

# SERVICE MANUAL

INTEGRATED COLOR TV / VIDEO CASSETTE  
RECORDER

BASIC TAPE MECHANISM : OVD-6S

## SPECIFICATIONS

POWER REQUIREMENTS .....	230V AC, 50Hz	TAPE SPEED .....	PAL
POWER CONSUMPTION .....	60W		SP: 23.39 mm/sec.
	Standby 6W		LP: 11.69 mm/sec.
WEIGHT .....	Approx.12.8 kg (28.16 lbs.)		NTSC (playback SP only)
DIMENSIONS .....	435 mm (W) x 370.5 mm (D) x		33.35 mm/sec.
	384.5 mm (H)	RECORDING/PLAYBACK TIME .....	PAL
	(17 1/4 x 14 5/8 x 15 1/4 in.)		SP: 5 hours max.
PICTURE TUBE .....	14 in. (34 cm "V"), 90 degree		with E-300 tape
	deflection		LP: 10 hours max.
TUNER SYSTEM .....	Frequency synthesized tuners		with E-300 tape
CHANNEL COVERAGE .....	UHF: 21 to 69		NTSC (playback SP only)
TV SYSTEM .....	I		3 hours 30 minutes max.
HORIZONTAL RESOLUTION .....	240 lines		with T-210 tape
OPERATING TEMPERATURE .....	5°C to 40°C	VIDEO INPUT .....	1.0Vp-p, 75 ohm, unbalanced
VIDEO RECORDING SYSTEM .....	Rotary 2 head helical scanning system	VIDEO OUTPUT .....	1.0Vp-p, 75 ohm, unbalanced
VIDEO SIGNAL SYSTEM .....	PAL colour signal, 625 lines, 50 fields	VIDEO S/N .....	53dB (nominal)
VIDEO HEAD .....	Azimuth 2 heads	AUDIO INPUT .....	SCART: -3.8 dBs, 50K ohm
USABLE CASSETTES .....	VHS video cassettes		RCA: -3.8 dBs, 50K ohm
		AUDIO OUTPUT .....	SCART: -3.8 dBs less than 1K ohm
		AUDIO TRACK .....	1 track (mono)

● Design and specifications are subject to change without notice.

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# SERVICING NOTICES ON CHECKING

## 1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

## 2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

## 3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character. Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a  $\triangle$  mark, the designated parts must be used.

## 4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

## 5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

## 6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.

Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.

Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

## 7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

### (INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the external exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

### **[Note 1]**

If you have not the 500V insulation resistance meter, use a Tester.

### **[Note 2]**

External exposure metal: Antenna terminal  
Earphone jack

# DISASSEMBLY INSTRUCTIONS

## 1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

### 1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 2 screws ①.
2. Remove the 2 screws ②.
3. Remove the 2 screws ③ which are used for holding the Back Cabinet.
4. Remove the AC cord from the AC cord hook ④.
5. Remove the Back Cabinet in the direction of arrow.

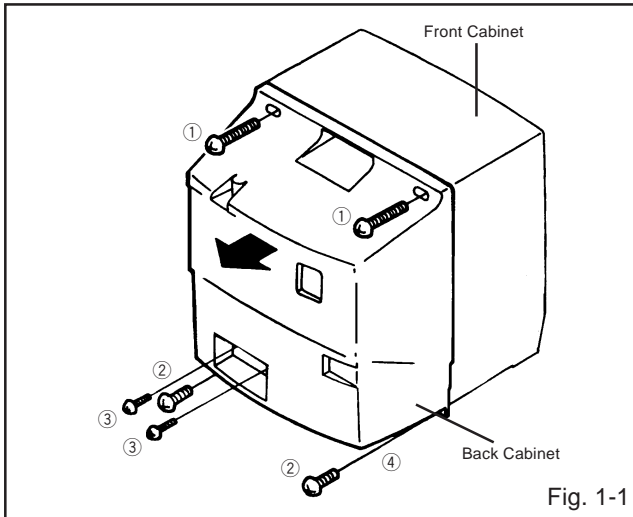


Fig. 1-1

### 1-2: CRT PCB (Refer to Fig. 1-2)

**CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.**

1. Remove the Anode Cap.  
(Refer to REMOVAL OF ANODE CAP)
2. Disconnect the following connectors:  
(CP801 and CP850).
3. Remove the CRT PCB in the direction of arrow.

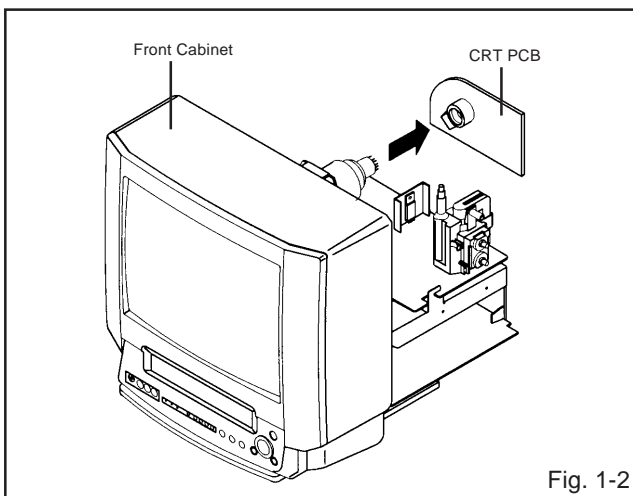


Fig. 1-2

### 1-3: TV/VCR BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors:  
(CP351, CP755, CP354, CP401, CP501 and CP502).
3. Unlock the support ②.
4. Remove the TV/VCR Block in the direction of arrow.

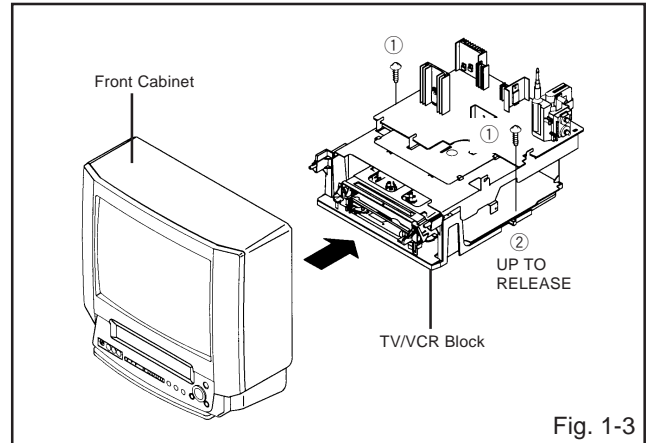


Fig. 1-3

### 1-4: MAIN PCB (Refer to Fig. 1-4)

1. Remove the screw ①.
2. Remove the Main PCB Holder.
3. Remove the 2 screws ②.
4. Remove the 3 screws ③.
5. Disconnect the following connectors:  
(CP810 and CP820).
6. Remove the Main PCB in the direction of arrow.

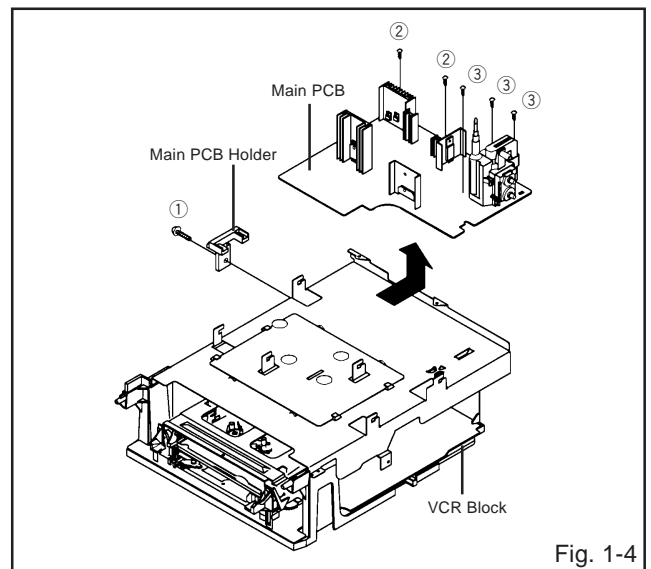
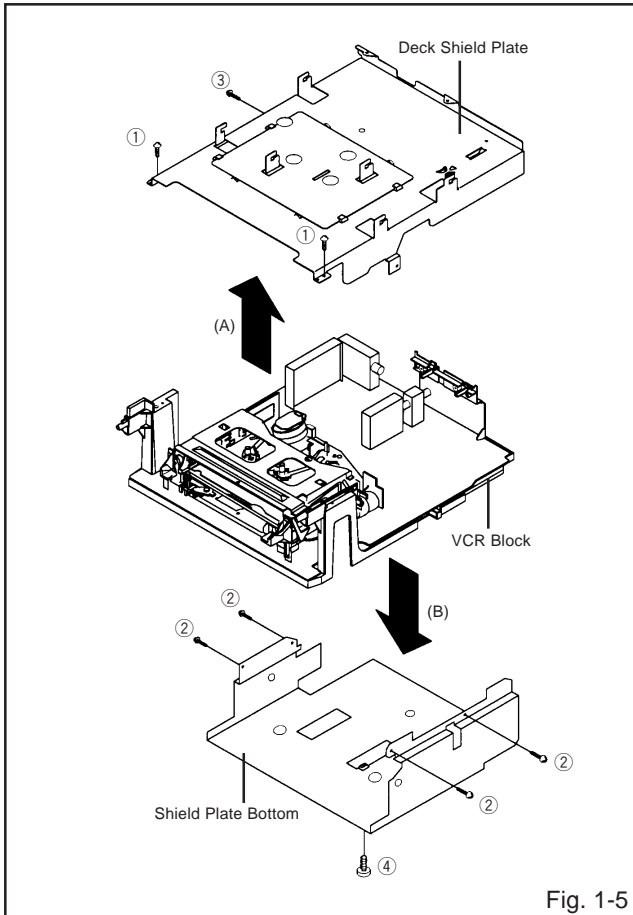


Fig. 1-4

## DISASSEMBLY INSTRUCTIONS

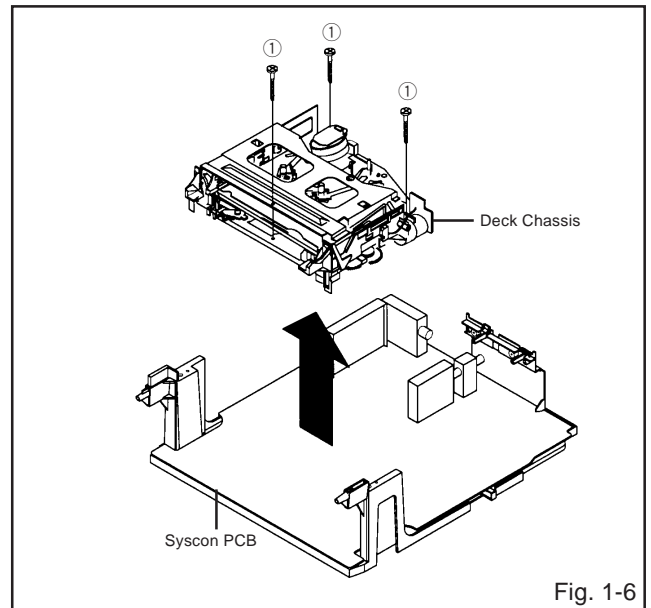
### 1-5: DECK SHIELD PLATE (Refer to Fig. 1-5)

1. Remove the 2 screws ①.
2. Remove the 4 screws ②.
3. Remove the screw ③.
4. Remove the Deck Shield Plate in the direction of arrow (A).
5. Remove the screw ④.
6. Remove the Shield Plate Bottom in the direction of arrow (B).



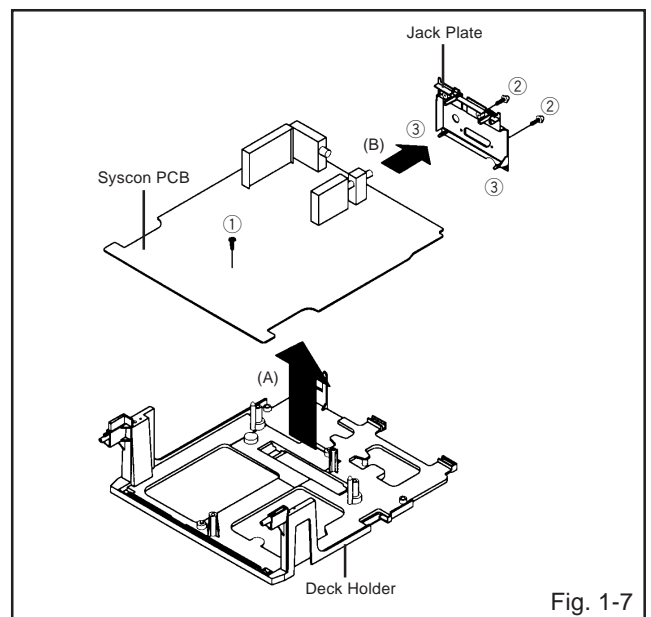
### 1-6: DECK CHASSIS (Refer to Fig. 1-6)

1. Remove the 3 screws ①.
2. Disconnect the following connectors: (CD1002, CP1004, CP1005, CP1006, CP4001, CP4004 and CP4005).
3. Remove the Deck Chassis in the direction of arrow.



### 1-7: JACK PLATE AND SYSCON PCB (Refer to Fig. 1-7)

1. Remove the screw ①.
2. Remove the Syscon PCB in the direction of arrow (A).
3. Remove the 2 screws ②.
4. Unlock the 2 supports ③.
5. Remove the Jack Plate in the direction of arrow (B).



# DISASSEMBLY INSTRUCTIONS

## 2. REMOVAL OF DECK PARTS

### 2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Remove the 2 screws ①.
2. Slide the 2 supports ② and remove the Top Bracket.

#### NOTE

When you install the Top Bracket, install the screw (1) first, then install the screw (2).

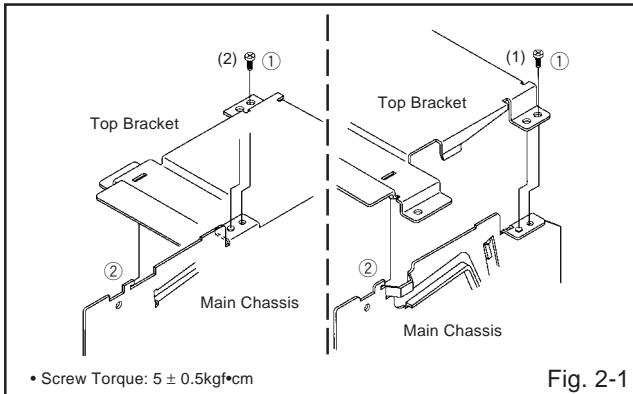


Fig. 2-1

### 2-2: FLAP LEVER/TAPE GUIDE R (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the back side.
2. Remove the Polyslider Washer ①.
3. Remove the Flap Lever.
4. Unlock the 3 supports ② and remove the Tape Guide R.

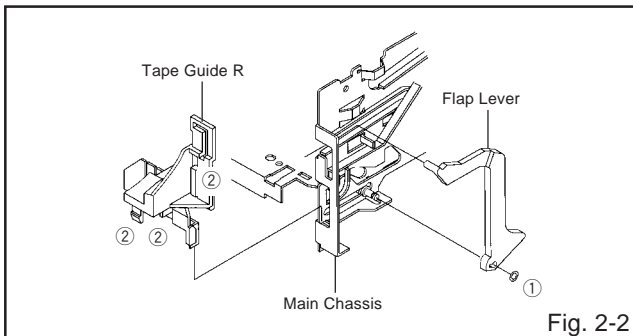


Fig. 2-2

### 2-3: TAPE GUIDE L (Refer to Fig. 2-3-A)

1. Move the Cassette Holder Ass'y to the back side.
2. Unlock the 2 supports ① and remove the Tape Guide L.
3. Remove the REC Lever. (Recorder only)

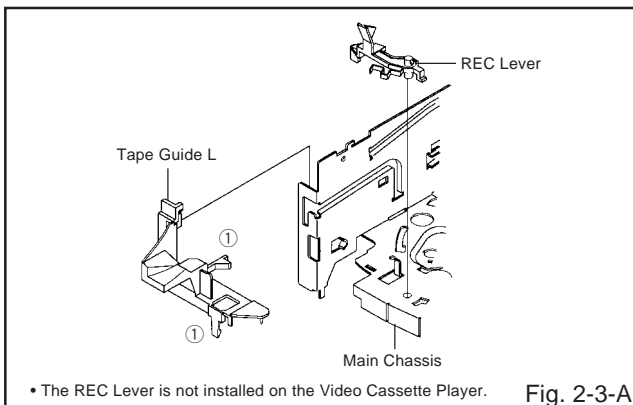


Fig. 2-3-A

#### NOTE

When you install the Tape Guide L, install as shown in the circle of Fig. 2-3-B. (Refer to Fig. 2-3-B)

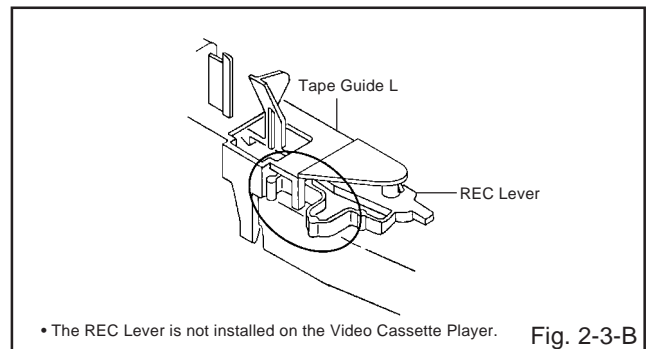


Fig. 2-3-B

### 2-4: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-4)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

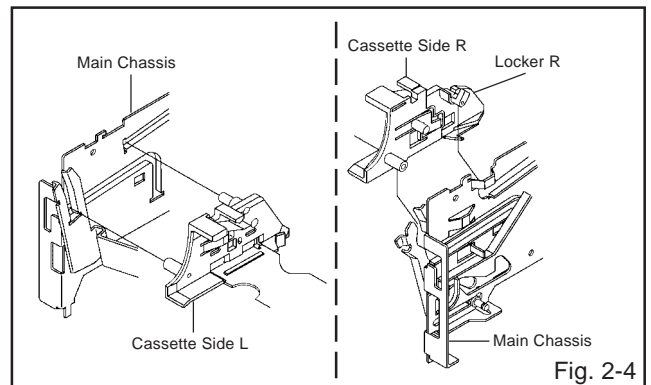


Fig. 2-4

### 2-5: CASSETTE SIDE L/R (Refer to Fig. 2-5)

1. Unlock the 4 supports ① and then remove the Cassette Side L/R.

#### NOTE

When you install the Cassette Side R, be sure to move the Locker R after installing.

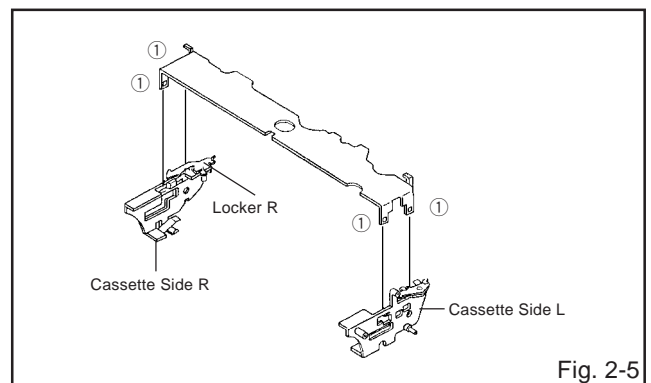
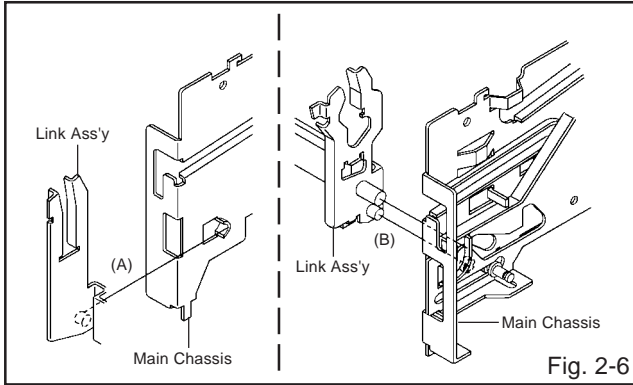


Fig. 2-5

# DISASSEMBLY INSTRUCTIONS

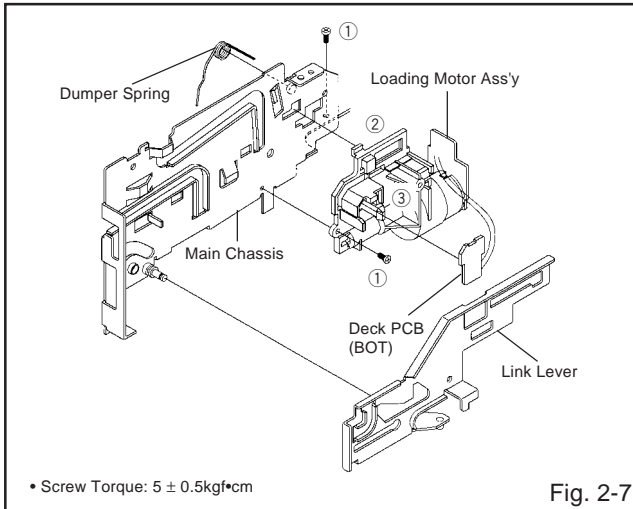
## 2-6: LINK ASS'Y (Refer to Fig. 2-6)

1. Set the Link Ass'y to the Eject position.
2. Remove the (A) side of the Link Ass'y first, then remove the (B) side.



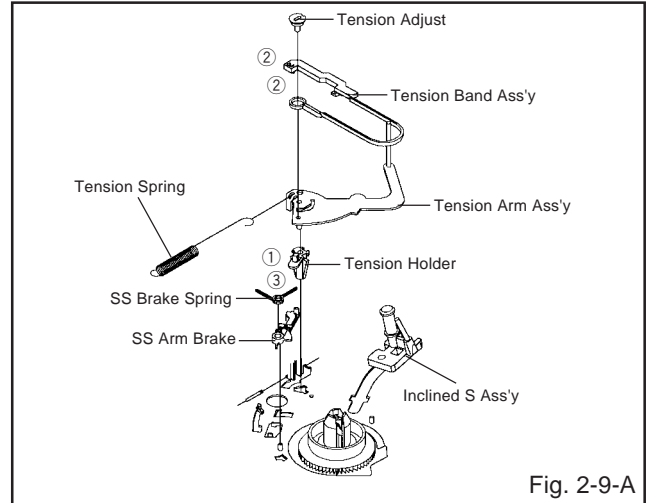
## 2-7: LOADING MOTOR ASS'Y (Refer to Fig. 2-7)

1. Remove the Link Lever.
2. Remove the Dumper Spring.
3. Remove the 2 screws ①.
4. Unlock the support ② and remove the Loading Motor Ass'y.
5. Unlock the 2 supports ③ and remove the Deck PCB (BOT).



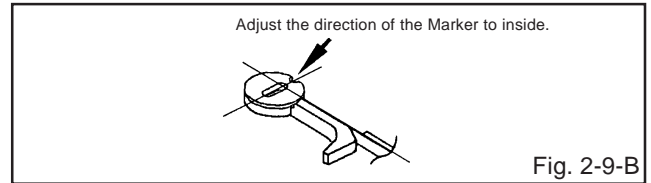
## 2-9: TENSION ASS'Y (Refer to Fig. 2-9-A)

1. Move the Inclined S Ass'y to the back side.
2. Remove the Tension Spring.
3. Unlock the support ① and remove the Tension Arm Ass'y.
4. Remove the Tension Adjust.
5. Unlock the 2 supports ② and remove the Tension Band Ass'y.
6. Unlock the support ③ and remove the Tension Holder.
7. Remove the SS Brake Spring.
8. Remove the SS Arm Brake.



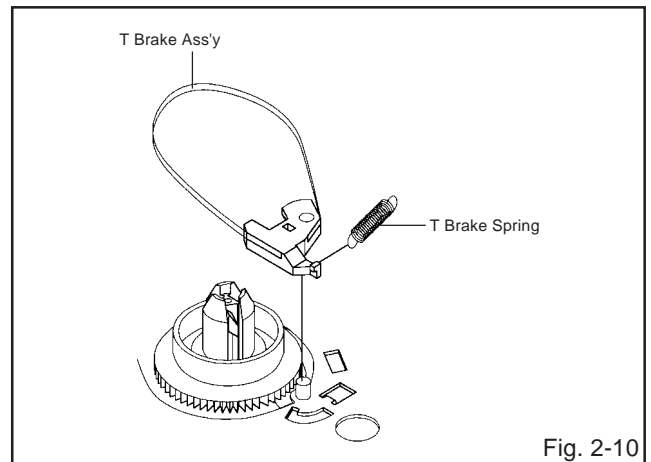
### NOTE

When you install the Tension Adjust, install as shown in Fig. 2-9-B. (Refer to Fig. 2-9-B)



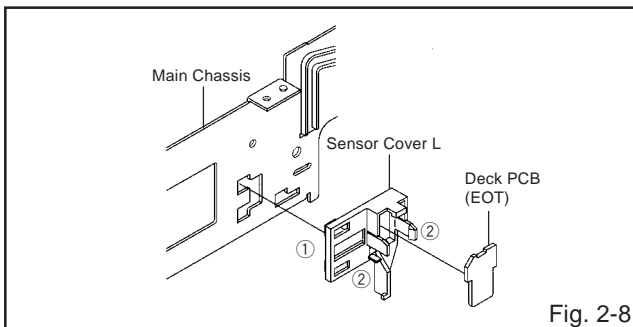
## 2-10: T BRAKE ASS'Y (Refer to Fig. 2-10)

1. Remove the T Brake Spring.
2. Remove the T Brake Ass'y.



## 2-8: SENSOR COVER L (Refer to Fig. 2-8)

1. Unlock the support ① and remove the Sensor Cover L.
2. Unlock the 2 supports ② and remove the Deck PCB (EOT).



# DISASSEMBLY INSTRUCTIONS

## 2-11: S REEL/T REEL (Refer to Fig. 2-11)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.

### NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) (Refer to Fig. 2-11) Do not adhere the stains on it.
5. When you install the reel, clean the shaft and oil it (FL OIL #6115). (If you do not oil, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. (Refer to MECHANICAL ADJUSTMENT)

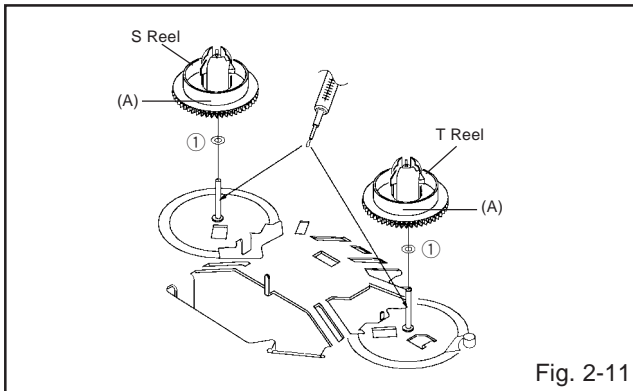


Fig. 2-11

## 2-12: PINCH ROLLER BLOCK/P5-3 ARM ASS'Y (Refer to Fig. 2-12-A)

1. Remove the P5 Spring.
2. Remove the screw ①.
3. Unlock the 2 supports ② and remove the Cassette Opener.
4. Remove the Pinch Roller Block, Pinch Roller Arm Spring, Pinch Roller Lever Ass'y and P5-3 Arm Ass'y.

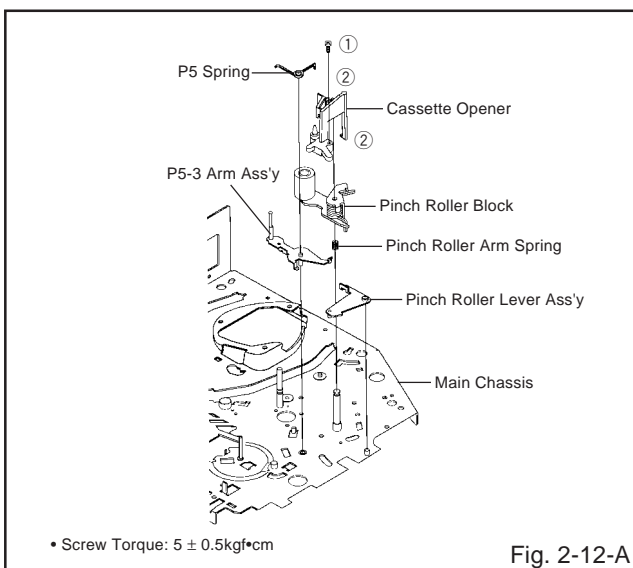


Fig. 2-12-A

### NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. When you install the Pinch Roller Block, install as shown in the circle of Fig. 2-12-B. (Refer to Fig. 2-12-B)

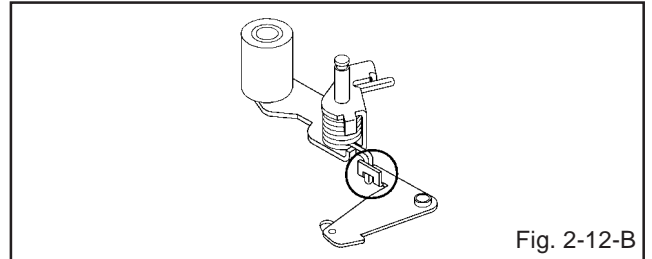


Fig. 2-12-B

## 2-13: A/C HEAD (Refer to Fig. 2-13-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

### NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-13-B. (Refer to Fig. 2-13-B)
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).

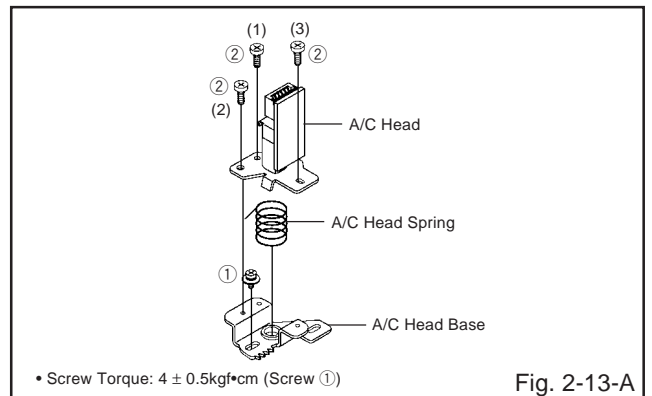


Fig. 2-13-A

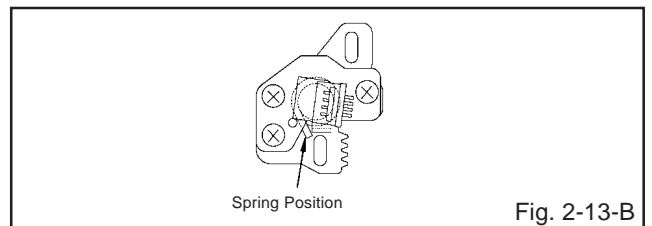


Fig. 2-13-B

## 2-14: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-14)

1. Remove the screw ①.
2. Remove the FE Head.

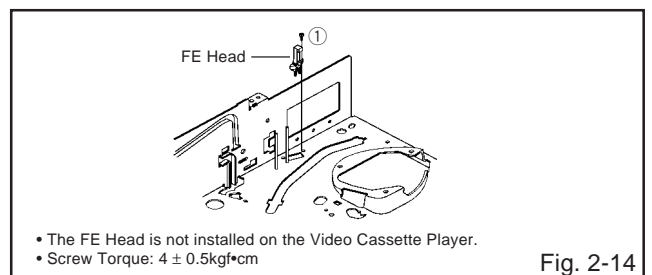


Fig. 2-14



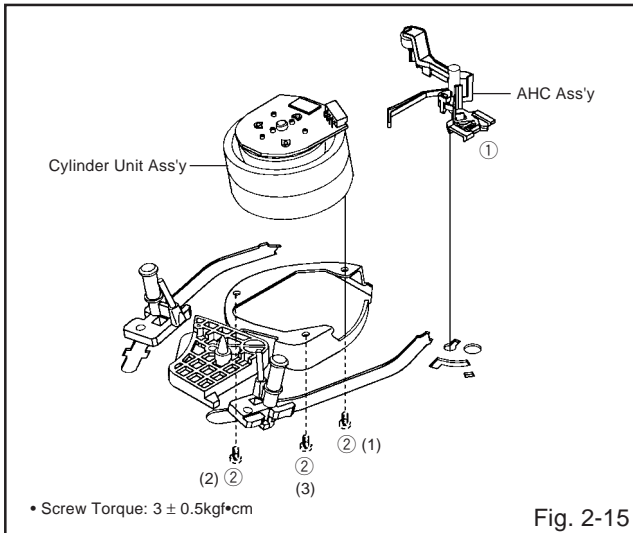
# DISASSEMBLY INSTRUCTIONS

## 2-15: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-15)

1. Unlock the support ① and remove the AHC Ass'y.
2. Remove the 3 screws ②.
3. Remove the Cylinder Unit Ass'y.

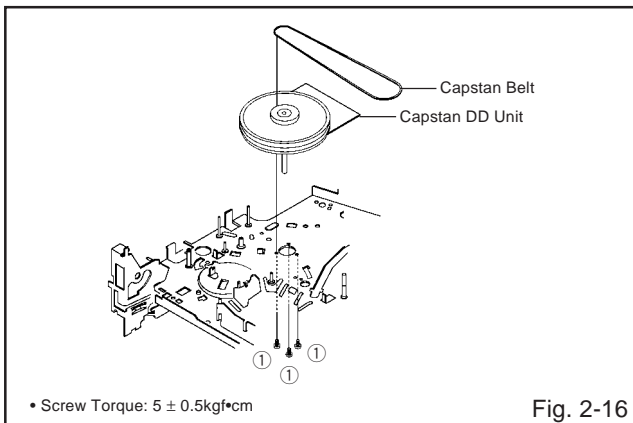
### NOTE

When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.



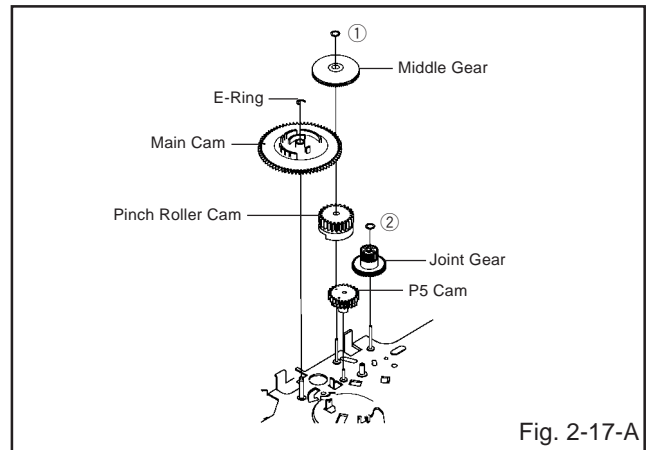
## 2-16: CAPSTAN DD UNIT (Refer to Fig. 2-16)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.



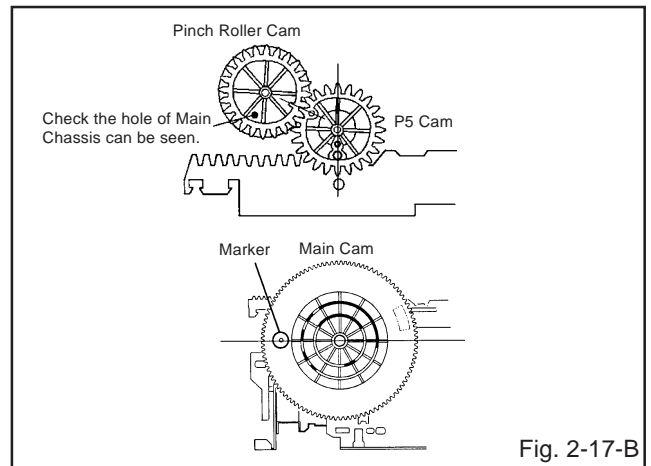
## 2-17: MIDDLE GEAR/MAIN CAM (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①, then remove the Middle Gear.
2. Remove the E-Ring, then remove the Main Cam, P5 Cam and Pinch Roller Cam.
3. Remove the Polyslider Washer ②, then remove the Joint Gear.



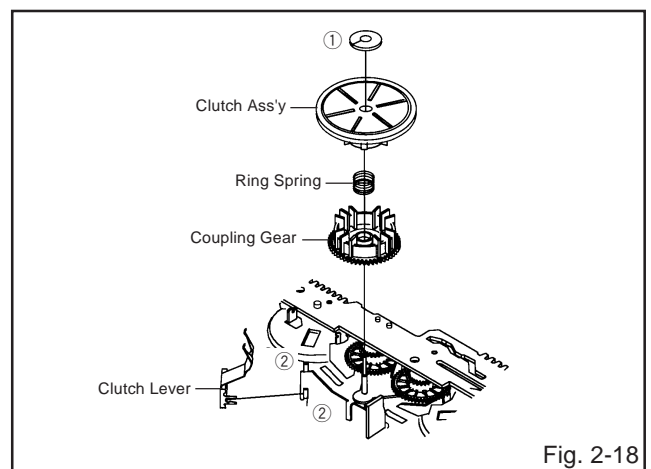
### NOTE

When you install the Pinch Roller Cam, P5 Cam and Main Cam, align each marker. (Refer to Fig. 2-17-B)



## 2-18: CLUTCH ASS'Y (Refer to Fig. 2-18)

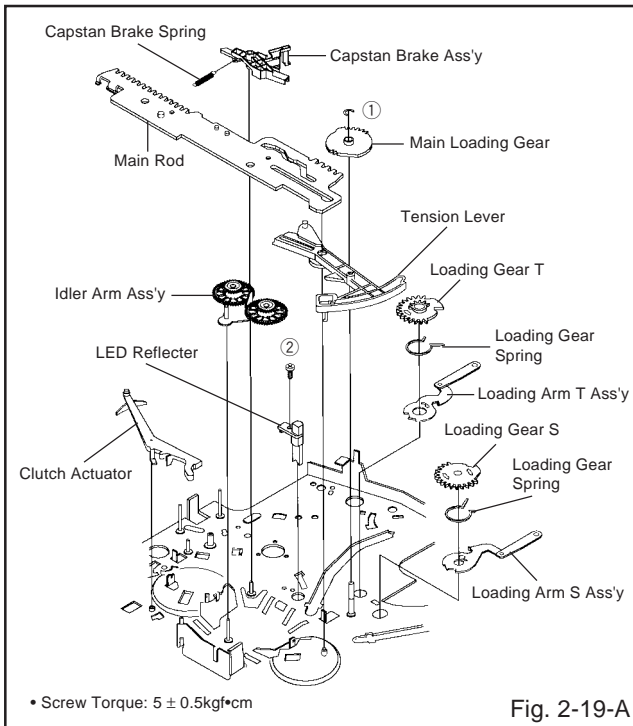
1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y, Ring Spring and Coupling Gear.
3. Unlock the 2 supports ② and remove the Clutch Lever.



# DISASSEMBLY INSTRUCTIONS

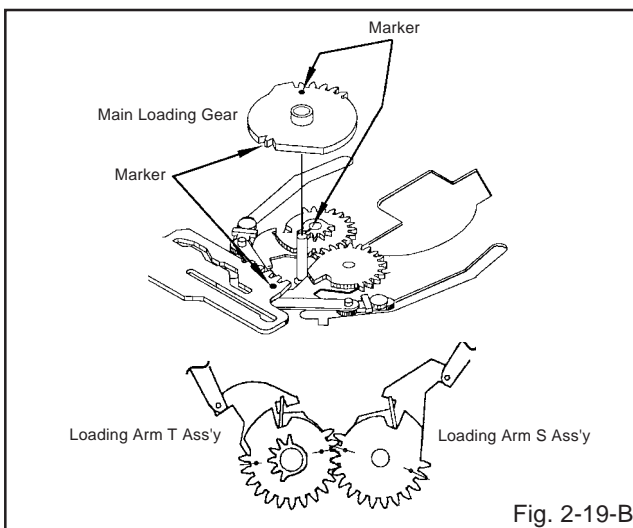
## 2-19: LOADING GEAR S/T ASS'Y (Refer to Fig. 2-19-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Capstan Brake Spring.
3. Slide the Main Rod and remove the Capstan Brake Ass'y.
4. Remove the Main Rod, Tension Lever, Clutch Actuator, Idler Arm Ass'y.
5. Remove the screw ②.
6. Remove the LED Reflector.
7. Remove the Loading Arm S Ass'y and Loading Arm T Ass'y.
8. Remove the Loading Gear S and Loading Gear T.
9. Remove the Loading Gear Spring.

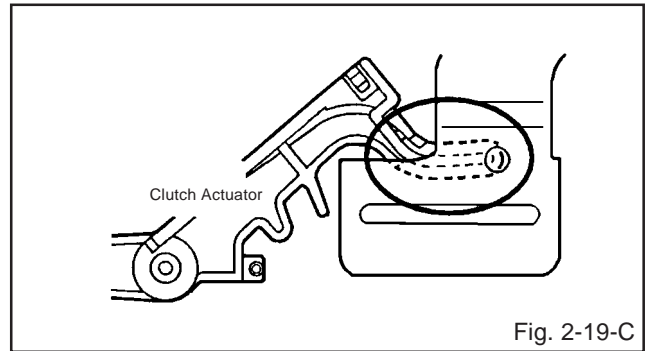


### NOTES

1. When you install the Loading Arm S Ass'y, Loading Arm T Ass'y and Main Loading Gear, align each marker. (Refer to Fig. 2-19-B)



2. When you install the Clutch Actuator, install as shown in the circle of Fig. 2-19-C. (Refer to Fig. 2-19-C)

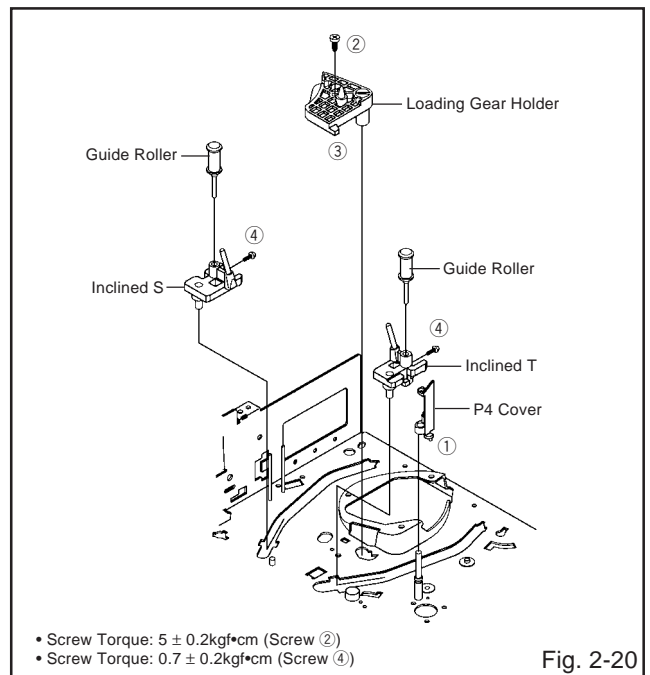


## 2-20: INCLINED S/T ASS'Y (Refer to Fig. 2-20)

1. Unlock the support ① and remove the P4 Cover.
2. Remove the screw ②.
3. Unlock the support ③ and remove the Loading Gear Holder.
4. Remove the Inclined S.
5. Remove the Inclined T.
6. Remove the 2 screws ④, then remove the Guide Roller.

### NOTE

Do not touch the roller of Guide Roller.



# DISASSEMBLY INSTRUCTIONS

## 3. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

- \* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- \* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

### REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 3-1.)**

Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.

A cracking noise will be heard as the voltage is discharged.

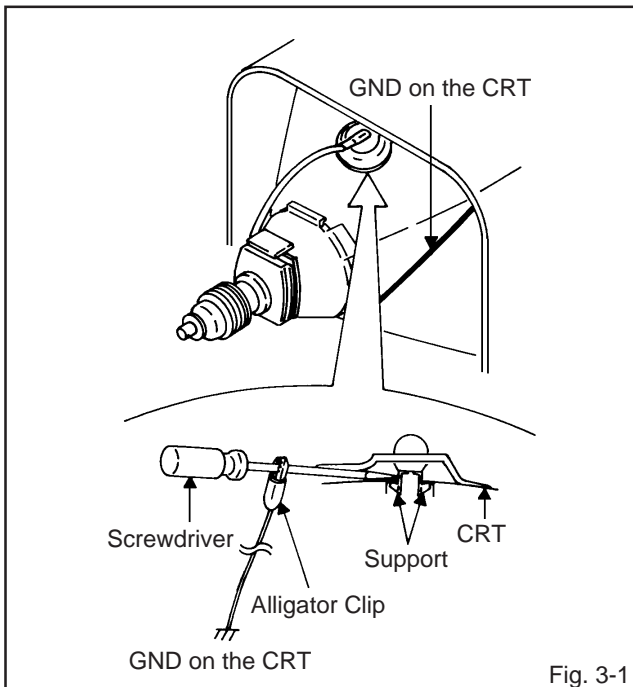


Fig. 3-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 3-2.)**

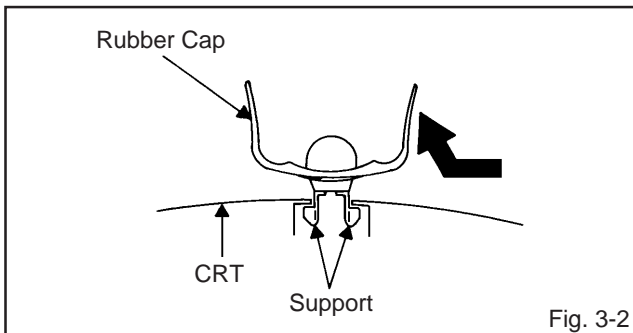


Fig. 3-2

3. After one side is removed, pull in the opposite direction to remove the other.

### NOTE

Take care not to damage the Rubber Cap.

### INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 3-3.)**

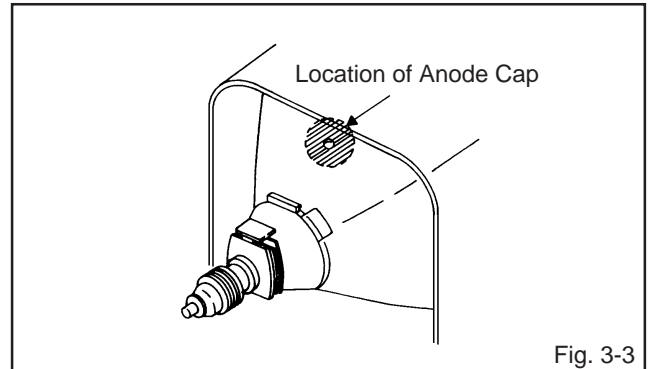


Fig. 3-3

### NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 3-4.)**

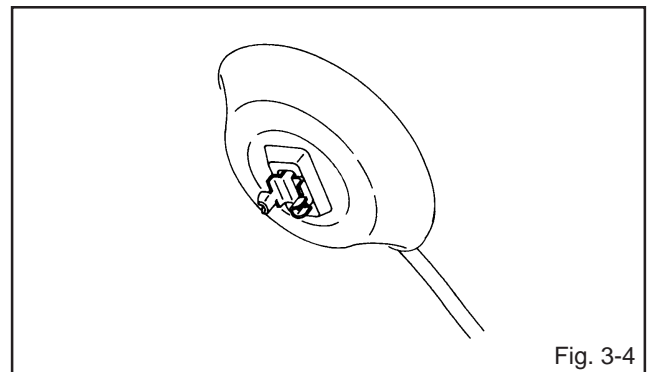


Fig. 3-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 3-5.**

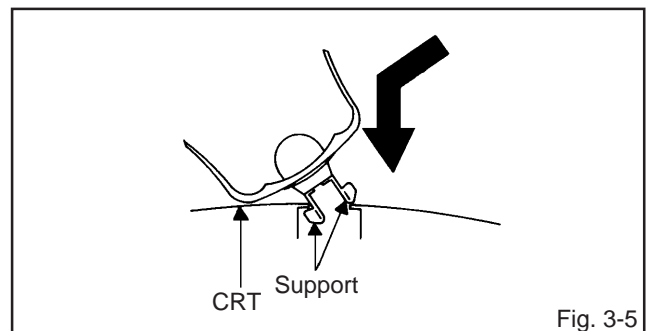


Fig. 3-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

## KEY TO ABBREVIATIONS

<b>A</b>	<b>A/C</b>	: Audio/Control	<b>H.SW</b>	: Head Switch	
	<b>ACC</b>	: Automatic Color Control	<b>Hz</b>	: Hertz	
	<b>AE</b>	: Audio Erase	<b>I</b>	<b>IC</b>	: Integrated Circuit
	<b>AFC</b>	: Automatic Frequency Control		<b>IF</b>	: Intermediate Frequency
	<b>AFT</b>	: Automatic Fine Tuning		<b>IND</b>	: Indicator
	<b>AFT DET</b>	: Automatic Fine Tuning Detect		<b>INV</b>	: Inverter
	<b>AGC</b>	: Automatic Gain Control	<b>K</b>	<b>KIL</b>	: Killer
	<b>AMP</b>	: Amplifier	<b>L</b>	<b>L</b>	: Left
	<b>ANT</b>	: Antenna		<b>LED</b>	: Light Emitting Diode
	<b>A.PB</b>	: Audio Playback		<b>LIMIT AMP</b>	: Limiter Amplifier
	<b>APC</b>	: Automatic Phase Control		<b>LM, LDM</b>	: Loading Motor
	<b>ASS'Y</b>	: Assembly		<b>LP</b>	: Long Play
	<b>AT</b>	: All Time		<b>L.P.F</b>	: Low Pass Filter
	<b>AUTO</b>	: Automatic		<b>LUMI.</b>	: Luminance
	<b>A/V</b>	: Audio/Video	<b>M</b>	<b>M</b>	: Motor
<b>B</b>	<b>BGP</b>	: Burst Gate Pulse		<b>MAX</b>	: Maximum
	<b>BOT</b>	: Beginning of Tape		<b>MINI</b>	: Minimum
	<b>BPF</b>	: Bandpass Filter		<b>MIX</b>	: Mixer, mixing
	<b>BRAKE SOL</b>	: Brake Solenoid		<b>MM</b>	: Monostable Multivibrator
	<b>BUFF</b>	: Buffer		<b>MOD</b>	: Modulator, Modulation
	<b>B/W</b>	: Black and White		<b>MPX</b>	: Multiplexer, Multiplex
<b>C</b>	<b>C</b>	: Capacitance, Collector		<b>MS SW</b>	: Mecha State Switch
	<b>CASE</b>	: Cassette	<b>N</b>	<b>NC</b>	: Non Connection
	<b>CAP</b>	: Capstan		<b>NR</b>	: Noise Reduction
	<b>CARR</b>	: Carrier	<b>O</b>	<b>OSC</b>	: Oscillator
	<b>CH</b>	: Channel		<b>OPE</b>	: Operation
	<b>CLK</b>	: Clock	<b>P</b>	<b>PB</b>	: Playback
	<b>CLOCK (SY-SE)</b>	: Clock (Syscon to Servo)		<b>PB CTL</b>	: Playback Control
	<b>COMB</b>	: Combination, Comb Filter		<b>PB-C</b>	: Playback-Chrominance
	<b>CONV</b>	: Converter		<b>PB-Y</b>	: Playback-Luminance
	<b>CPM</b>	: Capstan Motor		<b>PCB</b>	: Printed Circuit Board
	<b>CTL</b>	: Control		<b>P. CON</b>	: Power Control
	<b>CYL</b>	: Cylinder		<b>PD</b>	: Phase Detector
	<b>CYL-M</b>	: Cylinder-Motor		<b>PG</b>	: Pulse Generator
	<b>CYL SENS</b>	: Cylinder-Sensor		<b>P-P</b>	: Peak-to Peak
<b>D</b>	<b>DATA (SY-CE)</b>	: Data (Syscon to Servo)	<b>R</b>	<b>R</b>	: Right
	<b>dB</b>	: Decibel		<b>REC</b>	: Recording
	<b>DC</b>	: Direct Current		<b>REC-C</b>	: Recording-Chrominance
	<b>DD Unit</b>	: Direct Drive Motor Unit		<b>REC-Y</b>	: Recording-Luminance
	<b>DEMODO</b>	: Demodulator		<b>REEL BRK</b>	: Reel Brake
	<b>DET</b>	: Detector		<b>REEL S</b>	: Reel Sensor
	<b>DEV</b>	: Deviation		<b>REF</b>	: Reference
<b>E</b>	<b>E</b>	: Emitter		<b>REG</b>	: Regulated, Regulator
	<b>EF</b>	: Emitter Follower		<b>REW</b>	: Rewind
	<b>EMPH</b>	: Emphasis		<b>REV, RVS</b>	: Reverse
	<b>ENC</b>	: Encoder		<b>RF</b>	: Radio Frequency
	<b>ENV</b>	: Envelope		<b>RMC</b>	: Remote Control
	<b>EOT</b>	: End of Tape		<b>RY</b>	: Relay
	<b>EQ</b>	: Equalizer	<b>S</b>	<b>S. CLK</b>	: Serial Clock
	<b>EXT</b>	: External		<b>S. COM</b>	: Sensor Common
<b>F</b>	<b>F</b>	: Fuse		<b>S. DATA</b>	: Serial Data
	<b>FBC</b>	: Feed Back Clamp		<b>SEG</b>	: Segment
	<b>FE</b>	: Full Erase		<b>SEL</b>	: Select, Selector
	<b>FF</b>	: Fast Forward, Flipflop		<b>SENS</b>	: Sensor
	<b>FG</b>	: Frequency Generator		<b>SER</b>	: Search Mode
	<b>FL SW</b>	: Front Loading Switch		<b>SI</b>	: Serial Input
	<b>FM</b>	: Frequency Modulation		<b>SIF</b>	: Sound Intermediate Frequency
	<b>FSC</b>	: Frequency Sub Carrier		<b>SO</b>	: Serial Output
	<b>FWD</b>	: Forward		<b>SOL</b>	: Solenoid
<b>G</b>	<b>GEN</b>	: Generator		<b>SP</b>	: Standard Play
	<b>GND</b>	: Ground		<b>STB</b>	: Serial Strobe
<b>H</b>	<b>H.P.F</b>	: High Pass Filter		<b>SW</b>	: Switch

## KEY TO ABBREVIATIONS

<b>S</b>	<b>SYNC</b>	:	Synchronization
	<b>SYNC SEP</b>	:	Sync Separator, Separation
<b>T</b>	<b>TR</b>	:	Transistor
	<b>TRAC</b>	:	Tracking
	<b>TRICK PB</b>	:	Trick Playback
	<b>TP</b>	:	Test Point
<b>U</b>	<b>UNREG</b>	:	Unregulated
<b>V</b>	<b>V</b>	:	Volt
	<b>VCO</b>	:	Voltage Controlled Oscillator
	<b>VIF</b>	:	Video Intermediate Frequency
	<b>VP</b>	:	Vertical Pulse, Voltage Display
	<b>V.PB</b>	:	Video Playback
	<b>VR</b>	:	Variable Resistor
	<b>V.REC</b>	:	Video Recording
	<b>VSF</b>	:	Visual Search Fast Forward
	<b>VSR</b>	:	Visual Search Rewind
	<b>VSS</b>	:	Voltage Super Source
	<b>V-SYNC</b>	:	Vertical-Synchronization
	<b>VT</b>	:	Voltage Tuning
<b>X</b>	<b>X'TAL</b>	:	Crystal
<b>Y</b>	<b>Y/C</b>	:	Luminance/Chrominance

## SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter SERVICE MODE, Unplug AC cord till lost actual clock time. Then press and hold Vol (-) button of main unit and remocon key for more than 2 seconds.

The both pressing of set key and remote control key will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.

Set Key	Remocon Key	Operations
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	2	Reading of CHROMA DATA. Refer to the "NOTE FOR THE REPLACING OF MEMORY IC" and "NOTE FOR THE REPLACING OF CHROMA IC".
VOL. (-) MIN	3	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	4	Adjust the PG SHIFTER manually. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	5	The channel which is receiving by REC TUNER will appear on the screen. NOTE: Turn off the power to return to the normal operation.
VOL. (-) MIN	6	POWER ON total hours and PLAY/REC total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF USING HOURS).  Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "NOTE FOR THE REPLACING OF MEMORY IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

Method	Operations
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the "MECHANICAL ADJUSTMENT" (GUIDE ROLLER) and "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The EOT/BOT/Reel sensor do not work at this moment. Refer to the "PREPARATION FOR SERVICING"

## PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

Time Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	■	■	
Capstan Belt			■	■	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■	■	■	●	Clean the Head

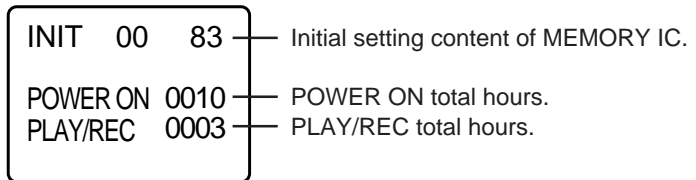
- : Clean
- : Replace

### CONFIRMATION OF USING HOURS

POWER ON total hours and PLAY/REC total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

**NOTE: The confirmation of using hours will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.**

1. Set the VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control for more than 2 seconds.
3. After the confirmation of using hours, turn off the power.



(16 x 16 x 16 x thousands digit value) + (16 x 16 x hundreds digit value) + (16 x tens digit value) + (ones digit value)

# PREVENTIVE CHECKS AND SERVICE INTERVALS

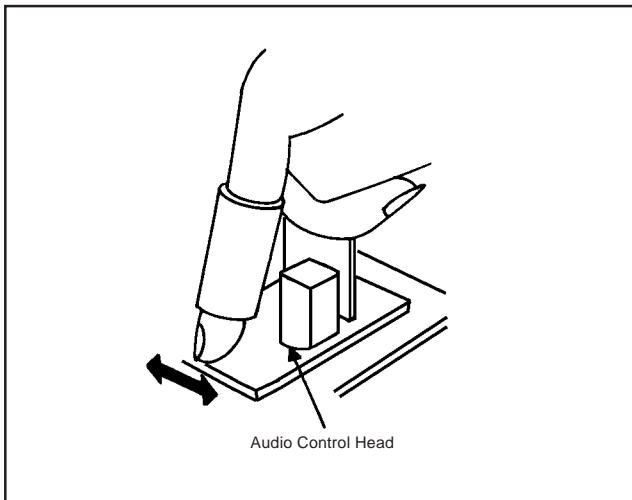
## CLEANING

### NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

### 1. AUDIO CONTROL HEAD

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol and clean the audio control head by wiping it horizontally. Clean the full erase head in the same manner. **(Refer to the figure below.)**



### 2. TAPE RUNNING SYSTEM

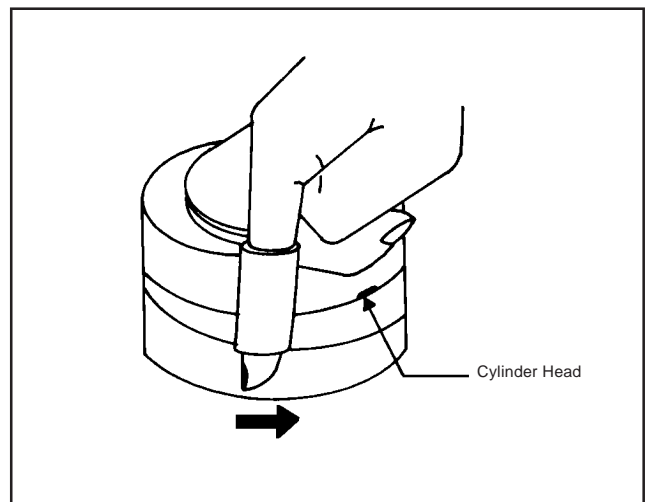
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

### 3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

### NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head. Use the chamois one by one.





## NOTE FOR THE REPLACING OF MEMORY IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

### NOTES:

- Initial Data setting will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.
- No need setting for the data except the Table 1.

ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA
00	20	13	80	20	5F	2D	00	3A	42	47	65
01	B0	14	00	21	00	2E	00	3B	00	48	66
02	14	15	6A	22	00	2F	00	3C	6C	49	6A
03	74	16	00	23	00	30	00	3D	2B	4A	47
06	14	17	35	24	00	31	00	3E	21	4B	03
0B	02	18	A3	25	5F	32	04	3F	15	4C	81
0C	20	19	58	26	0A	33	00	40	07	4D	01
0D	00	1A	36	27	F0	34	00	41	C4		
0E	00	1B	5F	28	00	35	00	42	81		
0F	F3	1C	05	29	F0	36	00	43	02		
10	00	1D	00	2A	01	37	00	44	E9		
11	00	1E	40	2B	05	38	00	45	33		
12	80	1F	F0	2C	01	39	31	46	F3		

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.

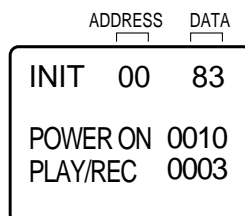


Fig. 1

3. ADDRESS is now selected and should "blink". Using the PLAY or STOP button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
  4. Press ENTER to select DATA. When DATA is selected, it will "blink".
  5. Again, step through the DATA using PLAY or STOP button until required DATA value has been selected.
  6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
  7. Repeat steps 3 to 6 until all data has been checked.
  8. When satisfied correct DATA has been entered.
  9. While holding down VOLUME button on front cabinet, press key 2 on remote control for more than 2 seconds.
  10. Perform the "VCO (MONITOR TUNER)" adjustment of ELECTRICAL ADJUSTMENT.
- The unit will now have the correct DATA for the new MEMORY IC.

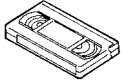
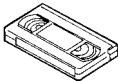
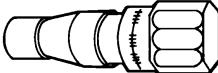
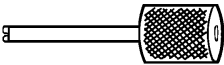
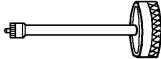
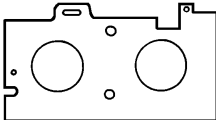
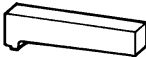
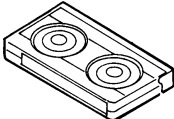
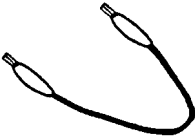
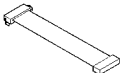
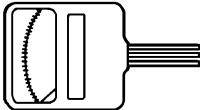
## NOTE FOR THE REPLACING OF CHROMA IC

In case of replacing CHROMA IC, perform the following steps.

**NOTE: The procedures below will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.**

1. While holding down VOLUME button on front cabinet, press key 2 on remote control for more than 2 seconds.
2. Perform the "VCO (MONITOR TUNER)" adjustment of ELECTRICAL ADJUSTMENT.

## SERVICING FIXTURES AND TOOLS

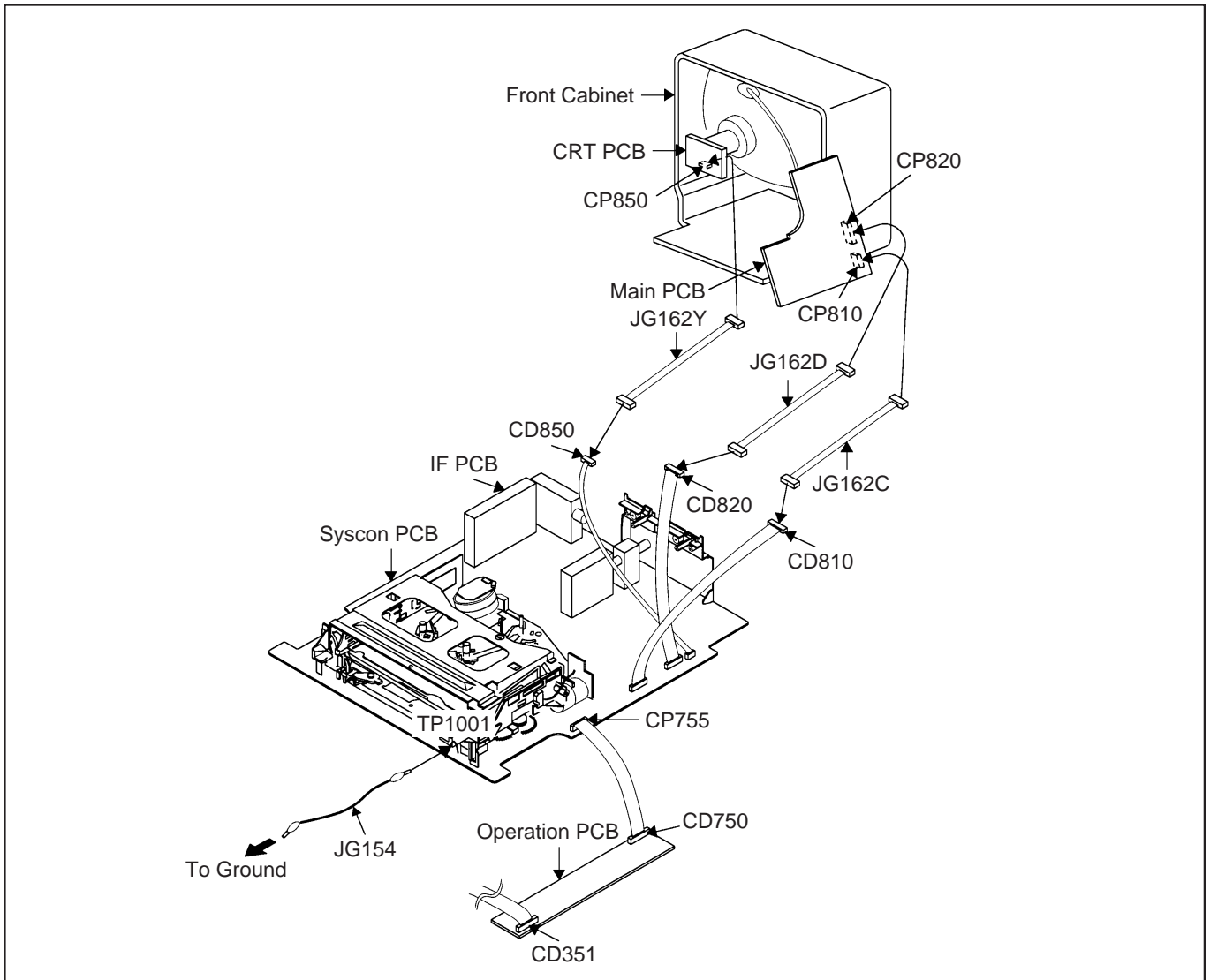
<p><b>(For 2 head 1 speed model, 4 head model)</b>  VHS Alignment Tape  JG001E (TTV-P2)  JG001F (TTV-P1L)  JG001U (VP<sub>1</sub> S-X6<sup>3</sup>)</p> 	<p><b>(For 2 head 2 speed model)</b>  VHS Alignment Tape  JG001C (TTV-P2)  JG001D (TTV-P1L)  JG001V (VP<sub>2</sub> S-X6<sup>3</sup>)</p> 	<p>JG002B Adapter  JG002E Dial Torque Gauge  (10~90gf•cm)  JG002F (60~600gf•cm)</p> 	<p>JG005 Post Adjustment Screwdriver  Part No. SV-TG0-030-000 (small)</p> 
<p>JG153 X Value Adjustment Screwdriver</p> 	<p>JG022 Master Plane</p> 	<p>JG024A Reel Disk Height Adjustment Jig</p> 	<p>JG100A Torque Tape (VHT-063)</p> 
<p>JG154 Cable  Parts No. SJ-G15-400-000</p> 	<p>JG162C Cable (10 Pins)  Parts No. SJ-G16-2C0-000  JG162D Cable (11 Pins)  Parts No. SJ-G16-2D0-000  JG162Y Cable (5 Pins)  Parts No. SJ-G16-2Y0-000</p> 	<p>Tentelometer</p> 	

Part No.	Remarks
JG001E	Stair Steps, 7KHz <b>(For 2 head 1 speed model, 4 head model)</b>
JG001F	Color Bar, 1KHz <b>(For 2 head 1 speed model, 4 head model)</b>
JG001U	X Value Adjustment <b>(For 2 head 1 speed model, 4 head model)</b>
JG001C	Stair Steps, 7KHz <b>(For 2 head 2 speed model)</b>
JG001D	Color Bar, 1KHz <b>(For 2 head 2 speed model)</b>
JG001V	X Value Adjustment <b>(For 2 head 2 speed model)</b>
JG002B	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	Brake Torque (T Reel Ass'y)
JG002F	VSR Torque, Brake Torque (S Reel)
JG005	Guide Roller Adjustment
JG153	X Value Adjustment
JG022/JG024A	Reel Disk Height Adjustment
JG100A	Playback Torque, Back Tension Torque During Playback
JG154	Used to connect the test point of SERVICE and GROUND
JG162C/JG162D	Used to connect the Syscon PCB and Main PCB
JG162Y	Used to connect the Syscon PCB and CRT PCB

## PREPARATION FOR SERVICING

### How to use the Servicing Fixture

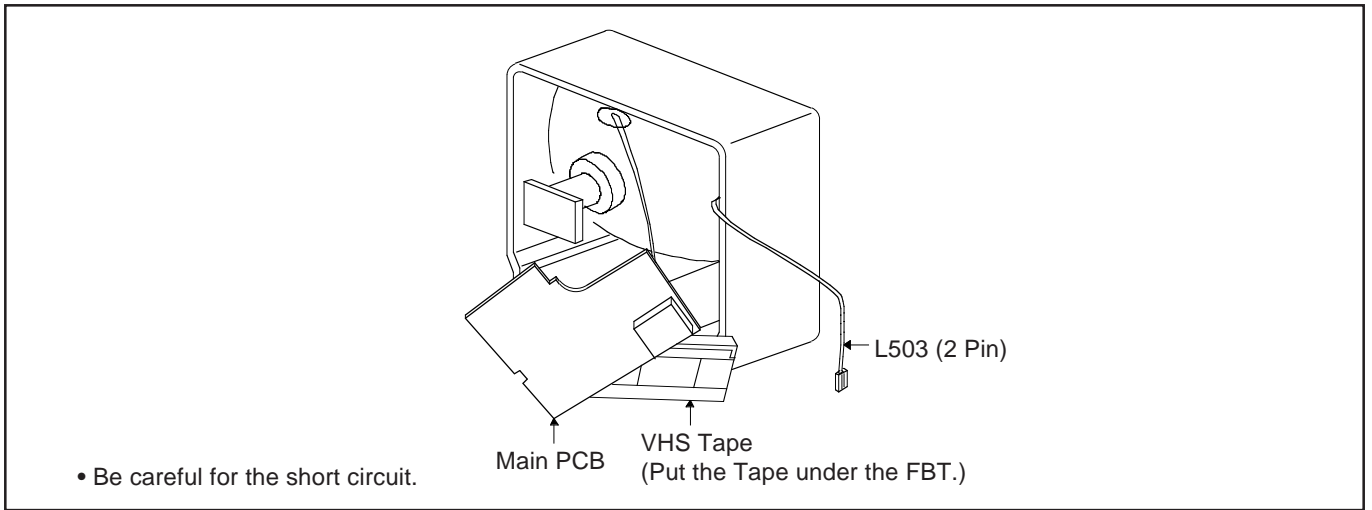
1. Unplug the connector CP351, CP755 and CP354 then remove the TV/VCR Block from the set.
2. Unplug the connector CP810, CP820 and CP850, then remove the Main PCB from the VCR Block.
3. Connect as shown in the below figure using the Service Fixture.
  - Connect the Syscon PCB to the Main PCB with the cable JG162C and JG162D.
  - Connect the Syscon PCB to the CRT PCB with the cable JG162Y.
4. Remove the Operation PCB from the set, then connect it with the Syscon PCB.  
If necessary, connect CP351. (Front A/V Jack Input Terminal)
5. Short circuit between TP1001 and Ground with the cable JG154.
- (Refer to MAJOR COMPONENTS LOCATION GUIDE)
- The EOT, BOT and Reel Sensor do not work at this moment.
6. At that time, the STOP/EJECT button is available to insert and eject the Cassette Tape.



## PREPARATION FOR SERVICING

### Servicing Position for Main PCB (In case of needing to check on Main PCB)

- It's possible to get the Servicing Position without the extension Jig if you arrange the unit as shown below.  
(But L503 connection can not be done, Degauss circuit will not operate.)



## VCR TEST TAPE INTERCHANGEABILITY TABLE

There are two types of the new alignment tape CH-1B (for NTSC) and CH-2 (for PAL). On each tape four signals (1) - (4) are recorded for the times and in the order shown below.

(1) : 8min. ---> (2) : 2min. ---> (3) : 5min. ---> (4) : 5min.

The TTV-MP1 (for M-PAL), TTV-MS1 (for MESECAM) and TTV-S1 (for SECAM) alignment tapes have the same contents as the previous tapes.

Method	Now in use TYPE		New TYPE		Application
	Model	Contents*1	Model	Contents*1	
NTSC	TTV-N1	NTSC, Color, 1kHz, SP	CH-1B(2)	NTSC, Stairsteps, 1kHz, SP	PB-Y Level/General electrical ADJ. Head ACE Height/Tilt ADJ.
	TTV-N1E	NTSC, Color, 1kHz, EP	CH-1B(4) *2	NTSC, Color, 1kHz, EP	Switching position ADJ.
	TTV-N2	NTSC, Stairsteps, 7kHz, SP	CH-1B(1)	NTSC, Stairsteps, 7kHz, SP	Head ACE Azimuth ADJ.
	TTV-N12 (SCV-1998)	NTSC, Color, 1kHz, SP	CH-1B(4)	NTSC, Color, 1kHz, EP	FM envelope ADJ. X-Value ADJ.
	TTV-N7A	NTSC, Stairsteps, 1kHz, SP, HiFi 400Hz	CH-1B(3)	NTSC, Color, No sound SP, HiFi 400Hz	HiFi Audio PB Level ADJ.
PAL	TTV-P1	PAL, Color, 1kHz, SP	CH-2(2) *3	PAL, Stairsteps, 1kHz, SP	Switching position ADJ. PB-Y Level/General electrical ADJ. Head ACE Height/Tilt ADJ.
	TTV-P1L	PAL, Color, 1kHz, LP	CH-2(4)	PAL, Color, 1kHz, LP	Switching position. (LP Model) FM Envelope ADJ. (LP Model) X-Value ADJ. (LP Model)
	TTV-P2	PAL, Stairsteps, 6kHz, SP	CH-2(1)	PAL, Stairsteps, 6kHz, SP	Head ACE Azimuth ADJ. FM Envelope ADJ. (SP Model) X-Value ADJ. (SP Model)
	TTV-P7	PAL, Stairsteps, 1kHz, SP, HiFi, 1kHz	CH-2(3)	PAL, Color, No sound SP, HiFi 400Hz	HiFi Audio PB Level ADJ.
	TTV-P16	PAL, Color, 400Hz, SP, HiFi 1kHz	No Changed.		FM Filter ADJ.

\*1. Described in the order of color format. Video signal. Linear audio. Tape speed and Hi-Fi audio.

\*2. Use CH-1B (1) - (3) with models used exclusively in the SP mode.

\*3. Use CH-2 (3) and (4) when it is necessary to observe the chroma signal.

# MECHANICAL ADJUSTMENTS

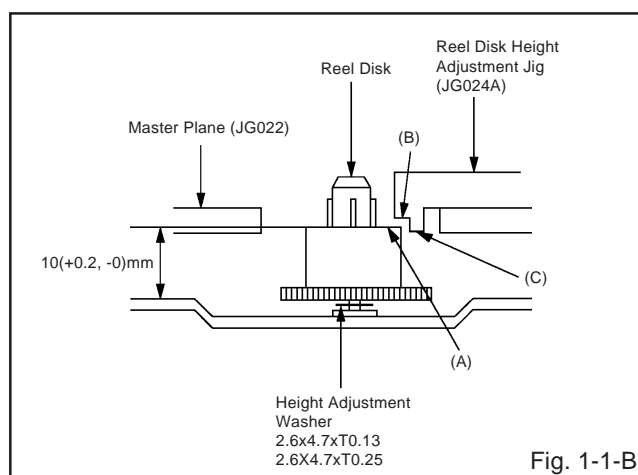
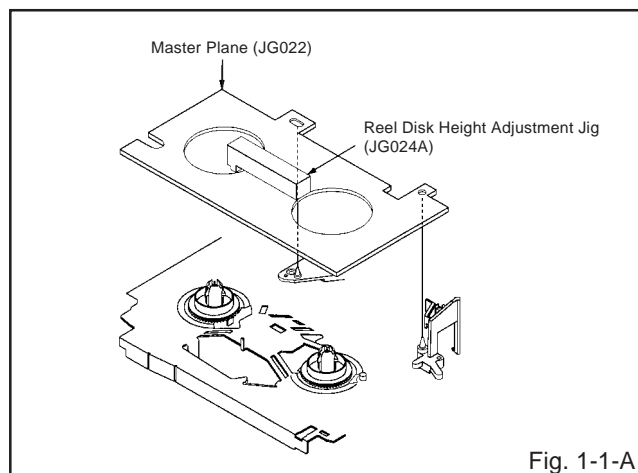
## 1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)
- When you activate the deck without the Cassette Holder, short circuit between **TP1001** and **GND**. (Refer to **ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE**) In this condition the BOT/EOT/Reel Sensor will not function.

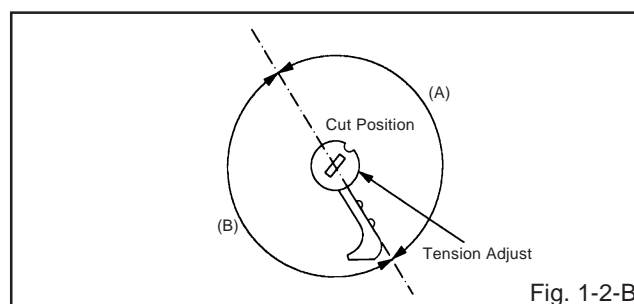
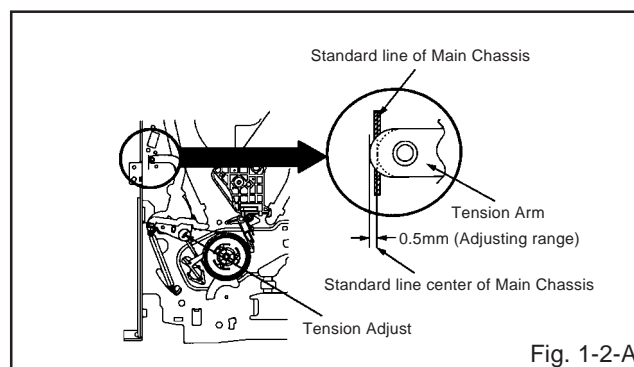
### 1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane (**JG022**) and reel disk height adjustment jig (**JG024A**) on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. Confirm that "A" of the reel disk is lower than "B" of the reel disk height adjustment jig (**JG024A**), and is higher than "C". If it is not enough height, adjust to  $10(+0.2, -0)$  mm with the height adjustment washer.
4. Adjust the other reel in the same way.



### 1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the Tension Adjust until the edge of the Tension Arm is positioning within 0.5mm range from the standard line center of Main Chassis. After this adjustment, confirm that the cut position is located in "A" area as shown in **Fig. 1-2-B**. If it is located in "B" area, adjust again.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

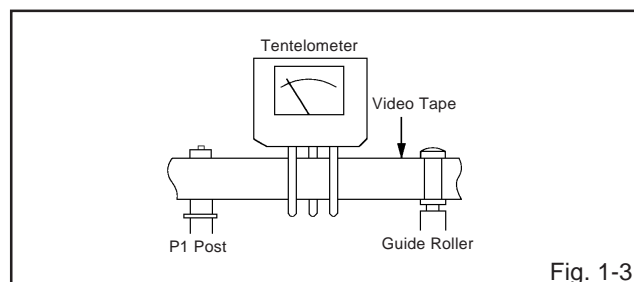


### 1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (E-180) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates  $20 \pm 2$ gf in the beginning of playback.

#### • USING A CASSETTE TYPE TORQUE TAPE (**JG100A**)

1. After confirmation and adjustment of Tension Post position (Refer to item 1-2), load the cassette type torque tape (**JG100A**) and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates  $60\sim 110$ gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates  $25\sim 40$ gf•cm during playback in SP mode.



## MECHANICAL ADJUSTMENTS

### 1-4: CONFIRMATION OF VSR TORQUE

1. Operate within 4~5 seconds after the reel disk begins to turn.
2. Install the Torque Gauge (JG002F) and Adapter (JG002B) on the S Reel. Set to the Rewind mode. (Refer to Fig.1-4)
3. Then, confirm that it indicates 120~180gf•cm.

#### NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

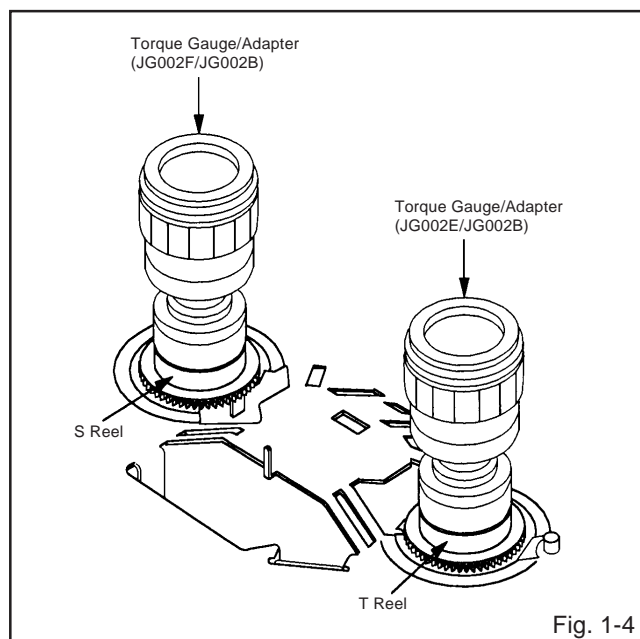
### 1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) (Refer to Fig. 1-4)

1. Set to the STOP mode.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge (JG002F) and Adapter (JG002B) on the S Reel. Turn the Torque Gauge (JG002F) clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) (Refer to Fig. 1-4)

1. Set to the STOP mode.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge (JG002E) and Adapter (JG002B) on the T reel. Turn the Torque Gauge (JG002E) counterclockwise.
4. Then, confirm that it indicates 45~70gf•cm.



#### NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	T Brake Spring/Tension Spring

## 2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

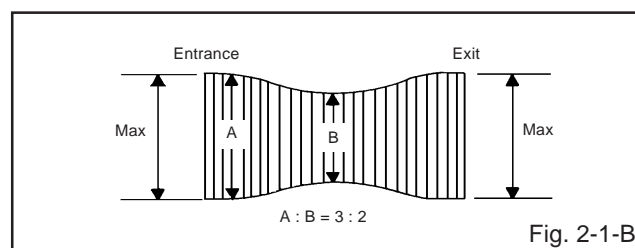
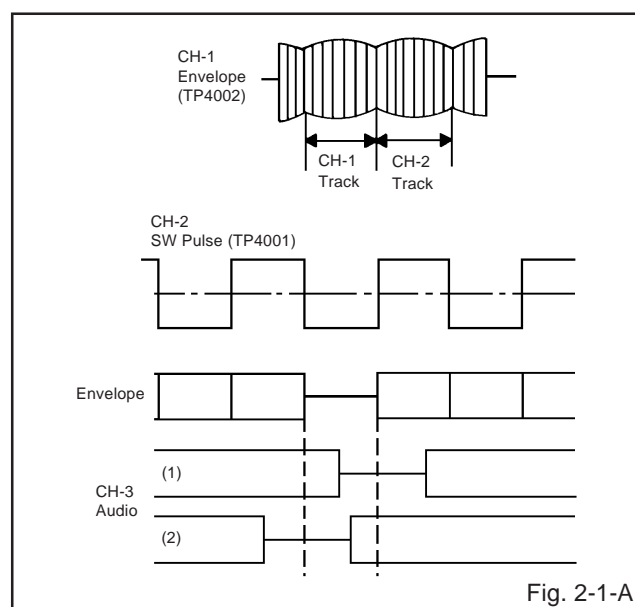
Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

### 2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape (JG001C or JG001E). (Refer to SERVICING FIXTURE AND TOOLS)
2. Connect CH-1 of the oscilloscope to TP4002 (Envelope) and CH-2 to TP4001 (SW Pulse).
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Trigger with SW Pulse and observe the envelope. (Refer to Fig. 2-1-A)
5. When observing the envelope, adjust the Adjusting Driver (JG005) slightly until the envelope will be flat. Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in Fig. 2-1-B, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback. (Refer to the ELECTRICAL ADJUSTMENTS)

#### NOTE

After adjustment, confirm and adjust A/C head. (Refer to item 2-2)



## MECHANICAL ADJUSTMENTS

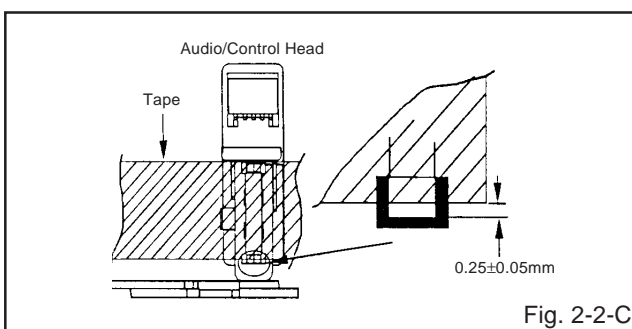
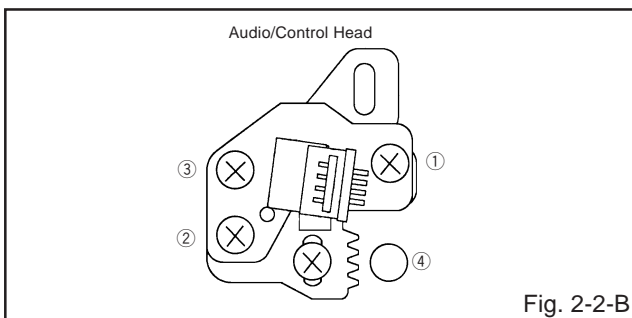
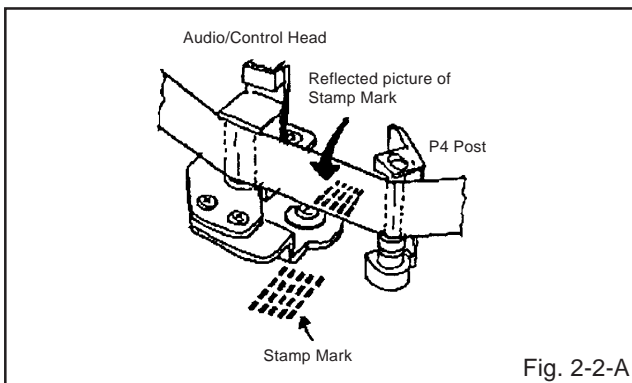
### 2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape (**JG001C** or **JG001E**).  
(Refer to **SERVICING FIXTURE AND TOOLS**)
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Post as shown in **Fig. 2-2-A**.
  - a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
  - b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
  - c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

### 2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

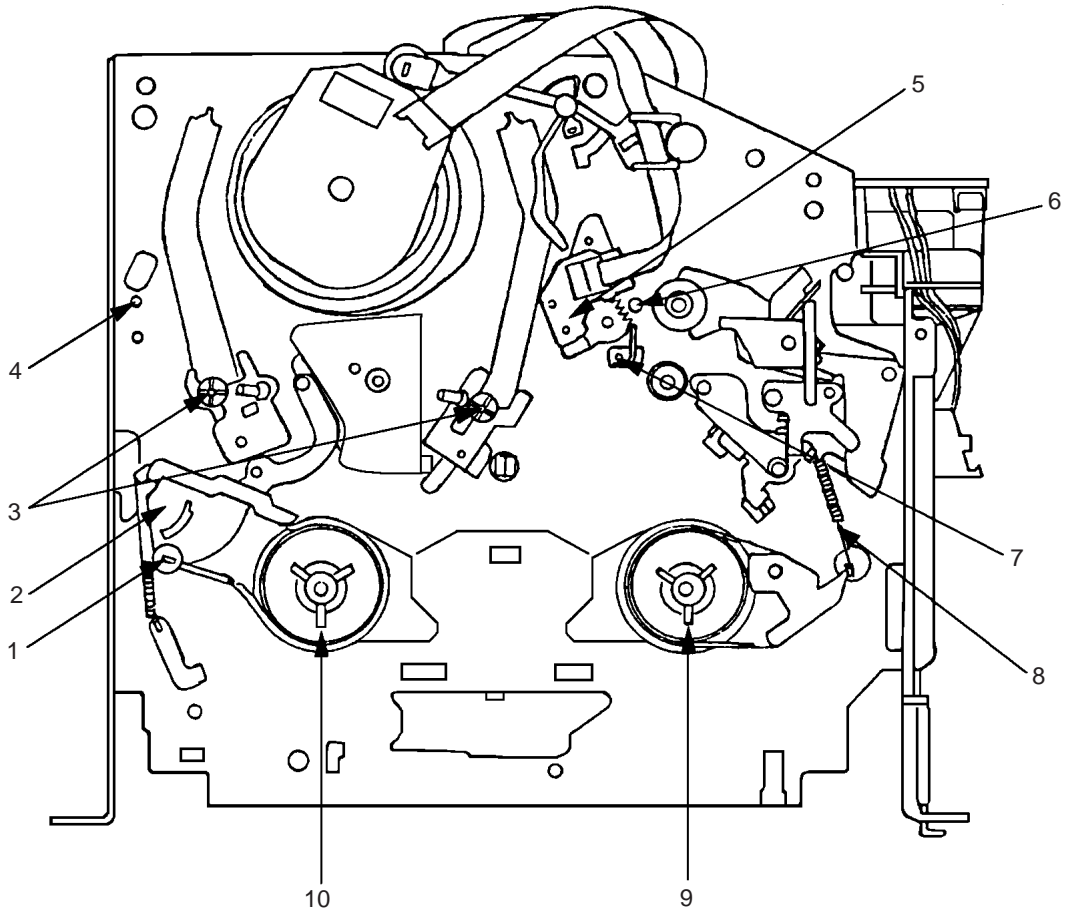
1. Confirm and adjust the height of the Reel Disk.  
(Refer to **item 1-1**)
2. Confirm and adjust the position of the Tension Post.  
(Refer to **item 1-2**)
3. Adjust the Guide Roller. (Refer to **item 2-1**)
4. Confirm and adjust the Audio/Control Head.  
(Refer to **item 2-2**)
5. Connect CH-1 of the oscilloscope to **TP4002**, CH-2 to **TP4001** and CH-3 to **HOT side of Audio Out Jack**.
6. Playback the VHS Alignment Tape (**JG001U** or **JG001V**).  
(Refer to **SERVICING FIXTURE AND TOOLS**)
7. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver (**JG153**) to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-1-A**.





# MECHANICAL ADJUSTMENTS

## 3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



- |                       |                                   |
|-----------------------|-----------------------------------|
| 1. Tension Adjust     | 6. X value adjustment driver hole |
| 2. Tension Arm        | 7. P4 Post                        |
| 3. Guide Roller       | 8. T Brake Spring                 |
| 4. P1 Post            | 9. T Reel                         |
| 5. Audio/Control Head | 10. S Reel                        |

# ELECTRICAL ADJUSTMENTS

## 1. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

### CAUTION

When replacing IC's or transistors, use only specified silicon grease (**YG6260M**).  
(To prevent the damage to IC's and transistors.)

### On-Screen Display Adjustment

1. Unplug the AC plug for more than 30 minutes to set the clock to the non-setting state. (To release the Back-Up immediately, take the short circuit between **C1003** and **GND** at the Power Off.) Then, set the volume level to minimum.
2. Press the VOL. DOWN button on the set and the channel button (**9**) on the remote control for more than 2 seconds to display adjustment mode on the screen as shown in **Fig. 1-1**.

### NOTE

Use the channel buttons (**1-8**) on the remote control to select the options shown in **Fig. 1-1**.  
Press the channel button (**0**) or MENU button on the remote control to end the adjustments.

1. H/V
2. WHITE BALANCE
3. SECAM
4. PICTURE
5. OTHERS
- 6.
- 7.
8. (VOL TEST)      0. END

"The adjustment items 3 and 8 is not used for this model."

Fig. 1-1

## 2. BASIC ADJUSTMENTS (VCR SECTION)

### 2-1: PG SHIFTER

1. Connect CH-1 on the oscilloscope to **TP4001** and CH-2 to **TP4501**.
2. Playback the alignment tape. (**JG001D**)
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the VOL. DOWN button on the set and the channel button (**3**) on the remote control simultaneously until the indicator REC disappears. If the indicator REC disappears, adjustment is completed.

### (If the above adjustments doesn't work well:)

5. Press the VOL. DOWN button on the set and the channel button (**3**) on the remote control simultaneously until the indicator REC disappears.
6. When the REC indicator is blinking, press both VOL. DOWN button on the set and the channel button (**4**) on the remote control simultaneously and adjust the Tracking +/- button until the arising to the down of Head Switching Pulse becomes  $6.5 \pm 0.5H$ .

(Refer to **Fig. 2-1-A, B**)

7. Stop the alignment tape.

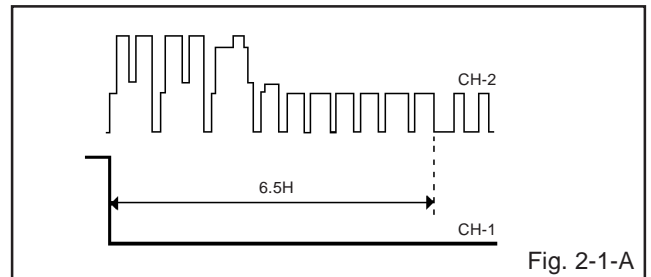


Fig. 2-1-A

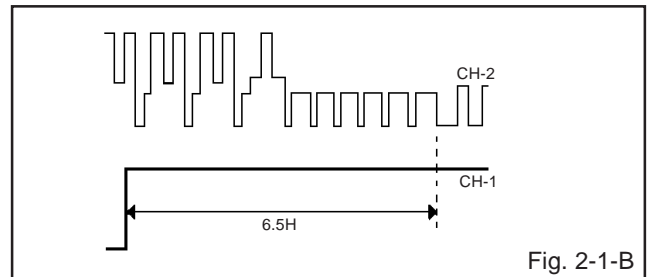


Fig. 2-1-B

### 2-2: VCO

#### (REC TUNER)

1. Place the set with Aging Test for more than 10 minutes.
2. Connect the oscillator (39.5MHz) to **TP601**.
3. Connect the digital voltmeter between the **pin 8 of CP603** and the **pin 1 (GND) of CP603**.
4. Adjust the **L6006** until the digital voltmeter is  $2.4 \pm 0.1V$ .

#### (MONITOR TUNER)

1. Place the set with Aging Test for more than 10 minutes.
2. Connect the oscillator (39.5MHz) to **TP602**.
3. Connect the digital voltmeter between the **pin 6 of CP603** and the **pin 1 (GND) of CP603**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**5**) on the remote control to select "OTHERS". The **Fig. 2-2** appears on the display.
5. Press the channel button (**6**) on the remote control to select "AFT".
6. Press the PLAY or STOP button on the remote control until the digital voltmeter is  $2.5 \pm 0.1V$ .

1. RF AGC DELAY
2. VIDEO LEVEL
3. FM LEVEL
4. OSD H
5. CUT OFF
6. AFT
7. REC AGC DELAY
8. VCO                      0. RETURN

"The adjustment item 8 is not used for this model."

Fig. 2-2

# ELECTRICAL ADJUSTMENTS

## 2-3: RF AGC DELAY

(MONITOR TUNER)

1. Receive the UHF (80dB).
2. Connect the digital voltmeter between the **pin 5 of CP603** and the **pin 1 (GND) of CP603**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(5)** on the remote control to select "OTHERS". The **Fig. 2-2** appears on the display.
4. Press the channel button **(1)** on the remote control to select "RF AGC DELAY".
5. Press the PLAY or STOP button on the remote control until the digital voltmeter is  $1.6 \pm 0.1V$ .

(REC TUNER)

1. Receive the UHF (80dB).
2. Connect the digital voltmeter between the **pin 7 of CP603** and the **pin 1 (GND) of CP603**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(5)** on the remote control to select "OTHERS". The **Fig. 2-2** appears on the display.
4. Press the channel button **(7)** on the remote control to select "REC AGC DELAY".
5. Press the PLAY or STOP button on the remote control until the digital voltmeter is  $1.6 \pm 0.1V$ .

## (TV SECTION)

### 2-4: CONSTANT VOLTAGE

1. Using the remote control, set the brightness and contrast to normal position.
2. Connect the digital voltmeter to **TP401**.
3. Set condition is AV MODE without signal.
4. Adjust the **VR502** until the digital voltmeter is  $135 \pm 0.5V$ .

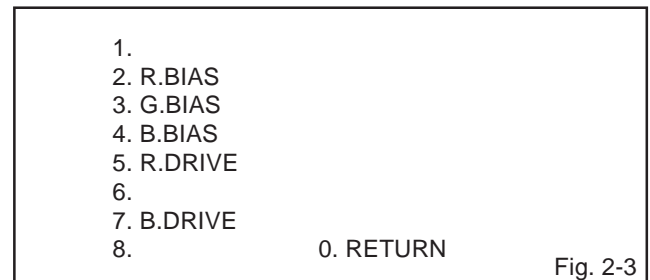
### 2-5: CUT OFF

1. Place the set with Aging Test for more than 15 minutes.
2. Set condition is AV MODE without signal.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(5)** on the remote control to select "OTHERS". The **Fig. 2-2** appears on the display.
5. Press the channel button **(5)** on the remote control to select "CUT OFF".
6. Adjust the **Screen Volume** until a dim raster is obtained.

### 2-6: WHITE BALANCE

**NOTE:** Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the white 100% signal from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(2)** on the remote control to select "AKB". The **Fig. 2-3** appears on the display.
5. Press the channel button **(2)** on the remote control to select the "R.BIAS".
6. Using the PLAY or STOP button on the remote control, adjust the R.BIAS.
7. Press the CH. UP/DOWN button on the remote control to select the "G.BIAS", "B.BIAS", "R.DRIVE" or "B.DRIVE".
8. Using the PLAY or STOP button on the remote control, adjust the G.BIAS, B.BIAS, R.DRIVE or B.DRIVE.
9. Perform the above adjustments 7 and 8 until the white color is looked like a white.



### 2-7: FOCUS

1. Receive a broadcast.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

### 2-8: HORIZONTAL POSITION

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control to select "H/V". The **Fig. 2-4** appears on the display.
4. Press the channel button **(1)** on the remote control to select "H. POSI 50/60".
5. Press the PLAY or STOP button on the remote control until the vertical line becomes fit to the notch of the shadow mask.
6. Receive the center cross signal of NTSC. (Audio Video Input)
7. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

# ELECTRICAL ADJUSTMENTS

1. H.POSI 50/60
- 2.
3. V.SIZE 50/60
4. V.POSI 50/60
5. V.LIN 50/60
6. V.SC 50/60
- 7.
8. (H. FREQ)            0. RETURN

"The adjustment item 8 is not used for this model."

Fig. 2-4

## 2-9: VERTICAL SIZE

**NOTE:** Adjust after performing adjustments in section 2-8.

1. Receive the cross hatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control to select "H/V". The **Fig. 2-4** appears on the display.
4. Press the channel button **(3)** on the remote control to select "V. SIZE 50/60".
5. Press the PLAY or STOP button on the remote control until the rectangle on the center of the screen becomes square.
6. Receive a broadcast and check if the picture is normal.
7. Receive the cross hatch signal of NTSC. (Audio Video Input)
8. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

## 2-10: VERTICAL LINEARITY 50

**NOTE:** Adjust after performing adjustments in section 2-9.

1. Receive the cross hatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control to select "H/V". The **Fig. 2-4** appears on the display.
4. Press the channel button **(5)** on the remote control to select "V. LIN 50/60".
5. Press the PLAY or STOP button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.
6. Receive the cross hatch signal of NTSC. (Audio Video Input)
7. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

## 2-11: VERTICAL POSITION

**NOTE:** Adjust after performing adjustments in section 2-10.

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control to select "H/V". The **Fig. 2-4** appears on the display.
4. Press the channel button **(4)** on the remote control to select "V. POSI 50/60".
5. Press the PLAY or STOP button on the remote control until the contrast step No. becomes "0"
6. Receive the center cross signal of NTSC. (Audio Video Input)
7. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

## 2-12: OSD HORIZONTAL

1. Using the remote control, set the brightness and contrast to normal position.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(5)** on the remote control to select "OTHERS". The **Fig. 2-2** appears on the display.
3. Press the channel button **(4)** on the remote control to select "OSD H".
4. Press the PLAY or STOP button on the remote control until the difference of A and B becomes minimum. **(Refer to Fig. 2-5)**

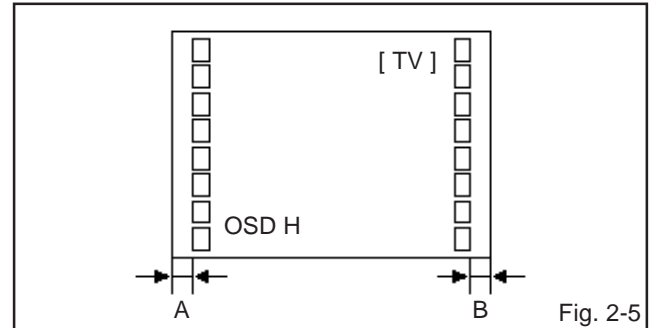


Fig. 2-5

## 2-13: SUB BRIGHTNESS

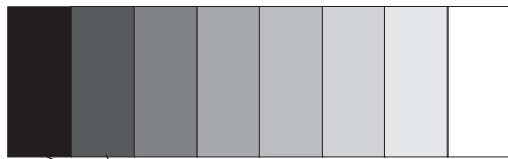
1. Receive more than 8 steps monochrome pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control to select "PICTURE". The **Fig. 2-6** appears on the display.
4. Press the channel button **(1)** on the remote control to select "BRIGHT".
5. Press the PLAY or STOP button on the remote control until the second scale from left end is starting to glitter. **(Refer to Fig. 2-7)**
6. Receive more than 8 steps monochrome pattern. (Audio Video Input)
7. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

# ELECTRICAL ADJUSTMENTS

1. BRIGHT
2. CONTRAST
3. COLOR
4. TINT
5. SHARPNESS
6. TEXT CONTRAST
7. TEXT BRIGHT
8. 0. RETURN

"The adjustment items 4 and 7 is not used for this model."

Fig. 2-6



No brilliance on the left end scale.  
The next scale have a slight brilliance.

Fig. 2-7

## 2-14: SUB COLOR

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast and color to normal position.
3. Connect the synchro scope to **TP801**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control to select "PICTURE". The **Fig. 2-6** appears on the display.
5. Press the channel button **(3)** on the remote control to select "COLOR".
6. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
7. Press the PLAY or STOP button on the remote control until the red color level is adjusted to 95% of the white level. (**Refer to Fig. 2-8**)
8. Receive the color bar pattern. (Audio Video Input)
9. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~7.

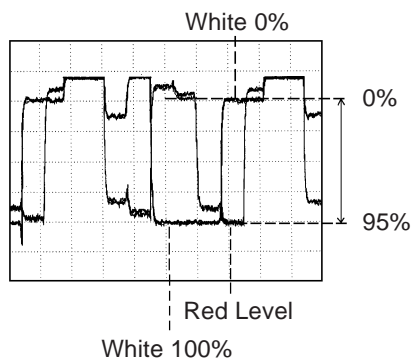


Fig. 2-8

## 2-15: SUB CONTRAST

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control to select "PICTURE". The **Fig. 2-6** appears on the display.
2. Press the channel button **(2)** on the remote control to select "CONTRAST".
3. Press the PLAY or STOP button on the remote control until the contrast step No. becomes "79"
4. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 1~3.

## 2-16: SUB SHARPNESS

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control to select "PICTURE". The **Fig. 2-6** appears on the display.
2. Press the channel button **(5)** on the remote control to select "SHARPNESS".
3. Check if the step No. of SHARPNESS is "28".
4. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 1~3.

## 2-17: TEXT CONTRAST

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control to select "PICTURE". The **Fig. 2-6** appears on the display.
2. Press the channel button **(6)** on the remote control to select "TEXT CONTRAST".
3. Press the PLAY or STOP button on the remote control until the bar step is set to "77".

## 2-18: V. S-CORRECTION (V. SC)

1. Receive the color bar pattern.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control to select "H/V". The **Fig. 2-4** appears on the display.
3. Press the channel button **(6)** on the remote control to select "V. SC 50/60".
4. Check if the step No. of V. SC is "0".
5. Receive the color bar pattern of NTSC. (Audio Video Input)
6. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.

## 2-19: 21 PIN AUDIO OUT

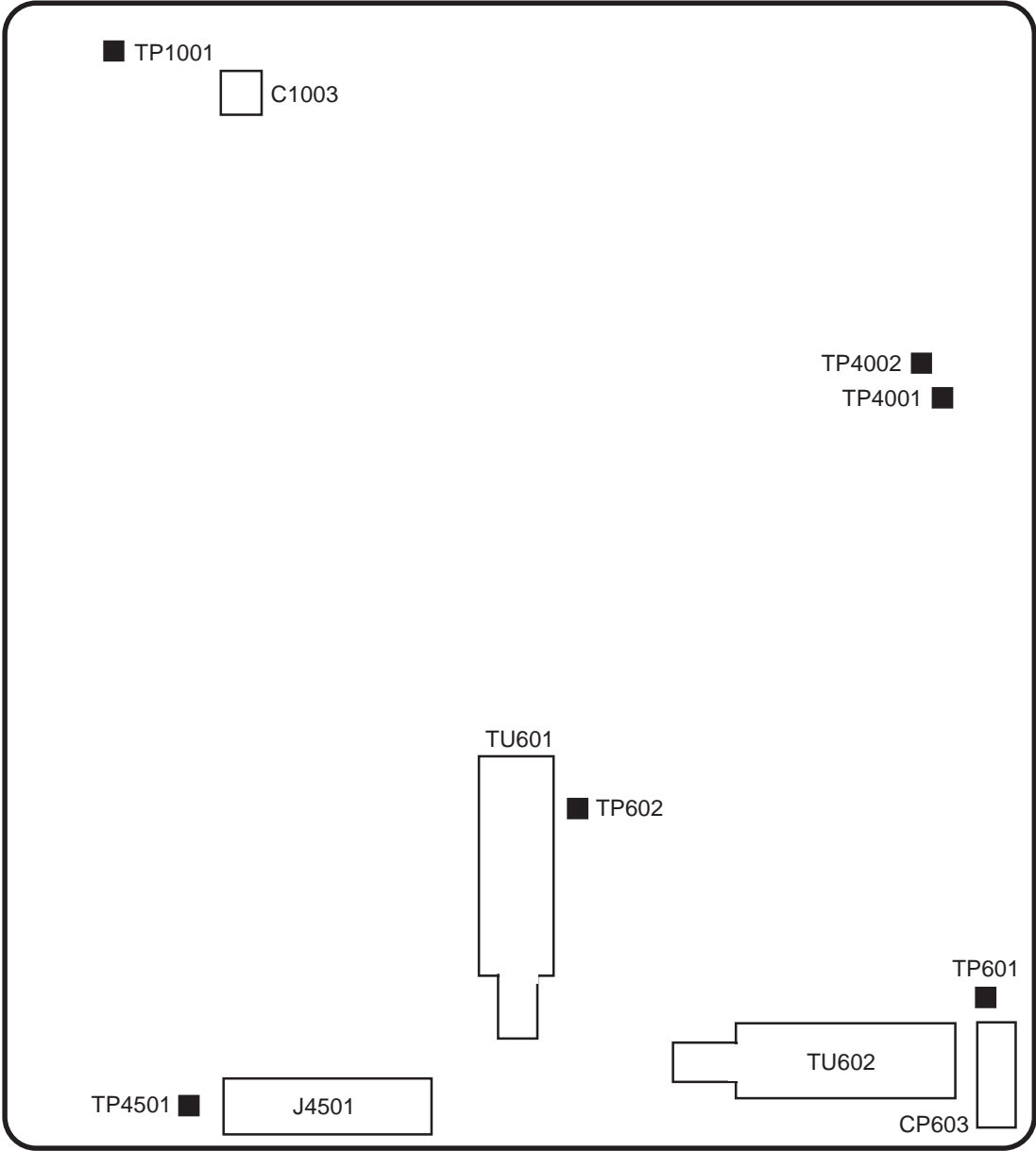
1. Receive the color bar pattern.
2. Connect the AC voltmeter to **pin3 of J4501**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(5)** on the remote control to select "OTHERS". The **Fig. 2-2** appears on the display.
4. Press the channel button **(3)** on the remote control to select "FM LEVEL".
5. Press the PLAY or STOP button on the remote control until the AC voltmeter is  $550 \pm 2.5\text{dbm}$ .

## 2-20: 21 PIN VIDEO OUT

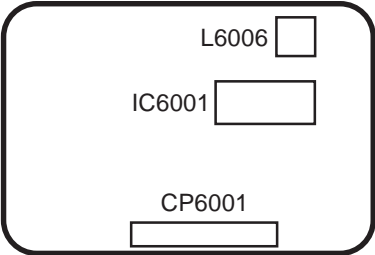
1. Receive the color bar pattern.
2. Connect the synchro scope to **TP4501**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(5)** on the remote control to select "OTHERS". The **Fig. 2-2** appears on the display.
4. Press the channel button **(2)** on the remote control to select "VIDEO LEVEL".
5. Press the PLAY or STOP button on the remote control until the synchro scope is  $1.0 \pm 0.15\text{V}$ .

# ELECTRICAL ADJUSTMENTS

## 3. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (VCR SECTION)



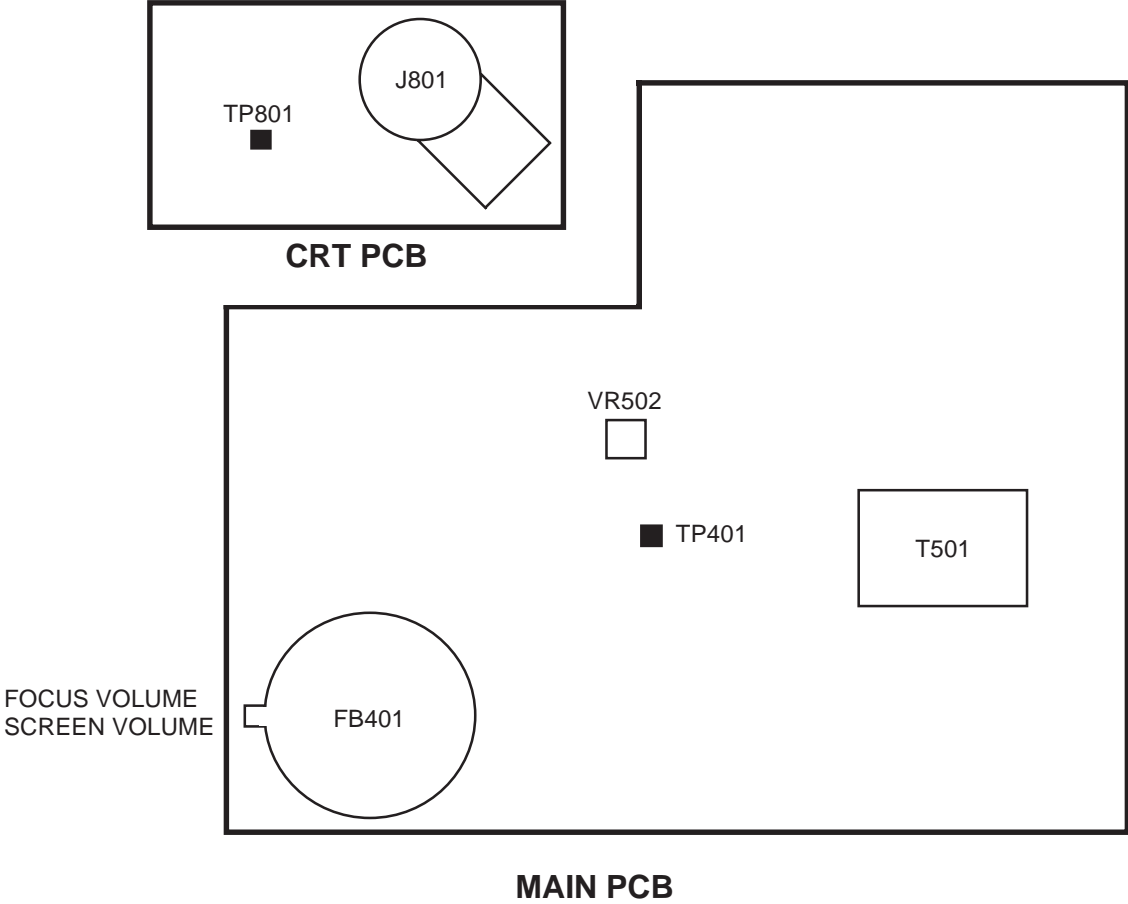
**SYSCON PCB**



**IF PCB**

# ELECTRICAL ADJUSTMENTS

(TV SECTION)



# ELECTRICAL ADJUSTMENTS

## 4. PURITY AND CONVERGENCE ADJUSTMENTS

### NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

### 4-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 4-1)**  
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

### 4-2: PURITY

### NOTE

Adjust after performing adjustments in section 4-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.  
Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue color.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

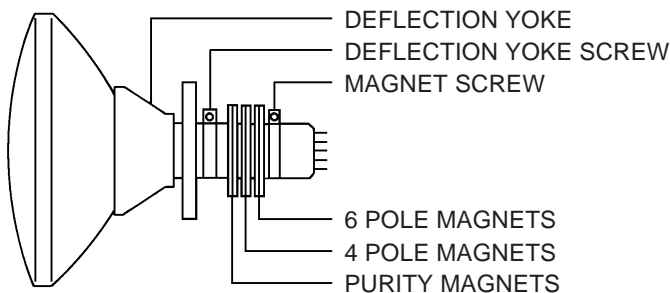


Fig. 4-1

### 4-3: STATIC CONVERGENCE

### NOTE

Adjust after performing adjustments in section 4-2.

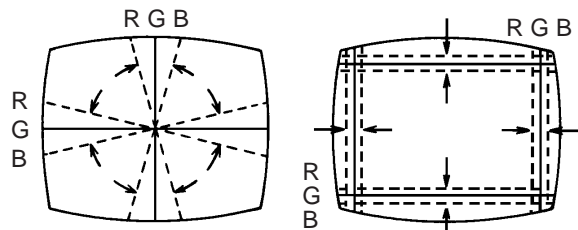
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

### 4-4: DYNAMIC CONVERGENCE

### NOTE

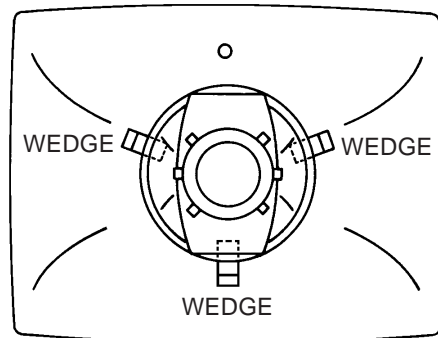
Adjust after performing adjustments in section 4-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 4-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 4-2-b)**



UPWARD/DOWNWARD SLANT    RIGHT/LEFT SLANT

Fig. 4-2-a



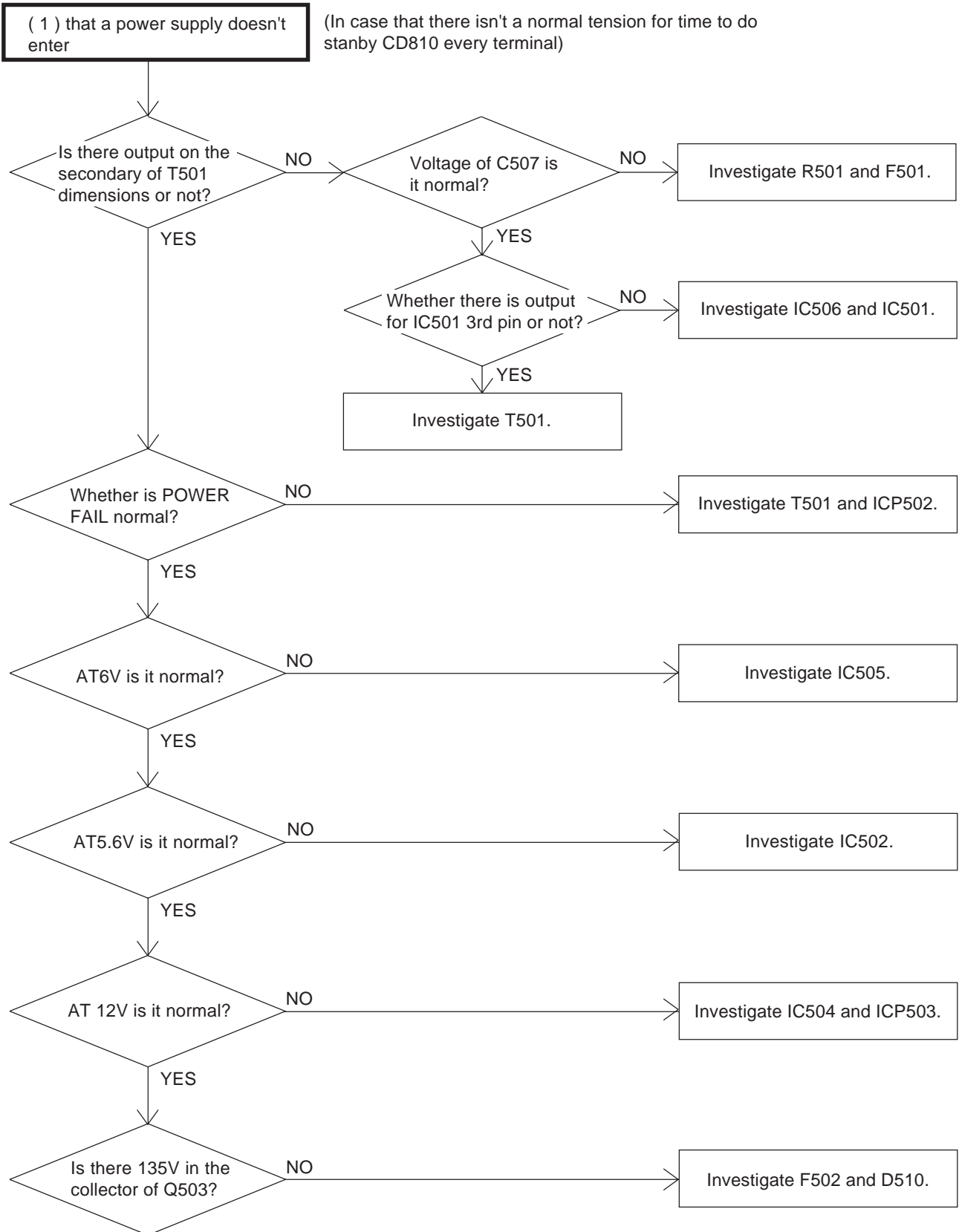
WEDGE POSITION

Fig. 4-2-b

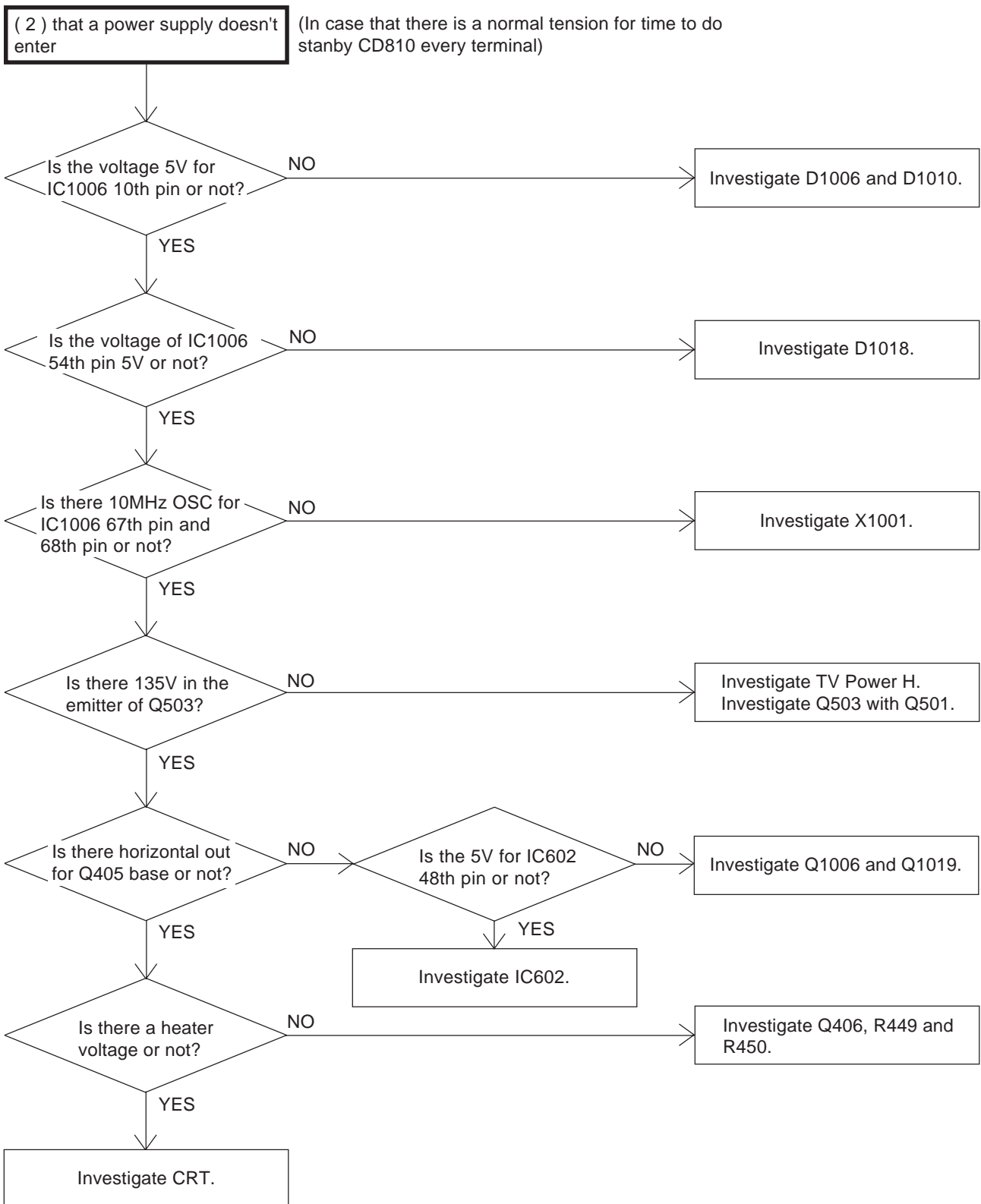


# TROUBLESHOOTING GUIDE

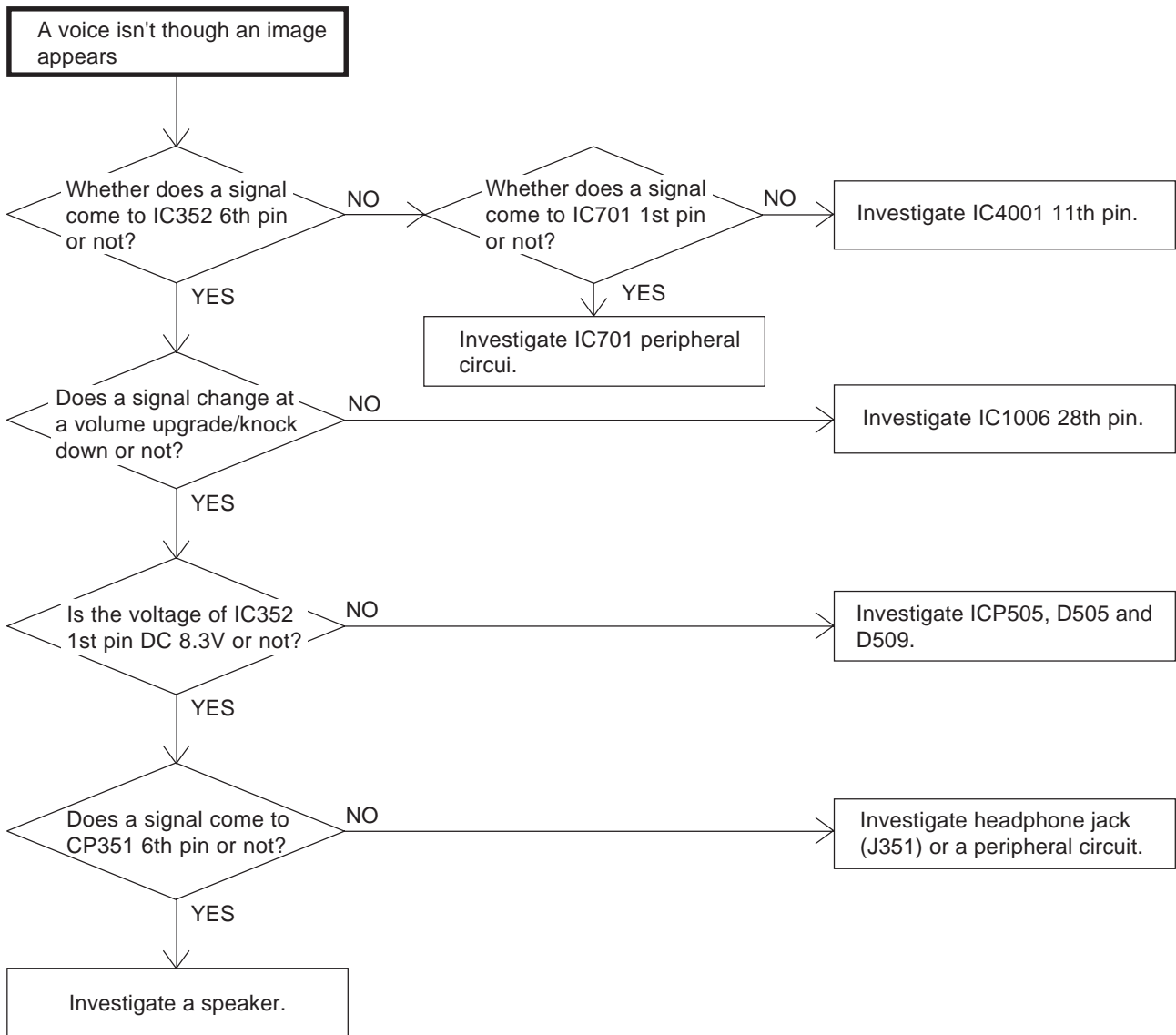
## (Television division)



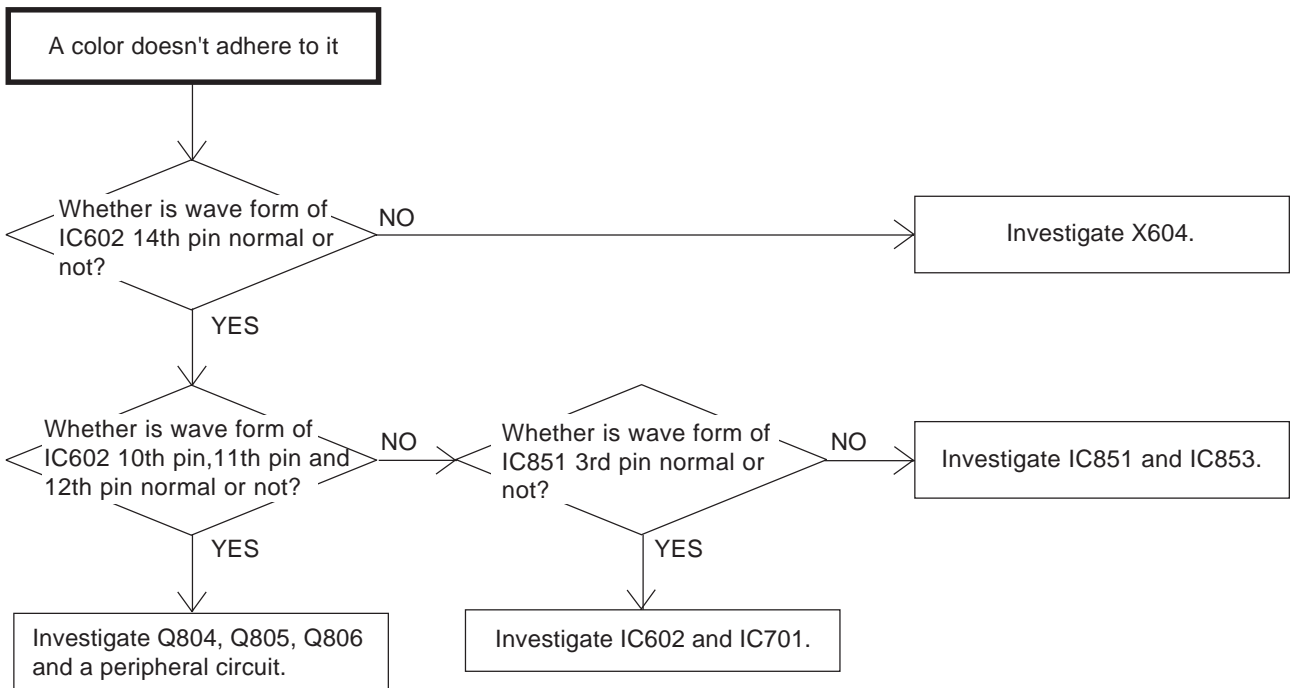
## TROUBLESHOOTING GUIDE



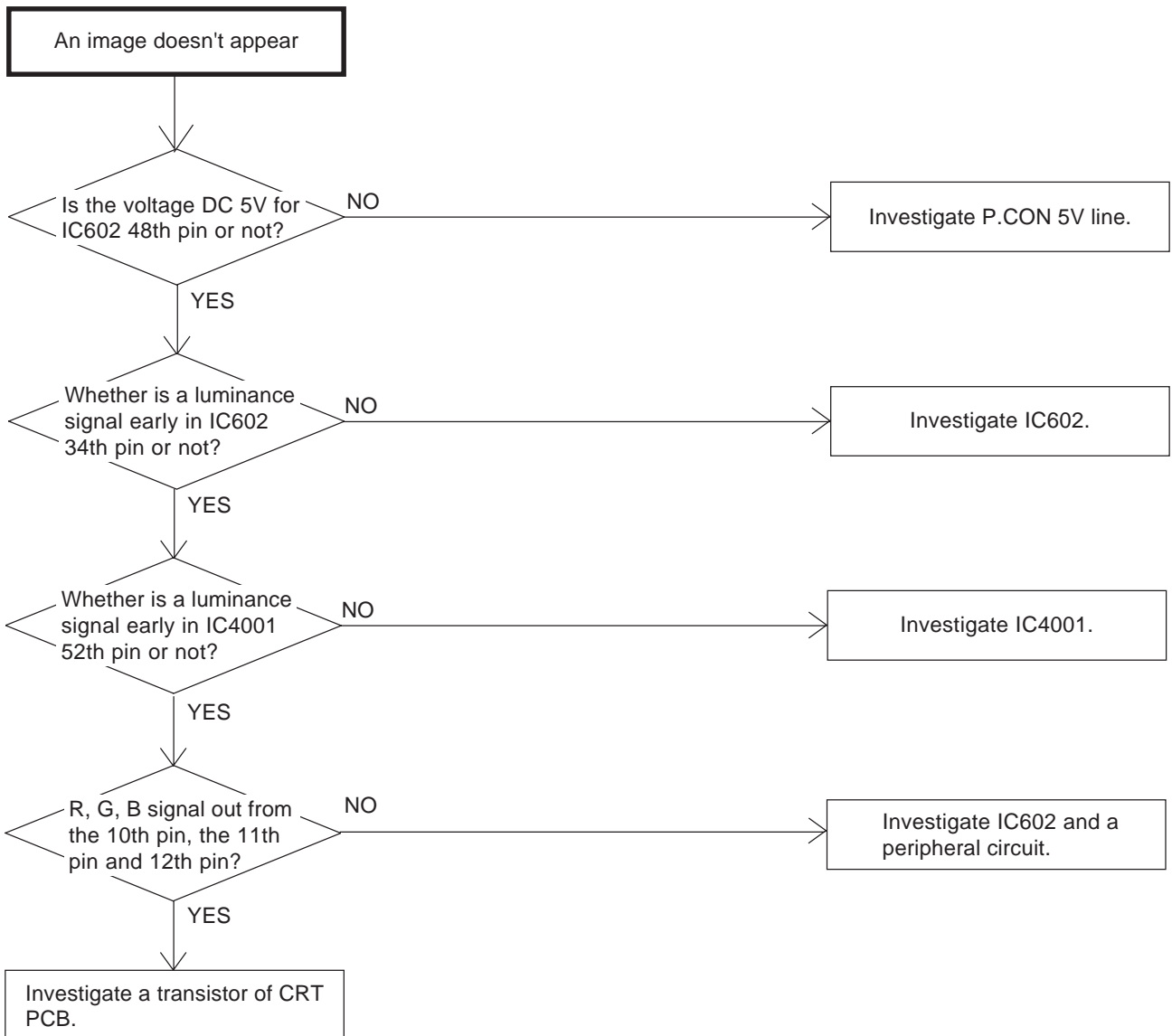
# TROUBLESHOOTING GUIDE



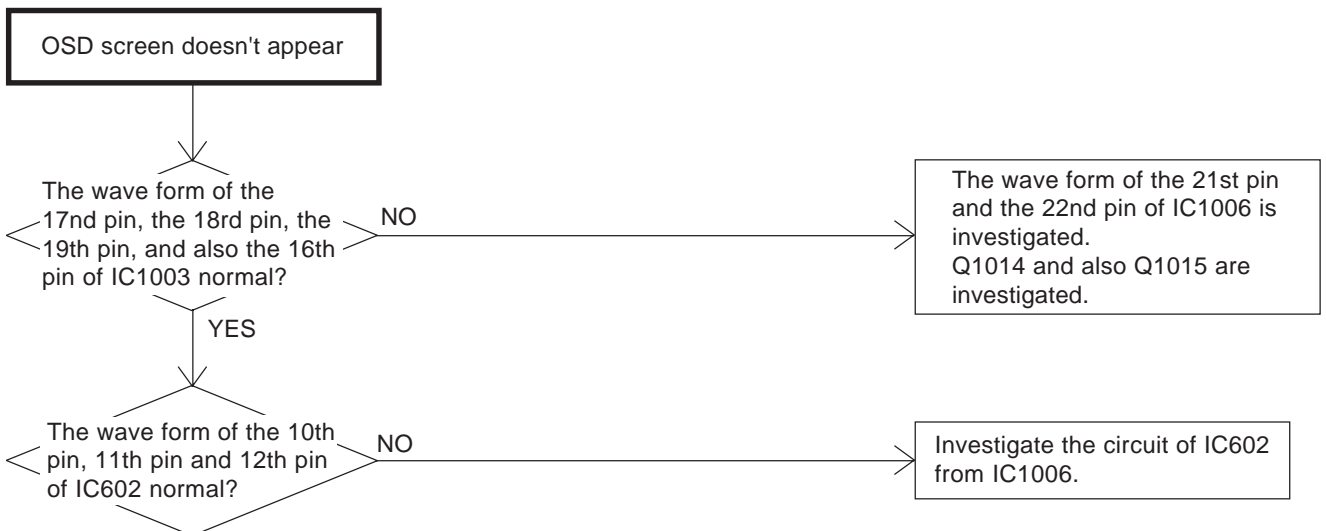
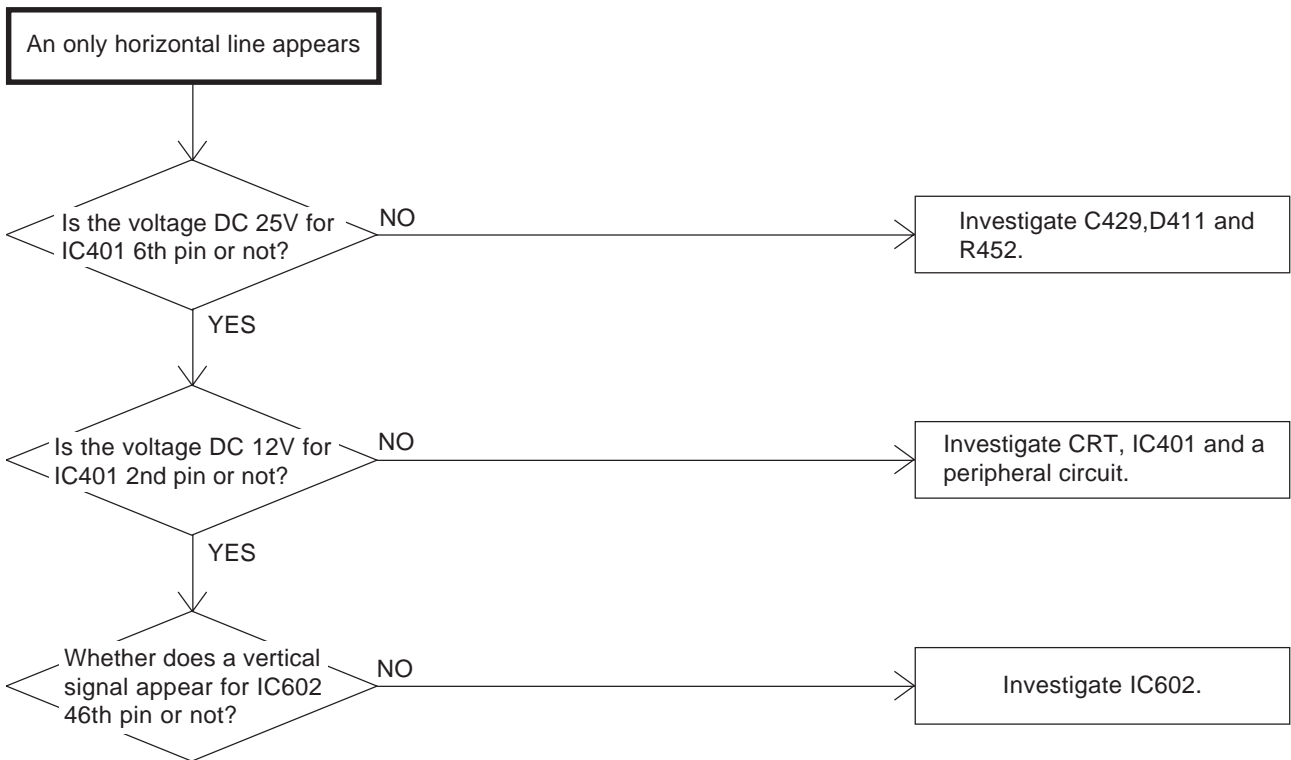
# TROUBLESHOOTING GUIDE



## TROUBLESHOOTING GUIDE

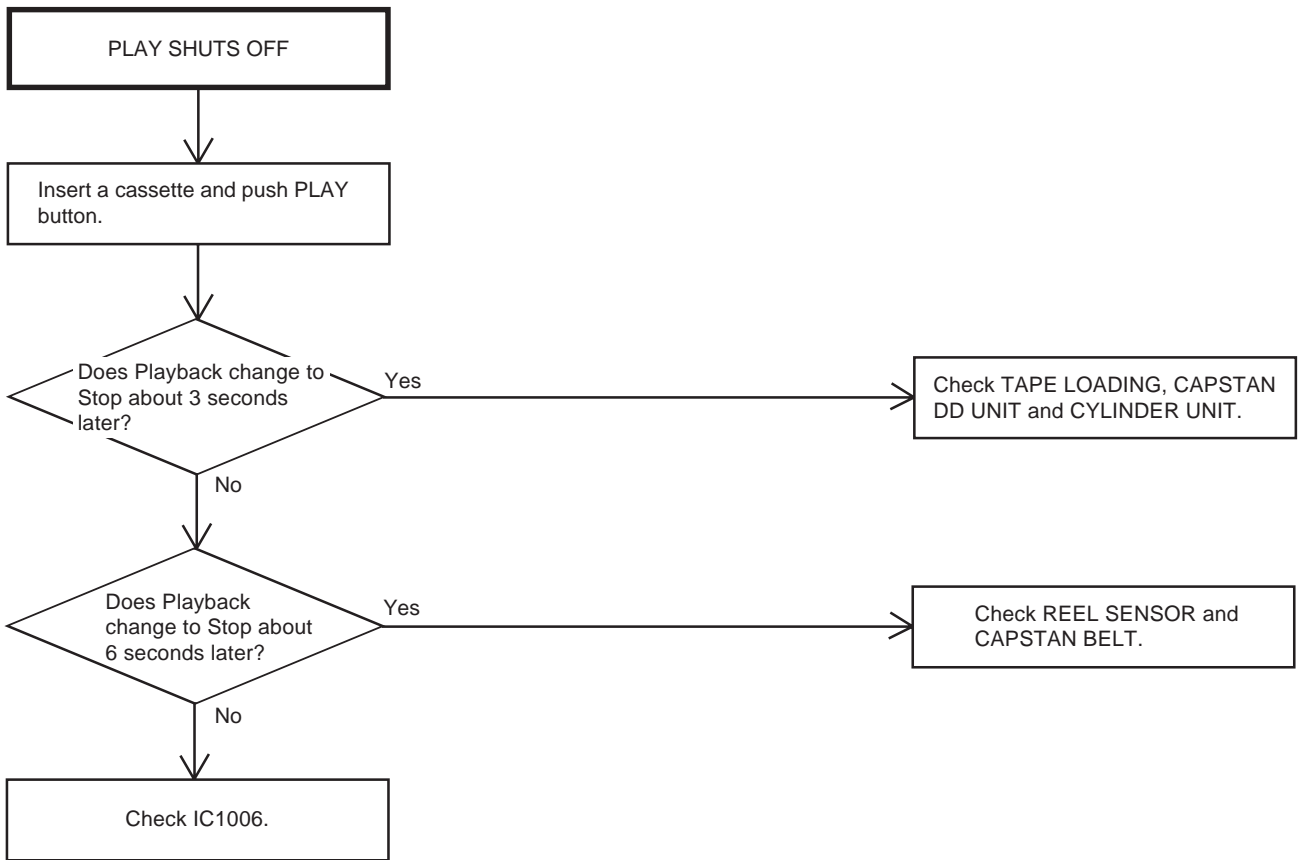


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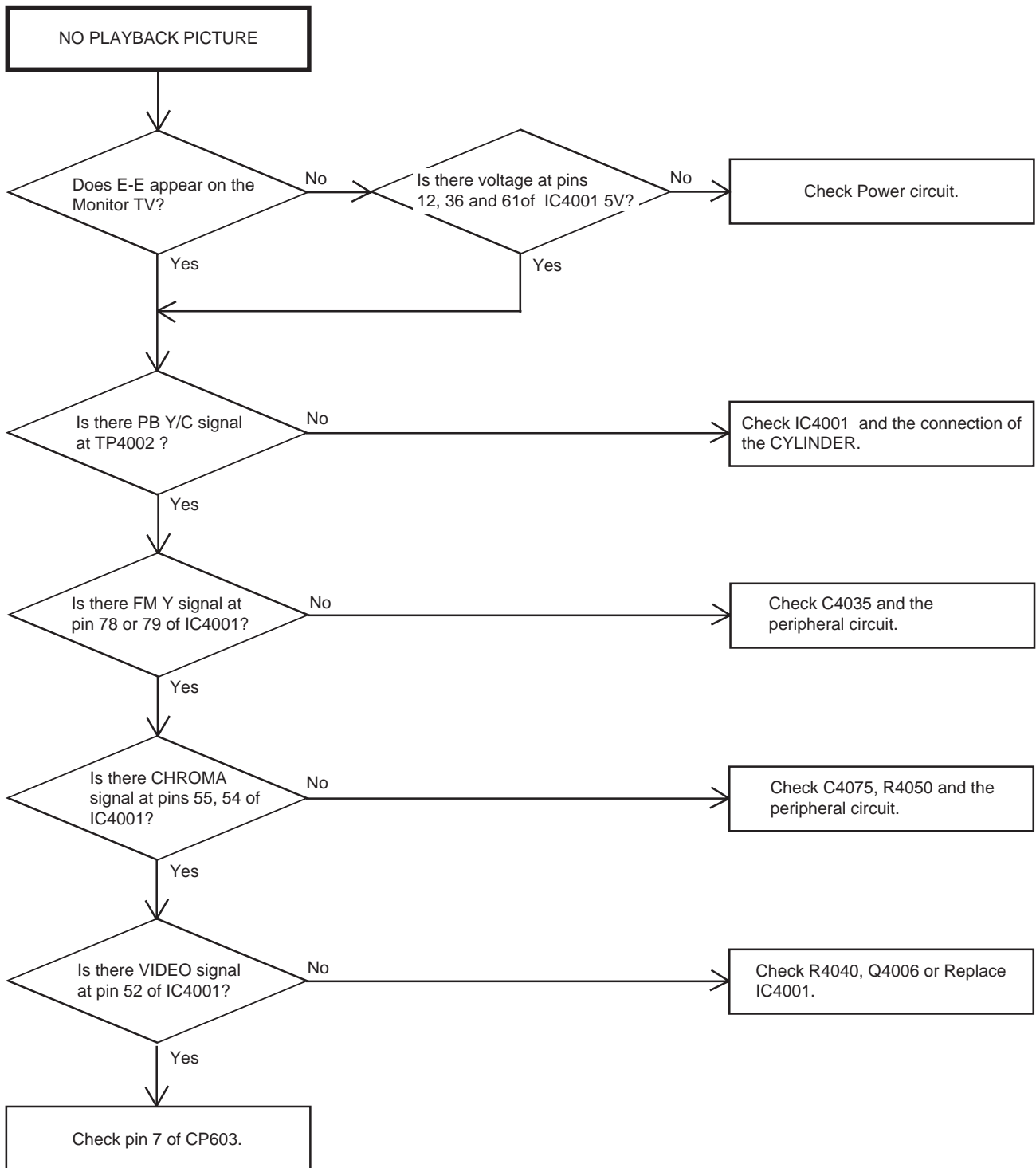


# TROUBLESHOOTING GUIDE

## (VCR SECTION)

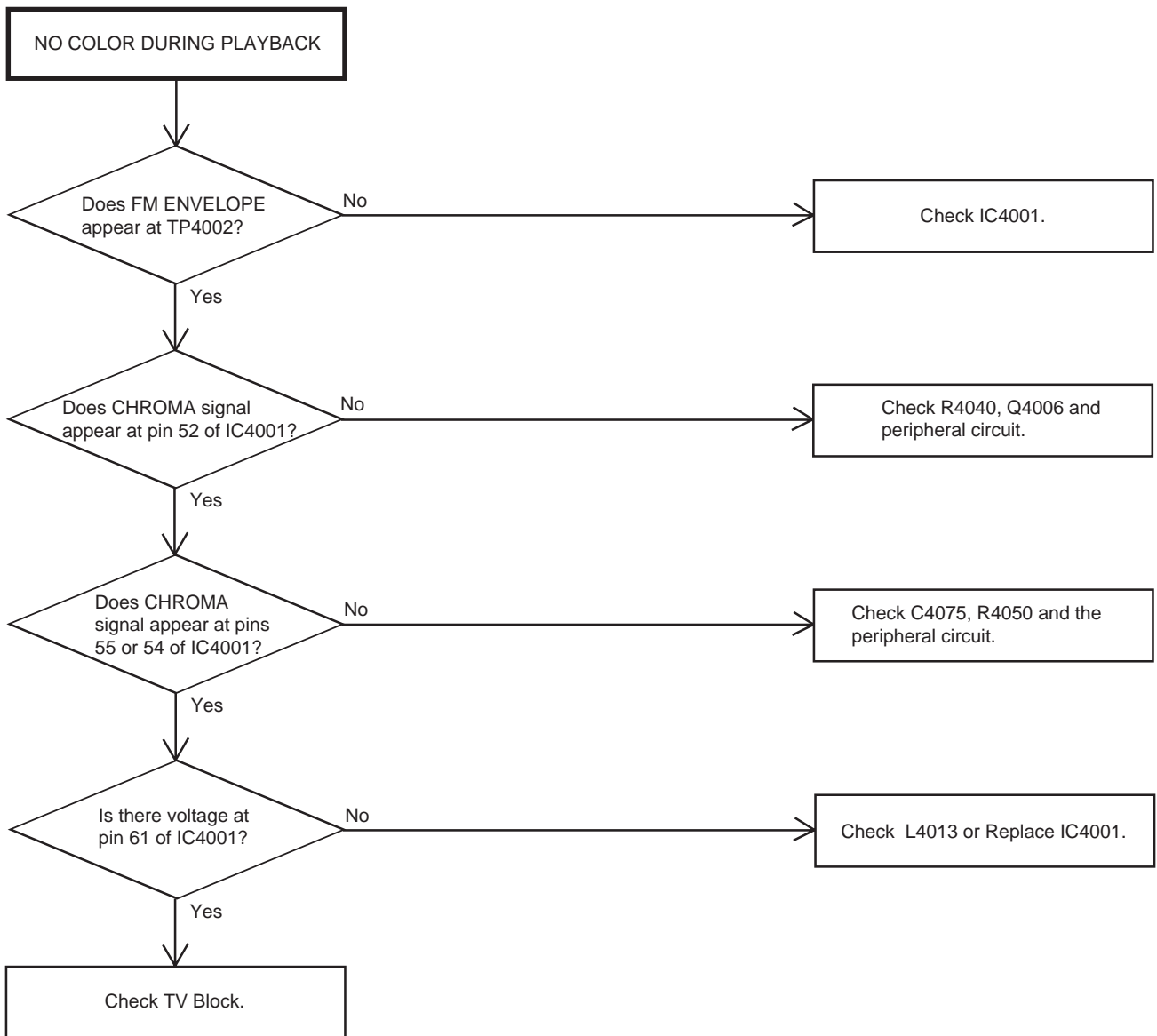


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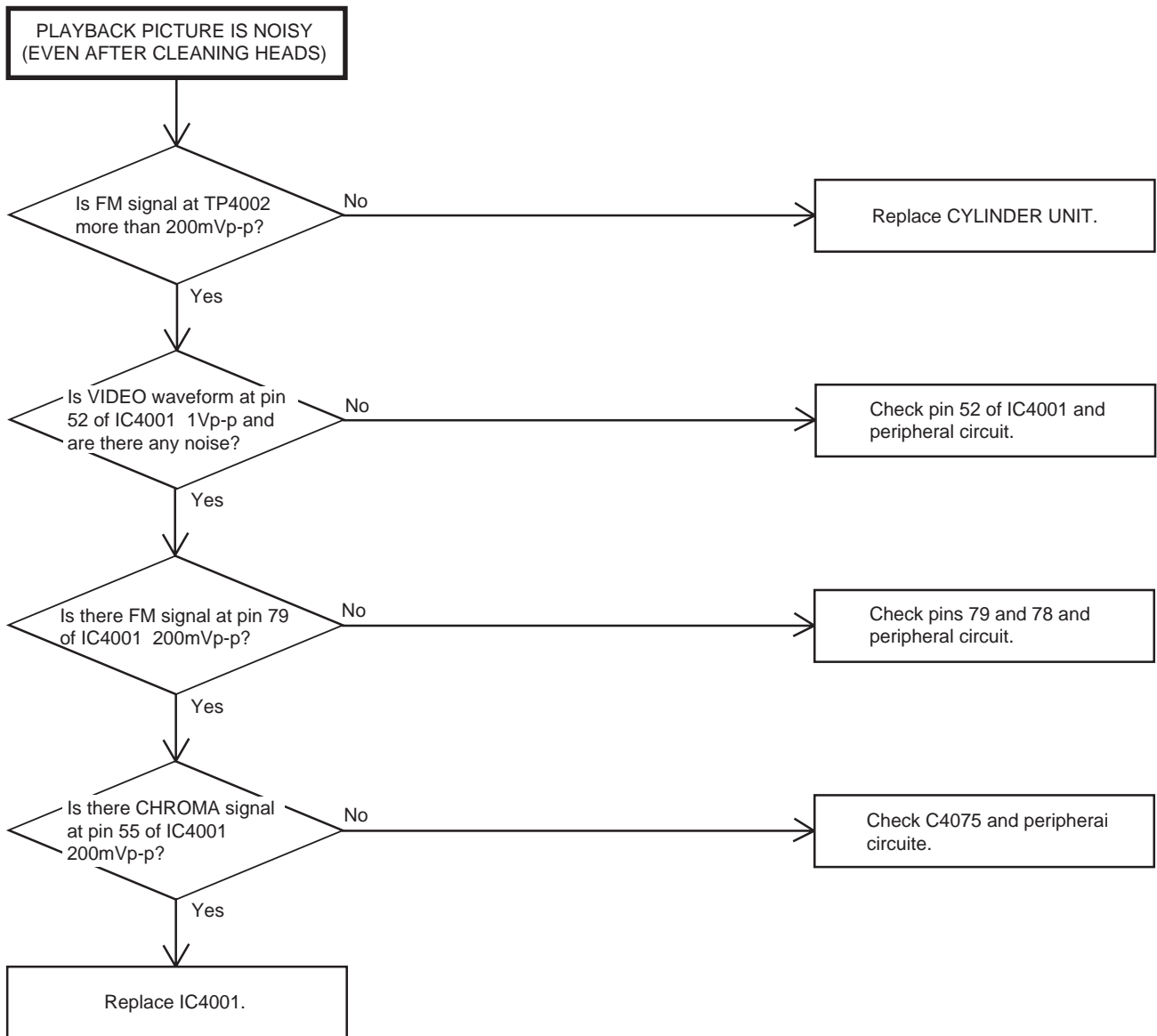




# TROUBLESHOOTING GUIDE



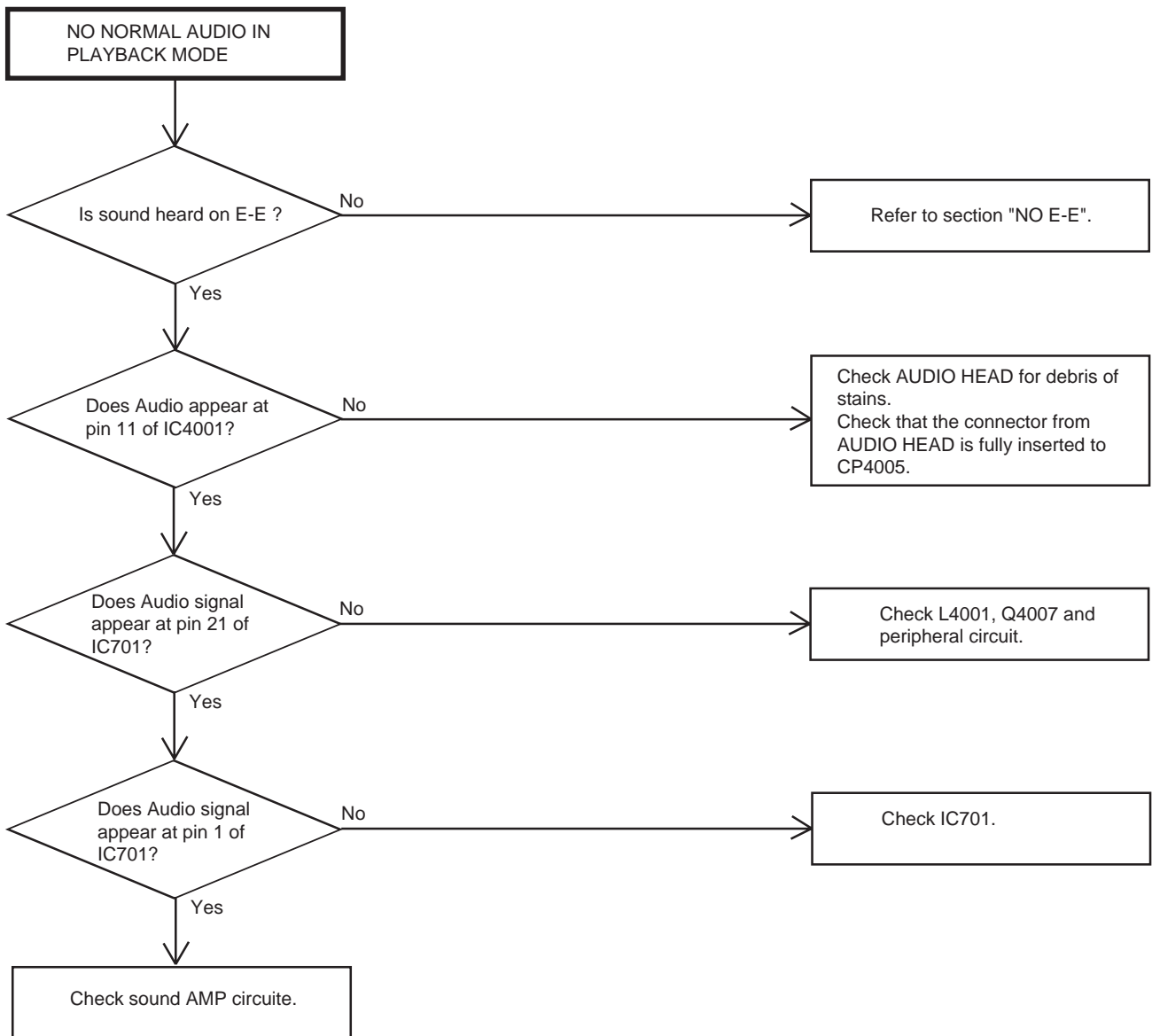
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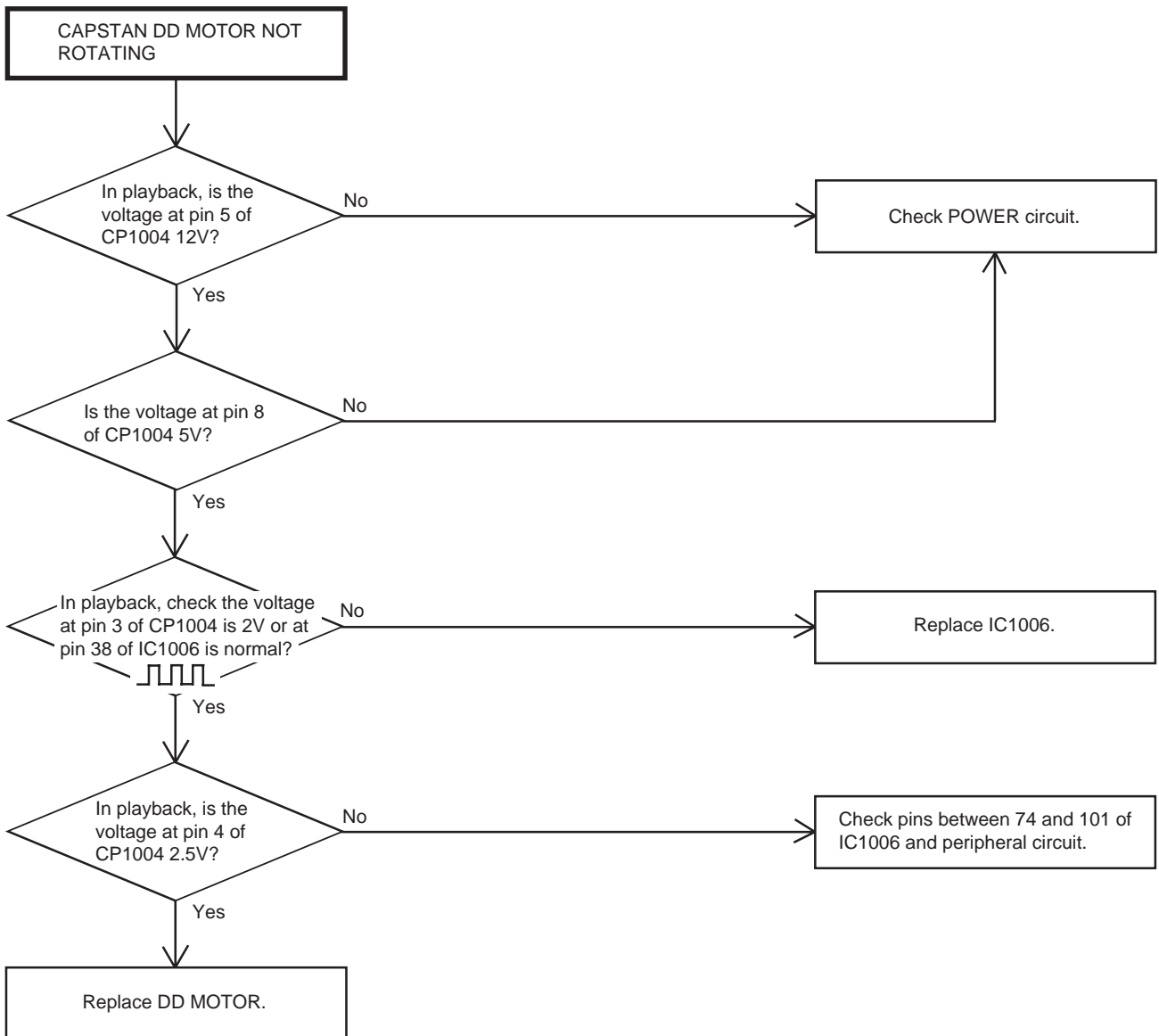
## TROUBLESHOOTING GUIDE



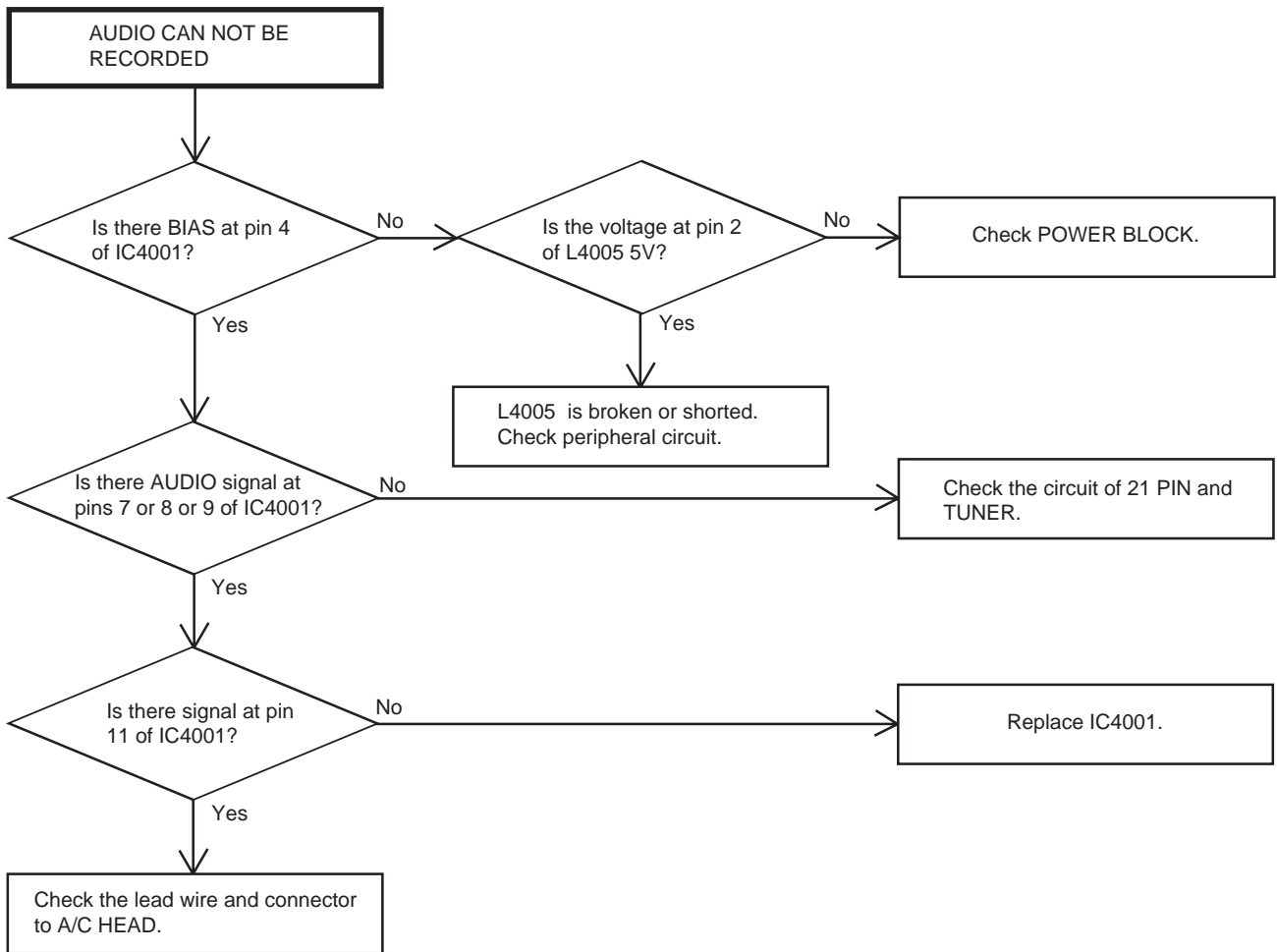
## TROUBLESHOOTING GUIDE



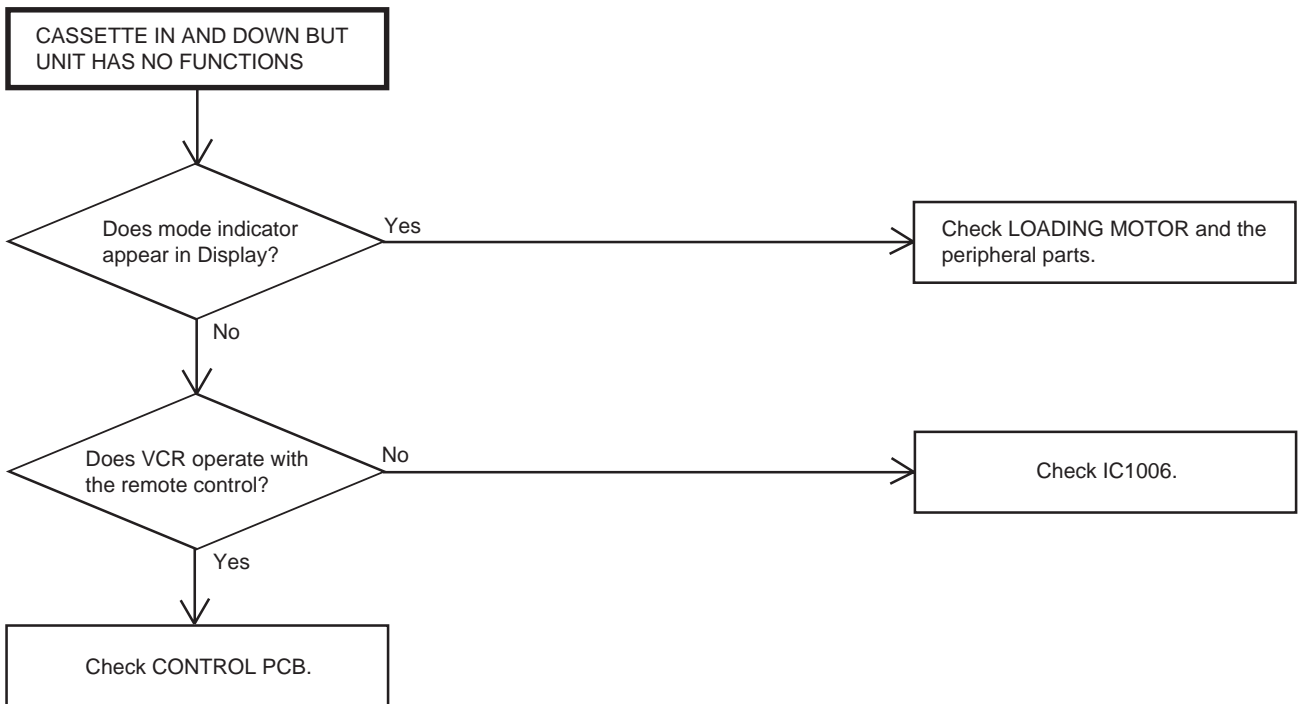
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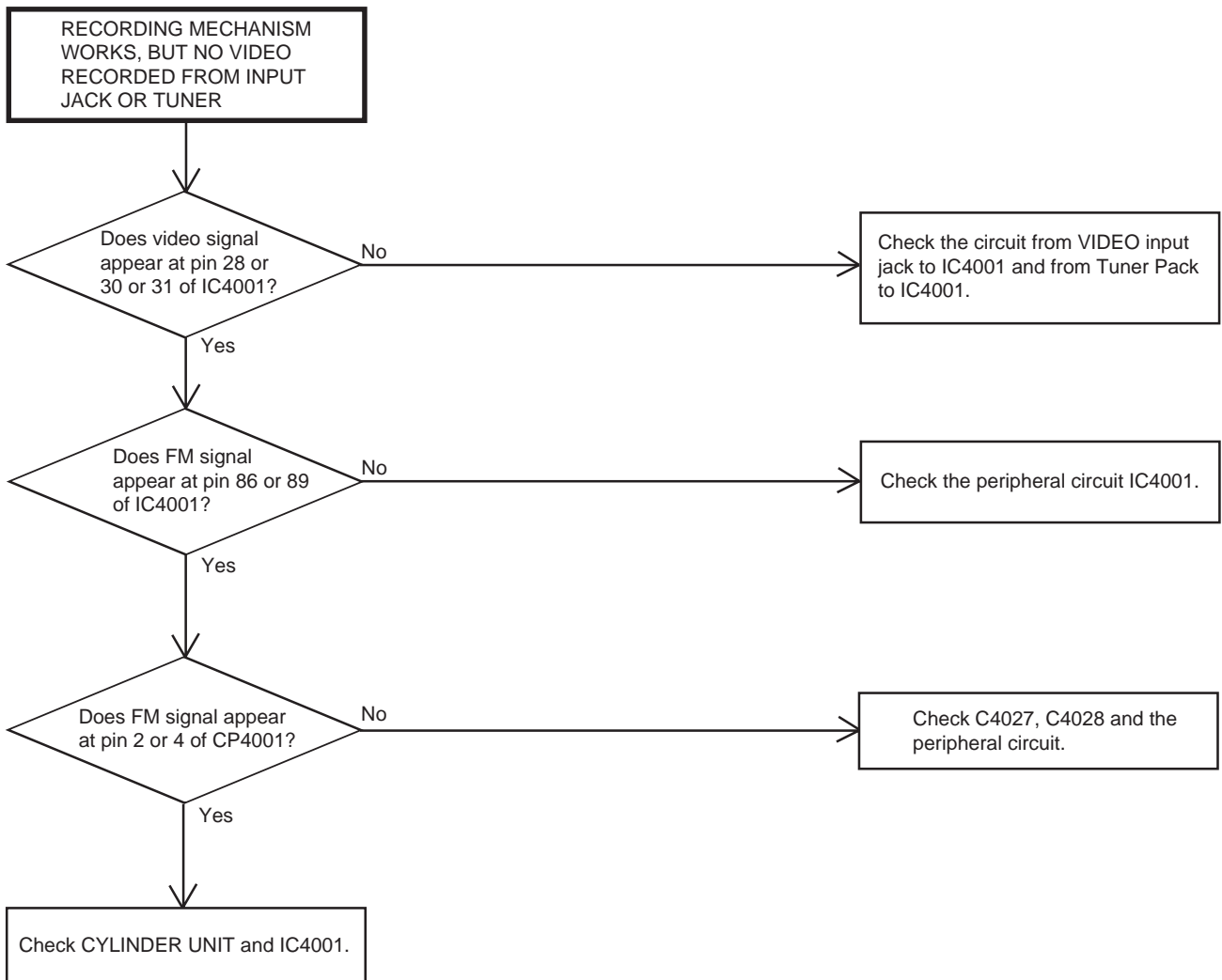
# TROUBLESHOOTING GUIDE



## TROUBLESHOOTING GUIDE

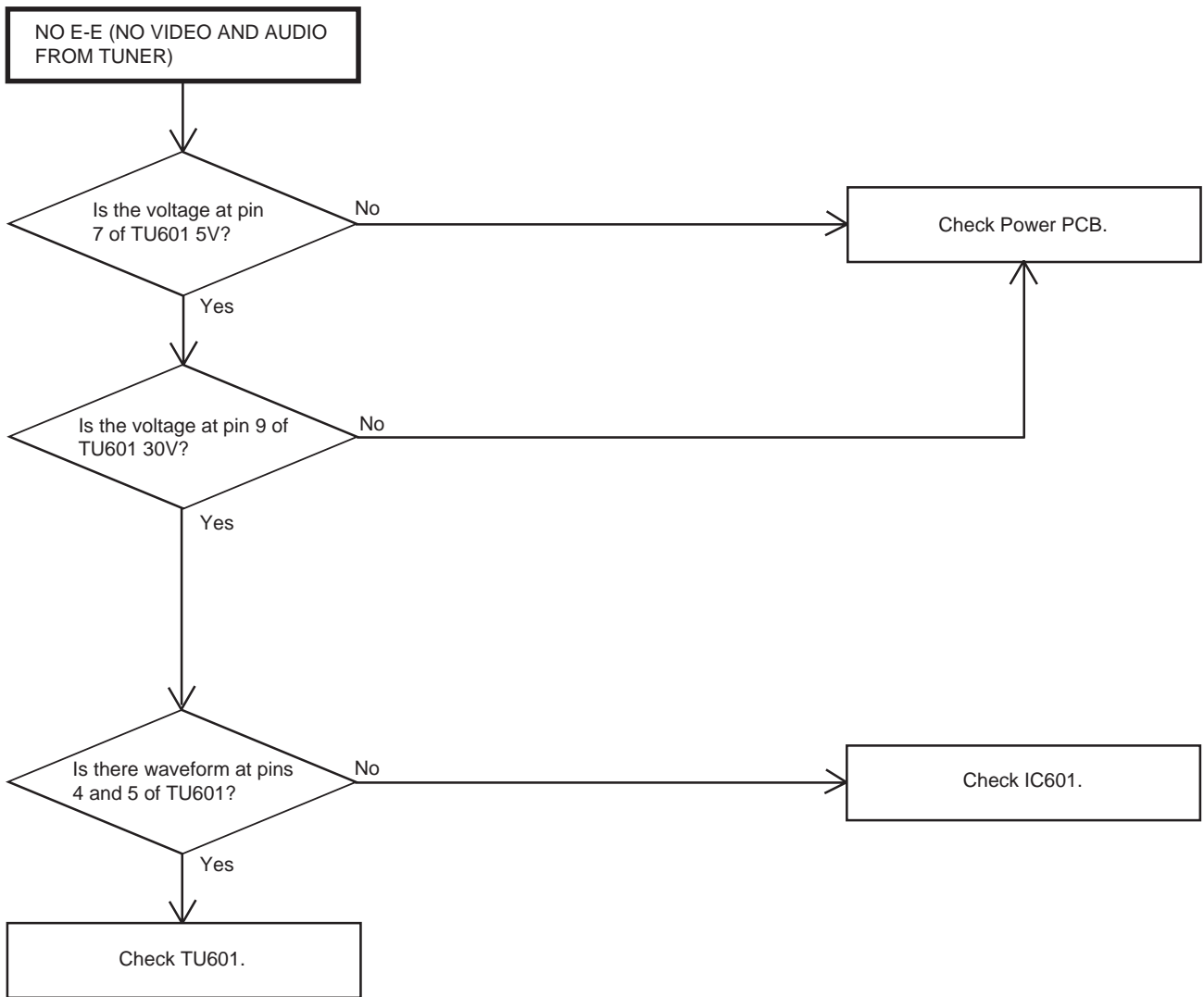


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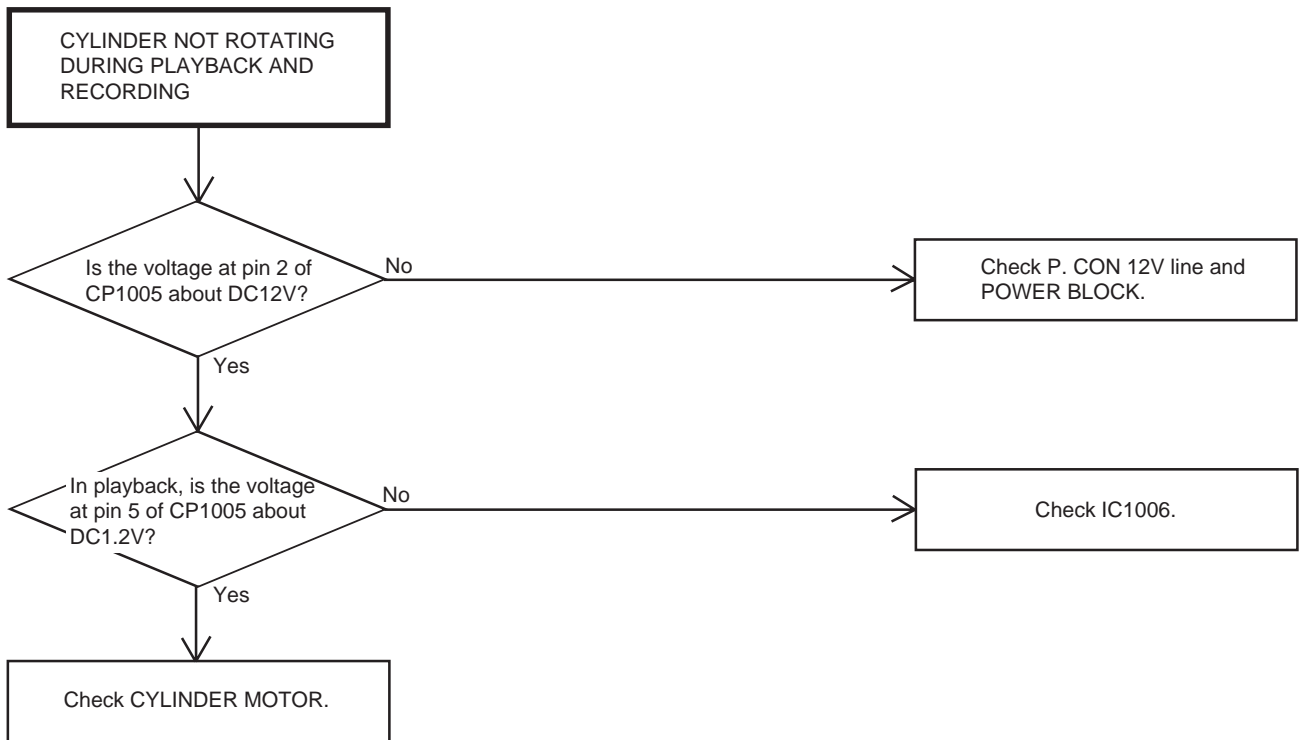




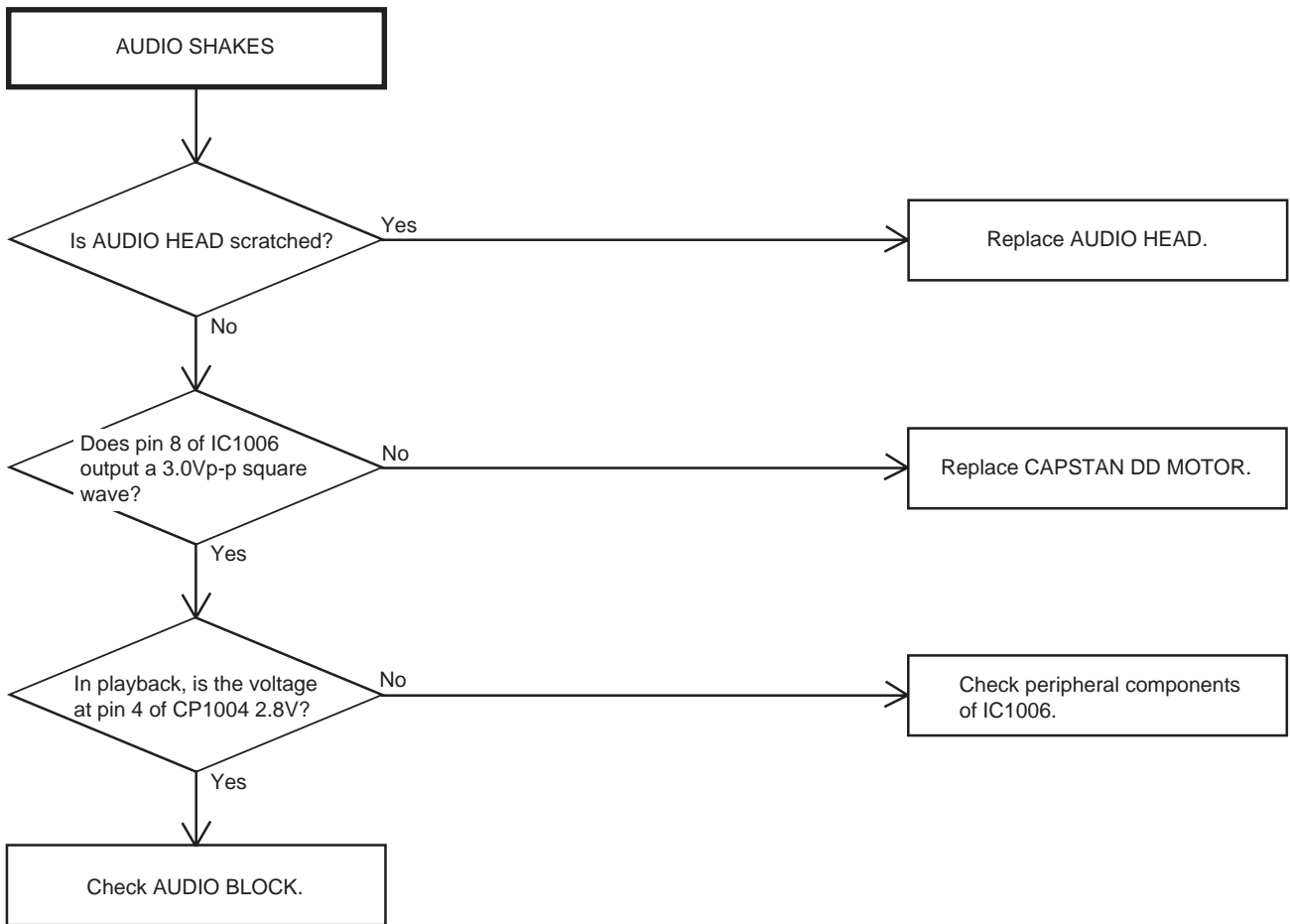
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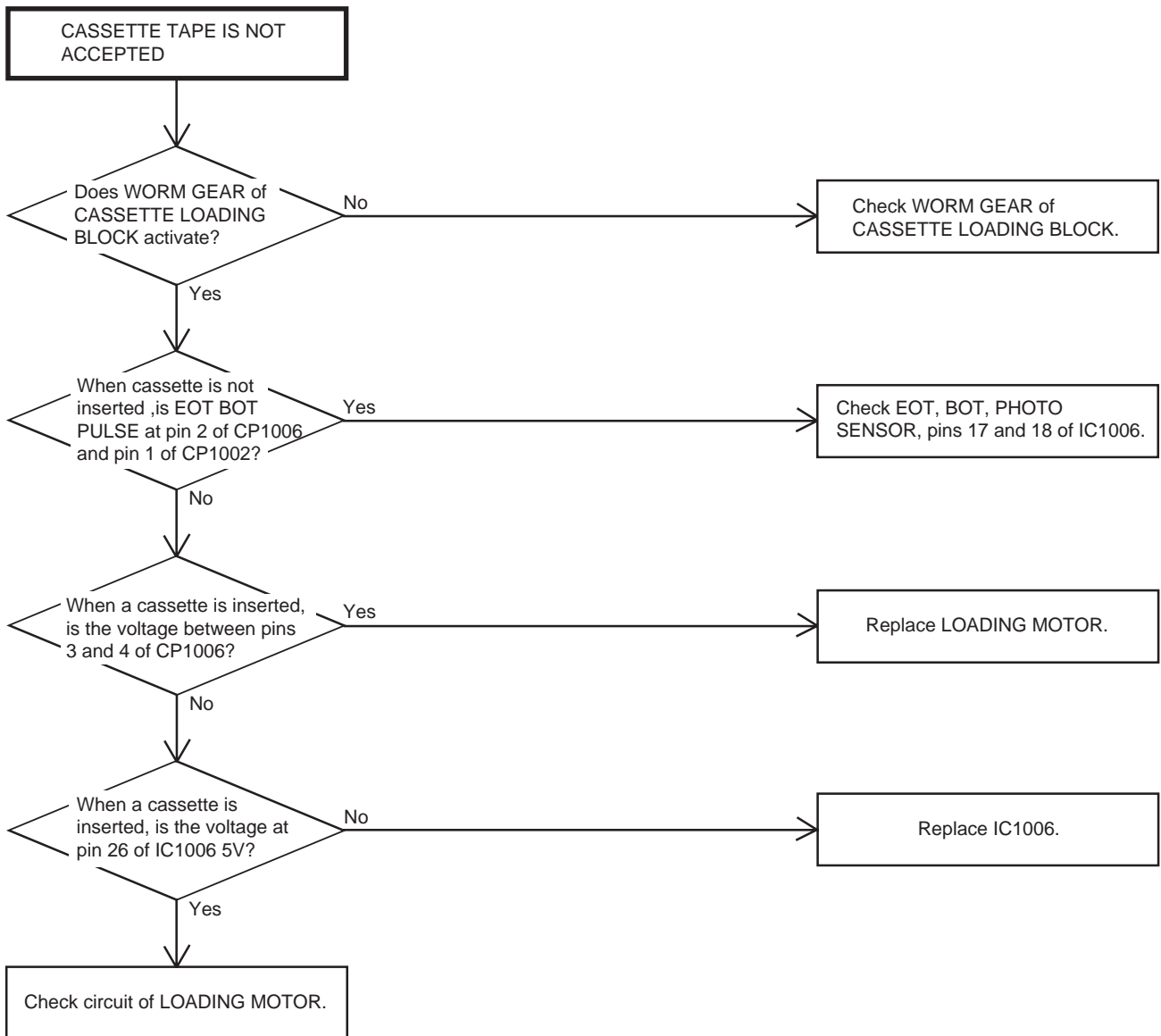
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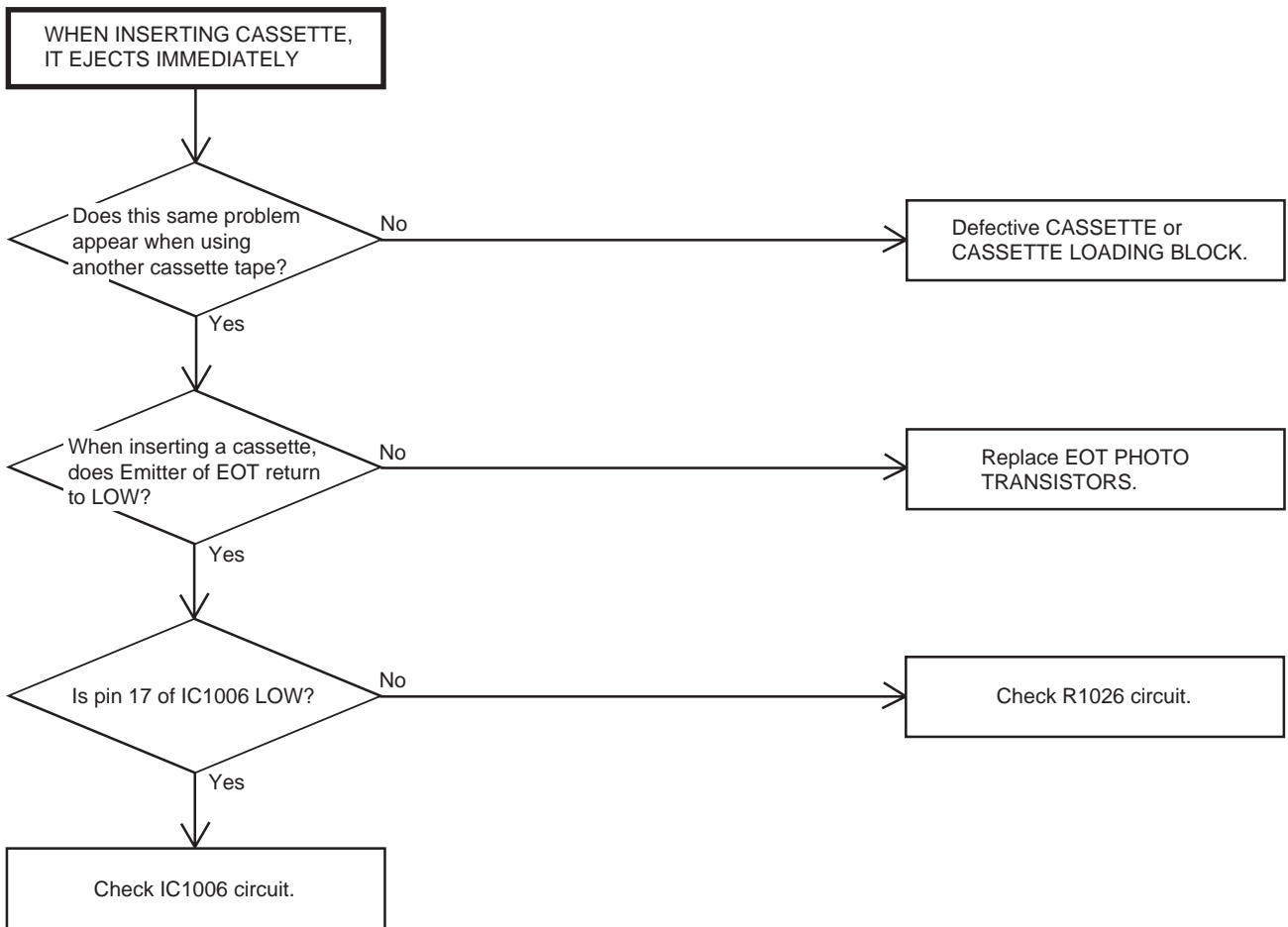
## TROUBLESHOOTING GUIDE



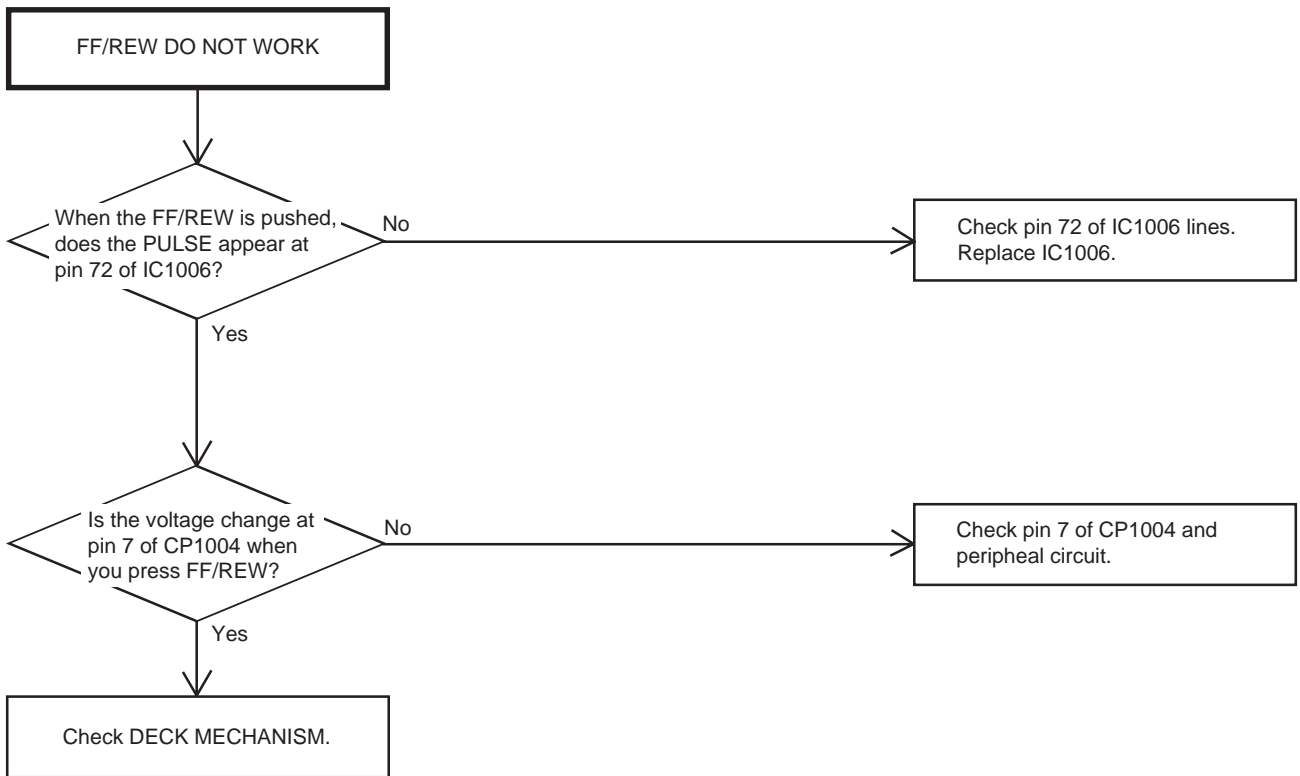
## TROUBLESHOOTING GUIDE



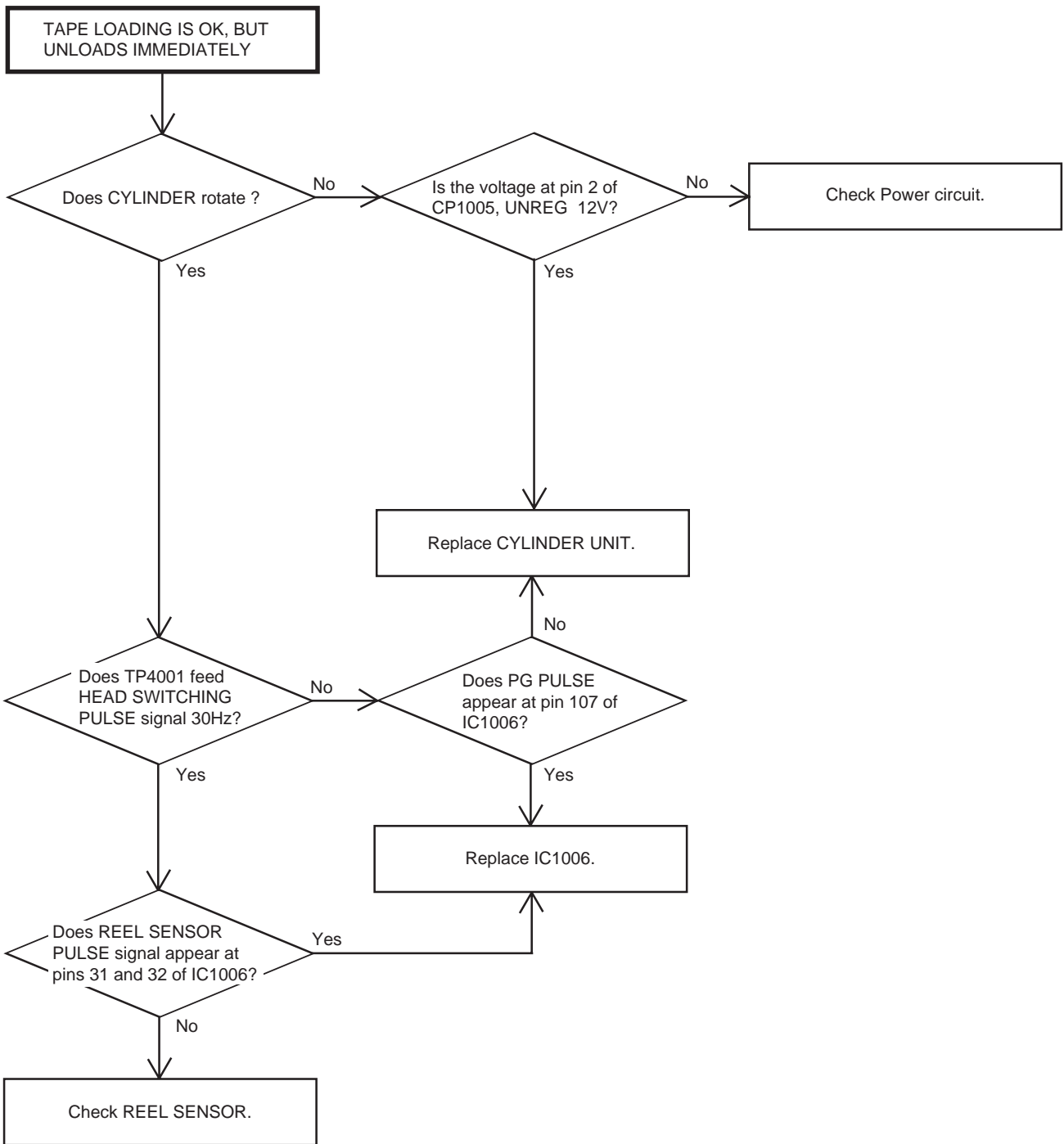
## TROUBLESHOOTING GUIDE



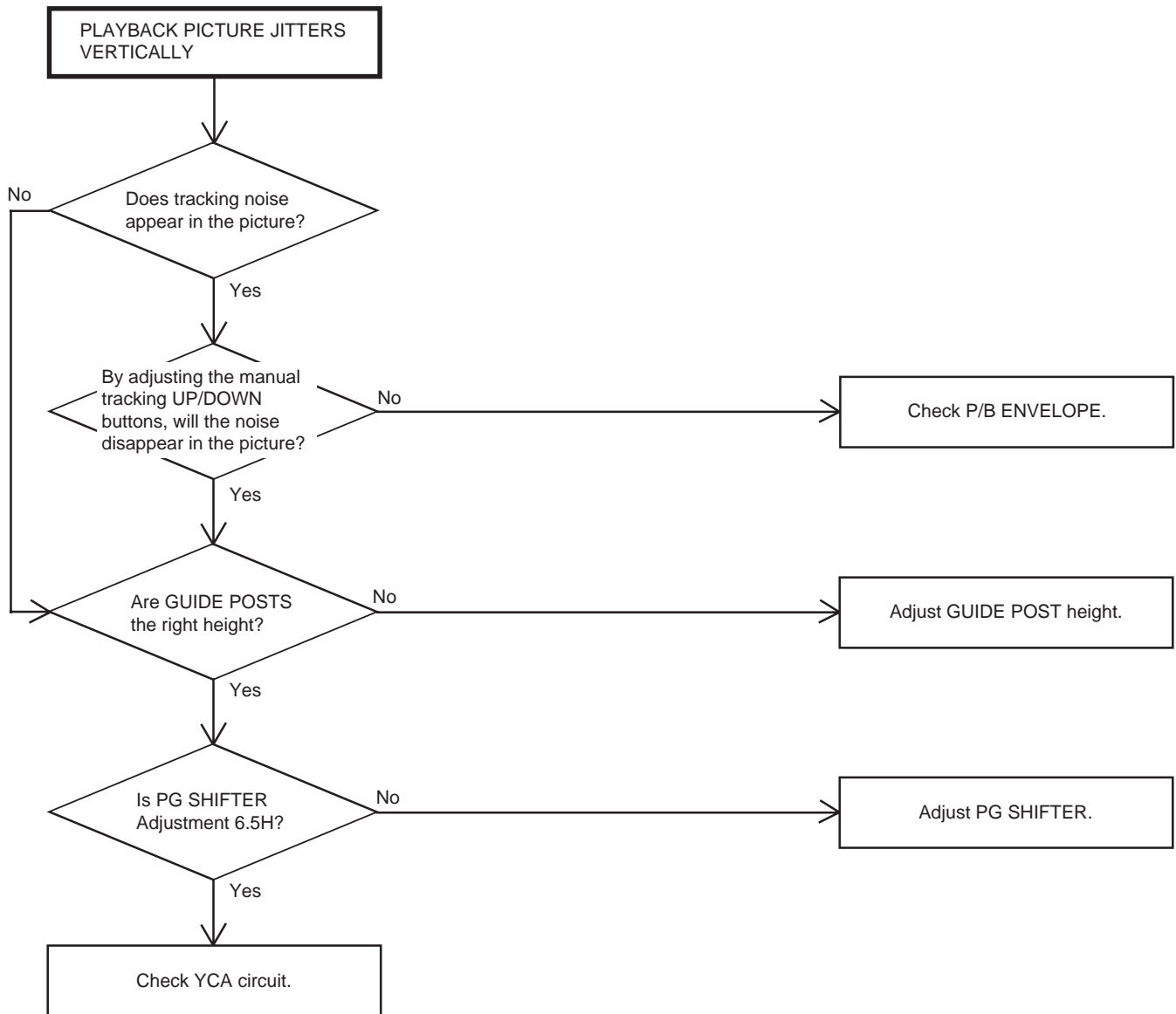
## TROUBLESHOOTING GUIDE



# TROUBLESHOOTING GUIDE

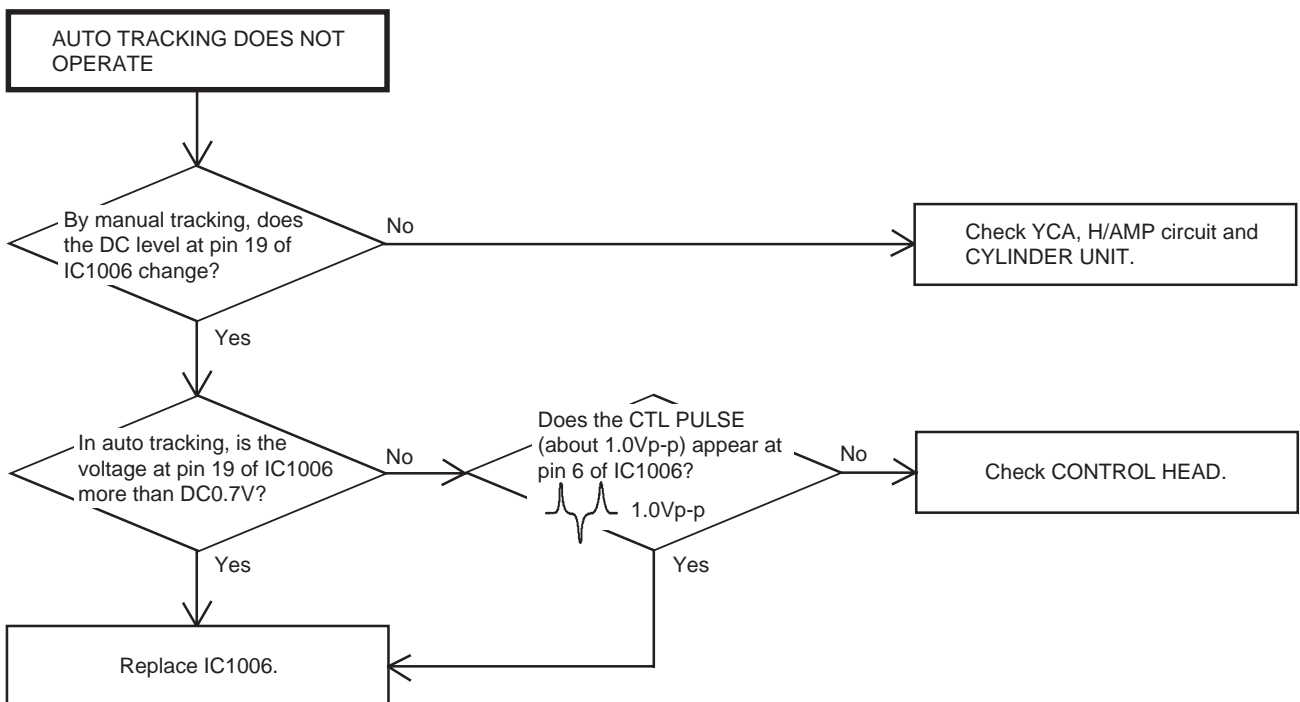
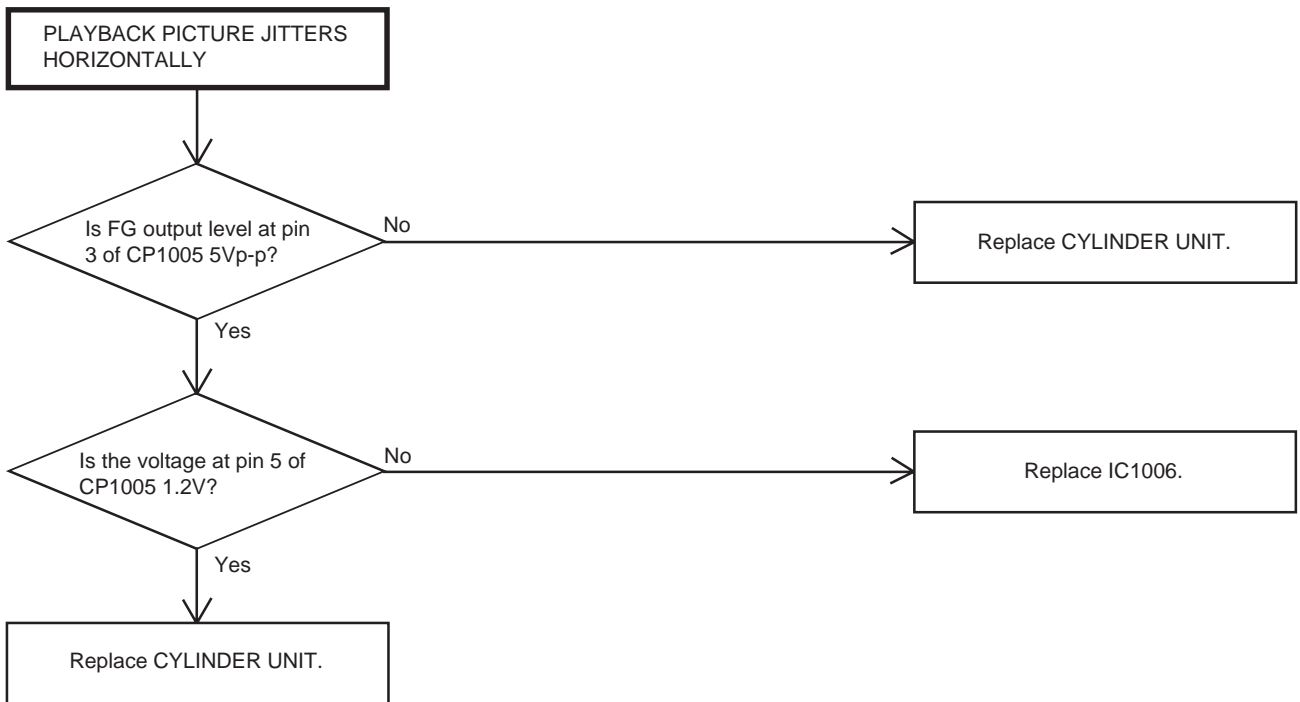


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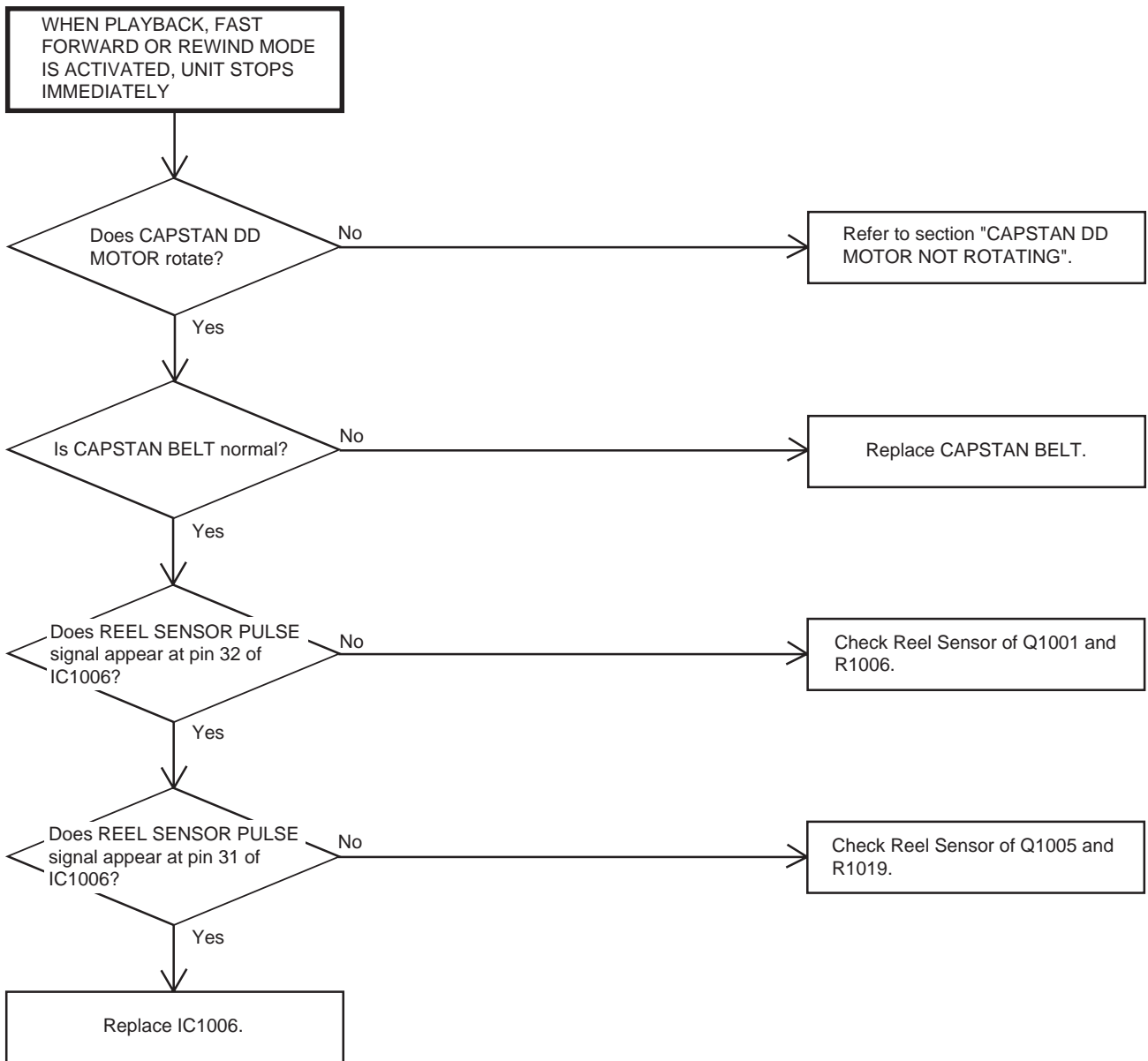




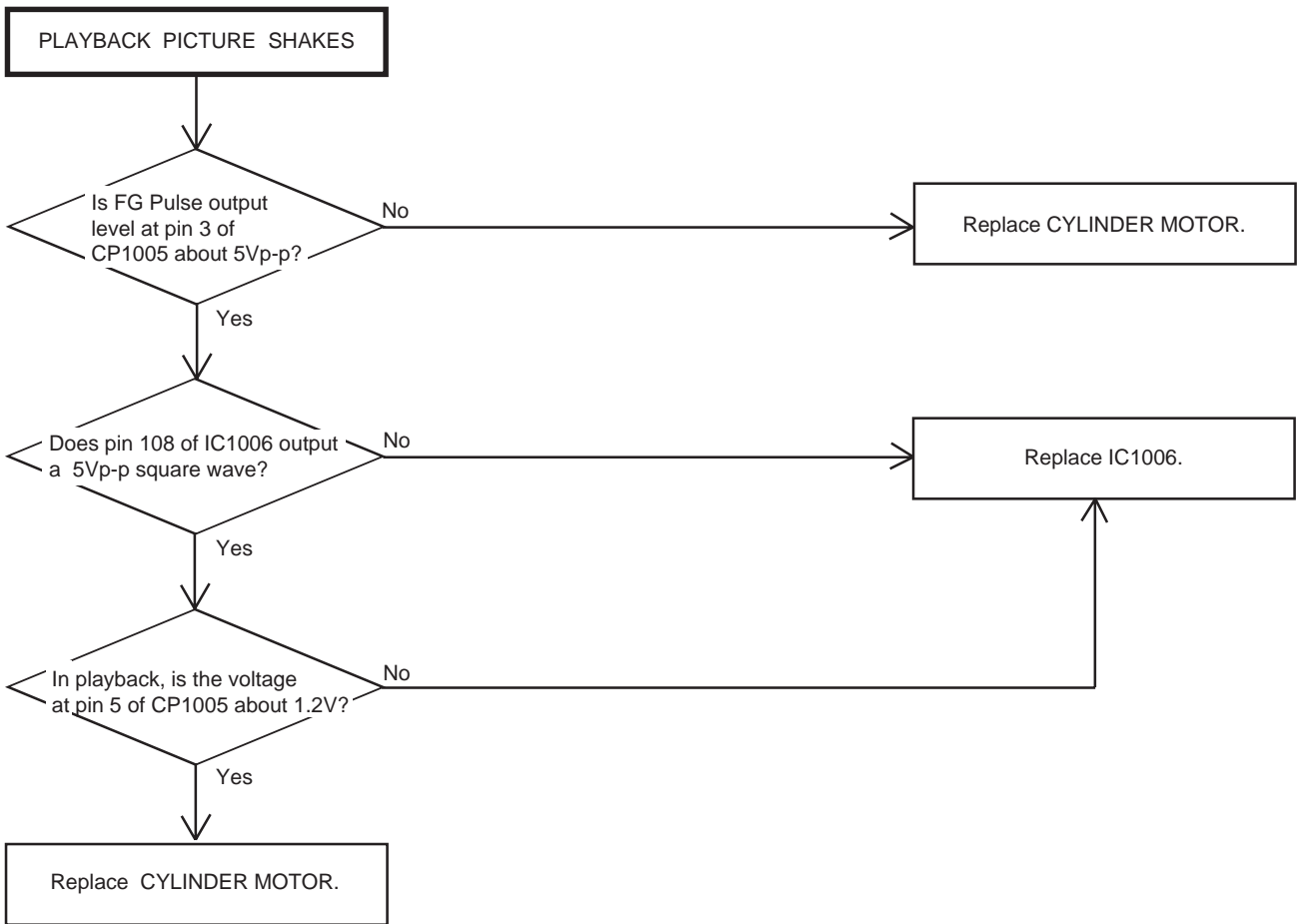
# TROUBLESHOOTING GUIDE



# TROUBLESHOOTING GUIDE



# TROUBLESHOOTING GUIDE



## IC DESCRIPTIONS

OEC0085B (IC1006)

No.	PORT	PIN NAME	I/O	DESCRIPTION
1	CTL(+)	CTL(+)	I/O	Input and output terminal of Control Head.
2	SVSS	SVSS	—	Ground.
3	CTL(-)	CTL(-)	I/O	Input terminal of Control Head.
4	CTLBIAS	CTLBIAS	IN	Input terminal for Control Bias.
5	CTLFB	CTLFB	IN	Input terminal for Control Feedback.
6	CTLAMP(O)	CTLAMP(O)	OUT	Output terminal for Control Amp Output.
7	CTLSMT(I)	CTLSMT(I)	IN	Input terminal for Control SMT Input.
8	CFG	CFG	IN	Input terminal for Capstan FG input.
9	SVCC	SVCC	—	P.CON +5 V.
10	AVCC	AVCC	—	AT +5 V.
11	AN0	Hi-Fi_ENV	IN	Input terminal of HIFI sound envelope signal.
12	AN1	MESECAM-M	IN	Input terminal of MESECAM or NOT.
13	AN2	VIDEO_ENV	IN	Input terminal of Video RF envelope.
14	AN3	MSSSEN_B	IN	Input terminal of mecha state sensor.
15	AN4	MSSSEN_A	IN	
16	AN5	AFT.S.CURVE	IN	AFT S.CURVE input for monitor tuner.
17	AN6	EOT	IN	Tape end sensor input signal.
18	AN7	BOT	IN	Tape start sensor input signal.
19	AN8	TUNER AGC	IN	Input terminal of Electric field strength for Auto setup.
20	AN9	REC AFT.S.CURVE	IN	AFT S.CURVE input for rec tuner.
21	ANA	KEY_A	IN	Main unit key input.
22	ANB	KEY_B	IN	
23	AVSS	AVSS	—	Ground.
24	P50	FF/REW-L	OUT	Not used.
25	P51	LDM_RVS	OUT	Output signal to control the rotation direction of the loading motor.
26	P52	LDM_FWD	OUT	
27	P53	AKB CTL	OUT	Output signal to Adjustment of AKB WHITE.
28	P40	VOLUME PWN	OUT	Output signal to PWM output for volume control.
29	P41	SECAM REC-L	OUT	Input terminal of SECAM or NOT.
30	P42	REC SECAM VI-H	OUT	Saw filter of TUNER_IF for rec tuner.
31	P43	REEL-T	IN	Input terminal of reel sensor TAKE UP.
32	P44	REEL-S	IN	Input terminal of reel sensor SUPPLY.
33	P45	TUNER CTL	OUT	Output terminal of DATA for 2-tuner control.
34	P46	TUNER MUTE-H	OUT	Mute signal of audio mute for tuner.
35	P46	TV POWER_ON-H	OUT	For control of the user TV-power switch ON/OFF.
36	P30	VCR POWER_ON-H	OUT	For control of the user VCR-power switch ON/OFF.
37	P31	VV-H	OUT	Output terminal for select Playback/Recording at the circuit of sound.
38	P32	CAP_LIMIT3	OUT	Switch the maximum out put current of the CAPSTAN Motor
39	P33	IIC OFF	IN	Input terminal to Communications of all the terminals are cut (for Factory adjustment).
40	P34	REC AGC CONT.	IN	Input terminal of AGC adjustment for rec tuner.
41	P35	CENT_LED	OUT	Output terminal for center LED control.
42	P36	CTL_MONITOR	OUT	Output terminal for control Monitor.

## IC DESCRIPTIONS

OEC0085B (IC1006)

No.	PORT	PIN NAME	I/O	DESCRIPTION
43	VSS	VSS	—	Ground.
44	P37	DA RGB SW	OUT	Output signal to cut of RGB sync
45	VCC	VCC	—	AT +5V.
46	SI1	SI1	IN	Input terminal of DATA FZTAT input.
47	SO1	SOD DATA	OUT	Output terminal of DATA FZTAT output.
48	SCK1	DEC TU SW	OUT	Output terminal of DATA for 2-tuner control.
49	SDA	IIC_DATA	OUT	Output Data terminal for I2CBUS communivation.
50	SCL	IIC_CLK	OUT	Output Clock terminal for I2CBUS communivation.
51	SI2	OSD_CE	OUT	Output terminal of signal OSD_IC is CE.
52	SO2	OSD_DATA	OUT	Output terminal of OSD DATA.
53	SCK2	OSD_CLK	OUT	Output terminal of OSD Clock data.
54	P10	POWER_FAIL	IN	Input for AC power.
55	P11	NO SYNC IN	IN	Input terminal for Judgement of the presence of broadcast.
56	P12	P12	IN	AT +5 V.
57	P13	P13	IN	
58	P14	P14	IN	
59	/IRQ5	-	—	Not used.
60	/IC	REMOCON IN	IN	Receive the remote control signal input.
61	P17	32KHz_MONITOR	OUT	Output terminal for xtal Monitor.
62	FEW	FEW	IN	Input terminal of FZTAT signal( L: low signal input).
63	/NMI	/NMI	—	AT +5 V.
64	X2	X2	OUT	Subclock pluse (32.768KHz).
65	X1	X1	IN	Subclock pluse (32.768KHz).
66	/RES	/RES	IN	RESET will be done when the voltage goes to HIGH after the restart signal.
67	OSC1	OSC1	IN	Connect the main crystal (10MHz).
68	VSS	VSS	—	Ground.
69	OSC2	OSC2	OUT	Connect the main crystal (10MHz).
70	VCC	VCC	—	AT +5 V.
71	MD0	MD0	IN	Input terminal of FZTAT signal.
72	P60	CAP_FWD-L	OUT	Capstan forward and backward command.
73	P61	MO MESECAM-H	IN	Input terminal of MESECAM or NOT for monitor tuner
74	P62	CAP_FULL	OUT	Output the HIGH during the acceleration force of Capstan Motor at SLOW mode.
75	P63	CYL_SPEED_UP	OUT	Output terminal for correct cylinder during SLOW.
76	P64	SECAM-L	OUT	Output signal of SECAM or NOT.
77	P65	IF MOD	OUT	Output signal of IF for rec tuner.
78	P66	MS_SENS_CTL	OUT	Output terminal to drive sensor control.
79	P67	TAB_SW	IN	Input terminal for judge the tape if it has TAB or not.
80	P70	TEXT RESET	OUT	Output terminal of reset for TEXT_IC.
81	P71	TV MUTE-H	OUT	Mute signal of TV mute.
82	VCC	VCC	—	AT +5 V.
83	P72	MO SECAM VI-H	OUT	Saw filter of TUNER_IF for monitor tuner.
84	VSS	VSS	—	Ground.
85	P73	VCR MUTE-H	OUT	Mute signal of VCR mute.

## IC DESCRIPTIONS

OEC0085B (IC1006)

No.	PORT	PIN NAME	I/O	DESCRIPTION
86	P74	V.REC.START-H	OUT	Output terminal for REC signal when record.
87	P75	PAL/SECAM	IN	Input terminal from secam_chroma_ic for SECAM or NOT
88	P76	AV1	OUT	Output terminal for control AV_SW_IC(TUNER,AV1,AV2)
89	P77	AV2	OUT	
90	P80	OTPB LED	OUT	Output terminal control for OTPB-LED voltage drive.
91	P81	SERVICE	IN	Input terminal for Service Mode.
92	SV1	SV1	OUT	Not used.
93	SV2	SV2	OUT	
94	P84	ON_TIMER LED	OUT	Output terminal control for ON_TIMER-LED voltage drive.
95	P85	PLAY LED	OUT	Output terminal control for PLAY-LED voltage drive.
96	P86	T-REC LED	OUT	Output terminal control for T-REC-LED voltage drive.
97	P87	REC LED	OUT	Output terminal control for REC-LED voltage drive.
98	C.SYNC	C.SYNC	IN	Input terminal for composite C SYNC.
99	AUDIO FF	Hi-Fi_H.SW	OUT	Output terminal of signal HI-FI sound head switching.
100	VIDEO FF	VIDEO_H.SW	OUT	Output terminal of signal Video head switching.
101	CAP PWM	CAP_PWM	OUT	Output terminal for PWM of Capstan Motor.
102	DRUM PWM	DRUM_PWM	OUT	Output terminal for PWM of Drum Motor.
103	C.ROT	-	—	Not used.
104	H.AMP.SW	-	—	
105	COMP	-	—	
106	EXCTL	EXT IN-L	IN	Input terminal for Compulsion outside input.
107	DPG	DPG	IN	Input terminal for DRUM PG signal.
108	DFG	DFG	IN	Input terminal for DRUM FG signal.
109	VCC	VCC	—	AT +5V.
110	VPULSE	DUMMY.V.SYNC	OUT	Output terminal of Video Pluse signal.
111	VSS	VSS	—	Ground.
112	CTLREF	CTLREF	OUT	Output terminal for AMP REFERENCE.

# SERVO TIMING CHART

IC1006 (OEC0085B)

DPG 107 PIN

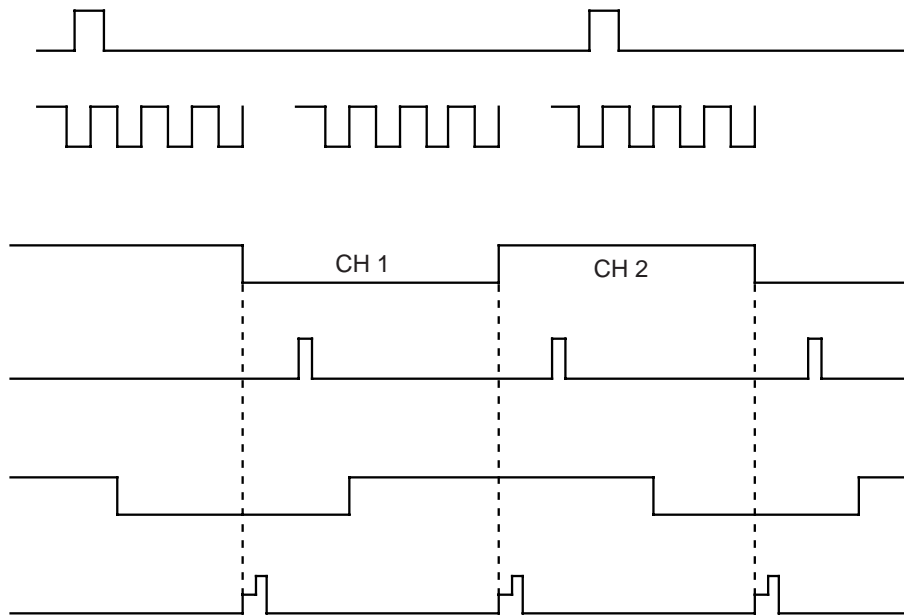
DFG 108 PIN

H. SW. P 100 PIN

V-SYNC (E-E) 98 PIN

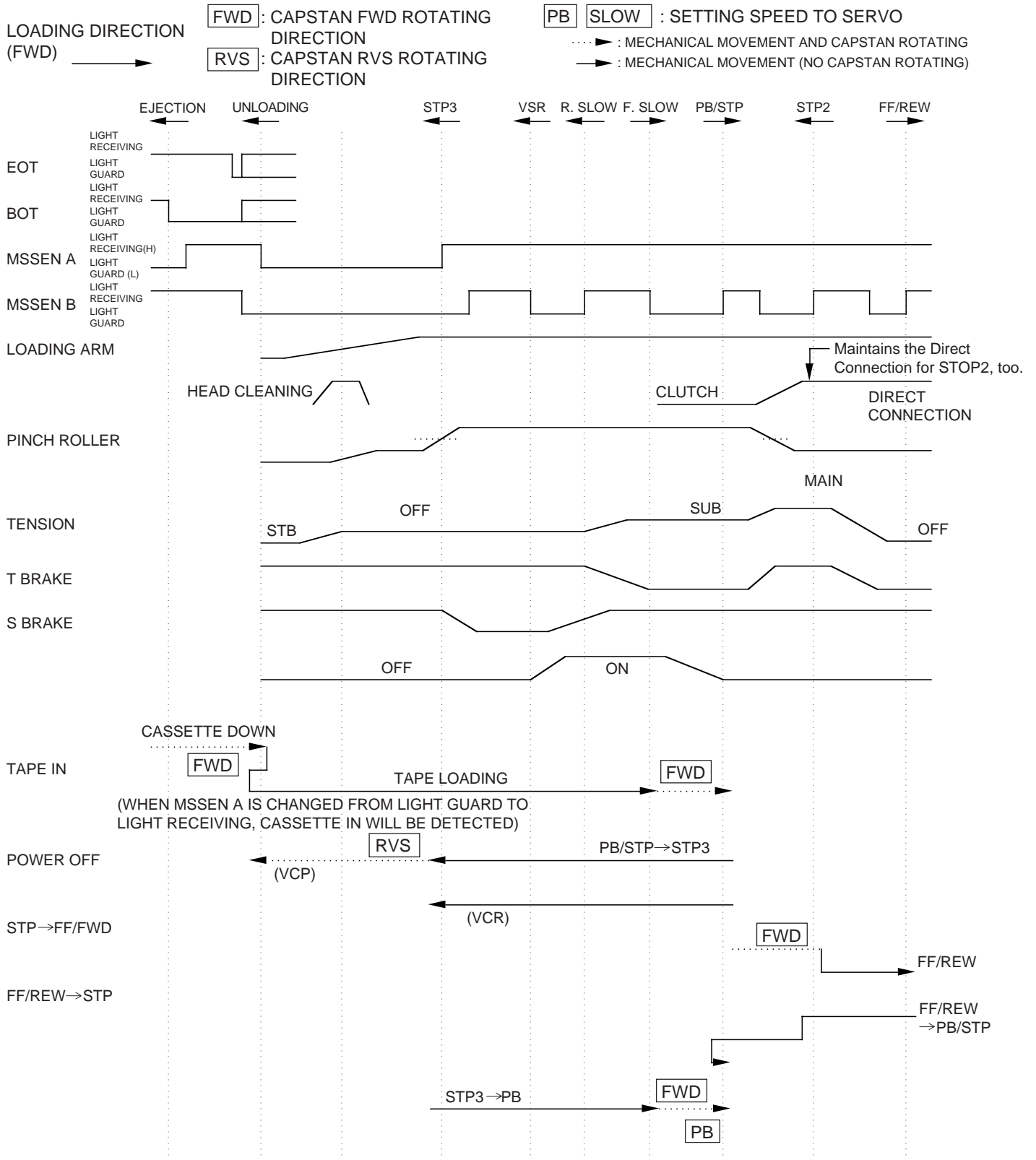
REC CTL (REC)  
6 PIN

V-SYNC (TRICK PB)  
110 PIN



• WAVEFORM CHANGES DEPENDED ON THE TAPE SPEED

# SYSTEM SWITCH MODE



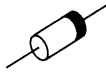


# SEMICONDUCTOR BASE CONNECTIONS

## DIODE



1SS133T-77  
MTZJ12B T-77  
MTZJ13B T-77  
MTZJ33B T-77  
MTZJ5.6B T-77  
MTZJ6.8B T-77  
SB10-03A3



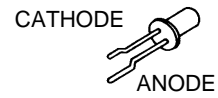
11E1N-TA1B2  
11EQS04N-TA1B2  
11ES1N-TA1B2  
1N4005E-6580-G23  
GP15M-G23  
RD12FB-T7  
RU2YX-V1



10ELS2N-TA1B2  
21DQ09N-TA2B1  
EG-01C  
EG01Z-V0  
RMPG06J-G3  
RU2AM V1

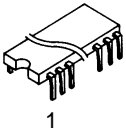


SID1050CM

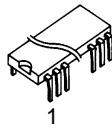


EM-553-F1T  
EQ-552-F1T

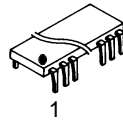
## IC



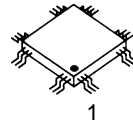
**16PIN**  
TC74HC4053AP  
**22PIN**  
M52472P  
**52PIN**  
NN5099



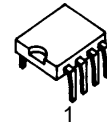
**20PIN**  
ET317  
**28PIN**  
ET106



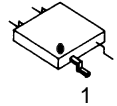
**24PIN**  
LA7567B



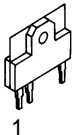
**100PIN**  
HA118217F  
**112PIN**  
OEC0085B



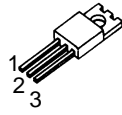
**8PIN**  
S-24C08ADPA-01



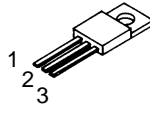
**24PIN**  
LC74772V  
LC74793/JM



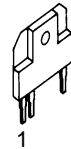
**7PIN**  
LA7840



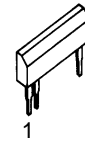
**3PIN**  
NJM7805FD  
NJM7812FA



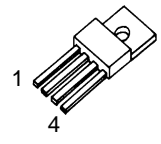
**3PIN**  
KIA7806PI



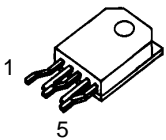
**9PIN**  
AN7523



**8PIN**  
BA6955AN



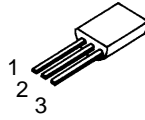
**4PIN**  
PQ09RD08



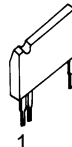
**5PIN**  
STR-F6707



**4PIN**  
ON3171R



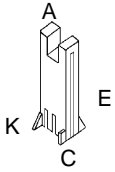
**3PIN**  
RE5VS31A



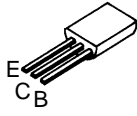
**10PIN**  
BA7604N

# SEMICONDUCTOR BASE CONNECTIONS

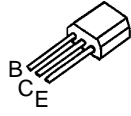
## TRANSISTOR



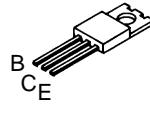
SG-260



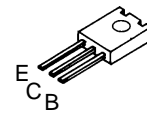
2SA1371(D,E)-AE  
 2SA608KF-NP-AA  
 2SA733(C)-T(P,Q)  
 2SB892(S,T)-AE  
 2SC1815Y(TPE2)  
 2SC2271(D,E)-AE  
 2SC2274-AA  
 2SC2909(S,T)-AA  
 2SC3000-AA  
 2SC945(C)-T(P,Q)  
 2SD734(E,F)-AA



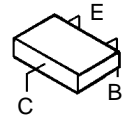
2SA933STP(R,S)  
 DTC114TSTP



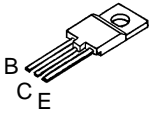
2SC4160-OEC-YAC1



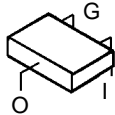
2SC4217(D,E)-RAC



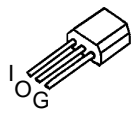
2SA1037AKT146R,S  
 2SC2412KT146 R,S  
 DTC114EKT147



2SD2599



DTA124EKAT146  
 DTC114EKAT146  
 DTC124EKAT146  
 DTC143EKAT146  
 DTC144EKAT146

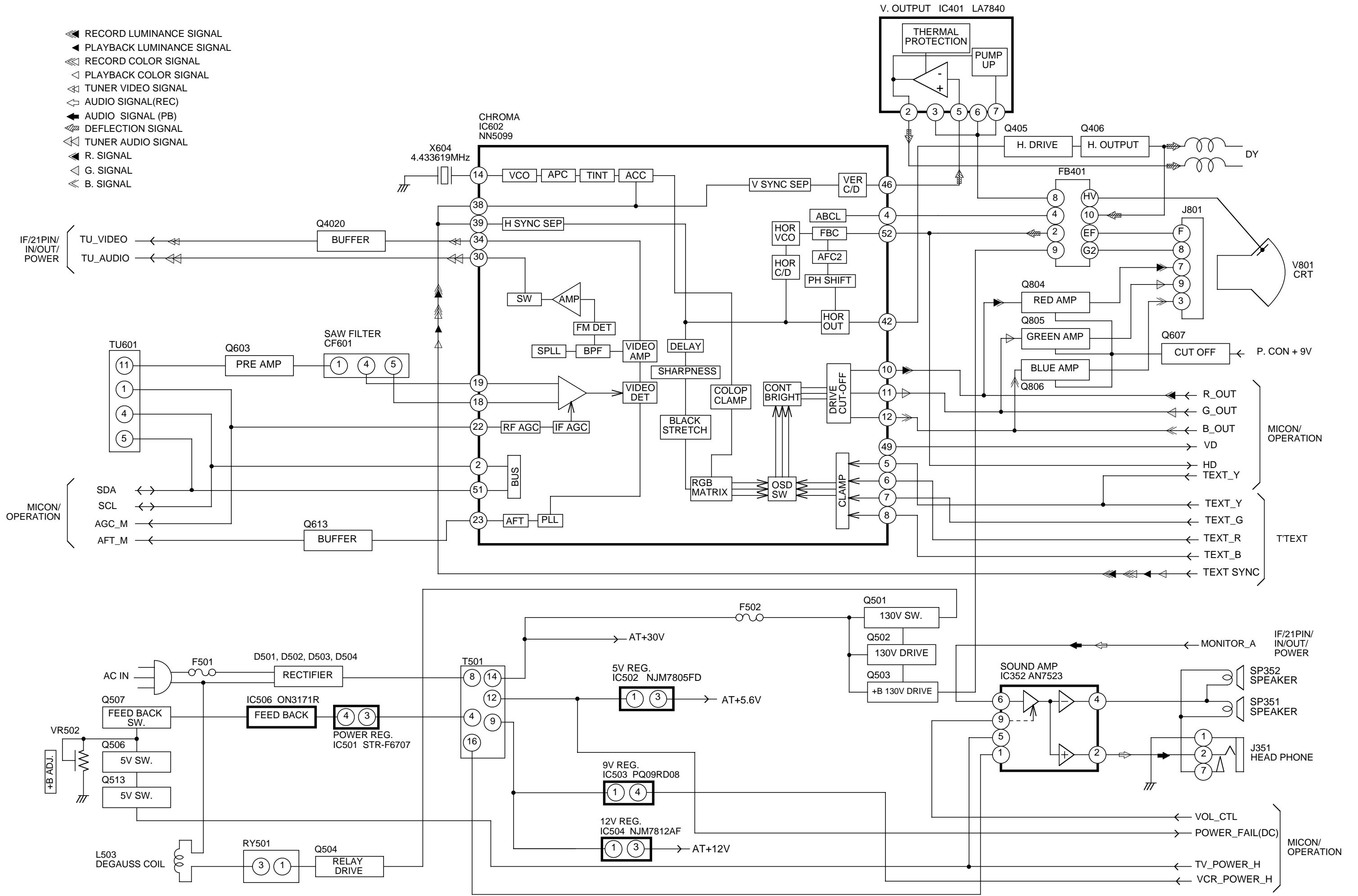


DTC114ESTP

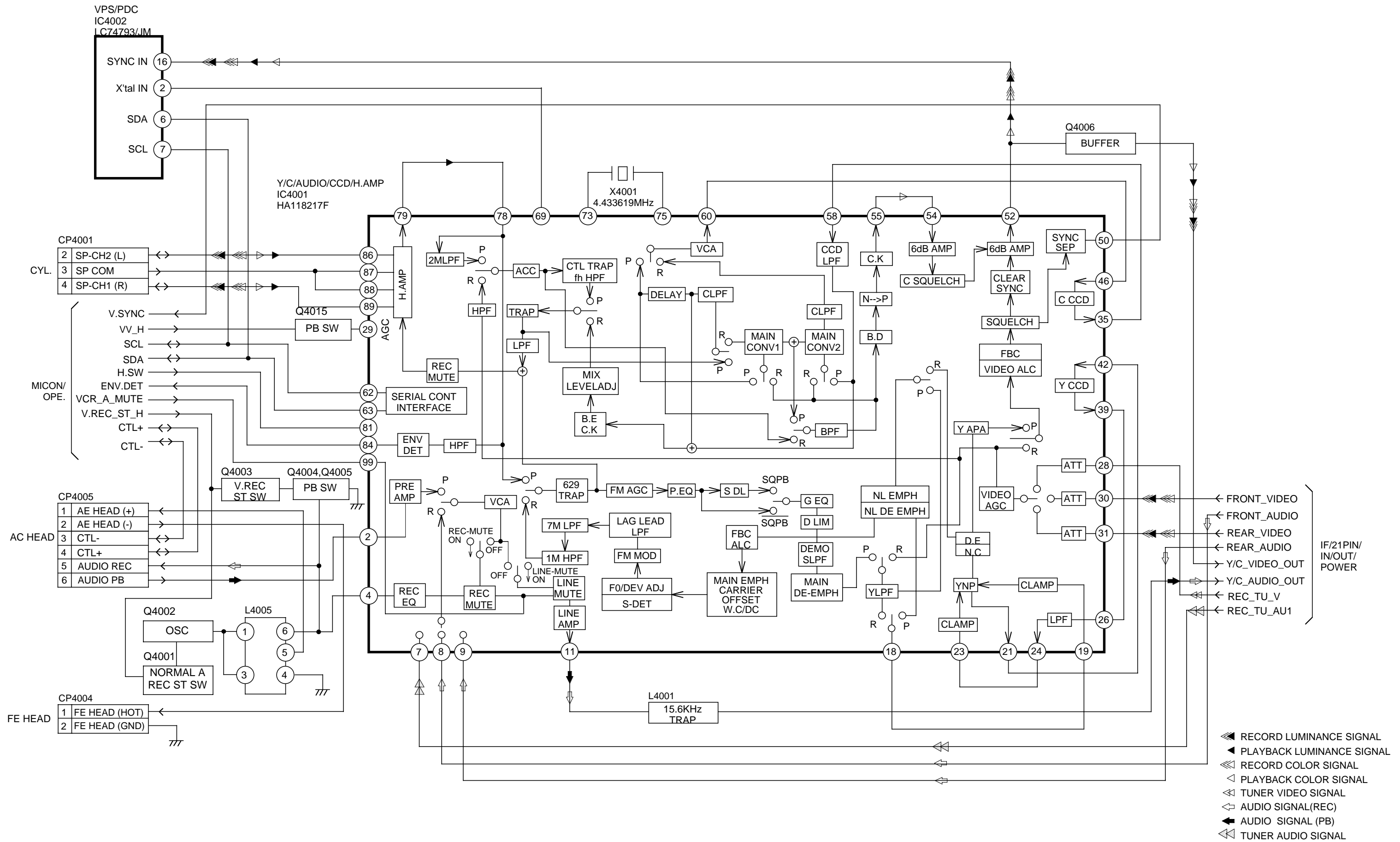


RPI-352Q01R

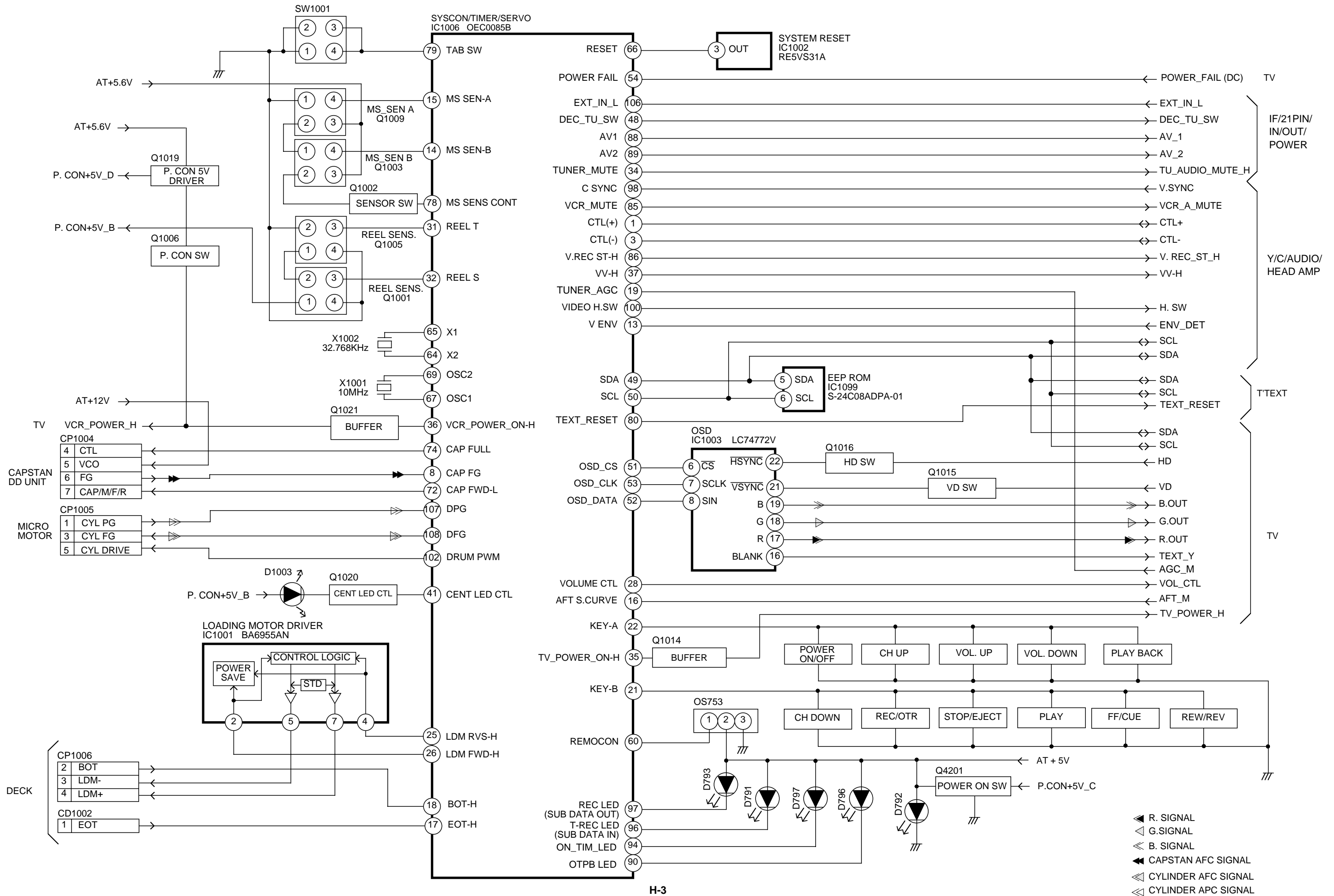
# TV BLOCK DIAGRAM



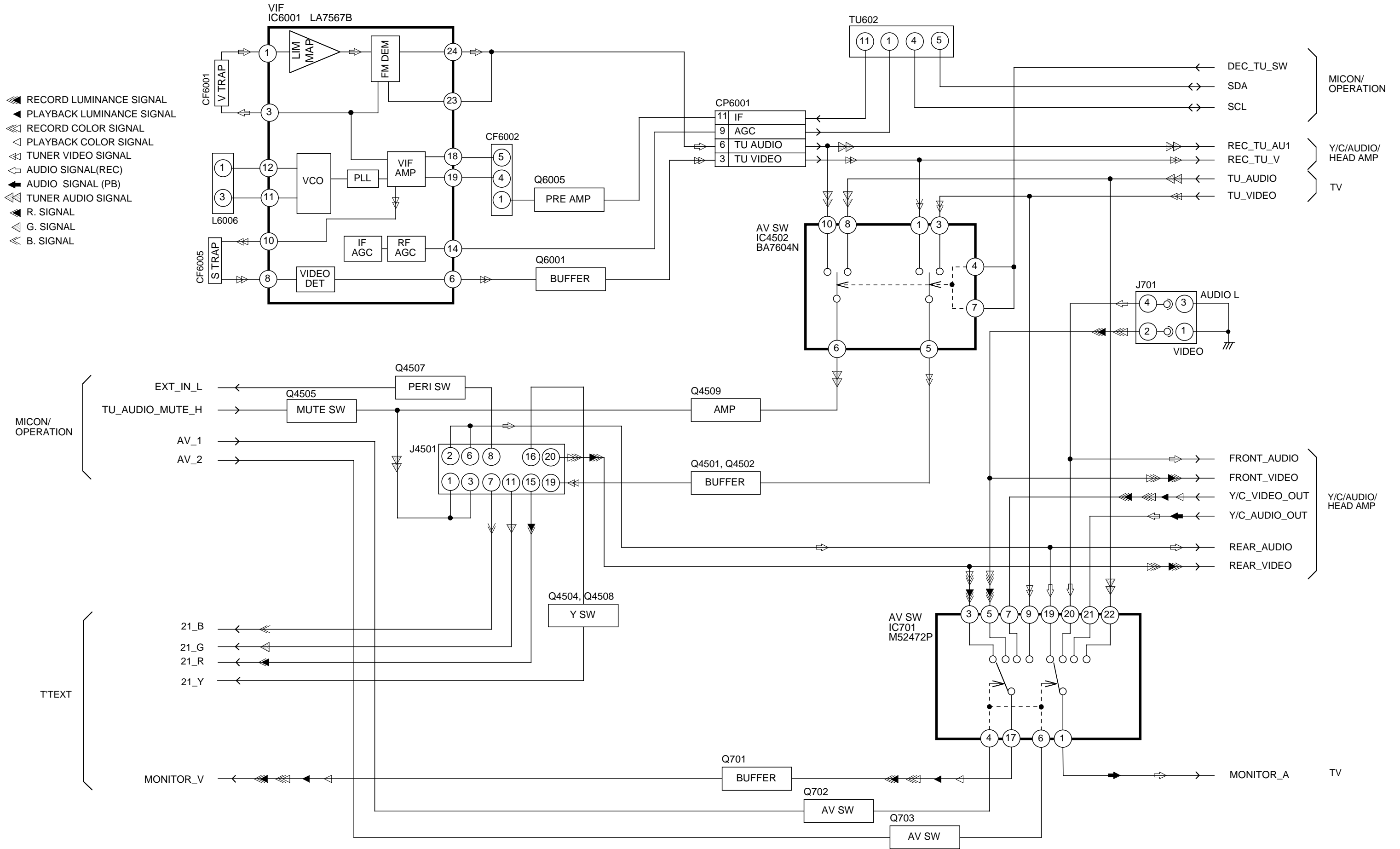
# Y/C/AUDIO/HEAD AMP BLOCK DIAGRAM



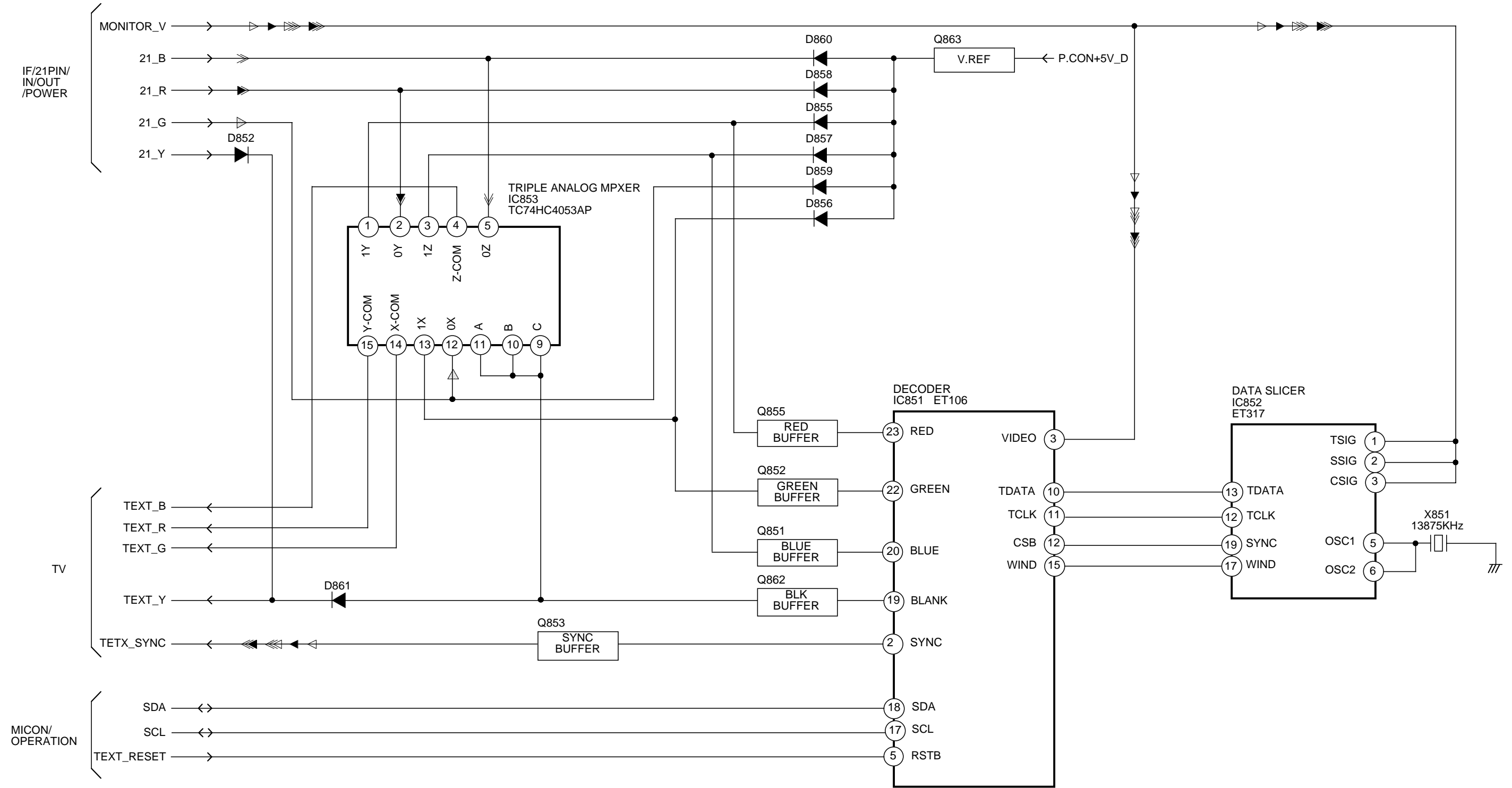
# MICON/OPERATION BLOCK DIAGRAM



# IF/21PIN/IN/OUT/POWER BLOCK DIAGRAM

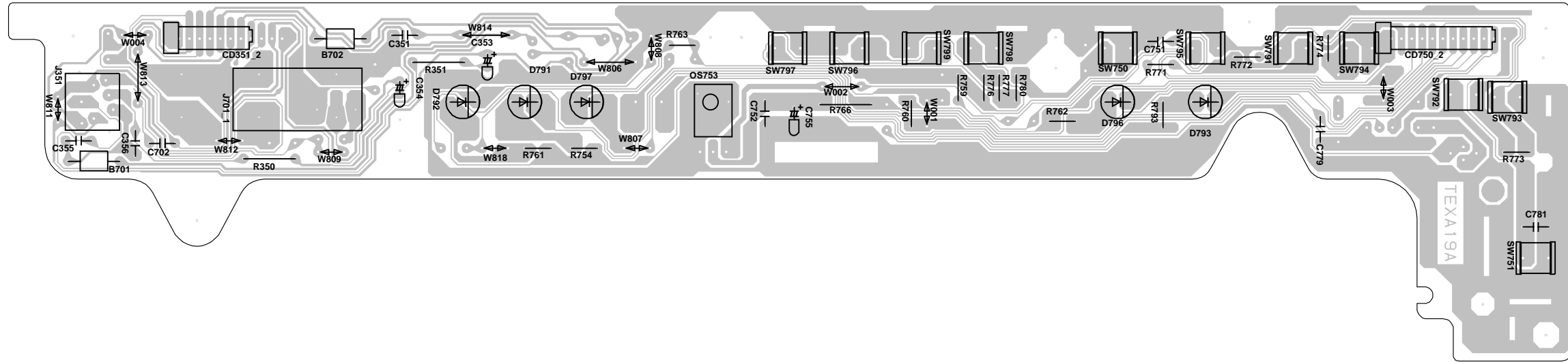


# T'TEXT BLOCK DIAGRAM

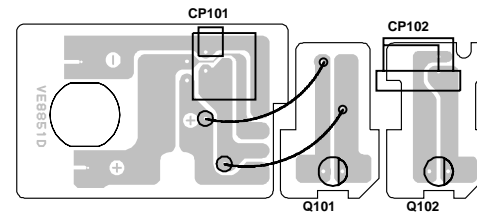


PRINTED CIRCUIT BOARDS

OPERATION

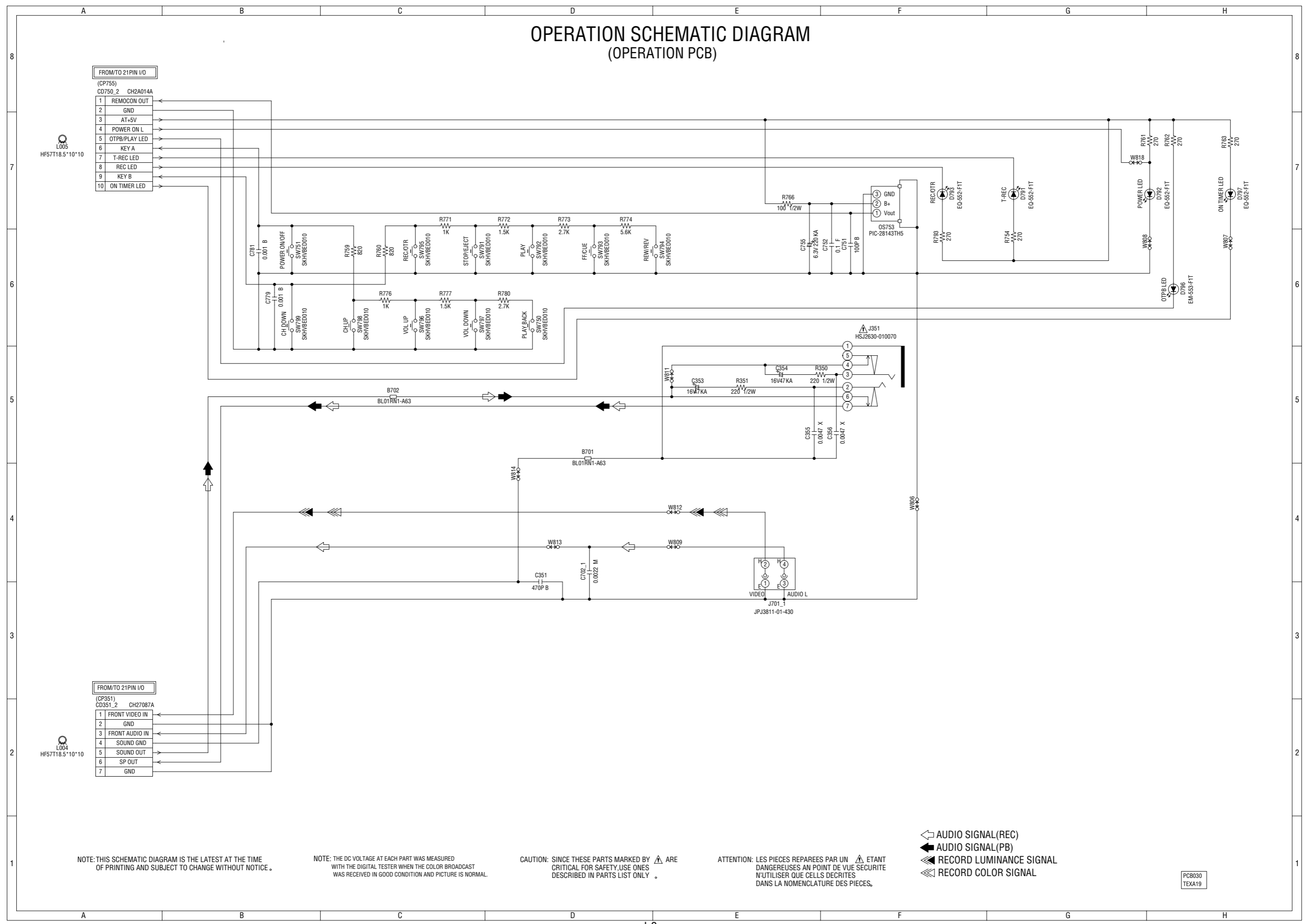


DECK





# OPERATION SCHEMATIC DIAGRAM (OPERATION PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

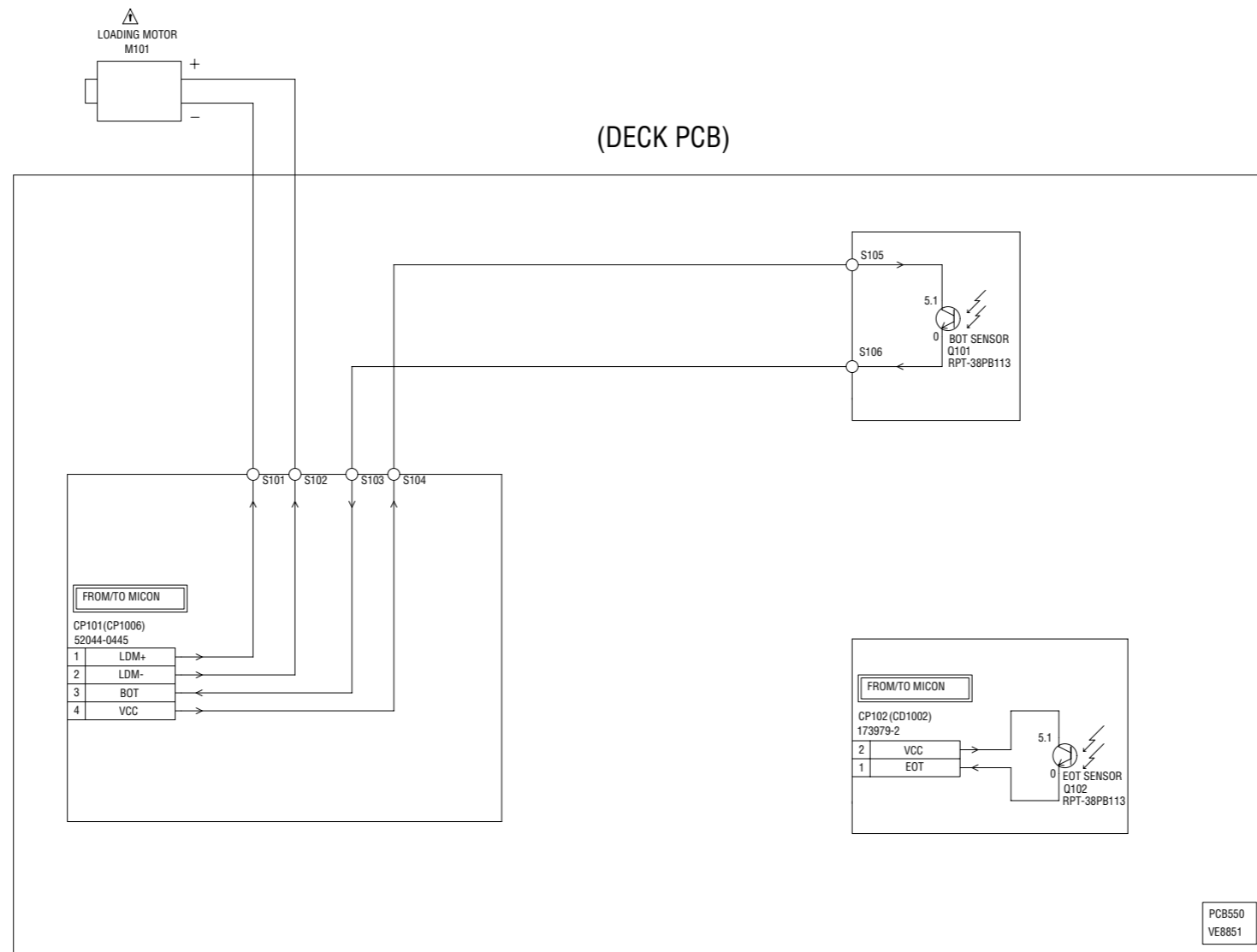
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.


ATTENTION: LES PIECES REPARÉES PAR UN ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.


- AUDIO SIGNAL(REC)
- AUDIO SIGNAL(PB)
- RECORD LUMINANCE SIGNAL
- RECORD COLOR SIGNAL

PCB030  
TEXA19

# DECK SCHEMATIC DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

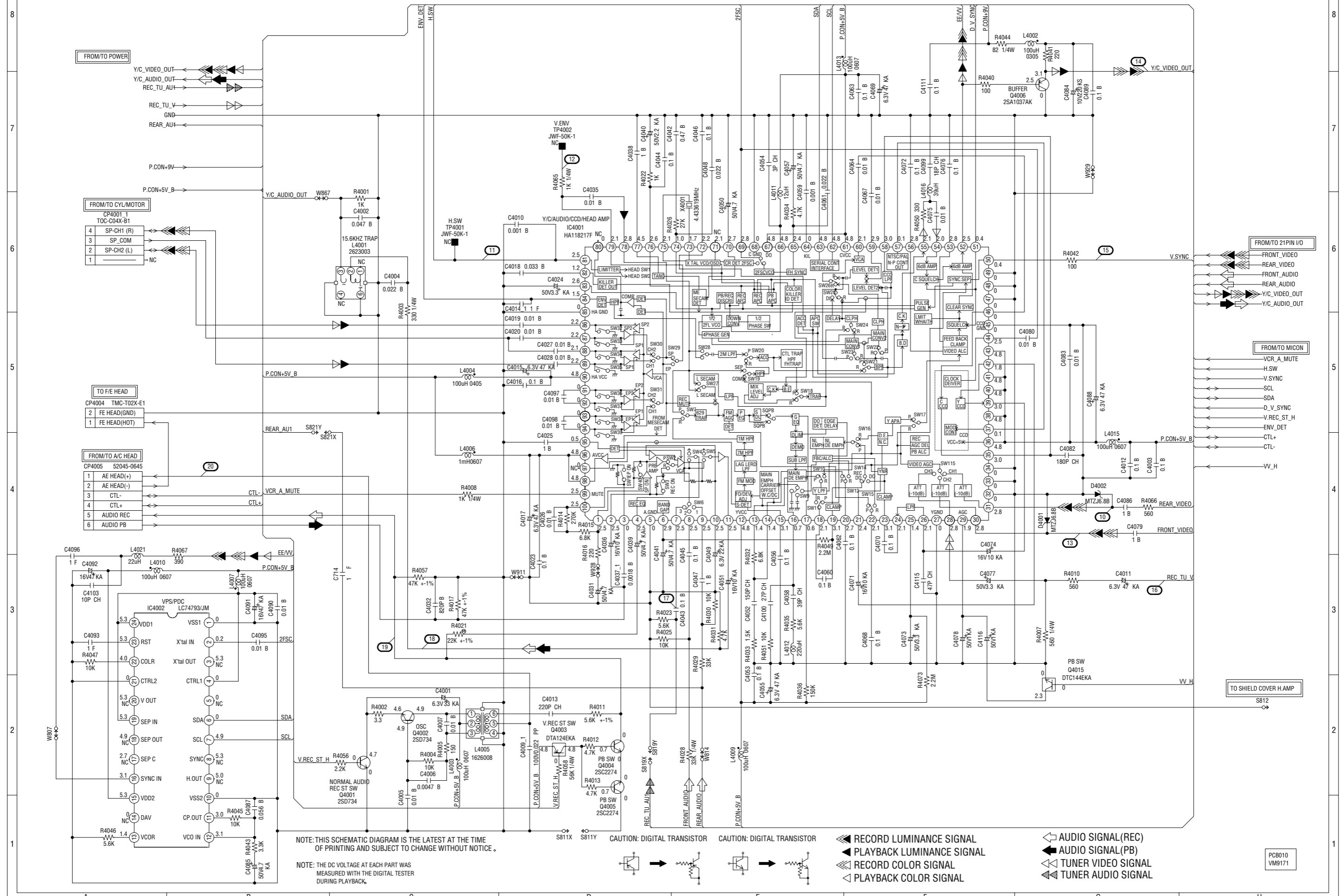






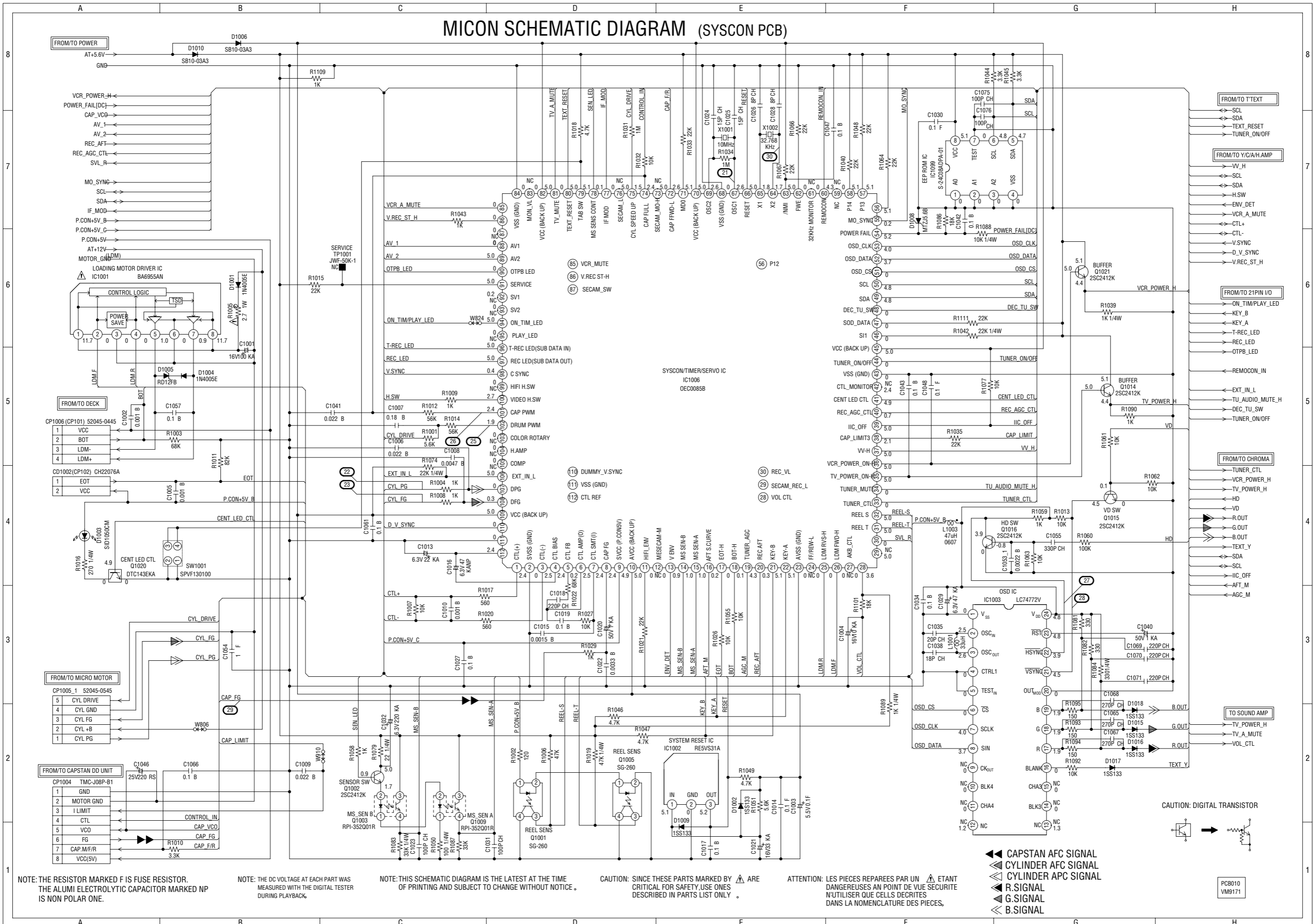


# Y/C/AUDIO/HEAD AMP SCHEMATIC DIAGRAM (SYSCON PCB)





# MICON SCHEMATIC DIAGRAM (SYSCON PCB)



NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.  
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

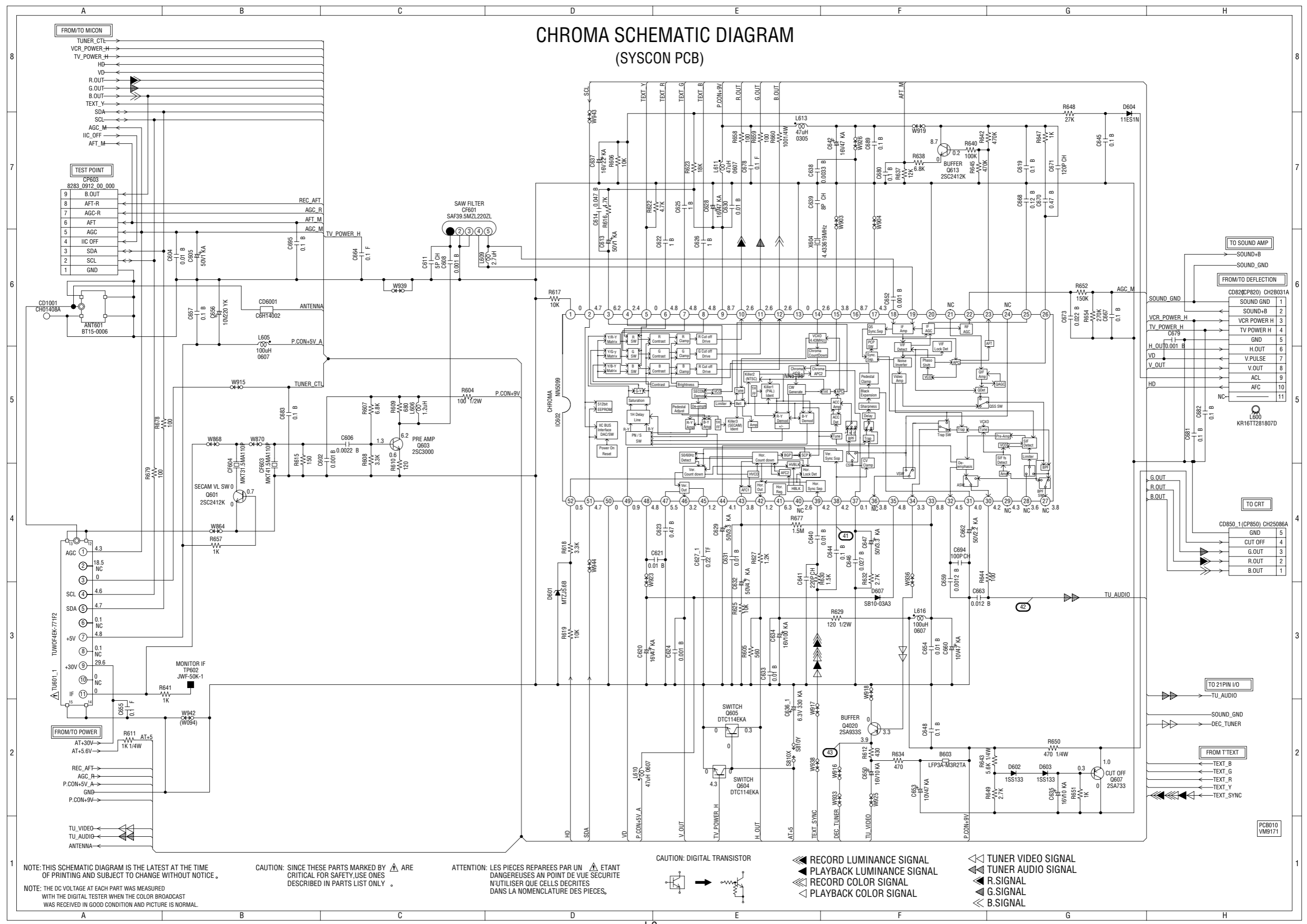
- CAPSTAN AFC SIGNAL
- CYLINDER AFC SIGNAL
- CYLINDER APC SIGNAL
- R.SIGNAL
- G.SIGNAL
- B.SIGNAL

CAUTION: DIGITAL TRANSISTOR



PCB010 VM9171

# CHROMA SCHEMATIC DIAGRAM (SYSCON PCB)

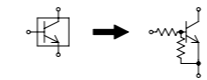


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.  
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION: DIGITAL TRANSISTOR



- RECORD LUMINANCE SIGNAL
- PLAYBACK LUMINANCE SIGNAL
- RECORD COLOR SIGNAL
- PLAYBACK COLOR SIGNAL

- TUNER VIDEO SIGNAL
- TUNER AUDIO SIGNAL
- R.SIGNAL
- G.SIGNAL
- B.SIGNAL

TO SOUND AMP

SOUND+B  
SOUND\_GND

FROM/TO DEFECTION

SOUND GND	1
SOUND+B	2
VCR POWER H	3
TV POWER H	4
GND	5
H. OUT	6
V. PULSE	7
V. OUT	8
ACL	9
AFC	10
NC	11

CR820(CP820) CH28031A

CR679

TO CRT

GND	5
CUT OFF	4
G. OUT	3
R. OUT	2
B. OUT	1

CR850\_1(CP850) CH25086A

TO 21PIN I/O

TU\_AUDIO  
SOUND\_GND  
DEC\_TUNER

FROM TTEXT

TEXT\_B  
TEXT\_G  
TEXT\_R  
TEXT\_Y  
TEXT\_SYNC

PC8010 VM9171

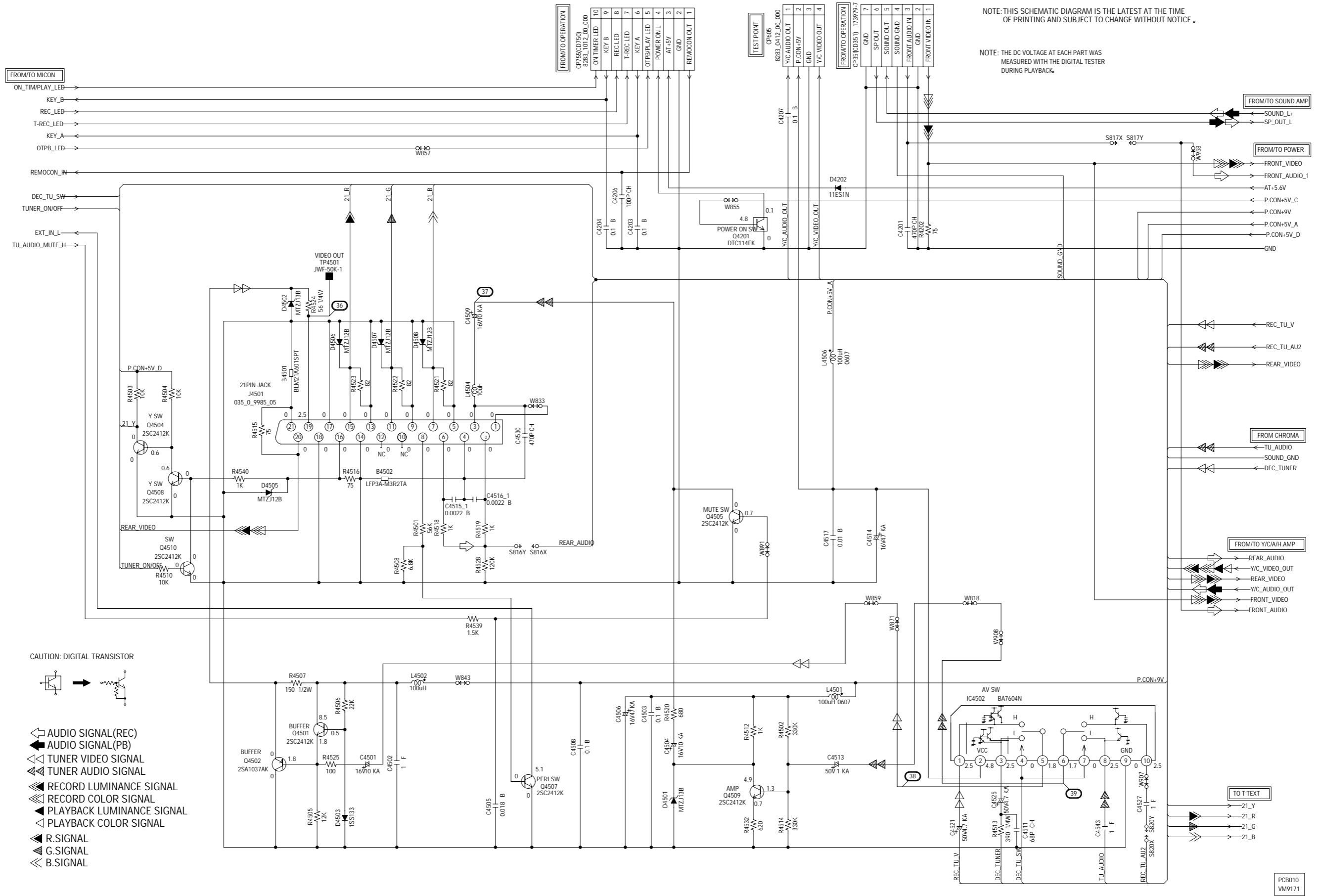


# 21PIN IN/OUT SCHEMATIC DIAGRAM

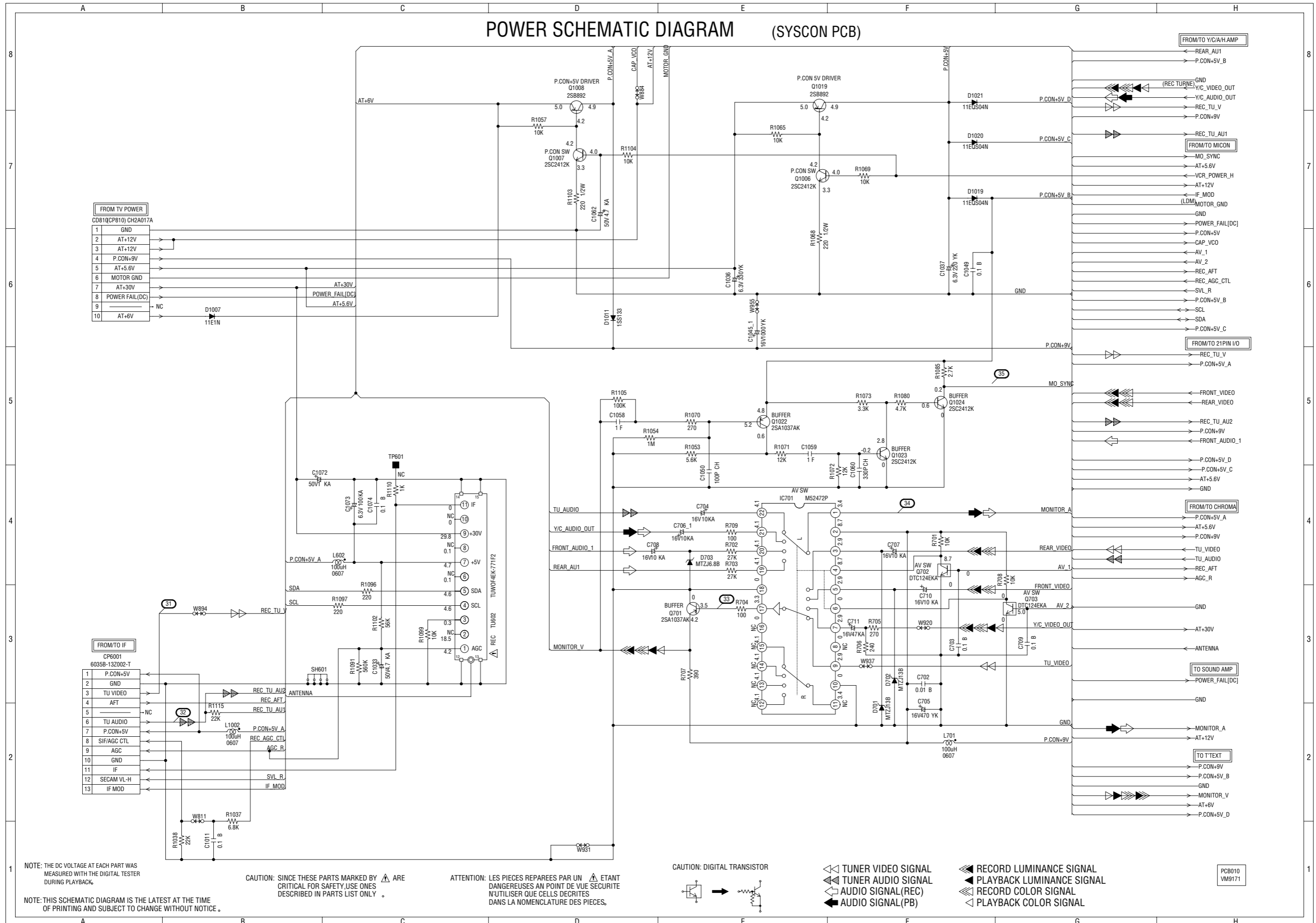
(SYSCON PCB)

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.



# POWER SCHEMATIC DIAGRAM (SYSCON PCB)



**FROM TV POWER**  
CD811(CP810) CH2A017A

1	GND
2	AT+12V
3	AT+12V
4	P.CON+9V
5	AT+5.6V
6	MOTOR GND
7	AT+30V
8	POWER FAIL(DC)
9	NC
10	AT+6V

**FROM/TO IF**  
CP6001  
6035B-132002-T

1	P.CON+5V
2	GND
3	TU VIDEO
4	AFT
5	TU AUDIO
6	P.CON+5V
7	SIF/AGC CTL
8	AGC
9	AGC CTL
10	GND
11	IF
12	SECAM VL-H
13	IF MOD

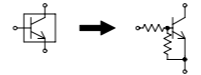
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION: DIGITAL TRANSISTOR



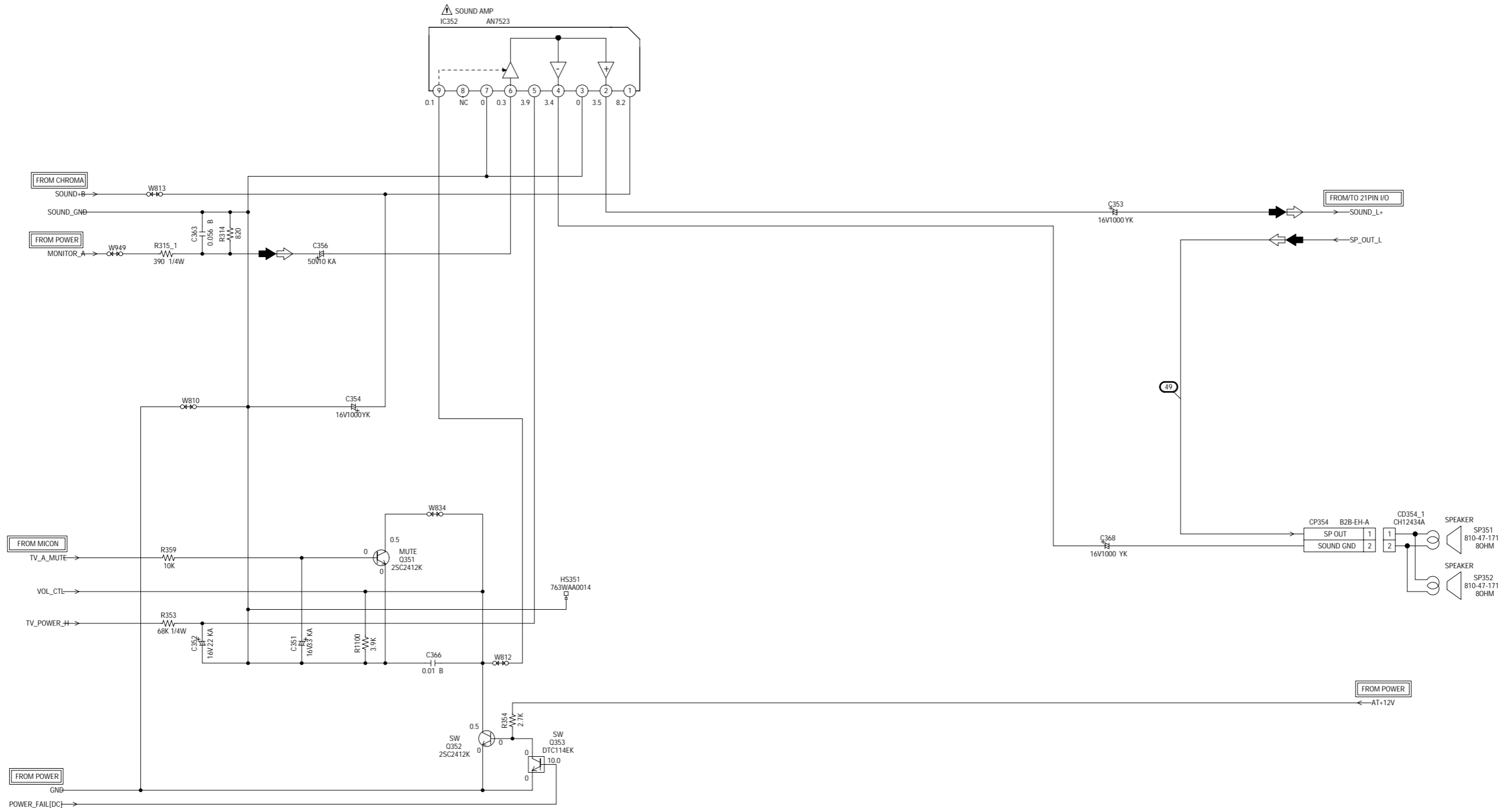
- TUNER VIDEO SIGNAL
- TUNER AUDIO SIGNAL
- AUDIO SIGNAL (REC)
- AUDIO SIGNAL (PB)

- RECORD LUMINANCE SIGNAL
- PLAYBACK LUMINANCE SIGNAL
- RECORD COLOR SIGNAL
- PLAYBACK COLOR SIGNAL

PCB010  
VM9171

# SOUND AMP SCHEMATIC DIAGRAM

(SYSCON PCB)



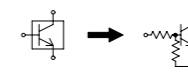
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

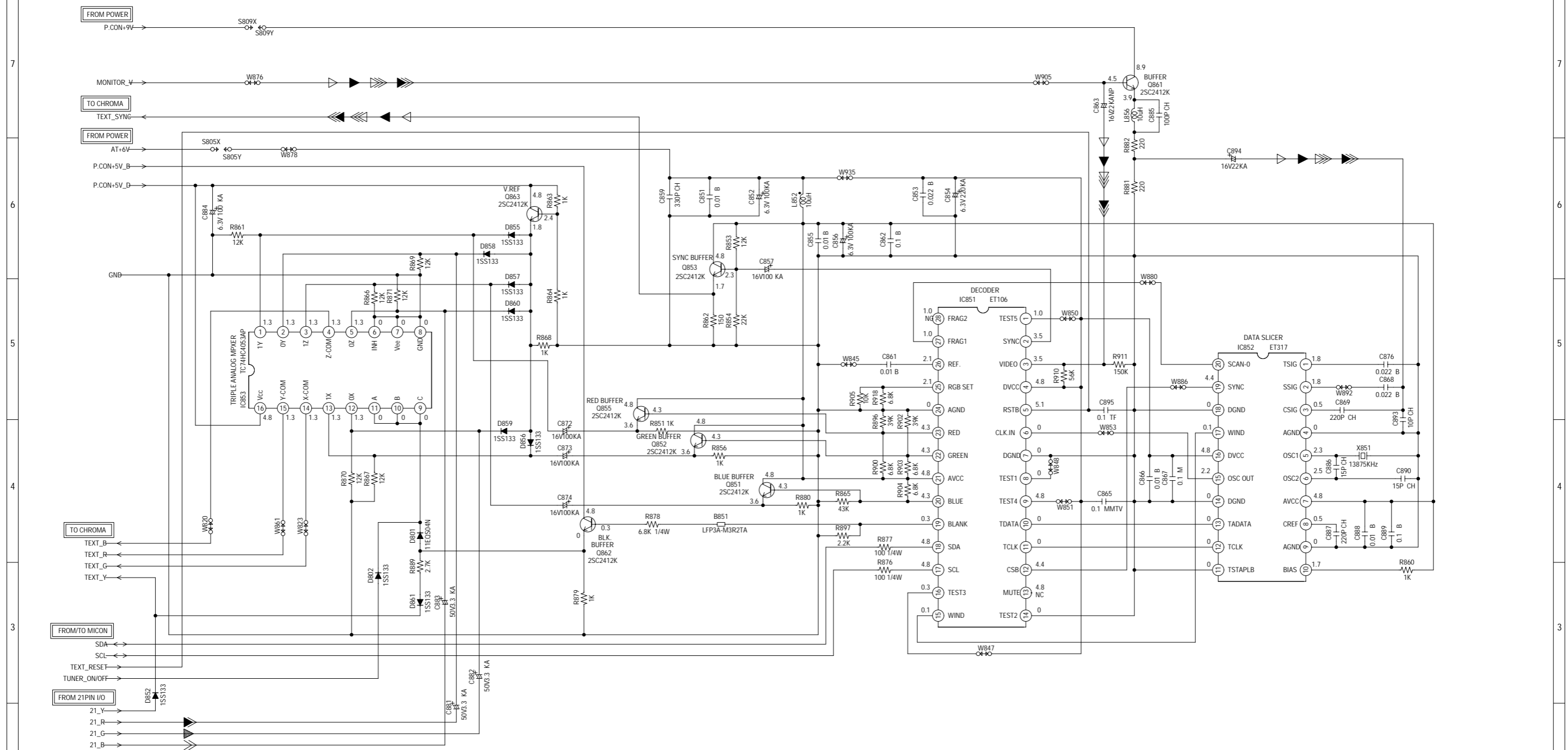
CAUTION: DIGITAL TRANSISTOR



AUDIO SIGNAL (REC)  
 AUDIO SIGNAL (PB)

PCB010  
VM9171

# T' TEXT SCHEMATIC DIAGRAM (SYSCON PCB)



NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.  
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP  
IS NON POLAR ONE.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME  
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED  
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST  
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

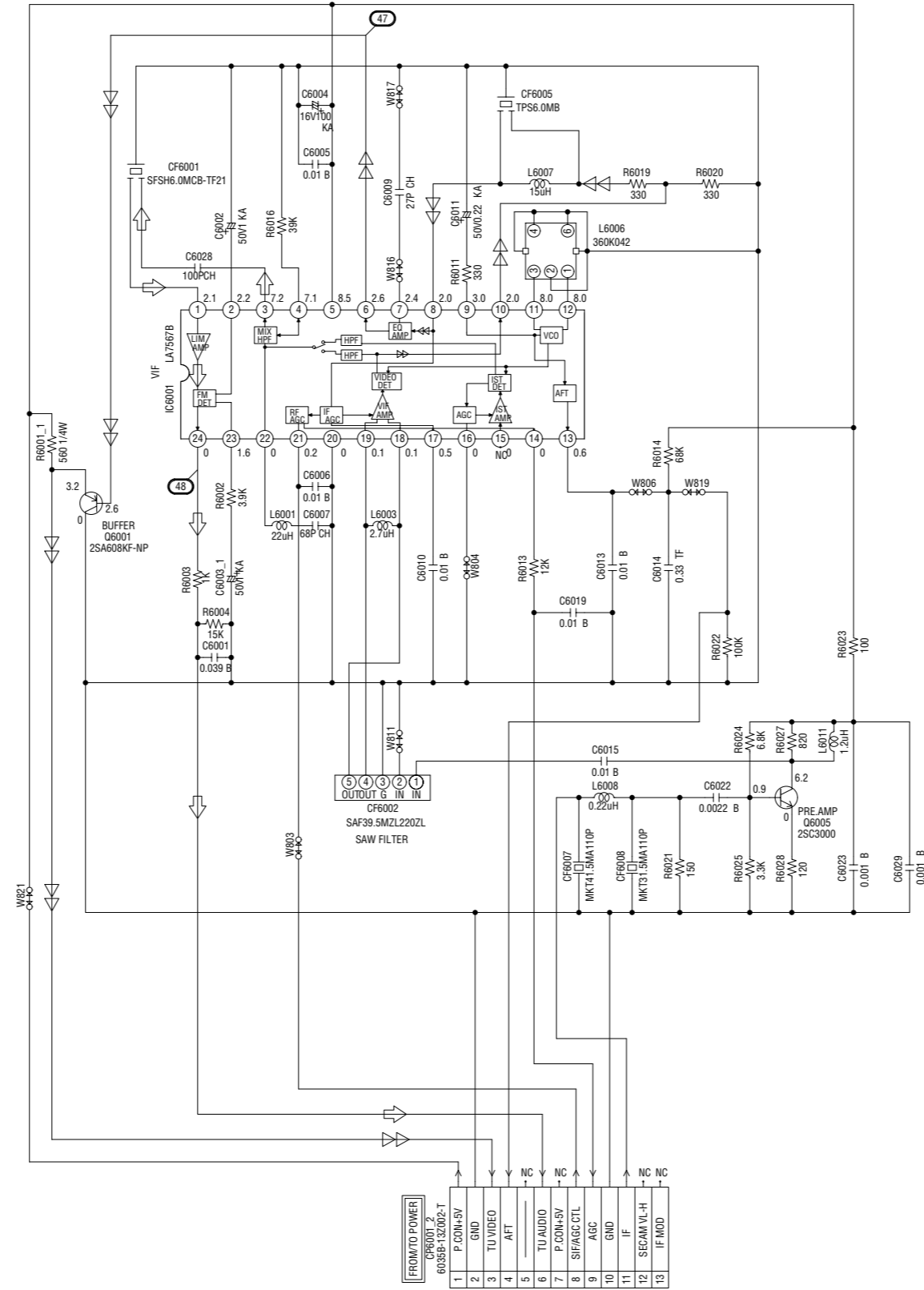
- ◀ RECORD LUMINANCE SIGNAL
- ▶ PLAYBACK LUMINANCE SIGNAL
- ◀ RECORD COLOR SIGNAL
- ▶ PLAYBACK COLOR SIGNAL

- ◀ R.SIGNAL
- ▶ G.SIGNAL
- ◀ B.SIGNAL

PCB010  
VM9171

# IF SCHEMATIC DIAGRAM

(IF PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

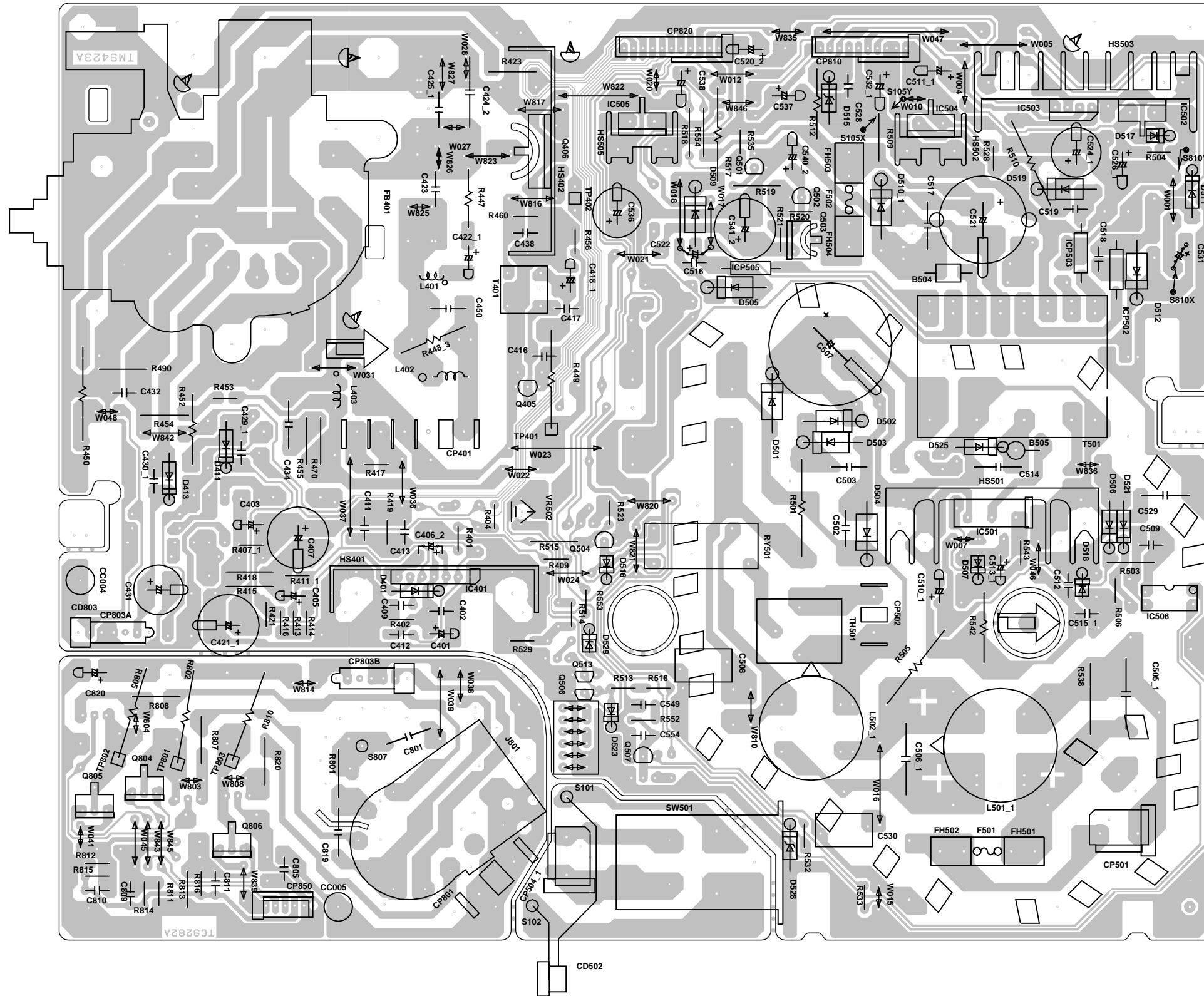
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

◁ TUNER VIDEO SIGNAL  
 ⇨ AUDIO SIGNAL(REC)

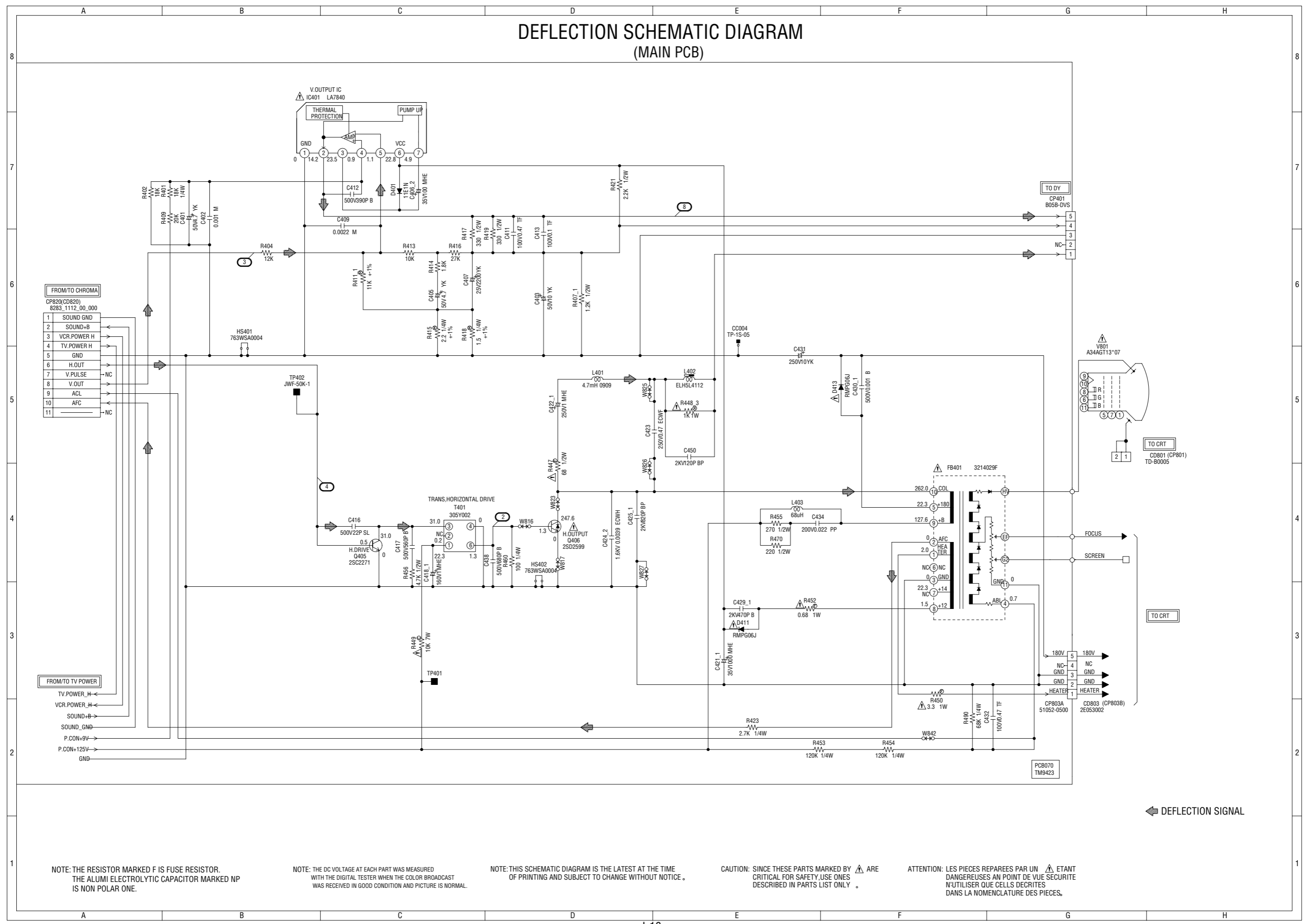
PCB350  
VE6778

# PRINTED CIRCUIT BOARDS

## MAIN/CRT/POWER SW



# DEFLECTION SCHEMATIC DIAGRAM (MAIN PCB)



**FROM/TO CHROMA**  
CP820(CD820)  
8283\_1112\_00\_000

1	SOUND_GND
2	SOUND+B
3	VCR_POWER_H
4	TV_POWER_H
5	GND
6	H.OUT
7	V.PULSE
8	V.OUT
9	ACL
10	AFC
11	NC

**FROM/TO TV POWER**

TV_POWER_H
VCR_POWER_H
SOUND+B
SOUND_GND
P.CON+9V
P.CON+125V
GND

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.  
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

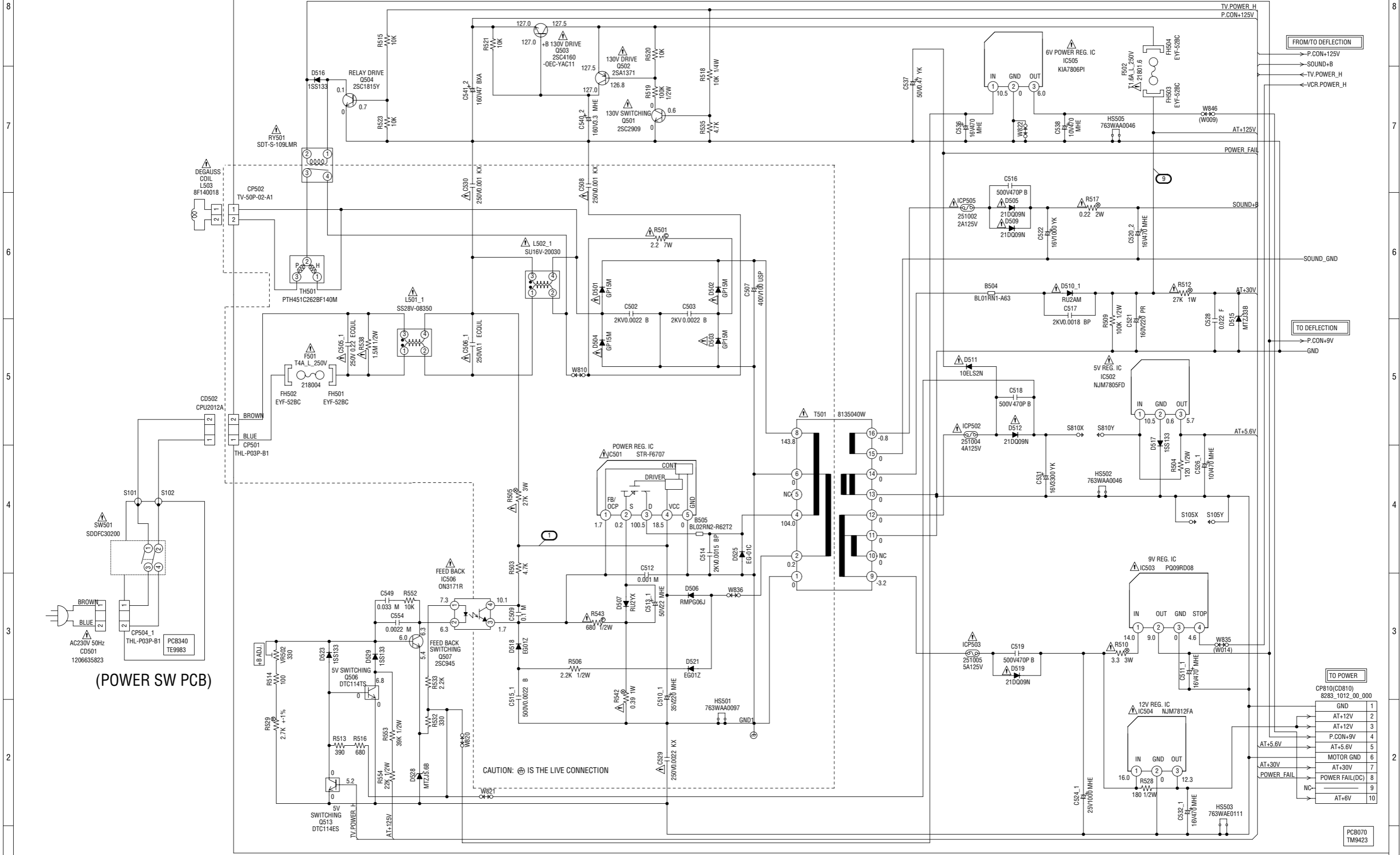
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN ⚠ ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

# TV POWER SCHEMATIC DIAGRAM (MAIN PCB)



(POWER SW PCB)

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.  
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

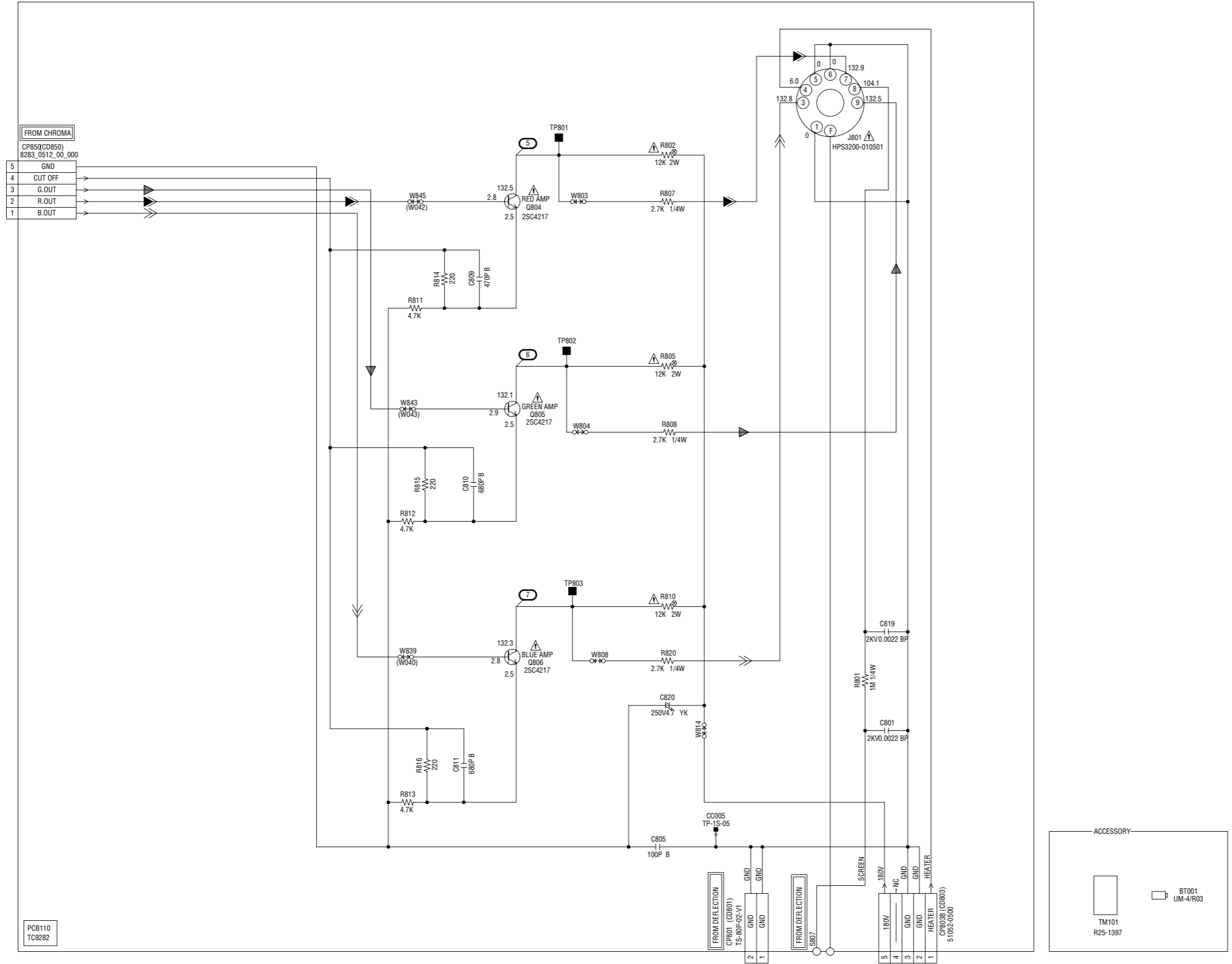
CAUTION: DIGITAL TRANSISTOR



TO POWER	
GND	1
AT+12V	2
AT+12V	3
P.CON+9V	4
AT+5.6V	5
MOTOR GND	6
AT+30V	7
POWER FAIL(DC)	8
NC	9
AT+6V	10



# CRT SCHEMATIC DIAGRAM (MAIN PCB)



◀ R.SIGNAL  
 ▲ G.SIGNAL  
 << B.SIGNAL

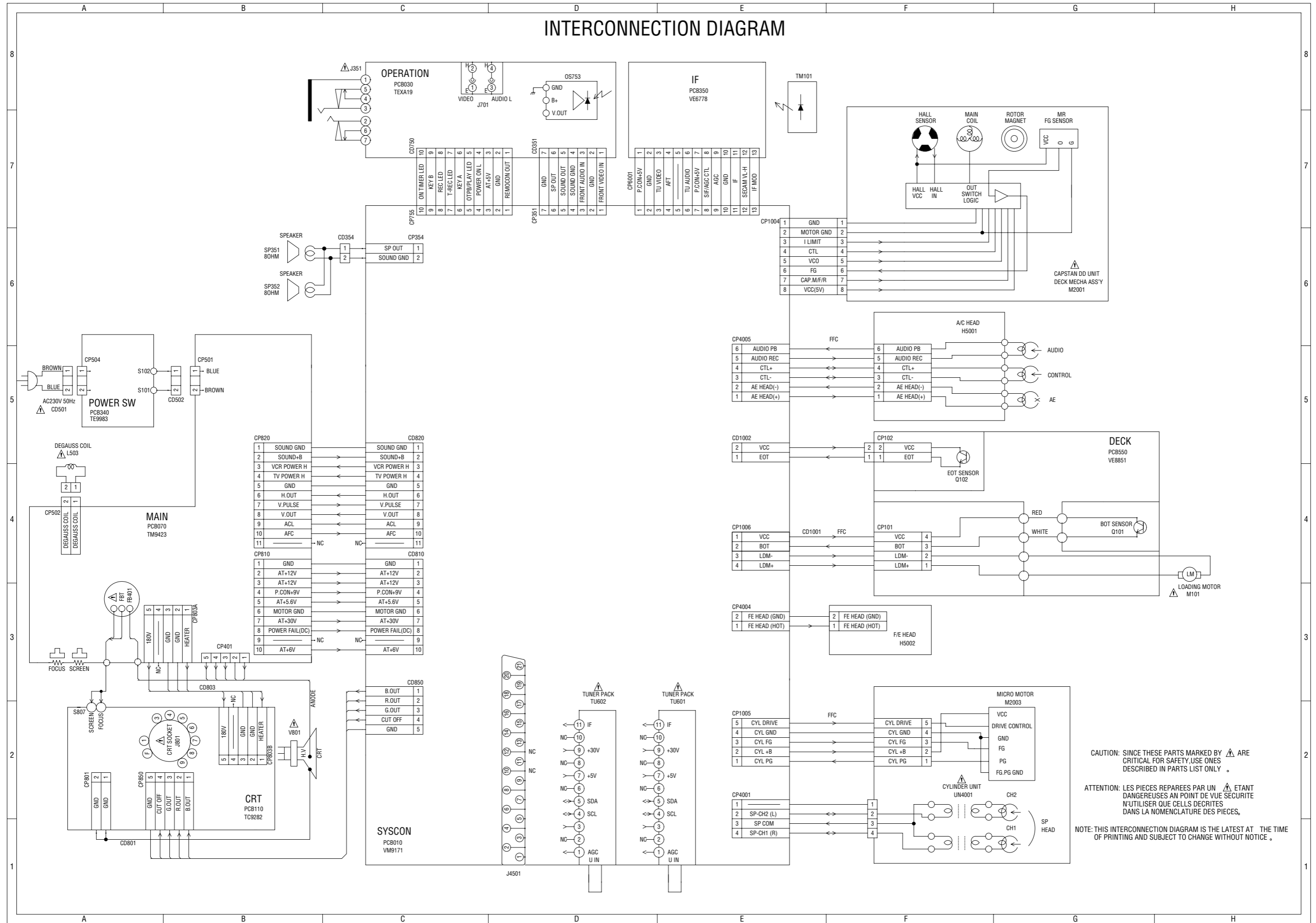
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: SINCE THESE PARTS MARKED BY  $\Delta$  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN  $\Delta$  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

# INTERCONNECTION DIAGRAM



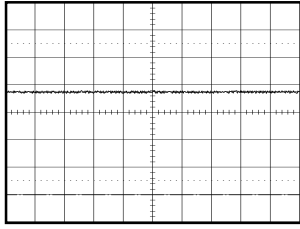
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIÈCES.

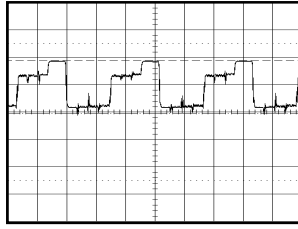
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

## WAVEFORMS

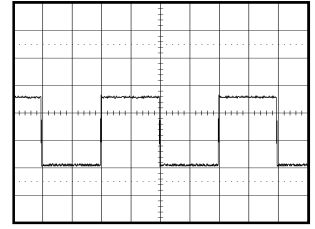
### TV POWER



① 5.0V 0.1ms/div

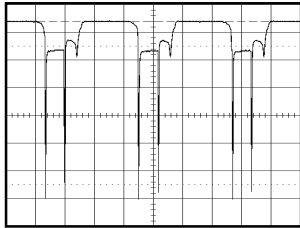


⑥ 50.0V 20μs/div

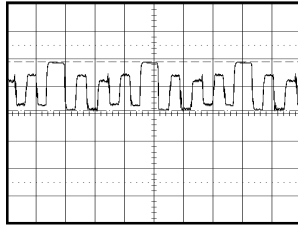


⑪ PB  
2.0V 10ms/div

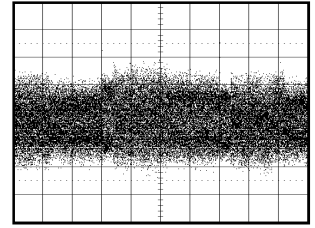
### DEFLECTION



② 2.0V 20μs/div

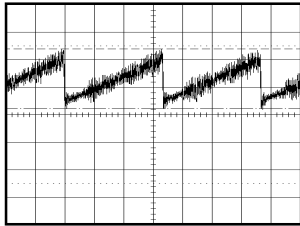


⑦ 50.0V 20μs/div

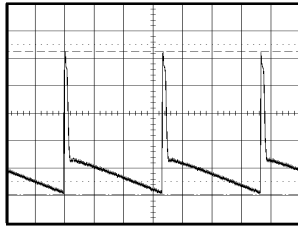


⑫ PB  
50mV 5ms/div

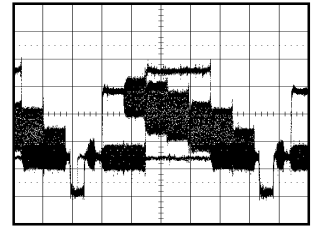
### DEFLECTION



③ 0.5V 5ms/div

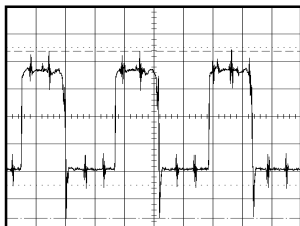


⑧ 10.0V 5ms/div

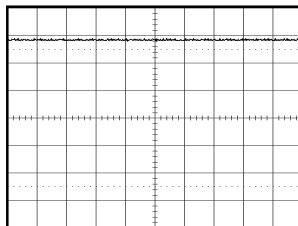


⑬ REC  
0.5V 10μs/div

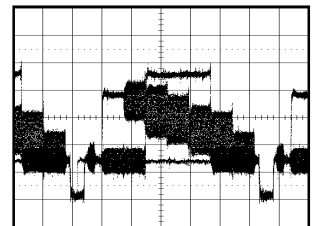
### TV POWER



④ 200mV 20μs/div

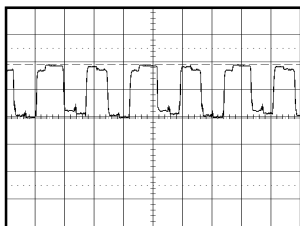


⑨ 20.0V 0.1ms/div



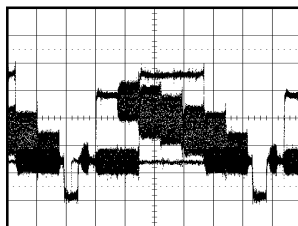
⑭ REC  
0.5V 10μs/div

### CRT

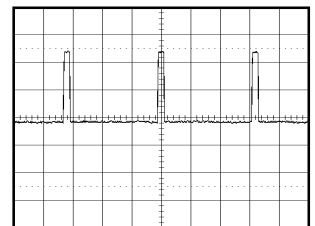


⑤ 50.0V 20μs/div

### Y/C/AUDIO/HEAD AMP



⑩ REC  
0.5V 10μs/div

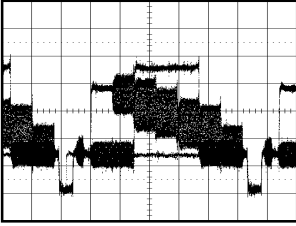


⑮ REC  
2.0V 20μs/div

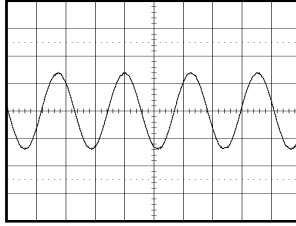
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

# WAVEFORMS

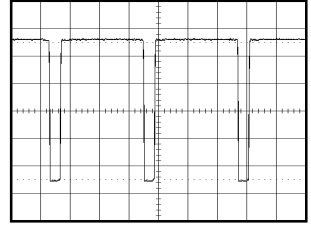
## MICON



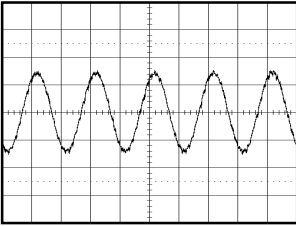
①⑥ REC  
0.5V 10 $\mu$ s/div



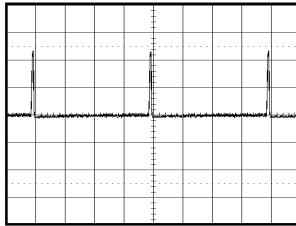
②① REC  
1.0V 2ms/div



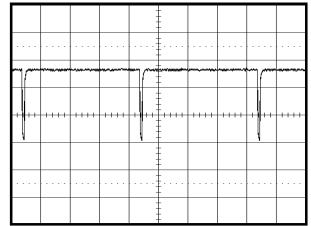
②⑦ REC  
1.0V 20 $\mu$ s/div



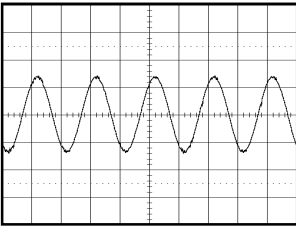
①⑦ REC  
100mV 0.5ms/div



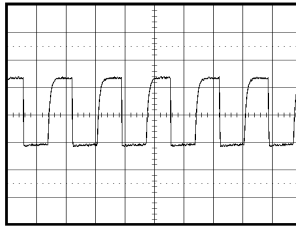
②② REC  
2.0V 10ms/div



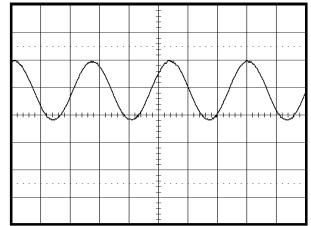
②⑧ REC  
2.0V 5ms/div



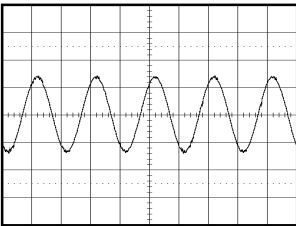
①⑧ REC  
0.5V 0.5ms/div



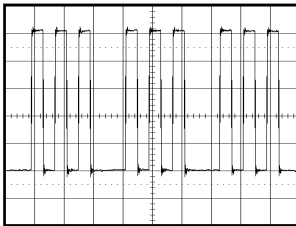
②③ REC  
2.0V 1ms/div



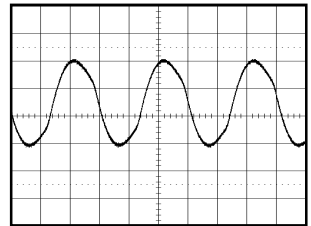
②⑨ REC  
0.5V 0.5ms/div



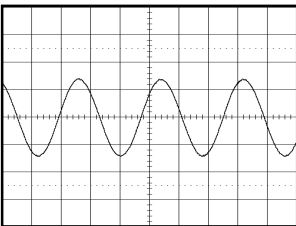
①⑨  
20.0V 2ms/div



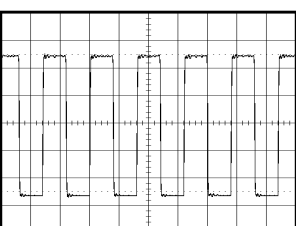
②⑤ REC  
1.0V 1 $\mu$ s/div



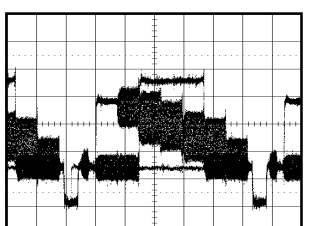
③⑩ REC  
0.5V 10 $\mu$ s/div



②⑩ REC  
20.0V 5 $\mu$ s/div



②⑥ REC  
1.0V 0.5 $\mu$ s/div

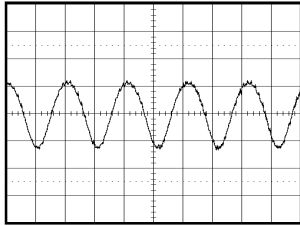


③① REC  
0.5V 10 $\mu$ s/div

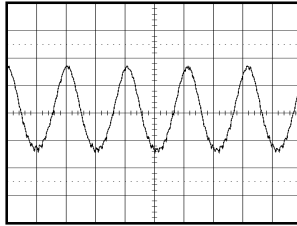
## POWER

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

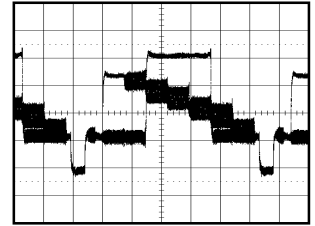
# WAVEFORMS



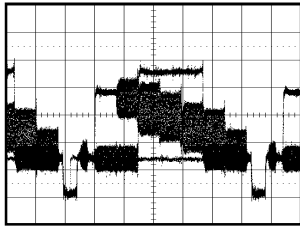
③② REC  
0.5V 0.5ms/div



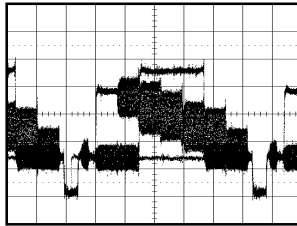
③⑦ REC  
0.5V 0.5ms/div



④③ REC  
0.5V 10μs/div

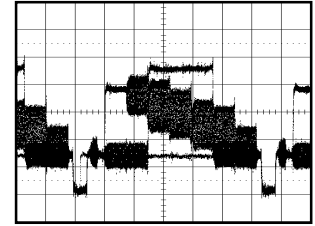


③③ REC  
0.5V 10μs/div

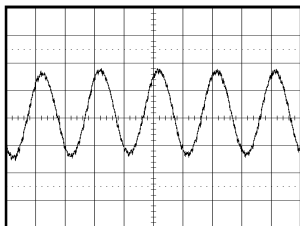


③⑧ REC  
0.5V 10μs/div

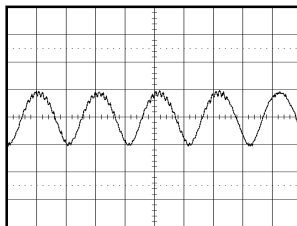
## IF



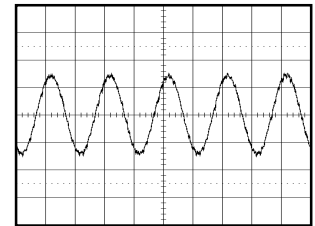
④⑦ REC  
0.5V 10μs/div



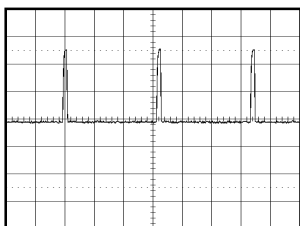
③④ REC  
200mV 0.5ms/div



③⑨ REC  
0.5V 0.5ms/div

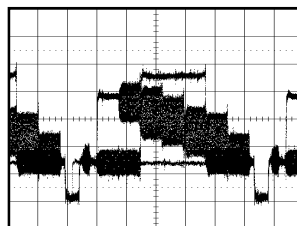


④⑧ REC  
100mV 0.5ms/div



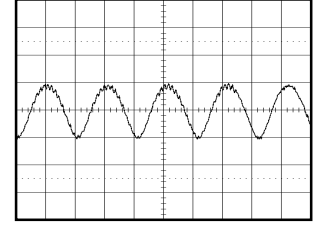
③⑤ REC  
2V 20μs/div

## CHROMA



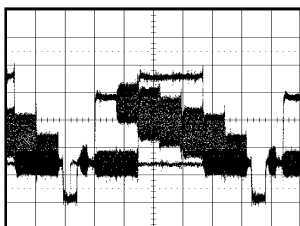
④① REC  
0.5V 1ms/div

## SOUND AMP

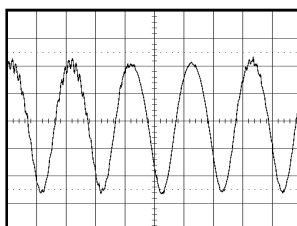


④⑨ REC  
0.5V 0.5ms/div

## 21PIN/IN/OUT



③⑥ REC  
0.5V 10μs/div

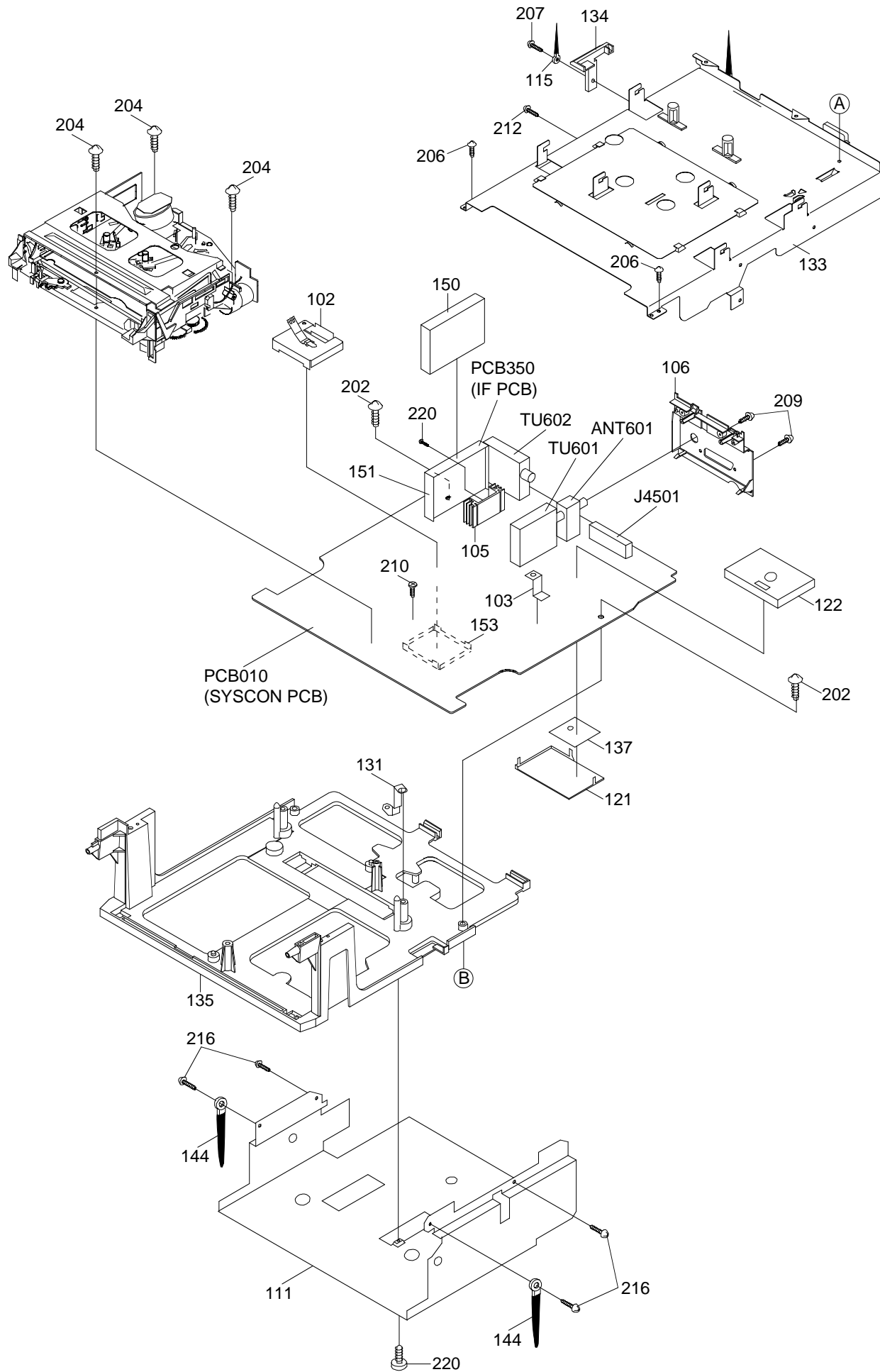


④② REC  
200mV 0.5ms/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.



# MECHANICAL EXPLODED VIEW



## MECHANICAL REPLACEMENT PARTS LIST

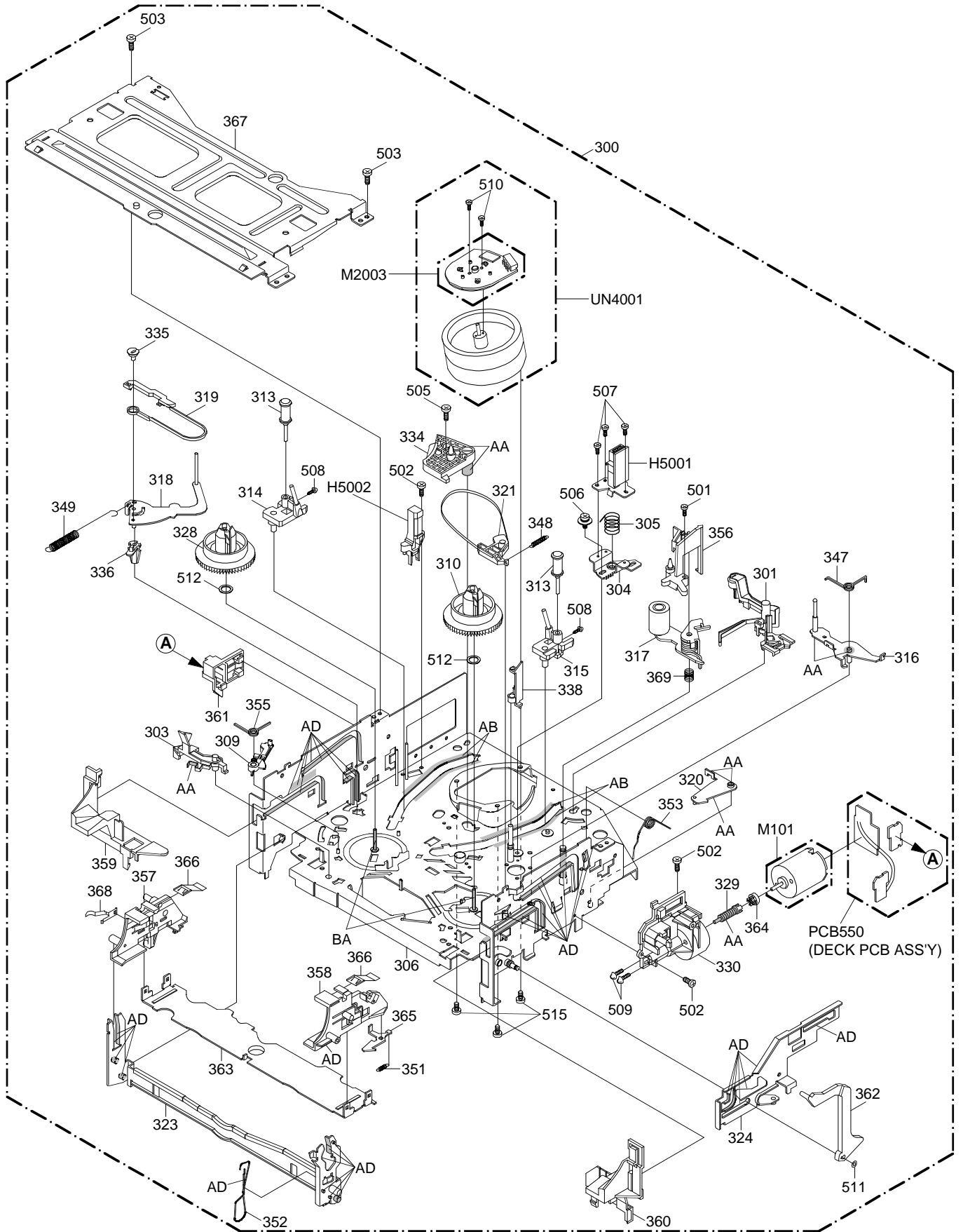
REF. NO.	PART NO.	DESCRIPTION	Q'TY	REF. NO.	PART NO.	DESCRIPTION	Q'TY
101	S5-540-3M7-200	CAB,FRONT ASS'Y	1	140	----	FELT SHEET	1
102	----	SHIELD,CASE HEAD AMP ASS'Y	1	141	----	FELT SHEET	1
103	----	PLATE,EARTH-SYSCON	1	142	----	FELT SHEET	2
104	S3-5WP-D06-800	BUTTON,REC	1	143	----	FELT SHEET	2
105	----	HEAT SINK	1	144	----	COATING CLIP EFB0692	2
106	S7-1WP-A02-440	PLATE,JACK	1	145	----	LABEL,ANTI-THEFT	1
107	----	HEAT SINK	2	146	S3-5WP-B00-470	BUTTON,POWER	1
108	----	HEAT SINK	1	147	----	WIRE,SPEAKER	2
109	----	HEAT SINK	1	148	----	RUBBER,SPEAKER	2
				149	S5-2WS-A01-990	PLATE,POWER SW	1
110	----	HEAT SINK	2				
111	----	PLATE,SHIELD BOTTOM	1	150	----	IF SHIELD CASE	1
112	----	METAL SPACER	4	151	----	SHIELD BOTTOM IF	1
113	----	RUBBER,SILCON	2	152	----	FELT SHEET	1
114	----	COATING CLIP	2	153	----	SHIELD,COVER HEAD AMP	1
115	----	CORD CLIP UL CO.	2				
116	----	CAB,FRONT	1	201	S1-172-40C-540	SCREW,TAPPING(B0) BIND 4x35	2
117	S1-2WP-J06-910	PLATE,FRONT	1	202	S1-175-40B-040	SCREW,TAP(B0)TRUSS 4-20	2
118	S1-2WP-J06-660	FLAP	1	203	S1-175-40A-640	TAP(B0)4-16	2
119	S1-3WP-A01-110	GLASS,LED	1	204	S1-171-40A-240	TAP(B0)V+4-12	3
				205	S1-0A1-30A-040	SCREW/WASHER(B)M3-10	1
120	S1-3WP-A01-100	GUIDE,REMOCON	1	206	S1-106-30A-240	SCREW,TAP(P)3-12	6
121	----	SHIELD,COVER	1	207	S1-072-308-040	UT2+3-8	1
122	----	SHILED,CASE	1	208	S1-106-30A-040	UIT+3-10	22
123	S2-344-901-020	BADGE,BRAND	1	209	S1-106-30A-220	SCREW,TAP 3-12	2
124	S3-5WP-D06-790	BUTTON,OTPB	1				
125	S0-2WP-J00-110	BUTTON,FRAME	1	210	87-741-095-410	SCREW,TAP TITE(P) FLAT 3-8	1
126	S3-5WP-D06-780	BUTTON,PLAY	1	211	S1-21F-50B-840	SCREW,TAP 5-28	4
127	S4-3WK-A00-320	SPR,FLAP	1	212	87-743-073-010	VT2+2.6-6	1
128	S5-540-3M7-400	CAB,BACK ASS'Y	1	213	87-753-095-410	SCREW,TAP 3-8	4
129	----	CAB,BACK	1	214	S1-0A1-30B-040	SCREW,WASHER(A)M3-20	3
				215	S1-0B1-308-040	SCREW/WASHER(B)M3-8	2
130	----	FELT SHEET	2	216	S1-076-306-040	BVTT+3-6	4
131	S5-3WS-A01-200	PLATE,BOTTOM-EARTH	1	217	S1-0A1-308-040	WASHER(A)M3-8	1
132	S4-1WU-A00-230	SPRING,EARTH	1	218	S1-0A1-306-040	SCREW,WASHER(A)M3-6	2
133	----	PLATE,DECK SHIELD ASS'Y	1	219	S1-0A1-305-040	SCREW,WASHER(A) M3-5	2
134	S6-1WP-AA0-180	HOLDER,M PCB	1				
135	S6-1WP-A01-800	HOLDER,DECK	1	220	S1-106-306-040	UIT+3-6	2
136	S6-1WP-A01-500	HOLDER,FBT	1	221	S1-0A1-30A-040	SCREW,WASHER(A)M3-10	4
137	----	SHEET,PVC	1				
138	----	SHEET,RATING	1				
139	----	LABEL,POP	1				

## ACCESSORY REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Q'TY
1	S7-6R0-DF0-200	TRANSMITTER R25-1397	1
2	S5-540-301-000	INSTRUCTION BOOK	1



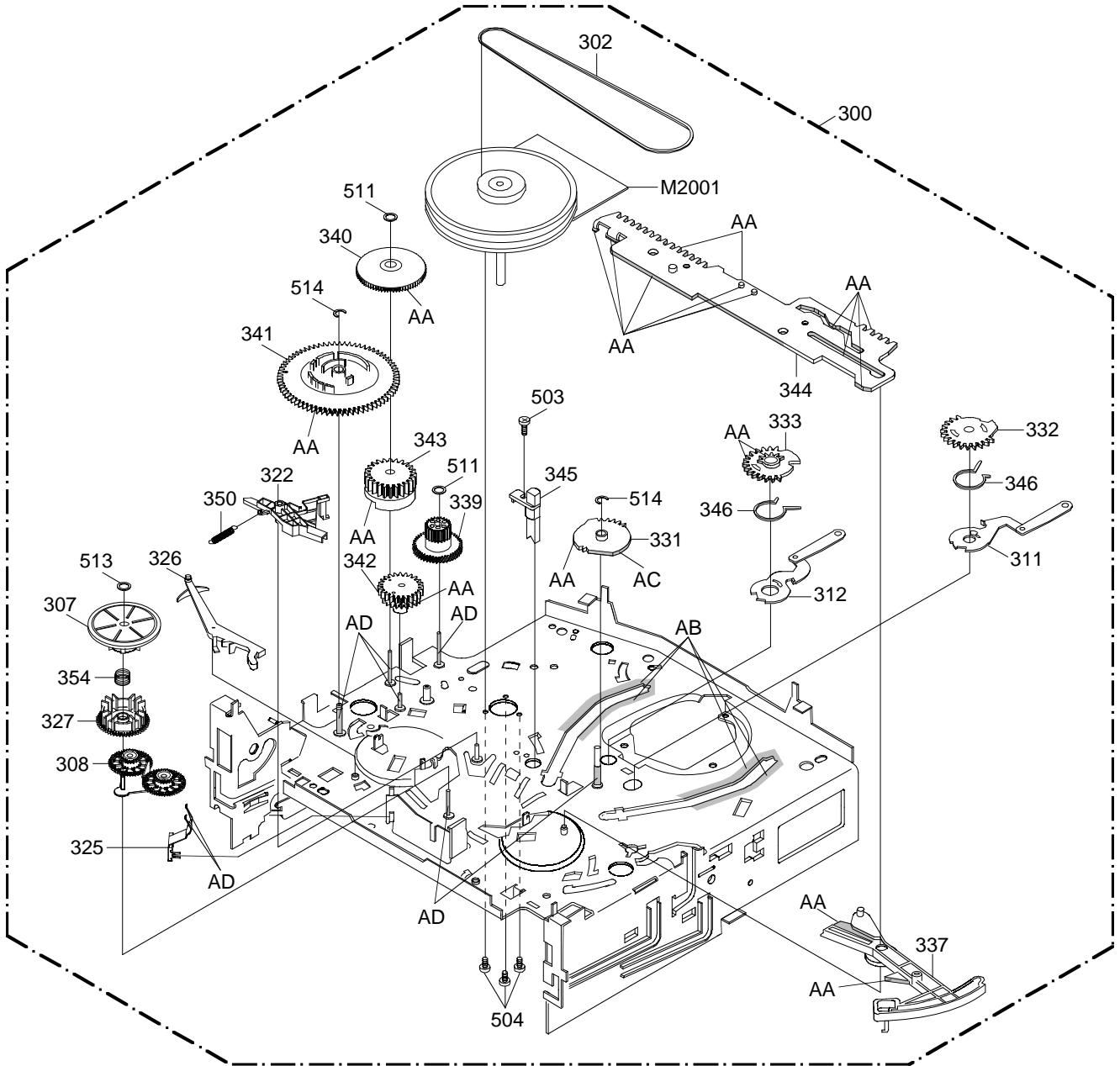
# CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	G-488M	AB
	FL-721	AC
	MG-33	AD
OIL	FL OIL No. 6115	BA

**NOTE:** Applying positions AA, AB, AC, AD and BA for the grease or oil are displayed for this section. Check if the correct grease or oil is applied for each position.

# CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	G-488M	AB
	FL-721	AC
	MG-33	AD
OIL	FL OIL No. 6115	BA

**NOTE:** Applying positions AA, AB, AC, AD and BA for the grease or oil are displayed for this section. Check if the correct grease or oil is applied for each position.

## CHASSIS REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Q'TY	REF. NO.	PART NO.	DESCRIPTION	Q'TY
300	----	DECK ASSY A55402N420A	1	360	S5-OP9-006-860	TAPE GUIDE R	1
301	S5-OA5-000-220	AHC ASS'Y	1	361	S5-OP9-007-070	COVER,SENSOR L	1
302	S5-OP2-002-900	BELT,CAPSTAN (S)	1	362	S5-OP9-006-880	LEVER,FLAP	1
303	S5-OP9-007-100	LEVER,REC	1	363	S5-OP9-006-900	CASS HOLDER	1
304	S5-OP5-000-830	BASE,AC HEAD	1	364	S5-OP6-005-400	DRIVER,WORM	1
305	S5-OP8-003-240	SPR,AC HEAD	1	365	S5-OP9-007-130	LOCKER,R2	1
306	S5-OA0-003-670	MAIN CHASSIS ASS'Y (S-Z)	1	366	S5-OP9-006-940	SPR,PACK	2
307	S5-OA2-000-820	CLUTCH ASS'Y(S2)	1	367	S5-OP9-006-950	BRACKET,TOP	1
308	S5-OA2-000-800	ARM,IDLER ASS'Y (S)	1	368	----	SPR,CASS EARTH	1
309	S5-OP6-005-560	ARM,SS BRAKE (S)	1	369	S5-OP8-003-410	SPRING,P/R ARM	1
310	S5-OP2-002-920	REEL,T (S)	1	501	87-654-075-410	SCREW,TAP 2.6-10	1
311	S5-OA3-000-610	LOAD ARM S ASS'Y	1	502	S1-072-268-040	VT2+2.6-8	3
312	S5-OA3-000-620	LOAD ARM T ASS'Y	1	503	87-743-073-010	VT2+2.6-6	3
313	S5-OA4-002-090	G-ROLLER ASS'Y	2	504	87-743-073-410	SCREW,TAP 2.6-6	3
314	S5-OA4-001-880	BASE,INCL S ASS'Y	1	505	S1-0A1-268-040	SCREW,WASHER(A)M2.6-8	1
315	S5-OA4-001-960	BASE,INCL T(S) ASS'Y	1	506	S1-0B1-264-040	SCREW,WASHER(B)M2.6-4	1
316	S5-OA4-001-990	P5-3 ARM ASS'Y(S)	1	507	87-261-035-410	SCREW,PAN M2-6	3
317	S5-OA4-002-050	PINCH ROLLER BLOCK	1	508	87-261-032-410	SCREW,PAN M2-3	2
318	S5-OA4-001-750	TENSION ARM ASS'Y	1	509	87-258-091-010	U+M3-3	2
319	S5-OA4-001-840	TENSION BAND ASS'Y (S)	1	510	S1-0A1-235-040	SEMS A M2.3-5	2
320	S5-OA4-001-780	PINCH ROLLER LEVER ASS'Y	1	511	S2-P26-600-5N0	PW(CUT)2.6-6-0.5	3
321	S5-OA6-001-880	BRAKE T ASS'Y (S)	1	512	S2-Q26-47C-5N0	POLY,WASHER 2.6-4.7	2
322	S5-OA6-001-910	CAP BRAKE ASS'Y(S)	1	513	S2-P18-450-5N0	PW(CUT)1.8-4.5-0.5	1
323	S5-OA9-002-130	LINK ASS'Y	1	514	S3-ETW-300-000	E-RING 3	2
324	S5-OA9-002-160	LINK LEVER ASS'Y	1	515	S1-0A1-265-040	SCREW,WASHER(A) M2.6-5	3
325	S5-OP2-002-840	LEVER,CLUTCH (S)	1	CP101	----	CONN,PWB SIDE 52044-0445	1
326	S5-OP2-002-850	ACTUATOR,CLUTCH	1	CP102	----	CONN,PWB SIDE 173979-2	1
327	S5-OP2-002-980	GEAR,COUPLING(S2)	1	H5001	S5-23D-910-340	HEAD,AC HVMXA1072A	1
328	S5-OP2-002-910	REEL,S (S)	1	H5002	S5-43D-020-130	HEAD,FE	1
329	S5-OP6-005-410	WORM	1	M101	S5-96P-780-010	MOTOR(LOADING)	1
330	S5-OP6-005-630	BRACKET,MOTOR	1	M2001	S5-94J-980-080	CAPSTAN DD UNIT EP15BC	1
331	S5-OP3-001-780	GEAR,MAIN LOADING	1	M2003	S5-89V-110-070	MICRO MOTOR	1
332	S5-OP3-001-790	GEAR,LOADING S	1	PCB550	----	DECK PCB ASS'Y VE8851	1
333	S5-OP3-001-800	GEAR,LOADING T	1	Q101	S0-007-003-200	PHOTO,TR RPT-38PB113	1
334	S5-OP3-001-860	HOLDER,LOADING GEAR	1	Q102	S0-007-003-200	PHOTO,TR RPT-38PB113	1
335	S5-OP4-004-720	ADJUST,TENSION	1	UN4001	S4-D12-0B5-000	CYLINDER UNIT ASSY A4D120B50C	1
336	S5-OP4-004-920	HOLDER,TENSION	1				
337	S5-OP4-004-900	LEVER,TENSION	1				
338	S5-OP4-004-750	COVER,P4	1				
339	S5-OP6-005-430	GEAR,JOINT	1				
340	S5-OP6-005-440	GEAR,MIDDLE	1				
341	S5-OP6-005-540	CAM,MAIN (S)	1				
342	S5-OP6-005-460	CAM,P5	1				
343	S5-OP6-005-650	CAM,PINCH ROLLER	1				
344	S5-OP6-005-610	ROD,MAIN(S)	1				
345	S5-OP7-000-350	REFLECTOR,LED	1				
346	S5-OP8-003-180	SPR,LOADING GEAR	2				
347	S5-OP8-003-340	SPR,P5 (S)	1				
348	S5-OP8-003-350	SPR,BRAKE T (S)	1				
349	S5-OP8-003-220	SPR,TENSION	1				
350	S5-OP8-003-360	SPR,CAP BRAKE (S)	1				
351	S5-OP8-003-420	SPRING,LOCKER(S)	1				
352	S5-OP8-003-260	SPR,LINK	1				
353	S5-OP8-003-280	SPR,DAMPER	1				
354	S5-OP8-003-300	SPR,RING	1				
355	S5-OP8-003-370	SPR,SS BRAKE (S)	1				
356	S5-OP9-006-800	OPENER,CASS	1				
357	S5-OP9-007-040	CASS,SIDE L(VA)	1				
358	S5-OP9-006-840	CASS SIDE R	1				
359	S5-OP9-007-090	TAPE GUIDE L(P,R)	1				

# ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
<b>SYSCON PCB ASS'Y</b>			<b>*** CAPACITORS ***</b>		
		<b>*** RESISTORS ***</b>	C4040	87-010-402-080	CAP,E 2.2-50V
△ R1005	S6-150-12R-7J0	RES,FUSE 2.7-1W	C4041	87-010-404-080	CAP,E 4.7-50V
R4021	S4-X5T-622-3F0	RES,MF 22K-1/6W	C4049	87-010-076-040	CAP,E 22UF-6.3V
		<b>*** CAPACITORS ***</b>	C4050	87-010-404-080	CAP,E 4.7-50V
C351	87-015-683-080	CAP,E 33-16V	C4051	87-015-075-040	CAP,E 10-16V
C352	87-016-053-080	CAP,E 22-16V	C4055	87-010-549-010	CAP,E 47-6.3V
C353	87-010-271-080	CAP,E 1000-16V	C4057	87-010-404-080	CAP,E 4.7-50V
C354	87-010-271-080	CAP,E 1000-16V	C4069	87-010-549-010	CAP,E 47-6.3V
C356	87-010-560-080	CAP,E 10-50V	C4071	87-015-075-040	CAP,E 10-16V
C368	87-010-271-080	CAP,E 1000-16V	C4073	87-010-403-080	CAP,E 3.3-50V
C605	87-015-695-080	CAP,E 1-50V	C4074	87-015-075-040	CAP,E 10-16V
C613	87-015-695-080	CAP,E 1-50V	C4077	87-010-403-080	CAP,E 3.3-50V
C620	87-010-380-080	CAP,E 47-16V	C4078	87-015-695-080	CAP,E 1-50V
C628	87-010-380-080	CAP,E 47-16V	C4084	87-010-248-010	CAP,E 220-10V
C629	87-010-403-080	CAP,E 3.3-50V	C4085	87-010-404-080	CAP,E 4.7-50V
C632	87-010-404-080	CAP,E 4.7-50V	C4088	87-010-549-010	CAP,E 47-6.3V
C634	87-010-112-080	CAP,E 100-16V	C4091	87-010-380-080	CAP,E 47-16V
C635	87-015-075-040	CAP,E 10-16V	C4092	87-010-380-080	CAP,E 47-16V
C636	S5-0HU-033-1M0	CAP,E 330-6.3V	C4116	87-015-695-080	CAP,E 1-50V
C637	87-016-053-080	CAP,E 22-16V	C4501	87-015-075-040	CAP,E 10-16V
C642	87-010-380-080	CAP,E 47-16V	C4504	87-015-075-040	CAP,E 10-16V
C647	87-010-403-080	CAP,E 3.3-50V	C4506	87-010-380-080	CAP,E 47-16V
C650	87-015-075-040	CAP,E 10-16V	C4509	87-015-075-040	CAP,E 10-16V
C653	S5-0HT-147-0M0	CAP,E 47-10 V	C4513	87-010-071-080	CAP,E 1-50V
C656	87-A10-189-040	CAP,E 220-10V	C4514	87-010-380-080	CAP,E 47-16V
C660	87-015-680-010	CAP,E 47-10V	C4521	87-010-404-080	CAP,E 4.7-50V
C662	87-010-402-080	CAP,E 2.2-50V	C4525	87-010-404-080	CAP,E 4.7-50V
C704	87-010-378-080	CAP,E 10-16V			<b>*** DIODES ***</b>
C705	87-010-235-080	CAP,E 470-16V	D601	87-017-931-010	ZENER,MTZJ5.6B
C706	87-010-378-080	CAP,E 10-16V	D602	87-020-465-010	DIODE,1SS133T
C707	87-010-378-080	CAP,E 10-16V	D603	87-020-465-010	DIODE,1SS133T
C708	87-010-378-080	CAP,E 10-16V	D604	S2-8T1-1ES-N10	DIODE,11ES1N-TA1B2
C710	87-015-075-040	CAP,E 10-16V	D607	S2-3U1-003-A30	DIODE,SB10-03A3
C711	87-010-380-080	CAP,E 47-16V	D701	S9-7U0-130-1B0	ZENER,MTZJ13B
C852	87-010-079-080	CAP,E 100-6.3V	D702	S9-7U0-130-1B0	ZENER,MTZJ13B
C854	87-015-975-080	CAP,E 220-6.3V	D703	S3-Z68-V10-000	ZENER,MTZJ6.8B
C856	87-010-079-080	CAP,E 100-6.3V	D801	S2-8TE-QS0-400	DIODE,11EQS04N-TA
C857	87-010-112-080	CAP,E 100-16V	D802	87-020-465-010	DIODE,1SS133T
C863	87-010-379-080	CAP,E 22-16V	D852	87-020-465-010	DIODE,1SS133T
C872	87-010-112-080	CAP,E 100-16V	D855	87-020-465-010	DIODE,1SS133T
C873	87-010-112-080	CAP,E 100-16V	D856	87-020-465-010	DIODE,1SS133T
C874	87-010-112-080	CAP,E 100-16V	D857	87-020-465-010	DIODE,1SS133T
C881	87-010-403-080	CAP,E 3.3-50V	D858	87-020-465-010	DIODE,1SS133T
C882	87-010-403-080	CAP,E 3.3-50V	D859	87-020-465-010	DIODE,1SS133T
C883	87-010-403-080	CAP,E 3.3-50V	D860	87-020-465-010	DIODE,1SS133T
C884	87-010-079-080	CAP,E 100-6.3V	D861	87-020-465-010	DIODE,1SS133T
C894	87-016-053-080	CAP,E 22-16V	D1001	S2-LXE-658-000	DIODE,1N4005E-G23
C1001	87-010-112-080	CAP,E 100-16V	D1002	87-020-465-010	DIODE,1SS133T
C1003	S0-001-937-600	CAP,E 0.1F-5.5V	D1003	S0-106-000-600	LED,SID1050CM
C1004	87-010-378-080	CAP,E 10-16V	D1004	S2-LXE-658-000	DIODE,1N4005E-G23
C1013	87-010-076-040	CAP,E 22UF-6.3V	D1005	S9-2T1-120-B00	ZENER,RD12FB-T7
C1016	S0-0NU-047-0M0	CAP,E 47-6.3V	D1006	S2-3U1-003-A30	DIODE,SB10-03A3
C1020	87-015-695-080	CAP,E 1-50V	D1007	S2-8T1-1E1-N10	DIODE,11E1N-TA1B2
C1021	87-015-683-080	CAP,E 33-16V	D1008	87-017-931-010	ZENER,MTZJ5.6B
C1029	87-010-549-010	CAP,E 47-6.3V	D1009	87-020-465-010	DIODE,1SS133T
C1032	87-016-088-040	CAP,E 220-6.3V	D1010	S2-3U1-003-A30	DIODE,SB10-03A3
C1033	87-010-404-080	CAP,E 4.7-50V	D1011	87-020-465-010	DIODE,1SS133T
C1036	87-010-370-080	CAP,E 330-6.3V	D1015	87-020-465-010	DIODE,1SS133T
C1037	87-016-088-040	CAP,E 220-6.3V	D1016	87-020-465-010	DIODE,1SS133T
C1040	87-015-695-080	CAP,E 1-50V	D1017	87-020-465-010	DIODE,1SS133T
C1045	87-001-271-080	CAP,E 1000-16V	D1018	87-020-465-010	DIODE,1SS133T
C1046	87-010-385-040	CAP,E 220UF-25V	D1019	S2-8TE-QS0-400	DIODE,11EQS04N-TA
C1062	87-010-404-080	CAP,E 4.7-50V	D1020	S2-8TE-QS0-400	DIODE,11EQS04N-TA
C1072	87-015-695-080	CAP,E 1-50V	D1021	S2-8TE-QS0-400	DIODE,11EQS04N-TA
C1073	87-015-677-010	CAP,E 100-6.3V	D4001	S3-Z68-V10-000	ZENER,MTZJ6.8B
C4001	S0-E7T-033-0M0	CAP,E 33-6.3V	D4002	S3-Z68-V10-000	ZENER,MTZJ6.8B
C4011	87-010-549-010	CAP,E 47-6.3V	D4202	S2-8T1-1ES-N10	DIODE,11ES1N-TA1B2
C4015	87-010-549-010	CAP,E 47-6.3V	D4501	S9-7U0-130-1B0	ZENER,MTZJ13B
C4017	87-010-549-010	CAP,E 47-6.3V	D4502	S9-7U0-130-1B0	ZENER,MTZJ13B
C4024	87-010-403-080	CAP,E 3.3-50V	D4503	87-020-465-010	DIODE,1SS133T
C4031	87-010-404-080	CAP,E 4.7-50V	D4505	S9-7U0-120-1B0	ZENER,MTZJ12B T-77
C4036	87-015-075-040	CAP,E 10-16V	D4506	S9-7U0-120-1B0	ZENER,MTZJ12B T-77
C4039	87-010-404-080	CAP,E 4.7-50V	D4507	S9-7U0-120-1B0	ZENER,MTZJ12B T-77
			D4508	S9-7U0-120-1B0	ZENER,MTZJ12B T-77

# ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
*** ICS ***			*** COILS ***		
△ IC352	S0-FSP-752-300	IC,AN7523	B851	S2-4DT-035-810	CORE,BEADS LFP3A-M3R2TA
IC602	S0-1DE-509-900	IC,NN5099	B4501	S2-4AC-360-1C0	CORE,BEADS BLM21A601SPT
IC701	S0-6D0-247-200	IC,M52472P	B4502	S2-4DT-035-810	CORE,BEADS LFP3A-M3R2TA
IC851	SC-KD0-010-600	IC,ET106			
IC852	SC-KD0-031-700	IC,ET317	L600	S2-A12-818-720	CORE,TRIDAL KR16TT281807
IC853	S5-5DC-405-3A0	IC,TC74HC4053AP	L602	S2-167-D10-1K0	COIL,100UH
△ IC1001	S0-7SQ-955-AN0	IC,BA6955AN	L605	S2-167-D10-1K0	COIL,100UH
IC1002	SE-1J0-S31-AH0	IC,RE5VS31A	L606	87-003-141-010	COIL,1.2UH
IC1003	S0-3FE-772-V00	IC,LC74772V	L609	S2-16S-12R-7J0	COIL,2.7UH
IC1006	S5-4F5-008-5B0	IC,OEC0085B	L610	87-005-566-080	COIL,47UH
IC1099	S5-540-3M0-150	IC,S-24C08ADPA-01	L611	87-005-566-080	COIL,47UH
IC4001	S0-4F3-821-7F0	IC,HA118217F	L613	S2-167-F47-0J0	COIL,47UH
IC4002	S0-3F6-479-300	IC,LC74793JM	L616	S2-167-D10-1K0	COIL,100UH
IC4502	S0-7S0-760-400	IC,BA7604N	L701	S2-167-D10-1K0	COIL,100UH
*** TRANSISTORS ***			L852	87-003-102-010	COIL,10UH
Q351	89-324-122-080	TR,2SC2412KT	L856	87-003-102-010	COIL,10UH
Q352	89-324-122-080	TR,2SC2412KT	L1001	87-003-148-010	COIL,33UH
Q353	SN-YTB-050-010	TR,DTC114E	L1002	S2-167-D10-1K0	COIL,100UH
Q601	89-324-122-080	TR,2SC2412KT	L1003	87-005-566-080	COIL,47UH
Q603	SC-3T0-300-000	TR,2SC3000	L4001	S3-262-300-380	COIL,TRAP 2623003
Q604	87-026-235-010	TR,DTC114EK	L4002	S2-167-F10-1J0	COIL,100UH
Q605	87-026-235-010	TR,DTC114EK	L4003	S2-167-D10-1K0	COIL,100UH
Q607	84-LB2-698-080	TR,2SA733(C)-T	L4004	87-005-208-010	COIL,100UH
Q613	89-324-122-080	TR,2SC2412KT	L4005	S3-162-600-880	COIL,BIAS OSC 1626008
Q701	89-110-372-080	TR,2SA1037AK	L4006	87-003-112-010	COIL,1MH
Q702	87-026-236-080	TR,DTC124EK	L4007	S2-167-D10-1K0	COIL,100UH
Q703	87-026-236-080	TR,DTC124EK	L4009	S2-167-D10-1K0	COIL,100UH
Q851	89-324-122-080	TR,2SC2412KT	L4010	S2-167-D10-1K0	COIL,100UH
Q852	89-324-122-080	TR,2SC2412KT	L4011	87-003-282-010	COIL,12UH
Q853	89-324-122-080	TR,2SC2412KT	L4012	87-003-154-080	COIL,220UH
Q855	89-324-122-080	TR,2SC2412KT	L4013	S2-167-D10-1K0	COIL,100UH
Q861	89-324-122-080	TR,2SC2412KT	L4015	S2-167-D10-1K0	COIL,100UH
Q862	89-324-122-080	TR,2SC2412KT	L4016	87-003-285-010	COIL,39UH
Q863	89-324-122-080	TR,2SC2412KT	L4021	S2-1LA-622-0K0	COIL,22UH
Q1001	S0-02M-005-700	PHOTO COUPLER SG-260	L4501	S2-167-D10-1K0	COIL,100UH
Q1002	89-324-122-080	TR,2SC2412KT	L4502	87-003-152-010	COIL,100UH
Q1003	S0-027-005-300	PHOTO,COUPLER RPI-352Q01	L4504	87-003-102-010	COIL,10UH
Q1005	S0-02M-005-700	PHOTO COUPLER SG-260	L4506	S2-167-D10-1K0	COIL,100UH
Q1006	89-324-122-080	TR,2SC2412KT			*** JACK ***
Q1007	89-324-122-080	TR,2SC2412KT	J4501	S6-3G1-000-370	SOCKET,21PIN 035_0_9985_0
Q1008	SB-3T0-089-200	TR,2SB892			*** SWITCH ***
Q1009	S0-027-005-300	PHOTO,COUPLER RPI-352Q01			
Q1014	89-324-122-080	TR,2SC2412KT	SW1001	S5-082-210-010	SW,LEAF SPVF130100
Q1015	89-324-122-080	TR,2SC2412KT			*** CONNECTORS ***
Q1016	89-324-122-080	TR,2SC2412KT			
Q1019	SB-3T0-089-200	TR,2SB892	CP603	S6-9E2-901-290	CONN,PWB SIDE
Q1020	87-026-287-080	TR,DTC143EKAT146	CP755	S6-9E2-A01-290	CONN,PWB SIDE
Q1021	89-324-122-080	TR,2SC2412KT	CP1004	S6-972-805-900	CONN PWB SIDE TMC-J08P-B1
Q1022	89-110-372-080	TR,2SA1037AK	CP1005	S6-9R7-500-280	CONN,PWB SIDE 52045-0545
Q1023	89-324-122-080	TR,2SC2412KT	CP1006	S6-9R7-400-280	CONN,52045-0445
Q1024	89-324-122-080	TR,2SC2412KT	CP4001	S6-972-406-000	CONN,PCB SIDE TOC-C04X-B1
Q4001	SD-3T0-073-400	TR,2SD734(E,F,G)-AA	CP4004	S6-971-203-200	CONN,TMC-TD2X-E1
Q4002	SD-3T0-073-400	TR,2SD734(E,F,G)-AA			*** FILTERS ***
Q4003	87-026-228-080	TR,DTA124EK	CF601	S0-22V-39R-520	FILTER,SAW SAF39.5MZL220ZL
Q4004	89-322-746-010	TR,2SC2274	CF603	S0-12T-041-010	CER,FLTR MKT41.5MA110
Q4005	89-322-746-010	TR,2SC2274	CF604	S0-12T-031-020	FILTER,CERAMIC TRAP MKT31.5MA110P
Q4006	89-110-372-080	TR,2SA1037AK			*** CRYSTAL & CERAMIC OSCILLATORS ***
Q4015	87-026-411-080	TR,DTC144EKAT146	X604	S0-OCT-4R4-060	X'TAL HC-94/U
Q4020	89-109-330-010	TR,2SA933STP	X851	S0-OCT-013-020	X'TAL HC-49/U-S
Q4201	SN-YTB-050-010	TR,DTC114E	X1001	S0-OCT-010-020	X'TAL,HC-49/U
Q4501	89-324-122-080	TR,2SC2412KT	X1002	S0-0D3-2R8-010	X'TAL,32.768K
Q4502	89-110-372-080	TR,2SA1037AK	X4001	S0-OCT-4R4-070	X'TAL HC-49/U
Q4504	89-324-122-080	TR,2SC2412KT			*** TUNER ***
Q4505	89-324-122-080	TR,2SC2412KT	△ TU601	S1-445-070-010	TUNER,UHF TUWOF4EK-771F2
Q4507	89-324-122-080	TR,2SC2412KT	△ TU602	S1-445-070-010	TUNER,UHF TUWOF4EK-771F2
Q4508	89-324-122-080	TR,2SC2412KT			
Q4509	89-324-122-080	TR,2SC2412KT			
Q4510	89-324-122-080	TR,2SC2412KT			
*** COILS ***					
ANT601	S2-3S0-002-4A0	ANT UNIT BT15-0006			
B603	S2-4DT-035-810	CORE,BEADS LFP3A-M3R2TA			

# ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
*** OTHERS ***			*** CAPACITORS ***		
CD810	S6-CH2-A01-7A0	CORD CONN CH2A017A	C401	87-016-636-080	CAP,E 4.7-50V
CD820	S6-CH2-B03-1A0	CORD CONN CH2B031A	C403	87-010-560-080	CAP,E 10-50V
CD850	S6-CH2-508-6A0	CORD CONN CH25086A	C405	87-016-636-080	CAP,E 4.7-50V
CD1001	S6-CH0-140-8A0	CORD,CONN CH01408A	C406	S5-EZT-410-1M0	CAP,E 100-35V
CD1002	S6-CH2-207-6A0	CORD CONN CH22076A	C407	87-016-588-080	CAP,E 2200-25V
CD6001	S6-C6H-140-020	CORD,COAXIAL C6H14002	C412	S0-JTB-05N-2K0	CAP,CER 390P-500V
<b>OPERATION PCB ASS'Y</b>			C417	S0-JTB-05S-2K0	CAP,CER 560PF-500V
*** CAPACITORS ***			C418	S5-EZT-B01-0M0	CAP,E 1-160V
C353	87-010-380-080	CAP,E 47-16V	C421	S5-EZ0-410-2M0	CAP,E 1000-35V
C354	87-010-380-080	CAP,E 47-16V	C422	S5-EZT-D01-0M0	CAP,E 1-250V
C755	87-016-088-040	CAP,E 220-6.3V	C423	S4-11F-347-4J0	CAP,MPP 0.47-250V
*** DIODES ***			C424	S4-14F-939-2H0	CAP,MPP 0.0039-1.6KV
D791	S0-21M-2Q1-200	LED,EQ-552-F1T	C425	S0-34B-N7W-2K0	CAP,CER 820P-2KV BP
D792	S0-21M-2Q1-200	LED,EQ-552-F1T	C429	87-012-386-080	CAP,CER 470PF-2KV
D793	S0-21M-2Q1-200	LED,EQ-552-F1T	C431	87-016-373-080	CAP,E 10-250V
D796	S0-21M-5Q1-500	LED,EM-553-F1T	C434	S3-N1F-222-3J0	CAP,0.022-200V
D797	S0-21M-2Q1-200	LED,EQ-552-F1T	C438	87-010-977-010	CAP,CER 680PF-500V
*** COILS ***			C450	S0-1BB-P7B-2K0	CAP,CER 120P-2KV
B701	S2-4AT-036-550	CORE,BEADS BL01RN1-A63T6	△ C505	S2-122-B22-4M0	CAP,0.22-250V E
B702	S2-4AT-036-550	CORE,BEADS BL01RN1-A63T6	△ C506	S2-122-B10-4M0	CAP,MP 0.1-250V
L004	S2-A6A-8A0-A10	CORE,FERRITE HF57T18.5*10*10	C507	S1-9A0-C01-040	CAP,E 100-400V
L005	S2-A6A-8A0-A10	CORE,FERRITE HF57T18.5*10*10	△ C508	SB-393-0M1-3M0	CAP,CER 0.001-250V
*** JACKS ***			C510	S5-EZT-422-1M0	CAP,E 220-35V
△ J351	S6-021-310-120	JACK,RCA 3.5 HSJ2630-0100	C511	S5-EZT-247-1M0	CAP,E 470-16V
J701	S6-021-010-200	JACK,RCA	C513	S5-EZT-522-0M0	CAP,E 22-50V
*** SWITCHES ***			C514	S0-1BB-P7E-3K0	CAP,0.0015-2KV BP
SW750	S5-042-01T-310	SW,TACT SKHVBED010	C516	87-012-376-010	CAP,CER 470PF-500V
SW751	S5-042-01T-310	SW,TACT SKHVBED010	C517	S0-34B-N7G-3K0	CAP,CER 0.0018-2KV
SW791	S5-042-01T-310	SW,TACT SKHVBED010	C518	87-012-376-010	CAP,CER 470PF-500V
SW792	S5-042-01T-310	SW,TACT SKHVBED010	C519	87-012-376-010	CAP,CER 470PF-500V
SW793	S5-042-01T-310	SW,TACT SKHVBED010	C520	S5-EZT-247-1M0	CAP,E 470-16V
SW794	S5-042-01T-310	SW,TACT SKHVBED010	C521	S5-3J0-B22-1M0	CAP,E 220-160V
SW795	S5-042-01T-310	SW,TACT SKHVBED010	C522	87-001-271-080	CAP,E 1000-16V
SW796	S5-042-01T-310	SW,TACT SKHVBED010	C524	S5-EZT-310-2M0	CAP,E 1000-25V
SW797	S5-042-01T-310	SW,TACT SKHVBED010	C526	S5-EZT-147-1M0	CAP,E 470-10V
SW798	S5-042-01T-310	SW,TACT SKHVBED010	C530	SB-393-0M1-3M0	CAP,CER 0.001-250V
SW799	S5-042-01T-310	SW,TACT SKHVBED010	C531	S0-EL0-233-2M0	CAP,E 3300-16V
*** OTHERS ***			C532	S5-EZT-247-1M0	CAP,E 470-16V
CD351	S6-CH2-708-7A0	CORD CONN CH27087A	C536	S5-EZT-247-1M0	CAP,E 470-16V
CD750	S6-CH2-A01-4A0	CORD,CONN CH2A014A	C537	87-015-694-080	CAP,E 0.47-50V
OS753	S7-7Q0-000-170	REMOTE RECEIV	C538	S5-EZT-147-1M0	CAP,E 470-10V
<b>MAIN PCB ASS'Y</b>			C540	S5-EZT-B3R-3M0	CAP,E 3.3-160V
*** RESISTORS ***			C541	S6-2DF-B47-0M0	CAP,E 47-160V
R411	87-022-629-080	RES,M/F 11K-1/6W	D401	S2-8T1-1E1-N10	DIODE,11E1N-TA1B2
R415	S4-X5T-42R-2F0	RES,M 2.2-1/4W	△ D411	S2-LTP-G06-J00	DIODE,RMPG06J
R418	S4-X5T-41R-5F0	RES,MF 1.5-1/4W	△ D413	S2-LTP-G06-J00	DIODE,RMPG06J
△ R447	87-A00-100-060	RES,FUSE 68-1/2W	△ D501	SG-P15-ML0-000	DIODE,GP15M-G23
△ R448	SF-F01-02J-B10	RES,M 1K-1W	△ D502	SG-P15-ML0-000	DIODE,GP15M-G23
△ R449	S5-X2C-E10-3J0	RES,CEMENT 10K-7W	△ D503	SG-P15-ML0-000	DIODE,GP15M-G23
△ R450	87-A00-106-060	RES,FUSE 3.3-1W	△ D504	SG-P15-ML0-000	DIODE,GP15M-G23
△ R452	S6-558-1R6-8J0	RES,FUSE 0.68-1W	△ D505	S2-8T2-1DQ-N90	DIODE,21DQ09N-TA2B
△ R501	S5-K2C-E2R-2J0	RES,CEM 2.2-7W	D506	S2-LTP-G06-J00	DIODE,RMPG06J
△ R505	S3-X28-B27-3J0	RES,M 27K-3W	D507	S2-BTR-U2Y-X00	DIODE,RU2YX-V1
△ R510	S3-X28-B3R-3J0	RES,M 3.3-3W	△ D509	S2-8T2-1DQ-N90	DIODE,21DQ09N-TA2B
△ R512	S3-X18-127-3J0	RES,M 27K	△ D510	S2-BTR-U2A-M00	DIODE,RU2AM V1
△ R517	87-022-601-080	RES,M 0.22-2W	△ D511	S2-8T1-0EL-S20	DIODE,10ELS2N-TA1
R529	S4-X5T-627-2F0	RES,M 2.7K-1/6W	△ D512	S2-8T2-1DQ-N90	DIODE,21DQ09N-TA2B
△ R542	S3-218-1R3-9J0	RES,MO 0.39-1W	D515	87-002-743-080	ZENER,MTZJ33B T77
△ R543	S6-35U-268-1J0	RES,FUSE 680-1/2W	D516	87-020-465-010	DIODE,1SS133T
			D517	87-020-465-010	DIODE,1SS133T
			D518	87-A40-172-080	DIODE,EG01Z-V0
			△ D519	S2-8T2-1DQ-N90	DIODE,21DQ09N-TA2B
			D521	87-A40-172-080	DIODE,EG01Z-V0
			D523	87-020-465-010	DIODE,1SS133T
			D525	S2-BT0-EG0-1C0	DIODE,EG-01C
			D528	87-017-931-010	ZENER,MTZJ5.6B
			D529	87-020-465-010	DIODE,1SS133T
			△ IC506	S0-021-000-1R0	PHOTO,COUPLER ON3171R
			TH501	S8-R0F-140-M00	DEGAUSS PTH451C26

# ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
		*** ICS ***			*** CAPACITORS ***
△ IC401	87-A20-128-010	IC,LA7840	C801	S0-JBB-07H-3K0	CAP,CER 0.0022-2KV
△ IC501	S2-BT0-670-700	IC,STR-F6707	C819	S0-JBB-07H-3K0	CAP,CER 0.0022-2KV
△ IC502	S0-Q09-780-500	IC,NJM7805FD	C820	S0-ELT-D4R-7M0	CAP,E 4.7-250V
△ IC503	S0-GA9-09R-D00	IC,PQ09RD08			
△ IC504	87-001-576-010	IC,NJM7812FA			*** TRANSISTORS ***
△ IC505	87-A20-790-010	IC,KIA7806P			
		*** TRANSISTORS ***	△ Q804	SC-3F0-421-700	TR,2SC4217(D,E)
			△ Q805	SC-3F0-421-700	TR,2SC4217(D,E)
			△ Q806	SC-3F0-421-700	TR,2SC4217(D,E)
Q405	SC-3T0-227-100	TR,2SC2271(D,E)-AE			*** CONNECTOR ***
△ Q406	SD-UQ0-259-900	TRANSISTOR SILICON 2SD2599			
△ Q501	SC-3T0-290-900	TR,2SC2909			
△ Q502	SA-3T1-371-A00	TR,2SA1371	CP850	S6-9E2-501-290	CONN,PWB SIDE
△ Q503	SC-300-416-000	TR,2SC4160-OEC-			*** FUSE ***
Q504	89-318-154-080	TR,2SC1815Y			
Q506	87-026-464-080	TR,DTC114TS			
Q507	89-309-458-010	TR,2SC945(C)	CP803B	S6-7R1-050-190	HOLDER,WIRE 51052-0500
Q513	SN-YTB-030-010	TR,DTC114E			*** CRT SOCKET ***
		*** COILS ***			
B504	S2-4AT-036-550	CORE,BEADS BL01RN1-A63T6	△ J801	S6-6X1-200-140	SOCKET,CRT HPS320
B505	S2-4A8-407-C30	CORE,BL02RN2-R62T2			<b>POWER SW PCB ASS'Y</b>
L401	87-003-143-010	COIL,4.7MH			*** SWITCH ***
L402	S2-210-000-130	COIL,LINEA ELH5L4112			
L403	87-003-150-010	COIL,68UH	△ SW501	S5-302-050-010	SW,PLUS SDDFC3056A
△ L501	S2-9X0-000-520	FILTER,			*** CONNECTOR ***
△ L502	S2-9X0-000-650	FILTER,SU16V-2			
T401	S3-305-Y00-2S0	TRANS,H DRIVE 305Y002S	CP504	S6-973-200-390	CORD UX CONNECTOR
		*** TRANSFORMER ***			*** AC CORD ***
△ T501	S4-813-504-0W0	TRANS SWITCHING 8135040W	△ CD501	S2-066-358-230	CORD AC 1206635823
		*** VARIABLE RESISTOR ***			*** OTHER ***
VR502	S1-263-L2B-TC0	SFR,RH063MCN2R07	CD502	S6-CPU-201-2A0	CORD CONN CPU2012A
		*** CONNECTORS ***			<b>IF PCB ASS'Y</b>
CP401	S6-9X4-500-290	CONN PWB SIDE B05B-DVS			*** CAPACITORS ***
CP501	S6-973-200-390	CORD UX CONNECTOR	C6002	87-010-071-080	CAP,E 1-50V
CP810	S6-9E2-A01-290	CONN,PWB SIDE	C6003	87-010-071-080	CAP,E 1-50V
CP820	S6-9E2-B01-290	CONN,PWB SIDE	C6004	87-010-112-080	CAP,E 100-16V
		*** FUSES ***	C6011	87-010-825-010	CAP,E 0.22-50V
CP803A	S6-7R1-050-190	HOLDER,WIRE 51052-0500			*** ICS ***
△ F501	S8-0PT-040-020	FUSE,4A-250V T	IC6001	S0-3D7-567-B00	IC,LA7567B
△ F502	S8-08T-1R6-020	FUSE,			*** TRANSISTORS ***
FH501	S6-710-T00-060	HOLDER,FUSE EYF-52B			
FH502	S6-710-T00-060	HOLDER,FUSE EYF-52B	Q6001	SA-3T0-608-KF0	TR,2SA608KF-NP-AA
FH503	S6-710-T00-060	HOLDER,FUSE EYF-52B	Q6005	SC-3T0-300-000	TR,2SC3000
FH504	S6-710-T00-060	HOLDER,FUSE EYF-52B			*** COILS ***
		*** RELAY ***			
△ RY501	S5-60Q-102-010	RELAY,SDT-S-109LMR	L6001	87-003-147-010	COIL,22UH
		*** OTHERS ***	L6003	S2-1LA-62R-7K0	COIL,2.7 LAP02TA2R7K
			L6006	S3-360-K04-2R0	COIL,VIDEO IFT 360K042
			L6007	87-003-146-010	COIL,15UH
△ ICP502	S8-3PC-040-020	MICRO FUSE 251004	L6008	S2-1LA-6R2-2M0	COIL,0.22 LAP02TAR22M
△ ICP503	S8-3PC-050-020	MICRO FUSE,251005	L6011	87-003-141-010	COIL,1.2UH
△ ICP505	S8-3PC-020-020	MICRO FUSE			*** FILTERS ***
		<b>CRT PCB ASS'Y</b>			
		*** RESISTORS ***	CF6001	S0-12T-6R0-120	FILTER,CER SFSH6.0MCB-TF21
			CF6002	S0-22V-39R-520	FILTER,SAW SAF39.5MZL220ZL
			CF6005	S0-12T-6R0-030	CER,FLTR TPS6.0M
△ R802	87-A00-164-090	RES,M 12K-2W	CF6007	S0-12T-041-010	CER,FLTR MKT41.5MA110
△ R805	87-A00-164-090	RES,M 12K-2W	CF6008	S0-12T-031-020	FILTER,CERAMIC TRAP MKT31.5MA110P
△ R810	87-A00-164-090	RES,M 12K-2W			

# ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
		<b>AND OTHERS</b>
		*** COIL ***
△ L503	S2-8F1-400-180	COIL,DEGAUSS 8F140018
		*** TRANSFORMER ***
△ FB401	S4-321-402-9F0	TRANS FLYBACK 3214029F
		*** OTHERS ***
CD354	S6-CH1-243-4A0	CORD CONN CH12434A
SP351	S7-0C5-330-080	SPEAKER,810-47-171
SP352	S7-0C5-330-080	SPEAKER,810-47-171
△ V801	S9-8P1-404-960	CRT W/DY A34AGT13-07



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