

# JVC

## SERVICE MANUAL

### VIDEO CASSETTE RECORDER

HR-J282EU, HR-J283EU, HR-J285EU,  
HR-J290EU, HR-J293EU, HR-J295EK, HR-J295MS,  
HR-J582EU, HR-J583EU, HR-J585EU,  
HR-J590EU, HR-J593EU, HR-J595EK, HR-J595MS



SHOWVIEW®  
VHS  
PAL  
Hi-Fi

#### SPECIFICATIONS (The specifications shown pertain specifically to the model HR-J290EU, J293EU, J590EU and J593EU.)

GENERAL	
Power	: 200 V – 240 V~, 50 Hz/60 Hz
Power consumption	
Power on	: Approx. 12 W
Standby mode	: 3.0 W
Video Head system	
HR-J590/J593/ J599EU	: DA4 (Double Azimuth) head helical scan system
HR-J290/J293EU	: Rotary two-head helical scan system
Tape speed	
(SP)	: 23.39 mm/sec
(LP)*	: 11.69 mm/sec
* HR-J590/J593/J599EU only	
Tape format	: Tape width 1/2" (12.7 mm high density VHS tape)
Maximum recording time	
(SP)	: 240 min. with E-240 video cassette
(LP)*	: 480 min. with E-240 video cassette
* HR-J590/J593/J599EU only	
Rewind time	: Approx. 180 sec. with E-180 cassette
Dimensions (W x H x D)	: 360 mm x 94.5 mm x 270 mm
Weight	: 4.0 kg
Operating temperature	: 5°C to 35°C
Operating humidity	: Less than 80 %
Timer	: 24 hours display type

VIDEO	
Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines 50 fields
Recording Format	: PAL/MESECAM
RF reception	: PAL (B/G)/SECAM (B/G)
RF OUT	: PAL G
RF modulator	: UHF channels 22 – 68 (Adjustable)
Input level	: VIDEO IN (SCART type) 1.0 Vp-p, 75 ohm, unbalanced
Output level	: VIDEO OUT (SCART type) 1.0 Vp-p, 75 ohm, unbalanced
Signal-to-noise ratio	: More than 43 dBm

AUDIO	
Input level	: AUDIO IN (SCART type) –6.0 dBm, more than 10 kΩ
Output level	
HR-J590/J593/ J599EU	: AUDIO OUT (SCART, RCA type) –6.0 dBm, less than 1 kΩ
HR-J290/J293EU	: AUDIO OUT (SCART type) –6.0 dBm, less than 1 kΩ
Audio track	
HR-J590/J593/ J599EU	: Mono track and Hi-Fi track
HR-J290/J293EU	: Mono track
Audio frequency response	
Normal audio	: 100 Hz to 10,000 Hz (–6/+3 dBm)
Hi-Fi audio*	: 20 Hz to 20,000 Hz (–3/+3 dBm)
* HR-J590/J593/J599EU only	
Audio signal to noise ratio [HR-J590/J593/J599EU only]	
Hi-Fi audio	: More than 70 dB (JIS A filter)
Audio dynamic range [HR-J590/J593/J599EU only]	
Hi-Fi audio	: More than 85 dB (JIS A filter)

ACCESSORIES	
Provided accessories	: RF cable, Infrared remote control unit, "R3" battery x 2

Specifications shown are for SP mode unless specified otherwise.  
E. & O.E. Design and specifications subject to change without notice.



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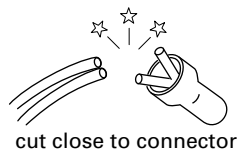
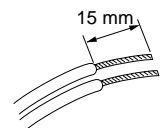
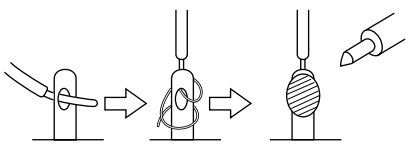
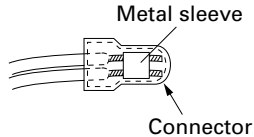
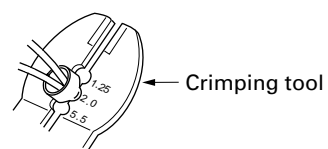
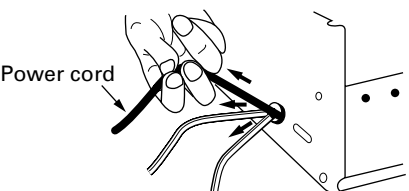
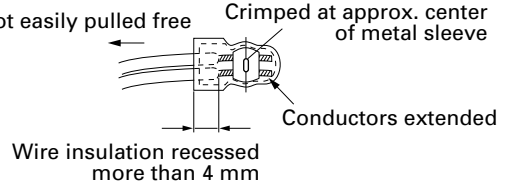
# SECTION1 SUMMARY

## KEY TO ABBREVIATIONS

A	AC :Alternating Current	LPF :Low Pass Filter
	ACC :Automatic Color Control	M MAX :Maximum
	ACSS :Automatic Channel Setting System	MD :Modulator
	ADJ :Adjust	MECHA.CTL :Mechanism Control
	A/E :Audio Erase	MIC :Microphone
	AFC :Automatic Frequency Control	MIN :Minimum
	AFT :Automatic Fine Tuning	MIX :Mixer, Mixing
	AGC :Automatic Gain Control	M.M. :Monostable, Multivibrator
	A.H.SW :Audio Head Switch	MMV :Mono Multi Vibrator
	ALC :Automatic Level Control	MOD :Modulation, Modulator
	AM :Amplitude Modulation	MODEM :Modulator-Demodulator
	AMP :Amplifier	MPX :Multiplex
	ANT :Antenna	N NR :Noise Reduction
	APC :Automatic Phase Control	O OSC :Oscillator
	ASS'Y :Assembly	OSD :On Screen Display
	AUX :Auxiliary	P PB :Playback
B	B :Base	PCB :Printed Circuit Board
	BGP :Burst Gate Pulse	P.CTL :Power Control
	BPF :Bandpass Filter	PRE-AMP :Preamplifier
	BS :Broadcasting Satellite	P.F :Power Failure
	BW or B/W :Black and White	PG :Pulse Generator
C	C :Capacitor, Chroma, Collector	PLL :Phase Locked Loop
	CAN :Cancel	PREM.DET :Premire Detect
	CAP :Capstan	P.P :Peak-to-Peak
	CAP.BRK :Capstan Brake	PS :Phase Shift
	CAP.RVS :Capstan Reverse	PWM :Pulse Width Modulation
	CATV :Cable Television	PWR CTL :Power Control
	CBA :Circuit Board Assembly	Q Q :Transistor
	CCD :Charge Coupled Device	QH :Quasi Horizontal
	C.CTL :Chro Control, Capstan Control	QSR :Quick Setting Record
	CFG :Capstan Frequency Generator	QTR :Quick Timer Record
	CHROMA :Chrominance	QV :Quasi Vertical
	CNR :Chroma Noise Redution	R R :Resistor, Right
	COMB :Combination	RE(or RC) :Remocon, Receiver
	Comb Filter	REC :Recording
	COMP :Comparator	REC S 'H' :Record Start 'Hight'
	Composite	REF :Reference
	Compensation	REG :Regulated, Regulator
	CONV :Converter	REMOCON :Remote Control(unit)
	C.ROT SW :Color Rotary Switch	RF :Radio Frequency
	CS :Chip Select	R/P :Record/Playback
	C.SYNC :Composite Synchronization	RTC :Reel Time Counter
	CTL DIV :Control Divide	S S :Serial
	CUR :Current	S.ACCEL :Slow Accel
	CYL :Cylinder	SAOP :Second Audio Program
D	D :Drum, Digital, Diode, Drain	SC :Scart, Simulcast
	D.ADJ :Drum Adjust	S.DET :Secam Detect
	DC :Direct Current	SH :Shift
	D.CTL :Drum Control	SHARP :Sharpness
	DEMOD :Demodulator	SIF :Sound Intermediate Frequency
	DET :Detector	SLD :Side Locking
	DEV :Deviation	S/N :Signal to Noise Ratio
	DHP :Double High Pass	SP :Standard Play
	DIGITRON :Digital Display Tube	ST :Stereo
	DL :Delay line	SUB :Subtract, Subcarrier
	DOC :Drop Out Compensator	SW or S/W :Switch
	DUB :Dubbing	SYNC :Synchronization
	D.V SYNC :Dummy Vertical Synchronization	SYSCON :System Control
E	E :Emitter	T T :Coil
	EE :Electric to Eletric	TP :Test Point
	EMPH :Emphasis	TR :Transistor
	ENA :Enable	TRK :Tracking
	ENV :Envelope	TRANS :Transformer
	EP :Extended Play	TU :Tuner, Take-up
	EQ :Equalizer	U UHF :Ultra High Frequency
	EXP :Expander	UNREG :Unregulated
F	F :Fuse	V V :Volt, Vertical
	FB :Feed Back	VA :Always Voltage
	FBC :Feed Back Clamp	VCO :Voltage Controlled Oscillator
	FE :Full Erase	VGC :Voltage Gain Control
	FG :Frequency Generator	VHF :Very High Frequency
	FL :Filter	V.H.SW :Video Head Switch
	FM :Frequency Modulation	VISS :VHS Index Search
	F/R :Front/Rear	VPS :Video Program System
	FS :Frequency Synthesizer	VR :Variable Resistor or Volume
	FSC :Subcarrier Frequency	V-SYNC :Vertical Synchronization
	F/V :Frequency Voltage	VTG :Voltage
G	GEN :Generator	VV :Voltage to Voltage
H	H :High, Horizontal	VXO :Voltage X-tal Oscillator
I	IC :Integrated Circuit	W W :Watt
	IF :Intermediate Frequency	WHT :White
	INS :Insert	W/O :With out
L	L :Low, Left, Coil	X X-TAL :Crystal
	LD :LED	Y Y/C :Luminance/Chrominance
	LD VTG CTL :Loading Voltage Control	YNR :Luminance Noise Reduction
	LECHA :Letter Character	Z ZD :Zener Diode
	L.M :Level Meter	
	LP :Long Play	

# Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

<b>●Precautions during Servicing</b>	
<p>1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.</p>	<p>12. Crimp type wire connector In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.</p> <p>1) <b>Connector part number</b> : E03830-001 2) <b>Required tool</b> : Connector crimping tool of the proper type which will not damage insulated parts. 3) <b>Replacement procedure</b> (1) Remove the old connector by cutting the wires at a point close to the connector. Important : Do not reuse a connector (discard it).</p>
<p>2. Parts identified by the <math>\triangle</math> symbol and shaded (■) parts are critical for safety. Replace only with specified part numbers. <b>Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.</b></p>	 <p style="text-align: center;">cut close to connector</p> <p style="text-align: center;"><b>Fig.3</b></p>
<p>3. Fuse replacement caution notice. Caution for continued protection against fire hazard. Replace only with same type and rated fuse(s) as specified.</p>	<p>(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.</p>
<p>4. Use specified internal wiring. Note especially: 1) Wires covered with PVC tubing 2) Double insulated wires 3) High voltage leads</p>	 <p style="text-align: center;"><b>Fig.4</b></p>
<p>5. Use specified insulating materials for hazardous live parts. Note especially: 1) Insulation Tape                      3) Spacers                                  5) Barrier 2) PVC tubing                              4) Insulation sheets for transistors</p>	<p>(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.</p>
<p>6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.</p>  <p style="text-align: center;"><b>Fig.1</b></p>	 <p style="text-align: center;"><b>Fig.5</b></p>
<p>7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)</p>	<p>(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.</p>
<p>8. Check that replaced wires do not contact sharp edged or pointed parts.</p>	 <p style="text-align: center;"><b>Fig.6</b></p>
<p>9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.</p>  <p style="text-align: center;"><b>Fig.2</b></p>	<p>(5) Check the four points noted in Fig.7.</p>
<p>10. Also check areas surrounding repaired locations.</p>	 <p style="text-align: center;"><b>Fig.7</b></p>
<p>11. Products using cathode ray tubes (CRTs) In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.</p>	

## ● Safety Check after Servicing

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

### 1. Insulation resistance test

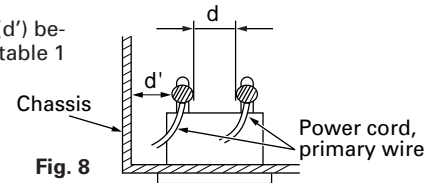
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

### 2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

### 3. Clearance distance

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

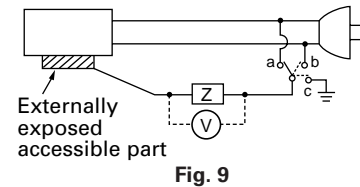


### 4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

**Measuring Method :** (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

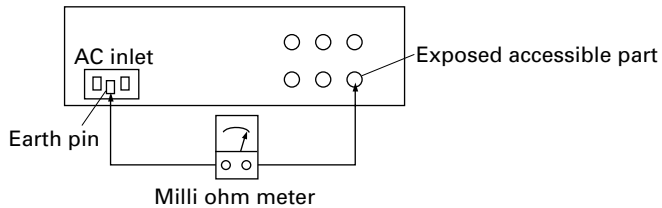


### 5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

**Measuring Method:**

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.



#### Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	$Z \leq 0.1 \text{ ohm}$
Europe & Australia	$Z \leq 0.5 \text{ ohm}$

Fig. 10

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	$R \geq 1 \text{ M}\Omega/500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3 \text{ mm}$
100 to 240 V			AC 1.5 kV 1 minute	$d, d' \geq 4 \text{ mm}$
110 to 130 V	USA & Canada	$1 \text{ M}\Omega \leq R \leq 12 \text{ M}\Omega/500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3.2 \text{ mm}$
110 to 130 V	Europe & Australia	$R \geq 10 \text{ M}\Omega/500 \text{ V DC}$	AC 3 kV 1 minute (Class II)	$d \geq 4 \text{ mm}$
200 to 240 V			AC 1.5 kV 1 minute (Class I)	$d' \geq 8 \text{ mm}$ (Power cord) $d' \geq 6 \text{ mm}$ (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan		$i \leq 1 \text{ mA rms}$	Exposed accessible parts
110 to 130 V	USA & Canada		$i \leq 0.5 \text{ mA rms}$	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia		$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Antenna earth terminals
			$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Other terminals

Table 2 Leakage current specifications for each region

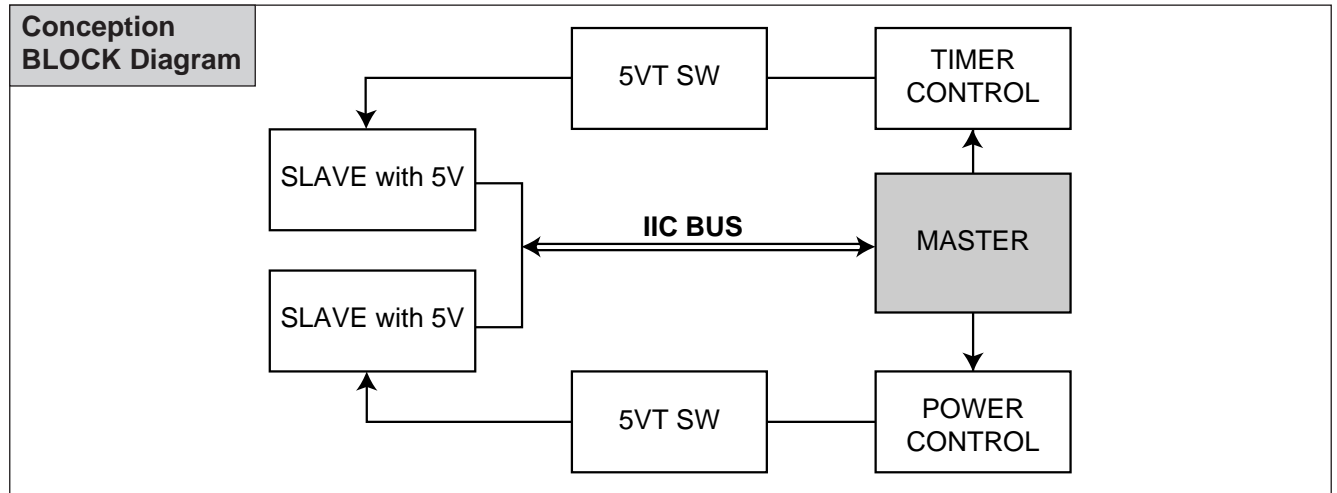
**Note:** These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

# PROPOSAL FOR APPLYING SHORT PROTECTION

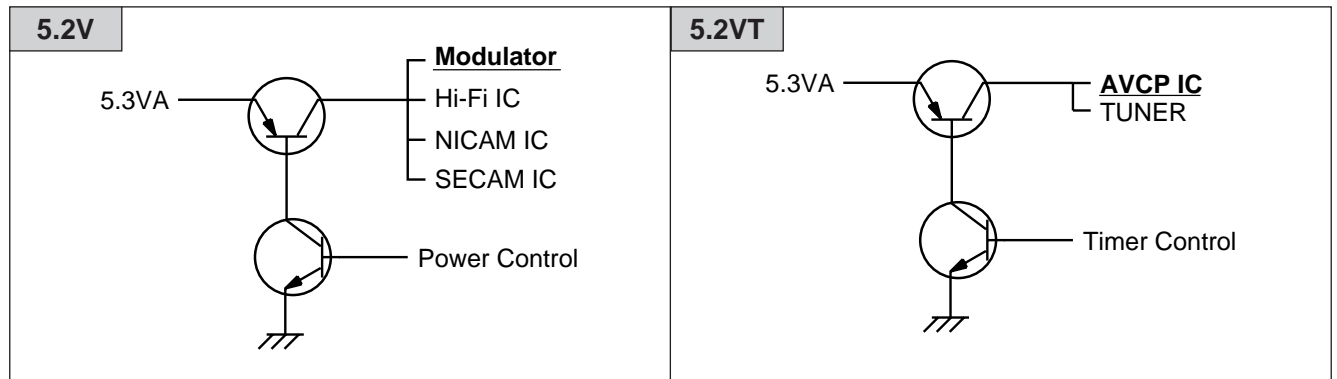
## • The Contents of Examination

As all the IC that is applied to VCR is controlled by IIC, mutual communication, if Vcc of IC is short or open with detecting 'Acknowledge' data of the specific IC according to each power(5V, 5VT)  $\mu$ -COM gets unable to detect 'ACK' data.

$\mu$ -COM regards this case as abnormal one and if it can't detect 'ACK' data for a certain time(3.5 sec) the signal of 'Power Control' and 'Timer Control' are switched to 'Low'. As a result POWER Switching TR is kept from generating heat and fire.



## • POWER for each IC



• IC to detect 'ACK' data is selected as below because IC is different in accordance to region and option

S/	5V POWER	SECAM IC
Series	5VT POWER	AVCP IC
P/Y/I	5V POWER	Modulator
Series	5VT POWER	AVCP IC

\*Short protection off mode : DJ01 Diode in

# SERVICE NOTICE ON REPLACING EEPROM

In case that defective EEPROM of PAL models is replaced, to operate these sets from the initial state MP KEY must be repaired as well before delivering to the customer.

If MP KEY isn't repaired the setting of RF OUT channel or LANGUAGE might be different from that for customer's country.

•**MP KEY** : In case of PAL VCR if holding the REC button on the front panel and the CLEAR button on the remote control handset for 5 ~ 7 seconds with power being switch all and no tapes, OK is displayed at FLD for FLD models and LED becomes on for LED CLOCK models.

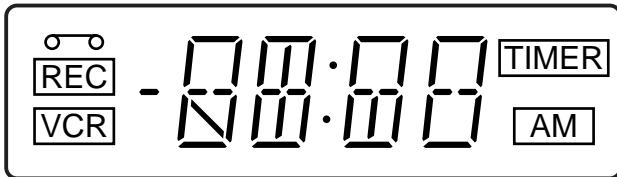
This is the state that initializing EEPROM is finished.

(In case of PAL VCP if holding the REC button on the front panel and the MENU button on the remote control handset for 5 ~ 7 seconds with power being off and no tapes, All the LED DOTs become on. This is the state that initializing EEPROM is finished.)

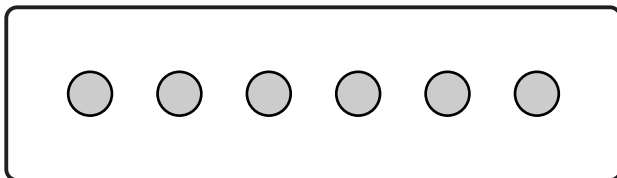
•**MP KEY's function** : MP KEY sets EEPROM's data up to the initial state.



• **FLD MODEL:**  
MP KEY "OK"



• **LED CLOCK MODEL:**  
MP KEY Switch all on a Light



• **LED DOT MODEL:**  
MP KEY Switch all on a Light



# SERVICE INFORMATION FOR EEPROM IC SETTING

## EEPROM option code No. setting

MODEL	NAME	HEX	BINARY	
HR-J285EU	02	00	00000000	
	C0	00	00000000	
	C0	00	00000000	
	B1	00	00000000	
	30	00	00000000	
HR-J290EU	48	00	00000000	
	E2	00	00000000	
	HR-J293EU	C1	00	00000000
		C8	00	00000000
HR-J585EU	B1	00	00000000	
	30	00	00000000	
	48	00	00000000	
	0C	00	00000000	
HR-J590EU/ J593EU	C0	00	00000000	
	B1	00	00000000	
	30	00	00000000	
	48	00	00000000	
	EC	00	00000000	
HR-J595EK	C1	00	00000000	
	C8	00	00000000	
	B1	00	00000000	
	30	00	00000000	
	48	00	00000000	
HR-J595MS	2C	00	00000000	
	C0	00	00000000	
	C8	00	00000000	
	B4	00	00000000	
	00	00	00000000	
HR-J295MS	43	00	00000000	
	6C	00	00000000	
	C0	00	00000000	
	48	00	00000000	
	B0	00	00000000	
HR-J295EK	62	00	00000000	
	40	00	00000000	
	62	00	00000000	
	C0	00	00000000	
	48	00	00000000	
HR-J282EU	B0	00	00000000	
	62	00	00000000	
	40	00	00000000	
	02	00	00000000	
	C0	00	00000000	
HR-J283EU	C0	00	00000000	
	C0	00	00000000	
	B7	00	00000000	
	00	00	00000000	
	50	00	00000000	

MODEL	NAME	HEX	BINARY
HR-J283EU	02	00	00000000
	C0	00	00000000
	C8	00	00000000
	B7	00	00000000
	00	00	00000000
HR-J582EU	50	00	00000000
	0C	00	00000000
	C0	00	00000000
	C0	00	00000000
	B7	00	00000000
HR-J583EU	00	00	00000000
	50	00	00000000
	0C	00	00000000
HR-J585EU	C0	00	00000000
	C8	00	00000000
	B7	00	00000000
	00	00	00000000
	50	00	00000000

# Remote control Key action

- OK : Now option data write to EEPROM
- MENU : Menu exit
- EDIT : ▲▼ (Option data change from 0~F Hexadecimal)
- MOVE : ◀▶ (Cursor move for option data setting)

## EEPROM option code No. setting procedure

1. Power Cord plug-in and Power SW on, then "EEPROM option data setting" screen to the left will be displayed.  
# If not, press the "Child lock" key on the Remote controller to switch with "CANAL" because the VCR set has "CANAL IC" inside.  
# If your VCR set has "NTSC Line Record", switch the VCR set to "AV" mode after inputting the Line Video signal. If not, the Blue back screen may be shown in to screen.
2. Refer to option data in the next page and input the value to the "HEX" field using "EDIT" key only, and then press the "OK" key on the Remote controller.
3. Check the basic operation (Tuner/PB/CUE/REV/AV/REC mode...)
4. Initialize the EEPROM IC pressing the "REC" key on the Front Panel and "CLEAR" key on the Remote controller at the same time.

# SPECIFICATIONS

## General

Power	: 200~240V, 50Hz
Power consumption	: Approx. 12 watts(Energy Saving mode : 3 watts)
Video Head system	: Rotary 2heads, helical scanning system (2HD Model) Double azimuth 4 heads, helical scanning system (4HD MONO, 4HD Hi-Fi Model)
Tape speed	: 23.39 mm/sec (SP mode)11.69 mm/sec(LP mode)
Tape format	: Tape width 1/2" (12.7 mm high density VHS tape)
Maximum recording time	: 4 hours in SP mode/8 hours in LP mode (with E-240 tape)
Rewind time	: Approx. 150 sec. (with E-180 tape)
Dimensions (W X H X D)	: 360 x 94.5 x 270 mm
Weight	: 9.0 lbs. (4.0 kg)
Operating temperature	: 41°F-95°F (5°C-35°C)
Operating humidity	: Less than 80%
Timer	: 24 hours display type

## Video

Television system	: CCIR standard (625 lines, 50 fields) PAL colour signal
Recording format	: PAL B/G (HR-J282EU/J283EU/J582EU/J583EU/J285EU/ J290EU/293EU/J585EU/J590EU/J593EU) PAL N (HR-J295EK/J595EK) PAL SECAM-L (HR-J295MS/J595MS)
Input level	: VIDEO IN (SCART, RCA type) 1.0 Vp-p, 75 ohm, unbalanced
Output level	: VIDEO OUT (SCART type) 1.0 Vp-p, 75 ohm, unbalanced
Signal to noise ratio	: More than 43 dBm

## Audio

Input level	: AUDIO IN (SCART type) Scart type : -6.0dBm, more than 10kΩ
Output level	: AUDIO OUT (SCART, RCA type) Scart type : -6.0dBm, less than 1kΩ RCA type : -6.0 dBm, less than 1kΩ
Audio track	: Mono track & Hi-Fi track
Audio signal to noise ratio	: Normal : More than 70 dBm(JIS A filter)
Audio dynamic range	: Hi-Fi audio : More than 85 dBm(JIS A filter)

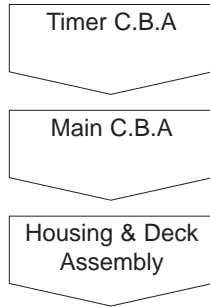
- Design and specifications are subject to change without notice.

 :Hi-Fi Model only

# SECTION 2 CABINET & MAIN CHASSIS SERVICE METHOD

## Electrical Part

(1) Re-assembly Flow for service like Fig. 2-1

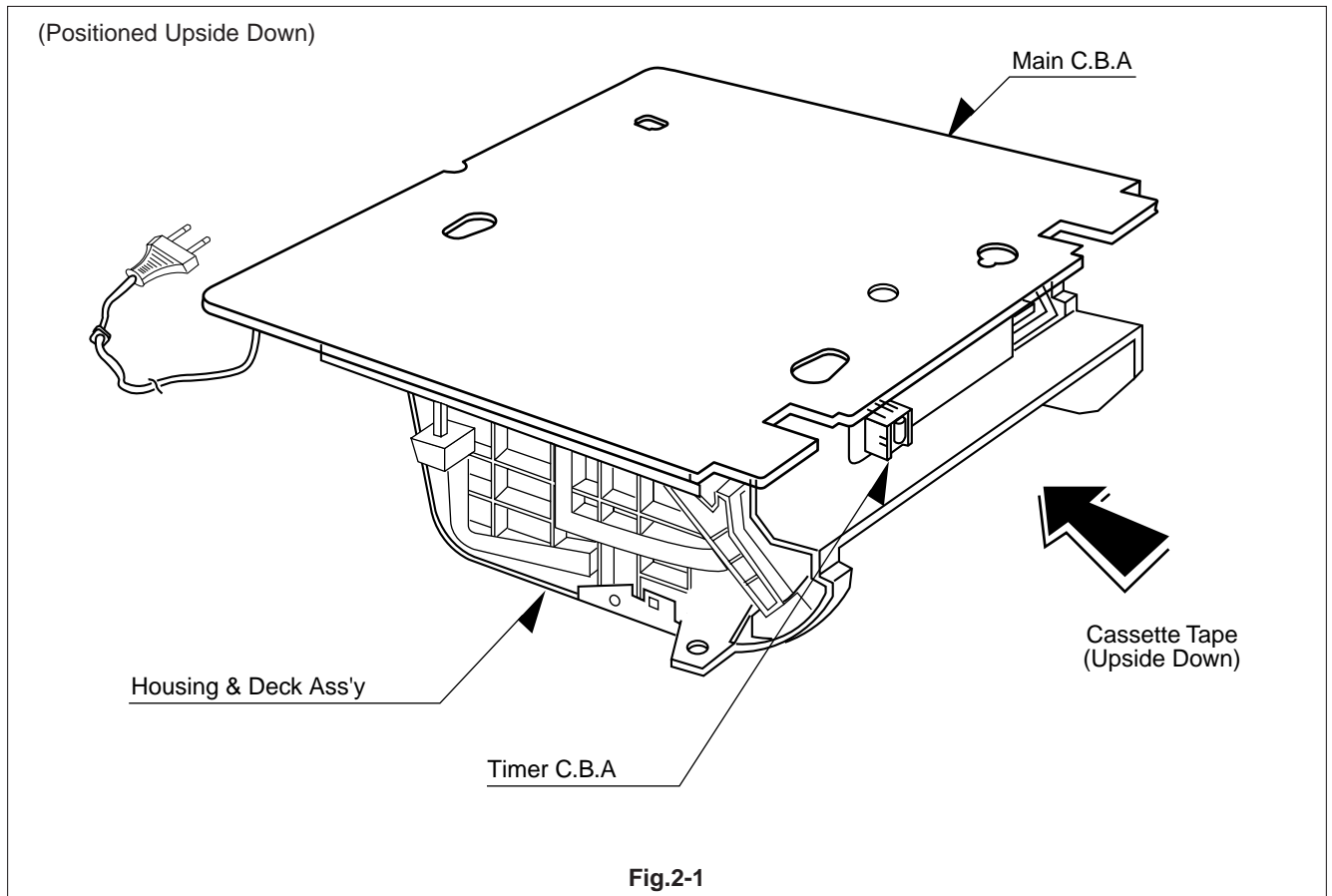


(2) To check and replace Electrical parts

- ① Re-assemble the unit according to No.1) Re-assembly Flow.
- ② Place the unit like Fig. 2-1
- ③ Check and replace Electrical parts.

### NOTE :

- ① Insert Video Cassette Tape inversely like Fig. 2-1 to check and replace defective parts.
- ② In disassembling and reassembling, be careful not to damaged CST switch.

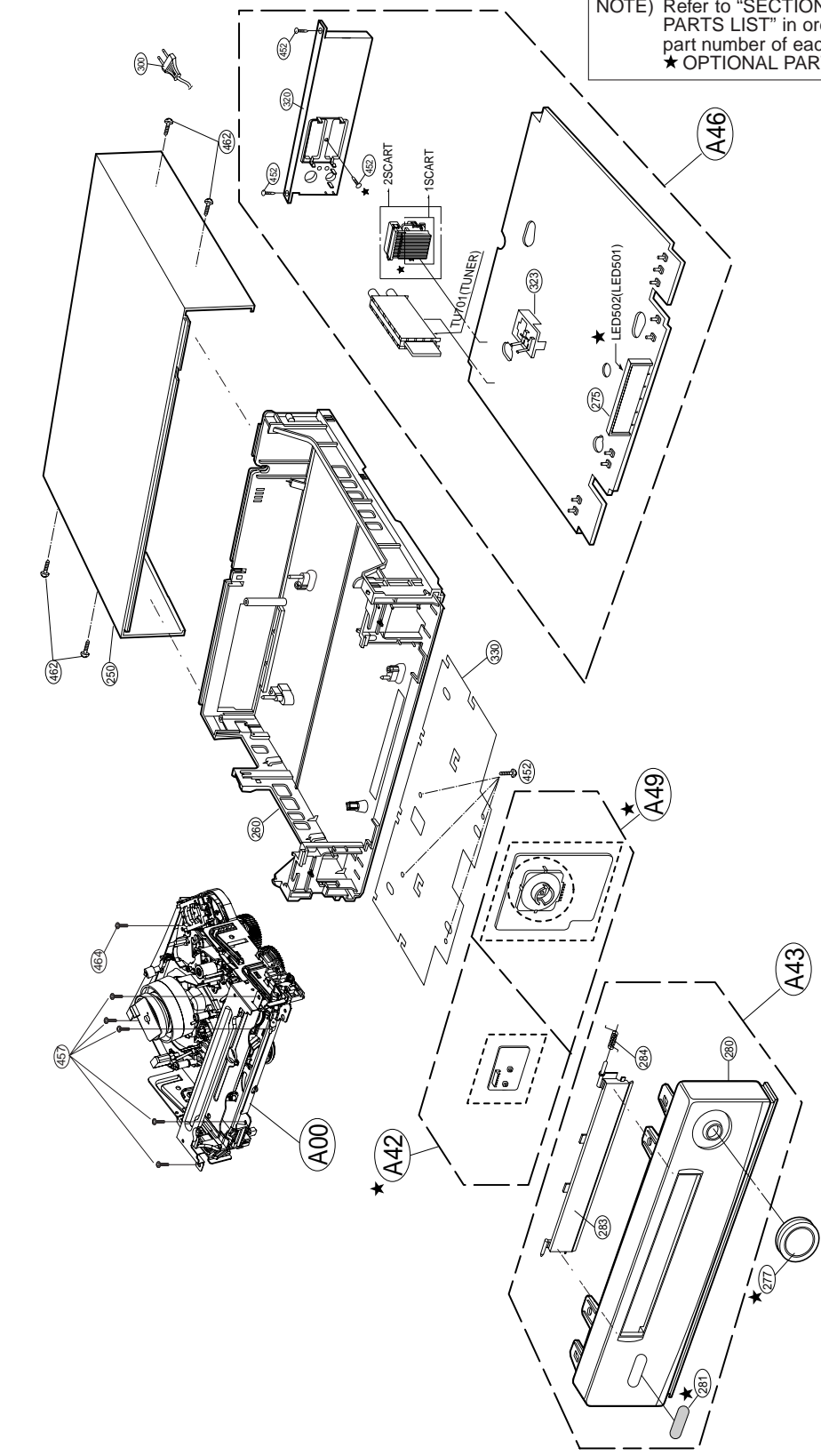


# EXPLODED VIEWS

## 1. Cabinet and Main Frame Section

NOTE) Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.  
 ★ OPTIONAL PARTS

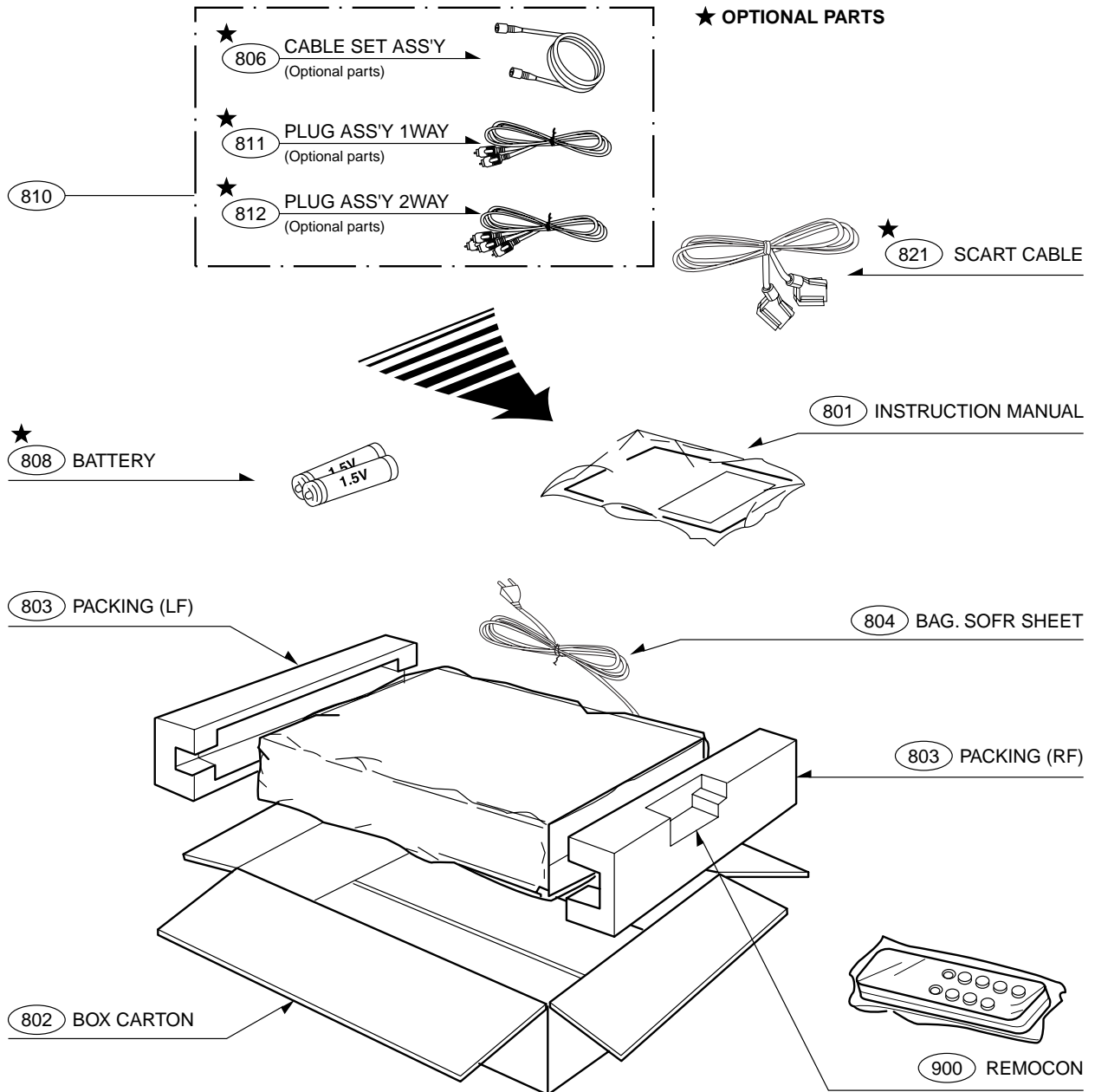
5  
4  
3  
2  
1



A B C D

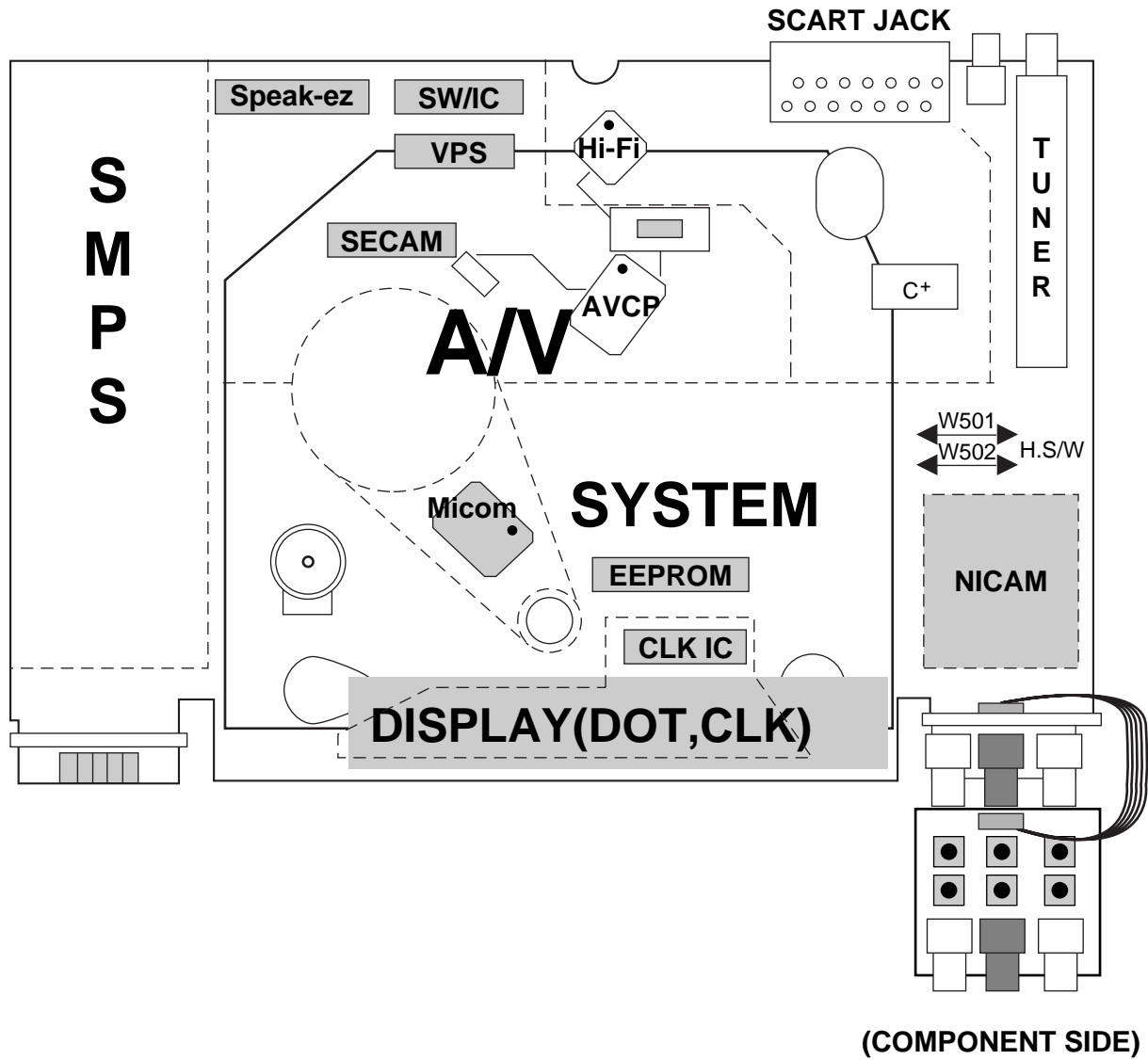
## 2.Packing Accessory Section

NOTE) Refer to "SECTION REPLACEMENT PARTS LIST" in order to look for the part number of each part.



# SECTION 3 ELECTRICAL ELECTRICAL ADJUSTMENT POINTS ARRANGEMENT

: Measurement point  
 : Adjustment point



# ELECTRICAL ADJUSTMENT PROCEDURES

## 1. Servo Adjustment

- 1) PG Adjustment
  - Test Equipment

- |  |
|--|
| a) OSCILLOSCOPE<br>b) PAL TEST TAPE (VHS SP)<br>c) JIG REMOCON (AUTO PG SETTING) |
|--|

- Adjustment And Specification

MODE	MEASUREMENT POINT	ADJUSTMENT POINT	SPECIFICATION
PLAY	V.Out H/SW(W501, W502)		$6.5 \pm 0.5H$

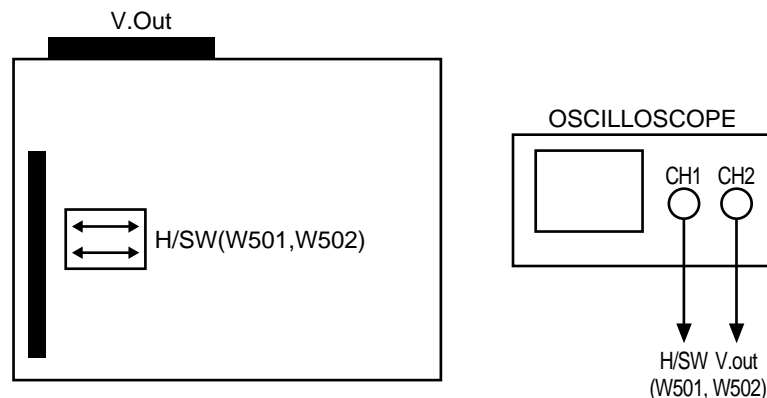
### • Adjustment Procedure

- a) Insert the PAL SP Test Tape and play.  
 Note - Adjust the distance of X, pressing the Tracking(+) or Tracking(-) when the "ATR(OSD on monitor)" is blink after PAL SP test Tape is inserted.
- b) Press the Auto PG KEY on JIG Remocon(1'st) or Press "Play" key on set and "0" key on Remocon.(Then check the light 4 Dot LED on CLK/LED - TRK is a Initial)
- c) Press the Auto PG Key on JIG Remocon again (2'nd) or press "Play" key on set and "0" key on Remocon again.(Then check the blink 4 Dot LED - At regular 0.25sec internal, Then check blink "PG waveform" on oscilloscope(MONO Model)).

### • Check the PG

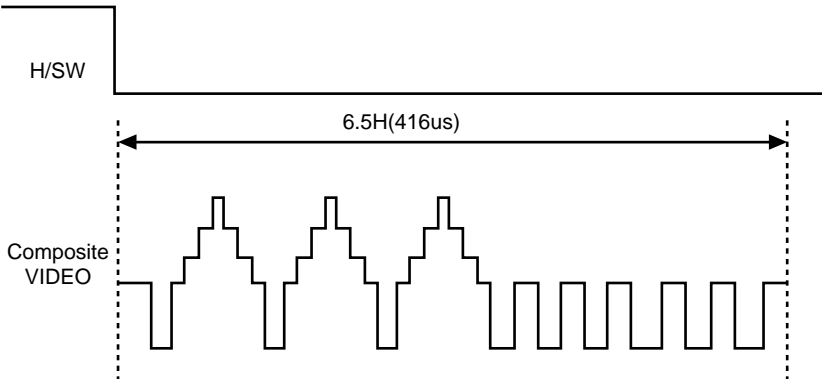
- a) Connect the CH1 of the oscilloscope to the H/SW and CD2 to the Video out for the VCR.
- b) Trigger the mixed Video Signal of CH2 to the CH1 H/SW(W501, W502), and then check the distance (time difference), which is from the selected A(B) Head point of the H/SW(W501, W502) signal to the starting point of the vertical synchronized signal, to  $6.5H \pm 0.5H$  ( $416\mu s$ ,  $1H=64.0\mu s$ ).

### • CONNECTION



# ELECTRICAL ADJUSTMENT PROCEDURES

- **WAVEFORM**



- **Attension and Reference**

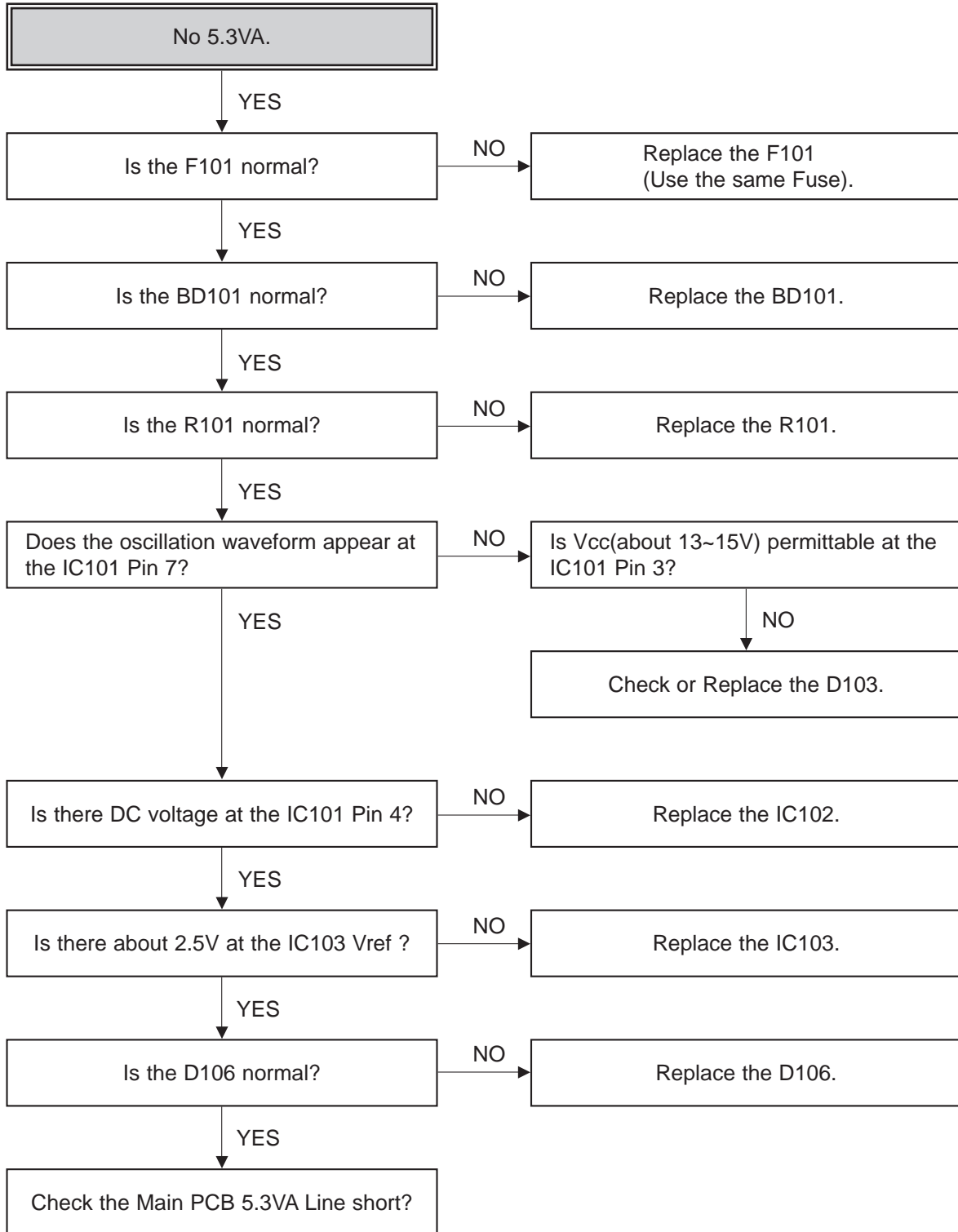
- a) The PG checking must do when RF Level is Maximum and SERVO system is Locking (MTR MODE)
- b) V.H/SW Level is 2Vpp.



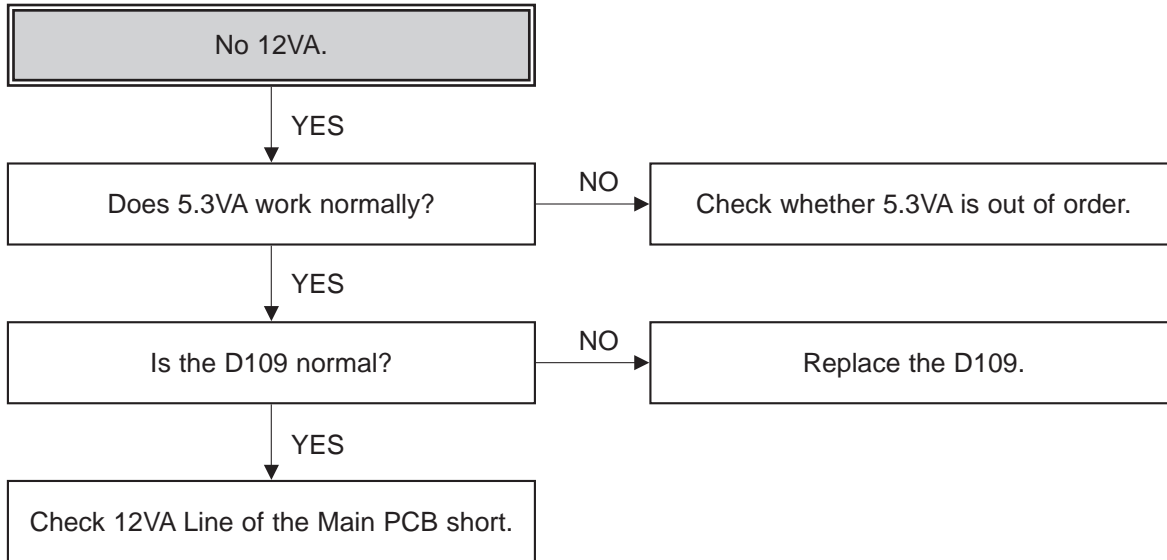
# ELECTRICAL TROUBLESHOOTING GUIDE

## 1. Power Circuit(SMPS)

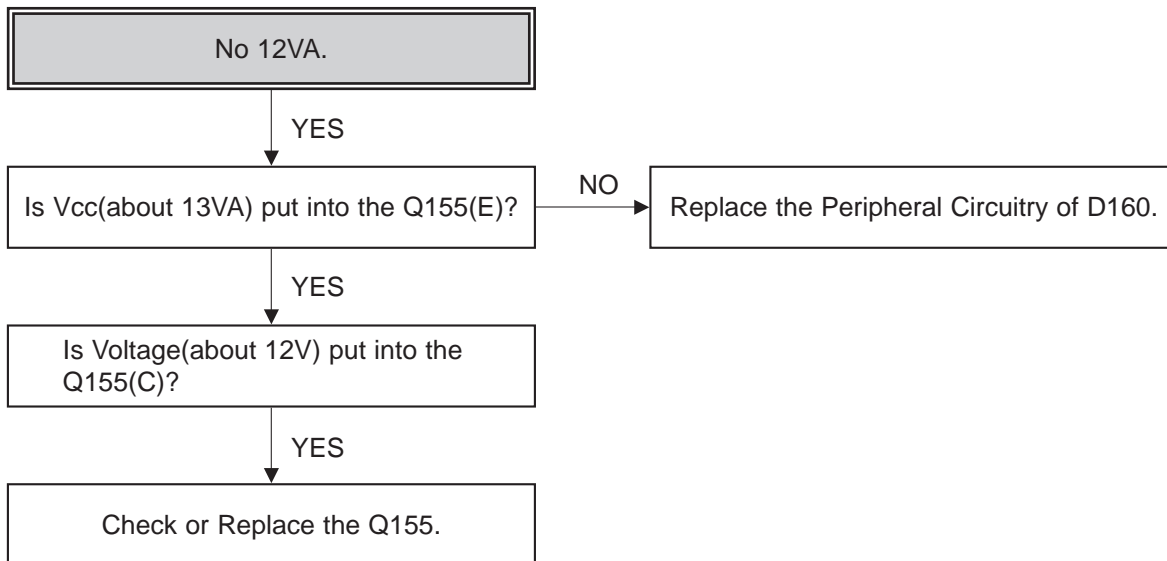
(1) No 5.3VA.



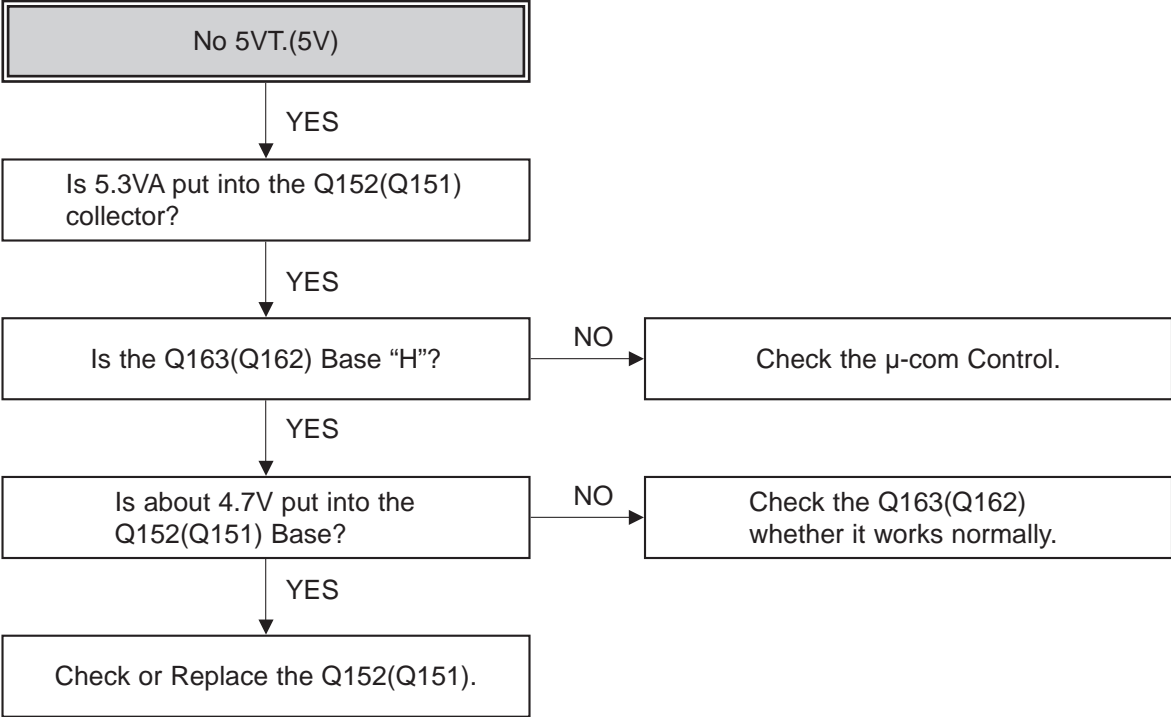
(2) No 12VA.(Capstan)



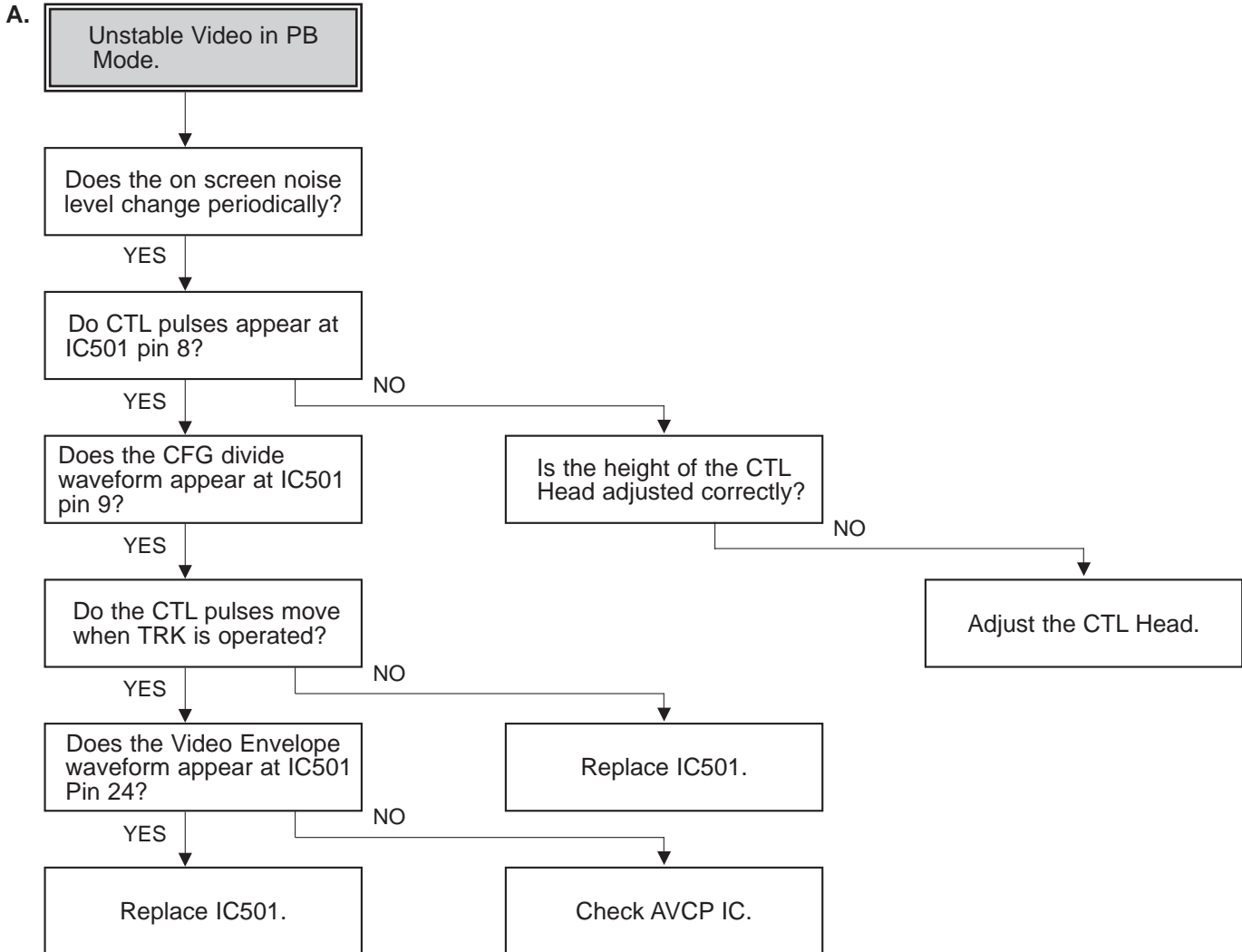
(3) No 12VA (CANAL, Buffer)

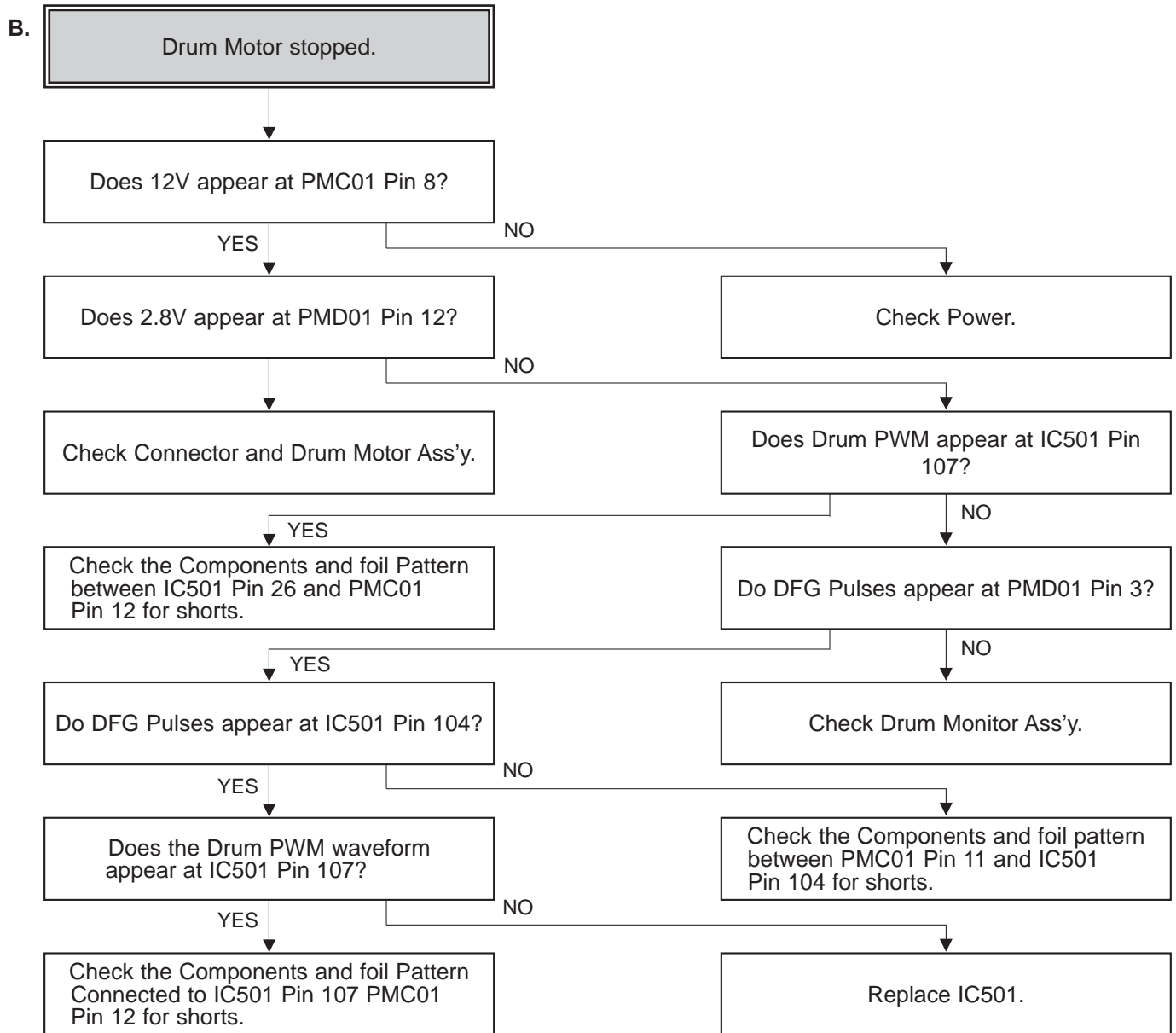


(4) No 5VT(5V)

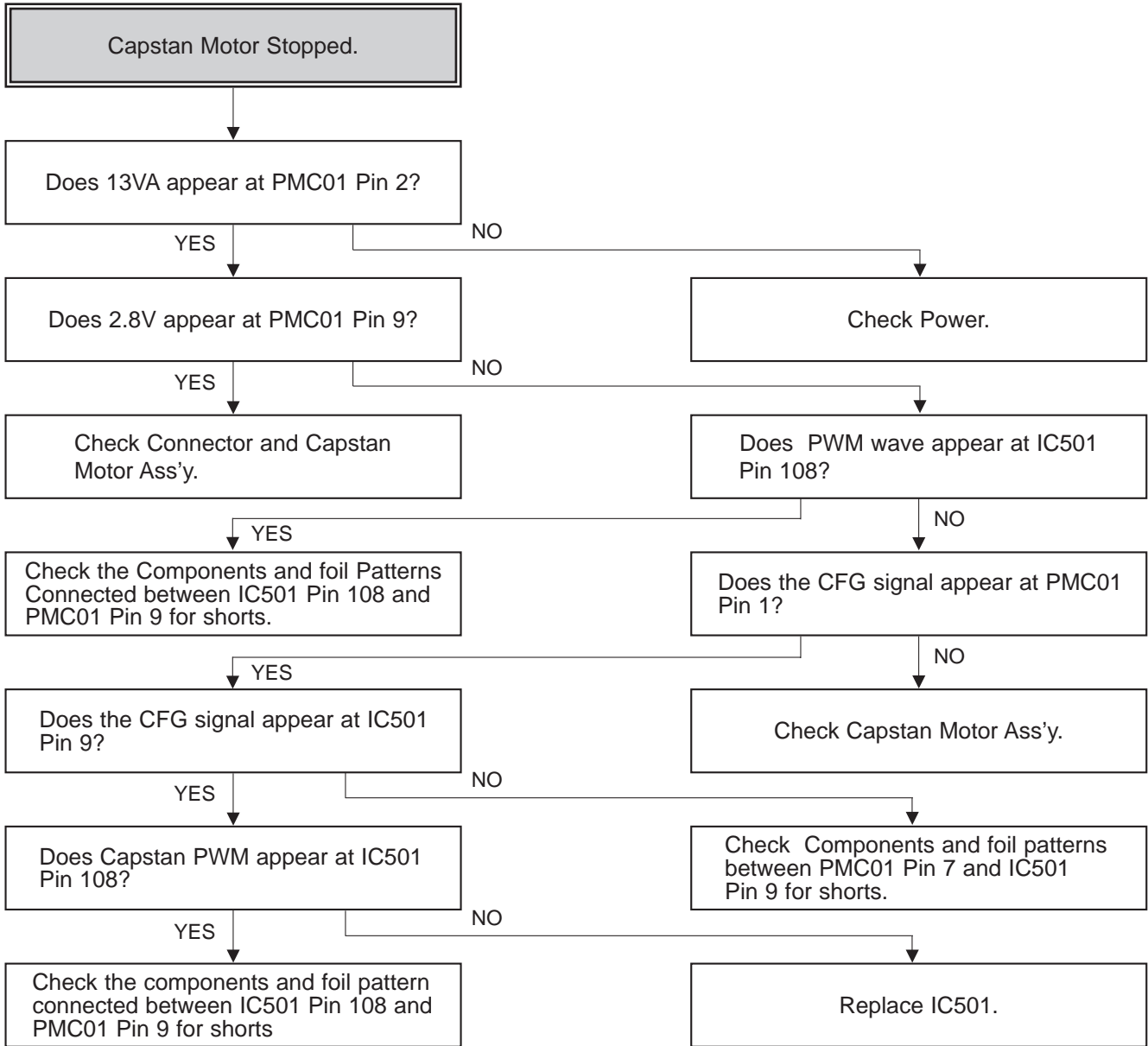


## 2. Servo Circuit

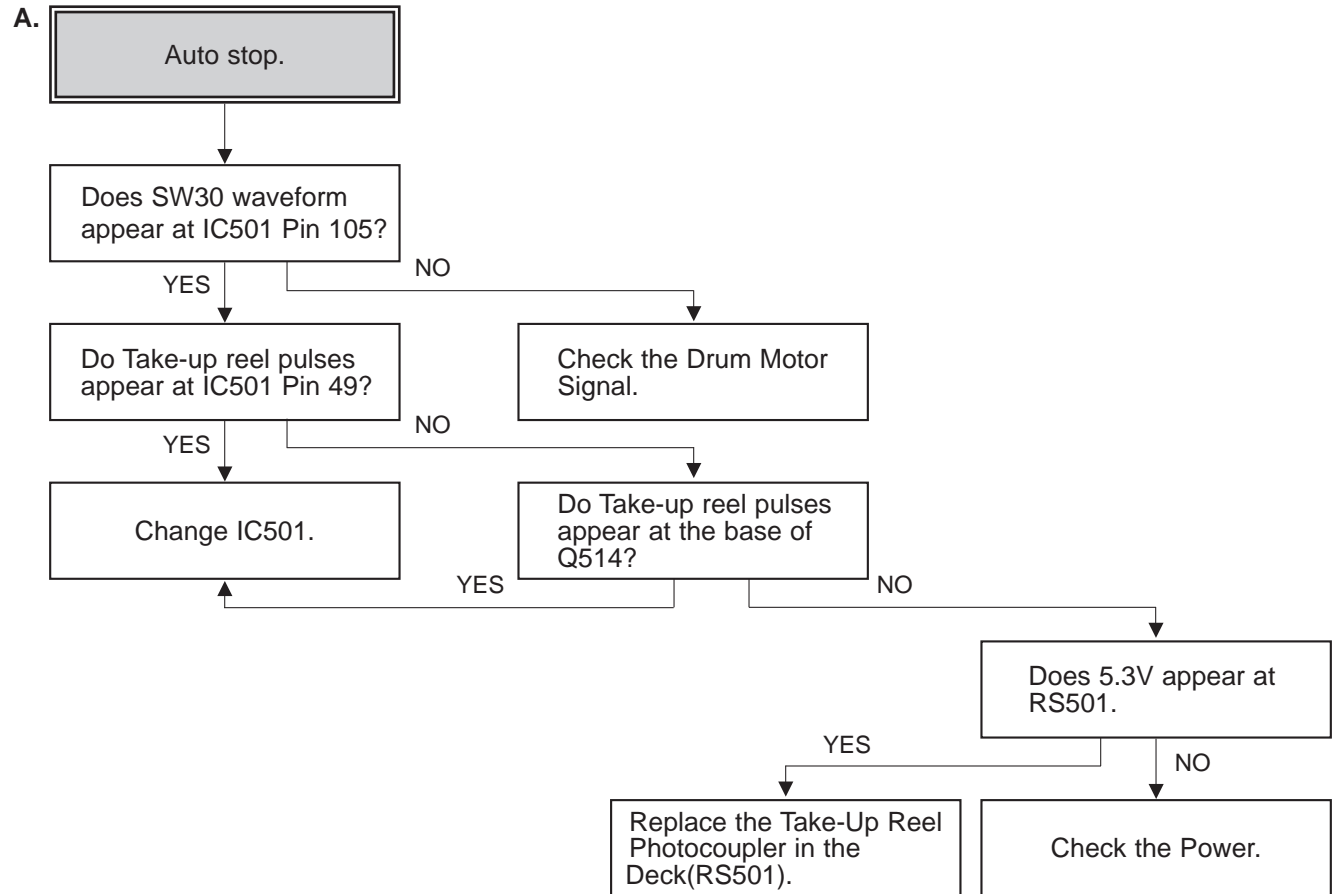


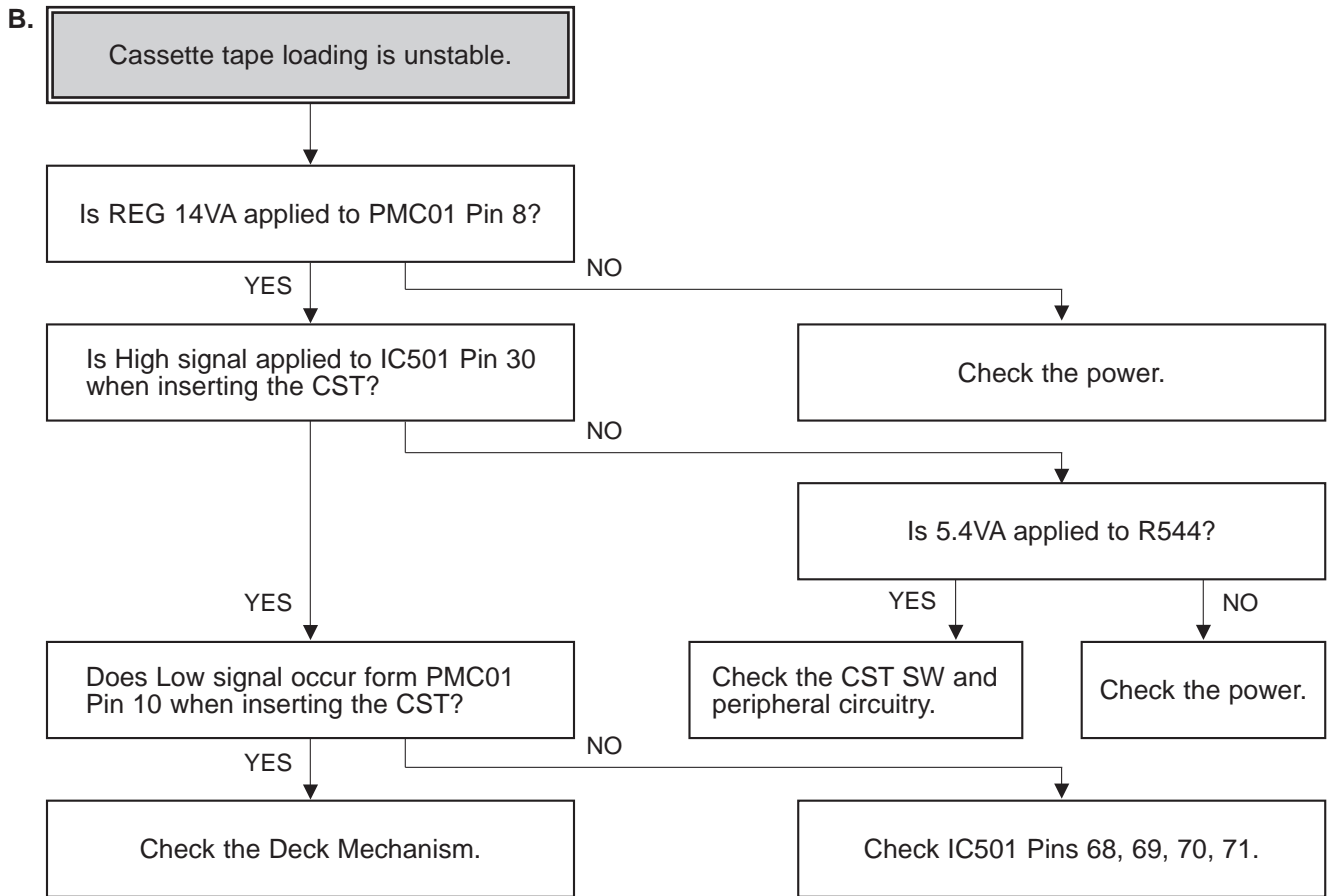


C.

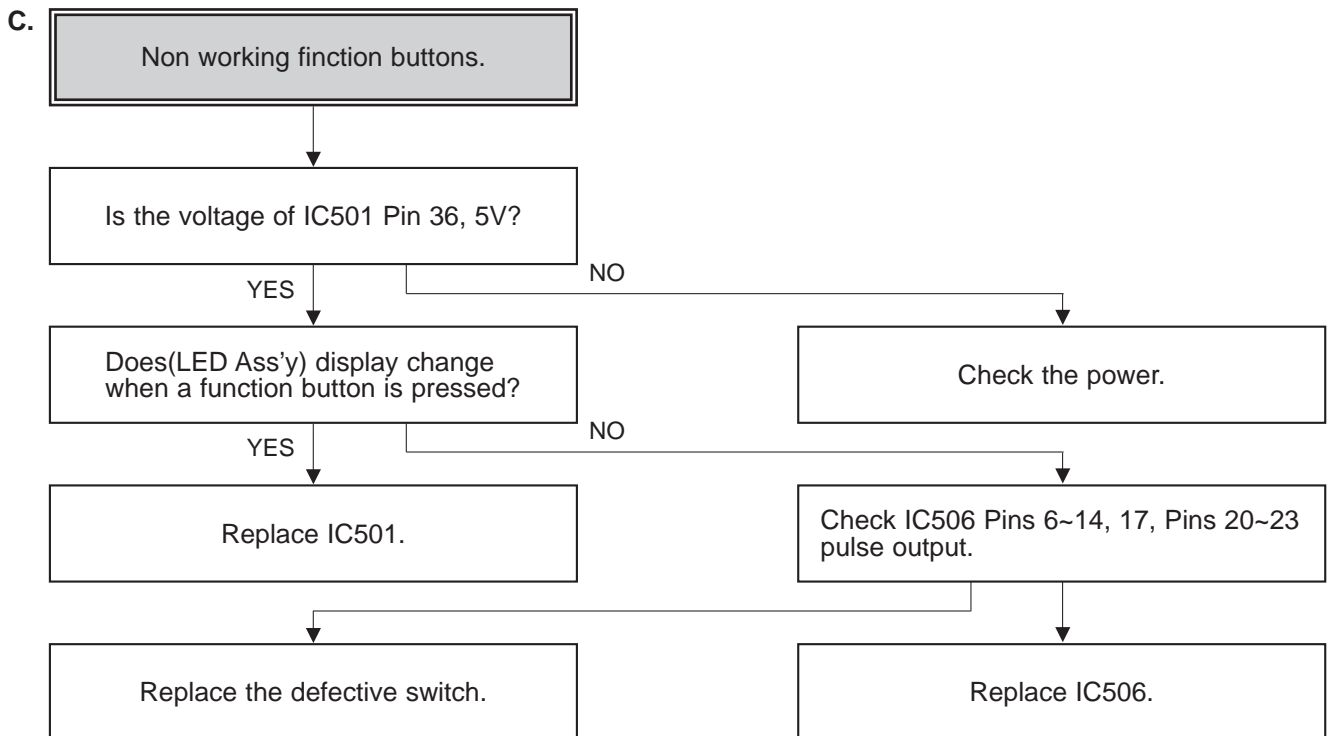


### 3. System & Front Panel Circuit





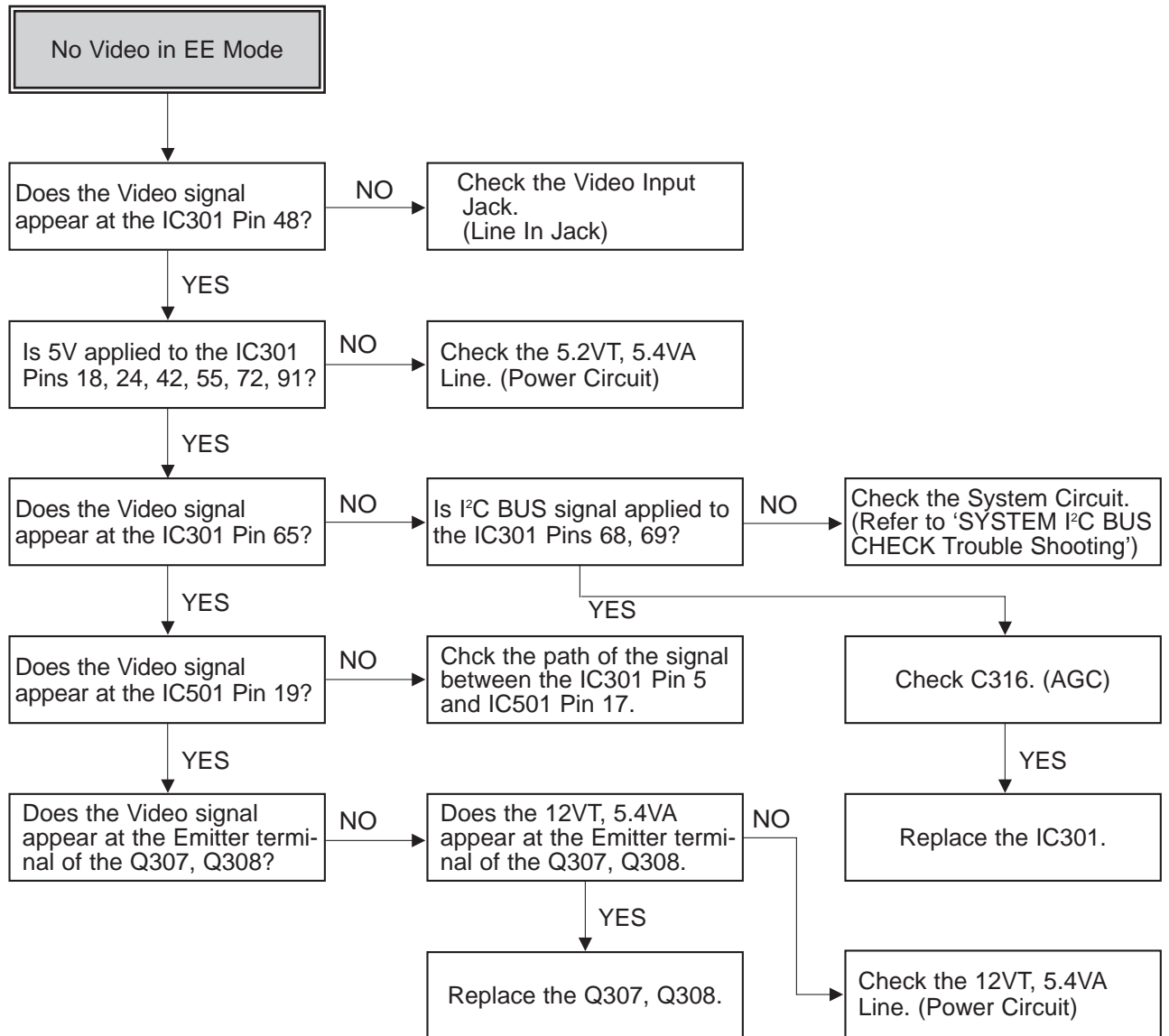
**NOTE :** Auto stop may also be caused by lack of lubrication, due to dried grease or oil.



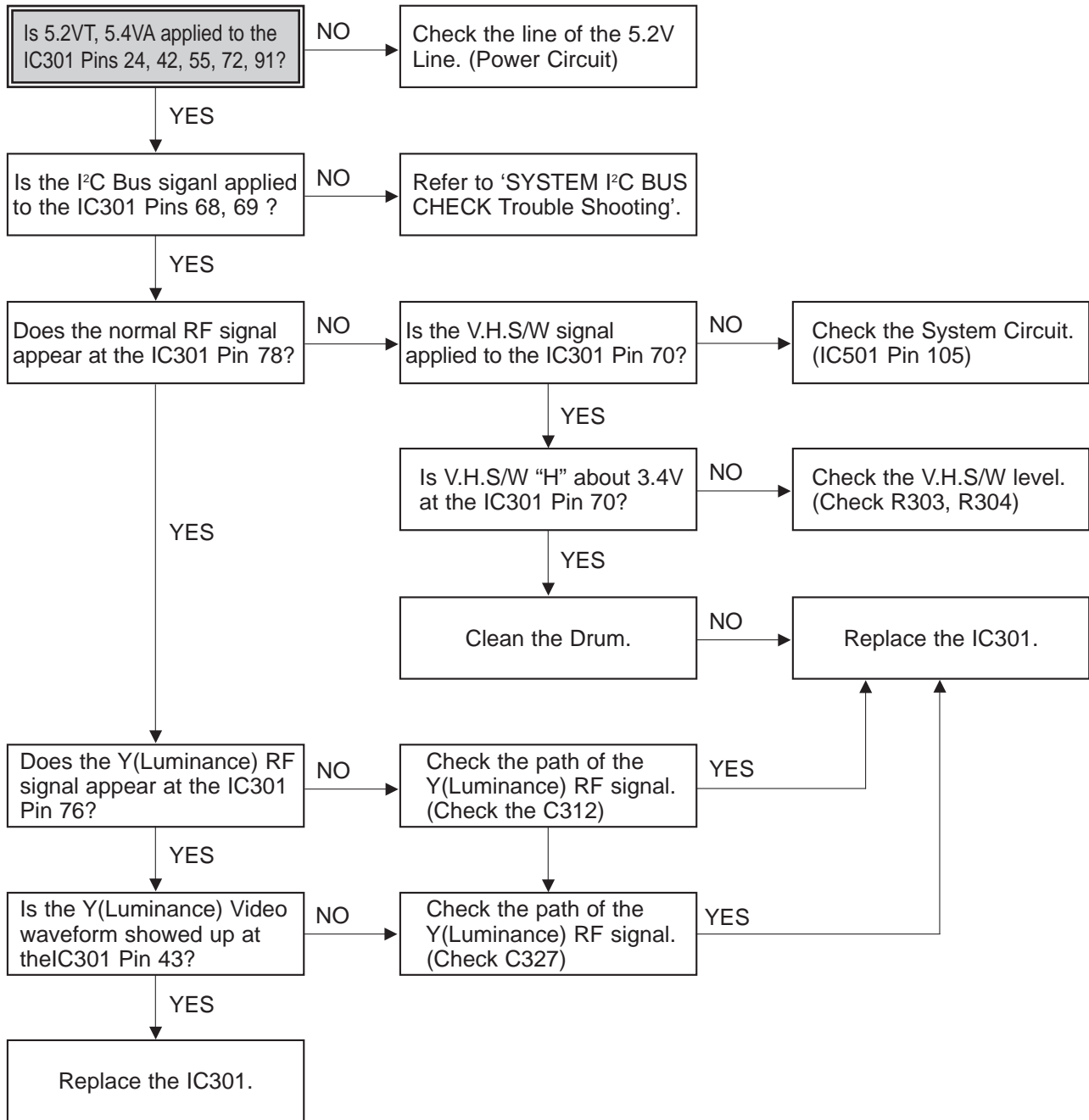


## 4. Y/C CIRCUIT

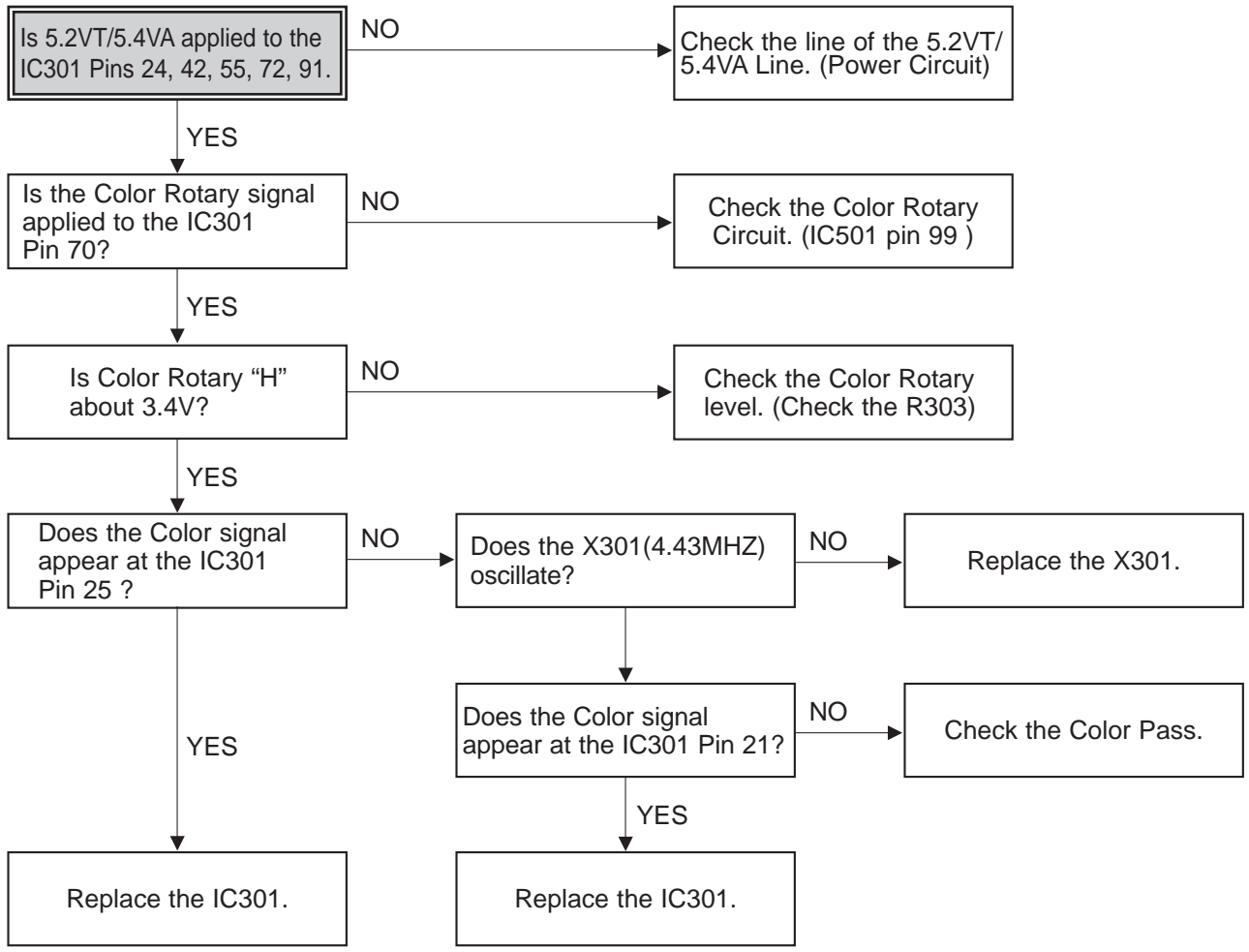
(1) No Video in EE Mode,



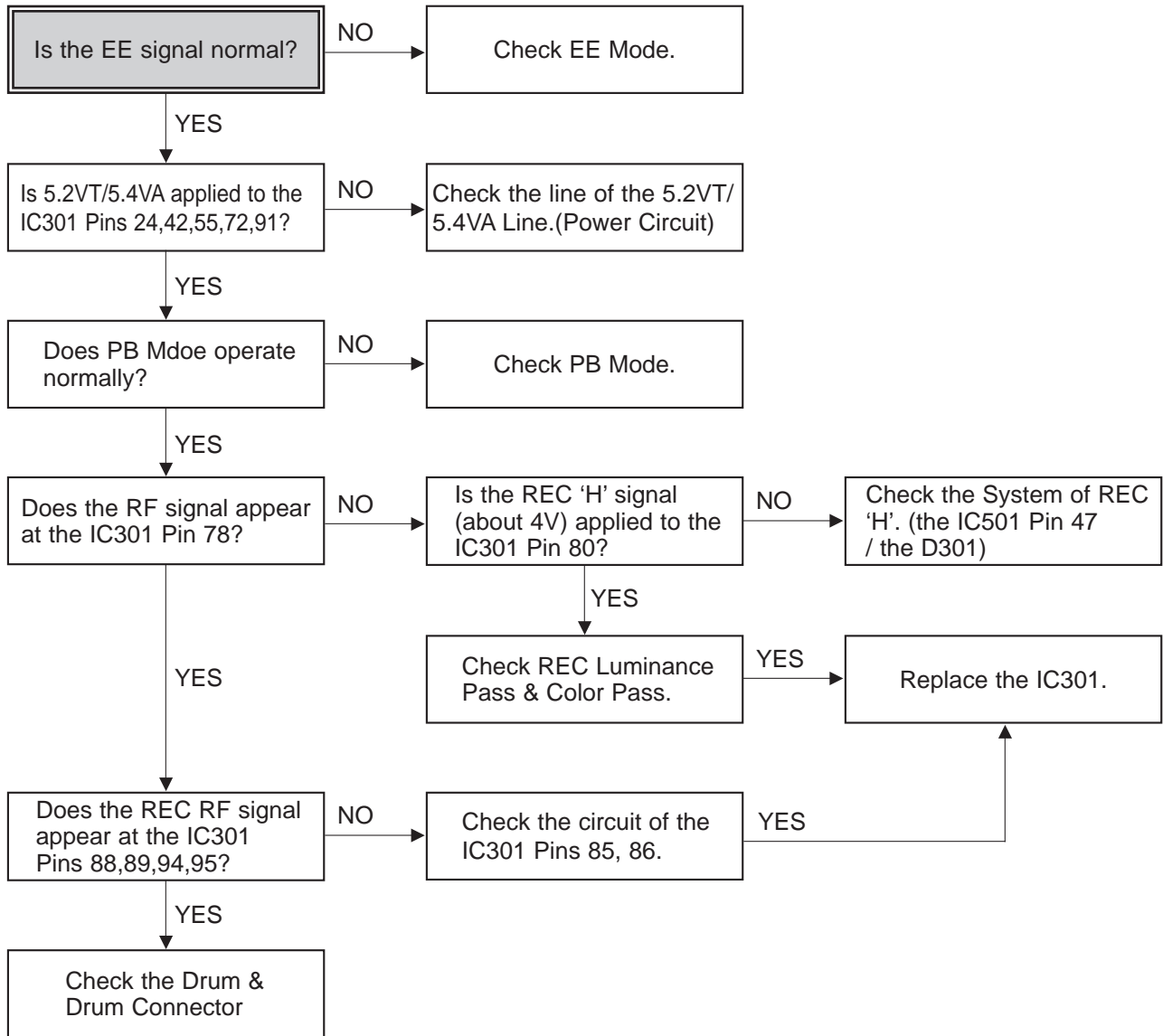
(2) When the Y(Luminance) signal doesn't appear on the screen in PB Mode,



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

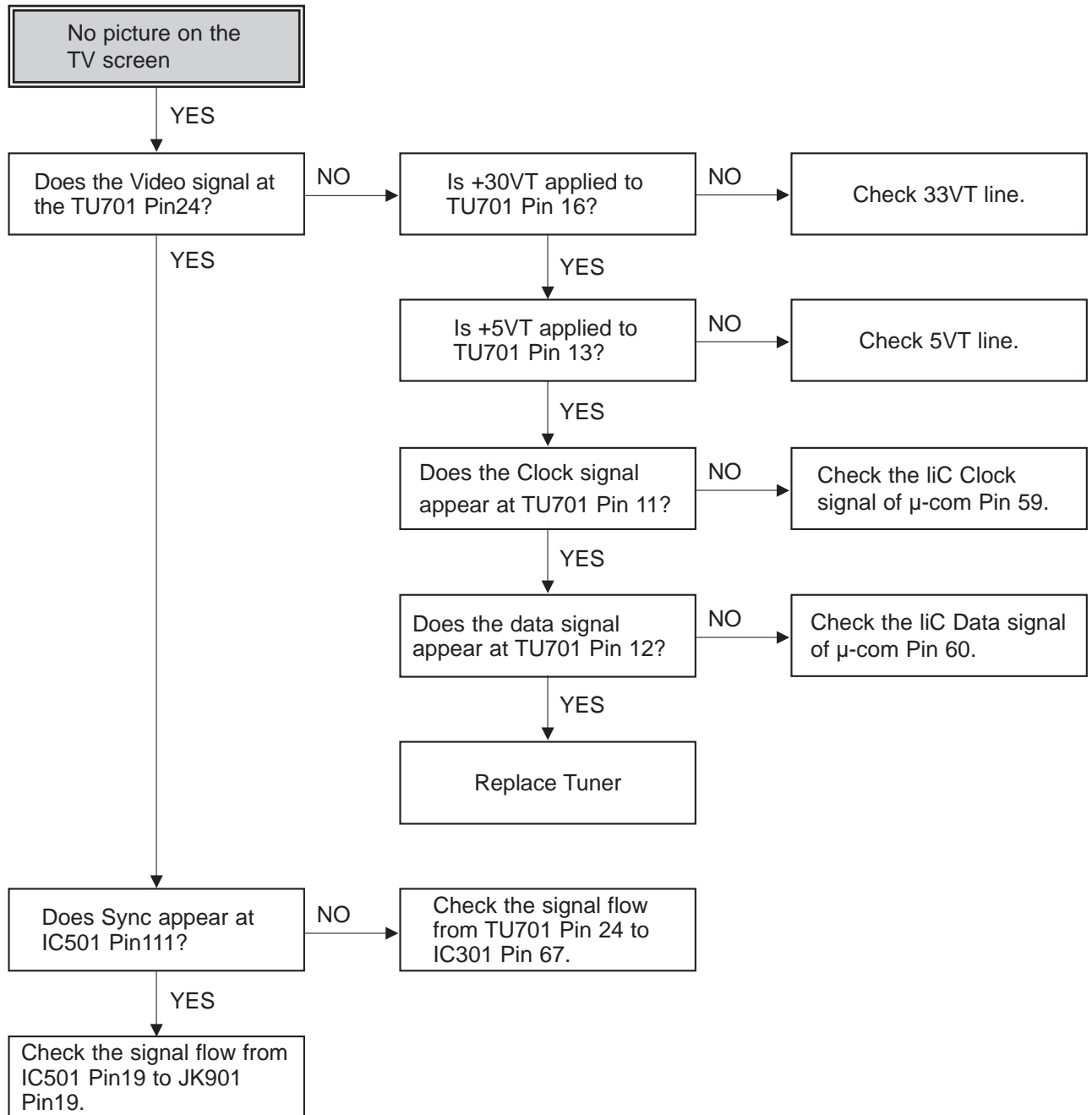


(4) When the Video signal doesn't appear on the screen in REC Mode,

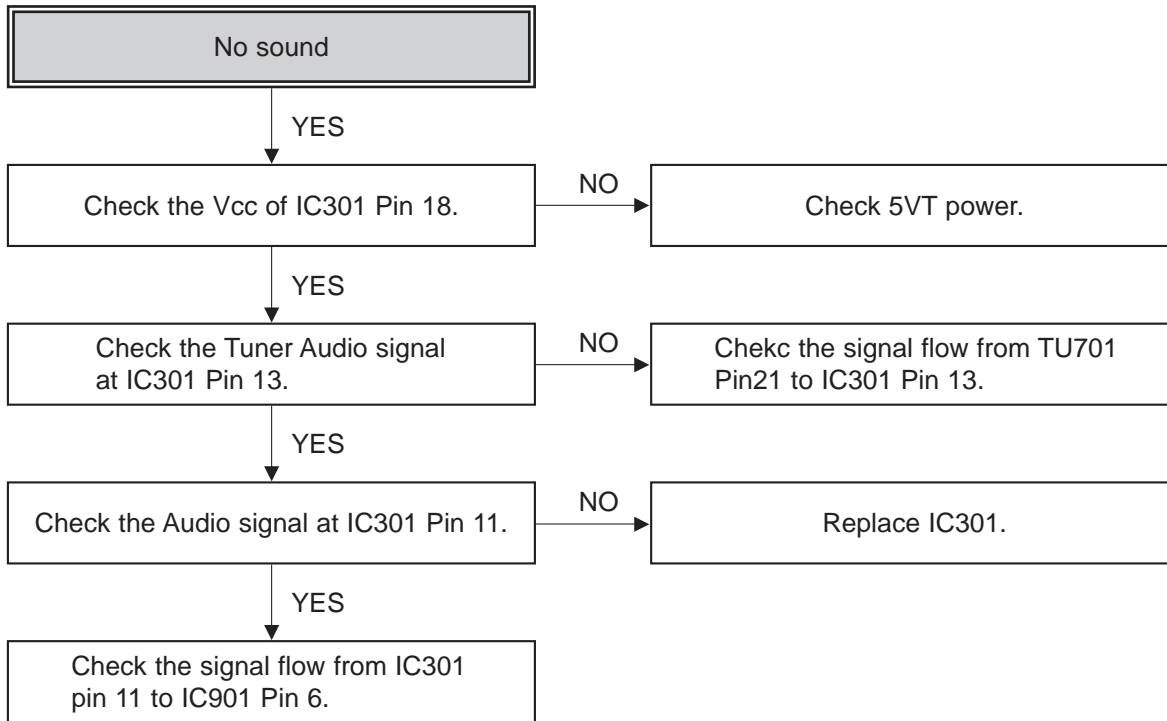


## 5. Tuner/IF circuit

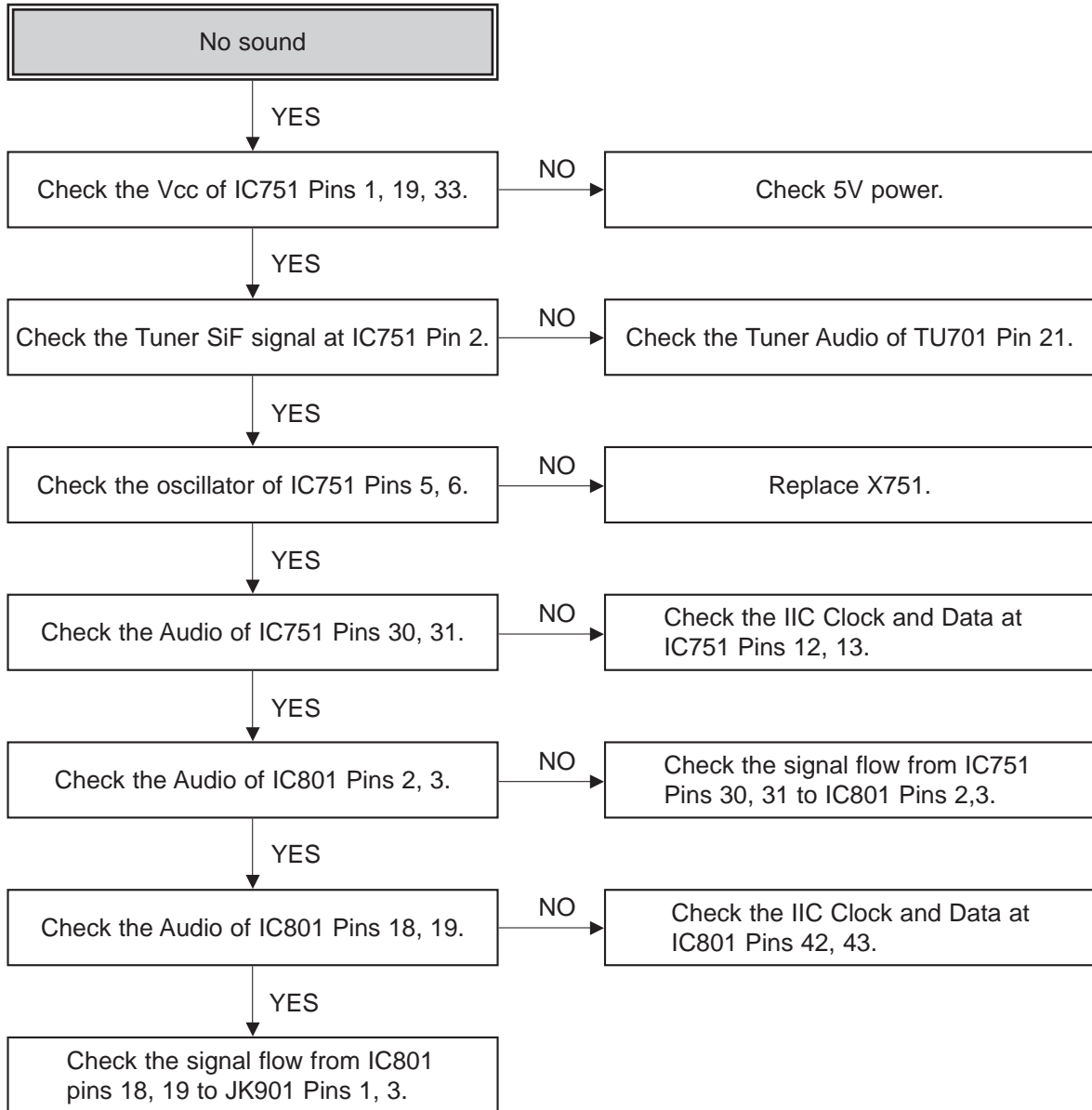
(1) No picture on the TV screen



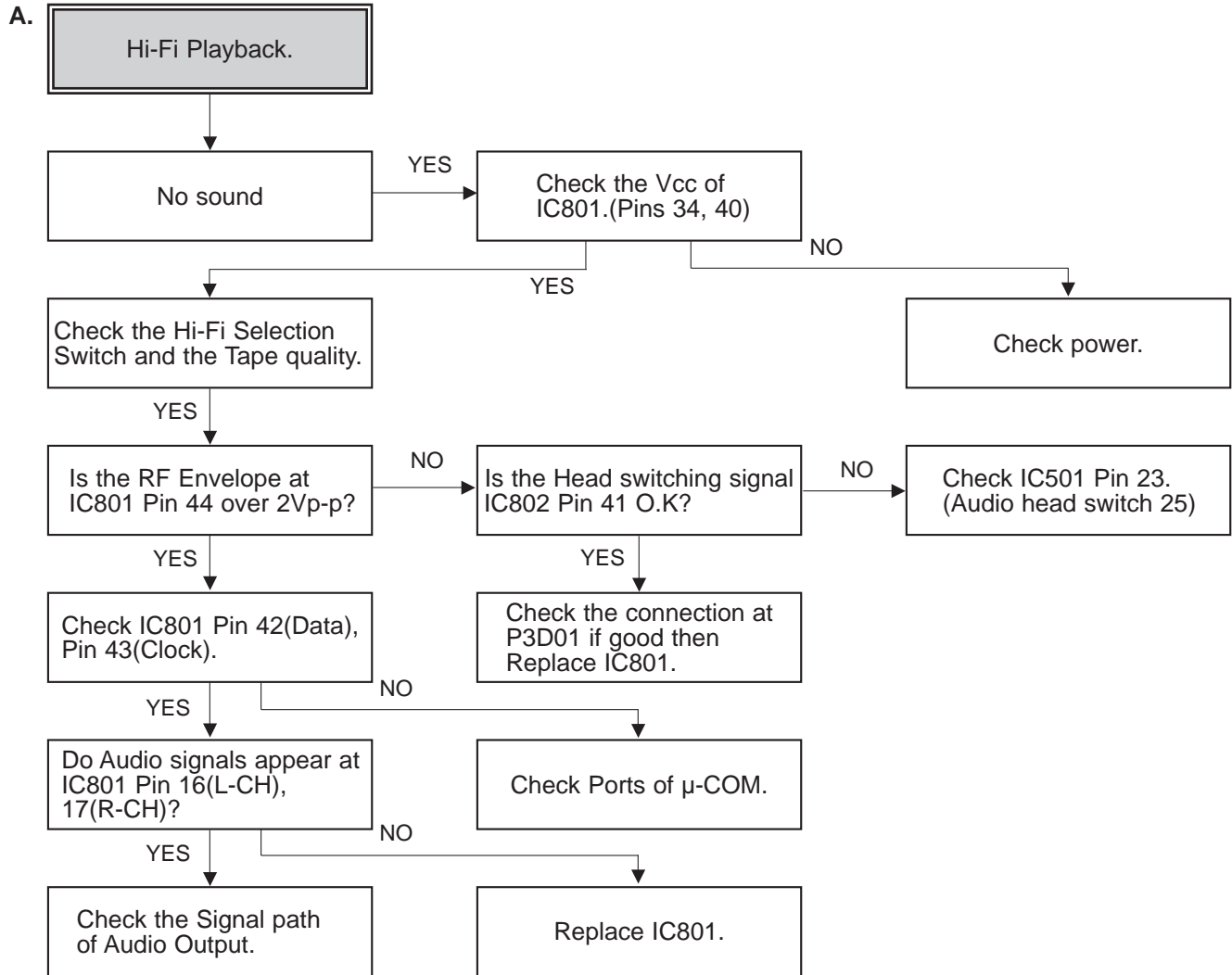
(2) No sound (Mono Model)



(3) No sound (Hi-Fi Model)

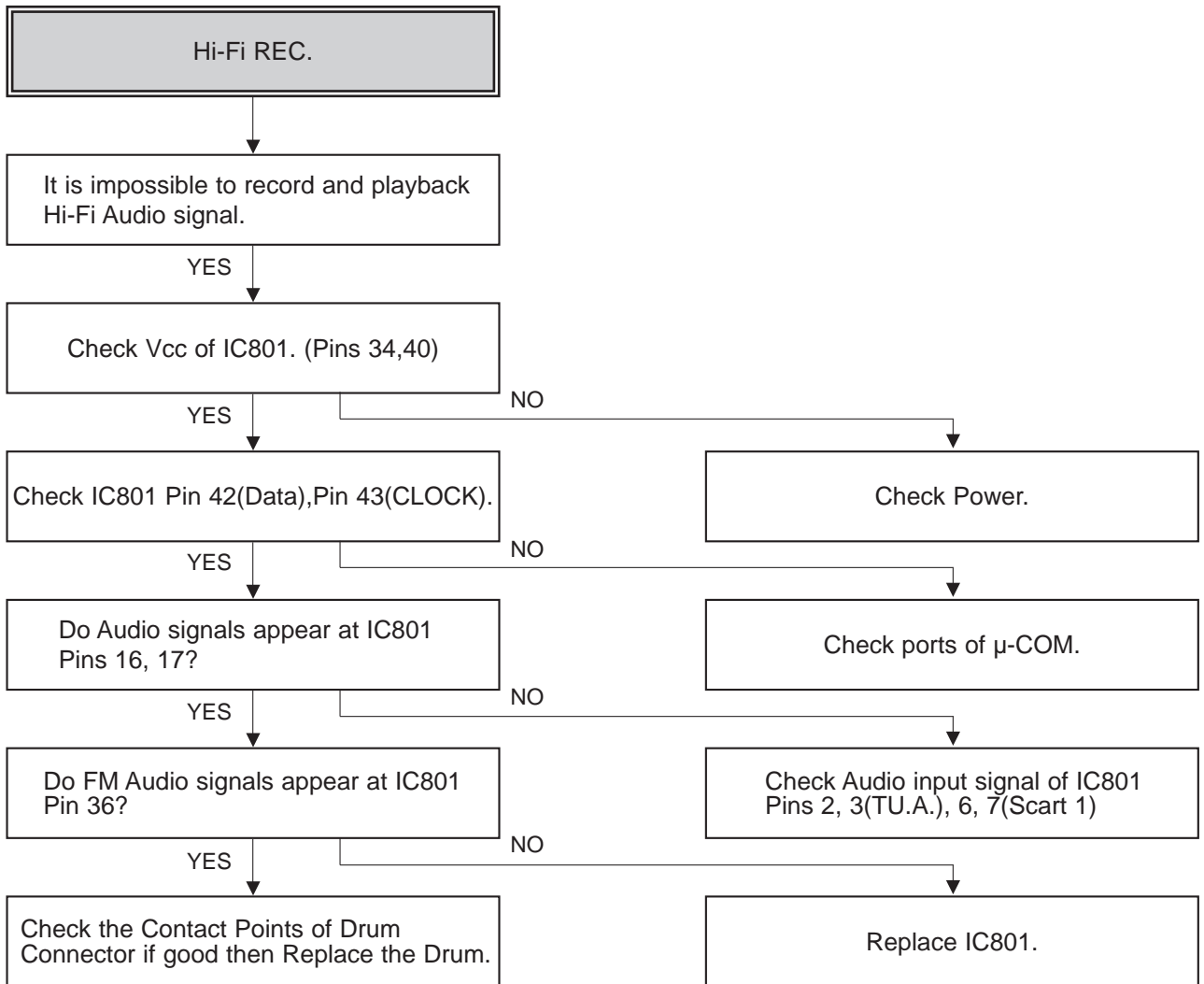


## 6. Hi-Fi Circuit (Hi-Fi Model)





B.





# SECTION 4 MECHANISM

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### MECHANISM TROUBLESHOOTING GUIDE

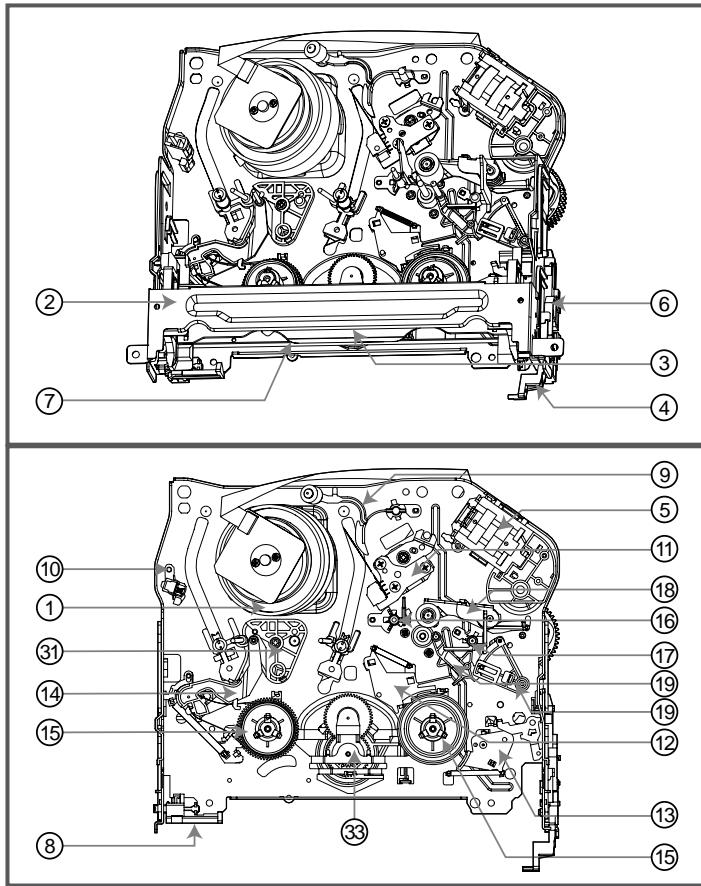
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### EXPLODED VIEWS

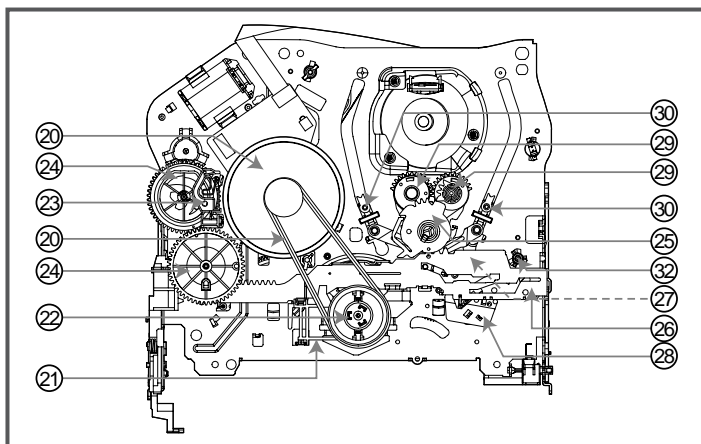
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# DECK MECHANISM PARTS LOCATIONS

## • Top View



## • Bottom View



**NOTE : When reassembly perform the procedure in the reverse order.**

- 1) When reassembling, confirm Mechanism and Mode Switch Alignment Position (Pefer to Page 4-14)
- 2) When disassembling, the Parts for Starting No. Should be removed first.

Pracedure Starting No.	Part	Fixing Type	Figure	View
1	Drum Assembly	3 Screw	A-1	T
2	Plate Top	2 Hook	A-2	T
2	3 Holder Assembly CST	Chassis Hole	A-2	T
2	4 Opener Door	Chassis Hole	A-2	T
5	Bracket Assembly L/D Motor	3 Hook	A-2	T
2,3,4	6 Gear Assembly Rack F/L	1 Hook, Chassis Hole	A-2	T
2,3,4,6	7 Arm Assembly F/L	Chassis Hole	A-2	T
8	Lever Assembly S/W	1 Hook	A-2	T
9	Arm Assembly Cleaner	Chassis Embossing	A-3	T
10	Head F/E	Chassis Embossing	A-3	T
11	Base Assembly A/C Head	1 Screw	A-3	T
2,3	12 Brake Assembly RS	1 Hook	A-4	T
2,3	13 Brake Assembly T	1 Hook	A-4	T
2,3	14 Arm Assembly Tension	2 Hook	A-4	T
2,3,12,13,14	15 Reel S/Reel T		A-4	T
16	Base Assembly P4	Chassis Embossing	A-5	T
17	Opener Lid	Chassis Embossing	A-5	T
17	18 Arm Assembly Pinch	Shaft	A-5	T
17	19 Lever T/Up / Arm T/Up	1 Hook	A-5	T
17,18	20 Belt Capstan/Motor Capstan	3 Screw	A-6	B
21	Lever F/R	Locking Tab	A-6	B
20, 21	22 Clutch Assembly D35	Washer	A-6	B
23	Break Assembly Capstan	Locking Tab	A-6	B
24	Gear Drive/Gear Cam	Washer/Hook	A-7	B
25	Gear Sector	1 Hook	A-7	B
20,21,23,24,25	26 Plate Slider	Shaft Guide	A-7	B
20,21,23,24,25,26	27 Lever Tension	1 Hook	A-7	B
2,3,14,20,21,25,23,24,26	28 Lever Spring	Locking Tab	A7	B
25	29 Gear Assembly P2/Gear Assembly P3	Boss	A-8	B
2,3,14,25,29	30 Base Assembly P2/Base Assembly P3	Chassis Slot	A-8	B
2,3,14,25,29	31 Base Loading	1 Screw	A-9	T
2,3,14	32 Base Tension	Chassis Embossing	A-9	B
2,3,20,21,22	33 Arm Assembly Idler	Locking Tab	A-9	T

R: Top, B:Bottom

# DECK MECHANISM DISASSEMBLY

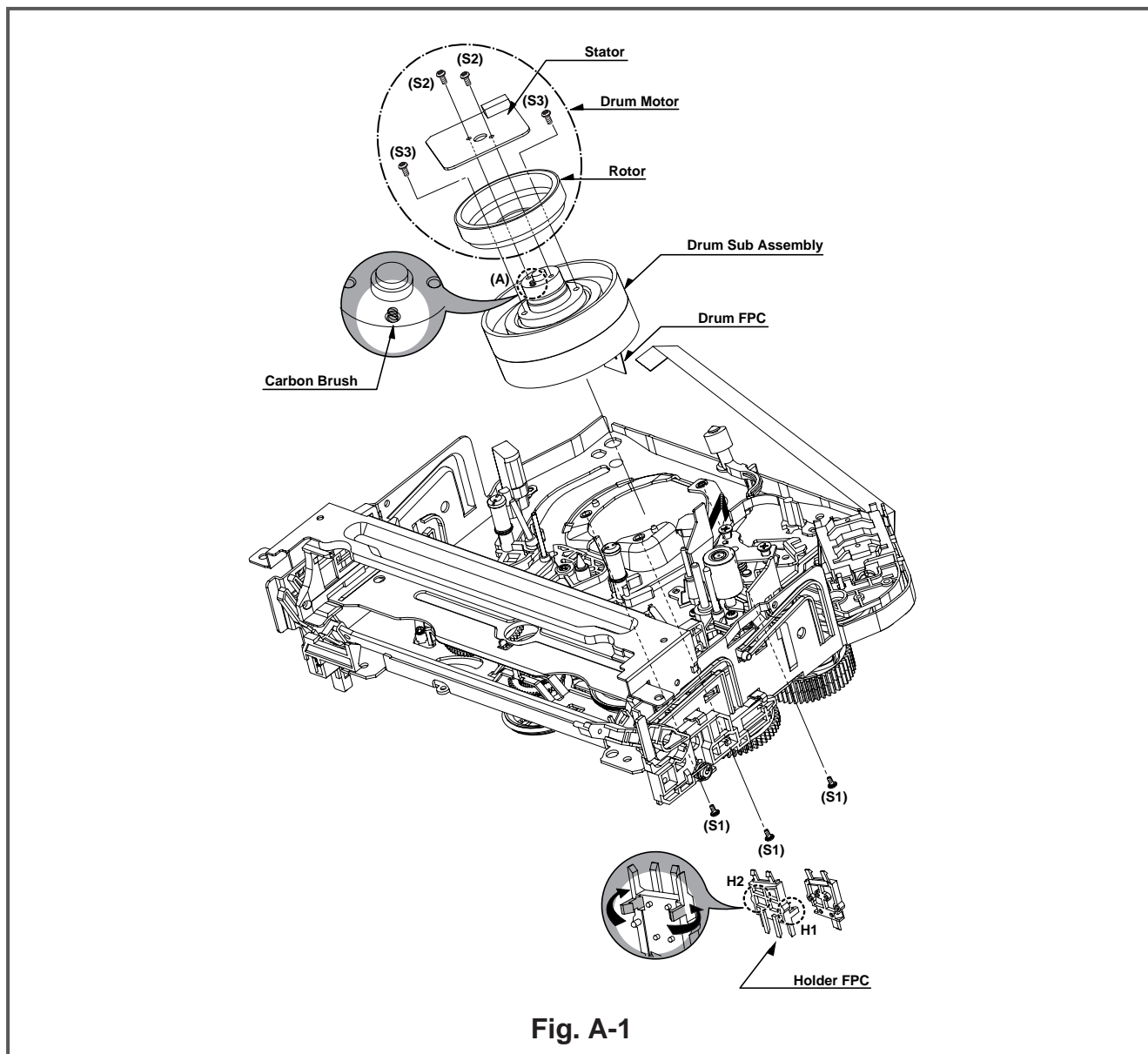


Fig. A-1

## 1. Drum Assembly (Fig. A-1-1)

- 1) Unplug the Drum FPC Connector.
- 2) Remove three Screws(S1) on bottom side and separate the Drum assembly.
- 3) Unhook (H1), (H2) and separate the Holder FPC and Cap FPC.

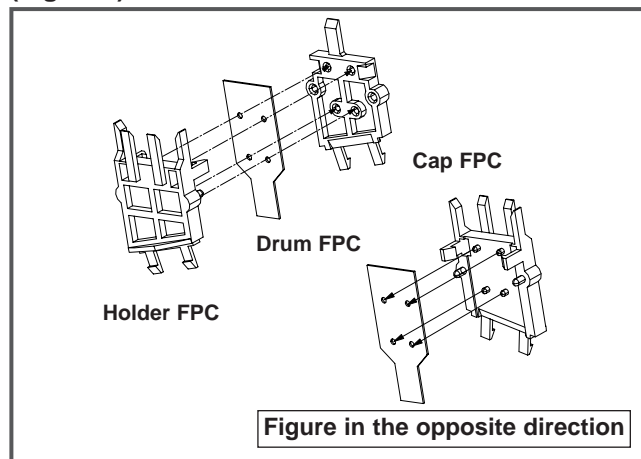
### 1-1. Drum Motor

- 1) Remove two Screws(S2) and disassemble the Stator of the Drum Motor.
- (2) Remove two Screws(S3) and separate the Rotor of the Drum Motor from the Drum Sub assembly.

#### NOTE

When reassembling, confirm (A) portion of the Drum Sub assembly whether the Carbon Brush is in there or not.

(Fig. B-1)



# DECK MECHANISM DISASSEMBLY

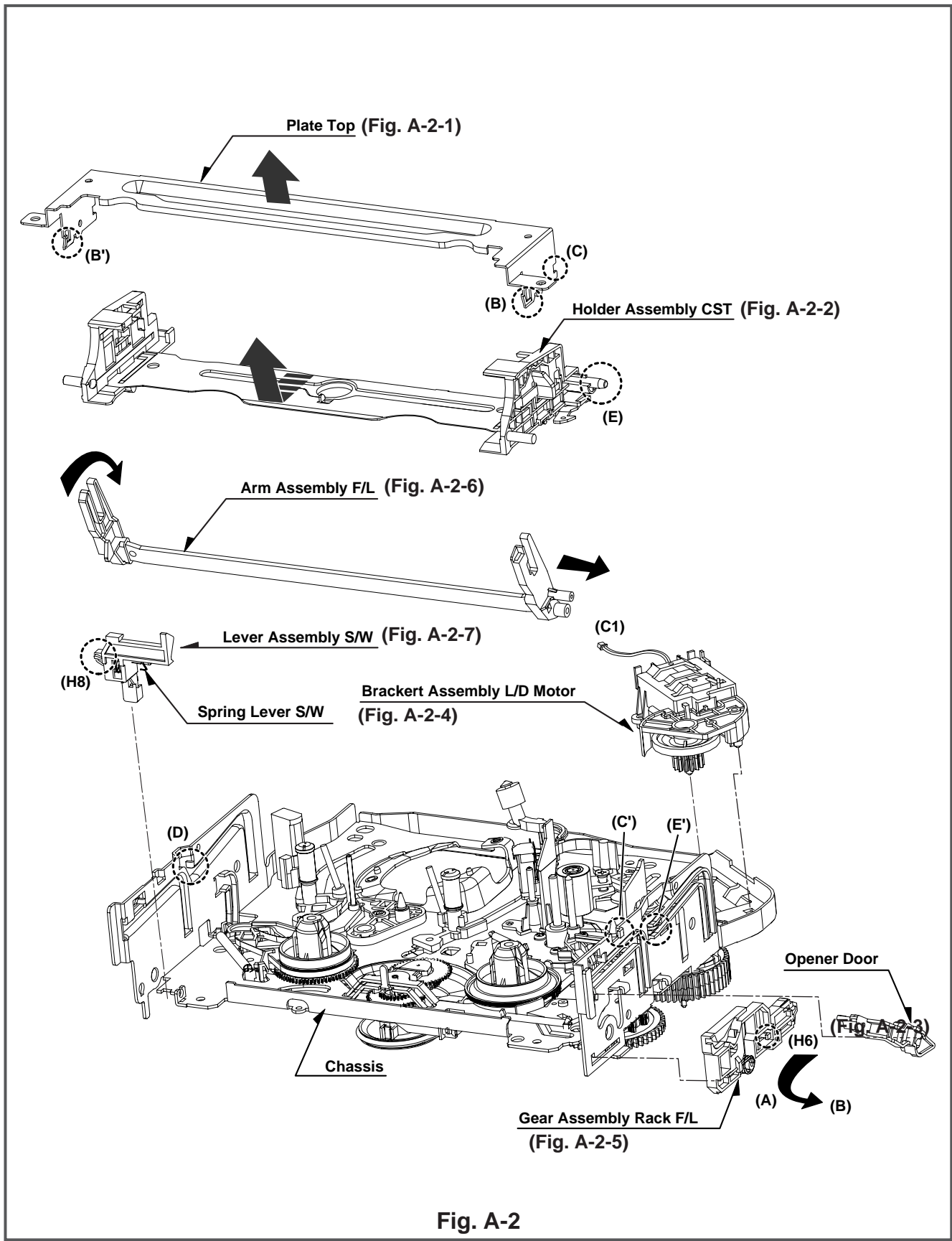


Fig. A-2

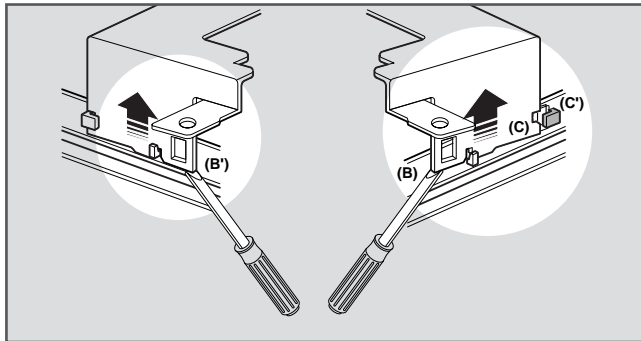
# DECK MECHANISM DISASSEMBLY

## 2. Plate Top (Fig. A-2-1)

- 1) Pull the (B) portion of the Plate Top back in direction of arrow and separate the right side of it.
- 2) pull the (B') portion of the Plate Top back in direction of arrow and separate the left side of it.  
(Used tools : (-) type Drive, anything tool with sharp point or flat point.)

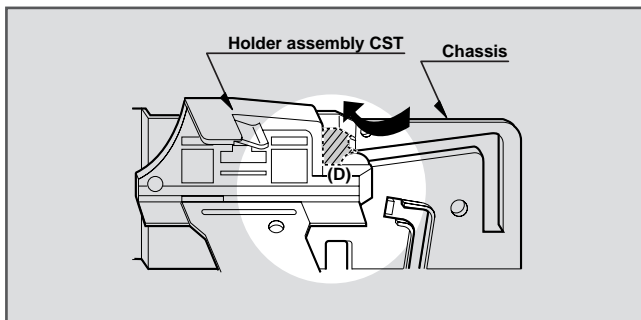
### NOTE

- (1) When reassembling, push the Plate Top after alignment the two position(C), (C') as Fig.



## 3. Holder Assembly CST (Fig.A-2-2)

- 1) Move the Holder assembly CST in direction of arrow and separate the left side of it first through the (D) position of the Chassis.



- 2) Disassemble the right side of the Holder assembly CST from each guided hole of the Chassis.

### NOTE

When reassembling, insert the (E) part of the Holder assembly CST in the (E') hole of the Chassis first and assemble the left side of it.

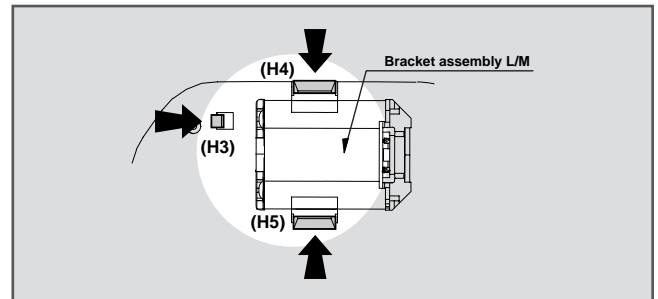
## 4. Opener Door (Figure. A-2-3)

- 1) Turn the Opener Door clockwise and remove it through the guide hole of the chassis.

## 5. Bracket assembly L/D Motor(Fig. A-2-4)

- 1) Unplug the Connector(C1).

- 2) Unhook three Hooks(H3,H4,H5) on bottom side of the Chassis, lift up the Bracket assembly L/M and disassemble the Bracket assembly L/D Motor.

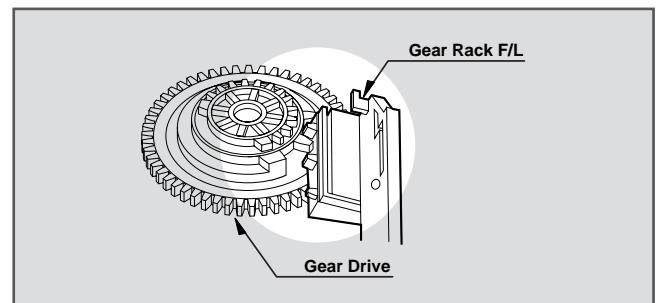


## 6. Gear Assembly Rack F/L (Fig. A-2-5)

- 1) Move the Gear Assembly Rack F/L in direction of arrow(A) and unhook the Hook(H6) pulling back in front.
- 2) Separate the Rear Rack F/L in direction of arrow(B).

### NOTE

When reassembling, align the Gear part of the Gear Assembly Rack F/L with the Gear Drive as below Fig.

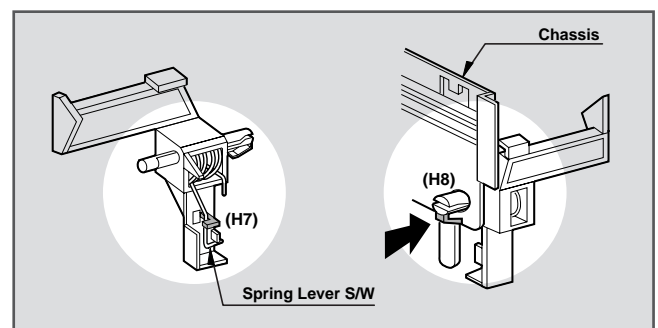


## 7. Arm assembly F/L (Fig. A-2-6)

- 1) Move the Arm assembly F/L in direction of arrow and separate the left side of it first.
- 2) Disassemble the Arm assembly F/L from each guided Hole of the Chassis.

## 8. Lever assembly S/W(Fig. A-2-7)

- 1) Hook the Spring Lever S/W on the Hook(H7) first as below Fig.
- 2) Unhook the Hook(H8) in the left side of the Chassis and move the Lever assembly S/W.



# DECK MECHANISM DISASSEMBLY

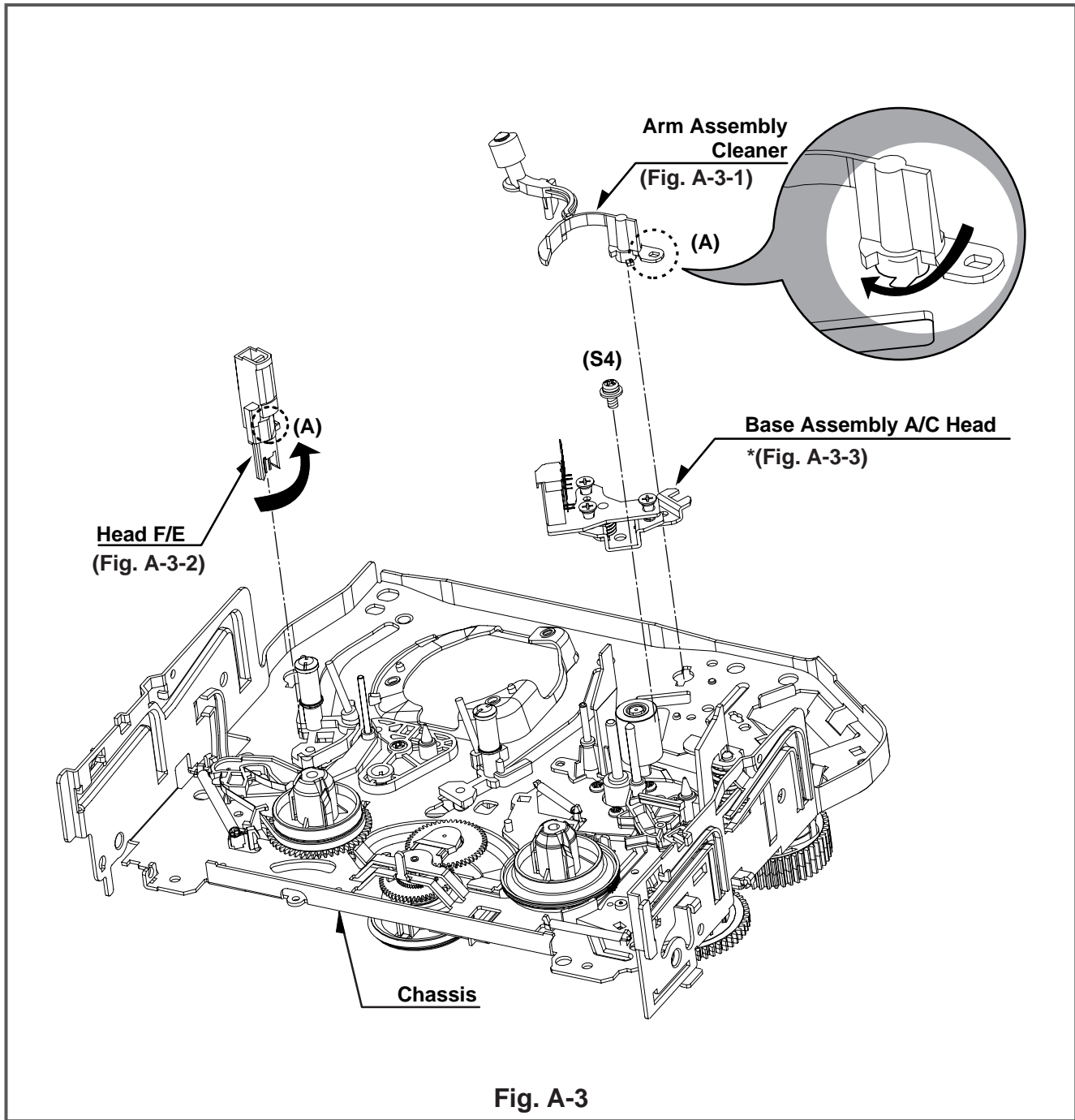


Fig. A-3

## 9. Arm assembly Cleaner (Fig. A-3-1)

- 1) Breakaway the (A) portion as Fig. A-3-1 from the Embossing of the Chassis, turn the Arm assembly Cleaner to clockwise direction and lift it up.

## 10. Head F/E (Fig. A-3-2)

- 1) Breakaway the (A) portion of the Head F/E from the Embossing of the Chassis, turn it to counterclockwise direction and lift it up.

## 11. Base assembly A/C Head (Fig. A-3-3)

- 1) Remove the Screw(S4) and lift the Base assembly A/C Head up.



# DECK MECHANISM DISASSEMBLY

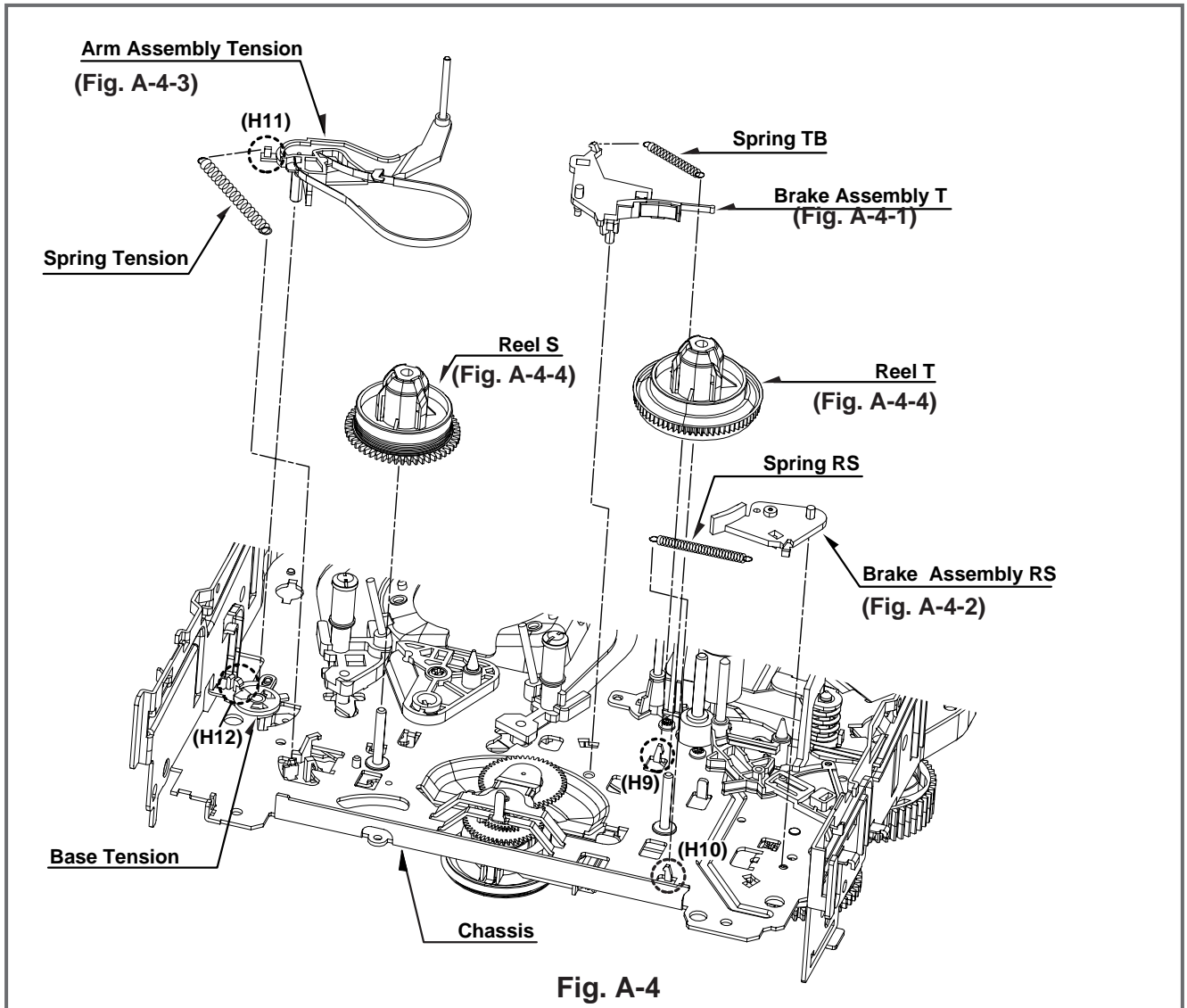


Fig. A-4

## 12. Brake assembly T (Fig. A-4-1)

- 1) Unhook the Spring TB from the Hook(H9) of the Chassis.
- 2) Lift the Brake assembly T up.

## 13. Brake assembly RS (Fig. A-4-2)

- 1) Unhook the Spring RS from the Hook(H10) of the Chassis..
- 2) Lift the Brake assembly T up.




## 14. Arm assembly Tension (Fig. A-4-3)

- 1) Unhook the Spring Tension from the Hook(H11) of the Arm assembly tension.
- 2) Unhook the Hook(H12) of the Base Tension and lift the Arm assembly Tension up.

### NOTE

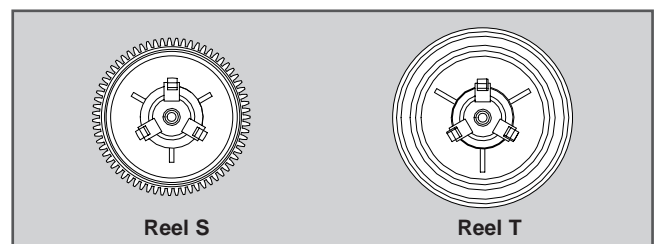
Difference for Springs

(Difference for Springs)

	Spring TB	
	Spring RS	Color (Black)
	Spring Tension	

## 15. Reel S / Reel T (Fig. A-4-4)

- 1) Difference for Reel S / Reel T



# DECK MECHANISM DISASSEMBLY

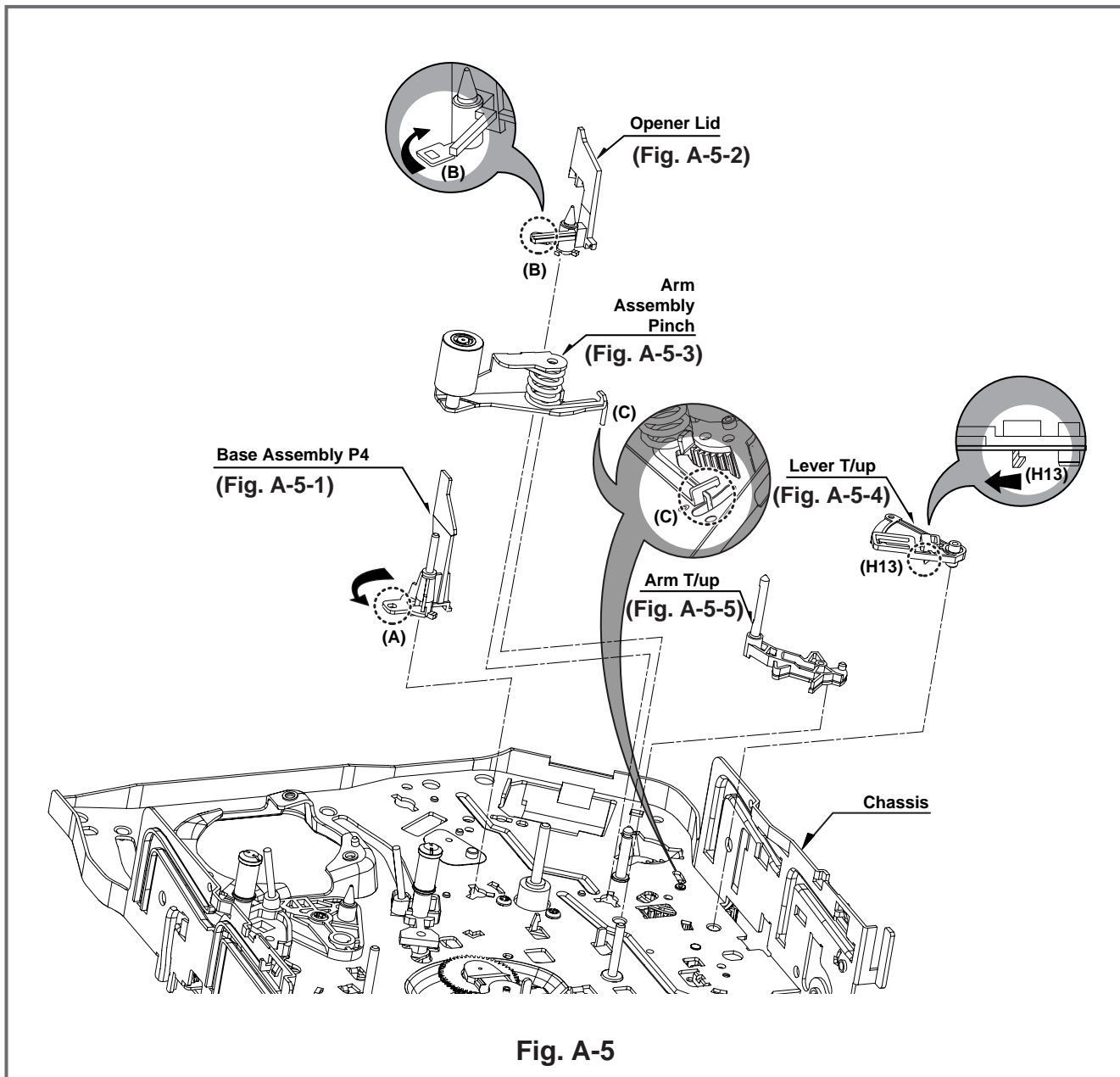


Fig. A-5

## 16. Base assembly P4 (Fig. A-5-1)

- 1) Breakaway the (A) portion of the Base assembly P4 from the Embossing of the Chassis.
- 2) Turn the Base assembly P4 to counterclockwise direction and lift it up.

## 17. Opener Lid (Fig. A-5-2)

- 1) Breakaway the (B) portion of the Opener Lid from the Embossing of the Chassis.
- 2) Turn the Opener Lid to clockwise direction and lift it up.

## 18. Arm assembly Pinch (Fig. A-5-3)

- 1) Lift the Arm assembly Pinch up.

## 19. Lever T/up (Fig. A-5-4)/ Arm T/up (Fig. A-5-5)

- 1) Unhook the Hook(H13) of the bottom Chassis and lift the Lever T/up up.
- 2) Lift the Arm T/up up.

### NOTE

When reassembling, confirm the (C) portion of the Arm assembly Pinch is inserted to the Chassis Hole correctly as Fig.

Place the Mechanism face down, or up side down.

# DECK MECHANISM DISASSEMBLY

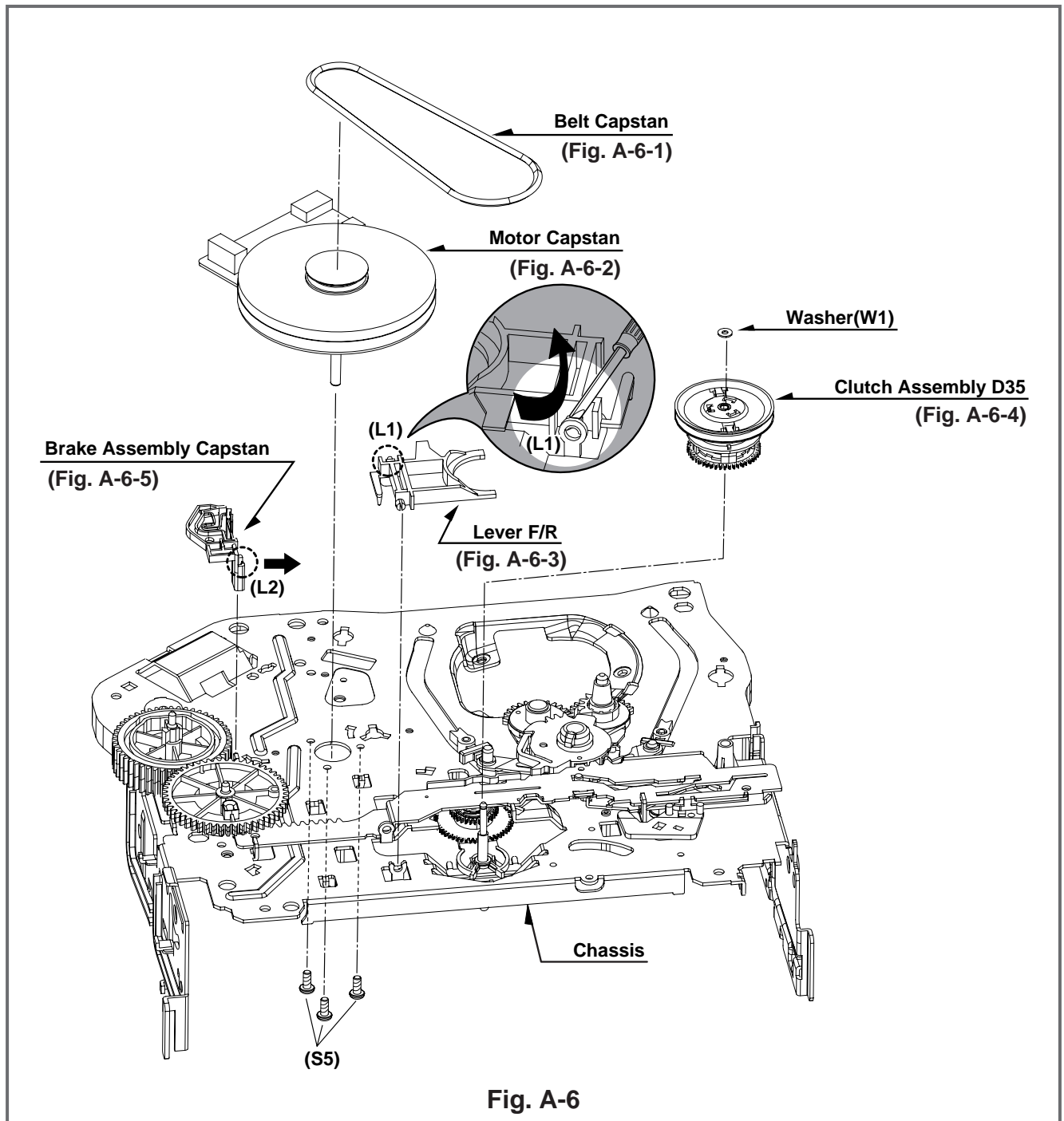


Fig. A-6

## 20. Belt Capstan (Fig. A-6-1)/ Motor Capstan (Fig. A-6-2)

- 1) Remove the Belt Capstan.
- 2) Remove the three Screws(S5) on bottom Chassis and lift the Motor Capstan up.

## 21. Lever F/R (Fig. A-6-3)

- 1) Unlock the Locking Tab(L1) as Fig. A-6-3 and lift the Lever F/R up.

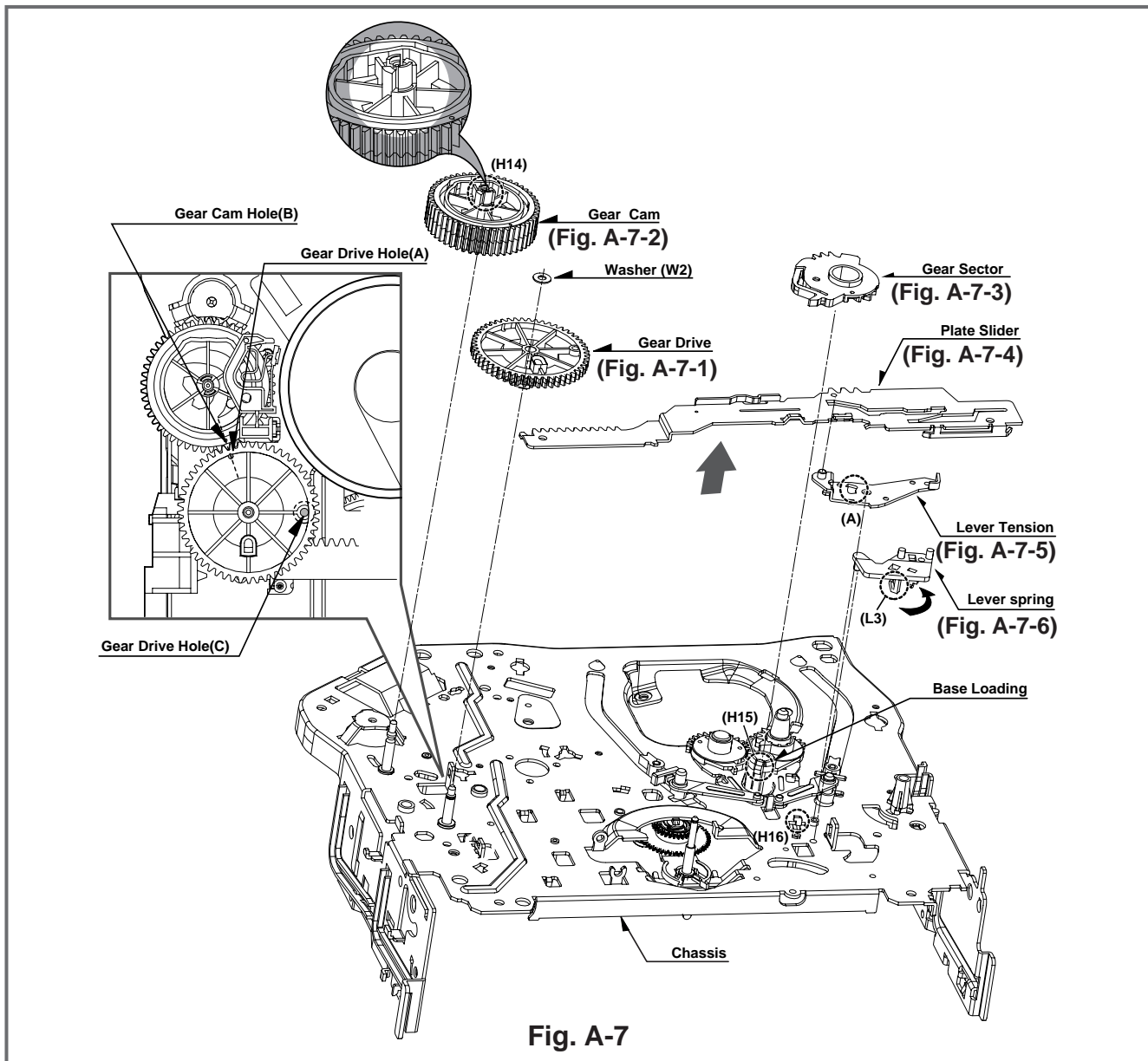
## 22. Clutch assembly D35 (Fig. A-6-4)

- 1) Remove the Washer(W1) and lift the Clutch assembly D35 up.

## 23. Brake assembly Capstan (Fig. A-6-5)

- 1) Pull the Locking Tab(L2) back in direction of arrow and lift it up.

# DECK MECHANISM DISASSEMBLY



**Fig. A-7**

## 24. Gear Drive (Fig. A-7-1)/ Gear Cam (Fig. A-7-2)

- 1) Remove the Washer(W2) and lift the Gear Drive up.
- 2) Unhook the Hook(H14) of the Gear Cam and lift the Gear Cam up.

### NOTE

When reassembling, align the Gear Drive Hole(A) and the Gear Cam Hole(B) in a straight line after the Gear Drive Hole(C) is aligned with the Chassis Hole as Fig.

## 25. Gear Sector (Fig. A-7-3)

- 1) Unhook the Hook(H15) of the Base Loading on bottom Chassis and lift the Gear Sector up.

## 26. Plate Slider (Fig. A-7-4)

- 1) Just lift the Plate Slider up.

## 27. Lever Tension (Fig. A-7-5)

- 1) Unhook the (A) portion of the Lever Tension from the Hook(H16) of the Chassis.
- 2) Turn the Lever Tension to counterclockwise direction and lift it up.

## 28. Lever Spring (Fig. A-7-6)

- 1) Unlock the Locking Tab(L3) of the bottom Chassis and lift the Lever Spring up.

# DECK MECHANISM DISASSEMBLY

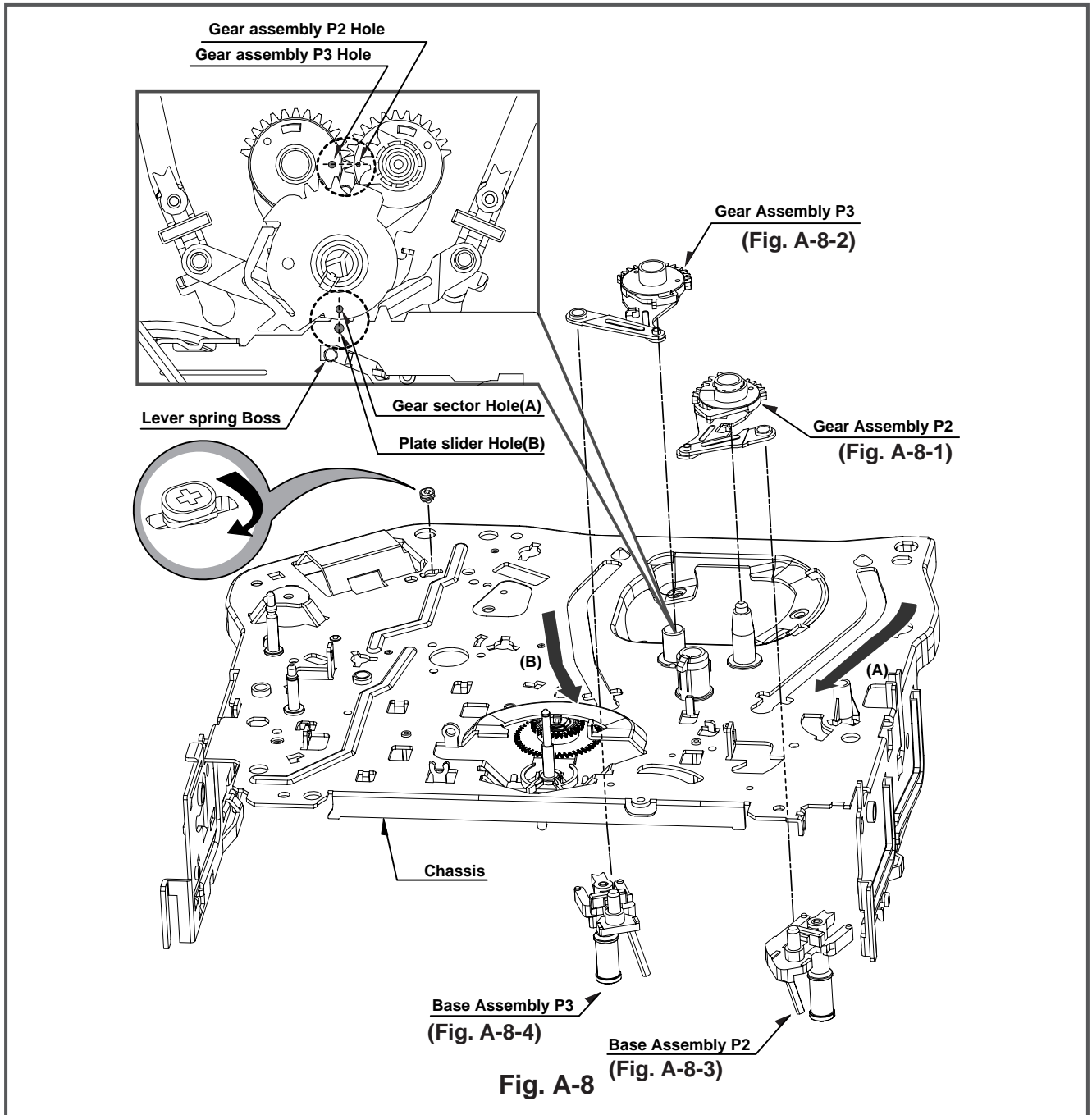


Fig. A-8

## 29. Gear assembly P2 (Fig. A-8-1)/ Gear assembly P3 (Fig. A-8-2)

- 1) Just lift the Gear assembly P2 up.
- 2) Just lift the Gear assembly P3 up.

### NOTE

When reassembling, align the two Holes of the Gear assembly P2 and P3 in a straight line after confirmation whether the Gear Sector Hole(A) and the Plate Slider Hole(B) are aligned or not as Fig.

## 30. Base assembly P2 (Fig. A-8-3)/ Base assembly P3 (Fig. A-8-4)

- 1) Move the Base assembly P2 in direction of arrow(A) along the Guided Hole of the Chassis and disassemble it on bottom side.
- 2) Move the Base assembly P3 in direction of arrow(B) along the Guided Hole of the Chassis and disassemble it on bottom side.

**Place the Mechanism face down, or return to original position.**

# DECK MECHANISM DISASSEMBLY

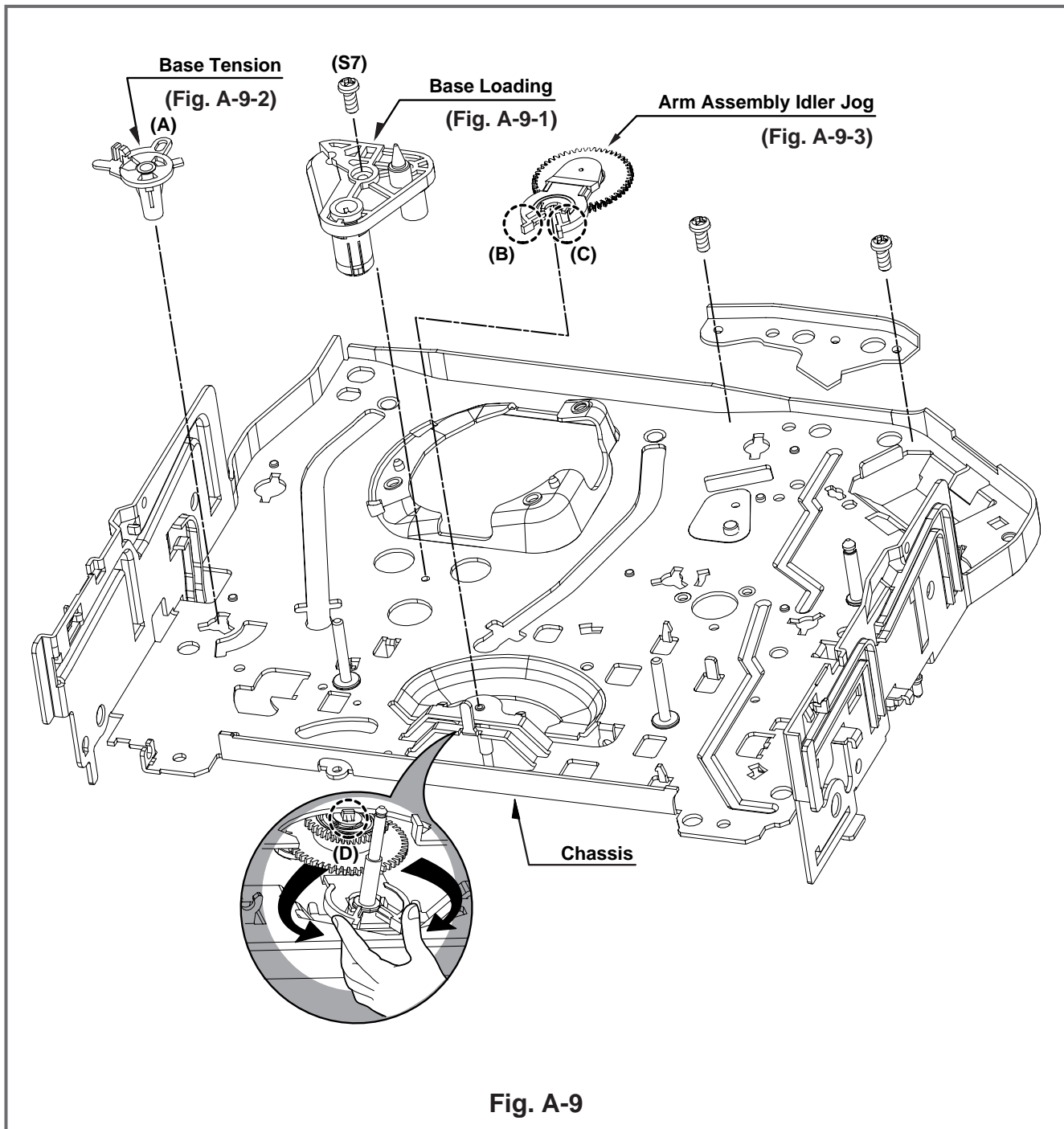


Fig. A-9

## 31. Base Loading (Fig. A-9-1)

- 1) Remove the Screw(S7).
- 2) Lift the Base Loading up.

## 32. Base Tension (Fig. A-9-2)

- 1) Breakaway the (A) portion of the Base Tension from the Embossing of the Chassis.
- 2) Turn the Base Tension to counterclockwise direction and lift it up.

## 33. Arm assembly Idler (Fig. A-9-3)

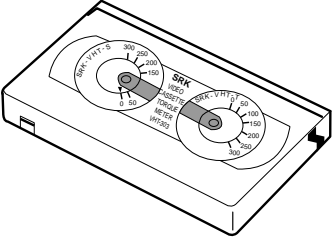
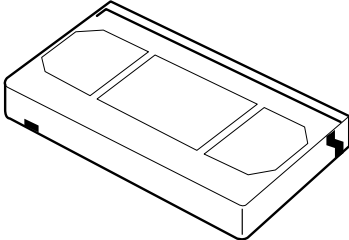
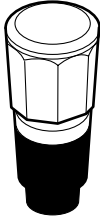
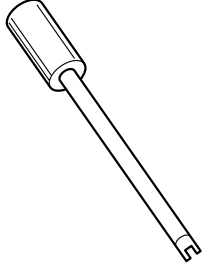
- 1) Make narrower the two parts, (A) and (B), as Fig. A-9-3.
- 2) Lift the Arm assembly Idler up.

### NOTE

When disassembling, be careful not to be caught the (D) part by the Chassis as Fig.

# DECK MECHANISM ADJUSTMENT

- Tools and Fixfures for Service

<p><b>1. Cassette Torque meter PUJ42881</b></p>  <p>A cassette-shaped torque meter with two circular scales on top. The left scale is labeled 'SRK 1000' and 'TORQUE METER (N/CM)' with markings from 0 to 300. The right scale is labeled 'SRK 1000' and 'TORQUE METER (WH/CM)' with markings from 0 to 300.</p>	<p><b>2. Alignment tape MHPE</b></p>  <p>A rectangular alignment tape with a central slot and two side tabs.</p>	<p><b>3. Torque gauge PUJ48075-2</b></p>  <p>A cylindrical torque gauge with a hexagonal top section and a black base.</p>
<p><b>4. Post height adjusting driver (Roller driver) PTU94002</b></p>  <p>A long, thin roller driver with a cylindrical handle at one end and a small metal tip at the other.</p>		

# DECK MECHANISM ADJUSTMENT

## 1.Mechanism Alignment Position Check

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

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

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

### CHECK DIAGRAM

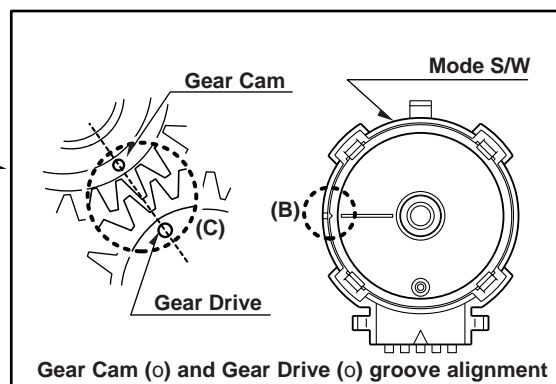
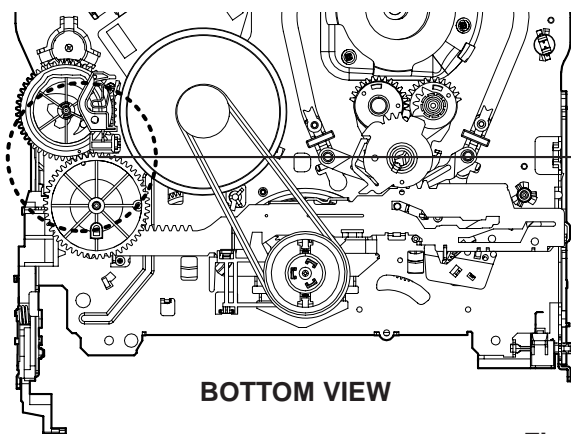


Fig. C-1

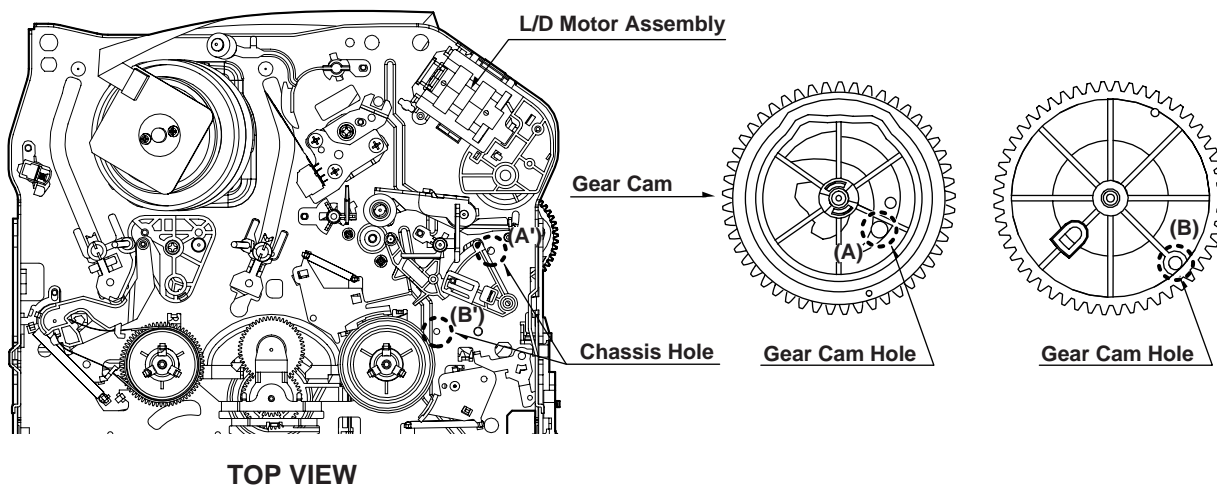


Fig. C-2



# DECK MECHANISM ADJUSTMENT

## 2. Preparation for Adjustment (To set the Deck Mechanism to the Loading state without inserting a Cassette Tape).

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

Cassette without Tape.

Cover the Holes of the End Sensors at the both sides of the Bracket Side(L) and Bracket Assembly Door to prevent a light leak.

Then The Deck Mechanism drives to the Stop Mode. In this case, The Deck Mechanism can accept inputs of each mode, however the Rewind and Review Operation can not be performed for more than a few seconds because the Take-up Reel Table is in the Stop State and can not be detected the Reel Pulses.

## 3. Checking Torque

**Purpose: To insure smooth Transport of the Tape during each Mode of Operation.**  
**If the Tape Transport is abnormal, then check the Torque as indicated by the chart below.**

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Checking Method		
<ul style="list-style-type: none"> <li>• Torque Gauge(600g/cm ATG)</li> <li>• Torque Gauge Adaptor</li> <li>• Cassette Torque Meter</li> </ul>	<ul style="list-style-type: none"> <li>• Play (FF) or Review (REW) Mode</li> </ul>	<ul style="list-style-type: none"> <li>• Perform each Deck Mechanism Mode without inserting a Cassette Tape(Refer to above No.2 Preparation for Adjustment).</li> <li>• Read the Measurement of the Take-up or Supply Reels on the Cassette Torque Meter(Fig. C-3-2).</li> <li>• Attach the Torque Gauge Adaptor to the Torque Gauge and then read the Value of it(Fig. C-3-1).</li> </ul>		
Item	Mode	Test Equipment	Measurement Reel	Measurement Values
Fast Forward Torque	Fast Forward	Cassette Torque Gauge	Take-Up Reel	More than 400g/cm
Rewind Torque	Rewind	Cassette Torque Gauge	Supply Reel	More than 400g/cm
Play Take-Up Torque	Play	Cassette Torque Meter	Take-Up Reel	40~100g/cm
Review Torque	Review	Cassette Torque Meter	Supply Reel	120~210g/cm

### NOTE:

The Values are measured by using a Torque Gauge and Torque Gauge Adaptor with the Torque Gauge affixed.

### • Cassette Torque Meter

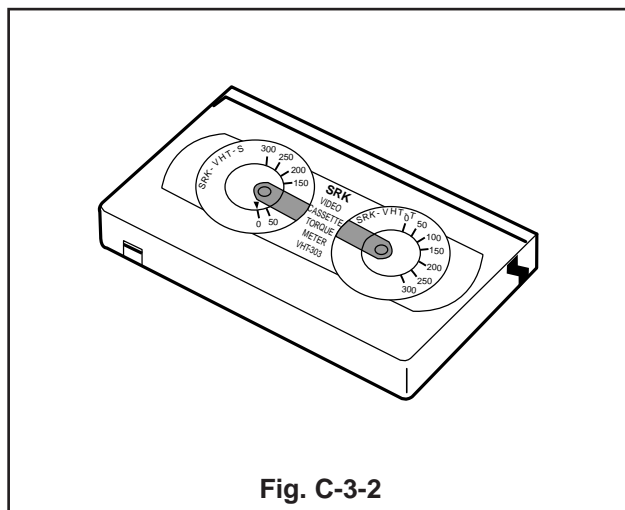


Fig. C-3-2

### NOTE:

The Torque reading to measure occurs when the Tape abruptly changes direction from Fast Forward or Rewind Mode, when quick bracking is applied to both Reels.

### • Torque Gauge

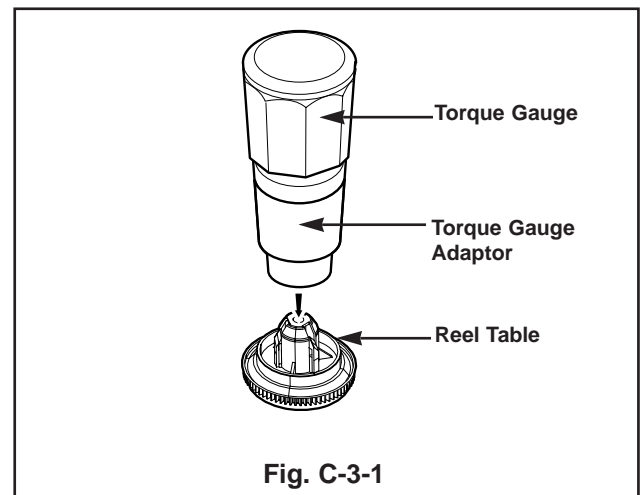


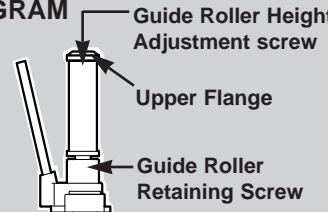
Fig. C-3-1

# DECK MECHANISM ADJUSTMENT

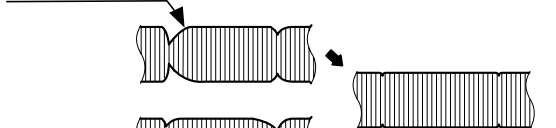
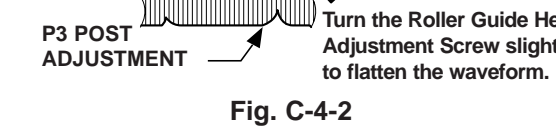
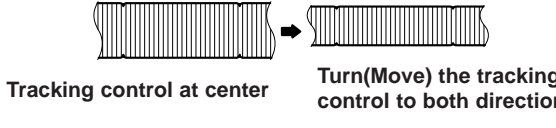
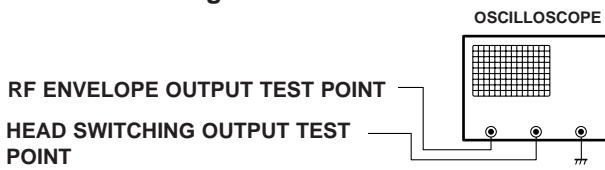
## 4. Guide Roller Height Adjustment

**Purpose: To regulate the Height of the Tape so that the Bottom of the Tape runs along the Tape Guide Line on the Lower Drum.**

### 4-1. Preliminary Adjustment

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> <li>• Post Height Adjusting Driver</li> </ul>	<ul style="list-style-type: none"> <li>• Play or Review Mode</li> </ul>	<ul style="list-style-type: none"> <li>• Guide Roller Height Adjustment screws on the Supply and Take-Up Guide Rollers.</li> </ul>
<b>Adjustment Procedure</b> <ol style="list-style-type: none"> <li>1) Confirm if the Tape runs along the Tape Guide Line of the Lower Drum.</li> <li>2) If the Tape runs the Bottom of the Guide Line, turn the Guide Roller Height Adjustment Screw to Clockwise direction.</li> <li>3) If it runs the Top, turn to Counterclockwise direction.</li> <li>4) Adjust the Height of the Guide Roller to be guided to the Guide Line of the Lower Drum from the Starting and Ending Point of the Drum.</li> </ol>		<b>ADJUSTMENT DIAGRAM</b>  <p>Fig. C-4-1</p>

### 4-2. Precise Adjustment

Test Equipment/Fixture	Test Equipment Connection Points	Test Conditions VCR(VCP) State	Adjustment Point
<ul style="list-style-type: none"> <li>• Oscilloscope</li> <li>• Alignment Tape</li> <li>• Post Height Adjusting Driver</li> </ul>	<ul style="list-style-type: none"> <li>• CH-1:PB RF Envelope</li> <li>• CH-2:NTSC: SW 30Hz PAL: SW 25Hz</li> <li>• Head Switching Output Point</li> <li>• RF Envelope Output Point</li> </ul>	<ul style="list-style-type: none"> <li>• Play an Alignment Tape</li> </ul>	<ul style="list-style-type: none"> <li>• Guide Roller Height Adjustment Screws</li> </ul>
<b>Adjustment Procedure</b> <ol style="list-style-type: none"> <li>1) Play an Alignment Tape after connecting the Probe of the Oscilloscope to the RF Envelope Output Test Point and Head Switching Output Test Point.</li> <li>2) Tracking Control(in PB Mode) : Center Position(When this Adjustment is performed after the Drum Assembly has been replaced, set the Tracking Control so that the RF Output is Maximum).</li> <li>3) Height Adjustment Screw : Flatten the RF Waveform. (Fig. C-4-2)</li> <li>4) Turn(Move) the Tracking Control(in PB Mode) Clockwise and Counterclockwise.(Fig. C-4-3)</li> <li>5) Check that any Drop of RF Output is uniform at the Start and End of the Waveform.</li> </ol>		<b>Waveform Diagrams</b> <p><b>P2 POST ADJUSTMENT</b></p>  <p><b>P3 POST ADJUSTMENT</b></p>  <p>Turn the Roller Guide Height Adjustment Screw slightly to flatten the waveform.</p> <p><b>Fig. C-4-2</b></p> <p>Tracking control at center</p>  <p>Turn(Move) the tracking control to both directions</p> <p><b>Fig. C-4-3</b></p>	
<b>NOTE</b> If the adjustment is excessive or insufficient the tape will jam or fold.		<b>Connection Diagram</b> 	

# DECK MECHANISM ADJUSTMENT

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

**Purpose: To insure that the Tape passes accurately over the Audio and Control Tracks in exact Alignment in both the Record and Playback Modes.**

### 5-1. Preliminary Adjustment (Height and Tilt Adjustment)

Perform the Preliminary Adjustment, when there is no Audio Output Signal with the Alignment Tape.

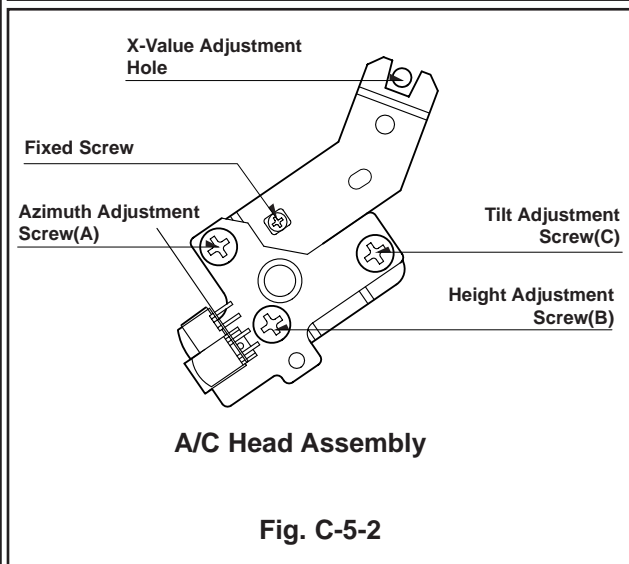
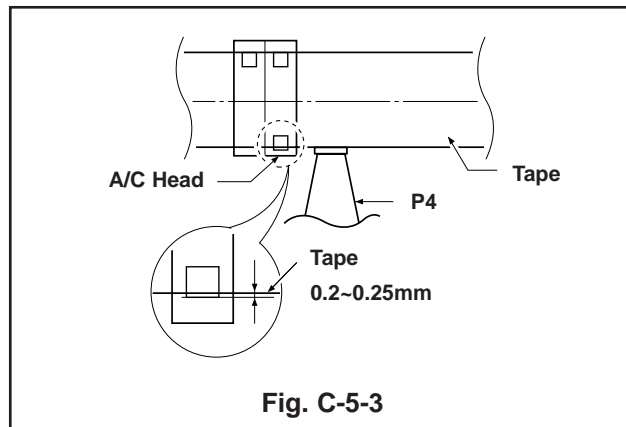
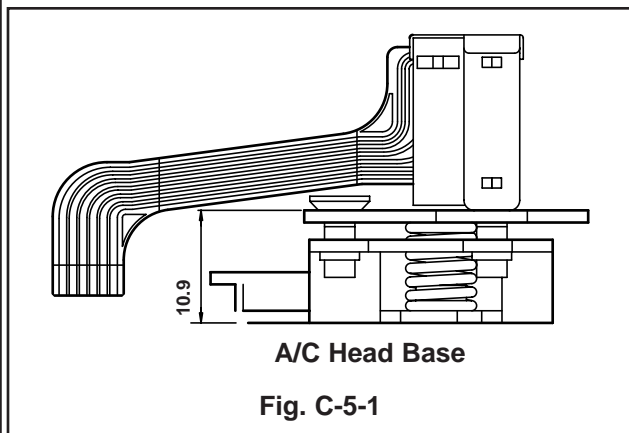
Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> <li>• Blank Tape</li> <li>• Screw Driver(+) Type 5mm</li> </ul>	<ul style="list-style-type: none"> <li>• Play the blank tape</li> </ul>	<ul style="list-style-type: none"> <li>• Tilt Adjustment Screw(C)</li> <li>• Height Adjustment Screw(B)</li> <li>• Azimuth Adjustment Screw(A)</li> </ul>

#### Adjustment Procedure/Diagrams

- Initially adjust the Base Assembly A/C Head as shown Fig. C-5-1 by using the Height Adjustment Screw(B).
- Play a Blank Tape and observe if the Tape passes accurately over the A/C Head without Tape Curling or Folding.
- If Folding or Curling is occurred then adjust the Tilt Adjustment Screw(C) while the Tape is running to resemble Fig. C-5-3.
- Reconfirm the Tape Path after Playback about 4~5 seconds.

#### NOTE

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



# DECK MECHANISM ADJUSTMENT

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

- 1) After completing Step 5-1.(Preliminary Adjustment), check that the Tape passes around the Take-up Guide and Pinch Roller without Folding or Curling at the Top or Bottom.
  - (1) If Folding or Curling is observed at the Bottom of the Take-up Guide then slowly turn the Tilt Adjustment Screw(C) in the Clockwise direction.
  - (2) If Folding or Curling is observed at the Top of it then

slowly turn the Tilt Adjustment Screw(C) in the Counterclockwise direction.

### NOTE:

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

## 5-3. Precise Adjustment (Azimuth adjustment)

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> <li>• Oscilloscope</li> <li>• Alignment Tape(SP)</li> <li>• Screw Driver(+) Type 5mm</li> </ul>	<ul style="list-style-type: none"> <li>• Audio output jack</li> </ul>	<ul style="list-style-type: none"> <li>• Play an Alignment Tape 6KHz Section</li> </ul>	<ul style="list-style-type: none"> <li>• Azimuth Adjustment Screw(A)</li> <li>• Height Adjustment Screw(B)</li> </ul>
<b>Adjustment Procedure</b> <ol style="list-style-type: none"> <li>1) Connect the Probe of the Oscilloscope to Audio Output Jack.</li> <li>2) Alternately adjust the Azimuth Adjustment Screw(A) and the Tilt Adjustment Screw(C) for Maximum Output of the 6Khz segment.</li> </ol>			

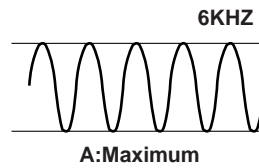


Fig. C-5-4

## 6. X-Value Adjustment

Purpose: To obtain compatibility with other VCR(VCP) Models.			
Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> <li>• Oscilloscope</li> <li>• Alignment tape(SP only)</li> <li>• Screw Driver(+) Type 5mm</li> </ul>	<ul style="list-style-type: none"> <li>• CH-1: PB RF Envelope</li> <li>• CH-2: NTSC: SW 30Hz PAL: SW 25Hz</li> <li>• Head Switching Output Test Point</li> <li>• RF Envelope Output Test Point</li> </ul>	<ul style="list-style-type: none"> <li>• Play an Alignment Tape</li> </ul>	
<b>Adjustment Procedure</b> <ol style="list-style-type: none"> <li>1) Release the Automatic Tracking to run long enough for Tracking to complete it's Cycle.</li> <li>2) Loosen the Fixed Mounting Screw and move the Base Assembly A/C Head in the direction as shown in the Diagram to find the center of the peak that allows for the maximum Waveform Envelope. This method should allow the 31um Head to be centrally located over the 58um Tape Track.</li> <li>3) Tighten the Base Assembly A/C Head mounting Screw.</li> </ol>		<b>Adjustment Diagram</b>	
		<b>Connection Diagram</b>	

# DECK MECHANISM ADJUSTMENT

## 7. Adjustment after Replacing Drum Assembly (Video Heads)

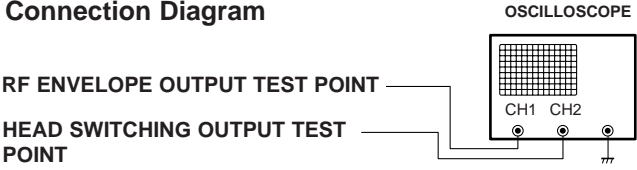
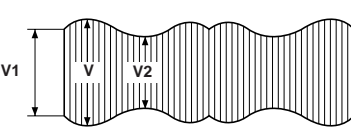
Purpose: To correct for shift in the Roller Guide and X value after replacing the Drum.			
Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Points
<ul style="list-style-type: none"> <li>Oscilloscope</li> <li>Alignment tapes</li> <li>Blank Tape</li> <li>Post Height Adjusting Driver</li> <li>Screw Driver(+) Type 5mm</li> </ul>	<ul style="list-style-type: none"> <li>CH-1: PB RF Envelope</li> <li>CH-2: NTSC: SW 30Hz PAL: SW 25Hz</li> <li>Head Switching Output Test Point</li> <li>RF Envelope Output Test Point</li> </ul>	<ul style="list-style-type: none"> <li>Play the blank tape</li> <li>Play an alignment tape</li> </ul>	<ul style="list-style-type: none"> <li>Guide Roller Precise Adjustment</li> <li>Switching Point</li> <li>Tracking Preset</li> <li>X-Value</li> </ul>
<b>Checking/Adjustment Procedure</b> Play a blank tape and check for tape curling or creasing around the roller guide. If there is a problem then follow the procedure 4. "Guide Roller Height" and 5. "Audio Control(A/C) Head Adjustment".		<b>Connection Diagram</b>  <b>Waveform</b> $V1/V \text{ MAX} \leq 0.7$ $V2/V \text{ MAX} \leq 0.8$ RF ENVELOPE OUTPUT 	

Fig. C-7

## 8. Check the Tape Travel after Reassembling Deck Assembly.

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

Test Equipment/ Fixture	Specification	Connection Points	Test Conditions (Mechanism Condition)
<ul style="list-style-type: none"> <li>Oscilloscope</li> <li>Alignment tapes(with 6H 3kHz Color Bar Signal)</li> <li>Stop Watch</li> </ul>	<ul style="list-style-type: none"> <li>RF Locking Time: Less than 5 sec.</li> <li>Audio Locking Time: Less than 10sec</li> </ul>	<ul style="list-style-type: none"> <li>CH-1: PB RF Envelope</li> <li>CH-2: Audio Output</li> <li>RF Envelope Output Point</li> <li>Audio Output Jack</li> </ul>	<ul style="list-style-type: none"> <li>Play an alignment tape (with 6H 3kHz Color Bar Signal)</li> </ul>
<b>Checking Procedure</b> Play an alignment tape then change the operating mode to CUE or REV and confirm if the unit meets the above listed specifications.		<b>NOTES:</b> 1) CUE is fast forward mode (FF) 2) REV is the rewind mode (REW) 3) Referenced to the Play mode	

### 8-2. Check for tape curling or jamming

Test Equipment/ Fixture	Specification	Test Conditions (Mechanism Condition)
<ul style="list-style-type: none"> <li>T-160 Tape</li> <li>T-120 Tape</li> </ul>	<ul style="list-style-type: none"> <li>Be sure there is no tape jamming or curling at the beginning, middle or end of the tape.</li> </ul>	<ul style="list-style-type: none"> <li>Run the CUE, REV play mode at the beginning and the end of the tape.</li> </ul>
<b>Checking Procedure</b> 1) Confirm that the tape runs smoothly around the roller guides, drum and A/C head assemblies while abruptly changing operating modes from Play to CUE or REV. This is to be checked at the beginning, middle and end sections of the cassette. 2) Confirm that the tape passes over the A/C head assembly as indicated by proper audio reproduction and proper tape counter performance.		

# MAINTENANCE/INSPECTION PROCEDURE

## 1 Check before starting repairs

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

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

Phenomenon	Inspection	Replacement
Color beats	Dirt on full-erase head	o
Poor S/N, no color	Dirt on video head	o
Vertical or Horizontal jitter	Dirt on video head Dirt on tape transport system	o
Low volume, Sound distorted	Dirt on Audio/control head	o
Tape does not run. Tape is slack	Dirt on pinch roller	o
In Review and Unloading (off mode), the Tape is rolled up loosely.	Clutch Assembly D33K Torque reduced	o
	Cleaning Drum and transport system	Fig. C-9-3

### NOTE

If locations marked with **o** do not operate normally after cleaning, check for wear and replace. See the EXPLODED VIEWS at the end of this manual as well as the above illustrations See the Greasing (Page 4-22) for the sections to be lubricated and greased.

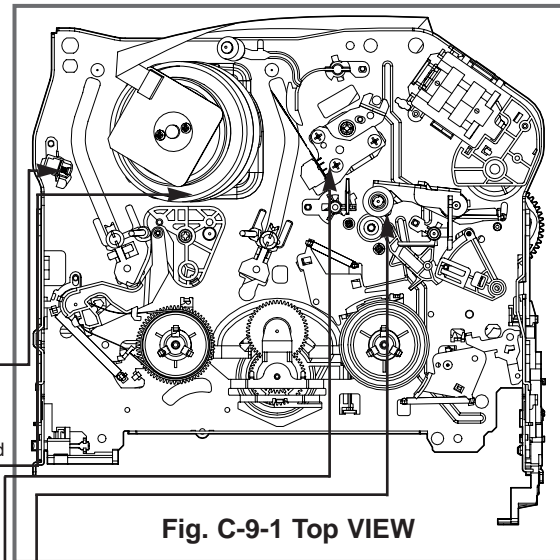


Fig. C-9-1 Top VIEW

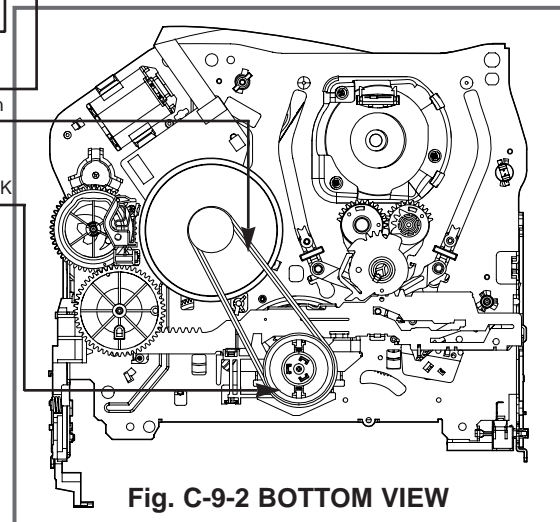


Fig. C-9-2 BOTTOM VIEW

\* No. (1)~(13) Indicates the Tape Path to be traveled from Supply Reel to Take-up Reel.

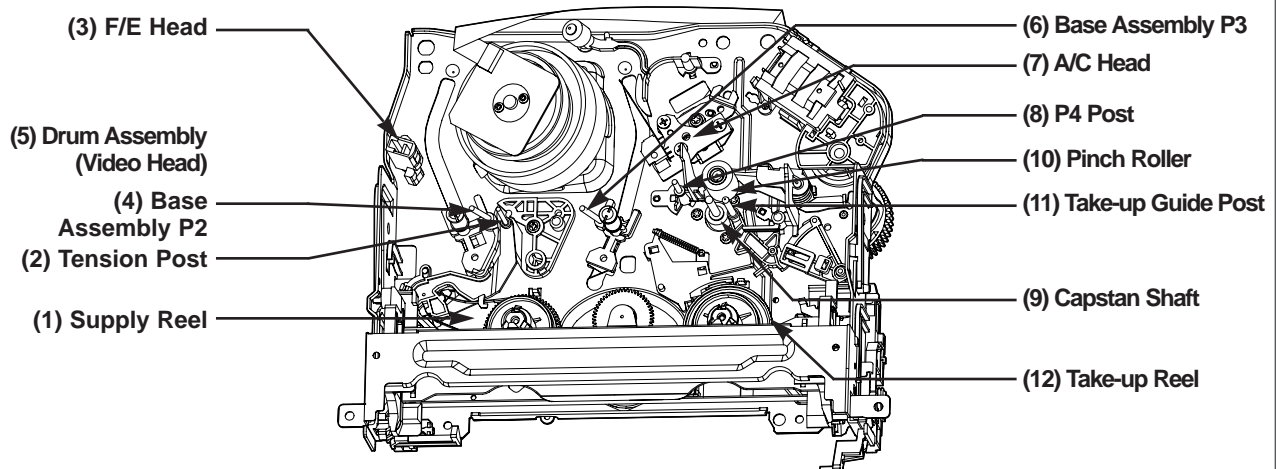


Fig. C-9-3 Tape Transport System

# MAINTENANCE/INSPECTION PROCEDURE

## 2. Required Maintenance

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

## 3. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR(VCP), and the environment in which the VCR(VCP) is used.

But, in general home use, a good picture will be maintained if inspection and maintenance is made every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1

When inspection is necessary / Average hours used per day	About 1 year	About 18 months	About 3 years
One hour	[Bar chart showing inspection every 1 year]		
Two hours	[Bar chart showing inspection every 18 months]		
Three hours	[Bar chart showing inspection every 3 years]		

## 4. Supplies Required for Inspection and Maintenance

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

## 5) Maintenance Procedure

### 5-1) Cleaning

#### (1) Cleaning video head

First use a cleaning tape. If the dirt on the head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with Isopropyl Alcohol. Touch the cleaning patch to the head tip and gently turn the head(rotating cylinder) right and left.

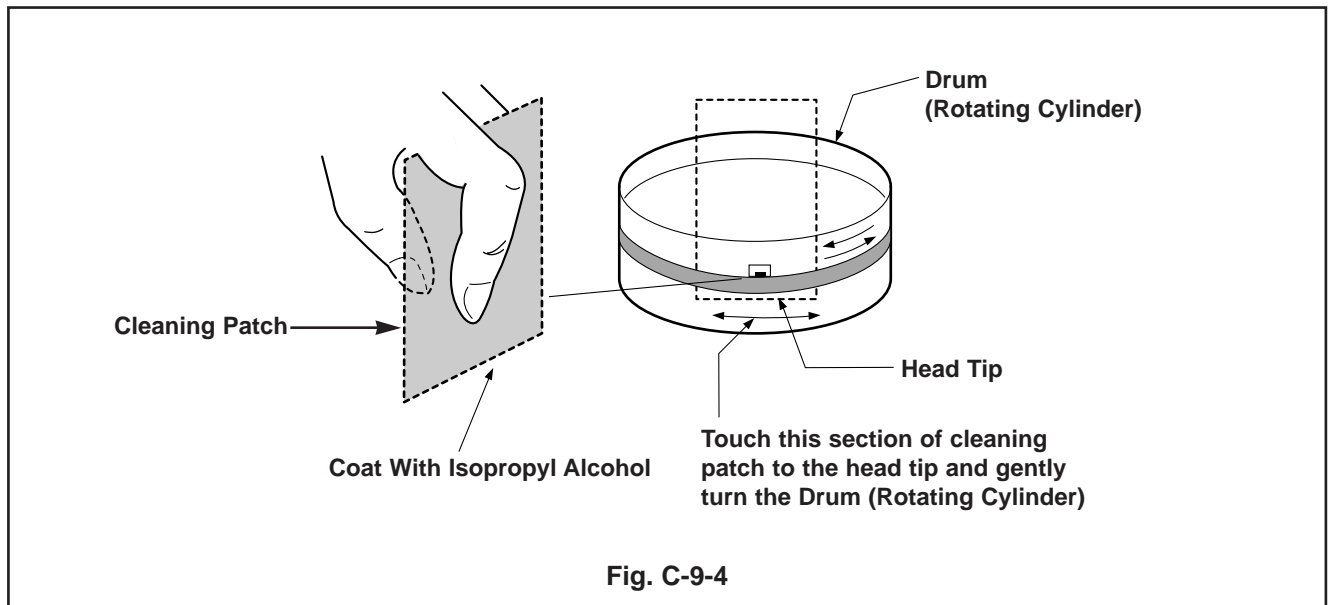
(Do not move the cleaning patch vertically. Make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged.)

Thoroughly dry the head. Then run the test tape. If Iso-propyl Alcohol remains on the video head, the tape may be damaged when it comes into contact with the head surface.

- (2) Clean the tape transport system and drive system, etc, by wiping with a cleaning patch wetted with Isopropyl Alcohol.

### NOTES:

- ① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which moves the tape.
- ② Make sure that during cleaning you do not touch the tape transport system with the tip of a screw driver and no that force is that would cause deforming or damage applied to the system.



# MAINTENANCE/INSPECTION PROCEDURE

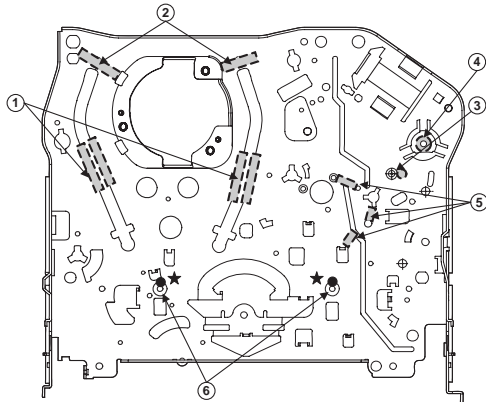
## 5-2) Greasing

### (1) Greasing guidelines

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

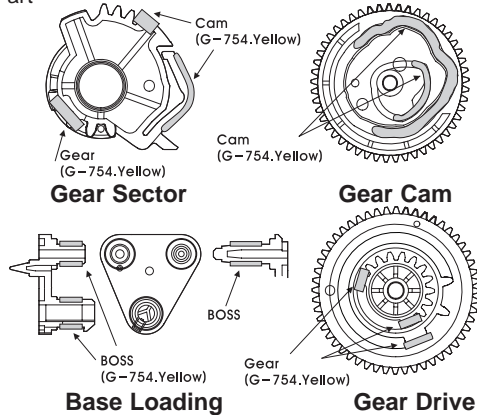
### NOTE: Greasing Points

- |                                   |   |
|-----------------------------------|---|
| 1) Loading Path Inside & Top side | 6) Shaft                                  |
| 2) Base Tension Boss inside Hole  | 7) Arm Assembly F/L of Buming Inside Hole |
| 3) Arm Assembly F/L "U" Groove    | 8) Reel S, T Shaft (G381:Yellow)          |
| 4) Arm Take-up Rubbing Section    | 9) Brake T Groove                         |
| 5) L/D Motor Gear Wheel Part      |   |



Chassis (Top)

### Gear Part



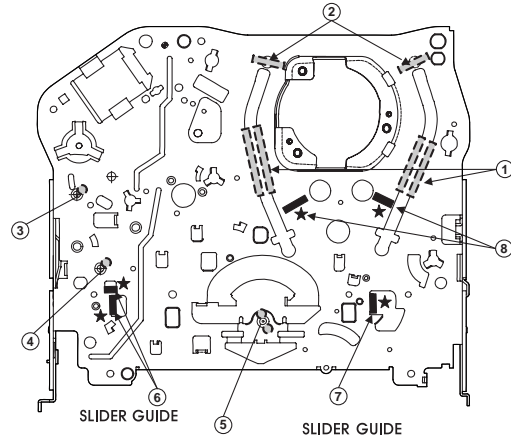
Bracket Side (L)

Bracket Assembly Door

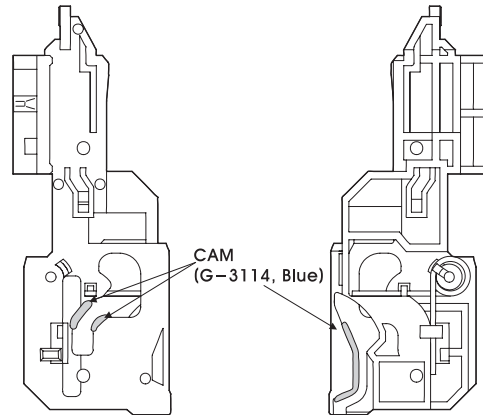
### (2) Periodic greasing

Grease specified locations every 5,000 hours.

- |                                   |                              |
|-----------------------------------|------------------------------|
| 1) Loading Path Inside & Top side | 5) Lever Tension Groove      |
| 2) Shaft                          | 6) Clutch Assembly D33 Shaft |
| 3) Gear Rack F/L Moving Section   | 7) Brake "S" Rubbing Section |
| 4) Shaft                          |                              |

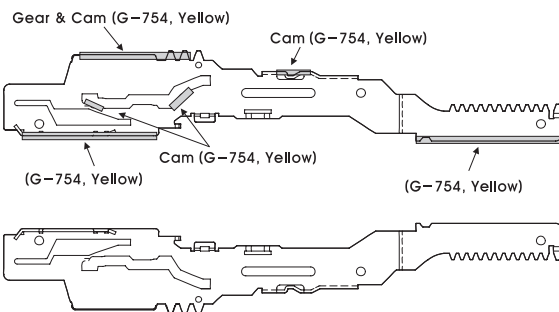


Chassis (Bottom)



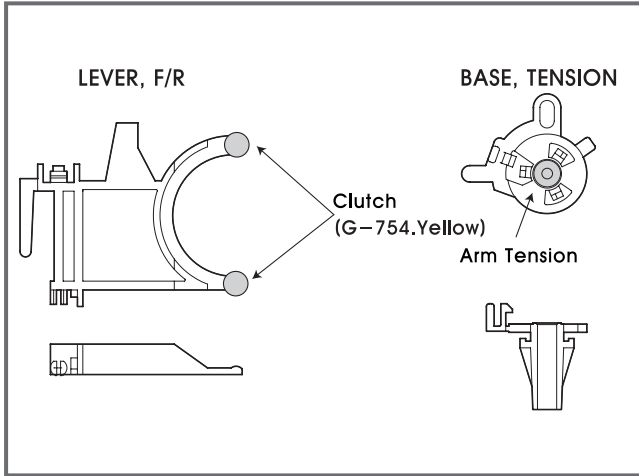
Guide Rack F/L

Gear Rack F/L

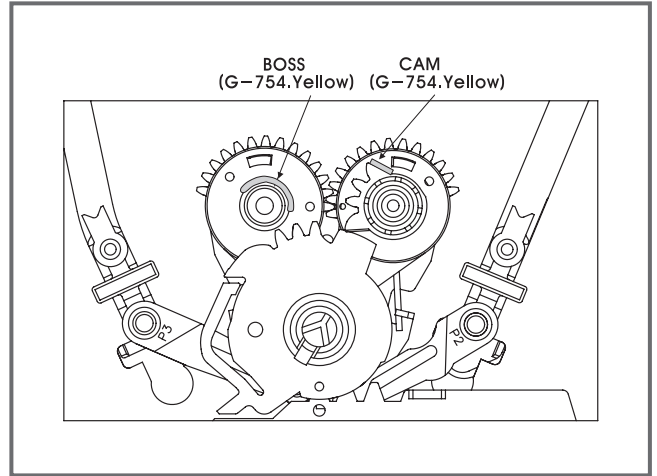




**GEAR , F/R**



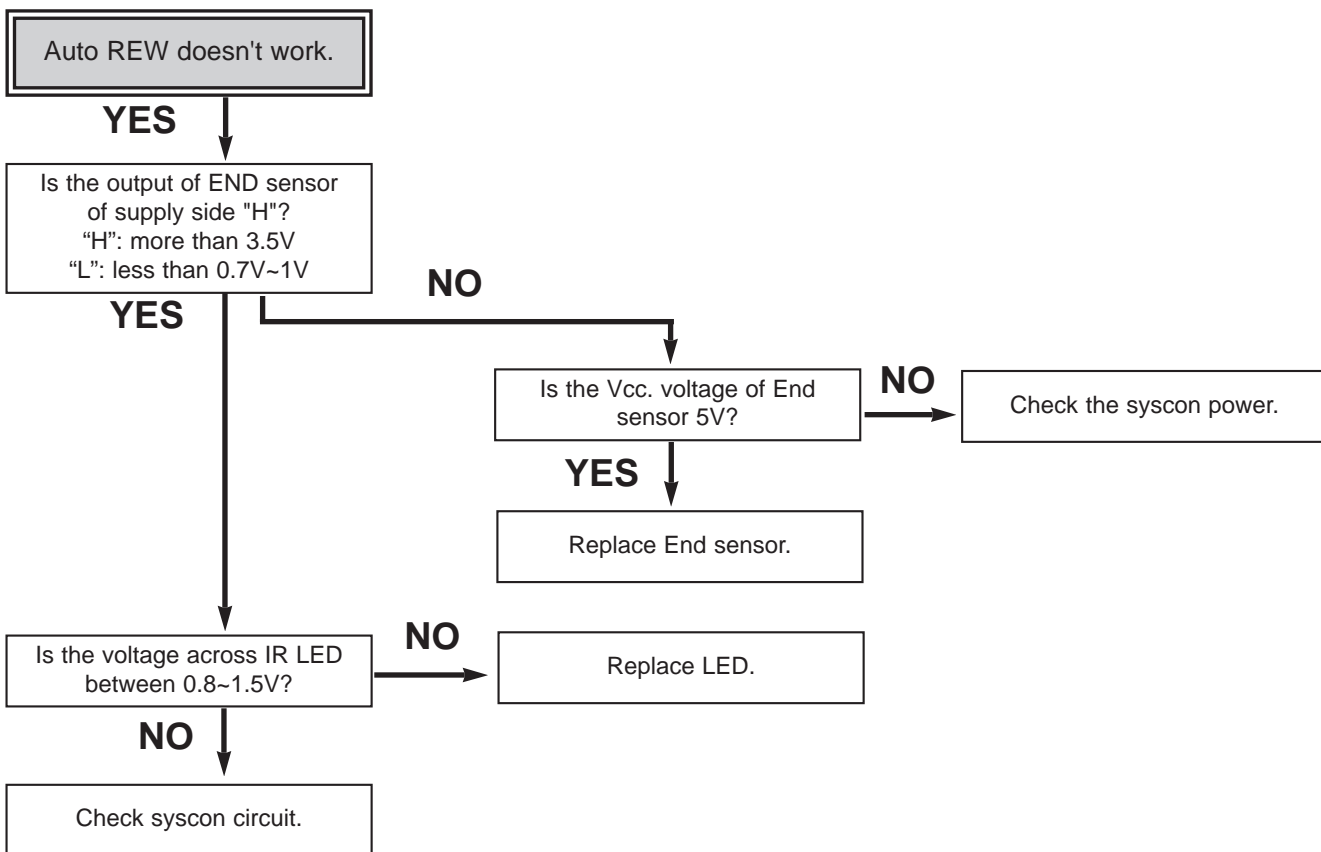
**GEAR AY, P2 & P3**



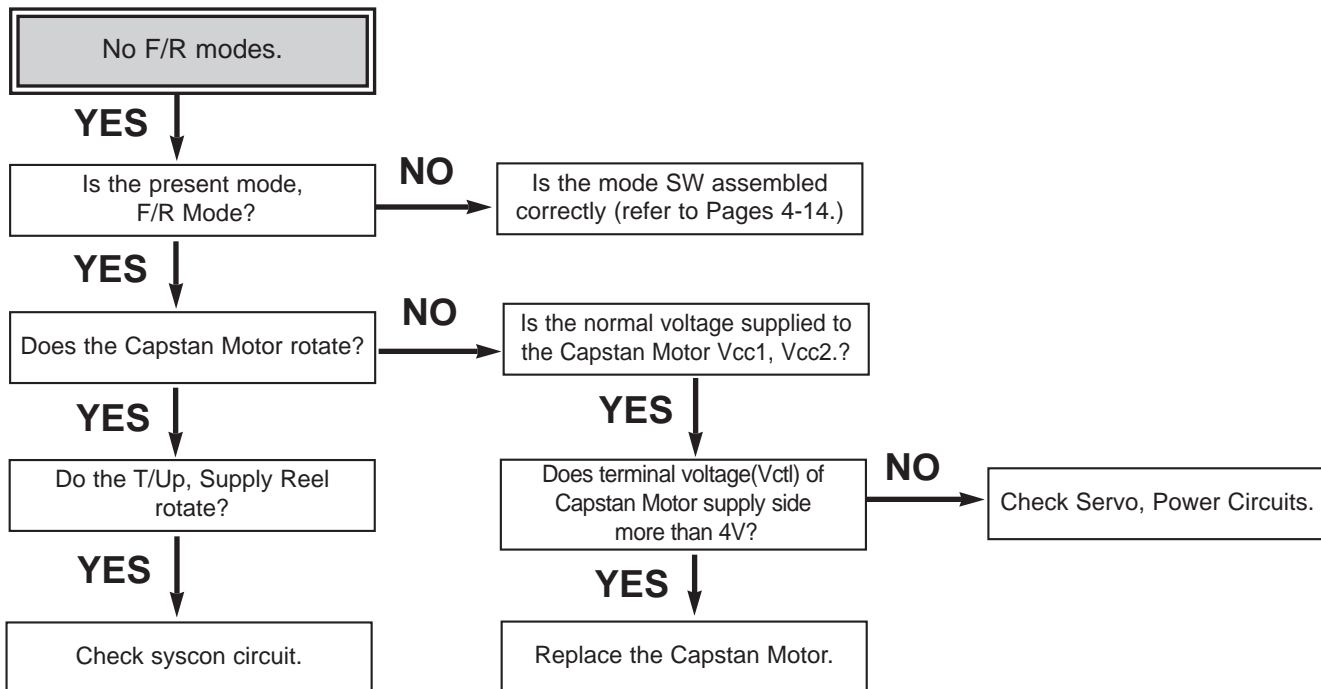
# MECHANISM TROUBLESHOOTING GUIDE

## 1. Deck Mechanism

A.

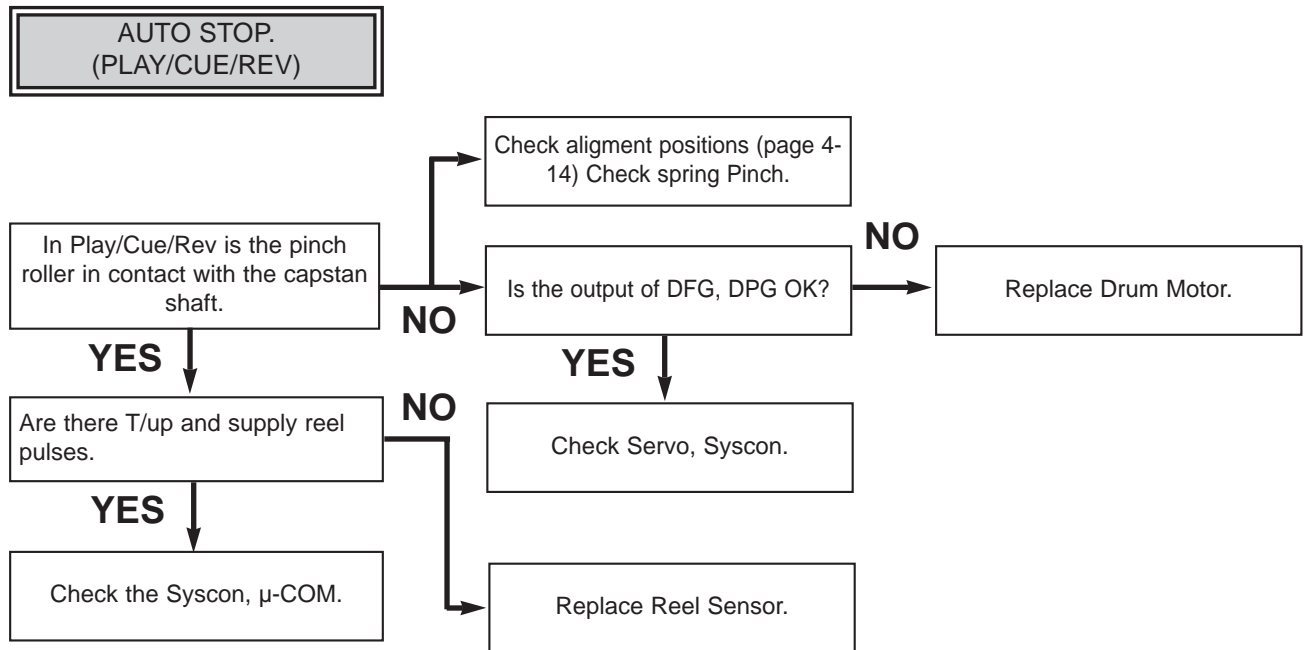


B.

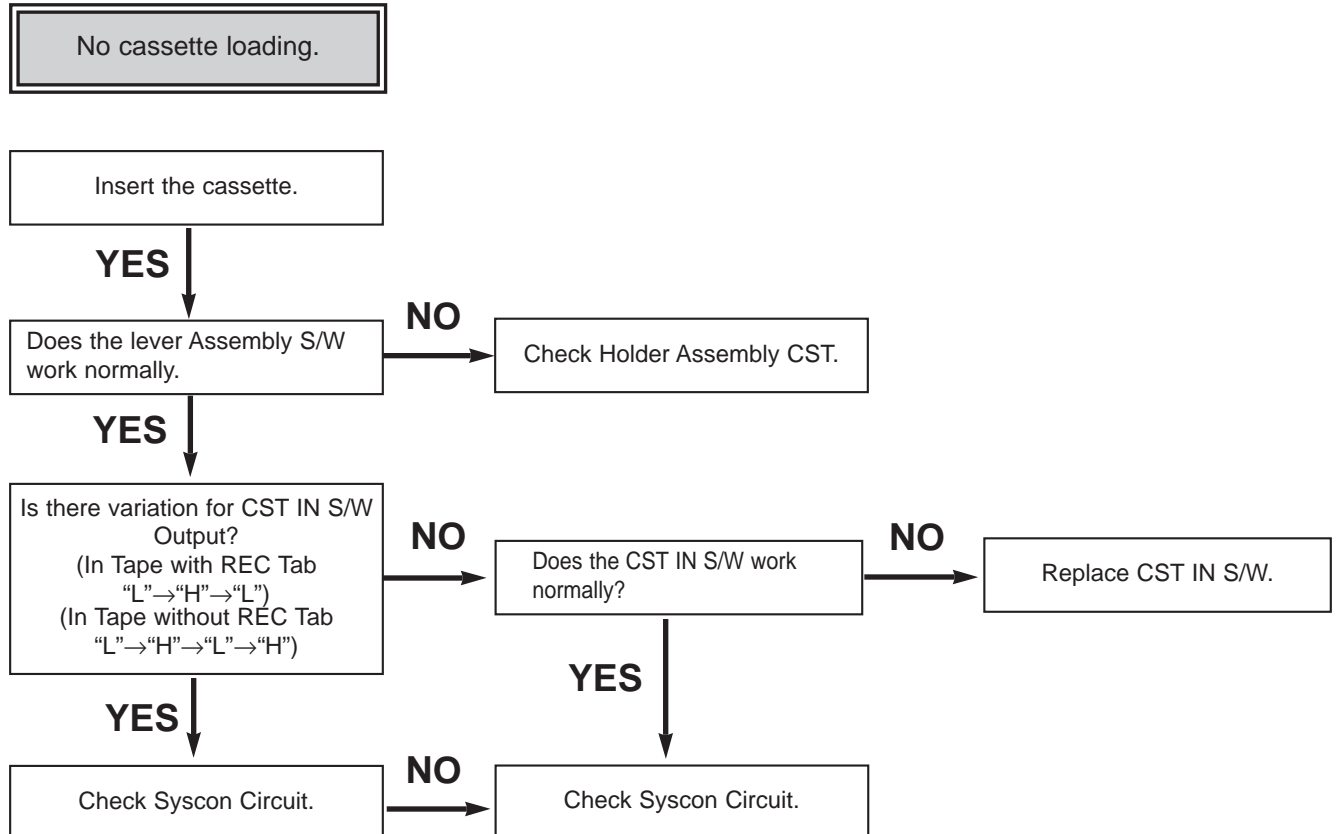


# MECHANISM TROUBLESHOOTING GUIDE

## C.

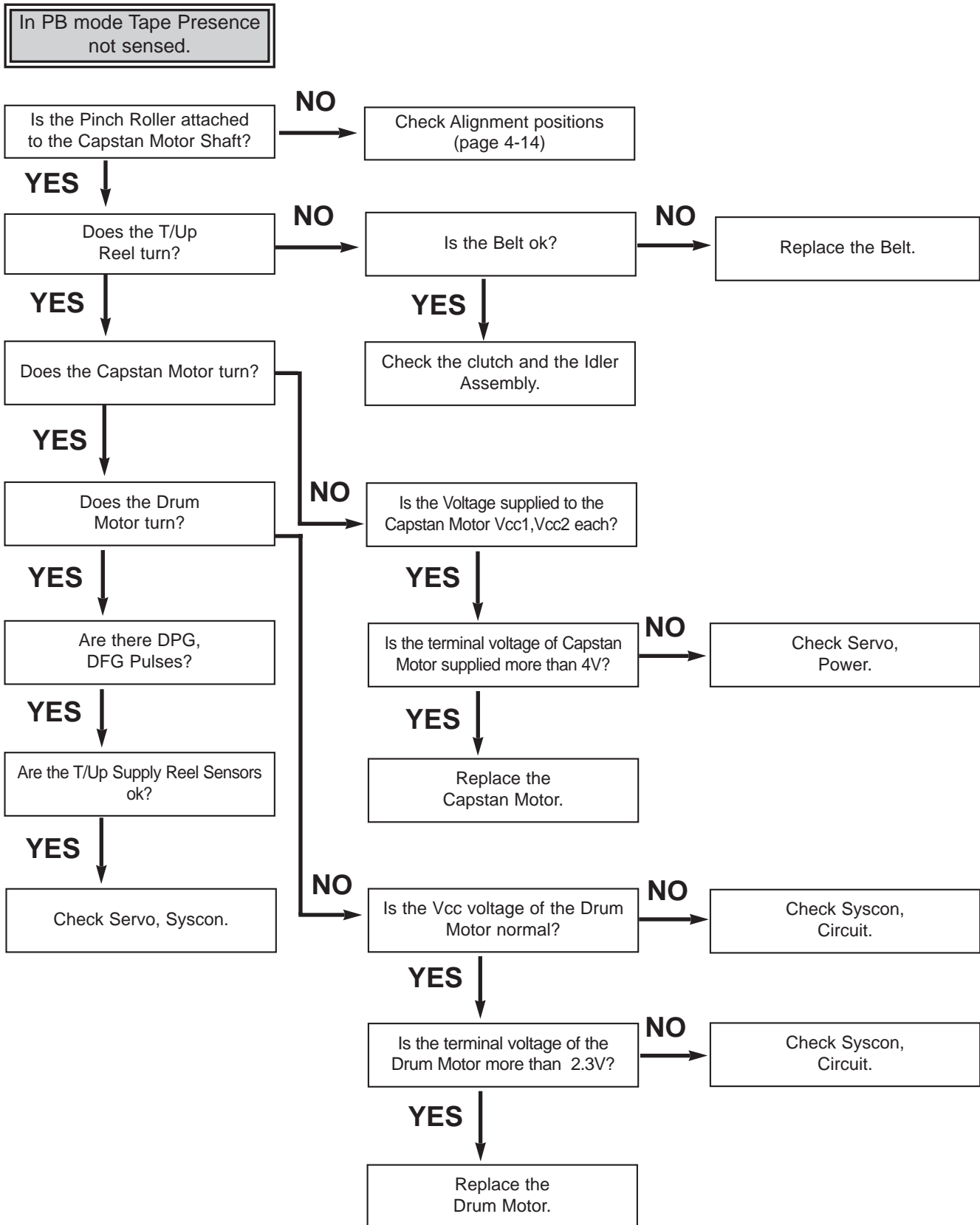


## D.



# MECHANISM TROUBLESHOOTING GUIDE

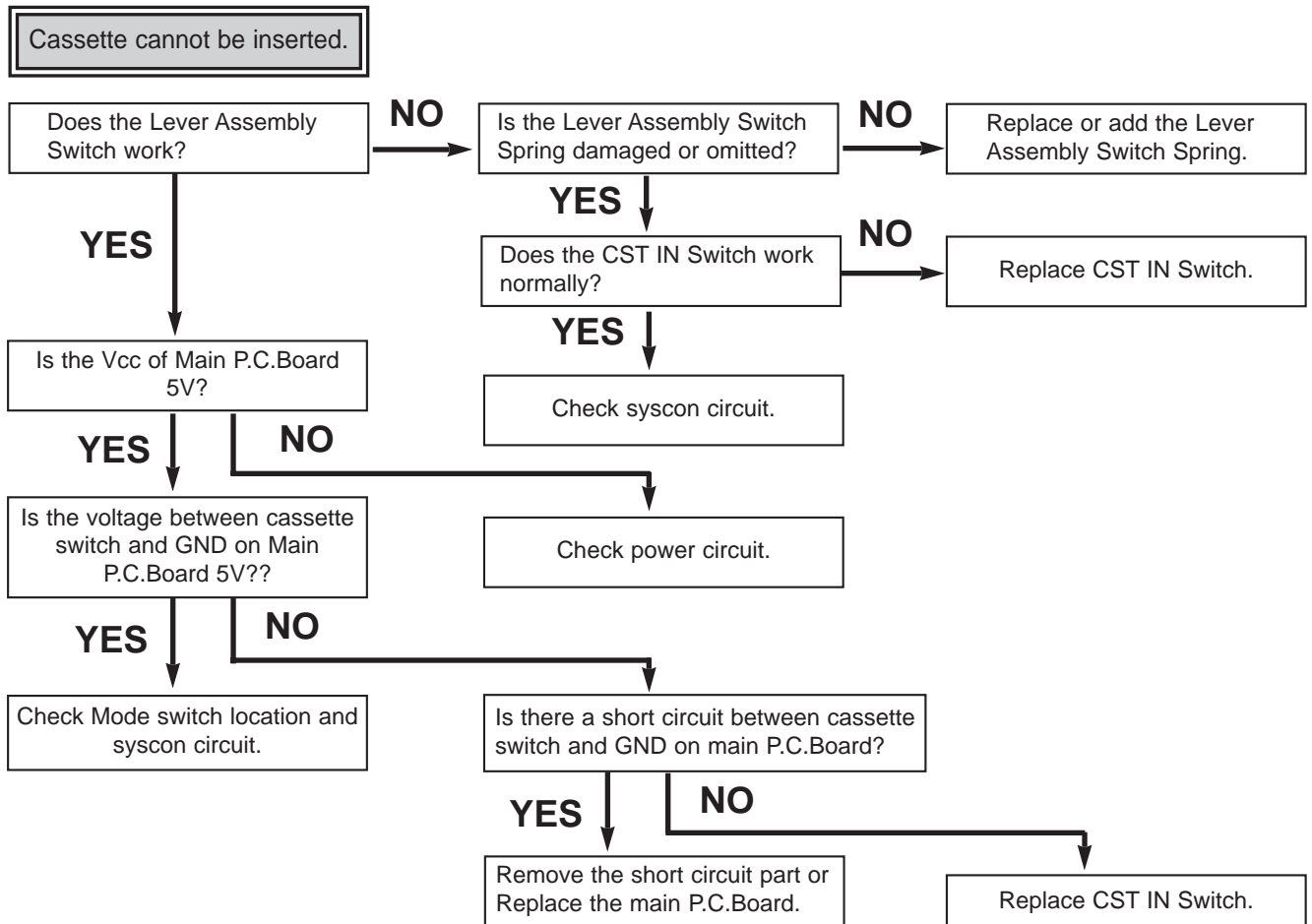
## E.



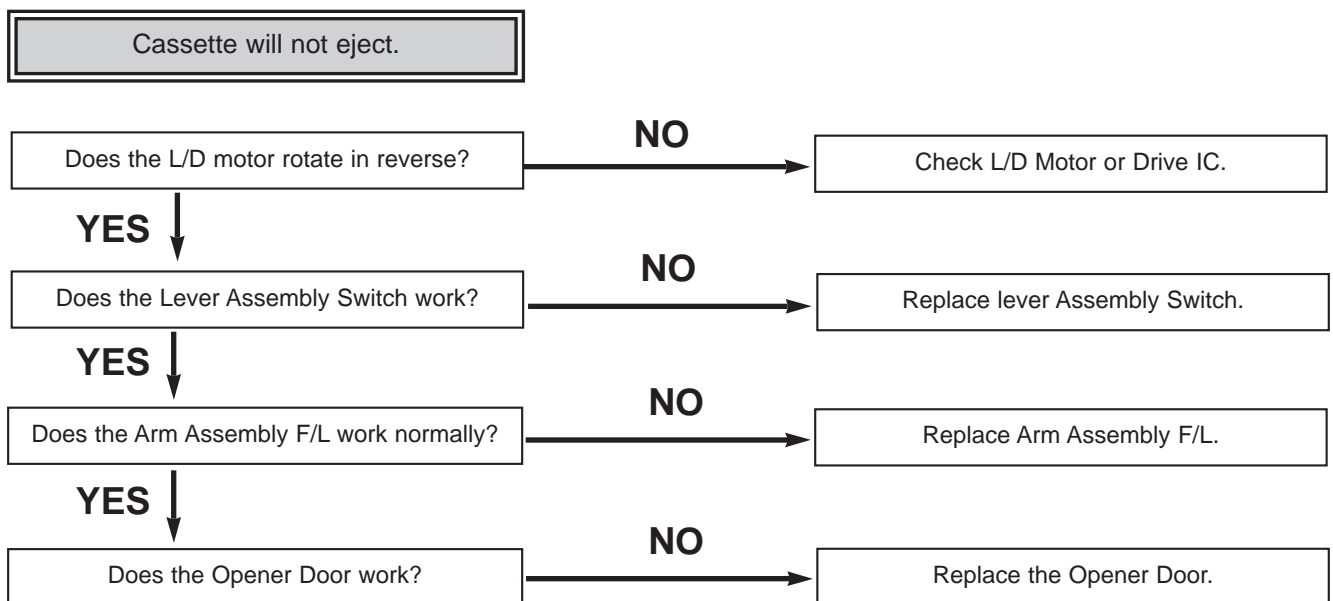
# MECHANISM TROUBLESHOOTING GUIDE

## 2. Front Loading Mechanism

A.



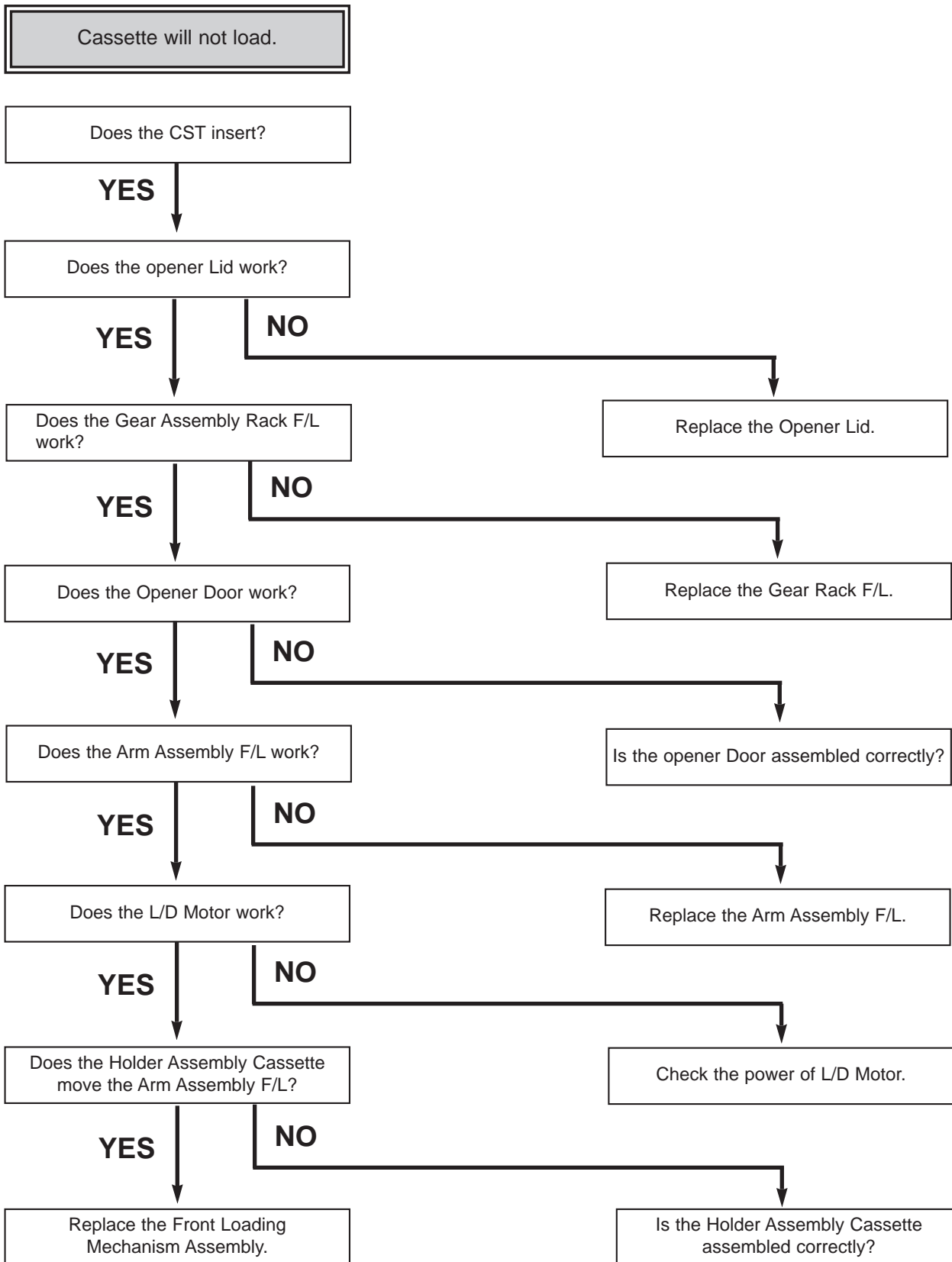
B.



# MECHANISM TROUBLESHOOTING GUIDE

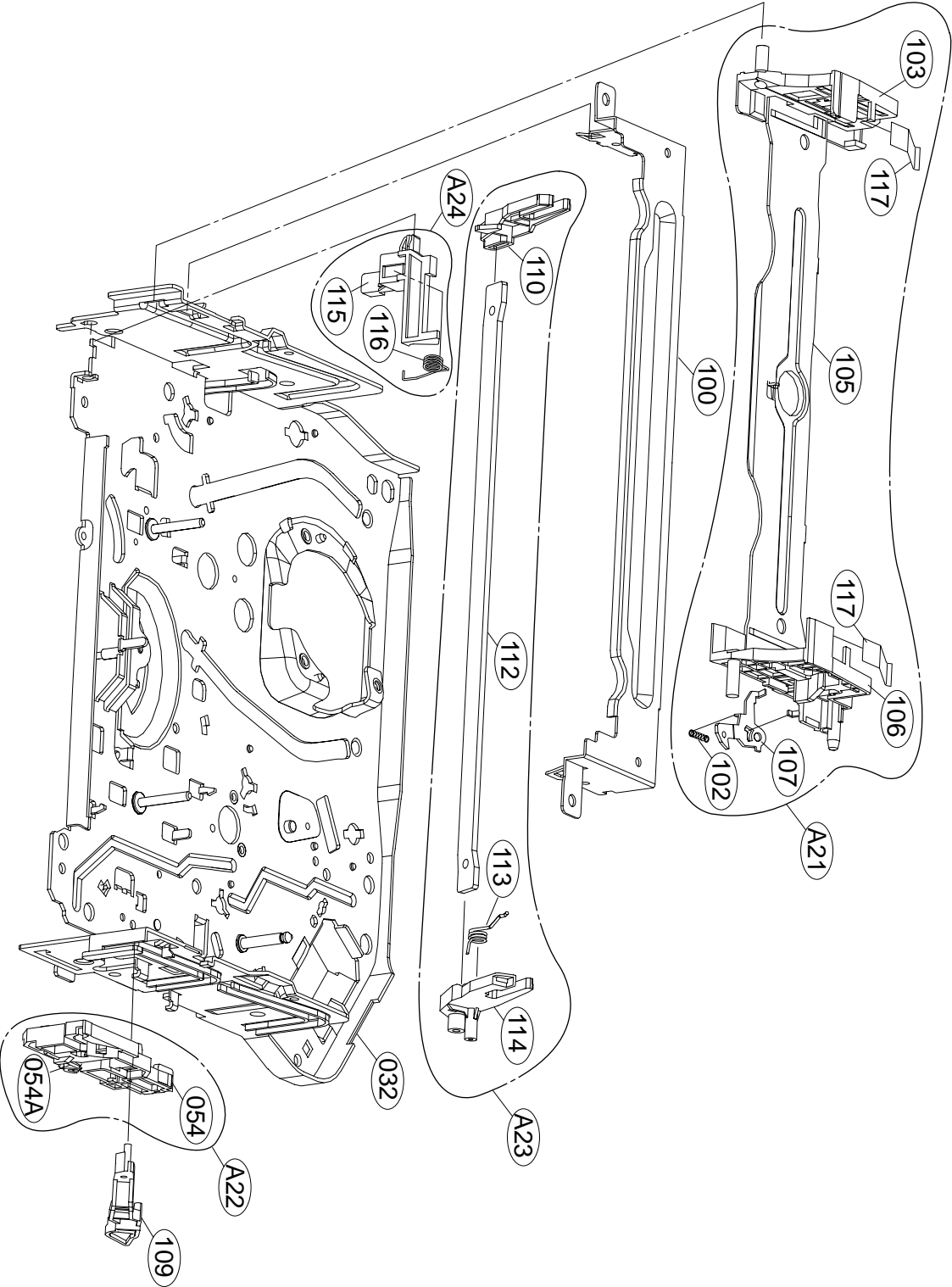
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C.



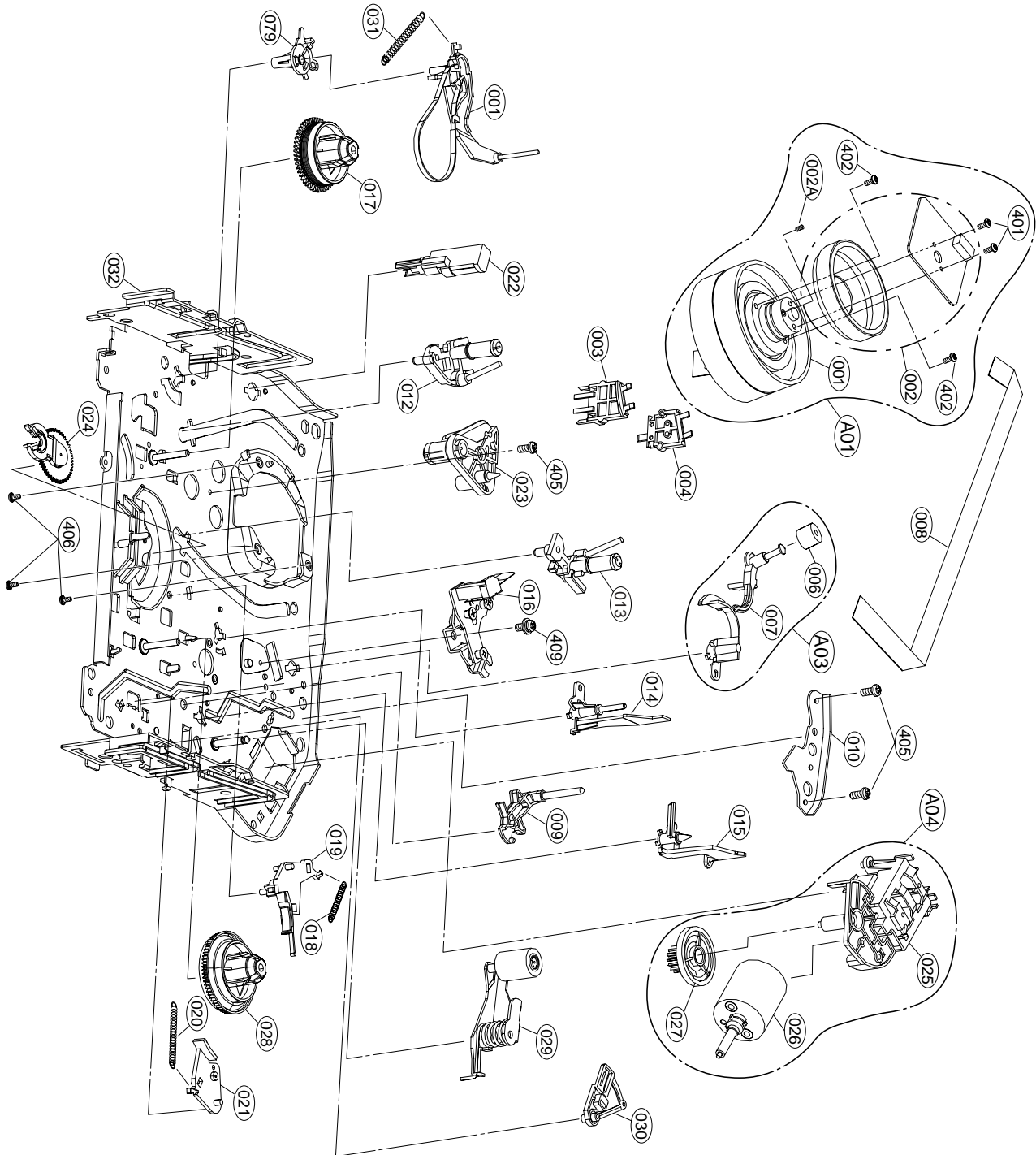
# EXPLODED VIEWS

## 1. Front Loading Mechanism Section



# EXPLODED VIEWS

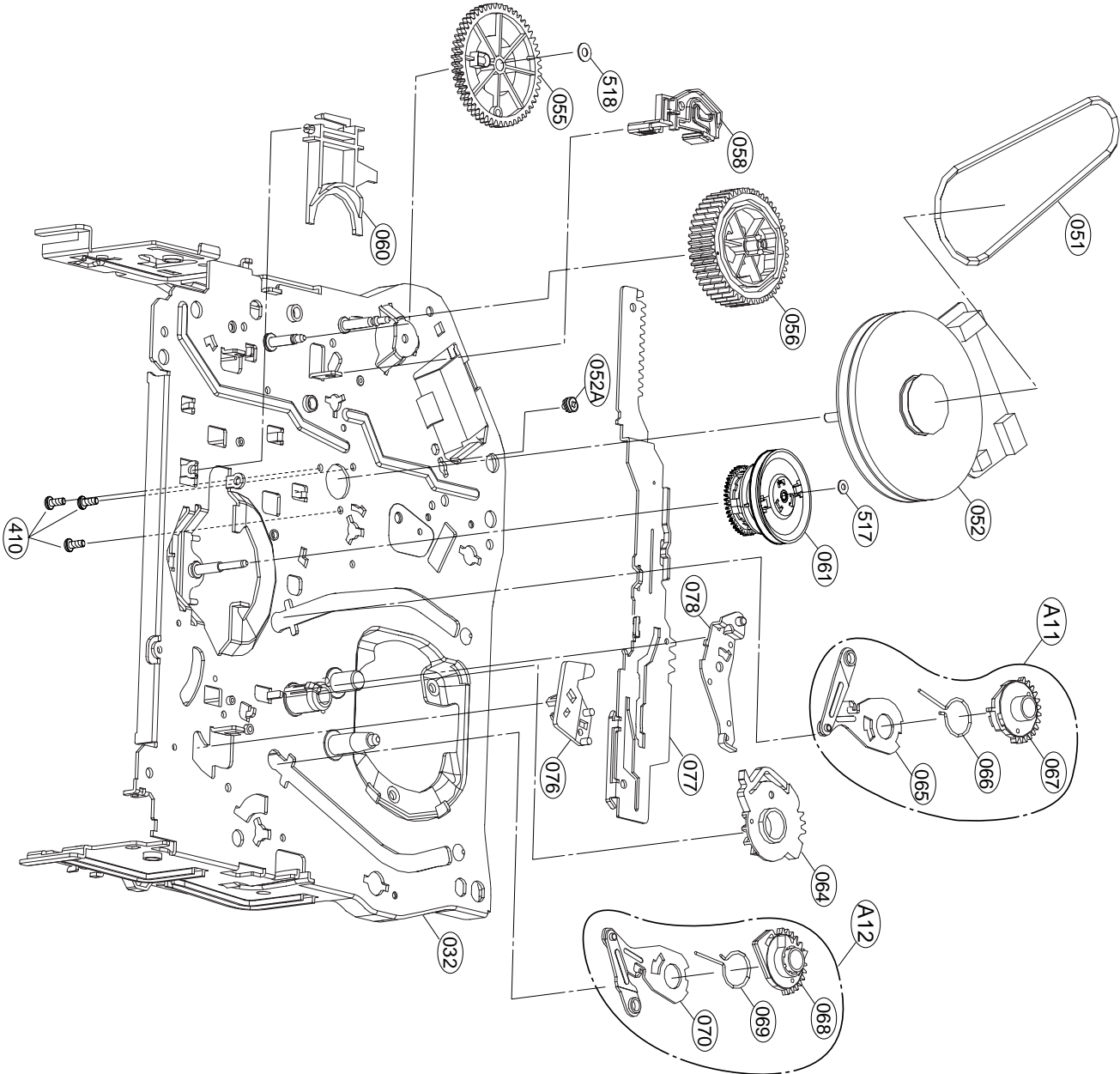
## 2. Moving Mechanism Section(1)





# EXPLODED VIEWS

## 3. Moving Mechanism Section(2)







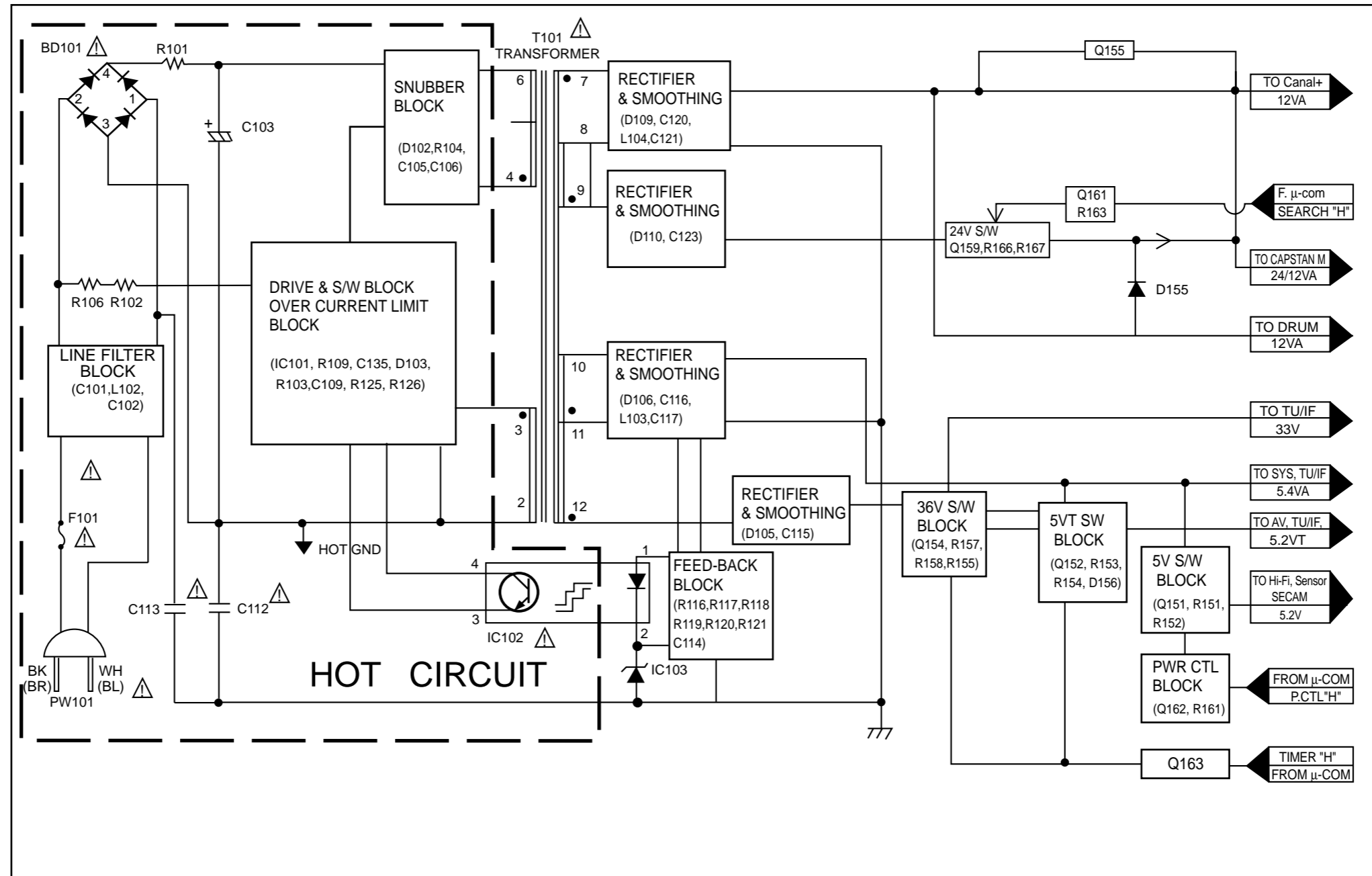
**JVC**

VICTOR COMPANY OF JAPAN, LIMITED  
VIDEO DIVISION



S40894

# BLOCK DIAGRAMS

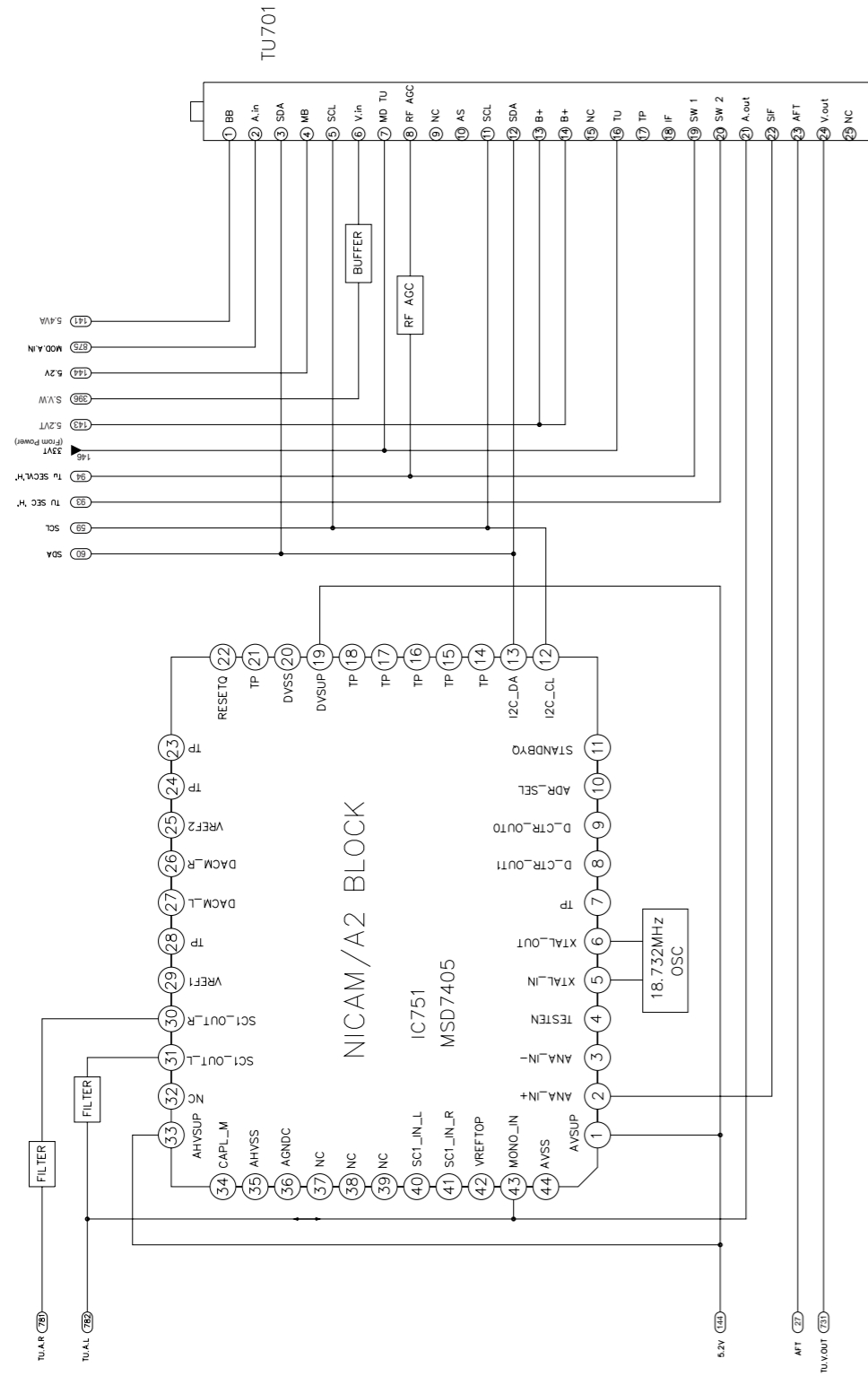
## 1. Power Block Diagram



'00 11. 30

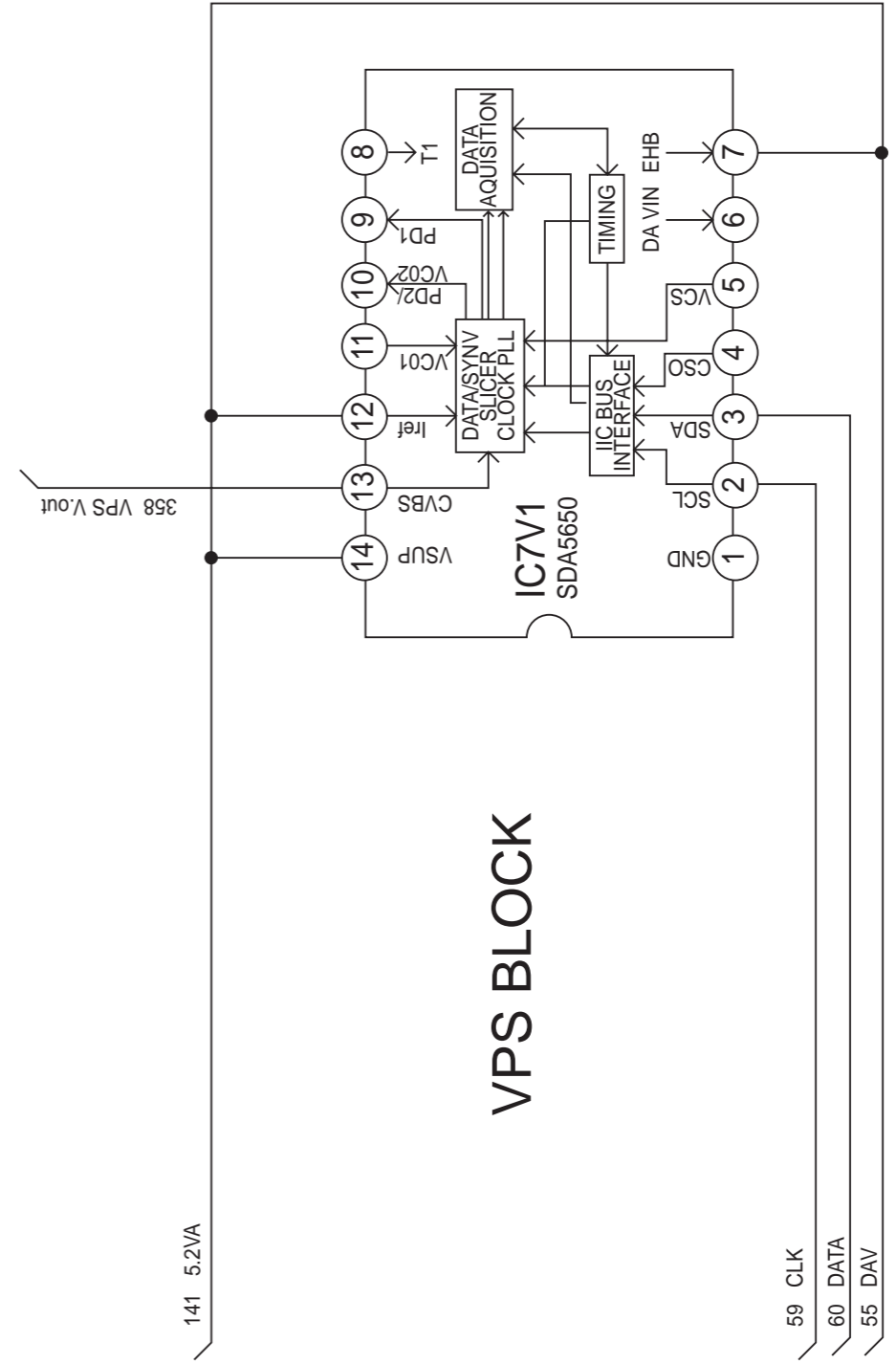
**NOTES :**  Symbol denotes AC ground.  
 Symbol denotes DC chassis ground.

## 2. Tu/IF, NICAM & A2 Block Diagram



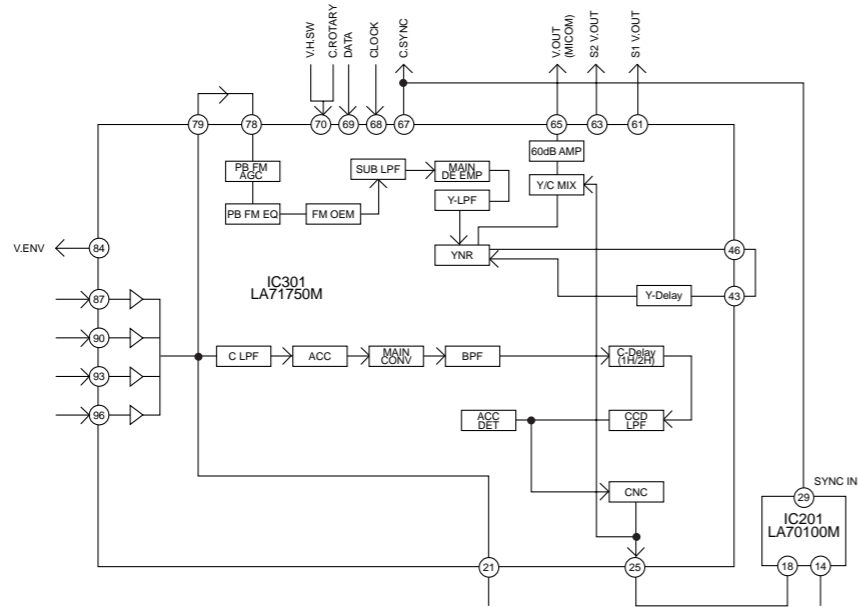
'99 12.8 R10488BA  
BC999NS/BD289Y

## 3. VPS Block Diagram

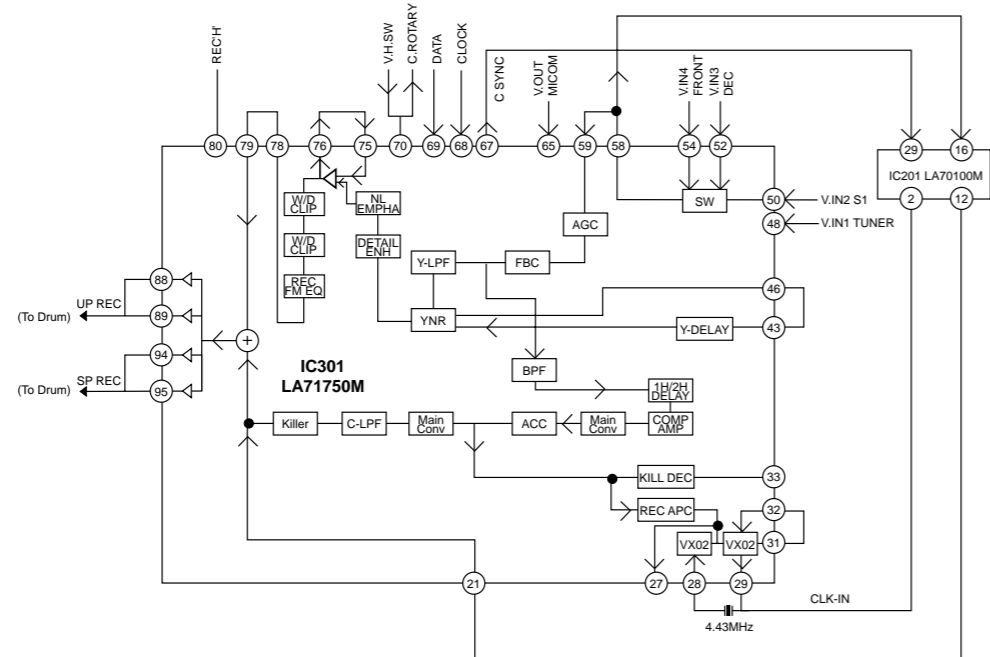


### 4. Y/C Block Diagram

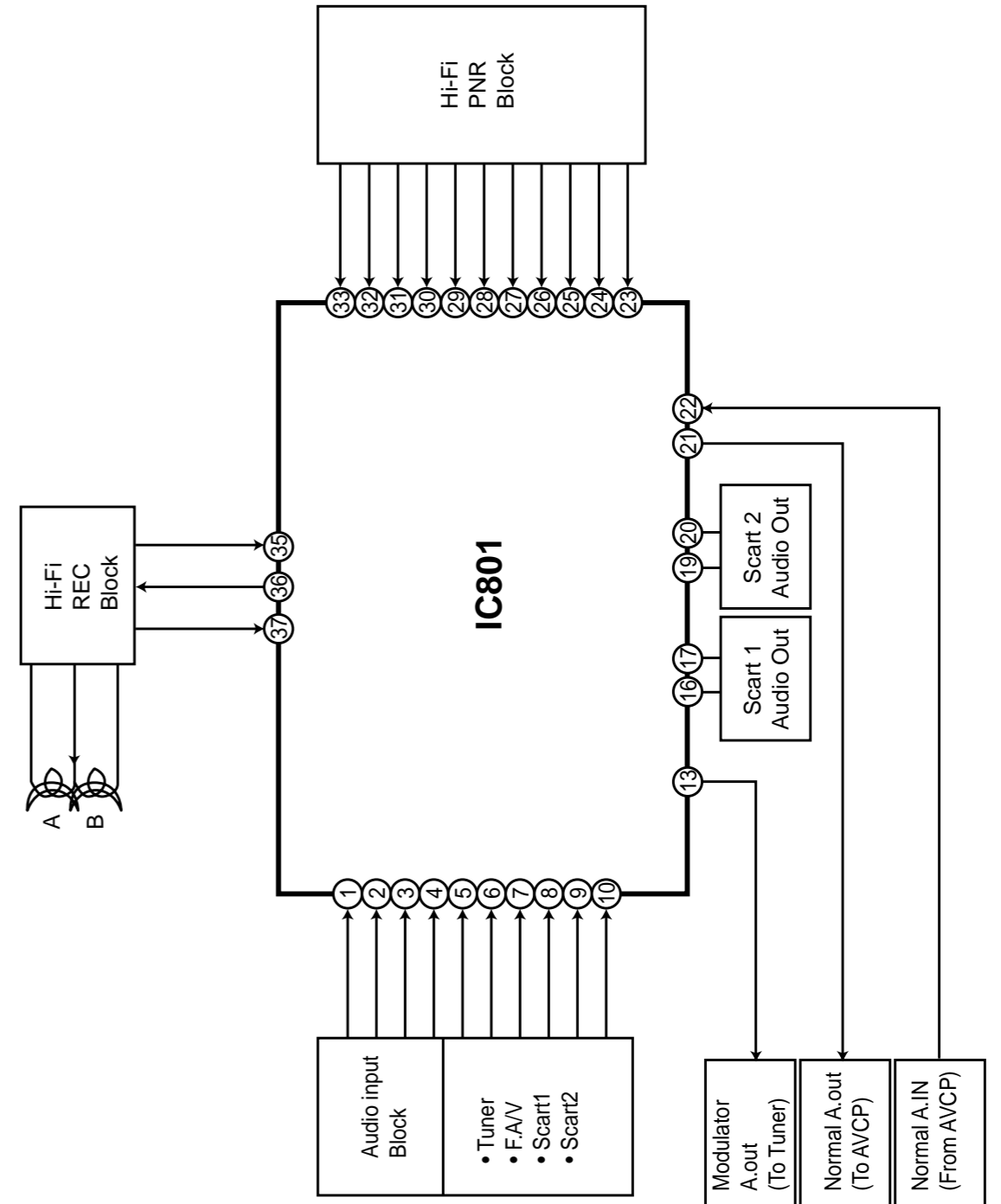
(PB MODE)



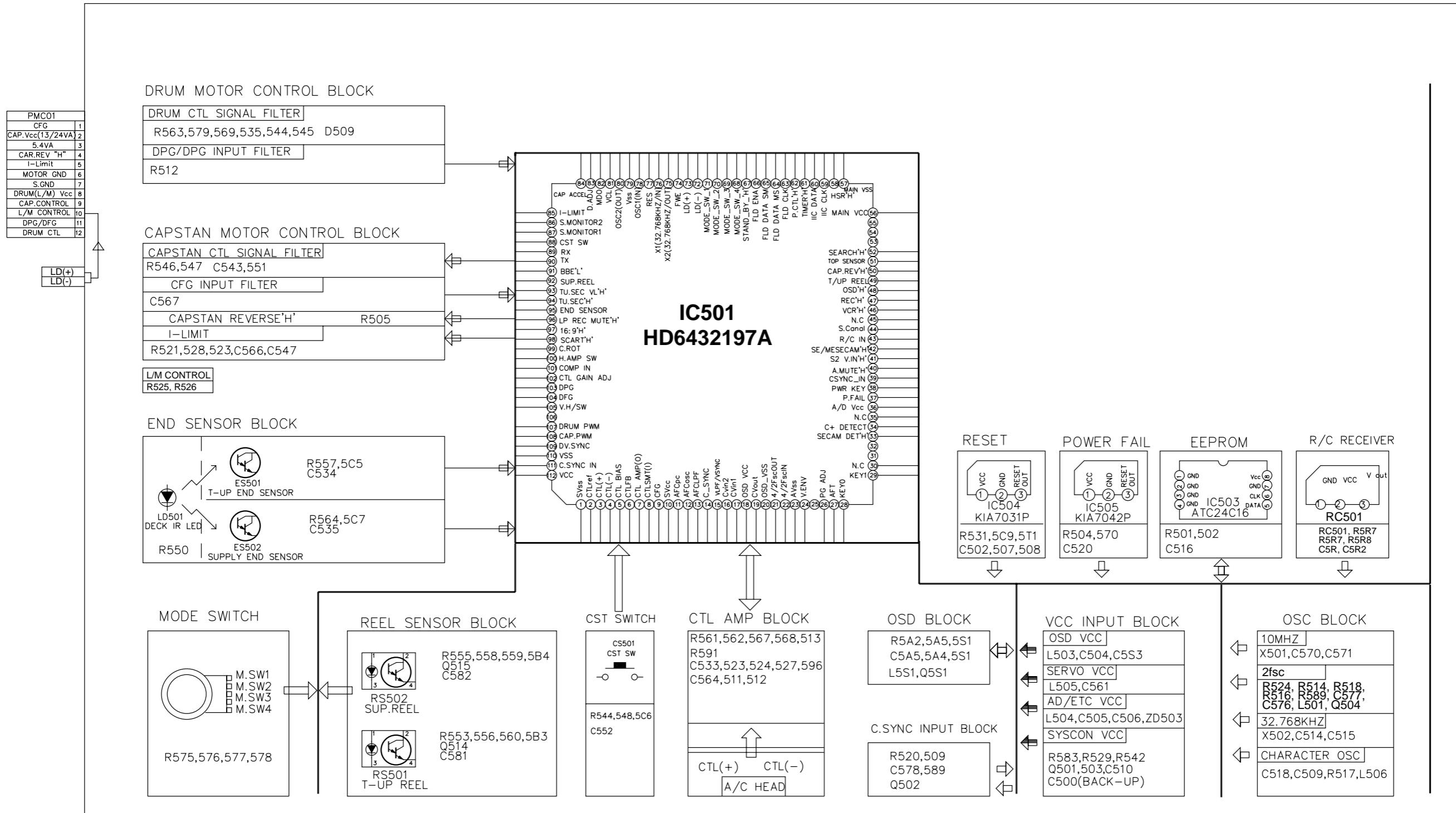
(REC MODE)



### 5. Hi-Fi Block Diagram



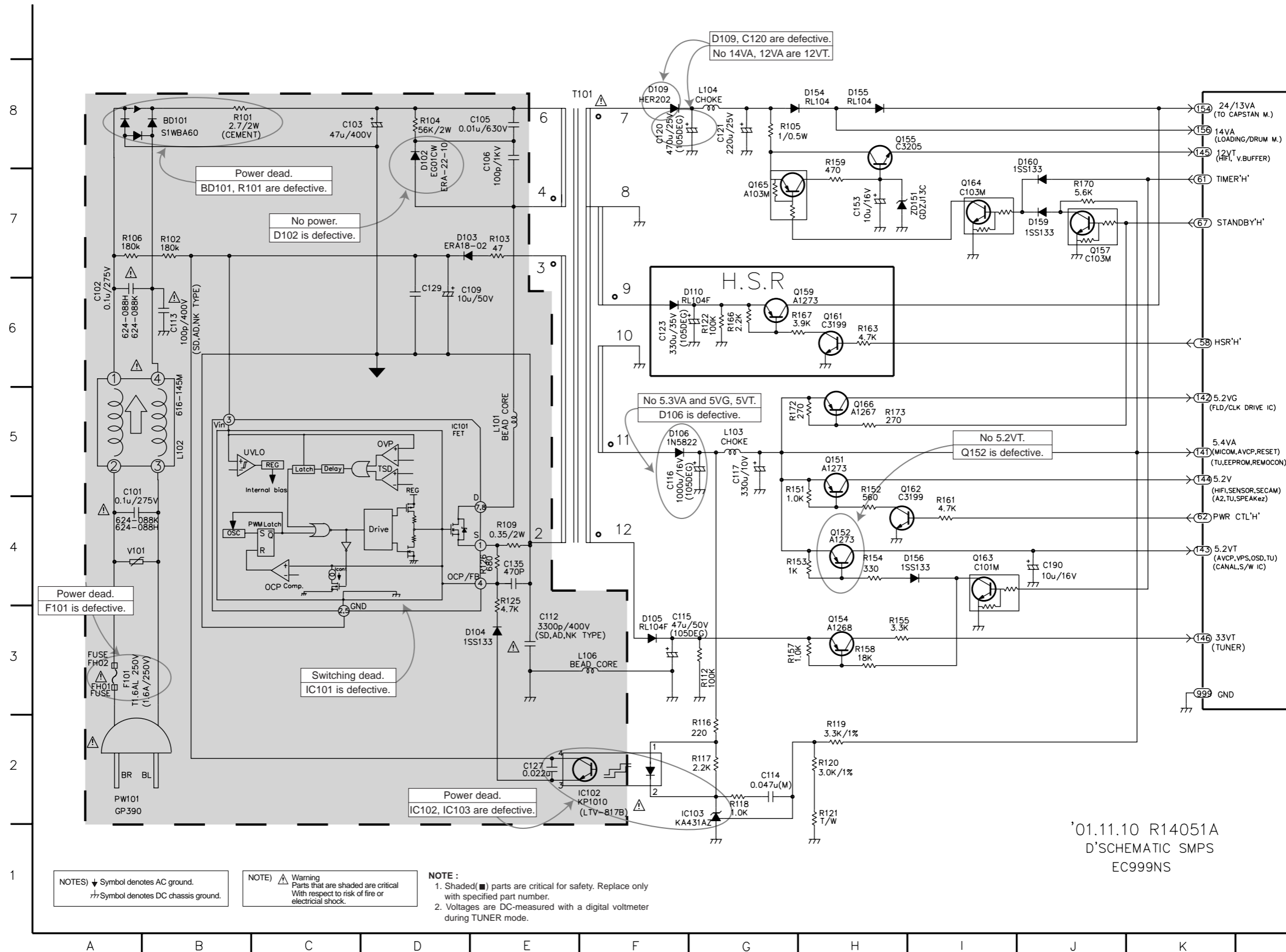
## 6. System Block Diagram





# CIRCUIT DIAGRAMS

## 1. Power Circuit Diagram



### LOCATION GUIDE

BD101	B8	Q154	H3
C101	A5	Q155	H8
C102	A6	Q157	J7
C103	C8	Q159	G6
C105	E8	Q161	H6
C106	E7	Q162	H5
C109	D6	Q163	I4
C112	E3	Q164	I7
C113	B6	Q165	G7
C114	G2	Q166	H5
C115	F3	R101	B8
C116	F5	R102	B7
C117	G5	R103	E7
C120	F8	R104	D8
C121	G8	R105	G8
C123	F6	R106	A7
C127	E2	R109	E4
C129	D6	R112	G3
C135	E4	R116	G2
C153	H7	R117	G2
C190	J4	R118	G2
D102	D7	R119	H2
D103	D7	R120	H2
D104	D3	R121	H2
D105	F3	R122	G6
D106	F5	R125	E4
D109	F8	R126	E4
D110	F6	R151	G5
D154	H8	R152	H5
D155	H8	R153	G4
D156	H4	R154	H4
D159	J7	R155	H3
D160	J8	R157	G3
FH01	A3	R158	H3
FH02	A3	R159	H8
IC101	D5	R161	I4
IC102	F2	R163	H6
IC103	F2	R166	G6
L101	E5	R167	G6
L102	B5	R170	J7
L103	G5	R172	G5
L104	G8	R173	H5
L106	E3	T101	E8
PW101	A2	V101	A4
Q151	H5	ZD151	I7
Q152	H4		

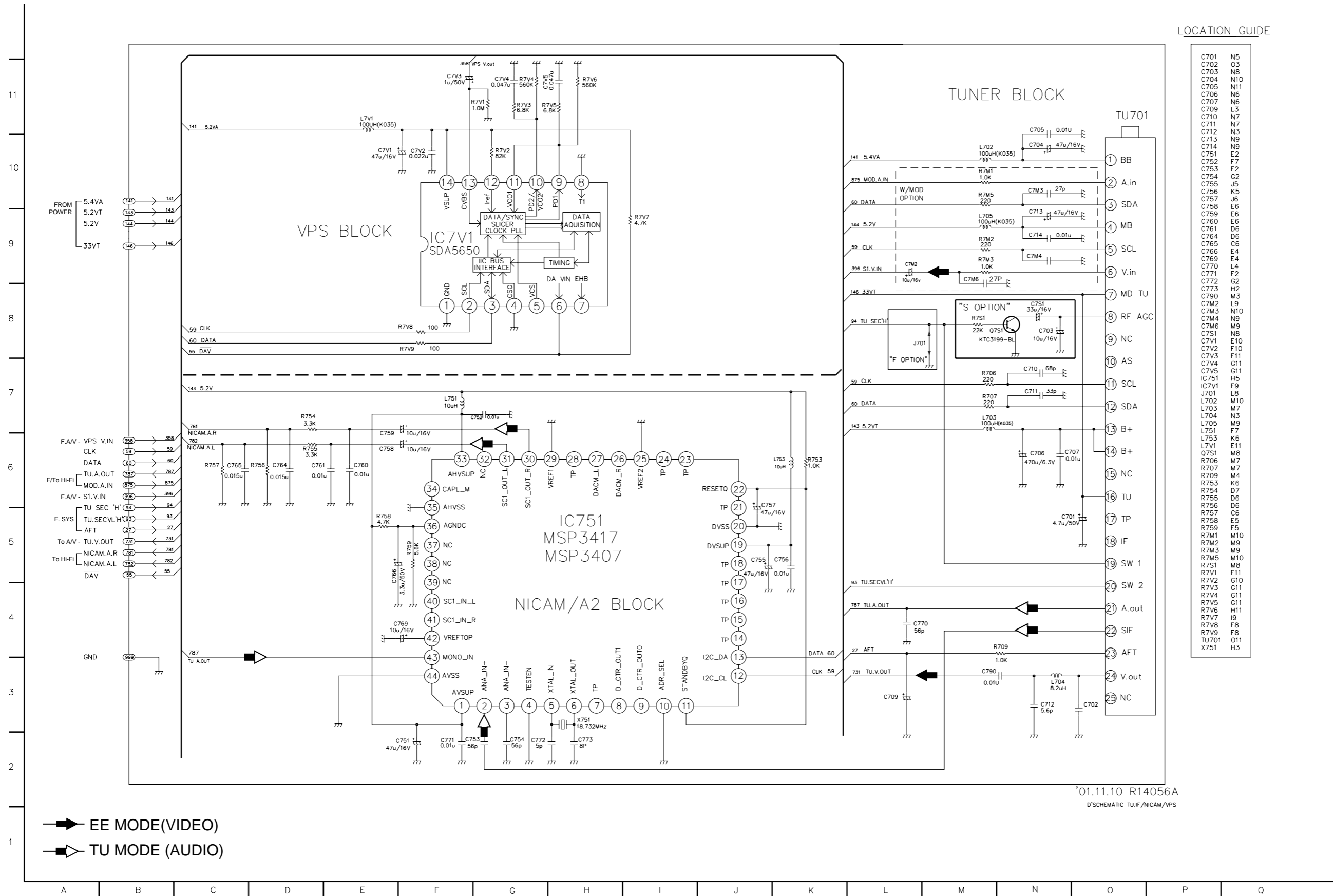
'01.11.10 R14051A  
D'SCHEMATIC SMPS  
EC999NS

NOTES: ⚡ Symbol denotes AC ground.  
⚡ Symbol denotes DC chassis ground.

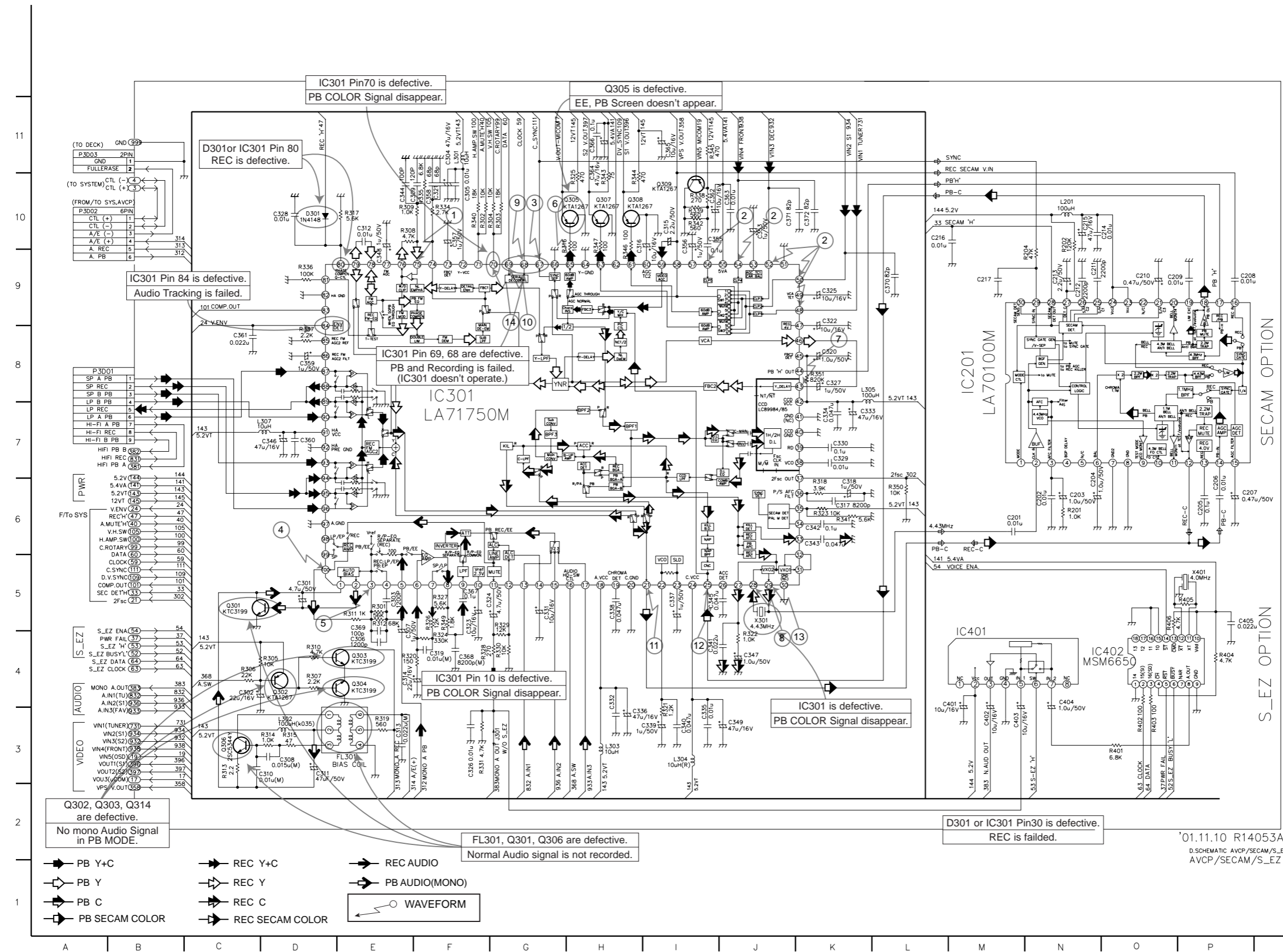
NOTE: ⚠ Warning  
Parts that are shaded are critical  
With respect to risk of fire or  
electrical shock.

NOTE:  
1. Shaded (■) parts are critical for safety. Replace only  
with specified part number.  
2. Voltages are DC-measured with a digital voltmeter  
during TUNER mode.

## 2. Tuner, NICAM Circuit Diagram



### 3. AV, SECAM, VPS Circuit Diagram

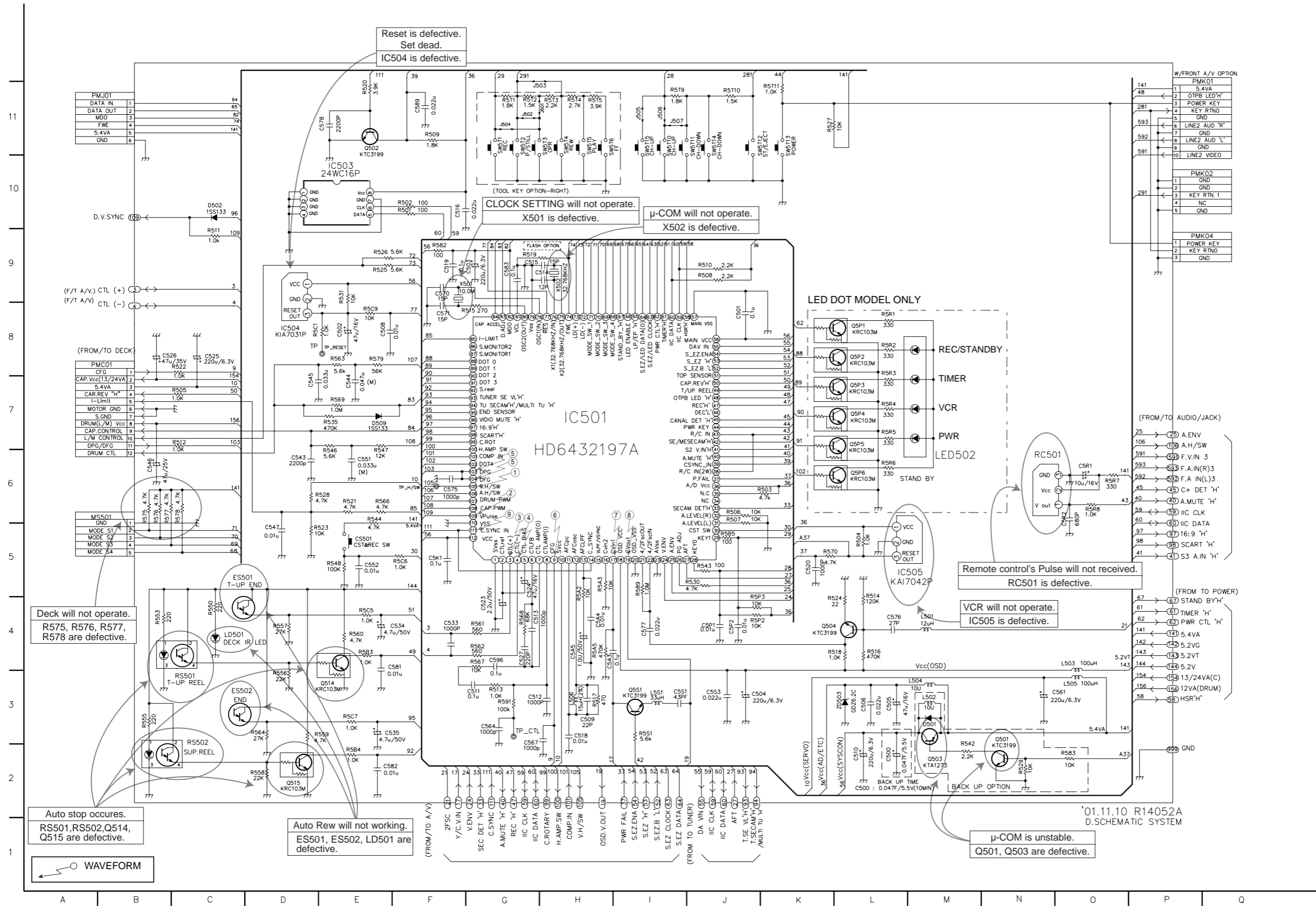


### LOCATION GUIDE

C201	M6	L302	D3
C202	N6	L303	H3
C203	N6	L304	I3
C204	N6	L305	K8
C205	P6	L307	C7
C206	P6	P3001	A8
C207	P6	P3002	A10
C208	P6	P3003	A11
C209	O9	Q301	C5
C210	O9	Q302	D4
C211	N9	Q303	E4
C212	N9	Q304	E4
C213	N9	Q305	G10
C214	O10	Q306	C5
C215	N10	Q307	H10
C216	L10	Q308	H10
C217	M9	Q309	I10
C201	D5	R201	N6
C302	C4	R202	N9
C303	E5	R204	N9
C304	F11	R301	E5
C305	F10	R302	F10
C306	E4	R303	G10
C307	E4	R304	G10
C308	D3	R305	D4
C309	F10	R306	C4
C310	C3	R307	D4
C311	D3	R308	E10
C312	F10	R309	E10
C313	E3	R310	D4
C314	E4	R311	E5
C315	I10	R312	E5
C316	H9	R313	C3
C317	K6	R314	D3
C318	K6	R315	D3
C319	F4	R316	H9
C320	K8	R317	E10
C321	F10	R318	K6
C322	K9	R319	E3
C323	F4	R320	E4
C324	G5	R321	I3
C325	K9	R322	J4
C326	K5	R323	K6
C327	K5	R324	F4
C328	D10	R325	H10
C329	K7	R326	F5
C330	K7	R327	F5
C331	G5	R328	F4
C332	H3	R329	G5
C333	K7	R330	G4
C334	K7	R331	F3
C335	I3	R334	F10
C336	H3	R335	F10
C337	I5	R336	D9
C338	H5	R337	H8
C339	H3	R338	I10
C340	I3	R339	I10
C341	I4	R340	F10
C342	K6	R341	K6
C343	K6	R342	I10
C344	E10	R343	H10
C345	I5	R344	H10
C346	D7	R345	I11
C347	J4	R346	H9
C348	E9	R347	H9
C349	J3	R349	F5
C353	J10	R350	L6
C355	I10	R351	K8
C356	I9	R401	O3
C357	F10	R402	O3
C358	F10	R403	O3
C359	D8	R404	P4
C360	D7	R405	P5
C361	C8	R406	O5
C362	I10	X301	J5
C363	J10	X401	P5
C364	H10		
C365	I11		
C366	H11		
C367	F5		
C368	F4		
C369	E5		
C370	L9		
C371	J10		
C372	K10		
C401	L4		
C402	M3		
C403	M3		
C404	N4		
C405	P5		
D301	D10		
FL301	E3		
IC201	M8		
IC301	F8		
IC401	M4		
IC402	N4		
J301	G3		
L201	N10		
L301	F11		

'01.11.10 R14053A  
D.SCHEMATIC AVCP/SECAM/S\_EZ  
AVCP/SECAM/S\_EZ

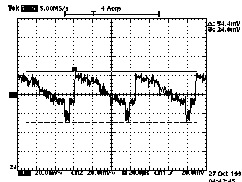
# 4. System Circuit Diagram



# WAVEFORM & VOLTAGE SHEET

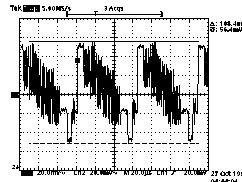
## \_ IC301 Oscilloscope Waveform

①



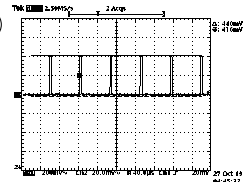
IC301 Pin ⑦⑤  
PB mode  
500mVp-p

②



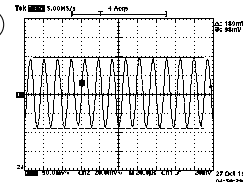
IC301 Pins ④⑧, ⑤①, ⑤②  
Video in 1Vp-p

③



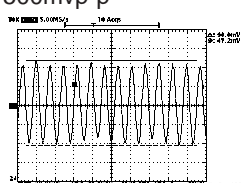
IC301 Pin ⑥⑦  
PB/REC mode  
4.0Vp-p

④



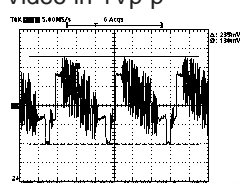
IC301 Pin ⑩①  
REC mode  
1.1Vp-p

⑤



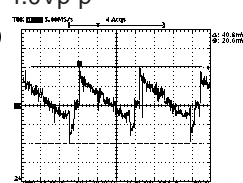
IC301 Pin ③  
REC mode  
2.0Vp-p

⑥



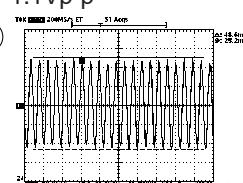
IC301 Pin ⑥⑤  
PB mode  
2.02Vp-p

⑦



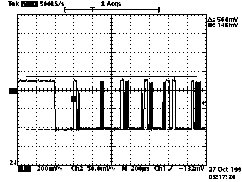
IC301 Pin ④③  
PB mode  
400mVp-p

⑧



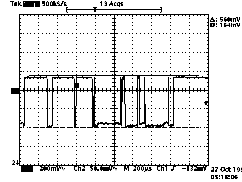
IC301 Pin ②⑧  
PB mode  
400mVp-p

⑨



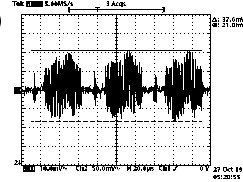
IC301 Pin ⑥⑧  
PB/REC mode  
5Vp-p

⑩



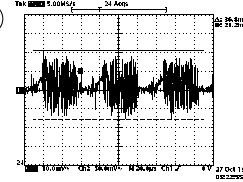
IC301 Pin ⑥⑨  
PB/REC mode  
5Vp-p

⑪



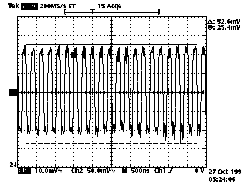
IC301 Pins ②①  
REC mode  
340mVp-p

⑫



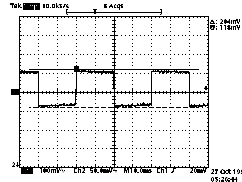
IC301 Pins ②⑤  
PB mode  
300mVp-p

⑬



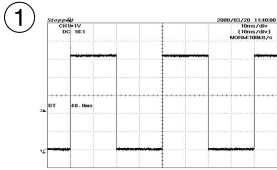
IC301 Pin ②⑨  
PB mode  
400mVp-p

⑭

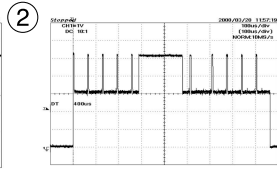


IC301 Pin ⑦①  
PB mode  
3.6Vp-p

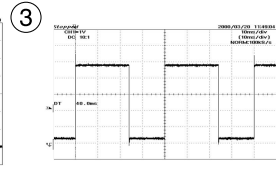
## \* IC501 Waveform Photographs



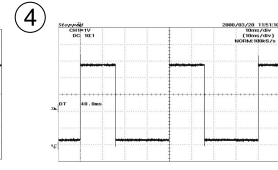
V.HSW  
(IC501 Pin 105)  
1V/10mS  
REC/PB MODE



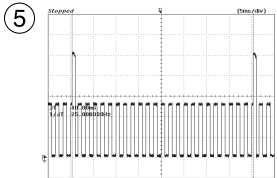
DV.SYNC  
(IC501 PIN 109)  
1V/100uS  
QUE/REV MODE



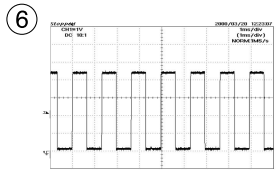
CTL(+)  
(IC501 Pin 3)  
1V/10mS



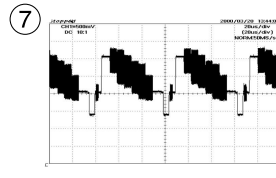
CTL(-)  
(IC501 Pin4)  
1V/10mS



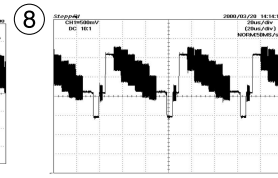
DFG/FG  
(IC501 PIN 103,104)  
1V/10mS  
REC/PB MODE



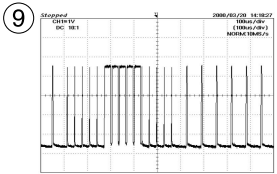
CFG  
(IC501 Pin9)  
1V/10mS



V.IN  
(IC501 Pin 17)  
500mV/20uS

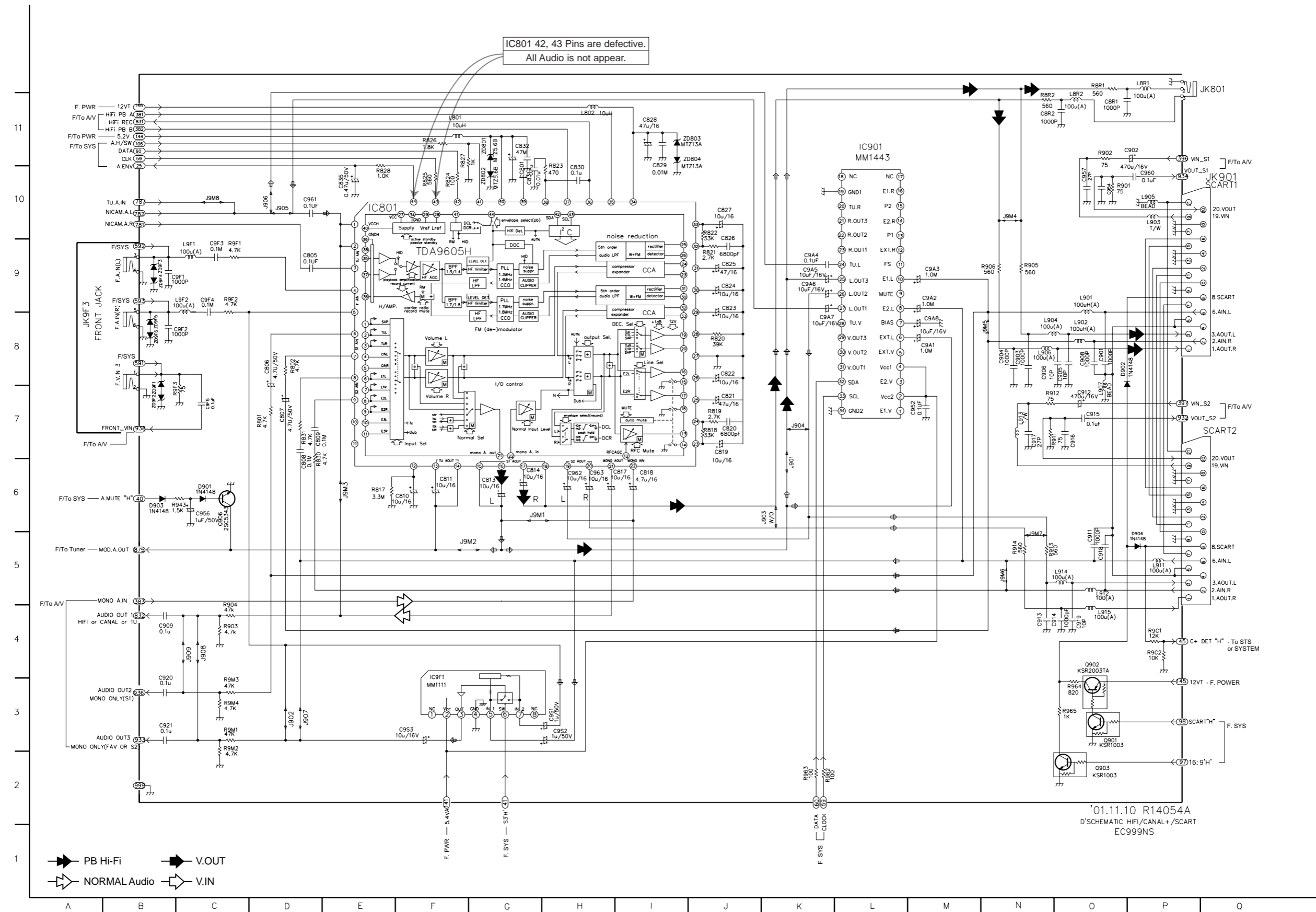


V.OUT  
(IC501 Pin 19)  
500mV/20uS  
EE/PB MODE



C.SYNC  
(IC501 Pin 111)  
1.0V/100uS  
EE/PB MODE

# 5. Hi-Fi, SCART Circuit Diagram



- ➔ PB Hi-Fi
- ➔ V.OUT
- ⚡ NORMAL Audio
- ⚡ V.IN

# • CIRCUIT VOLTAGE CHART

MODE PIN NO.	EE	PB	REC
<b>IC 103</b>			
R	2.45	2.45	2.44
A	-0.03	-0.03	0
K	4.05	4.06	4.07
<b>IC 201</b>			
1	2.52	2.52	2.52
2	2.4	2.41	2.41
3	0	3.35	3.37
4	0	2.59	0
5	0	0	0
6	2.8	3.72	0
7	0	0	0
8	0	0	0
9	3.04	3.02	3.04
10	2.53	2.51	0
11	2.1	2.08	2.19
12	3.32	1.96	3.25
13	4.01	4.01	4.01
14	2.55	2.54	2.56
15	3.06	1.94	3.06
16	6.2	3.2	3.22
17	2.34	4.25	0.22
18	0.13	3.44	0.13
19	2.23	2.21	2.22
20	2.08	2.22	2.06
21	2.27	2.4	2.28
22	1.42	1.43	0
23	5.05	5.02	5.06
24	5.05	5.02	5.06
25	2.31	2.07	2.37
26	2.3	2.02	2.38
27	2.09	2.08	2.11
28	0.18	0.19	0.18
29	0.48	0.26	0.41
30	2.08	2.07	2.11
<b>IC 401</b>			
1	0	0.01	0
2	5.21	5.2	5.21
3	2.19	2.2	2.19
4	0	0	0
5	2.91	2.91	2.91
6	0	0	0
7	2.92	2.92	2.92
8	0	0	0
<b>IC 402</b>			
1	0	0	0
2	2.86	2.86	2.85
3	5.15	5.16	0
4	5.29	5.29	5.29
5	4.94	4.94	4.94
6	5.29	5.29	5.29
7	5.29	5.2	5.29
8	2.57	2.57	2.57
9	0	0	0
10	5.29	5.29	5.29

MODE PIN NO.	EE	PB	REC
11	2.41	2.41	2.42
12	2.1	2.1	2.08
13	0	5.29	5.29
14	5.26	5.26	5.25
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
<b>IC 301</b>			
1	5.15	5.14	1.7
2	0.02	0.03	0.75
3	2.29	2.29	0
4		1.46	0.5
5	2.28	2.26	2.47
6	2.29	2.28	2.29
7	2.28	2.28	2.27
8	2.27	2.27	2.27
9	2.26	2.26	3.05
10	2.29	2.29	2.28
11	2.37	2.39	2.28
12	0	0.02	0.11
13	2.26	2.3	2.28
14		0.02	
15	2.26	2.26	2.29
16	5.17	0.16	5.05
17	2.26	2.26	2.27
18	5.17	5.17	5.14
19	4.24	4.25	3.07
20	0	0	0
21	3.36	1.96	3.25
22	3.07	3.06	3.06
23	3.06	3.03	3.05
24	5.16	5.16	5.13
25	0.13	3.44	5.13
26	1.44	1.82	0
27	2.07	2.1	1.42
28	4.23	4.21	4.18
29	2.83	2.83	2.9
30	0	0	0
31	4.7	4.7	4.69
32	4.7	4.7	4.69
33	2.85	2.06	2.07
34	0.33	0.31	0.31
35	2.17	2.16	2.16
36	3.35	3.35	3.35
37	2.09	2.11	2.09
38	1.99	2.03	2.02
39	9.45	9.43	9.39
40	0	0	0
41	0	0	0
42	5.17	5.16	5.14
43	2.4	2.42	2.39
44	2.34	4.42	0.08
45	2.33	2.46	2.46
46	2.69	2.67	2.68

MODE PIN NO.	EE	PB	REC
47	4.17	4.17	4.17
48	2.35	2.37	2.33
49	3.18	3.18	3.18
50	1.97	1.97	1.97
51	0	0	0
52	1.97	1.97	1.97
53	2.34	2.35	2.35
54	1.97	1.99	1.99
55	5.24	5.24	5.24
56	2.25	2.31	2.29
57	2.02	2.14	1.99
58	2.37		2.4
59	2.94	2.95	2.93
60	1.42	1.55	1.38
61	1.72	1.85	2.05
62	0.09	0.11	0.11
63	1.75	1.84	
64	0	0	0
65	1.85	1.85	1.81
66	0	0	0
67	0	0.44	0.4
68	4.79	4.91	4.81
69	4.75	4.81	4.79
70	5.27	2.69	2.69
71	0.01	0	0.01
72	5.13	5.11	5.09
73		1.98	2.21
74	2.55	2.63	2.53
75	2.46	2.63	2.45
76	2.47	0.77	2.45
77	1.59	1.59	1.49
78	2.7	3.39	2.69
79	2.02	1.91	2.52
80	1.06	1.06	4.72
81	1.11	1.12	1.11
82	0	0	0
83	5.13	1.47	1.51
84	0.46	2.43	1.75
85	0	0	1.36
86		0	2.03
87	0	0.72	0.7
88	0.71	0.72	0.7
89	0.71	0.72	0.7
90	0.71	0.72	0.7
91	5.17	5.16	5.11
92	0	0	0
93	1.95	1.93	0.73
94	1.95	1.93	0.72
95	1.95	1.93	0.72
96	1.95	1.93	4.33
97	0	0	0
98	2.29	2.29	2.4
99	0	2.29	2.4
100	2.29	2.29	2.53

MODE PIN NO.	EE	PB	REC
<b>IC 501</b>			
1	0	0	0
2	2.39	2.57	2.57
3	2.57	2.57	3.04
4	2.57	2.57	2.1
5	2.57	2.57	2.57
6	2.56	2.57	2.57
7	2.58	2.59	2.58
8	2.55	2.55	2.55
9	4.62	2.31	2.31
10	4.85	5.16	5.016
11	1.89	1.91	1.9
12	1.89	1.9	1.89
13	2.61	2.5	2.49
14	0.4	0.4	0.4
15	0.08	0.1	0.56
16	1.99	1.91	1.98
17	2.39	2.34	2.31
18	5.14	5.14	5.11
19	2.41	2.37	2.33
20	0	0	0
21	2.47	2.47	0
22	2.46	2.46	0
23	0	0	0
24	0.51	2.47	0.01
25	2.81	2.88	2.8
26	5.27	2.28	5.28
27	2.46	2.5	2.54
28	5.27	5.28	5.28
29	5.22	5.27	5.27
30	0	5.01	0.05
31	0.17		1.9
32	0.12		
33	0.18	0.18	0.18
34	0.31	0.3	0.43
35	5.27	5.28	5.28
36	5.28	5.29	5.28
37	4.93	4.94	4.94
38	4.88	4.88	4.87
39	2.29	2.29	2.28
40	0	0	0
41	0	0	0
42	0	0	0
43	4.88	4.88	4.87
44	5.24	5.25	5.24
45	0	0	0
46	0	0	0
47	0	0	0
48	0	0	0
49	0.01	5.28	
50	5.25	0	0
51	4.48	0.04	0.02
52	5.28	5.29	5.29
53	0	0	0
54	5.25	5.26	5.27

MODE PIN NO.	EE	PB	REC
55	5.27	5.29	0.08
56	5.27	5.28	5.28
57	0	0	0
58	0	0	0
59	4.91	4.92	4.79
60	4.91	4.91	4.79
61	5.17	5.18	5.18
62	5.17	5.19	5.18
63	2.84	2.83	2.86
64	5.14	5.14	5.15
65	0.01	0.01	0.02
66	5.1	5.11	5.11
67	0.83	0.83	0.89
68	0.01	5.3	5.3
69	0.01	5.3	5.3
70	5.29	5.3	5.3
71	5.29	0	0.01
72	0.03	0.03	0.04
73	5.24	5.23	5.22
74	0	0	0
75	1.49	1.5	1.5
76	1.3	1.4	1.21
77	5.27	5.27	5.27
78	2.55	2.53	2.54
79	0	0	0
80	5.29	2.58	2.58
81	3.25	3.25	3.25
82	5.28	5.28	5.28
83	0	2.7	2.69
84	0	2.77	2.77
85	0	3.55	3.55
86	2.65	2.68	2.86
87	0	3.3	3.21
88	0	0	0
89	0	0	0
90	0	0	0
91	0	0	0
92	0.95	5.16	
93	0	0	0
94	0	0	0
95	0.29	0.1	0.07
96	0	0	0
97	0	0	0
98	5.26	5.26	5.25
99	0	2.7	0
100	0.01	0	0
101	0.7	0.13	0.57
102	0	0	0
103	0.12	1.39	1.39
104	0.12	1.39	1.39
105	0	2.7	0
106	0	2.64	5.12
107	0	2.75	2.74
108	0	2.78	2.77
109	0.05	0.05	0.05

MODE PIN NO.	EE	PB	REC
110	0	0	0
111	4.2	0.4	0.4
112	5.29	5.28	5.27
<b>IC 503</b>			
1	0	0	0
2	0	0	0
3	0	0	0
4			







# SECTION 5 REPLACEMENT PARTS LIST

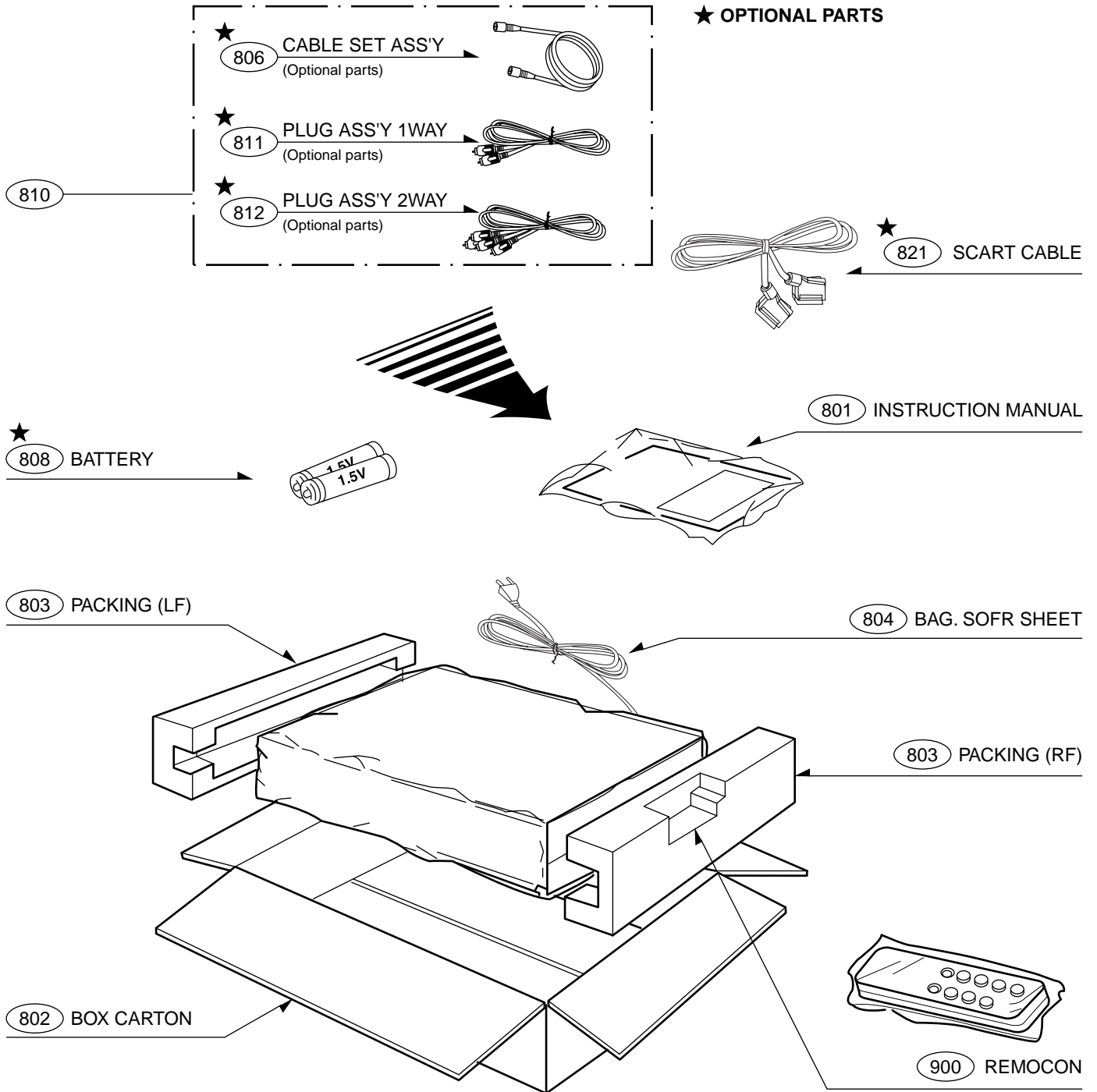
## SAFETY PRECAUTION

Parts identified by the  symbol are critical for safety. Replace only with specified part numbers.

### 5.1 EXPLODED VIEW

#### 5.1.1 PACKING AND ACCESSORY ASSEMBLY <M1>

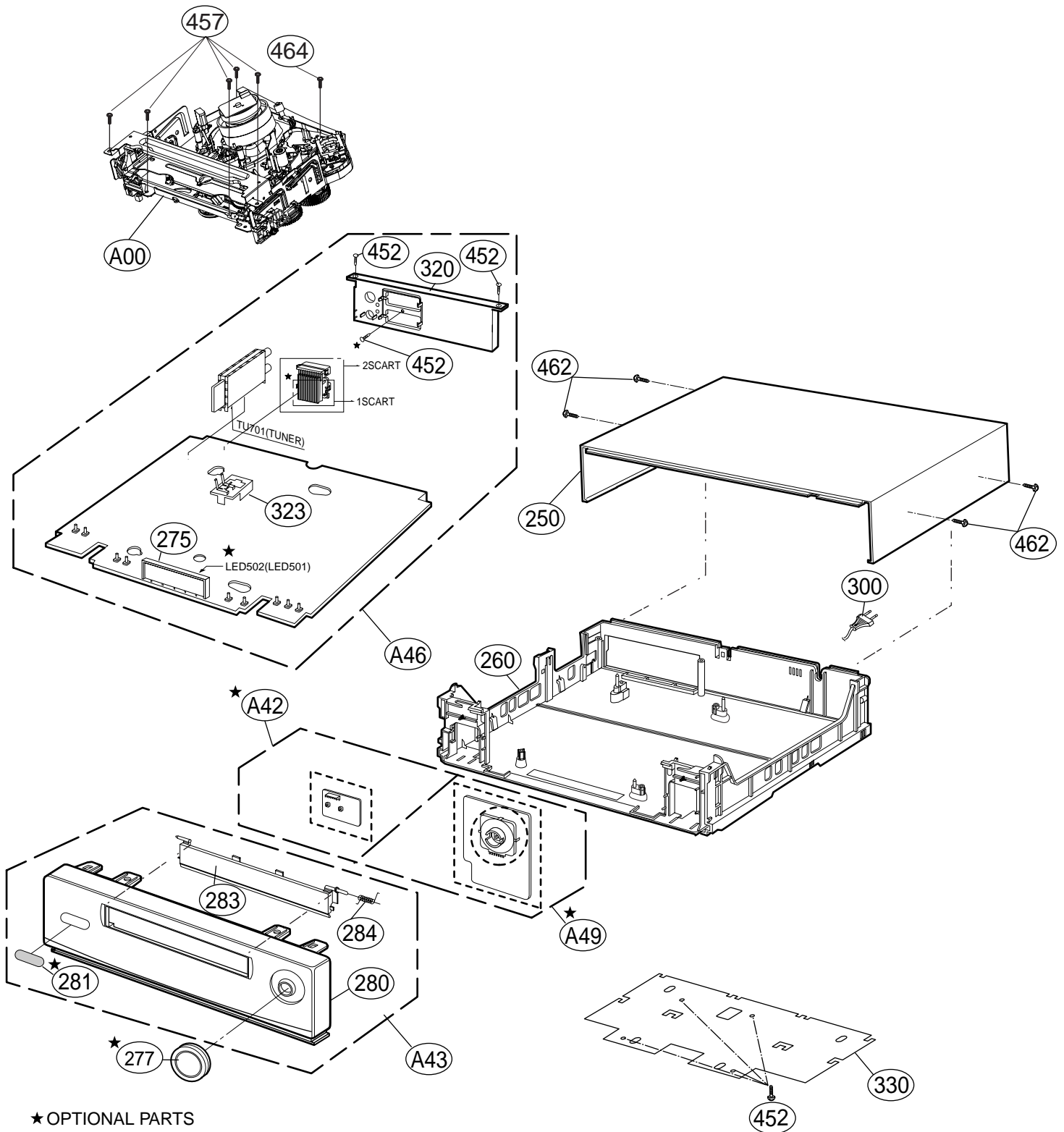
The instruction manual to be provided with this product will differ according to the destination.



5.1.2 FINAL ASSEMBLY <M2>

**BEWARE OF BOGUS PARTS**

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.















MODEL	MARK	MODEL	MARK	MODEL	MARK
HR-J285EU	A	HR-J595MS	F	HR-J282EU	K
HR-J290EU	B	HR-J295MS	G	HR-J283EU	L
HR-J585EU	C	HR-J595EK	H	HR-J582EU	M
HR-J590EU	D	HR-J295EK	I	HR-J583EU	N
HR-J593EU	E	HR-J293EU	J		

# Δ REF No.	PART No.	PART NAME, DESCRIPTION	SPECIFICATION	ABCDEFHJ KLMN	# Δ REF No.	PART No.	PART NAME, DESCRIPTION	SPECIFICATION	ABCDEFHJ KLMN
R5C5	QRD161J-102Y	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	Δ L102	LG-616-145H	FILTER(CIRC)	SHT LFS2020V4-04350	ABCDEFHJ KLMN
R5C6	QRD161J-102Y	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L103	LG-633-088G	COIL, CHOKE	CHOCK(22MH) 5MM TOKO TP	ABCDEFHJ KLMN
R5C7	QRD161J-102Y	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L104	LG-633-088G	COIL, CHOKE	CHOCK(22MH) 5MM TOKO TP	ABCDEFHJ KLMN
R5C9	QRD161J-103Y	RESISTOR, FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L106	LG-636-004C	COIL	BEAD CORE BFC3550R2FD8, R/T/P	ABCDEFHJ KLMN
R5P2	QRD161J-103Y	RESISTOR, FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L201	LG-0LR1000K035	INDUCTOR, RADIAL LEAD	100M K 6X6 L5 TP	FG
R5P3	QRD161J-103Y	RESISTOR, FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L301	LG-0LR10102J0N5	INDUCTOR, RADIAL LEAD	100H 5% TP 3X5 TR5	ABCDEFHJ KLMN
R5R2	QRD161J-331Y	RESISTOR, FIXED CARBON FILM	330 OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L302	LG-0LR1000K035	INDUCTOR, RADIAL LEAD	100M K 6X6 L5 TP	ABCDEFHJ KLMN
R5R3	QRD161J-331Y	RESISTOR, FIXED CARBON FILM	330 OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L303	LG-0LR10102J0N5	INDUCTOR, RADIAL LEAD	100H 5% TP 3X5 TR5	ABCDEFHJ KLMN
R5R4	QRD161J-152Y	RESISTOR, FIXED CARBON FILM	15K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L304	LG-0LR10102J0N5	INDUCTOR, RADIAL LEAD	100H 5% TP 3X5 TR5	ABCDEFHJ KLMN
R5R5	QRD161J-331Y	RESISTOR, FIXED CARBON FILM	330 OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L305	LG-0LR1000K035	INDUCTOR, RADIAL LEAD	100M K 6X6 L5 TP	ABCDEFHJ KLMN
R5R6	QRD161J-331Y	RESISTOR, FIXED CARBON FILM	330 OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L307	LG-0LR10102J0N5	INDUCTOR, RADIAL LEAD	100H 5% TP 3X5 TR5	ABCDEFHJ KLMN
R5R8	QRD161J-102Y	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L501	LG-0LA0122K018	INDUCTOR AXIAL LEAD	12M K 2.3X3.4 L5 TP	ABCDEFHJ KLMN
R5S1	QRD161J-562Y	RESISTOR, FIXED CARBON FILM	5.6K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L503	LG-0LR1000K035	INDUCTOR, RADIAL LEAD	100M K 6X6 L5 TP	ABCDEFHJ KLMN
R5T1	QRD161J-182Y	RESISTOR, FIXED CARBON FILM	1.8K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L504	LG-0LR10102J0N5	INDUCTOR, RADIAL LEAD	100H 5% TP 3X5 TR5	ABCDEFHJ KLMN
R5T2	QRD161J-152Y	RESISTOR, FIXED CARBON FILM	1.5K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L505	LG-0LR1000K035	INDUCTOR, RADIAL LEAD	100M K 6X6 L5 TP	ABCDEFHJ KLMN
R5T3	QRD161J-222Y	RESISTOR, FIXED CARBON FILM	2.2K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L506	LG-636-027C	INDUCTOR, RADIAL LEAD	EL0405RA SKI150G-3-K-TDK 15UH	ABCDEFHJ KLMN
R5T4	QRD161J-272Y	RESISTOR, FIXED CARBON FILM	2.7K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L5G2	LG-0LR3300K035	INDUCTOR, RADIAL LEAD	330M K 6X6 L5 TP	ABCDEFHJ KLMN
R5T5	QRD161J-332Y	RESISTOR, FIXED CARBON FILM	3.3K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L5S1	LG-0LA0332K018	INDUCTOR AXIAL LEAD	33M K 2.3X3.4 L5 TP	ABCDEFHJ KLMN
R5T9	QRD161J-182Y	RESISTOR, FIXED CARBON FILM	1.8K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L702	LG-0LR1000K035	INDUCTOR, RADIAL LEAD	100M K 6X6 L5 TP	ABCDEFHJ KLMN
R5T10	QRD161J-152Y	RESISTOR, FIXED CARBON FILM	1.5K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L703	LG-0LR1000K035	INDUCTOR, RADIAL LEAD	100M K 6X6 L5 TP	ABCDEFHJ KLMN
R5T11	QRD161J-102Y	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L704	LG-0LA0821K018	INDUCTOR AXIAL LEAD	8.2M K 2.3X3.4 L5 TP	ABCDEFHJ KLMN
R706	QRD161J-221Y	RESISTOR, FIXED CARBON FILM	220 OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L705	LG-0LR1000K035	INDUCTOR, RADIAL LEAD	100M K 6X6 L5 TP	ABCDE HI J KLMN
R707	QRD161J-221Y	RESISTOR, FIXED CARBON FILM	220 OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L751	LG-0LR10102J0N5	INDUCTOR, RADIAL LEAD	100H 5% TP 3X5 TR5	CDEF H MN
R709	QRD161J-102Y	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	L753	LG-0LR10102J0N5	INDUCTOR, RADIAL LEAD	100H 5% TP 3X5 TR5	CDEF H MN
R753	QRD161J-102Y	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	CDEF H MN	L7V1	LG-0LR1000K035	INDUCTOR, RADIAL LEAD	100M K 6X6 L5 TP	B DE J
R754	QRD161J-332Y	RESISTOR, FIXED CARBON FILM	3.3K OHM 1/6 W 5.00% TA26	CDEF H MN	L801	LG-0LR10102J0N5	INDUCTOR, RADIAL LEAD	100H 5% TP 3X5 TR5	CDEF H MN
R755	QRD161J-332Y	RESISTOR, FIXED CARBON FILM	3.3K OHM 1/6 W 5.00% TA26	CDEF H MN	L802	LG-0LR10102J0N5	INDUCTOR, RADIAL LEAD	100H 5% TP 3X5 TR5	CDEF H MN
R758	QRD161J-472Y	RESISTOR, FIXED CARBON FILM	4.7K OHM 1/6 W 5.00% TA26	CDEF H MN	L8R1	LG-0LA1000K018	INDUCTOR AXIAL LEAD	100M K 2.3X3.4 L5 TP	CDEF H MN
R759	QRD161J-562Y	RESISTOR, FIXED CARBON FILM	5.6K OHM 1/6 W 5.00% TA26	CDEF H MN	L8R2	LG-0LA1000K018	INDUCTOR AXIAL LEAD	100M K 2.3X3.4 L5 TP	CDEF H MN
R7M1	QRD161J-102Y	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	ABCDE HI J KLMN	L901	LG-0LA1000K018	INDUCTOR AXIAL LEAD	100M K 2.3X3.4 L5 TP	ABCDEFHJ KLMN
R7M2	QRD161J-221Y	RESISTOR, FIXED CARBON FILM	220 OHM 1/6 W 5.00% TA26	ABCDE HI J KLMN	L902	LG-0LA1000K018	INDUCTOR AXIAL LEAD	100M K 2.3X3.4 L5 TP	ABCDEFHJ KLMN
R7M3	QRD161J-102Y	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	ABCDE HI J KLMN	L904	LG-0LA1000K018	INDUCTOR AXIAL LEAD	100M K 2.3X3.4 L5 TP	ABCDEFHJ KLMN
R7M5	QRD161J-221Y	RESISTOR, FIXED CARBON FILM	220 OHM 1/6 W 5.00% TA26	ABCDE HI J KLMN	L905	LG-636-004C	COIL	BEAD CORE BFC3550R2FD8, R/T/P	ABCDEFHJ KLMN
R7S1	QRD161J-223Y	RESISTOR, FIXED CARBON FILM	22K OHM 1/6 W 5.00% TA26	FG	L906	LG-0LA1000K018	INDUCTOR AXIAL LEAD	100M K 2.3X3.4 L5 TP	ABCDEFHJ KLMN
R7V1	QRD161J-105Y	RESISTOR, FIXED CARBON FILM	1M OHM 1/6 W 5.00% TA26	B DE J	L907	LG-636-004C	COIL	BEAD CORE BFC3550R2FD8, R/T/P	ABCDEFHJ KLMN
R7V2	QRD161J-104Y	RESISTOR, FIXED CARBON FILM	100K OHM 1/6 W 5.00% TA26	B DE J	L911	LG-0LA1000K018	INDUCTOR AXIAL LEAD	100M K 2.3X3.4 L5 TP	B DEFGH J
R7V3	QRD161J-682Y	RESISTOR, FIXED CARBON FILM	6.8K OHM 1/6 W 5.00% TA26	B DE J	L912	LG-0LA1000K018	INDUCTOR AXIAL LEAD	100M K 2.3X3.4 L5 TP	B DEFGH J
R7V4	QRD161J-564Y	RESISTOR, FIXED CARBON FILM	560K OHM 1/6 W 5.00% TA26	B DE J	L914	LG-0LA1000K018	INDUCTOR AXIAL LEAD	100M K 2.3X3.4 L5 TP	B DEFGH J
R7V5	QRD161J-682Y	RESISTOR, FIXED CARBON FILM	6.8K OHM 1/6 W 5.00% TA26	B DE J	L915	LG-0LA1000K018	INDUCTOR AXIAL LEAD	100M K 2.3X3.4 L5 TP	B DEFGH J
R7V6	QRD161J-564Y	RESISTOR, FIXED CARBON FILM	560K OHM 1/6 W 5.00% TA26	B DE J	CSS01	LG-6600M000002	SWITCH, PUSH	MPU11810MLB0 MIC DC 5V 1MA D-3	ABCDEFHJ KLMN
R7V7	QRD161J-472Y	RESISTOR, FIXED CARBON FILM	4.7K OHM 1/6 W 5.00% TA26	B DE J	ESS01	LG-4931R-0050C	HOLDER ASSEMBLY	END (DI)	ABCDEFHJ KLMN
R7V8	QRD161J-101Y	RESISTOR, FIXED CARBON FILM	100 OHM 1/6 W 5.00% TA26	B DE J	ESS02	LG-4931R-0050C	HOLDER ASSEMBLY	END (DI)	ABCDEFHJ KLMN
R7V9	QRD161J-101Y	RESISTOR, FIXED CARBON FILM	100 OHM 1/6 W 5.00% TA26	B DE J	Δ F101	LG-586-011T	FUSE, SLOW BLOW	1600MA 250 V 5.2X20 CY/GL SEMK	ABCDEFHJ KLMN
R801	QRD161J-472Y	RESISTOR, FIXED CARBON FILM	4.7K OHM 1/6 W 5.00% TA26	CDEF H MN	Δ FH01	LG-586-008B	HOLDER	FUSE CLIP TP SINSUNG	ABCDEFHJ KLMN
R802	QRD161J-472Y	RESISTOR, FIXED CARBON FILM	4.7K OHM 1/6 W 5.00% TA26	CDEF H MN	Δ FH02	LG-586-008B	HOLDER	FUSE CLIP TP SINSUNG	ABCDEFHJ KLMN
R817	QRD161J-335Y	RESISTOR, FIXED CARBON FILM	3.3K OHM 1/6 W 5.00% TA26	CDEF H MN	JK801	LG-6612R-C002C	JACK, RCA	RCA-208C-06 YUQIU WH-RD	CDEF H MN
R818	QRD161J-333Y	RESISTOR, FIXED CARBON FILM	33K OHM 1/6 W 5.00% TA26	CDEF H MN	JK901	LG-6620R000202J	JACK, SCART	DSAM-0121 DOOWON 2F-21P(BL-BK)	B DEFG J
R819	QRD161J-272Y	RESISTOR, FIXED CARBON FILM	2.7K OHM 1/6 W 5.00% TA26	CDEF H MN	JK901	LG-6620R000202K	JACK, SCART	DSAM-0120 DOOWON 1F-21P (BK)	A C I KLMN
R820	QRD161J-333Y	RESISTOR, FIXED CARBON FILM	33K OHM 1/6 W 5.00% TA26	CDEF H MN	JK901	LG-6620R000202L	JACK, SCART	DSAM-0138 DOOWON 2F-21P(BK-BK)	H
R821	QRD161J-272Y	RESISTOR, FIXED CARBON FILM	2.7K OHM 1/6 W 5.00% TA26	CDEF H MN	LDS01	LG-4931R-0017C	HOLDER ASSEMBLY	LED(DI-CKD)LOCAL	ABCDEFHJ KLMN
R822	QRD161J-333Y	RESISTOR, FIXED CARBON FILM	33K OHM 1/6 W 5.00% TA26	CDEF H MN	LDS02	LG-6301R2U001F	LED ASSEMBLY	TOH-30M-G3R1 OASIS UNIVERSAL 4	ABCDEFHJ KLMN
R823	QRD161J-471Y	RESISTOR, FIXED CARBON FILM	470 OHM 1/6 W 5.00% TA26	CDEF H MN	MSS01	LG-6600JBR005B	SWITCH, MODE	NON 5V 1MA VERTICAL -G	ABCDEFHJ KLMN
R824	QRD161J-101Y	RESISTOR, FIXED CARBON FILM	100 OHM 1/6 W 5.00% TA26	CDEF H MN	P3D01	LG-561-234S	CONNECTOR (CIRC), DRAWING	GF120-9S-TS-A LG CABLE 9P 1.25	CDEF H MN
R825	QRD161J-561Y	RESISTOR, FIXED CARBON FILM	560 OHM 1/6 W 5.00% TA26	CDEF H MN	P3D01	LG-561-234Z	CONNECTOR (CIRC)	GF120-3S-TS-A LGC 3PIN 1.25MM	AB G IJKL
R826	QRD161J-182Y	RESISTOR, FIXED CARBON FILM	1.8K OHM 1/6 W 5.00% TA26	CDEF H MN	P3D02	LG-6630R5S010A	CONNECTOR (CIRC)	GF105-06S-TS LG CABLE 6PIN 2MM	ABCDEFHJ KLMN
R827	QRD161J-102Y	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	CDEF H MN	P3D03	LG-561-251B	CONNECTOR (CIRC), DRAWING	GB201-2P-TS-B(LG)	ABCDEFHJ KLMN
R828	QRD161J-102Y	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	CDEF H MN	PMC01	LG-6630R-BE01L	CONNECTOR (CIRC), BOARD TO BOARD	JE12-12 JAE UEN 12P 2.0MM	ABCDEFHJ KLMN
R830	QRD161J-472Y	RESISTOR, FIXED CARBON FILM	4.7K OHM 1/6 W 5.00% TA26	CDEF H MN	Δ PW101	LG-561-292B	CONNECTOR	GP390 LGC 3P 3.96 STRAIGHT SN	ABCDEFHJ KLMN
R831	QRD161J-472Y	RESISTOR, FIXED CARBON FILM	4.7K OHM 1/6 W 5.00% TA26	CDEF H MN	RC501	LG-6712R1940GA	REMOTE CONTROLLER RECEIVER	TSOP2840WE1 VISHAY(TEMIC) 40KH	ABCDEFHJ KLMN
R8R1	QRD161J-561Y	RESISTOR, FIXED CARBON FILM	560 OHM 1/6 W 5.00% TA26	CDEF H MN	RS501	LG-6500RAB003A	SENSOR	SG-260 KODENSHI D33 REEL SENSO	ABCDEFHJ KLMN
R8R2	QRD161J-561Y	RESISTOR, FIXED CARBON FILM	560 OHM 1/6 W 5.00% TA26	CDEF H MN	RS502	LG-6500RAB003A	SENSOR	SG-260 KODENSHI D33 REEL SENSO	ABCDEFHJ KLMN
R901	QRD161J-750Y	RESISTOR, FIXED CARBON FILM	75 OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	SW51	LG-556-213C	SWITCH, DETECTOR	THV951BAA POSTECH DC 12 V 5-0	ABCDEFHJ KLMN
R902	QRD161J-750Y	RESISTOR, FIXED CARBON FILM	75 OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	SW5T10	LG-556-213C	SWITCH, DETECTOR	THV951BAA POSTECH DC 12 V 5-0	ABCDEFHJ KLMN
R903	QRD161J-392Y	RESISTOR, FIXED CARBON FILM	3.9K OHM 1/6 W 5.00% TA26	A I KL	SW5T11	LG-556-213C	SWITCH, DETECTOR	THV951BAA POSTECH DC 12 V 5-0	ABCDEFHJ KLMN
R904	QRD161J-472Y	RESISTOR, FIXED CARBON FILM	4.7K OHM 1/6 W 5.00% TA26	BCDEFHJ J MN	SW5T12	LG-556-213C	SWITCH, DETECTOR	THV951BAA POSTECH DC 12 V 5-0	ABCDEFHJ KLMN
R909	QRD161J-473Y	RESISTOR, FIXED CARBON FILM	4.7K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	SW5T13	LG-556-213C	SWITCH, DETECTOR	THV951BAA POSTECH DC 12 V 5-0	ABCDEFHJ KLMN
R905	QRD161J-561Y	RESISTOR, FIXED CARBON FILM	560 OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	SW5T3	LG-556-213C	SWITCH, DETECTOR	THV951BAA POSTECH DC 12 V 5-0	ABCDEFHJ KLMN
R906	QRD161J-561Y	RESISTOR, FIXED CARBON FILM	560 OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	SW5T4	LG-556-213C	SWITCH, DETECTOR	THV951BAA POSTECH DC 12 V 5-0	ABCDEFHJ KLMN
R911	QRD161J-750Y	RESISTOR, FIXED CARBON FILM	75 OHM 1/6 W 5.00% TA26	B DEFGH J	SW5T5	LG-556-213C	SWITCH, DETECTOR	THV951BAA POSTECH DC 12 V 5-0	ABCDEFHJ KLMN
R912	QRD161J-750Y	RESISTOR, FIXED CARBON FILM	75 OHM 1/6 W 5.00% TA26	B DEFGH J	SW5T6	LG-556-213C	SWITCH, DETECTOR	THV951BAA POSTECH DC 12 V 5-0	ABCDEFHJ KLMN
R913	QRD161J-561Y	RESISTOR, FIXED CARBON FILM	560 OHM 1/6 W 5.00% TA26	B DEFGH J	Δ T101	LG-642-015G	TRANSFORMER, SMPS	SJE-015G/SHT-015G SJSHIC/LSLE	ABCDEFHJ KLMN
R914	QRD161J-561Y	RESISTOR, FIXED CARBON FILM	560 OHM 1/6 W 5.00% TA26	B DEFGH J	TU701	LG-6700PPL03A	TUNER	SECAM TADC-S3010 LG PAL FS Y2K	FG
R943	QRD161J-152Y	RESISTOR, FIXED CARBON FILM	1.5K OHM 1/6 W 5.00% TA26	ABCDEFHJ KLMN	TU701	LG-6700PPL03B	TUNER	BIG TADC-G3010 LG PAL FS Y2K2	AB J
R962	QRD161J-101Y	RESISTOR, FIXED CARBON FILM	100 OHM 1/6 W 5.00% TA26	B G J	TU701	LG-6700PPL03E	TUNER	GIKI TADC-M301D LG PAL FS Y2	CDE HI KLMN
R963	QRD161J-101Y	RESISTOR, FIXED CARBON FILM	100 OHM 1/6 W 5.00% TA26	B G J	X301	LG-6202R2443AC	RESONATOR, CRYSTAL	HC49U BUBANG 4-433709MHZ 15	ABCDEFHJ KLMN
R964	QRD161J-821Y	RESISTOR, FIXED CARBON FILM	820 OHM 1/6 W 5.00% TA26						