin A of [3] enters hole A of [6] properly.

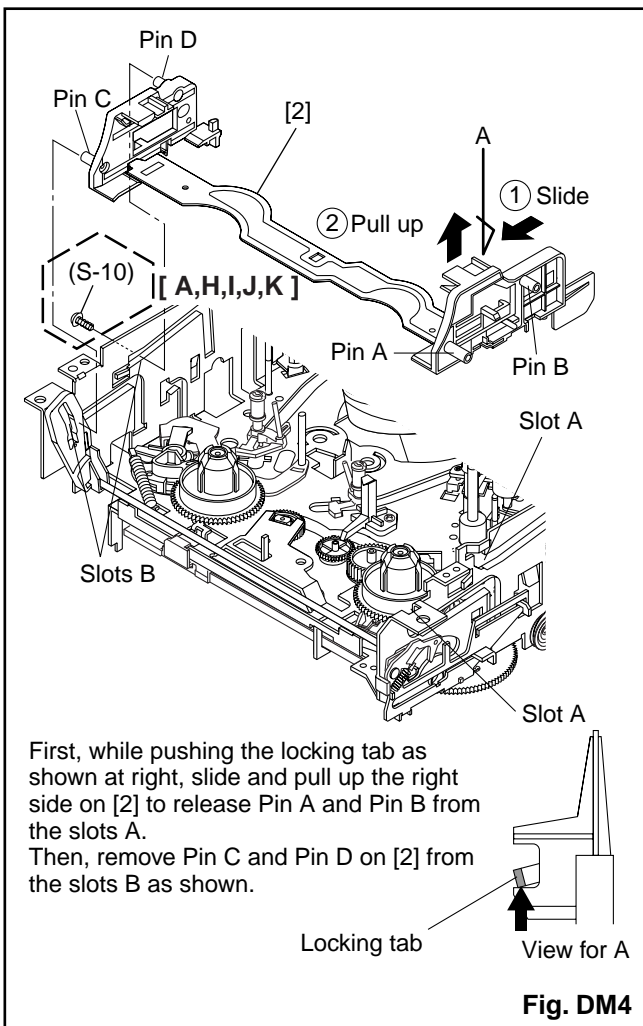


**Installation of [4] and [6]**

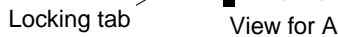
Install [6] in [4] while pulling (L-2) in a direction of arrow. After installing [6] in [4], confirm that pin B of [4] enters hole B of [6] properly.



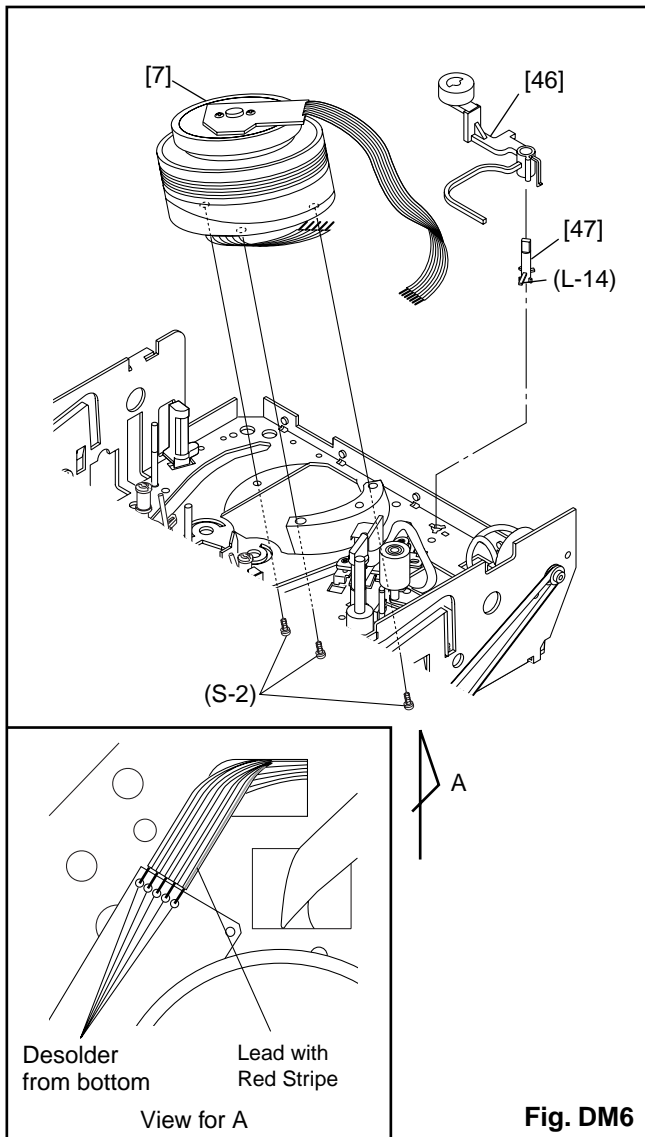
**Fig. DM5**



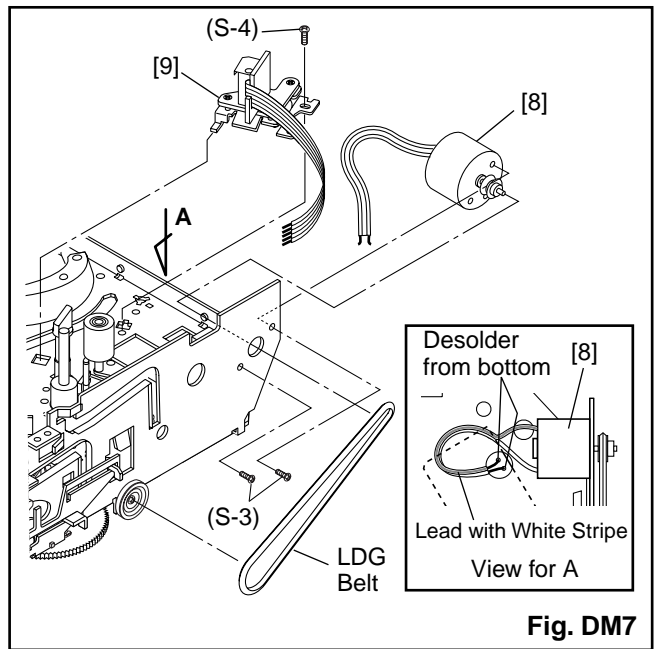
First, while pushing the locking tab as shown at right, slide and pull up the right side on [2] to release Pin A and Pin B from the slots A.  
Then, remove Pin C and Pin D on [2] from the slots B as shown.



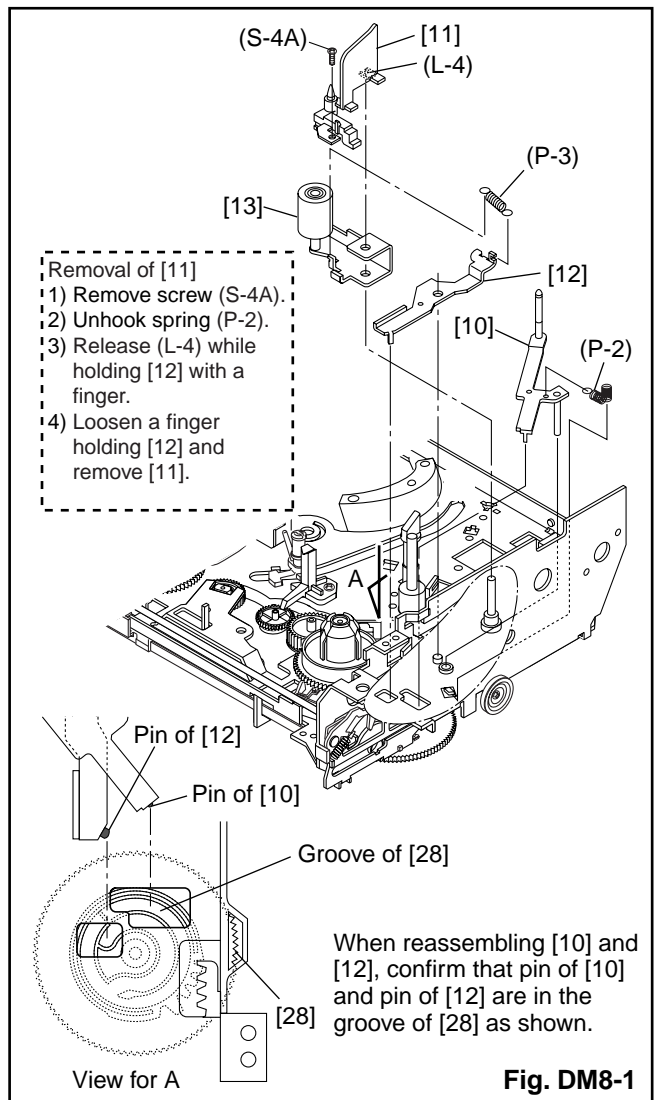
**Fig. DM4**



**Fig. DM6**



**Fig. DM7**



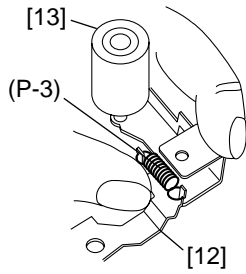
- Removal of [11]
- 1) Remove screw (S-4A).
  - 2) Unhook spring (P-2).
  - 3) Release (L-4) while holding [12] with a finger.
  - 4) Loosen a finger holding [12] and remove [11].

When reassembling [10] and [12], confirm that pin of [10] and pin of [12] are in the groove of [28] as shown.

**Fig. DM8-1**

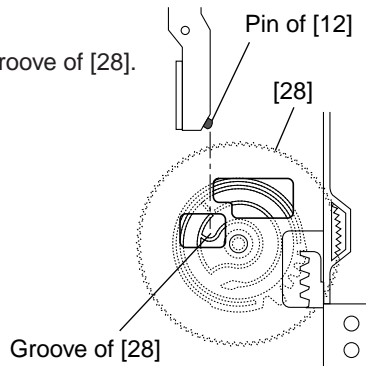
## Installation of [13] and [12]

Hook spring (P-3) up to [12] and [13], then install then to the specified position so that [12] will be floated slightly while holding [12] and [13]. (Refer to Fig. A.)



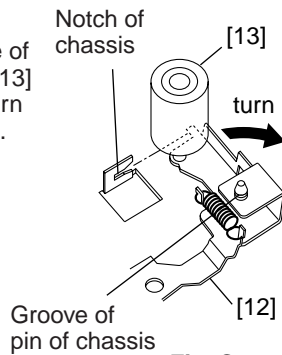
**Fig. A**

Install pin of [12] in groove of [28]. (Refer to Fig. B.)



**Fig. B (Top view)**

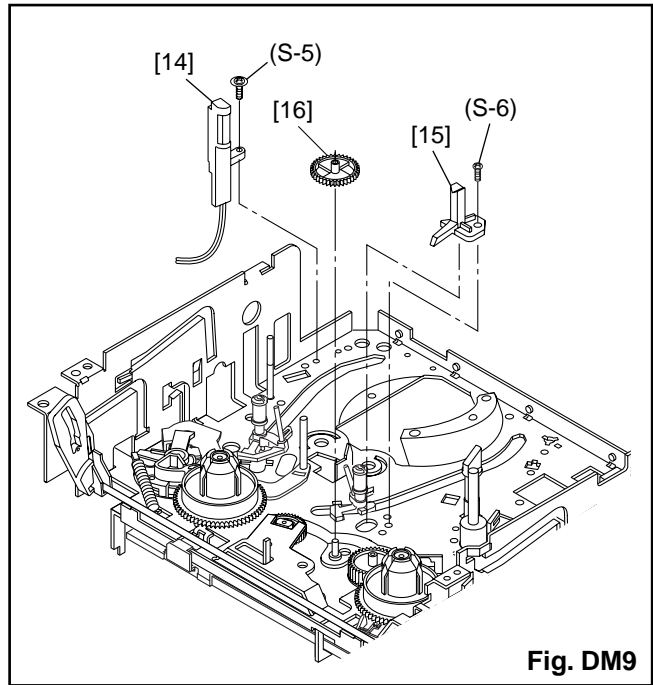
Hold [12] and [13] till groove of pin of chassis looks and fit [13] in notch of chassis. Then, turn a few [13] while holding [12]. (Refer to Fig. C.)



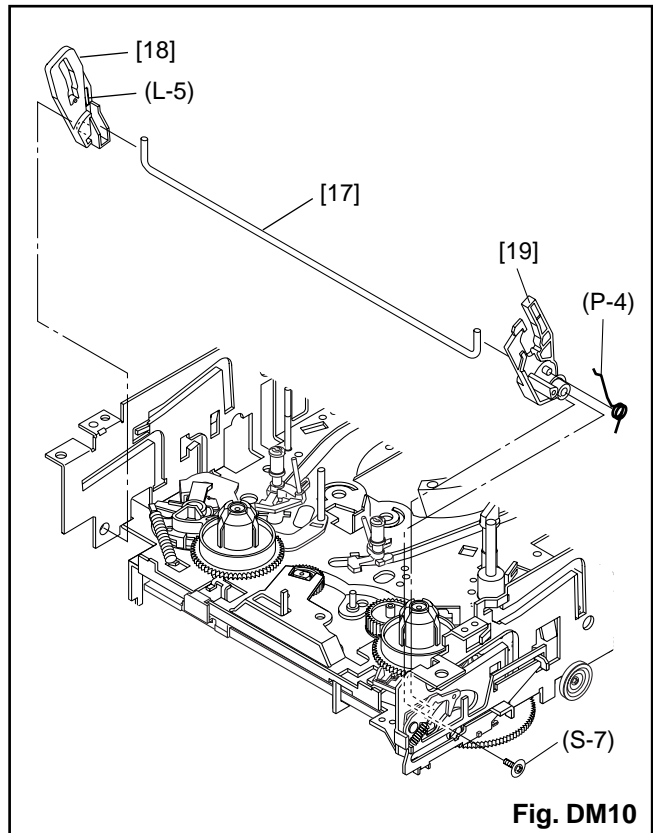
**Fig. C**

Install [11] and [10] while holding [12]. (Refer to Fig. DM8-1.)

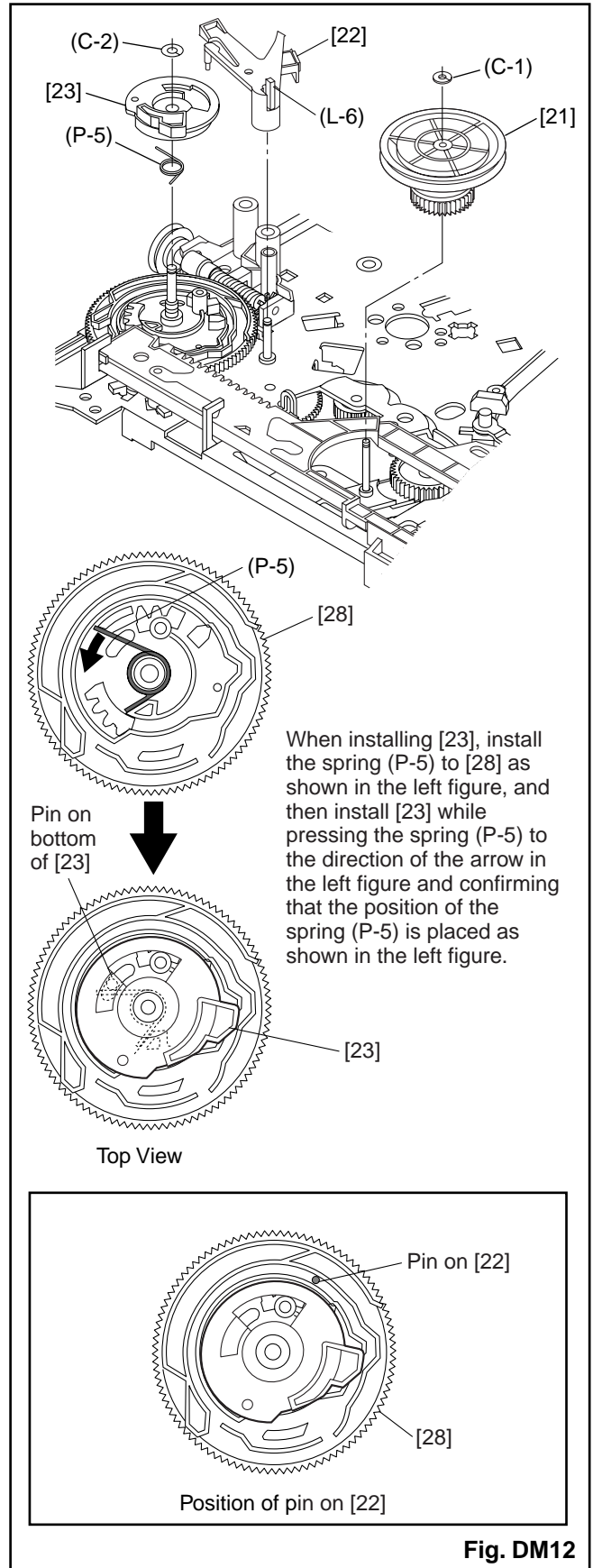
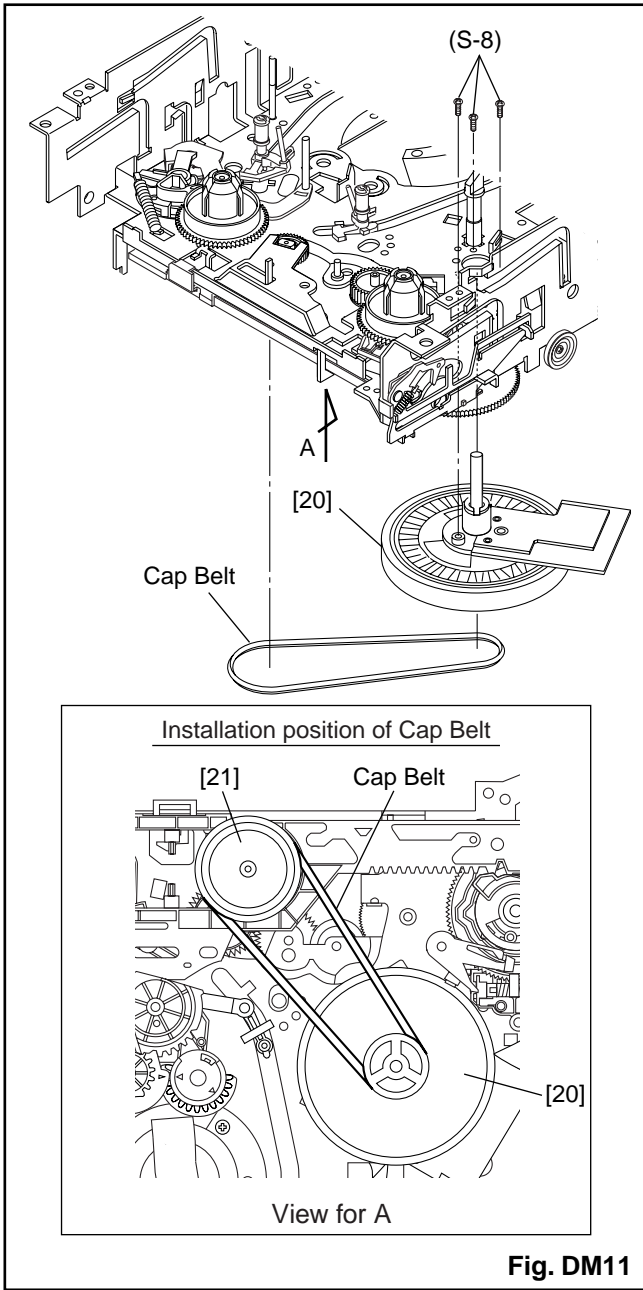
**Fig. DM8-2**

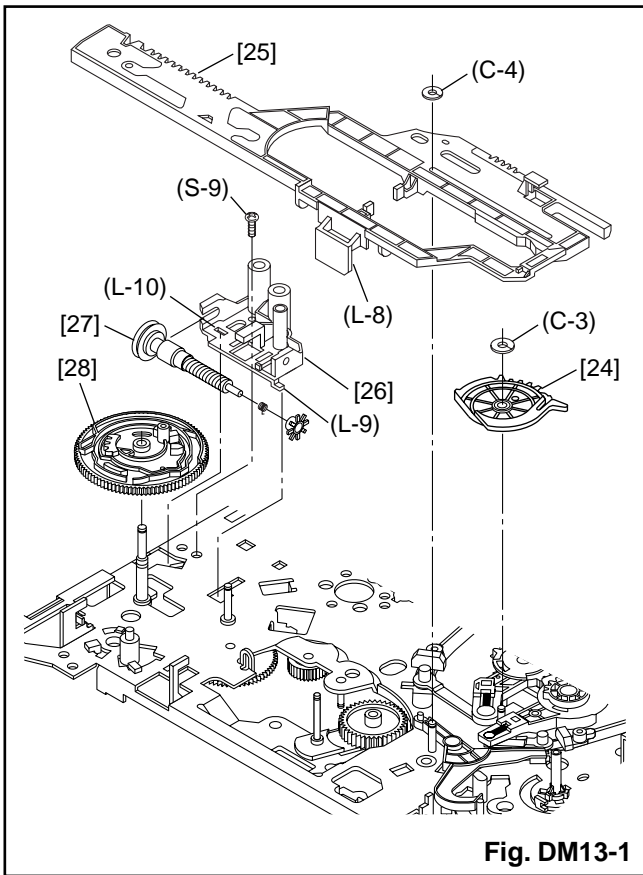


**Fig. DM9**



**Fig. DM10**

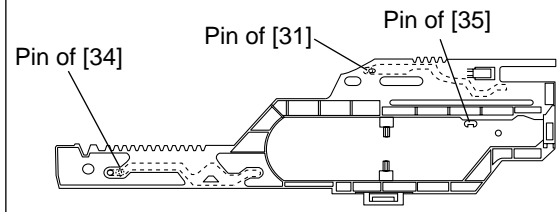




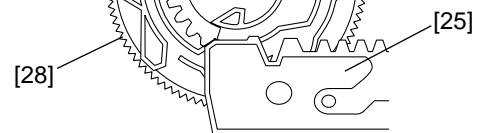
**Fig. DM13-1**

### Installation of [25]

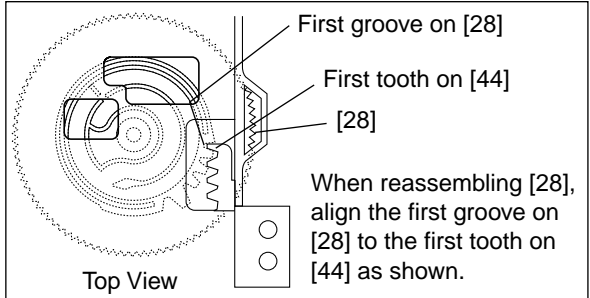
Position of Mode Lever when installed



Bottom View



Align [25] and [28] as shown.



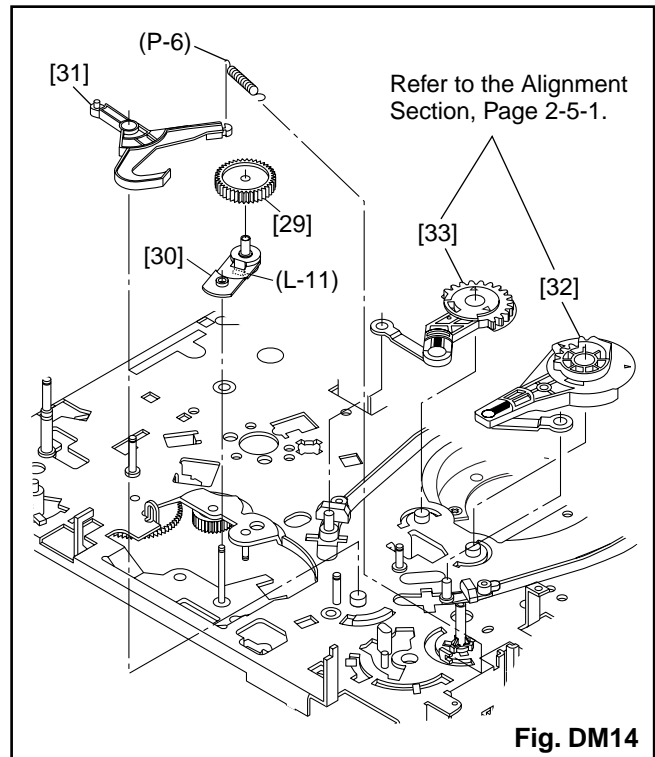
First groove on [28]

First tooth on [44]

When reassembling [28], align the first groove on [28] to the first tooth on [44] as shown.

Top View

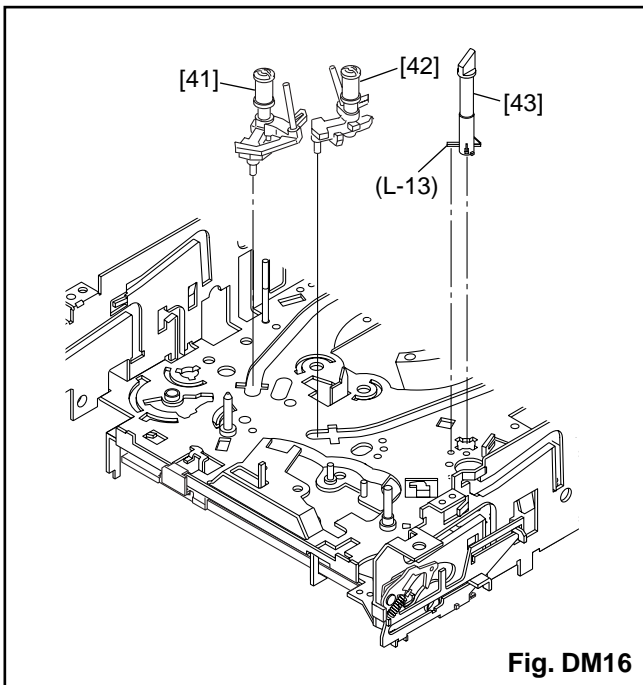
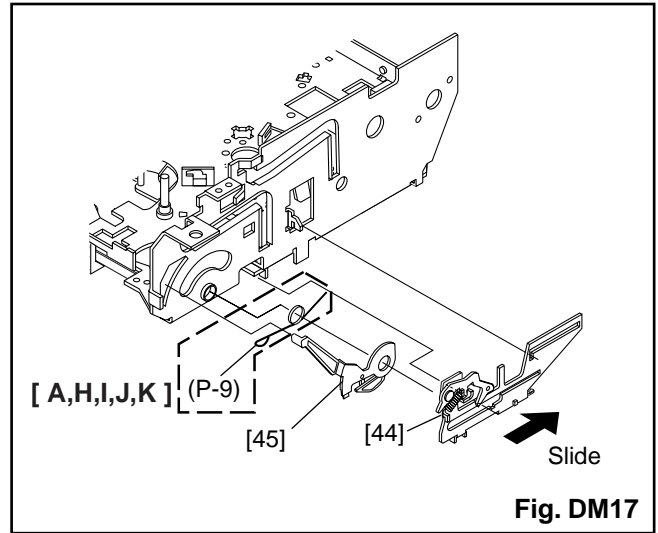
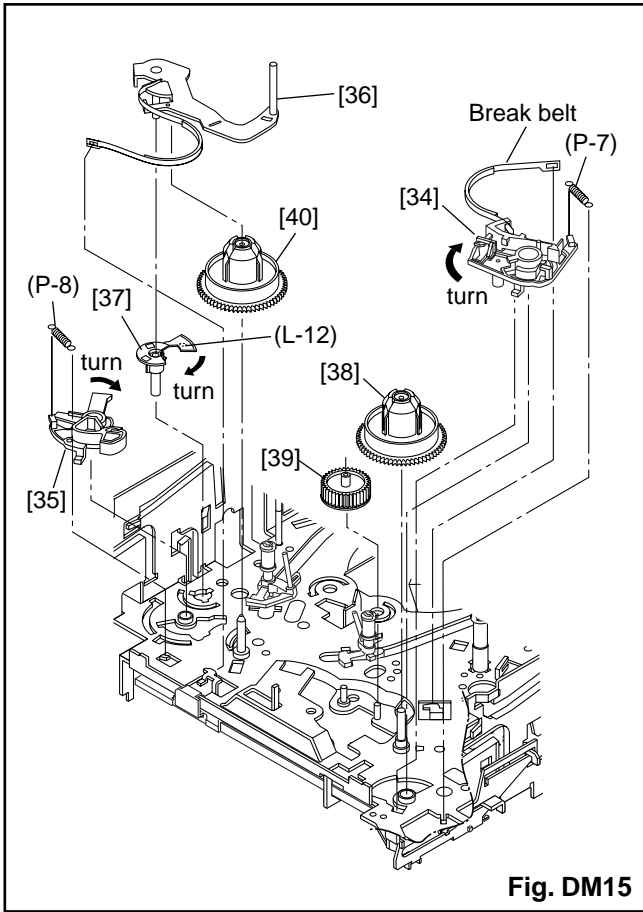
**Fig. DM13-2**



Refer to the Alignment Section, Page 2-5-1.

**Fig. DM14**





# ALIGNMENT PROCEDURES OF MECHANISM

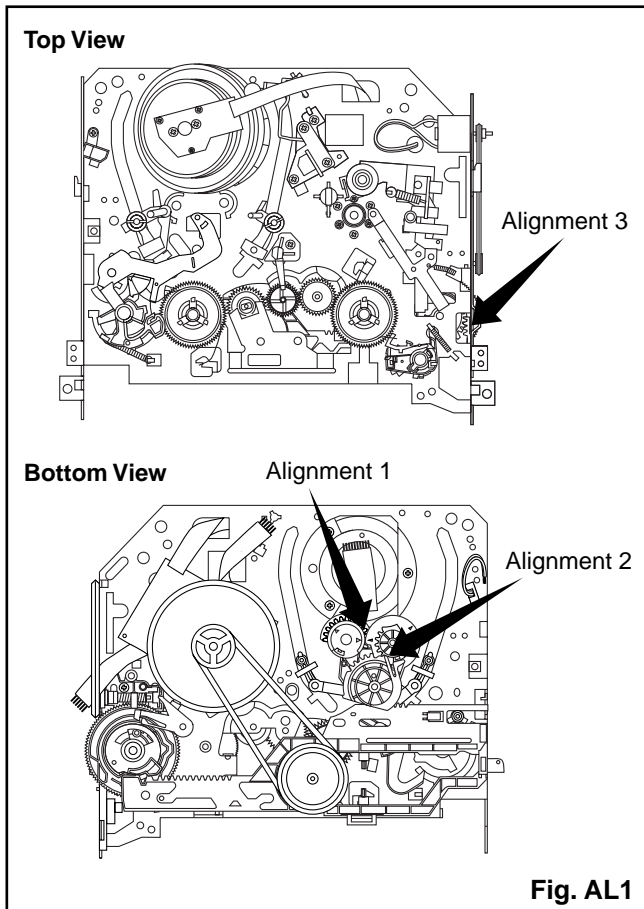
The following procedures describe how to align the individual gears and levers that make up the tape loading/unloading mechanism. Since information about the state of the mechanism is provided to the System Control Circuit only through the Mode Switch, it is essential that the correct relationship between individual gears and levers be maintained.

**All alignments are to be performed with the mechanism in Eject mode,** in the sequence given. Each procedure assumes that all previous procedures have been completed.

## IMPORTANT:

If any one of these alignments is not performed properly, even if off by only one tooth, the unit will unload or stop and it may result in damage to the mechanical or electrical parts.

## Alignment points in Eject Position



## Alignment 1

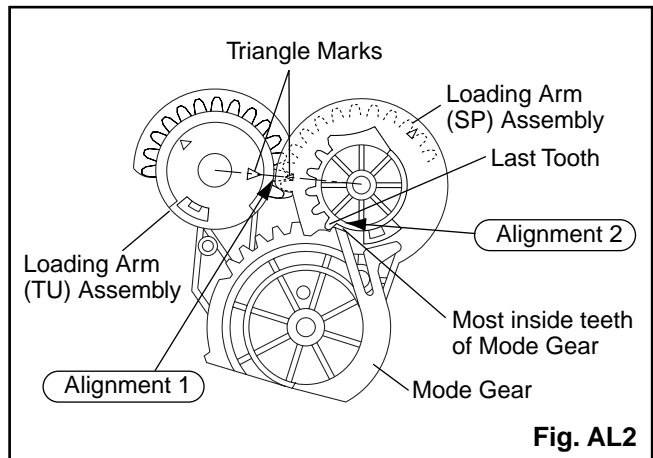
### Loading Arm (SP) and (TU) Assembly

Install Loading Arm (SP) and (TU) Assembly so that their triangle marks point to each other as shown in Fig. AL2.

## Alignment 2

### Mode Gear

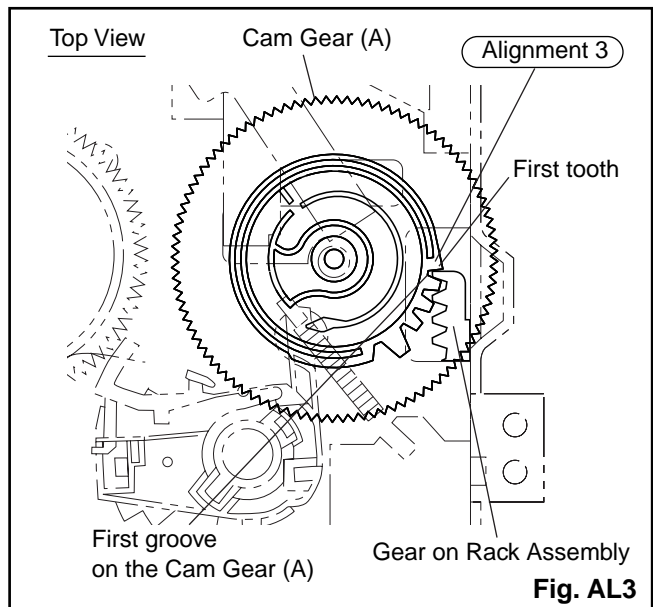
Keeping the two triangles pointing at each other, install the Loading Arm (SP) Assembly so that the last tooth of the gear meets the most inside teeth of the Mode Gear. See Fig. AL2.



## Alignment 3

### Cam Gear (A), Rack Assembly

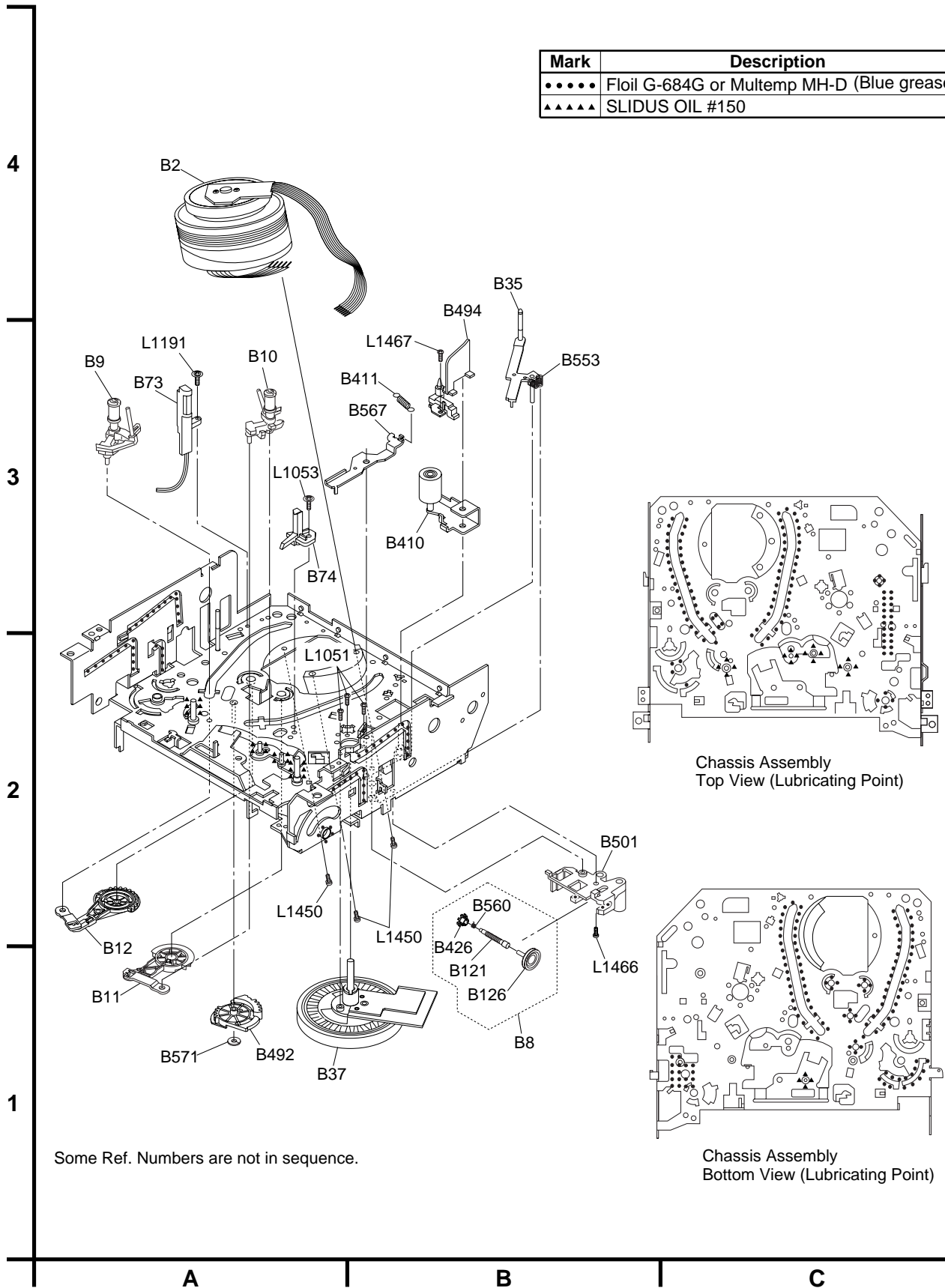
Install the Rack Assembly so that the first tooth on the gear of the Rack Assembly meets the first groove on the Cam Gear (A) as shown in Fig. AL3.



# DECK EXPLODED VIEWS

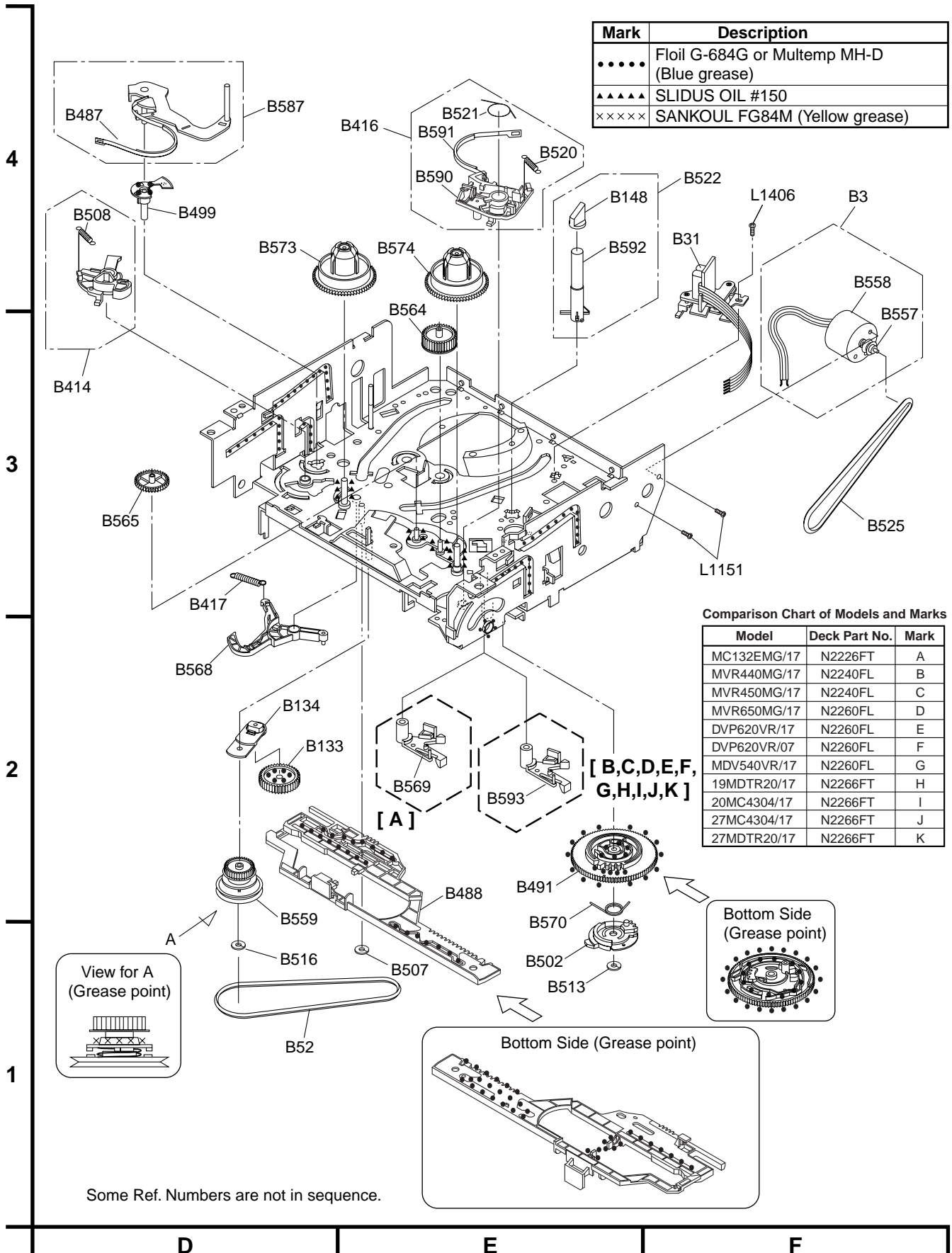
## Deck Mechanism View 1

Mark	Description
•••••	Floil G-684G or Multemp MH-D (Blue grease)
▲▲▲▲▲	SLIDUS OIL #150



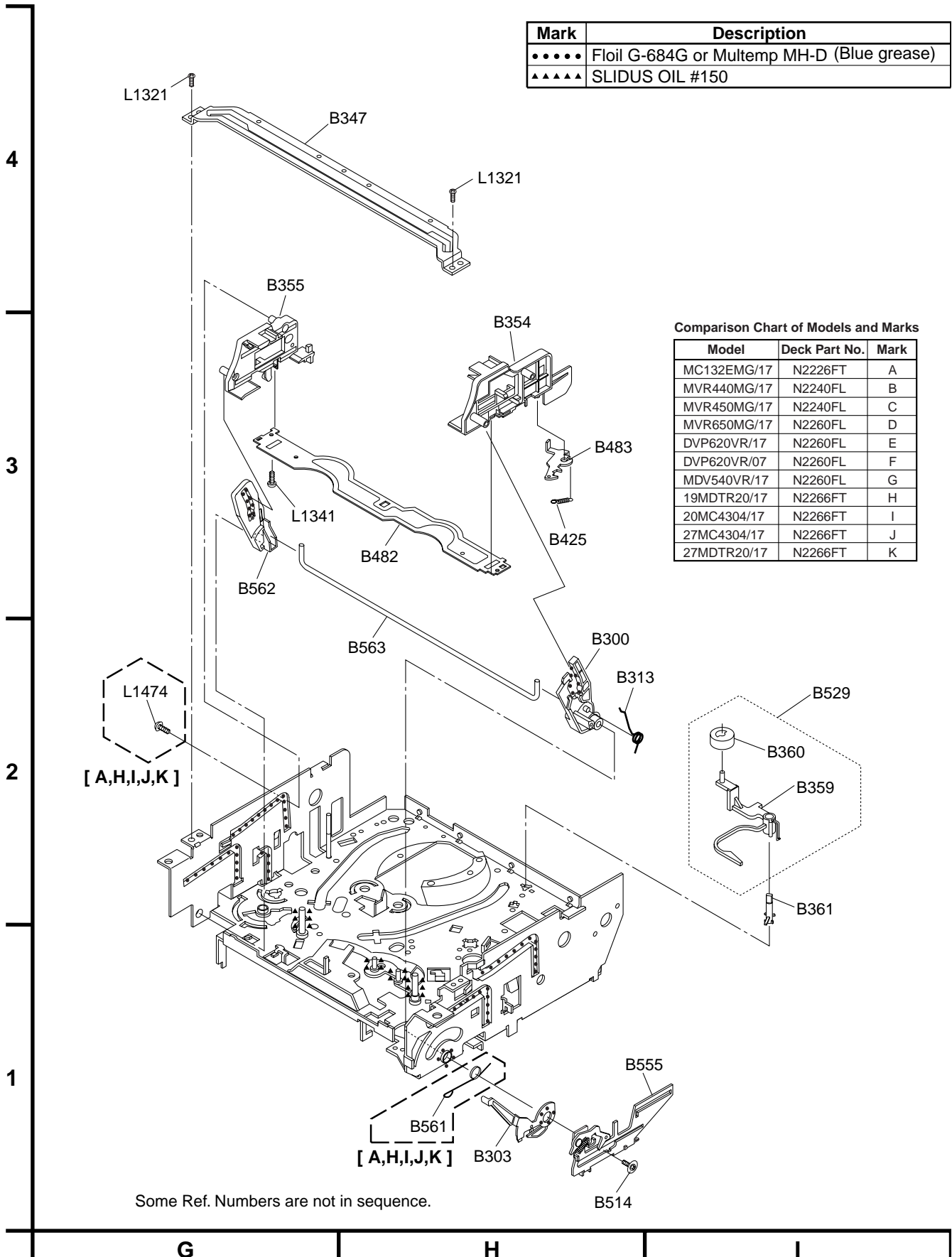
Some Ref. Numbers are not in sequence.

# Deck Mechanism View 2



# Deck Mechanism View 3

Mark	Description
•••••	Floil G-684G or Multemp MH-D (Blue grease)
▲▲▲▲▲	SLIDUS OIL #150




Comparison Chart of Models and Marks

Model	Deck Part No.	Mark
MC132EMG/17	N2226FT	A
MVR440MG/17	N2240FL	B
MVR450MG/17	N2240FL	C
MVR650MG/17	N2260FL	D
DVP620VR/17	N2260FL	E
DVP620VR/07	N2260FL	F
MDV540VR/17	N2260FL	G
19MDTR20/17	N2266FT	H
20MC4304/17	N2266FT	I
27MC4304/17	N2266FT	J
27MDTR20/17	N2266FT	K

Some Ref. Numbers are not in sequence.

# DECK PARTS LIST


**PRODUCT SAFETY NOTE:** Products marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

**NOTE:** Parts that are not assigned part numbers (---- - or blank) are not normally available.

To order parts call the **TOLL FREE Philips Sales Center number: 1 - 800 - 851 - 8885**  
**(In Canada) 1 - 800 - 363 - PART.**  
**1 - 800 - 535 - 3715 (Fax).**

## Comparison Chart of Models and Marks

Model	Deck Part No.	Mark
MC132EMG/17	N2226FT	A
MVR440MG/17	N2240FL	B
MVR450MG/17	N2240FL	C
MVR650MG/17	N2260FL	D
DVP620VR/17	N2260FL	E
DVP620VR/07	N2260FL	F
MDV540VR/17	N2260FL	G
19MDTR20/17	N2266FT	H
20MC4304/17	N2266FT	I
27MC4304/17	N2266FT	J
27MDTR20/17	N2266FT	K

Ref.	 Mark	Pos.	Description	ID No.	Part No.
B2	A	A-4	CYLINDER ASSEMBLY MK12.5 NTSC 2HD	N2228CYL	4835 691 27327
B2	B,C	A-4	CYLINDER ASSEMBLY MK12.5 NTSC 4HD	N2248CYL	4835 691 27329
B2	D,E,F,G,H,I,J,K	A-4	CYLINDER ASSEMBLY MK12.5 NTSC 6HD	N2268CYL	4835 691 27328
B3		F-4	LOADING MOTOR ASSEMBLY MK12.5	0VSA14636	4835 464 57614
B8		B-2	PULLEY ASSEMBLY MK12	0VSA13500	4835 528 87063
B9		A-3	MOVING GUIDE S P.P MK12.5	0VSA14717	4835 464 57616
B10		A-3	MOVING GUIDE T P.P MK12.5	0VSA14639	4835 464 57615
B11		A-1	LOADING ARM(TU) ASSEMBLY MK12	0VSA13300	4835 464 57607
B12		A-2	LOADING ARM(SP) ASSEMBLY MK12	0VSA13299	4835 464 57606
B31	A,H,I,J,K	F-4	AC HEAD ASSEMBLY(TVCR) MK12.5	0VSA14866	4835 464 57617
B31	B,C,D,E,F,G	F-4	AC HEAD ASSEMBLY MK12.5	0VSA14841	4835 464 57623
B35		B-3	TAPE GUIDE ARM ASSEMBLY MK12.5	0VSA15014	4835 464 57621
B37		B-1	CAPSTAN MOTOR 288/VCZC1300	N9680CML	4835 362 17046
B52		D-1	CAP BELT MK10	0VM411138	4835 358 37161
B73		A-3	FE HEAD(MK11) MH-131SF11 or	DHVEC01Z0005	4835 249 97074
		A-3	FE HEAD(MK12) VTR-1X2ERS11-155 or	DHVEC01TE005	4835 249 97074
		A-3	FE HEAD(MK12) HVFHP0047A	DHVEC01AL007	4835 249 97074
B74		A-3	PRISM MK10	0VM202870	4835 402 97849
B121		B-2	WORM MK12	0VM414091	4835 522 37411
B126		B-1	PULLEY MK12	0VM414330B	4835 528 87064
B133		D-2	IDLER GEAR MK12	0VM305738	4835 522 37409

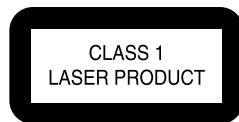
Ref.	 Mark	Pos.	Description	ID No.	Part No.
B134		D-2	IDLER ARM MK12	0VM305739	4835 402 97883
B148		E-4	TG CAP MK11	0VM412972	---- -
B300		H-2	C DRIVE LEVER(TU) MK12	0VM203773	4835 402 97877
B303		H-1	F DOOR OPENER MK12	0VM203751C	4835 402 97891
B313		H-2	C DRIVE SPRING MK12	0VM414145	---- -
B347		G-4	GUIDE HOLDER A MK10	0VM304920	---- -
B354		H-3	SLIDER(TU) MK12	0VM101172F	4835 402 97889
B355	A,H,I,J,K	G-3	SLIDER(SP) MK12	0VM101182K	4835 402 97875
B355	B,C,D,E,F,G	G-3	SLIDER(SP) MK12	0VM101182H	4835 402 97875
B359		I-2	CLEANER LEVER MK10	0VM304413	4835 402 97845
B360		I-2	CLEANER ROLLER MK9	0VM410032C	4835 464 57553
B361		I-2	CL POST MK10	0VM411114	4835 464 57559
B410		B-3	PINCH ARM(A) ASSEMBLY(6) MK12.5 or	0VSA14935	4835 464 57618
		B-3	PINCH ARM(A) ASSEMBLY(5) MK12	0VSA13788	4835 402 97887
B411		B-3	PINCH SPRING MK12	0VM414644	---- -
B414		D-4	M BRAKE(SP) ASSEMBLY MK12.5	0VSA14994	4835 464 57619
B416		E-4	M BRAKE(TU) ASSEMBLY MK12	0VSA13283	4835 464 57601
B417		D-3	TENSION SPG(3002645) MK12	0VM414221F	---- -
B425		H-3	LOCK LEVER SPRING MK10	0VM411110	---- -
B426		B-2	KICK PULLEY MK10	0VM411095	4835 528 87061
B482		H-3	CASSETTE PLATE MK12	0VM203749	4835 402 97873
B483		H-3	LOCK LEVER MK12	0VM414095	4835 402 97884
B487		D-4	BAND BRAKE(SP) MK12	0VM305723	4835 466 47059
B488		E-2	MODE LEVER MK12.5	0VM101351	4835 402 97896
B491		E-2	CAM GEAR(A) MK12	0VM101174	4835 522 37404
B492		A-1	MODE GEAR MK12	0VM203769	4835 522 37405
B494		B-3	C DOOR OPENER MK12	0VM305719	4835 402 97879
B499		D-4	T LEVER HOLDER MK12	0VM305729	---- -
B501		B-2	WORM HOLDER MK12	0VM203767	---- -
B501	B,C,D,E,F,G	B-2	WORM HOLDER(R) MK12	0VM204324	---- -
B502		E-1	CAM GEAR(B) MK12	0VM305721	4835 522 37406
B507		E-1	REEL WASHER MK9 5*2.1*0.5	0VM410058	---- -
B508		D-4	S BRAKE SPRING MK10	0VM411121	---- -
B513		E-1	CAM WASHER MK12	0VM414741	---- -
B514		H-1	SCREW RACK MK10	0VM411535	---- -
B516		D-1	REEL WASHER MK9 5*2.1*0.5	0VM410058	---- -
B520		E-4	TU BRAKE SPRING MK12	0VM414285	---- -
B521		E-4	REV BRAKE SPRING MK12	0VM414222	---- -
B522		E-4	TG POST ASSEMBLY MK11	0VSA12080	4835 464 57584
B525		F-3	LDG BELT MK11	0VM412804	---- -
B529		I-2	CLEANER ASSEMBLY MK10	0VSA11161	4835 464 57561
B553		B-3	REV SPRING MK11	0VM412555	---- -
B555		H-1	RACK ASSEMBLY MK12	0VSA13289	4835 464 57605
B557		F-3	MOTER PULLEY U5	0VM403205	4835 528 87036
B558		F-3	LOADING MOTOR M31E-1 R-14 7401	MMDZB12MM007	4835 361 27171
B559		D-2	CLUTCH ASSEMBLY MK12 or	0VSA13284	4835 464 57602
		D-2	CLUTCH ASSEMBLY(64) MK12	0VSA14459	4835 464 57613
B560		B-2	KICK SPRING MK10	0VM411475A	---- -
B561	A,H,I,J,K	H-1	F DOOR SPRING MK10	0VM411430	---- -
B562		G-3	C DRIVE LEVER(SP) MK12	0VM203772	4835 402 97876
B563		H-3	SLIDER SHAFT MK12	0VM305762	4835 535 97031
B564		E-3	M GEAR MK12	0VM305735	4835 522 37407
B565		D-3	SENSOR GEAR MK12	0VM305736	4835 522 37408
B567		B-3	PINCH ARM(B) MK12	0VM305718	4835 402 97878
B568		D-2	BT ARM MK12	0VM305728	4835 402 97882
B569	A	E-2	CAM HOLDER(F) MK12 or	0VM305722	---- -
	A	E-2	CAM HOLDER MK12.5	0VM306618	---- -
B570		E-2	CAM RACK SPRING(HI) MK11	0VM412923	---- -

Ref.	▲	Mark	Pos.	Description	ID No.	Part No.
B571			A-1	PS.W CUT 1.6X4.0X0.5T	0VM408485A	--- --
B573			E-4	REEL(SP)(D2) MK12	0VM203755	4835 528 17057
B574			E-4	REEL(TU)(D2) MK12	0VM203756	4835 528 17058
B587			D-4	TENSION LEVER ASSEMBLY MK12	0VSA13279	4835 464 57598
B590			E-4	BRAKE ARM(TU) MK12	0VM203752E	4835 402 97892
B591			E-4	BAND BRAKE(TU) MK12	0VM305724C	4835 466 47062
B592			E-4	TG POST MK11	0VM412550	4835 464 57596
B593		B,C,D, E,F,G, H,I,J,K	E-2	CAM HOLDER ASSEMBLY MK12.5	0VSA14634	4835 464 57622
L1051			A-2	SCREW, B-TIGHT M2.6X6 PAN HEAD+	GPMB9060	--- --
L1053			A-3	SCREW, S-TIGHT M2.6X8 WASHER HEAD+	GCMS9080	--- --
L1151			F-3	SCREW, SEMS M2.6X4 PAN HEAD+	CPM39040	--- --
L1191			A-3	SCREW, S-TIGHT M2.6X8 WASHER HEAD+	GCMS9080	--- --
L1321			G-4, H-4	SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	--- --
L1341			G-3	SCREW, P-TIGHT M2X6 PAN HEAD+	GPMP2060	--- --
L1406			F-4	AC HEAD SCREW MK9	0VM410964	--- --
L1450			A-2, B-2	SCREW, SEMS M2.6X5 PAN HEAD+	CPM39050	--- --
L1466			B-2	SCREW, S-TIGHT M2.6X6 BIND HEAD+	GBMS9060	--- --
L1467			B-3	SCREW M2.6X5 WASHER HEAD+	SCM39050	--- --
L1474		A,H,I,J ,K	G-2	SCREW, P-TIGHT M2.6X12 WASHER HEAD+	GCMP9120	--- --

# Service Service Service



# Service Manual



DVD+ReWritable



## Contents

	<b>Page</b>
1 Technical Specifications	2
2 Safety Instructions, Warnings and Notes	3
3 Directions for Use(No DFU necessary)	4
4 Mechanical Instructions	5
5 Service Modes, Error Codes and Fault Finding	8
6 <i>Block Diagrams, Waveforms, Wiring Diagram</i>	13
Block Diagram	13
Testpoints Overview	14
7 <i>Electrical Diagrams and Print-Layouts</i>	<i>Diagram</i>
Servo Board: OPU Interface (Diagram 1)	15
Servo Board: Cheetah (Diagram 2)	16
Servo Board: Laconic (Diagram 3)	17
Servo Board: Drivers (Diagram 4)	18
Servo Board: Centaurus (Diagram 5)	21
Servo Board: Power, Connectors (Diagram 6)	26
Servo Board: Tray Motor Conn. (Diagram 7)	27
8 Alignments (No alignments necessary)	31
9 Circuit-, IC Descriptions and List of Abbreviations	33
10 Electrical Parts List	47

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# PHILIPS



# 1. Technical Specifications and Connection Facilities

## 1.1 VAD8041 functionality:

- Loading of 8 cm and 12 cm discs by a motorized tray
- Disc type recognition and in case of a DVD+RW disc laser power calibration
- Servo control for disc rotation, sledge movements, tilt, focus and actuator position
- EFM+ encoding / decoding for DVD, and EFM decoding for CD
- Writes and read DVD+RW discs and reads DVD, CD and CD-R/RW discs
- Linking control, header insertion and sector number updating at record
- Interfacing to the MPEG back-end for control and for data
- The back-end has to provide MPEG data processing, data buffering, construction of logical format for Lead-in, Data area and Lead-out part of the DVD+RW disc

## 1.2 Connections

The following interfaces are provided for connecting the drive to the MPEG back-end Application:

- Power Connector: 4-pin supply interface
- IDE Connector: 40-pin command and data transfer interface
- IDE Bus selection:
  - Jumper Selection: 6-pin IDE Bus selector

## 1.3 Read and Write Speeds

Type of Disc (Function)	Disc Rotation Speed
Read Speed CD	CAV 7x
Read Speed DVD	CAV 4x
Write Speed DVD+RW	ZCAV 2.4x
Write Speed DVD+R	ZCAV 2.4x

## 2. Safety Instructions, Warnings and Notes

### 2.1 Safety Instructions

#### 2.1.1 General Safety

Safety regulations require that during a repair:

- Connect the unit to the mains via an isolation transformer.
- Replace safety components, indicated by the symbol ▲, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that after a repair, you must return the unit in its original condition. Pay, in particular, attention to the following points:

- Route the wires/cables correctly, and fix them with the mounted cable clamps.
- Check the insulation of the mains lead for external damage.
- Check the electrical DC resistance between the mains plug and the secondary side:
  1. Unplug the mains cord, and connect a wire between the two pins of the mains plug.
  2. Set the mains switch to the 'on' position (keep the mains cord unplugged!).
  3. Measure the resistance value between the mains plug and the front panel, controls, and chassis bottom.
  4. Repair or correct unit when the resistance measurement is less than 1 MΩ.
  5. Verify this, before you return the unit to the customer/user (ref. UL-standard no. 1492).
  6. Switch the unit 'off', and remove the wire between the two pins of the mains plug.

#### 2.1.2 Laser Safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

##### Laser Device Unit

Type	: Semiconductor laser GaAlAs
Wavelength	: 650 nm (DVD) 780 nm (VCD/CD)
Output Power	: 20 mW (DVD+RW writing) 0.8 mW (DVD reading) 0.3 mW (VCD/CD reading)
Beam divergence	: 60 degree

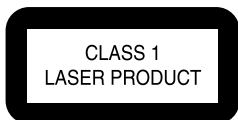


Figure 2-1 Class 1 Laser Product

**Note:** Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

### 2.2 Warnings

#### 2.2.1 General

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD, symbol ⚡). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are at the same potential as the mass of the set by a wristband with resistance. Keep components and tools at this same potential. Available ESD protection equipment:
  - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
  - Wristband tester 4822 344 13999.
- Be careful during measurements in the live voltage section. The primary side of the power supply (pos. 1005), including the heatsink, carries live mains voltage when you connect the player to the mains (even when the player is 'off!'). It is possible to touch copper tracks and/or components in this unshielded primary area, when you service the player. Service personnel must take precautions to prevent touching this area or components in this area. A 'lightning stroke' and a stripe-marked printing on the printed wiring board, indicate the primary side of the power supply.
- Never replace modules, or components, while the unit is 'on'.

#### 2.2.2 Laser

- The use of optical instruments with this product, will increase eye hazard.
- Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.
- Repair handling should take place as much as possible with a disc loaded inside the player.
- Text below is placed inside the unit, on the laser cover shield:

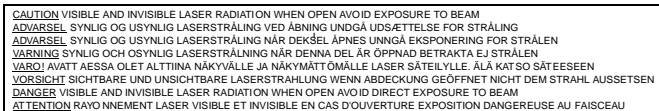


Figure 2-2 Warning text

### 3. Directions For Use

Not applicable

## 4. Mechanical Instructions

Note that exploded views can be found in chapter 10

### 4.1 General

Follow the dismantling instructions in described order.  
Never touch the lens of the OPU.  
Take sufficient ESD measures during handling.

### 4.2 Dismantling

You can divide the Basic Engine into the following parts:

1. Loader (frame and tray)
2. PWB
3. DVD-Mechanism (OPU, traverse with turntable motor and sledge-motor assy)
4. Encasing

### 4.3 Cabinet

- Remove the encasing by releasing the four screws at the underside of the drive, see figure 4-1
- Make sure that you do not lose the 5 heat paths (gray rubber pieces that conduct the heat from the ICs to the case)!
- If you need to measure on the PCB while a disc is inserted, the top case should be applied again onto the drive. In this way the clamping mechanism is established.

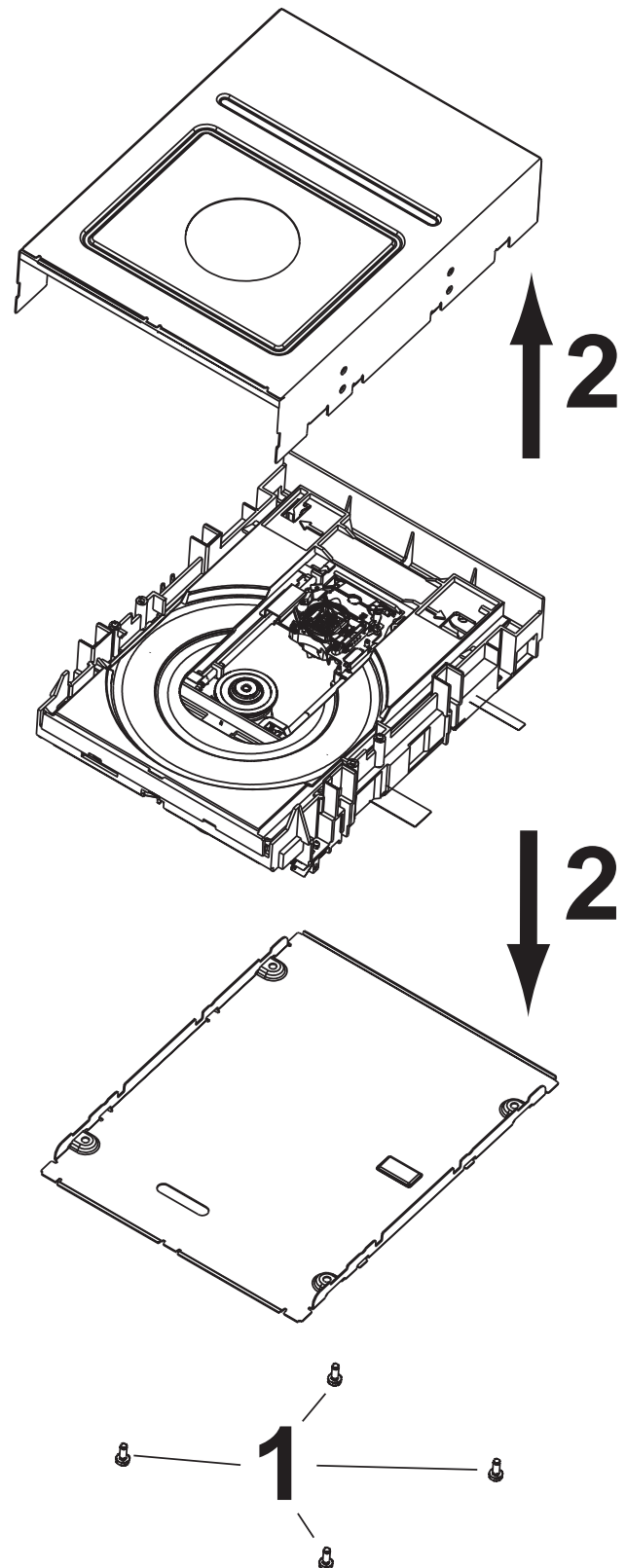


Figure 4-1 Basic Engine dismantling (part1)

#### 4.4 Tray

- Remove encasing as described in 4.3
- Disengage the two holders that fix the tray [1], see figure 4-2, and pull out the tray [2]

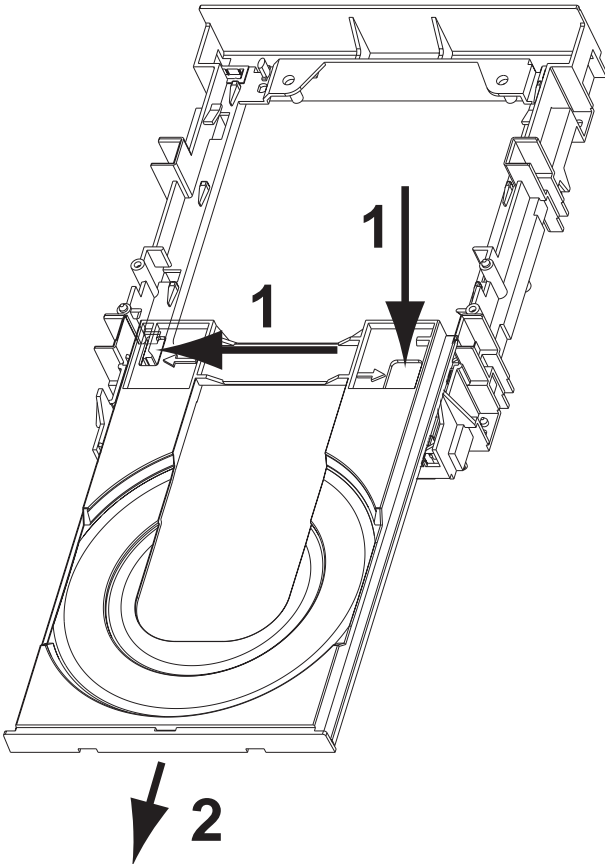


Figure 4-2 Remove Tray

#### 4.5 Printed Board

Note: After exchanging the PWB (or the DVD-M) the complete drive has to be adjusted! Run command 931 of DSW (AdjustLaserControl). Refer to chapter 8 for adjustment instructions!

- Remove encasing as described in 4.3
- Disconnect the 2 flex foils from the PWB connectors and the OPU flex
- Remove the 2 screws that hold the PWB, see figure 4-3
- Remove the PCB
- Remove the yellow plate if needed by releasing the 2 snap hooks

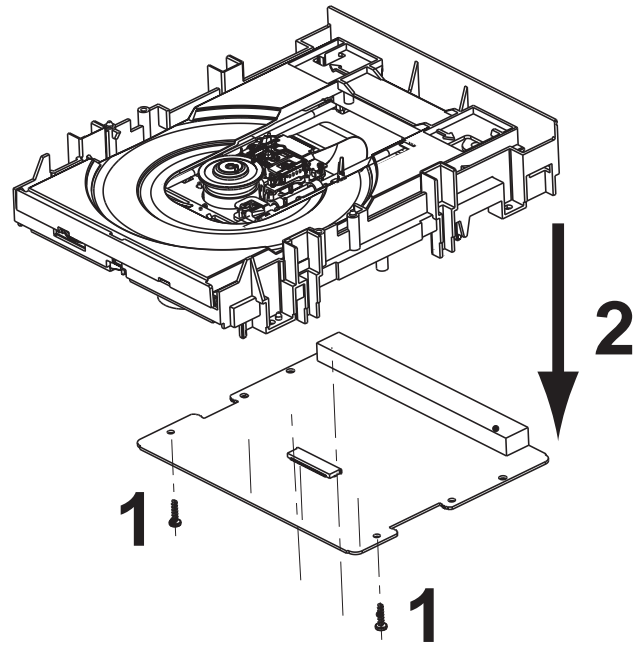


Figure 4-3 Remove PWB

#### 4.6 DVD-M

**Caution:** Never try to align or repair the DVD-Module itself! Only the factory can do this properly. Service engineers are only allowed to exchange the sledge motor assy. After Exchanging the DVD-M (or the PWB) the complete drive has to be adjusted! Run command 931 of DSW (AdjustLaserControl). Refer to chapter 8 for adjustment instructions!

- Remove PCB as described in 4.5
- Remove the four screws [1], see figure 4-4.
- Now you can remove the DVDM

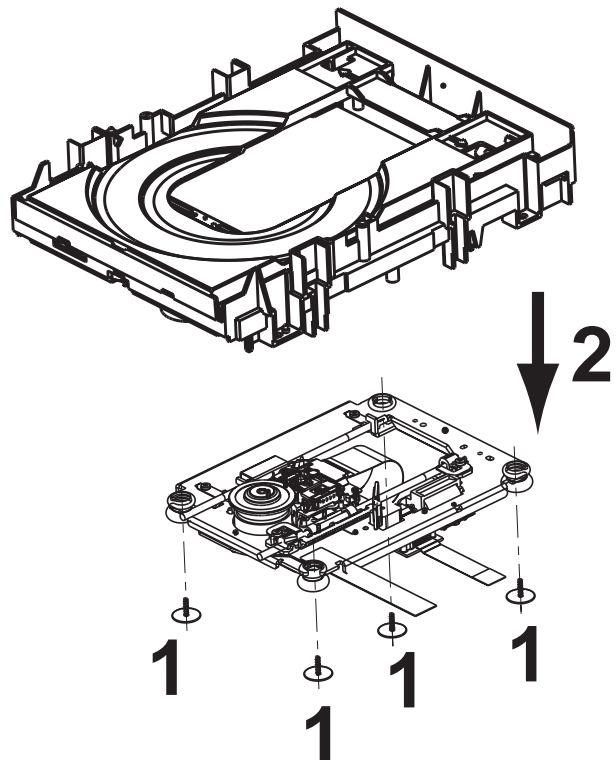


Figure 4-4 Remove DVDM

## 4.7 Sledge Motor Assembly

Caution: Never try to align or repair the DVD-Module itself!  
Only the factory can do this properly. Service engineers are only allowed to exchange the sledge motor assy.

- Eject the tray.
- Remove the 2 screws that hold the sledge motor, see figure 4-5
- Remove the sledge motor

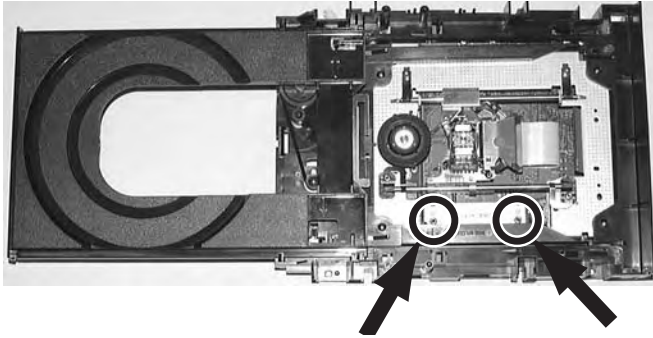


Figure 4-5 Remove Sledge Motor Assy

## 4.8 Re-assembly

To re-assemble the module, do all processes in reverse order.  
Take care of the following:

- **Complete module:** Place all wires/cables in their original position
- **Heat Paths:** Put the 5 heat paths (gray rubber pieces) back to their position on the ICs, see figure 4-6.
- **Emergency opening slot:** Be sure that the slot for the emergency tray opener is covered by adhesive tape!
- **Jumper selection:** Jumper has to be in position "Master"!

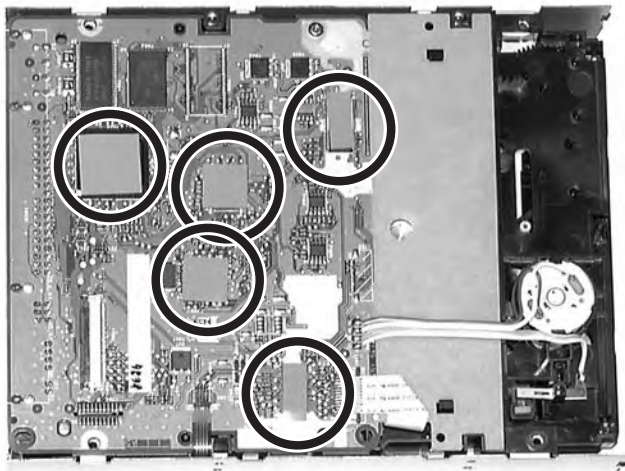


Figure 4-6 Heat Path

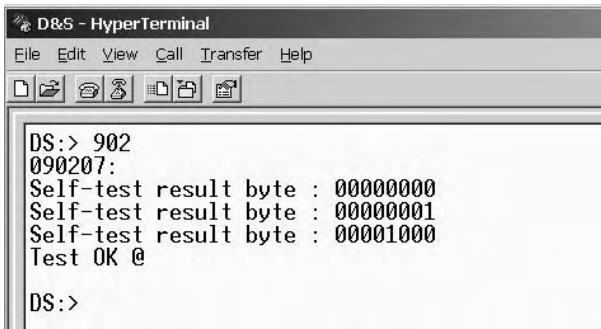
## 5. Service Modes, Error Codes and Fault Finding

### 5.1 General

Please refer to the service manual of the recorder for a description of the complete Diagnostics Software. In this manual only drive specific error codes are explained.

### 5.2 Self test

A power on self-test is incorporated in the software of this drive. With DSW command 902 (Chrysalis Mpeg Codec) the set software can retrieve the result of the self-test.



```

D&S - HyperTerminal
File Edit View Call Transfer Help
DS:> 902
090207:
Self-test result byte : 00000000
Self-test result byte : 00000001
Self-test result byte : 00001000
Test OK @
DS:>
  
```

Figure 5-1 Example, nucleus 902 showing no communication with the OPU

Following table gives the output format of this nucleus.

Bit	7	6	5	4	3	2	1	0
0	Reserved				tray*	ttm*	pcs*	laser forward sense
1	Reserved			real dsp*	hdr80	cheetah	laconic	elantec
2	Reserved				eeeprom	eeeprom checksum*	eeeprom empty*	iic

\*error code not detected in VAD8031/VAD8041

Forward Sense Tests if the forward sense value measured during drive startup is within normal range  
 HDR80 Performs a read/write test on a register (HDR 80 is an internal module of Centaurus)  
 Cheetah Performs a read/write test on a register  
 Laconic Read the IC version (fixed) and checks if it's ok  
 Elantec Performs a read/write test on a register  
 Eeprom Performs a read/write test on an address  
 I2C Tries addressing all I2C devices in the system - if one fails, this test fails

Please note that if the I2C test fails, most other IC tests will fail as well.

Figure 5-2 Self test Results

## 5.3 Error Codes

With DSW command 910 (Digital Board Chrysalis) the set software can retrieve an overview of all occurred engine errors.

```

DSW-> 910
Momentary errors (0-9): 0x21 0x00 0x00 0x20 0x00 0x00 0x00 0x00 0x00
Cumulative errors (1-9): 0x00 0x80 0x20 0x00 0x00 0x00 0x00 0x00
Software fatal assert : 256 cpowermanager.cpp
091000:
Test OK @
DSW->_

```

### 5.3.1 Momentary Errors

Byte 0: latest error:

Overview of the BE error codes.

error code	error	meaning
0x00	no_error	No error has occurred
0x01	illegal_command_error	Command not allowed in this state or unknown command
0x02	illegal_parameter_error	Parameter(s) not valid for this command
0x03	command_timeout_error	The maximum execution time for the command has exceeded
0x04	sledge_home_error	The sledge could not be moved home
0x05	sledge_calibration_error	An error occurred during calibration of the sledge
0x06	sledge_unstable_error	The sledge detected unstable control
0x07	speed_timeout_error	Spindle motor could not reach its target speed within timeout
0x08	speed_window_error	Measured spinning speed is not within expected window
0x09	focus_timeout_error	Focus could not be achieved within the timeout
0x0A	focus_retries_error	The amount of focus retries expired
0x0B	focus_agc_error	The focus agc results are out of range
0x0C	radial_timeout_error	Servo didn't get on track within the timeout
0x0D	radial_retries_error	Servo didn't get on track after several retries
0x0E	radial_agc_error	The radial agc results are out of range
0x0F	radial_init_error	Unreliable signal scaling after the radial initialisation
0x10	hf_pll_error	HF-decoder pll could not lock to HF signal
0x11	wobble_pll_error	Wobble pll could not lock to wobble signal
0x12	subcode_timeout_error	Subcode information could not be read
0x13	subcode_notfound_error	Requested subcode item could not be found
0x14	header_timeout_error	Header information could not be read
0x15	adip_timeout_error	Adip information could not be read
0x16	adip_window_error	Adip address was not within expected window
0x17	adip_sync_error	No adip sync was detected

error code	error	meaning
0x18	atip_timeout_error	Atip information could not be read
0x19	atip_notfound_error	Requested atip item could not be found
0x1A	atip_window_error	Atip address was not within expected window
0x1B	atip_sync_error	No atip sync was detected
0x1C	tray_error	Tray could not be closed or opened within the timeout
0x1D	seek_error	The requested seek couldn't be performed within the timeout
0x1E	no_hf_present_error	Attempt to read from a blank area
0x1F	record_error	An error occurred during the recording
0x20	illegal_stopaddress_error	The requested stopaddress with modify-stop-address is not valid
0x21	no_disc_error	No disc is detected
0x22	not_initialised_error	The system is not initialised (e.g. seek on unknown disc type)
0x23	illegal_medium_error	BE detected an unsupported medium during disc recognition
0x24	cd_frequency_error	Measured HF frequency is not within CD frequency range
0x25	dvd_frequency_error	Measured HF frequency is not within DVD frequency range
0x26	reserved(non_existing_bca_error)	Attempt to read non-existing bca information
0x27	reserved(bca_read_error)	An error occurred during reading of bca information
0x28	selftest_error	An error occurred during the self-test of the BE
0x29	i2c_error	The I2C interface does not operate
0x2A	laser_pll_error	Laser control pll did not lock or lost lock on write clock
0x2B	laser_forward_sense_error	Forward sense value didn't change with changing laser power
0x2C	jitter_optimisation_error	An error occurred during optimisation of the jitter
0x2D	tilt_calibration_error	An error occurred during calibration of the tilt frame
0x2E	reserved	
0x2F	frontend_offset_calibration_error	The offset in the frontend couldn't be calibrated
0x30	reserved	
0x31	wsg_calculation_error	An error occurred in the calculation of the write strategy
0x32	buffer_overrun_error	The buffer input stream overran the buffer output stream
0x33	return_value_invalid_error	The requested information is not available for this inquiry
0x34	illegal_recording_speed_error	The selected speed is not allowed for a recording on this medium
0x35	opc_media_parameter_error	The media parameters (info in ATIP/ADIP) are invalid or not read
0x36	opc_record_power_error	The final optimum power was not reached
0x37	opc_start_power_low_error	OPC start power too low (optimum power is higher)
0x38	opc_start_power_high_error	OPC start power too high (optimum power is lower)



error code	error	meaning
0x39	opc_power_calculation_error	Error during OPC power calculation (samples are wrong)
0x3A	opc_test_zone_full_error	OPC can't be performed because test zone is full
0x3B	opc_bad_jitter_measurement_error	The jitter measurement during OPC samples readback failed
0x3C	opc_read_samples_error	An error occurred during OPC readback sampling
0x3D	ropc_alpha_overflow_error	The determined value for the optimum power is too high
0x3E	ropc_alpha_ref_current_error	The alpha measurement reference current is wrong (IAN)
0x3F	ropc_alpha_gain_error	The alpha measurement alpha gain is wrong
0x40	beta_over_under_flow_error	During the walking OPC a beta over-/under-flow was detected
0x41	not_enough_calib_points_error	Not enough valid calibration points available for re-calibration
0x42	not_enough_power_error	The calculated power during re-calibration exceeds max power
0x43	illegal_reading_speed_error	The selected speed is not allowed for the requested command
0x44	servo_fatal_error	The actuator dissipation became too high during a servo recovery

This error is overwritten by the next player / inquiry command.

Byte 1 - 9: cumulative errors of previous error occurrences.  
Every individual error has its own bit in the 9-byte structure as described in the drawing below:

*Format of the BE error bytes.*

**byte 1**

b7	b6	b5	b4	b3	b2	b1	b0
reserved	FOCUS AGC ERROR	FOCUS RETRIES ERROR	FOCUS TIMEOUT ERROR	RADIAL AGC ERROR	RADIAL RETRIES ERROR	RADIAL TIMEOUT ERROR	RADIAL INIT ERROR

**byte 2**

TRAY ERROR	reserved	JITTER OPTIMIZATION ERROR	SLEDGE HOME ERROR	SLEDGE UNSTABLE ERROR	SLEDGE CALIBRATION ERROR	TILT SENSOR OFFSET CALIBRATION ERROR	TILT CALIBRATION ERROR
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**byte 3**

RECORD ERROR	SEEK ERROR	NO DISC ERROR	NOT INITIALISED ERROR	ILLEGAL STOPADDRESS ERROR	ILLEGAL PARAMETER ERROR	ILLEGAL COMMAND ERROR	COMMAND TIMEOUT ERROR
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**byte 4**

SERVO FATAL ERROR	reserved	reserved	HF PLL ERROR	NO HF PRESENT ERROR	HEADER TIMEOUT ERROR	SUBCODE NOTFOUND ERROR	SUBCODE TIMEOUT ERROR
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**byte5**

WOBBLE PLL ERROR	ADIP SYNC ERROR	ADIP WINDOW ERROR	ADIP TIMEOUT ERROR	ATIP NOTFOUND ERROR	ATIP SYNC ERROR	ATIP WINDOW ERROR	ATIP TIMEOUT ERROR
------------------	-----------------	-------------------	--------------------	---------------------	-----------------	-------------------	--------------------

**byte6**

WSG CALCULATION ERROR	DVD FREQUENCY ERROR	CD FREQUENCY ERROR	ILLEGAL RECORDING SPEED ERROR	SPEED WINDOW ERROR	SPEED TIMEOUT ERROR	NON EXISTING BCA ERROR	BCA READ ERROR
-----------------------	---------------------	--------------------	-------------------------------	--------------------	---------------------	------------------------	----------------

**byte7**

LASER FORWARD SENSE ERROR	NVRAM CHECKSUM UPDATE ERROR	FRONTEND OFFSET CALIBRATION ERROR	LASER PLL ERROR	ILLEGAL READING SPEED ERROR	ILLEGAL MEDIUM ERROR	SELFTEST ERROR	PC ERROR
---------------------------	-----------------------------	-----------------------------------	-----------------	-----------------------------	----------------------	----------------	----------

**byte8**

OPC READ SAMPLES ERROR	OPC BAD JITTER MEASUREMENT ERROR	OPC TEST ZONE FULL ERROR	OPC POWER CALCULATION ERROR	OPC START POWER HIGH ERROR	OPC START POWER LOW ERROR	OPC RECORD POWER ERROR	OPC MEDIA PARAMETER ERROR
------------------------	----------------------------------	--------------------------	-----------------------------	----------------------------	---------------------------	------------------------	---------------------------

**byte9**

RETURN VALUE INVALID ERROR	BUFFER OVERRUN ERROR	BETA OVER/UNDER FLOW ERROR	NOT ENOUGH CALIB POINTS ERROR	NOT ENOUGH POWER ERROR	ROPC ALPHA GAIN ERROR	ROPC ALPHA REF CURRENT ERROR	ROPC ALPHA OVERFLOW ERROR
----------------------------	----------------------	----------------------------	-------------------------------	------------------------	-----------------------	------------------------------	---------------------------

These errors are kept in memory until a power down of the drive (e.g. when recorder goes to standby) or reset of the drive.

### 5.3.2 Cumulative errors

These errors are stored in EEPROM and are thus non-volatile showing the complete error history of the drive.

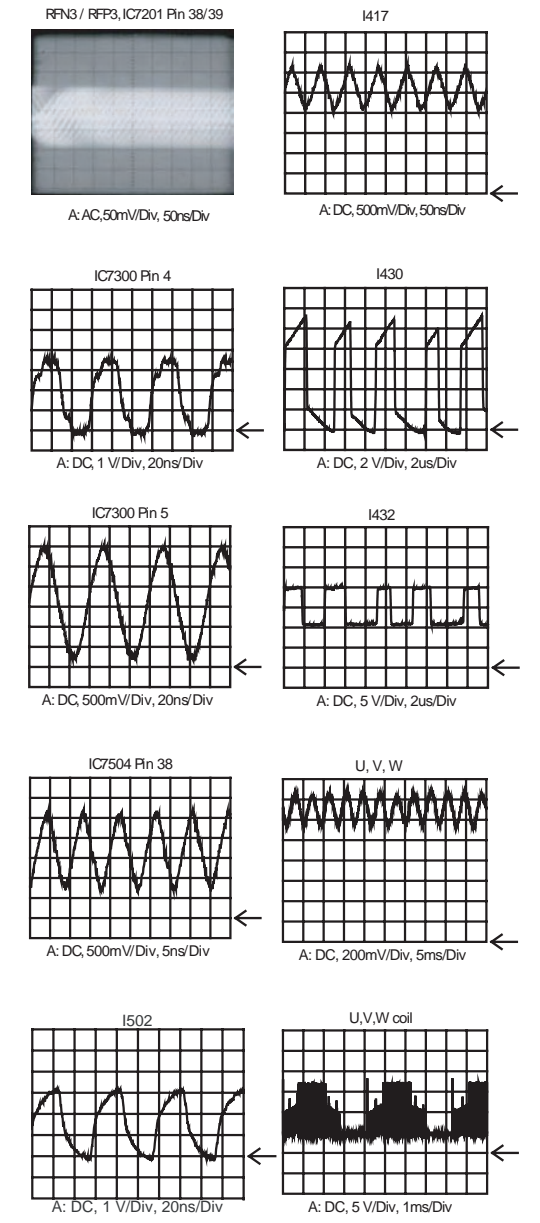
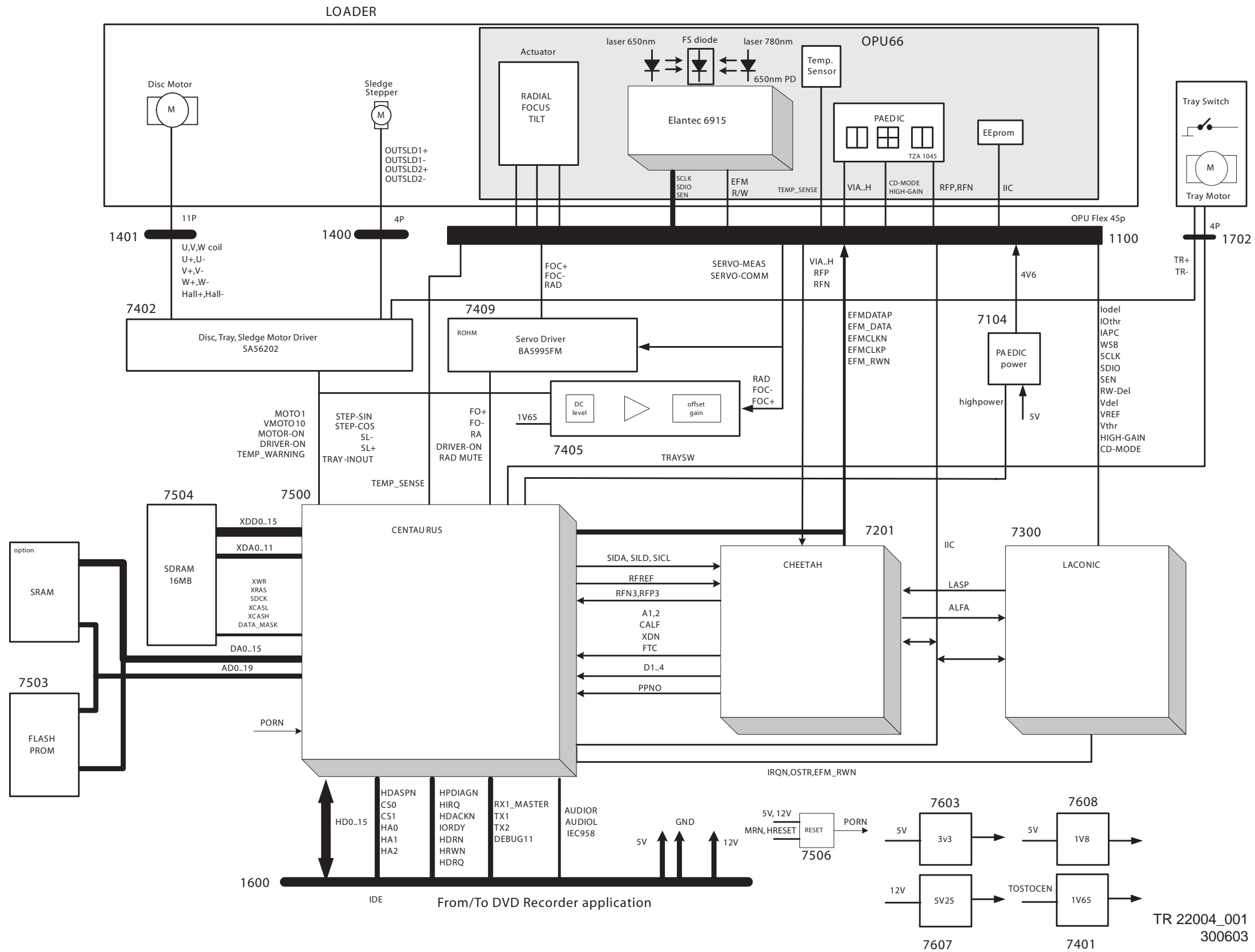
Byte 1 - 9: cumulative errors of previous player / inquiry error occurrences. These bytes are the same as the nine bytes (1-9) of the Momentary errors

### 5.3.3 Software fatal assert

Gives row number and file name in the source code of the firmware of the data path of the AV3

# 6. Block Diagrams, Waveforms, Wiring Diagram.

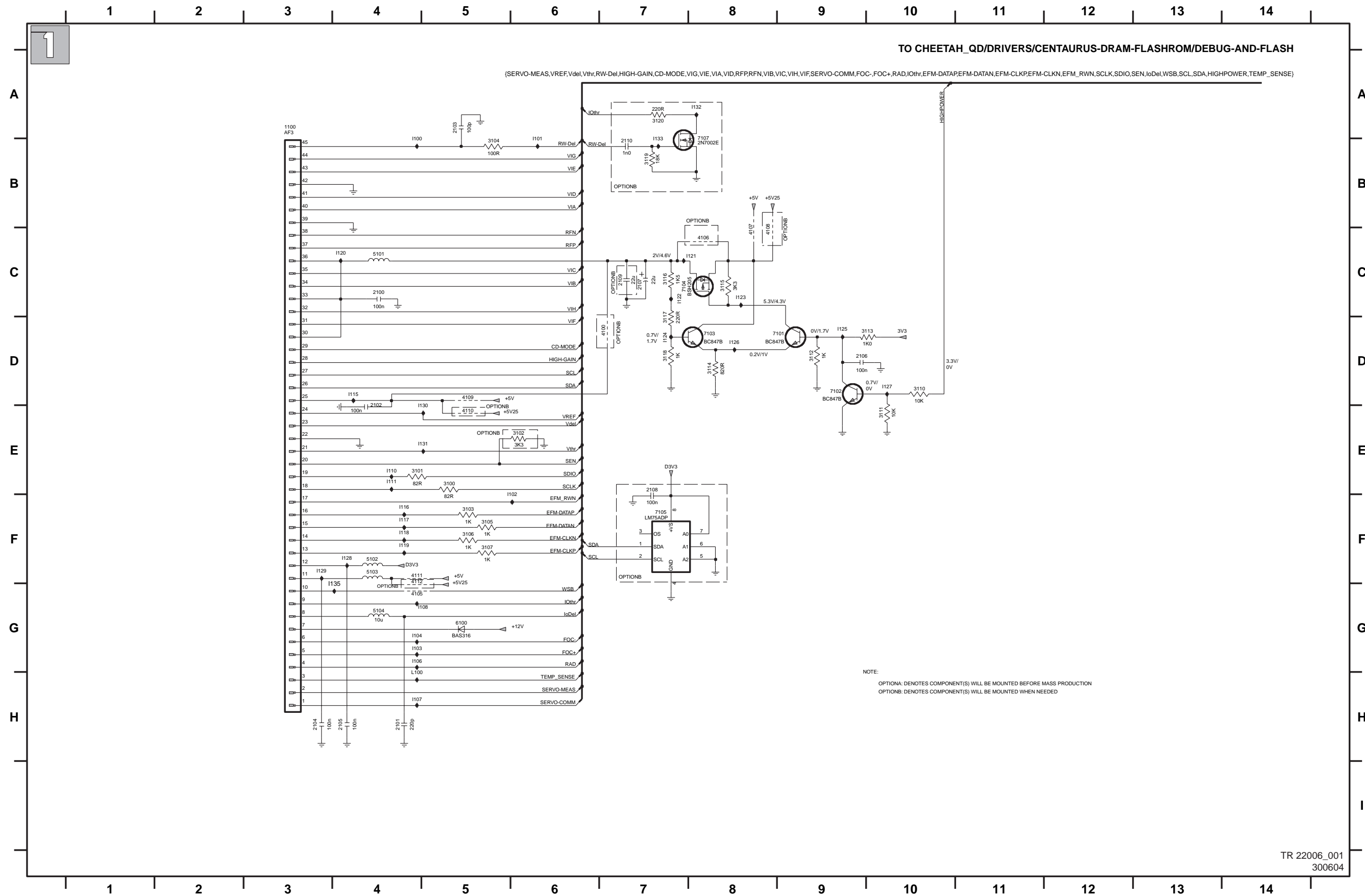
## Block Diagram





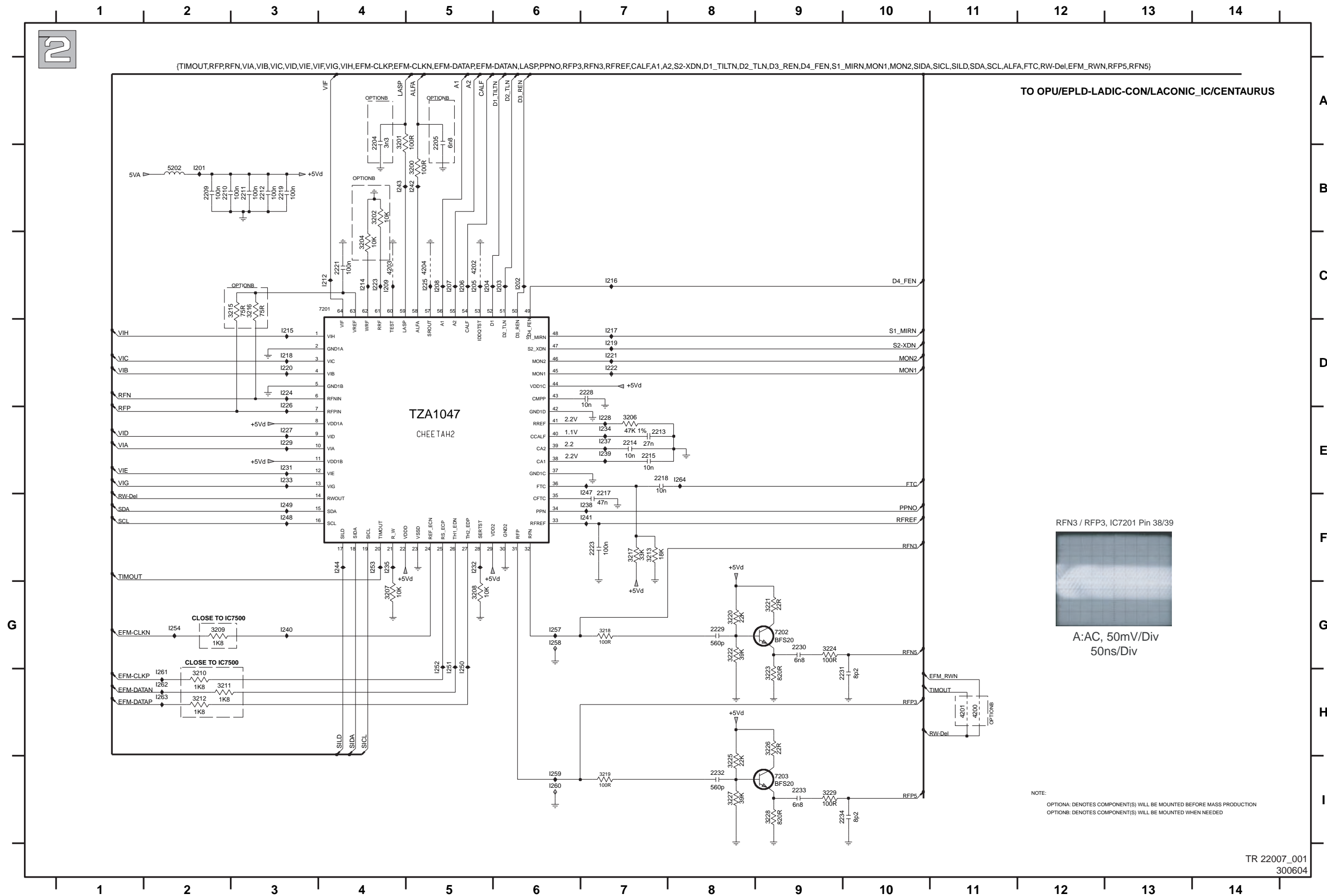
# 7. Electrical Diagrams and Print-Layouts

## Servo Board: OPU Interface



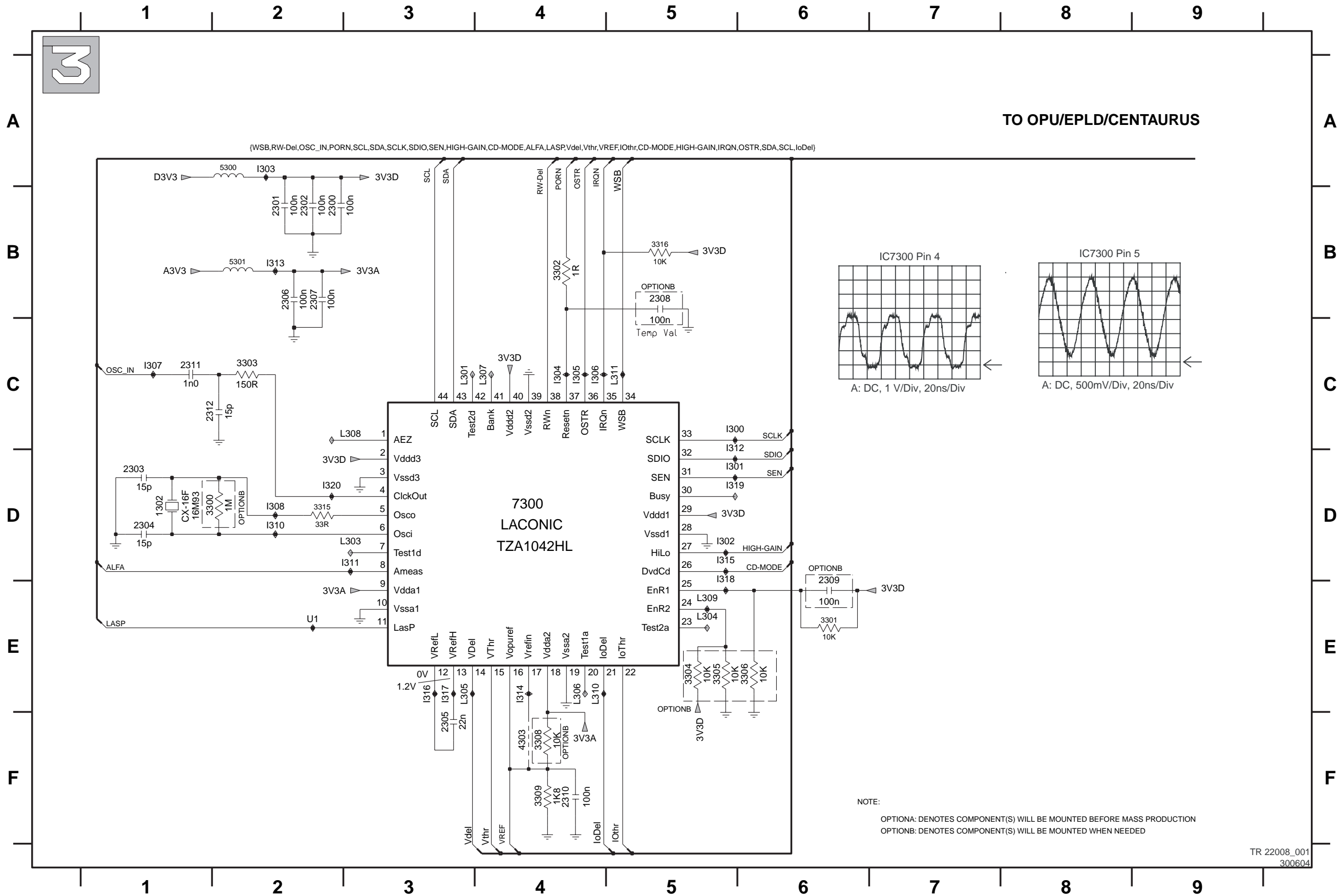
- 1100 A3
- 2100 C4
- 2101 H4
- 2102 E4
- 2103 A5
- 2104 H3
- 2105 H4
- 2106 D9
- 2107 C7
- 2108 E7
- 2109 C7
- 2110 B7
- 3100 E5
- 3101 E4
- 3102 E6
- 3103 F5
- 3104 B5
- 3105 F5
- 3106 F5
- 3107 F5
- 3110 D10
- 3111 E10
- 3112 D9
- 3113 D10
- 3114 D8
- 3115 C8
- 3116 C7
- 3117 D7
- 3118 D7
- 3119 B7
- 3120 A7
- 4100 D7
- 4105 G4
- 4106 C8
- 4107 C8
- 4108 C8
- 4109 D5
- 4110 E5
- 4111 F4
- 4112 G4
- 5101 C4
- 5102 F4
- 5103 F4
- 5104 G4
- 6100 G5
- 7101 D9
- 7102 D9
- 7103 D8
- 7104 C7
- 7105 F7
- 7107 B8
- I100 A4
- I101 A6
- I102 E6
- I103 G4
- I104 G4
- I106 G4
- I107 H4
- I108 G5
- I110 E4
- I111 E4
- I115 D4
- I116 F4
- I117 F4
- I118 F4
- I119 F4
- I120 C4
- I121 C8
- I122 C7
- I123 C8
- I124 D7
- I125 D9
- I126 D8
- I127 D10
- I128 F4
- I129 F3
- I130 D5
- I131 E5
- I132 A8
- I133 A7
- I135 F4
- L100 G4

Servo Board: Cheetah



- 2204 A4
- 2205 A5
- 2209 B2
- 2210 B2
- 2211 B3
- 2212 B3
- 2213 E7
- 2214 E7
- 2215 E7
- 2217 E7
- 2218 E7
- 2219 B3
- 2221 C4
- 2223 F7
- 2228 D7
- 2229 G8
- 2230 G9
- 2231 H10
- 2232 I8
- 2233 I9
- 2234 H9
- 3200 B5
- 3201 A4
- 3202 B4
- 3204 C4
- 3206 E7
- 3207 G4
- 3208 G5
- 3209 G2
- 3210 H2
- 3211 H2
- 3212 H2
- 3213 F7
- 3215 C3
- 3216 C3
- 3217 F7
- 3218 G7
- 3219 I7
- 3220 G8
- 3221 G9
- 3222 G8
- 3223 H9
- 3224 G9
- 3225 I8
- 3226 H9
- 3227 I8
- 3228 I9
- 3229 I9
- 4200 H11
- 4201 H11
- 4202 C5
- 4203 C4
- 4204 C5
- 5202 B2
- 7201 C4
- 7202 G9
- 7203 I9
- I201 B2
- I202 C6
- I203 C6
- I204 C5
- I205 C5
- I206 C5
- I207 C5
- I208 C5
- I209 C4
- I212 C4
- I214 C4
- I215 D3
- I216 C7
- I217 D7
- I218 D3
- I219 D7
- I220 D3
- I221 D7
- I222 D7
- I223 C4
- I224 D3
- I225 C5
- I226 D3
- I227 E3
- I228 E7
- I229 E3
- I231 E3
- I232 F5
- I233 E3
- I234 E7
- I235 F4
- I237 E7
- I238 F7
- I239 E7
- I240 G3
- I241 F7
- I242 B5
- I243 B4
- I244 F4
- I247 E7
- I248 F3
- I249 F3
- I250 G5
- I251 G5
- I252 G5
- I253 F4
- I254 G2
- I257 G6
- I258 G6
- I259 I6
- I260 I6
- I261 H2
- I262 H2
- I263 H2
- I264 E8

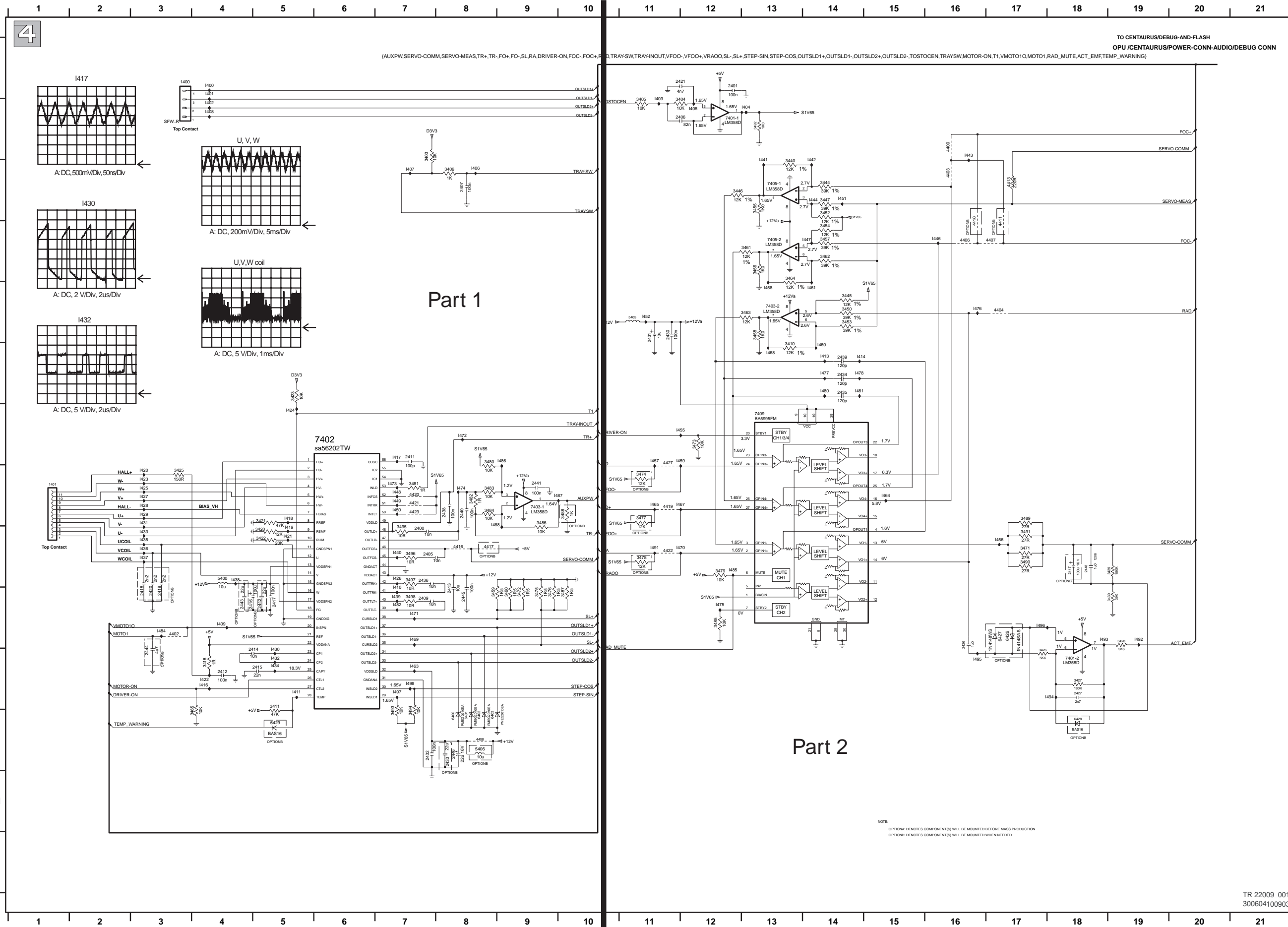
Servo Board: Laconic



- U1 E2
- 1302 D1
- 2300 B2
- 2301 B2
- 2302 B2
- 2303 D1
- 2304 D1
- 2305 F3
- 2306 B2
- 2307 B2
- 2308 B5
- 2309 E6
- 2310 F4
- 2311 C1
- 2312 C2
- 3300 D2
- 3301 E6
- 3302 B4
- 3303 C2
- 3304 E5
- 3305 E5
- 3306 E6
- 3308 F4
- 3309 F4
- 3315 D2
- 3316 B5
- 4303 F4
- 5300 A2
- 5301 B2
- 7300 D4
- I300 C5
- I301 D5
- I302 D5
- I303 A2
- I304 C4
- I305 C4
- I306 C4
- I307 C1
- I308 D2
- I310 D2
- I311 D3
- I312 C5
- I313 B2
- I314 E4
- I315 D5
- I316 E3
- I317 E3
- I318 D5
- I319 D5
- I320 D2
- L301 C3
- L303 D3
- L304 E5
- L305 E3
- L306 E4
- L307 C4
- L308 C3
- L309 E5
- L310 E4
- L311 C5

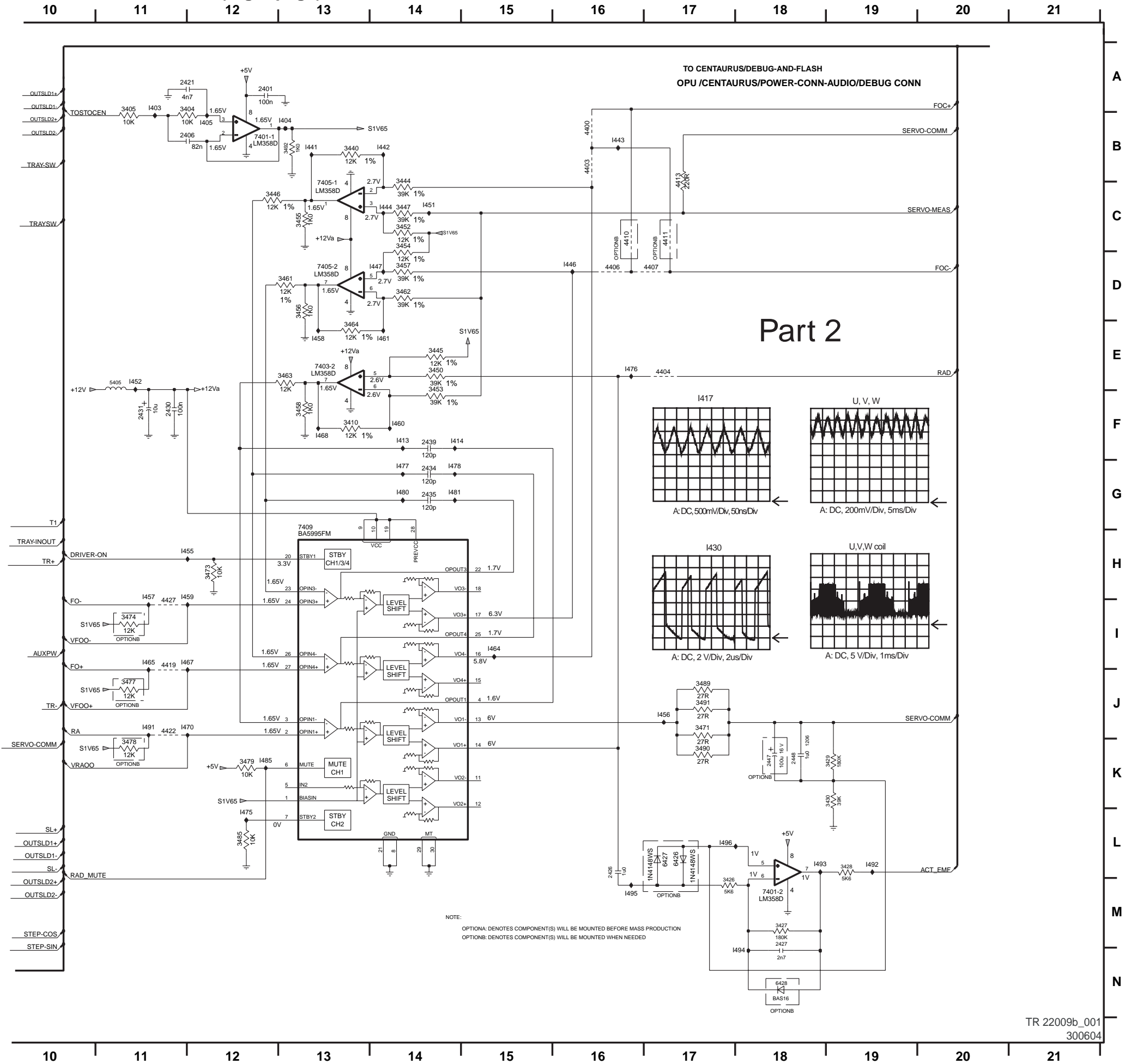


### Servo Board: Drivers (Overview)

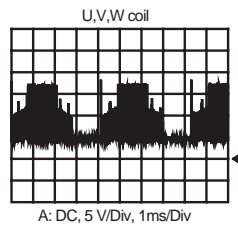
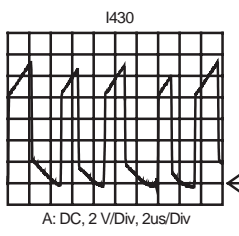
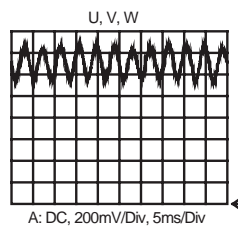
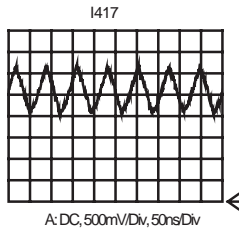




Servo Board: Drivers (Right page)



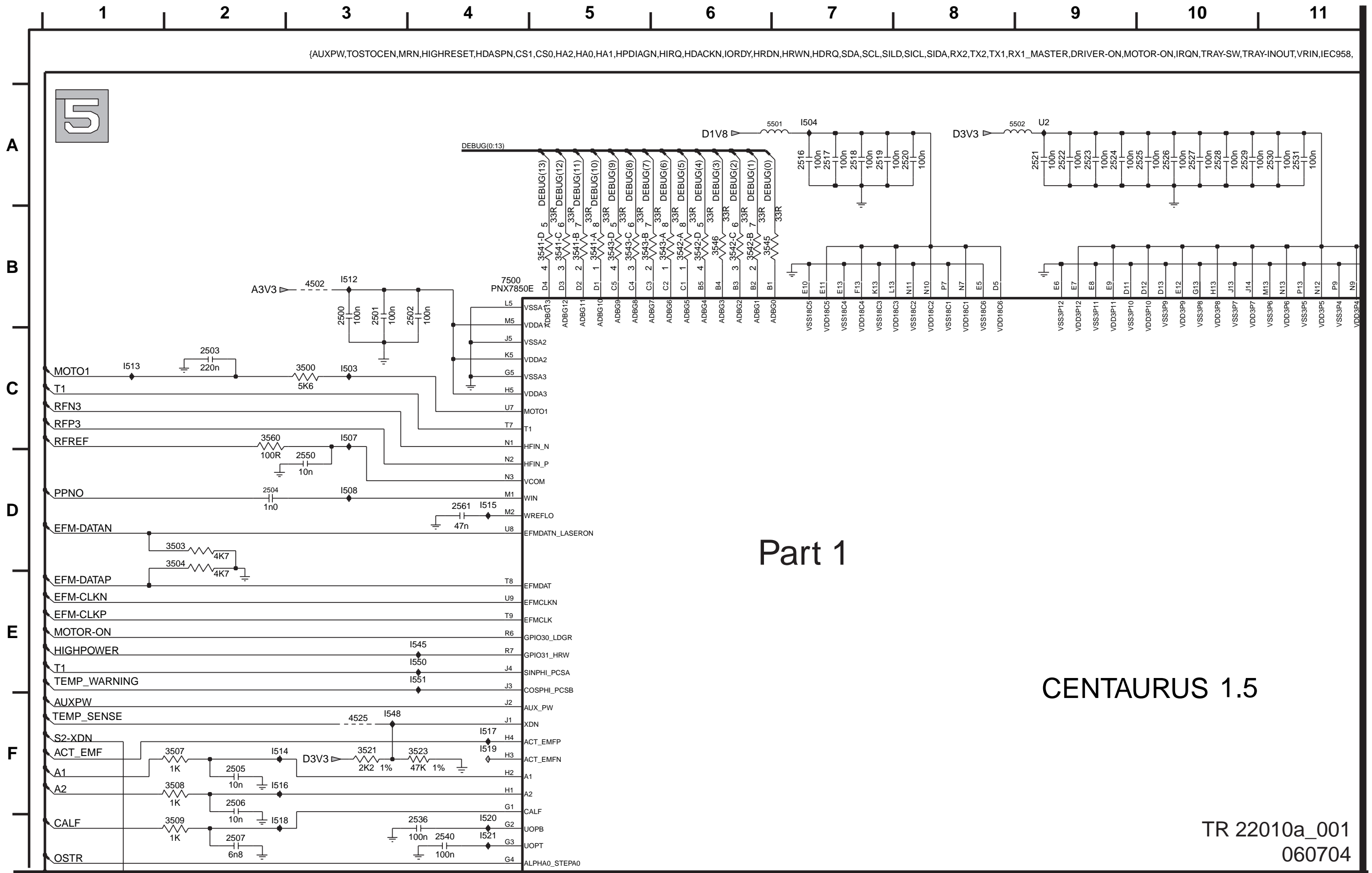
Part 2



NOTE:  
 OPTIONA: DENOTES COMPONENT(S) WILL BE MOUNTED BEFORE MASS PRODUCTION  
 OPTIONB: DENOTES COMPONENT(S) WILL BE MOUNTED WHEN NEEDED



Servo Board: Centaurus Part1



Part 1

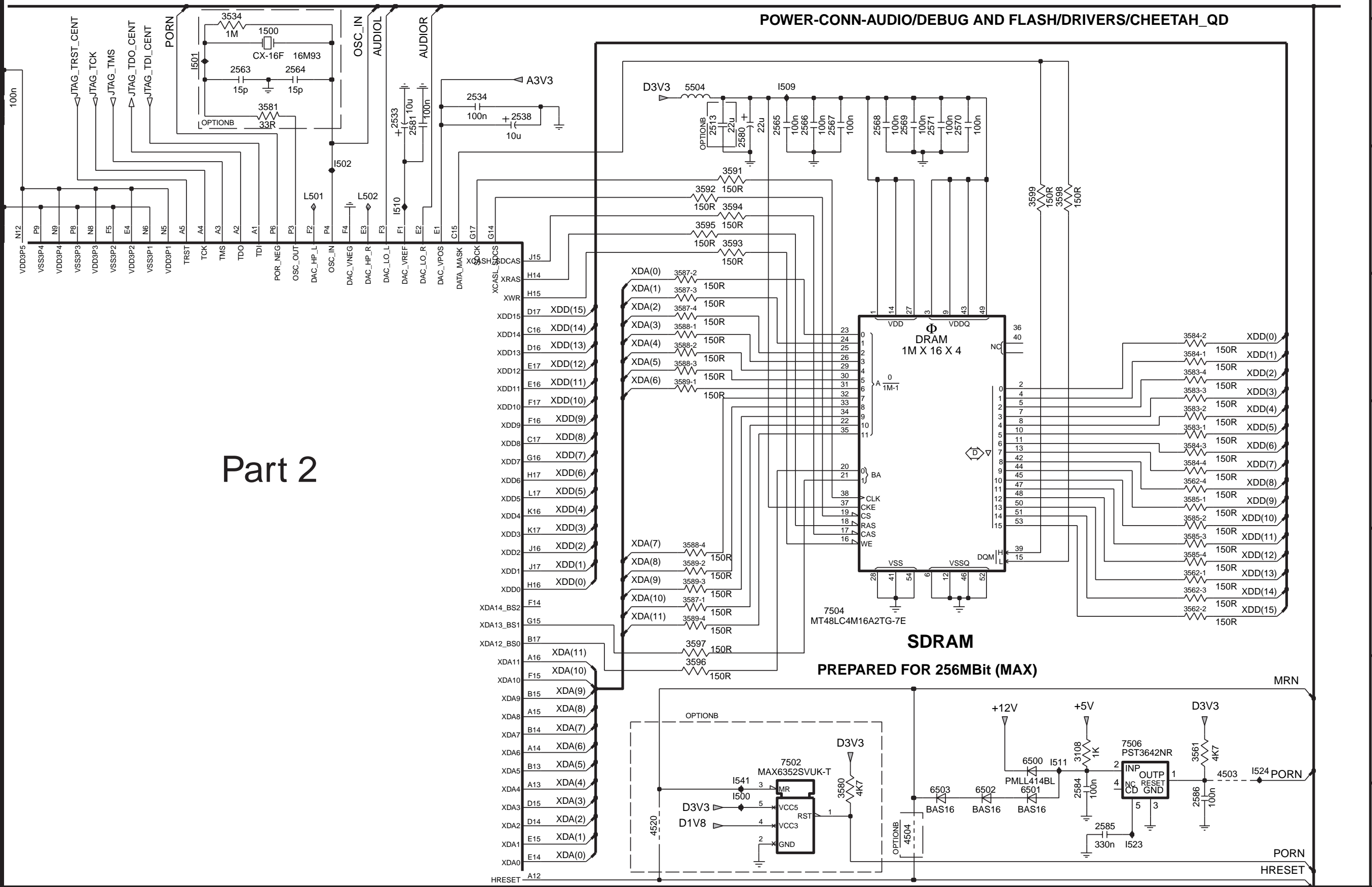
CENTAURUS 1.5

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060704

Servo Board: Centaurus Part 2

11 12 13 14 15 16 17 18 19 20 21

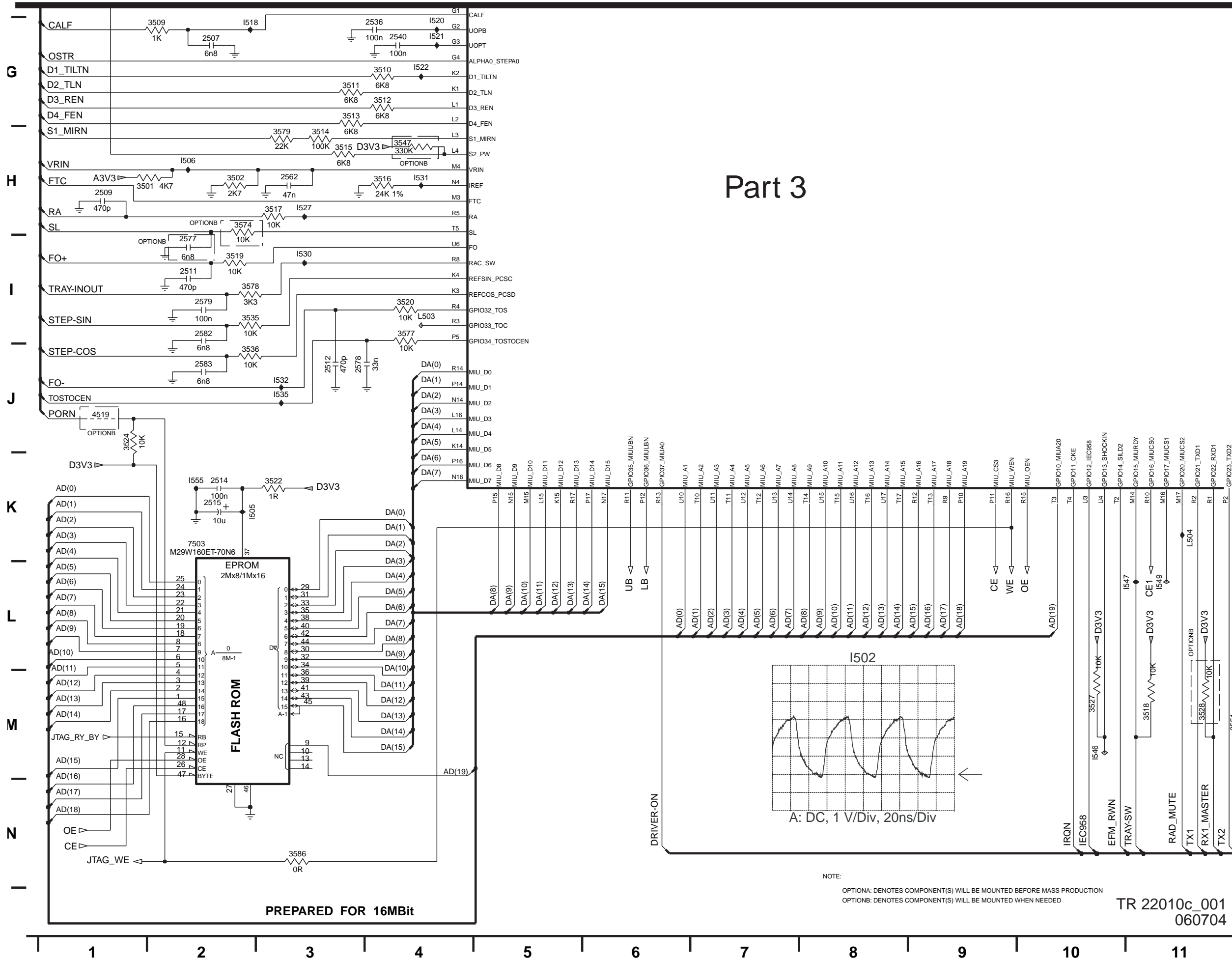
RFP3,RFN3,T1,MOTO1,AUDIOL,AUDIOR,HRESET,HDASPN,CS1,CS0,HA2,HA0,HA1,HPDIAGN,HIRQ,HDACKN,IORDY,HRDN,HRWN,HDRQ,SDA,SCL,SILD,SICL,SIDA,RX2,TX2,TX1,RX1\_MASTER,DRIVER-ON,MOTOR-ON,IRQN,TRAY-SW,TRAY-INOUT,VRIN,IEC958,EFM\_RWN,RAD\_MUTE,ACT\_EMF,TEMP\_SENSE)



Part 2

Servo Board: Centaurus Part 3

Part 3

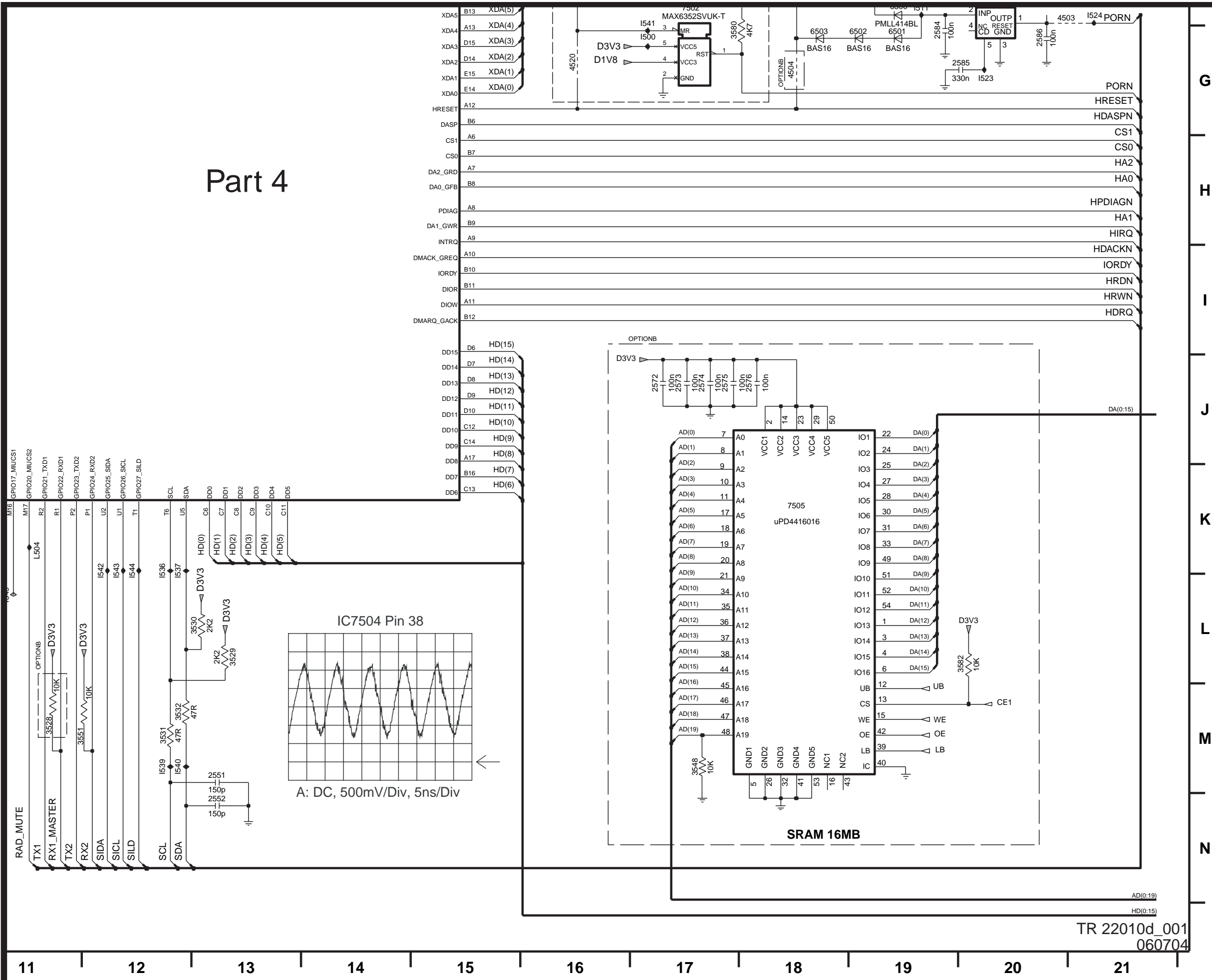


NOTE:  
 OPTIONA: DENOTES COMPONENT(S) WILL BE MOUNTED BEFORE MASS PRODUCTION  
 OPTIONB: DENOTES COMPONENT(S) WILL BE MOUNTED WHEN NEEDED

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 060704

Servo Board: Centaurus Part 4

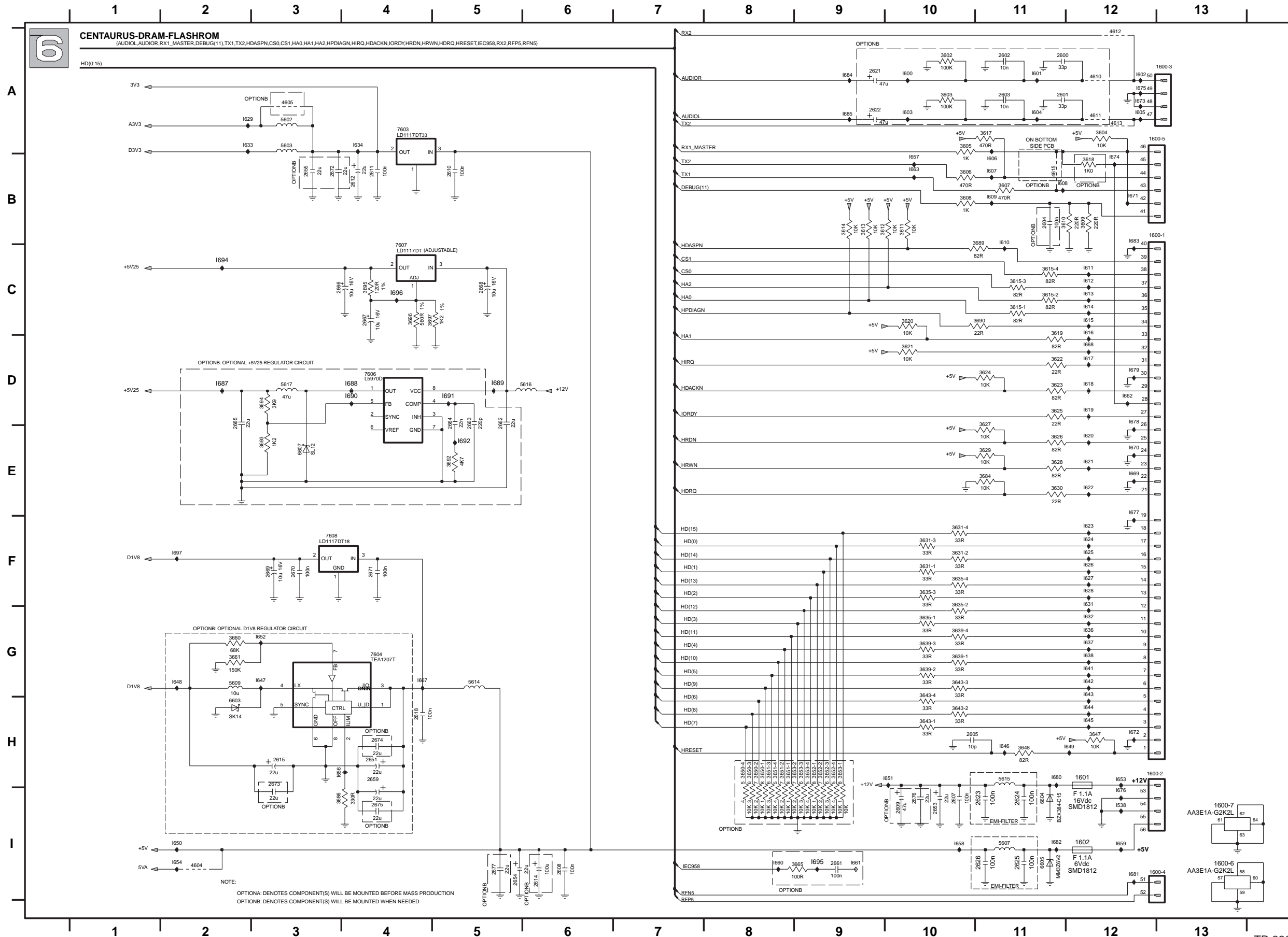
Part 4



TR 22010d\_001  
060704

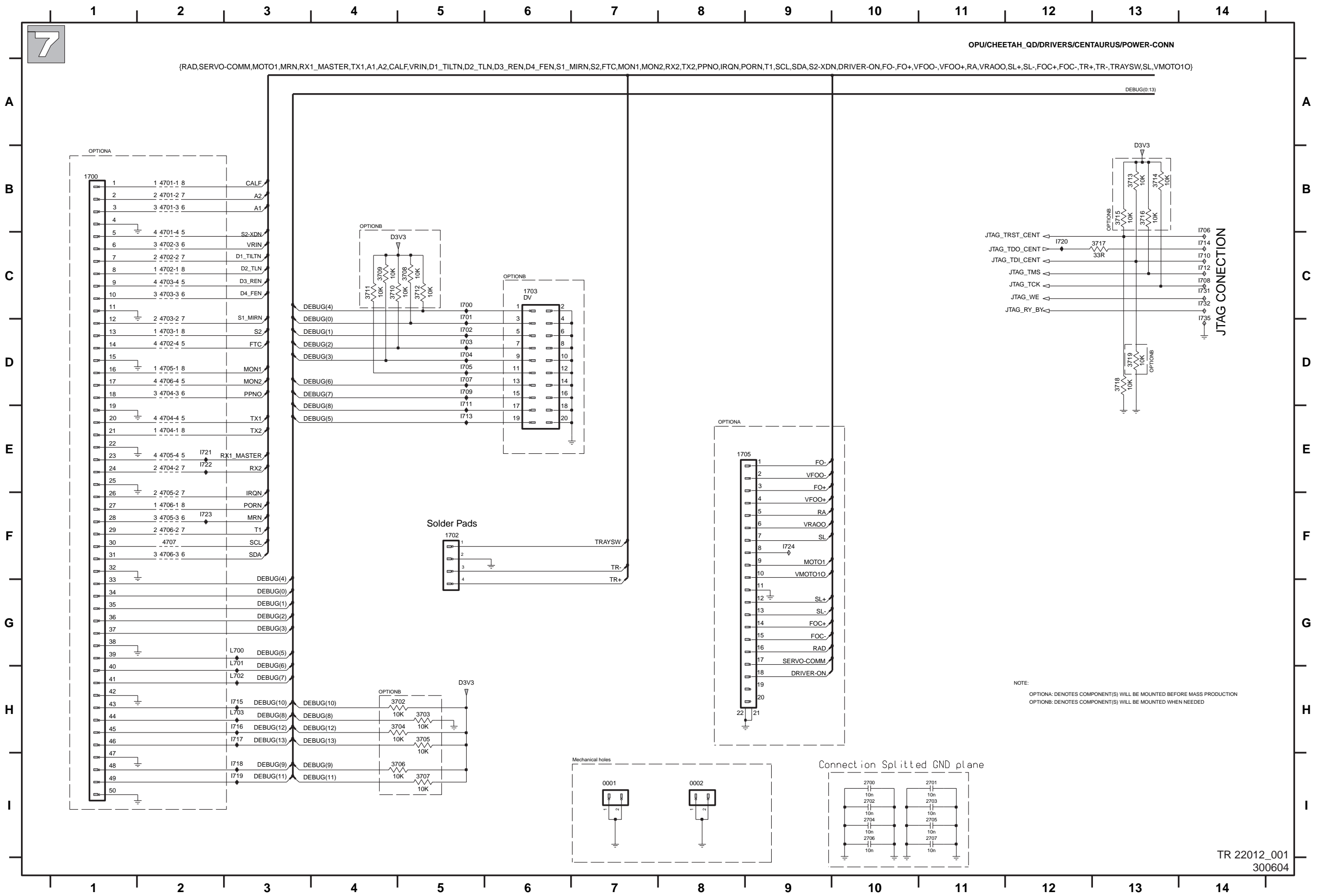


Servo Board: Power, Connectors



1600-1 B12	3661 G2	I690 D4
1600-2 H12	3665 I9	I691 D5
1600-3 A12	3684 E11	I692 E5
1600-4 I12	3686 I3	I694 C2
1600-5 A12	3689 C11	I695 I9
1600-6 I13	3690 C11	I696 C4
1600-7 I13	3692 E5	I697 F2
1601 H12	3693 E3	
1602 H12	3694 D3	
2600 A11	3695 C4	
2601 A11	3696 C4	
2602 A11	3697 C4	
2603 A11	4604 I2	
2604 B11	4605 A3	
2605 H10	4610 A12	
2607 H10	4611 A12	
2608 I6	4612 A12	
2609 H10	4613 A12	
2610 B5	4615 B11	
2611 B4	5602 A3	
2612 B4	5603 A3	
2614 I6	5607 I11	
2615 H3	5609 G2	
2618 H4	5614 G5	
2621 A9	5615 H11	
2622 A9	5616 D6	
2623 H11	5617 D3	
2624 H11	6603 H2	
2625 H11	6604 I11	
2626 H11	6605 H11	
2651 H4	6607 E3	
2653 H10	7603 A4	
2654 I5	7604 G4	
2655 B3	7606 D4	
2659 H4	7607 C4	
2661 I9	7608 F3	
2662 D5	1538 I12	
2663 D5	I600 A10	
2664 D5	I601 A11	
2665 D2	I602 A12	
2666 C3	I603 A10	
2667 C4	I604 A11	
2668 C5	I605 A12	
2669 F3	I606 B11	
2670 F3	I607 B11	
2671 F4	I608 B11	
2672 B3	I609 B11	
2673 H3	I610 B11	
2674 H4	I611 C12	
2675 I4	I612 C12	
2676 H10	I613 C12	
2677 I5	I614 C12	
3602 A10	I615 C12	
3603 A10	I616 C12	
3604 A12	I617 D12	
3605 A10	I618 D12	
3606 B10	I619 D12	
3607 B11	I620 E12	
3608 B10	I621 E12	
3609 B12	I622 E12	
3610 B11	I623 F12	
3611 B10	I624 F12	
3612 B9	I625 F12	
3613 B9	I626 F12	
3614 B9	I627 F12	
3615-1 C11	I628 F12	
3615-2 C11	I629 A2	
3615-3 C11	I631 F12	
3615-4 C11	I632 G12	
3617 A11	I633 A2	
3618 B12	I634 A4	
3619 D11	I636 G12	
3620 C10	I637 G12	
3621 D10	I638 G12	
3622 D11	I641 G12	
3623 D11	I642 G12	
3624 D11	I643 G12	
3625 D11	I644 H12	
3626 E11	I645 H12	
3627 E11	I646 H11	
3628 E11	I647 G3	
3629 E11	I648 G2	
3630 E11	I649 H12	
3631-1 F10	I650 I2	
3631-2 F10	I651 H10	
3631-3 F10	I652 G3	
3631-4 F10	I653 H12	
3635-1 G10	I654 I2	
3635-2 G10	I656 H3	
3635-3 G10	I657 B10	
3635-4 F10	I658 I10	
3639-1 G10	I659 H12	
3639-2 G10	I660 I8	
3639-3 G10	I661 I9	
3639-4 G10	I662 D12	
3643-1 H10	I663 B10	
3643-2 H10	I667 G4	
3643-3 G10	I668 D12	
3643-4 H10	I669 E12	
3647 H12	I670 E12	
3648 H11	I671 B12	
3650-1 H8	I672 H12	
3650-2 H8	I673 A12	
3650-3 H8	I674 B12	
3650-4 H8	I675 A12	
3651-1 H8	I676 H12	
3651-2 H8	I677 E12	
3651-3 H8	I678 D12	
3651-4 H8	I679 D12	
3652-1 H9	I680 H11	
3652-2 H9	I681 I12	
3652-3 H9	I682 H11	
3652-4 H9	I683 B12	
3653-1 H9	I684 A9	
3653-2 H9	I685 A9	
3653-3 H9	I687 D2	
3653-4 H9	I688 D4	
3660 G2	I689 D5	

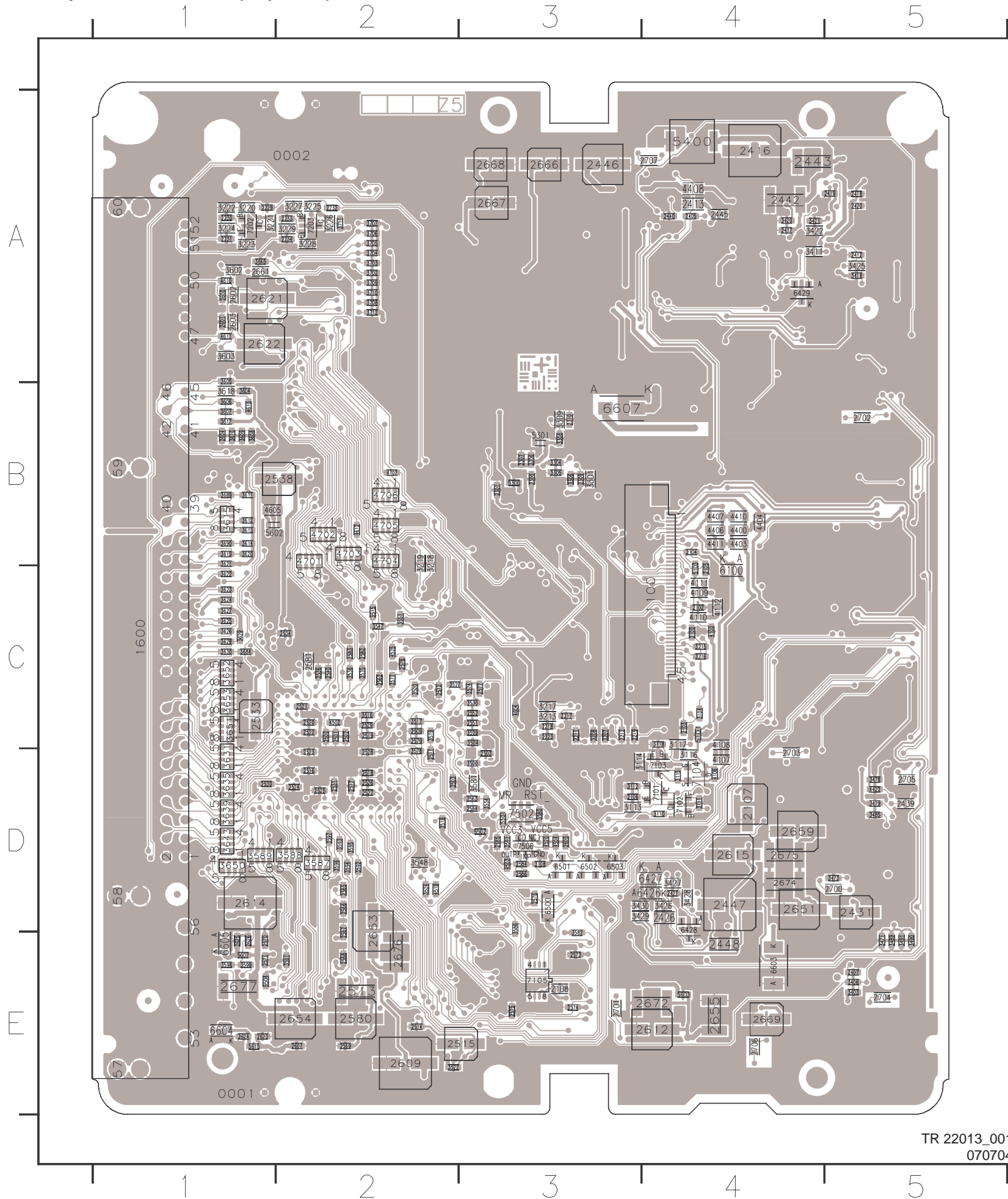
### Servo Board: Tray Motor Connections



- 0001 I7
- 0002 I8
- 1700 B1
- 1702 F5
- 1703 C6
- 1705 E9
- 2700 H10
- 2701 H11
- 2702 H10
- 2703 H11
- 2704 H10
- 2705 H11
- 2706 H10
- 2707 H11
- 3702 H5
- 3703 H5
- 3704 H5
- 3705 H5
- 3706 I5
- 3707 I5
- 3708 C5
- 3709 C4
- 3710 C4
- 3711 C4
- 3712 C5
- 3713 B13
- 3714 B13
- 3715 B13
- 3716 B13
- 3717 C13
- 3718 D13
- 3719 D13
- 4701-1 B2
- 4701-2 B2
- 4701-3 B2
- 4701-4 C2
- 4702-1 C2
- 4702-2 C2
- 4702-3 C2
- 4702-4 D2
- 4703-1 D2
- 4703-2 C2
- 4703-3 C2
- 4703-4 E2
- 4704-1 E2
- 4704-2 E2
- 4704-3 D2
- 4704-4 E2
- 4705-1 D2
- 4705-2 F2
- 4705-3 F2
- 4705-4 E2
- 4706-1 F2
- 4706-2 F2
- 4706-3 F2
- 4706-4 D2
- 4707 F2
- I700 C5
- I701 C5
- I702 D5
- I703 D5
- I704 D5
- I705 D5
- I706 B14
- I707 D5
- I708 C14
- I709 D5
- I710 C14
- I711 D5
- I712 C14
- I713 E5
- I714 C14
- I715 H3
- I716 H3
- I717 H3
- I718 I3
- I719 I3
- I720 C12
- I721 E2
- I722 E2
- I723 F2
- I724 F9
- I731 C14
- I732 C14
- I735 C14
- L700 G3
- L701 G3
- L702 H3
- L703 H3

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300604

Layout Servo Board (Top Side)



1100 C4	2527 D2	2701 E3	3518 O2	3653 C1	6500 D3
1600 C1	2528 D2	2702 B5	3519 C2	3665 A1	6501 D3
2100 C4	2529 C2	2703 D4	3520 C2	3684 C1	6502 D3
2102 C4	2530 D1	2704 E5	3522 E2	3689 B1	6503 D3
2103 C4	2531 D2	2705 D5	3524 O2	3690 B1	6603 E4
2104 B4	2533 C1	2706 E4	3527 C2	3702 A2	6604 E1
2105 C4	2534 C2	2707 A4	3529 C3	3703 A2	6605 E1
2106 D3	2536 C2	3104 C4	3530 C3	3704 A2	6607 B3
2107 D4	2538 B2	3108 D3	3534 O3	3705 A2	7101 D4
2108 E3	2540 C2	3110 D4	3535 C2	3706 A2	7102 D4
2211 C3	2551 C3	3111 D4	3536 C2	3707 A2	7103 D4
2212 C3	2552 C3	3112 D3	3547 C2	3708 A2	7104 D4
2217 C3	2562 C2	3113 D3	3548 O2	3709 A2	7105 E3
2218 C3	2563 D3	3114 D3	3551 C2	3710 A2	7202 A1
2219 C3	2564 D3	3115 D4	3561 O3	3711 A2	7203 A2
2223 C3	2565 D2	3116 D4	3574 C3	3712 A2	7502 D3
2229 A1	2566 D2	3117 C4	3577 C2	4100 C4	7506 D3
2230 A1	2567 E2	3118 C4	3578 O2	4106 O4	
2231 A1	2568 E2	3207 C3	3580 O3	4107 D4	
2232 A2	2569 E2	3208 C3	3581 O3	4108 C4	
2233 A2	2570 E1	3213 C3	3582 E3	4109 C4	
2234 A2	2571 E1	3215 C4	3586 O3	4110 C4	
2300 B3	2573 E3	3216 C4	3587 O2	4111 C4	
2301 B3	2574 E3	3217 C3	3588 O2	4112 C4	
2306 B3	2575 E3	3218 B2	3589 O1	4400 B4	
2307 B3	2576 D3	3219 B2	3591 E2	4403 B4	
2309 B3	2577 C3	3220 A1	3592 O2	4404 B4	
2310 B3	2578 C2	3221 A1	3593 O2	4406 B4	
2405 A4	2579 C2	3222 A1	3594 O2	4407 B4	
2407 E5	2580 E2	3223 A1	3595 O2	4408 A4	
2412 A5	2581 C2	3224 A1	3596 O2	4410 B4	
2413 A4	2582 C2	3225 A2	3597 O2	4411 B4	
2416 A4	2583 C2	3226 A2	3598 E1	4422 D5	
2417 A4	2584 D3	3227 A2	3599 E1	4502 C2	
2418 A5	2585 D3	3228 A2	3602 A1	4503 O3	
2419 A5	2586 D3	3229 A2	3603 A1	4504 D3	
2420 A5	2600 A1	3301 B3	3604 B1	4519 D2	
2426 D4	2601 A1	3304 B3	3605 A1	4520 D3	
2427 D4	2602 A1	3305 B3	3606 B1	4525 C2	
2431 D5	2603 A1	3306 B3	3607 B1	4604 C3	
2439 D5	2604 B1	3308 B3	3608 B1	4605 B1	
2440 A4	2605 D3	3309 B3	3609 B1	4610 A1	
2442 A4	2607 E2	3403 E5	3610 B1	4611 A1	
2443 A4	2609 E2	3406 E5	3611 B1	4612 B2	
2445 A4	2612 E4	3411 A4	3612 B1	4613 B1	
2446 A3	2614 D1	3418 A5	3613 B1	4701 B2	
2447 D4	2615 D4	3420 A4	3614 B1	4702 B2	
2448 E4	2621 A1	3421 A4	3615 B1	4703 B2	
2500 C2	2622 A1	3422 A4	3617 B1	4704 B2	
2501 C2	2623 E1	3425 A5	3618 B1	4705 B2	
2502 C2	2624 E1	3426 O4	3619 B1	4706 B2	
2503 D3	2625 E1	3427 O4	3620 B1	4707 B2	
2509 C2	2626 E1	3428 O4	3621 B1	5101 C4	
2511 D2	2651 D4	3429 O3	3622 C1	5103 C4	
2512 C2	2653 D2	3430 O3	3623 C1	5300 B3	
2513 E2	2654 E2	3471 E5	3624 C1	5301 B3	
2514 E2	2655 E4	3473 O5	3625 C1	5400 A4	
2515 E3	2659 D4	3478 O5	3626 C1	5501 D3	
2516 D2	2661 A1	3479 O5	3627 C1	5502 O3	
2517 D2	2666 A3	3485 O5	3628 C1	5504 E1	
2518 D2	2667 A3	3489 E5	3629 C1	5602 B1	
2519 C2	2668 A3	3490 E5	3630 C1	5603 E4	
2520 C2	2669 E4	3491 E5	3631 O1	5607 E1	
2521 C2	2672 E4	3500 O3	3635 D1	5615 E1	
2522 C2	2674 D4	3503 O2	3639 D1	6100 C4	
2523 D2	2675 D4	3504 C3	3643 D1	6426 O4	
2524 D2	2676 E2	3515 C2	3650 D1	6427 D4	
2525 D2	2677 E1	3516 C2	3651 C1	6428 D4	
2526 D2	2700 D5	3517 C2	3652 C1	6429 A4	

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## 8. Alignments, Test Procedures

### 8.1 Adjust Laser Control

In case of exchanging DVD-M or PWB an adjustment to align OPU and PWB to each other is necessary.

#### 8.1.1 Adjustment Procedure

- Connect the Digital Board to a PC via serial cable (3122 785 90017)
- Start up Hyperterminal or any other terminal program with the correct settings (19200 8-N-1)
- Power on the set
- Call up nucleus 931 of the DSW. The adjustment takes about 30 seconds

Example:

```
DS:> 931
93100
Test OK @
```

- Now data within the OPU EEPROM and the FLASH of the PWB are aligned.

### 8.2 Drive Test

#### 8.2.1 Short Term Test Procedure

**Test 1:** Disc LVP 12.01 (7104 099 91731) test layer change on track 28 ->31  
Duration: 1 minute

When the LVP12.01 disc is loaded and accepted the next steps are:

- Skip to track 29.
- Press next to chapter 30.
- Fast forward to halfway track 30
- Play track 30 till track 31 halfway
- When this part of the disc is played without any still pictures or freeze frames the beamlanding of the OPU is good (the track transition at the beginning of track 31 gives a short still picture but this is normal.)
- Stop the disc.

**Test 2:** DVD+R blank disc type Ricoh 4X (7104 099 94261)  
Duration: 4 minutes

- Record 1 minute
- Press stop
- Open / close
- Play back recorded track

Remark: When this disc is used for 30 recordings the disc appears to be full. But physically the disc is not full and to use also the remaining space on the disc you can do this by deleting the index pictures.

**Test 3:** CD-RW low reflection audio disc. (7104 099 96581)  
Duration: 1 minute

- Play a few seconds from track 1
- Skip to the last track
- Play a few seconds of the last track.
- Stop the disc

#### 8.2.2 Long Term Test Procedure

Following the steps to be taken for all DVD recorders coming in for service to the workshop related to a DVDM failure and which have "No Defect Found", NDF after a Short Term Test.

In case no defect is found during the "Short Term Test Procedure" the test has to be extended with a burn in test - "Long Term Test Procedure".

The burn in test described herein should be done with a DVD+RW disc.

Make a recording of 1 to 2 hours on M1/HQ and M2/SP mode.

#### Remark:

Attention! To prevent scratches the discs should be treated very carefully!

Heavily scratched discs have a bad influence on the test performance and should be replaced.

The technician has to decide by visual inspection the reliability of his test material.

The pictures below show a bad example of discs used too long.



Figure 8-1



Figure 8-2

**Flowchart for test instruction**

In the flowchart below it is described how and when the burn in test has to be carried out.

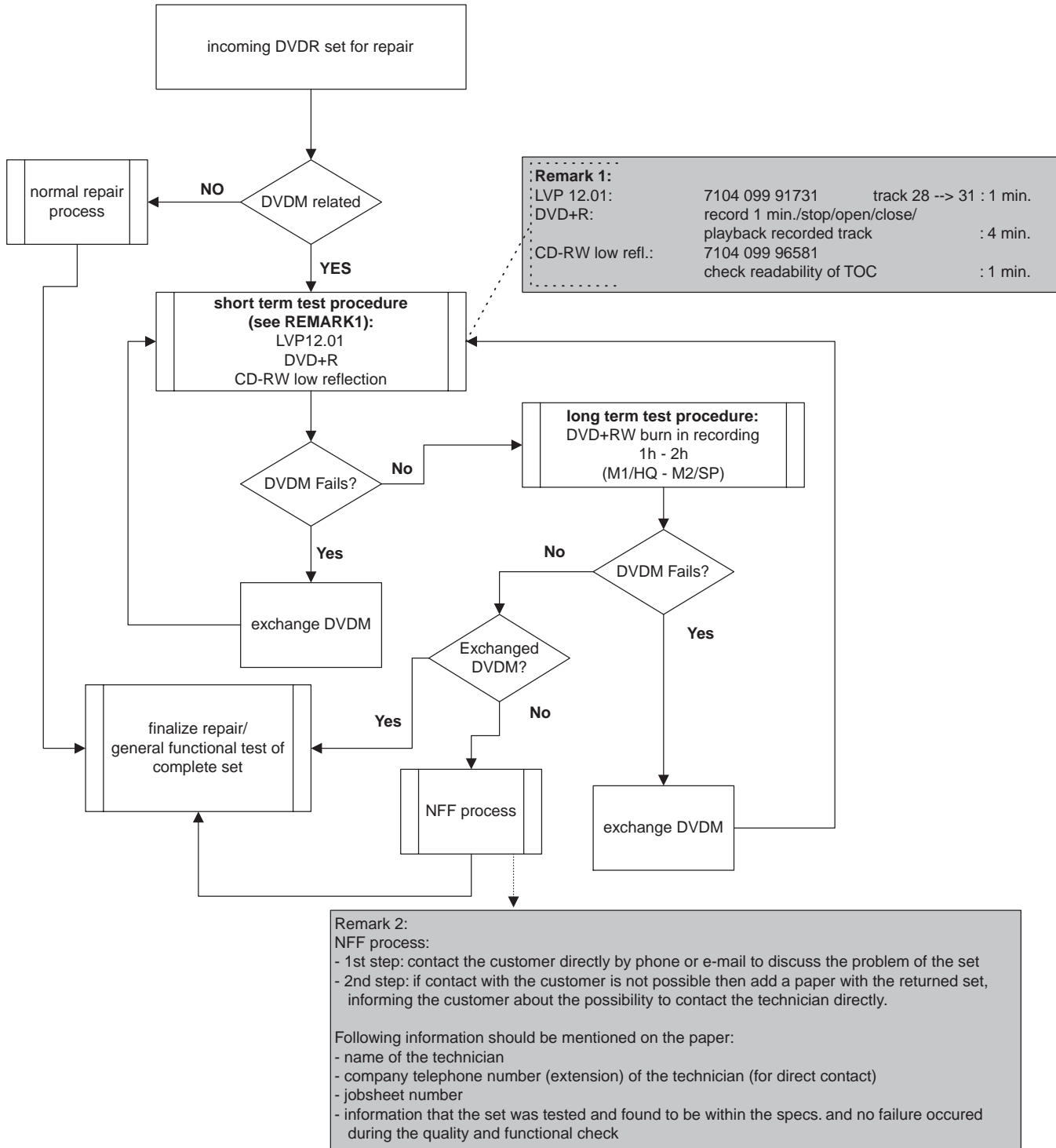


Figure 8-3

## 9. Circuit Descriptions, Abbreviation List, and Data Sheets

### 9.1 General

The VAD8041 module, also known as "AV3.5", is a Video Recorder Drive with an IDE interface intended for use in a consumer DVD+RW/+R video recorder.

The video recorder engine performs all basic servo tasks. It reads data from and writes data to the disc and controls all functions like tray control, start/stop the disc, tracking, jumping and communicating to the host.

Mechanically, the module consists of a motorized tray loader that contains the dual laser optical pickup unit and a PCBA that contains all the electronics needed to control the drive and interfacing to the MPEG encoder/decoder back-end application.

There is a temperature sensor included in the drive that prevents malfunction or destruction of the drive in case the temperature inside the drive gets too high.

### 9.2 Overall Block Diagram DVDM & Frontend

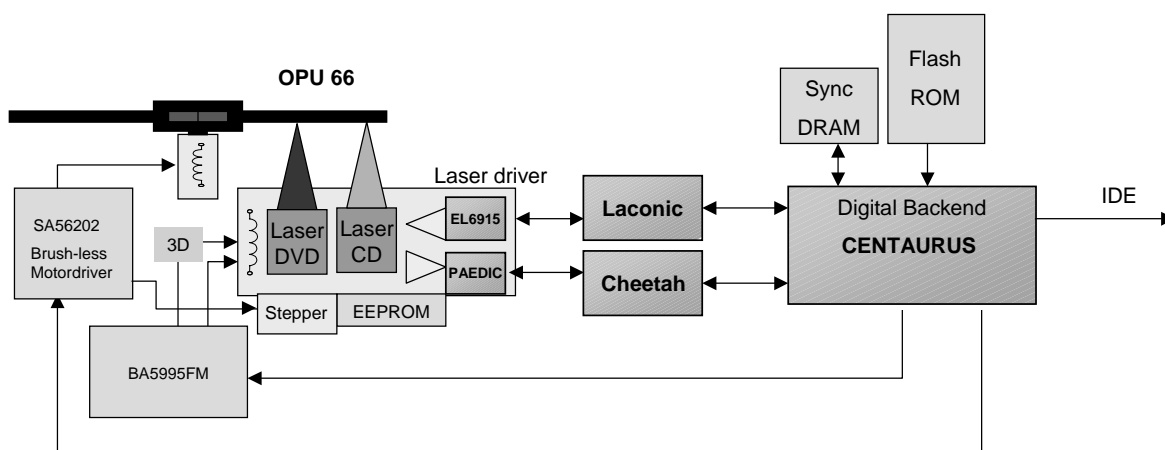


Figure 9-1

### 9.3 Centaurus

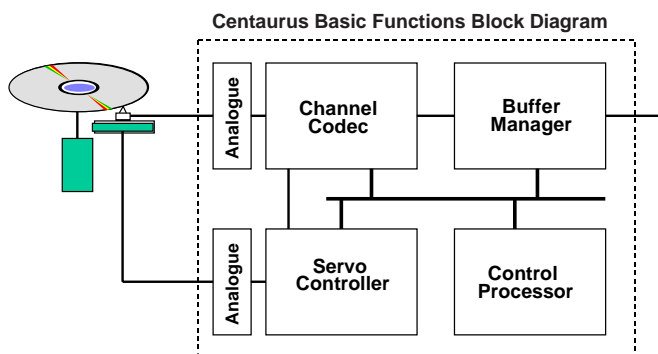


Figure 9-2

The Centaurus, IC7500 is a highly integrated IC that controls all the functions of the drive. It interfaces via the IDE to the MPEG back-end and incorporates the following functions:

- CD/DVD channel decoder/encoder
- CD/DVD data block decoder/encoder
- Buffer Manager
- Digital Servo processor using digital signal processor.
- Drive System microprocessor based on MIPS core.

The MIPS microcontroller uses Flash ROM for the firmware and SRAM is provided for the encoding/decoding function block of centaurus. 2 MBytes of data buffer size is available inside the IC for data storage.

### 9.4 Cheetah

The Cheetah, IC7201 is an analogue pre-processing for the diode signals coming from the OPU. It contains an amplifier with programmable gain that amplifies the RF signal to adapt the output for the different reflectivity of the various discs. The tracking signals are filtered and normalized. In addition the IC contains a timing circuit for the sample and hold circuits and for switching the various blocks between read and write. Supporting functions such as laser control and offset control are incorporated. Communication to and from the IC is based on a fast two-wire serial bus that works according to the I2C interface protocol.

### 9.5 Laconic

The main function of the LACONIC, IC7300 is to control the laser power. The IC forms a closed control loop in combination with the Elantec located on the OPU. It compensates aging and temperature of the laser. Furthermore it forms a fingerprint correction loop. It also acts as bridge between IIC and serial bus of the Elantec laser driver on the OPU.

### 9.6 Optical Pick-up Unit

The OPU66 is a dual Laser Optical Pick-up Unit for DVD+RW/+R. It consists of a 3-D actuator for focusing, radial tracking and tilt correction.

- 650nm laser for DVD
- 780nm laser for CD

On the interconnecting flex several electrical components are mounted.

- Elantec programmable laser diode power driver



- Paedic integrated photo detector with programmable gain pre-amplifier
- Eeprom containing a number of values representing adjustments belonging to the OPU.

The laser control and diode signal processor ICs together with an EEPROM are mounted on the OPU flex.

The laser control IC generates the DVD laser read and writing signals needed for reading DVD discs and writing DVD+RW / +R discs (write strategies of DVD+RW / +R discs).

The diode signal processor is an analogue pre-processor adapted for the CD and CD-R / RW read function.

The EEPROM contains information about writing current, writing strategies and other parameters belonging to the OPU.

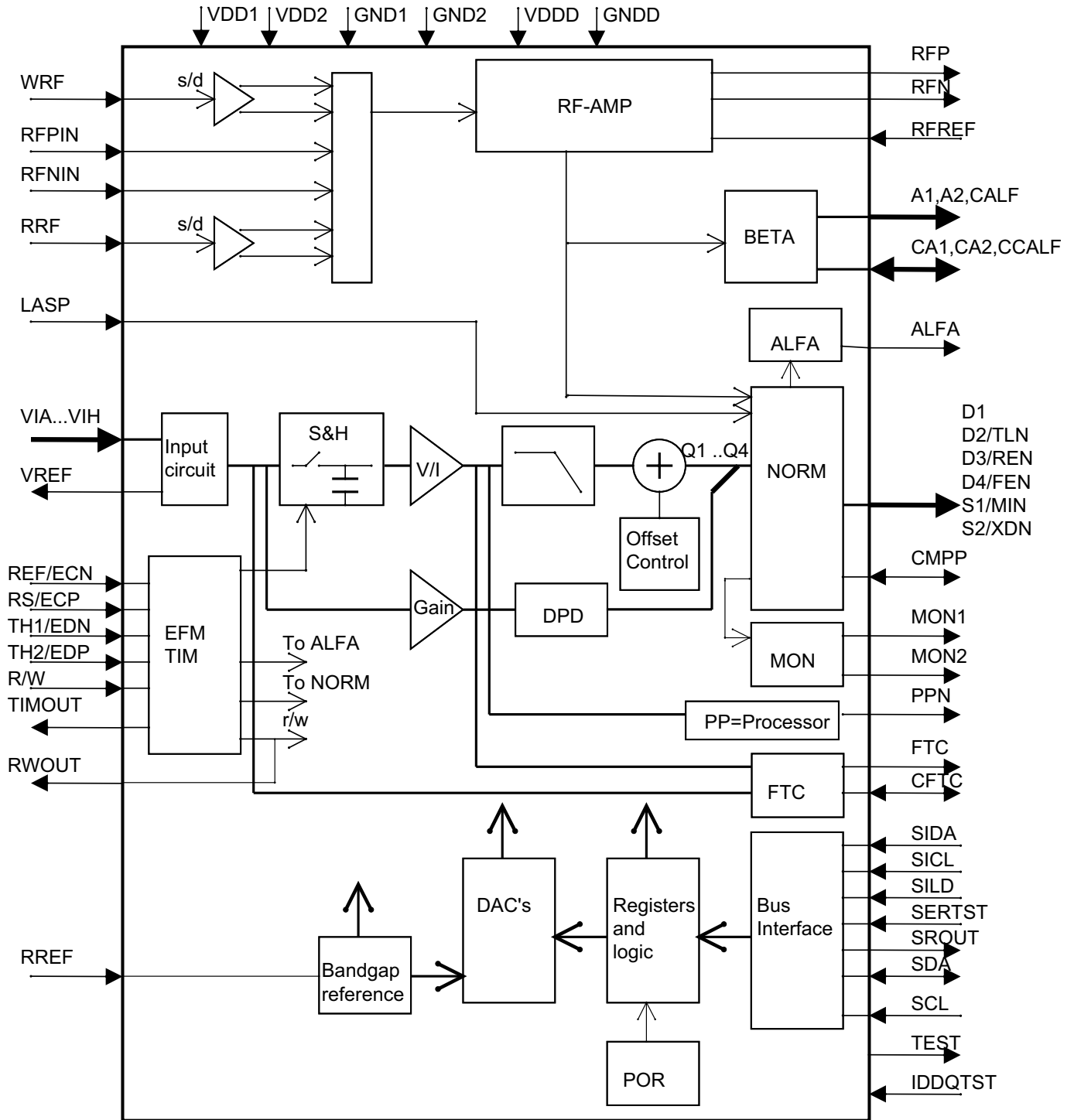
## 9.7 Motor and Servo drivers

The SA56202 is a one-chip motor driver IC that is capable to drive all motors of CD or DVD systems: spindle, sled and loading motors. The driver for the 3-phase, brushless, hall-commutated spindle motor uses True-Silent PWMTM. This proprietary technology ensures that all 3-phase motor currents are sinusoidal resulting in an optimally silent and power-efficient driver. Internal compensation of the spindle motor's back-EMF enables the driver to operate in current-steering mode without using external power-dissipating sense resistors. The driver for the 2-phase sled stepper motor operates in current-steering PWM mode. In addition the IC contains four full-bridge linear channels that are used to drive the loading motor.

The 3D actuators (focus, tracking and tilt) are driven by IC 7409, BA5995FM.

9.8 IC Servo Board

IC7201, TZA1047: Servo Board, Analogue PReprocessor



Symbol	Pin	Description
VIH	1	Satellite segment H input
GND1	2	Ground
VIC	3	Central segment C input
VIB	4	Central segment B input
GND1	5	Ground
RFNIN	6	Inverse differential RF input / Single-ended RF read input
RFPIN	7	Differential RF input/ Single-ended RF write input
VDD1	8	Positive supply
VID	9	Central segment D input
VIA	10	Central segment A input
VDD1	11	Positive supply
VIE	12	Satellite segment E input
VIG	13	Satellite segment G input
RWOUT	14	R/W signal output
SDA	15	Data input/output I <sup>2</sup> C
SCL	16	Clock input I <sup>2</sup> C
SILD	17	Strobe line of serial bus interface
SIDA	18	Data line of serial bus interface
SICL	19	Clock line of serial bus interface
TIMOUT	20	EFMTIM test output
R/W	21	External Read/Write signal input
VDDD	22	Positive supply digital part
VSSD	23	digital ground
REF/ECN	24	Reference input for timing signals in EFMTIM bypass mode <sup>[1]</sup> / Inverse EFM clock input <sup>[2]</sup>
RS/ECP	25	RF sampling signal <sup>[1]</sup> / EFM clock input <sup>[2]</sup>
TH1/EDN	26	Segment sampling timing signal <sup>[1]</sup> / Inverse EFM data input <sup>[2]</sup>
TH2/EDP	27	Segment sampling timing signal <sup>[1]</sup> / EFM data input <sup>[2]</sup>
SERTST	28	Enable test mode (Tie to GND or leave open for normal operation)
VDD2	29	Positive supply voltage

Symbol	Pin	Description
GND2	30	Supply ground
RFP	31	RF output voltage, positive
RFN	32	RF output voltage, negative
RFREF	33	Reference voltage for differential RF output common mode level
PPN	34	Output PP voltage
CFTC	35	FTC high pass filter capacitor
FTC	36	FTC output
GND1	37	Supply ground
CA1	38	Beta circuit external capacitor
CA2	39	Beta circuit external capacitor
CCALF	40	Beta circuit external capacitor
RREF	41	Reference resistor to ground
GND1	42	Supply ground
CMPP	43	MPP external capacitor
VDD1	44	Positive supply
MON1	45	Monitor output voltage
MON2	46	Monitor output voltage
S2/XDN	47	Servo output current
S1/MIRN	48	Servo output current
D4/FEN	49	Servo output current
D3/REN	50	Servo output current
D2/TLN	51	Servo output current
D1	52	Servo output current
IDDQTST	53	Select zero dissipation mode (tie to GND for normal operation)
CALF	54	RF average level signal
A2	55	RF bottom level signal
A1	56	RF top level signal
SROUT	57	shift register output for register test mode
ALFA	58	alfa output current
LASP	59	laser power setpoint signal
TEST	60	Test output
RRF	61	Single ended RF read input voltage

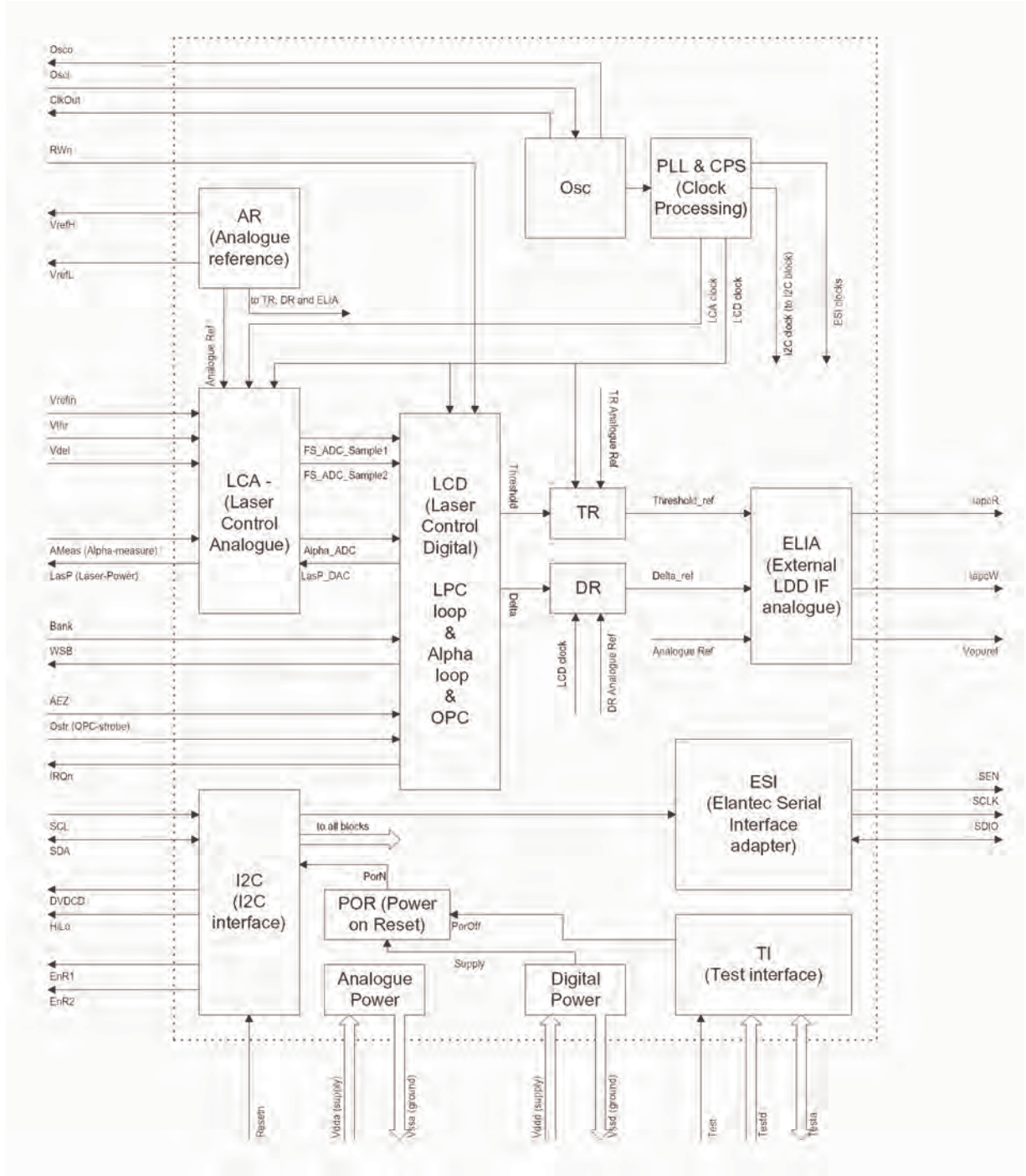
Symbol	Pin	Description
WRF	62	Single ended RF write input voltage
VREF	63	PDIC reference voltage output
VIF	64	Satellite segment F input

[1] Only in EFM bypass mode

[2] EFM clock and data when not in EFM bypass mode.

IC7300, TZA1042: Servo Board, Laser Power Controller

Block diagram



## Pin description

Symbol	Pin	Type	Drive /Thr.	Description
AEZ	1	I h y pd	T	Alpha Error Zero/Alpha Set Zero
V <sub>DD3</sub>	2	P	-	Digital Pad Supply
V <sub>SS3</sub>	3	P	-	Digital Pad Supply
CLOCKOUT	4	T	M	Buffered Oscillator Output
OSCO	5	AO	A	Output of inverting Amplifier that forms oscillator
OSCI	6	AI	A	Input of inverting Amplifier that forms oscillator
TEST1D	7	I pd	T	Test pin
AMEAS	8	AI	A	Alpha Measure – value of measured disk writing quality
V <sub>DDA1</sub>	9	P	-	Analogue Supply
V <sub>SSA1</sub>	10	P	-	Analogue Supply
LASP	11	AO	A	Laser Power – indicates power level
VREFL	12	AO	A	Bandgap Voltage Reference ground connection
VREFH	13	AO	A	Bandgap Voltage Reference output
VDEL	14	AI	A	Voltage input for Delta “laser power”
VTHR	15	AI	A	Voltage input for Threshold “laser power”
VOPUREF	16	AO	A	Reference Voltage for OPU
VREFIN	17	AI	A	Input Reference Voltage for Vthr and Vdel
V <sub>DDA2</sub>	18	P	-	Analogue Supply
V <sub>SSA2</sub>	19	P	-	Analogue Supply
TEST1A	20	AB	A	Test pin
IAPCW	21	AO	A	Current Output of Delta Reference
IAPCR	22	AO	A	Current Output of Threshold Reference
TEST2A	23	AB	A	Test pin
ENR2	24	T	M	Programmable Output Flag
ENR1	25	B pd	M/T	Device Initialisation/Programmable Output Flag (must be driven to VDD during reset)
DVDCD	26	T	M	Programmable Output Flag for indicating DVD/CD mode
HILO	27	T	M	Programmable Output Flag for indicating High/Low reflectivity
V <sub>SSD1</sub>	28	P	-	Digital Pad Supply
V <sub>DD1</sub>	29	P	-	Digital Pad Supply
BUSY	30	B	M/T	Busy Enable input from Elantec / Board test IO
SEN	31	B	M/T	Serial Enable output to Elantec / Board test IO
SDIO	32	B	M/T	Serial data input output from/to Elantec / Board test IO
SCLK	33	B	M/T	Busy Enable input from Elantec / Board test IO
WSB	34	B	M/T	Write Strategy Bank – output controls OPU write switching / Board test IO

**Pin description...continued**

Symbol	Pin	Type	Drive /Thr.	Description
IRQN	35	OD	M	Interrupt Request Not – active low interrupt request
OSTR	36	I hy pd	T	OPC Strobe – request step in alpha setpoint / Board test input
RESETN	37	I hy pd	T	Reset Not – active low reset input
RWN	38	B	M/T	Read/Write not – indicates power setpoints/Board test IO
V <sub>SSD2</sub>	39	P	-	Digital Core Supply
V <sub>DDD2</sub>	40	P	-	Digital Core Supply
BANK	41	I hy pd	T	CAV setpoint switching input signal / Board test IO
TEST2D	42	I pd	T	Test pin
SDA	43	BOD	M/T	I <sup>2</sup> C Serial Data
SCL	44	I	T	I <sup>2</sup> C Serial Clock

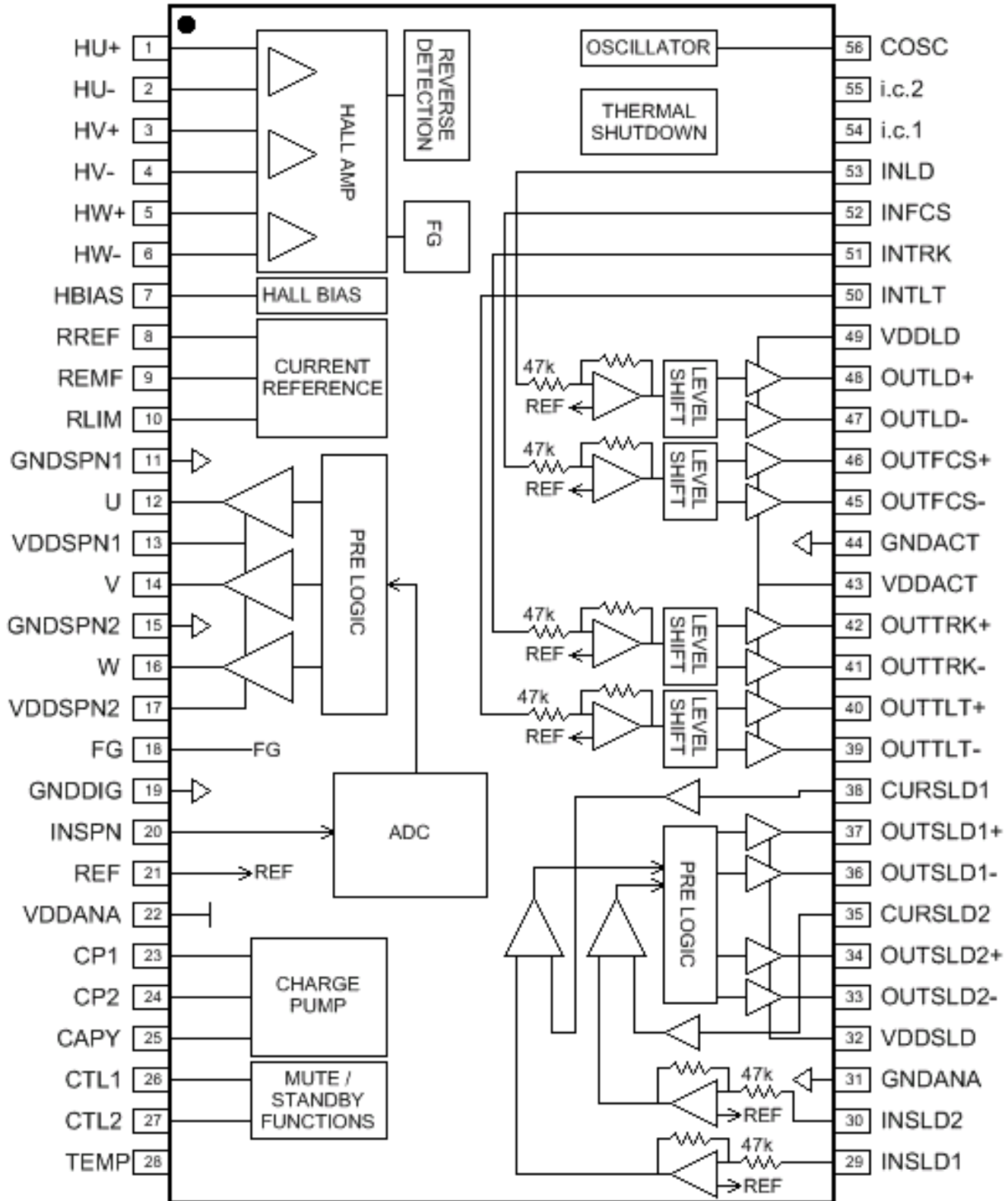
- [1] All supply pins must be connected to the same external power supply voltage
- [2] All inputs are 5V tolerant – i.e. they will drive the supply voltage (3.0-3.6V), but will work correctly when interface to a 5V drive device
- [3] The pin type definition is given below:

**PinType Definition Table**

Type	Definition
I	input
O	output
OD	open drain
B	bi-directional
BOD	bi-directional open drain
T	tri-state output
AI	analog input
AO	analog output
AB	analog bi-directional
P	power connection
hy	hysteresis on input
pd	hysteresis on output



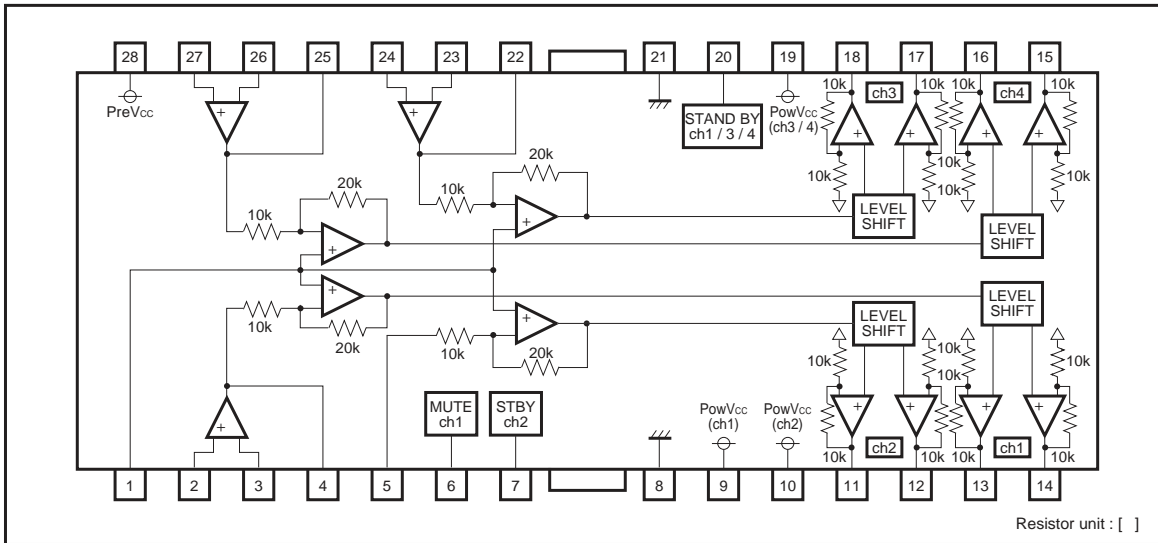
IC7402, SSA56202: Servo Board, Motor Driver



## PIN DESCRIPTION

PIN	SYMBOL	DESCRIPTION	PIN	SYMBOL	DESCRIPTION
1	HU+	positive Hall input U	56	COSC	ext. capacitor for int. oscillator
2	HU-	negative Hall input U	55	i.c.2	internally connected
3	HV+	positive Hall input V	54	i.c.1	internally connected
4	HV-	negative Hall input V	53	INLD	loading driver input
5	HW+	positive Hall input W	52	INFCS	focus driver input
6	HW-	negative Hall input W	51	INTRK	tracking driver input
7	HBIAS	Hall element bias	50	INTLT	tilting driver input
8	RREF	ext. res. for current reference	49	VDDL	loading driver power supply
9	REMF	ext. res. for EMF regeneration	48	OUTLD+	loading driver positive output
10	RLIM	ext. res. for current limit	47	OUTLD-	loading driver negative output
11	GNDSPN1	spindle driver power ground 1	46	OUTFCS+	focus driver positive output
12	U	spindle driver output U	45	OUTFCS-	focus driver negative output
13	VDDSPN1	spindle driver power supply 1	44	GNDACT	actuator drivers power ground
14	V	spindle driver output V	43	VDDACT	actuator drivers power supply
15	GNDSPN2	spindle driver power ground 2	42	OUTTRK+	tracking driver pos. output
16	W	spindle driver output W	41	OUTTRK-	tracking driver neg. output
17	VDDSPN2	spindle driver power supply 2	40	OUTTTL+	tilting driver pos. output
18	FG	frequency generator output	39	OUTTTL-	tilting driver neg. output
19	GNDDIG	ground supply	38	CURSLD1	sled driver 1 current sense
20	INSPN	spindle driver input	37	OUTSLD1+	sled driver 1 positive output
21	REF	reference input voltage	36	OUTSLD1-	sled driver 1 negative output
22	VDDANA	system supply voltage	35	CURSLD2	sled driver 2 current sense
23	CP1	charge pump cap. conn. 1	34	OUTSLD2+	sled driver 2 positive output
24	CP2	charge pump cap. conn. 2	33	OUTSLD2-	sled driver 2 negative output
25	CAPY	charge pump output voltage	32	VDDSLD	sled driver power supply
26	CTL1	driver logic control input 1	31	GNDANA	ground supply
27	CTL2	driver logic control input 2	30	INSLD2	sled driver 2 input
28	TEMP	thermal warning	29	INSLD1	sled driver 1 input

**IC7408,7409 BA5995: Servo Board, 4-channel BTL driver**  
**IC actuator and motor drive**



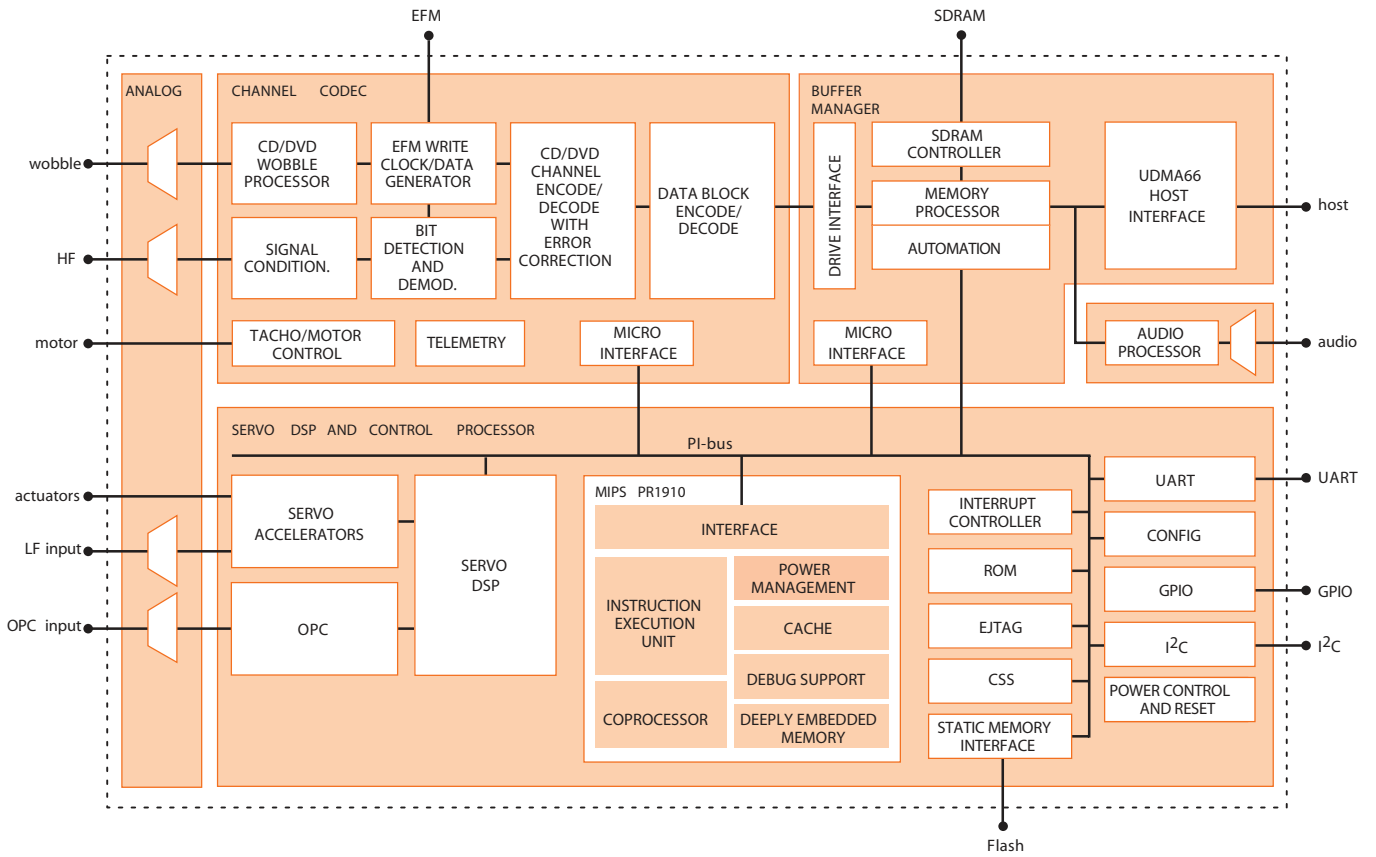
Pin No.	Pin name	Function
1	BIAS IN	Input for bias-amplifier
2	OPIN1 (+)	Non inverting input for CH1 OP-AMP
3	OPIN1 ( )	Inverting input for CH1 OP-AMP
4	OPOUT1	Output for CH1 OP-AMP
5	IN2	Input for CH2
6	MUTE	Input for CH1 mute control
7	STBY2	Input for CH2 stand by control
8	GND	Substrate ground
9	PowVcc1	Vcc for CH1 power block
10	PowVcc2	Vcc for CH2 power block
11	V <sub>O2</sub> ( )	Inverted output of CH2
12	V <sub>O2</sub> (+)	Non inverted output of CH2
13	V <sub>O1</sub> ( )	Inverted output of CH1
14	V <sub>O1</sub> (+)	Non inverted output of CH1

Pin No.	Pin name	Function
15	V <sub>O4</sub> (+)	Non inverted output of CH4
16	V <sub>O4</sub> ( )	Inverted output of CH4
17	V <sub>O3</sub> (+)	Non inverted output of CH3
18	V <sub>O3</sub> ( )	Inverted output of CH3
19	PowVcc3	Vcc for CH3/4 power block
20	STBY1	Input for CH1/3/4 stand by control
21	GND	Substrate ground
22	OPOUT3	Output for CH3 OP-AMP
23	OPIN3 ( )	Inverting input for CH3 OP-AMP
24	OPIN3 (+)	Non inverting input for CH3 OP-AMP
25	OPOUT4	Output for CH4 OP-AMP
26	OPIN4 ( )	Inverting input for CH4 OP-AMP
27	OPIN4 (+)	Non inverting input for CH4 OP-AMP
28	PreVcc	Vcc for pre block

Note) Symbol of + and (output of drivers) means polarity to input pin.  
 (For example if voltage of pin4 high, pin14 is high.)

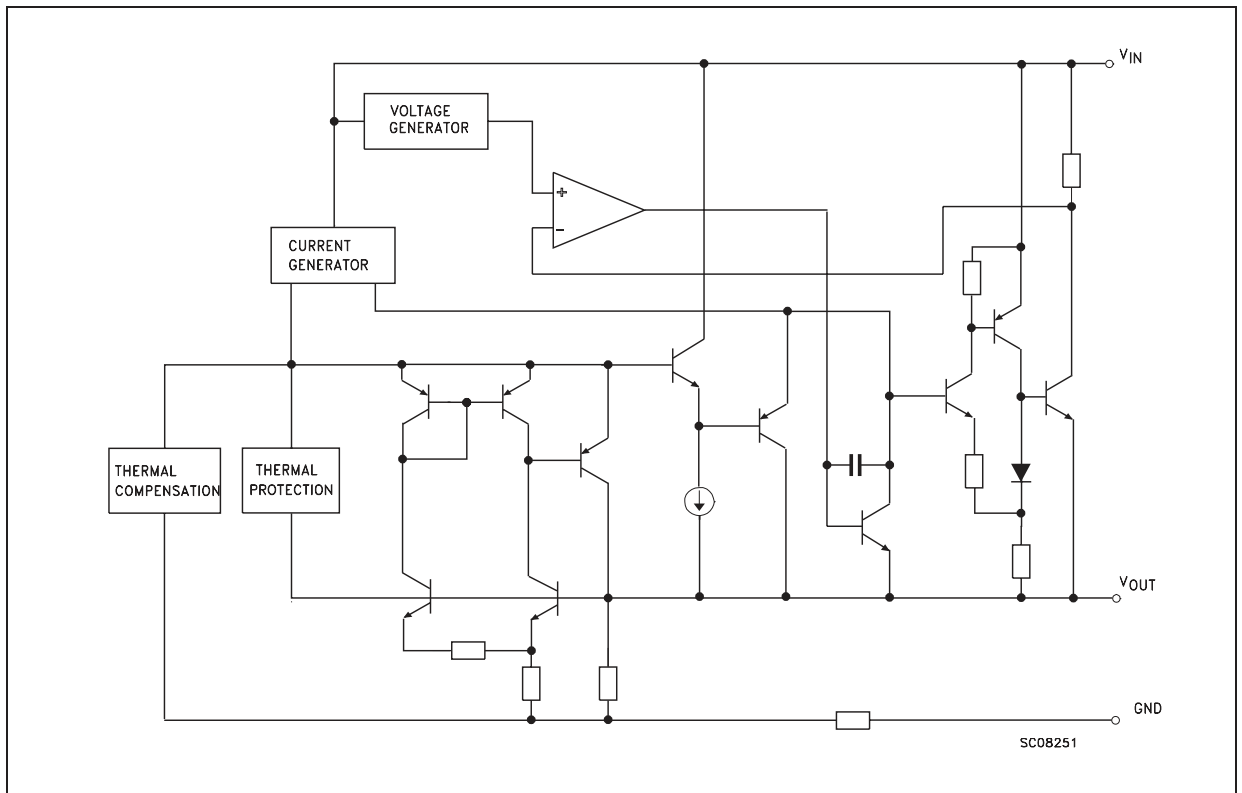
**IC7500, PNX7850: Servo Board, Channel Codec/Buffer Manager/Servo Processor and Controller**

Nexperia PNX7850 conceptual block diagram



**IC7603, LD1117: Servo Board, Voltage Regulator**

**BLOCK DIAGRAM**



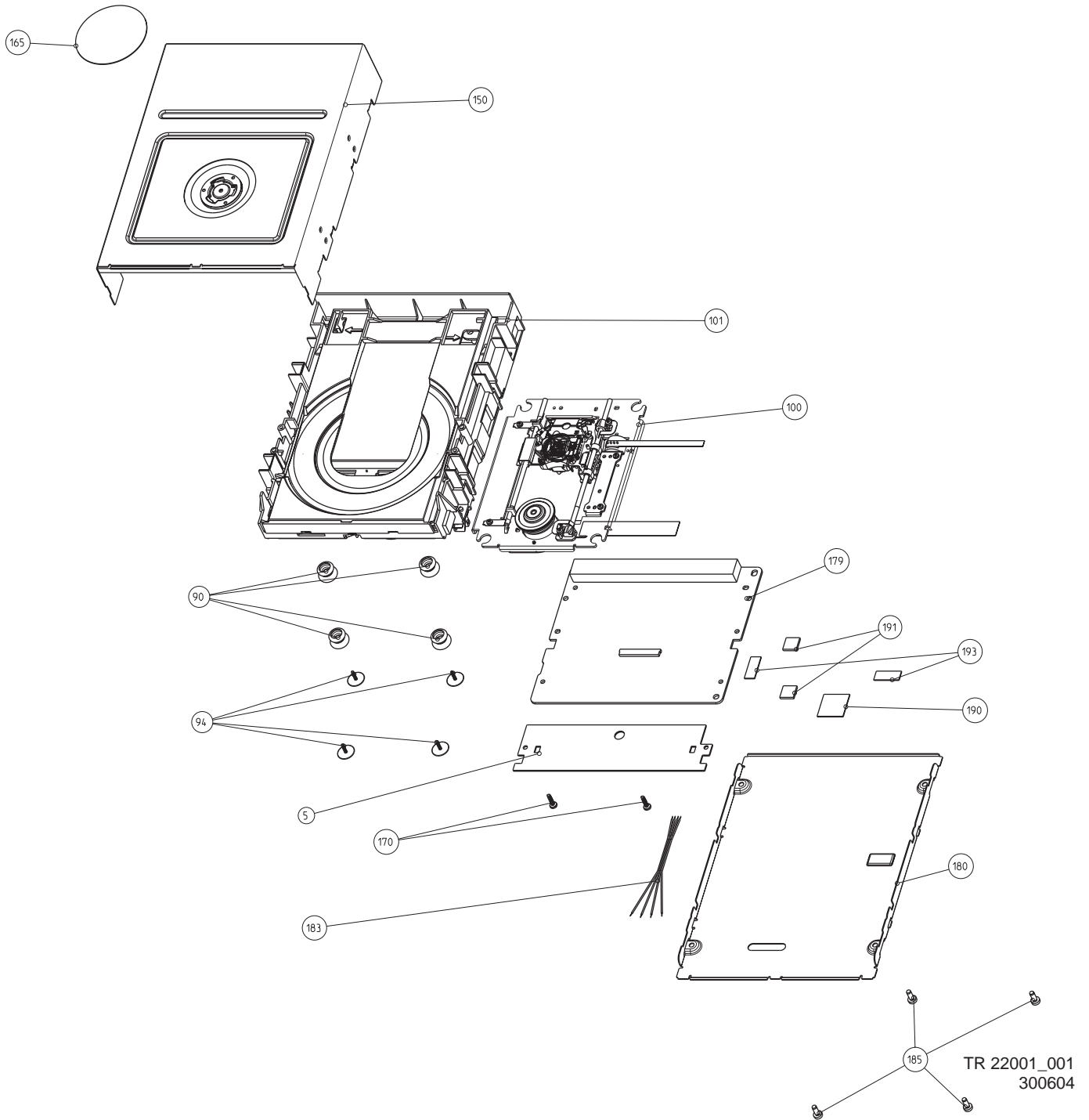
## 9.9 Abbreviation list

ADC	Analogue to Digital Converter	uP	Microprocessor
ADIP	ADdress In Pre-groove	VCD	Video CD
AGC	Automatic Gain Control	Y/C	Luminance (Y) and Chrominance (C) signal
CD	Compact Disc	YUV	Component video
CLV	Constant Linear Velocity		
DROPPi	Dvd Rewritable Opu Pre-Processor IC		
AM	Amplitude Modulation		
BE	Basic Engine		
ComPair	Computer aided rePair		
CD-DA	CD Digital Audio		
CS	Chip Select		
DAC	Digital to Analogue Converter		
DAIO	Digital Audio Input Output		
DENC	Digital Encoder		
DFU	Direction For Use: description for the end user		
DNR	Dynamic Noise Reduction		
DRAM	Dynamic RAM		
DSD	Direct Stream Digital		
DSP	Digital Signal Processing		
DVD	Digital Versatile Disc		
EEPROM	Electrical Erasable Programmable ROM		
EFM	Eight to Fourteen bit Modulation		
FDS	Full Diagnostic Software		
HF	High Frequency		
I2C	Integrated Ic bus (signals at 5V level)		
I2S	Integrated Ic Sound bus (signals at 3.3V level)		
IC	Integrated Circuit		
IF	Intermediate Frequency		
IRQ	Interrupt ReQuest		
LADiC	LAser Driver IC		
LLD	Loss Less Decoder		
LPCM	Linear Pulse Code Modulation		
LRCLK	Left/Right CLock		
MACE	Mini All Cd Engine		
MPEG	Motion Pictures Experts Group		
NC	Not Connected		
NVM	Non Volatile Memory: IC containing DVD related data e.g. alignments		
OPC	Optimum Power Calibration		
OPU	Optical Pickup Unit		
PCB	Printed Circuit Board (see PWB)		
PCS	Position Control Sledge		
PLL	Phase Locked Loop		
PCM	Pulse Code Modulation		
PCM_CLK	Audio system clock for DAC		
PCM_OUTx	Audio serial output data		
PSU	Power Supply Unit		
PWB	Printed Wiring Board (see PCB)		
RAM	Random Access Memory		
RGB	Red, Green and Blue colour space		
ROM	Read Only Memory		
RF	Radio Frequency		
S2B	Serial to Basic engine, communication bus between host- and servo processor		
SCL	Serial Clock I2C		
SCLK	Audio serial bit clock		
SDA	Serial Data I2C		
SDRAM	Synchronous DRAM		
SMC	Surface Mounted Components		
S/PDIF	Sony Philips Digital InterFace		
SPIDRE	Signal Processing Ic for Dvd REwritable		
SRAM	Static Random Access Memory		
STBY	STandBY		
SVCD	Super Video CD		
SW	SoftWare		
THD	Total Harmonic Distortion		
TTL	Transistor Transistor Logic (5V logic)		

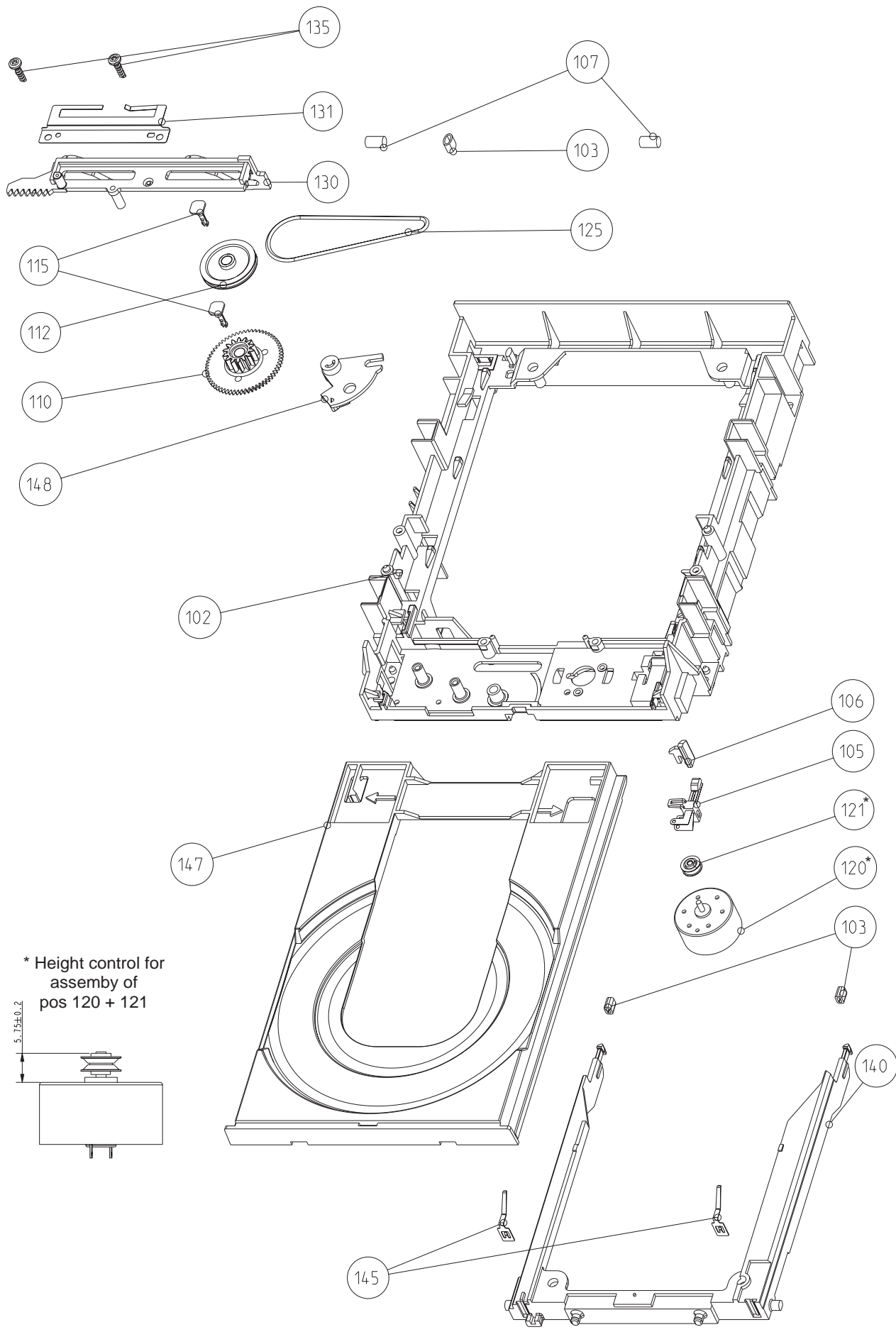
# 10. Spareparts List

## 10.1 Exploded Views

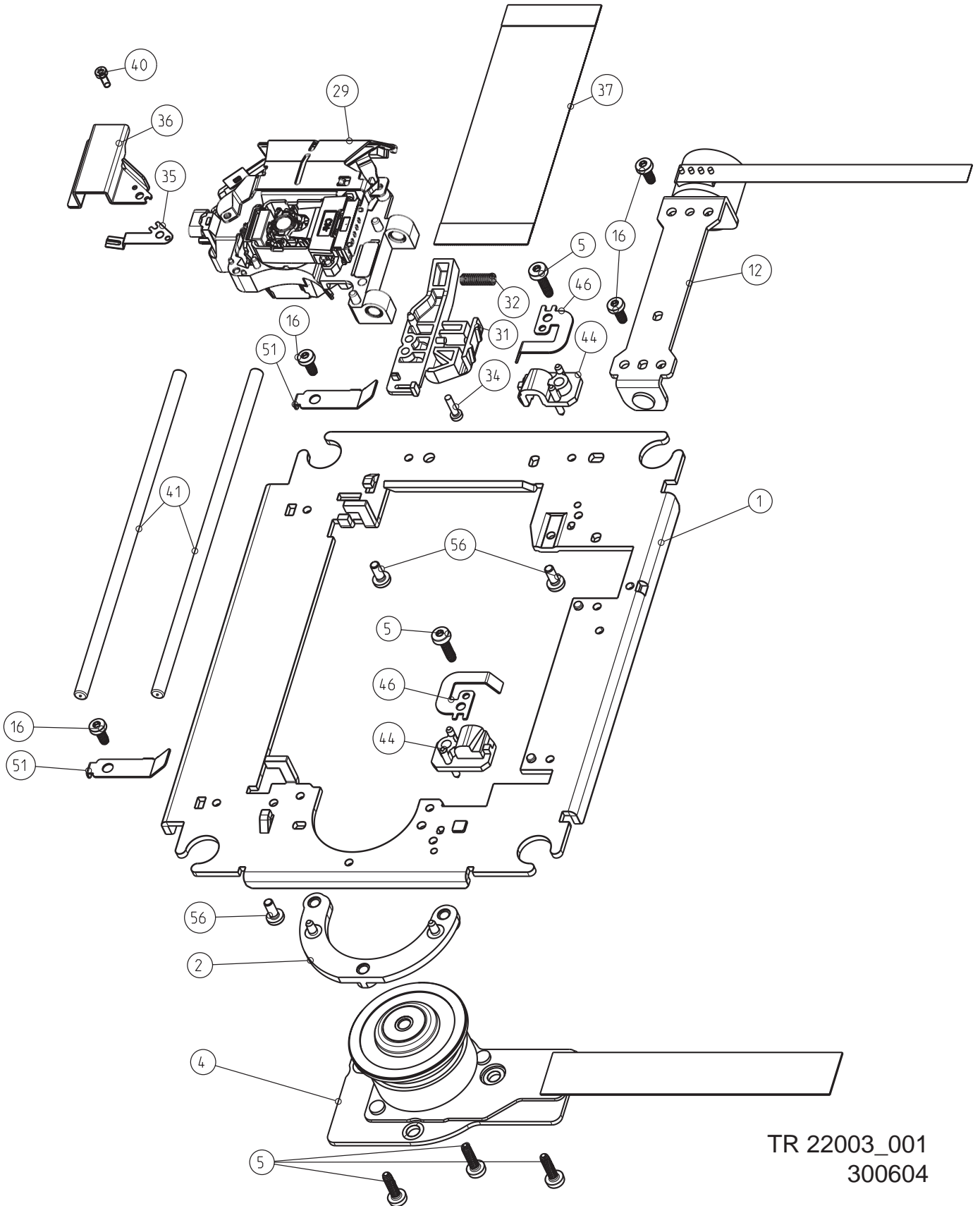
### Basic Engine



Loader



DVD-M



TR 22003\_001  
300604



## Mechanical

## Various

0001	7104 099 91851	LVP12.01
0002	7104 099 96581	CD-RW LOW REFLECTION AUDIO DISC
0003	7104 099 94261	RICOH +R (4 SPEED) BLANK DISC
0005	3139 194 01581	SEALING STRIP
0090	3104 144 10730	SUSPENSION
0095	3139 198 80010	TRAY SWITCH
0100	9305 022 84101	VAM8041/01
100/12	3104 148 01950	SLEDGE MOTOR
100/37	3104 143 30780	OPU FLEX CABLE 45P 0.5
0101	3104 144 04272	TRAY
0120	3139 198 00620	TRAY MOTOR
0121	3104 144 04980	MOTOR PULLEY, TRAY
0125	3104 144 10121	TRAY MOTOR BELT
0183	3139 191 00200	4-WAY CABLE
0190	3139 194 01541	HEAT SINK PAD (CENTAURUS)
0191	3139 194 01551	HEAT SINK PAD (CHEETAH)
0193	3139 194 01561	HEAT SINK PAD (DRIVER)

## Printed Board

## Various

1100	2422 025 17821	CON H 45P F 0.50
1302	2422 543 01025	Crystal 16.93 MHz
1400	2422 025 05548	CON H 4P F 1.00
1401	2422 025 18382	CON H 11P F 1.00
1500	2422 543 01025	Crystal 16.93 MHz
1600	2422 033 00396	SOC COMBI H 56P
1601	2122 662 00152	0.18Ω PTC 1812 16V
1602	2122 662 00136	0.21Ω PTC 1812 6V
1700	2422 025 17909	CON BM H 50P F 0.5
1703	3139 190 20051	CON V 2X 10P M 1.27
1705	2422 025 05544	CON H 20P F 0.50

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2100	2238 586 59812	100nF 20-80% 50V 0603
2101	4822 126 13883	220pF 5% 50V
2102	2238 586 59812	100nF 20-80% 50V 0603
2103	2020 552 94427	100pF 5% 50V 0603
2104	2238 586 59812	100nF 20-80% 50V 0603
2105	2238 586 59812	100nF 20-80% 50V 0603
2106	2238 586 59812	100nF 20-80% 50V 0603
2107	5322 124 41945	22μF 20% 35V SMD
2108	2238 586 59812	100nF 20-80% 50V 0603
2109	2022 552 05635	22μF 16V X5R 10%
2110	3198 016 31020	1nF 10% 25V 0603
2204	5322 126 11579	3.3nF 10% 63V
2205	5322 126 11582	6.8nF 10% 63V
2209	2238 586 59812	100nF 20-80% 50V 0603
2210	2238 586 59812	100nF 20-80% 50V 0603
2211	2238 586 59812	100nF 20-80% 50V 0603
2212	2238 586 59812	100nF 20-80% 50V 0603
2213	2238 786 56642	27nF 16V 0603 X7R 10%
2214	5322 126 11583	10nF 10% 50V 0603
2215	5322 126 11583	10nF 10% 50V 0603
2217	3198 017 34730	47nF 16V 0603
2218	5322 126 11583	10nF 10% 50V 0603
2219	2238 586 59812	100nF 20-80% 50V 0603
2221	2238 586 59812	100nF 20-80% 50V 0603
2223	2238 586 59812	100nF 20-80% 50V 0603
2228	5322 126 11583	10nF 10% 50V 0603
2229	4822 126 14249	560pF 10% 50V 0603
2230	5322 126 11582	6.8nF 10% 63V
2231	4822 126 14487	8.2pF 0.5% 50V 0603
2232	4822 126 14249	560pF 10% 50V 0603
2233	5322 126 11582	6.8nF 10% 63V
2234	4822 126 14487	8.2pF 0.5% 50V 0603
2300	2238 586 59812	100nF 20-80% 50V 0603
2301	2238 586 59812	100nF 20-80% 50V 0603
2302	2238 586 59812	100nF 20-80% 50V 0603
2303	4822 122 33752	15pF 5% 50V
2304	4822 122 33752	15pF 5% 50V
2305	2238 916 15641	22nF 10% 25V 0603
2306	2238 586 59812	100nF 20-80% 50V 0603
2307	2238 586 59812	100nF 20-80% 50V 0603
2308	2238 586 59812	100nF 20-80% 50V 0603
2309	2238 586 59812	100nF 20-80% 50V 0603
2310	2238 586 59812	100nF 20-80% 50V 0603
2311	5322 126 11578	1nF 10% 50V 0603
2312	4822 122 33752	15pF 5% 50V
2400	5322 126 11583	10nF 10% 50V 0603

2401	2238 586 59812	100nF 20-80% 50V 0603
2405	5322 126 11583	10nF 10% 50V 0603
2406	2238 786 55648	82nF 10% 16V 0603
2407	2238 586 59812	100nF 20-80% 50V 0603
2409	5322 126 11583	10nF 10% 50V 0603
2411	2020 552 94427	100pF 5% 50V 0603
2412	2238 586 59812	100nF 20-80% 50V 0603
2413	2020 552 96637	10μF 6.3V 0805 X5R
2414	5322 126 11583	10nF 10% 50V 0603
2415	2238 916 15641	22nF 10% 25V 0603
2416	4822 124 12095	100μF 20% 16V
2417	2238 586 59812	100nF 20-80% 50V 0603
2418	4822 126 14238	2.2nF 50V 0603
2419	4822 126 14238	2.2nF 50V 0603
2420	4822 126 14238	2.2nF 50V 0603
2421	4822 126 13193	4.7nF 10% 63V
2426	4822 126 14043	1μF 20% 16V
2427	2238 586 15628	2.7nF 10% 50V 0603
2430	2238 586 59812	100nF 20-80% 50V 0603
2431	4822 124 23002	10μF 20% 16V
2432	2238 586 59812	100nF 20-80% 50V 0603
2433	2022 552 05635	22μF 16V X5R 10%
2434	5322 122 33861	120pF 10% 50V
2435	5322 122 33861	120pF 10% 50V
2436	5322 126 11583	10nF 10% 50V 0603
2438	2238 586 59812	100nF 20-80% 50V 0603
2439	5322 122 33861	120pF 10% 50V
2440	2238 586 59812	100nF 20-80% 50V 0603
2441	2238 586 59812	100nF 20-80% 50V 0603
2442	2022 552 05635	22μF 16V X5R 10%
2443	2022 552 05635	22μF 16V X5R 10%
2444	2022 552 05616	4.7μF 6.3V 0805 X5R
2445	2238 586 59812	100nF 20-80% 50V 0603
2446	5322 124 41945	22μF 20% 35V SMD
2447	4822 124 12095	100μF 20% 16V
2448	2020 552 95812	1μF 1206 X7R 16V 10%
2500	2238 586 59812	100nF 20-80% 50V 0603
2501	2238 586 59812	100nF 20-80% 50V 0603
2502	2238 586 59812	100nF 20-80% 50V 0603
2503	4822 126 13879	220nF 20% 16V
2504	3198 016 31020	1nF 10% 25V 0603
2505	5322 126 11583	10nF 10% 50V 0603
2506	5322 126 11583	10nF 10% 50V 0603
2507	5322 126 11582	6.8nF 10% 63V
2509	4822 126 13881	470pF 5% 50V
2511	4822 126 13881	470pF 5% 50V
2512	4822 126 13881	470pF 5% 50V
2513	2022 552 05635	22μF 16V X5R 10%
2514	2238 586 59812	100nF 20-80% 50V 0603
2515	4822 124 23002	10μF 20% 16V
2516	2238 586 59812	100nF 20-80% 50V 0603
2517	2238 586 59812	100nF 20-80% 50V 0603
2518	2238 586 59812	100nF 20-80% 50V 0603
2519	2238 586 59812	100nF 20-80% 50V 0603
2520	2238 586 59812	100nF 20-80% 50V 0603
2521	2238 586 59812	100nF 20-80% 50V 0603
2522	2238 586 59812	100nF 20-80% 50V 0603
2523	2238 586 59812	100nF 20-80% 50V 0603
2524	2238 586 59812	100nF 20-80% 50V 0603
2525	2238 586 59812	100nF 20-80% 50V 0603
2526	2238 586 59812	100nF 20-80% 50V 0603
2527	2238 586 59812	100nF 20-80% 50V 0603
2528	2238 586 59812	100nF 20-80% 50V 0603
2529	2238 586 59812	100nF 20-80% 50V 0603
2530	2238 586 59812	100nF 20-80% 50V 0603
2531	2238 586 59812	100nF 20-80% 50V 0603
2533	4822 124 23002	10μF 20% 16V
2534	2238 586 59812	100nF 20-80% 50V 0603
2536	2238 586 59812	100nF 20-80% 50V 0603
2538	4822 124 23002	10μF 20% 16V
2540	2238 586 59812	100nF 20-80% 50V 0603
2550	5322 126 11583	10nF 10% 50V 0603
2551	3198 016 31510	150pF 10% 50V 0603
2552	3198 016 31510	150pF 10% 50V 0603
2561	3198 017 34730	47nF 16V 0603
2562	3198 017 34730	47nF 16V 0603
2563	4822 122 33752	15pF 5% 50V
2564	4822 122 33752	15pF 5% 50V
2565	2238 586 59812	100nF 20-80% 50V 0603
2566	2238 586 59812	100nF 20-80% 50V 0603
2567	2238 586 59812	100nF 20-80% 50V 0603
2568	2238 586 59812	100nF 20-80% 50V 0603
2569	2238 586 59812	100nF 20-80% 50V 0603
2570	2238 586 59812	100nF 20-80% 50V 0603
2571	2238 586 59812	100nF 20-80% 50V 0603
2572	2238 586 59812	100nF 20-80% 50V 0603
2573	2238 586 59812	100nF 20-80% 50V 0603
2574	2238 586 59812	100nF 20-80% 50V 0603
2575	2238 586 59812	100nF 20-80% 50V 0603
2576	2238 586 59812	100nF 20-80% 50V 0603
2577	5322 126 11582	6.8nF 10% 63V
2578	3198 017 33330	CER2 0603 X7R 16V 33N
2579	2238 586 59812	100nF 20-80% 50V 0603
2580	5322 124 41945	22μF 20% 35V SMD

2581	2238 586 59812	100nF 20-80% 50V 0603
2582	5322 126 11582	6.8nF 10% 63V
2583	5322 126 11582	6.8nF 10% 63V
2584	2238 586 59812	100nF 20-80% 50V 0603
2585	2020 552 96899	330nF 0603 X5R 16V 10%
2586	2238 586 59812	100nF 20-80% 50V 0603
2600	2222 867 15339	33pF 5% 50V 0603
2601	2222 867 15339	33pF 5% 50V 0603
2602	5322 126 11583	10nF 10% 50V 0603
2603	5322 126 11583	10nF 10% 50V 0603
2604	2238 586 59812	100nF 20-80% 50V 0603
2605	4822 122 33741	10pF 10% 50V
2607	2238 586 59812	100nF 20-80% 50V 0603
2608	2238 586 59812	100nF 20-80% 50V 0603
2609	4822 124 80151	47μF 20% 16V
2610	2238 586 59812	100nF 20-80% 50V 0603
2611	2238 586 59812	100nF 20-80% 50V 0603
2612	5322 124 41945	22μF 20% 35V SMD
2614	4822 124 12095	100μF 20% 16V
2615	5322 124 41945	22μF 20% 35V SMD
2618	2238 586 59812	100nF 20-80% 50V 0603
2621	4822 124 11131	47UF 6.3V
2622	4822 124 11131	47UF 6.3V
2623	2238 586 59812	100nF 20-80% 50V 0603
2624	2238 586 59812	100nF 20-80% 50V 0603
2625	2238 586 59812	100nF 20-80% 50V 0603
2626	2238 586 59812	100nF 20-80% 50V 0603
2651	5322 124 41945	22μF 20% 35V SMD
2653	5322 124 41945	22μF 20% 35V SMD
2654	5322 124 41945	22μF 20% 35V SMD
2655	2022 552 05635	22μF 16V X5R 10%
2659	5322 124 41945	22μF 20% 35V SMD
2661	2238 586 59812	100nF 20-80% 50V 0603
2662	2022 552 05635	22μF 16V X5R 10%
2663	4822 126 13883	220pF 5% 50V
2664	2238 916 15641	22nF 10% 25V 0603
2665	2022 552 05635	22μF 16V X5R 10%
2666	4822 124 23002	10μF 20% 16V
2667	4822 124 23002	10μF 20% 16V
2668	4822 124 23002	10μF 20% 16V
2669	4822 124 23002	10μF 20% 16V
2670	2238 586 59812	100nF 20-80% 50V 0603
2671	2238 586 59812	100nF 20-80% 50V 0603
2672	2022 552 05635	22μF 16V X5R 10%
2673	2022 552 05635	22μF 16V X5R 10%
2674	2022 552 05635	22μF 16V X5R 10%
2675	2022 552 05635	22μF 16V X5R 10%
2676	2022 552 05635	22μF 16V X5R 10%
2677	2022 552 05635	22μF 16V X5R 10%
2700	5322 126 11583	10nF 10% 50V 0603
2701	5322 126 11583	10nF 10% 50V 0603
2702	5322 126 11583</	

3216	4822 051 30759	75Ω 5% 0.062W	3504	4822 051 30472	4.7kΩ 5% 0.062W	3647	4822 051 30103	10kΩ 5% 0.062W
3217	4822 051 30333	33kΩ 5% 0.062W	3507	4822 051 30102	1kΩ 5% 0.062W	3648	2322 702 60829	82Ω 5% 0603
3218	4822 051 30101	100Ω 5% 0.062W	3508	4822 051 30102	1kΩ 5% 0.062W	3650	3198 031 11030	1206 4X 10K PM5 COL R
3219	4822 051 30101	100Ω 5% 0.062W	3509	4822 051 30102	1kΩ 5% 0.062W	3651	3198 031 11030	1206 4X 10K PM5 COL R
3220	4822 051 30223	22kΩ 5% 0.062W	3510	4822 051 30682	6.8kΩ 5% 0.062W	3652	3198 031 11030	1206 4X 10K PM5 COL R
3221	4822 117 12139	22Ω 5% 0.062W	3511	4822 051 30682	6.8kΩ 5% 0.062W	3653	3198 031 11030	1206 4X 10K PM5 COL R
3222	4822 051 30393	39kΩ 5% 0.062W	3512	4822 051 30682	6.8kΩ 5% 0.062W	3660	4822 051 30683	68kΩ 5% 0.062W
3223	4822 117 12968	820Ω 5% 0.62W	3513	4822 051 30682	6.8kΩ 5% 0.062W	3661	4822 051 30154	150kΩ 5% 0.062W
3224	4822 051 30101	100Ω 5% 0.062W	3514	4822 117 13632	100kΩ 1% 0603 0.62W	3665	4822 051 30101	100Ω 5% 0.062W
3225	4822 051 30223	22kΩ 5% 0.062W	3515	4822 051 30682	6.8kΩ 5% 0.062W	3684	4822 051 30103	10kΩ 5% 0.062W
3226	4822 117 12139	22Ω 5% 0.062W	3516	4822 117 13525	24kΩ 1% 0.62W 0603	3686	4822 051 30331	330Ω 5% 0.062W
3227	4822 051 30393	39kΩ 5% 0.062W	3517	4822 051 30103	10kΩ 5% 0.062W	3689	2322 702 60829	82Ω 5% 0603
3228	4822 117 12968	820Ω 5% 0.62W	3518	4822 051 30103	10kΩ 5% 0.062W	3690	4822 117 12139	22Ω 5% 0.062W
3229	4822 051 30101	100Ω 5% 0.062W	3519	4822 051 30103	10kΩ 5% 0.062W	3692	4822 051 30472	4.7kΩ 5% 0.062W
3300	4822 051 30105	1MΩ 5% 0.062W	3520	4822 051 30103	10kΩ 5% 0.062W	3693	4822 117 11817	1.2kΩ 1% 1/16W
3301	4822 051 30103	10kΩ 5% 0.062W	3521	2322 704 62202	2.2kΩ 0603 1%	3694	4822 051 30392	3.9kΩ 5% 0.063W 0603
3302	4822 117 12917	1Ω 5% 0.062W 0603	3522	4822 117 12917	1Ω 5% 0.062W 0603	3695	2322 704 61201	120Ω 0603 1%
3303	4822 051 30151	150Ω 5% 0.062W	3523	4822 117 12925	47kΩ 1% 0.063W 0603	3696	2322 704 65601	560Ω 1% 0603
3304	4822 051 30103	10kΩ 5% 0.062W	3524	4822 051 30103	10kΩ 5% 0.062W	3697	5322 117 13036	1.2kΩ 1% 0.063W 0603
3305	4822 051 30103	10kΩ 5% 0.062W	3527	4822 051 30103	10kΩ 5% 0.062W	3702	4822 051 30103	10kΩ 5% 0.062W
3306	4822 051 30103	10kΩ 5% 0.062W	3528	4822 051 30103	10kΩ 5% 0.062W	3703	4822 051 30103	10kΩ 5% 0.062W
3308	4822 051 30103	10kΩ 5% 0.062W	3529	4822 051 30222	2.2kΩ 5% 0.062W	3704	4822 051 30103	10kΩ 5% 0.062W
3309	4822 117 12903	1.8kΩ 1% 0.063W 0603	3530	4822 051 30222	2.2kΩ 5% 0.062W	3705	4822 051 30103	10kΩ 5% 0.062W
3315	4822 051 30339	33Ω 5% 0.062W	3531	4822 051 30479	47Ω 5% 0.062W	3706	4822 051 30103	10kΩ 5% 0.062W
3316	4822 051 30103	10kΩ 5% 0.062W	3532	4822 051 30479	47Ω 5% 0.062W	3707	4822 051 30103	10kΩ 5% 0.062W
3403	4822 051 30103	10kΩ 5% 0.062W	3534	4822 051 30105	1MΩ 5% 0.062W	3708	4822 051 30103	10kΩ 5% 0.062W
3404	4822 051 30103	10kΩ 5% 0.062W	3535	4822 051 30103	10kΩ 5% 0.062W	3709	4822 051 30103	10kΩ 5% 0.062W
3405	4822 051 30103	10kΩ 5% 0.062W	3536	4822 051 30103	10kΩ 5% 0.062W	3710	4822 051 30103	10kΩ 5% 0.062W
3406	4822 051 30102	1kΩ 5% 0.062W	3541	3198 031 13390	1206 4X 33R PM5 COL	3711	4822 051 30103	10kΩ 5% 0.062W
3410	5322 117 13028	12kΩ 1% 0.063W 0603	3542	3198 031 13390	1206 4X 33R PM5 COL	3712	4822 051 30103	10kΩ 5% 0.062W
3411	4822 117 12925	47kΩ 1% 0.063W 0603	3543	3198 031 13390	1206 4X 33R PM5 COL	3713	4822 051 30103	10kΩ 5% 0.062W
3418	4822 117 12917	1Ω 5% 0.062W 0603	3545	4822 051 30339	33Ω 5% 0.062W	3714	4822 051 30103	10kΩ 5% 0.062W
3420	4822 051 30123	12kΩ 5% 0.062W	3546	4822 051 30339	33Ω 5% 0.062W	3715	4822 051 30103	10kΩ 5% 0.062W
3421	4822 117 12925	47kΩ 1% 0.063W 0603	3547	4822 051 30334	330kΩ 5% 0.062W	3716	4822 051 30103	10kΩ 5% 0.062W
3422	4822 051 30203	20K00 5% 0.062W	3548	4822 051 30103	10kΩ 5% 0.062W	3717	4822 051 30339	33Ω 5% 0.062W
3423	4822 051 30103	10kΩ 5% 0.062W	3551	4822 051 30103	10kΩ 5% 0.062W	3718	4822 051 30103	10kΩ 5% 0.062W
3425	4822 051 30151	150Ω 5% 0.062W	3560	4822 051 30101	100Ω 5% 0.062W	3719	4822 051 30103	10kΩ 5% 0.062W
3426	4822 051 30562	5.6kΩ 5% 0.063W 0603	3561	4822 051 30472	4.7kΩ 5% 0.062W	4100	4822 051 30008	Jumper 0603
3427	2322 702 60184	180kΩ 5% 0603	3562	4822 117 13526	150Ω 5% 0.63W	4105	4822 051 30008	Jumper 0603
3428	4822 051 30562	5.6kΩ 5% 0.063W 0603	3574	4822 051 30103	10kΩ 5% 0.062W	4106	4822 051 30008	Jumper 0603
3429	2322 702 60184	180kΩ 5% 0603	3577	4822 051 30103	10kΩ 5% 0.062W	4107	4822 051 30008	Jumper 0603
3430	4822 051 30393	39kΩ 5% 0.062W	3578	4822 051 30332	3.3kΩ 5% 0.062W	4108	4822 051 30008	Jumper 0603
3440	5322 117 13028	12kΩ 1% 0.063W 0603	3579	4822 051 30223	22kΩ 5% 0.062W	4109	4822 051 30008	Jumper 0603
3444	5322 117 13064	39kΩ 1% 0.063W 0603	3580	4822 051 30472	4.7kΩ 5% 0.062W	4110	4822 051 30008	Jumper 0603
3445	5322 117 13028	12kΩ 1% 0.063W 0603	3581	4822 051 30339	33Ω 5% 0.062W	4111	4822 051 30008	Jumper 0603
3446	5322 117 13028	12kΩ 1% 0.063W 0603	3582	4822 051 30103	10kΩ 5% 0.062W	4112	4822 051 30008	Jumper 0603
3447	5322 117 13064	39kΩ 1% 0.063W 0603	3583	4822 117 13526	150Ω 5% 0.63W	4200	4822 051 30008	Jumper 0603
3450	5322 117 13064	39kΩ 1% 0.063W 0603	3584	4822 117 13526	150Ω 5% 0.63W	4201	4822 051 30008	Jumper 0603
3452	5322 117 13028	12kΩ 1% 0.063W 0603	3585	4822 117 13526	150Ω 5% 0.63W	4202	4822 051 30008	Jumper 0603
3453	5322 117 13064	39kΩ 1% 0.063W 0603	3586	4822 051 30008	Jumper 0603	4203	4822 051 30008	Jumper 0603
3454	5322 117 13028	12kΩ 1% 0.063W 0603	3587	4822 117 13526	150Ω 5% 0.63W	4204	4822 051 30008	Jumper 0603
3455	4822 051 30102	1kΩ 5% 0.062W	3588	4822 117 13526	150Ω 5% 0.63W	4303	4822 051 30008	Jumper 0603
3456	4822 051 30102	1kΩ 5% 0.062W	3589	4822 117 13526	150Ω 5% 0.63W	4400	4822 051 20008	Jumper 0805
3457	5322 117 13064	39kΩ 1% 0.063W 0603	3591	4822 051 30151	150Ω 5% 0.062W	4402	4822 051 30008	Jumper 0603
3458	4822 051 30102	1kΩ 5% 0.062W	3592	4822 051 30151	150Ω 5% 0.062W	4403	4822 051 20008	Jumper 0805
3459	2322 702 60158	1.5Ω 0603 5%	3593	4822 051 30151	150Ω 5% 0.062W	4404	4822 051 20008	Jumper 0805
3460	2322 702 60158	1.5Ω 0603 5%	3594	4822 051 30151	150Ω 5% 0.062W	4406	4822 051 20008	Jumper 0805
3461	5322 117 13028	12kΩ 1% 0.063W 0603	3595	4822 051 30151	150Ω 5% 0.062W	4407	4822 051 20008	Jumper 0805
3462	5322 117 13064	39kΩ 1% 0.063W 0603	3596	4822 051 30151	150Ω 5% 0.062W	4408	4822 051 20008	Jumper 0805
3463	4822 051 30123	12kΩ 5% 0.062W	3597	4822 051 30151	150Ω 5% 0.062W	4410	4822 051 20008	Jumper 0805
3464	5322 117 13028	12kΩ 1% 0.063W 0603	3598	4822 051 30151	150Ω 5% 0.062W	4411	4822 051 20008	Jumper 0805
3465	4822 051 30103	10kΩ 5% 0.062W	3599	4822 051 30151	150Ω 5% 0.062W	4413	4822 051 30221	220Ω 5% 0.062W
3471	2322 702 60279	27Ω 5% 0.1W 0603	3602	4822 117 13632	100kΩ 1% 0603 0.62W	4416	4822 051 30008	Jumper 0603
3472	2322 702 60158	1.5Ω 0603 5%	3603	4822 117 13632	100kΩ 1% 0603 0.62W	4417	4822 051 30008	Jumper 0603
3473	4822 051 30103	10kΩ 5% 0.062W	3604	4822 051 30103	10kΩ 5% 0.062W	4419	4822 051 30008	Jumper 0603
3474	4822 051 30123	12kΩ 5% 0.062W	3605	4822 051 30102	1kΩ 5% 0.062W	4420	4822 051 30008	Jumper 0603
3475	2322 702 60158	1.5Ω 0603 5%	3606	4822 051 30471	470Ω 5% 0.062W	4421	4822 051 30008	Jumper 0603
3476	2322 702 60158	1.5Ω 0603 5%	3607	4822 051 30471	470Ω 5% 0.062W	4422	4822 051 30008	Jumper 0603
3477	4822 051 30123	12kΩ 5% 0.062W	3608	4822 051 30102	1kΩ 5% 0.062W	4423	4822 051 30008	Jumper 0603
3478	4822 051 30123	12kΩ 5% 0.062W	3609	4822 051 30221	220Ω 5% 0.062W	4427	4822 051 30008	Jumper 0603
3479	4822 051 30103	10kΩ 5% 0.062W	3610	4822 051 30221	220Ω 5% 0.062W	4502	4822 051 30008	Jumper 0603
3480	4822 051 30103	10kΩ 5% 0.062W	3611	4822 051 30103	10kΩ 5% 0.062W	4503	4822 051 30008	Jumper 0603
3481	4822 117 12917	1Ω 5% 0.062W 0603	3612	4822 051 30103	10kΩ 5% 0.062W	4504	4822 051 30008	Jumper 0603
3482	4822 051 20108	1Ω 5% 0.1W	3613	4822 051 30103	10kΩ 5% 0.062W	4519	4822 051 30008	Jumper 0603
3483	4822 051 30103	10kΩ 5% 0.062W	3614	4822 051 30103	10kΩ 5% 0.062W	4520	4822 051 30008	Jumper 0603
3484	4822 051 30103	10kΩ 5% 0.062W	3615	2350 035 10829	ARV24 4X 82R PM5	4525	4822 051 30008	Jumper 0603
3485	4822 051 30103	10kΩ 5% 0.062W	3617	4822 051 30471	470Ω 5% 0.062W	4604	4822 051 30008	Jumper 0603
3486	4822 051 30103	10kΩ 5% 0.062W	3618	4822 051 30102	1kΩ 5% 0.062W	4605	4822 051 20008	Jumper 0805
3487	2322 702 60158	1.5Ω 0603 5%	3619	2322 702 60829	82Ω 5% 0603	4610	4822 051 30008	Jumper 0603
3488	4822 051 30102	1kΩ 5% 0.062W	3620	4822 051 30103	10kΩ 5% 0.062W	4611	4822 051 30008	Jumper 0603
3489	2322 702 60279	27Ω 5% 0.1W 0603	3621	4822 051 30103	10kΩ 5% 0.062W	4612	4822 051 30008	Jumper 0603
3490	2322 702 60279	27Ω 5% 0.1W 0603	3622	4822 117 12139	22Ω 5% 0.062W	4613	4822 051 30008	Jumper 0603
3491	2322 702 60279	27Ω 5% 0.1W 0603	3623	2322 702 60829	82Ω 5% 0603	4615	4822 051 30008	Jumper 0603
3492	4822 051 30102	1kΩ 5% 0.062W	3624	4822 051 30103	10kΩ 5% 0.062W	4707	4822 051 30008	Jumper 0603
3493	4822 051 30103	10kΩ 5% 0.062W	3625	4822 117 12139	22Ω 5% 0.062W	4xxx	2350 035 91001	ARV24 4X JUMPER
3494	4822 051 30103	10kΩ 5% 0.062W	3626	2322 702 60829	82Ω 5% 060			

5300	2422 549 44991	0603 EMI 100MHZ 600R
5301	2422 549 44991	0603 EMI 100MHZ 600R
5400	2422 536 00501	D62LCB 10µF PM20
5405	2422 549 44991	0603 EMI 100MHZ 600R
5406	2422 536 00501	D62LCB 10µF PM20
5501	2422 549 44991	0603 EMI 100MHZ 600R
5502	2422 549 44991	0603 EMI 100MHZ 600R
5504	2422 549 44991	0603 EMI 100MHZ 600R
5602	2422 549 44991	0603 EMI 100MHZ 600R
5603	2422 549 44991	0603 EMI 100MHZ 600R
5607	2422 549 45322	0603 EMI 100MHZ 150R
5609	2422 536 00501	D62LCB 10µF PM20
5614	2422 549 44991	0603 EMI 100MHZ 600R
5615	2422 549 45322	0603 EMI 100MHZ 150R
5616	2422 549 44991	0603 EMI 100MHZ 600R
5617	2422 536 00593	D62LCB 47µF 20%



6100	4822 130 11397	BAS316
6400	9340 571 37115	PMEG1020EA
6401	9340 571 37115	PMEG1020EA
6402	9340 571 37115	PMEG1020EA
6403	9340 571 37115	PMEG1020EA
6426	9965 000 20150	1N4148WS SOD-323
6427	9965 000 20150	1N4148WS SOD-323
6428	5322 130 31928	BAS16
6429	5322 130 31928	BAS16
6500	4822 130 81637	PMLL4148L
6501	5322 130 31928	BAS16
6502	5322 130 31928	BAS16
6503	5322 130 31928	BAS16
6603	9322 168 86685	SK14
6604	4822 130 11522	UDZ15B
6605	9322 159 72685	MM3Z6V2
6607	9322 189 14668	SL12



7101	5322 130 60159	BC846B
7102	5322 130 60159	BC846B
7103	5322 130 60159	BC846B
7104	9340 547 21215	BSH205
7105	9352 697 76118	LM75ADP
7107	9965 000 17814	2N7002E
7201	9352 713 79557	TZA1047HL
7202	5322 130 42718	BFS20
7203	5322 130 42718	BFS20
7300	9352 713 77157	TZA1042HL
7401	5322 209 82941	LM358D
7402	9352 735 89118	SA56202TW
7403	5322 209 82941	LM358D
7405	5322 209 82941	LM358D
7409	9322 164 64668	BA5995FM
7500	9352 737 02557	PNX7850E_Z_M2A
7502	9322 186 84685	MAX6352SVUK
7503	3139 198 00790	PB AV3.5
7504	9322 166 67668	MT48LC4M16A2TG-7E
7505	9322 205 94671	UPD4416016G5-A15-9JF
7506	9322 184 07685	PST3642N
7603	4822 209 17398	LD1117DT33
7604	9352 610 38118	TEA1207T_N1
7606	9322 191 07668	L5970D
7607	9322 144 97668	LD1117DT
7608	9322 197 17668	LD1117-1.8V-A

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