

AVD-K150B/K150E/K150G/ K150N/K150R

SERVICE MANUAL

Ver 1.0 2004.06

AEP Model
AVD-K150B/K150E/K150N/K150R
UK Model
AVD-K150G



AVD-K150B/K150E/K150G/K150N/K150R is the Amplifier, DVD/VIDEO player and tuner section in DAV-D150B/D150E/D150G/D150N/D150R.

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DVD	Model Name Using Similar Mechanism	NEW
	Mechanism Type	DP-7C
	Optical Pick-up Name	PVR-502W
VCR	Mechanism Type	D35 (N)

SPECIFICATIONS

General

Power requirements	AC 230 V , 50/60 Hz
Power consumption	74W
Dimensions (approx.)	430 x 98 x 386 mm (17 x 3 ⁷ / ₈ x 15 ¹ / ₄ inches) (W x H x D)
Mass (approx.)	6.5 kg (14 lb 6 oz)
Operating temperature	5 °C to 35 °C (41 °F to 95 °F)
Operating humidity	5 % to 90 %

Maximum recording time	SP: 4 hour (E-240 tape), LP: 8 hour (E-240 tape)
Rewind time	About 180 seconds (E-180 tape)
Input level	VIDEO: 1.0 V(p-p), 75 ohms, unbalanced AUDIO: -6.0 dBm, more than 10 kohms (SCART) -6.0 dBm, more than 47 kohms (RCA) DIGITAL AUDIO IN: Optical connector x 1
Output level	VIDEO: 1.0 V(p-p), 75 ohms, unbalanced

DVD Section

Laser	Semiconductor laser (Wavelength DVD: 650nm, CD: 780nm)
Signal system	PAL
Frequency response	DVD (PCM 48 kHz): 10 Hz to 22 kHz CD: 10 Hz to 20 kHz
Signal-to-noise ratio	More than 80 dB (ANALOG OUT connectors only)
Harmonic distortion	Less than 0.05%

FM Tuner

Tuning Range	65 - 74 MHz (150R) 87.5 - 108.0 MHz (ALL MODEL)
Intermediate Frequency	10.7 MHz

AM Tuner

Tuning Range	522 - 1,611 kHz
Intermediate Frequency	450 kHz

VIDEO Section

Head system	4 heads helical scan azimuth system
Television system	PAL B/G colour system (150E) PAL B/G, SECAM L colour system (150B) PAL I colour system (150G) PAL B/G, SECAM D/K colour system (150N) PAL (B/G, I/I), SECAM D/K colour system (150R)
Recording format	PAL
Tape speed	PAL/MESECAM; 23.39 mm/s (SP), 16.69 mm/s (LP)

Amplifier Section

Stereo mode	70W + 70W (6 Ω at 1 kHz, THD 10 %)
Surround mode	Front: 70W/ch (6 Ω at 1 kHz, THD 10 %) Center*: 70W (6 Ω at 1 kHz, THD 10 %) Surround*: 70W/ch (6 Ω at 1 kHz, THD 10 %) Subwoofer*: 100W (4 Ω at 30 Hz, THD 10 %) * Depending on the sound mode settings and the source, there may be no sound output.
Inputs	AV 2, AV 3, OPTICAL IN (AV3 OPT)

- Design and specifications are subject to change without notice.

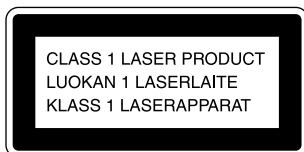
DVD/VCR RECEIVER

9-877-959-01
2004F1678-1
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Sony Corporation
Home Audio Company
Published by Sony Engineering Corporation

SONY®

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.



This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 °C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.

(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size)



LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40 °C higher than ordinary solder.
Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
Soldering irons using a temperature regulator should be set to about 350 °C.
Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK $\triangle$ OR DOTTED LINE WITH MARK $\triangle$ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

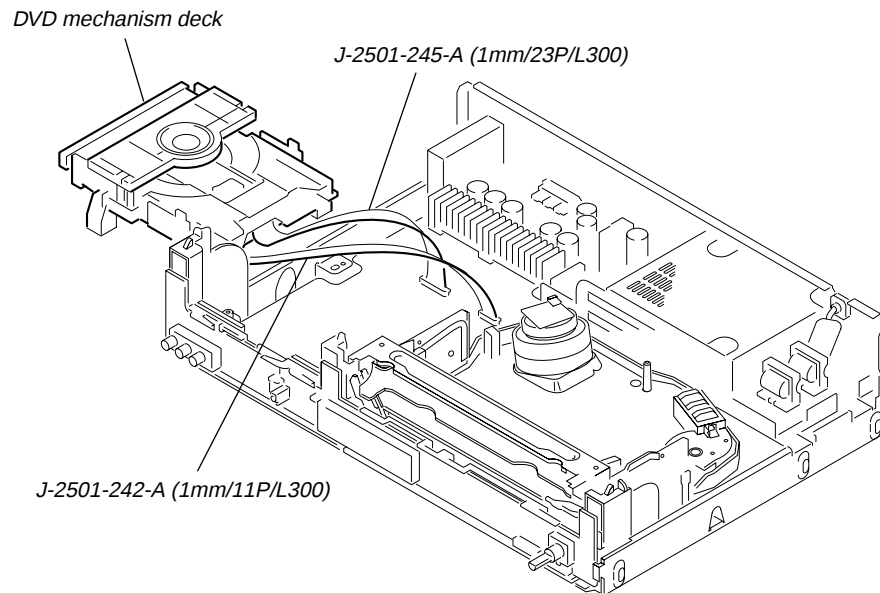
The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

Carry out the "S curve check" in "CD section adjustment" and check that the S curve waveform is output several times.

• **SERVICE POSITION-1 (DVD Mechanism Deck)**

Extension cable (J-2501-242-A, J-2501-245-A) is required to inspect the DVD mechanism deck.



• **SERVICE POSITION-2 (VIDEO Mechanism Deck)**

Perform the operation check of the VIDEO mechanism deck after the VCR board and the VIDEO mechanism deck are turned upside down.

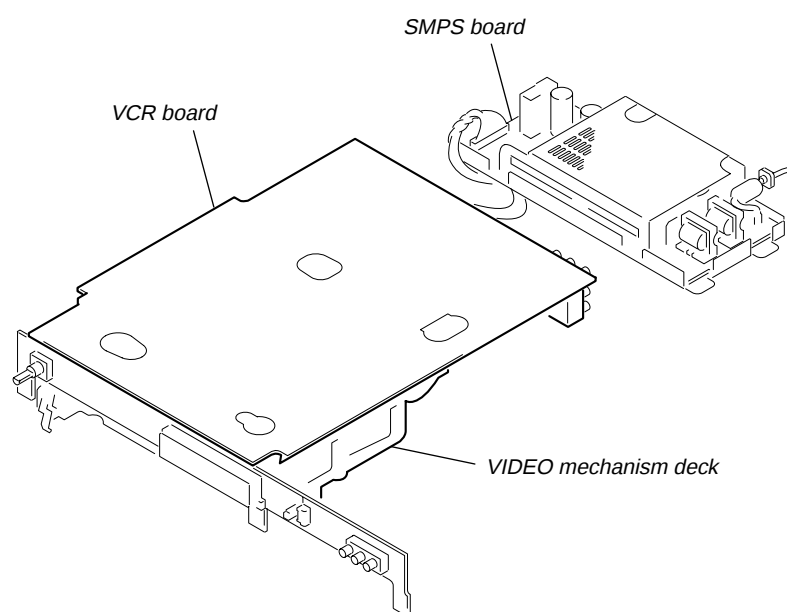


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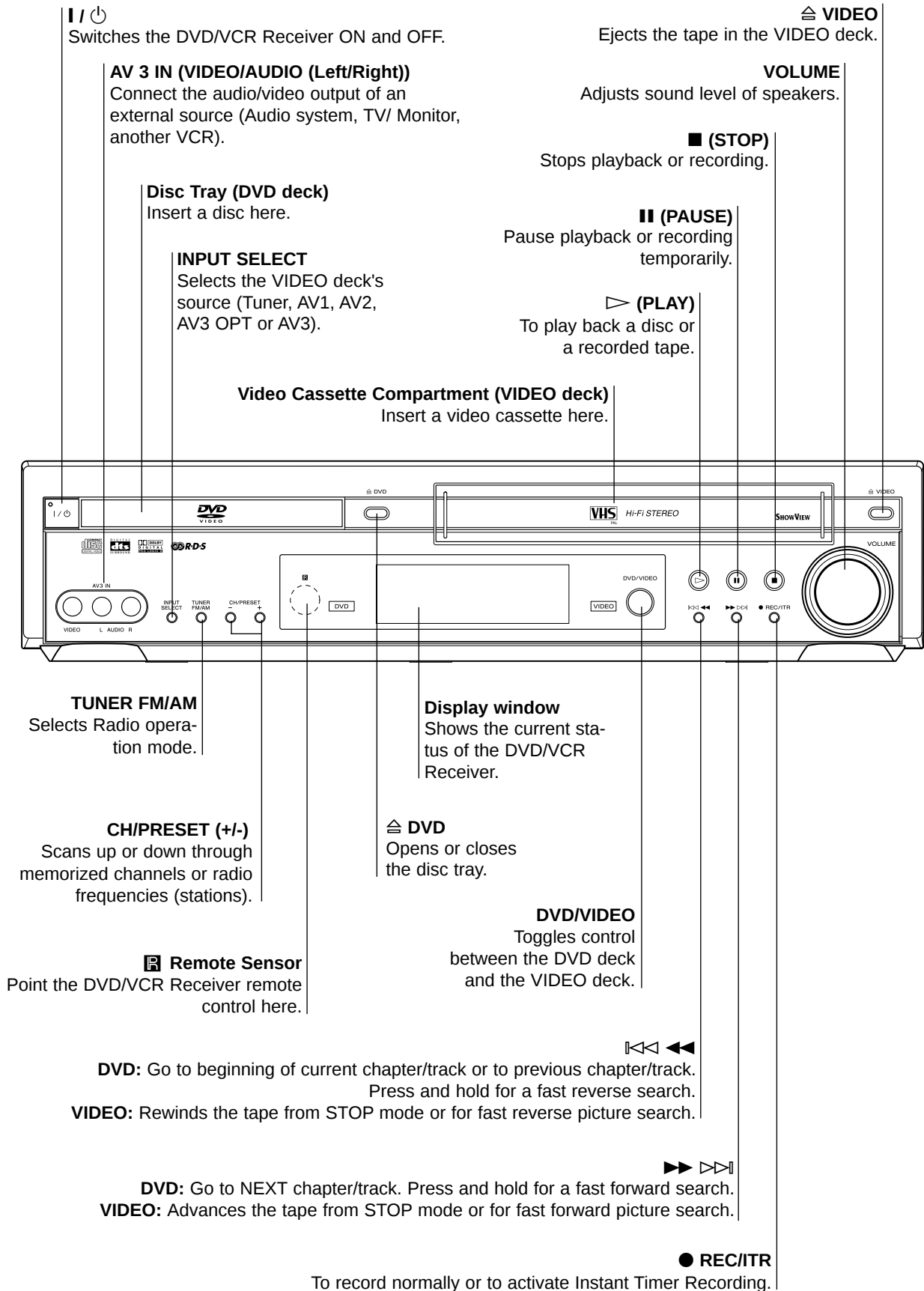
AVD-K150B/K150E/K150G/K150N/K150R

SECTION 1

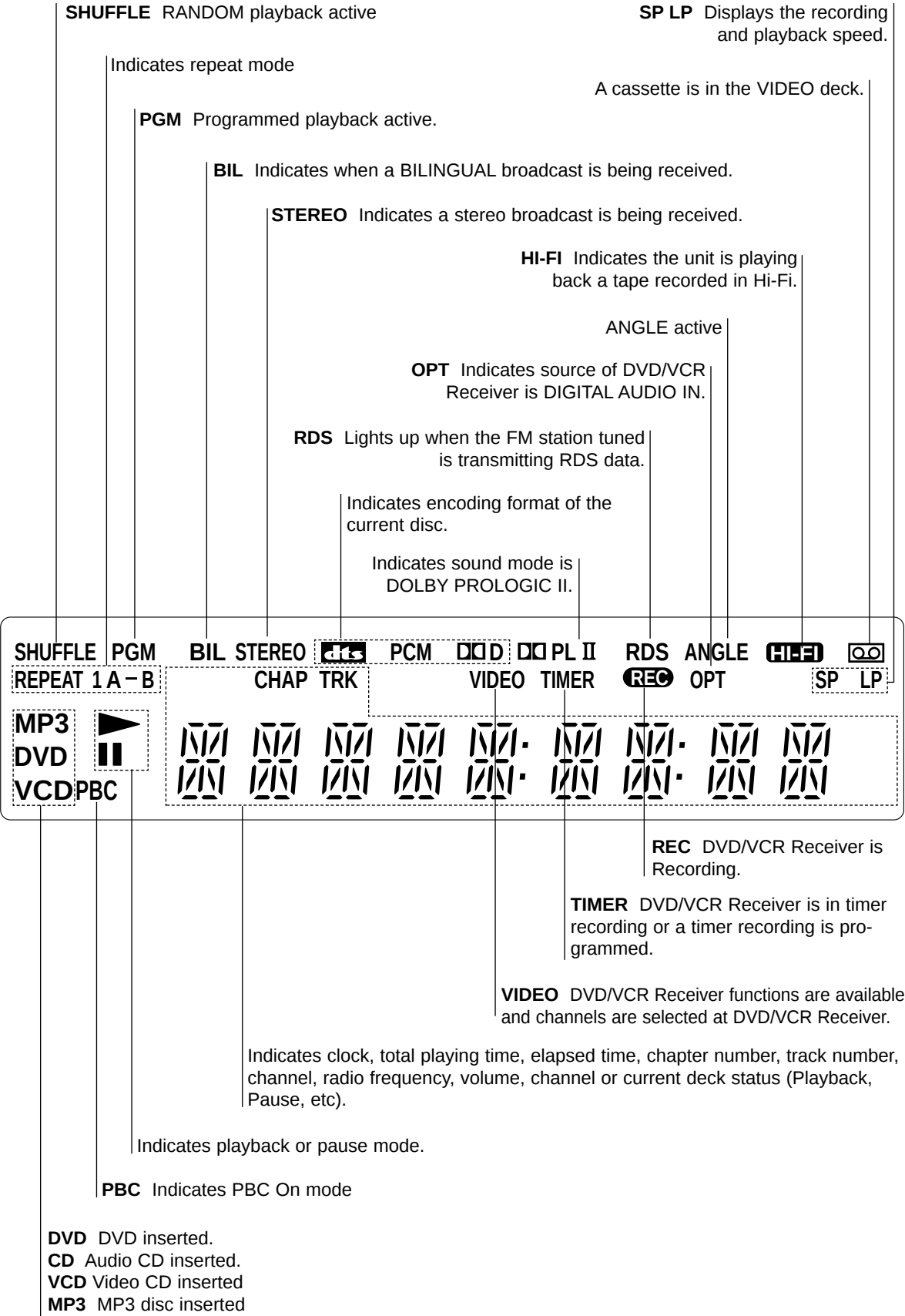
GENERAL

This section is extracted from instruction manual.

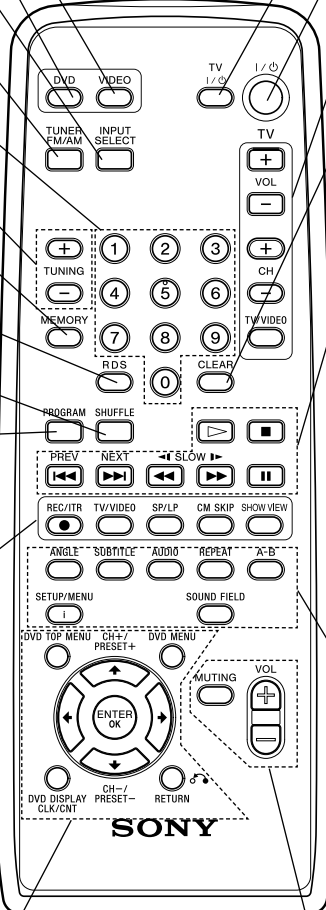
Front Panel



Display Window



Remote Control



VIDEO
Select the output source to VIDEO.

DVD
Sets the output source to DVD.

INPUT SELECT
Selects the VIDEO deck's source (AV1, AV2, AV3 OPT, AV3, or Tuner).

TUNER FM/AM
Selects the DVD/VCR Receiver's tuner as the listening choice. (FM and AM bands)

0-9 numerical buttons
Selects numbered options in a menu.

TUNING (+/-)
To tune in the desired station.

MEMORY
Memorize a radio station frequency into the tuner.

RDS
Start a search for a specific PS type.

SHUFFLE
Plays tracks in random order.

PROGRAM
Enters to the program edit mode or exits from that.

● REC/ITR
Records normally or activates Instant Timer Recording.

TV/VIDEO
To view channels selected by the VIDEO tuner or by the TV tuner.

SP/LP
Selects recording speed.

CM SKIP
Fast forwards picture search through 30 seconds of recording.

SHOWVIEW
To display the programme menu for ShowView System programming.

DVD TOP MENU
Displays the disc's Title menu, if available.

DVD MENU
Accesses menu on a DVD disc.

◀/▶/▲/▼ (left/right/up/down)
Selects an option in the menu.

CH/PRESET(+/-)
Selects a program of VIDEO or Tuner. Adjusts manually the tape's picture onscreen.

ENTER/OK
Acknowledges menu selection.

DVD DISPLAY, CLK/CNT
Accesses On-Screen display. Switches among the clock and tape counter.

RETURN
Returns the setup menu.

TV I / ⏻
Switches TV ON and OFF.

I / ⏻
Switches DVD/VCR Receiver ON and OFF.

TV Control Buttons (see page 41)

- **VOL +/-** : Adjusts TV's volume.
- **CH +/-** : Selects TV's channel.
- **TV/VIDEO**: Selects the TV's source.

CLEAR
Removes a track number on the program menu. To clear preset stations from the tuner memory.

Playback Control Buttons

- **▶ (PLAY)**
Starts playback.
- **■ (STOP)**
Stops playback.
- **◀◀ (PREV) (DVD mode only)**
Go to beginning of current chapter or track or go to previous chapter or track.
- **▶▶ (NEXT) (DVD mode only)**
Go to next chapter or track.
- **◀◀/▶▶ (SLOW ◀/▶)**
DVD: For picture search or slow playback backward or forward.
VIDEO: Rewinds or advances the tape in STOP mode or for picture search.
- **⏸ (PAUSE)**
zPause playback or recording temporarily.

ANGLE
Selects a DVD camera angle if available.

SUBTITLE
Selects a subtitle language.

AUDIO
Selects an audio language (DVD) or an audio channel (CD).

REPEAT
Repeat chapter, track, title, all.

A-B
Repeats sequence.

SETUP/MENU (i)
Accesses or returns DVD setup menu and VIDEO setup menu.

SOUND FIELD
Selects sound mode between BYPASS, PRO LOGIC, PRO LOGIC II (MOVIE, MUSIC, MATRIX) and 3D SURROUND.

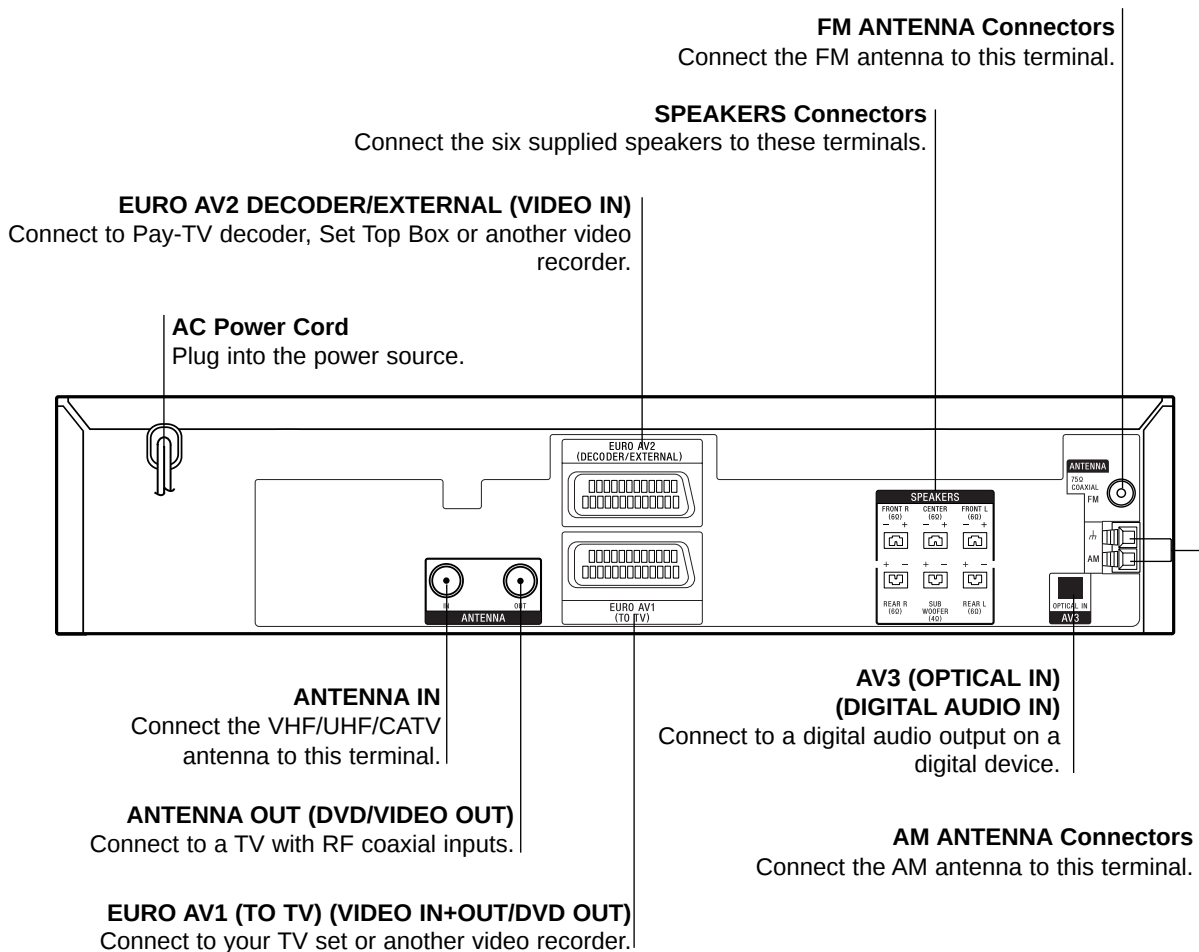
VOL (+/-)
Adjusts speaker volume.

MUTING
Momentarily silence the speaker of the DVD/VCR Receiver.

Note

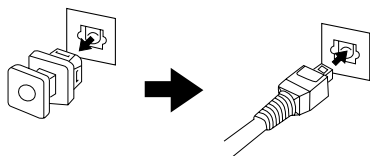
This remote control uses the same buttons for VIDEO and DVD functions (ex. PLAY).
To use the VIDEO, first press the VIDEO button.
To use the DVD, first press the DVD button.

Rear Panel



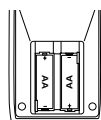
Dust Protection Cap

Remove the dust protection cap from the OPTICAL IN jack and connect the optical digital cable (not supplied) securely so that the configurations of both the cable and the connector match. Keep the dust protection cap and always reattach the cap when not using the connector to protect against dust intrusion.



Do not touch the inner pins of the jacks on the rear panel. Electrostatic discharge may cause permanent damage to the unit.

Remote control battery installation



Detach the battery cover on the rear of the remote control, and insert two R6 (size AA) batteries with $\oplus$ and $\ominus$ aligned correctly. When using the remote control, point it at the remote sensor **R** on the unit.

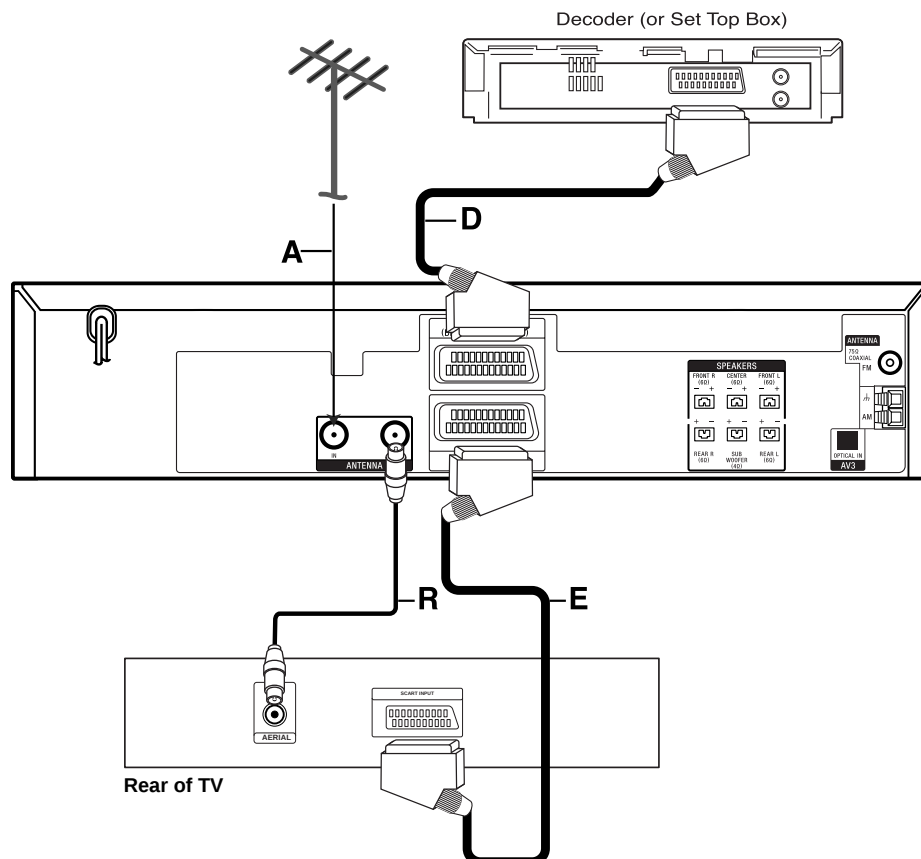


Do not mix old and new batteries. Never mix different types of batteries (standard, alkaline, etc.).

Connections

TV and Decoder (or Set Top Box) Connections

Make one of the following connections, depending on the capabilities of your existing equipment.



Tips

- Depending on your TV and other equipment you wish to connect, there are various ways you could connect the DVD/VCR Receiver. Use one of the connections described below.
- Please refer to the manuals of your TV, VIDEO, Stereo System or other devices as necessary to make the best connections.



Caution

- Make sure the DVD/VCR Receiver is connected directly to the TV. Select the correct AV input on your TV.
- Do not connect your DVD/VCR Receiver to TV via your VIDEO. The DVD image could be distorted by the copy protection system.

Basic connections (AV)

- Connect the **EURO AV1 (TO TV)** on the rear panel of the DVD/VCR Receiver to the scart input socket on the TV using a SCART lead (**E**).
- Some TV broadcasters transmit encoded television signals which you can only see with a purchased or rented decoder. You can connect such a decoder (descrambler) to the DVD/VCR Receiver (**D**).

Basic connection (RF)

- Connect the aerial cable (**A**) from your indoor/ outdoor aerial to **ANTENNA IN** jack on the rear panel of DVD/VCR Receiver.
- Connect the supplied RF cable (**R**) from the **ANTENNA OUT** jack on the rear panel of DVD/VCR Receiver to your television's Aerial Input.

Notes

When you connect the DVD/VCR Receiver to your TV, be sure to turn off the power and unplug both units from the wall outlet before making any connections.

Connections (Continued)

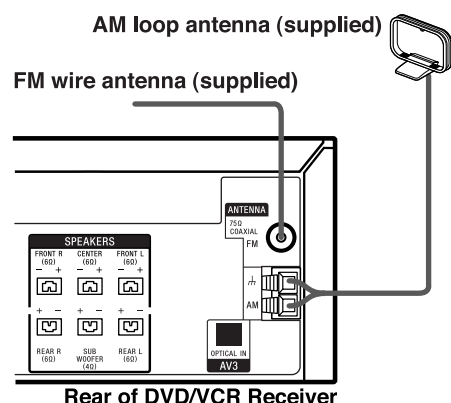
Radio Aerial Connections

Connect the supplied FM/AM antennas for radio listening.

- 1** Connect the AM loop antenna to the AM antenna connectors.
- 2** Connect the FM wire antenna to the FM antenna connectors.

Notes

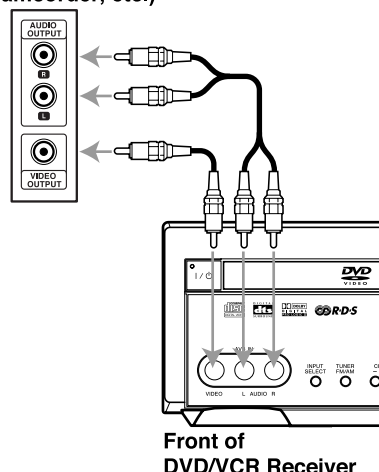
- To prevent noise pickup, keep the AM loop antenna away from the DVD/VCR Receiver and other components.
- Be sure to fully extend the FM wire antenna.
- After connecting the FM wire antenna, keep it as horizontal as possible.



Accessory Audio/Video (A/V) Connections to DVD/VCR Receiver

Connect the **AV3 IN** jacks on the DVD/VCR Receiver to the audio/video out jacks on your accessory component, using optional audio/video cables.

Jack Panel of Accessory Component (VCR, Camcorder, etc.)



Digital Device Connections

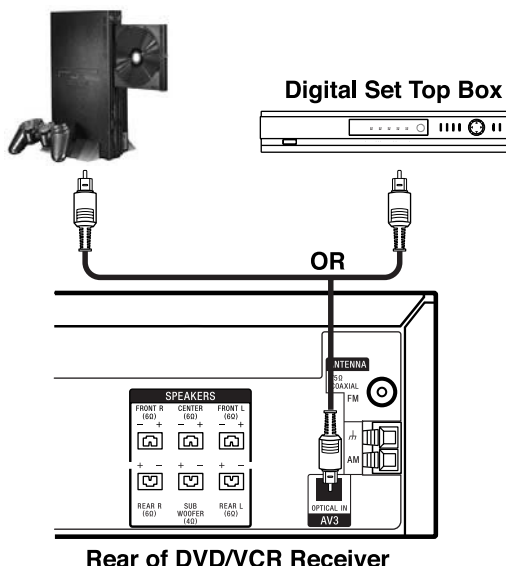
Connect the OPTICAL IN jacks on the DVD/VCR Receiver to the digital audio out (optical) jacks on your digital device (Game device, Digital Set Top Box, etc.), using optional optical audio cable.

To select source of DVD/VCR Receiver to OPTICAL IN, press INPUT SELECT repeatedly on the remote control until "AV3 OPT" appears in the display window.

Notes

- If the audio format of the digital output does not match the capabilities of your DVD/VCR Receiver, the DVD/VCR Receiver will produce a strong, distorted sound or no sound at all.
- The Optical input function is available only when the other unit's Sampling Frequency is 32 - 48kHz.

Game Device



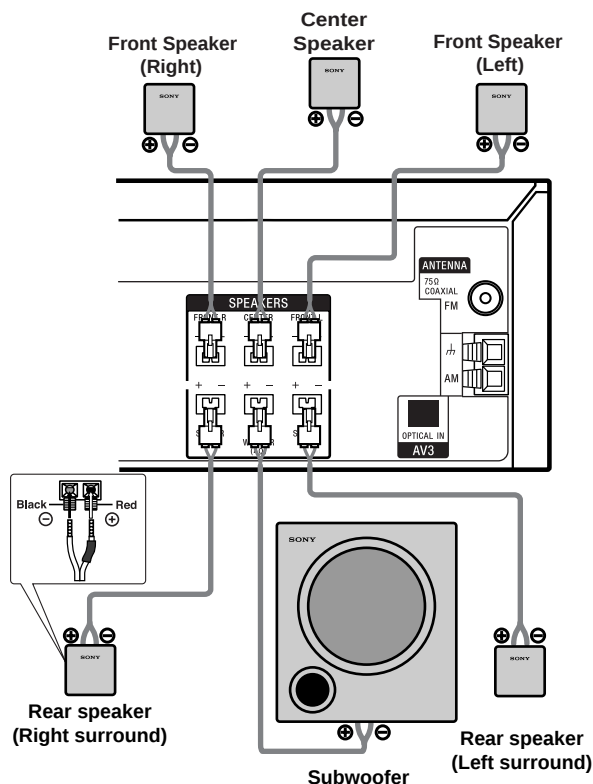
Connections (Continued)

Speaker System Connections

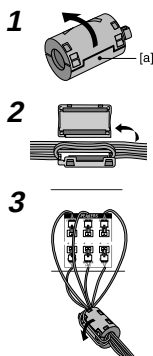
Connect the speakers using the supplied speaker cords by matching the colors of the terminals and those of the cords. To obtain the best possible surround sound, adjust the speaker parameters (distance, level, etc.).

Notes

- Be sure to match the speaker cord to the appropriate terminal on the components: $\oplus$ to $\oplus$ and $\ominus$ to $\ominus$. If the cords are reversed, the sound will be distorted and lack bass.
- If you use front speakers with low maximum input rating, adjust the volume carefully to avoid excessive volume output to the speakers.
- Do not disassemble the front covers of supplied speakers.



About Ferrite Core



Be sure to attach the ferrite core to the speaker cables (for connecting to this unit). This ferrite core can reduce noises.

How to attach the ferrite core.

- 1 Push the stopper [a] of the ferrite core to open.
- 2 Wind the Center and Subwoofer Speaker cables once on the ferrite core. Pass the others straight on the ferrite core.
- 3 Close the ferrite core until it clicks.

Speaker Positioning

For a normal setup use 6 speakers (2 front speakers, center speaker, 2 rear speakers and subwoofer).

• Front Speakers

Based on your listening position, set up the speakers at equal distance. And by hearing position, set up an interval between speakers of 45 degree.

• Center Speaker

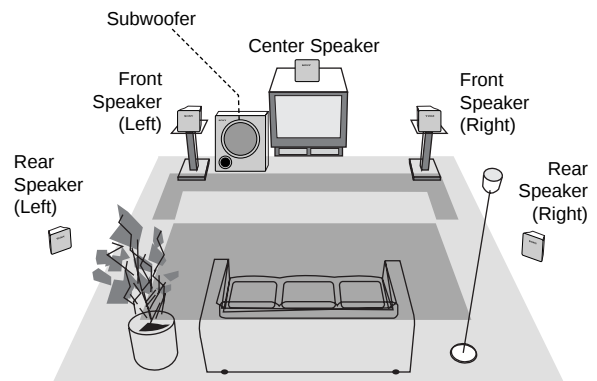
It is ideal that the center speakers and front speakers are same height. But normally place it above or below the television as shown below.

• Rear Speakers

Place the rear surround speakers to the left and right behind the primary listening area. These speakers recreate sound motion and atmosphere required for surround playback. For best results, do not install the rear speakers too far behind the listening position, install them at or above the level of the listener's ears. It is also effective to direct the rear speakers towards a wall or ceiling to further disperse the sound. In the case of a smaller room size, if the audience is near to the rear wall set the rear speakers opposite each other, and set the rear speakers 60 - 90 cm above the listener's ears.

• Subwoofer

This can be placed in any front position.



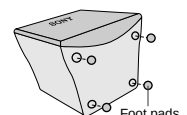
Speaker Positioning Example

Note

Speaker stand is optional.

Attaching the foot pads

To prevent speaker vibration or movement while listening, attach the supplied foot pads to the speaker, as shown.



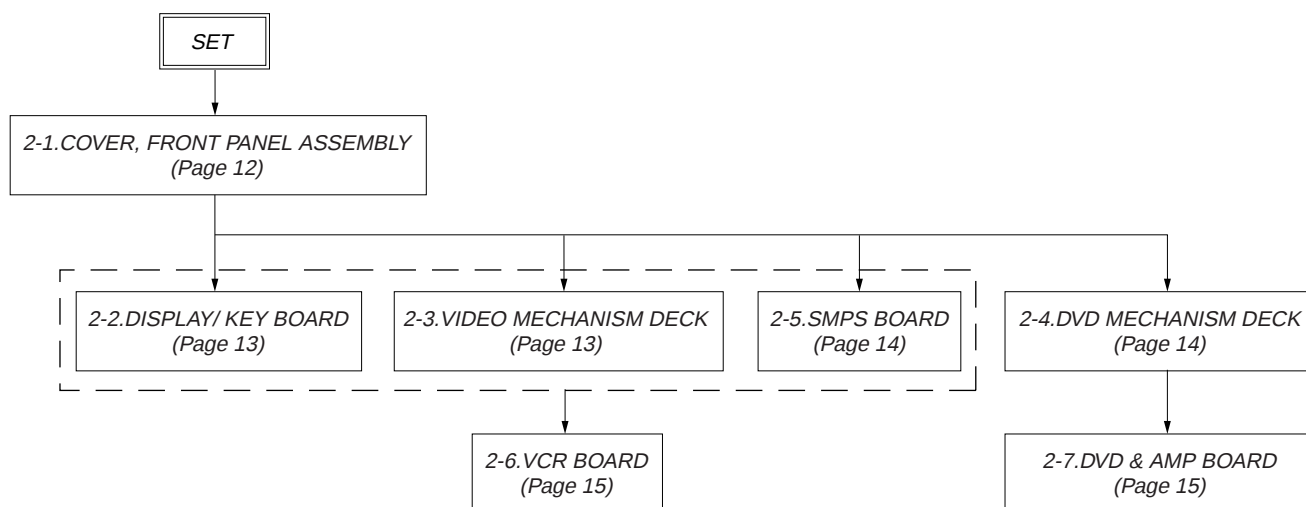
Attaching the color labels

Attach the color labels onto the rear panel of the speakers before connecting the speakers.



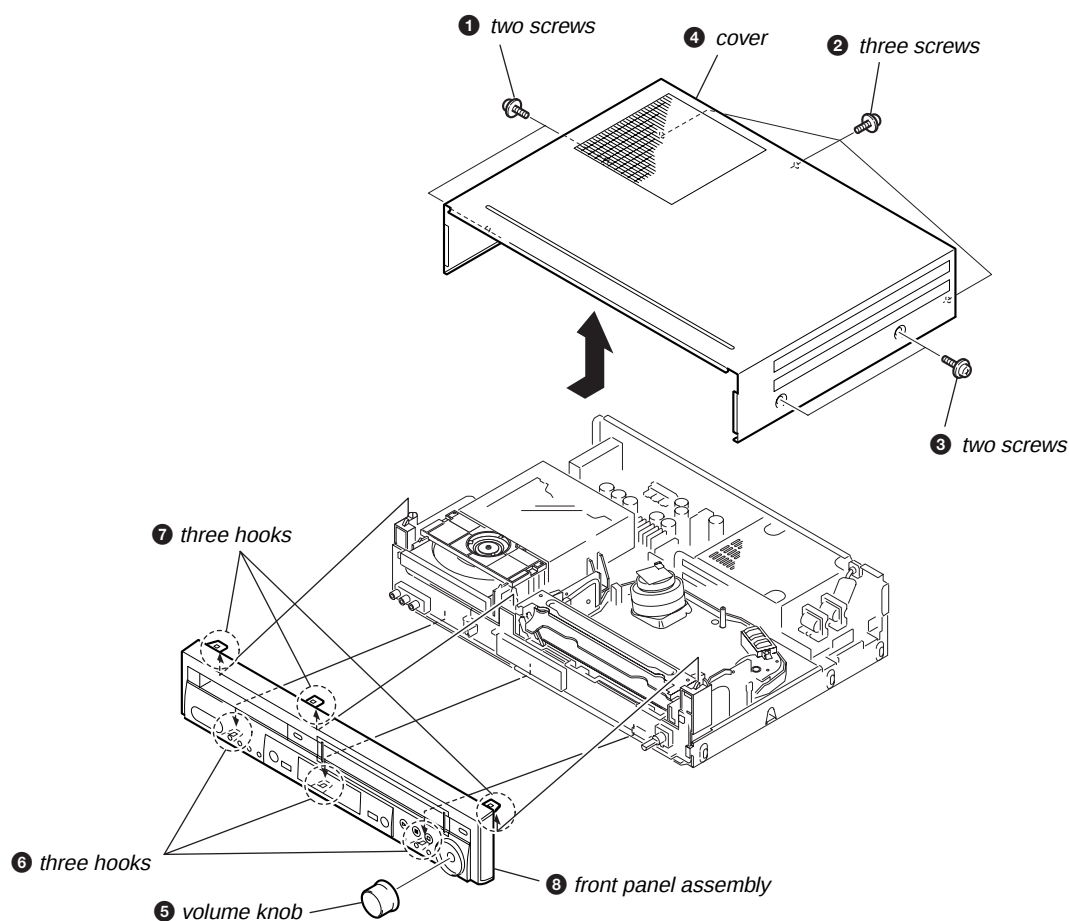
SECTION 2 DISASSEMBLY

- This set can be disassembled in the order shown below.
- The dotted square with arrow (□→) prompts you to move to the next job when all of the works within the dotted square (□) are completed.

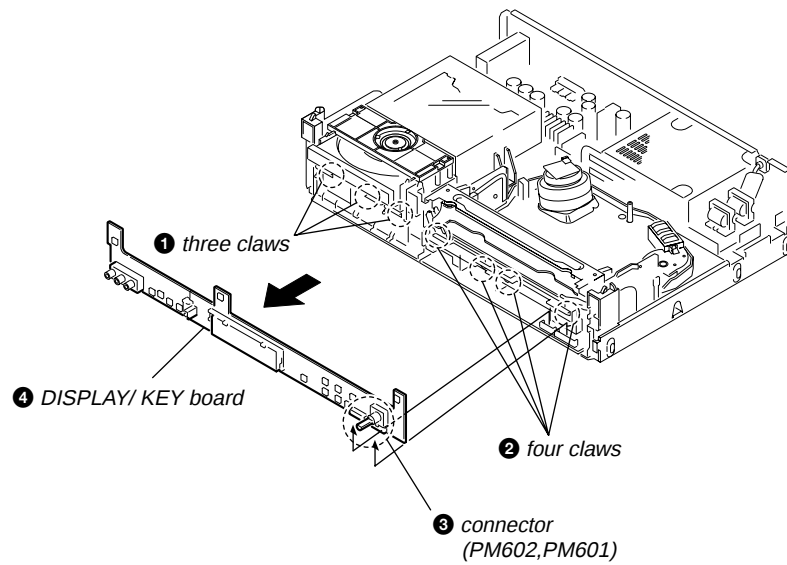


Note: Follow the disassembly procedure in the numerical order given.

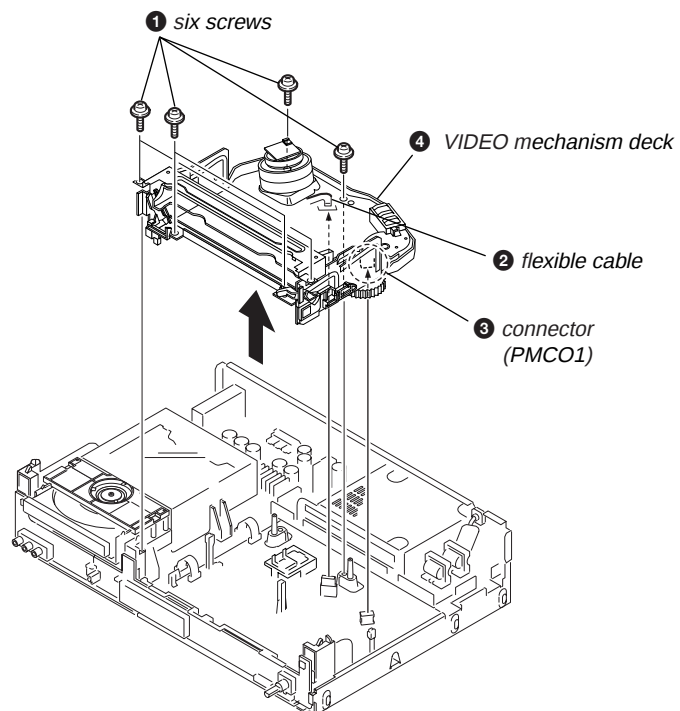
2-1. COVER, FRONT PANEL ASSEMBLY



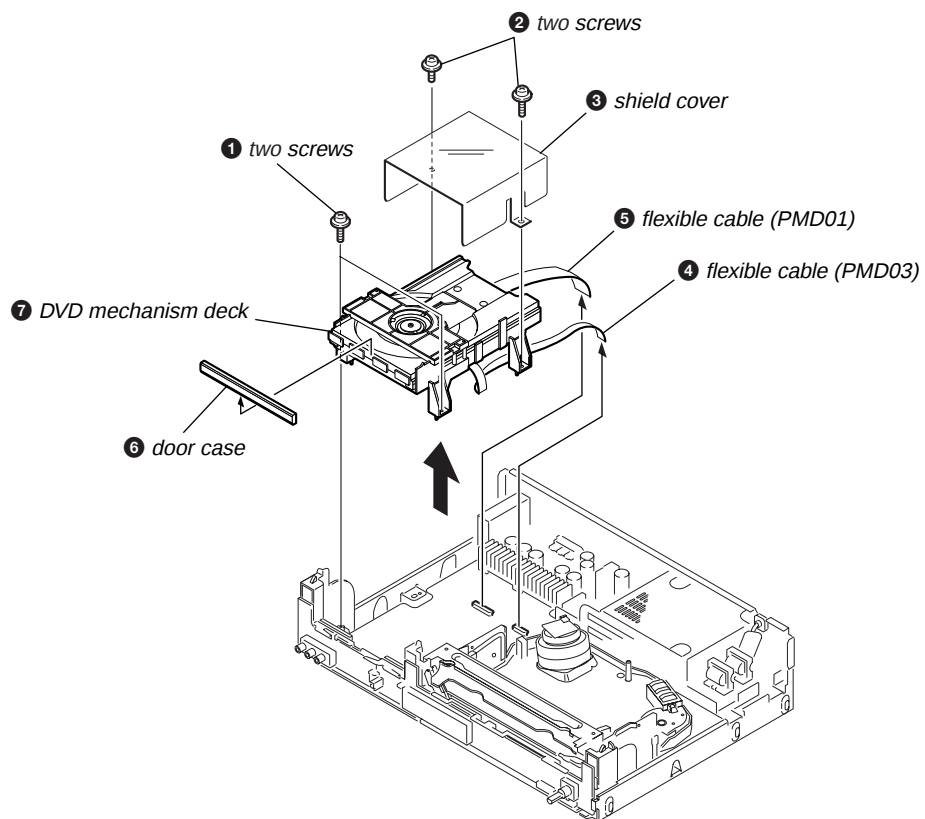
2-2. DISPLAY/KEY BOARD



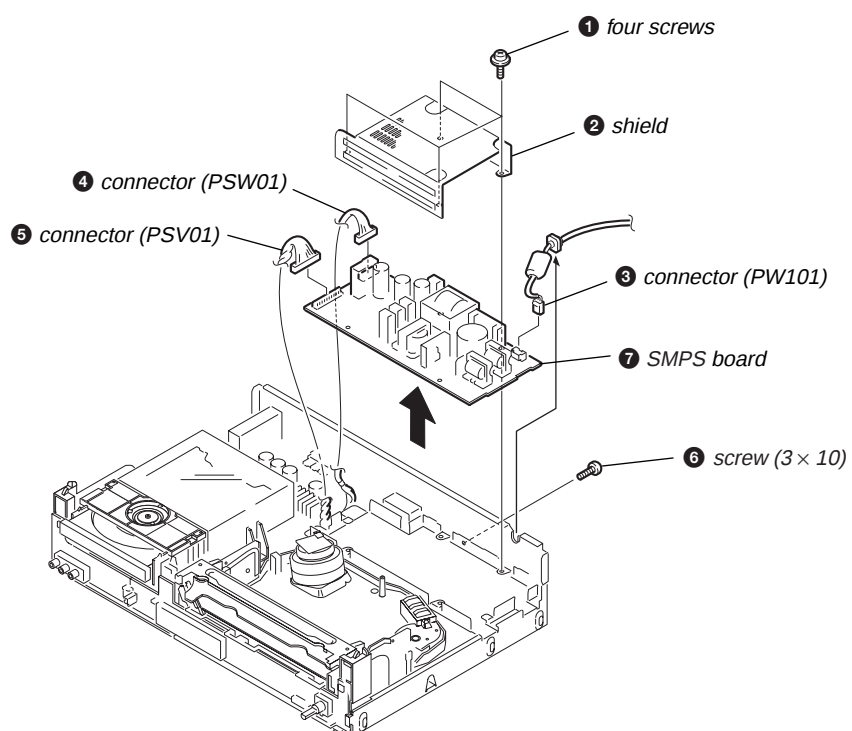
2-3. VIDEO MECHANISM DECK



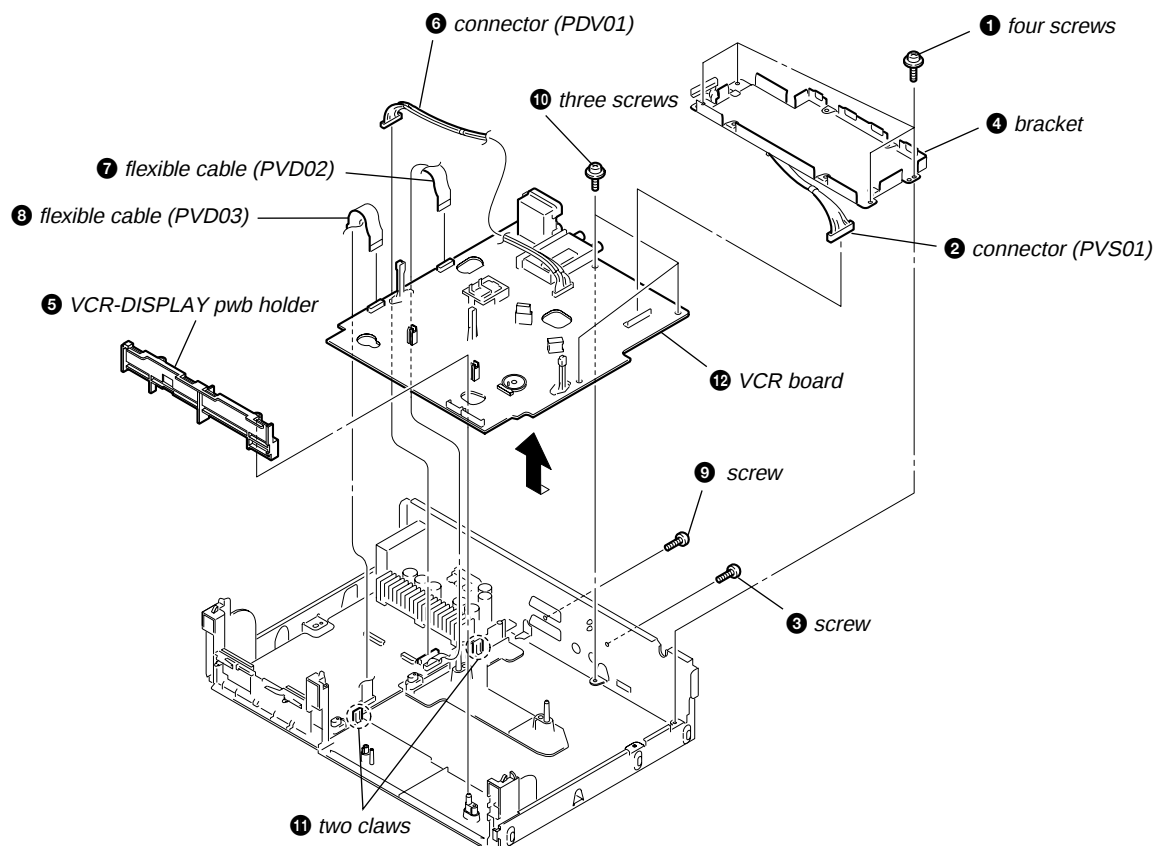
2-4. DVD MECHANISM DECK



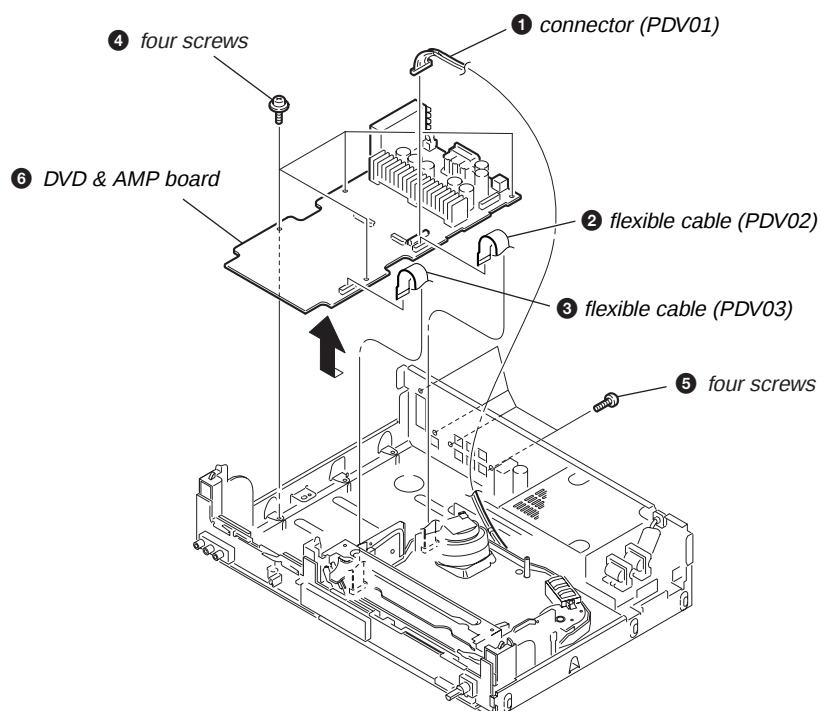
2-5. SMPS BOARD



2-6. VCR BOARD



2-7. DVD & AMP BOARD



AVD-K150B/K150E/K150G/K150N/K150R

SECTION 3

ELECTRICAL ADJUSTMENTS

3-1. VCR SECTION ELECTRICAL ADJUSTMENT

1. Servo Adjustment

1) PG Adjustment

- Test Equipment
 - a) OSCILLOSCOPE
 - b) NTSC MODEL : NTSC SP TEST TAPE

• Adjustment And Specification

MODE	MEASUREMENT POINT	ADJUSTMENT POINT	SPECIFICATION
PLAY	V.Out H/SW(W373, W374)	R/C TRK JIG KEY	6.5 ± 0.5H

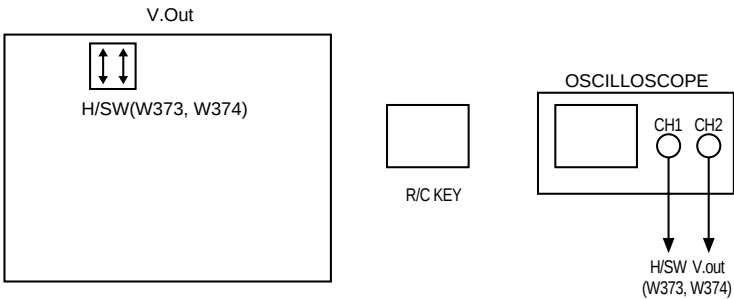
• Adjustment Procedure

- a) Insert the SP Test Tape and play.
- b) Connect the CH1 of the oscilloscope to the H/SW(W373, W374) and CH2 to the Video Out for the VCR.
- c) Trigger the mixed Combo Video Signal of CH2 to the CH1 H/SW(W373, W374), and then check the distance (time difference), which is from the selected A(B) Head point of the H/SW(W373, W374) signal to the starting point of the vertical synchronized signal, to 6.5H ± 0.5H (412μs, 1H=63μs).
- Note - Press FRONT CH UP KEY and FRONT PLAY KEY on Deck playback, and it goes in to ATR PRE-SET. after the SP Test Tape is inserted.

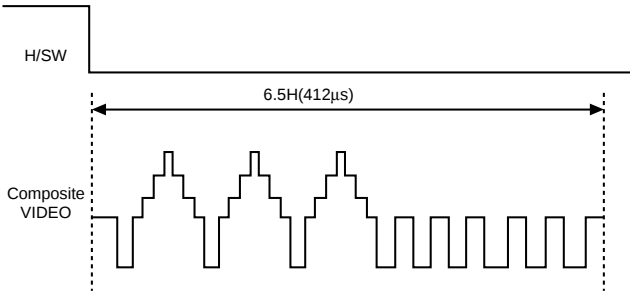
• PG Adjustment Method

- a-1) Playback the SP standard tape
- b-2) Press the “O” key on the Remote controller and the “PLAY” key on the Front Panel the same time, then it goes in to Tracking initial mode.
- c-3) Repeat the above step(No.b-2), then it finishes the PG adjusting automatically.
- d-4) Stop the playback, then it goes out to PG adjusting mode after mony the PG data.

• CONNECTION



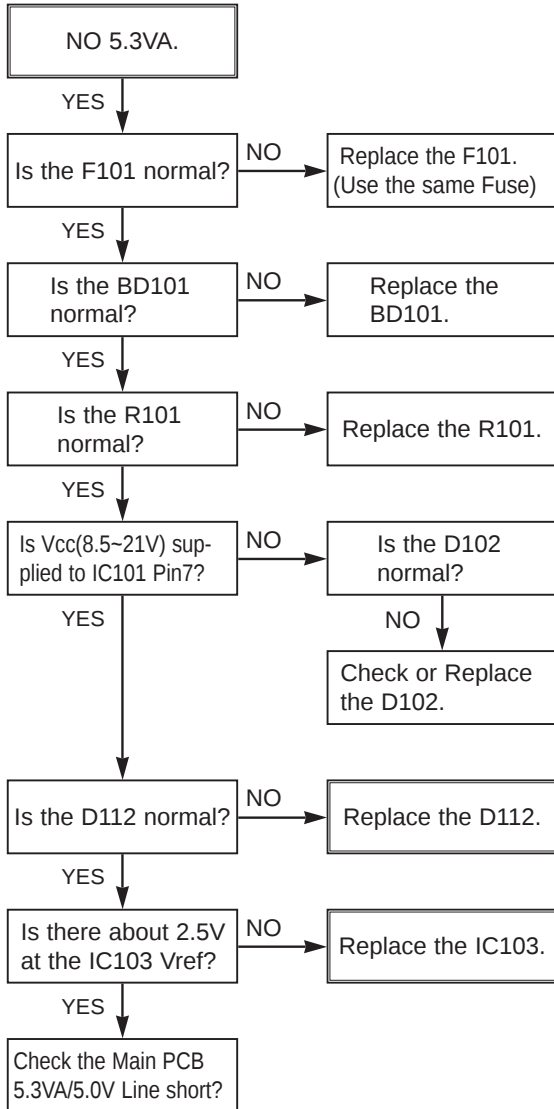
• WAVEFORM



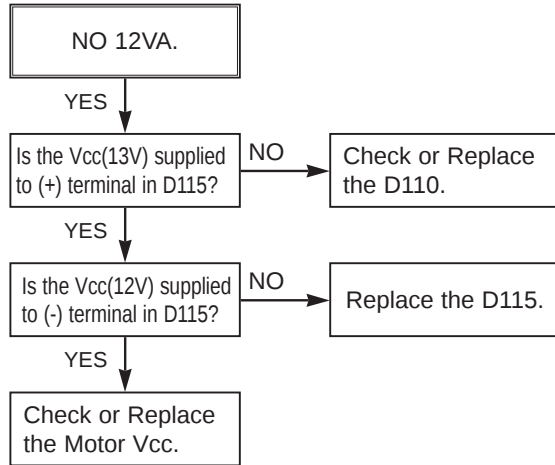
3-2. ELECTRICAL TROUBLESHOOTING GUIDE

1. Power (SMPS) CIRCUIT

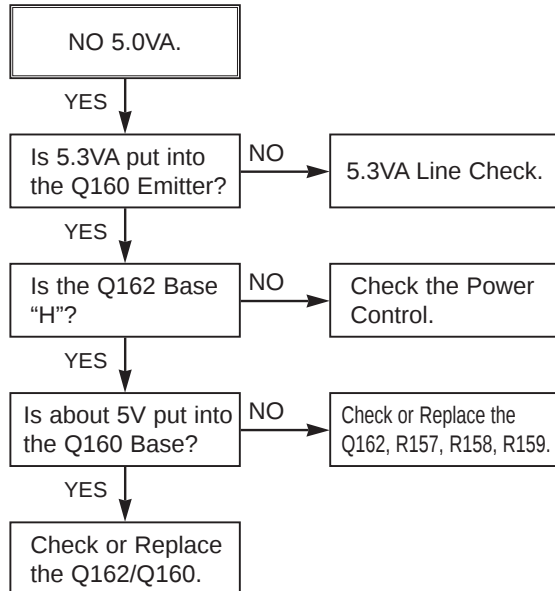
(1) No 5.3VA (SYS/Hi-Fi/TUNER)



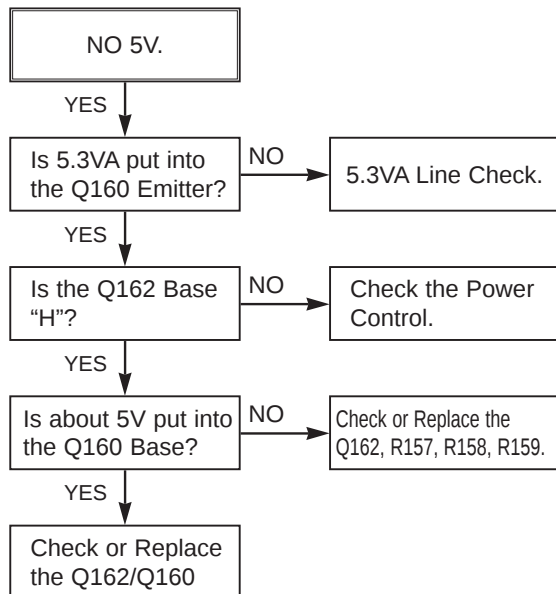
(2) No 12VA (TO CAP, DRUM MOTOR)



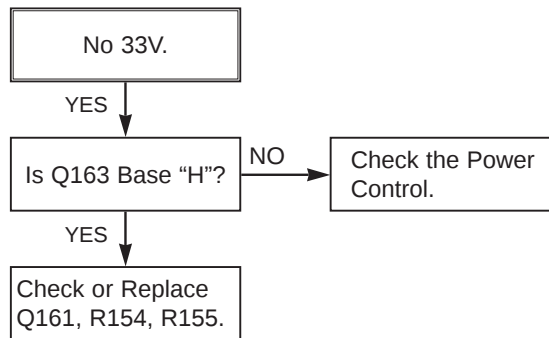
(3) No 5.0V (SYS/Hi-Fi/TUNER)



(4) No 5V (TO DVD)

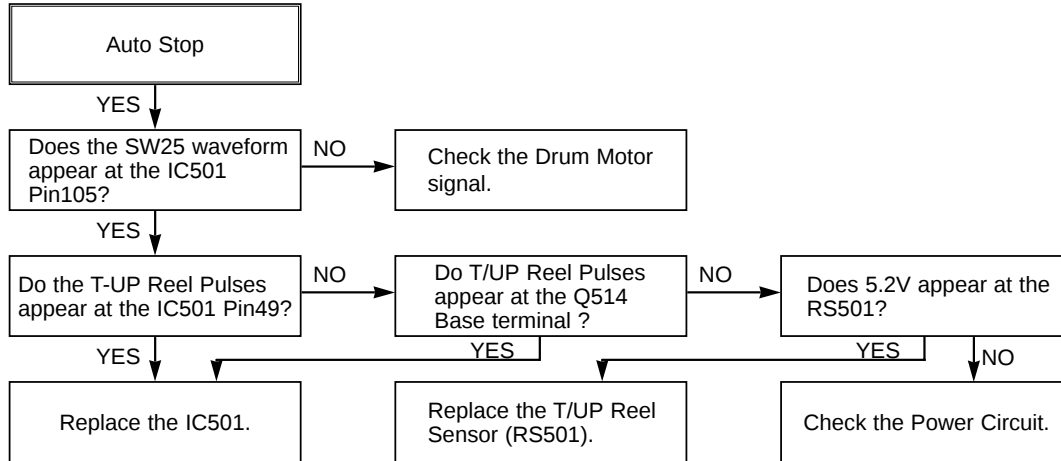


(5) No 33V (TUNER)

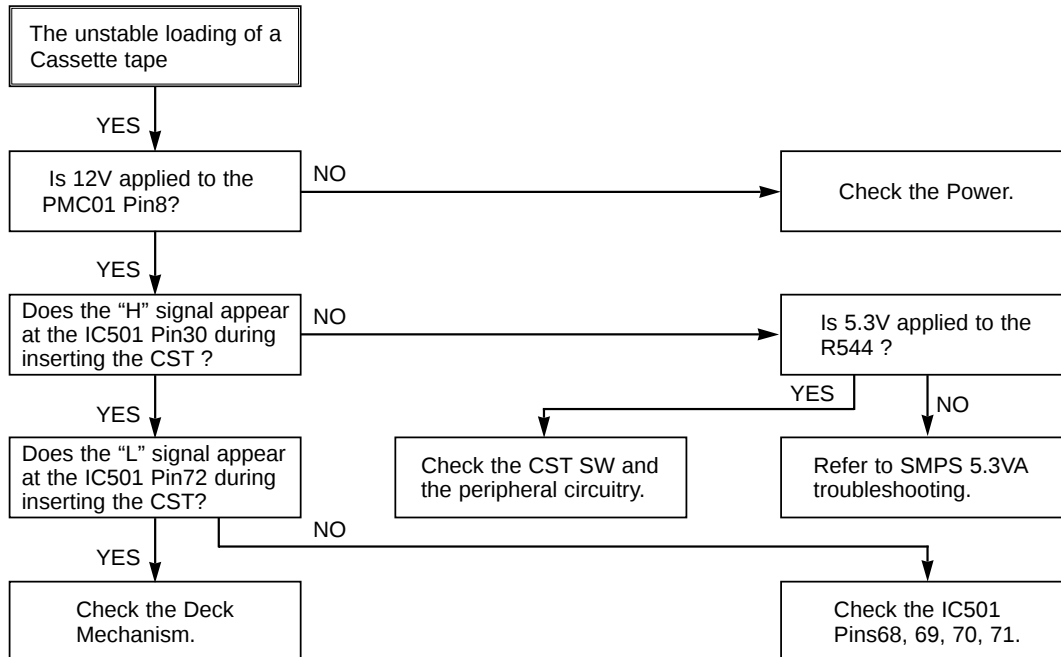


2. SYSTEM/KEY CIRCUIT

(1) AUTO STOP



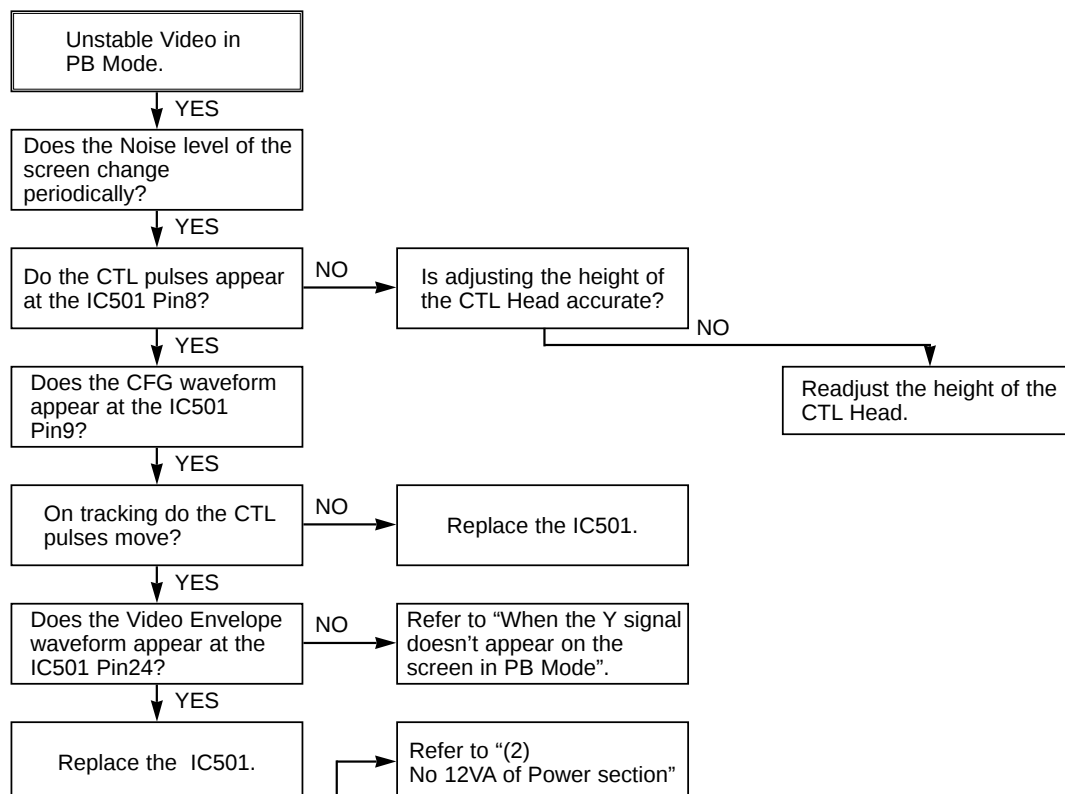
(2) The unstable loading of a Cassette tape



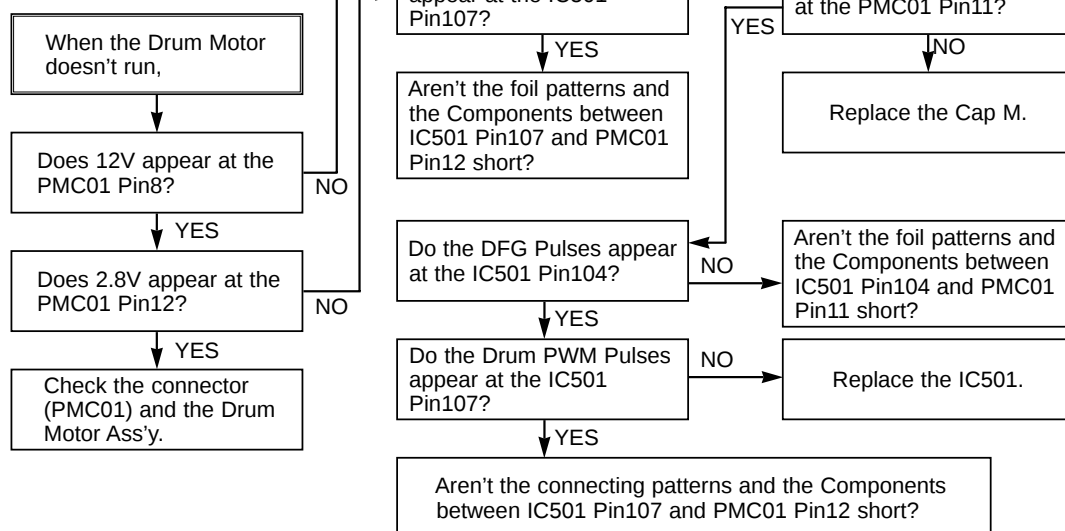
Caution : Auto stop can occur because Grease or Oil is dried up

3. SERVO CIRCUIT

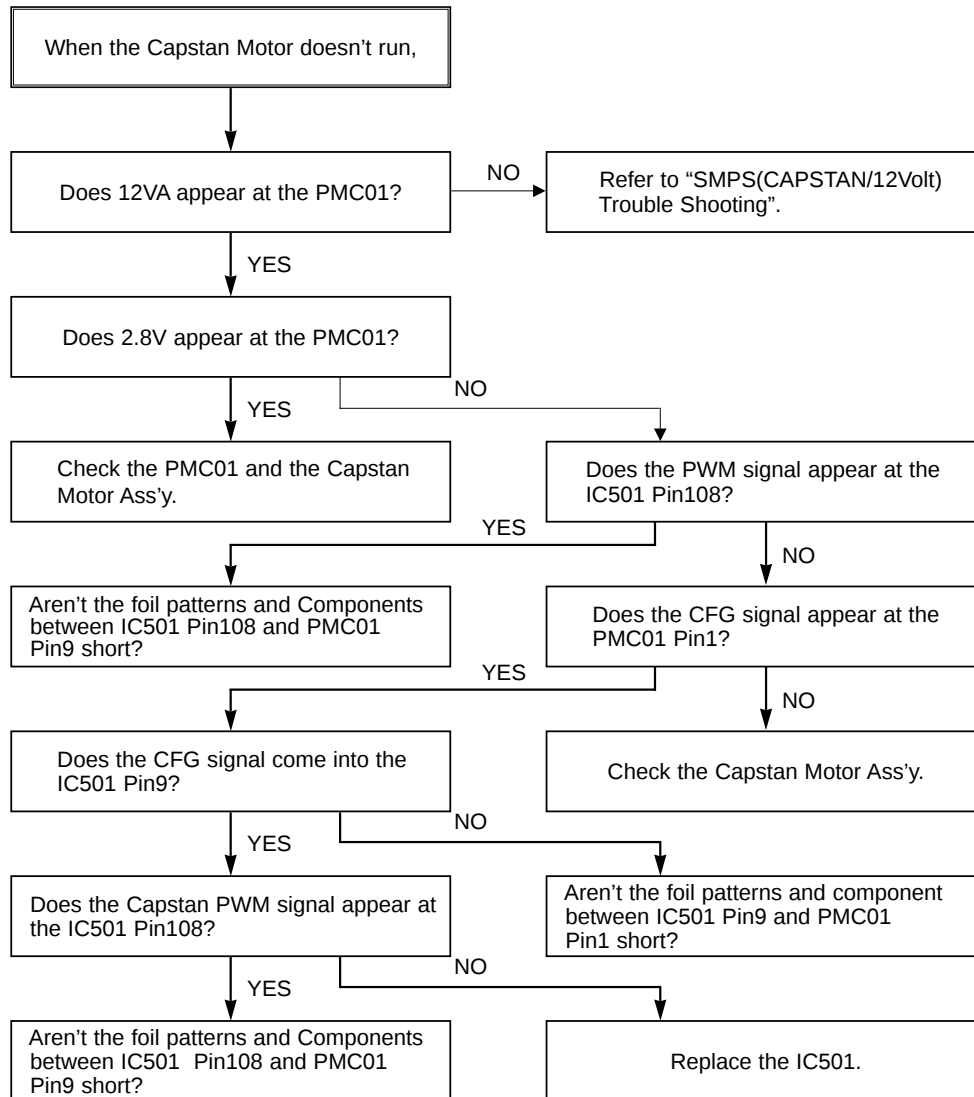
(1) Unstable Video in PB MODE



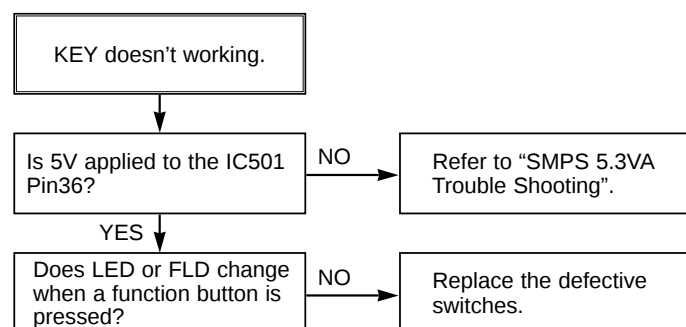
(2) When the Drum Motor doesn't run.



(3) When the Capstan Motor doesn't run,

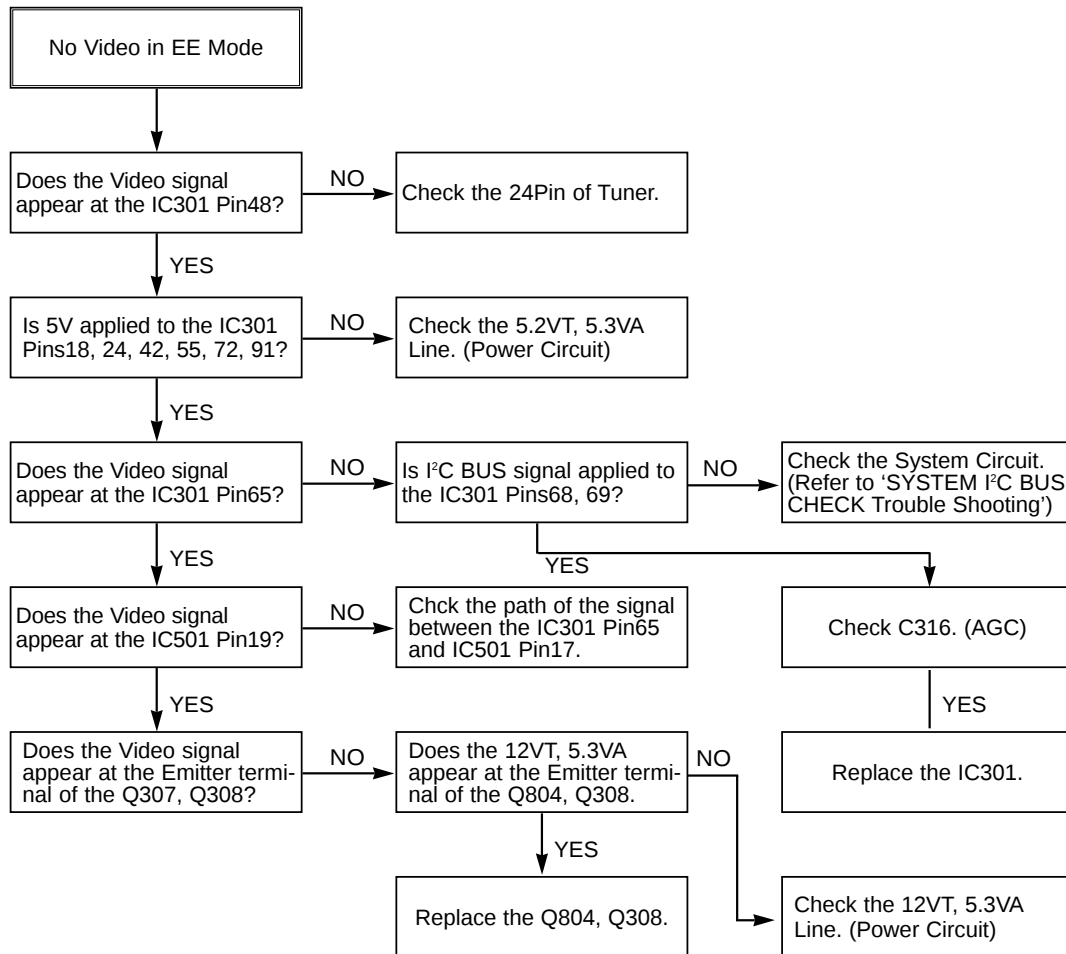


(4) KEY doesn't working

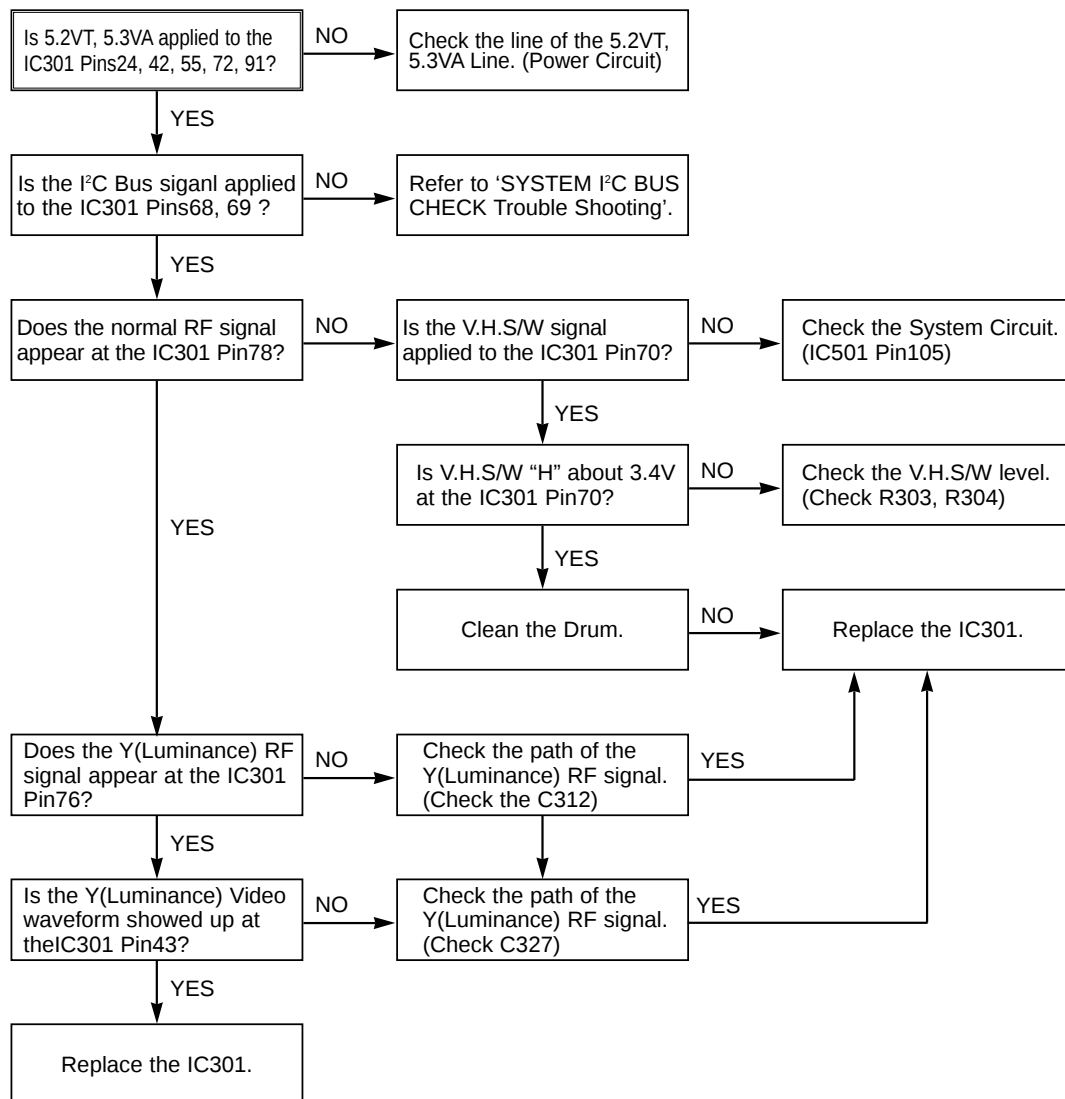


4. Y/C CIRCUIT

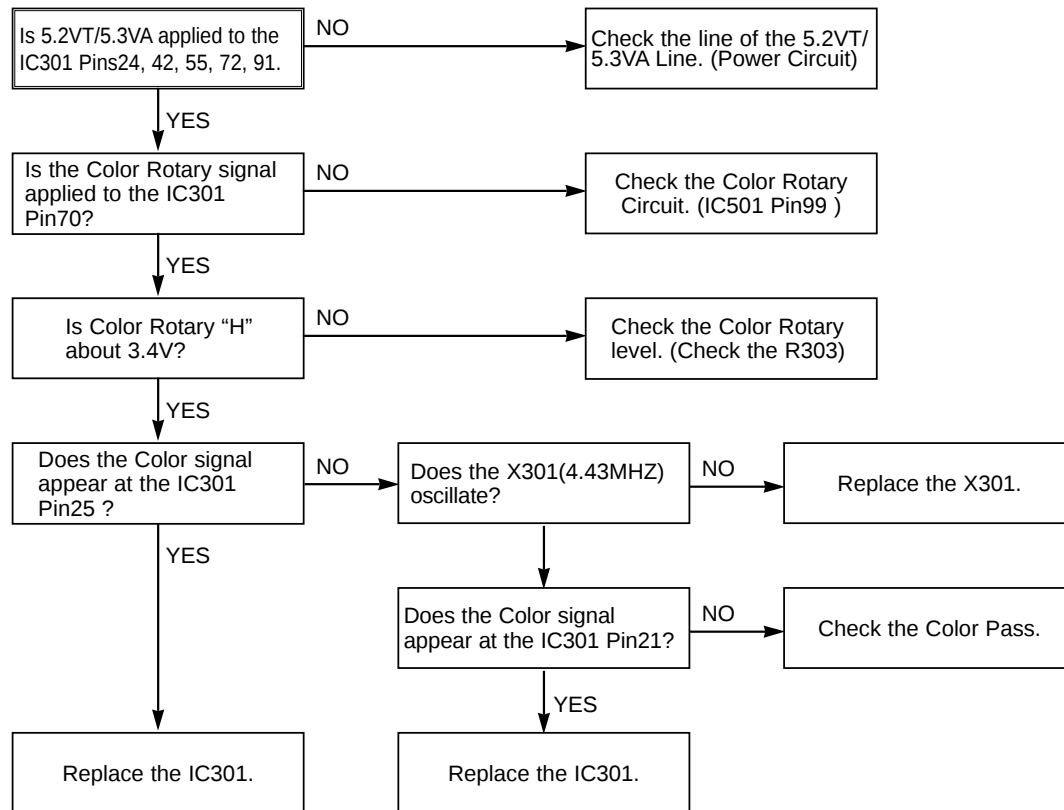
(1) No Video in EE Mode,



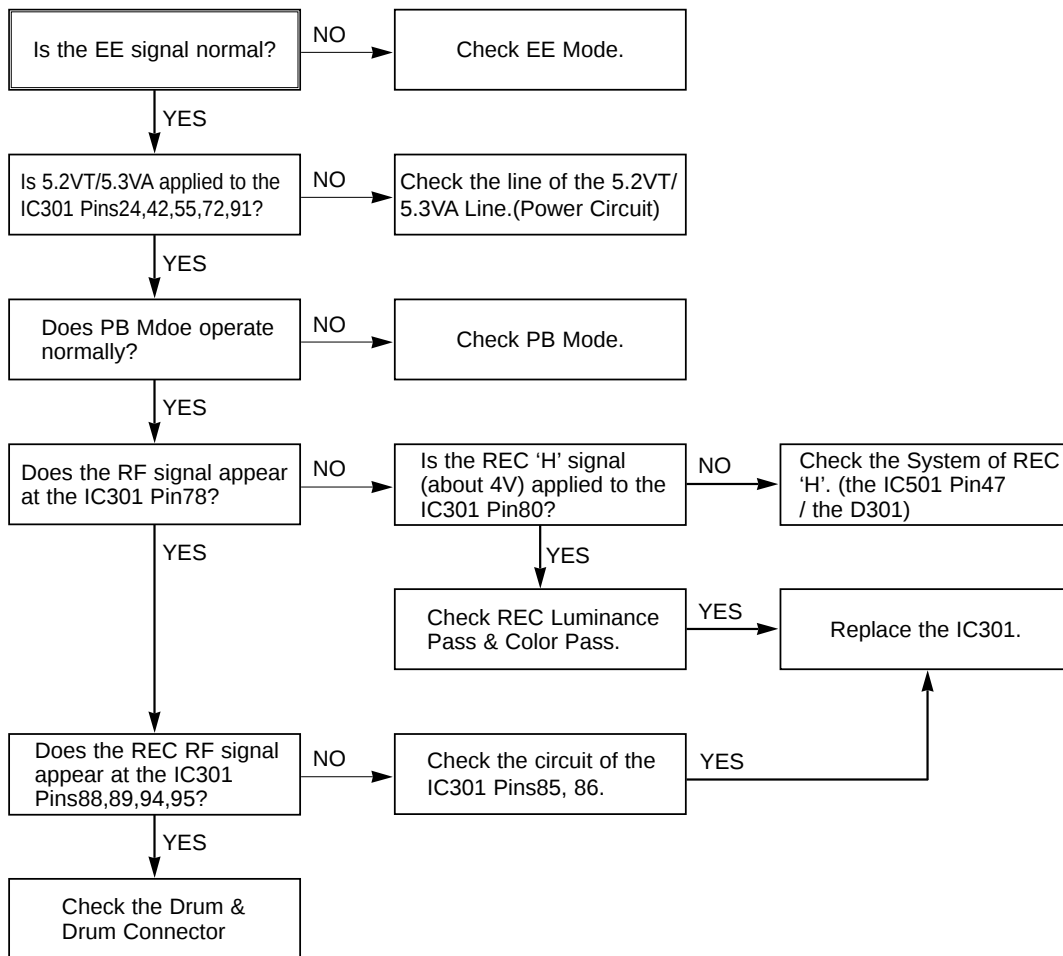
(2) When the Y(Luminance) signal doesn't appear on the screen in PB Mode,



(3) When the C(Color) signal doesn't appear on the screen in PB Mode,

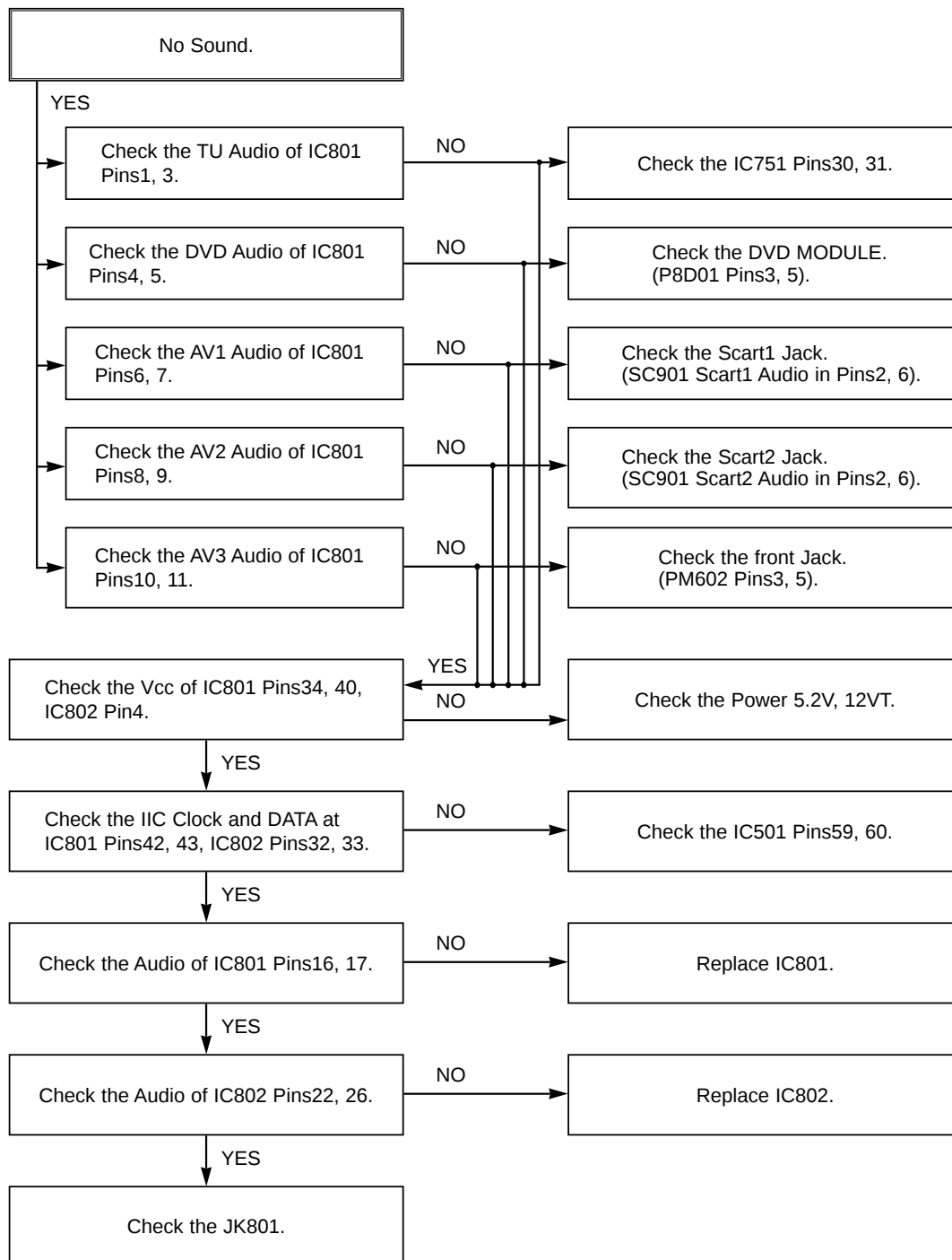


(4) When the Video signal doesn't appear on the screen in REC Mode,

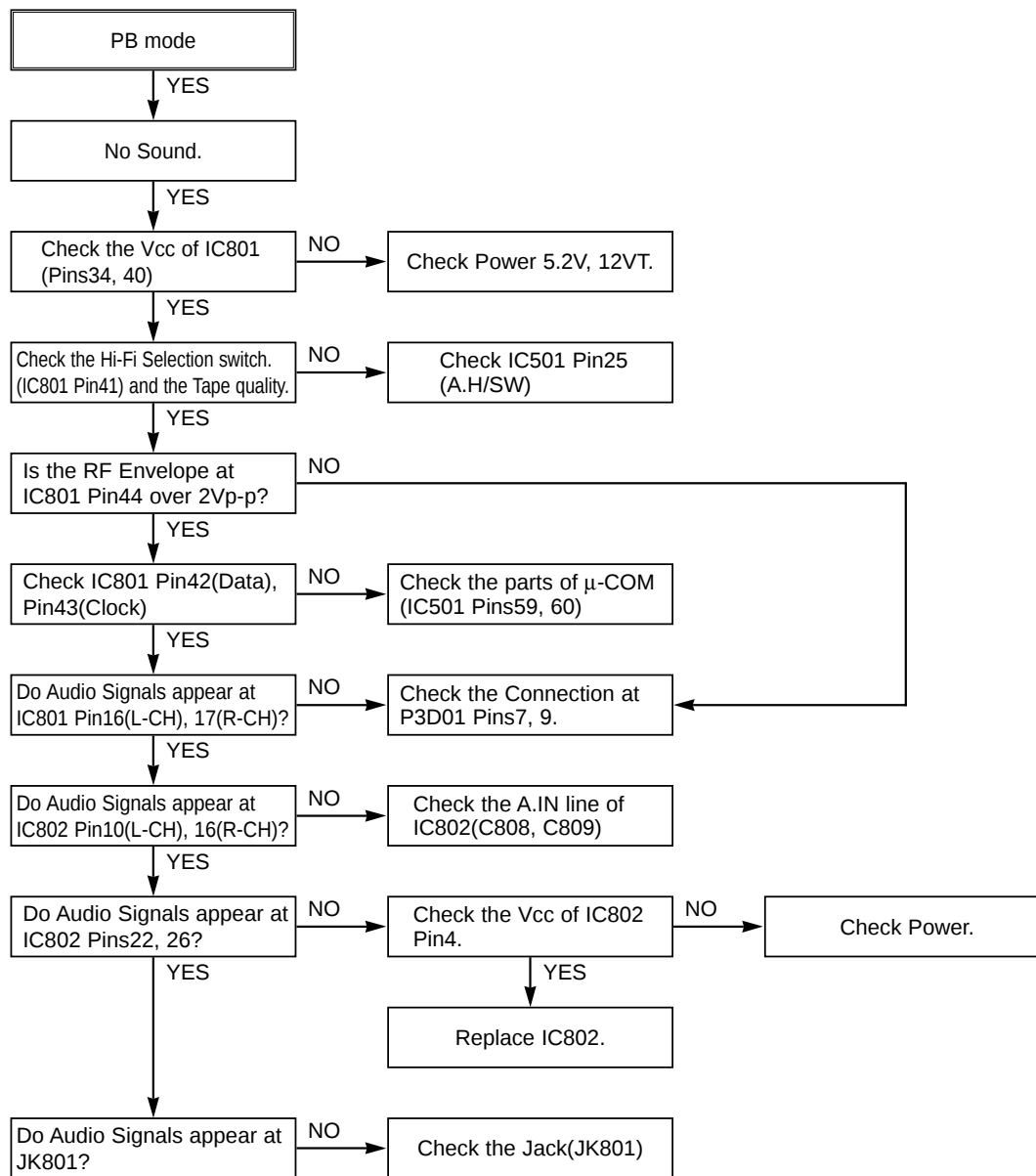


5. Hi-Fi CIRCUIT

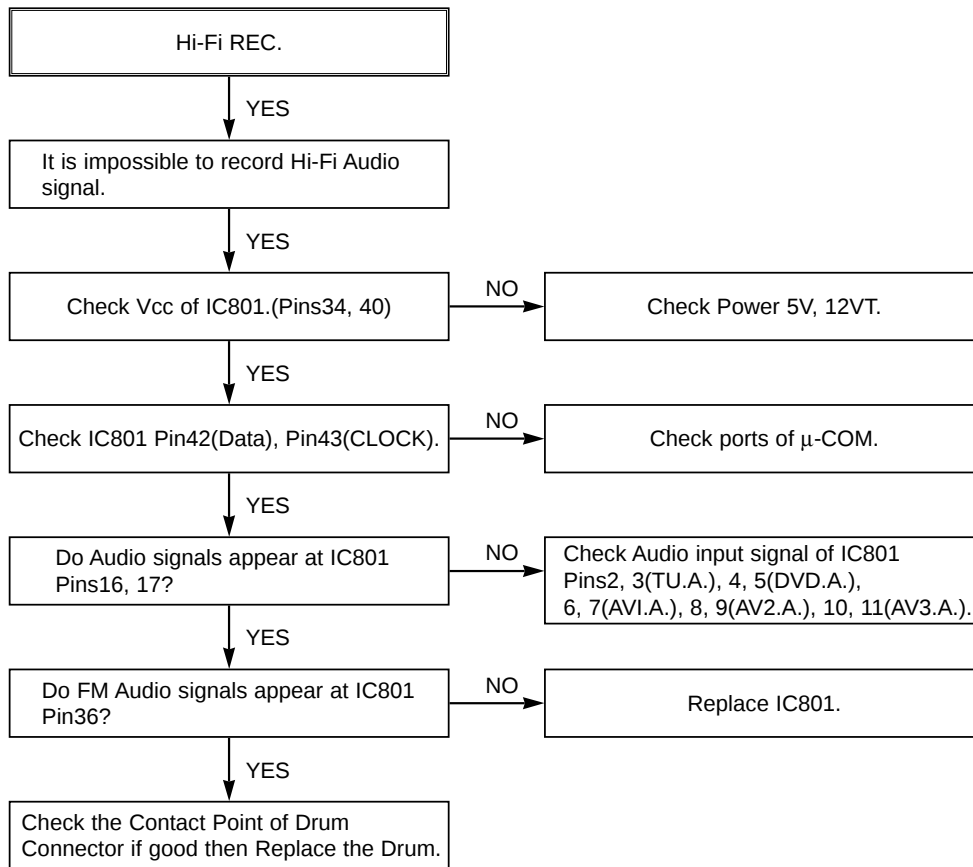
(A) No Sound(EE Mode)



(B) Hi-Fi Playback

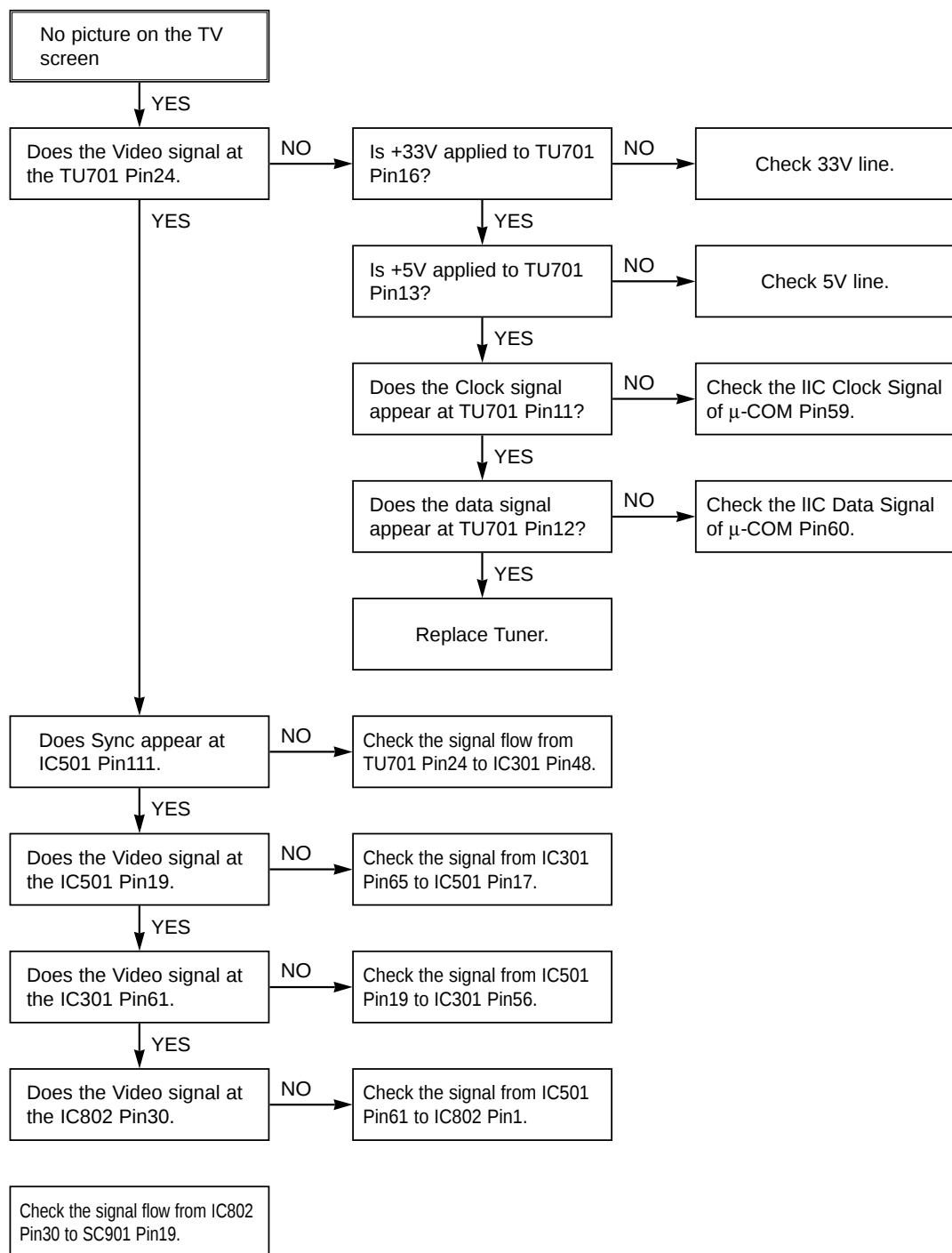


(C)

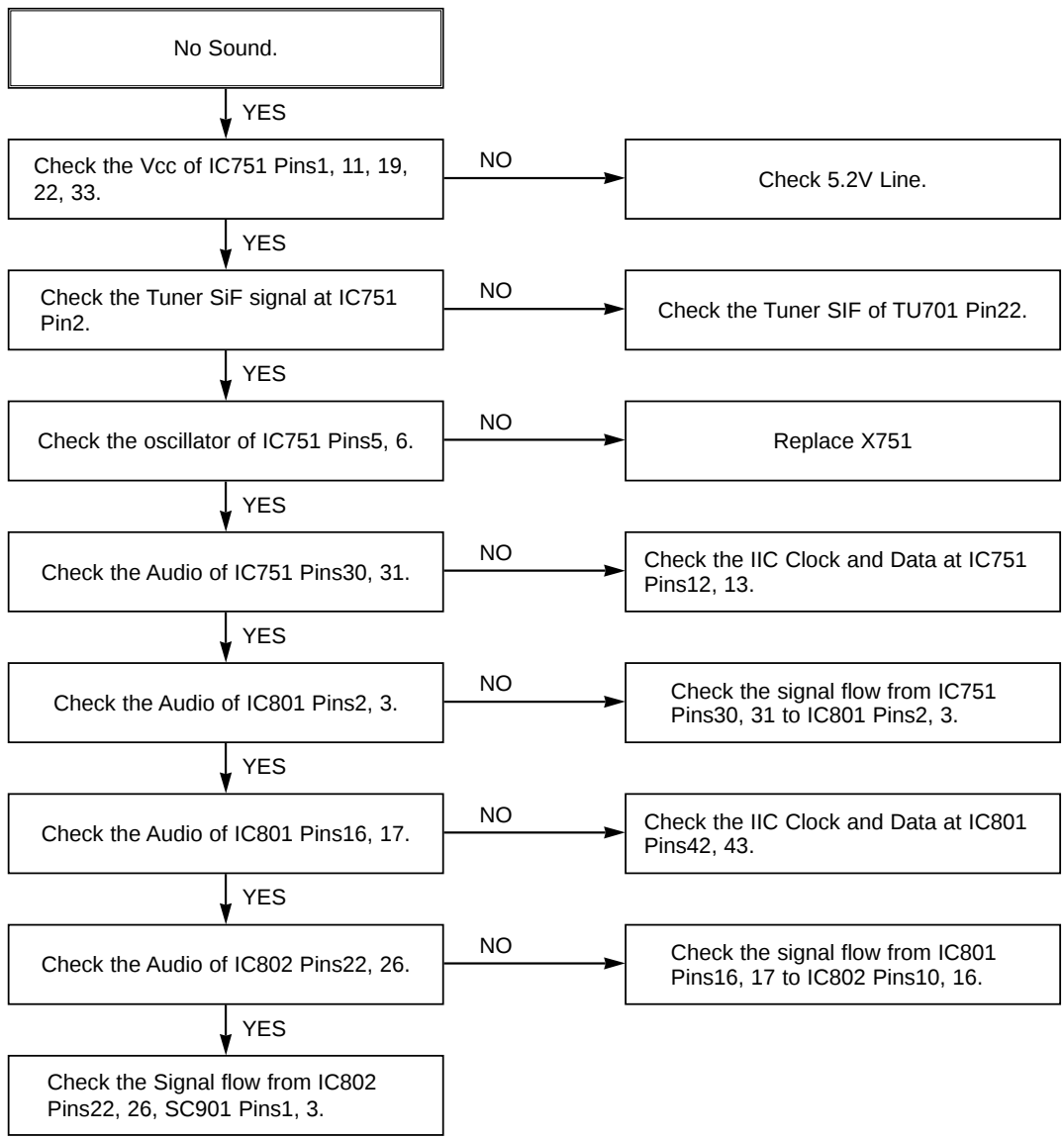


6. Tuner/IF CIRCUIT

(A) No Picture on the TV screen

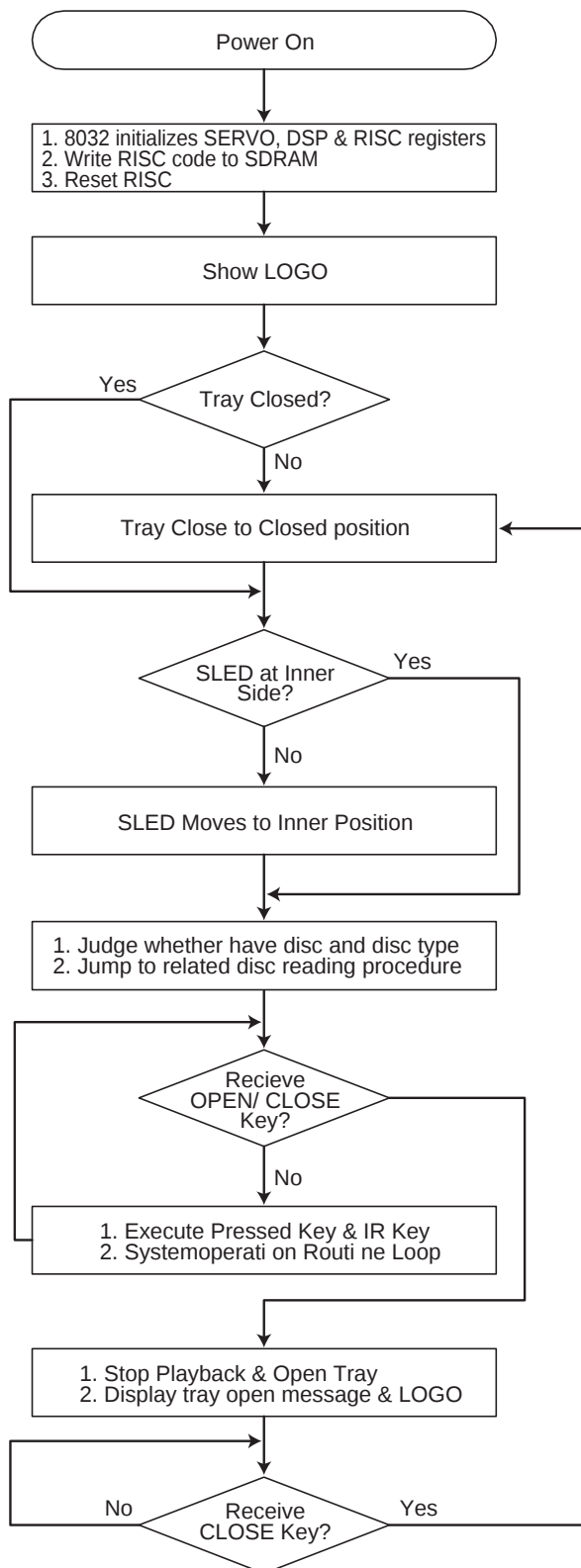


(B) No Sound

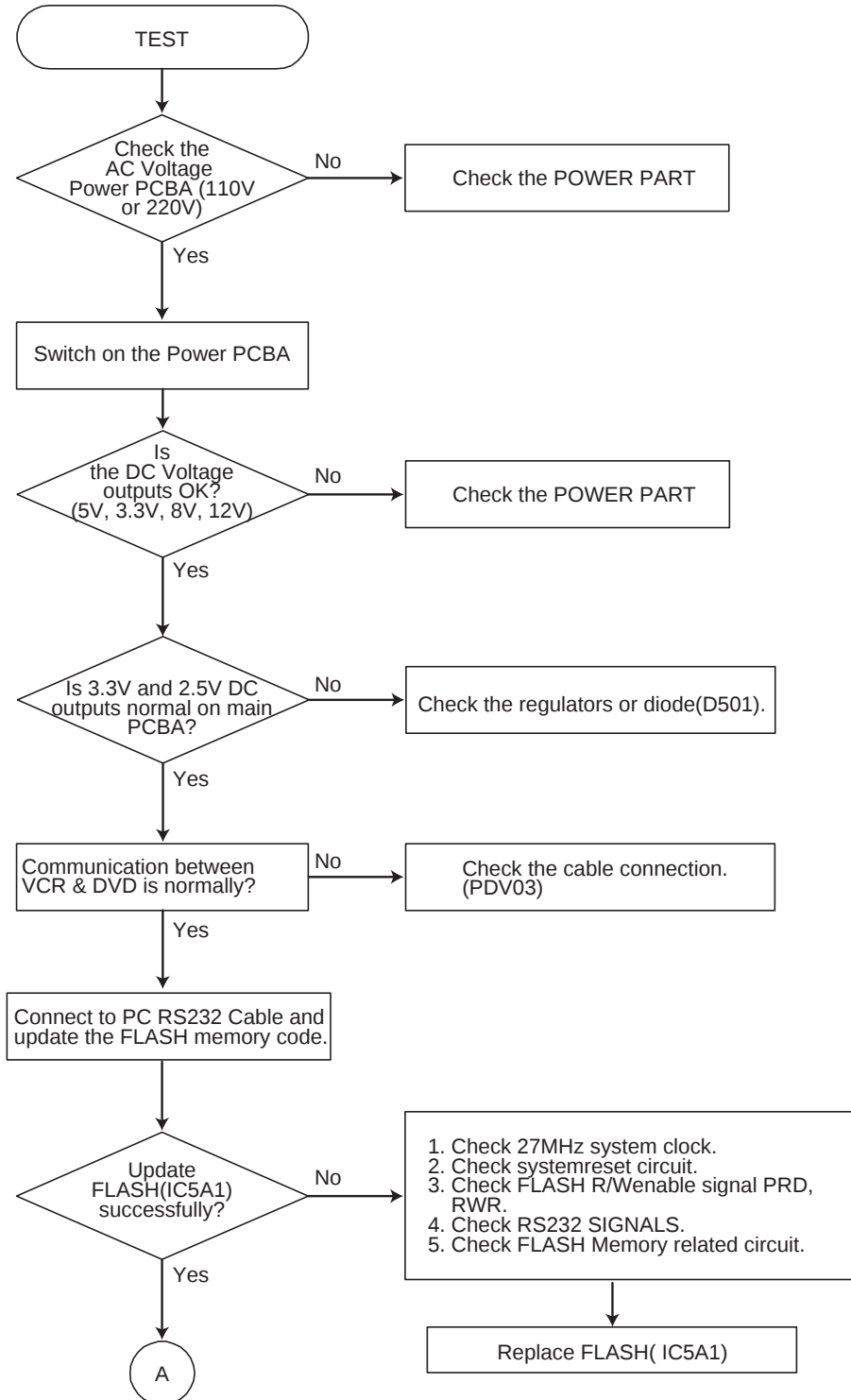


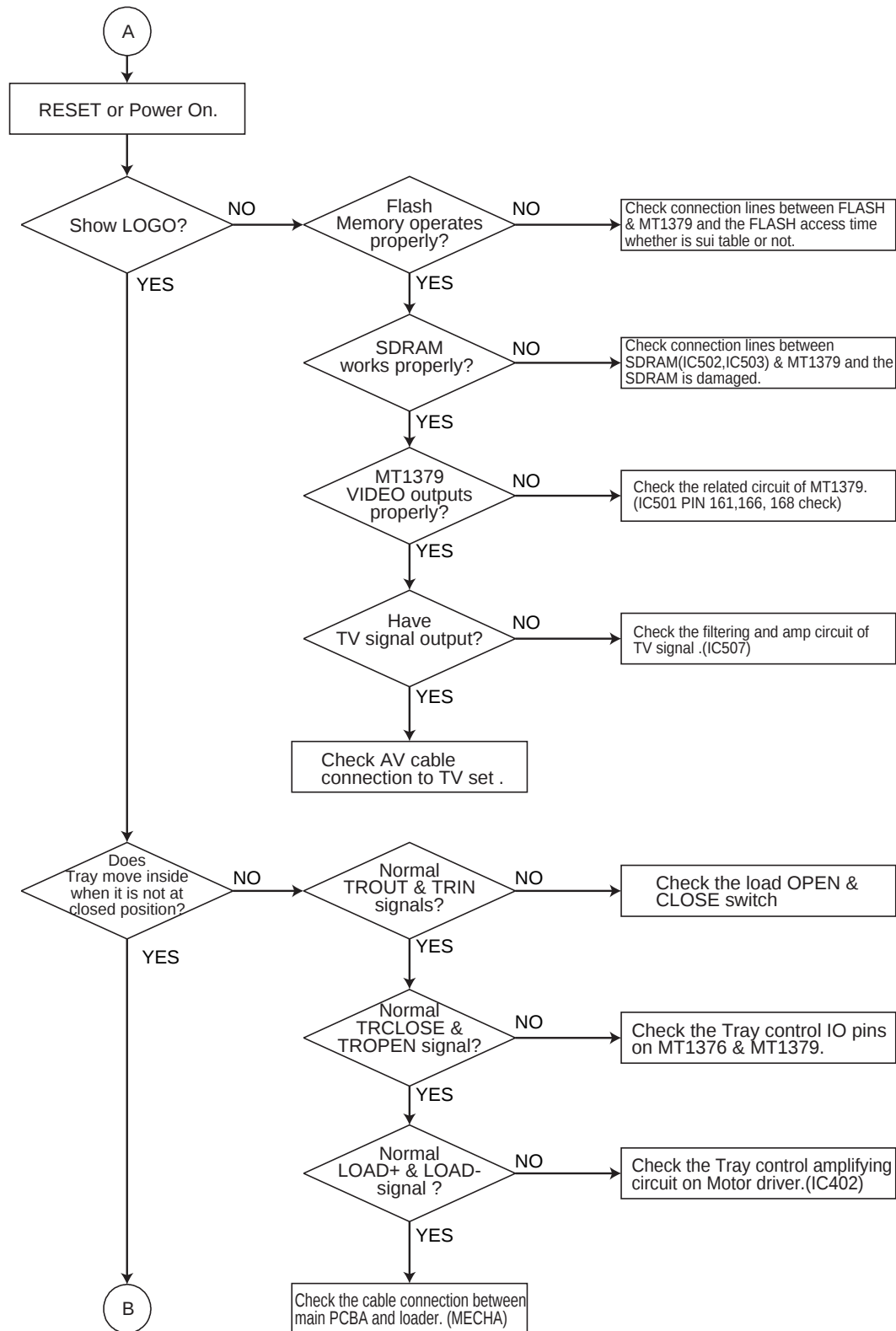
3-3. DVD & AMP SECTION ELECTRICAL TROUBLESHOOTING GUIDE

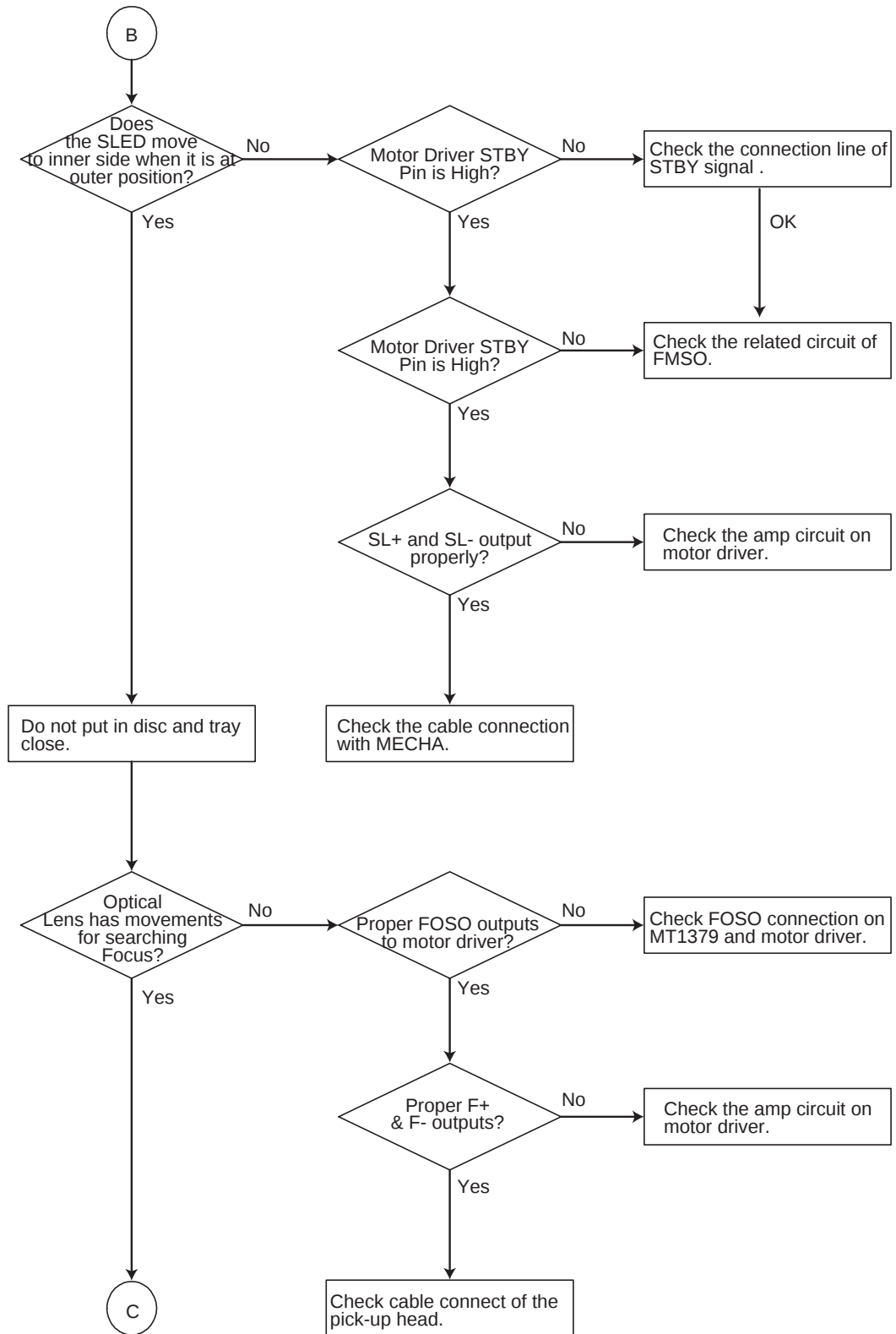
1. System operation flow

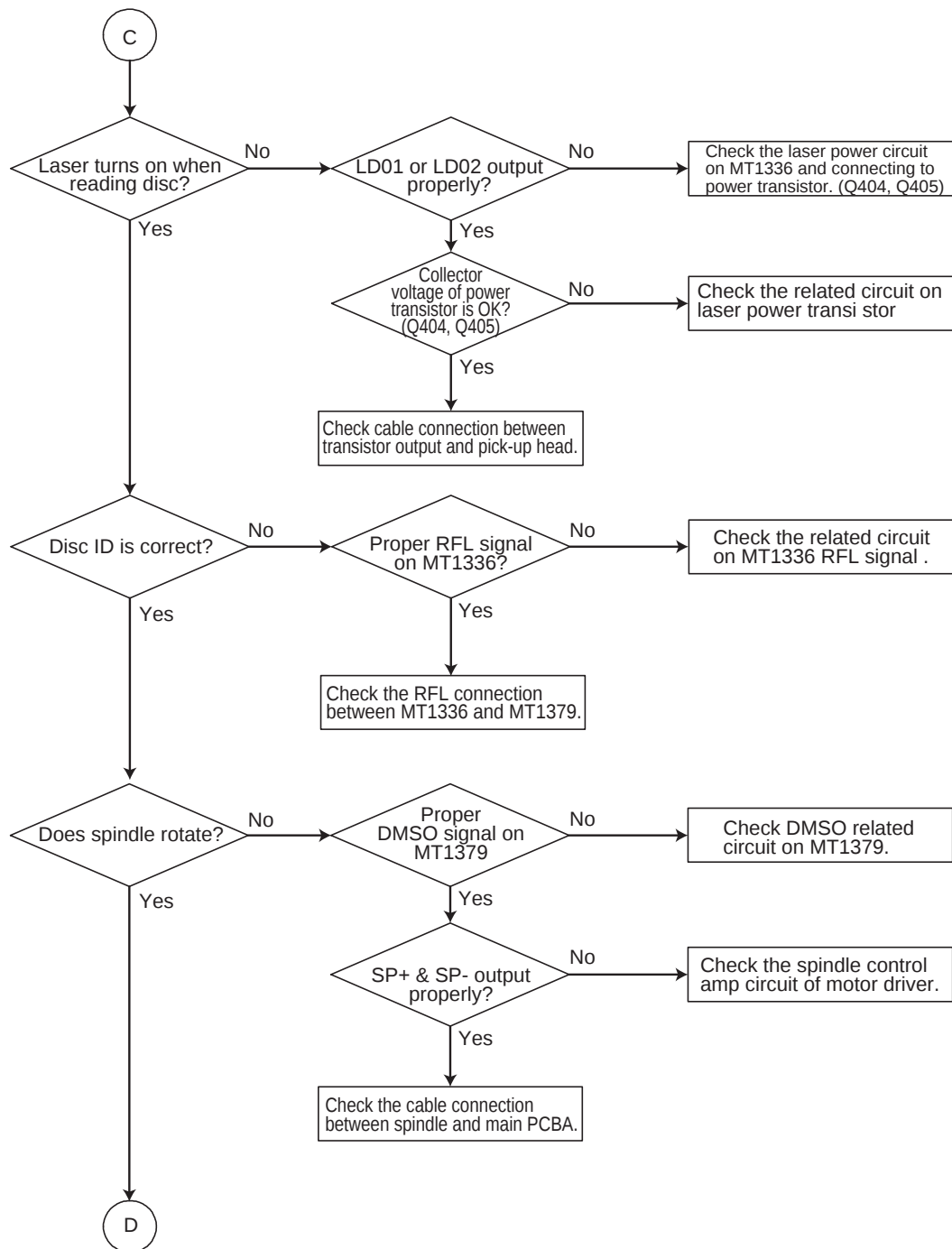


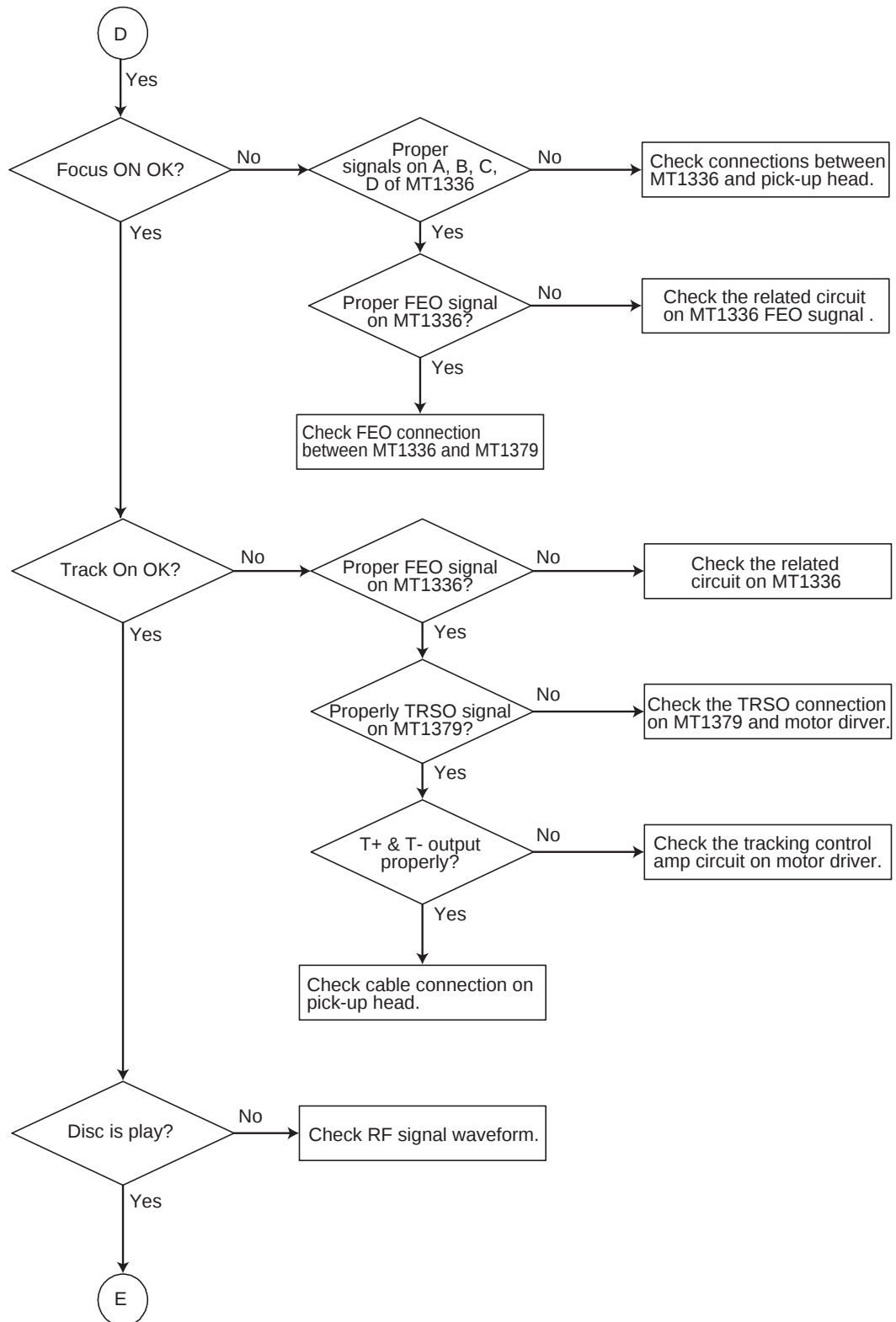
2. Test & debug flow

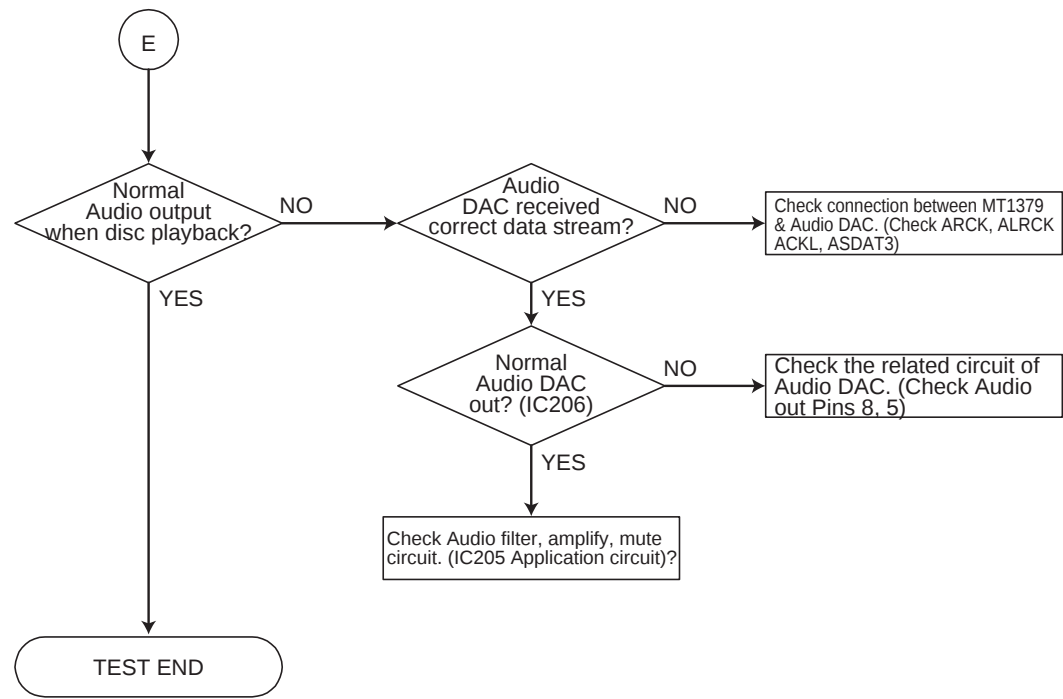




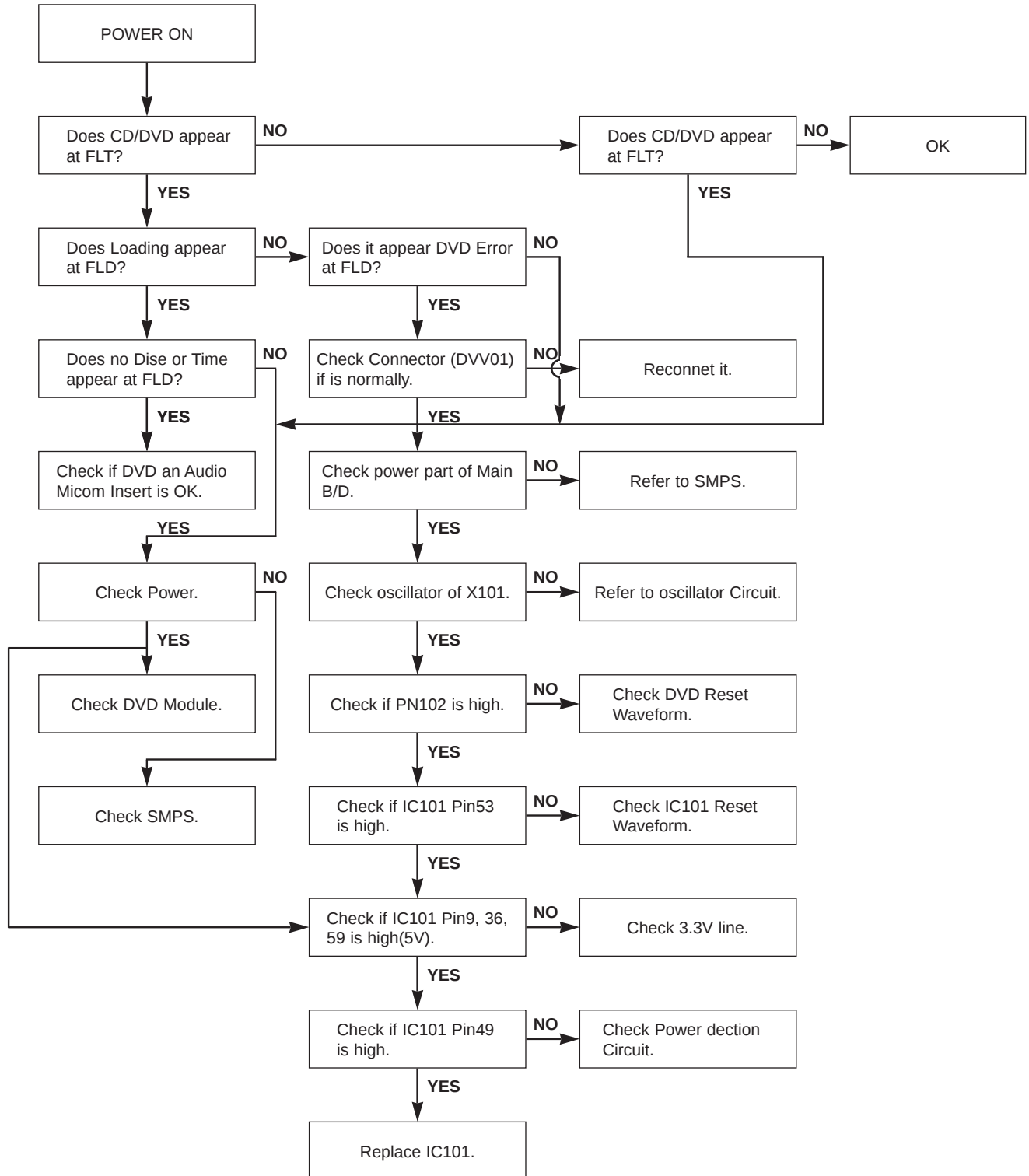






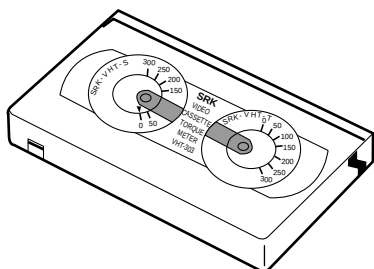
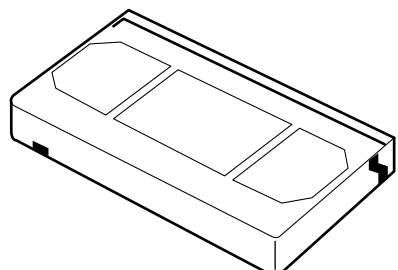
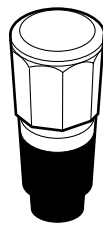
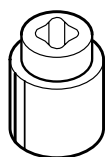
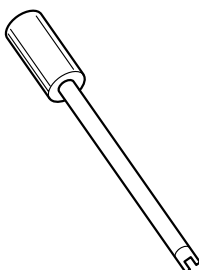
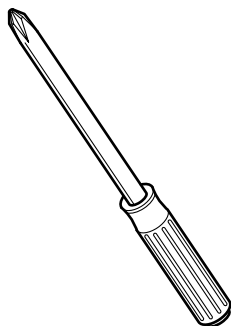


3. AUDIO μ -COM Circuit(DVD & AMP)



SECTION 4 MECHANICAL ADJUSTMENTS

• Tools and Fixfures for Service

1. Cassette Torque meter SRK-VHT-303(Not SVC part) 	2. Alignment tape (See figure below) 	3. Torque gauge 600g.Cm ATG 
4. Torque gauge adaptor 	5. Post height adjusting driver Parts No.: SV-TGO-030-000(SMALL) : SV-TGO-030-000(LARGE) 	6. + Type driver (φ 5) 

• Alignment Tapes for Adjustment

Derivation No.			A	B C	D
	Mechanism		A	B C	D
		SP/LP 2/4 Head	SP 2 Head	SP/LP/EP 2/4 Head	SP 2 Head
Adjustment Items					
FM Envelope		TTV-P2L	TTV-P2	TTV-N1 (TTV-N12)	TTV-N2
A/C Head	Slantness	A commercially available tape			
	Height	TTV-P1 (TTV-P1L)	TTV-P1	TTV-N1 (TTV-N12) (TTV-N1E)	TTV-N1 (TTV-N12)
	Azimuth	TTV-P1	TTV-P2	TTV-N2	TTV-N2
X-value		TTV-P2 (TTV-P2L)	TTV-P2	TTV-N2 TTV-N2E TTV-N12	TTV-N2
RG Post Inclination		A commercially available tape			
Tape Back Tension		SRK-VHT-303			

The numbers in () parenthesis can be used as the substitute.

1. Mechanism Alignment Position Check

Purpose: To determine if the Mechanism is in the correct position, when a Tape is ejected.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Check Point
• Blank tape	• Eject Mode (with Cassette ejected)	• Mechanism and Mode Switch Position

- 1) Turn the Power S/W on and eject the Cassette by pressing the Eject Button.
- 2) Remove the Top Cover and Plate Assembly Top, visually check if the Gear Cam Hole is aligned with the Chassis Hole as below Fig. C-2.
- 3) IF not, rotate the Shaft of the Loading Motor to either clockwise or counterclockwise until the alignment is as below Fig. C-2.
- 4) Remove the Screw which fixes the Deck Mechanism and Main Frame and confirm if the Gear Cam is aligned with the Gear Drive as below Fig. C-1(A).
- 5) Confirm if the Mode S/W on the Main P.C.Board is aligned as below Fig. C-1(B).
- 6) Remount the Deck Mechanism on the Main P.C.Board and check each operation.

CHECK DIAGRAM

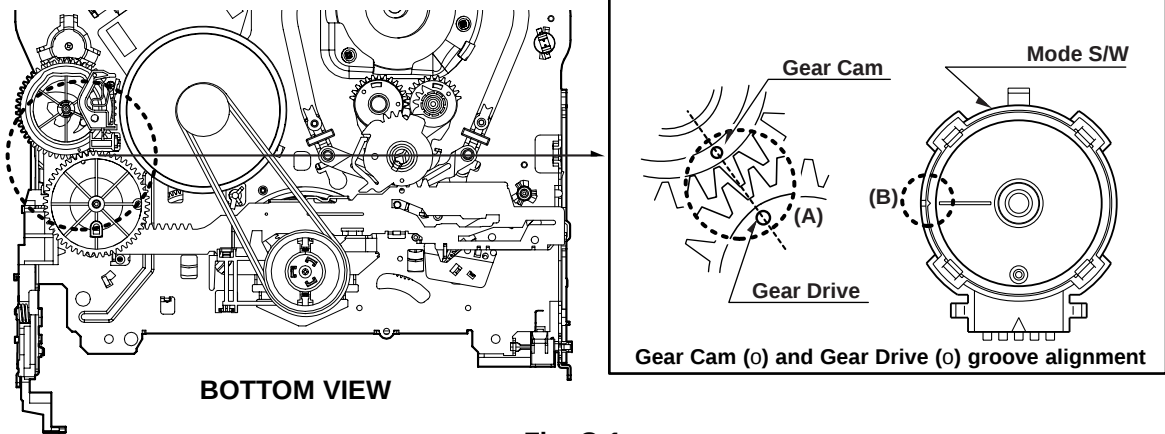


Fig. C-1

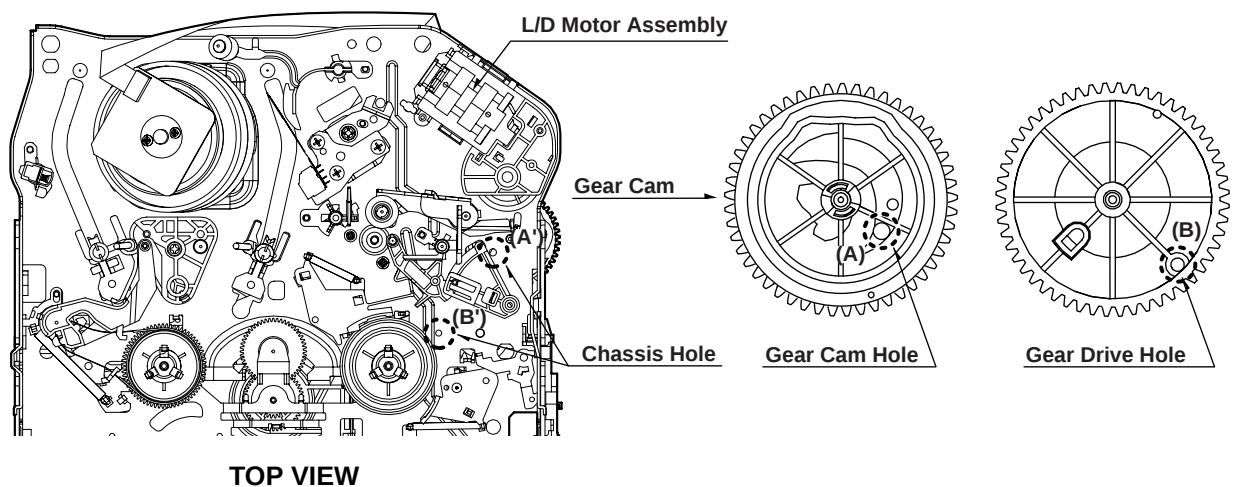


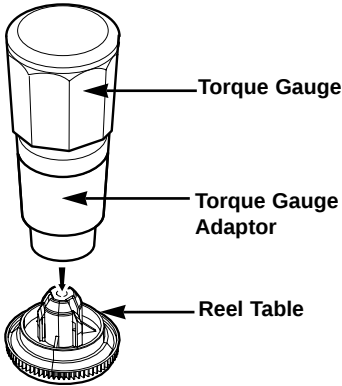
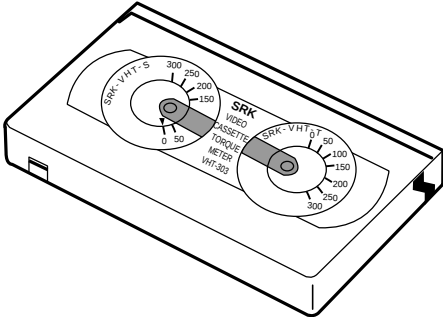
Fig. C-2

2. Preparation for Adjustment (To set the Deck Mechanism of the loading state without inserting a cassette tape).

- 1) Unplug the power cord from the AC outlet.
- 2) Disassemble the Top Cover and Plate Assembly Top.
- 3) Plug the power cord into the AC outlet.
- 4) Turn the power S/W on and push the Lever Stopper of the Holder Assembly CST to the back for loading the

cassette without tape.
Cover the holes of the End Sensors at the both sides of the Chassis to prevent a light leak.
Then the Deck Mechanism drives to the Stop Mode.
In this case, the Deck Mechanism can accept inputs of each mode, however the Rewind and Review operation can not be performed for more than a few seconds because the Take-up Reel Table is in the Stop State and can not be detected the Reel Pulses.

3. Checking Torque

Purpose: To insure smooth transport of the tape during each mode of operation. If the tape transport is abnormal, then check the torque as indicated by the chart below.				
Test Equipment/ Fixture		Test Conditions (Mechanism Condition)		Checking Method
• Torque Gauge(600g/cm ATG) • Torque Gauge Adaptor • Cassette Torque Meter SRK-VHT-303		• Play (FF) or Review (REW) Mode		• Perform each Deck Mechanism mode without inserting a cassette tape(Refer to above No.2 Preparation for Adjustment). • Read the measurement of the Take-up or Supply Reels on the Cassette Torque Meter(Fig. C-3-2). • Attach the Torque Gauge Adaptor to the Torque Gauge and then read the value of it(Fig. C-3-1).
Item	Mode	Test Equipment	Measurement Reel	Measurement Values
Fast Forward Torque	Fast Forward	Cassette Torque Gauge	Take-Up Reel	More than 400g/cm
Rewind Torque	Rewind	Cassette Torque Gauge	Supply Reel	More than 400g/cm
Play Take-Up Torque	Play	Cassette Torque Meter	Take-Up Reel	40~100g/cm
Review Torque	Review	Cassette Torque Meter	Supply Reel	120~210g/cm
NOTE: The values are measured by using a Torque Gauge and Torque Gauge Adaptor with the Torque Gauge affixed. • Torque Gauge (600g.cm ATG)  Fig. C-3-1 NOTE: The torque reading to measure occurs when the tape abruptly changes direction from Fast Forward to Rewind Mode, when quick braking is applied to both Reels. • Cassette Torque Meter (SRK-VHT-303)  Fig. C-3-2				

4. Guide Roller Height Adjustment

Purpose: To regulate the height of the tape so that the bottom of the tape runs along the tape guide line on the Lower Drum.

4-1. Preliminary Adjustment

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
• Post Height Adjusting Driver	• Play or Review Mode	• Guide Roller Height Adjustment screws on the Supply and Take-Up Guide Rollers.

Adjustment Procedure

- 1) Confirm if the tape runs along the tape guide line of the Lower Drum.
- 2) If the tape runs the bottom of the guide line, turn the Guide Roller Height Adjustment Screw to clockwise direction.
- 3) If it runs the top, turn to counterclockwise direction.
- 4) Adjust the height of the Guide Roller to be guided to the guide line of the Lower Drum from the starting and ending point of the Drum.

ADJUSTMENT DIAGRAM

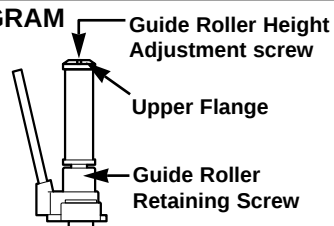


Fig. C-4-1

4-2. Precise Adjustment

Test Equipment/Fixture	Test Equipment Connection Points	Test Conditions VCR(VCP) State	Adjustment Point
• Oscilloscope • Alignment Tape • Post Height Adjusting Driver	• CH-1:PB RF Envelope • CH-2:NTSC: SW 30Hz PAL: SW 25Hz • Head Switching Output Point • RF Envelope Output Point	• Play an Alignment Tape	• Guide Roller Height Adjustment Screws

Adjustment Procedure

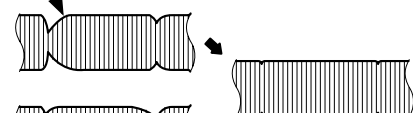
- 1) Play an Alignment Tape after connecting the probe of the Oscilloscope to the RF Envelope Output Test Point and Head Switching Output Test Point.
- 2) Tracking Control(in PB Mode) : Center Position(When this adjustment is performed after the Drum Assembly has been replaced, set the Tracking Control so that the RF Output is Maximum).
- 3) Height Adjustment Screw : Flatten the RF waveform. (Fig. C-4-2)
- 4) Turn(Move) the Tracking Control(in PB Mode) clockwise and counterclockwise.(Fig. C-4-3)
- 5) Check that any drop of RF Output is uniform at the start and end of the waveform.

NOTE

If the adjustment is excessive or insufficient the tape will jam or fold.

Waveform Diagrams

P2 POST ADJUSTMENT



P3 POST ADJUSTMENT



Fig. C-4-2

Turn the Roller Guide Height Adjustment Screw slightly to flatten the waveform.

Tracking Control at center

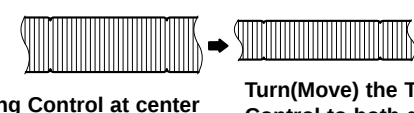
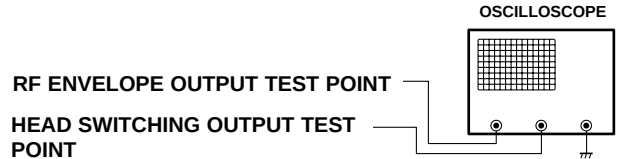


Fig. C-4-3

Turn(Move) the Tracking Control to both directions

Connection Diagram



5. Audio/Control (A/C) Head Adjustment

Purpose: To insure that the tape passes accurately over the Audio and Control Tracks in exact alignment of the both Record and Playback Modes.

5-1. Preliminary Adjustment (Height and Tilt Adjustment)
Perform the Preliminary Adjustment, when there is no Audio Output Signal with the Alignment Tape.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
- Blank Tape - Screw Driver(+) Type 5mm	Play the blank tape	- Tilt Adjustment Screw(C) - Height Adjustment Screw(B) - Azimuth Adjustment Screw(A)

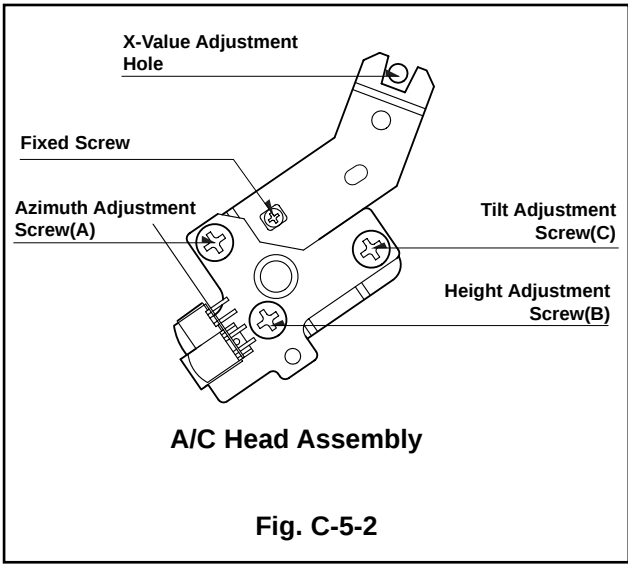
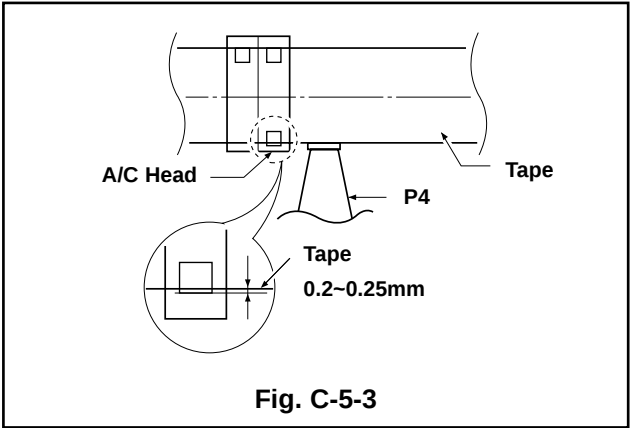
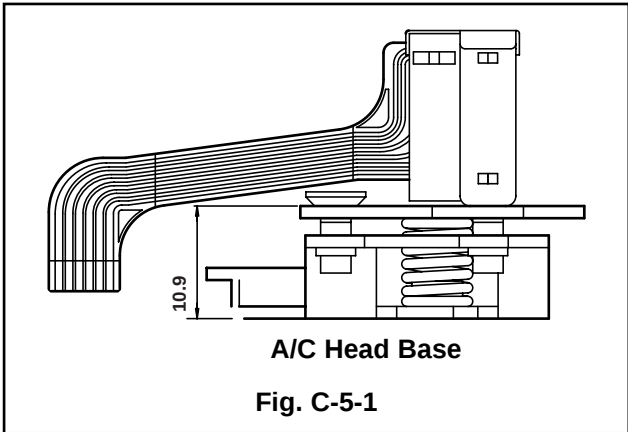
Adjustment Procedure/Diagrams

- 1) Initially adjust the Base Assembly A/C Head as shown Fig. C-5-1 by using the Height Adjustment Screw(B).

2) Play a blank tape and observe if the tape passes accurately over the A/C Head without tape curling or folding.

3) If folding or curling is occurred then adjust the Tilt Adjustment Screw(C) while the tape is running to resemble Fig. C-5-3.
- 4) Reconfirm the tape path after Playback about 4~5 seconds.

NOTE
Ideal A/C head height occurs when the tape runs between 0.2~0.25mm above the bottom edge of the A/C Head core.



5-2. Confirm that the tape passes smoothly between the Take-up Guide and Pinch Roller(using a mirror or the naked eye).

- 1) After completing Step 5-1.(Preliminary Adjustment), check that the tape passes around the Take-up Guide and Pinch Roller without folding or curling at the top or bottom.
 - (1) If folding or curling is observed at the bottom of the Take-up Guide then slowly turn the Tilt Adjustment Screw(C) in the clockwise direction.

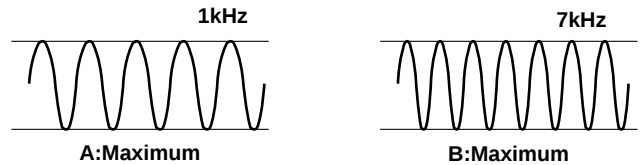
- (2) If folding or curling is observed at the top of it then slowly turn the Tilt Adjustment Screw(C) in the counterclockwise direction.

NOTE:

Check the RF envelope after adjusting the A/C Head, if the RF waveform differs from Fig. C-5-4, performs Precise Adjustment to flat the RF waveform.

5-3. Precise Adjustment (Azimuth adjustment)

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
- Oscilloscope - Alignment Tape(SP) - Screw Driver(+) Type 5mm	Audio output jack	Play an Alignment Tape 1kHz, 7kHz Sections	- Azimuth Adjustment Screw(A) - Height Adjustment Screw(B)
Adjustment Procedure 1) Connect the probe of the oscilloscope to Audio Output Jack. 2) Alternately adjust the Azimuth Adjustment Screw(A) and the Tilt Adjustment Screw(C) for maximum output of the 1kHz and 7kHz segments, while maintaining the flattest envelope differential between the two frequencies.			

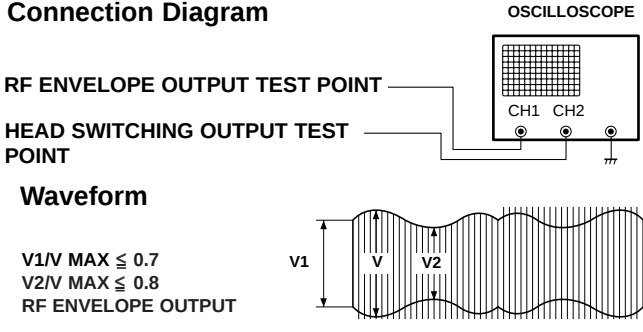


6. X-Value Adjustment

Purpose: To obtain compatibility with the other VCR(VCP) Models.

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
- Oscilloscope - Alignment Tape(SP only) - Screw Driver(+) Type 5mm	- CH-1: PB RF Envelope - CH-2: NTSC: SW 30Hz PAL: SW 25Hz - Head Switching Output Test Point - RF Envelope Output Test Point	Play an Alignment Tape	
Adjustment Procedure 1) Release the Automatic Tracking to run long enough for tracking to complete it's cycle. 2) Loosen the Fixed Mounting Screw and move the Base Assembly A/C Head in the direction as shown in the diagram to find the center of the peak that allows for the maximum waveform envelope. This method should allow the 31μm Head to be centrally located over the 58μm tape track. 3) Tighten the Base Assembly A/C Head mounting Screw.		Adjustment Diagram Connection Diagram	

7. Adjustment after Replacing Drum Assembly (Video Heads)

Purpose: To correct for shift in the Roller Guide and X value after replacing the Drum.			
Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Points
- Oscilloscope - Alignment Tapes - Blank Tape - Post Height Adjusting Driver - Screw Driver(+) Type 5mm	- CH-1: PB RF Envelope - CH-2: NTSC: SW 30Hz PAL: SW 25Hz - Head Switching Output Test Point - RF Envelope Output Test Point	- Play the Blank Tape - Play an Alignment Tape	- Guide Roller Precise Adjustment - Switching Point - Tracking Preset - X-Value
Checking/Adjustment Procedure Play a blank tape and check for tape curling or creasing around the Roller Guide. If there is a problem then follow the procedure 4. "Guide Roller Height" and 5. "Audio Control(A/C) Head Adjustment".		Connection Diagram 	

8. Check the Tape Travel after Reassembling Deck Assembly.

8-1. Checking Audio and RF Locking Time during playback and after CUE or REV (FF/REW)

Test Equipment/ Fixture	Specification	Connection Points	Test Conditions (Mechanism Condition)
- Oscilloscope - Alignment Tapes(with 6H 3KHz Color Bar Signal) - Stop Watch	- RF Locking Time: Less than 5 sec. - Audio Locking Time: Less than 10sec	- CH-1: PB RF Envelope - CH-2: Audio Output - RF Envelope Output Point - Audio Output Jack	Play an Alignment Tape (with 6H 3kHz Color Bar Signal)
Checking Procedure Play an Alignment Tape then change the operating mode to CUE or REV and confirm if the unit meets the above listed specifications.		NOTES: 1) CUE is the forward search mode (FF) 2) REV is the backward search mode (REW) 3) Refer to the Play mode	

8-2. Checking for tape curling or jamming

Test Equipment/ Fixture	Specification	Test Conditions (Mechanism Condition)
- T-160 Tape - T-120 Tape	Be sure there is no tape jamming or curling at the beginning, middle or end of the tape.	Run the CUE, REV, Play mode at the beginning and the end of the tape.
Checking Procedure 1) Confirm that the tape runs smoothly around the roller guides, Drum and A/C Head Assemblies while abruptly changing operating modes from Play to CUE or REV. This is to be checked at the beginning, middle and end sections of the tape. 2) Confirm that the tape passes over the A/C Head Assembly as indicated by proper audio reproduction and proper tape counter performance.		

1. Check before starting repairs

The following faults can be remedied by cleaning and oiling. Check the needed lubrication and the conditions of cleanliness in the unit.

Check with the customer to find out how often the unit is used, and then determine that the unit is ready for inspection and maintenance. Check the following parts.

Phenomenon	Inspection	Replacement
Color beats	Dirt on Full-Erase Head	○
Poor S/N, no color	Dirt on Video Head	○
Vertical or Horizontal jitter	Dirt on Video Head Dirt on tape transport system	○
Low volume, Sound distorted	Dirt on Audio/Control Head	○
Tape does not run. Tape is slack	Dirt on Pinch Roller	○
In Review and Unloading (off mode), the tape is rolled up loosely.	Clutch Assembly D35 torque reduced	○
	Cleaning Drum and transport system	Fig. C-9-3

NOTE

If locations marked with ○ do not operate normally after cleaning, check for wear and replace.

See the EXPLODED VIEWS at the end of this manual as well as the above illustrations and see the Greasing (Page 45, 46) for the sections to be lubricated and greased.

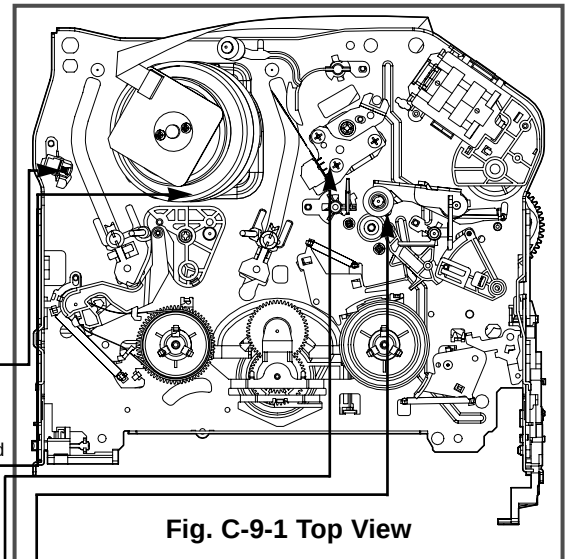


Fig. C-9-1 Top View

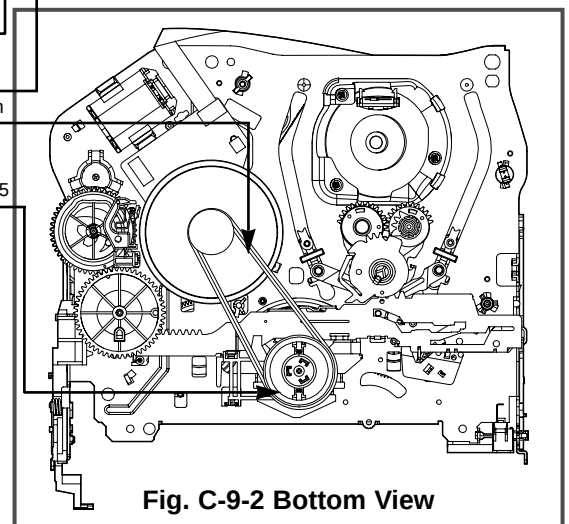


Fig. C-9-2 Bottom View

* No. (1)~(12) Indicates the Tape Path to be traveled from Supply Reel to Take-up Reel.

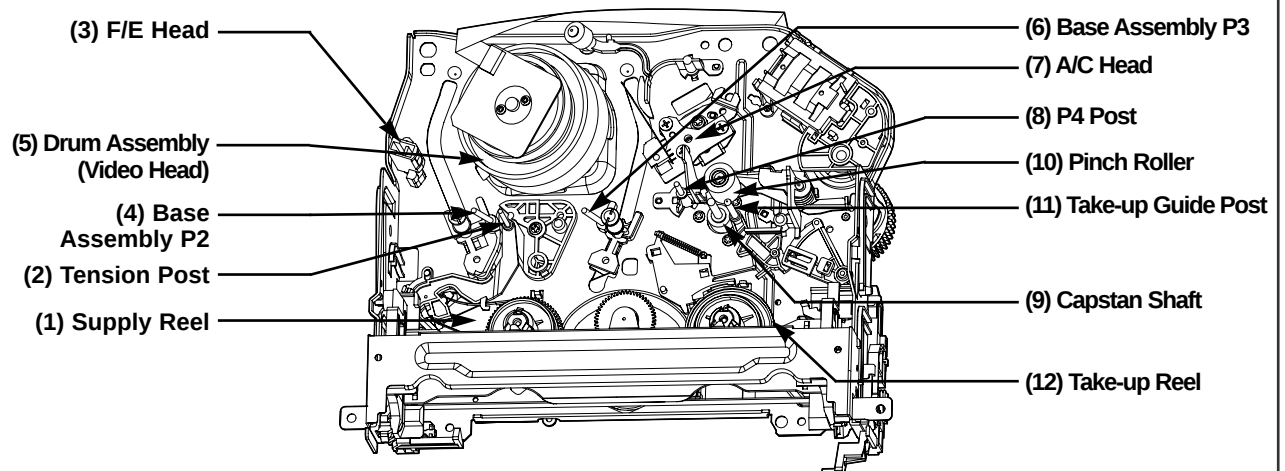


Fig. C-9-3 Tape Transport System

2. Required Maintenance

The recording density of a VCR(VCP) is much higher than that of an audio tape recorder. VCR(VCP) components must be very precise, at tolerances of 1/1000mm, to ensure compatibility with the other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure a good picture, periodic inspection and maintenance, including replacement of worn out parts and lubrication, is necessary.

3. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR(VCP), and the environment in which the VCR(VCP) is used.
But, in general home use, a good picture will be maintained if inspection and maintenance is made every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1

When inspection is necessary Average hours used per day	About 1 year	About 18 months	About 3 years
One hour			
Two hours			
Three hours			

4. Supplies Required for Inspection and Maintenance

- (1) Grease : Kanto G-311G (Blue) or equivalent
- (2) Isopropyl Alcohol or equivalent
- (3) Cleaning Patches
- (4) Grease : Kanto G-381(Yellow)

5. Maintenance Procedure

5-1) Cleaning

- (1) Cleaning video head
First use a cleaning tape. If the dirt on the head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with Isopropyl Alcohol. Touch the cleaning patch to the head tip and gently turn the head(rotating cylinder) right and left.
(Do not move the cleaning patch vertically. Make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged.)
Thoroughly dry the head. Then run the test tape. If Iso-propyl Alcohol remains on the video head, the tape may be damaged when it comes into contact with the head surface.
- (2) Clean the tape transport system and drive system, etc, by wiping with a cleaning patch wetted with Isopropyl Alcohol.

NOTES:

- ① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which moves the tape.
- ② Make sure that during cleaning you do not touch the tape transport system with excessive force that would cause deformation or damage to the system.

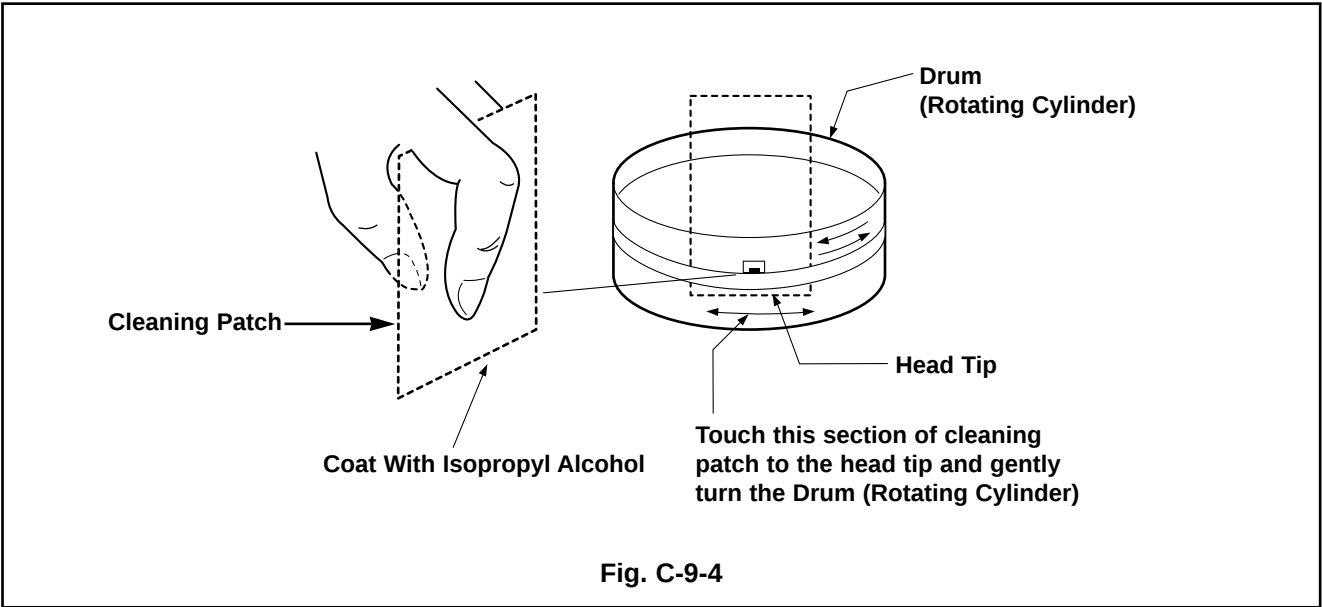


Fig. C-9-4

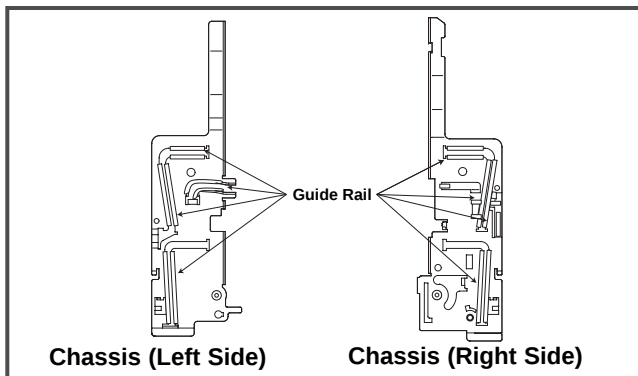
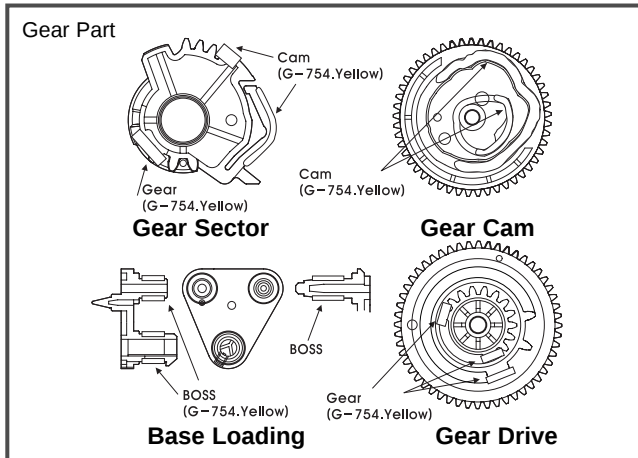
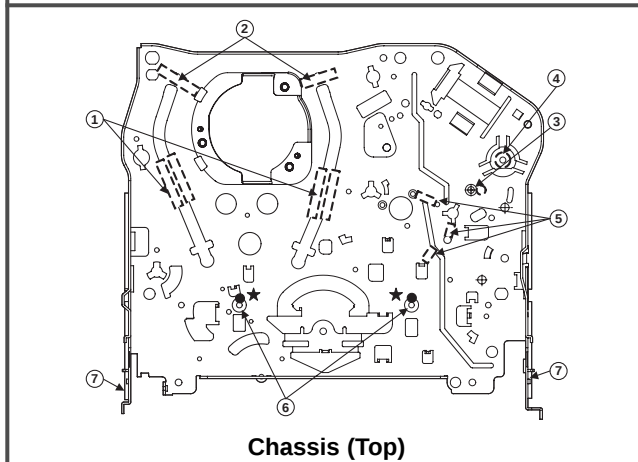
5-2) Greasing

(1) Greasing guidelines

Apply grease, with a cleaning patch. Do not use excessive grease. It may come into contact with the tape transport or drive system. Wipe excessive grease and clean with cleaning patch wetted in Isopropyl Alcohol.

NOTE:Greasing Points

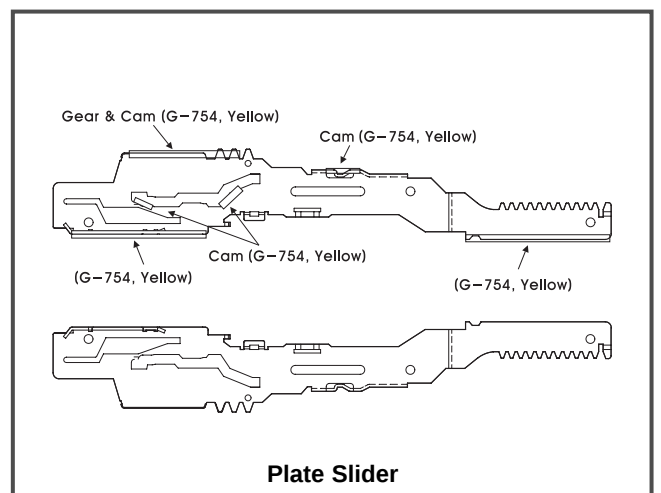
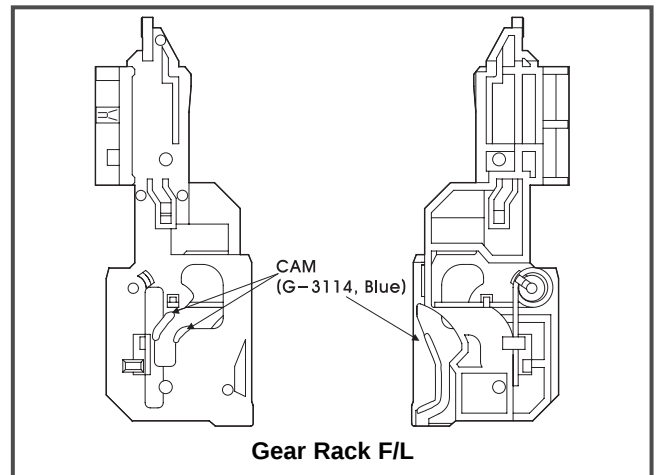
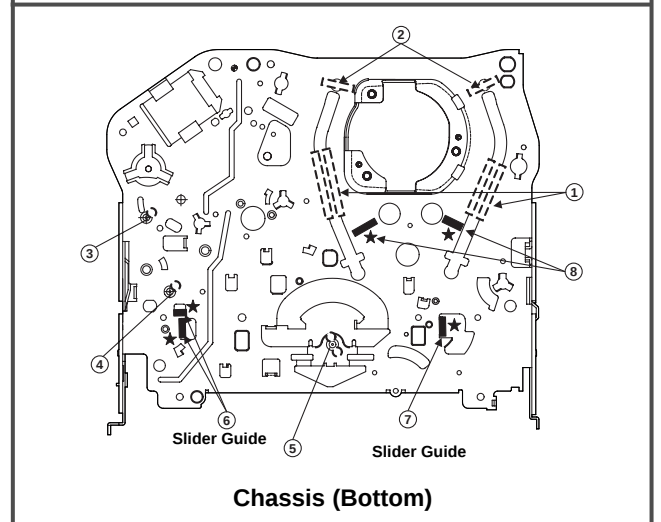
- | | |
|-----------------------------------|---------------------------------------|
| 1) Loading Path Inside & Top side | 5) Arm Take-up Rubbing Sections |
| 2) Base Assembly P2, P3 stopper | 6) Reel S,T shaft(G381:Yellow) |
| 3) Shaft | 7) Arm Assembly F/L Rotating Sections |
| 4) L/D Motor Gear Wheel Part | |



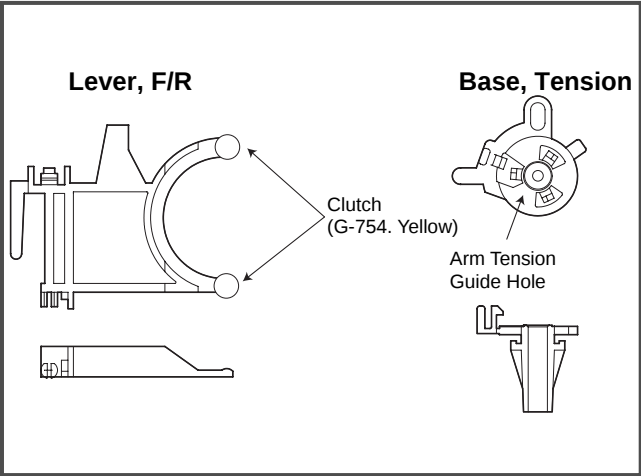
(2) Periodic greasing

Grease specified locations every 5,000 hours.

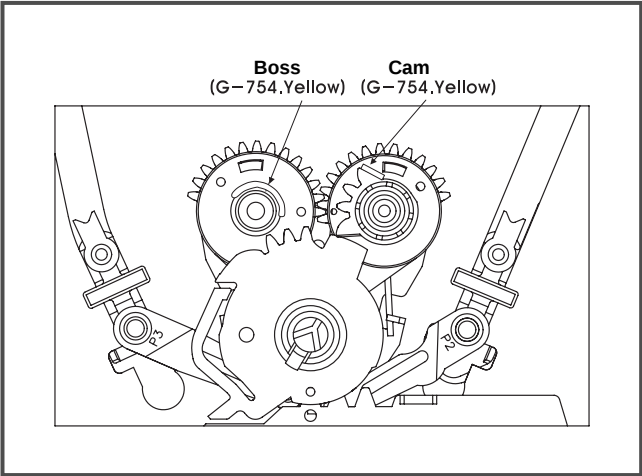
- | | |
|-----------------------------------|--|
| 1) Loading Path Inside & Top side | 6) Plate Slider Guide Sections |
| 2) Base Assembly P2,P3 stopper | 7) Plate Slider Guide Sections |
| 3) Shaft | 8) Gear Assembly P2, P2 Rubbing Sections |
| 4) Shaft | |
| 5) Clutch Assembly D35 Shaft | |



Lever, F/R, Base, Tension

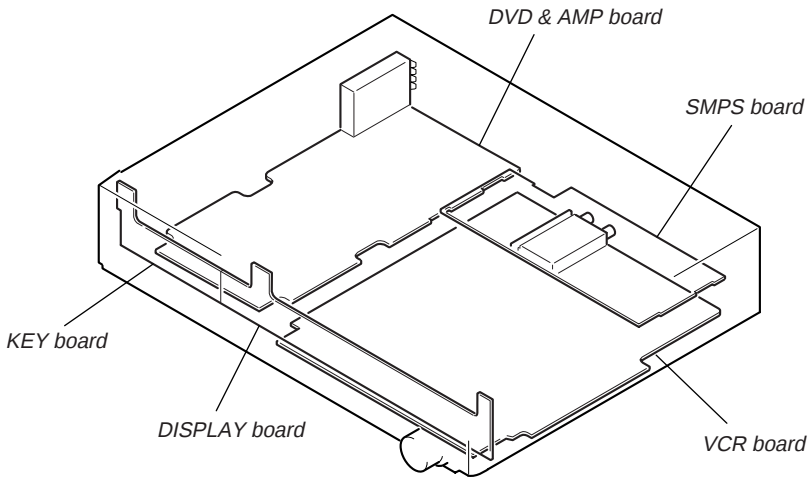


GEAR AY, P2 & P3



SECTION 5
DIAGRAMS

• Circuit Boards Location



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For schematic diagrams.

Note:

- All capacitors are in μF unless otherwise noted. (p: pF) 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- $\triangle$: internal component.
- $\square$: panel designation.

Note: The components identified by mark $\triangle$ or dotted line with mark $\triangle$ are critical for safety. Replace only with part number specified.

- — : B+ Line.
- --- : B- Line.

- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages and waveforms are dc with respect to ground in service mode.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- no mark : STOP
- Circled numbers refer to waveforms.

• Signal path.

- ▶ : AUDIO
- ▶▶ : CD
- ▶▶▶ : DVD
- ▶▶▶▶ : TUNER
- ▶▶▶▶▶ : VIDEO
- ▶▶▶▶▶▶ : Y
- ▶▶▶▶▶▶▶ : CHROMA
- ▶▶▶▶▶▶▶▶ : R, G, B

For printed wiring boards.

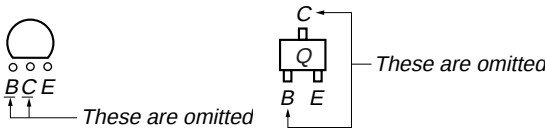
Note:

- : parts extracted from the component side.
- : Through hole.
- ▨ : Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)

Caution:

Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.

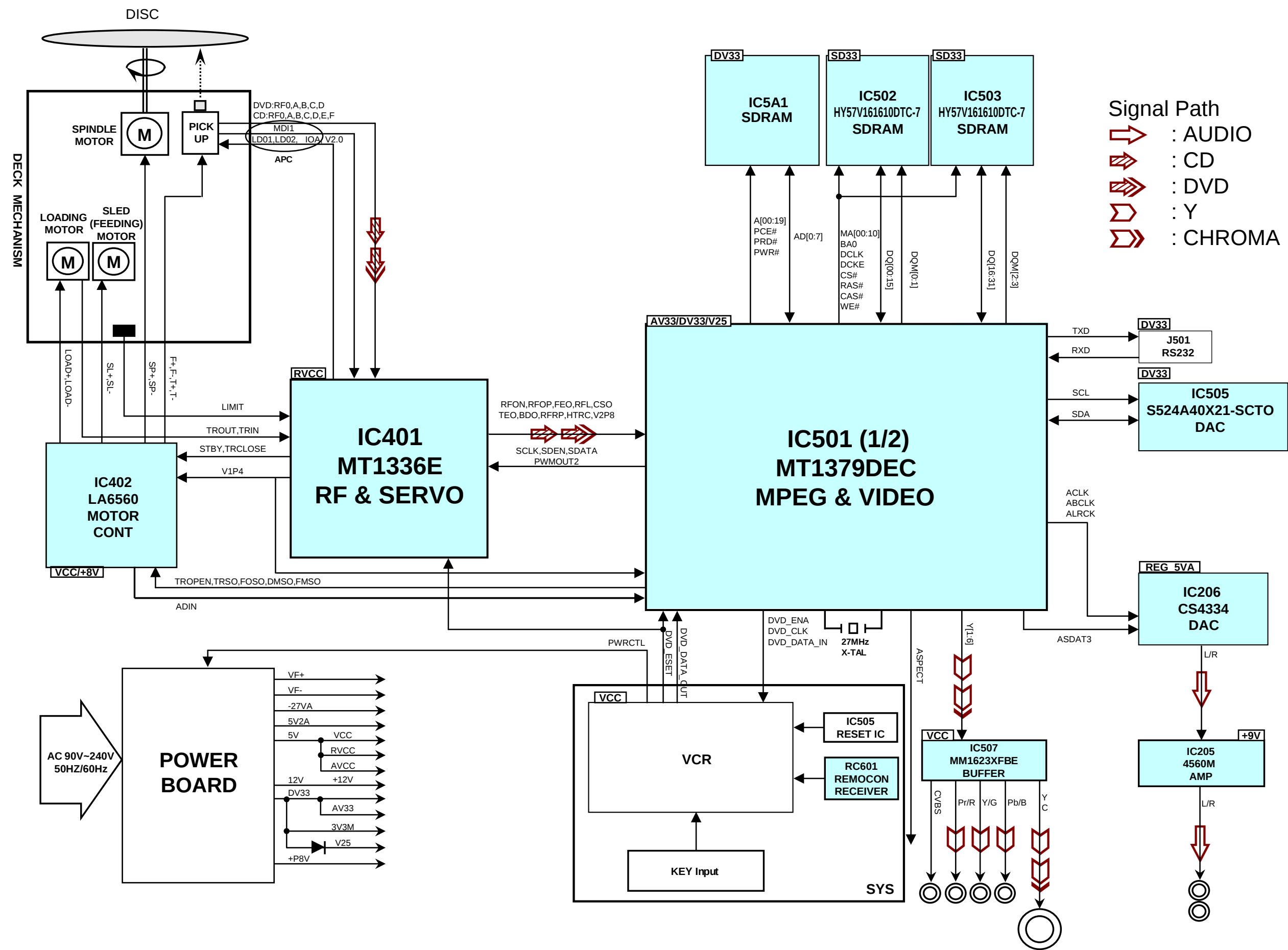
- Indication of transistor.



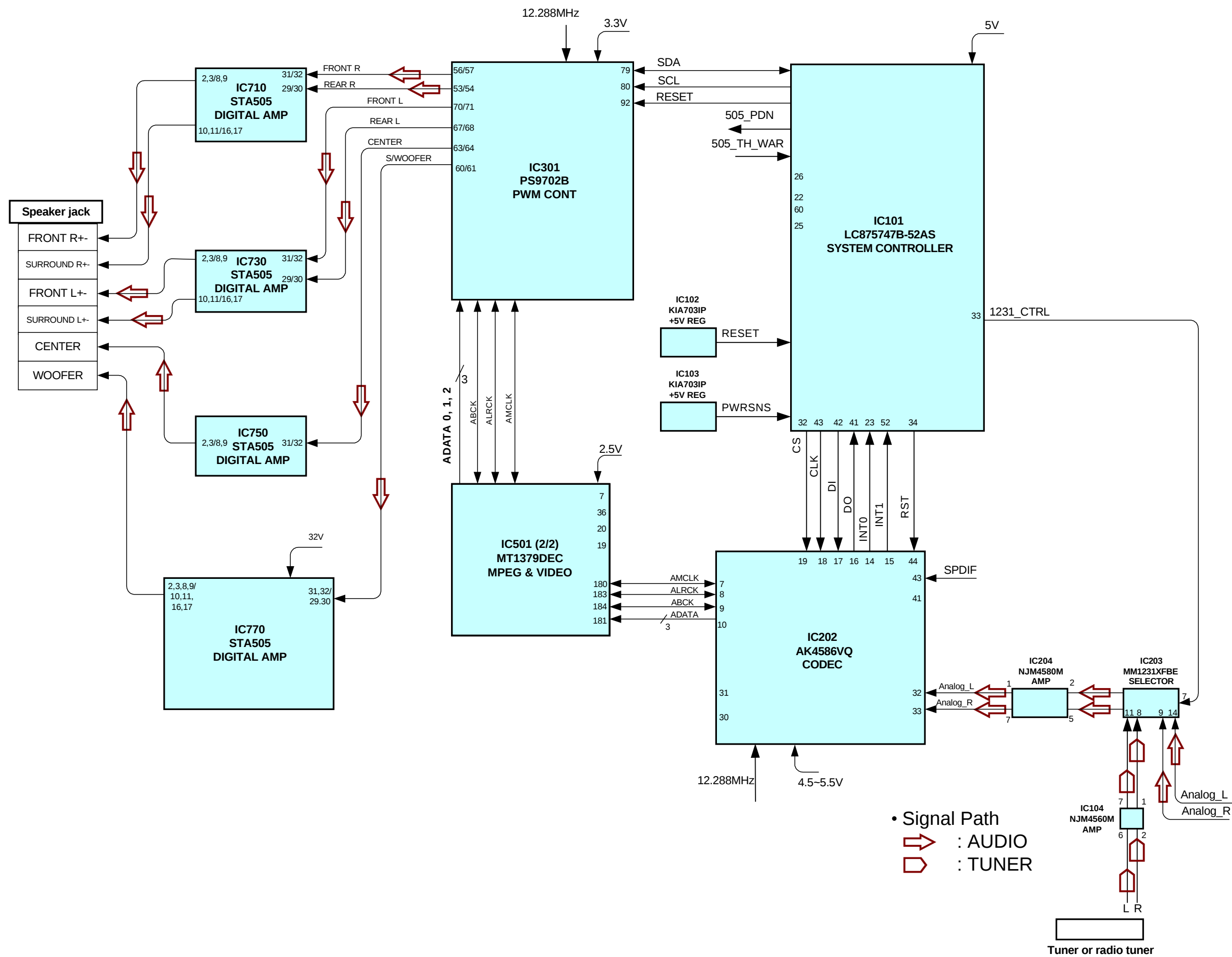
• Abbreviation

- AED : North European model
- RU : Russian model

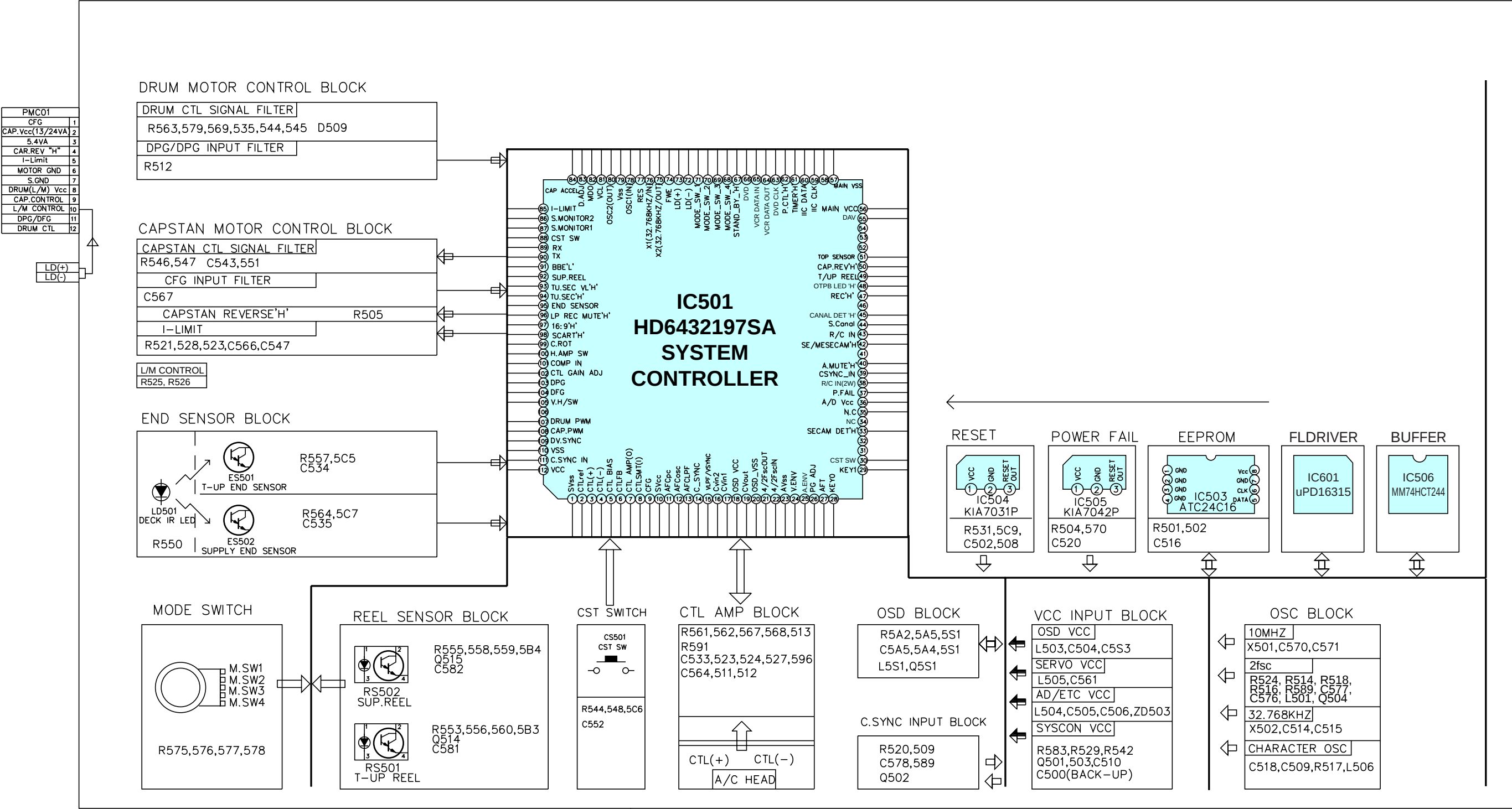
5-1. BLOCK DIAGRAM – DVD (OVERALL) SECTION –



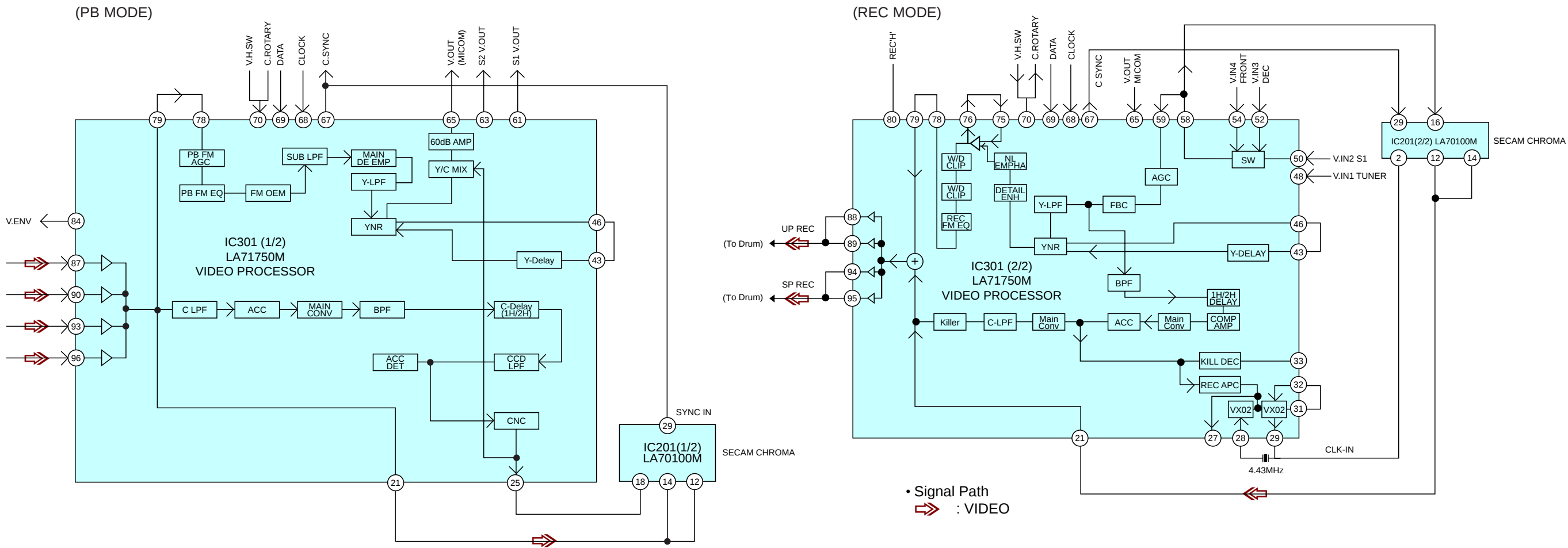
5-2. BLOCK DIAGRAM – DVD (AMP) SECTION –



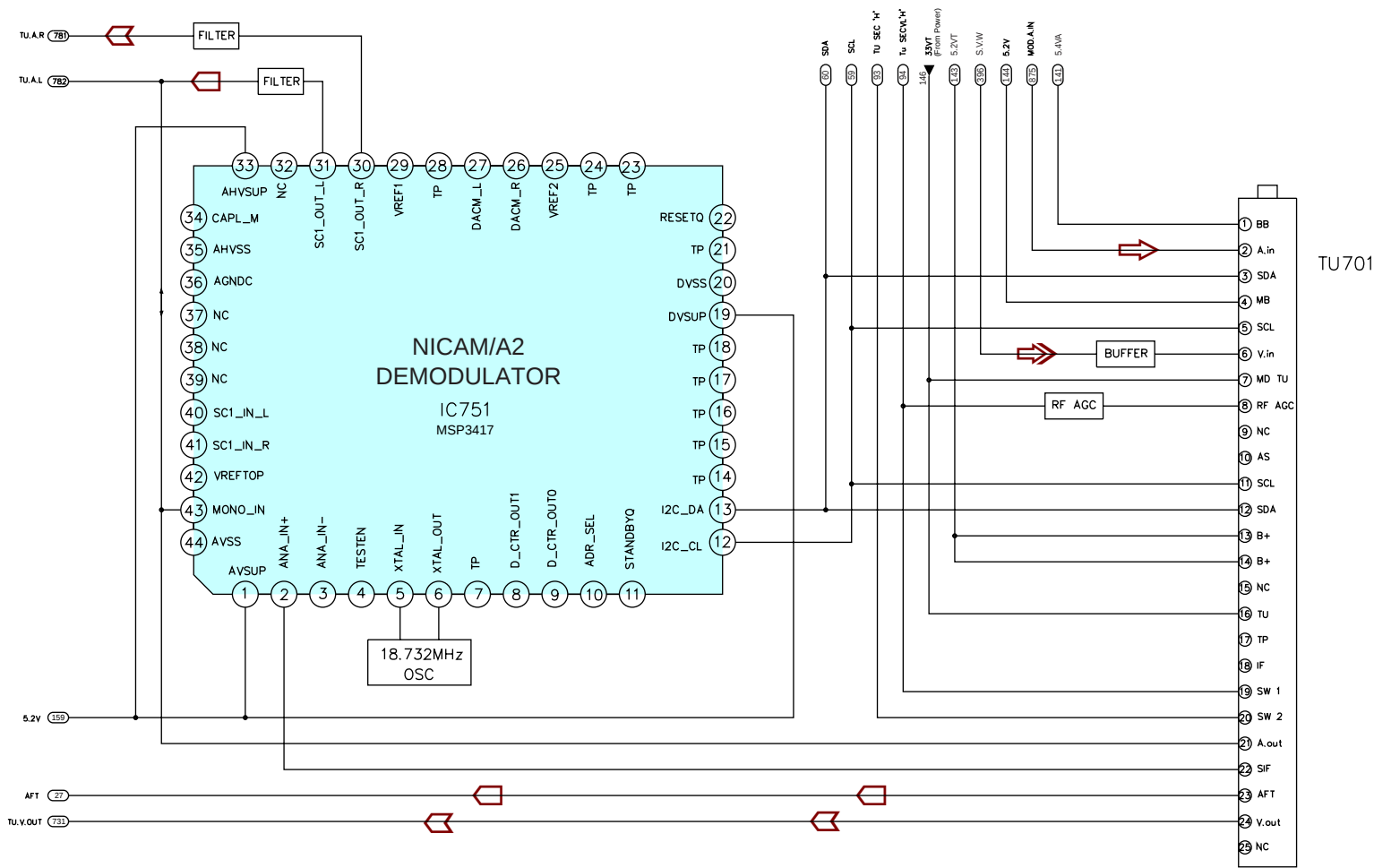
5-3. BLOCK DIAGRAM – VCR/PANEL SECTION –



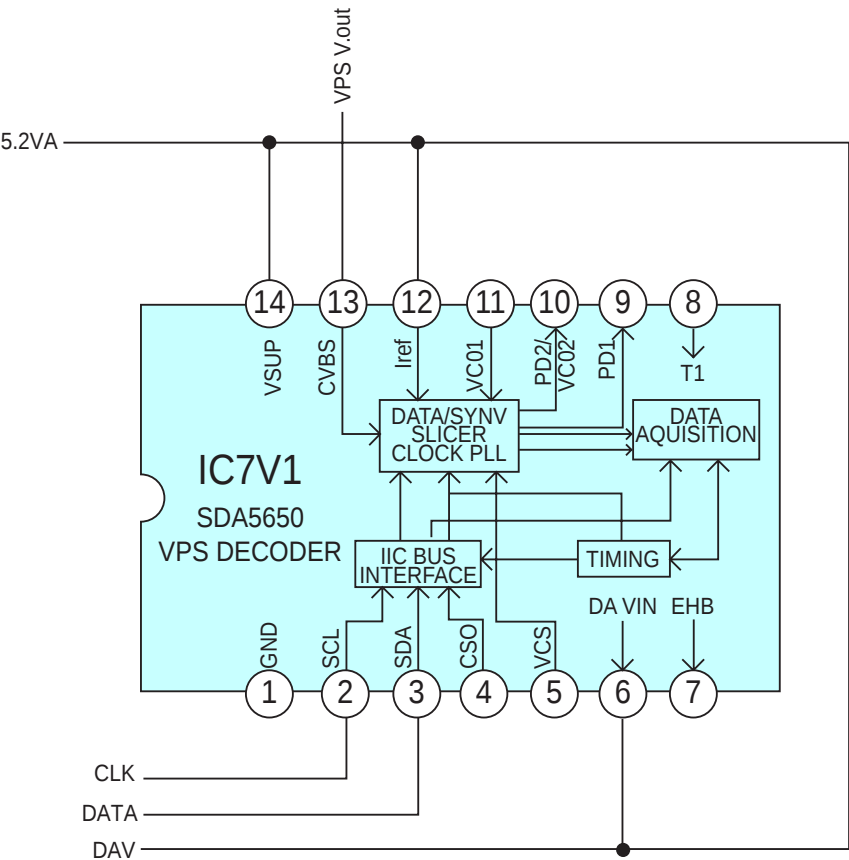
5-4. BLOCK DIAGRAM – VCR (Y/C) SECTION –



TUIF,NICAM&A2 BLOCK

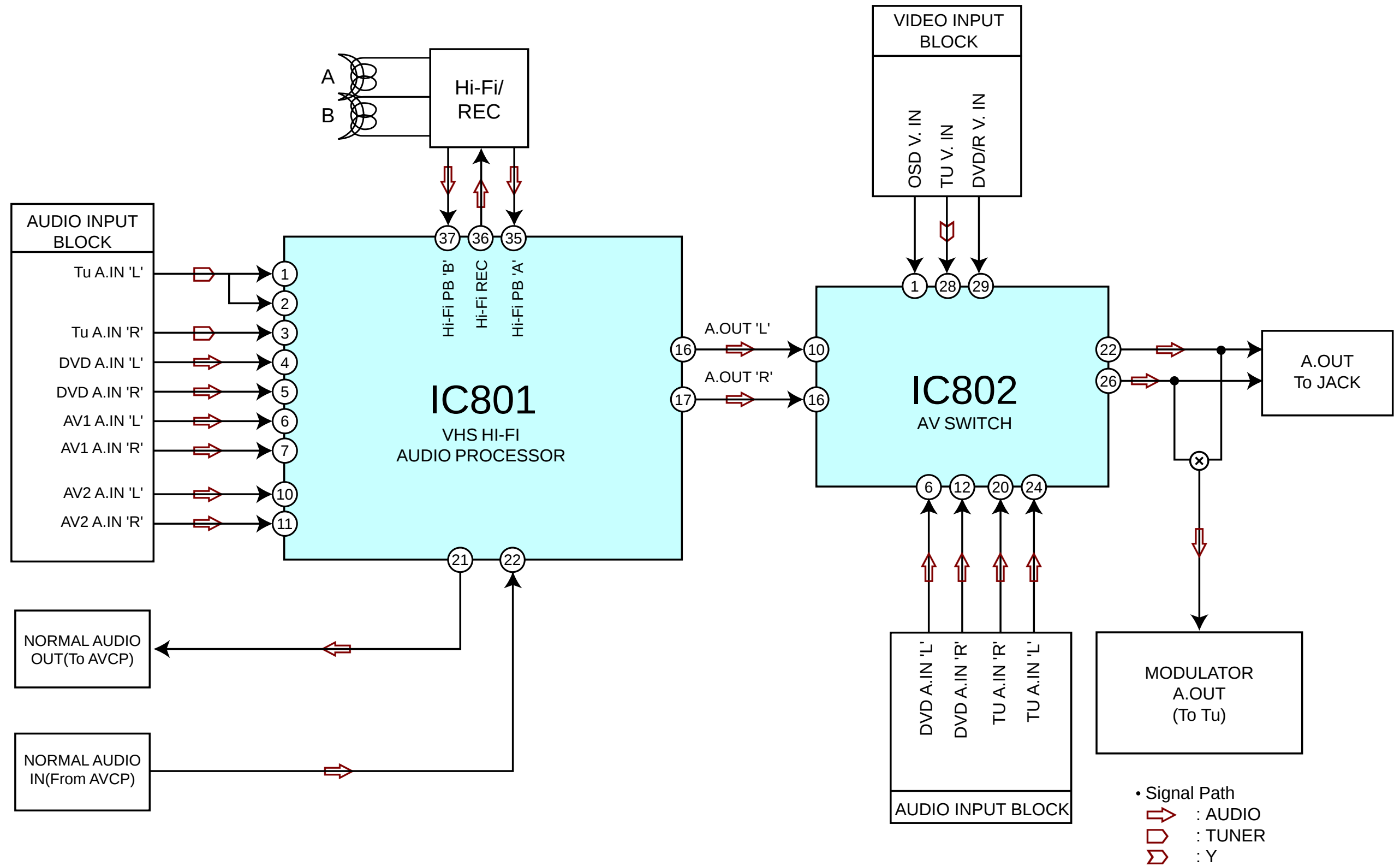


VPS BLOCK

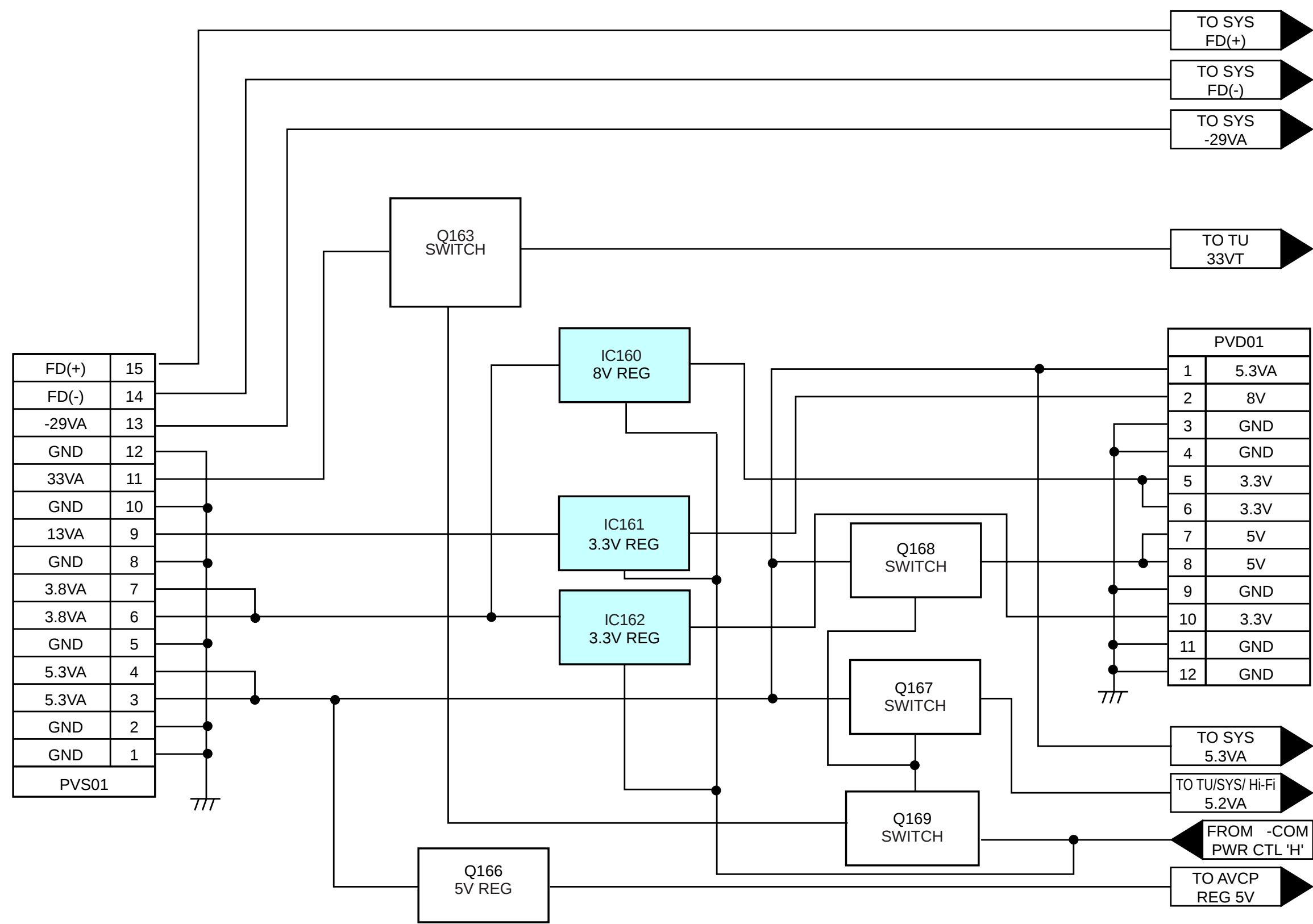


- Signal Path
 - : TUNER
 - ◻ : Y
 - ➡ : AUDIO
 - ➡ : VIDEO

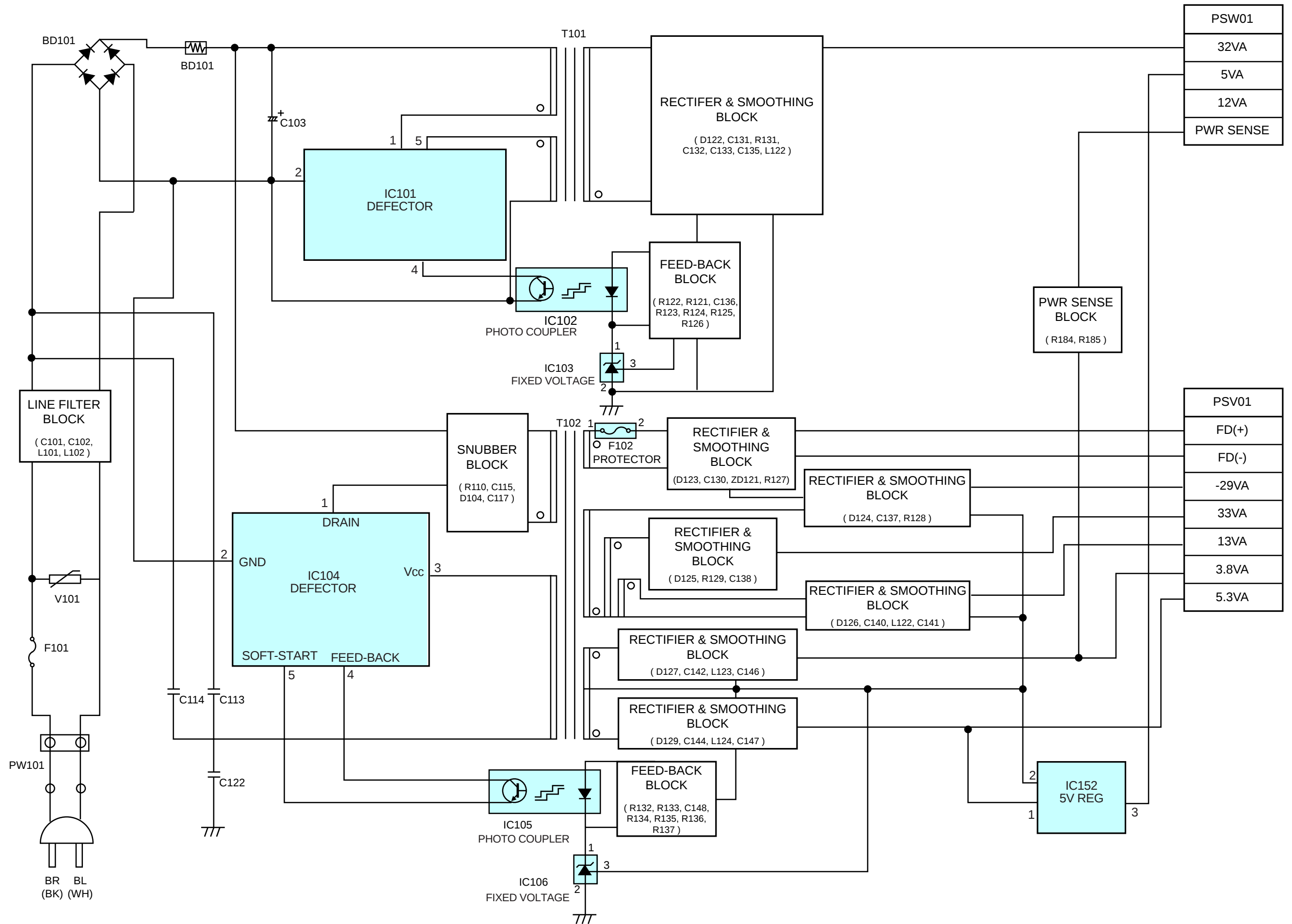
5-6. BLOCK DIAGRAM – VCR (HI-FI) SECTION –



5-7. BLOCK DIAGRAM – VCR POWER SECTION –

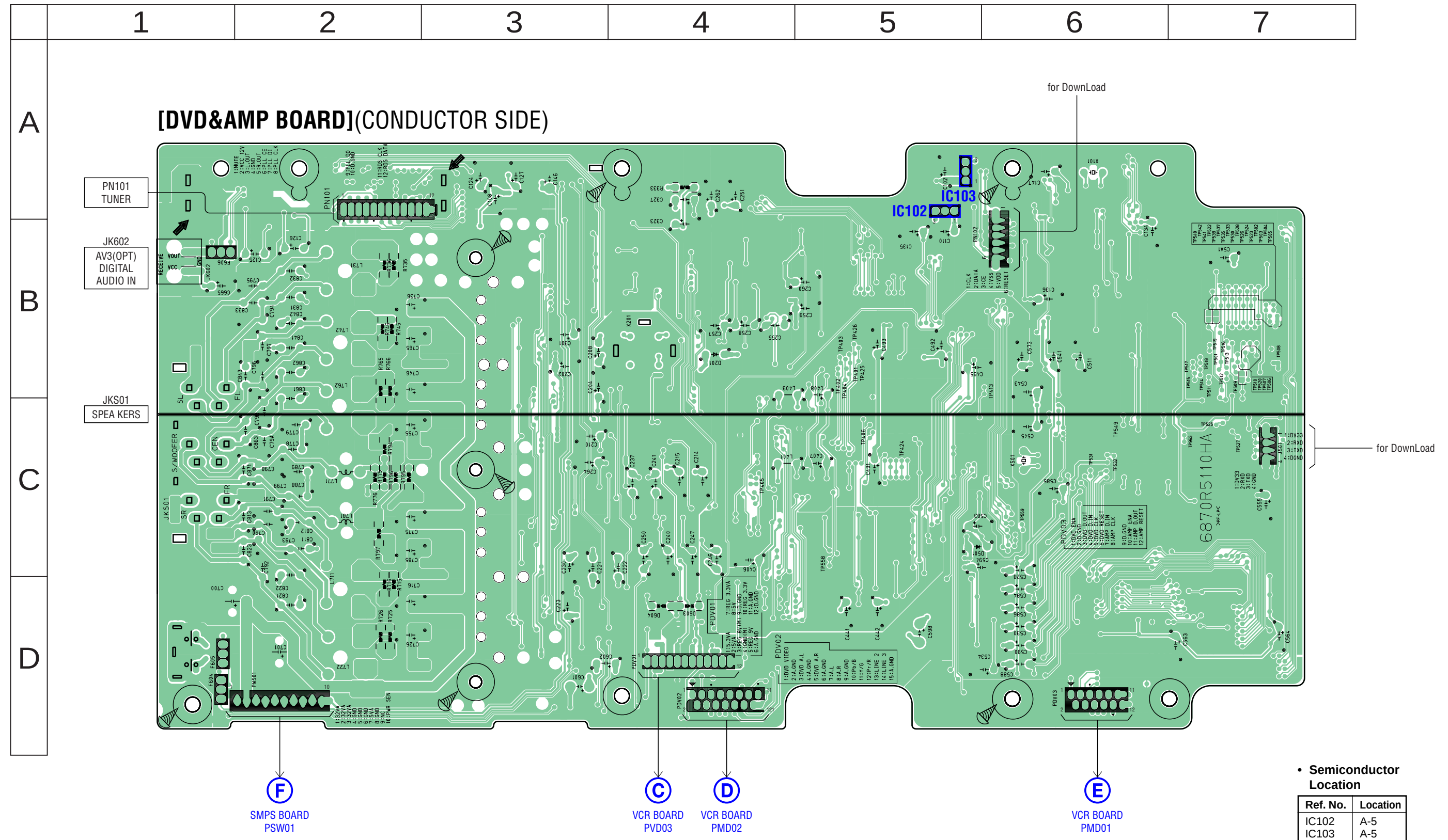


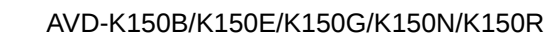
5-8. BLOCK DIAGRAM – POWER SECTION –



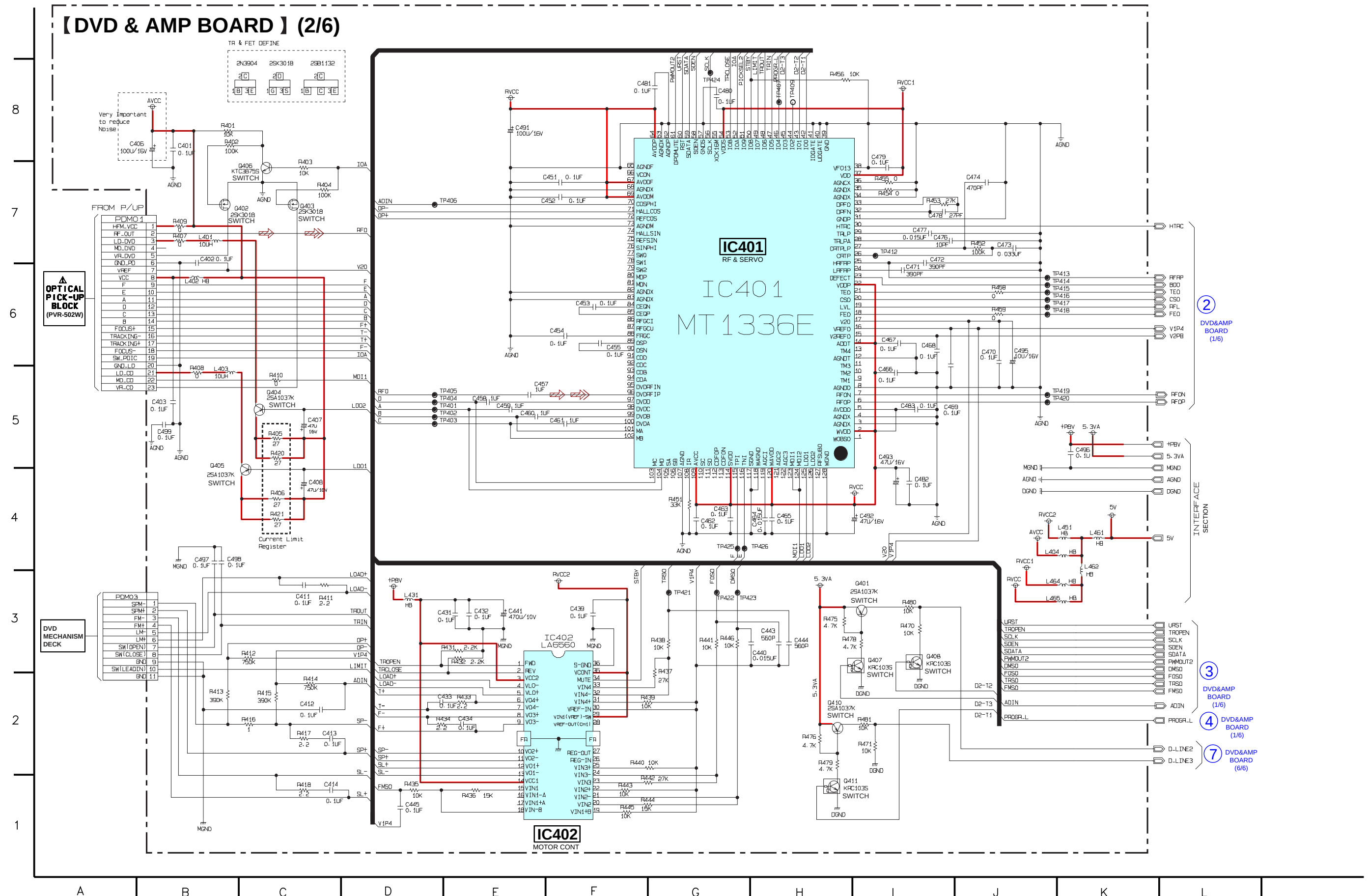
5-10. PRINTED WIRING BOARD – DVD & AMP SECTION (CONDUCTOR SIDE) –

- See page 51 for Circuit Boards Location.

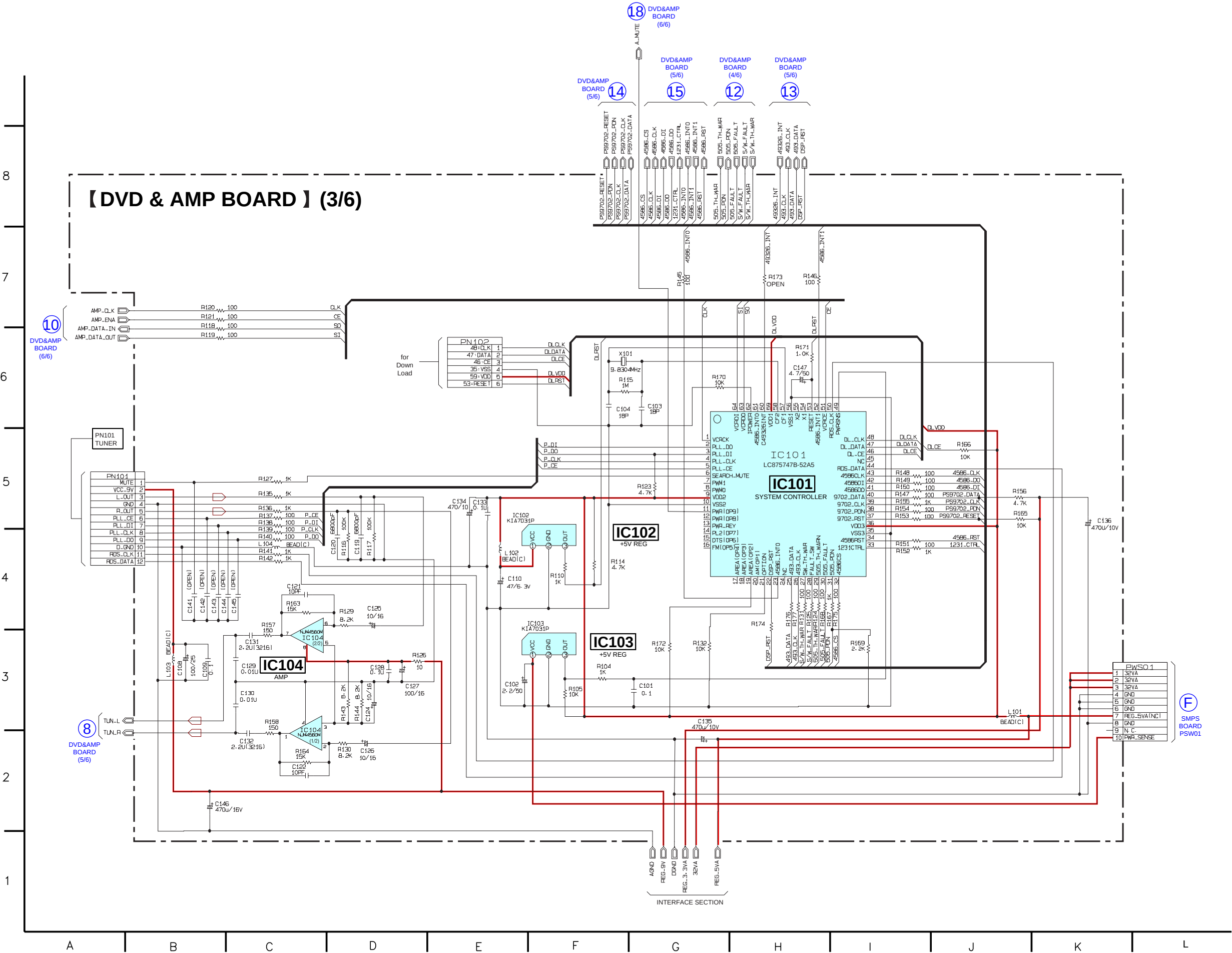




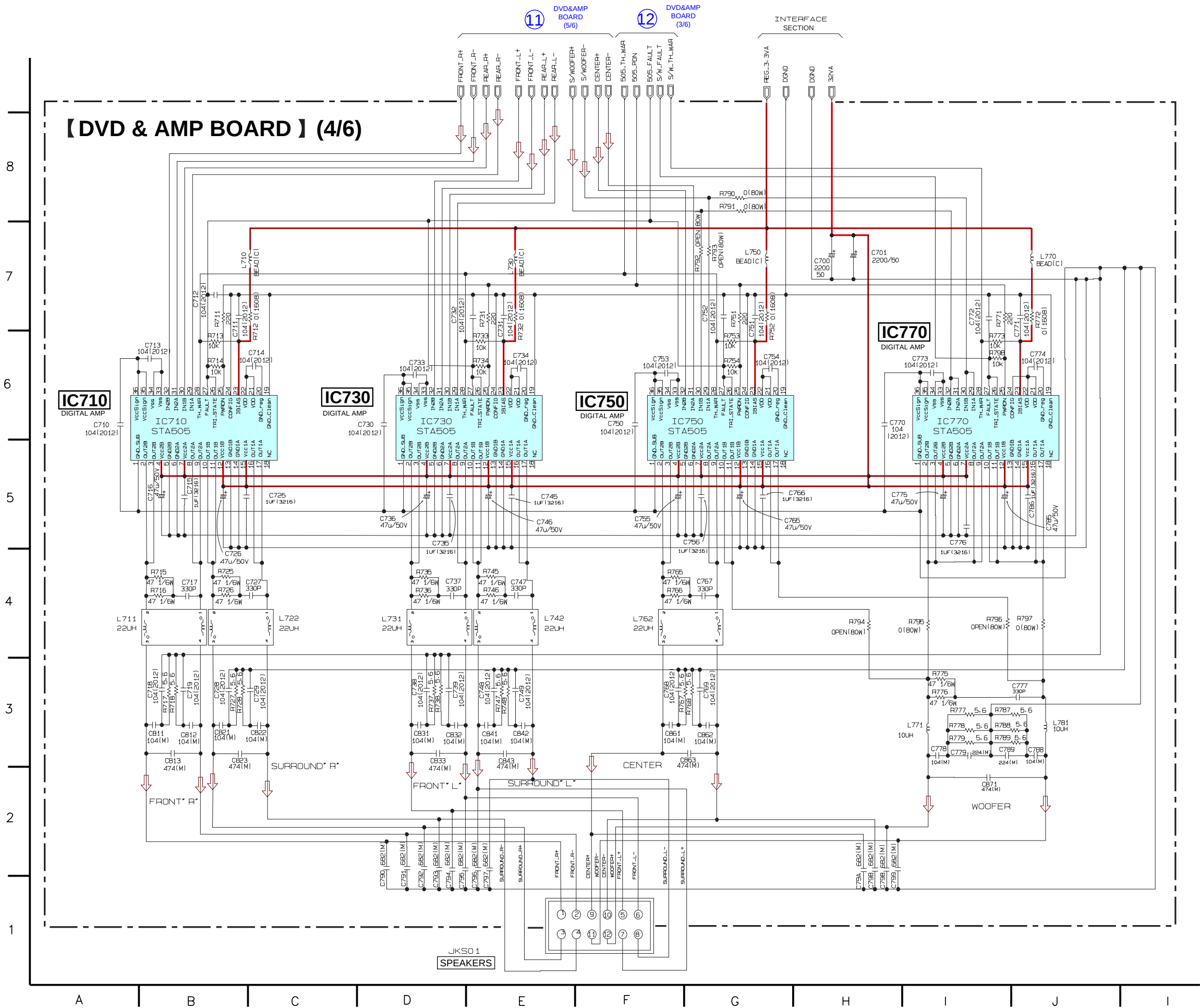
5-12. SCHEMATIC DIAGRAM – RF & SERVO SECTION – [DVD & AMP BOARD] (2/6)



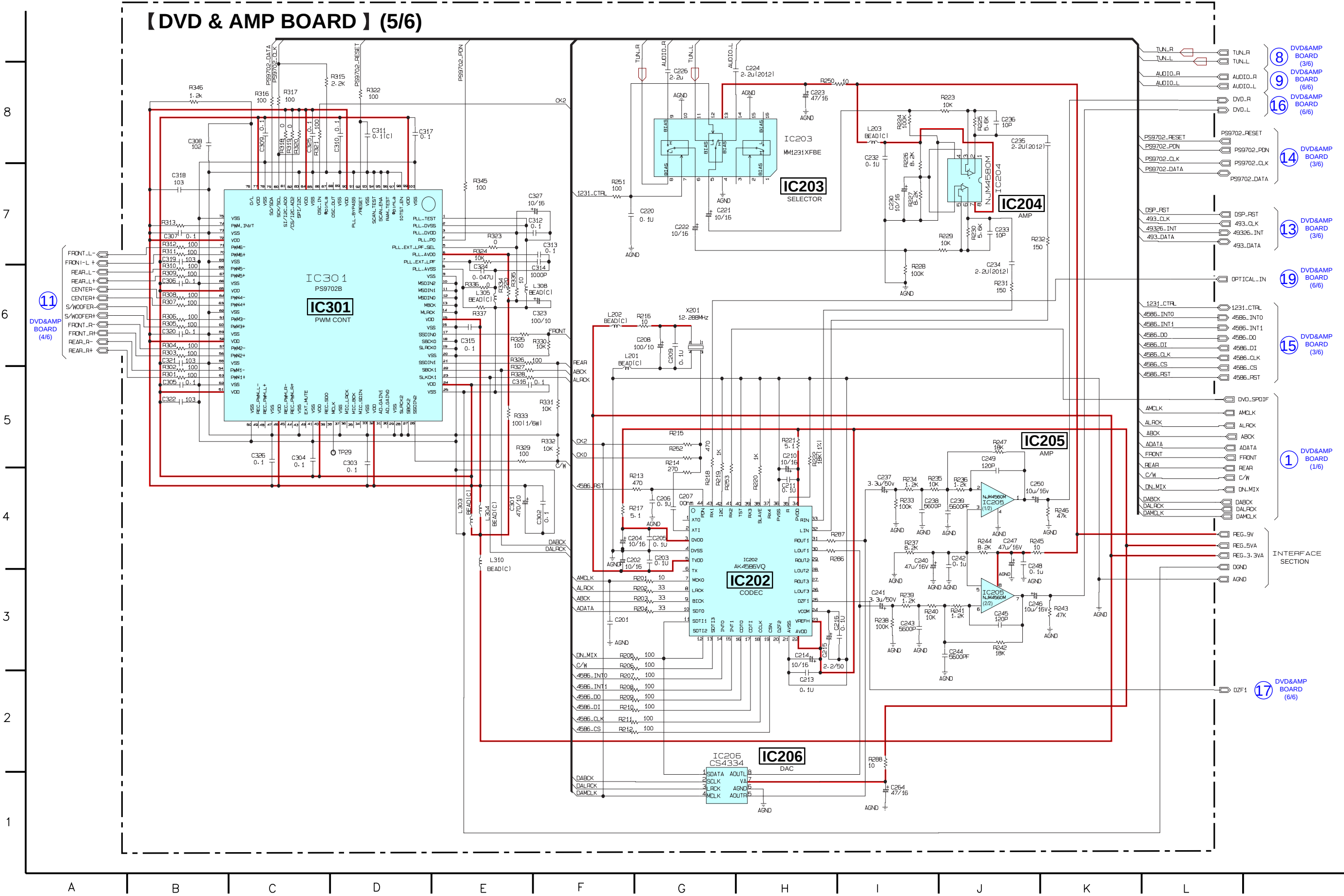
5-13. SCHEMATIC DIAGRAM – AUDIO, μ _COM SECTION – [DVD & AMP BOARD] (3/6)



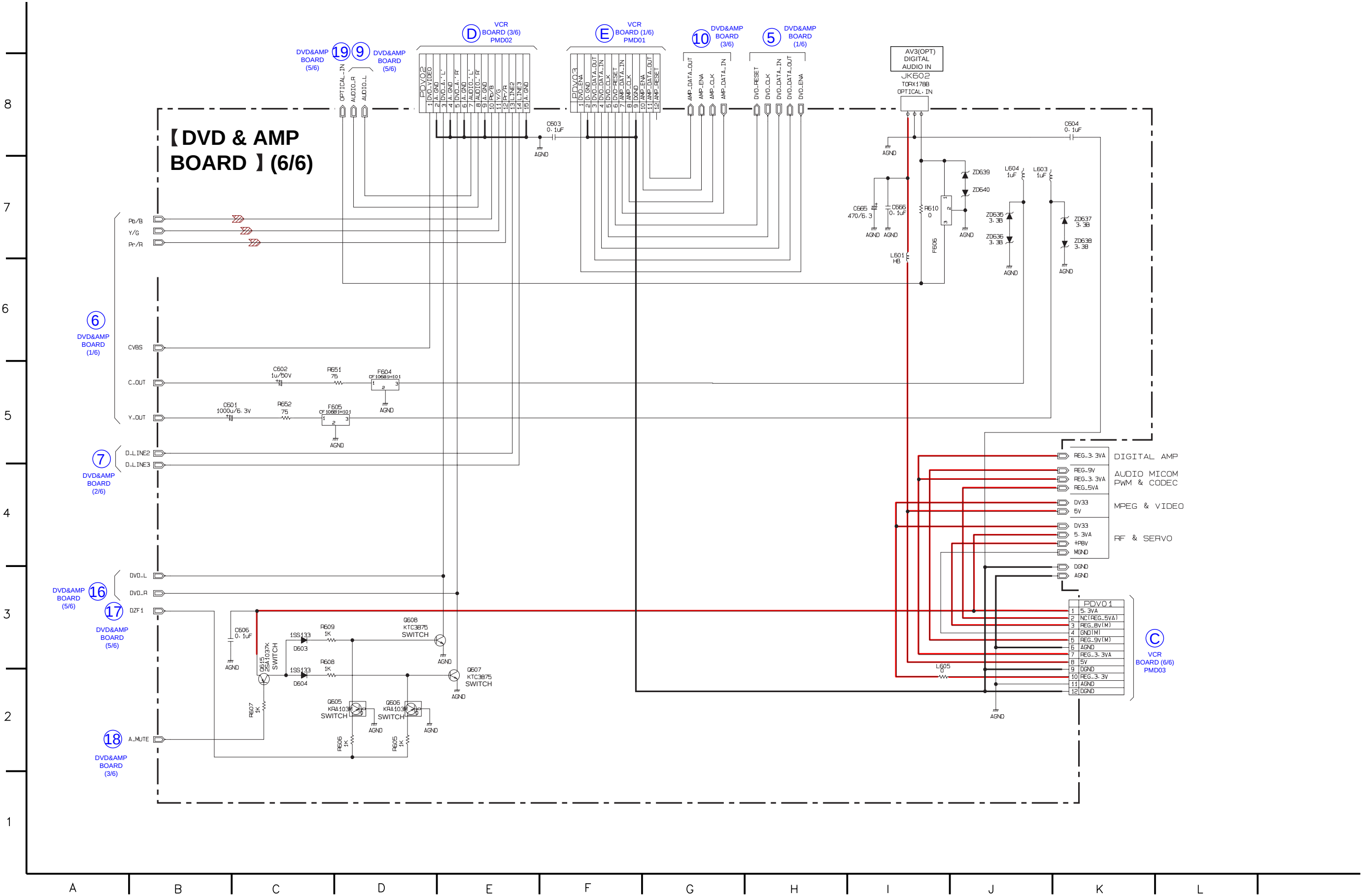
5-14. SCHEMATIC DIAGRAM – DIGITAL AMP SECTION – [DVD & AMP BOARD] (4/6)



5-15. SCHEMATIC DIAGRAM – PWM & CODEIC SECTION – [DVD & AMP BOARD] (5/6)



5-16. SCHEMATIC DIAGRAM – INTERFACE SECTION – [DVD & AMP BOARD] (6/6)



AVD-K150B/K150E/K150G/K150N/K150R

• VOLTAGE CHART (DVD & AMP BOARD) –1/2

MODE PIN NO.	STOP	PLAY
IC101		
1	5.23	5.22
2	0	0
3	1.75	1.99
4	0	0
5	4.91	4.91
6	NC	NC
7	0.54	1.88
8	0.54	1.88
9	4.91	4.91
10	0	0
11	4.77	4.77
12	0.12	0.12
13	4.72	4.72
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	3.24	3.22
23	0.91	0.91
24	1.65	1.65
25	0	0
26	0	0
27	1.99	1.93
28	3.12	3.12
29	3.26	3.25
30	3.12	3.12
31	4.65	4.65
32	NC	NC
33	NC	NC
34	NC	NC
35	0	0
36	4.91	4.91
37	3.25	3.24
38	4.91	4.91
39	0	0
40	3.22	3.2
41	NC	NC
42	NC	NC
43	NC	NC
44	NC	NC
45	NC	NC
46	4.91	4.9
47	2.08	2.03
48	2.07	2.07
49	4.91	4.9
50	NC	NC
51	5.09	5.08
52	0	0
53	4.91	4.91
54	2.16	2.1

MODE PIN NO.	STOP	PLAY
55	2.04	1.96
56	0	0
57	2.36	2.36
58	2.42	2.42
59	4.9	4.91
60	2.4	2.4
61	1.8	1.9
62	4.9	4.9
63	0	0
64	5.23	5.22
IC102		
1	4.93	4.93
2	0	0
3	4.93	4.93
IC103		
1	3.72	3.71
2	0	0
3	4.93	4.93
IC104		
1	6.04	6.04
2	6.04	6.04
3	6.04	6.04
4	0	0
5	6.04	6.04
6	6.04	6.04
7	6.04	6.04
8	12.09	12.08
IC202(AK4586)		
1	2.41	2.39
2	2.04	2.07
3	4.85	4.84
4	0	0.01
5	3.28	3.28
6	4.85	0.01
7	1.18	1.15
8	1.65	1.65
9	1.63	1.62
10	1.3	1.25
11	0	1.63
12	0	1.63
13	0	0.58
14	0	0.03
15	0	0.03
16	0.45	0.2
17	0	0.01
18	0	0.02
19	4.93	4.92
20	0	0.02
21	0	0.01
22	4.94	4.93
23	4.93	4.93
24	2.46	2.46
25	0	0.02
26	2.47	2.47
27	2.47	2.47

MODE PIN NO.	STOP	PLAY
28	2.47	2.47
29	2.47	2.47
30	2.47	2.47
31	2.47	2.47
32	2.47	2.46
33	2.47	2.46
34	4.93	4.92
35	1.2	1.2
36	0	0.01
37	2.44	2.45
38	0	0.01
39	2.44	2.45
40	0	0.02
41	2.44	2.45
42	0	0.01
43	4.24	4.23
44	4.93	4.93
IC301		
1	0	0
2	0	0
3	3.21	3.18
4	4.91	4.91
5	3.21	3.18
6	2.95	2.92
7	1.72	1.7
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	3.21	3.18
16	0	0
17	0	0.9
18	0	0
19	0	0
20	0	0
21	0	0.9
22	1.59	1.6
23	1.63	1.62
24	3.22	3.18
25	0	0
26	0	0.9
27	0	0
28	0	0
29	0	0
30	NC	NC
31	NC	NC
32	3.21	3.18
33	0	0
34	NC	NC
35	NC	NC
36	NC	NC
37	0	0

MODE PIN NO.	STOP	PLAY
38	1.6	1.59
39	NC	NC
40	3.21	3.18
41	0	0
42	NC	NC
43	0	0
44	NC	NC
45	NC	NC
46	3.21	3.18
47	0	0
48	NC	NC
49	NC	NC
50	0	0
51	3.21	318
52	0	0
53	1.59	1.58
54	1.59	1.58
55	0	0
56	1.59	1.58
57	1.59	1.58
58	3.21	3.18
59	0	0
60	1.59	1.58
61	1.59	1.58
62	0	0
63	1.59	1.58
64	1.59	1.59
65	3.21	3.18
66	0	0
67	1.59	1.58
68	1.59	1.58
69	0	0
70	1.59	1.58
71	1.59	1.58
72	3.21	3.18
73	0	0
74	0	0
75	0	0
76	3.1	3.09
77	3.21	3.18
78	0	0
79	3.22	3.2
80	0	0
81	3.21	3.18
82	3.21	3.18
83	0	0
84	3.21	3.18
85	0	0
86	1.67	1.67
87	NC	NC
88	NC	NC
89	0	0
90	3.21	3.18
91	0	0
92	3.25	3.24

MODE PIN NO.	STOP	PLAY
93	0	0
94	0	0
95	0	0
96	0	0
97	NC	NC
98	0	0
99	3.21	3.18
100	0	0
IC401(MT1336E)		
1	1.03	2.99
2	5.11	5.08
3	0	0
4	0	0
5	5.11	5.07
6	0	1.95
7	0	0
8	0	0
9	5.11	0
10	5.11	5.08
11	5.11	5.08
12	0	0
13	5.11	0
14	5.11	5.08
15	2.84	2.81
16	1.45	1.43
17	2.08	2.07
18	1.37	1.42
19	0.69	2.3
20	2.4	0
21	2.35	0
22	5.11	5.08
23	0	0
24	2.59	3.2
25	0.19	1.88
26	1.58	0
27	2.56	3.13
28	2	2.01
29	2	2.06
30	2.96	1.52
31	0	0
32	0.06	2.07
33	0.07	2.07
34	0	0
35	0	0
36	0	0
37	5.13	0
38	0	0
39	0	0
40	0	0
41	0	0
42	5.12	5.09
43	5.12	5.09
44	5.12	5.09
45	5.12	5.09
46	5.12	5.09

MODE PIN NO.	STOP	PLAY
47	0	0
48	5.12	5.09
49	5.12	0
50	5.08	5.06
51	5.09	5.07
52	5.1	0
53	0	0
54	5.13	0
56	1.61	0
57	0	0
58	0	0
59	0	0
60	0	0
61	3.28	0
62	0	0
63	0	0
64	0	0
65	0	0
66	0.026	0
67	5.12	5.08
68	0	0
69	5.12	0
70	3.21	2.03
71	3.46	2.2
72	2.81	0
73	0	0
74	0.21	0.09
75	0.22	0
76	0	0.1
77	0.21	0.09
78	0.23	0.09
79	0.21	0.08
80	0.23	0.08
81	0.22	0
82	0	0
83	0	0
84	0.07	0
85	0.07	2.27
86	1.97	0
87	1.96	1.9
88	1.54	1.71
89	0.19	2.22
90	0.21	0
91	0.22	0.06
92	0.22	0
93	0.23	0.06
94	0.23	0.06
95	2.28	0
96	2.28	2.25
97	2.27	1.23
98	2.27	2.23
99	2.27	2.23
100	2.16	2.23
101	2.08	2.17
102	2.07	2.17

MODE PIN NO.	STOP	PLAY
103	2.07	2.18
104	2.08	0
105	0.13	0.15
106	0.14	0.16
107	0	0
108	1.28	1.28
109	5.18	5.05
110	0.14	0.16
111	0.15	0.15
112	0.13	0.16
113	0.14	0.15
114	5.1	5.05
115	2.07	2.06
116	2.06	2.09
117	0	0
118	0	0
119	0	0
120	5.1	5.05
121	0.13	0.15
122	0.14	0.15
123	0	0.18
124	0	0.18
125	5.08	5.03
126	5.08	3.16
127	0.06	2.08
128	0	0
IC402 (LA6560)		
1	0	0
2	0	0
3	8.04	8.01
4	0.12	0.06
5	0	0.06
6	3.64	3.69
7	3.62	3.61
8	3.64	3.53
9	3.6	3.76
10	3.62	2.43
11	3.63	4.85
12	3.62	3.72
13	3.64	3.57
14	8.04	8.01
15	1.45	1.48
16	0.27	1.39
17	0.29	1.32
18	1.45	1.43
19	1.45	1.43
20	1.45	0.82
21	1.45	1.43
22	1.45	1.43
23	1.47	1.37
24	1.45	1.43
25	1.45	1.43
26	0.95	0.9
27	0	0
28	1.45	1.43

MODE PIN NO.	STOP	PLAY
29	5.15	5.11
30	1.45	1.43
31	1.45	1.43
32	1.45	1.43
33	1.46	1.45
34	5.08	5.06
35	5.15	5.11
36	0	0
IC501(MT1379)		
1	1.22	1.22
2	0	0
3	0.96	0.9
4	2	2.06
5	0	1.51
6	1.48	1.47
7	0	1.56
8	3.2	1.52
9	0.12	0.06
10	0.12	0.06
11	3.25	3.25
12	1.41	1.49
13	1.41	1.41
14	0	0
15	1.42	1.42
16	3.3	0
17	2.53	2.53
18	1.42	2.27
19	1.42	1.39
20	0	0
21	2.61	2.58
22	0.75	1.46
23	2.83	1
24	1.9	0.89
25	1.72	0.39
26	0.68	0.31
27	2.84	3.16
28	0	0
29	2.85	0.66
30	1.83	0.49
31	0.91	1.39
32	1.43	1.2
33	1.51	1.57
34	1.51	1.43
35	3.3	3.29
36	0.81	1.26
37	1.45	1.02
38	1.82	1.6
39	1.2	1.5
40	2	2.06
41	2.17	1.95
42	2.53	2.52
43	1.96	1.9
44	1.79	1.9
45	0.8	1.72
46	0.8	1.96

MODE PIN NO.	STOP	PLAY
47	0.8	1.84
48	3.3	2.63
49	0	0.13
50	0	0.07
51	0	0

• **VOLTAGE CHART (DVD & AMP BOARD) –2/2**

MODE PIN NO.	STOP	PLAY
157	0	1.63
158	0	3.29
159	0	3.27
160	0	1.27
161	0	1.27
162	0	2.35
163	0	0
164	0	0.73
165	0	3.27
166	0	0.5
167	0	0
168	0	0.53
169	0	3.27
170	0	0.59
171	0	0
172	3.01	0.72
173	0	0.72
174	0	0
175	0	2.73
176	0	3.13
177	0	3.13
178	0	3.25
179	0	0
180	0	0
181	2.04	2.64
182	0	2.52
183	0	0
184	0	0.09
185	0	3.26
186	—	—
187	0	0.08
188	0	0
189	0	0
190	0	0
191	0.23	0
192	0	3.29
193	0	0
194	0	0
195	0	0
196	0	0
197	0	1.63
198	0	0
199	0	0
200	0	2.15
201	0	1.44
202	0	1.44
203	0	1.43
204	0	1.43
205	0	1.42
206	0	2.1
207	0	2.07
208	0	1.41
209	0	1.52
210	0	1.43
211	0	2.81

MODE PIN NO.	STOP	PLAY
212	0	3.28
213	0	0.12
214	0	0.12
215	1.02	1.43
216	0	1.43
IC502(SDRAM)		
1	3.27	3.28
2	1.18	1.26
3	1.1	1.52
4	0	0
5	0.66	1.07
6	0.85	1.12
7	3.27	3.28
8	0.51	0.97
9	3.06	0
10	0	0
11	0.06	0.98
12	3.18	0.87
13	3.27	3.28
14	2.94	2.56
15	0.47	0.42
16	2.93	3.01
17	3.21	3.22
18	2.87	2.95
19	0.15	1.32
20	0	0.05
21	3.09	1.32
22	3.09	1.32
23	3.09	1.32
24	3.09	1.33
25	3.27	3.29
26	0	0
27	0.15	1.36
28	1.84	2.36
29	1	2.32
30	0.54	1.75
31	0.06	0.06
32	0.05	0.06
33	0	0
34	0.73	1.26
35	1.48	1.55
36	2.91	2.53
37	0.07	0
38	3.27	3.28
39	1.06	1.05
40	0.47	0.98
41	0	0
42	0	0.6
43	1.12	1.24
44	3.27	3.28
45	1.21	0.99
46	1.31	1.34
47	0	0
48	1.43	1.44
49	0.88	1.01

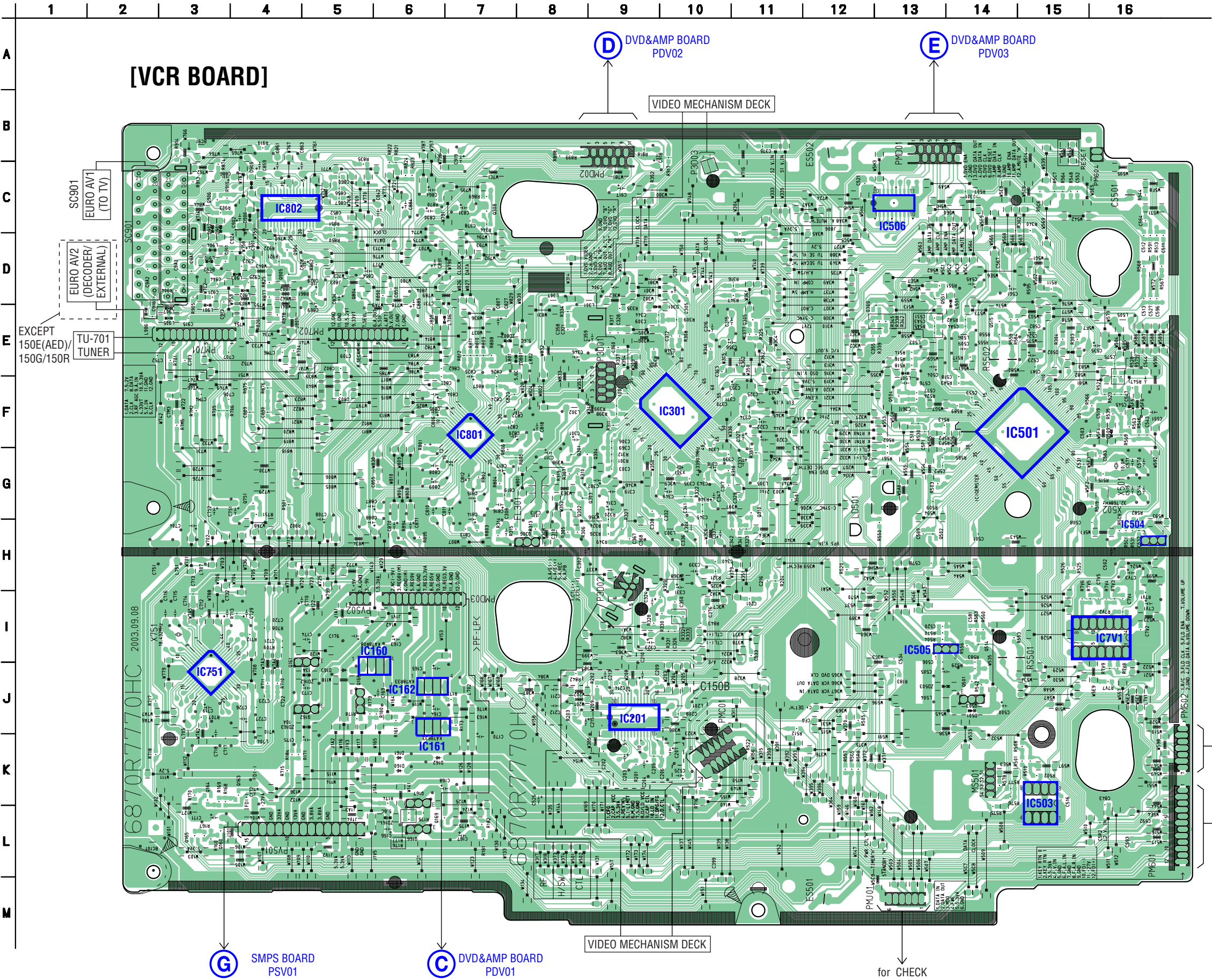
MODE PIN NO.	STOP	PLAY
50	0	0
IC505(EEPROM)		
1	0	0
2	0	0
3	0	0
4	0	0
5	3.28	3.29
6	3.28	3.29
7	0	0
8	3.28	3.29
IC507(MM1623)		
1	5.09	5.08
2	2.43	2.42
3	5.09	5.08
4	1.45	0
5	0	0
6	1.45	1.69
7	0	0
8	2.47	2.46
9	0	0
10	1.14	1.76
11	0	0
12	2.42	2.42
13	5.09	5.08
14	2.43	2.42
15	0	0
16	2.49	2.47
17	0	0
18	2.48	2.47
19	0	0
20	1.18	2.3
21	1.76	2.17
22	0	0
23	1.76	2.24
24	0	0
25	0	0
26	0	0
27	0.06	0.05
28	5.09	0
IC5A1(FLASH)		
1	0.08	0.16
2	1.82	0.45
3	2.84	0
4	2.83	3.12
5	0.69	0.26
6	1.72	0.25
7	1.92	0.9
8	1.7	1.45
9	0	0
10	0	0
11	3.27	3.29
12	3.56	3.55
13	3.29	3.29
14	0	0
15	0.23	0.06

MODE PIN NO.	STOP	PLAY
16	0	0
17	0	0
18	0	0.87
19	1.98	2.64
20	2.28	2.18
21	2.13	1.96
22	1.67	2.01
23	1.99	1.72
24	1.93	2.19
25	2.05	1.94
26	0	0
27	0	0
28	0	0
29	1.49	2.03
30	0.16	1.07
31	1.96	1.25
32	0.16	1.1
33	0.99	2.2
34	1.17	1.07
35	0.79	1.82
36	0.15	1.07
37	3.29	3.3
38	1.93	3.09
39	0.16	1.07
40	1.5	2.2
41	0.16	1.07
42	1.21	2.64
43	0.16	1.08
44	1.64	1.48
45	2.05	2.06
46	0	0
47	0	0
48	0.07	0.13
IC710		
1	0	0
2	15.6	15.6
3	15.6	15.6
4	3.59	31.58
5	0	0
6	0	0
7	31.59	31.58
8	15.62	15.62
9	15.62	15.62
10	15.61	15.61
11	15.61	15.61
12	31.59	31.59
13	0	0
14	0	0
15	31.59	31.59
16	15.61	15.61
17	15.61	15.61
18	NC	NC
19	0	0
20	0.02	0.02
21	5.02	5.02

MODE PIN NO.	STOP	PLAY
22	5.02	5.02
23	3.25	3.24
24	0	0
25	3.15	3.15
26	3.15	3.15
27	3.15	3.15
28	3.24	3.23
29	1.58	1.57
30	1.58	1.57
31	1.58	1.57
32	1.58	1.57
33	26.32	26.31
34	26.32	26.31
35	31.58	31.57
36	31.58	31.57
IC730		
1	0	0
2	15.6	15.6
3	15.6	15.6
4	31.59	31.58
5	0	0
6	0	0
7	31.59	31.58
8	15.62	15.62
9	15.62	15.62
10	15.61	15.61
11	15.61	15.61
12	31.59	31.59
13	0	0
14	0	0
15	31.59	31.59
16	15.61	15.61
17	15.61	15.61
18	NC	NC
19	0	0
20	0.02	0.02
21	5.02	5.02
22	5.02	5.02
23	3.24	3.23
24	0	0
25	3.15	3.15
26	3.15	3.15
27	3.15	3.15
28	3.24	3.23
29	1.58	1.57
30	1.58	1.57
31	1.58	1.57
32	1.58	1.57
33	26.3	26.3
34	26.3	26.3
35	31.58	31.57
36	31.58	31.57
IC750		
1	0	0
2	15.6	15.6

[illegible]

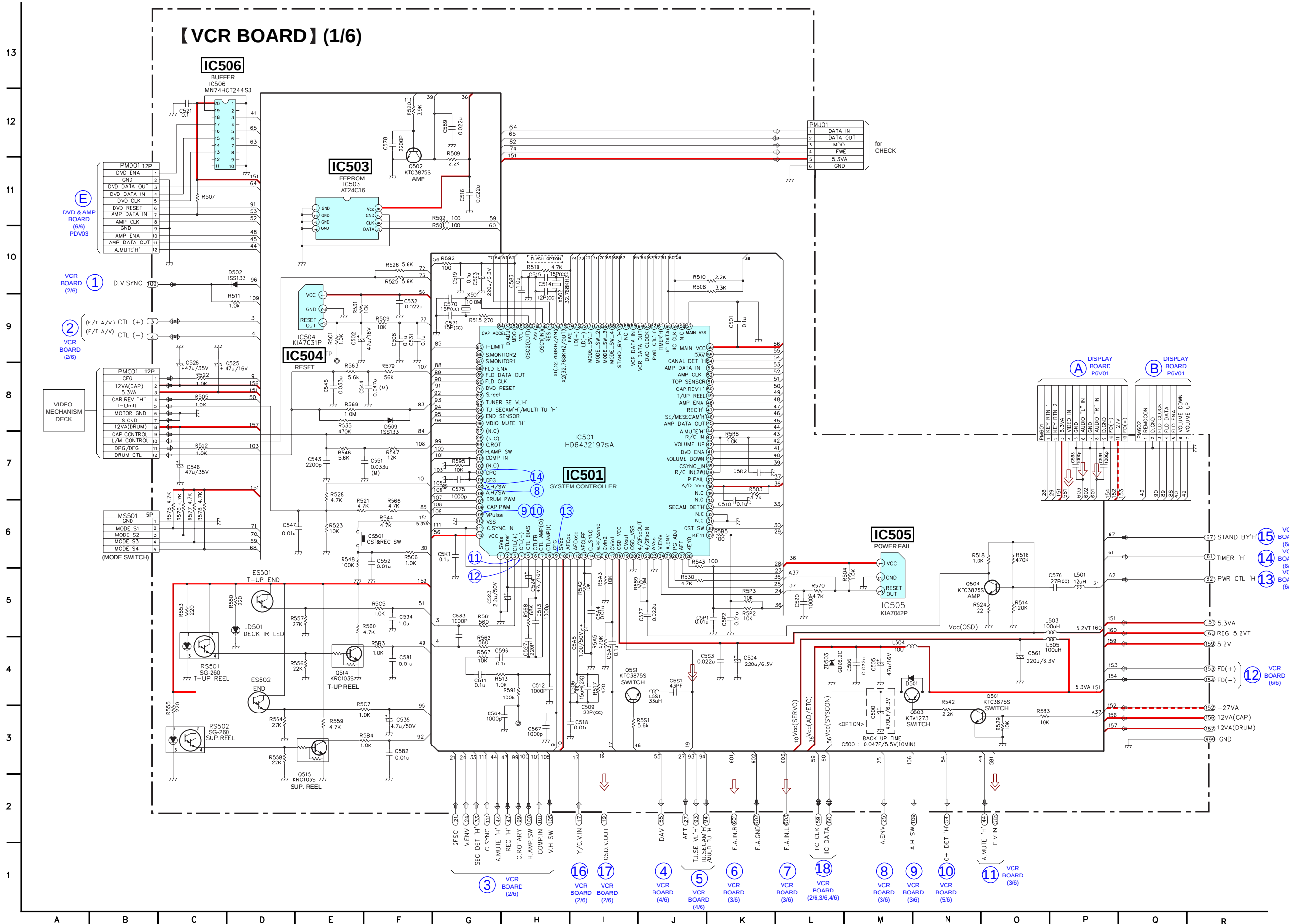
SECTION	NO	STOP			PLAY		
		B	E	C	B	E	C
DVD&	Q401	5.2	5.19	0	5.2	5.19	0
	Q402	0	0	0	0	0	0.22
	Q403	5.08	0	0	4.93	0	0
	Q404	5.01	5.08	0	4.96	5.02	0
	Q405	5.01	5.08	0.44	3.32	4.01	1.9
	Q407	0	0	5.2	0	0	0
	Q408	2.85	0	0	2.83	0	0
	Q410	5.2	5.2	0	0	5.2	0
	Q411	0	0	5.2	0	0	5.19



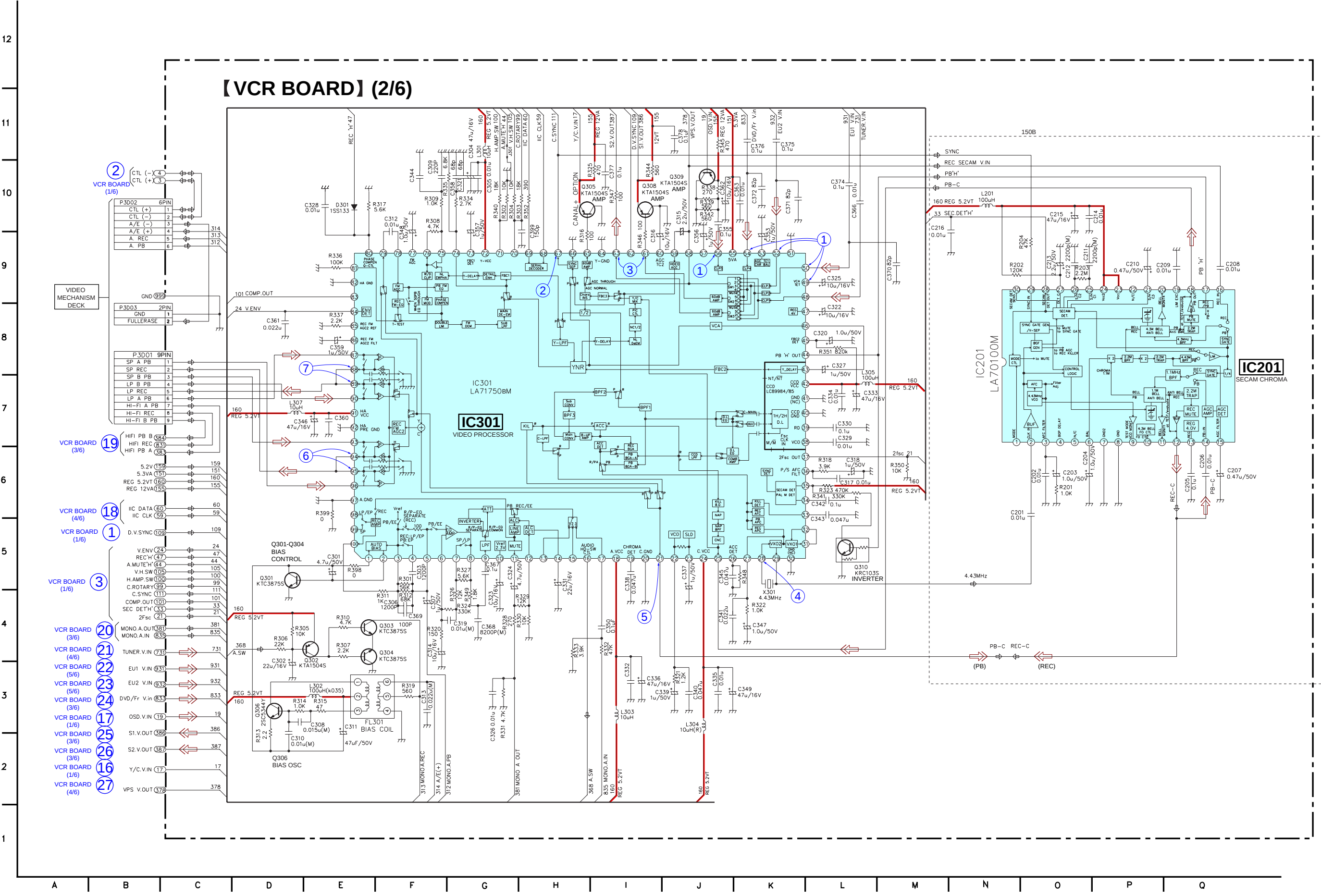
• Semiconductor Location

Ref. No.	Location
D161	K-6
D163	J-5
D509	F-16
IC160	J-6
IC161	K-6
IC162	J-6
IC201	J-9
IC301	F-10
IC501	F-15
IC503	K-15
IC504	H-16
IC505	I-14
IC506	C-13
IC751	J-3
IC7V1	I-16
IC801	F-7
IC802	C-4
Q161	J-4
Q162	J-4
Q163	K-4
Q164	K-3
Q166	L-6
Q167	K-6
Q168	J-5
Q169	L-6
Q301	G-8
Q302	G-8
Q303	G-8
Q304	G-9
Q305	E-11
Q306	H-8
Q308	C-7
Q309	E-12
Q310	G-11
Q501	J-14
Q502	H-13
Q503	J-14
Q504	F-13
Q514	I-14
Q515	E-14
Q5S1	D-14
Q804	D-5
Q904	D-4
Q905	D-4
Q906	C-3

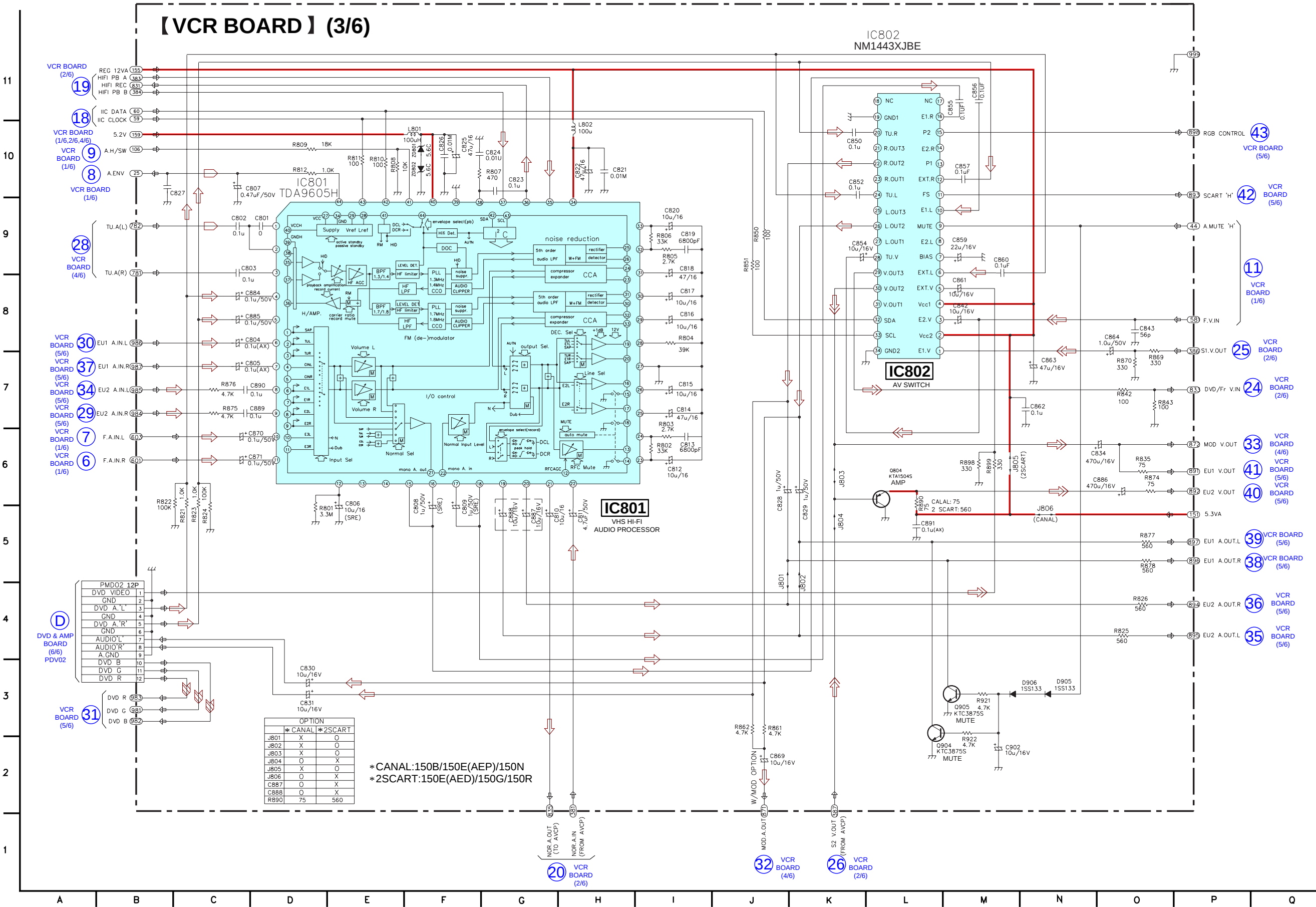
5-18. SCHEMATIC DIAGRAM – VCR SYSTEM SECTION – [VCR BOARD] (1/6)



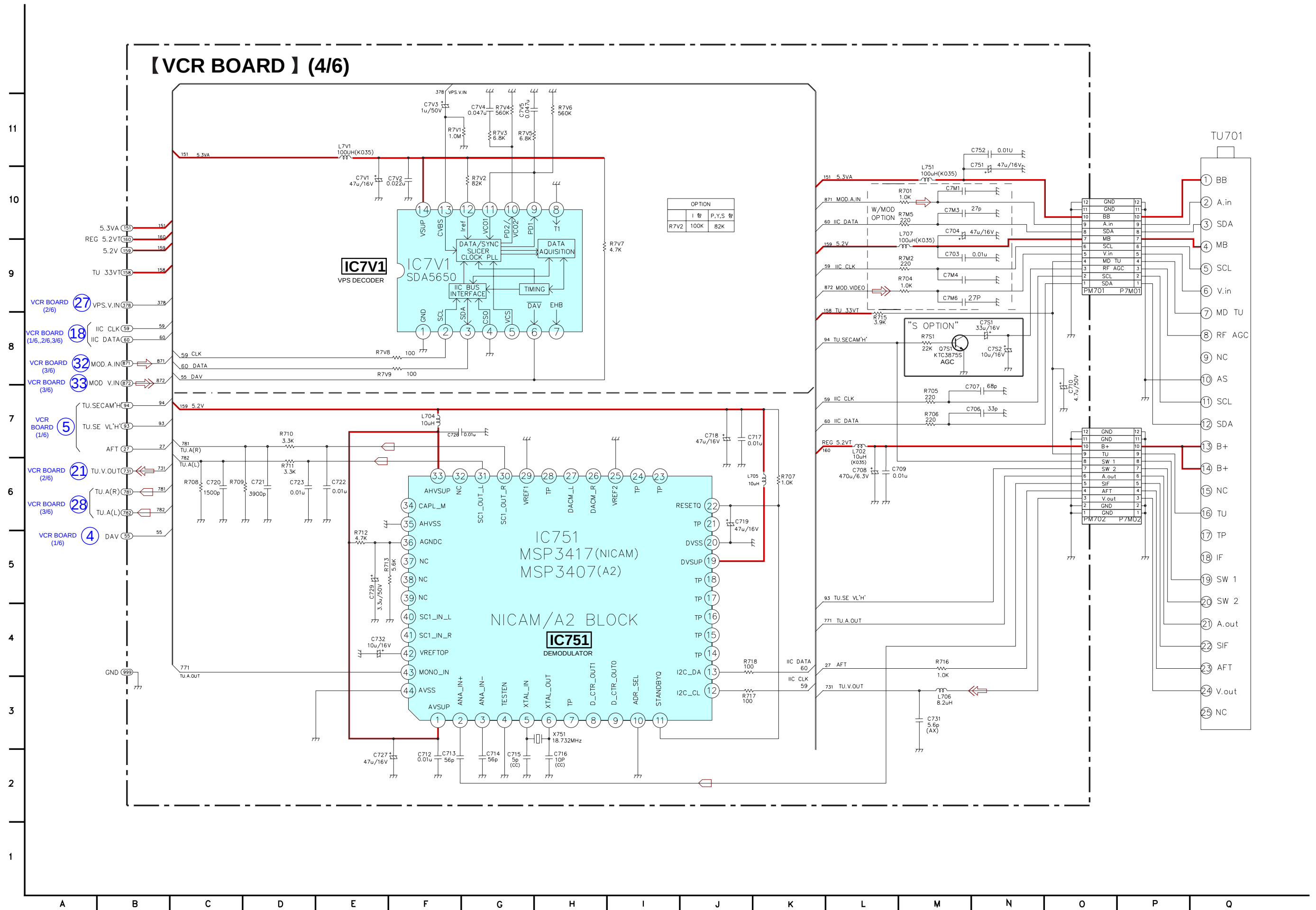
5-19. SCHEMATIC DIAGRAM – AVCP/SECAM SECTION – [VCR BOARD] (2/6)



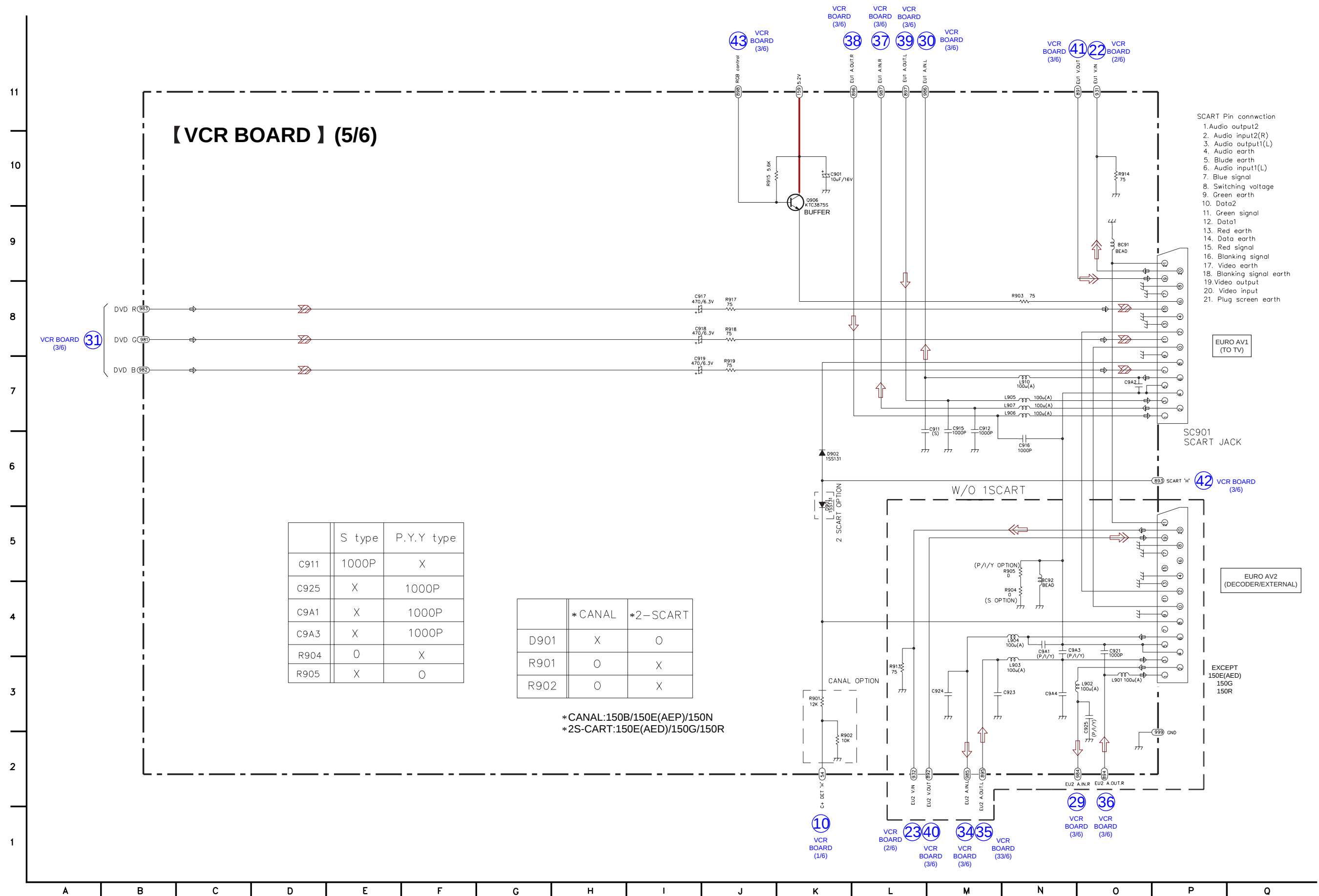
5-20. SCHEMATIC DIAGRAM – HI-FI/SWITCH SECTION- [VCR BOARD] (3/6)



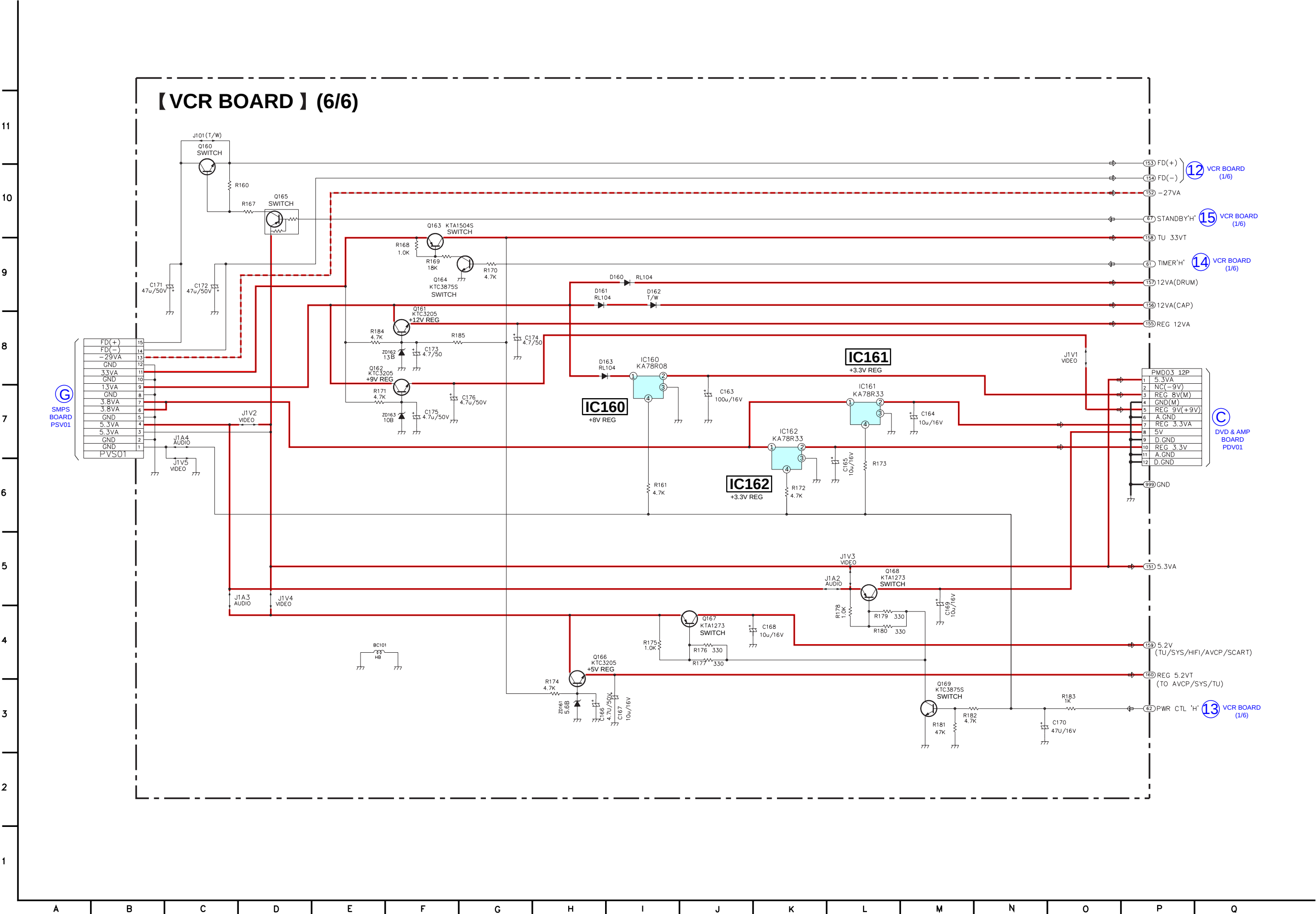
5-21. SCHEMATIC DIAGRAM – TUIF/NICAM/VPS SECTION – [VCR BOARD] (4/6)



5-22. SCHEMATIC DIAGRAM – SCART/SWITCH SECTION – [VCR BOARD] (5/6)



5-23. SCHEMATIC DIAGRAM – VCR POWER SECTION – [VCR BOARD] (6/6)

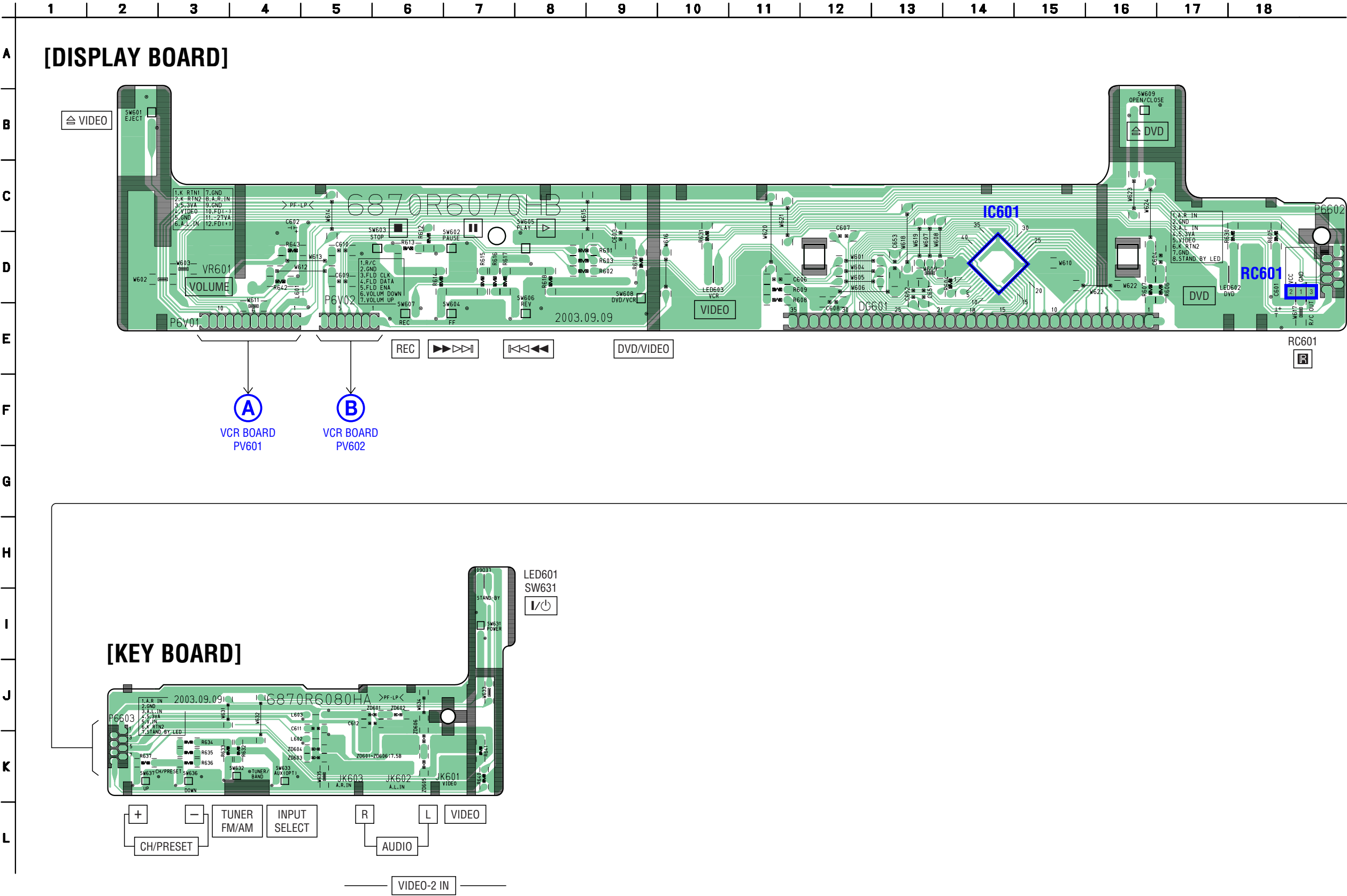


• VOLTAGE CHART (VCR BOARD)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Location No.	Base	Emitter	Collector
IC160		7	0	60	1.5	12	1.8	65	5.1	5	5.1	20	0	13	-	21	-	13	13						
1	12.3	8	2.2	61	1.5	13	2.4	66	-	6	5.1	21	-	14	-	22	5.7	10	9	13	13				
2	8	9	2.1	62	0	14	4.1	67	0	7	0	22	5.1	15	0	23	-	32.6	33	33	33				
3	0	10	0	63	0	15	-	68	0	8	5.2	23	-	16	6.1	24	5.5	0.6	0	0	0				
4	0	11	2.3	64	0	16	0	69	0	IC504		24	-	17	8.1	25	-	5.6	5.2	5.3	5.3				
IC161		12	0	65	1.7	17	3.3	70	5.1	1	5.1	25	0	18	0	26	5.7	5	5.3	5.2	5.2				
1	3.8	13	-	66	0	18	5	71	5.1	2	0	26	-	19	8.1	27	-	5	5.3	5	5				
2	3.3	14	0	67	0	19	2.3	72	0	3	5.1	27	-	20	8.1	28	0	0.6	0	0	0				
3	0	15	-	68	4.8	20	0	73	5.1	IC505		28	-	21	4.6	29	1.4	0	0	5	5				
4	0	16	0	69	4.7	21	2.4	74	0	1	5.1	29	0	22	3.8	30	2.4	4.3	5	5	5				
IC162		17	0	70	2.5	22	2.5	75	2.4	2	0	30	2.8	23	3.8	31	-	0	0	0	0				
1	3.8	18	5	71	1.8	23	0	76	2.5	3	4.8	31	2.7	24	3.8	32	5.1	0.7	0	0	0				
2	3.3	19	0	72	5	24	0.8	77	4.9	IC506		32	-	25	3.8	33	0	A2.1	2.8	0	0				
3	0	20	0	73	1.7	25	0	78	2.5	1	0	33	5.1	26	0.8	34	0	5	5	5	5				
4	0	21	1.9	74	2.8	26	5.2	79	0	2	-	34	-	27	0	35	0	2.5	3.2	0	0				
IC201		22	0	75	0.6	27	4.1	80	2.5	3	2.2	35	0	28	3.8	36	2.8	0	3.6	0	0				
1	-	23	0	76	0.7	28	2.5	81	3.3	4	-	36	2.8	29	2.8	37	-	4	0	0	0				
2	2.4	24	5	77	0	29	0	82	5.1	5	5.1	37	-	30	0.8	38	-	0	0	0	0				
3	3.6	25	3.3	78	3.3	30	1.9	83	2.4	6	-	38	-	31	3.8	39	-	0.7	0	0	0				
4	-	26	2.4	79	1.9	31	0	84	0	7	5.1	39	-	32	3.8	40	-	4.5	5.2	5.1	5.1				
5	-	27	2	80	1.9	32	0	85	0	8	-	40	-	33	3.8	41	-	-2.1	0	3.3	3.3				
6	3.7	28	0	81	1.3	33	0	86	-	9	-	41	-	34	11.8	42	2.6	0	3.8	1.5	1.5				
7	0	29	2.6	82	0	34	-	87	-	10	0	42	2.6	35	0.3	43	2.3	0	0	5	5				
8	0	30	0	83	2.1	35	5.1	88	5.1	11	-	43	2.3	36	2.8	44	0	4.8	0	0	0				
9	-	31	4.9	84	0.5	36	5.1	89	5.1	12	-	44	0	37	0.3	38	0	0	0	0	0				
10	-	32	4.9	85	0	37	0	90	5.1	13	0	IC7V1		39	0	39	0	1.8	0	2.8	2.8				
11	-	33	2.4	86	0.4	38	3	91	2.7	14	-	1	0	40	5.1	40	5.1	0	0	0	0				
12	1	34	1.5	87	1.9	39	0	92	5	15	3.8	2	4.8	41	0	41	0	0	0	0	0				
13	4	35	2.3	88	1.9	40	0	93	0	16	-	3	4.7	42	5.1	42	5.1	0	0	0	0				
14	2.6	36	2	89	1.9	41	0	94	0	17	1.3	4	0	43	5.1	43	5.1	0	0	0	0				
15	2	37	1.8	90	0	42	4.9	95	0	18	-	5	-	44	0	IC802		1	3.3	11.9	11.9				
16	3.6	38	2	91	5	43	0	96	0	19	0	6	5.1	45	5.6	2	11.9	3	2.7	11.9	11.9				
17	4	39	9.2	92	0	44	0	97	-	20	5.1	7	-	46	5.4	3	3	5	5.5	0	0				
18	2.2	40	0	93	0.7	45	5	98	-	IC751		8	0	47	5.4	4	3.8	6	5.5	7	5.6				
19	3.6	41	0	94	0	46	0	99	0	1	5.1	9	0	48	5.4	5	3	7	5.6	8	-				
20	-	42	5	95	0	47	0	100	0	2	1.5	10	0	49	5.4	6	3.8	8	5.2	9	0				
21	0	43	2.5	96	0	48	4.9	101	0	3	1.5	11	5.1	50	5.4	7	3.8	9	5.2	10	5.4				
22	-	44	4	97	0	49	0	102	-	4	-	12	4.8	51	5.4	8	5.2	10	5.2	11	11.4				
23	4.9	45	2	98	-	50	0	103	2.4	5	2.5	13	4.8	52	5.4	9	5.2	11	5.2	12	5.5				
24	4.9	46	2.7	99	-	51	4.2	104	2.4	6	2.5	14	5.1	53	5.4	10	5.2	12	5.2	13	-				
25	2.9	47	4	100	2.2	52	5.1	105	0	7	-	15	-	IC801		11	5.2	13	-	14	-				
26	2.9	48	3.8	IC501		53	2	106	0	8	-	16	-	1	3.8	12	5.2	14	5.2	15	0				
27	3.1	49	2.9	1	0	54	0	107	0	9	-	17	-	2	3.8	13	5.2	16	5.4	16	5.4				
28	0	50	2.3	2	0.3	55	5.2	108	0	10	0	18	-	3	3.8	14	5.2	17	-	17	-				
29	0.7	51	-	3	2	56	5.1	109	0	11	5.1	19	5.1	4	3.8	15	5.5	18	-	18	-				
30	-	52	3.1	4	2.5	57	0	110	0	12	4.8	19	5.1	5	3.8	16	5.5	19	0	19	0				
IC301		53	2.2	5	2.5	58	-	111	4	13	4.8	20	5.1	6	5.2	17	-	20	5.4	20	5.4				
1	5	54	0	6	2.5	59	0	112	5.1	14	-	1	0	7	5.5	18	-	IC802		1	3.3				
2	0	55	5.2	7	2.7	60	5.1	IC503		15	-	2	3.8	8	5.2	19	0	2	11.9	3	2.7				
3	2.2	56	5.2	8	2.4	61	5.1	1	0	16	-	3	3.8	9	5.2	20	5.4	3	2.7	4	11.9				
4	0	57	3.5	9	0.4	62	5.1	2	0	17	-	4	3.8	10	5.2	1	3.8	4	11.9	5	5.5				
5	0	58	0	10	5.2	63	5.1	3	0	18	-	5	3.8	11	5.2	2	11.9	6	5.5	7	5.6				
6	2.2	59	0	11	1.8	64	5.1	4	0	19	5.1	11	5.2	12	0	3	3	7	5.6	8	-				

VOLTAGE : FM MODE

VOLTAGE : FM MODE

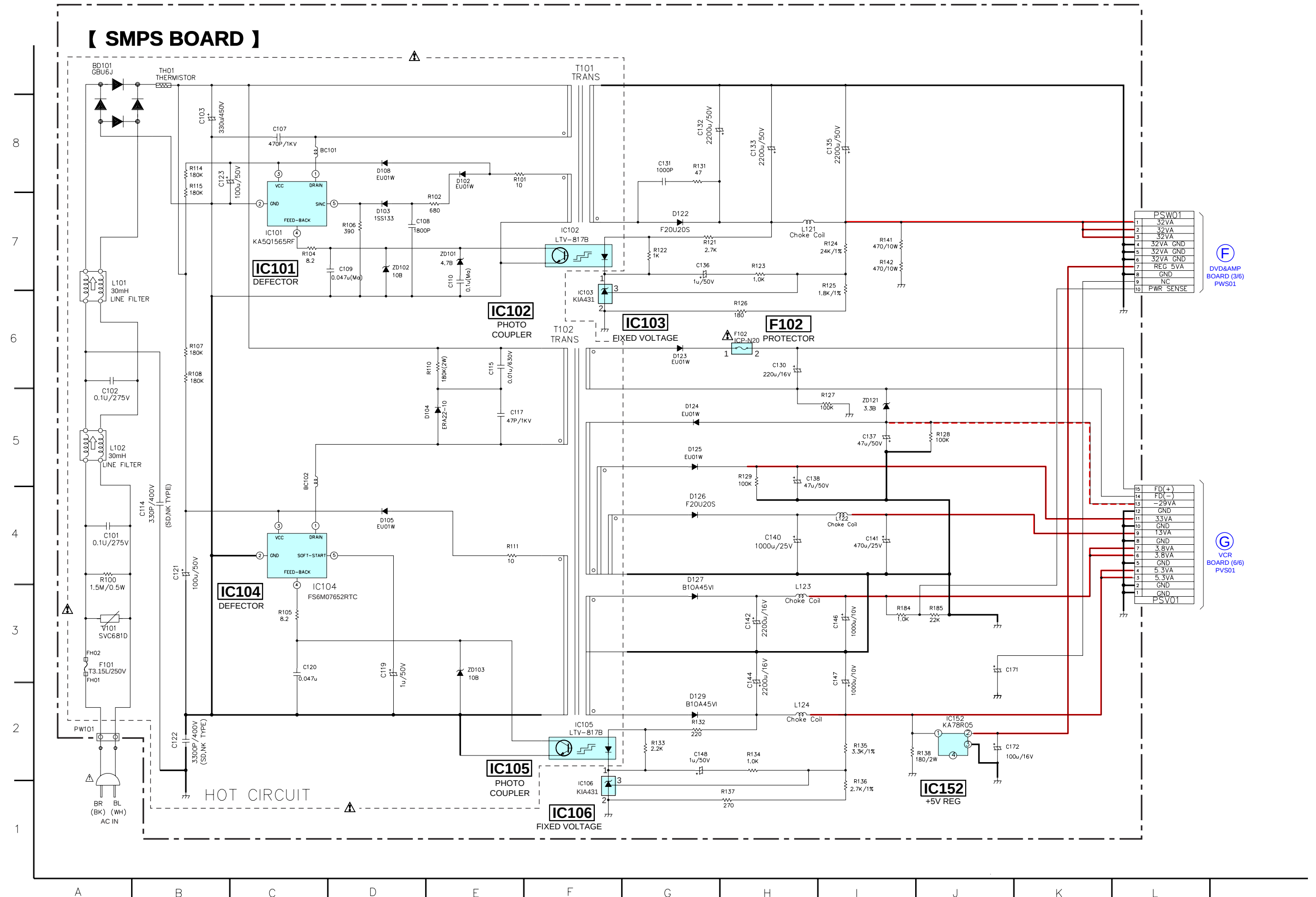


79



AVD-K150B/K150E/K150G/K150N/K150R

5-27. SCHEMATIC DIAGRAM – SMPS SECTION –

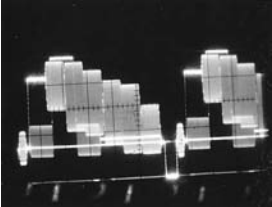


AVD-K150B/K150E/K150G/K150N/K150R

Waveforms

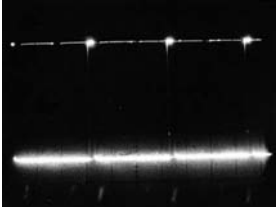
VCR Board

① IC301 ④⑧, ⑤⑩, ⑤②, ⑤④, ⑤⑥
EE (VIDEO IN)



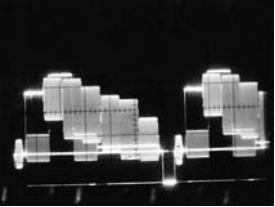
200 mV/10 msec DIV

② IC301 ⑥⑦
PB/REC (C-SYNC OUT)



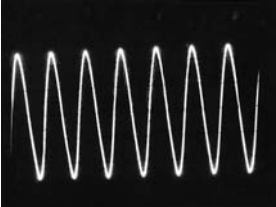
1.0 V/20 msec DIV

③ IC301 ⑥①, ⑥③
EE (VIDEO OUT)



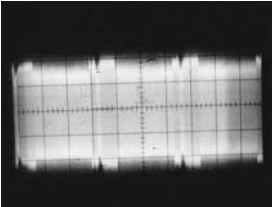
500 mV/10 msec DIV

④ IC301 ②⑧
PB/REC (4.43MHz X-TAL IN)



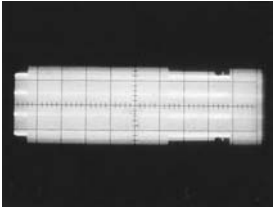
100 mV/200 nsec DIV

⑤ IC301 ②①
PB (PB RF OUT)



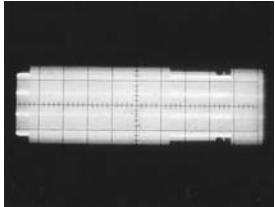
100 mV/5 msec DIV

⑥ IC301 ⑨④, ⑨⑤
SP REC (REC RF)



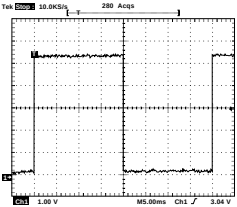
500 mV/2 msec DIV

⑦ IC301 ⑧⑧, ⑧⑨
LP REC (REC RF)



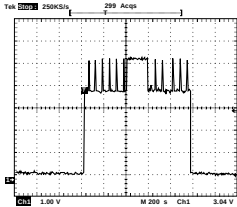
500 mV/2 msec DIV

⑧ IC501 ①⑥⑤
REC/PB (V.HSW)



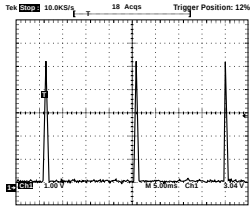
1.0 V/5 msec DIV

⑨ IC501 ①⑥⑨
QUE/REV (DV.SYNC)



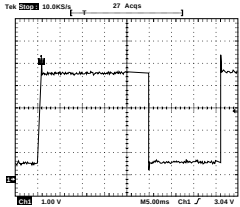
1 V/200 μsec DIV

⑩ IC501 ①⑥⑧ QUE/REV (DV.SYNC)
※ UPPER WAVEFORM



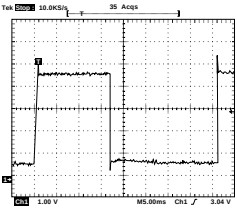
0.2 V/40 μsec DIV

⑪ IC501 ③
(CTL +)



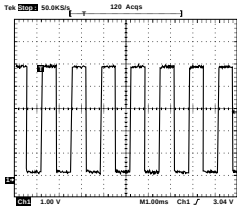
1 V/5 msec DIV

⑫ IC501 ④
(CTL -)



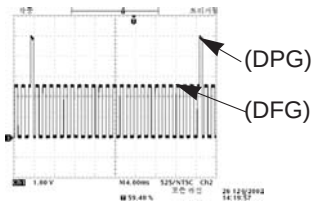
1 V/5 msec DIV

⑬ IC501 ⑨
REC/PB (CFG)



1 V/10 msec DIV

⑭ IC501 ①⑥③, ①⑥④
REC/PB (DPG/DFG)



1 V/10 msec DIV

AVD-K150B/K150E/K150G/K150N/K150R

SECTION 6

EXPLODED VIEWS

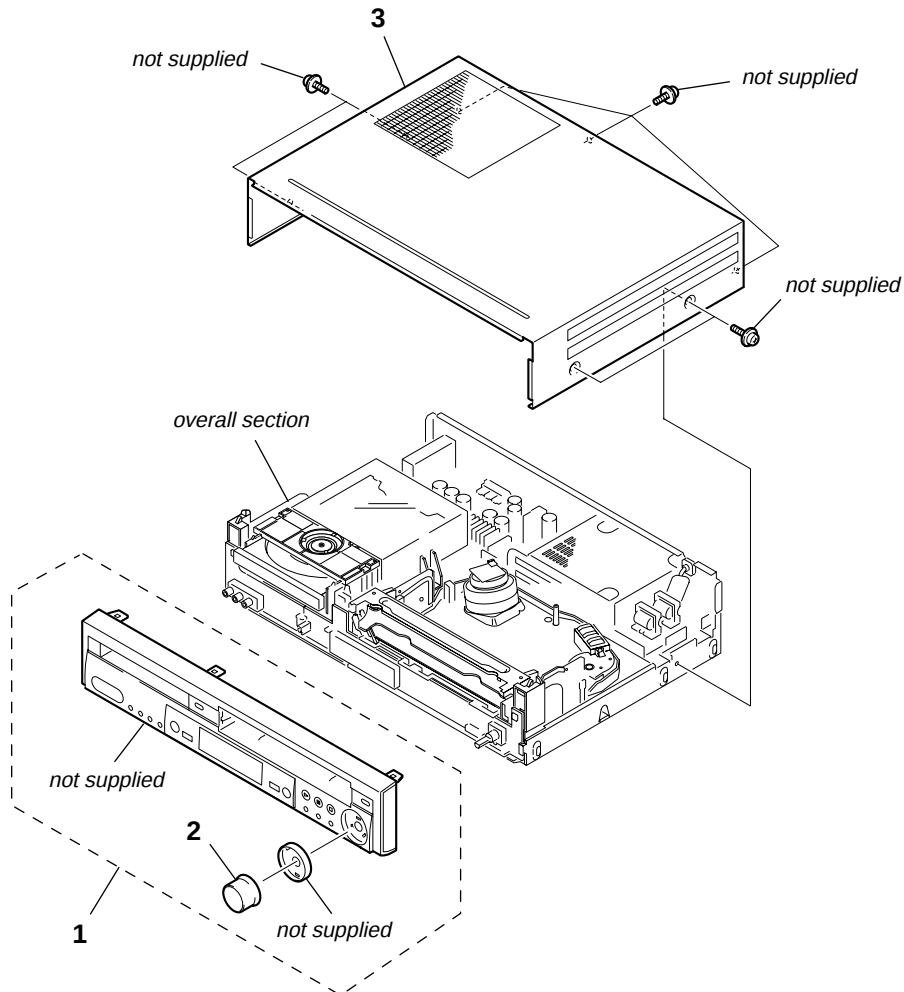
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.
- Abbreviation
AED : North European model
RU : Russian model

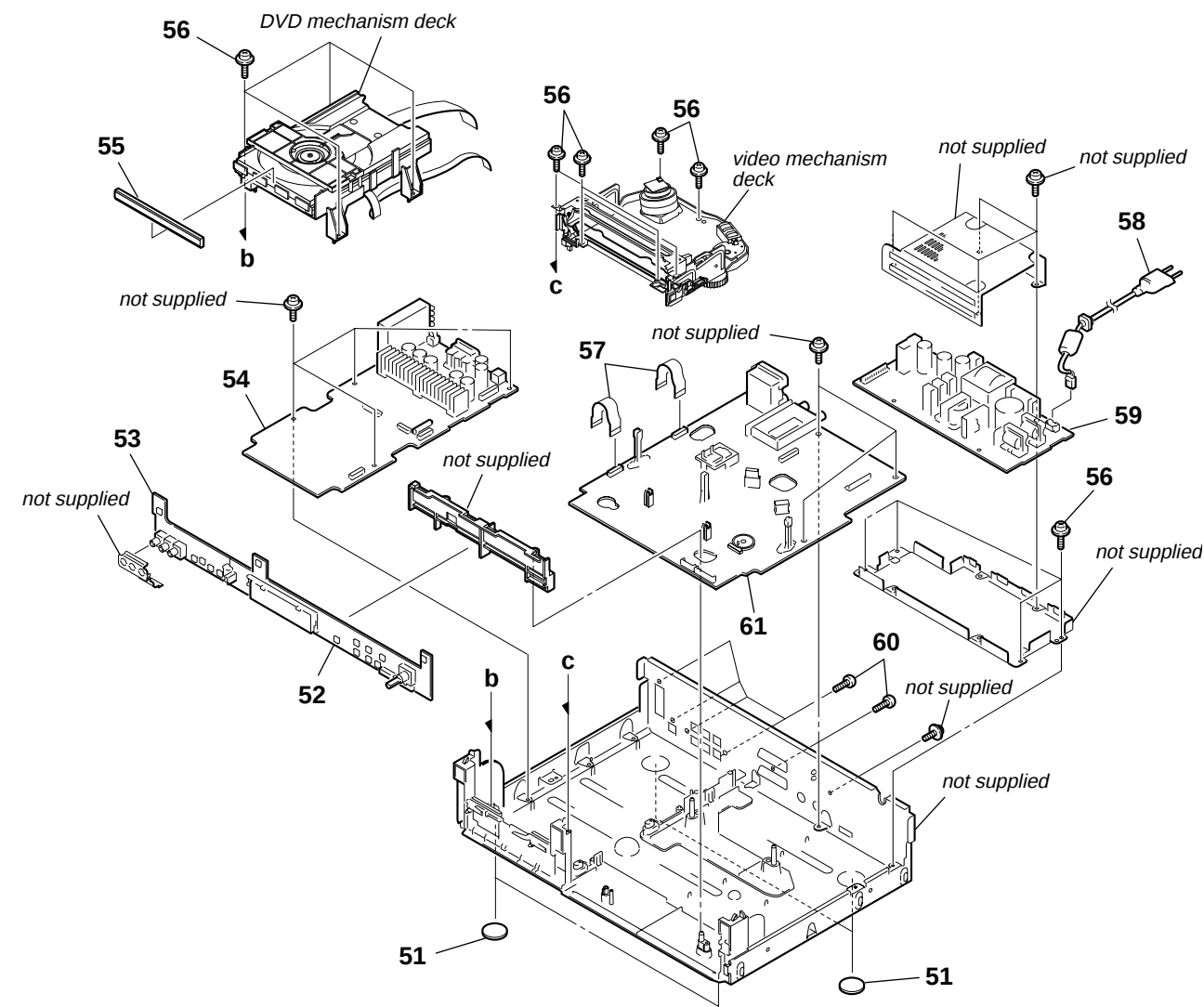
The components identified by mark $\triangle$ or dotted line with mark $\triangle$ are critical for safety. Replace only with part number specified.

6-1. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	9-885-062-72	PANEL ASSEMBLY,FRONT (150E)		1	9-885-062-89	PANEL ASSEMBLY,FRONT (150R)	
1	9-885-062-84	PANEL ASSEMBLY,FRONT (150N)		2	9-885-055-34	KNOB,VOLUME	
1	9-885-062-64	PANEL ASSEMBLY,FRONT (150B)		3	9-885-055-32	CASE	
1	9-885-062-79	PANEL ASSEMBLY,FRONT (150G)					

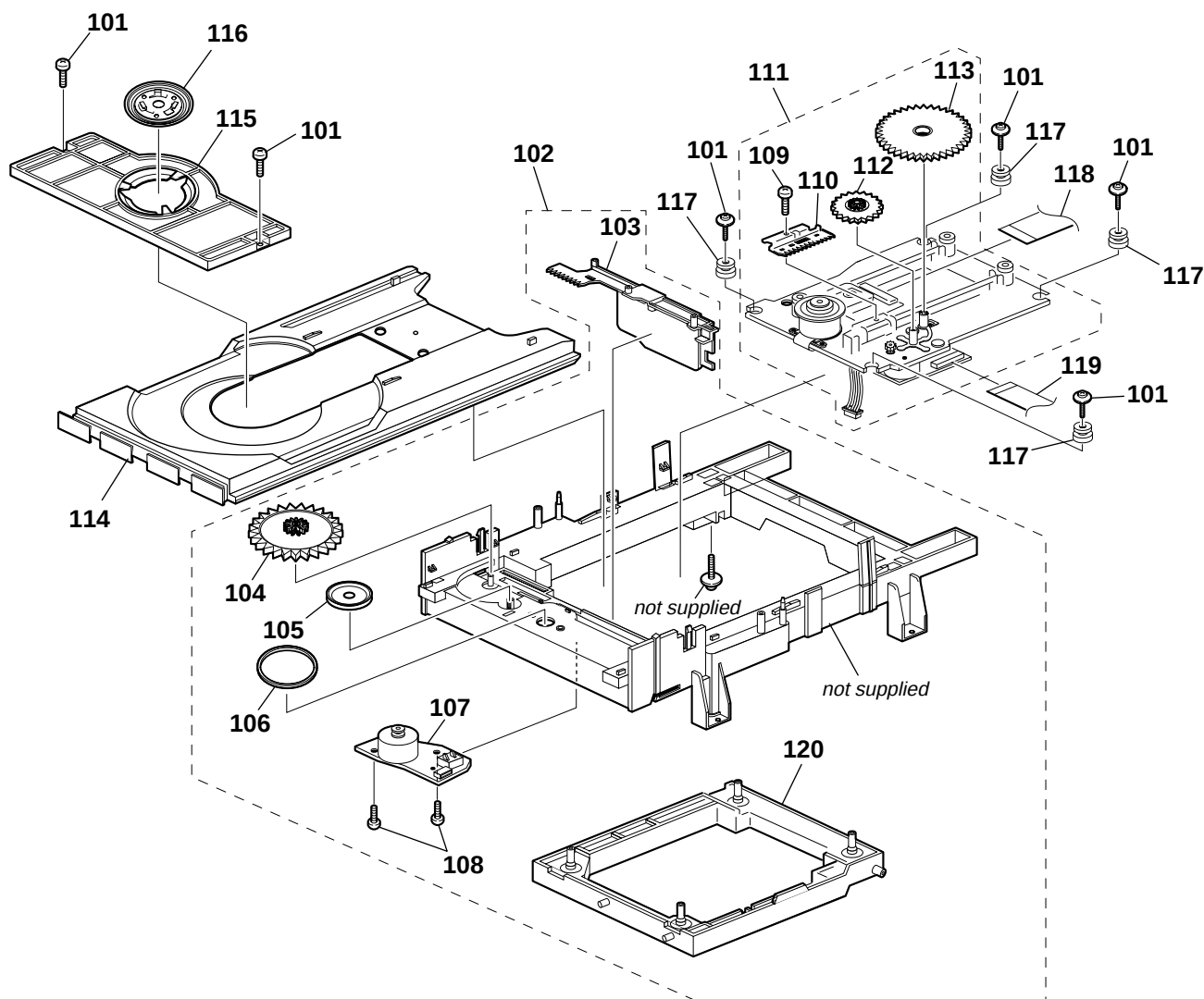
6-2. OVERALL SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	9-885-055-38	RUBBER,FOOT		△ 58	9-885-062-81	CORD, POWER (150G)	
52	9-885-055-48	DISPLAY BOARD, COMPLETE		△ 58	9-885-062-66	CORD, POWER (EXCEPT 150G)	
53	9-885-055-49	KEY BOARD, COMPLETE		59	9-885-062-67	SMPS BOARD, COMPLETE	
54	9-885-062-74	DVD & AMP BOARD, COMPLETE (150E)		60	9-885-039-85	SCREW SPECIAL (3X10)	
54	9-885-062-86	DVD & AMP BOARD, COMPLETE (150N)		61	9-885-062-75	VCR BOARD, COMPLETE (150E(AEP))	
54	9-885-062-68	DVD & AMP BOARD, COMPLETE (150B)		61	9-885-062-77	VCR BOARD, COMPLETE (150E(AED))	
54	9-885-062-82	DVD & AMP BOARD, COMPLETE (150G)		61	9-885-062-87	VCR BOARD, COMPLETE (150N)	
54	9-885-062-91	DVD & AMP BOARD, COMPLETE (150R)		61	9-885-062-69	VCR BOARD, COMPLETE (150B)	
55	9-885-062-62	DOOR,CASE (DVD)		61	9-885-062-83	VCR BOARD, COMPLETE (150G)	
56	9-885-034-51	SCREW SPECIAL (3X12)		61	9-885-062-87	VCR BOARD, COMPLETE (150N)	
57	9-885-055-44	FFC,12CORE 1.25 60mm SHIELD		61	9-885-062-92	VCR BOARD, COMPLETE (150R)	

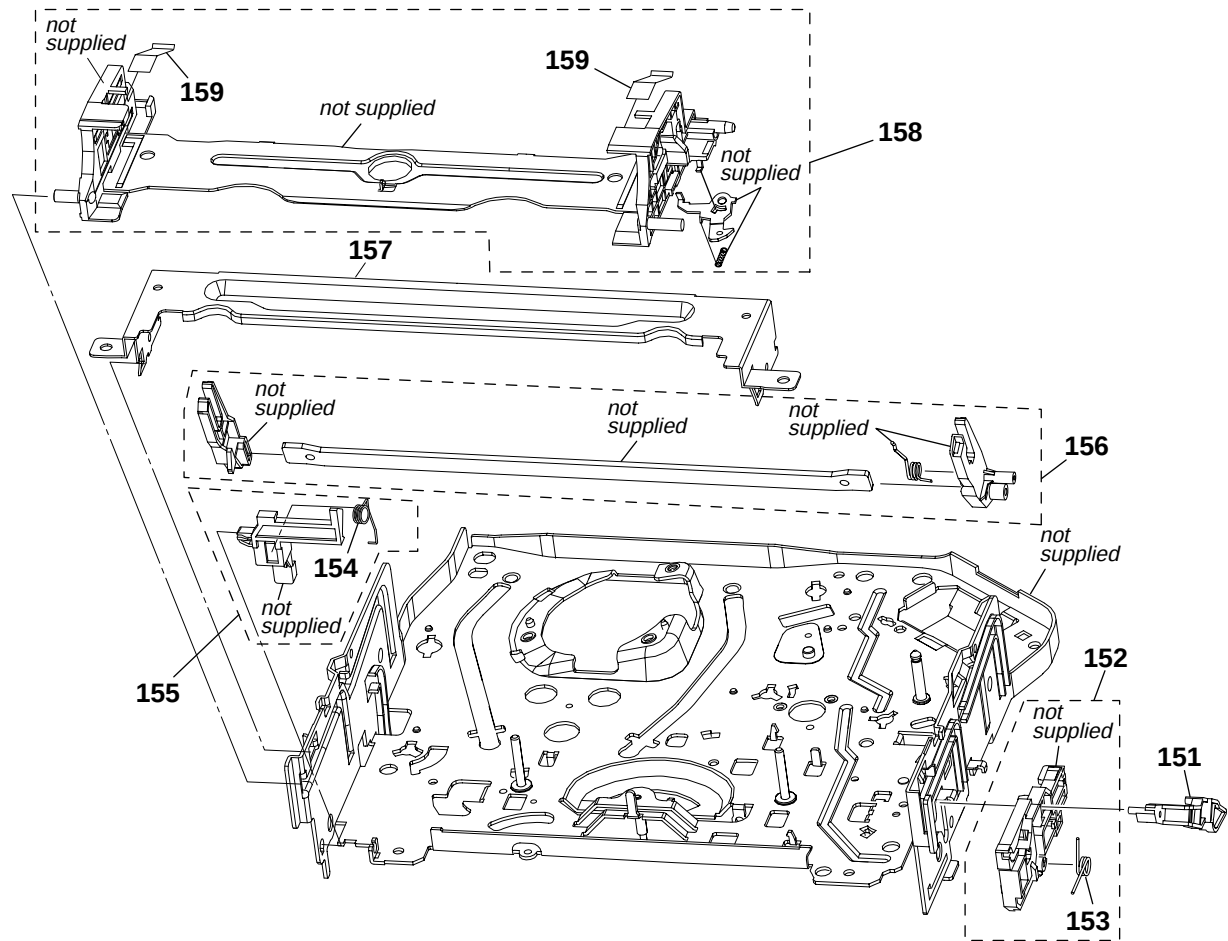
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

6-3. DVD MECHANISM DECK



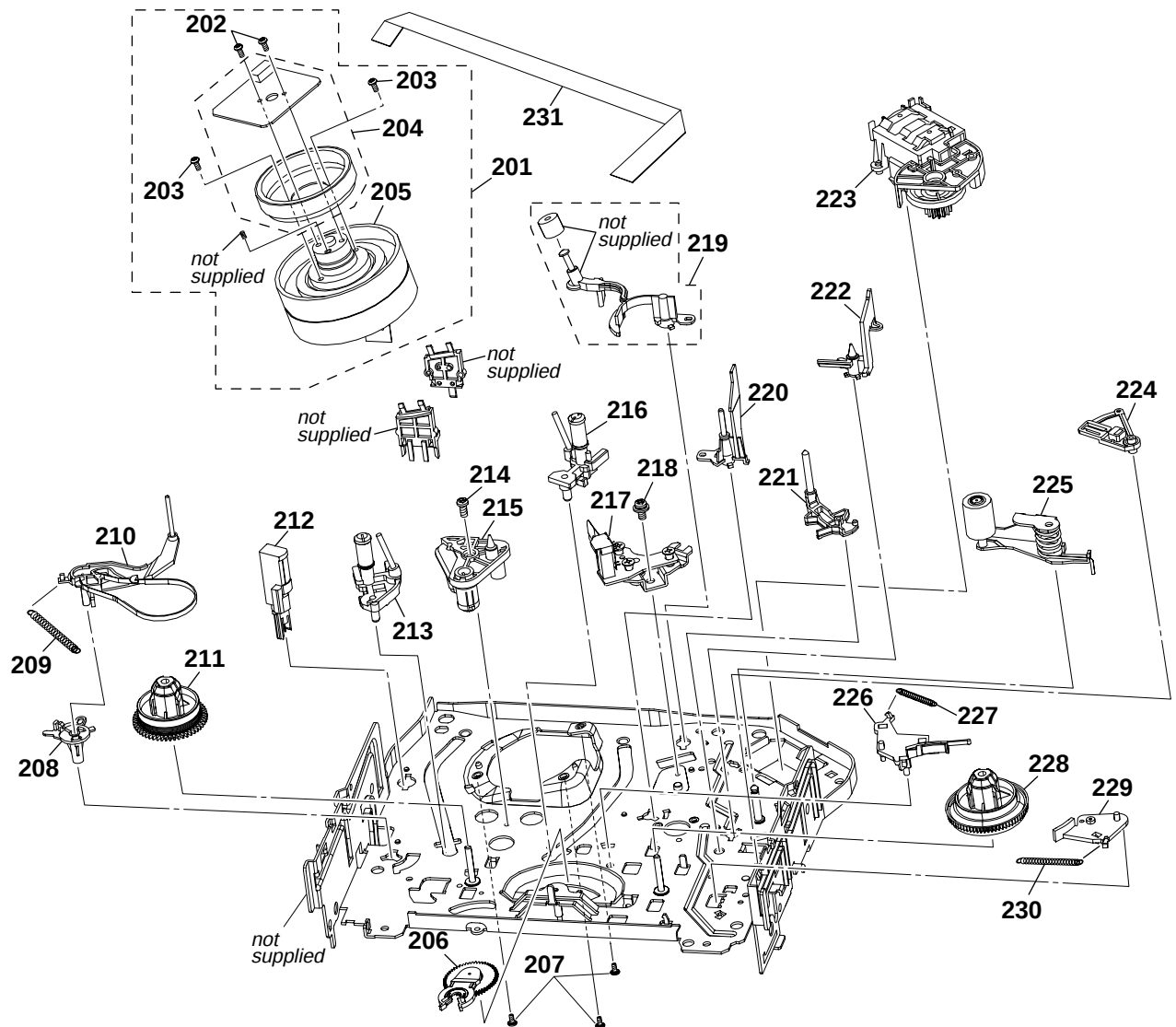
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	9-885-039-79	SCREW, B-TITE		111	9-885-041-45	BASE ASSY, SLED (DP-7C)	
102	9-885-041-44	BASE ASSY, MAIN (DP-7C)		112	9-885-039-97	GEAR, MIDDLE (DP-7C)	
103	9-885-040-08	GUIDE, UP/DOWN		113	9-885-039-96	GEAR, PINION (DP-7C)	
104	9-885-039-99	GEAR, LOADING		114	9-885-056-05	TRAY, DISC	
105	9-885-056-19	GEAR, PULLEY		115	9-885-056-01	HOLDER, CLAMP	
106	9-885-056-18	BELT		116	9-885-056-07	CLAMP ASSY	
107	9-885-040-26	PWB (PCB) ASSY, OTHERS		117	9-885-056-04	RUBBER, DAMPER (DP-7C)	
108	9-885-039-77	SCREW, DRAWING (SWERCH16A/ZNBK)		118	9-885-056-06	CABLE, FLAT (23 CORE)	
109	9-885-039-78	SCREW, MACHINE		119	9-885-056-02	CABLE, FLAT (11 CORE)	
110	9-885-039-95	GEAR ASSY		120	9-885-056-03	FRAME, UP/DOWN DP7C	

6-4. VIDEO MECHANISM DECK -1



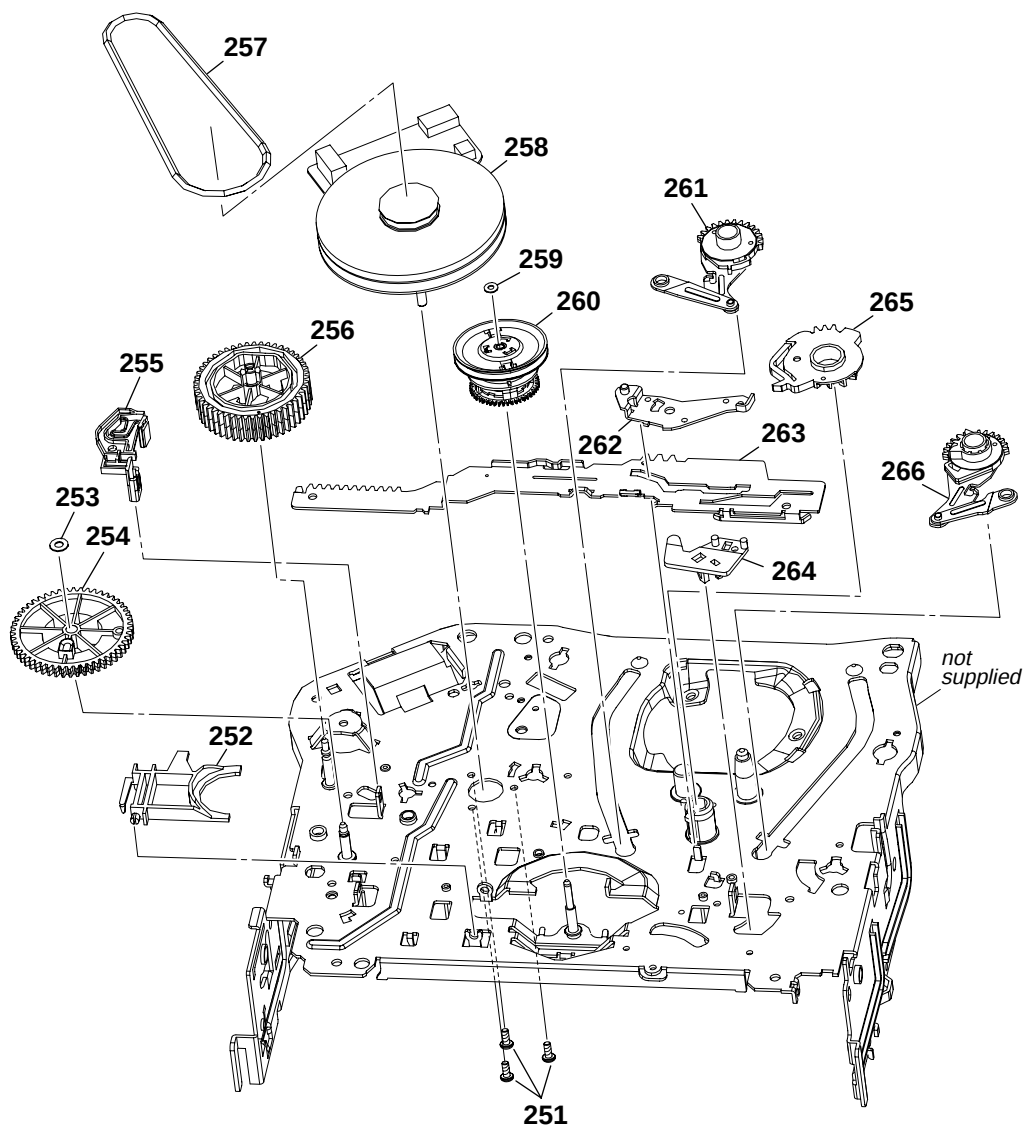
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
151	9-885-034-28	OPENER, DOOR		156	9-885-034-72	ARM ASSY, F/L	
152	9-885-034-71	GEAR ASSY, RACK (F/L)		157	9-885-056-14	PLATE, TOP	
153	9-885-056-15	SPRING, COIL (D35)		158	9-885-034-70	HOLDER ASSY, CST	
154	9-885-034-34	SPRING, COIL (D35 SWITCH)		159	9-885-056-16	PLATE, SPRING CST	
155	9-885-034-73	LEVER ASSY, SWITCH					

6-5. VIDEO MECHANISM DECK -2



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
201	9-885-034-65	DRUM ASSY, D35-6CH PAL		216	9-885-033-84	BASE ASSY, P3	
202	9-885-034-44	SCREW, D2.6 L4.5 MSWR3/FZY		217	9-885-033-87	BASE ASSY, A/C HEAD	
203	9-885-034-45	SCREW, D2.6 L4.0 MSWR3/FZY		218	9-885-034-48	SCREW, D2.6 L5.0 SWRCH18A/FZY	
204	9-885-033-74	MOTOR, DRUM 120AL05		219	9-885-034-66	ARM ASSY, CLEANER	
205	9-885-040-03	MOTOR (MECH), DRUM MDVC-035AA		220	9-885-033-85	BASE ASSY, P4	
206	9-885-056-11	ARM ASSY, IDLER		221	9-885-033-80	ARM, T/UP	
207	9-885-034-47	SCREW, D3.0 L6.0 MSWR3/FZY		222	9-885-033-86	OPENER, LID	
208	9-885-034-21	BASE, TENSION		223	9-885-040-06	MOTOR ASSY (LOADING)	
209	9-885-034-02	SPRING COIL, TENSION		224	9-885-034-01	LEVER, T/UP	
210	9-885-033-82	ARM ASSY, TENSION		225	9-885-034-00	ARM ASSY, DECK/MECHA PINCH	
211	9-885-033-88	REEL, S		226	9-885-033-90	BRAKE ASSY, RS	
212	9-885-033-93	HEAD, D35 FE ST		227	9-885-033-89	SPRING COIL, RS D35	
213	9-885-040-18	HEAD (CIRC), D35 FE TDK 6		228	9-885-033-99	REEL, T	
214	9-885-033-83	BASE ASSY, P2		229	9-885-033-92	BRAKE ASSY, T	
215	9-885-034-46	SCREW, D2.6 L5.8 SWRCH16A/FZY		230	9-885-033-91	SPRING COIL, D35	
216	9-885-039-82	BASE ASSY, SLED (DP-5-4V)		231	9-885-056-10	CABLE, FLAT (7 CORE)	

6-6. VIDEO MECHANISM DECK -3



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
251	9-885-034-49	SCREW, D2.6 L6.8 MSWR3/FZY		259	9-885-034-53	WASHER, STOPPER	
252	9-885-034-10	LEVER, F/R		260	9-885-056-13	CLUTCH ASSY, D35	
253	9-885-034-54	WASHER, STOPPER		261	9-885-034-68	GEAR ASSY, P3	
254	9-885-034-07	GEAR, DRIVE		262	9-885-034-20	LEVER, TENSION	
255	9-885-034-09	BRAKE ASSY, CAPSTAN		263	9-885-034-19	PLATE, SLIDER	
256	9-885-034-08	GEAR, CAM		264	9-885-034-18	LEVER, SPRING	
257	9-885-034-04	BELT, CAPSTAN		265	9-885-034-12	GEAR, SECTOR (D35)	
258	9-885-056-12	MOTOR, CAPSTAN		266	9-885-034-69	GEAR ASSY, P2	

AVD-K150B/K150E/K150G/K150N/K150R

SECTION 7

ELECTRICAL PARTS LIST

DISPLAY

DVD & AMP

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable

- CAPACITORS
uF: μ F
COILS
uH: μ H
- SEMICONDUCTORS
In each case, u: μ , for example:
uA. . : μ A. . uPA. . : μ PA. .
uPB. . : μ PB. . uPC. . : μ PC. .
uPD. . : μ PD. .
- Abbreviation
AED : North European model
RU : Russian model

When indicating parts by reference number, please include the board name.

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	9-885-055-48	DISPLAY BOARD, COMPLETE *****				< DIODE >	
		< INDICATOR TUBE >		D501	6-500-323-01	DIODE RL104 R	
DG601	9-885-055-97	INDICATOR TUBE, FLUORESCENT		D603	8-719-991-34	DIODE 1SS133	
		< IC >		D604	8-719-991-34	DIODE 1SS133	
IC601	8-759-643-83	IC UPD16315GB-3BS				< IC >	
		< DIODE >		IC101	9-885-055-65	IC LC875747B-52A5	
LED602	9-885-055-98	DIODE, LED DL-11S2GNS (DVD)		IC102	9-885-032-96	IC KIA7031P	
LED603	9-885-055-98	DIODE, LED DL-11S2GNS (VIDEO)		IC103	9-885-032-96	IC KIA7031P	
		< CONNECTOR >		IC104	8-759-745-64	IC NJM4560M-TE1	
P6V01	9-885-056-99	CONNECTOR, BOARD TO BOARD 12PIN		IC202	9-885-055-66	IC AK4586VQ	
P6V02	9-885-056-00	CONNECTOR, BOARD TO BOARD 7PIN					
PS602	1-816-678-11	CONNECTOR, BOARD TO BOARD 8PIN		IC203	8-759-297-77	IC MM1231XFBE	
		< IC >		IC204	8-759-656-83	IC NJM4580M	
RC601	1-478-247-11	REMOTE CONTROLLER RECEIVER ()		IC205	8-759-745-64	IC NJM4560M-TE1	
		< SWITCH >		IC206	9-885-055-67	IC CS4334-KS	
SW601	1-572-184-21	SWITCH, TACT ( VIDEO)		IC301	9-885-054-83	IC PS9702B	
SW602	1-572-184-21	SWITCH, TACT ()					
SW603	1-572-184-21	SWITCH, TACT ()		IC401	9-885-041-57	IC MT1336E	
SW604	1-572-184-21	SWITCH, TACT ()		IC402	6-705-366-01	IC LA6560-A-TE	
SW605	1-572-184-21	SWITCH, TACT ()		IC501	9-885-055-68	IC MT1379DEC	
				IC502	6-700-173-01	IC HY57V161610DTC-7	
SW606	1-572-184-21	SWITCH, TACT ()		IC503	6-700-173-01	IC HY57V161610DTC-7	
SW607	1-572-184-21	SWITCH, TACT (REC)					
SW608	1-572-184-21	SWITCH, TACT (DVD/VIDEO)		IC505	6-702-399-01	IC S524A40X21-SCT0	
SW609	1-572-184-21	SWITCH, TACT ( DVD)		IC507	9-885-041-64	IC MM1623XFBE	
		< ENCODER >		IC5A1	9-885-062-95	IC PROGRAM, DTS60913S DVD (150B/150E)	
VR601	9-885-055-02	ENCODER, VOLUME (VOLUME)		IC5A1	9-885-062-96	IC PROGRAM, DTS60913I DVD (150G)	
		*****		IC5A1	9-885-062-97	IC PROGRAM, DTS60913Y DVD (150N)	
	9-885-062-68	DVD & AMP BOARD, COMPLETE (150B)					
	9-885-062-74	DVD & AMP BOARD, COMPLETE (150E)		IC5A1	9-885-062-99	IC PROGRAM, DTS60911X DVD (150R)	
	9-885-062-82	DVD & AMP BOARD, COMPLETE (150G)		IC710	9-885-054-79	IC STA505	
	9-885-062-86	DVD & AMP BOARD, COMPLETE (150N)		IC730	9-885-054-79	IC STA505	
	9-885-062-91	DVD & AMP BOARD, COMPLETE (150R)		IC750	9-885-054-79	IC STA505	
		*****		IC770	9-885-054-79	IC STA505	
						< JACK/TERMINAL >	
				JK602	8-749-923-05	JACK, TORX178 (VIDEO 1)	
				JKS01	1-694-998-11	TERMINAL BLOCK, 6P (SPEAKERS)	
						< CONNECTOR >	
				PDV01	9-885-055-74	CONNECTOR, MA 12PIN WH	
				PDV02	9-885-054-96	CONNECTOR, 12PIN 1.25mm	
				PDV03	9-885-054-96	CONNECTOR, 12PIN 1.25mm	
				PDM03	9-885-055-75	CONNECTOR, 11P 1.0mm	
				PDM01	9-885-055-76	CONNECTOR, 23P 1.0mm	

AVD-K150B/K150E/K150G/K150N/K150R

DVD & AMP	KEY	SMPS	VCR
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Ref. No.	Part No.	Description	Remark
< TUNER >			
PN101	9-885-062-94	TUNER,KST-MJ104MMV1-60L (EXCEPT 150R)	
PN101	9-885-062-98	TUNER,KST-MJ001MV0-60L (150R)	
< WIRE ASSEMBLY >			
PWS01	9-885-055-72	WIRE ASSEMBLY, 10PIN 70mm	
< TRANSISTOR >			
Q401	8-729-902-07	TRANSISTOR 2SA1037K-Q	
Q402	8-729-048-50	TRANSISTOR 2SK3018	
Q403	8-729-048-50	TRANSISTOR 2SK3018	
Q404	8-729-902-07	TRANSISTOR 2SA1037K-Q	
Q405	8-729-902-07	TRANSISTOR 2SA1037K-Q	
Q406	8-729-034-51	TRANSISTOR KTC3875S-GR-T1	
Q407	8-729-038-68	TRANSISTOR KRC103S-T1	
Q408	8-729-038-68	TRANSISTOR KRC103S-T1	
Q410	8-729-902-07	TRANSISTOR 2SA1037K-Q	
Q411	8-729-038-68	TRANSISTOR KRC103S-T1	
Q501	8-729-034-51	TRANSISTOR KTC3875S-GR-T1	
Q605	8-729-038-55	TRANSISTOR KRA103S-T1	
Q606	8-729-038-55	TRANSISTOR KRA103S-T1	
Q607	8-729-034-51	TRANSISTOR KTC3875S-GR-T1	
Q608	8-729-034-51	TRANSISTOR KTC3875S-GR-T1	
Q615	9-885-039-69	TRANSISTOR 2SA1037K-Q	
< VIBRATOR >			
X101	9-885-054-89	VIBRATOR CRYSTAL 9.8304MHz	
X201	9-885-055-90	VIBRATOR CRYSTAL 12.288MHz	
X501	9-885-040-11	VIBRATOR CRYSTAL 27MHz	
< ZENER DIODE >			
ZD635	9-885-055-73	DIODE ZENER BZX84-C3V3	
ZD636	9-885-055-73	DIODE ZENER BZX84-C3V3	
ZD637	9-885-055-73	DIODE ZENER BZX84-C3V3	
ZD638	9-885-055-73	DIODE ZENER BZX84-C3V3	

	9-885-055-49	KEY BOARD,COMPLETE	

< CONNECTOR >			
PS603	1-816-677-11	CONNECTOR,BOARD TO BOARD 8PIN	
< SWITCH >			
SW631	1-572-184-21	SWITCH,TACT (I/⏏)	
SW632	1-572-184-21	SWITCH,TACT (TUNER FM/AM)	
SW633	1-572-184-21	SWITCH,TACT (INPUT SELECT)	
SW636	1-572-184-21	SWITCH,TACT (CH/PRESET -)	
SW637	1-572-184-21	SWITCH,TACT (CH/PRESET +)	

	9-885-062-67	SMPS BOARD,COMPLETE	

< CAPACITOR >			
△C103	9-885-062-93	CAP, ELECT 330UF 450V	

Ref. No.	Part No.	Description	Remark
< DIODE >			
△BD101	9-885-055-54	DIODE GBU6J	
△D102	8-719-085-16	DIODE EU01W	
△D103	8-719-991-34	DIODE 1SS133	
△D104	6-500-366-01	DIODE ERA22-10	
△D105	8-719-085-16	DIODE EU01W	
△D108	8-719-085-16	DIODE EU01W	
D122	9-885-055-56	DIODE F20U20STU	
D123	8-719-085-16	DIODE EU01W	
D124	8-719-085-16	DIODE EU01W	
D125	8-719-085-16	DIODE EU01W	
D126	9-885-055-56	DIODE F20U20STU	
D127	8-719-068-69	DIODE FMB-G24H	
D129	8-719-068-69	DIODE FMB-G24H	
< FUSE >			
△F101	1-533-470-12	FUSE SLOW BLOW 3150mA 250V	
< IC >			
△F102	1-532-685-91	IC ICP-N20	
△IC101	9-885-055-57	IC KA5Q1565RF	
△IC102	8-749-018-95	SENSOR, LTV-817B	
IC103	6-700-522-01	IC KIA431	
△IC104	9-885-055-58	IC FS6M07652RTC	
△IC105	8-749-018-95	SENSOR, LTV-817B	
IC106	6-700-522-01	IC KIA431	
IC152	8-759-457-44	IC KA78R05TSTU	
<TRANSFORMER >			
△T101	9-885-055-59	TRANSFORMER EER424220	
△T102	9-885-055-60	TRANSFORMER EER3530	
< THERMISTOR >			
△TH01	9-885-055-61	THERMISTOR, 4.0OHM	
< VARISTOR >			
△V101	9-885-035-07	VARISTOR, SVC681D	
< ZENER DIODE >			
△ZD101	9-885-055-62	DIODE ZENER UZ-4.7BSB	
△ZD102	9-885-055-63	DIODE ZENER UZ-10BSB	
△ZD103	9-885-055-63	DIODE ZENER UZ-10BSB	
ZD121	9-885-055-64	DIODE ZENER UZ-3.3BSB	

	9-885-062-69	VCR BOARD,COMPLETE (150B)	
	9-885-062-75	VCR BOARD,COMPLETE (150E(AEP))	
	9-885-062-77	VCR BOARD,COMPLETE (150E(AED))	
	9-885-062-83	VCR BOARD,COMPLETE (150G)	
	9-885-062-87	VCR BOARD,COMPLETE (150N)	
	9-885-062-92	VCR BOARD,COMPLETE (150R)	

< SWITCH >			
CS501	9-885-055-77	SWITCH,PUSH	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
		< DIODE >					
D161	6-500-323-01	DIODE, RL104 R		Q303	8-729-034-51	TRANSISTOR, KTC3875S-GR-T1	
D163	6-500-323-01	DIODE, RL104 R		Q304	8-729-034-51	TRANSISTOR, KTC3875S-GR-T1	
D165	8-719-991-34	DIODE, 1SS133		Q305	8-729-034-50	TRANSISTOR, KTA1504-GR-T1	
D509	8-719-991-34	DIODE, 1SS133		Q306	9-885-033-28	TRANSISTOR, 2SC5344Y	
D802	8-719-991-34	DIODE, 1SS133		Q308	8-729-034-50	TRANSISTOR, KTA1504-GR-T1	
		< HOLDER >					
ES501	9-885-055-78	HOLDER ASSEMBLY		Q309	8-729-034-50	TRANSISTOR, KTA1504-GR-T1	
ES502	9-885-055-78	HOLDER ASSEMBLY		Q310	8-729-038-68	TRANSISTOR, KRC103S-T1	
		< COIL >		Q501	8-729-034-51	TRANSISTOR, KTC3875S-GR-T1	
FL301	9-885-055-79	COIL, 75M		Q502	8-729-034-51	TRANSISTOR, KTC3875S-GR-T1	
		< IC >		Q503	8-729-040-76	TRANSISTOR, KTA1273-TP-Y	
IC160	8-759-544-12	IC, KA78R08TSTU		Q504	8-729-034-51	TRANSISTOR, KTC3875S-GR-T1	
IC161	8-759-544-11	IC, KA78R33TSTU		Q514	8-729-038-68	TRANSISTOR, KRC103S-T1	
IC162	8-759-544-11	IC, KA78R33TSTU		Q515	8-729-038-68	TRANSISTOR, KRC103S-T1	
IC301	9-885-063-07	IC, LA71750BM		Q5S1	8-729-034-51	TRANSISTOR, KTC3875S-GR-T1	
IC501	9-885-063-00	IC, HD6432197SA HITACHI 112QFP		Q804	8-729-034-50	TRANSISTOR, KTA1504-GR-T1	
IC503	9-885-035-06	IC, AT24C16		Q904	8-729-034-51	TRANSISTOR, KTC3875S-GR-T1	
IC504	9-885-032-96	IC, KIA7031P		Q905	8-729-034-51	TRANSISTOR, KTC3875S-GR-T1	
IC505	8-759-059-14	IC, KIA7042P		Q906	8-729-034-51	TRANSISTOR, KTC3875S-GR-T1	
IC506	8-759-674-43	IC, MM74HCT244SJ				< SENSOR >	
IC751	9-885-063-08	IC, MSP3417G-QG-B8-V3 NICAM+A2		RS501	9-885-033-37	SENSOR, SG-260	
				RS502	9-885-033-37	SENSOR, SG-260	
IC801	9-885-033-01	IC, TDA9605H QFP44 BK HIFI AMP+HIF				< JACK >	
IC802	9-885-063-09	IC, MM1443XJBE CANAL SWITCH		SC901	9-885-063-03	JACK, SCART (EURO AV1/AV2) (EXCEPT 150E(AED)/150G/150R)	
				SC901	9-885-063-05	JACK, SCART (EURO AV1) (150E(AED)/150G/150R)	
		< HOLDER >				< TUNER >	
LD501	9-885-035-43	HOLDER ASSEMBLY		TU701	9-885-063-02	TUNER, TADC-M401D (150B)	
		< SWITCH >		TU701	9-885-063-04	TUNER, TADC-M401D (EXCEPT 150B)	
MS501	9-885-040-19	SWITCH, MODE				< VIBRATOR >	
		< CONNECTOR >		X301	9-885-033-42	VIBRATOR, CRYSTAL 4.433709MHz	
P3D01	9-885-055-92	CONNECTOR, 9PIN 1.25mm		X501	9-885-033-43	VIBRATOR, CRYSTAL 10.0MHz	
P3D02	9-885-055-93	CONNECTOR, 6PIN 2mm		X502	9-885-063-01	VIBRATOR, CRYSTAL 32.768kHz	
P3D03	9-885-055-94	CONNECTOR, 2PIN				< ZENER DIODE >	
PM601	9-885-055-95	CONNECTOR, 12PIN 2.0mm		ZD161	8-719-921-47	DIODE, ZENER MTZJ-5.6B	
PM602	9-885-055-96	CONNECTOR, 7PIN 2.0mm		ZD162	8-719-921-88	DIODE, ZENER MTZJ-13B	
				ZD163	8-719-921-75	DIODE, ZENER MTZJ-10B	
PMC01	9-885-055-91	CONNECTOR, BOARD TO BOARD 12PIN		*****			
PMD01	9-885-054-96	CONNECTOR, 12P				MISCELLANEOUS	
PMD02	9-885-054-96	CONNECTOR, 12P				*****	
PMD03	9-885-055-90	CONNECTOR ASSEMBLY, 12PIN 200mm					
		< TRANSISTOR >		57	9-885-055-44	FFC, 12CORE 1.25 60mm SHIELD	
Q161	8-729-043-89	TRANSISTOR, KTC3205-TP-Y		△58	9-885-062-81	CORD, POWER (150G)	
Q162	8-729-043-89	TRANSISTOR, KTC3205-TP-Y		△58	9-885-062-66	CORD, POWER (EXCEPT 150G)	
Q163	8-729-034-50	TRANSISTOR, KTA1504-GR-T1		201	9-885-034-65	DRUM ASSY, D35-6CH PAL	
Q164	8-729-034-51	TRANSISTOR, KTC3875S-GR-T1		212	9-885-033-93	HEAD, D35 FE ST	
Q166	8-729-043-89	TRANSISTOR, KTC3205-TP-Y					
				212	9-885-040-18	HEAD (CIRC), D35 FE TDK 6	
Q167	8-729-040-76	TRANSISTOR, KTA1273-TP-Y		223	9-885-040-06	MOTOR ASSY (LOADING)	
Q168	8-729-040-76	TRANSISTOR, KTA1273-TP-Y		231	9-885-056-10	CABLE, FLAT (7 CORE)	
Q169	8-729-034-51	TRANSISTOR, KTC3875S-GR-T1		258	9-885-056-12	MOTOR, CAPSTAN	
Q301	8-729-034-51	TRANSISTOR, KTC3875S-GR-T1					
Q302	8-729-034-50	TRANSISTOR, KTA1504-GR-T1					

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REVISION HISTORY

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