

SERVICE MANUAL

INTEGRATED COLOR TV/VIDEO
CASSETTE RECORDER

BASIC TAPE MECHANISM : OVD-5

SPECIFICATIONS

GENERAL

POWER REQUIREMENTS 230V AC, 50Hz
 POWER CONSUMPTION 57W
 WEIGHT 13.5 kg (29.7 lbs.)
 DIMENSIONS 435 mm (W) x 365 mm (D) x
 384.5 mm (H)
 (17 1/8 x 14 3/8 x 15 1/4 in.)

TV SECTION

PICTURE TUBE 14" (34 cm "V"), 90 degree
 deflection
 TUNER SYSTEM Voltage synthesized tuner
 CHANNEL COVERAGE UHF: 21 to 69
 TV SYSTEM I
 HORIZONTAL RESOLUTION 240 lines

VCR SECTION

OPERATING TEMPERATURE 5°C to 40°C
 VIDEO RECORDING SYSTEM Rotary 2 head helical
 scanning system
 VIDEO HEAD Azimuth 2 head

VIDEO SIGNAL SYSTEM PAL colour system, 625 lines,
 50 fields
 AUDIO TRACK 1 track (Mono)
 USABLE CASSETTES VHS video cassette
 TAPE SPEED PAL SP: 23.39 mm/sec
 LP: 11.69 mm/sec
 NTSC (Playback SP only)
 33.35 mm/sec
 RECORDING TIME PAL SP: 4 hours 20 minutes
 with E-260 tape
 LP: 8 hours 40 minutes
 with E-260 tape
 NTSC (Playback SP only)
 3 hours with T-180 tape
 VIDEO INPUT 1.0Vp-p, 75 ohm, unbalanced
 VIDEO OUTPUT 1.0Vp-p, 75 ohm, unbalanced
 VIDEO S/N 53dB (nominal)
 AUDIO INPUT -8dBs, 50k ohm
 AUDIO OUTPUT -6dBs, less than 1K ohm

● 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

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.

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

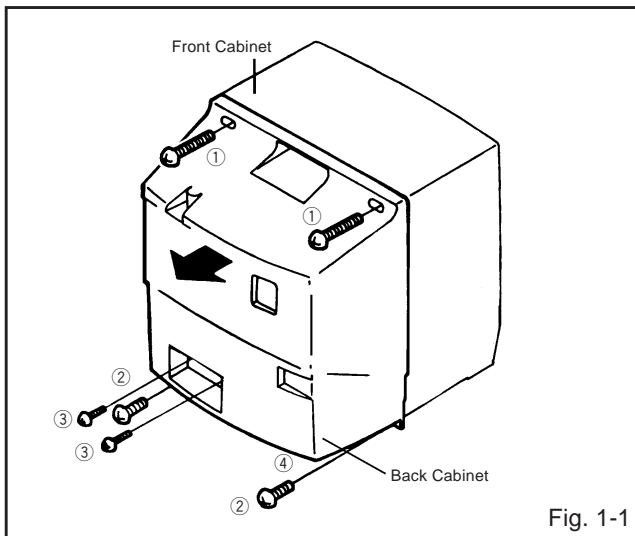


Fig. 1-1

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 on PAGE 12)
2. Disconnect the following connectors:
(CP801 and CP850).
3. Remove the CRT PCB in the direction of arrow.

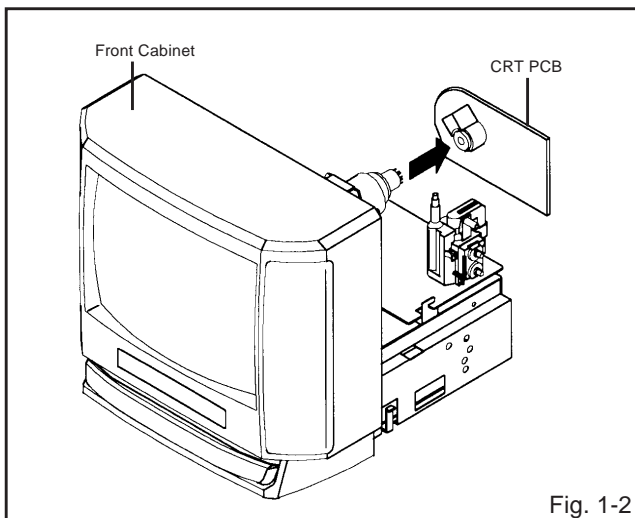


Fig. 1-2

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

1. Remove the 2 screws ①.
2. Disconnect the following connectors:
(CY757, CP353, CP503, CP502 and CP301).
3. Unlock the support ②.
4. Remove the TV/VCR Block in the direction of arrow.

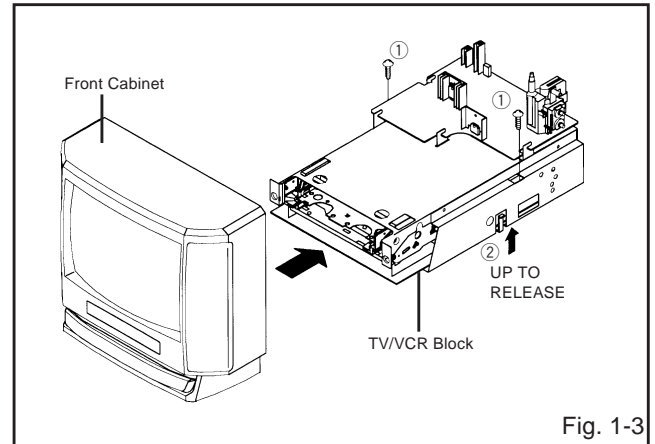


Fig. 1-3

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.

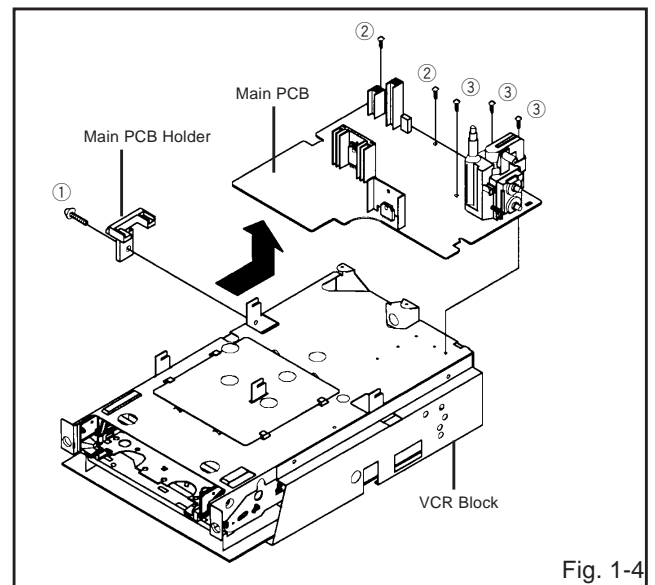


Fig. 1-4

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

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

DISASSEMBLY INSTRUCTIONS

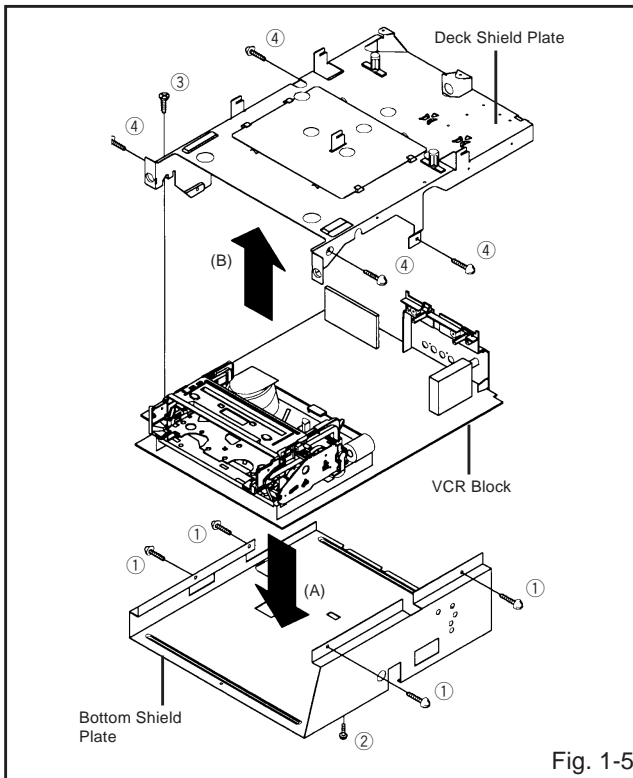


Fig. 1-5

1-6: FRONT LOADING UNIT 15 AND DECK CHASSIS (Refer to Fig. 1-6-A)

1. Remove the 2 screws ①.
2. Remove the Front Loading Unit 15 in the direction of arrow (A).
3. Remove the 3 screws ②.
4. Remove the 2 screws ③.
5. Disconnect the following connectors:
(CP4001, CP1002 and CP4002).
6. Remove the Deck Chassis in the direction of arrow (B).

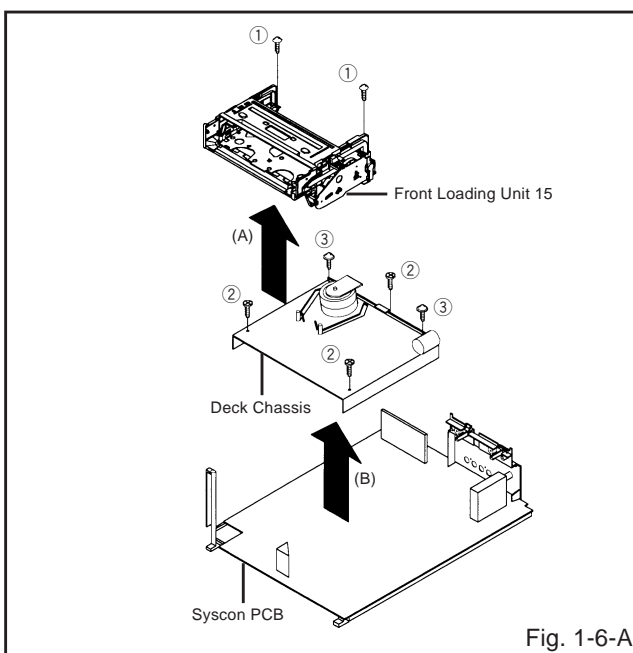


Fig. 1-6-A

NOTE

When installing the Front Loading Unit 15, align the timing marker and pull the Cassette Holder Ass'y in the direction of arrow (C). (Refer to Fig. 1-6-B)

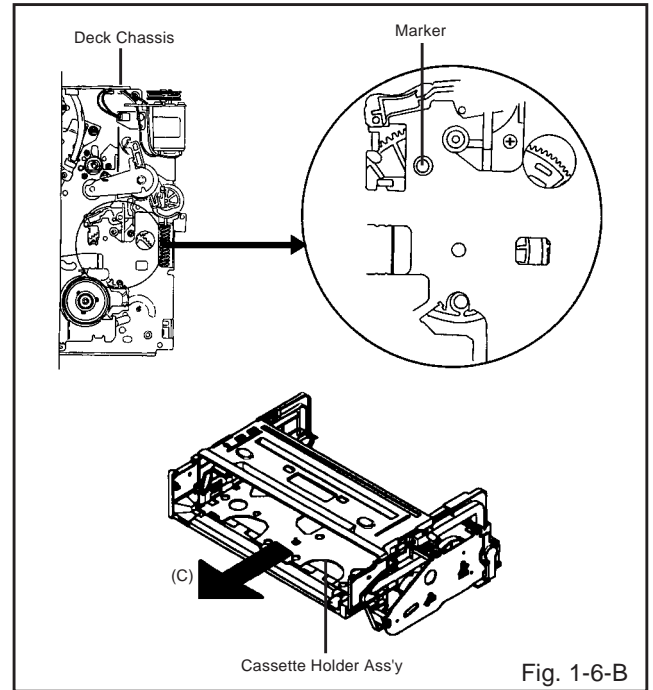


Fig. 1-6-B

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

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

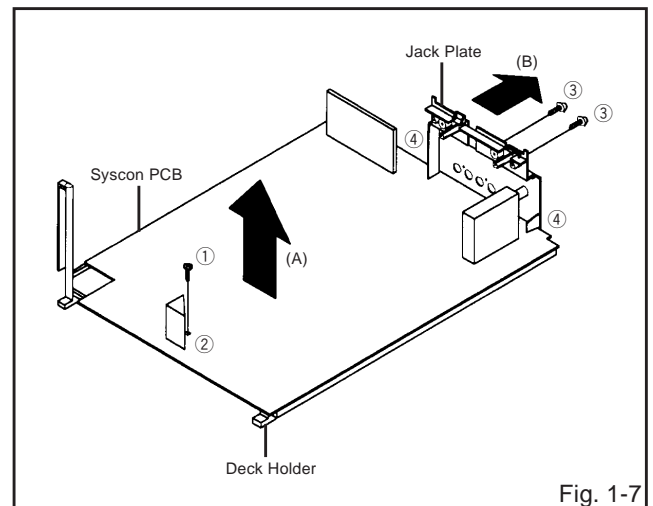


Fig. 1-7

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF DECK PARTS

2-1: LINK GEAR (R) / CAM GEAR (Refer to Fig. 2-1)

1. Unlock the support ①.
2. Remove the BOT Sensor Cover and BOT Reflector.
3. Unlock the 3 supports ②.
4. Remove the Side Bracket R2 and Spring Earth.
5. Remove the Flap Lever, Link Gear (R), Cam Gear Ass'y and BOT Lever.

NOTE

1. When installing the BOT Lever, insert the BOSS into the hole of Link Gear (R).
2. When installing the Link Ass'y 3 and Link Gear (R), align the timing Marks.

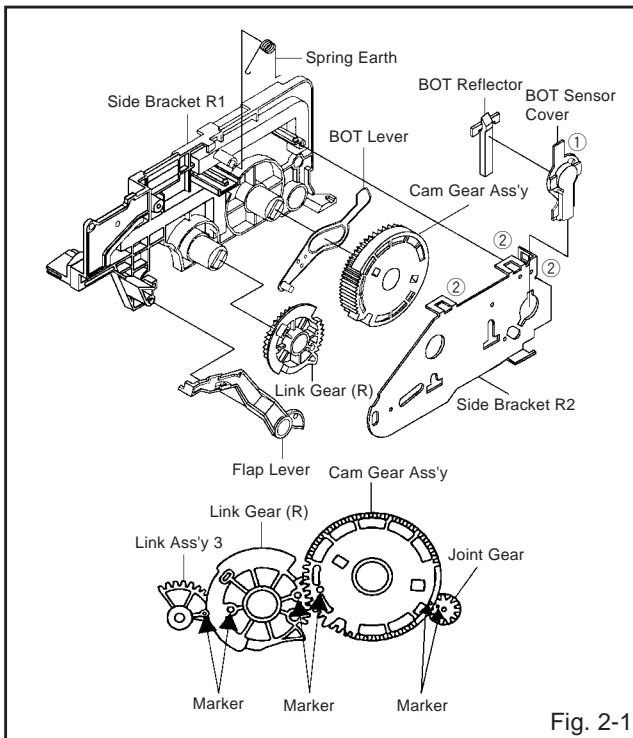


Fig. 2-1

2-2: TOP BRACKET / TAPE PIECE GUIDE (Refer to Fig. 2-2)

1. Remove the Lever Rec Spring.
2. Unlock the 2 supports ①.
3. Remove the Tape Piece Guide.
4. Unlock the 4 supports ②.
5. Remove the Top Bracket.
6. Remove the Side Bracket R1 and Side Bracket L.
7. Unlock the support ③.
8. Remove the Joint Gear.
9. Remove the Bracket R Spring.

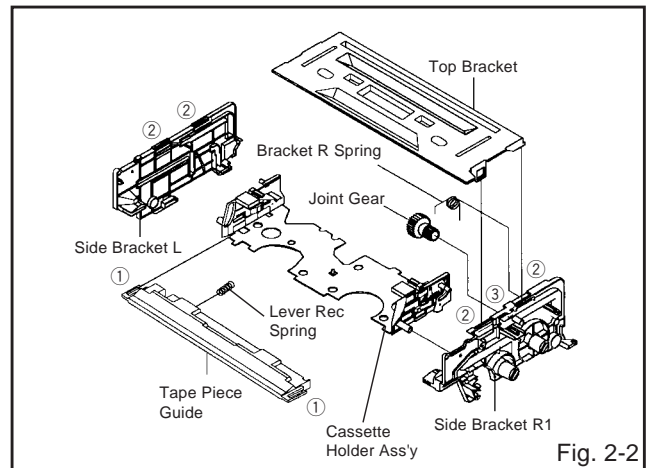


Fig. 2-2

2-3: LINK ASS'Y 3 (Refer to Fig. 2-3)

1. After removing in the direction (A) of Link Ass'y 3, remove the Link Ass'y 3 in the direction (B).

NOTE

Install the (B) first, then install the (A).

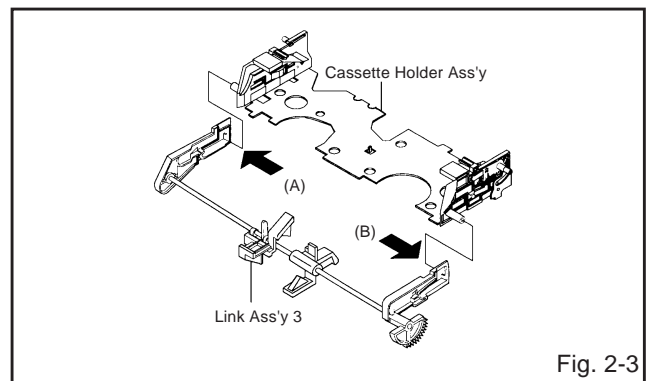


Fig. 2-3

2-4: CASSETTE SIDE R (Refer to Fig. 2-4)

1. Unlock the 2 supports ①.
2. Remove the Cassette Side R.
3. Remove the Pack Spring.
4. Remove the Locker Spring.
5. Unlock support ②.
6. Remove the Locker R.

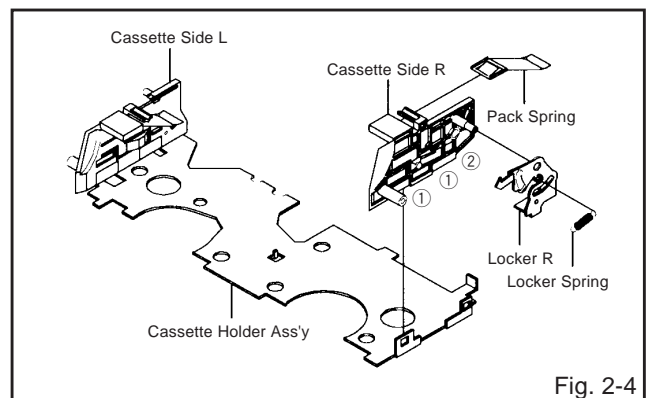


Fig. 2-4

DISASSEMBLY INSTRUCTIONS

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

1. Unlock the 2 supports ①.
2. Remove the Cassette Side L.
3. Remove the Pack Spring.
4. Remove the Locker Spring.
5. Unlock the support ②.
6. Remove the Locker L.

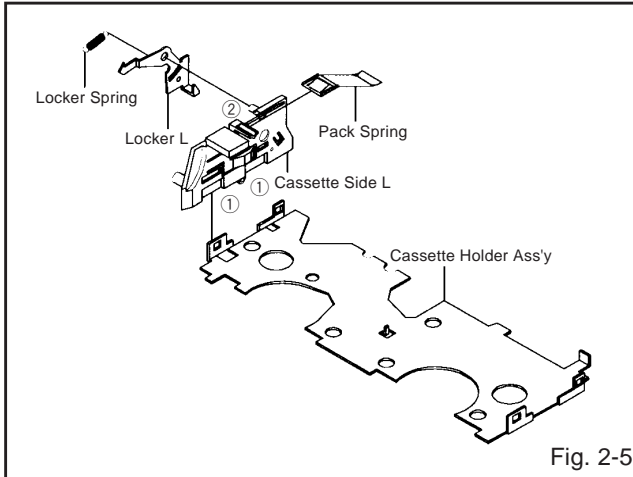


Fig. 2-5

2-6: BRAKE BRACKET (Refer to Fig. 2-6)

1. Remove the Main Brake Spring, S-S Brake Spring, Joint Arm Spring and T-S Brake Spring.
2. Remove the 2 screws ①.
3. Remove the screw ②.
4. Remove the Brake Bracket.
5. Remove the Sub Brake S, Sub Brake T, Main Brake S Ass'y and Main Brake T Ass'y.
6. Remove the Joint Arm.
7. Remove the Reflector LED 2.

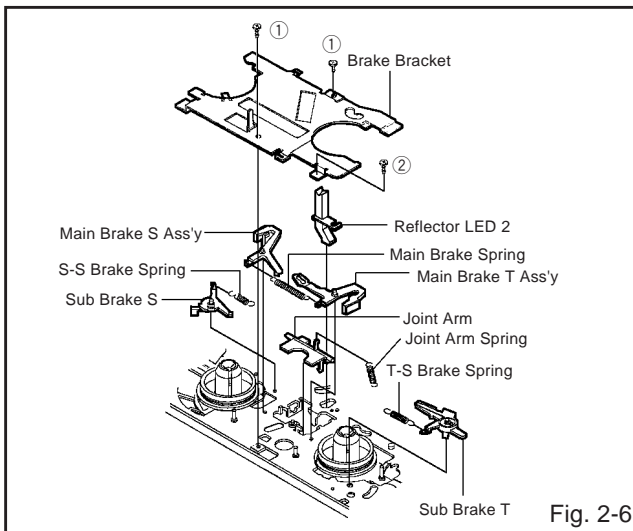


Fig. 2-6

2-7: TENSION BAND (Refer to Fig. 2-7)

1. Remove the Tension Arm Spring 1.
2. Remove the Tension Arm Spring 2.
3. Remove the Tension Adjust.
4. Remove the Tension Arm Ass'y.
5. Remove the Tension Band Ass'y.
6. Remove the Tension Lever 2 Ass'y.

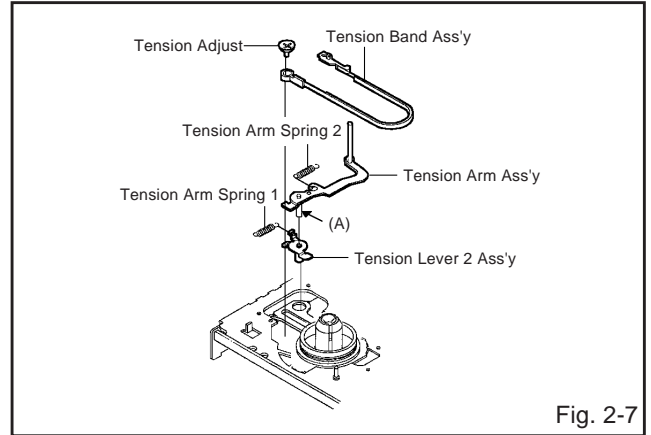


Fig. 2-7

NOTES

1. Install the Tension Band Ass'y without twisting it.
2. Turbine Oil the area marked with A in Fig. 2-7.

2-8: REEL DISK (Refer to Fig. 2-8)

1. Remove the Reel Disk S and Reel Disk T.
2. Remove the 2 polyslider washers.

NOTES

1. Installation of Reel Disk after performing step 1, 2 and 3 in section 2-7 of DISASSEMBLY INSTRUCTIONS.
2. The Height Adjustment washers are sometimes attached to the back of the Reel Disk.
3. Clean the Reel Disk Shaft and put in height adjusting washers.
4. Be careful not to damage the Tension Band Ass'y at the time of removal and installation.
5. Be careful not to scratch the Reel Disk Shaft with the polyslider washer or the tool at the time of removal and installation.
6. After oiling the Reel Disk Shaft, install the new Reel Disk S and Reel Disk T again.
7. After installation, adjust the height of the Reel Disk. **(Refer to item 1-1 of MECHANICAL ADJUSTMENTS)**
8. After installation, adjust and confirm the tension post position. **(Refer to item 1-2 of MECHANICAL ADJUSTMENTS)**

DISASSEMBLY INSTRUCTIONS

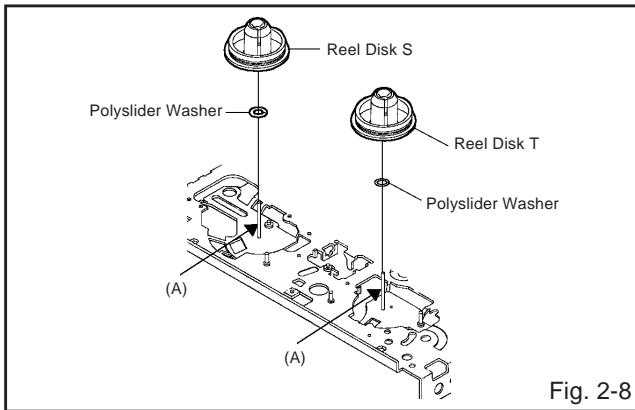


Fig. 2-8

2-9: PINCH ROLLER / CASSETTE OPENER (Refer to Fig. 2-9)

1. Unlock the support ①.
2. Remove the Pinch Roller.
3. Remove the screw ②.
4. Unlock the 2 supports ③.
5. Remove the Cassette Opener.
6. Remove the Spring P5 and Arm P5 Ass'y.
7. Remove the Cam Gear, Polyslider Washer ④, Spring Cam Pinch and Cam Pinch Roller.
8. Remove the Polyslider Washer ⑤ and Cam P5.

NOTES

1. Do not touch the Pinch Roller. (Use gloves.)
2. When installing the Cam P5, Cam Pinch Roller and Cam Gear, align the timing marks.

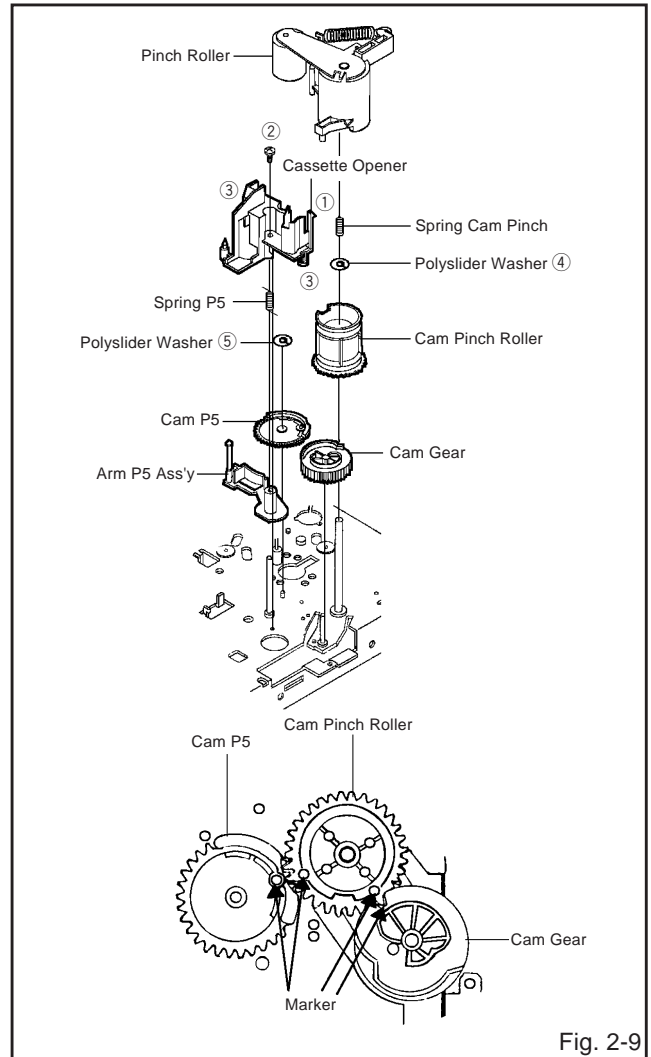


Fig. 2-9

2-10: AUDIO CONTROL HEAD (Refer to Fig. 2-10)

1. Disconnect the following connector: (CP4106) on the Head Amp PCB.
2. Remove the 3 screws ①.
3. Remove the 3 Audio Control Head Springs.
4. Remove the Audio Control Head.

NOTES

1. Do not touch the head by any means when replacing the Audio Control Head. (Use gloves.)
2. After replacement, confirm the following adjustments.
 - a. MECHANICAL ADJUSTMENTS: ITEM 2-2
 - b. MECHANICAL ADJUSTMENTS: ITEM 2-3

DISASSEMBLY INSTRUCTIONS

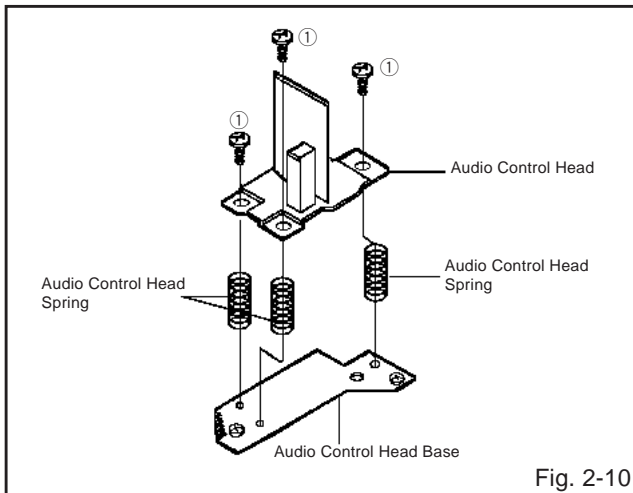


Fig. 2-10

2-11: CYLINDER UNIT (Refer to Fig. 2-11)

1. Disconnect the following connectors: (CP4101 and CP4102) on the Head Amp PCB.
2. Remove the Joint Screw, then remove the Azimuth Spring.
3. Remove the 2 screws ①, then remove the Polyslider Washer and Cylinder Unit from the Main Chassis.

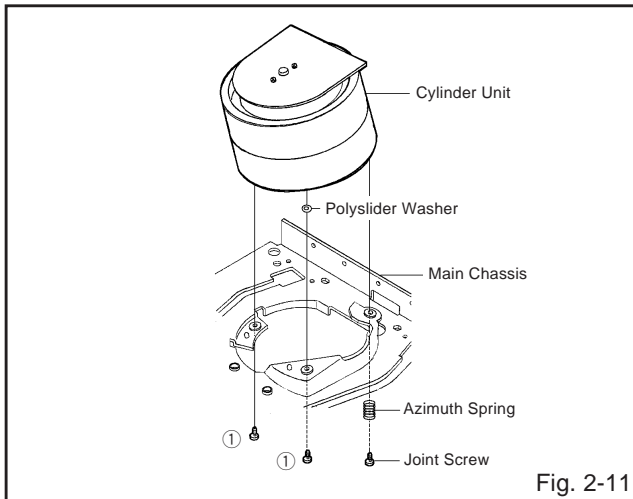


Fig. 2-11

2-12: PLATE BOTTOM (Refer to Fig. 2-12)

1. Remove the Capstan Belt.
2. Remove the 2 screws ①.
3. Remove the 3 screws ②.
4. Remove the Mode Switch.
5. Remove the Tension Lever Spring.
6. Remove the Plate Bottom.

NOTE

When installing the Mode Switch, align the timing position.

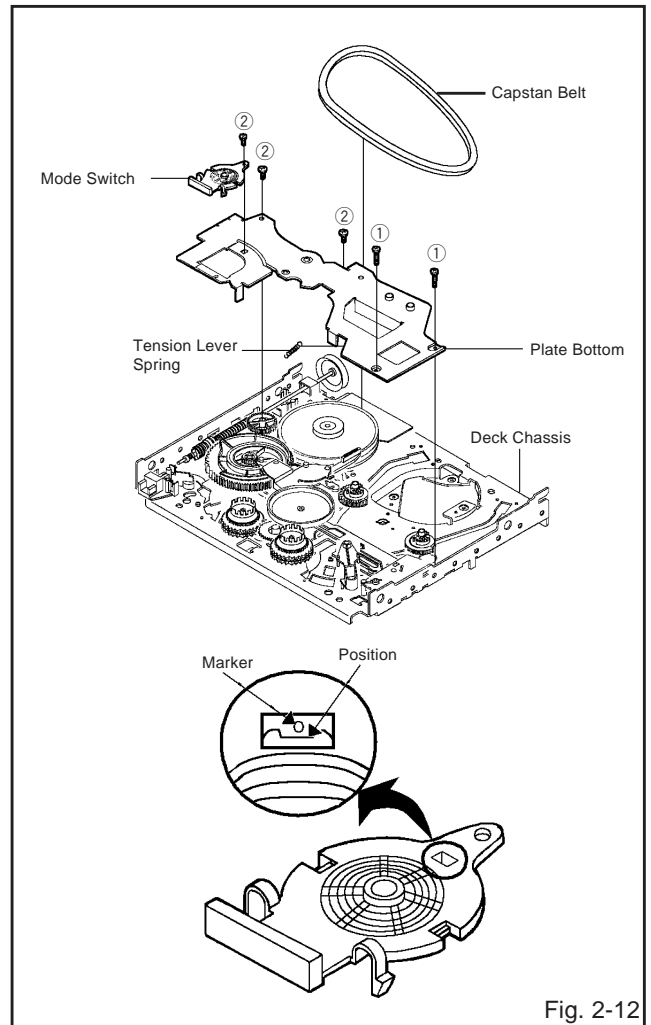


Fig. 2-12

2-13: CENTER PULLEY (Refer to Fig. 2-13)

1. Remove the Polyslider Washer ①.
2. Remove the Center Pulley.
3. Remove the Polyslider Washer ②.
4. Remove the Center Pulley Spring.
5. Remove the Idler Arm Ass'y.
6. Remove the 2 Polyslider Washers ③.
7. Remove the Clutch Gear T Ass'y and Clutch Gear S Ass'y.

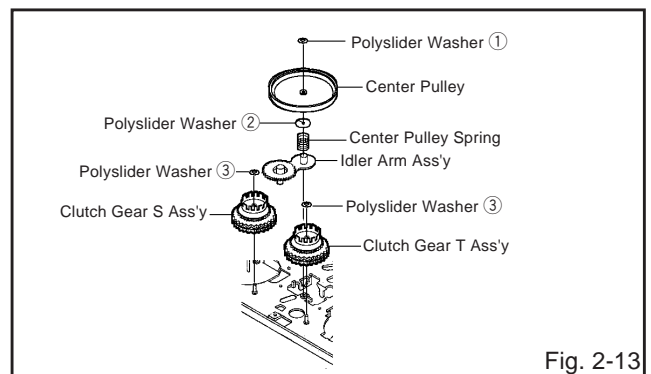


Fig. 2-13

DISASSEMBLY INSTRUCTIONS

2-14: MAIN CAM (Refer to Fig. 2-14)

1. Remove the Loading Lever.
2. Remove the Main Brake Lever.
3. Remove the Capstan Brake Spring.
4. Remove the Capstan Brake Ass'y.
5. Remove the Main Rod Spring.
6. Remove the Tension Holder.
7. Remove the Tension Lever.
8. Remove the Main Cam.
9. Remove the Middle Gear.
10. Remove the Main Rod Ass'y.

NOTES

1. When installing the Main Rod Ass'y, install side (B) first, then install side (A).
2. When installing the Loading Lever, align the timing marks.

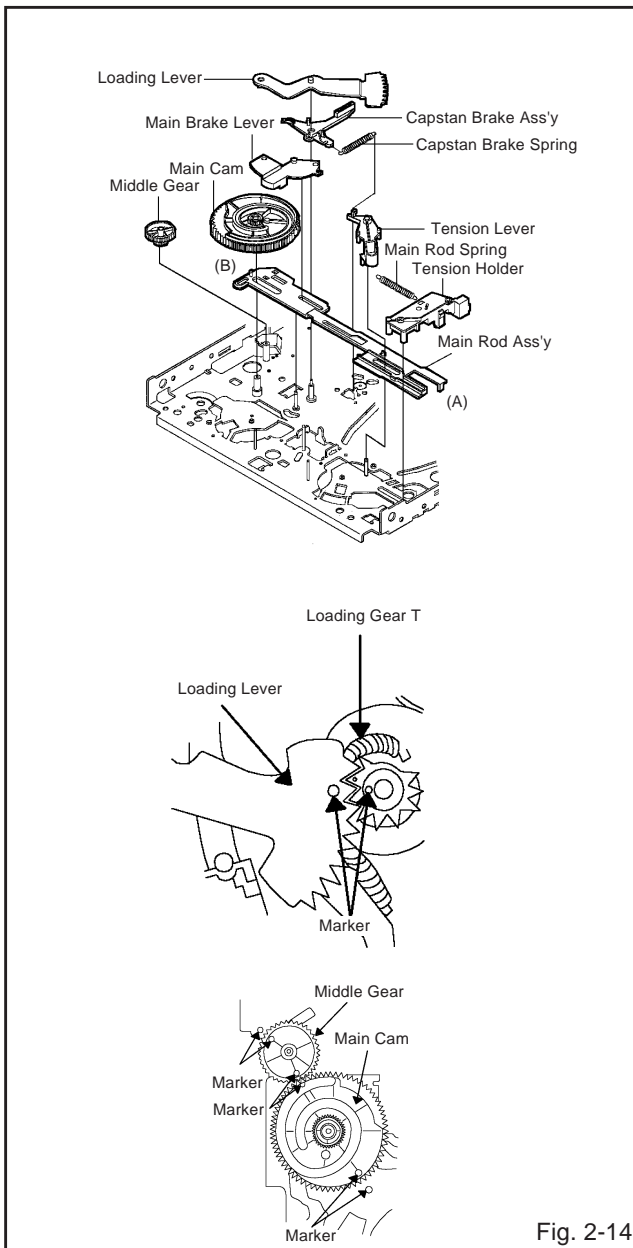


Fig. 2-14

2-15: CAPSTAN DD UNIT (Refer to Fig. 2-15)

1. Remove the 3 screws ①.
2. Disconnect the CP4105.
3. Remove the Capstan DD Unit.

NOTE

Use the specified screw to hold the Capstan DD Unit.

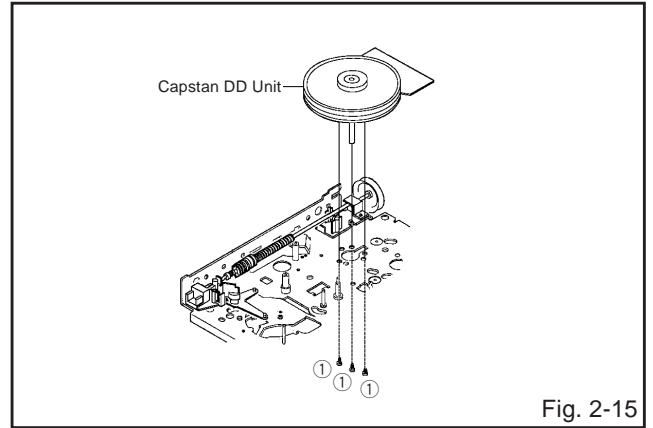


Fig. 2-15

2-16: INCLINED T ASS'Y / INCLINED S ASS'Y (Refer to Fig. 2-16)

1. Remove the 4 screws ①.
2. Remove the Catcher S and Catcher T.
3. Remove the 2 CS Rings.
4. Remove the Inclined T Ass'y and Inclined S Ass'y.
5. Remove the Loading Gear T Ass'y.
6. Remove the Loading Gear S Ass'y.

NOTE

When installing the Inclined T Ass'y and Inclined S Ass'y, align the timing marks.

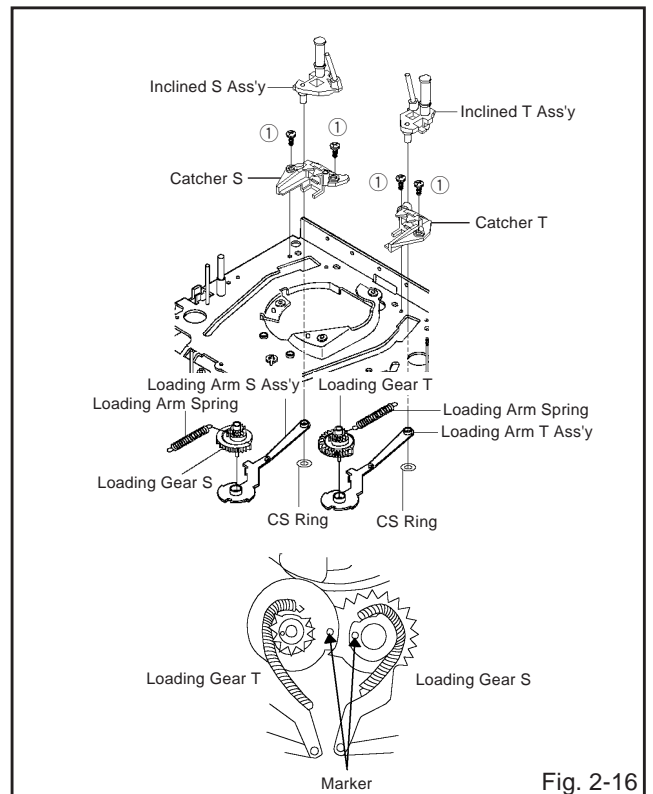


Fig. 2-16

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.

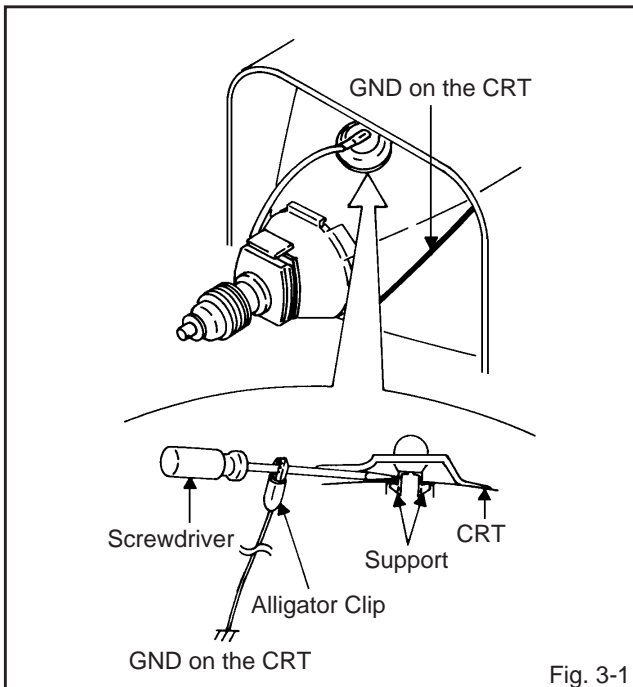


Fig. 3-1

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.)**

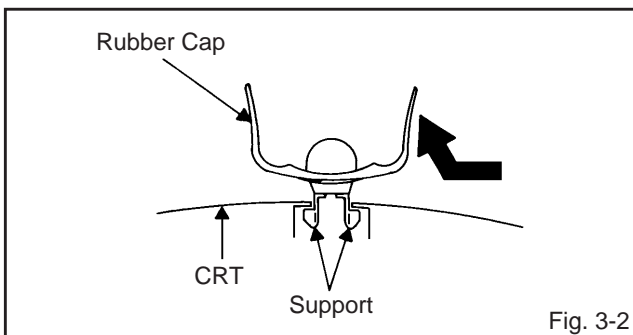


Fig. 3-2

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.)**

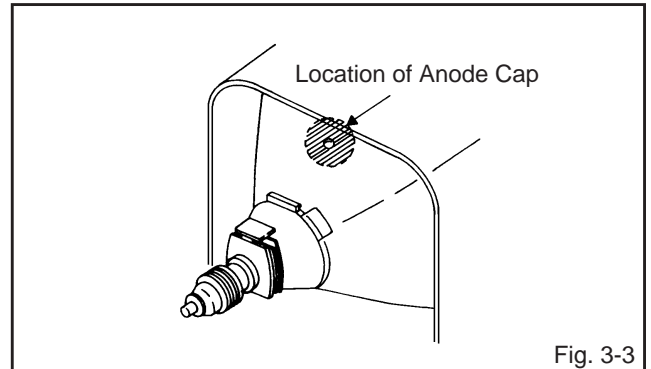


Fig. 3-3

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.)**

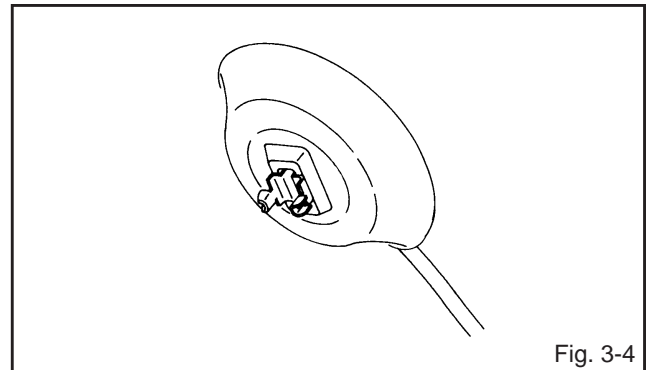


Fig. 3-4

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

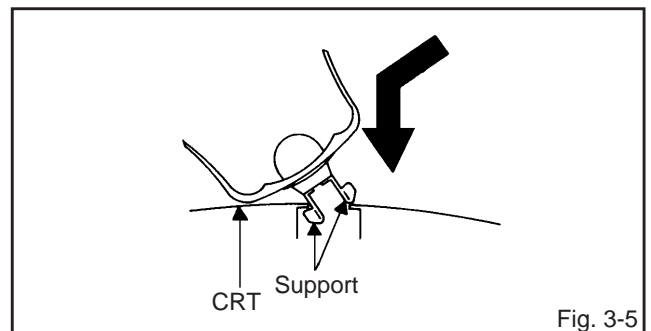


Fig. 3-5

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

KEY TO ABBREVIATIONS

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

KEY TO ABBREVIATIONS

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

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	■	■	■	■	■	
Loading Motor Belt			■	■	●	Clean the rubber, and parts which the rubber touches.
Reel Belt			■	■	●	
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	Replace when rolling becomes abnormal.
Tape Running Guide Post	■	■	■	■	■	
Cylinder Unit	■	■	■	■	●	Clean the Head.

● : Replace ■ : Clean

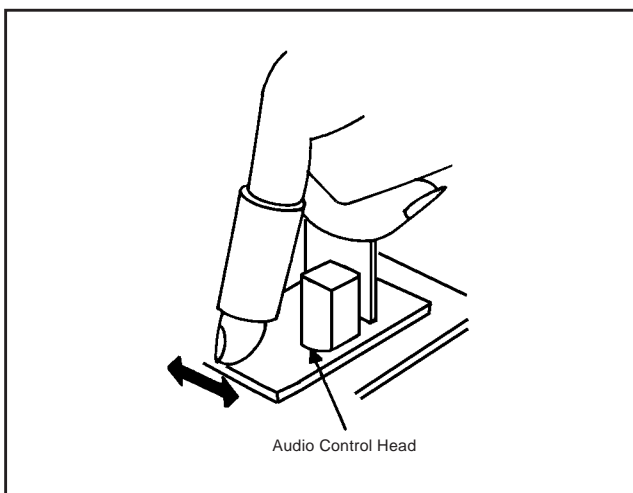
CLEANING

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

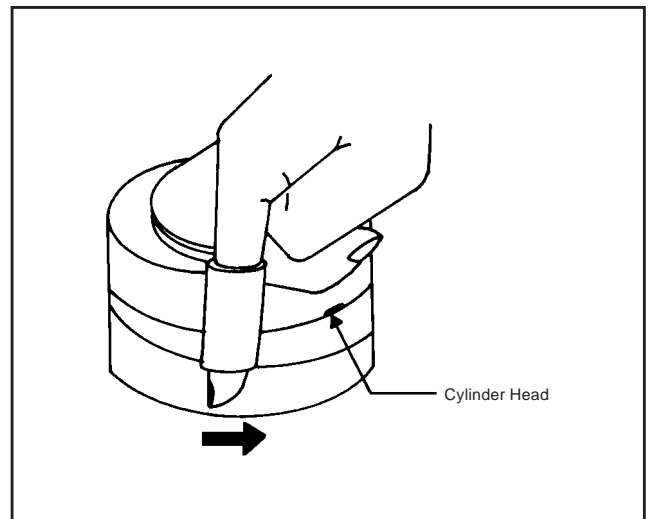
- When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

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 up or down since this can damage the head. Always use a piece of chamois for cleaning.



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.

NOTE

- 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 the setting for after INI 6.

ADDRESS	INI 01	INI 02	INI 03	INI 04	INI 05	INI 06
DATA	EB	91	A9	00	88	AD

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 simultaneously.
3. ADDRESS and DATA should appear as FIG 1.

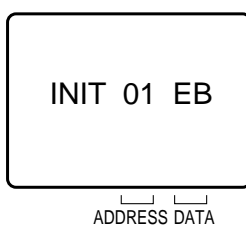
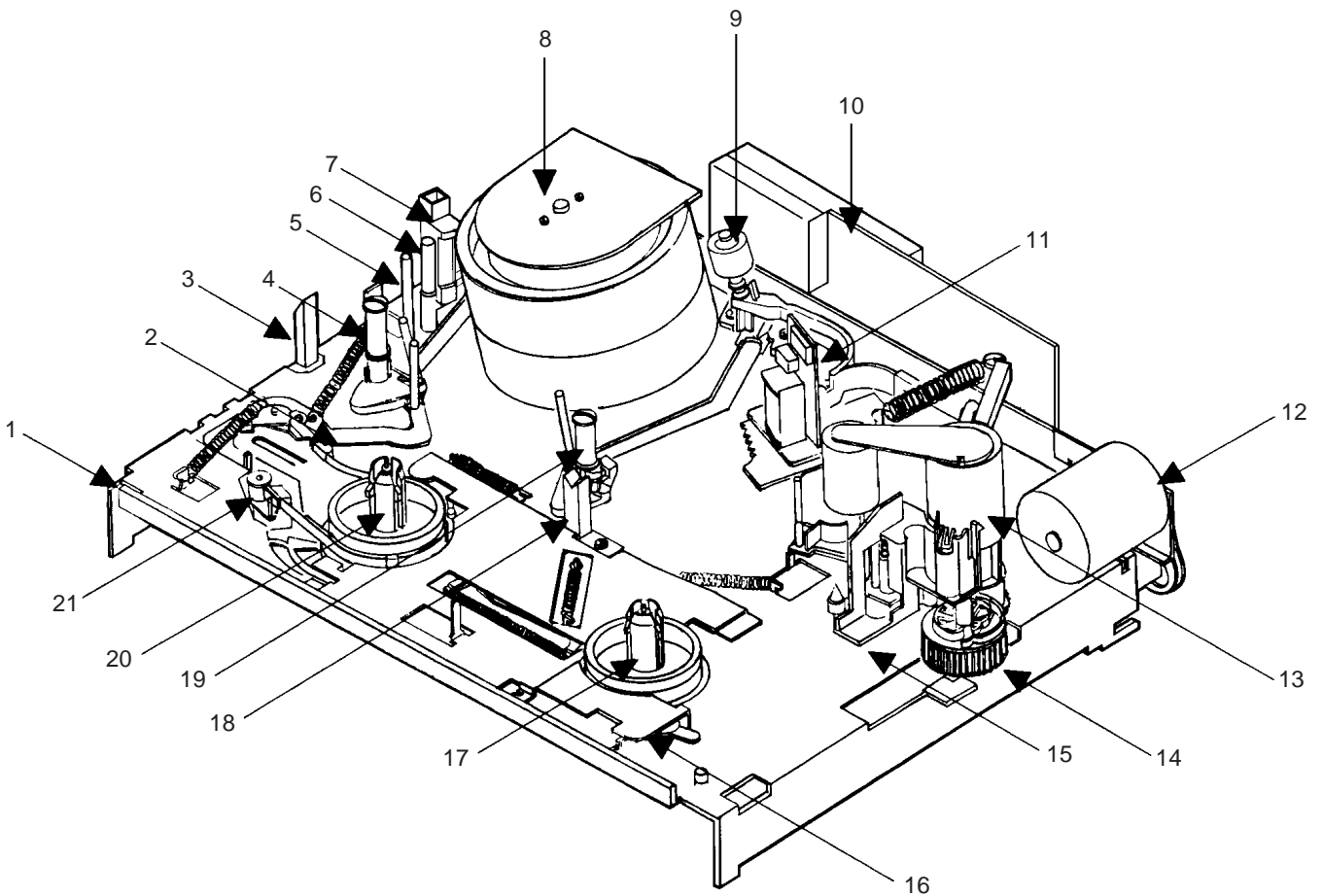


Fig. 1

4. ADDRESS is now selected and should "blink". Using the SET + or - keys on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
5. Press ENTER to select DATA. When DATA is selected, it will "blink".
6. Again, step through the DATA using SET + or - until required DATA value has been selected.
7. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
8. Repeat steps 4 to 7 until all data has been checked.
9. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input. The unit will now have the correct DATA for the new MEMORY IC.

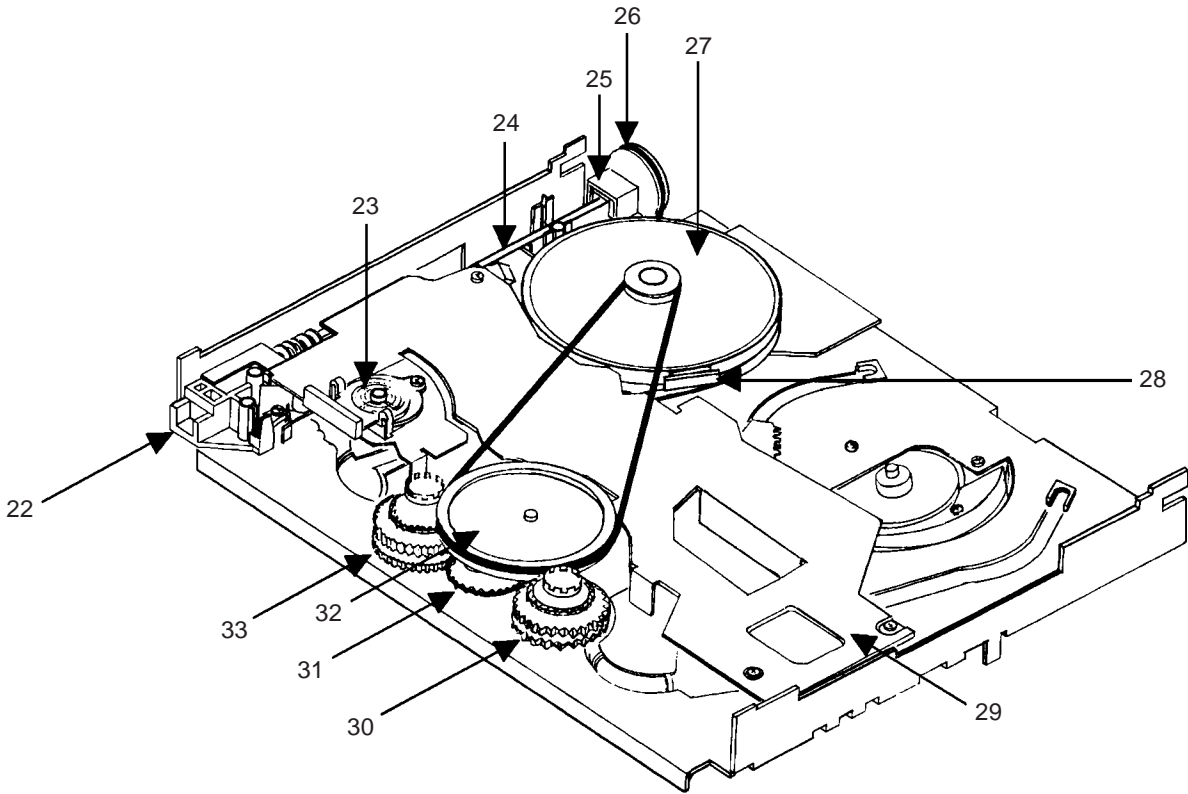
DECK PARTS LOCATIONS

(TOP VIEW)



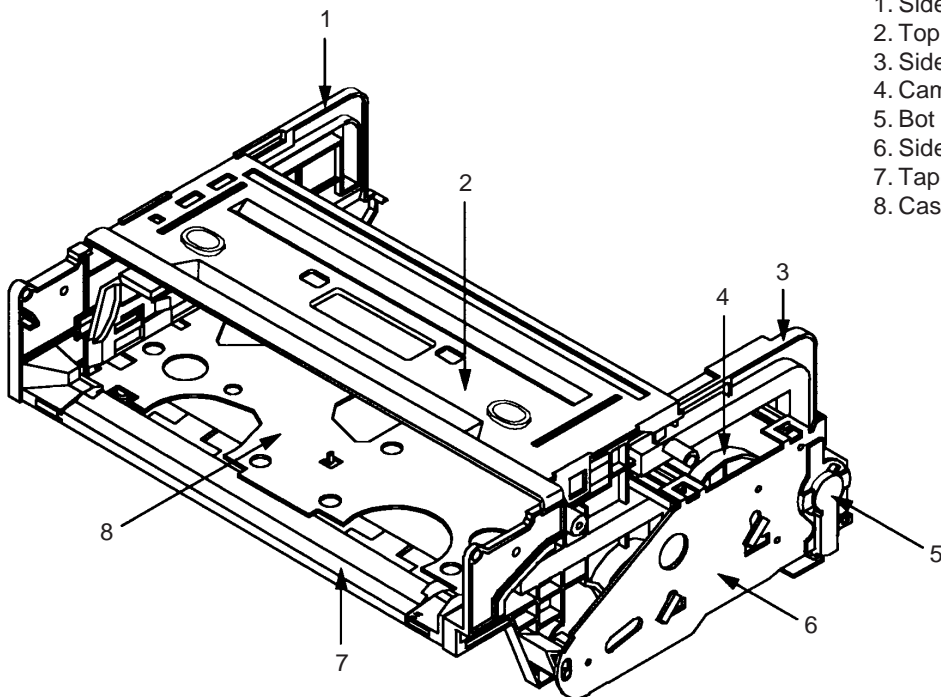
- | | |
|-------------------------|--------------------------|
| 1. Main Chassis | 12. Loading Motor |
| 2. Tension Arm Ass'y | 13. Pinch Roller Block |
| 3. EOT Reflector | 14. Cam Gear |
| 4. Guide Roller S Ass'y | 15. Cassette Opener |
| 5. P0 Post | 16. Brake Bracket |
| 6. P1 Post | 17. Reel T |
| 7. FE Head | 18. LED Reflector |
| 8. Cylinder Unit | 19. Guide Roller T Ass'y |
| 9. Auto Head Cleaning | 20. Reel S |
| 10. Head Amp PCB | 21. Tension Band Ass'y |
| 11. Audio/Control Head | |

DECK PARTS LOCATIONS (BOTTOM VIEW)



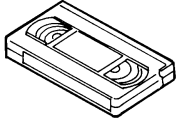
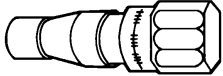
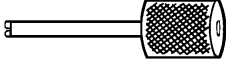
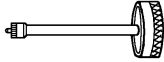
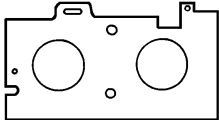
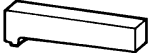
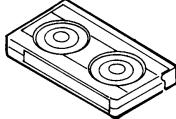
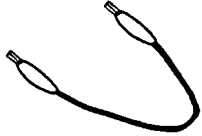
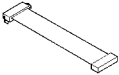
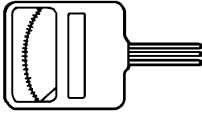
- | | |
|--------------------------|-------------------------|
| 22. Worm Bracket F Ass'y | 28. Capstan Brake Ass'y |
| 23. Mode Switch | 29. Bottom Plate |
| 24. Worm Ass'y | 30. Clutch Gear S Ass'y |
| 25. Worm Bracket R Ass'y | 31. Idler Arm Ass'y |
| 26. Loading Motor Belt | 32. Center Pulley |
| 27. Capstan DD Unit | 33. Clutch Gear T Ass'y |

(FRONT LOADING UNIT 15)



1. Side Bracket L
2. Top Bracket Ass'y
3. Side Bracket R Ass'y
4. Cam Gear Ass'y
5. Bot Sensor Cover
6. Side Bracket R2
7. Tape Piece Guide
8. Cassette Holder Ass'y

SERVICING FIXTURES AND TOOLS

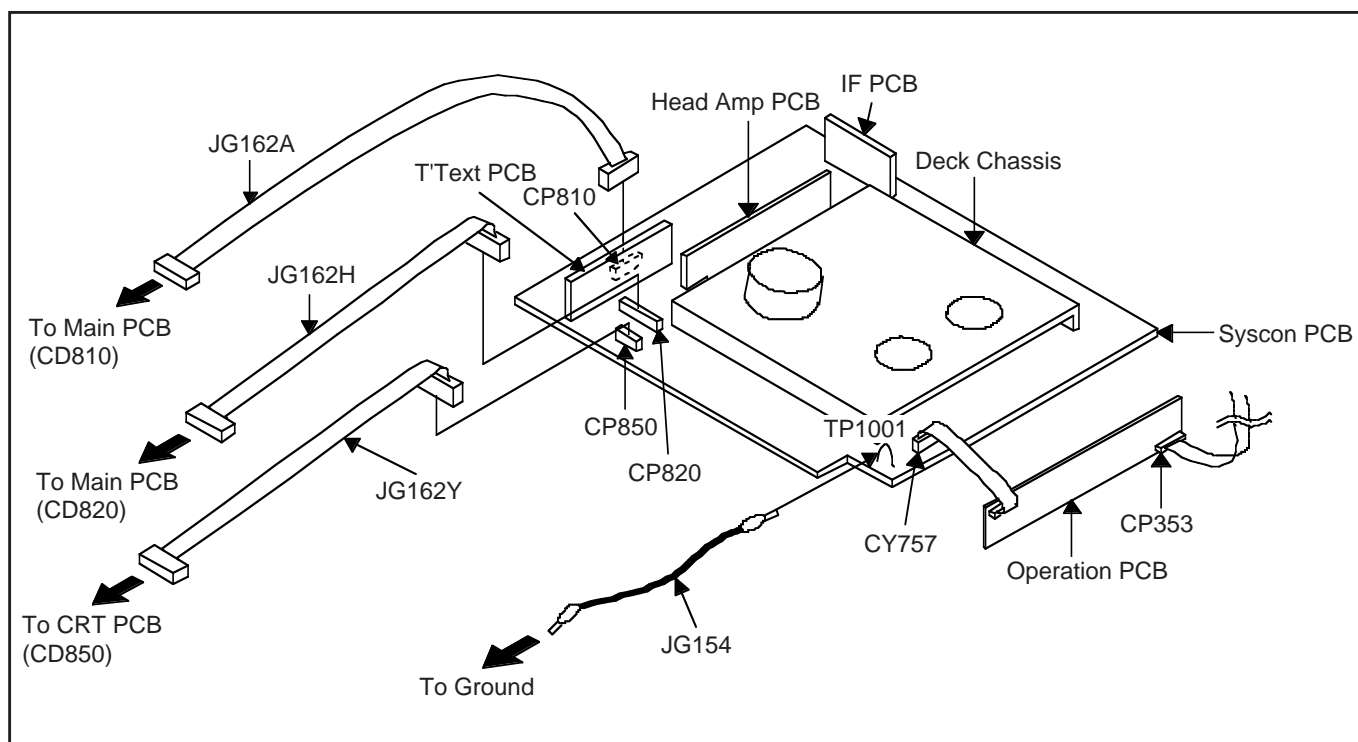
<p>VHS Alignment Tape JG001C (TTV-P2 or CH-2) JG001D (TTV-P1 or CH-2)</p> 	<p>JG002B Adapter JG002F Dial Torque Gauge (60~600gf•cm) JG002G (100~1200gf•cm)</p> 	<p>JG005 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small)</p> 	<p>JG153 X Value Adjustment Screwdriver</p> 
<p>JG022 Master Plane</p> 	<p>JG024 Reel Disk Height Adjustment Jig</p> 	<p>JG100A Torque Tape (VHT-063)</p> 	<p>JG154 Cable Part No. SJ-G15-400-000</p> 
<p>JG162A Cable (8 pins) Part No. SJ-G16-2A0-000 JG162H Cable (15 pins) Part No. SJ-G16-2H0-000 JG162Y Cable (5 pins) Part No. SJ-G16-2Y0-000</p> 	<p>Tentelometer</p> 		

Part No.	Remarks
JG001C	Stair Step, 6KHz
JG001D	Color Bar, 1KHz
JG002F	Playback Take Up Torque
JG002G	Fast Forward Torque, Rewind Torque, Brake Torque (Take up Reel/Supply Reel)
JG005	Guide Roller Adjustment
JG153	X-Value Adjustment
JG022/JG024	Reel Disk Height Adjustment
JG100A	Playback Back Tension Torque
JG154	Used to connect the test point of SERVICE and GROUND
JG162A/JG162H	Used to connect the SYSCON PCB and MAIN PCB
JG162Y	Used to connect the SYSCON PCB and CRT PCB

PREPARATION FOR SERVICING

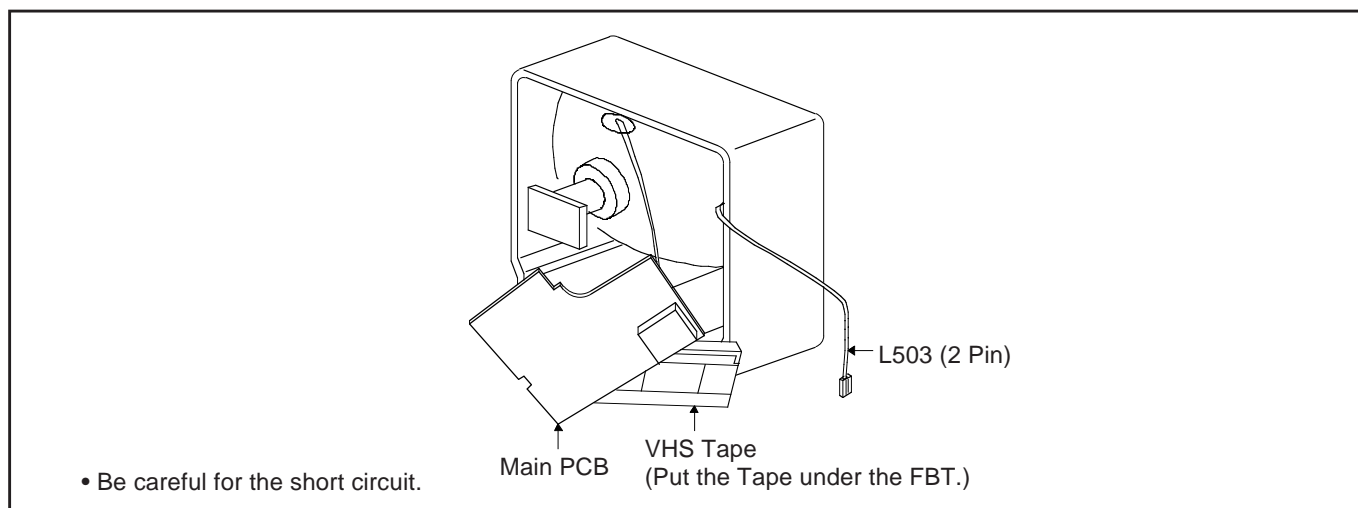
Basic Servicing Position (In case of needing to check on all blocks)

1. Unplug the connector CP301, CP353 and CY757, 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 JG162A and JG162H.
 - 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.
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.



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.)



MECHANICAL ADJUSTMENTS

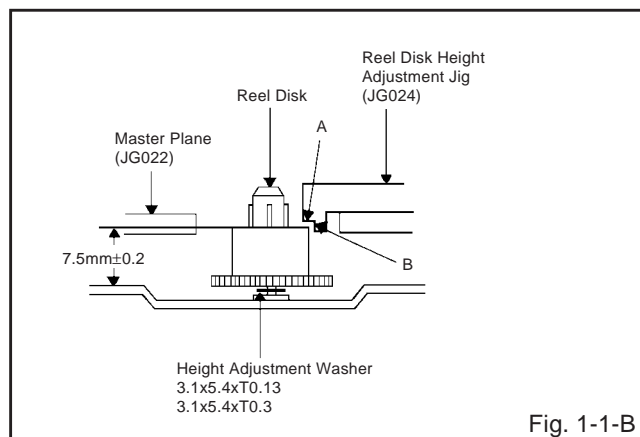
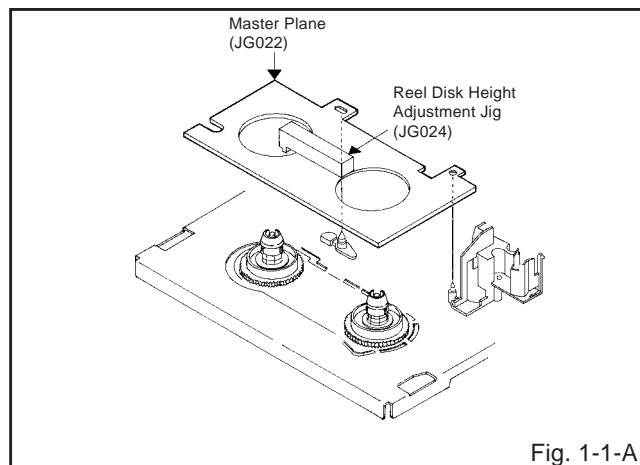
1. CONFIRMATION AND ADJUSTMENT

Read the following NOTED items before starting work.

- Place an object which weighs between 350g and 500g on the Cassette Tape to keep it steady when you want to make the tape run without the Front Loading Unit 15. (Do not place an object which weighs over 500g.)
- When you activate the deck without the Front Loading Unit 15, short circuit between **TP1001** and **Ground**. In this condition the BOT/EOT/Reel Sensor will not function.

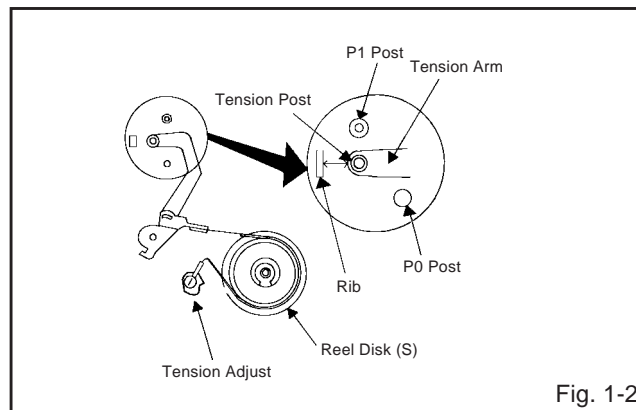
1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane (**JG022**) and reel disk height adjustment jig (**JG024**) on mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. Confirm that the reel disk is lower than "A" of the reel disk height adjustment jig (**JG024**) on the master plane and higher than "B" as shown in **Fig. 1-1-B**. If it is not, adjust to less than $7.5\text{mm} \pm 0.2\text{mm}$ with the height adjustment washer.
4. Perform the same adjustment for other reel.



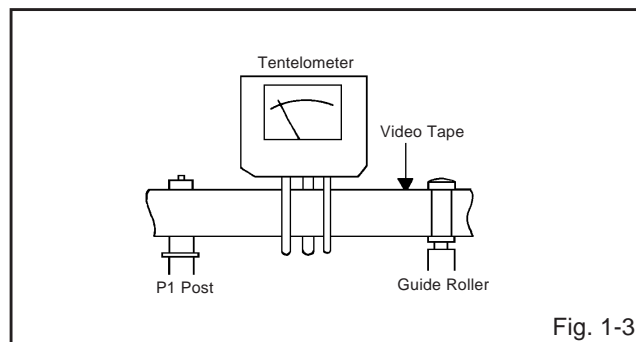
1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Turn on the power and set to the PLAY mode adjust the Tension so that the Tension Post is at the position of 0.3mm~0.5mm from the Rib. (**Refer to Fig. 1-2**)
2. Confirm that the video tape is not curling at the flange of P1 post or is not running on flanges.



1-3: CONFIRMATION AND ADJUSTMENT OF BACK TENSION ON PLAYBACK

1. Load a video tape recorded in standard speed mode. Set the unit to the PLAY mode.
 2. Install the tentelometer as shown in **Fig. 1-3**. Confirm the value is within $20 \sim 27\text{gf} \cdot \text{cm}$ at this time.
- IN CASE OF USING A CASSETTE TYPE TORQUE TAPE.
1. After adjustment, confirm and adjust the tension post position (**Refer to item 1-2**) for the tension arm, install the cassette type torque tape (**JG100A**) and set to the PLAY mode.
 2. Confirm that the left hand side tension value of the torque tape is $25 \sim 38\text{gf} \cdot \text{cm}$ for the standard mode tape.



MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF FAST FORWARD TORQUE

1. Set torque gauge (**JG002G**) on take-up reel disk, and place unit in FAST FORWARD mode. (Refer to Fig. 1-4)
2. Confirm that torque is more than 400gf•cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the FAST FORWARD button and the reel disk will begin to turn.

1-5: CONFIRMATION OF REWIND TORQUE

1. Operate within 4 or 5 seconds after the reel disk begins to turn.
2. Set torque gauge (**JG002G**) on supply reel disk, and place the unit in REWIND mode. (Refer to Fig. 1-4).
3. Confirm that torque is more than 400gf•cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the REWIND button and the reel disk will begin to turn.

1-6: CONFIRMATION OF REEL BRAKE TORQUE

(Take-Up Reel Brake) (Refer to Fig. 1-4)

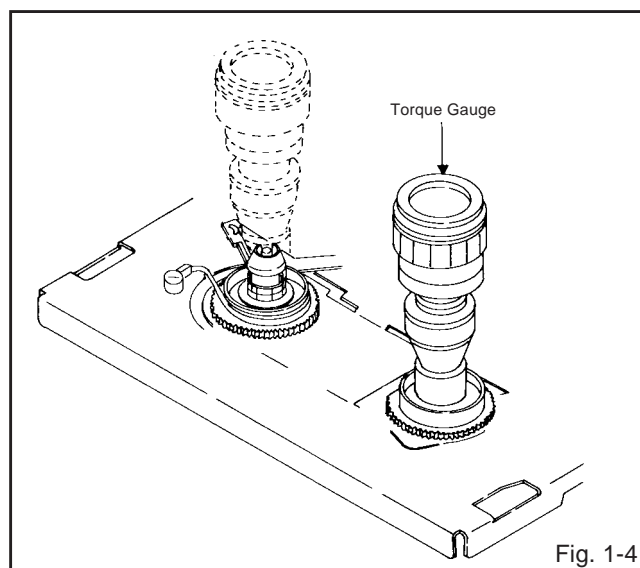
1. Set to STOP mode.
2. Set the torque gauge (**JG002G**) to the take-up reel and turn it counterclockwise.
3. Confirm that it is more than 200gf•cm at that time.

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

1. Set to STOP mode.
2. Set the torque gauge (**JG002G**) to the supply reel and turn it clockwise.
3. Confirm that it is more than 200gf•cm at that time.

NOTE

Separate the idler from the reel and confirm the brake torque.



NOTE

If the torque value checked is out of tolerance, replace the appropriate parts as follows.

Check Items	Replace Parts
1-4	Idler Ass'y or Clutch ASS'Y
1-5	Idler Ass'y or Clutch ASS'Y
1-6	Main Brake T Ass'y or Main Brake S Ass'y

2. TAPE RUNNING CONFIRMATION AND ADJUSTMENT

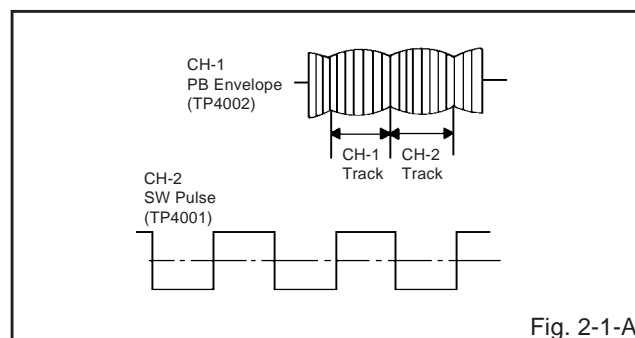
- Tape running is adjusted precisely at the factory. Normally, it is not necessary to make adjustments. It is necessary to confirm and make adjustments when the parts of the tape running mechanism are replaced because of extensive usage or failure.
- When adjusting P2, P3 and Value X, be careful to the Primary side of Main PCB on the Video Block for a electric shock. So, use a insulator material such as plastic for JIG driver grip.

2-1: GUIDE ROLLER

1. Connect CH-1 on the oscilloscope to **TP4002 (PB Envelope)** and CH-2 to **TP4001 (SW Pulse)**.
2. Set the tracking to manual center position in the following way. Press and hold the tracking auto button more than 2 seconds to set the tracking to center position.
3. Trigger with SW pulse and observe the envelope. (Refer to Fig. 2-1-A)
4. Adjust the guide roller height while observing the envelope, and make the envelope flat. Adjust the envelope so that the flatness will not be affected even when the tracking control button is pressed. (Use the adjustment screwdriver **JG005**).
5. Press and hold the tracking control button and (at the point that the envelope waveform starts to reduce) adjust the envelope so that the A : B ratio is better than 3 : 2. (Refer to Fig. 2-1-B)
6. Adjust the PG shifter (**ELECTRICAL ADJUSTMENTS : ITEM 3-1**) in the PLAY mode.

NOTE

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



MECHANICAL ADJUSTMENTS

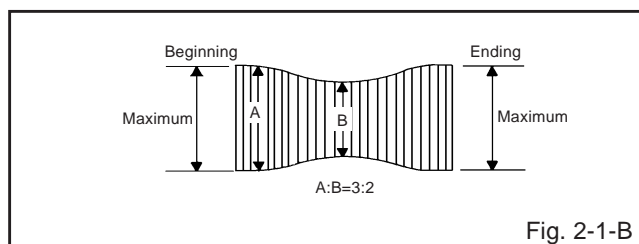


Fig. 2-1-B

2-2: CONFIRMATION AND ADJUSTMENT OF A/C HEAD TILT

When the tape is running abnormally, perform the following adjustments.

1. Insert a new tape and play it back.
2. Confirm that there is no crease on the tape between the P4 post and guide roller (R) and the tape is running smoothly. (It is absolutely impossible to get satisfactory sound if the tape is distorted between the A/C head and P4 post.)
3. If the tape still does not run smoothly, turn the screw ① and adjust the tilt of the A/C head. (Refer to Fig. 2-2)

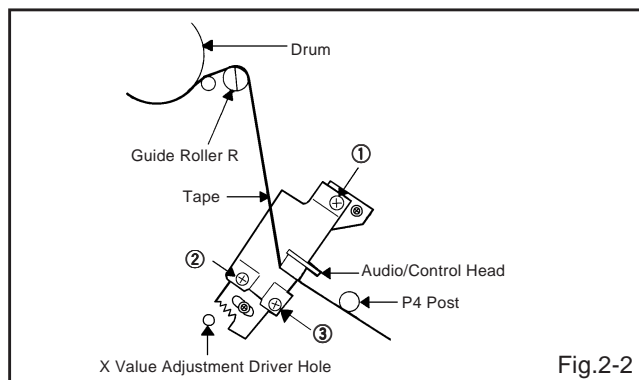


Fig.2-2

2-3: ADJUSTMENT OF A/C HEAD HEIGHT AND AZIMUTH

1. Playback a VHS alignment tape (JG001C) and observe the waveform at the audio output terminal.
2. Turn the screw ② slowly to change the azimuth of the A/C head. Adjust the height so that the audio output becomes maximum. (Refer to Fig. 2-2)
3. Adjust the screw ③, (Refer to Fig. 2-2) until the height of the A/C head reaches the position against the tape as shown in Fig. 2-3.
4. When the control head height is not correct. (When you must turn the screw more than 45 degrees), Turn all of the screws ①, ② and ③ to the same degrees. Then confirm the angle of the audio/control head and adjust again.

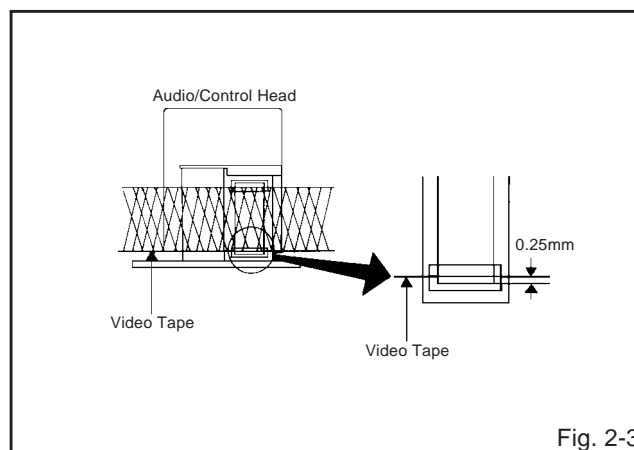


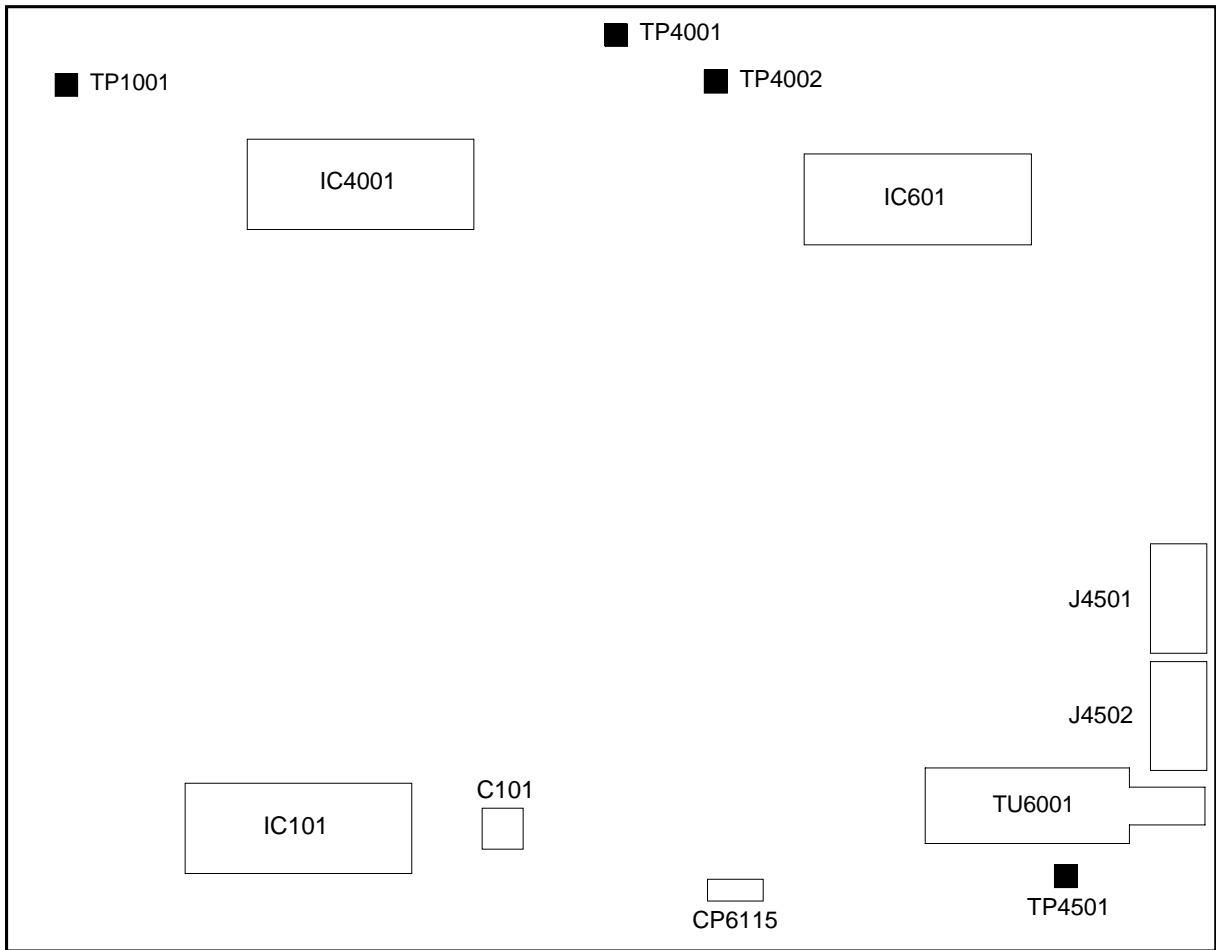
Fig. 2-3

2-4: TAPE RUNNING ADJUSTMENT

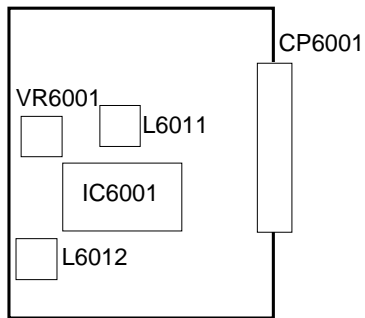
1. Adjust the height of reel disk. (Refer to item 1-1)
2. Confirm and adjust tension post position. (Refer to item 1-2)
3. Adjust the guide roller. (Refer to item 2-1)
4. Adjust the A/C head tilt. (Refer to item 2-2)
5. Adjust the A/C head height and azimuth. (Refer to item 2-3)
6. Connect CH-1 on the oscilloscope to TP4001 and CH-2 to TP4002. Playback the VHS alignment tape (JG001C). Set the tracking to manual center. Adjust X with the screw driver for X (JG153) as the Fig. 2-1-A and Fig. 2-1-B. (Refer to No. 2 of the item 2-1).

MAJOR COMPONENTS LOCATION GUIDE

(VCR SECTION)



SYSCON



IF

ELECTRICAL ADJUSTMENTS

(VCR SECTION)

3. 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 a silicon grease. (To prevent the damage to IC's and transistors.)

3-1: PG SHIFTER (HEAD SWITCHING) ADJUSTMENT

CONDITIONS

MODE-PLAYBACK

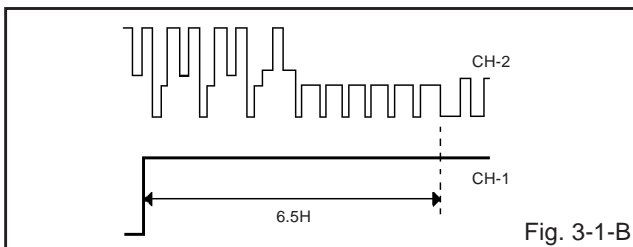
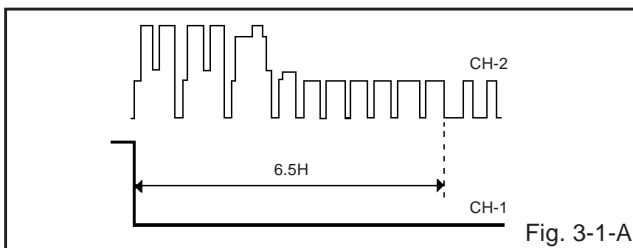
Input Signal-Alignment Tape (**JG001C**) or Similar

INSTRUCTIONS

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 **C101** and **GND** at the Power Off.) Then, set the volume level to minimum.
2. Connect CH-1 on the oscilloscope to **TP4001** and CH-2 to **TP4501**.
3. Playback the alignment tape. (**JG001C**)
4. Press and hold the Tracking Auto button more than 2 seconds to set the tracking to center position.
5. 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:)

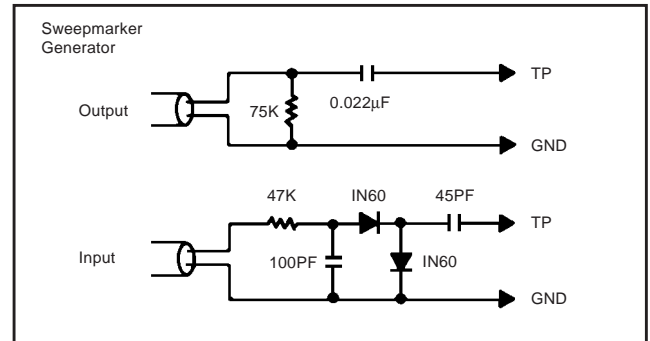
6. Press the VOL. DOWN button on the set and the channel button (3) on the remote control simultaneously until the indicator REC disappears.
7. When the REC indicator is blinking, press both VOL. DOWN key on the set and the channel button (4) on the remote control simultaneously and adjust the Tracking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



3-2: VCO COIL

NOTE

For adjusting of VCO, connect input and output terminals of sweepmarker generator to the circuit as shown below, then adjust it.

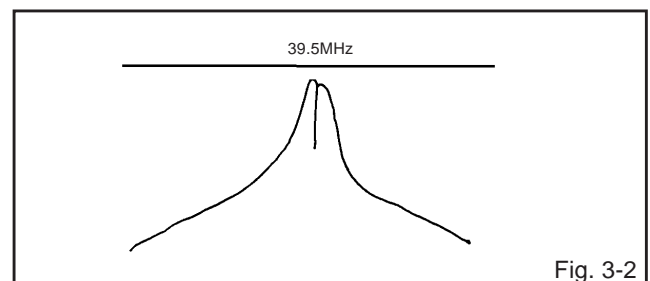


CONDITION

MODE-STOP

INSTRUCTIONS

1. Connect the output of sweepmarker generator to **pin 5 of IC6001**.
2. Connect the input of sweepmarker generator to **pin 17 of IC6001**.
3. Connect a 10K ohm variable resistor to IF AGC terminal (**pin 4 of IC6001**), 9V line and ground, then adjust to make the waveform of the oscilloscope readable.
4. Adjust **L6011** until the waveform marker (39.5MHz) becomes as shown in **Fig. 3-2**.



3-3: AFT COIL

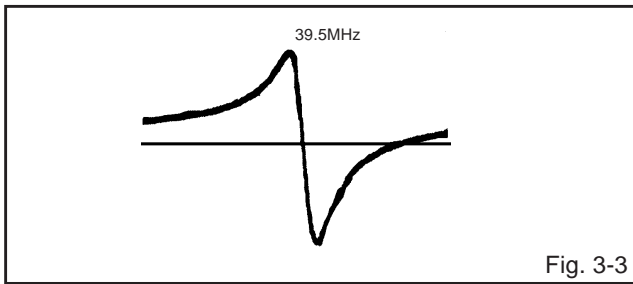
CONDITION

MODE-STOP

INSTRUCTIONS

1. Connect the output of sweepmarker generator to **pin 5 of IC6001**.
2. Connect the input of sweepmarker generator to **pin 3 of CP6115**.
3. Adjust **L6012** until the waveform marker (39.5MHz) becomes as shown in **Fig. 3-3**.
4. Disconnect the sweepmarker generator and the oscilloscope.
5. Connect the generator (39.5MHz) to the **pin 4 of CP6115** through 2.2K ohm and connect the DC voltmeter to **pin 3 of CP6115**.
6. Adjust **L6012** until the DC voltage at **pin 3 of CP6115** is $3.8V \pm 0.1V$.

ELECTRICAL ADJUSTMENTS



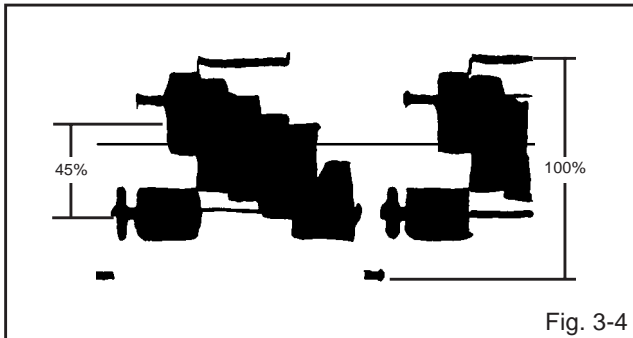
3-4: COLOR LEVEL

CONDITIONS

MODE-STOP

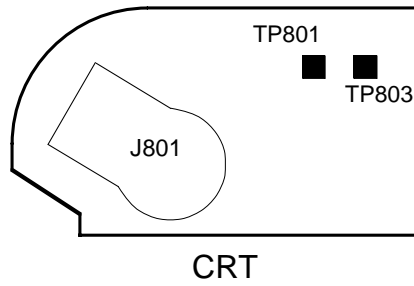
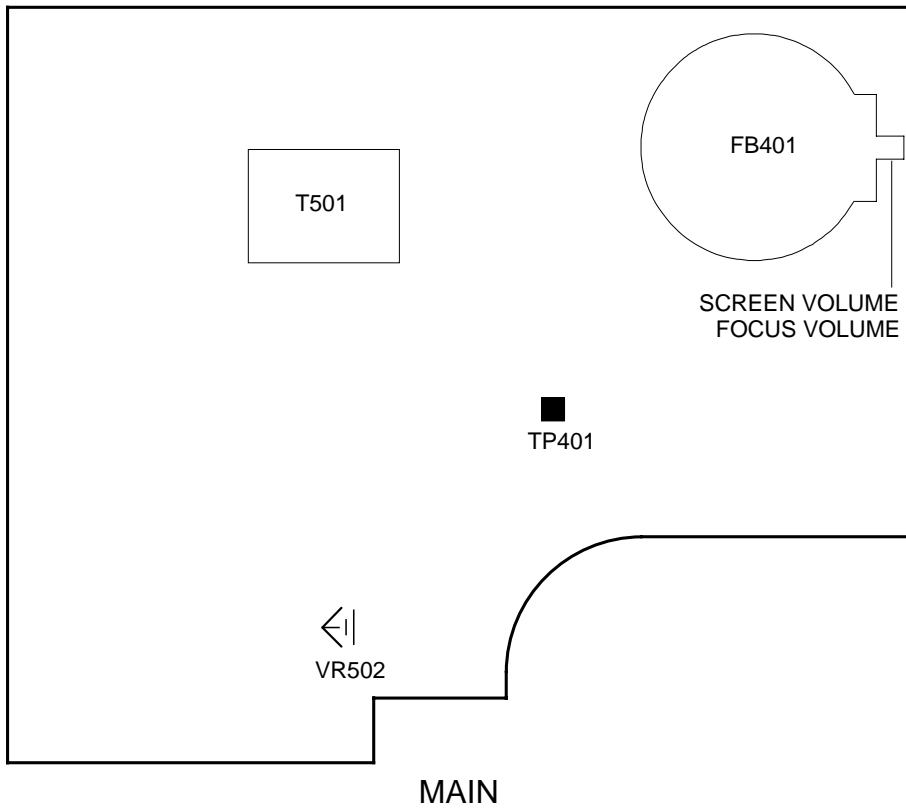
INSTRUCTIONS

1. Connect the oscilloscope to **TP4501**.
2. When the Y-LEVEL is 100%, adjust the **VR6001** until the MAGENTA Section LEVEL becomes $45 \pm 5\%$.
(Refer to Fig. 3-4)



MAJOR COMPONENTS LOCATION GUIDE

(TV SECTION)



ELECTRICAL ADJUSTMENTS

(TV SECTION)

4. BASIC ADJUSTMENTS

On-Screen Display Adjustment

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 **C101** and **GND** at the Power Off.) Then, set the volume level to minimum. Press the VOL. DOWN key on the set and the Channel button **(9)** on the remote control simultaneously to appear the adjustment mode on the screen as shown in **Fig. 4-1**, **Fig. 4-2**, **Fig. 4-3**, **Fig. 4-4**, **Fig. 4-5** and **Fig. 4-6**.

NOTE

Use the 1 - 7 keys on the remote control to select the options shown in **Fig. 4-1**, **Fig. 4-2**, **Fig. 4-3**, **Fig. 4-4**, **Fig. 4-5** and **Fig. 4-6**.

Press the 8 key to end the adjustments.

ADJUSTMENT MODE1

1. H PHASE
2. V DC
3. V SIZE
4. AGC
5. CUT OFF
6. OSD H

7. NEXT 8. END

"The adjustment item 4 is not used for this model."

Fig. 4-1

ADJUSTMENT MODE2

- 1.
2. RED BIAS
3. GREEN BIAS
4. BLUE BIAS
5. GREEN DRIVE
6. BLUE DRIVE

7. NEXT 8. END

Fig. 4-2

ADJUSTMENT MODE3

1. BRIGHT
2. CONTRAST
3. COLOR
4. TINT
5. SHARPNESS
6. E-RGB CONT

7. NEXT 8. END

"The adjustment items 5 and 6 are not used for this model."

Fig. 4-3

ADJUSTMENT MODE4

1. R-Y B OFFSET
2. B-Y B OFFSET
- 3.
- 4.
- 5.
- 6.

7. NEXT 8. END

"The adjustment items 1 and 2 are not used for this model."

Fig. 4-4

ADJUSTMENT MODE5

1. WIDE V SART
2. WIDE V STOP
3. WIDE P SART
4. WIDE P STOP
5. V S-COR
6. V LINEA

7. NEXT 8. END

"The adjustment items 1, 2, 3, 4 and 5 are not used for this model."

Fig. 4-5

ADJUSTMENT MODE6

1. H PHASE 60
2. WIDE V STOP 60
3. V LINEA 60
- 4.
- 5.
- 6.

7. NEXT 8. END

"The adjustment item 2 is not used for this model."

Fig. 4-6

4-1: CUT OFF

1. Activate the adjustment mode display of **Fig. 4-1** and press the channel button **(5)** on the remote control.
2. Adjust the **Screen Volume** until picture is distinct.

4-2: WHITE BALANCE

1. Receive the color bar pattern.
2. Adjust the adjustment mode display of **Fig. 4-2** until the white color is looked like a white.

4-3: FOCUS

1. Receive the broadcasting signal.
2. Adjust the **Focus Volume** until picture is distinct.

ELECTRICAL ADJUSTMENTS

4-4: HORIZONTAL PHASE (TV)

1. Receive the color bar pattern (RF Input).
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 4-1** and press the channel button **(1)** on the remote control.
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

4-5: VERTICAL POSITION (TV)

1. Receive the color bar pattern (RF Input).
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 4-1** and press the channel button **(2)** on the remote control.
4. Press the VOL. UP/DOWN button on the remote control until the horizontal line of the color bar comes to approximate center of the CRT.

4-6: VERTICAL SIZE (TV)

1. Receive the 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. 4-1** and press the channel button **(3)** on the remote control.
4. Press the VOL. UP/DOWN button on the remote control until the horizontal overscan is equal to the vertical overscan.

4-7: VERTICAL LINEA (TV)

1. Receive the 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. 4-5** and press the channel button **(6)** on the remote control.
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

4-8: HORIZONTAL PHASE 60 (AV)

1. Receive the monochrome pattern (Audio Video Input).
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 4-6** and press the channel button **(1)** on the remote control.
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

4-9: VERTICAL LINEA 60 (AV)

1. Receive the monochrome pattern (Audio Video Input).
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 4-6** and press the channel button **(3)** on the remote control.
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

4-10: OSD HORIZONTAL

1. Using the remote control, set the brightness and contrast to normal position.
2. Activate the adjustment mode display of **Fig. 4-1** and press the channel button **(6)** on the remote control.
3. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum.
(Refer to Fig. 4-7)

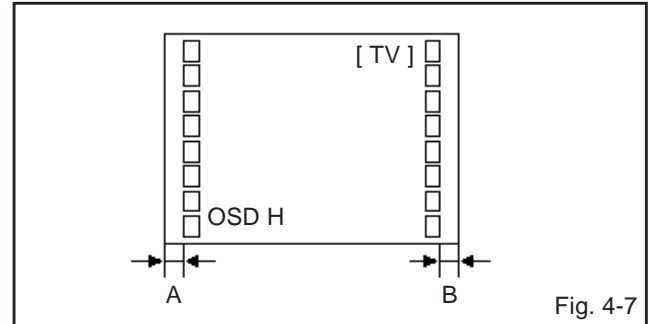


Fig. 4-7

4-11: SUB CONTRAST (TV)

1. Receive the monochrome pattern (RF Input).
2. Activate the adjustment mode display of **Fig. 4-3** and press the channel button **(2)** on the remote control.
3. Press the VOL. UP/DOWN button on the remote control until the CONTRAST level is set to the "19".

4-12: SUB CONTRAST (AV)

1. Receive the monochrome pattern (Audio Video Input).
2. Activate the adjustment mode display of **Fig. 4-3** and press the channel button **(2)** on the remote control.
3. Press the VOL. UP/DOWN button on the remote control until the CONTRAST level is set to the "19".

4-13: SUB BRIGHTNESS (TV)

1. Receive the monochrome pattern (RF Input).
2. Using the remote control, set the brightness to minimum position and contrast to maximum position.
3. Activate the adjustment mode display of **Fig. 4-3** and press the channel button **(1)** on the remote control.
4. Press the VOL. UP/DOWN button on the remote control until the white 25% is slightly brilliant.

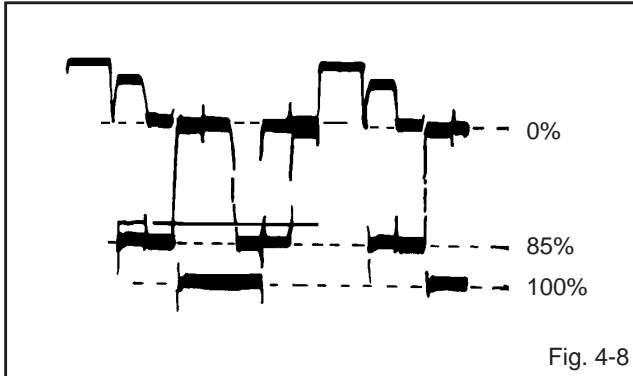
4-14: SUB BRIGHTNESS (AV)

1. Receive the monochrome pattern (Audio Video Input).
2. Using the remote control, set the brightness to minimum position and contrast to maximum position.
3. Activate the adjustment mode display of **Fig. 4-3** and press the channel button **(1)** on the remote control.
4. Press the VOL. UP/DOWN button on the remote control until the white 25% is slightly brilliant.

ELECTRICAL ADJUSTMENTS

4-15: SUB COLOR (TV)

1. Receive the color bar pattern (RF Input).
2. Connect the oscilloscope to **TP801**.
3. Activate the adjustment mode display of **Fig. 4-3** and press the channel button **(3)** on the remote control.
4. 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.
5. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 85% of the white level. (Refer to **Fig. 4-8**)



4-18: CONSTANT VOLTAGE

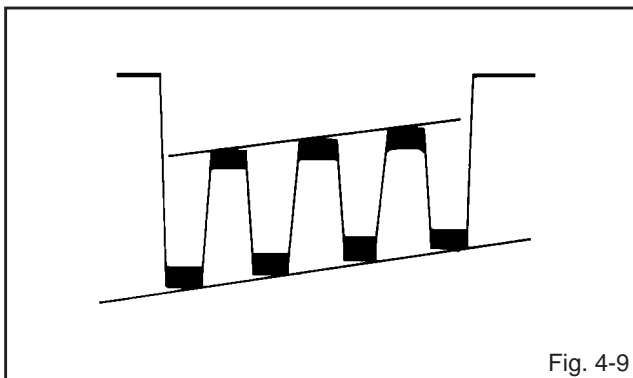
1. Set to the AV mode. (No input for AV)
2. Connect the DC voltmeter to **TP401**.
3. Adjust the **VR502** until the DC voltmeter is $131V \pm 0.5V$.

4-16: SUB COLOR (AV)

1. Receive the color bar pattern (Audio Video Input).
2. Connect the oscilloscope to **TP801**.
3. Activate the adjustment mode display of **Fig. 4-3** and press the channel button **(3)** on the remote control.
4. 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.
5. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 85% of the white level. (Refer to **Fig. 4-8**)

4-17: SUB TINT (AV)

1. Receive the NTSC rainbow pattern (Audio Video Input).
2. Connect the oscilloscope to **TP803**.
3. Activate the adjustment mode display of **Fig. 4-3** and press the channel button **(4)** on the remote control.
4. Press the VOL. UP/DOWN button on the remote control until the waveform becomes as shown in **Fig. 4-9**.



ELECTRICAL ADJUSTMENTS

5. 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.

5-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 5-1)**
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.

5-2: PURITY

NOTE

Adjust after performing adjustments in section 5-1.

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 colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

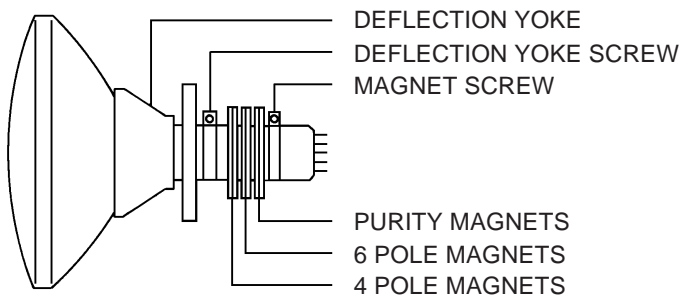


Fig. 5-1

5-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 5-2.

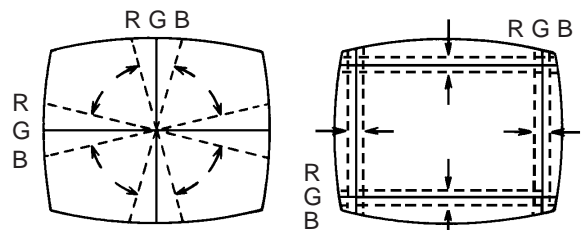
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

5-4: DYNAMIC CONVERGENCE

NOTE

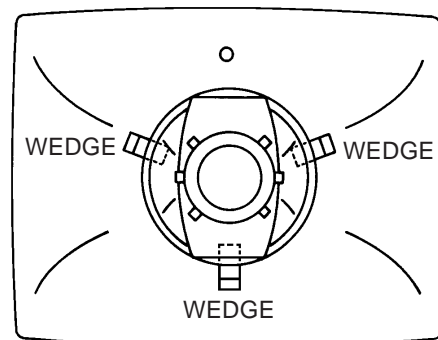
Adjust after performing adjustments in section 5-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 5-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 5-2-b)**



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

Fig. 5-2-a

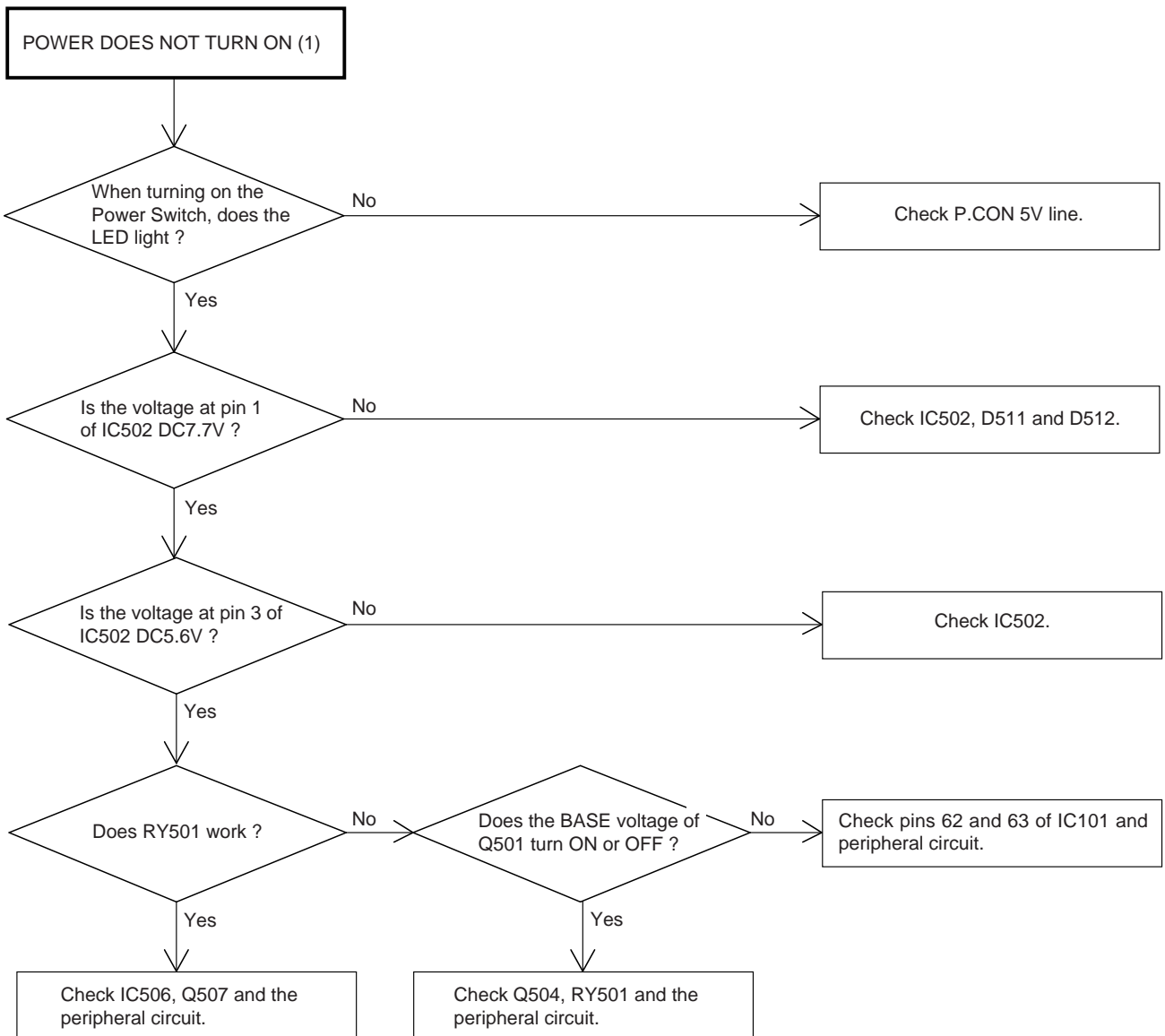


WEDGE POSITION

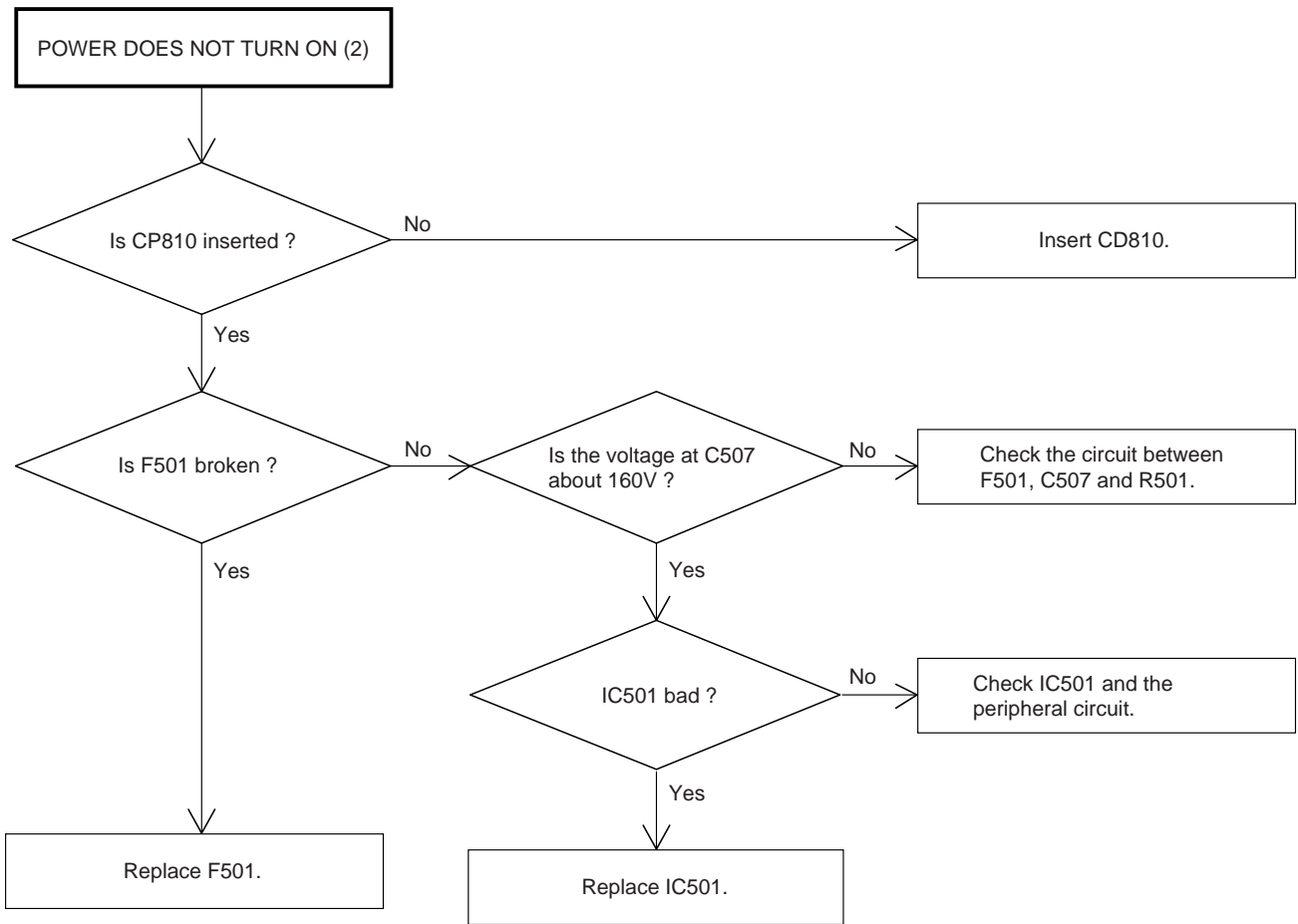
Fig. 5-2-b

TROUBLESHOOTING GUIDE

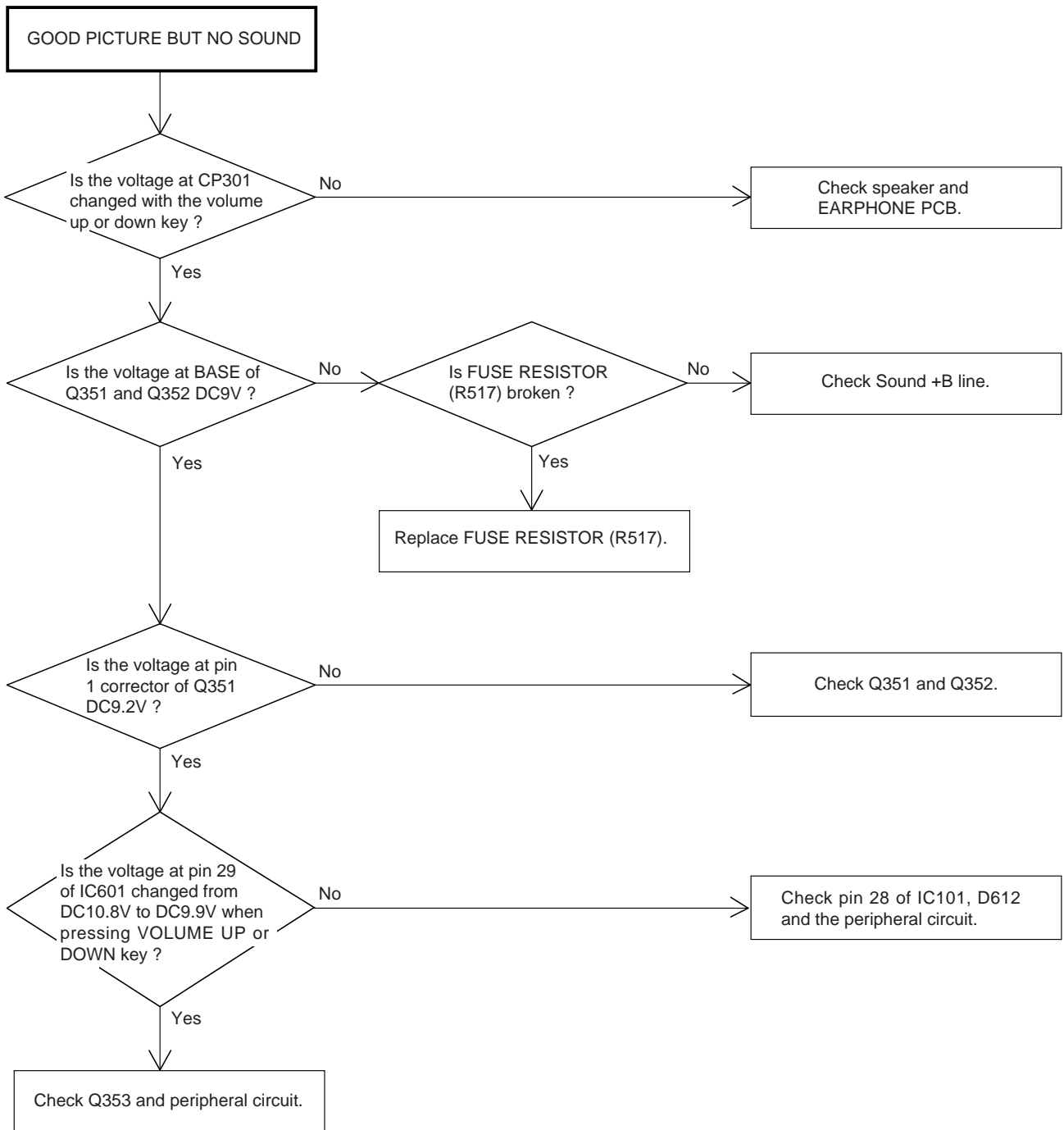
(TV SECTION)



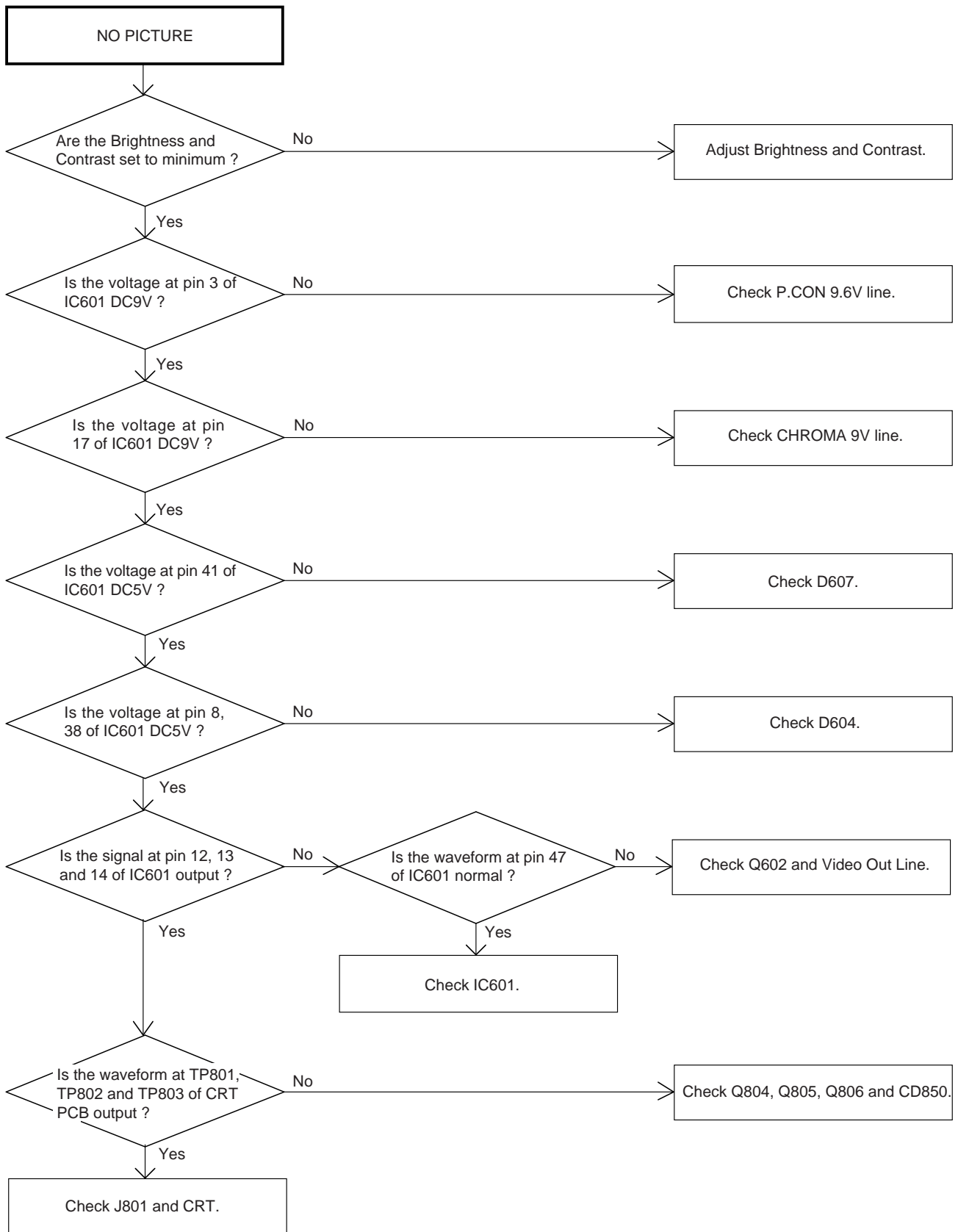
TROUBLESHOOTING GUIDE



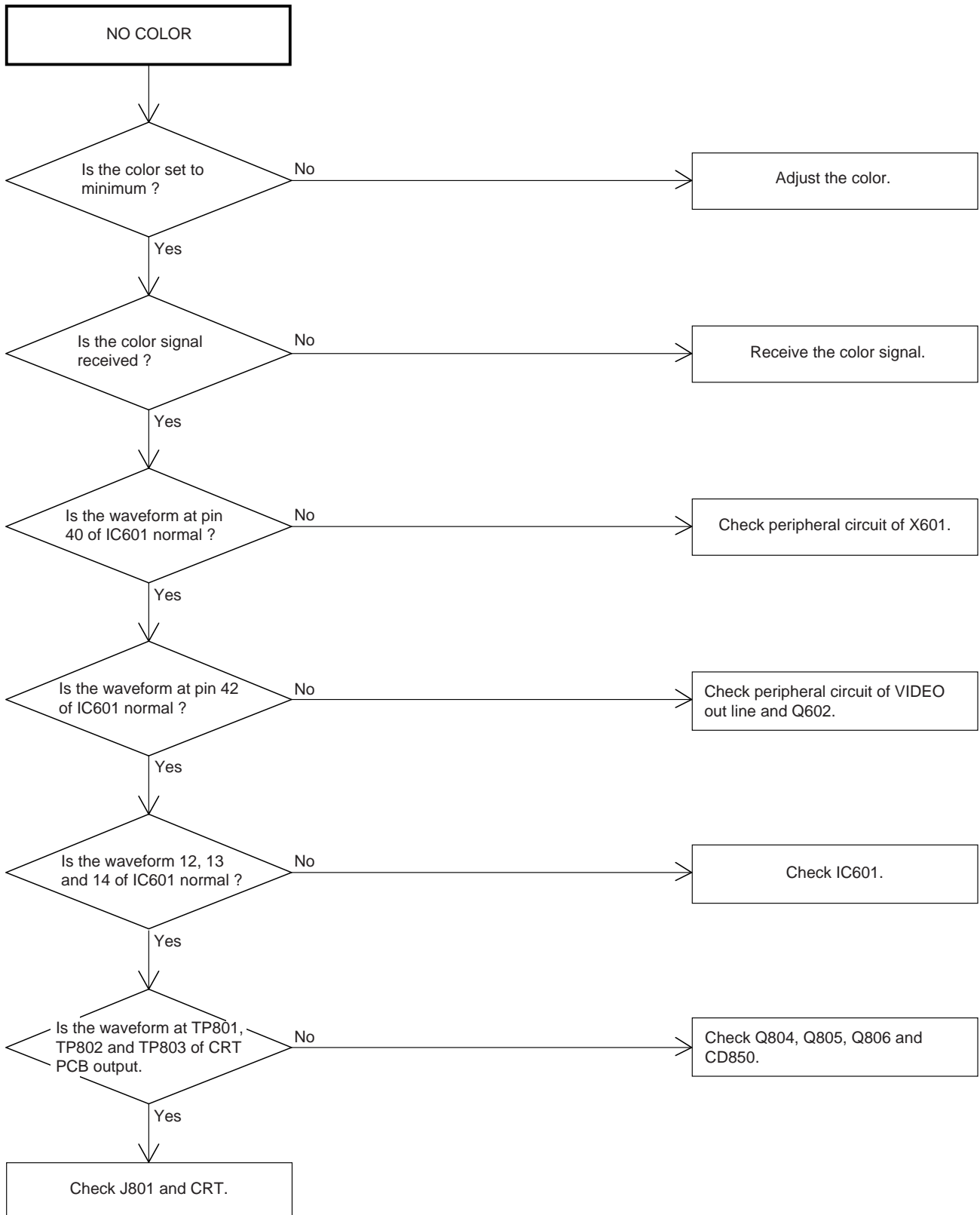
TROUBLESHOOTING GUIDE



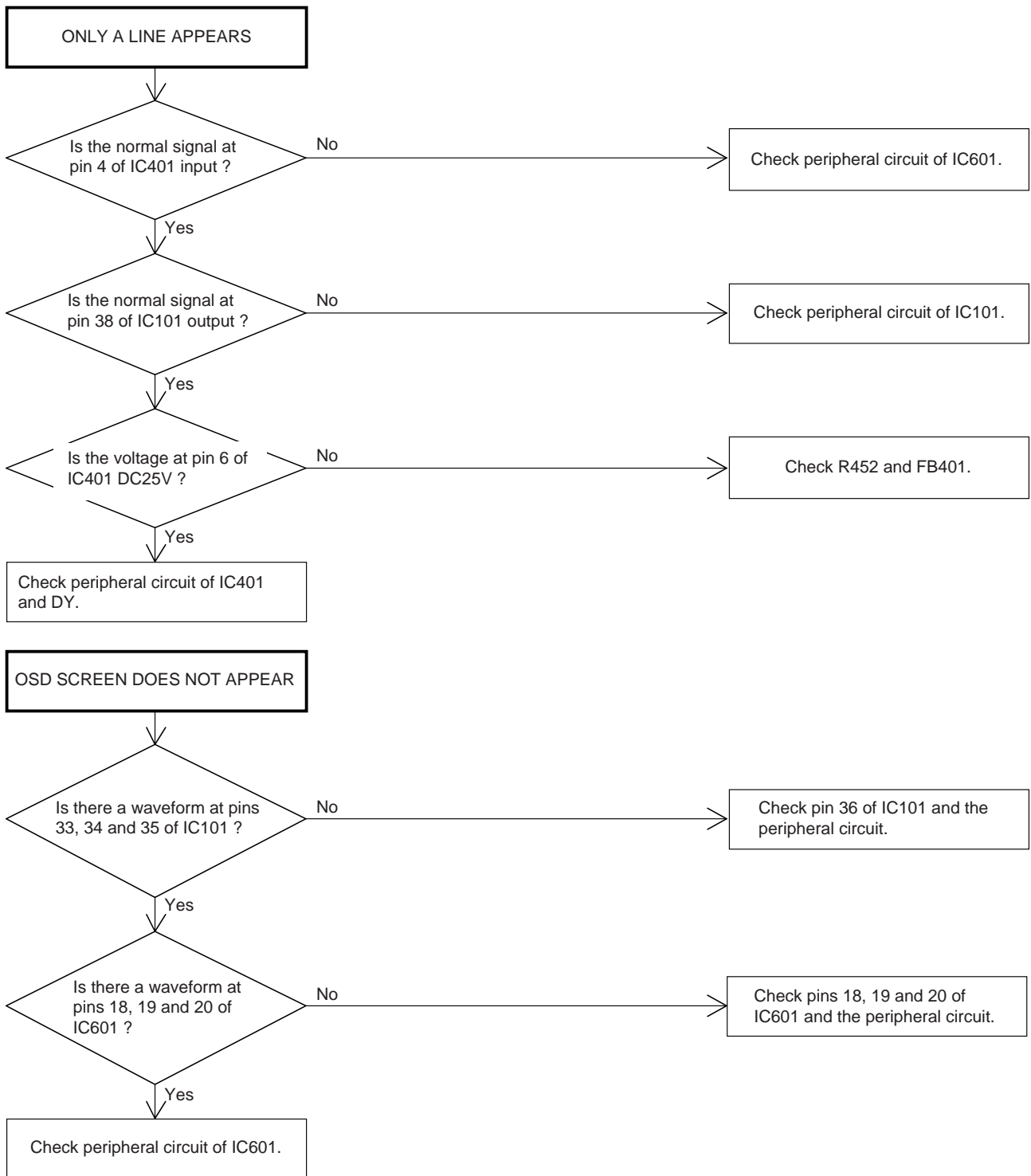
TROUBLESHOOTING GUIDE



TROUBLESHOOTING GUIDE

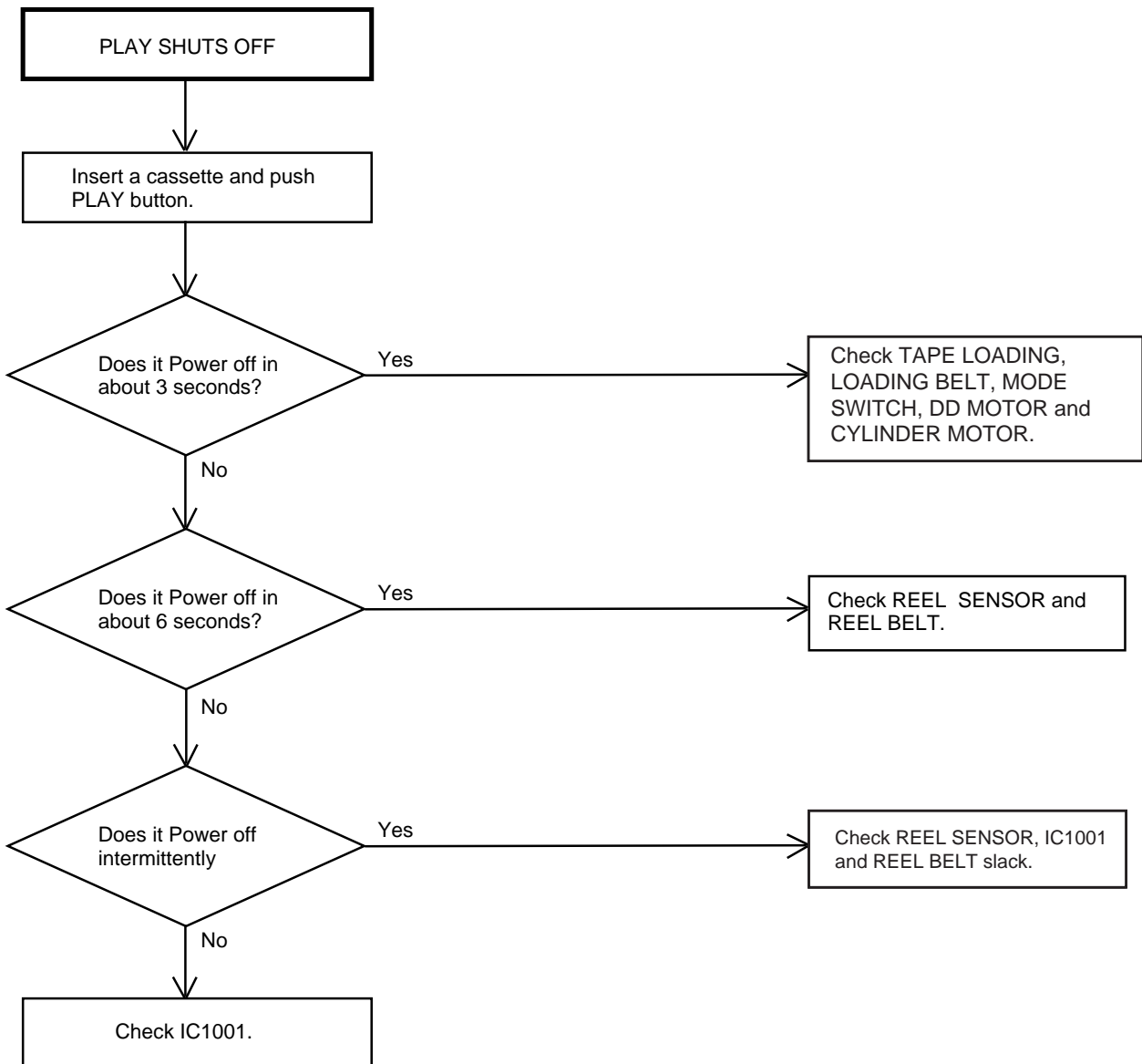


TROUBLESHOOTING GUIDE

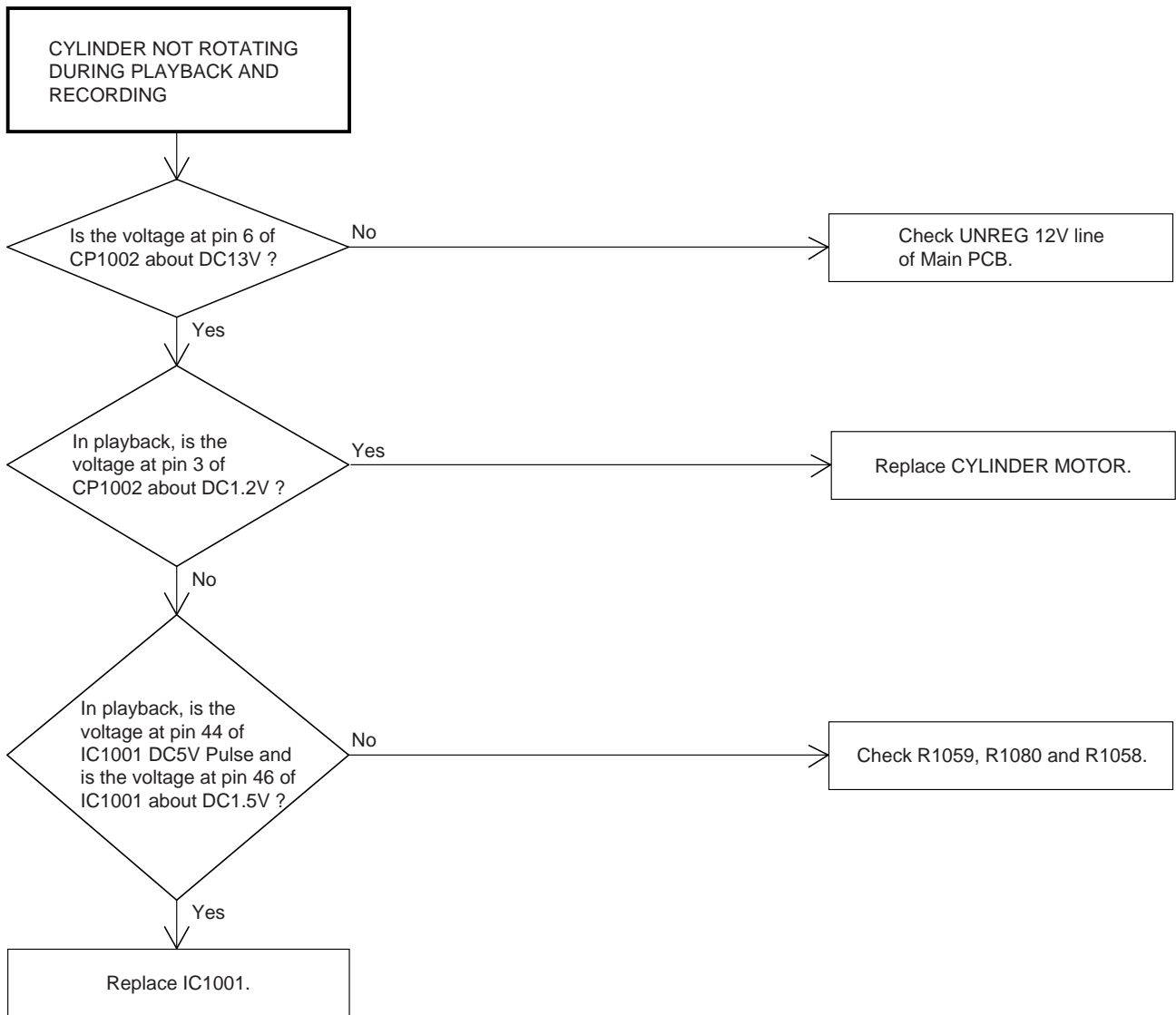


TROUBLESHOOTING GUIDE

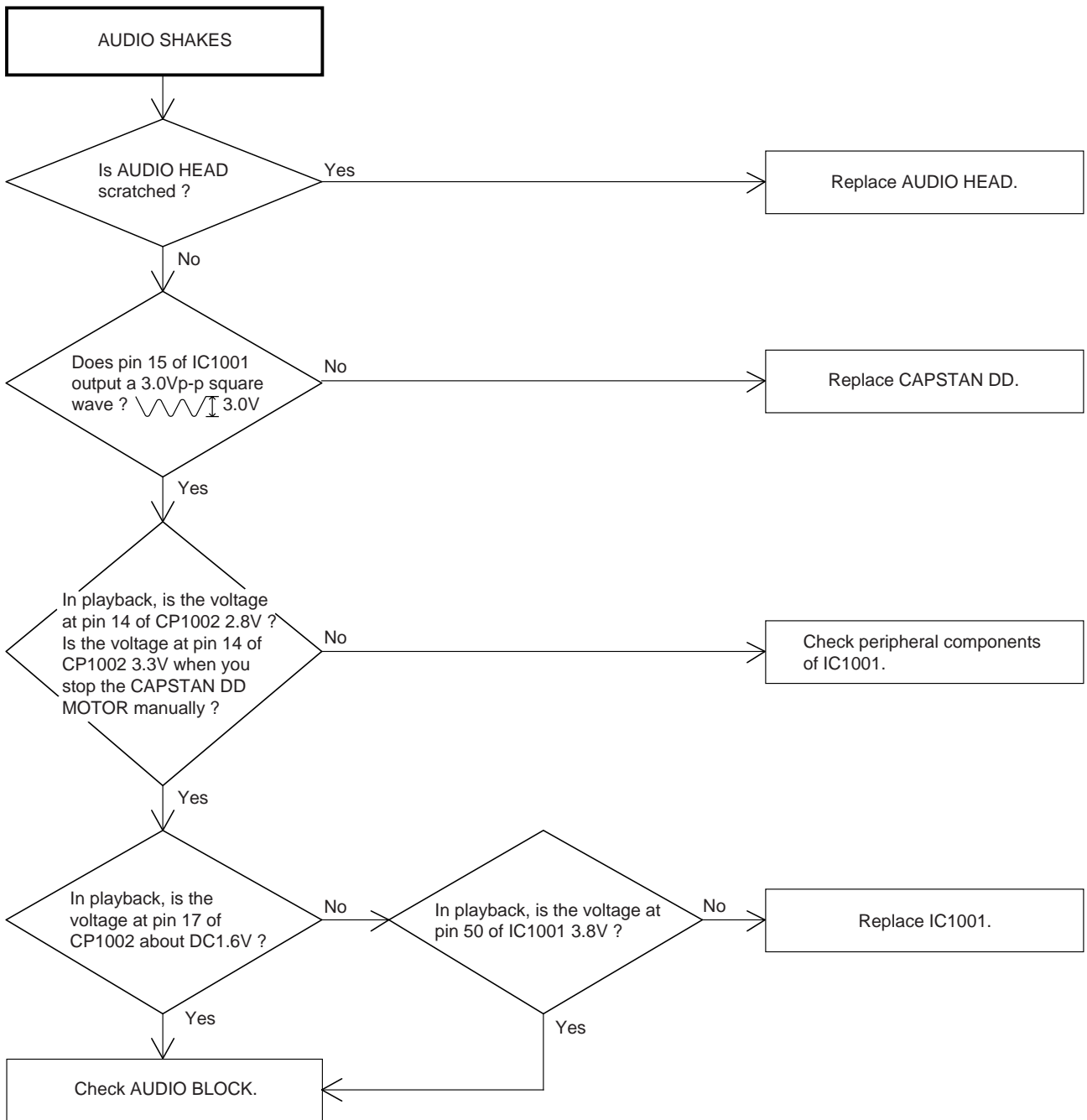
(VCR SECTION)



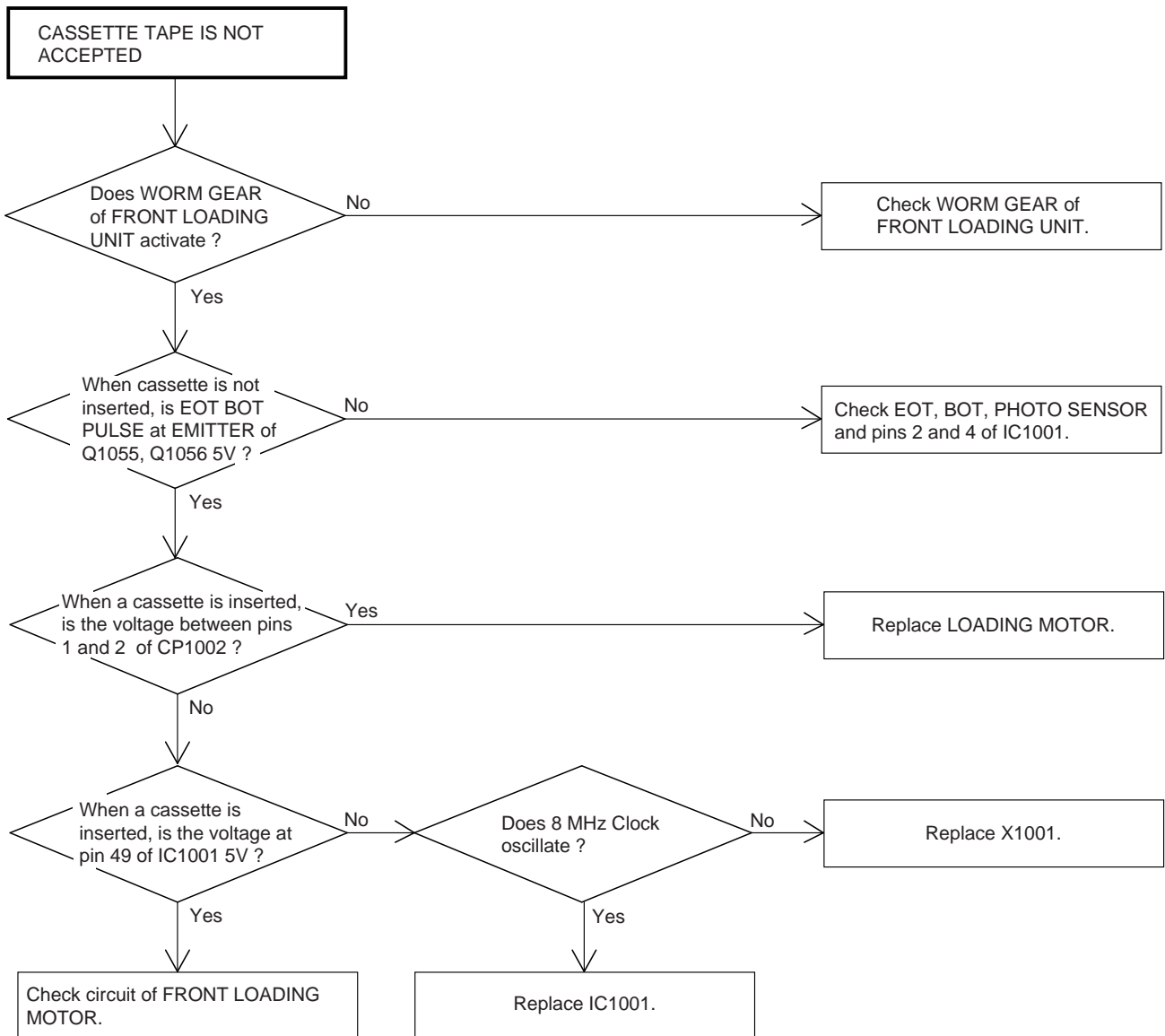
TROUBLESHOOTING GUIDE



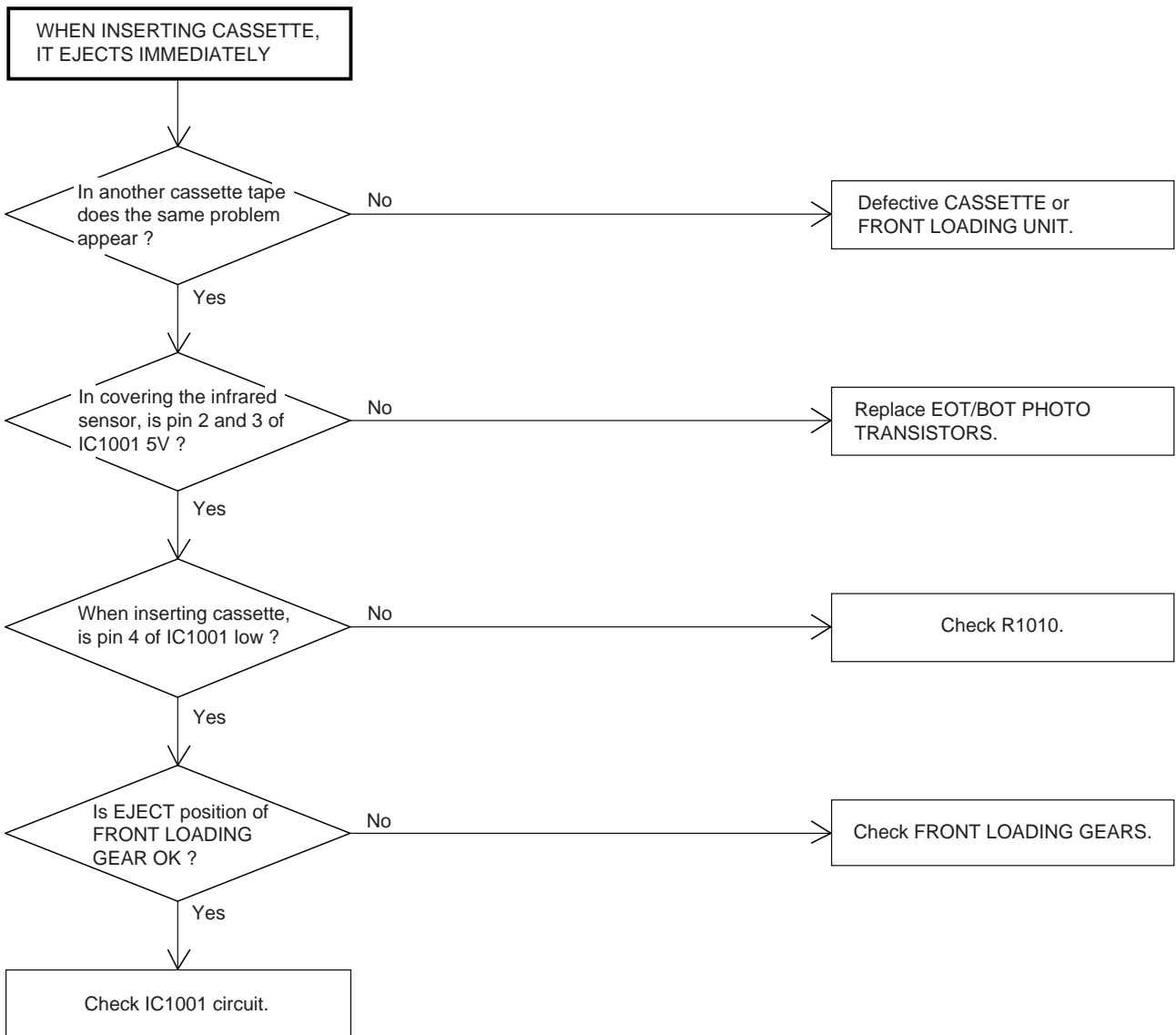
TROUBLESHOOTING GUIDE



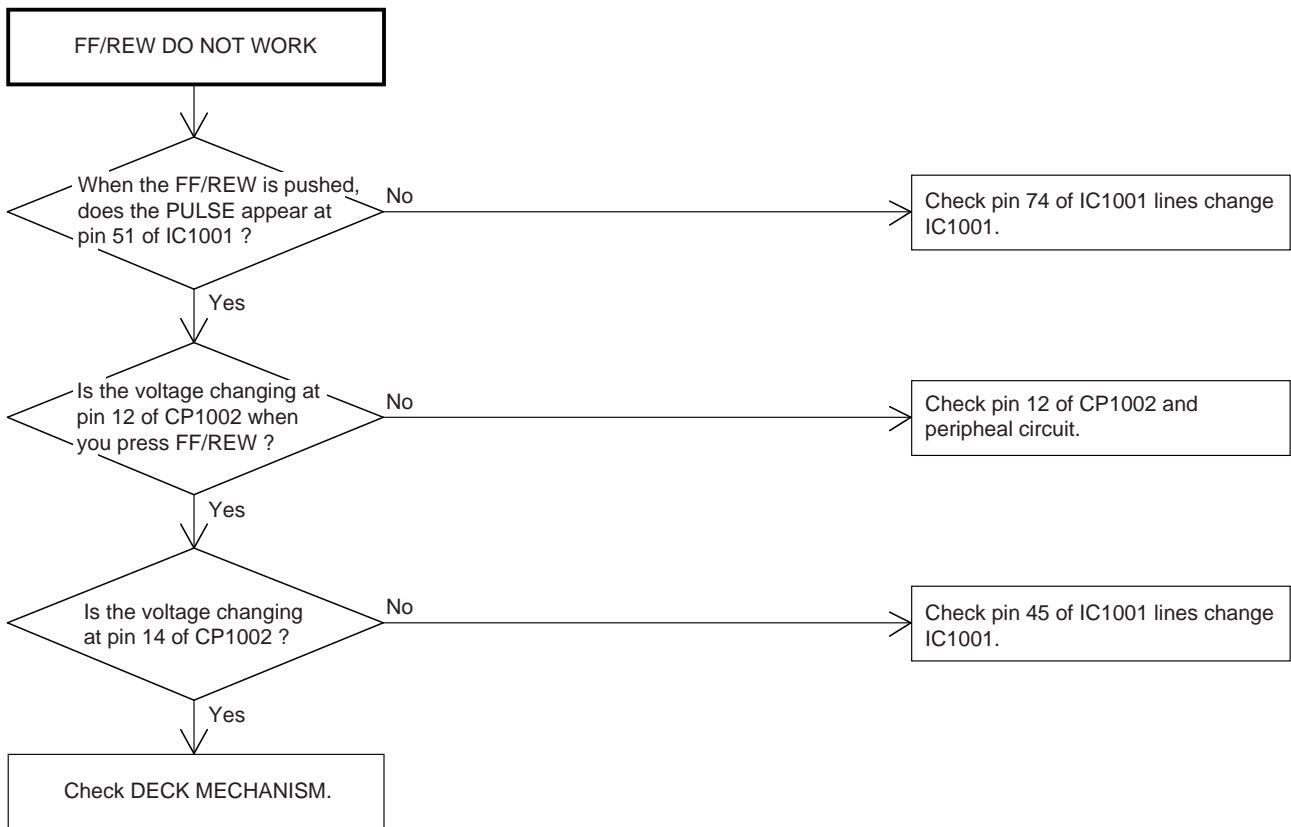
TROUBLESHOOTING GUIDE



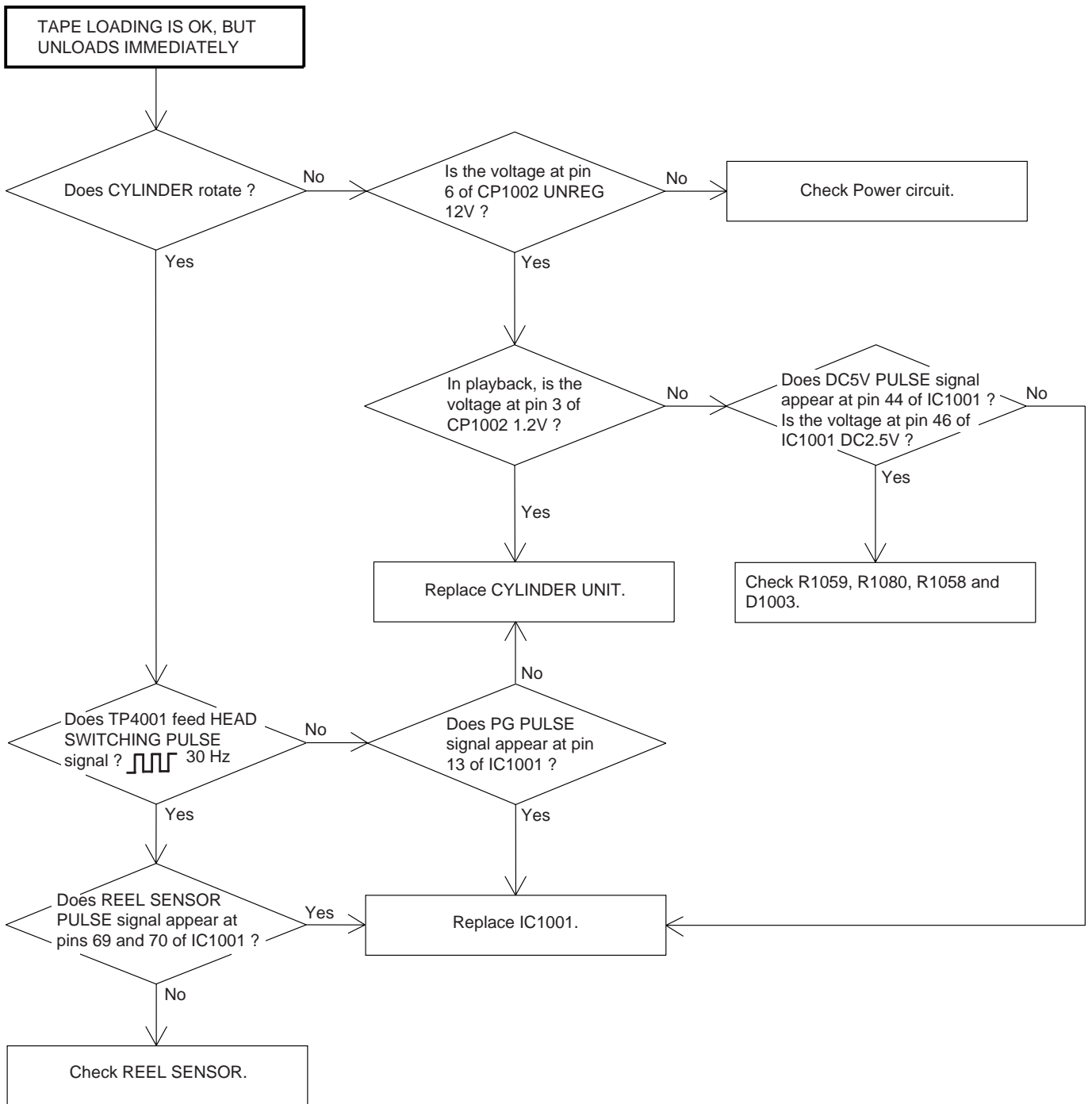
TROUBLESHOOTING GUIDE



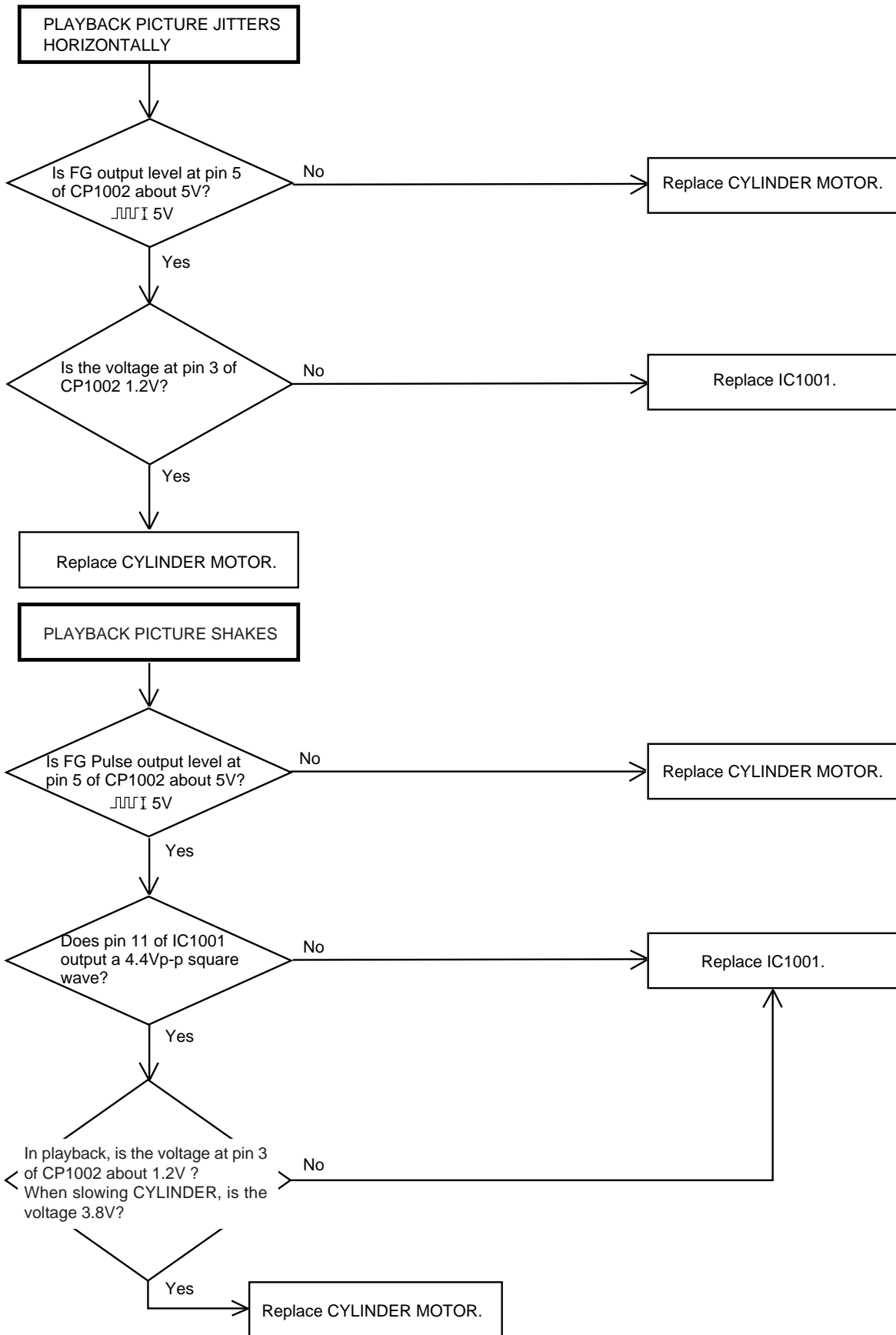
TROUBLESHOOTING GUIDE



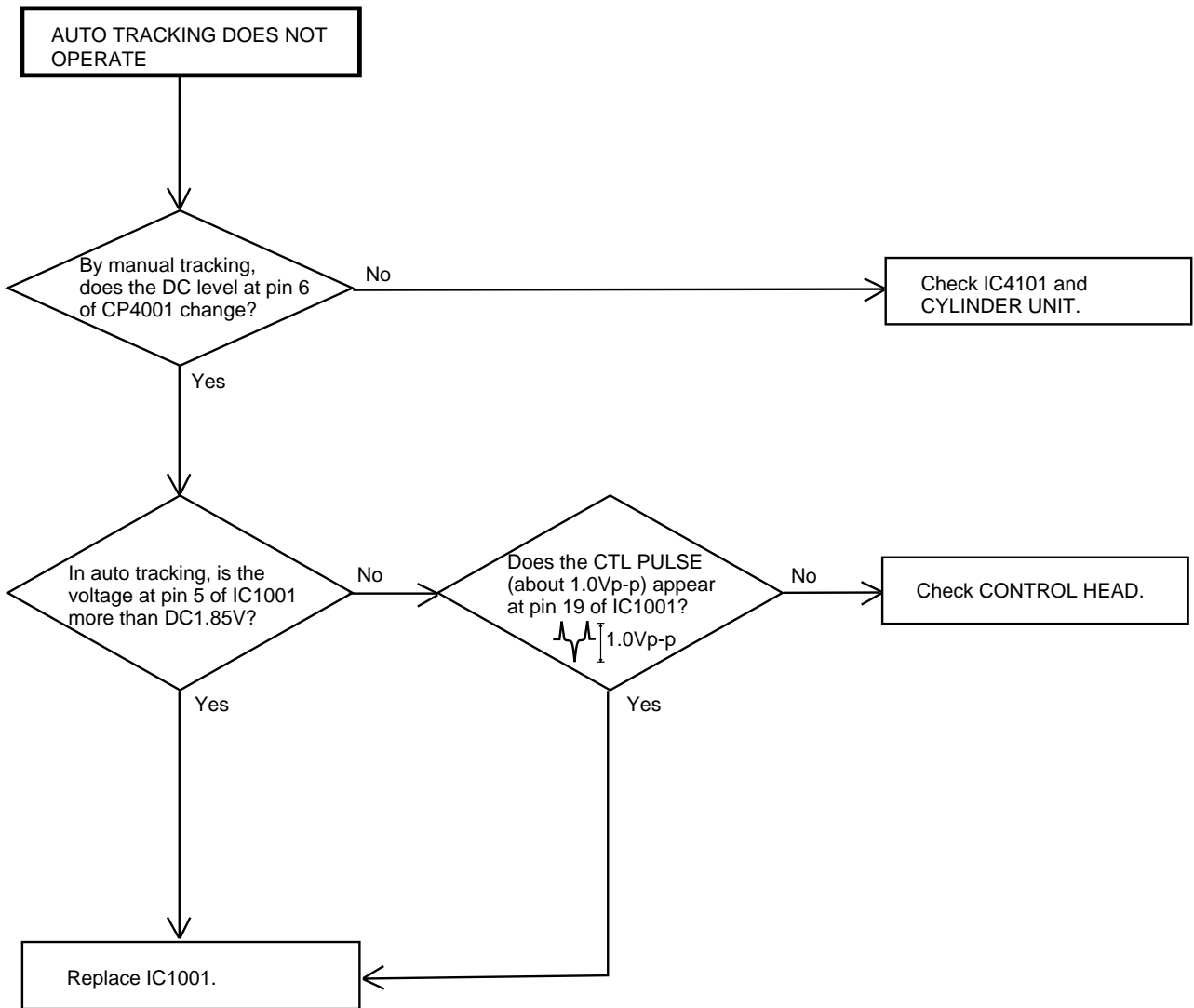
TROUBLESHOOTING GUIDE



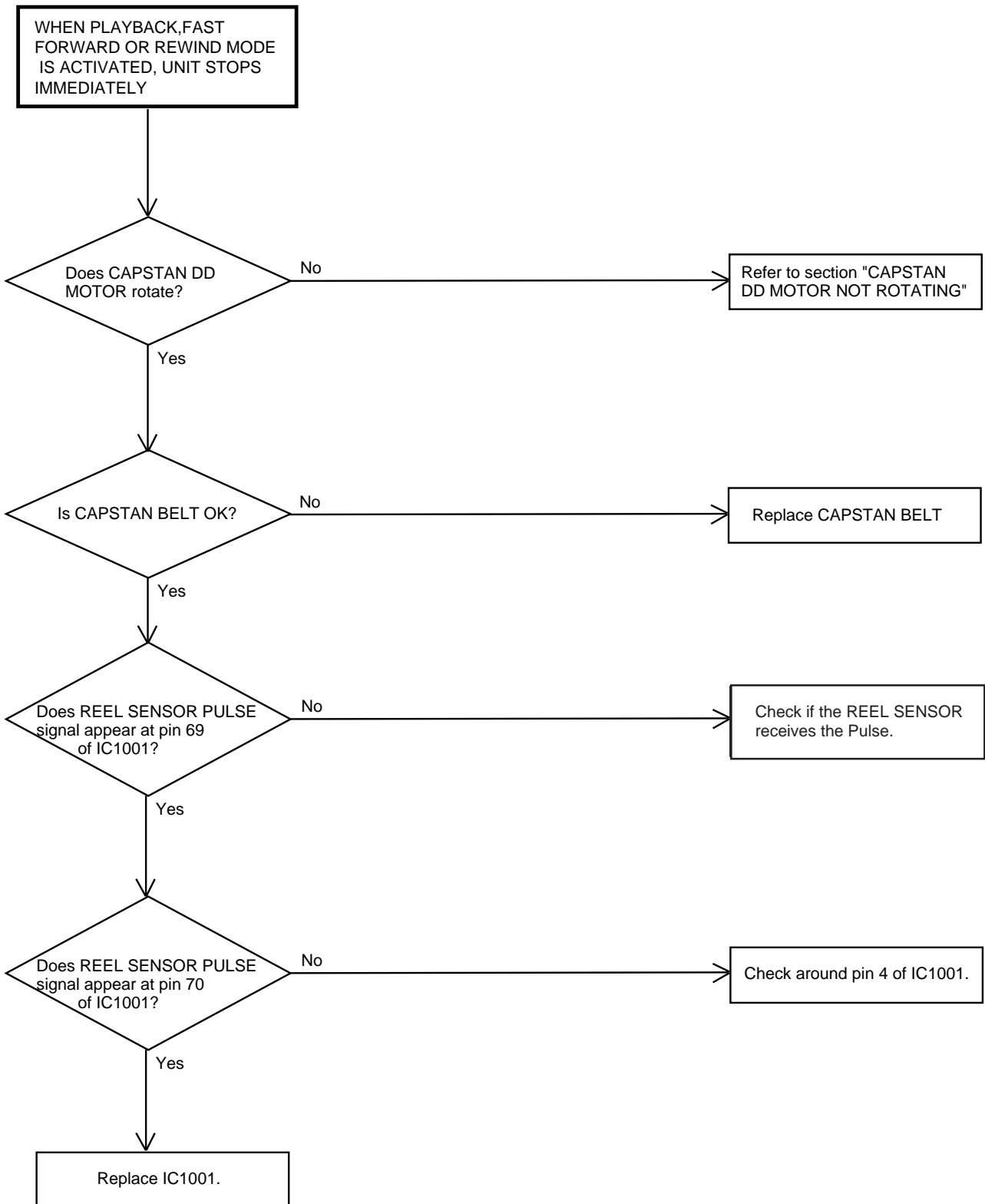
TROUBLESHOOTING GUIDE



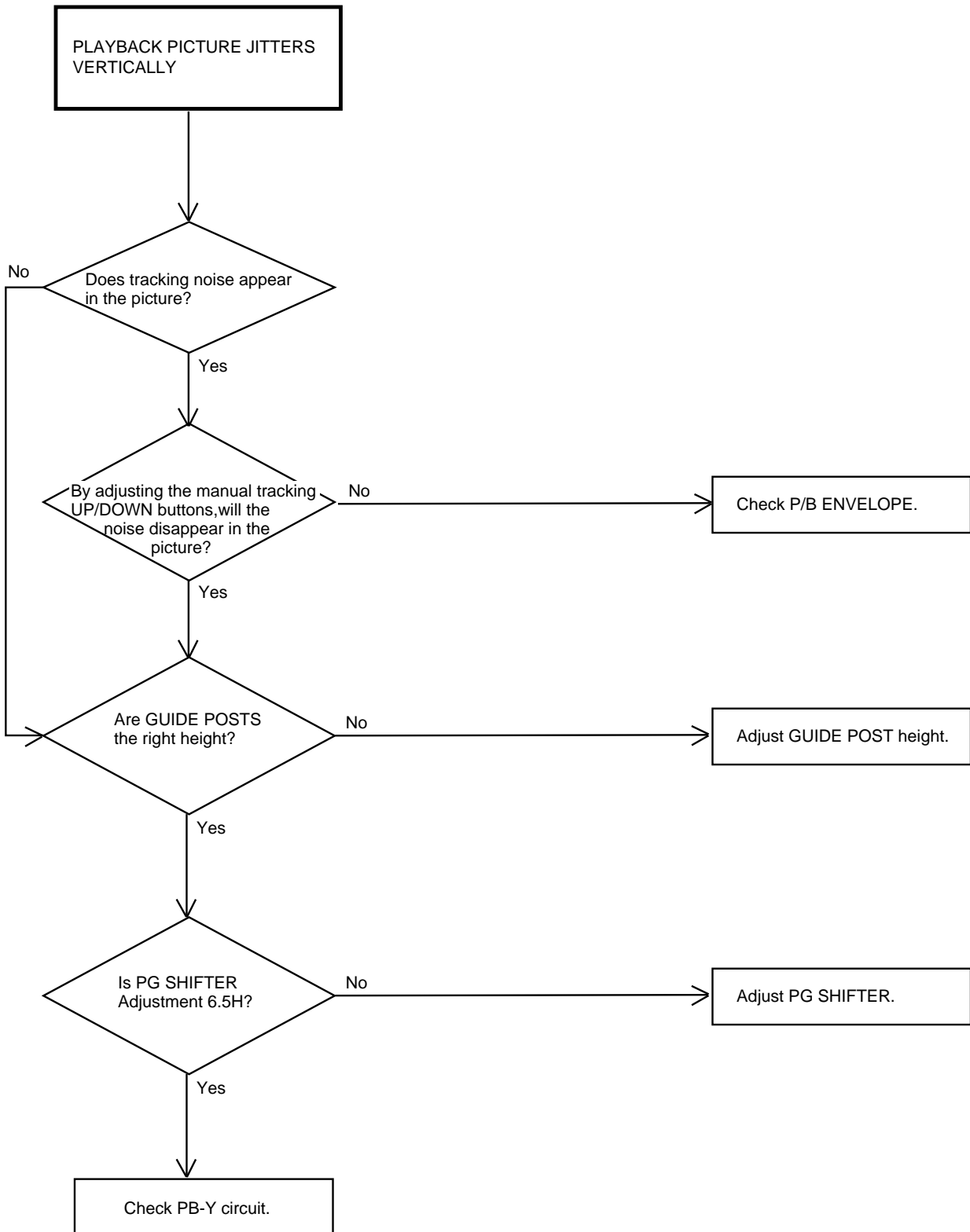
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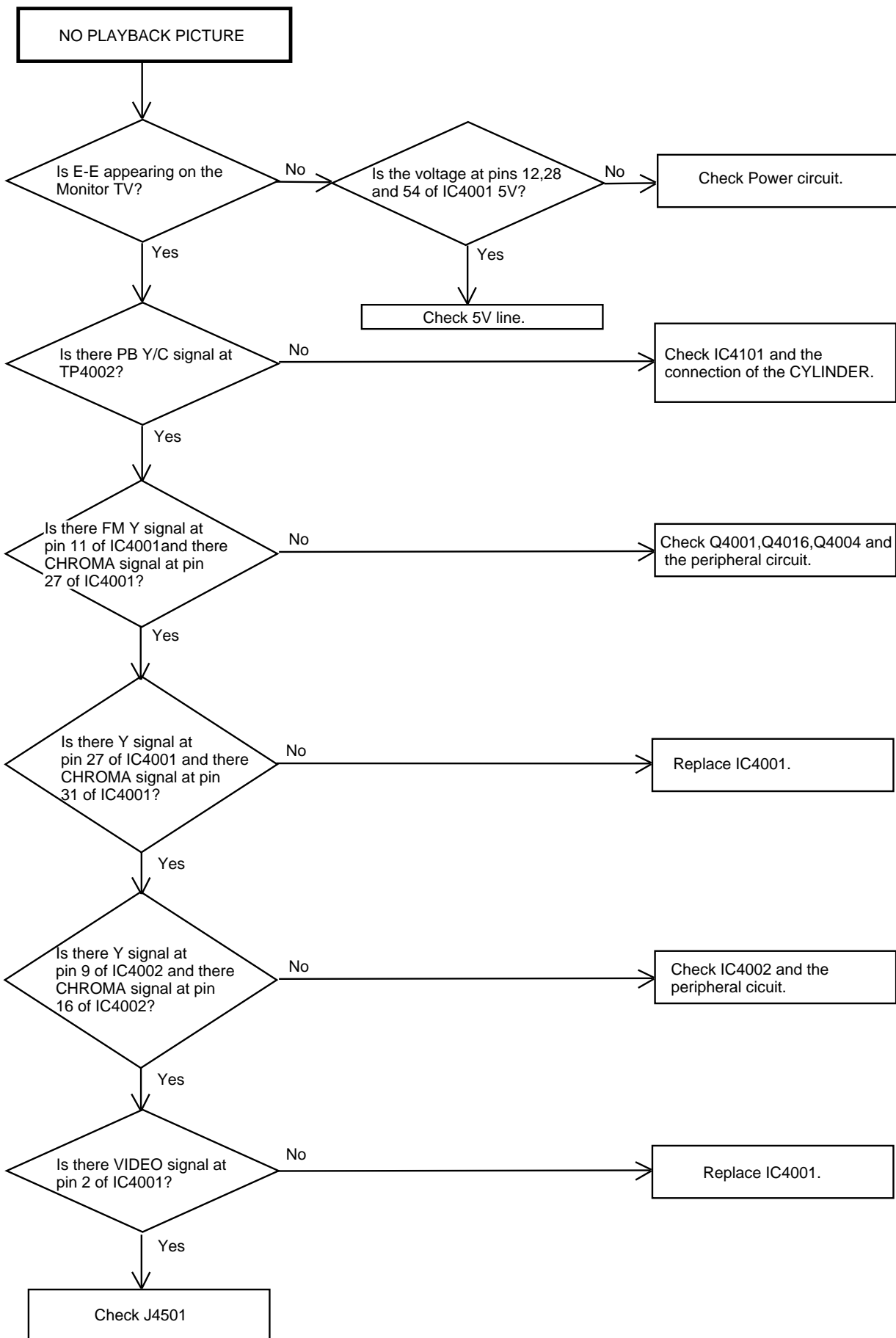
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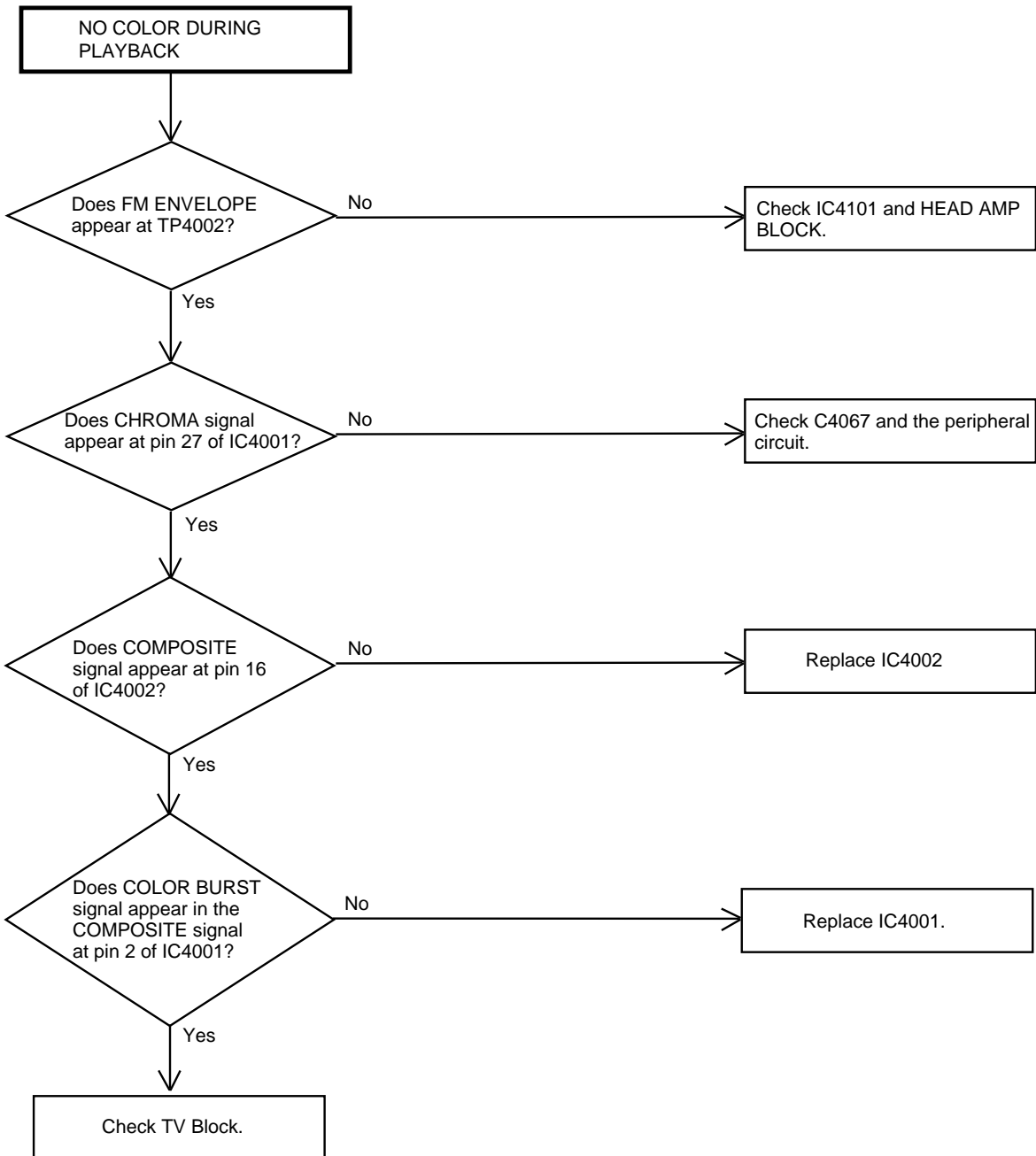
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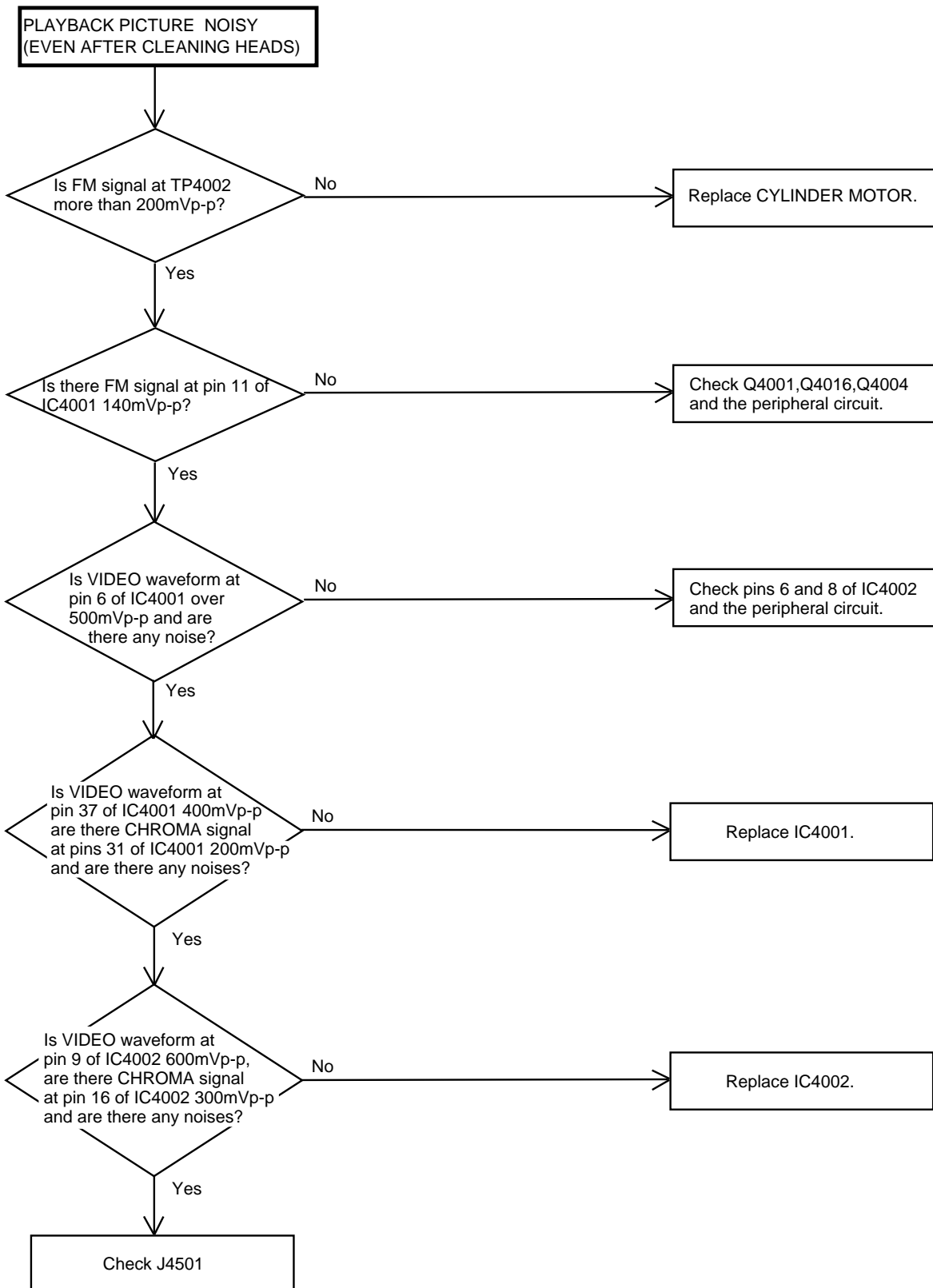
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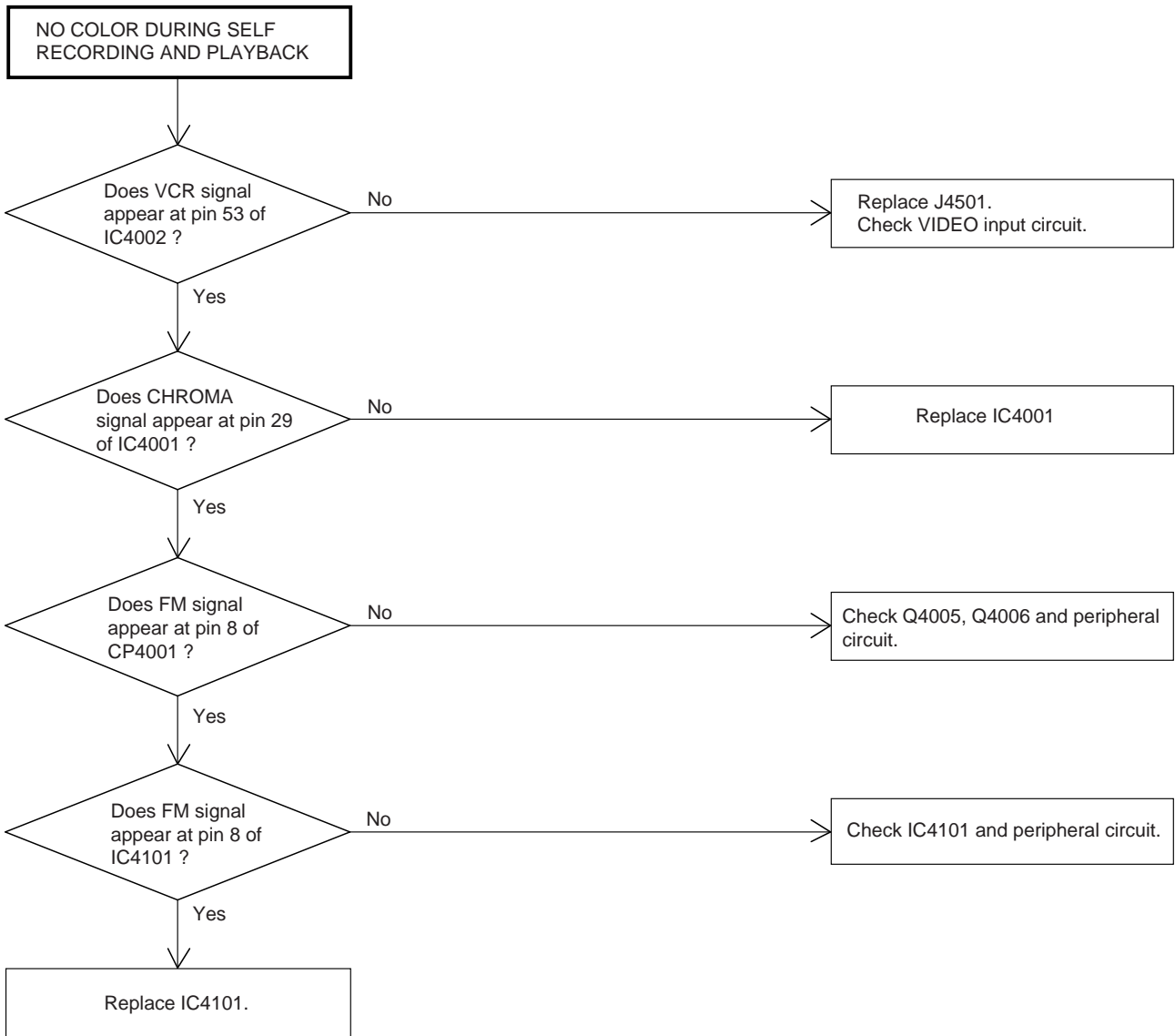
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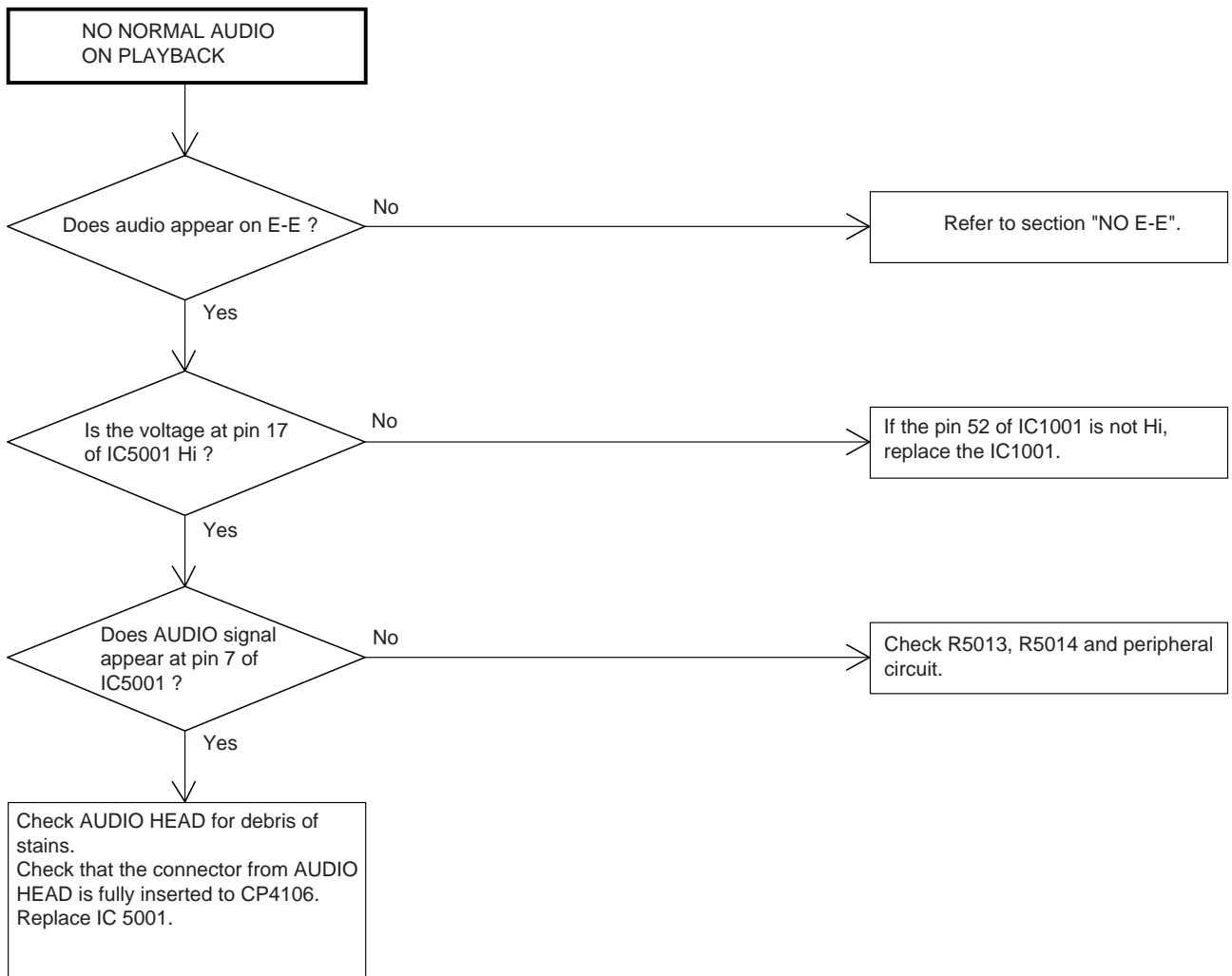
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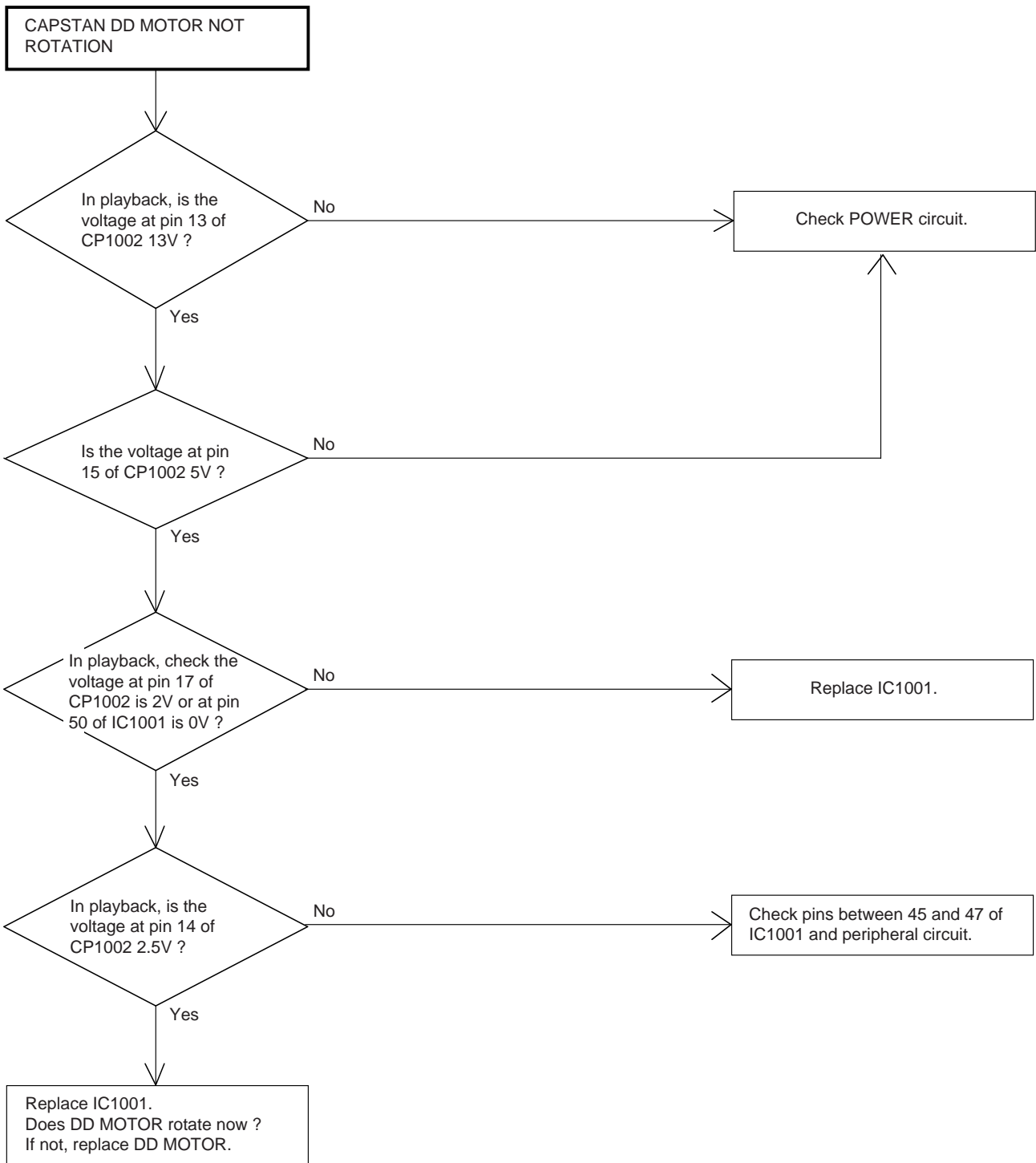
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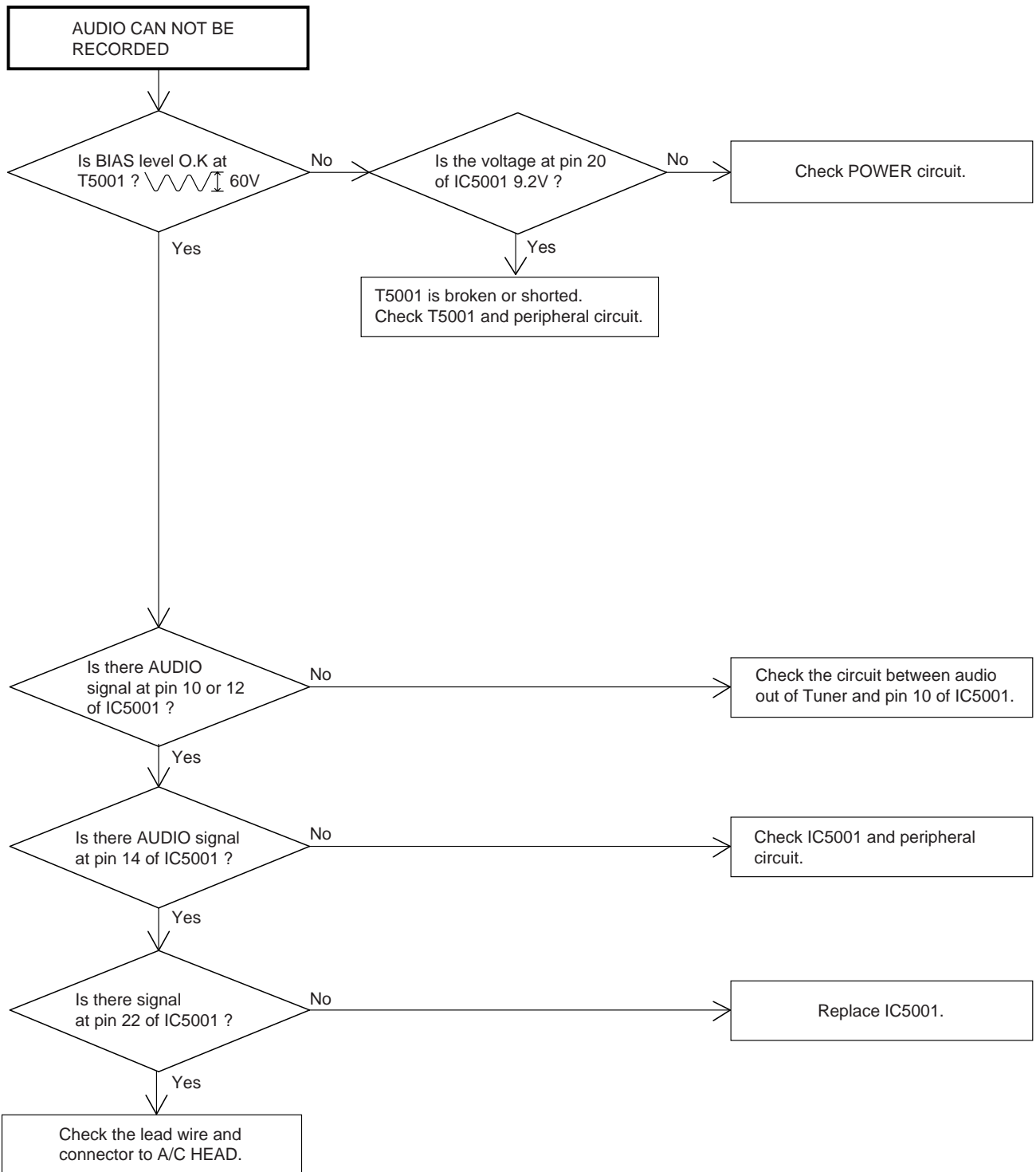
TROUBLESHOOTING GUIDE



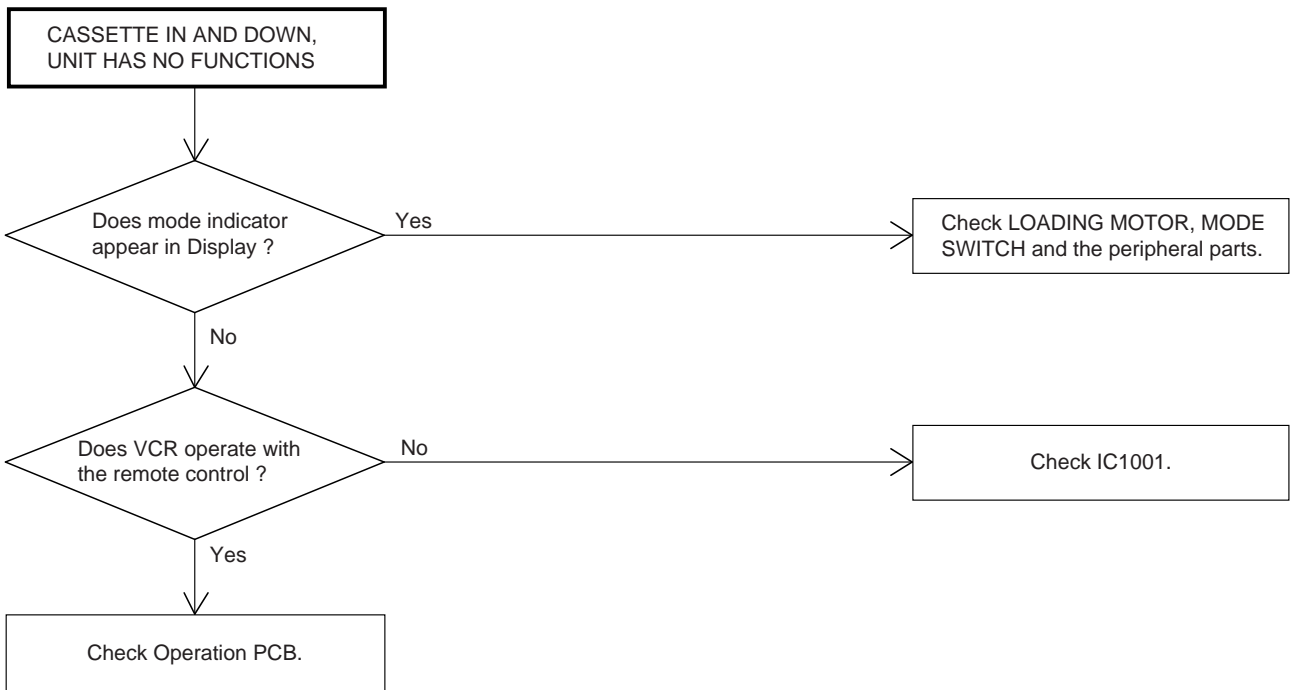
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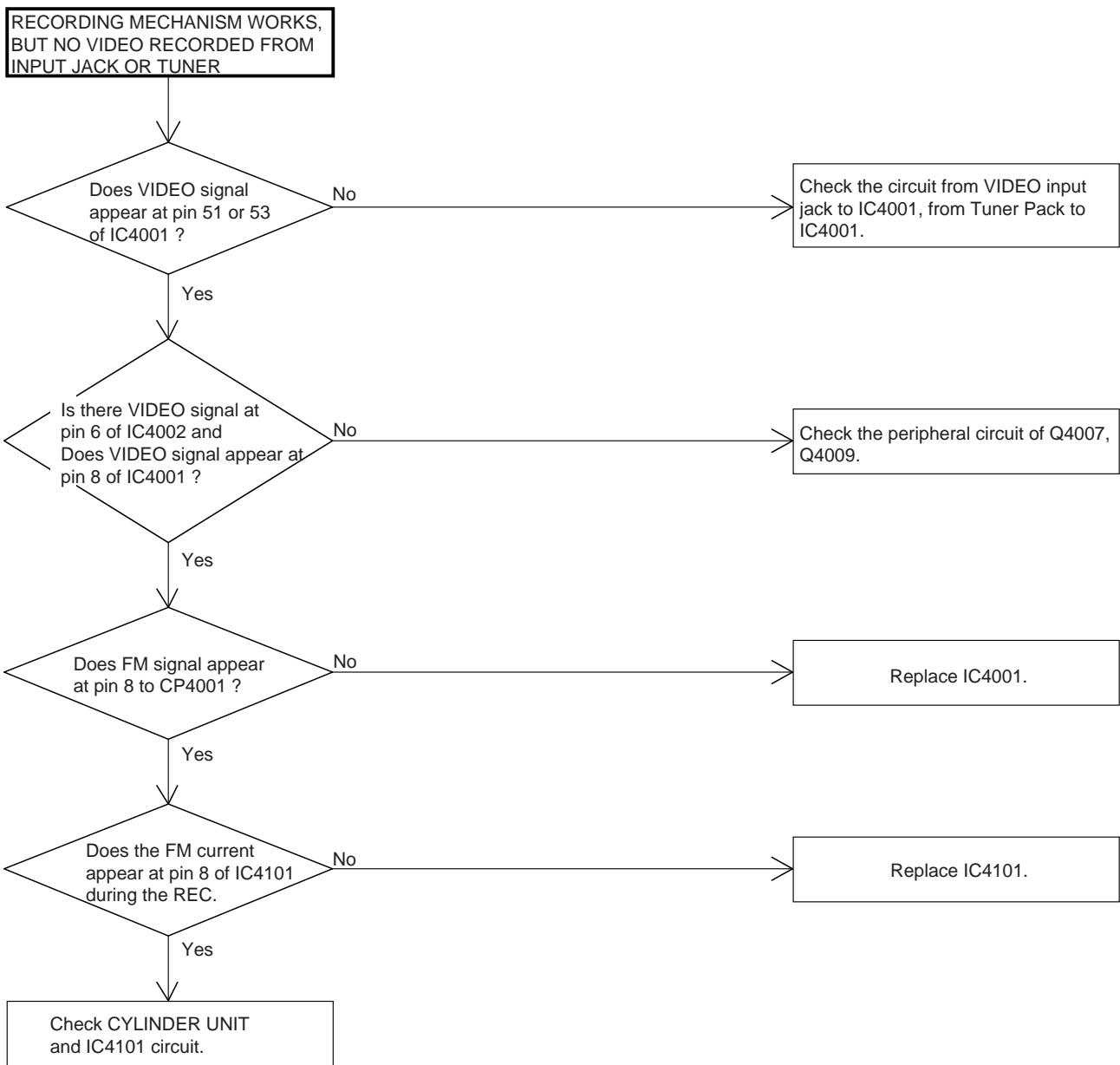
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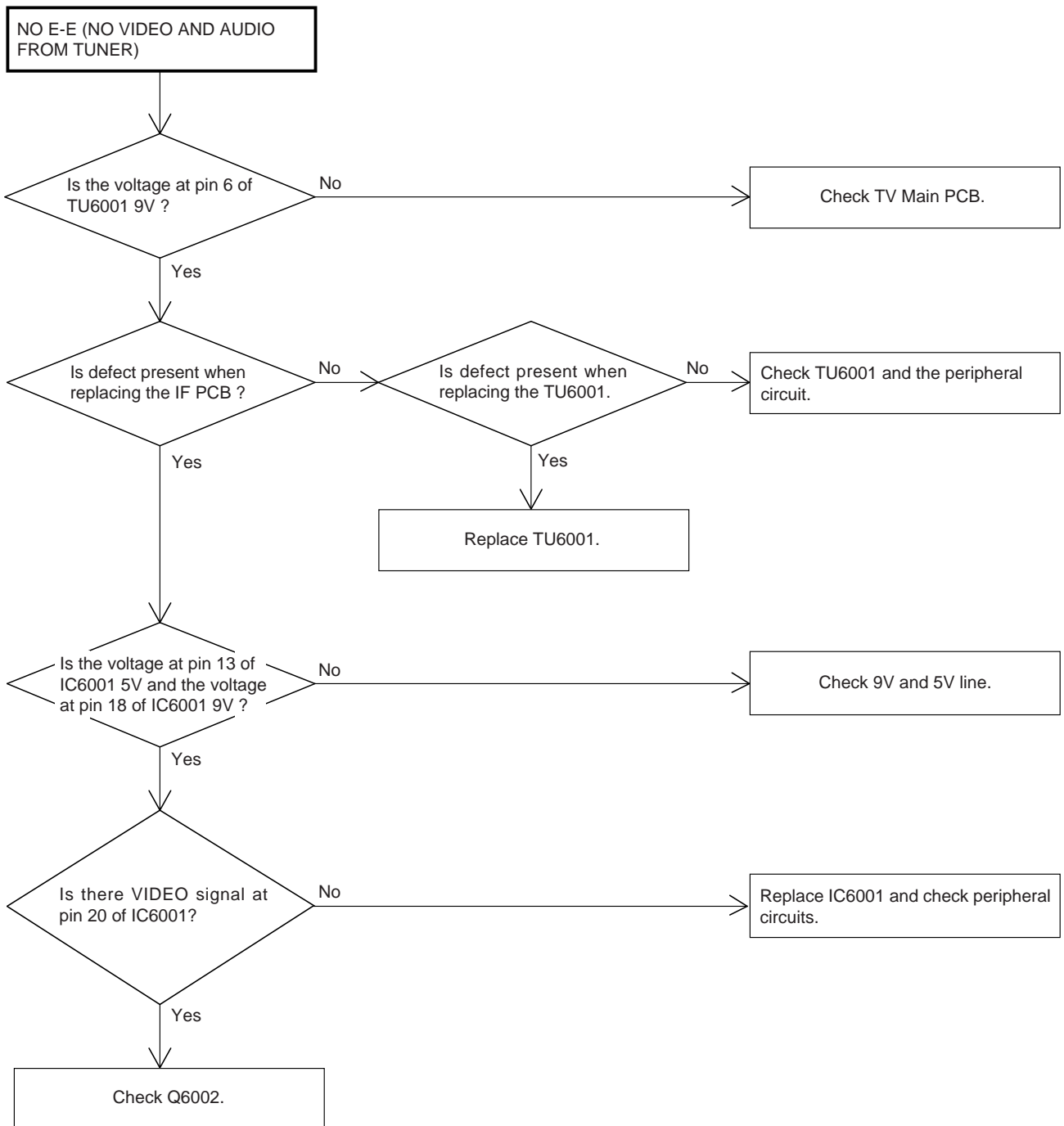
TROUBLESHOOTING GUIDE



TROUBLESHOOTING GUIDE



TROUBLESHOOTING GUIDE



IC DESCRIPTIONS

OEC6044D

Pin No.	Pin Name	I/O	Description
1	VSS	—	Ground.
2	PAL/SEC	O	PAL/SECAM Selection.
3	HALF TONE	O	HALF TONE terminal for T'TEXT.
4	—	—	Not used.
5	I2C OFF	I	I2C BUS OFF input for the adjustment.
6	H. SW	I	H. SW input.
7	—	—	Not used.
8	DEGAUSS	O	DEGAUSS output.
9	TEXT RESET	O	T'TEXT IC RESET output.
10	—	—	Not used.
11	TV MUTE	O	MUTE output.
12	VT	O	PWM output for tuning.
13	VOLUME	O	PWM output for volume.
14	P. B. LED	O	OTPB (One-Touch Playback button) call LED output.
15	—	—	Not used.
16	—	—	Not used.
17	TRICK PB	I	Mode selector for special playback.
18	AGC	—	AGC PWM output.
19	V. POSI/V. SIZE	O	V. POSI/V. SIZE PWM output.
20	AV2	O	External select output 2.
21	AV1	O	External select output 1.
22	AGC DET	I	AGC voltage input for AUTO SETUP.
23	COL SYS IN	I	COLOR SYSTEM input from Y/C, SECAM CHROMA IC.
24	DV-SYNC	O	DV-SYNC output for Y/C IC.
25	AFT	I	AFT S. CURVE input.
26	KEY A	I	KEY A input.
27	KEY B	I	KEY B input.
28	VL	O	Band output.
29	VH	O	Band output.
30	FORTHED VH	O	Forced VH.
31	—	—	Not used.
32	VSS	—	Ground.
33	RED	O	Color signal red output.
34	GREEN	O	Color signal green output.
35	BLUE	O	Color signal blue output.
36	Y	O	Y-signal output.
37	HD	I	H. pulse input.
38	VD	I	V. pulse input.
39	SCL	O	I2C bus interface.
40	SDA	I/O	I2C bus interface.
41	B.B HI	O	B.B HI output.
42	OSC1	I	Terminal to connect the OSD circuit.
43	OSC2	O	Terminal to connect the OSD circuit.
44	TEST	O	Ground.
45	XIN	I	Terminal to connect the oscillator (8.000MHz).
46	XOUT	O	Terminal to connect the oscillator (8.000MHz).
47	RESET	I	Reset signal input.
48	POWER FAIL	I	Input for the detection of power interruption.
49	XTIN	I	Terminal to connect the oscillator (32KHz).
50	XTOUT	O	Terminal to connect the oscillator (32KHz).

IC DESCRIPTIONS

OEC6044D

Pin No.	Pin Name	I/O	Description
51	REMOCON	I	Remocon pulse input.
52	SD	I	SD signal input.
53	TU MUTE	O	Tuner mute output.
54	VCR MUTE	O	VCR mute output.
55	SST	I	Serial data input.
56	STS	O	Serial data output.
57	SCLK	O	Serial clock output.
58	STRB	O	Strob output.
59	SIF	O	SIF selection.
60	AUDIO A	O	Switching output of HI-FI/STEREO. (Open)
61	AUDIO B	O	Switching output of HI-FI/STEREO. (Open)
62	TV POWER	O	TV power output.
63	VCR POWER	O	VCR power output.
64	VDD	—	+5V.

IC DESCRIPTION

OEC9032B

Pin No.	Pin Name	I/O	Description
1	VSAD	—	Ground.
2	BOT	I	Tape start sensor input signal.
3	CASS DOWN/SERVICE	I	Input of CASS DOWN, TAB switch and setting of service mode.
4	EOT	I	Tape end sensor input signal.
5	VIDEO ENV DET	I	Input terminal of video RF envelope.
6	HI-FI ENV DET	I	Input terminal of HI-FI RF envelope.
7	DEW	I	Dew sensor input.
8	SLOW TRACK OFFSET	I	Slow tracking offset adjustment.
9	CYL/CAP MOTOR SELECT	I	CYL/CAP motor select input.
10	VDAD	—	5V.
11	DFG OUT	O	Output terminal of DFG AMP.
12	DFG IN	I	Input terminal of DFG AMP.
13	DPG IN	I	Input terminal of DPG comparator.
14	CFG IN	I	Input terminal of CFG AMP.
15	CFG OUT	O	Output terminal of CFG AMP.
16	VSSA	—	Ground.
17	VREF	—	Power on reset signal.
18	CTL AMP -	I	Input terminal of CTL AMP.
19	CTL AMP +	O	Output terminal of CTL AMP.
20	CTL -	I	Input terminal of CTL AMP negative.
21	CTL +	I/O	Input terminal of CTL AMP positive.
22	VDDA	—	5V.
23	RESET B	—	Power reset.
24	TEST	I	Ground.
25	SYSTEM 1	O	Open.
26	V-PB H	O	Open.
27	HI-FI L	I	Input selection of audio type.
28	AUTO DET IN	I	Ground.
29	BILINGUAL L	I	Input selection of audio type.
30	STEREO L	I	Input selection of audio type.
31	2HEAD/4HEAD	I	Input terminal for heads selecting 2 head/4 head.
32	SEARCH SPEED SW	I	Input terminal for the speed selection of CUE/REV.
33	TRICK PB-L	O	During special playback, this pin will output HIGH.
34	LP-H	O	Output HIGH at tape speed LP.
35	SP-H	O	Output HIGH at tape speed SP.
36	REC-H	O	After the tape loading, when the REC key is activated, HIGH will be output.
37	V. REC ST H	O	When the recording current flows through the head during the recording, this pin will output HIGH.
38	VIDEO H. SW	O	Output terminal of VIDEO HEAD SW.
39	AUDIO H. SW	O	Open.
40	H. AMP SW	O	Open.
41	COLOR ROTARY	O	Open.
42	DUMMY-V	O	Imitation vertical signal output.
43	VDD	—	5V.
44	PWM0	O	PWM output for error signal of drum motor.
45	PWM1	O	PWM output for error signal of capstan motor.
46	DRM ON	I/O	Control the drum motor rotation direction.
47	CAP ON	I/O	Control the capstan motor rotation direction.
48	LDM REV.	O	Control the loading motor rotation direction.
49	LDM FWD.	O	Control the loading motor rotation direction.
50	CAP LIMIT	I/O	3 State C-MOS output.

IC DESCRIPTION

OEC9032B

Pin No.	Pin Name	I/O	Description
51	CAP F/R	O	Output the LOW signal while the capstan motor is rotation in the direction of PB.
52	VV-H	O	Control output to select the output of PLAYBACK picture or EE picture.
53	EXT IN-L	I	Input of external input signal.
54	EXT H	O	Control the external input signal.
55	MS SW3	I	Mecha state switch terminal.
56	MS SW2	I	Mecha state switch terminal.
57	MS SW1	I	Mecha state switch terminal.
58	MS SW0	I	Mecha state switch terminal.
59	TAPE IN LED	O	Lights when a tape is inserted.
60	REC LED	O	Lights at REC mode.
61	T-REC LED	O	Lights at T-REC mode.
62	CLOCK 0	—	Terminal to connect the oscillator.
63	CLOCK 1	—	Terminal to connect the oscillator.
64	VSS	—	Ground.
65	ATR LED	O	Lights at ATR mode.
66	PLAY LED	I	Lights at PLAY mode.
67	REPEAT LED	O	Lights at REPEAT mode.
68	SYSTEM 2	O	Open.
69	REEL S	I	Input terminal of reel sensor.
70	REEL T	O	Input terminal of reel sensor.
71	SENS LED	O	Tape end sensor LED.
72	CE	I	Timer output signal.
73	COUNTP IN	I	1 second pulse input for tape counter.
74	S. DATA IN	I	Serial data input signal.
75	S. DATA OUT	O	Serial data output signal.
76	S. CLK	I	Serial clock input signal.
77	COMP	O	Open.
78	SYNC IN	I	Vertical synchronization signal input.
79	COUNTP OUT	O	1 second pulse input for tape counter.
80	CTL OUT	O	Open.

TA1232AN

Pin No.	Pin Name	I/O	Description
3	PV/PH/BLK	I	0V~0.8V (BLK): Video Signal Output of Black 100% will appear. 1.2V~2.3V (NORMAL): Video Signal Output will appear. 2.7V~ 3.8V (PH): Only the Horizontal Signal Output will appear. 4.2V~5.0V: Only the Vertical Signal Output will appear.

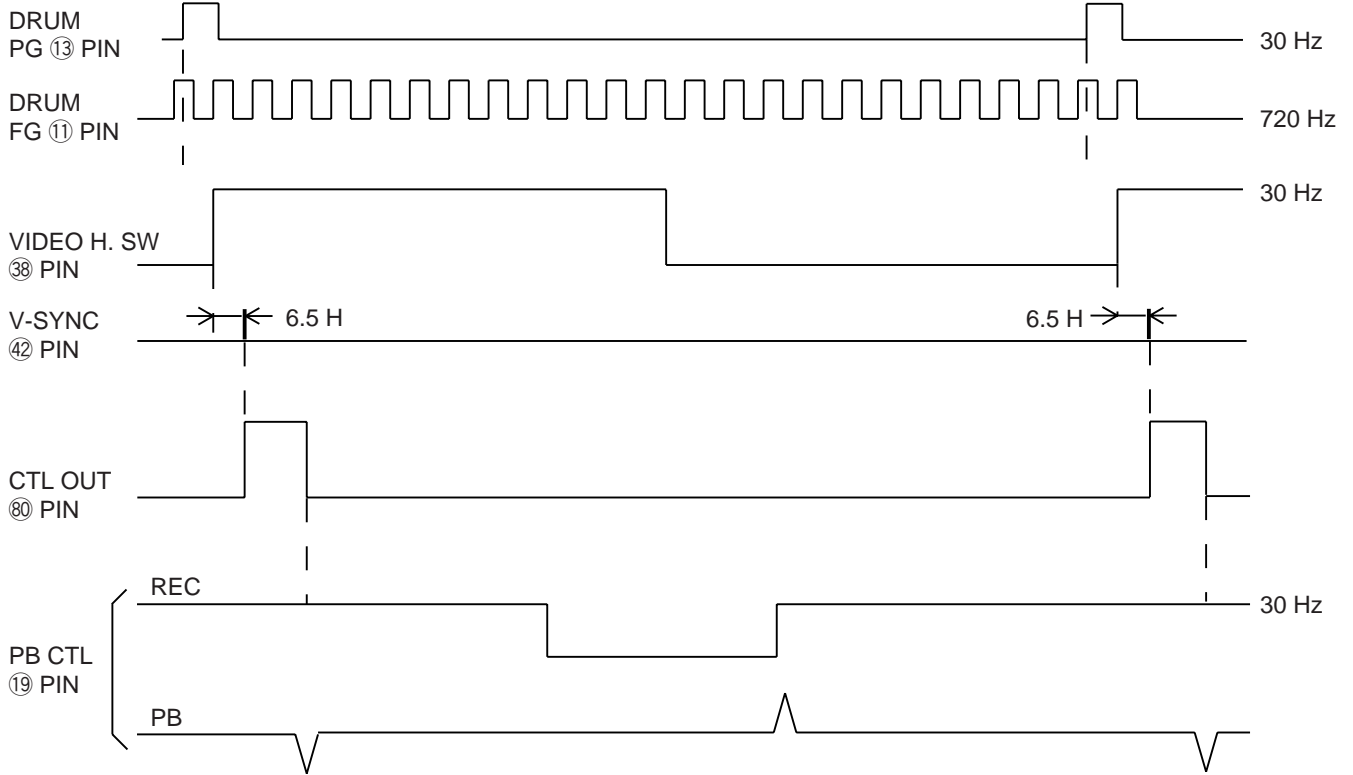
IC DESCRIPTIONS

TB1229CN

Pin No.	Pin Name	I/O	Description
1	AV VIDEO IN	I	Input for the External Composite Video signals.
2	V-AGC	—	Control to keep the V-Ramp output constant.
3	H VCC	—	VCC for the DEF Block (Deflection Family).
4	H. OUT	O	Horizontal Output Terminal.
5	CURV CORR	—	Corrects the screen deflection for the high voltage change.
6	FBP IN	I	FBP Input for the Horizontal AFC2 Detection/the Horizontal Blanking Pulse.
7	COINC DET	—	Connects the filter to detect the Horizontal Synchronous signal or Vertical Synchronous signal.
8	VDD	—	VDD Terminal for the Logic Block.
9	SCL	—	SCL Terminal for I2C BUS.
10	SDA	—	SDA Terminal for I2C BUS.
11	D GND	—	GND Terminal for the Logic Block.
12	B OUT	O	Blue output Terminal.
13	G OUT	O	Green output Terminal.
14	R OUT	O	Red output Terminal.
15	T GND	—	GND Terminal for the TEXT Block.
16	ABCL	—	External Uni Color, Brightness Control Terminal.
17	RGB ACC	—	VCC Terminal for the TEXT Block.
18	D-R IN	I	Digital Red Input Terminal.
19	D-G IN	I	Digital Green Input Terminal.
20	D-B IN	I	Digital Blue Input Terminal.
21	D-YS	—	Selector Switch for the Halftone/Internal RGB signal/Digital RGB.
22	A-YS	—	Selector Switch for the Internal RGB signal/analogue RGB.
23	A-R IN	I	Analogue Red Input Terminal.
24	A-G IN	I	Analogue Green Input Terminal.
25	A-B IN	I	Analogue Blue Input Terminal.
26	COLOR LIMITER	—	Connects the filter for to detect the Color Limit.
27	TV AUDIO IN	I	Monaural Audio Signal Input Terminal.
28	AV AUDIO IN	I	Monaural Audio Signal Input Terminal.
29	AUDIO OUT	O	Output the Audio Signal through the Attenuator.
30	APC FILTER	—	Connects the APC filter for the Chromatic Demodulation.
31	Y2 IN	I	Input the Y signal that is separated.
32	FSC GND	—	GND Terminal for the VCXO Block.
33	B-Y IN	I	Input Terminal for the B-Y signal.
34	R-Y IN	I	Input Terminal for the R-Y signal.
35	R-Y OUT	O	Output the demodulated R-Y signal.
36	B-Y OUT	O	Output the demodulated B-Y signal.
37	Y OUT	O	Output the Y signal that is separated.
38	FSC VDD	—	VDD Terminal for the VCXO Block.
39	BLACK FIL	—	Connect the filter to control the Black Stretch Gain of the Black Stretch Circuit.
40	X. TAL	—	Connect the 16.2MHz X'tal for the sub-carrier appearance.
41	Y/C VCC	—	VCC Terminal for the Y/C Signal Separation Block.
42	C IN	I	Chromatic Input Terminal.
43	Y/C GND	—	GND Terminal for the Y/C Signal Separation Block.
44	APL	—	Connects the filter to correct the DC Restore percentage.
45	Y1 IN	I	Y Signal Input Terminal.
46	S-DEMO ADJ	—	Ground.
47	TV VIDEO IN	I	Input for the TV Composite Video signals.
48	AFC1 FILTER	—	Connects the filter for the Horizontal AFC1 detection.
49	SYNC OUT	O	Output the Synchronous Signal that is separated at the Synchronous Separation Circuit.
50	V-SEPA	—	Connect the filter for the Vertical Synchronous Separation.
51	SYNC IN	I	Input for the Synchronous Separation Circuit.
52	V-RAMP	—	Connect the filter for the V-Ramp Wave Form making.
53	V OUT	O	Output Terminal for the Vertical Ramp Signal.
54	V NF	I	NF Input Terminal for the Vertical.
55	DEF GND	—	GND Terminal for the DEF Block (Deflection Family).
56	VIDEO OUT	O	Output Terminal for the External, TV Video Input that is selected at the Bus.

SERVO TIMING CHART

IC1001 (OEC9032B)

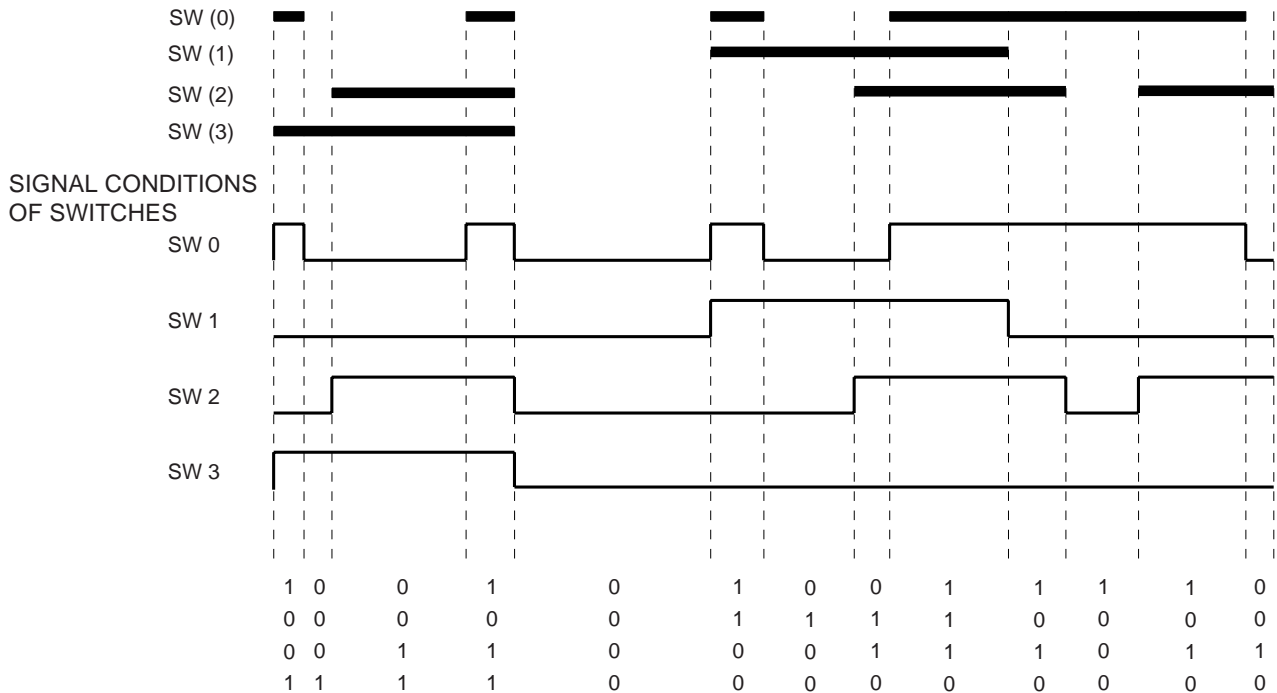


• WAVEFORM CHANGES DEPENDED ON THE TAPE SPEED

SYSTEM SWITCH MODE

SWITCH COMPOSITION

SWITCH PATTERN



MODE SWITCH				DECK MODE
SW 3	SW 2	SW 1	SW 0	
1	0	0	1	EJECT
1	0	0	0	CASSETTE UP
1	1	0	0	CASSETTE DOWN
1	1	0	1	IDLE
0	0	0	0	*1
0	0	1	1	UL START
0	0	1	0	VSR
0	1	1	0	RVS STILL
0	1	1	1	FWD STILL
0	1	0	1	PLAY/REC/STOP 1
0	0	0	1	STOP 2
0	1	0	1	FF / REW
0	1	0	0	

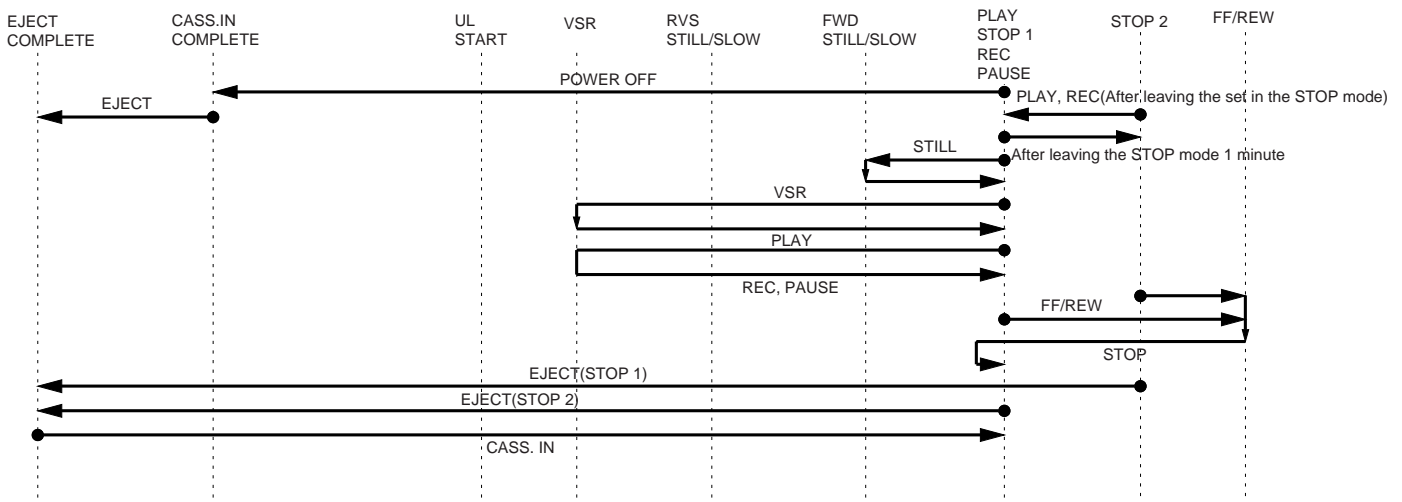
MODE SWITCH				DECK MODE
SW 3	SW 2	SW 1	SW 0	
0	5	5	0	EJECT
5	5	5	0	STOP(Right after)
5	0	5	0	STOP(After 1 minute)
5	5	5	0	PLAY
5	5	5	0	REC (After selecting the Cassette)
5	0	5	5	FF (After selecting the Cassette)
5	0	5	5	REW
5	5	5	0	VSR
5	5	0	5	VSR
5	0	0	0	STILL(PLAY)
5	5	5	0	PAUSE(REC)
0	0	5	0	POWER OFF (TAPE IN)
0	0	5	0	POWER ON (TAPE IN)

OUTPUT LIST OF MECHANICAL SWITCHES

*1: IT IS ONLY PASSING POINT, THERE IS NO DECK MODE.

VOLTAGE (V)

MODE SEPARATION



SEMICONDUCTOR BASE CONNECTIONS

DIODE



1SS133T-77
MTZJ13B T-77
MTZJ5.1C T-77
MTZJ5.6B T-77
MTZJ6.8C T-77
MTZJ9.1B T-77
UZ-5.1BCB-TA
UZ-5.6BCB-TA



11E1N-TA1B2
11E2N-TA1B2
11EQS04N-TA1B2
11ES1N-TA1B2



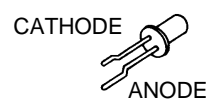
LFB-01L



10ELS2N-TA1B2
10ELS6TA1B2
15DF6-FC
1R5NU41
21DQ09N-TA2B1
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RM11C

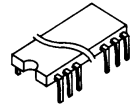


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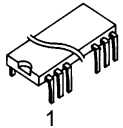


EM-553-F9T
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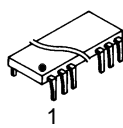
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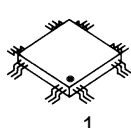
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OEC6044D
56PIN
TB1229CN
54PIN
TA1232AN
16PIN
TL8850AP



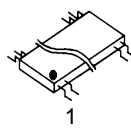
28PIN
CF70200NW



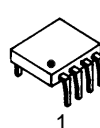
24PIN
LA7289



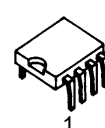
80PIN
1
OEC9032B



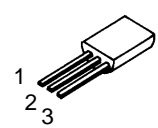
24PIN
LA7411M-TP-T



8PIN
1
LA6358T

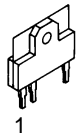


8PIN
1
M24C04-BN6

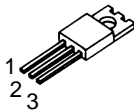


3PIN
1
2
3
PST600H

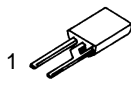
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CF72306
M52313SP
14PIN
SDA5649



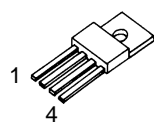
7PIN
LA7832



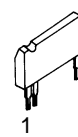
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3
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NJM7812FA



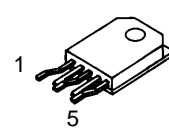
2PIN
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UPC574J-T



4PIN
1
4
PQ09RD08

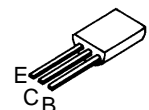


10PIN
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OEC9029A

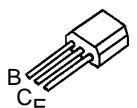


5PIN
1
5
STR-F6653

TRANSISTOR



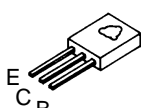
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2SA733(C)-T(P,Q)
2SB892(S,T)-AE
2SB926(S,T)-AA
2SC1317(Q,R,S)-T
2SC1815Y(TPE2)
2SC2001(C)-T_L
2SC2271(D,E)-AE
2SC2872S
2SC2909(S,T)-AA
2SC3000-AA
2SC945(C)-T(P,Q)



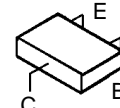
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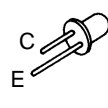
GP1S94



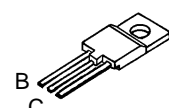
2SC2688(L,M)



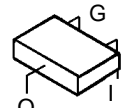
2SA1037AKT146R,S
2SA1037KT147
2SC2412KT146 R,S
2SC2412KT147
DTC114TKAT146



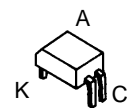
RPT-38PB113



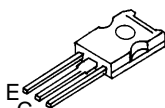
2SD2599



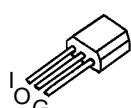
DTA124EKAT146
DTC114EKAT146
DTC124EKAT146
DTC143EKAT146
DTC143TKT147
DTC144EKAT146



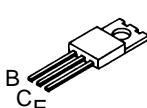
ON3171R



2SA1356_Y
2SC3419_Y

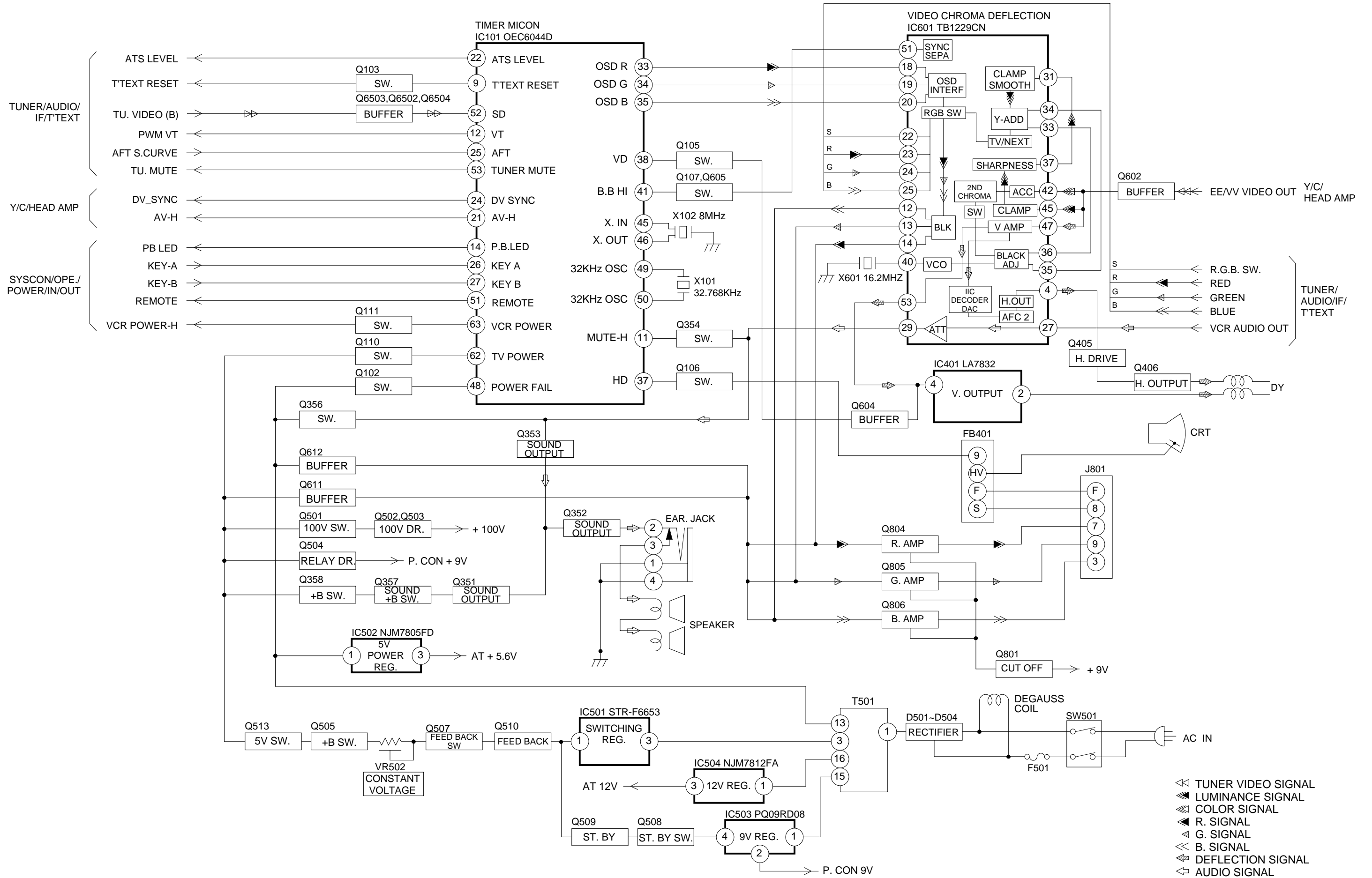


DTC114ESTP



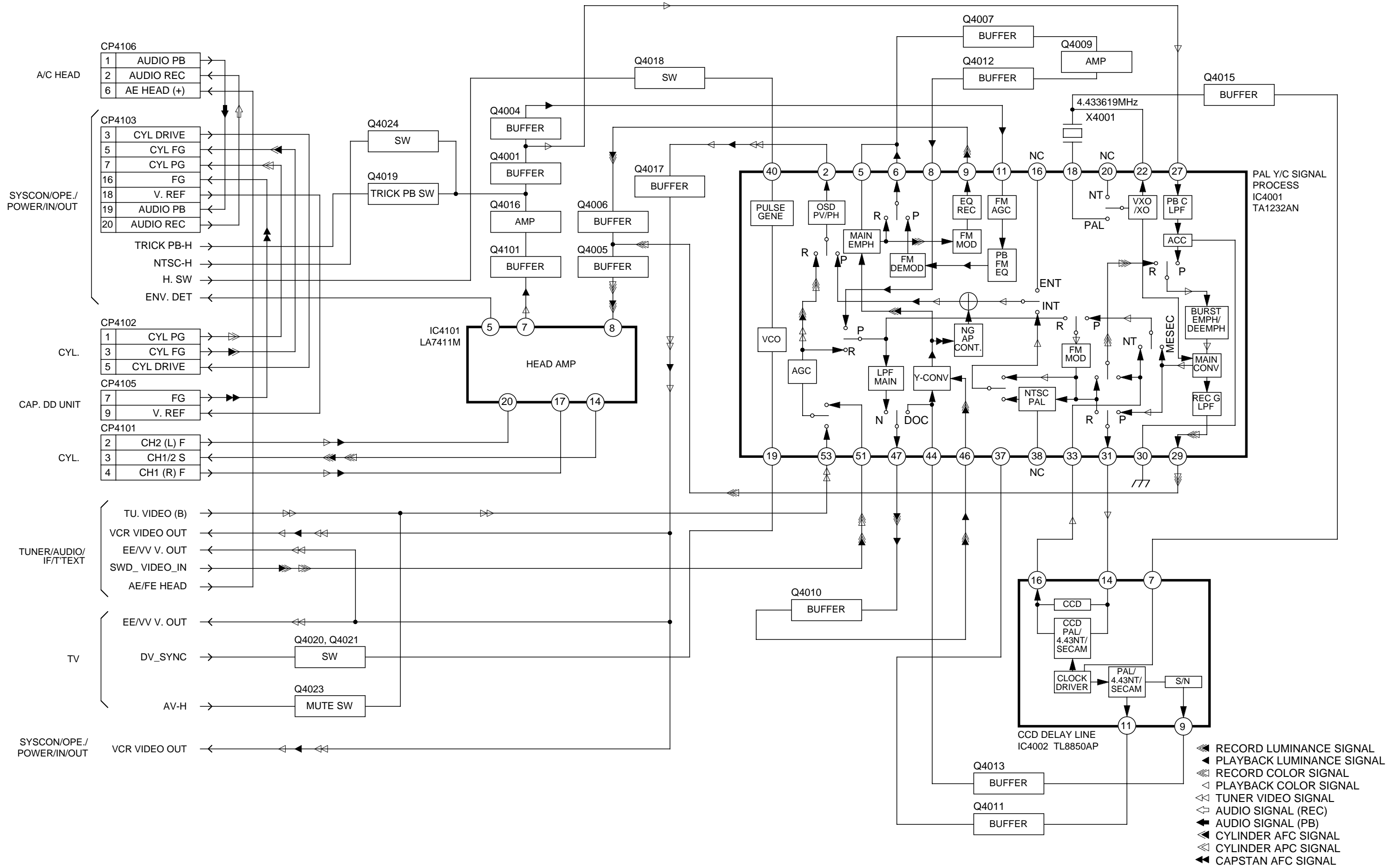
2SC4160-OEC-YAC11

TV BLOCK DIAGRAM

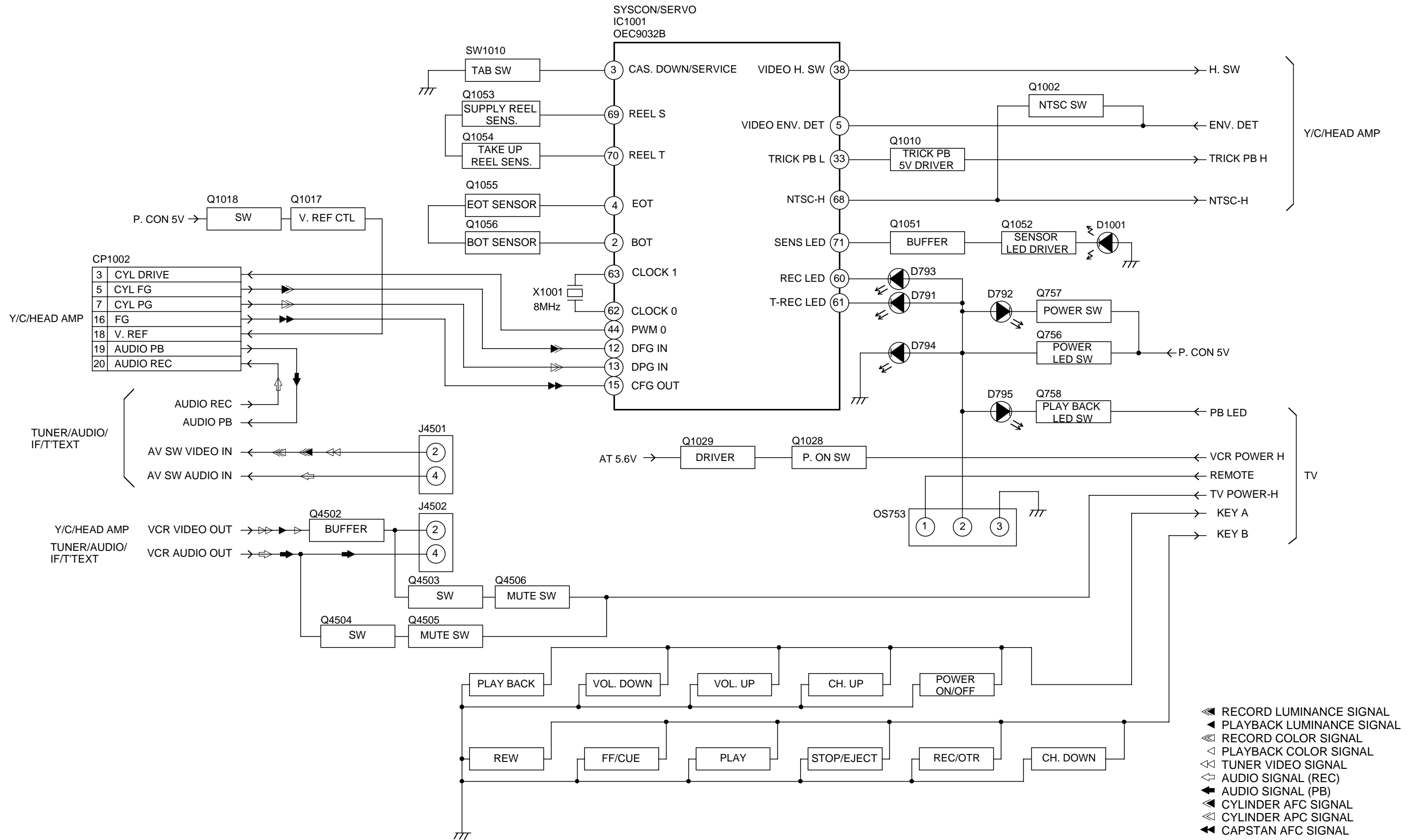


- ◁ TUNER VIDEO SIGNAL
- ◁ LUMINANCE SIGNAL
- ◁ COLOR SIGNAL
- ◁ R. SIGNAL
- ◁ G. SIGNAL
- ◁ B. SIGNAL
- ◁ DEFLECTION SIGNAL
- ◁ AUDIO SIGNAL

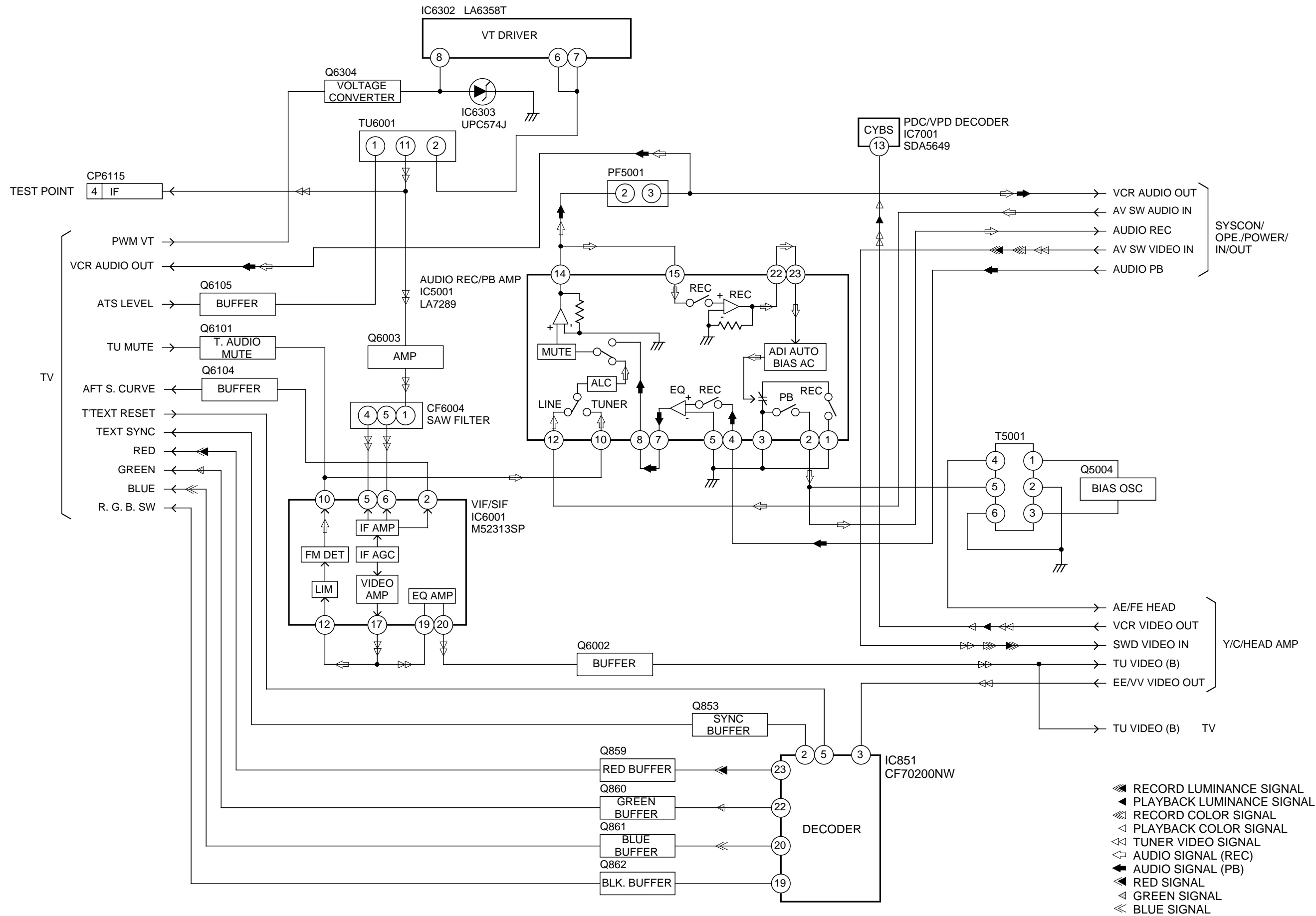
Y/C/HEAD AMP BLOCK DIAGRAM



SYSTEM CONTROL/OPERATION/POWER/IN/OUT BLOCK DIAGRAM

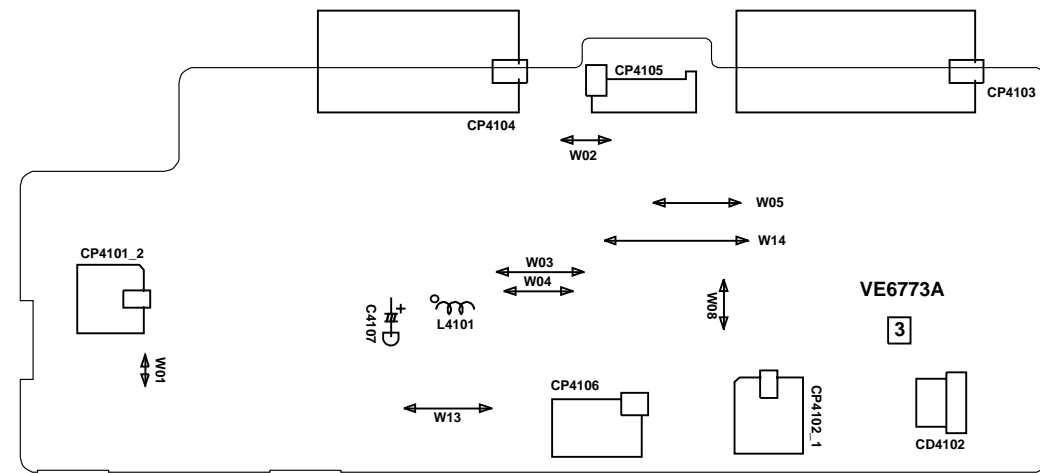


TUNER/AUDIO/IF/T'TEXT BLOCK DIAGRAM

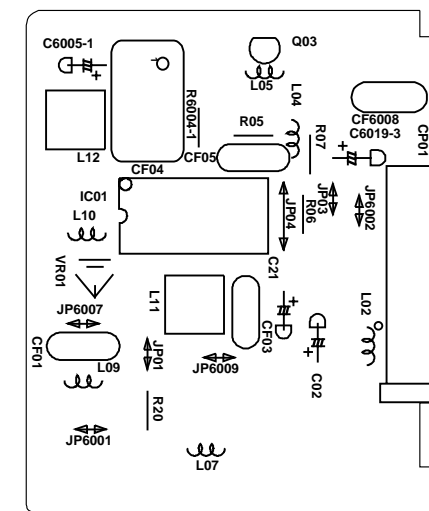


PRINTED CIRCUIT BOARDS

HEAD AMP

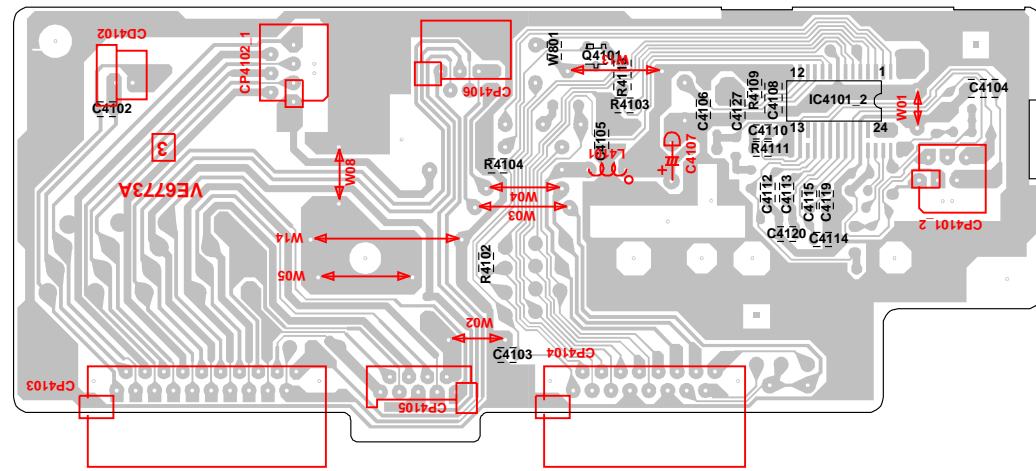


IF

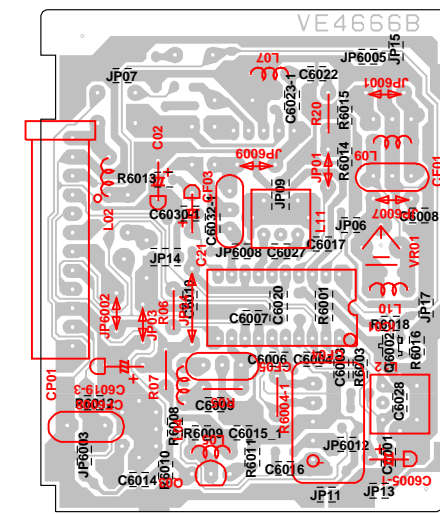


PRINTED CIRCUIT BOARDS

HEAD AMP

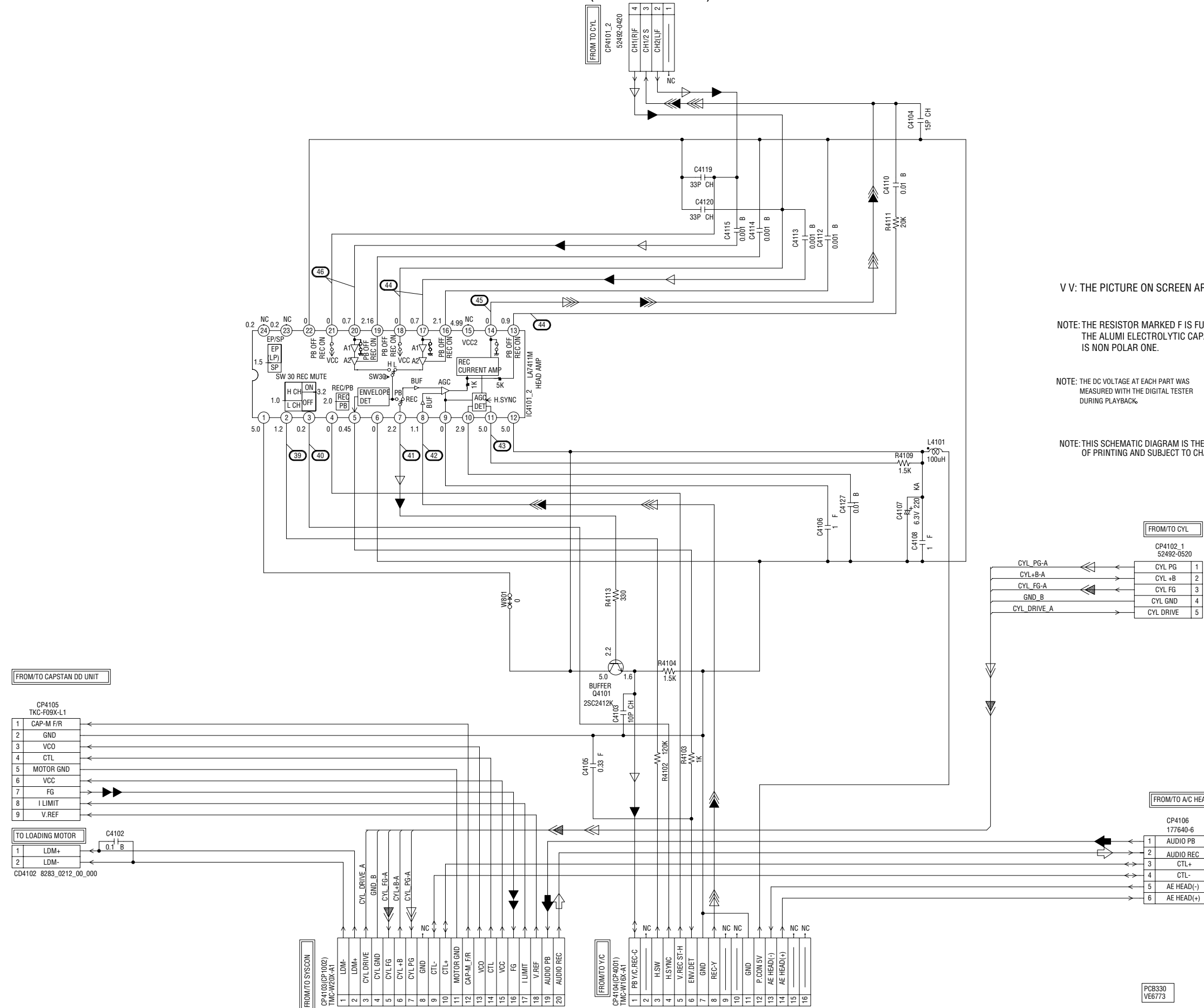


IF



HEAD AMP SCHEMATIC DIAGRAM

(HEAD AMP PCB)



V V: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.

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 .

FROM/TO CYL

CP4102_1	52492-0520
CYL PG-A	CYL PG 1
CYL+B-A	CYL +B 2
CYL FG-A	CYL FG 3
GND_B	CYL GND 4
CYL DRIVE A	CYL DRIVE 5

FROM/TO CAPSTAN DD UNIT

CP4105	TKC-F09X-L1
1	CAP-M F/R
2	GND
3	VCO
4	CTL
5	MOTOR GND
6	VCC
7	FG
8	I LIMIT
9	V.REF

TO LOADING MOTOR

CD4102	8283_0212_00_000
1	LDM+
2	LDM-

FROM/TO A/C HEAD

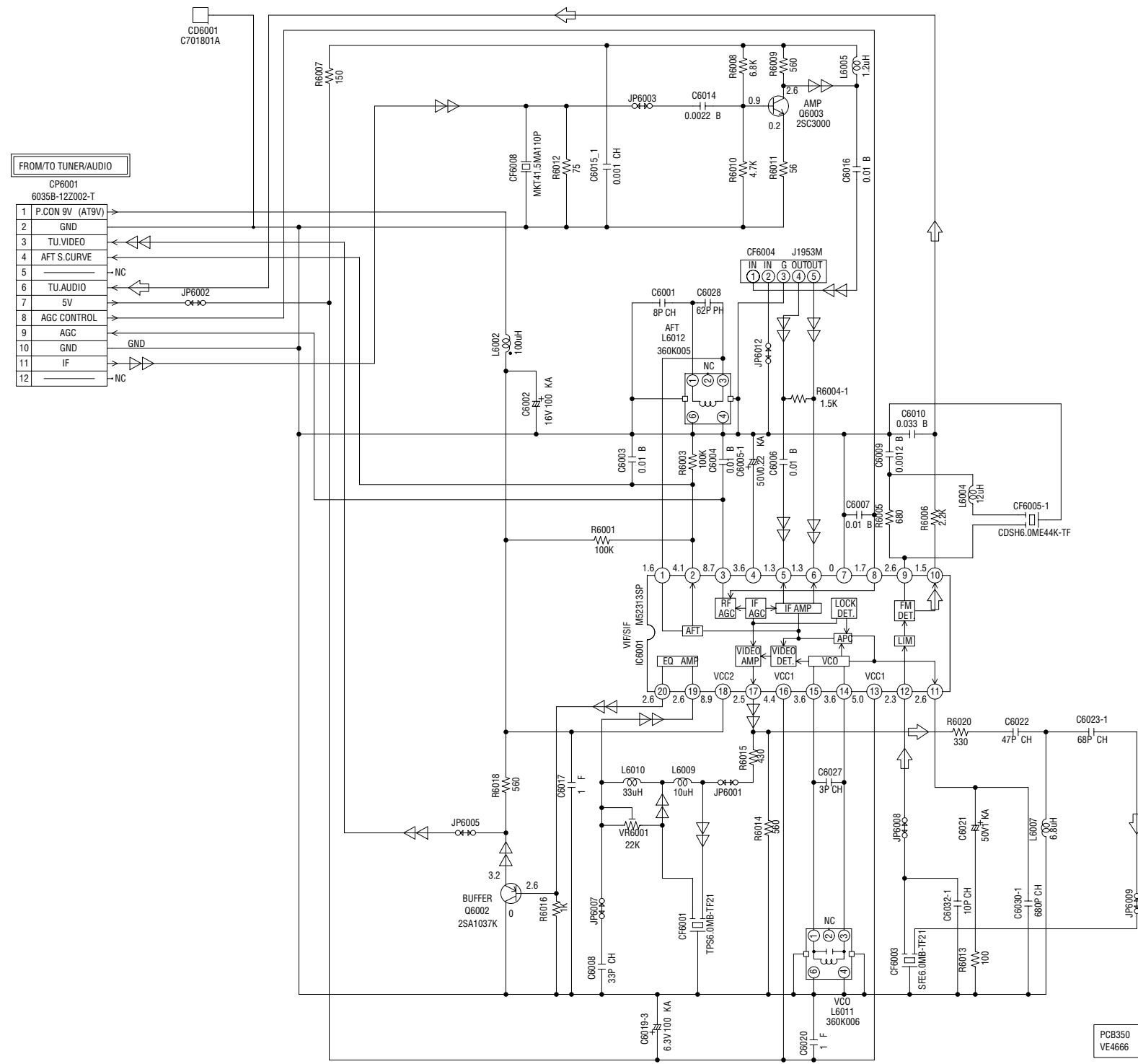
CP4106	177640-6
1	AUDIO PB
2	AUDIO REC
3	CTL+
4	CTL-
5	AE HEAD(-)
6	AE HEAD(+)

- ◀ CAPSTAN AFC SIGNAL
- ◀ RECORD LUMINANCE SIGNAL
- ▶ PLAYBACK LUMINANCE SIGNAL
- ◀ RECORD COLOR SIGNAL
- ◀ PLAYBACK COLOR SIGNAL
- ◀ AUDIO SIGNAL(REC)
- ▶ AUDIO SIGNAL(PB)
- ◀ CYLINDER AFC SIGNAL
- ◀ CYLINDER APC SIGNAL

PCB330
VE6773

IF SCHEMATIC DIAGRAM

(IF PCB)



FROM TO TUNER/AUDIO	
1	P.CON 9V (AT9V)
2	GND
3	TU.VIDEO
4	AFT S.CURVE
5	NC
6	TU.AUDIO
7	5V
8	AGC CONTROL
9	AGC
10	GND
11	IF
12	NC

◁▷ TUNER VIDEO SIGNAL
 ⇄ AUDIO SIGNAL(REC)

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

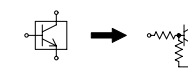
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

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

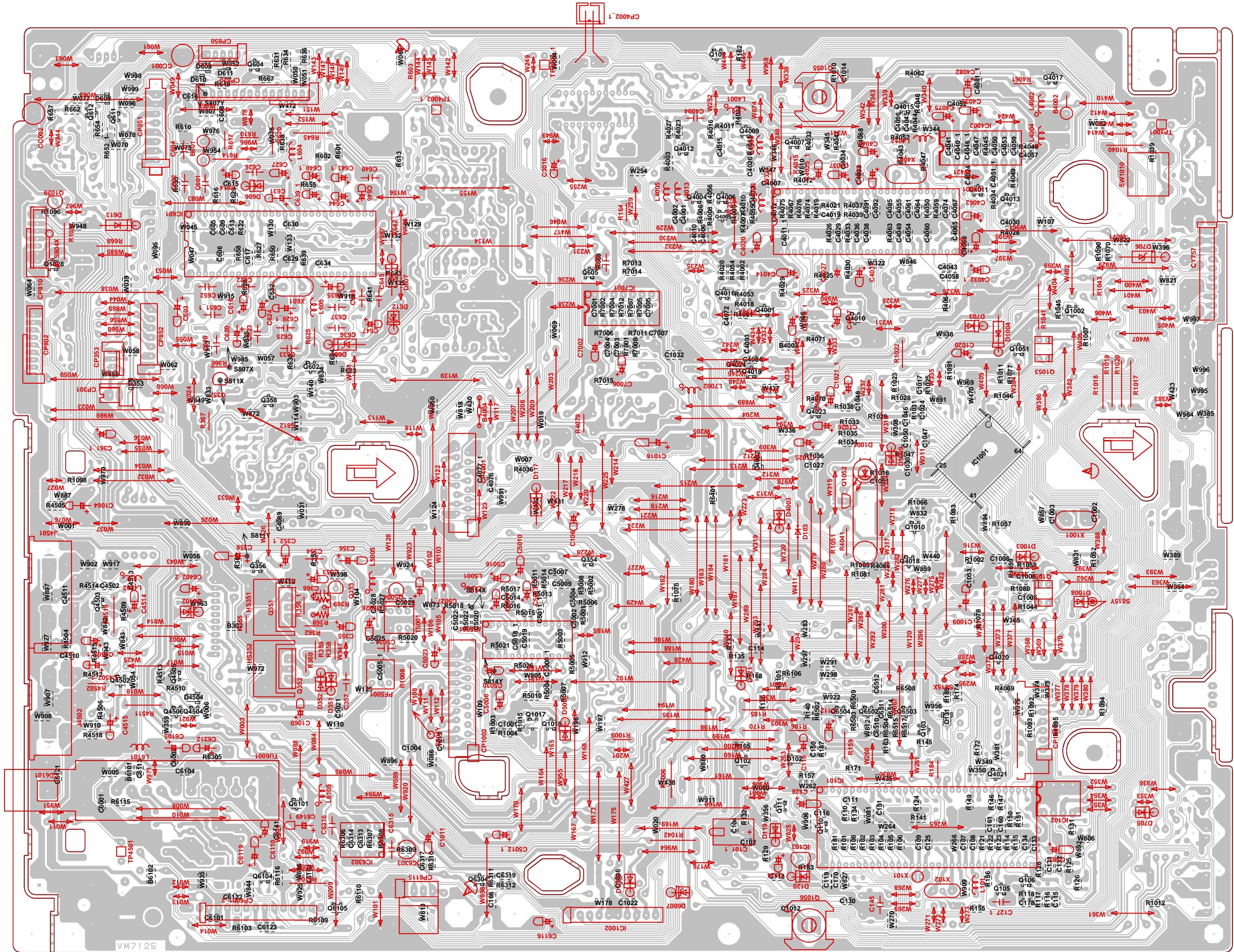
V V: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.

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

CAUTION: DIGITAL TRANSISTOR

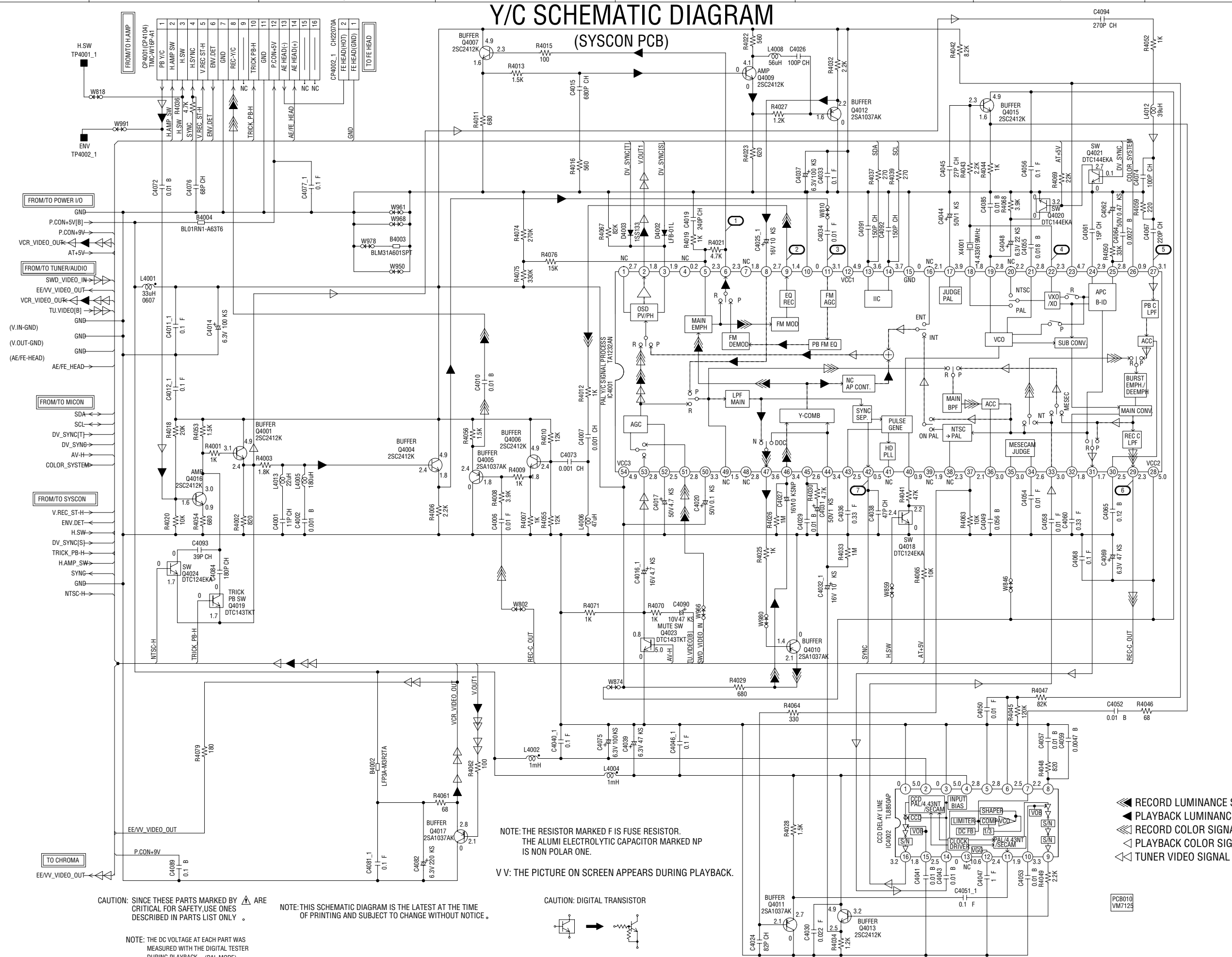


PRINTED CIRCUIT BOARDS
SYSCON



Y/C SCHEMATIC DIAGRAM

(SYSCON PCB)



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

V V: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR



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

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

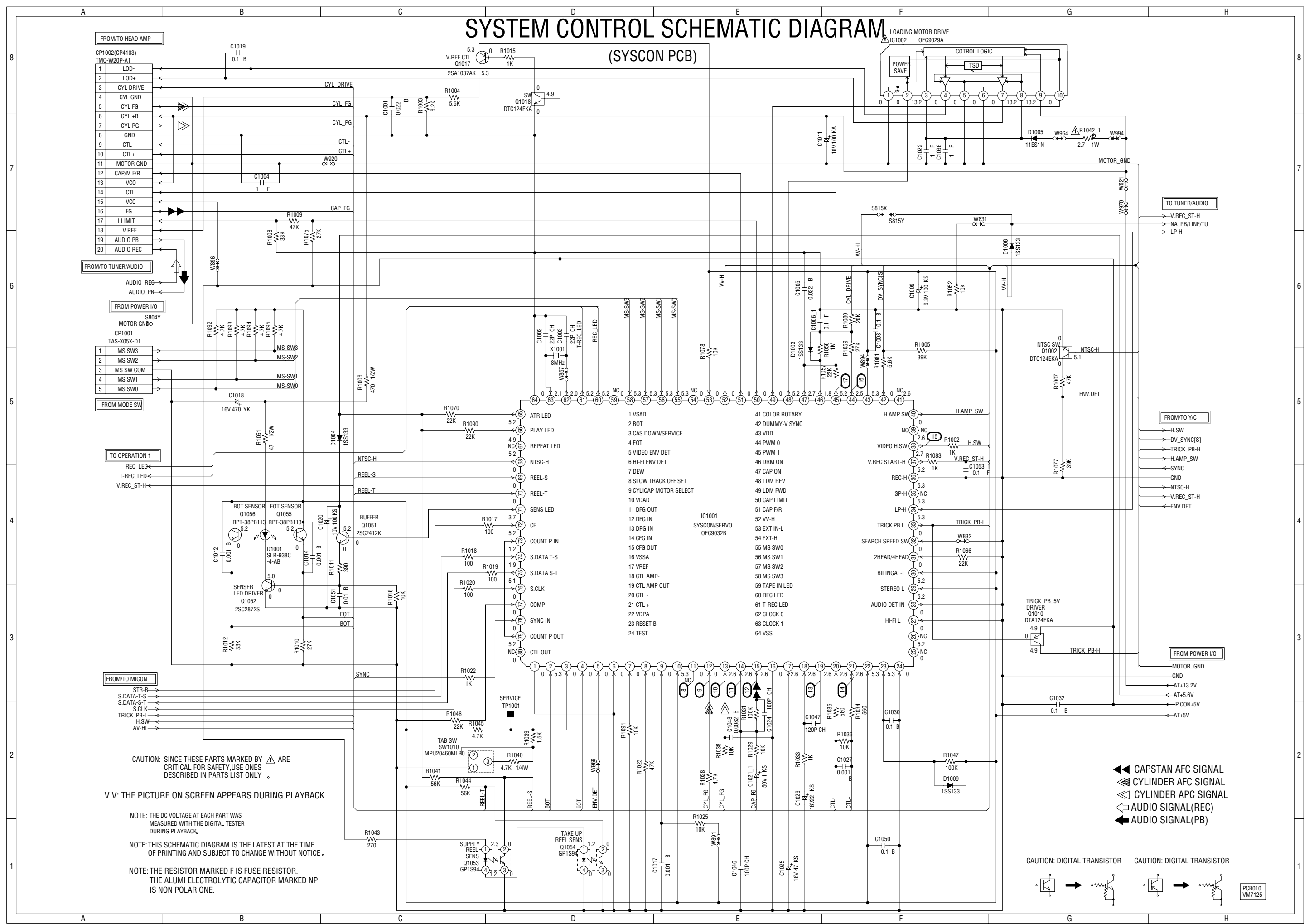
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK. (PAL MODE)

- ▶ RECORD LUMINANCE SIGNAL
- ▶ RECORD LUMINANCE SIGNAL
- ▶ RECORD COLOR SIGNAL
- ▶ PLAYBACK COLOR SIGNAL
- ▶ TUNER VIDEO SIGNAL

PCB010
VM7125

SYSTEM CONTROL SCHEMATIC DIAGRAM

(SYSCON PCB)



FROM/TO HEAD AMP

- CP1002(CP4103)
TMC-W20P-A1
- 1 LOD-
 - 2 LOD+
 - 3 CYL DRIVE
 - 4 CYL GND
 - 5 CYL FG
 - 6 CYL +B
 - 7 CYL PG
 - 8 GND
 - 9 CTL-
 - 10 CTL+
 - 11 MOTOR GND
 - 12 CAP/M F/R
 - 13 VCO
 - 14 CTL
 - 15 VCC
 - 16 FG
 - 17 I LIMIT
 - 18 V.REF
 - 19 AUDIO PB
 - 20 AUDIO REC

FROM/TO TUNER/AUDIO

- AUDIO_REC
- AUDIO_PB

FROM POWER I/O

- S804Y
MOTOR GND

- CP1001
TAS-X05X-D1
- 1 MS SW3
 - 2 MS SW2
 - 3 MS SW COM
 - 4 MS SW1
 - 5 MS SW0

FROM MODE SW

- REC_LED
- T-REC_LED
- V_REC_ST-H

TO OPERATION 1

- REEL-S
- REEL-T
- NTSC-H

FROM/TO MICON

- STR-B
- S.DATA-T-S
- S.DATA-S-T
- S.CLK
- TRICK_PB-L
- H.SW
- AV-HI

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

V V: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.

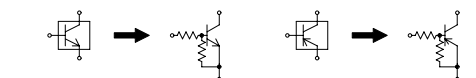
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

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

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

- CAPSTAN AFC SIGNAL
- CYLINDER AFC SIGNAL
- CYLINDER APC SIGNAL
- AUDIO SIGNAL(REC)
- AUDIO SIGNAL(PB)

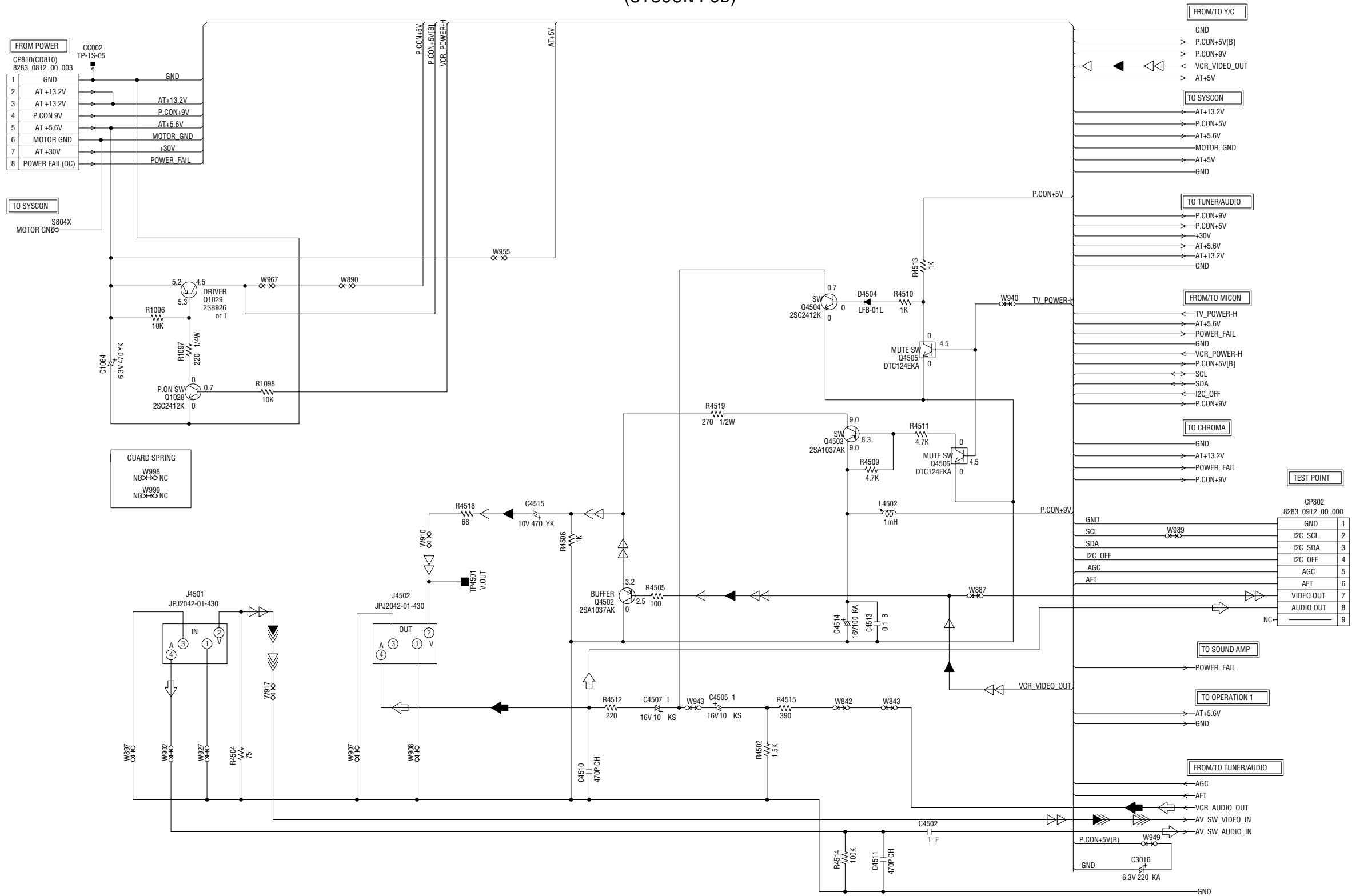
CAUTION: DIGITAL TRANSISTOR



PC8010
VM7125

POWER/IN/OUT SCHEMATIC DIAGRAM

(SYSCON PCB)



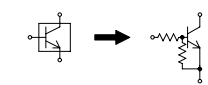
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

V V: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.
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: DIGITAL TRANSISTOR

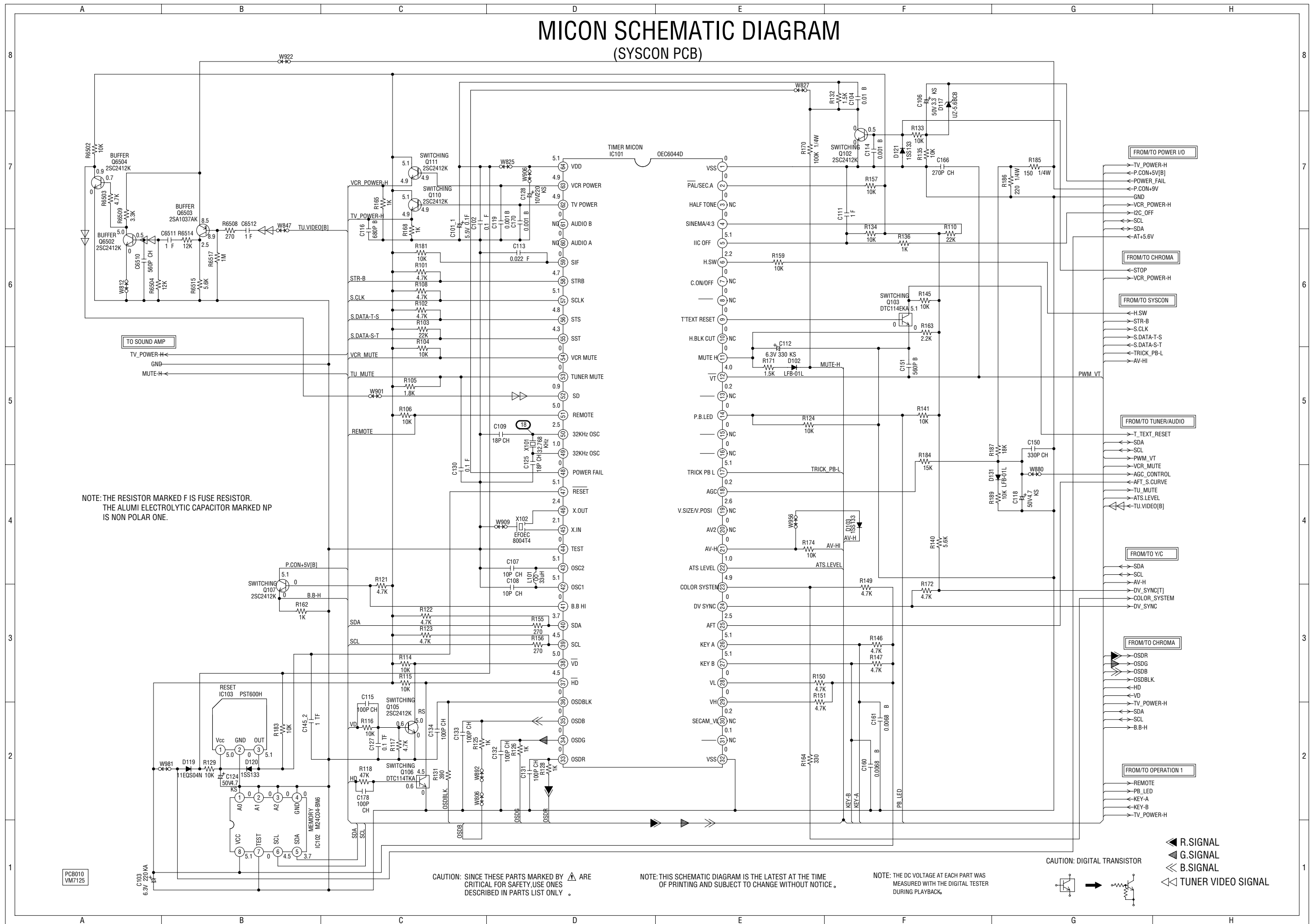


- RECORD LUMINANCE SIGNAL
- RECORD COLOR SIGNAL
- TUNER VIDEO SIGNAL
- AUDIO SIGNAL (PB)
- AUDIO SIGNAL (REC)
- PLAYBACK LUMINANCE SIGNAL
- PLAYBACK COLOR SIGNAL

PCB010
VM7125

MICON SCHEMATIC DIAGRAM

(SYSCON PCB)



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

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

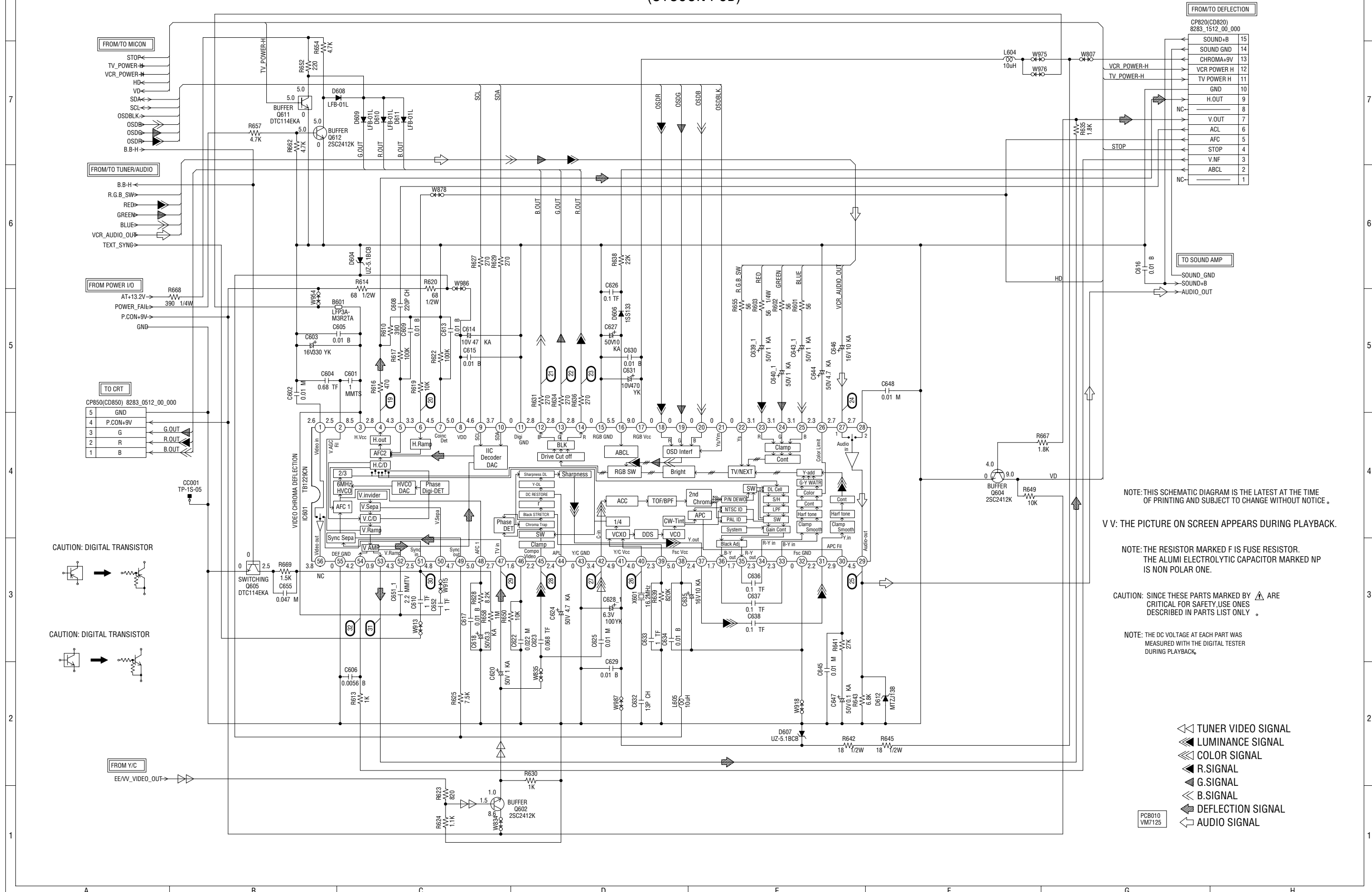
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

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

CAUTION: DIGITAL TRANSISTOR

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

CHROMA SCHEMATIC DIAGRAM (SYSCON PCB)



FROM/TO DEFLECTION

CP820(CD820)	
8283_1512_00_000	
SOUND+B	15
SOUND GND	14
CHROMA+9V	13
VCR POWER H	12
TV POWER H	11
GND	10
H.OUT	9
NC	8
V.OUT	7
ACL	6
AFC	5
STOP	4
V.NF	3
ABCL	2
NC	1

TO SOUND AMP

SOUND_GND	
SOUND+B	
AUDIO_OUT	

TO CRT

CP850(CD850)	
8283_0512_00_000	
GND	5
P.CON+9V	4
G	3
R	2
B	1

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

V V: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.

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

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

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

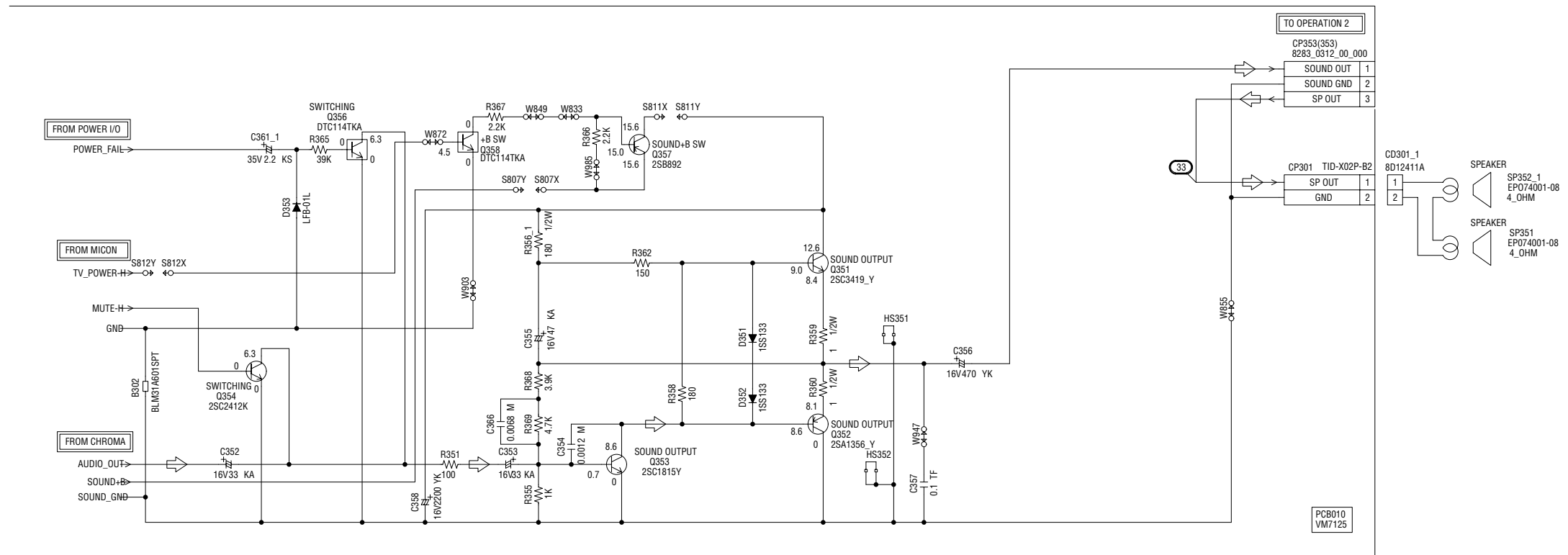
- TUNER VIDEO SIGNAL
- LUMINANCE SIGNAL
- COLOR SIGNAL
- R.SIGNAL
- G.SIGNAL
- B.SIGNAL
- DEFLECTION SIGNAL
- AUDIO SIGNAL

CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

SOUND AMP SCHEMATIC DIAGRAM

(SYSCON PCB)



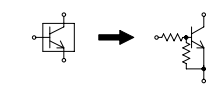
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

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.

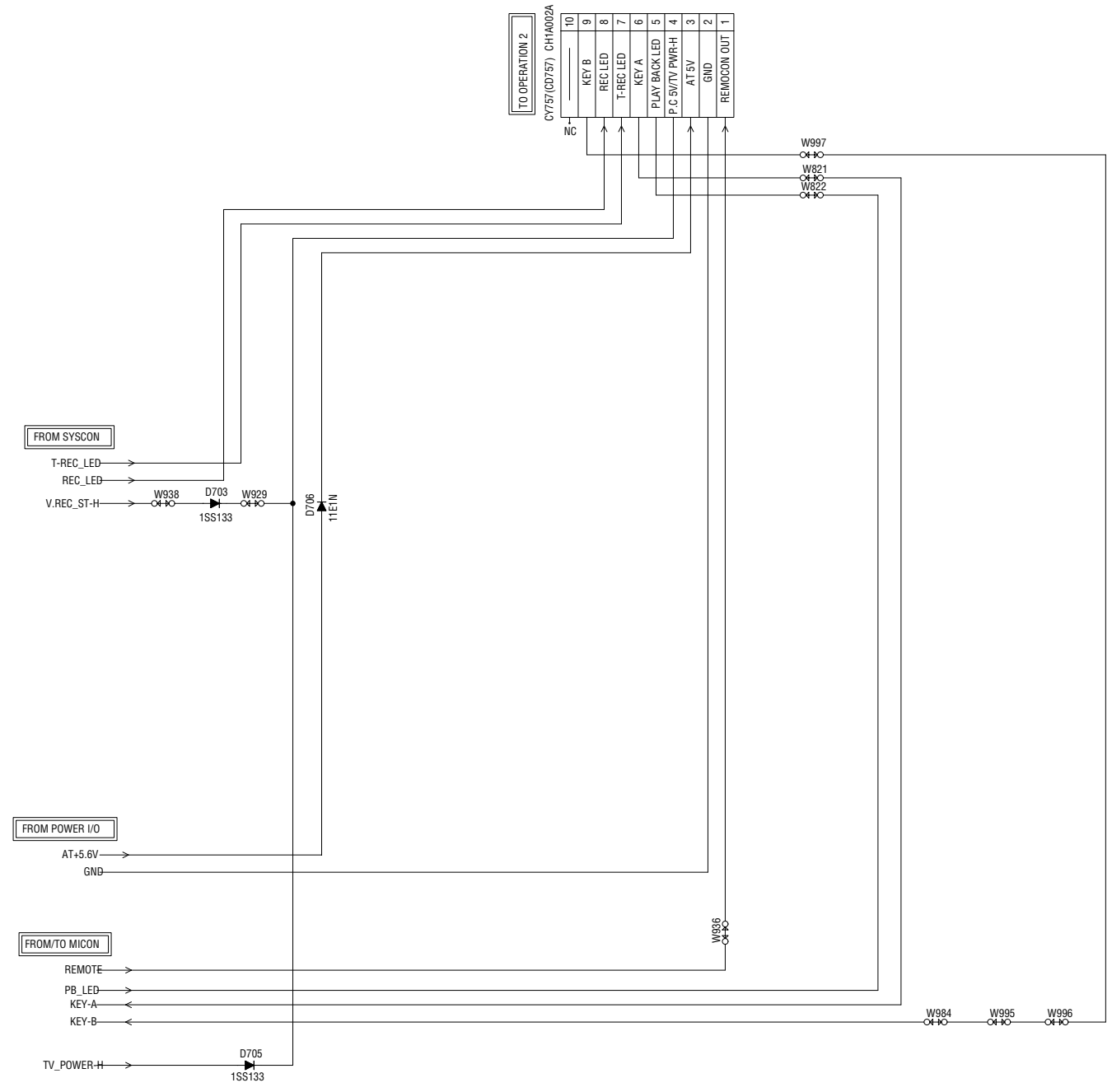
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR



← AUDIO SIGNAL

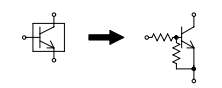
OPERATION 1 SCHEMATIC DIAGRAM (SYSCON PCB)



PCB010
VM7125

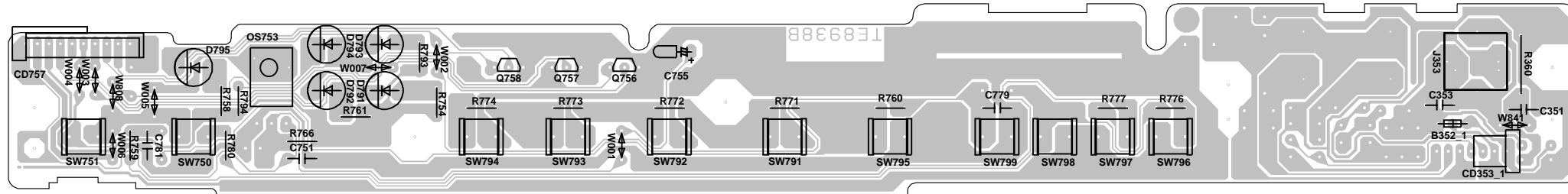
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: DIGITAL TRANSISTOR

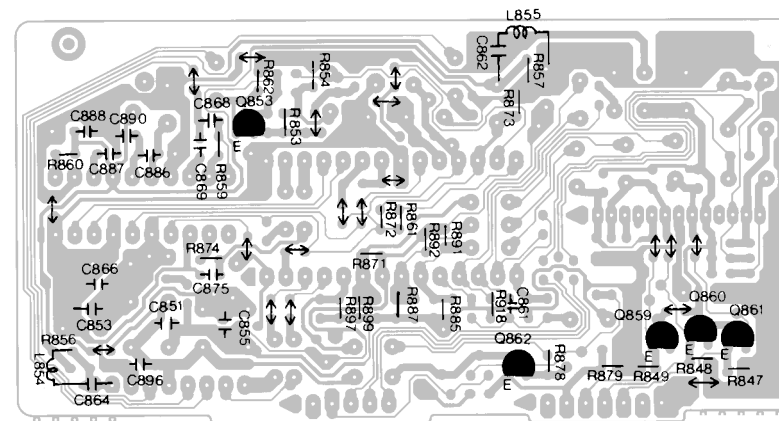


PRINTED CIRCUIT BOARDS

OPERATION

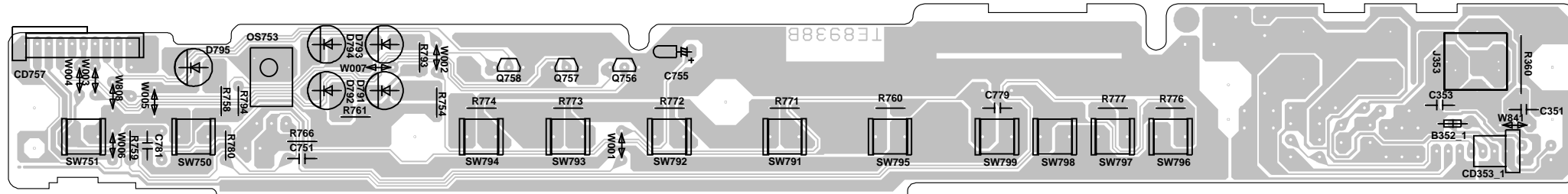


T' TEXT

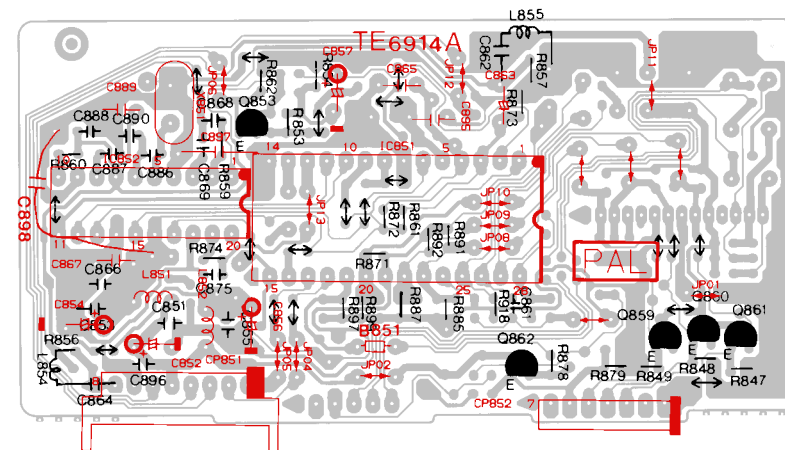


PRINTED CIRCUIT BOARDS

OPERATION

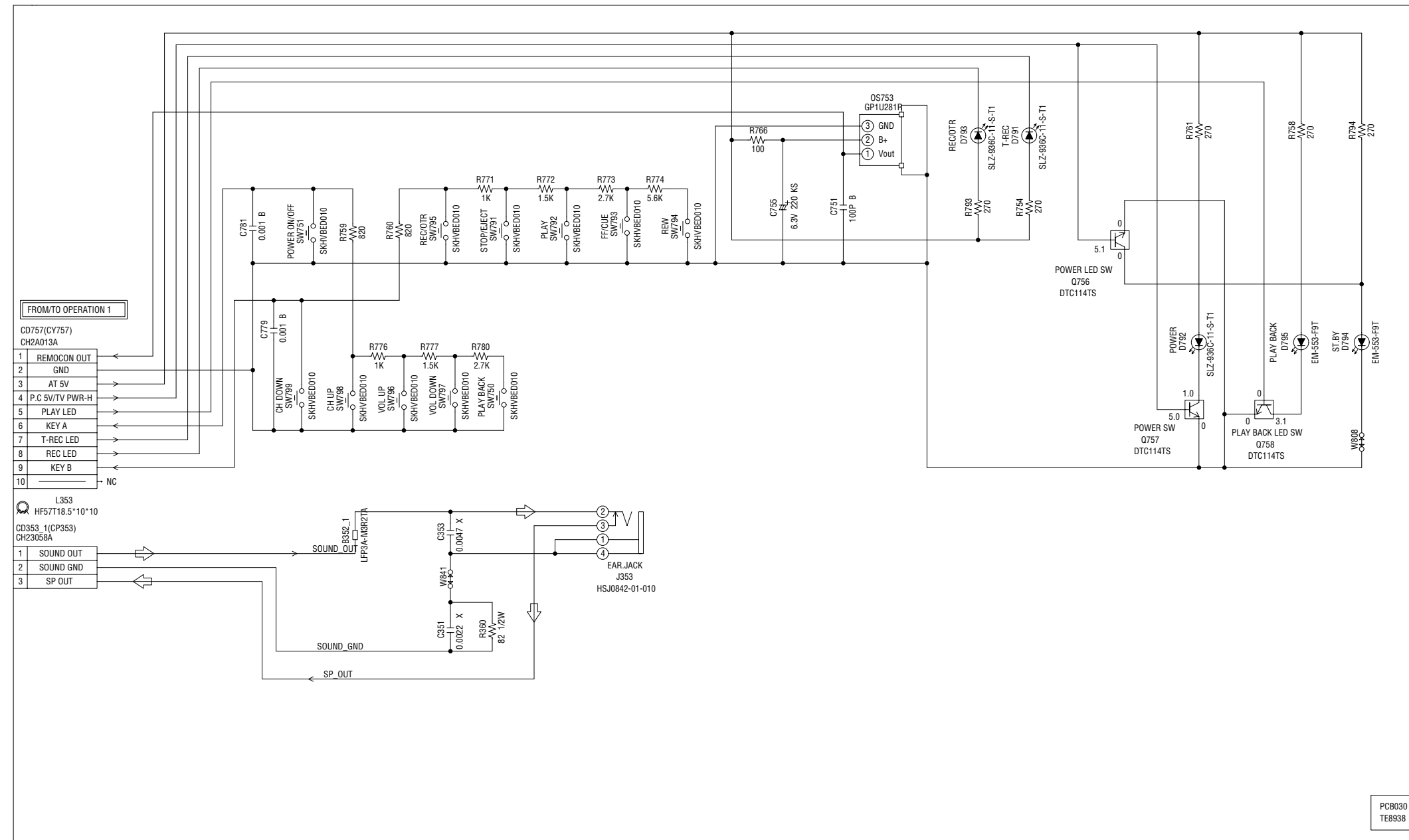


T' TEXT



OPERATION 2 SCHEMATIC DIAGRAM

(OPERATION PCB)



FROM/TO OPERATION 1

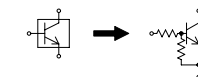
CD757(CY757) CH2A013A	
1	REMOCON OUT
2	GND
3	AT 5V
4	P.C 5V/TV PWR-H
5	PLAY LED
6	KEY A
7	T-REC LED
8	REC LED
9	KEY B
10	NC

L353 HF57T18.5*10*10	
CD353 1(CP353) CH23058A	
1	SOUND OUT
2	SOUND GND
3	SP OUT

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.

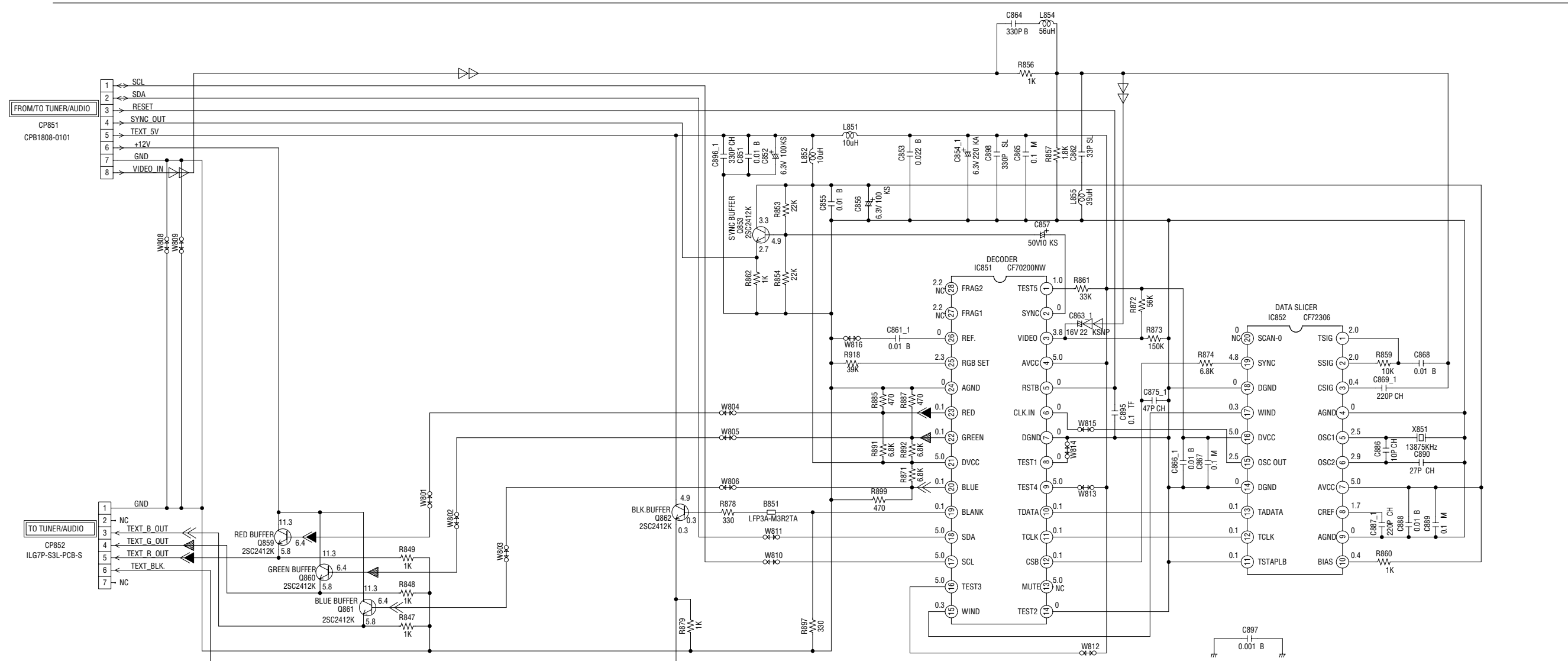
CAUTION: DIGITAL TRANSISTOR



← AUDIO SIGNAL

T'TEXT SCHEMATIC DIAGRAM

(T'TEXT PCB)



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

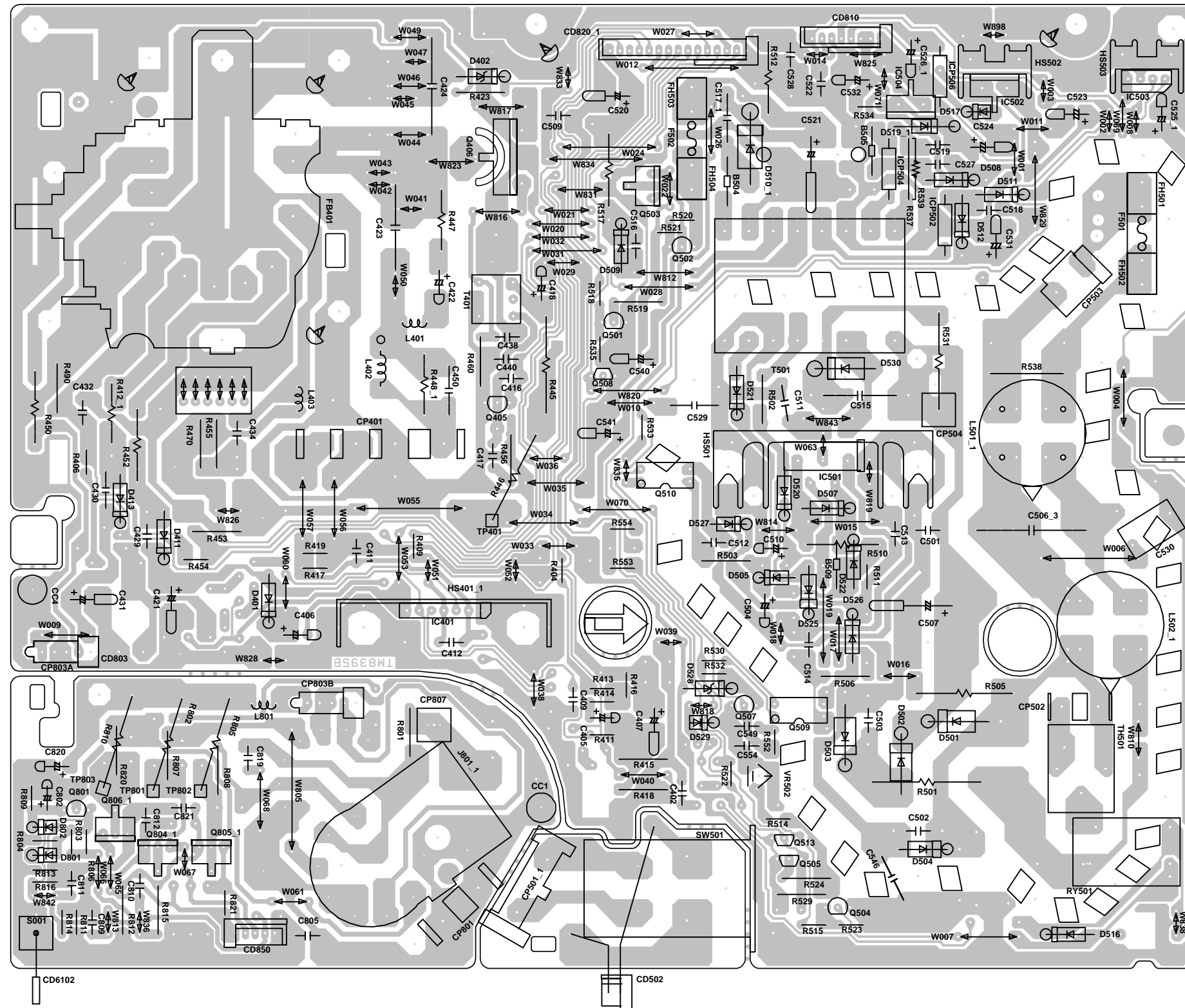
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

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

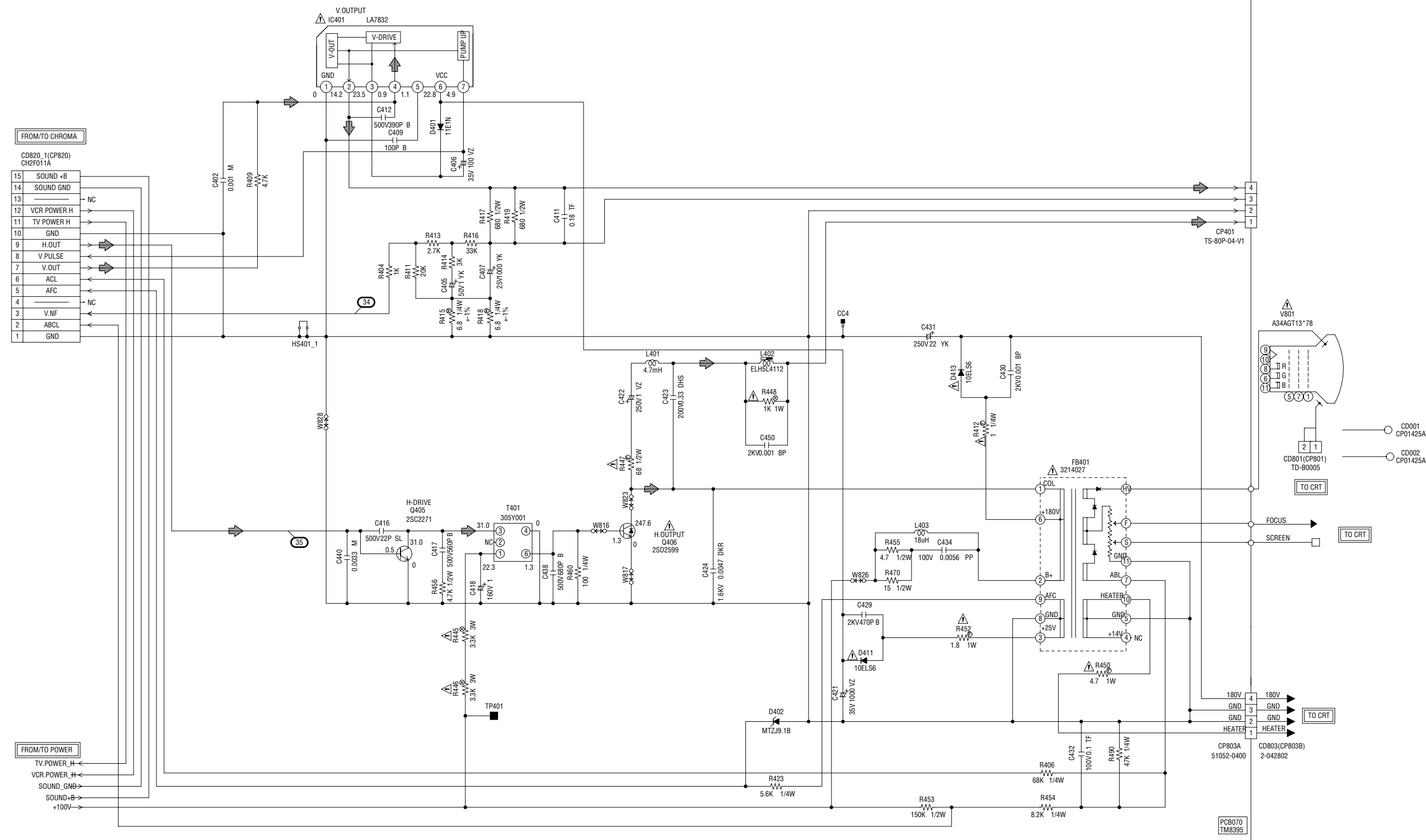
- R.SIGNAL
- G.SIGNAL
- B.SIGNAL
- TUNER VIDEO SIGNAL

PRINTED CIRCUIT BOARDS

MAIN/CRT/POWER SW



DEFLECTION SCHEMATIC DIAGRAM (MAIN PCB)



FROM/TO CHROMA

- CD820_1(CP820)
- CH2F011A
- 15 SOUND +B
- 14 SOUND GND
- 13
- 12 VCR POWER H
- 11 TV POWER H
- 10 GND
- 9 H.OUT
- 8 V.PULSE
- 7 V.OUT
- 6 ACL
- 5 AFC
- 4
- 3 V.NF
- 2 ABCL
- 1 GND

FROM/TO POWER

- TV.POWER_H
- VCR.POWER_H
- SOUND_GND
- SOUND+B
- +100V

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.

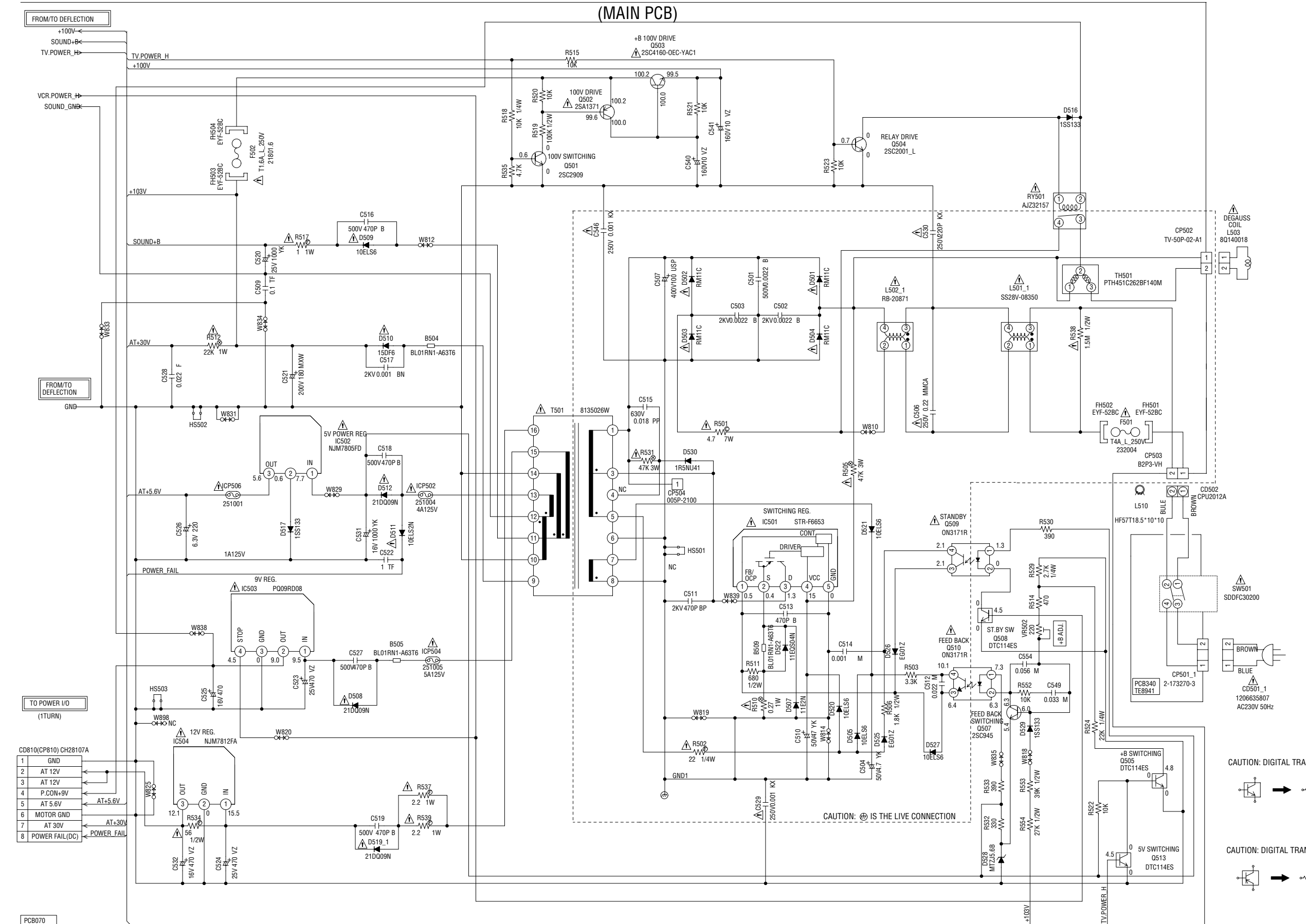
NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

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

DEFLECTION SIGNAL

POWER SCHEMATIC DIAGRAM

(MAIN PCB)



CD810(CP810) CH28107A

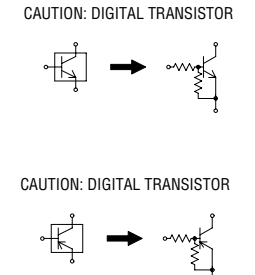
1	GND
2	AT 12V
3	AT 12V
4	P.CON+9V
5	AT 5.6V
6	MOTOR GND
7	AT 30V
8	POWER FAIL(DC)

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.

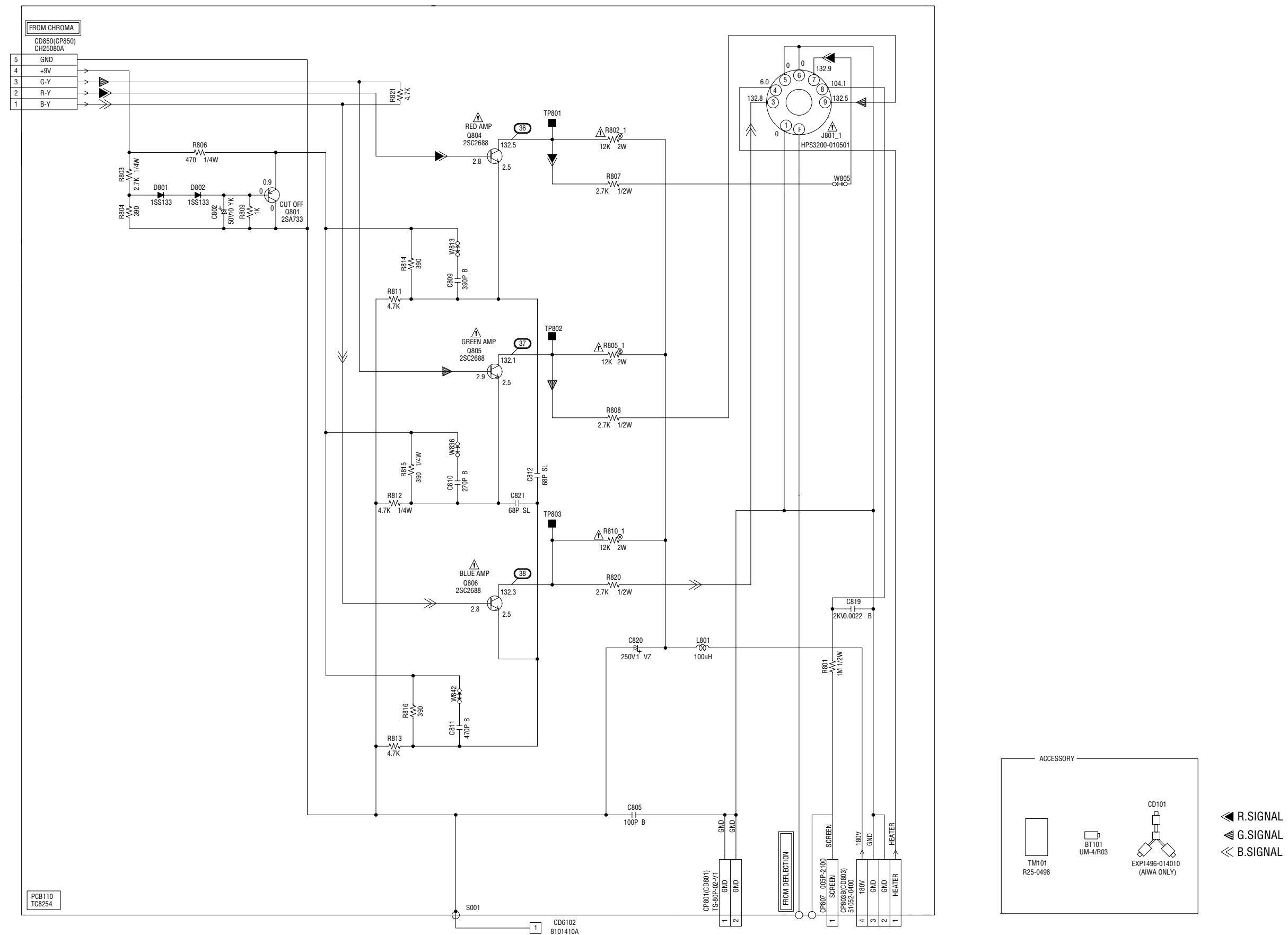
NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

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



CRT SCHEMATIC DIAGRAM

(CRT PCB)

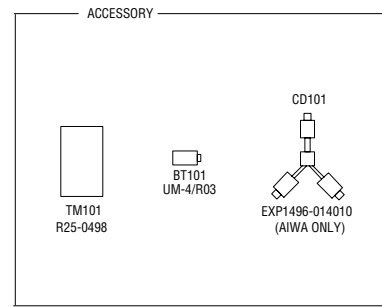


CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

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

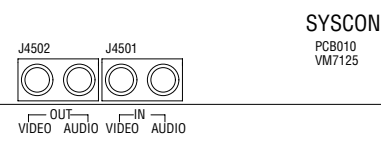
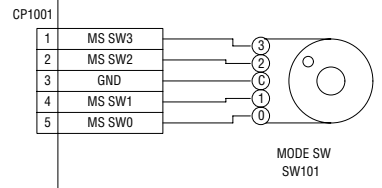
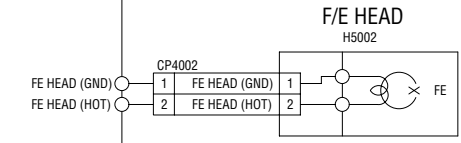
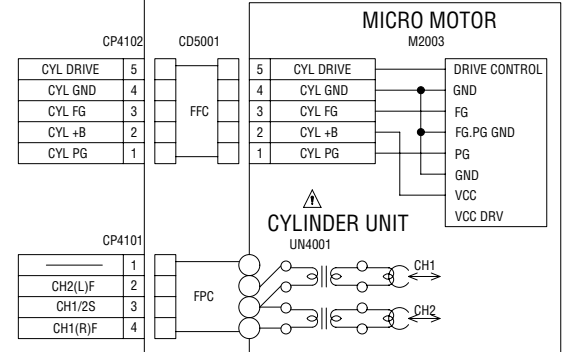
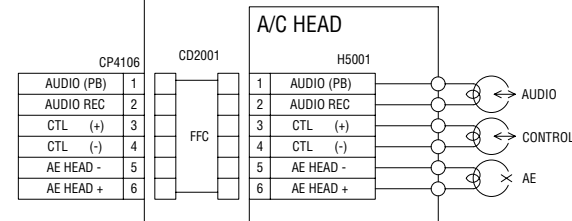
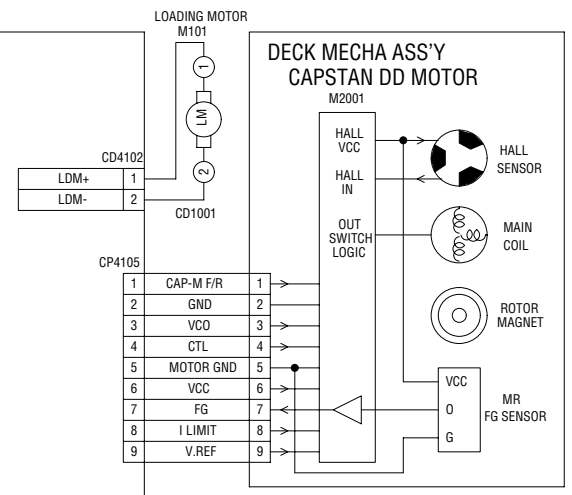
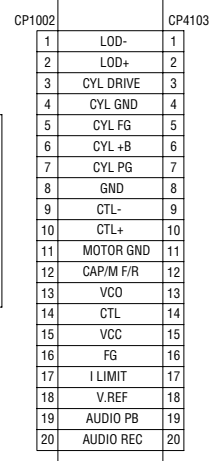
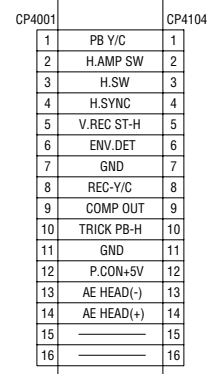
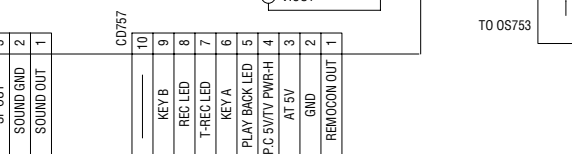
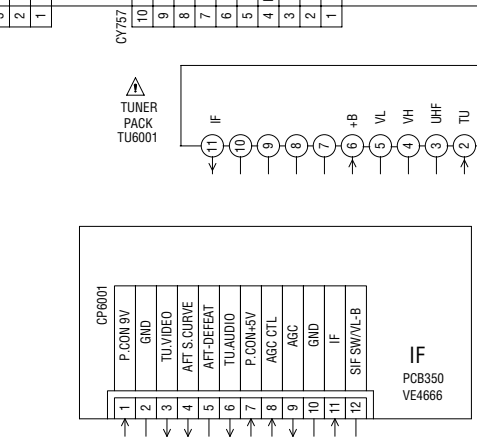
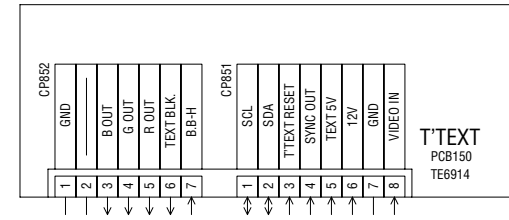
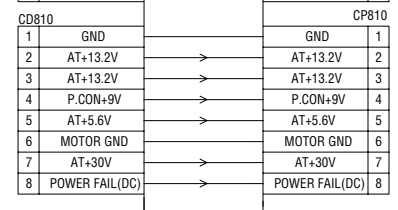
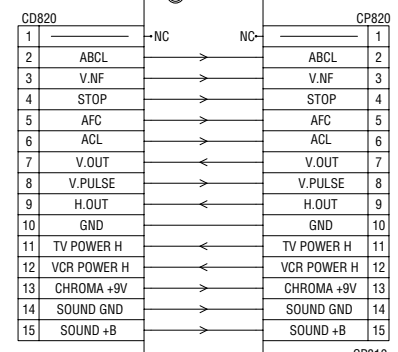
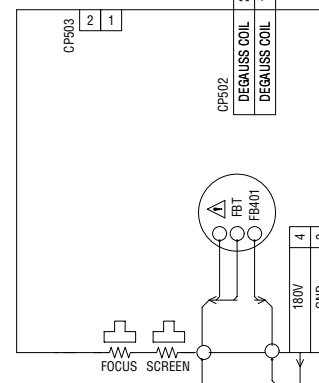
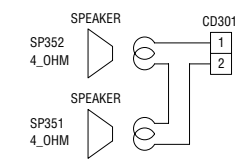
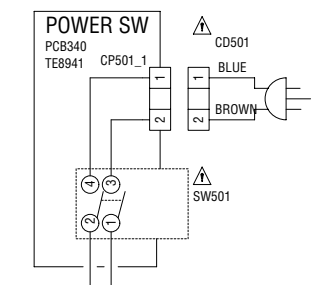
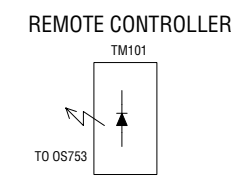
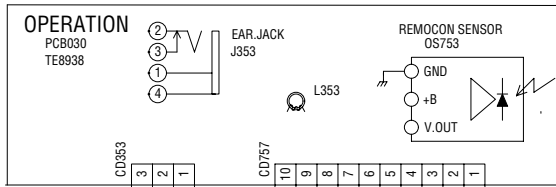
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

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



R.SIGNAL
 G.SIGNAL
 B.SIGNAL

INTERCONNECTION DIAGRAM



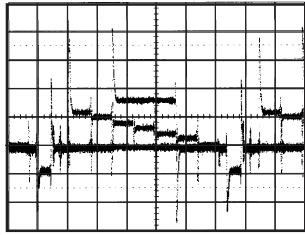
V V: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.

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

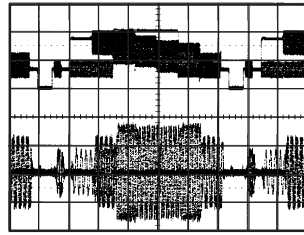
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

WAVEFORMS

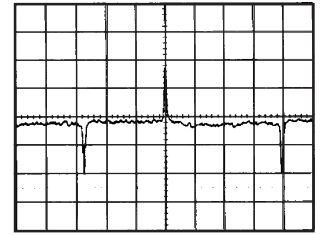
Y/C



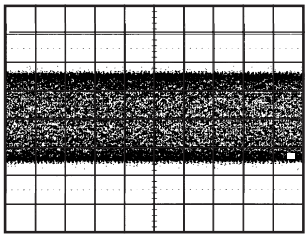
① REC
200mV. 10 μ s/div



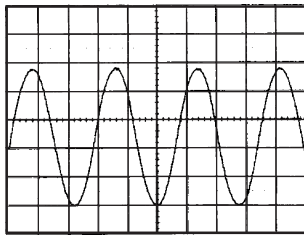
⑦ REC
2V. 10 μ s/div



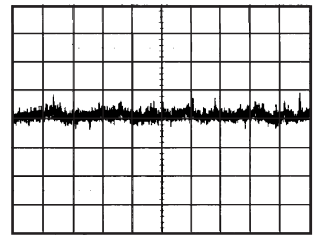
⑬ REC/PB
0.5V 5ms/div



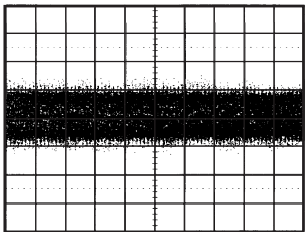
② REC
200mV. 0.5ms/div



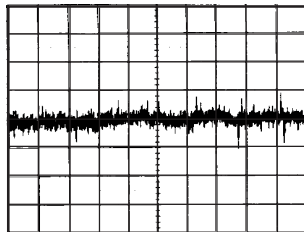
⑧ REC/PB
0.5V. 0.5ms/div



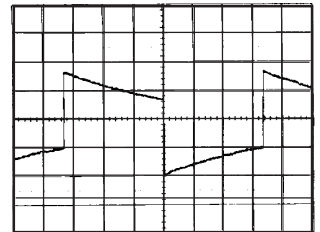
⑭ REC/PB
20mV 5ms/div



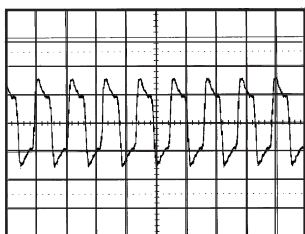
③ PB
200mV. 0.5ms/div



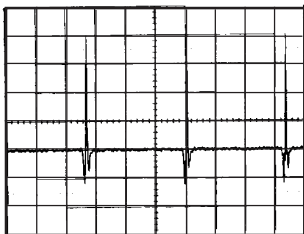
⑨ REC/PB
20mV. 0.5ms/div



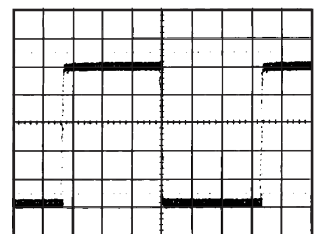
⑭ REC/PB
2V 5ms/div



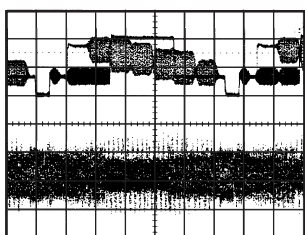
④ REC
200mV. 0.2 μ s/div



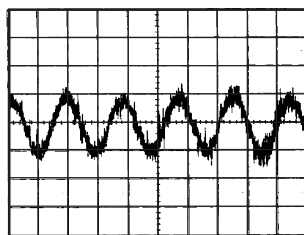
⑩ REC/PB
200mV. 10ms/div



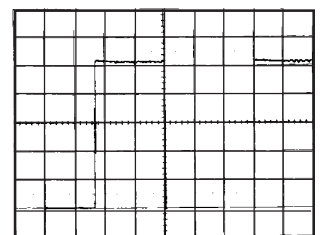
⑮ REC/PB
0.5V 5ms/div



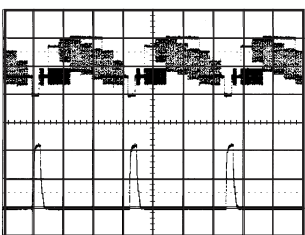
⑤ PB
50mV 10 μ s/div



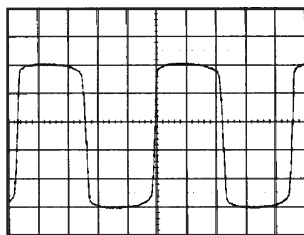
⑪ REC/PB
20mV. 0.5ms/div



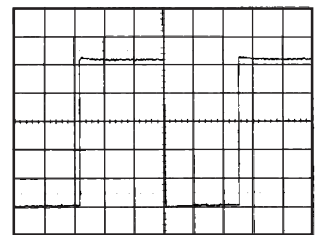
⑯ REC/PB
1V 2 μ s/div



⑥ REC
100mV. 20 μ s/div



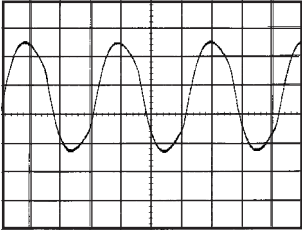
⑫ REC/PB
0.5V 0.2ms/div



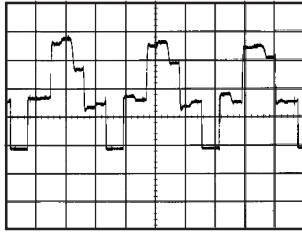
⑰ REC/PB
1V 2 μ s/div

WAVEFORMS

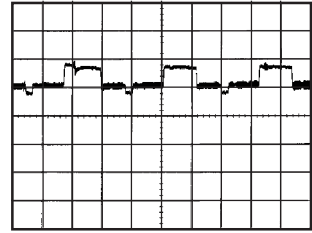
MICON



⑱ 1V 10µs/div

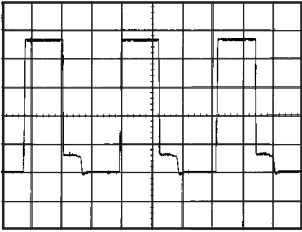


㉒ 1V 20µs/div color

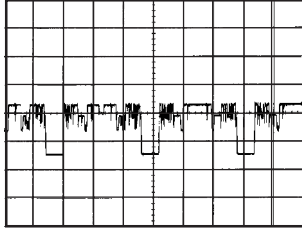


㉗ 1V 20µs/div

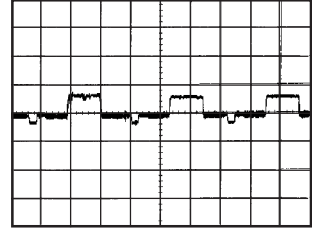
CHROMA



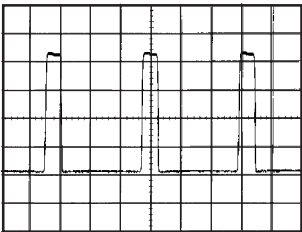
⑲ 1V 20µs/div



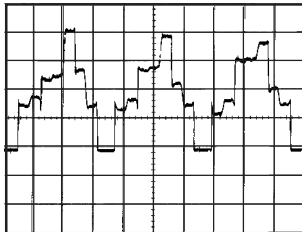
㉓ 2V 20µs/div



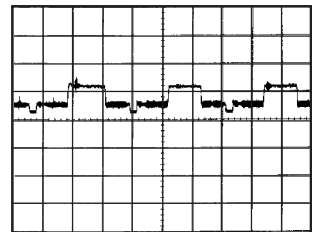
㉘ 1V 20µs/div



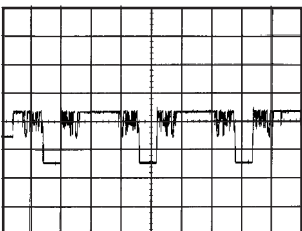
⑳ 2V 20µs/div



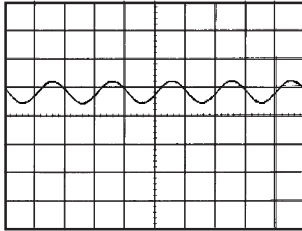
㉓ 1V 20µs/div color



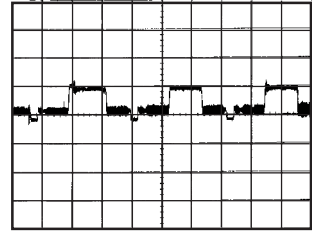
㉙ 1V 20µs/div



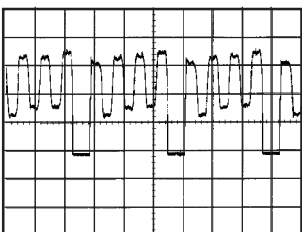
㉑ 2V 20µs/div



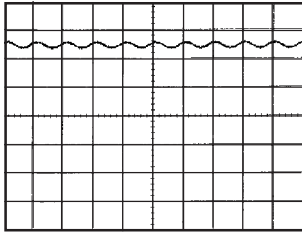
㉔ 1V 500µs/div



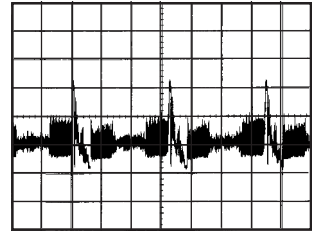
㉚ 1V 20µs/div



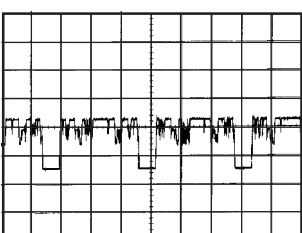
㉑ 1V 20µs/div color



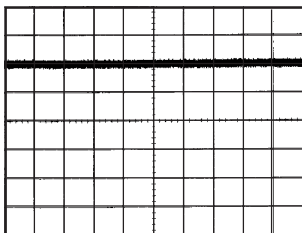
㉕ 1V 1ms/div



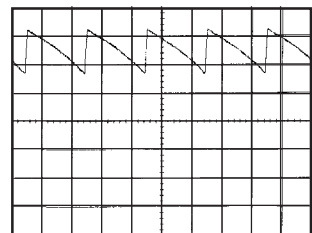
㉛ 1V 20µs/div



㉒ 2V 20µs/div



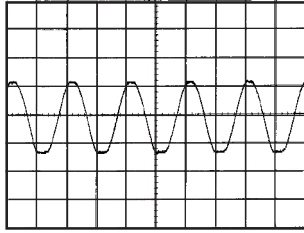
㉖ 1V 5µs/div



㉜ 1V 10ms/div

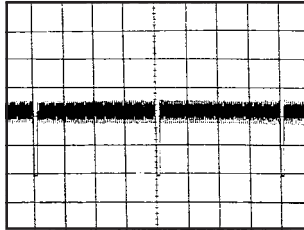
WAVEFORMS

SOUND AMP

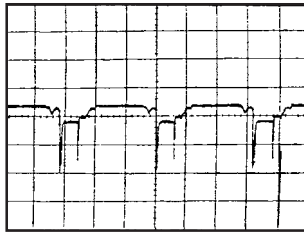


③③ 5V. 500 μ s/div

DEFLECTION

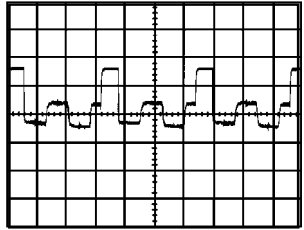


③④ 2V. 5ms/div

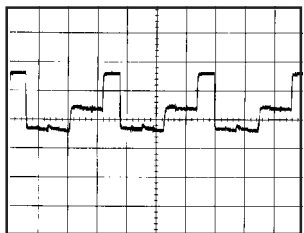


③⑤ 5V. 20 μ s/div

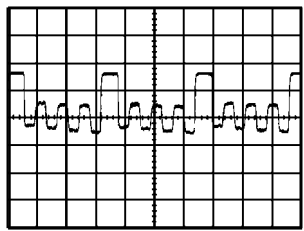
CRT



③⑥ 50V. 20 μ s/div

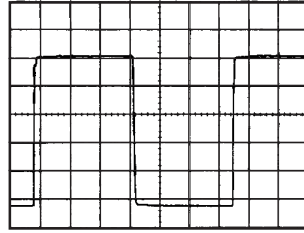


③⑦ 50V. 20 μ s/div

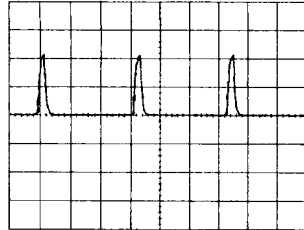


③⑧ 50V. 20 μ s/div

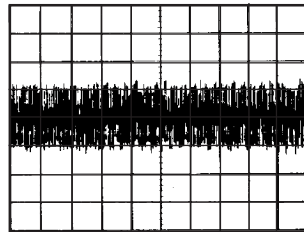
HEAD AMP



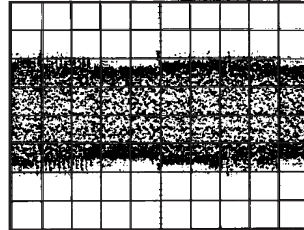
③⑨ REC/PB
500mV. 5ms/div



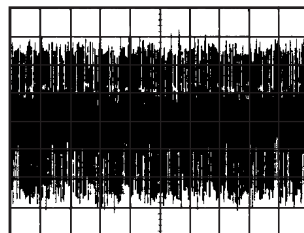
④⑩ REC/PB
1V. 20 μ s/div



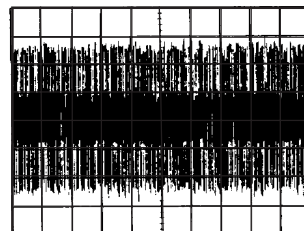
④① PB
500V. 0.1s/div



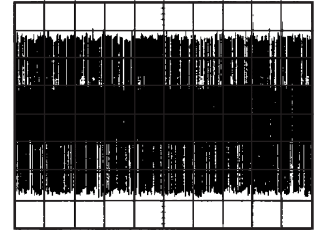
④② REC
50mV. 10 μ s/div



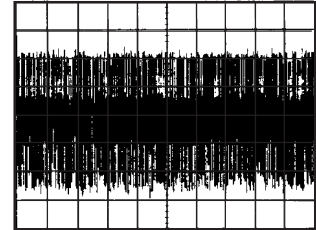
④③ REC/PB
10mV. 1s/div



④④ PB
50mV 50ms/div



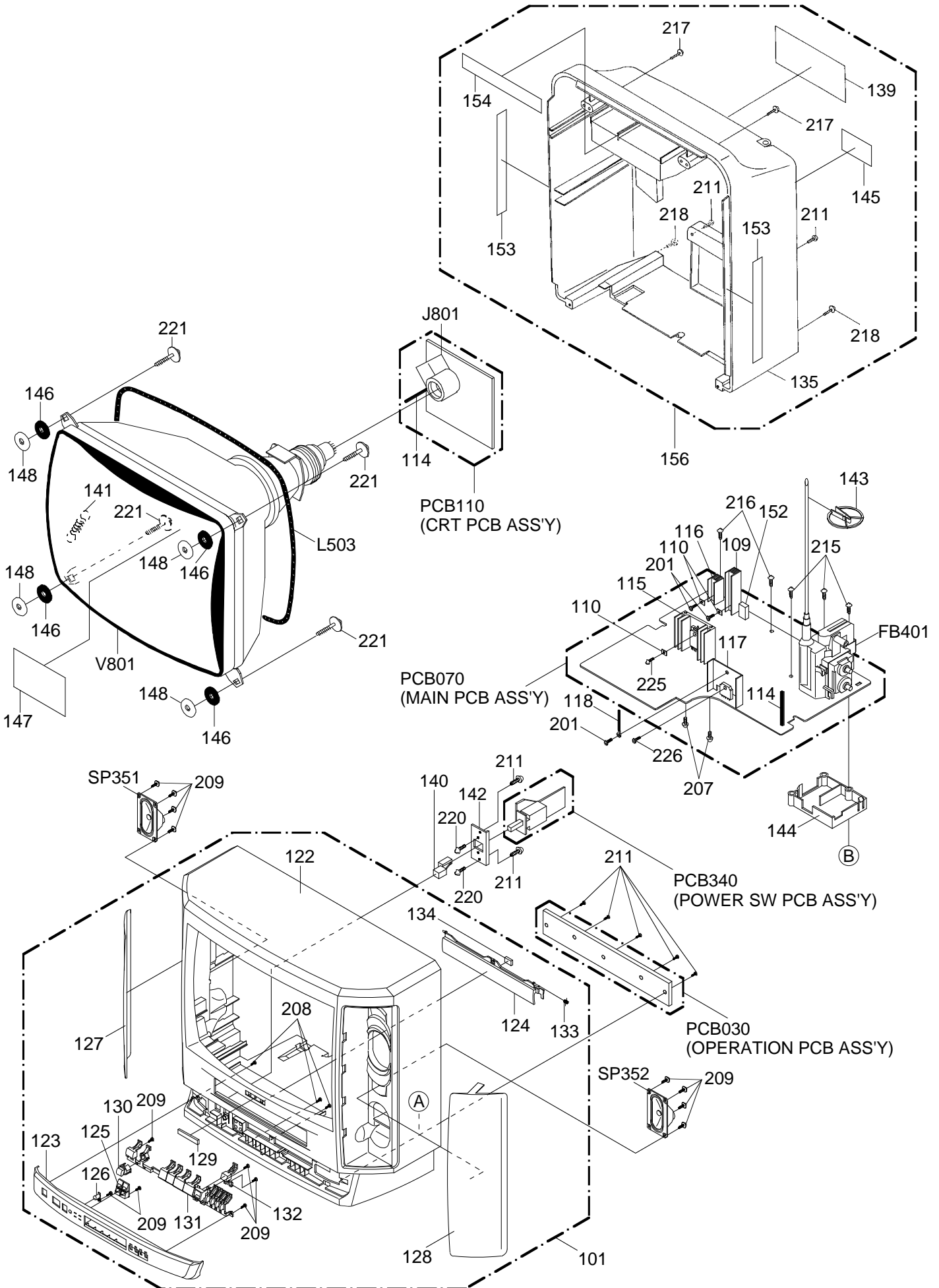
④⑤ REC
500mV. 50ms/div



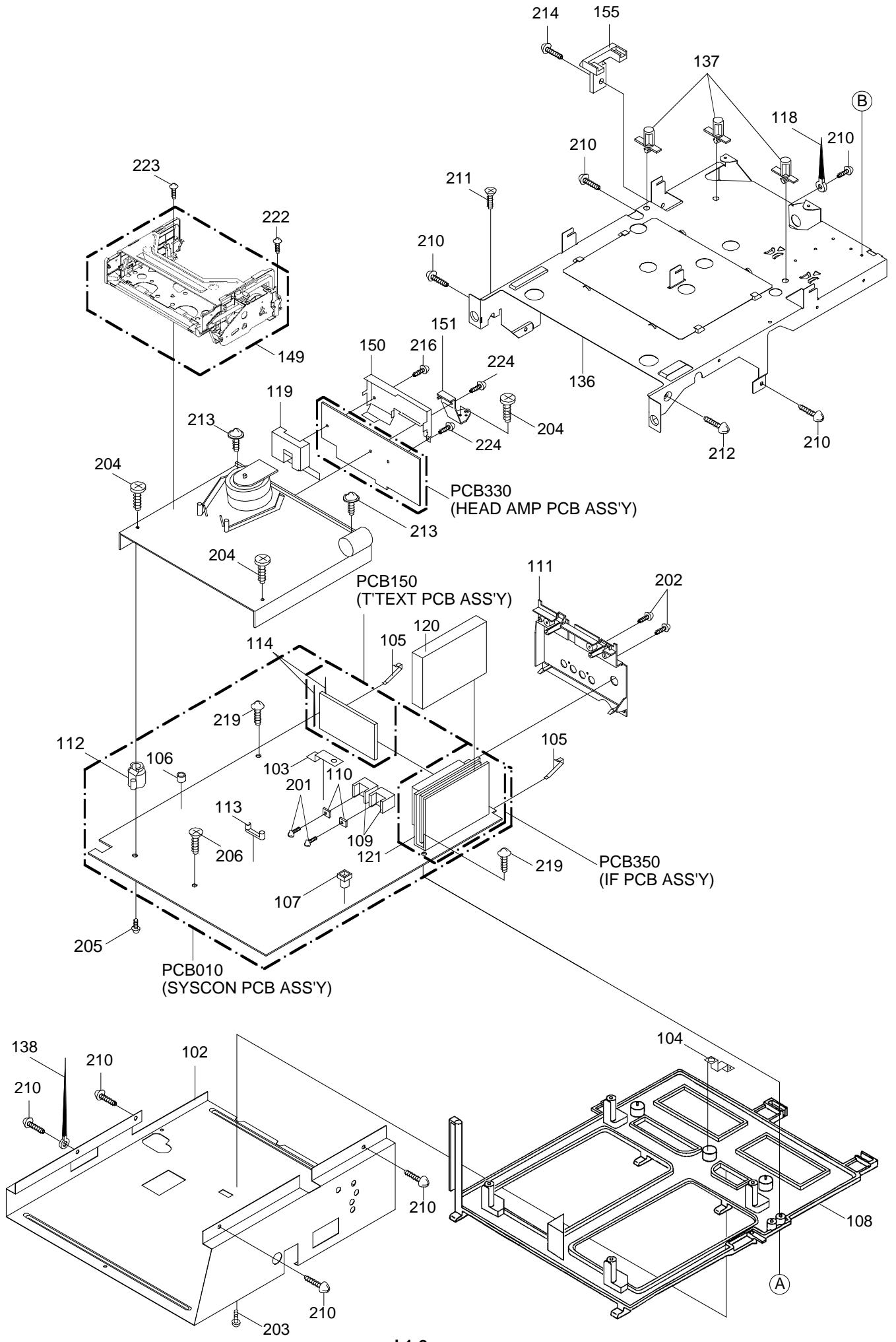
④⑥ PB
50mV. 0.1s/div

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

MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW



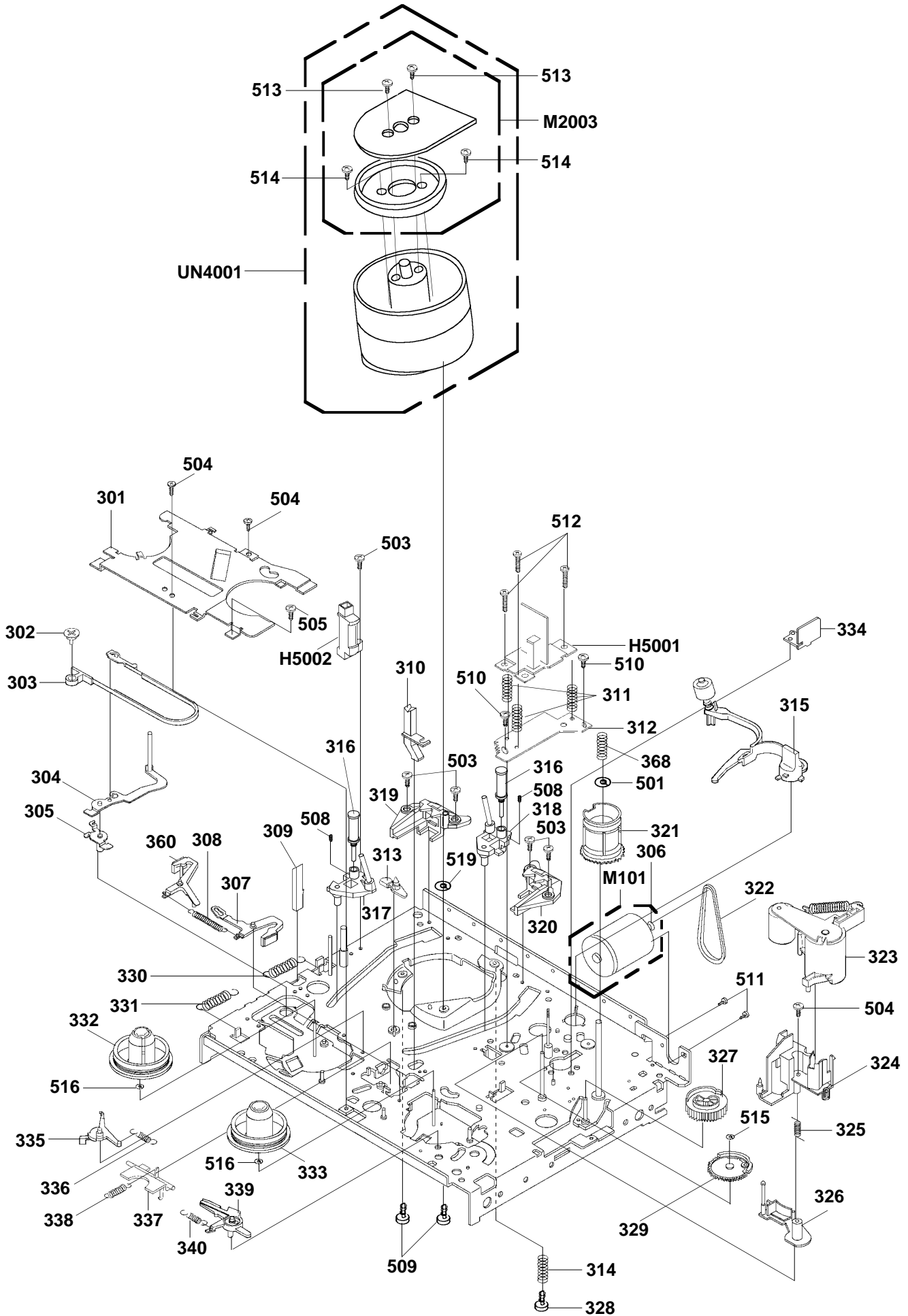
MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Q'TY	REF. NO.	PART NO.	DESCRIPTION	Q'TY
101	S5-380-6M7-200	CABINET,FRONT ASS'Y	1	142	S5-2WS-A01-090	PLATE,POWER SW.	1
102	----	PLATE,SHIELD BOTTOM	1	143	----	HOLER,ANODE WIRE	1
103	----	PLATE,EARTH SYSCON	1	144	S6-1WP-A01-500	HOLDER,FBT	1
104	----	PLATE,BOTTOM-EARTH	1	145	----	LABEL,ANTI-THEFT	1
105	S5-3WU-A00-390	SPR,EARTH M-PCB	2	146	----	SHEET,CRT SUPPORT	4
106	S5-4WP-AA0-030	COVER,LED(L)	1	147	----	LABEL,POP	1
107	S5-4WP-AA0-040	COVER,LED(R)	1	148	S6-9WS-A00-020	WASHER 9.1*22-T1	4
108	S6-1WP-A01-430	HOLDER DECK #2	1	149	S5-OA9-002-070	FRONT LOADING UNIT 15	1
109	----	HEAT SINK	3				
				150	----	SHIELD,COVER HEAD AMP	1
110	----	METAL SPACER	5	151	----	ANGLE,DECK BACK	1
111	S7-1WP-AA0-320	PLATE,JACK	1	152	----	HEAT SINK	1
112	----	SPACER,P.C.B.	1	153	----	FELT SHEET	2
113	S5-OP7-000-310	HOLDER,LED	1	154	----	FELT SHEET	1
114	----	COATING CLIP	4	155	S6-1WP-A01-510	HOLDER,M/PCB	1
115	----	HEAT SINK	1	156	S5-380-6M7-400	CABINET,BACK ASS'Y	1
116	----	HEAT SINK	1				
117	----	HEAT SINK	1	201	S1-0A1-308-040	WASHER(A)M3-8	5
118	----	CORD CLIP UL CO.	2	202	S1-102-30A-020	VT2+3-10	2
119	----	SHIELD,CASE HEAD AMP	1	203	87-741-094-410	SCREW,TAP 3-6 BIND	1
				204	S1-171-40A-240	TAP(B0)V+4-12	3
120	----	IF SHIELD CASE	1	205	S1-173-30A-040	TAP(B0)3-10	1
121	----	IF SHIELD BOTTOM	1	206	87-343-172-010	SCREW,VT2+4-12	1
122	----	CABINET,FRONT	1	207	87-753-095-410	SCREW,TT(B)BRAZIER 3-8	2
123	S1-2WP-JA3-320	PLATE,FRONT	1	208	S1-106-30A-040	UIT+3-10	3
124	S1-2WP-JA3-550	FLAP	1	209	S1-106-308-040	TAP(P)3-8	14
125	S1-3WP-A00-740	GLASS,LED	1				
126	S1-3WP-A00-750	GUIDE,REMOCON	1	210	S1-076-306-040	BVTT+3-6	8
127	S1-4WS-B00-080	GRILL,SPEAKER	1	211	S1-106-30A-240	SCREW,TAP(P)3-12	10
128	S1-4WS-B00-090	GRILL,SPEAKER(R)	1	212	S1-106-306-040	UIT+3-6	1
129	S2-344-900-070	BADGE,BRAND	1	213	S1-17D-30A-040	TAP(B0)3-10	2
				214	S1-076-308-040	SCREW,TAP	1
130	S3-5WP-DA2-030	BUTTON,OTPB	1	215	S1-0A1-30B-040	SCREW,WASHER(A) M3x20	3
131	S3-5WP-JA0-600	BUTTON,FRAME	1	216	S1-0A1-306-040	SCREW,WASHER(A)M3-6	3
132	S3-5WP-JA0-610	BUTTON,REC/OTR	1	217	S1-172-40C-540	SCREW,TAPPING(B0) BIND 4x35	2
133	S4-3WK-A00-320	SPR,FLAP	1	218	S1-175-40A-640	TAP(B0)4-16	2
134	----	CUSHION	1	219	S1-175-40B-040	SCREW,TAP(B0)TRUSS 4-20	2
135	S0-2WP-A04-830	CABI,BACK	1				
136	----	PLATE,DECK SHIELD	1	220	S1-0A1-305-040	SCREW/WASHER(A) M3-5	2
137	S9-0PS-701-000	PUSH SPACER	3	221	S1-11J-50D-040	SCREW TAP(A)5-40	4
138	----	COATING CLIP EFB0692	1	222	87-751-074-410	VT2+2.6-8	1
139	----	SHEET,RATING	1	223	87-743-073-010	VT2+2.6-6	1
				224	S1-072-308-040	UT2+3-8	2
140	S3-5WP-BA0-350	BUTTON,POWER	1	225	S1-096-30A-020	SCREW,TAP TITE(B) BRAZIER 3x10	1
141	S4-1WU-A00-010	SPRING,EARTH	1	226	S1-0A1-30A-040	SCREW/WASHER(A) M3x10	1

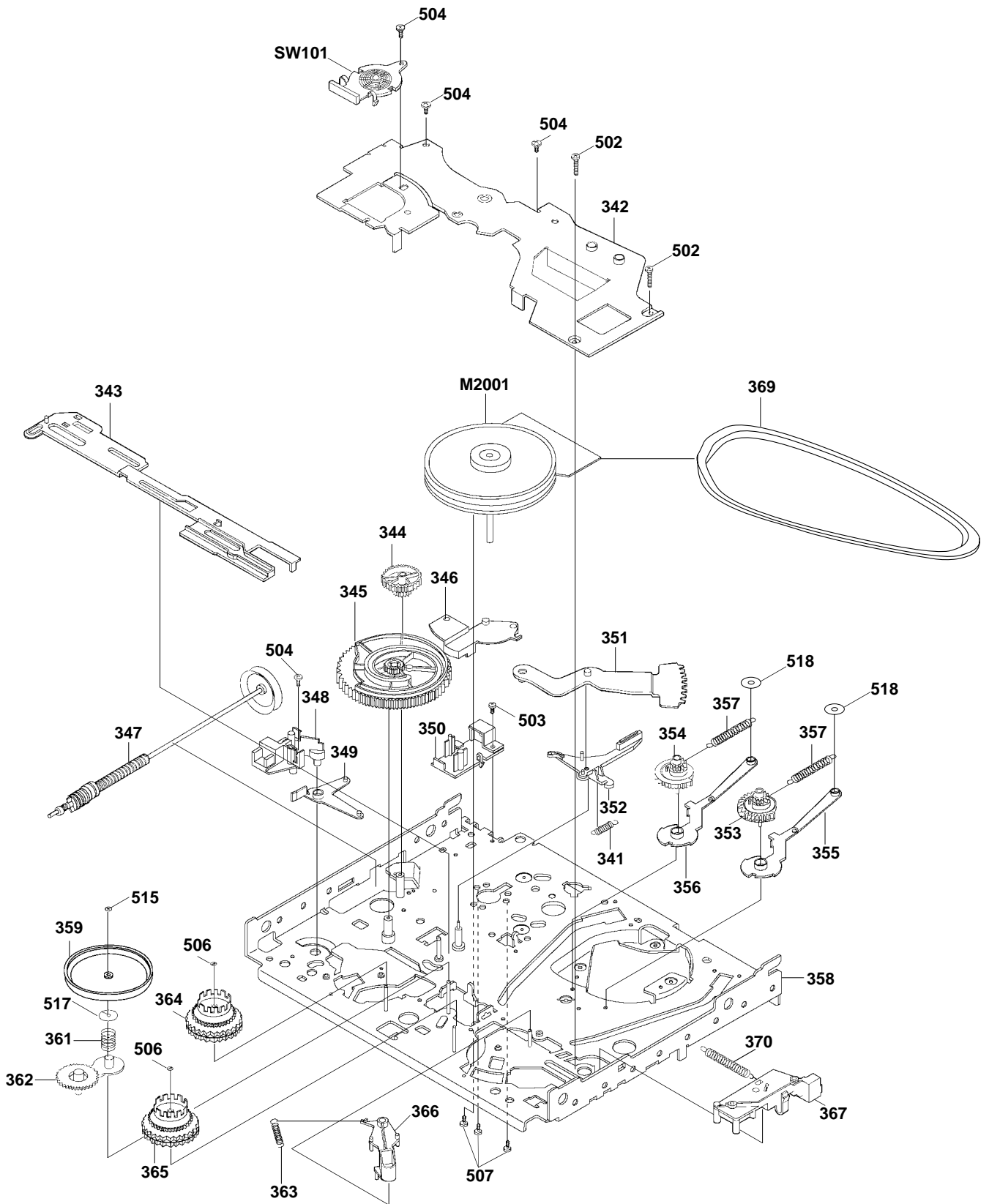
ACCESSORY REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Q'TY
1	S6-82B-A40-030	RCA PIN CORD	1
2	S7-6R0-BC1-200	REMOCON RC-T145K	1
3	S5-380-601-000	INSTRUCTION BOOK	1

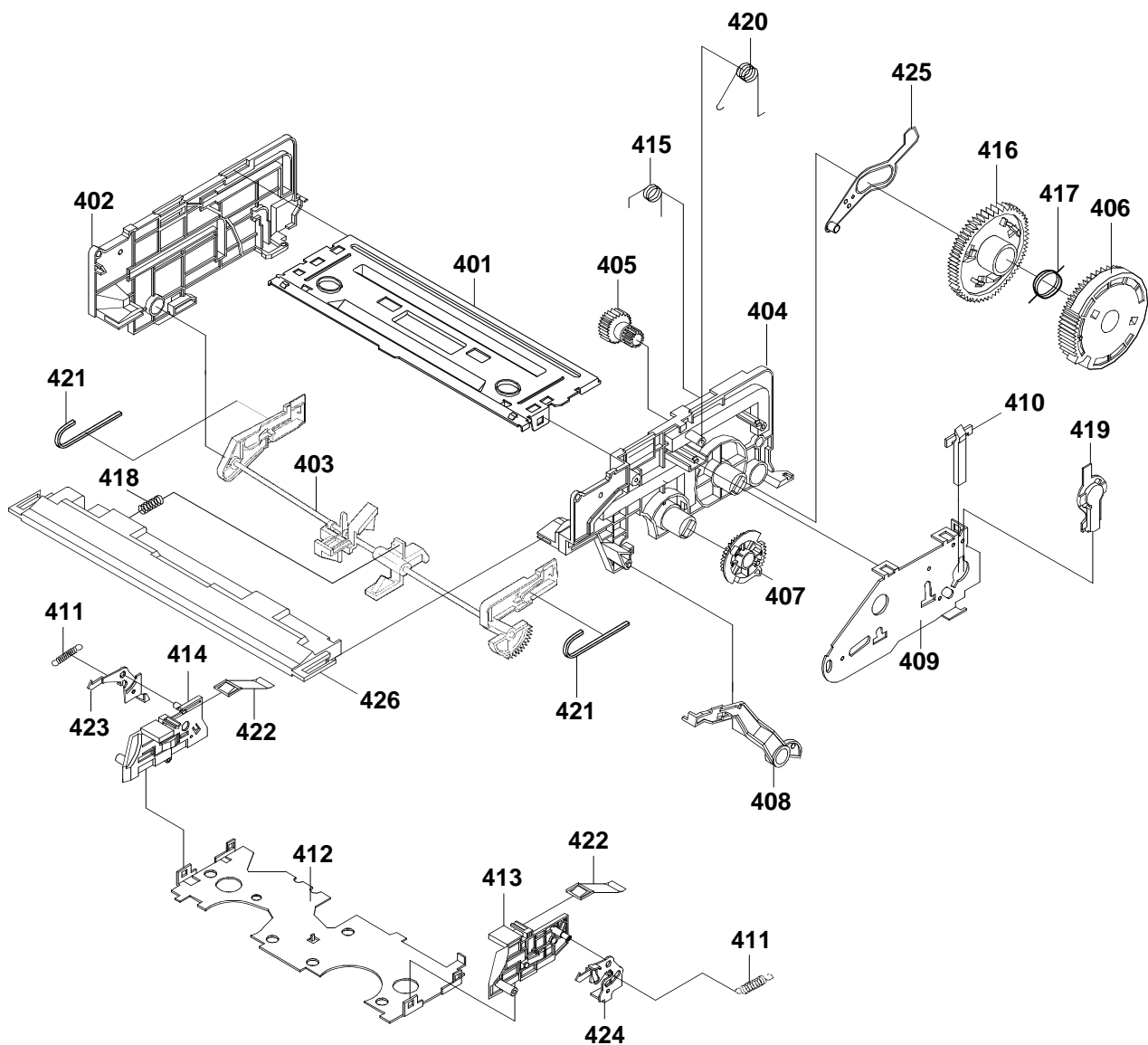
CHASSIS EXPLODED VIEW (TOP VIEW)



CHASSIS EXPLODED VIEW (BOTTOM VIEW)



FRONT LOADING UNIT 15 EXPLODED VIEW



CHASSIS/FRONT LOADING UNIT 15 REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Q'TY	REF. NO.	PART NO.	DESCRIPTION	Q'TY
# 301	S5-OP6-004-710	BRACKET,BRAKE	1	401	S5-OP9-007-000	BRACKET,TOP(2)	1
302	S5-OP4-003-580	ADJUST,TENSION	1	402	S5-OP9-006-750	BRACKET SIDE L	1
303	S5-OA4-001-220	TENSION BAND ASS'Y	1	403	S5-OA9-002-100	LINK ASS'Y 3	1
304	S5-OA4-001-240	TENSION ARM ASS'Y	1	404	S5-OP9-006-150	BRKET,SIDE R	1
305	S5-OA4-001-230	TENSION LEVER 2 ASS'Y	1	405	S5-OP9-006-010	GEAR,,JOINT	1
306	S5-OP6-004-860	PULLEY,LDM 5	1	406	S5-OP9-006-020	GEAR,CAM	1
# 307	S5-OA6-001-560	MAIN BRAKE T ASS'Y	1	407	S5-OP9-006-090	GEAR,LINK R	1
# 308	S5-OP8-002-520	SPR,MAIN BRAKE	1	408	S5-OP9-006-720	LEVER,FLAP 2	1
309	S5-OP9-005-640	REFLECTOR,EOT	1	409	S5-OP9-006-160	BRKET,SIDE R2	1
310	-----	REFLECTOR,LED 2	1	410	-----	REFLECTOR,BOT	1
311	S5-OP8-003-150	SPRING,AC HEAD 2	3	411	S5-OP8-002-960	SPR,LOCKER	2
312	S5-OP5-000-600	BASE,AC HEAD	1	412	S5-OP9-006-110	CASS,HOLDER	1
313	S5-OP0-003-940	POST,CASS GUIDE L	1	413	S5-OP9-006-130	CASS,SIDE R	1
314	S5-OP8-002-450	SPRING,AZIMUTH 2	1	414	S5-OP9-006-680	CASS,SIDE L	1
# 315	S5-OA5-000-200	AHC ASS'Y(2)	1	415	S5-OP8-002-980	SPR,BRACKET R	1
316	S5-OA4-001-020	G-ROLLER ASS'Y	2	416	S5-OP9-006-080	GEAR,CLUTCH	1
317	S5-OA4-001-610	BASE,S INCLINED ASS'Y	1	417	S5-OP8-002-970	SPR,CLUTCH	1
318	S5-OA4-001-620	BASE,T INCLINED ASS'Y	1	418	S5-OP8-003-170	SPRING,LEVER REC(2)	1
319	S5-OP4-004-390	CATCHER,S	1	419	S5-OP9-006-200	COVER,SENSOR BOT	1
320	S5-OP4-004-400	CATCHER,T	1	420	S5-OP8-002-900	SPR,EARTH	1
# 321	S5-OP4-004-300	CAM,PINCH ROLLER (PB)	1	421	S5-OP8-002-940	SPR,LINK	2
322	S5-OP6-004-870	BELT,LOADING	1	422	S5-OP8-002-990	SPR,PACK	2
# 323	S5-OA4-001-570	PINCH ROLLER (PB) BLOCK	1	423	S5-OP9-006-050	LOCKER,L	1
324	S5-OP9-005-410	CASS,OPENER	1	424	S5-OP9-006-060	LOCKER,R	1
325	S5-OP8-002-640	SPR,P5	1	425	S5-OP9-006-100	LEVER,BOT	1
# 326	S5-OA4-001-680	P5 ARM ASS'Y(PB)	1	426	S5-OP9-006-770	TAPE GUIDE PIECE(2)	1
327	S5-OP4-003-420	CAM,GEAR	1	501	S2-Q40-70C-5N0	PW,4.1-7-0.25	1
328	S1-462-30A-140	VT2+3-11	1	502	S1-092-26A-640	VT2+2.6-16	2
# 329	S5-OP4-004-500	CAM,P5	1	503	S1-072-268-040	VT2+2.6-8	6
330	S5-OP4-003-560	SPR,TENSION ARM 2	1	504	87-743-073-010	VT2+2.6-6	7
# 331	S5-OP4-003-570	SPR,TENSION ARM 1	1	505	S1-071-236-040	SCREW,TAP 2.3-6 PAN	1
332	S5-OP2-002-160	REEL S	1	506	S2-P16-600-5N0	POLY,W(CUT)1.6-6-0.5	2
333	S5-OP2-002-170	REEL T	1	507	87-264-074-410	SCREW,TAP(B)PAN 2.6-8	3
# 334	S5-OP4-004-460	CATCHER,P5 (VP)	1	508	S1-5DJ-203-020	SCREW,M2-3	2
335	S5-OP6-004-650	SUB BRAKE S	1	509	S1-0A1-306-040	SCREW,WASHER(A)M3-6	2
336	S5-OP8-002-530	SPR,S-S BRAKE	1	510	S1-0B1-266-040	UFT2+M2.6-6	2
337	S5-OP2-002-470	ARM,JOINT	1	511	87-258-091-010	U+M3-3	2
338	S5-OP8-002-620	SPR,JOINT ARM	1	512	87-253-075-010	U+M2.6-10	3
339	S5-OA6-001-570	SUB BRAKE T ASS'Y	1	513	S1-0A1-235-040	SEMS A M2.3-5	2
340	S5-OP8-002-540	SPR,T-S BRAKE	1	514	87-261-093-410	SCREW,M3-5	2
341	S5-OP8-002-550	SPR,CAP BRAKE	1	515	S2-P26-600-5N0	POLY,W(CUT)2.6-6-0.5	2
342	-----	PLATE,BOTTOM	1	516	S2-Q26-471-3N0	POLY,W 2.6-4.7-0.13	2
# 343	S5-OA6-001-760	ROD,MAIN ASS'Y	1	517	S2-P26-A00-5N0	POLY,W(CUT)2.6-10-0.5	1
344	S5-OP4-003-410	GEAR,MIDDLE	1	518	S3-CST-400-000	CS,RING 4.0	2
# 345	S5-OP6-005-350	CAM,MAIN	1	519	S2-Q31-54B-3N0	PW,3.1-5.4-T0.13	1
# 346	S5-OP6-004-680	LEVER,MAIN BRAKE	1	CD1001	S6-872-205-8A0	CORD CONN 8722058A	1
# 347	S5-OA6-001-590	WORM ASS'Y	1	CD2001	-----	JUMPER 2W06080	1
348	S5-OP6-004-830	BRACKET,WORM F	1	CD5001	-----	CORD,JUMPER 2L05150	1
349	S5-OP6-004-740	LEVER,RATCHET	1	H5001	S5-23D-910-320	HEAD(AUDIO CONTROL)HVMXA103	1
350	S5-OP6-004-840	BRACKET,WORM R	1	H5002	S5-43D-020-100	HEAD,FULL ERASE HVFHF00	1
351	S5-OP3-001-510	LEVER,LOADING	1	M101	S5-96P-480-010	MOTOR,LOAD(1)	1
352	-----	CAPSTAN BRAKE ASS'Y (M.J)	1	M2001	S5-94J-980-040	CAPSTAN DD UNIT SP39BD	1
353	S5-OP3-001-520	GEAR,LOADING S	1	M2003	S5-89V-110-040	MICRO MOTOR EP14BA	1
354	S5-OP3-001-530	GEAR,LOADING T	1	# SW101	S5-202-440-060	MODE SWITCH	1
355	S5-OA3-000-530	LOADING ARM S ASS'Y	1	UN4001	S4-B41-1B5-000	CYLINDER UNIT ASS'Y A4B411B5	1
356	S5-OA3-000-540	LOADING ARM T ASS'Y	1				
357	S5-OP8-002-630	SPR,LOADING GEAR	2				
# 358	-----	MAIN CHASSIS ASS'Y	1				
359	S5-OP2-002-130	CENTER,PULLEY	1				
360	S5-OA6-001-550	MAIN BRAKE S ASS'Y	1				
361	S5-OP8-002-610	SPR,C-PULLEY	1				
# 362	S5-OA2-000-650	ARM,IDLER,ASS'Y	1				
363	S5-OP8-002-700	SPR,LEVER TENSION	1				
# 364	S5-OA2-000-640	CLUTCH GEAR T ASS'Y	1				
# 365	S5-OA2-000-630	CLUTCH GEAR S ASS'Y	1				
366	S5-OP4-003-600	LEVER,TENSION	1				
# 367	S5-OP4-003-590	HOLDER,TENSION	1				
368	S5-OP8-003-100	SPRING,CAM PINCH	1				
369	S5-OP2-002-150	BELT,CAPSTAN	1				
370	S5-OP8-002-560	SPR,MAIN ROD	1				

Note: Some parts labeled # are not compatible, but they are very similar before servicing, be sure to check the parts in the INFORMATION FOR USING THE DECK PARTS (OVD-5): 09-986-269-200 for the repair. Because if you use wrong parts, the deck or tape will be damaged.

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
		SYSCON PCB ASS'Y			*** CAPACITORS ***
		*** RESISTOR ***			
△ R1042	87-029-165-060	RES,FUSE 2.7-1W	C5013	87-010-401-080	CAP,E 1-50V
		*** CAPACITORS ***	C5016	87-010-380-080	CAP,E 47-16V
C101	S0-001-937-600	CAP,E 0.1F-5.5V	C5017	87-016-053-080	CAP,E 22-16V
C103	87-016-088-040	CAP,E 220-6.3V	C5023	87-010-404-080	CAP,E 4.7-50V
C106	87-010-403-080	CAP,E 3.3-50V	C5026	87-010-380-080	CAP,E 47-16V
C112	87-010-370-080	CAP,E 330-6.3V	C5027	87-010-378-080	CAP,E 10-16V
C118	87-010-404-080	CAP,E 4.7-50V	C5030	87-015-075-040	CAP,E 10-16V
C124	87-010-404-080	CAP,E 4.7-50V	C6105	87-010-548-010	CAP,E 220-16V
C128	87-010-248-010	CAP,E 220-10V	C6110	87-010-403-080	CAP,E 3.3-50V
C352	87-015-683-080	CAP,E 33-16V	C6116	87-010-400-080	CAP,E 0.47-50V
C353	87-015-683-080	CAP,E 33-16V	C6119	87-010-235-080	CAP,E 470-16V
C355	87-010-380-080	CAP,E 47-16V	C6149	87-010-371-080	CAP,E 470-6.3V
C356	87-010-235-080	CAP,E 470-16V	C6312	87-010-404-080	CAP,E 4.7-50V
C358	87-016-579-080	CAP,E 2200-16V	C6402	87-015-419-080	CAP,E 4.7-16V
C361	87-010-417-080	CAP,E 2.2-35V	C7002	87-010-370-080	CAP,E 330-6.3V
C603	87-010-685-080	CAP,E 330-16V	C7006	87-010-374-080	CAP,E 47-10V
C614	87-015-680-010	CAP,E 47-10V			*** DIODES ***
C618	87-010-403-080	CAP,E 3.3-50V	D102	SD-3RL-FB0-1L0	DIODE,LFB-01L
C620	87-010-071-080	CAP,E 1-50V	D103	87-020-465-010	DIODE,1SS133T
C624	87-010-404-080	CAP,E 4.7-50V	D117	87-017-931-080	ZENER,UZ-5.6BCB-TA
C627	87-010-560-080	CAP,E 10-50V	D119	S2-8TE-QS0-400	DIODE,11EQS04N-TA
C628	87-015-677-080	CAP,E 100-6.3V	D120	87-020-465-010	DIODE,1SS133T
C631	87-010-221-080	CAP,E 470-10V	D121	87-020-465-010	DIODE,1SS133T
C635	87-010-378-080	CAP,E 10-16V	D131	SD-3RL-FB0-1L0	DIODE,LFB-01L
C639	87-015-695-080	CAP,E 1-50V	D351	87-020-465-010	DIODE,1SS133T
C640	87-015-695-080	CAP,E 1-50V	D352	87-020-465-010	DIODE,1SS133T
C643	87-015-695-080	CAP,E 1-50V	D353	SD-3RL-FB0-1L0	DIODE,LFB-01L
C644	87-010-404-080	CAP,E 4.7-50V	D604	87-A40-186-080	ZENER,UZ-5.1-BCB-TA
C646	87-015-075-040	CAP,E 10-16V	D606	87-020-465-010	DIODE,1SS133T
C647	87-010-067-010	CAP,E 0.1-50V	D607	87-A40-186-080	ZENER,UZ-5.1-BCB-TA
C1009	87-015-677-080	CAP,E 100-6.3V	D608	SD-3RL-FB0-1L0	DIODE,LFB-01L
C1011	87-010-112-080	CAP,E 100-16V	D609	SD-3RL-FB0-1L0	DIODE,LFB-01L
C1018	87-010-235-080	CAP,E 470-16V	D610	SD-3RL-FB0-1L0	DIODE,LFB-01L
C1020	87-010-263-080	CAP,E 100-10V	D611	SD-3RL-FB0-1L0	DIODE,LFB-01L
C1021	87-010-401-080	CAP,E 1-50V	D612	S9-7U0-130-1B0	ZENER,MTZJ13B
C1025	87-010-380-080	CAP,E 47-16V	D613	S2-8T1-1E1-N10	DIODE,11E1N-TA1B2
C1026	87-010-379-080	CAP,E 22-16V	D703	87-020-465-010	DIODE,1SS133T
C1060	87-010-263-080	CAP,E 100-10V	D705	87-020-465-010	DIODE,1SS133T
C1064	87-010-371-080	CAP,E 470-6.3V	D706	S2-8T1-1E1-N10	DIODE,11E1N-TA1B2
C3016	87-016-088-040	CAP,E 220-6.3V	D1001	S0-013-000-300	PHOTO,DIODE SLR-938C
C4014	87-015-677-080	CAP,E 100-6.3V	D1003	87-020-465-010	DIODE,1SS133T
C4016	87-015-419-080	CAP,E 4.7-16V	D1004	87-020-465-010	DIODE,1SS133T
C4017	87-010-404-080	CAP,E 4.7-50V	D1005	S2-8T1-1ES-N10	DIODE,11ES1N-TA1B2
C4020	87-010-067-010	CAP,E 0.1-50V	D1008	87-020-465-010	DIODE,1SS133T
C4025	87-010-378-080	CAP,E 10-16V	D1009	87-020-465-010	DIODE,1SS133T
C4027	87-010-378-080	CAP,E 10-16V	D4002	SD-3RL-FB0-1L0	DIODE,LFB-01L
C4031	87-010-401-080	CAP,E 1-50V	D4003	87-020-465-010	DIODE,1SS133T
C4032	87-010-378-080	CAP,E 10-16V	D4504	SD-3RL-FB0-1L0	DIODE,LFB-01L
C4037	87-015-677-080	CAP,E 100-6.3V	D5001	87-020-465-010	DIODE,1SS133T
C4039	87-010-549-010	CAP,E 47-6.3V	D6007	87-070-136-010	ZENER,MTZJ5.1C T
C4044	87-010-401-080	CAP,E 1-50V	D6402	S9-7U0-6R8-1C0	ZENER,MTZJ6.8C(D)
C4048	87-010-499-080	CAP,E 22-6.3V			*** ICS ***
C4062	87-010-400-080	CAP,E 0.47-50V	IC101	S5-5D0-604-4D0	IC,OEC6044D
C4069	87-010-549-010	CAP,E 47-6.3V	IC102	S5-3D0-04B-N60	IC,M24C04-BN6
C4075	87-015-677-080	CAP,E 100-6.3V	IC103	S9-UJ0-T60-0H0	IC,PST600H
C4082	87-015-975-080	CAP,E 220-6.3V	IC601	S0-5DE-122-9C0	IC,TB1229CN
C4090	87-010-374-080	CAP,E 47-10V	IC1001	S5-7F5-903-2B0	IC,OEC9032B
C4505	87-010-378-080	CAP,E 10-16V	△ IC1002	S0-7S0-902-9A0	IC,OEC9029A
C4507	87-010-075-040	CAP,E 10-16V	IC4001	S0-5D3-232-AN0	IC,TA1232AN
C4514	87-010-112-080	CAP,E 100-16V	IC4002	S0-5D0-885-0A0	IC,TL8850AP
C4515	87-010-221-080	CAP,E 470-10V	IC5001	S0-3D7-728-900	IC,LA7289
C5006	87-010-404-080	CAP,E 4.7-50V	IC6302	S0-3D0-635-8T0	IC,LA6358T
C5010	87-010-403-080	CAP,E 3.3-50V	IC6303	87-027-327-010	IC,UPC574J-T
C5012	87-010-378-080	CAP,E 10-16V	IC7001	S3-ED6-564-900	IC,SDA5649

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
*** TRANSISTORS ***			*** COILS ***		
Q102	89-324-122-080	TR,2SC2412KT	B4002	S2-4DT-035-810	CORE,BEADS LFP3A-M3R2TA
Q103	87-026-235-010	TR,DTC114EK	B4003	S2-4AC-140-150	CORE,BEADS(0) BLM31A601SPT
Q105	89-324-122-080	TR,2SC2412KT	B4004	S2-4AT-036-550	CORE,BEADS BL01RN1-A63T6
Q106	87-026-239-080	TR,DTC114TKAT14	B6101	S2-4AC-140-150	CORE,BEADS(0) BLM31A601SPT
Q107	89-324-122-080	TR,2SC2412KT	B6102	S2-4AC-140-150	CORE,BEADS(0) BLM31A601SPT
Q110	89-324-122-080	TR,2SC2412KT			
Q111	89-324-122-080	TR,2SC2412KT	L101	87-003-148-010	COIL,33UH
Q351	89-334-194-010	TR,2SC3419_Y	L604	87-003-102-010	COIL,10UH
Q352	89-113-564-010	TR,2SA1356_Y	L605	87-003-102-010	COIL,10UH
Q353	89-318-154-080	TR,2SC1815Y	L4001	S2-167-D33-0K0	COIL,33UH
Q354	89-324-122-080	TR,2SC2412KT	L4002	S2-1B7-310-2K0	COIL,1000UH
Q356	87-026-239-080	TR,DTC114TKAT14	L4004	87-003-112-010	COIL,1MH
Q357	SB-3T0-089-200	TR,2SB892	L4005	87-003-288-010	COIL,180UH
Q358	87-026-239-080	TR,DTC114TKAT14	L4006	87-003-149-080	COIL,47UH
Q602	89-324-122-080	TR,2SC2412KT	L4008	87-003-286-010	COIL,56UH
Q604	89-324-122-080	TR,2SC2412KT	L4012	87-003-285-010	COIL,39UH
Q605	87-026-235-010	TR,DTC114EK	L4013	87-003-147-010	COIL,22UH
Q611	87-026-235-010	TR,DTC114EK	L4502	87-003-112-010	COIL,1MH
Q612	89-324-122-080	TR,2SC2412KT	L5001	S2-167-D10-1K0	COIL,100UH
Q1002	87-026-236-080	TR,DTC124EK	L5005	87-003-112-010	COIL,1MH
Q1010	87-026-228-080	TR,DTA124EK	L6101	S2-167-D10-1K0	COIL,100UH
Q1017	89-110-372-080	TR,2SA1037AK	L6102	S2-16S-1R4-7M0	COIL,0.47UH
Q1018	87-026-236-080	TR,DTC124EK	L6105	87-003-152-010	COIL,100UH
Q1028	89-324-122-080	TR,2SC2412KT	L7002	S2-167-D10-1K0	COIL,100UH
Q1029	SB-WT0-092-600	TR,2SB926(S,T)			
Q1051	89-324-122-080	TR,2SC2412KT	PF5001	S3-262-300-380	COIL,TRAP 2623003
Q1052	SC-YT2-872-S00	TR,2SC2872S			
Q1053	S0-02G-004-900	PHOTO,COUPLER GP1S94	T5001	S3-362-601-0R0	COIL,BIAS OSC 3626010
Q1054	S0-02G-004-900	PHOTO,COUPLER GP1S94			
Q1055	S0-007-003-200	PHOTO,TR RPT-38PB113			*** JACKS ***
Q1056	S0-007-003-200	PHOTO,TR RPT-38PB113			
Q4001	89-324-122-080	TR,2SC2412KT	J4501	S6-320-000-650	JACK,PLATE JPJ2042-01-4
Q4004	89-324-122-080	TR,2SC2412KT	J4502	S6-320-000-650	JACK,PLATE JPJ2042-01-4
Q4005	89-110-372-080	TR,2SA1037AK			*** SWITCH ***
Q4006	89-324-122-080	TR,2SC2412KT			
Q4007	89-324-122-080	TR,2SC2412KT			
Q4009	89-324-122-080	TR,2SC2412KT	SW1010	S5-01W-020-050	PUSH SW MPU20460MLB0
Q4010	89-110-372-080	TR,2SA1037AK			*** CONNECTORS ***
Q4011	89-110-372-080	TR,2SA1037AK			
Q4012	89-110-372-080	TR,2SA1037AK			
Q4013	89-324-122-080	TR,2SC2412KT	CP301	S6-9W1-200-190	CONN,PCB SIDE TID-X02P-B2
Q4015	89-324-122-080	TR,2SC2412KT	CP802	S6-9E2-901-290	CONN,PCB SIDE 8283_0912_00_000
Q4016	89-324-122-080	TR,2SC2412KT	CP820	S6-9E2-F01-290	CONN,PCB SIDE 8283_1512_00_000
Q4017	89-110-372-080	TR,2SA1037AK	CP850	S6-9E2-501-290	CONN,PCB SIDE 8283_0512_00_000
Q4018	87-026-236-080	TR,DTC124EK	CD6101	S6-810-141-1A0	CORD,CONN 8101411A
Q4019	SN-7TM-050-010	TR,DTC143TK			*** CRYSTAL & CERAMIC OSCILLATORS ***
Q4020	87-026-411-080	TR,DTC144EKAT146			
Q4021	87-026-411-080	TR,DTC144EKAT146			
Q4023	SN-7TM-050-010	TR,DTC143TK	X101	S0-0D3-2R8-010	X'TAL,32.768K
Q4024	87-026-236-080	TR,DTC124EK	X102	S0-01T-8R0-040	CER,OSC EFOEC8004T4
Q4502	89-110-372-080	TR,2SA1037AK	X601	S0-0WA-016-010	CRYSTAL,HC-49
Q4503	89-110-372-080	TR,2SA1037AK	X1001	S0-0CA-8R0-050	X'TAL,8.0MHZ
Q4504	89-324-122-080	TR,2SC2412KT	X4001	S0-0CA-4R4-040	X'TAL,4.4336MHZ
Q4505	87-026-236-080	TR,DTC124EK			*** TUNER ***
Q4506	87-026-236-080	TR,DTC124EK			
Q5004	89-313-172-010	TR,2SC1317			
Q6101	87-026-287-080	TR,DTC143EKAT146	⚠ TU6001	S1-447-070-200	TUNER UHF UE25-B01
Q6104	89-324-122-080	TR,2SC2412KT			*** OTHERS ***
Q6105	89-324-122-080	TR,2SC2412KT			
Q6304	89-324-122-080	TR,2SC2412KT			
Q6502	89-324-122-080	TR,2SC2412KT	CY757	S6-CH1-A00-2A0	CORD,CONN CH1A002A
Q6503	89-110-372-080	TR,2SA1037AK	CP4002	S6-CH2-207-0A0	CORD,CONN CH22070A
Q6504	89-324-122-080	TR,2SC2412KT			OPERATION PCB ASS'Y
*** COILS ***			*** CAPACITOR ***		
B302	S2-4AC-140-150	CORE,BEADS(0) BLM31A601SPT			
B601	S2-4DT-035-810	CORE,BEADS LFP3A-M3R2TA	C755	87-015-975-080	CAP,E 220-6.3V

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
*** DIODES ***			*** CAPACITORS ***		
D791	S0-213-2Q0-400	LED,SLZ-936C-11-S-T1	C417	S0-JTB-05S-2K0	CAP,CER 560PF-500V
D792	S0-213-2Q0-400	LED,SLZ-936C-11-S-T1	C418	S0-E7T-B01-0M0	CAP,E 1-160V
D793	S0-213-2Q0-400	LED,SLZ-936C-11-S-T1	C421	87-010-397-010	CAP,E 1000-35V
D794	S0-21M-5Q1-300	LED,EM-553-F9T	C422	87-016-322-010	CAP,E 1-250V
D795	S0-21M-5Q1-300	LED,EM-553-F9T	C423	S4-41F-233-4J0	CMPP,0.33-200V D
*** TRANSISTORS ***			C424	S4-N2A-947-2H0	CMPP,0.0047-1.6KV
Q756	87-026-464-080	TR,DTC114TS	C429	87-012-386-080	CAP,CER 470PF-2KV
Q757	87-026-464-080	TR,DTC114TS	C430	S0-34B-N71-3K0	CAP,CER 0.001-2KV BP
Q758	87-026-464-080	TR,DTC114TS	C431	87-016-600-080	CAP,E 22-250V
*** COIL ***			C432	S6-11T-110-4J0	CMPL 0.1-100V T
B352	S2-4DT-035-810	CORE,BEADS LFP3A-M3R2TA	C438	87-010-977-010	CAP,CER 680PF-500V
*** SWITCHES ***			C450	S0-34B-N71-3K0	CAP,CER 0.001-2KV BP
SW750	S5-042-01T-310	SW,TACT SKHVBED010	C502	S1-3VB-07H-3K0	CAP,CER 2200PF-2KV
SW751	S5-042-01T-310	SW,TACT SKHVBED010	C503	S1-3VB-07H-3K0	CAP,CER 2200PF-2KV
SW791	S5-042-01T-310	SW,TACT SKHVBED010	C504	87-016-636-080	CAP,E 4.7-50V
SW792	S5-042-01T-310	SW,TACT SKHVBED010	C507	S1-9A0-C01-040	CAP,E 100-400V
SW793	S5-042-01T-310	SW,TACT SKHVBED010	C510	87-010-408-010	CAP,E 47-50V
SW794	S5-042-01T-310	SW,TACT SKHVBED010	C511	S0-34B-N7Q-2K0	CAP,CER 470PF-2KV BP
SW795	S5-042-01T-310	SW,TACT SKHVBED010	C515	S3-N1F-518-3J0	CPP 0.018-630V
SW796	S5-042-01T-310	SW,TACT SKHVBED010	C516	87-012-376-010	CAP,CER 470PF-500V
SW797	S5-042-01T-310	SW,TACT SKHVBED010	C517	S0-34B-N71-3K0	CAP,CER 0.001-2KV
SW798	S5-042-01T-310	SW,TACT SKHVBED010	C518	87-012-376-010	CAP,CER 470PF-500V
SW799	S5-042-01T-310	SW,TACT SKHVBED010	C519	87-012-376-010	CAP,CER 470PF-500V
*** OTHERS ***			C520	87-010-388-090	CAP,E 1000-25V
CD353	S6-CH2-305-8A0	CORD,CONN CH23058A	C521	S5-2E0-C18-1M0	CAP,E 180-200V
CD757	S6-CH2-A01-3A0	CORD,CONN CH2A013A	C523	87-070-387-040	CAP,E 470-25V V
J353	S6-121-210-010	JACK RCA 3.5 HSJ0842-01-010	C524	87-070-387-040	CAP,E 470-25V V
OS753	S7-790-140-010	IC,GP1U281 REMOTE RECEIVER	C525	87-010-235-080	CAP,E 470-16V
MAIN PCB ASS'Y			C526	87-A10-373-080	CAP,E 220-6.3V
*** RESISTORS ***			C527	87-012-376-010	CAP,CER 470PF-500V
△ R412	S6-158-401-0J0	RES,FUSE 1-1/4W	△ C529	SB-393-0M1-3M0	CAP,CER 0.001-250V
R415	S4-25T-46R-8F0	RES,M/F 6.8-1/4W	△ C530	SB-393-0MH-2K0	CAP,CER 220P-250V
R418	S4-25T-46R-8F0	RES,M/F 6.8-1/4W	C531	87-010-271-080	CAP,E 1000-16V
△ R445	S3-K20-B33-2J0	RES,M/O 3.3K-3W	C532	87-010-235-910	CAP,E 470-16V V
△ R446	S3-K20-B33-2J0	RES,M/O 3.3K-3W	C540	87-010-964-010	CAP,E 10-160V
△ R447	S6-158-268-0J0	RES,FUSE 68-1/2W	C541	87-010-964-010	CAP,E 10-160V
△ R448	SF-F01-02J-B10	RES,METAL 1K-1W	△ C546	SB-393-0M1-3M0	CAP,CER 0.001-250V
△ R450	87-029-164-010	RES,FUSE 4.7-1W	D401	S2-8T1-1E1-N10	DIODE,11E1N-TA1B2
△ R452	87-A00-140-060	RES,FUSE 1.8-1W	D402	S9-7U0-9R1-1B0	ZENER,MTZJ9.1B
△ R501	S5-Y2C-E4R-7J0	RES,CEMENT 4.7-7W	△ D411	S2-8T1-0EL-S60	DIODE,10ELS6TA1
△ R502	87-029-365-010	RES,FUSE 22-1/4W	△ D413	S2-8T1-0EL-S60	DIODE,10ELS6TA1
△ R505	S3-U28-B47-3J0	RES,M/O 47K-3W	△ D501	S2-BTR-M11-C00	DIODE,RM11C
△ R510	S3-118-1R2-7J0	RES,M/O 0.27-1W	△ D502	S2-BTR-M11-C00	DIODE,RM11C
△ R512	S3-K18-122-3J0	RES,M/O 22K-1W	△ D503	S2-BTR-M11-C00	DIODE,RM11C
△ R517	87-029-131-010	RES,FUSE 1-1W	△ D504	S2-BTR-M11-C00	DIODE,RM11C
△ R531	S3-X28-B47-3J0	RES,METAL 47K-3W	D505	S2-8T1-0EL-S60	DIODE,10ELS6TA1
△ R534	87-029-033-090	RES,FUSE 56-1/2W	D507	S2-8T1-1E2-N20	DIODE,11E2N-TA1B2
△ R537	87-029-160-010	RES,FUSE 2.2-1W	△ D508	S2-8T2-1DQ-N90	DIODE,21DQ09N-TA2B
△ R539	87-029-160-010	RES,FUSE 2.2-1W	△ D509	S2-8T1-0EL-S60	DIODE,10ELS6TA1
*** CAPACITORS ***			△ D510	S2-8I1-5DF-600	DIODE,15DF6-FC
C405	87-015-695-080	CAP,E 1-50V	△ D511	S2-8T1-0EL-S20	DIODE,10ELS2N-TA1
C406	87-010-393-010	CAP,E 100-35V	△ D512	S2-8T2-1DQ-N90	DIODE,21DQ09N-TA2B
C407	87-010-388-090	CAP,E 1000-25V	D516	87-020-465-010	DIODE,1SS133T
C412	S0-JTB-05N-2K0	CAP,CER 390PF-500V B	D517	87-020-465-010	DIODE,1SS133T
			△ D519	S2-8T2-1DQ-N90	DIODE,21DQ09N-TA2B
			D520	S2-8T1-0EL-S60	DIODE,10ELS6TA1
			D521	S2-8T1-0EL-S60	DIODE,10ELS6TA1
			D522	S2-8TE-QS0-400	DIODE,11EQS04N-TA
			D525	87-A40-172-080	DIODE,EG01Z-V0
			D526	87-A40-172-080	DIODE,EG01Z-V0
			D527	S2-8T1-0EL-S60	DIODE,10ELS6TA1
			D528	87-017-931-010	ZENER,MTZJ5.6B
			D529	87-020-465-010	DIODE,1SS133T
			D530	S2-5T1-R5N-U00	DIODE,1R5NU41
			TH501	S8-R0F-140-M00	DEGAUSS PTH451C26

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
		*** ICS ***			CRT PCB ASS'Y
△ IC401	87-070-237-010	IC,LA7832			*** RESISTORS ***
△ IC501	87-A20-969-010	IC,STR-F6653	△ R802	SF-G01-23J-H10	RES,M/O 12K-2W
△ IC502	S0-Q09-780-500	IC,NJM7805FD	△ R805	SF-G01-23J-H10	RES,M/O 12K-2W
△ IC503	S0-GA9-09R-D00	IC,PQ09RD08	△ R810	SF-G01-23J-H10	RES,M/O 12K-2W
△ IC504	87-001-576-010	IC,NJM7812FA			*** CAPACITORS ***
		*** TRANSISTORS ***			
Q405	SC-3T0-227-100	TR,2SC2271(D,E)-AE	C802	87-010-560-080	CAP,E 10-50V
△ Q406	SD-UQ0-259-900	TR,2SD2599	C819	S1-3VB-07H-3K0	CAP,CER 2200PF-2KV
Q501	SC-3T0-290-900	TR,2SC2909	C820	87-016-322-010	CAP,E 1-250
△ Q502	SA-3T1-371-A00	TR,2SA1371			*** DIODES ***
△ Q503	SC-300-416-000	TR,2SC4160-OEC-YAC11			
Q504	89-320-011-210	TR,2SC2001(C)-T			
Q505	SN-YTB-030-010	TR,DTC114E	D801	87-020-465-010	DIODE,1SS133T
Q507	89-309-458-010	TR,2SC945(C)	D802	87-020-465-010	DIODE,1SS133T
Q508	SN-YTB-030-010	TR,DTC114E			*** TRANSISTORS ***
△ Q509	S0-021-000-1R0	PHOTO COUPLER,ON3171R			
△ Q510	S0-021-000-1R0	PHOTO COUPLER,ON3171R			
Q513	SN-YTB-030-010	TR,DTC114E	Q801	84-LB2-698-080	TR,2SA733(C)-T
		*** COILS ***	△ Q804	SC-S00-268-800	TR,2SC2688(L)
			△ Q805	SC-S00-268-800	TR,2SC2688(L)
			△ Q806	SC-S00-268-800	TR,2SC2688(L)
B504	S2-4AT-036-550	CORE,BEADS BL01RN1-A63T6			*** COIL ***
B505	S2-4AT-036-550	CORE,BEADS BL01RN1-A63T6			
B509	S2-4AT-036-550	CORE,BEADS BL01RN1-A63T6			
L401	87-003-143-010	COIL,4.7MH	L801	S2-167-D10-1K0	COIL,100UH
L402	S2-210-000-130	COIL,LINEARITY ELH5L4112			*** CONNECTOR ***
L403	87-003-283-080	COIL,18UH			
△ L501	S2-9X0-000-520	COIL,LINE FILTER SS28V-08350	CD6102	S6-810-141-0A0	CORD,CONN 8101410A
△ L502	S2-9K0-000-010	COIL,LINE FILTER RB-20871			*** CRT SOCKET ***
		*** TRANSFORMER ***			
△ FB401	S4-321-402-7F0	TRANS FLYBACK 3214027	△ J801	S6-6X1-200-140	SOCKET,CRT HPS3200-010501
T401	S3-305-Y00-180	TRANS,HORI DRIVE 305Y001			*** OTHER ***
△ T501	S4-813-502-6W0	TRANS,SWITCHING 8135026W	CD850	S6-CH2-508-0A0	CORD,CONN CH25080A
		*** VARIABLE RESISTOR ***			TTEXT PCB ASS'Y
VR502	S1-263-H2B-TC0	SFR,RH063MCJ2R07			*** CAPACITORS ***
		*** FUSES ***	C852	87-015-677-080	CAP,E 100-6.3V
△ F501	S8-0PT-040-020	FUSE,4A-250V T	C854	87-015-975-080	CAP,E 220-6.3V
△ F502	S8-08T-1R6-020	FUSE,1.6A-250V T	C856	87-015-677-080	CAP,E 100-6.3V
FH501	S6-710-T00-060	HOLDER,FUSE EYF-52BC	C857	87-010-415-010	CAP,E 10-50V
FH502	S6-710-T00-060	HOLDER,FUSE EYF-52BC	C863	87-015-973-010	CAP,E 22-16V
FH503	S6-710-T00-060	HOLDER,FUSE EYF-52BC			*** ICS ***
FH504	S6-710-T00-060	HOLDER,FUSE EYF-52BC			
		*** RELAY ***	IC851	S5-CD0-020-000	IC,CF70200NW
			IC852	S5-CD0-230-600	IC,CF72306
△ RY501	S5-601-101-010	RELAY,AJZ32157			*** TRANSISTORS ***
		*** OTHERS ***			
CD810	S6-CH2-810-7A0	CORD,CONN CH28107A	Q853	89-324-122-080	TR,2SC2412KT
CD820	S6-CH2-F01-1A0	CORD,CONN CH2F011A	Q859	89-324-122-080	TR,2SC2412KT
			Q860	89-324-122-080	TR,2SC2412KT
			Q861	89-324-122-080	TR,2SC2412KT
			Q862	89-324-122-080	TR,2SC2412KT
△ ICP502	S8-3PC-040-020	MICRO FUSE,251004			*** COILS ***
△ ICP504	S8-3PC-050-020	MICRO FUSE,251005			
△ ICP506	S8-3PC-010-020	MICRO FUSE,251001	B851	S2-4DT-035-810	CORE,BEADS LFP3A-M3R2TA
			L851	87-003-102-010	COIL,10UH
			L852	87-003-102-010	COIL,10UH

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
		*** COILS ***			*** COILS ***
L854	87-003-286-010	COIL,56UH	L6002	87-003-152-010	COIL,100UH
L855	87-003-285-010	COIL,39UH	L6004	87-003-282-010	COIL,12UH
		*** CONNECTOR ***	L6005	S2-1LA-61R-2K0	COIL,1.2UH
CP852	S6-9H1-702-090	CONN PCB SIDE ILG7P-S3L-PCB-S	L6007	87-003-144-010	COIL,6.8UH
		*** CRYSTAL & CERAMIC OSCILLATORS ***	L6009	87-003-102-010	COIL,10UH
X851	S0-0WA-013-010	CRYSTAL,13875KHz	L6010	87-003-148-010	COIL,33UH
		HEAD AMP PCB ASS'Y	L6011	S3-360-K00-6R0	COIL,V IFT 360K006
		*** CAPACITOR ***	L6012	S3-360-K00-5R0	COIL,V IFT 360K005
C4107	87-016-088-040	CAP,E 220-6.3V	VR6001	S1-263-H4B-TC0	SFR,RH063MCJ4R07A
		*** IC ***			*** FILTERS ***
IC4101	S0-3FG-741-1M0	IC,LA7411M	CF6001	S0-12T-6R0-030	CER,FIL TPS6.0MB-TF21
		*** TRANSISTOR ***	CF6003	S0-12T-6R0-020	CER,FIL SFE6.0MB-TF21
Q4101	89-324-122-010	TR,2SC2412	CF6004	S0-2E2-39R-5A0	FILTER,SAW J1953M
		*** COIL ***	CF6005	S0-12T-6R0-050	CER,FIL CDSH6.0ME44K-TF
L4101	S2-166-310-1K0	COIL,100UH	CF6008	S0-12T-041-010	FILTER,CERA MKT41.5MA110P
		POWER SW PCB ASS'Y			*** OTHER ***
		*** COIL ***	CD6001	S6-C70-180-1A0	CORD,JUMPER C701801A
L510	S2-A6A-8A0-A10	CORE,FERRITE HF57T18.5*10*10			AND OTHERS
		*** SWITCH ***			*** COILS ***
△ SW501	S5-302-050-010	SW,PLUS SDDFC3056A	L353	S2-A6A-8A0-A10	CORE,FERRITE HF57T18.5*10*10
		*** CONNECTOR ***	△ L503	S2-8Q1-400-180	COIL,DEGAUSS 8Q140018
CP501	S6-944-301-000	CORD,CONN 2-173270-3			*** CONNECTOR ***
		*** OTHER ***	CD301	S6-8D1-241-1A0	CORD,CONN 8D12411A
CD502	S6-CPU-201-2A0	CORD,CONN CPU2012A			*** AC CORD ***
		IF PCB ASS'Y	△ CD501	S2-066-358-070	CORD,AC 1206635807
		*** CAPACITORS ***			*** OTHERS ***
C6002	87-010-112-080	CAP,E 100-16V	CD001	S6-CP0-142-5A0	CORD,CONN CP01425A
C6005	87-010-825-010	CAP,E 0.22-50V	CD002	S6-CP0-142-5A0	CORD,CONN CP01425A
C6019	87-010-079-080	CAP,E 100-6.3V	SP351	S7-0U5-330-040	SPEAKER,EP074-A82101A
C6021	87-010-071-080	CAP,E 1-50V	SP352	S7-0U5-330-040	SPEAKER,EP074-A82101A
		*** IC ***	△ V801	S9-8P1-404-790	CRT,A34AGT13*78
IC6001	S0-6DA-523-130	IC,M52313SP			
		*** TRANSISTORS ***			
Q6002	89-110-372-010	TR,2SA1037			
Q6003	SC-3T0-300-000	TR,2SC3000			



サービス技術ニュース	
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アイワ株式会社 〒110-8710 東京都台東区池之端1-2-11 ☎03(3827)3111 (代表)
AIWA CO.,LTD. 2-11, IKENOHATA 1-CHOME, TAITO-KU, TOKYO 110-8710, JAPAN TEL:03 (3827) 3111