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# Service Manual

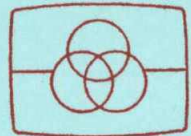
Monitor/Player

- Summary
- Operating Instructions
- Circuit Descriptions
- Electrical Adjustment Procedures
- Mechanical Adjustment Procedures
- Block Diagrams
- Schematic Diagrams
- Circuit Board Diagrams
- Exploded Views
- Replacement Parts Lists



## AG-500

-E  
-A  
-B  
-EN



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### SPECIFICATIONS

GENERAL		MONITOR SECTION	
ITEM	SPECIFICATION	ITEM	SPECIFICATION
Power Source	AG-500-A, B: 240V AC, 50Hz AG-500-EN: 110~240V (auto-voltage) AC, 50Hz AG-500E: 220V AC, 50Hz	Anode Voltage	23.0 kV±1.5 kV (at zero beam current)
Power Consumption	Approx. 64 W	Heater Voltage	6.3 Vrms
Audio (Speaker) Output	1.5 W	<b>VTR SECTION</b>	
Headphone Output	Max. 50 mVrms (8Ω)	ITEM	SPECIFICATION
Connectors (Phono)	Video Input (BNC); 1.0 Vp-p, 75Ω unbalanced Video Output (BNC); 1.0 Vp-p, 75Ω unbalanced Audio Input (PHONO); -10 dBv, 47 kΩ unbalanced Audio Output (PHONO); -8 dBv, 1 kΩ unbalanced (1 Vrms=0 dBv)	Television System	CCIR Standard (625 lines, 50 fields) PAL colour signal
Operating Temperature	5°C~40°C	Video Playback System	Helical scanning system
Operating Humidity	35%~80%	Recorded Video Signal	Luminance: FM Azimuth recording Colour signal: Converted subcarrier phase shift recording
Weight	Approx. 11.6 kg	Audio Track	1 track
Dimensions	390×340×288 mm	Tape Format	Tape with 1/2" (12.7 mm) high density tape
<b>MONITOR SECTION</b>		Tape Speed	23.39 mm/s
ITEM	SPECIFICATION	Playback Time	180 min. with NV-E180
Picture Tube	26 cm, 90° Deflection	FF/REW Time	Approx. 6 min with NV-E180
Resolutions	Vertical: 230 lines (center) Horizontal: 280 lines (center)	Video Horizontal Resolution	240 lines (on monoscope test pattern)
		Audio Frequency Response	80~10kHz
		Signal-to-Noise Ratio	Video: 43 (colour) Audio: 43dB

Weight and dimensions shown are approximate.  
Specifications are subject to change without notice.



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## INTRODUCTION

*This Service Manual contains all the technical information which will allow service personnel to understand and service this Panasonic VHS Monitor/Player model AG-500.*

*The AG-500 has many special features as described later.*

*Added to the basic VHS format, these features make the AG-500 an ideal unit for business, education, sales and training applications.*

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## Features

### 1. Self-contained VTR/colour monitor

A single unit consisting of a VTR for playback, and a 26 cm colour monitor.

### 2. Small size and compact design for easy carrying

### 3. Simple operation

Playback starts simply by turning on the power switch and inserting a prerecorded cassette tape.

### 4. Clear picture in still and slow motion modes

### 5. Repeat playback

Recorded tapes can be played back in the following ways.

- From the start of a tape to the end.
- From the start of a tape to the end of the video signal. If there is no end of video signal, playback is made automatically from the start of a tape to the end.

### 6. Audio and video input/output terminals

The AG-500 can be used as a monitor by means of the input terminals. (E to E picture during stop, rewind or fast forward.)

Using the output terminals, another VTR or monitoring equipment can be connected.

### 7. High quality picture

### 8. Headphone jack

A headphone can be used for audio monitoring. Audio is monaural.

## Cautions for Use

- Do not insert fingers or any other objects into the video cassette holder.
- Avoid operating or leaving the unit near strong magnetic fields. Be especially careful of large audio speakers.
- Avoid operating or storing the unit in an excessively hot, cold, or damp environment as this may result in damage both to the unit and to the tape.
- This unit is supplied with a 3-prong grounded AC plug — do not try to defeat its purpose. (Not for U.K. Model)
- Do not spray any cleaner or wax directly on the unit.
- If the unit is not going to be used for a length of time, turn the Power OFF and disconnect the power plug from the AC outlet.
- Do not leave a cassette in the unit when not in use.
- Do not block the ventilation slots on the top of the unit.
- Use this unit horizontally and do not place anything on the top panel.
- Before turning OFF the power switch, ensure that the unit is in the Stop mode. Also, before leaving the unit for a long period or moving it from one place to another, be sure to remove the cassette tape and turn OFF the power switch.
- If you place another piece of equipment (particularly a monitor TV) on the right of the unit, maintain an adequate distance between it and the unit. If it is too close to the unit, the video and/or audio may be adversely affected.
- Do not attempt to disassemble the unit. There are no user serviceable parts inside.
- If any liquid spills inside the unit, have the unit examined for possible damage.
- Refer any needed servicing to qualified service personnel.

### Cleaning care for video heads

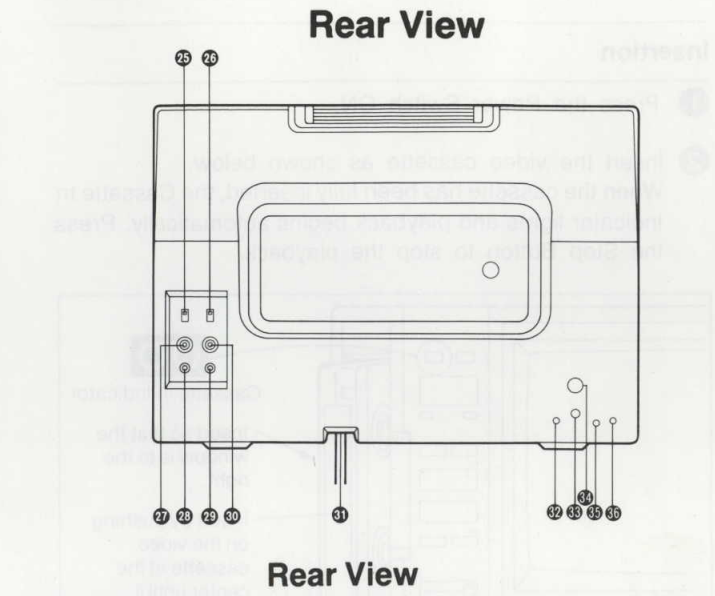
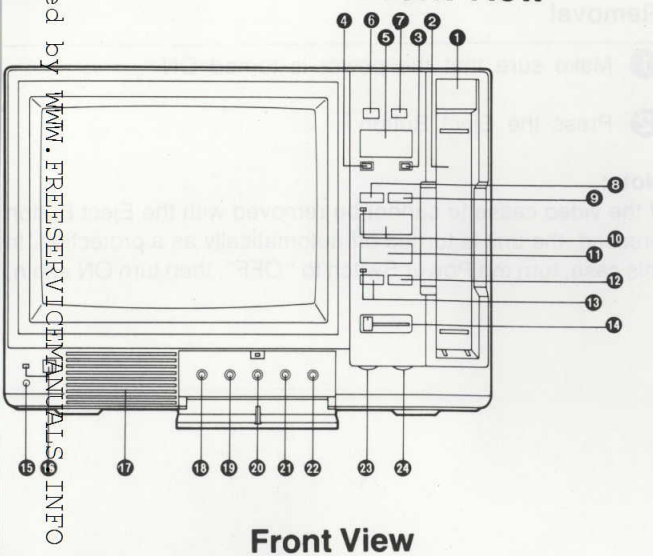
The video heads are the means by which the unit reads pictures from the tape during playback.

In the unlikely event that they become dirty enough to be clogged, no picture will be played back. This can easily be determined if, during playback of a known good tape, there is good sound, but no picture (picture is extremely snowy). If this is the case, have the unit checked by qualified service personnel.

**Note:** We do not recommend that you attempt to clean the video heads yourself.

**WARNING:** UNAUTHORIZED RECORDING OF COPYRIGHTED TELEVISION PROGRAMMES, FILMS, VIDEO TAPES AND OTHER MATERIALS MAY INFRINGE ON THE RIGHTS OF COPYRIGHT OWNERS AND BE CONTRARY TO COPYRIGHT LAWS.

# Controls



- 1 Remote Control Receiver
- 2 Cassette Holder
- 3 Memory/Search Lock Button
- 4 Counter Reset Button
- 5 Counter
- 6 Eject Button
- 7 Cassette In Indicator
- 8 Rewind Button
- 9 Fast Forward Button
- 10 Play Button/ Indicator
- 11 Stop Button
- 12 Slow Button
- 13 Still Button/ Indicator
- 14 Audio Volume Control
- 15 Headphone Jack (monaural M3 type)
- 16 Power Switch/ Indicator
- 17 Speaker
- 18 V-Hold Control  
Adjust this control if the picture rolls up or down.
- 19 Sharpness Control  
Turn clockwise to get a sharper picture and turn counterclockwise to get a softer picture.  
Sharpness control can only be adjusted for the playback picture.
- 20 Contrast Control  
Adjust this control for proper overall contrast.
- 21 Bright Control  
Adjust brightness level for proper overall picture brightness.
- 22 Colour Control  
Adjust this control for proper colour saturation.
- 23 Slow Tracking Control
- 24 Tracking Control

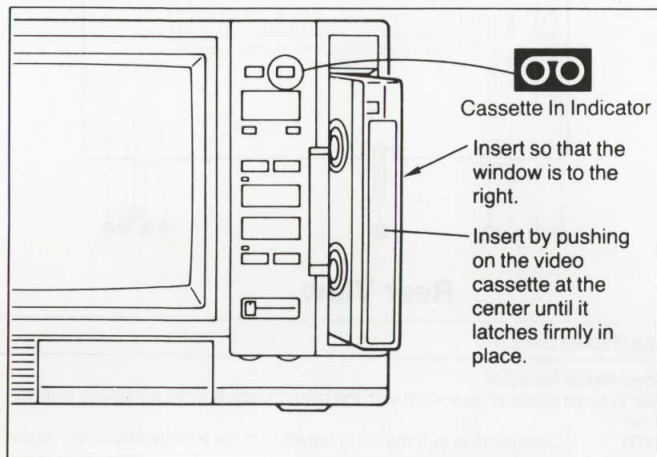
- 25 Auto Repeat Switch
- 26 Video Mode Selector  
Used to avoid mistaken operation with the colour/black & white automatic selector circuit.  
**AUTO:** Distinguishes automatically between black & white and colour video signals.  
**COLOUR:** When the colour signal is weak, S/N ratio is insufficient, etc., and the automatic selector circuit does not operate properly, the unit is placed forcibly on "COLOUR"
- 27 Video Input Jack (BNC)
- 28 Audio Input Jack (PHONO)
- 29 Audio Output Jack (PHONO)
- 30 Video Output Jack (BNC)
- 31 Power Cord
- 32 V-HEIGHT Control  
Adjust this control until picture becomes symmetrical from top to bottom.
- 33 Screen Control  
See TV Adjustment Procedure.
- 34 Focus Control  
Adjust this control to obtain the sharpest and clearest picture.
- 35 Service Switch  
See TV Adjustment Procedure.
- 36 H-Hold Control  
Adjust this control at the point where horizontal movement stops.

**Note:** Focus, Screen, H-Hold, V-Size controls and Service Switch are not user controls, these controls should be used by a serviceman only.

# Insertion and Removal of cassette tape

## Insertion

- 1 Press the Power Switch ON.
- 2 Insert the video cassette as shown below. When the cassette has been fully inserted, the Cassette In Indicator lights and playback begins automatically. Press the Stop Button to stop the playback.



## Removal

- 1 Make sure that the power is turned ON.
- 2 Press the Eject Button.

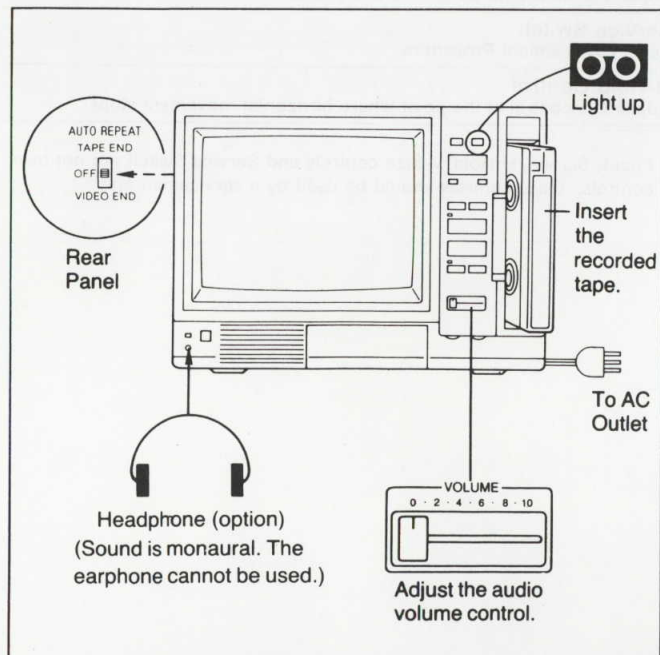
### Note:

If the video cassette cannot be removed with the Eject Button pressed, the unit is turned off automatically as a protection. In this case, turn the Power Switch to "OFF", then turn ON again.

# Playback

## Preparation

- Press the Power Switch ON.
- Be sure that the Auto Repeat Switch on the rear panel is OFF.



## Auto Playback

This function activates playback automatically whenever the tape has been inserted. When the tape is inserted, the Cassette In Indicator lights up and playback will start automatically.

## Normal Playback

Press the Play Button. Play Indicator lights and playback will start.

- Turn the Tracking Control on the unit if the image is partially obscured by bands of noise to move the noise out of the picture. Normally, leave the control in the detent FIX position.



## Slow Motion Playback

- Press the Slow Button during normal playback.
- Press the Play Button to resume normal playback.
- If noise appears during slow motion playback, turn the Slow Tracking Control so that the noise is at a minimum.
- The Still Indicator blinks during slow motion playback.
- If slow motion playback continues for over 10 minutes, the unit will go into the stop mode automatically.

## Still Playback

- Press the Still Button during normal playback or during slow motion playback.
- Press the Still Button once again to resume normal playback or slow motion playback.
- If noise appears during still playback, set for slow motion mode and adjust with the Slow Tracking Control to minimize the bands of noise as shown below, then press the Still Button.

### SLOW TRACKING FIX



- If still playback continues for more than 5 minutes, the unit will go into the stop mode automatically.

Once the Still Button is pressed, it should be pressed once again to be released. And the unit will resume to the last touch when it is released. For example if, during playback, first the Still Button and then the Slow buttons are pressed, the still playback remains. But when the still mode is released, the unit will go into the slow motion playback.

## Rewind and Fast Forward the tape

When the unit is in stop mode:  
Press the Rewind (REW) Button to rewind the tape.  
Press the Fast Forward (FF) Button to move the tape forward rapidly.

## Search Playback

When the FF Button is held down while the unit is in the playback, slow motion playback or still, the tape will be played back in the forward direction at about 5 times normal speed.

When the Rewind Button is held down while the unit is in the playback, slow motion playback or still, the tape will be played back in the reverse direction at about 5 times normal speed.

When the Memory/Search Button is pressed and "S" display appears in the counter, search forward or reverse playback can be obtained without keeping the FF or REW Button depressed.

- If this function is maintained for more than 10 minutes, the unit automatically returns to the previous mode.

**To release the Search Forward/Reverse manually, proceed as follows:**

- Press the Play Button. The unit will go into the following mode.

Previous Mode	Subsequent Mode
Still Playback	Still Playback
Normal Playback	Normal Playback
Slow motion Playback	

- Press the Memory/Search Lock Button to clear the "S" display. The unit will go into the previous mode.
- Press the Stop Button.  
The unit will go into the stop mode.

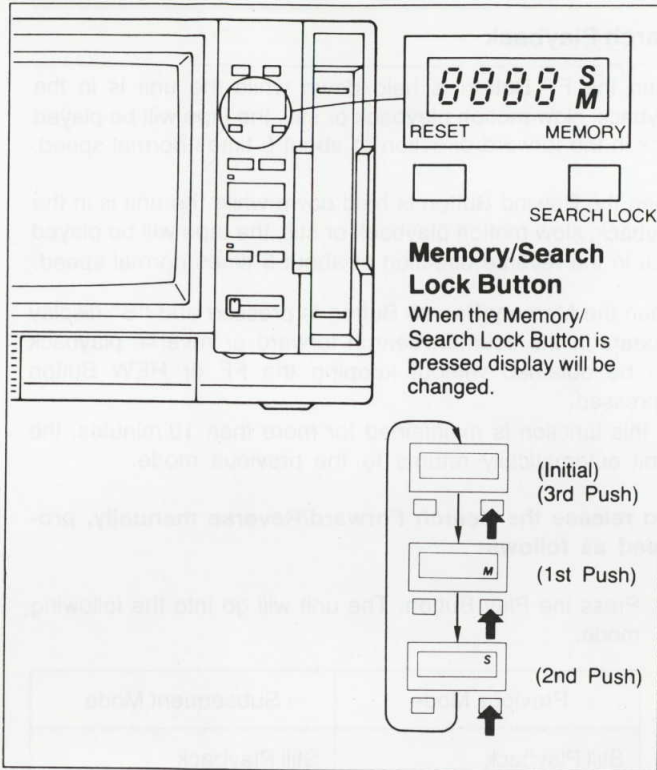
## After Finishing Playback

Press the Stop Button to stop the playback.

### Notes:

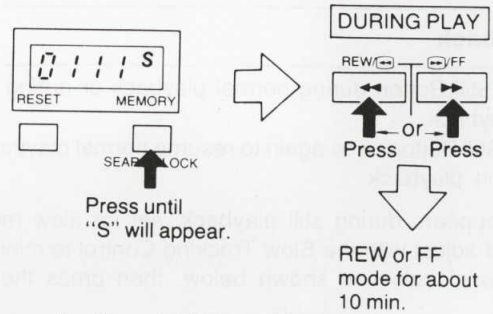
- A distortion may occur on the upper part of the picture during STILL mode, but this is not a malfunction.
- No sound is heard during SEARCH mode.
- Colour programme may be played back in Black and White or playback image may be dark during SEARCH mode, but this is not a malfunction.
- A skew may occur on the picture during SEARCH mode, but this is not a malfunction.

# Counter



## Search Lock

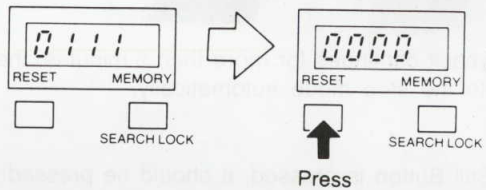
When the Memory/Search Lock button is pressed until the "S" display lights at the upper right of the counter display, and the FF or REW button is pressed during normal playback, slow motion playback or still playback, search forward or reverse playback can be held for about 10 minutes. Thereafter, the unit will automatically return to the previous mode.



- To release the Search Forward/Reverse manually, see page 7, section "Search Playback".

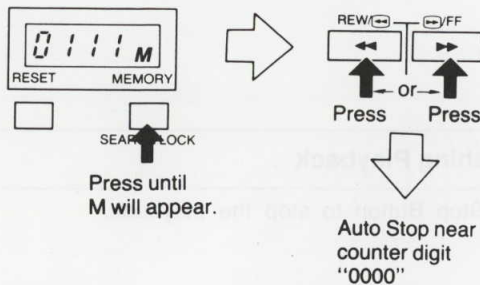
## Counter Reset

Pressing the Reset Button clears the counter indication to 0000.



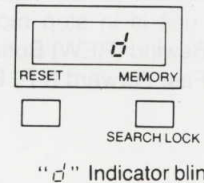
## Memory Stop

When the Memory/Search Lock Button is pressed and the "M" display lights at the lower right in the counter, the tape can be stopped near counter digit "0000" during FF or REW modes.



## Dew Indicator

In case of dew detection the safety device of this unit will operate in order to protect the cassette tape and video heads. In case of dew detection, the "d" Indicator in the counter blinks. Take out the cassette tape and wait until "d" Indicator goes out with power switch turned on.





# Repeat Playback

## Repeat playback between tape beg. and tape end

If it is desired to play back the tape repeatedly from tape beginning to tape end, proceed as follows:

- 1 Set the Auto Repeat Switch to the "TAPE END" position.
- 2 Press the Play Button.

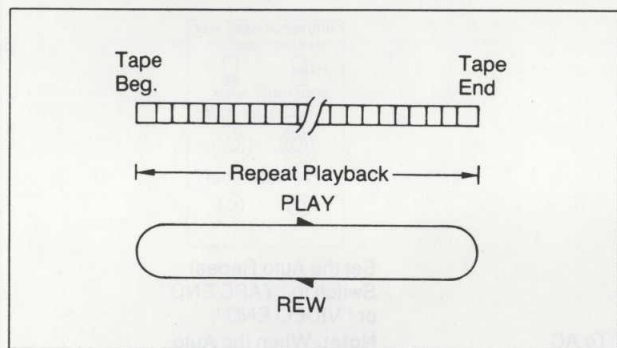


Rear View

Set the Auto Repeat Switch to "TAPE END".



Press PLAY



## Repeat Playback between tape beg. and video end

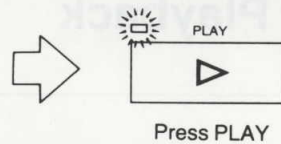
If it is desired to play back the tape repeatedly from tape beginning to interruption of the video signal, first make sure that video recording on the tape is interrupted for at least 3 seconds (see diagram).

- 1 Set the Auto Repeat Switch to the "VIDEO END" position.
- 2 Press the Play Button.

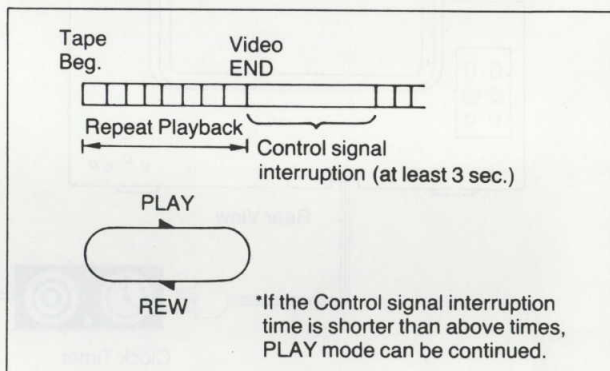


Rear View

Set the Auto Repeat Switch to "VIDEO END".



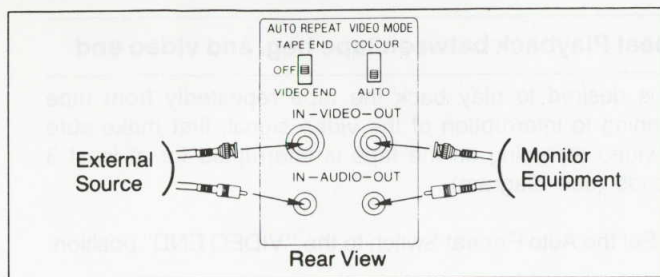
Press PLAY



### Notes:

- If short repeat playback is continued many times, the repeated section of tape may be damaged.
- NV-E240 type cassettes are not recommended for Repeat Playback use.

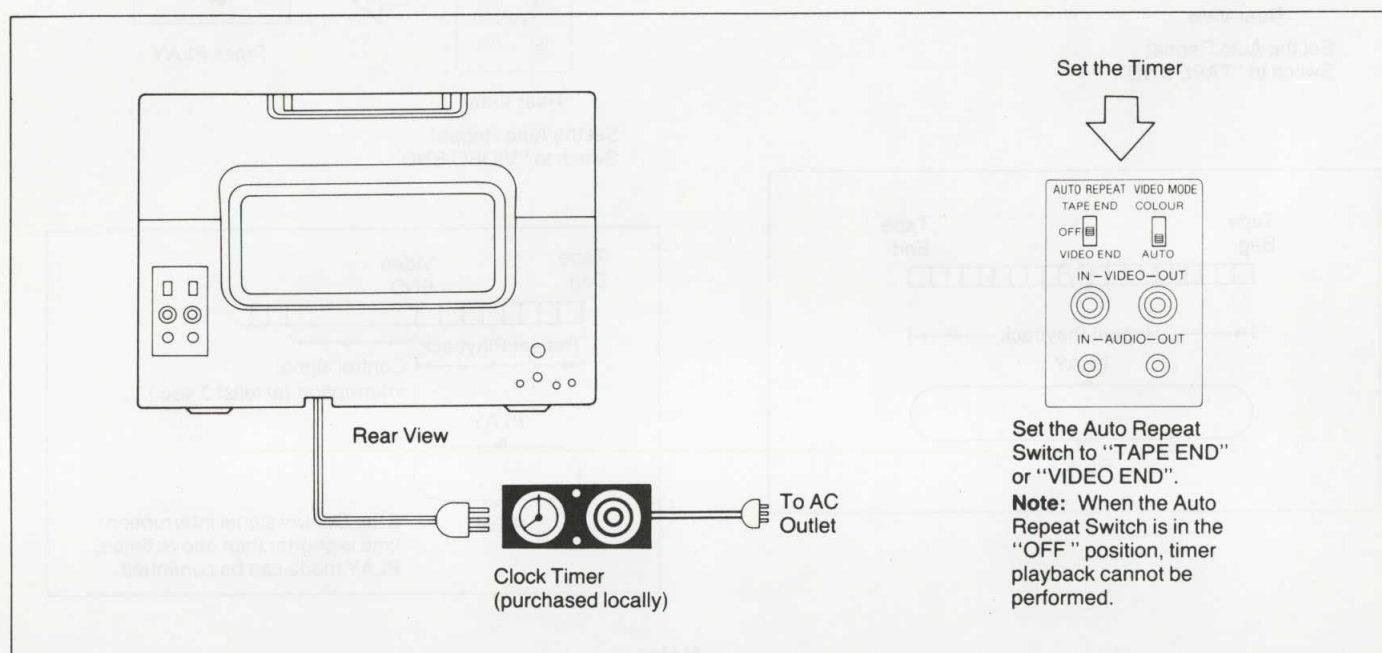
## Audio/Video Terminals



When you want to view an input signal on the monitor during stop, fast forward or rewind (i.e. E to E picture), turn the unit to Stop mode and connect the external input signal to the Audio and Video Inputs of this unit.

The external input signal appears on the monitor automatically.

## Timer Playback



The use of an external timer permits timer playback with this unit.

- ① Press the Power Switch ON.
  - ② Insert the recorded cassette tape.
  - ③ Turn the unit to the Stop mode when the timer playback beginning position is reached.
  - ④ Set the timer to the desired ON time. (Refer to the operating instructions for the timer.)
  - ⑤ Set the Auto Repeat Switch to the "TAPE END" or "VIDEO END" whichever you desire.
  - ⑥ Be sure that the power of the timer is ON.
- It takes about one minute to load the tape inside the unit. Therefore, set the timer preset time about one minute before the playback start time.

### Operation at Preset Times:

At the preset ON time, the power will be automatically turned ON, the tape will start moving, and the playback picture will appear on the monitor.

When the tape reaches its end or video end, it will be rewound to the beginning.

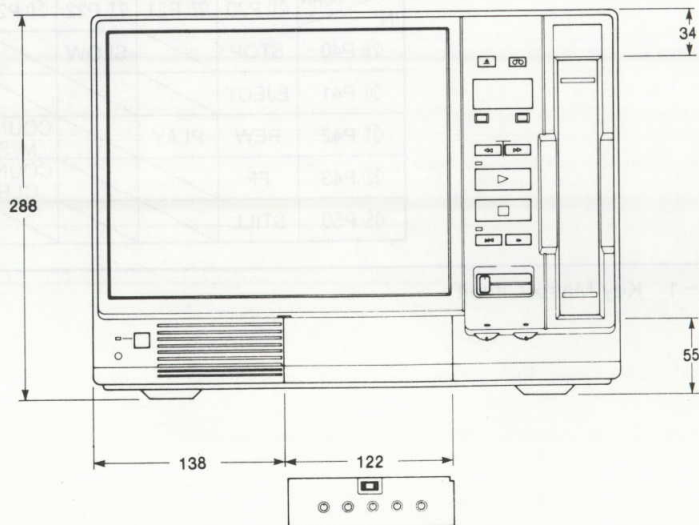
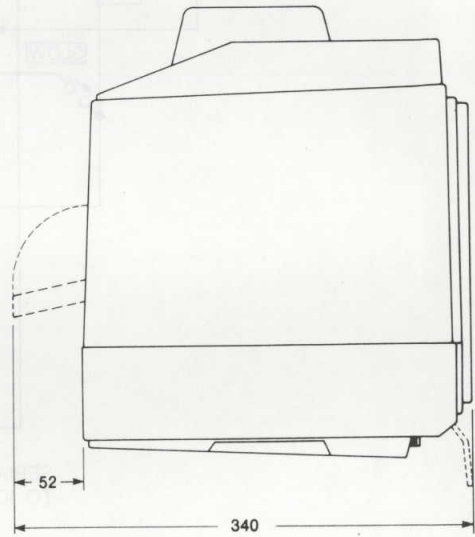
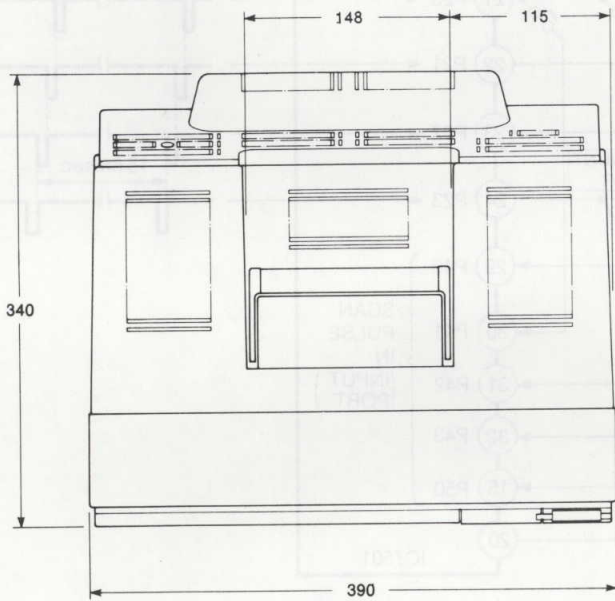
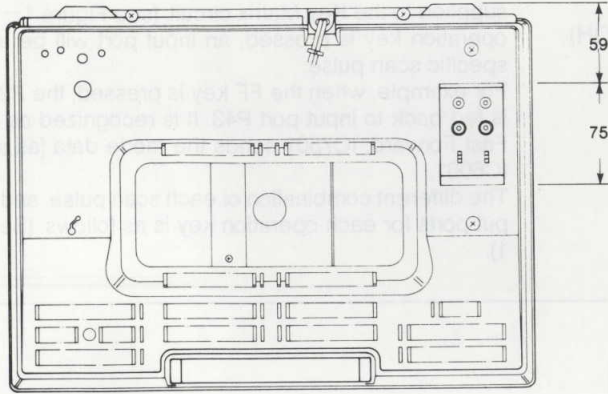
### To stop timer playback

If desired to stop the timer playback, press the Stop Button.

### Important Notes:

- If the power is turned OFF (i.e. power failure) while the tape is moving during timer playback, the tape will remain loaded. When the power is restored, the tape will be unloaded and then the unit will resume the playback mode.
- Be sure that the Auto Repeat Switch is in the "TAPE END" or "VIDEO END" position, otherwise timer playback cannot be performed.

# Dimension



Units : mm

**SYSTEM CONTROL SECTION**

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**SYSTEM CONTROL SECTION**

The main purpose of the system control section is to drive the mechanism in accordance with the operation section. If any undesirable conditions occur, this unit automatically goes to the stop mode, and if necessary. For this purpose, Main microprocessor IC6001 (MN15342VQH) Counter and Timer IC7501 (MN15261VQY) are employed.

**Key Matrix Circuit**

In order to detect the selected key, scan pulses are always supplied to the Key Matrix circuit. (see Figure 1-1). When any operation key is pressed, an input port will be assigned to a specific scan pulse. For example, when the FF key is pressed, the P20 scan pulse is fed back to input port P43. It is recognized as a request for Fast Forward, IC7501 sends the mode data (as serial data) to IC6001. The different combination of each scan pulse, and assigned input ports for each operation key is as follows. (See Figure 1-1).

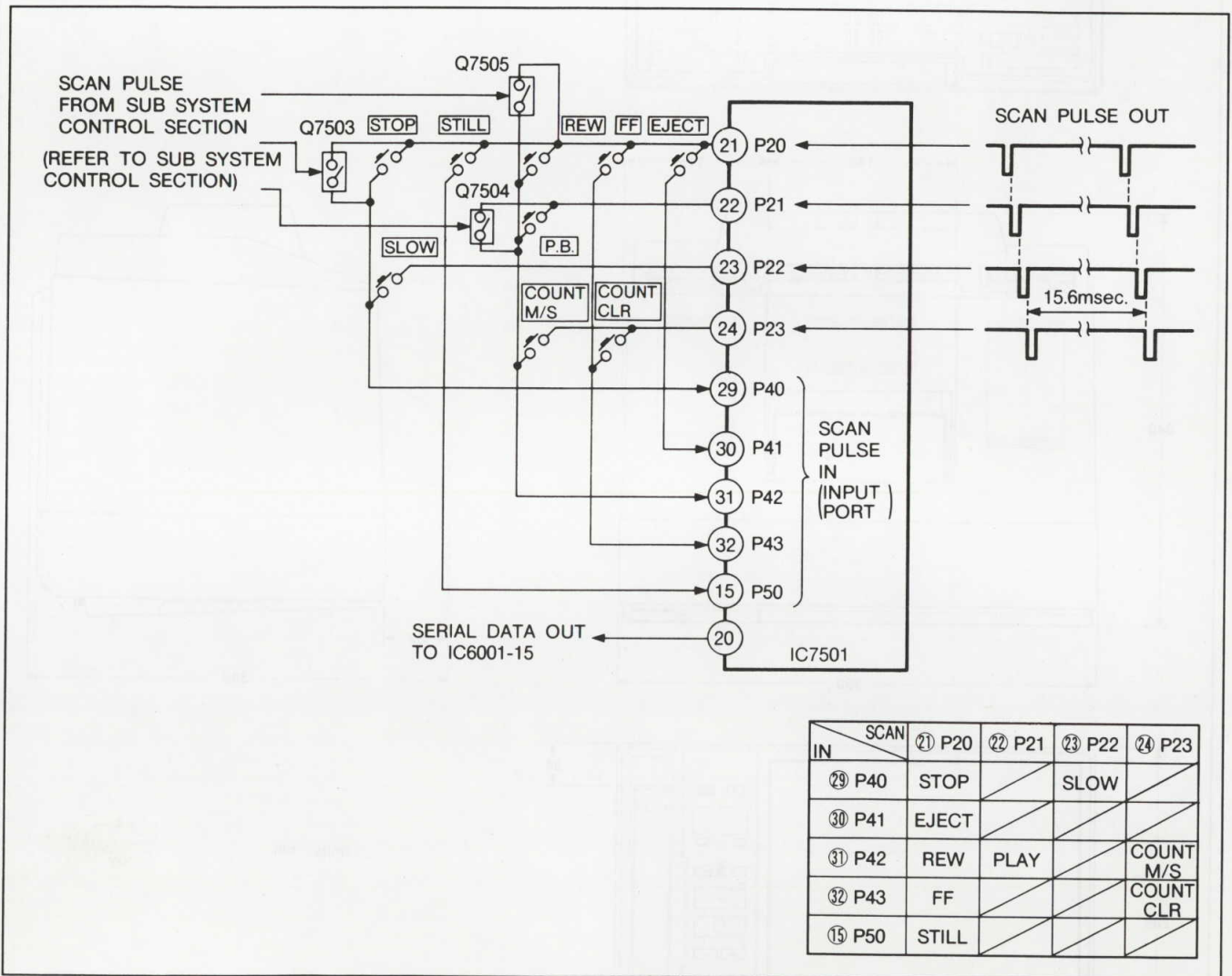


Figure 1-1 Key Matrix Circuit

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## Tape Counter Display

On the front panel, the tape count display tube is located, and some information (memory, search lock and tape count) are displayed on this display tube.

System Control microprocessor IC6001 sends the counter number and some other information to the operation microprocessor IC7501 through the serial data line.

This display tube is driven by the operation microprocessor IC7501.

The outputs from DIG G (pin 48) through DIG D (pin 52) are applied to the grids of display tube, and the each segment of the tube receives the signal from SEG 0 (pin 61) through SEG 6 (pin 55).

The outputs from DIG G-D are shown in Figure 1-2.

## Serial Data Transmission

Operation/Counter IC7501 detects the selected key and this information is then sent to IC6001.

To exchange the data between the main microprocessor IC6001 and operation/counter IC7501, serial data transmission is used as shown in Figure 1-3.

Serial data transmission is used because of the relatively large amount of information that can be sent over a single data line (as opposed to parallel data transmission which would require a separate line for each segment of information). Actually, there are three lines required in this system; a data input a data output, and a clock line

However IC7501 has only two lines, one for data and one for clock. The data in/out line of IC7501 is time shared.

### (A) Serial clock Line

Serial clock pulses, which are generated inside IC6001 are necessary to synchronize the transmission and reception of the

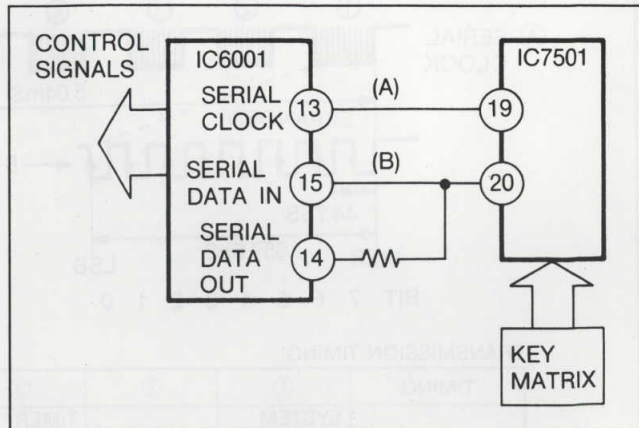


Figure 1-3 Serial Data Transmission.

serial data between the two microprocessors as shown in Figure 1-4.

In order to transmit much data on a single line, the serial clock is divided into 7 bursts lasting 5msec, occurring every 22msec, as shown in Figure 1-4.

### (B) Serial data

Serial data is transmitted to correspond with the serial clock timing.

IC7501 transmits operation mode data to IC6001.

IC6001 sends the counter number data and VTR condition data to IC7501, where it is used to drive the display tube. The actual data is shown in Figure 1-4. The serial data is read at the rising edge of serial clock.

For example, when the REW key is pressed, IC7501 detects it and sends the serial data at No.3 timing as shown in Figure 1-5.

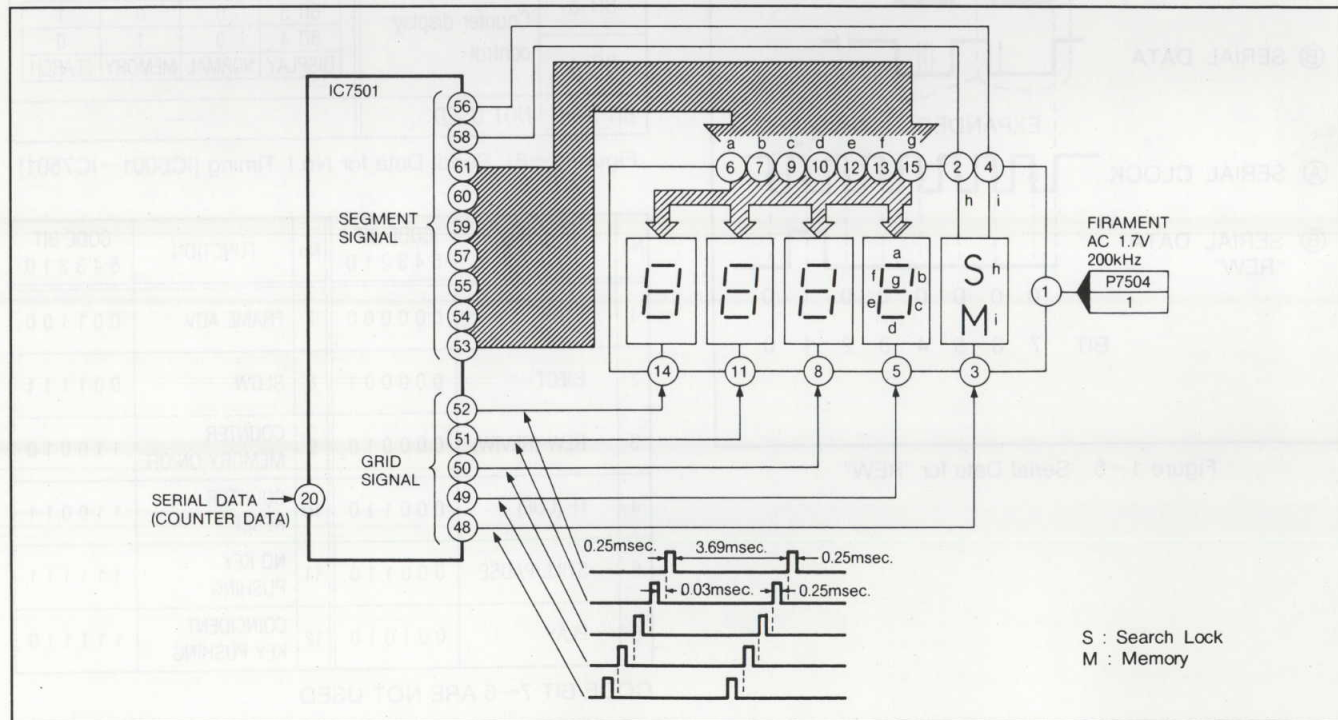


Figure 1-2 Tape Counter Display

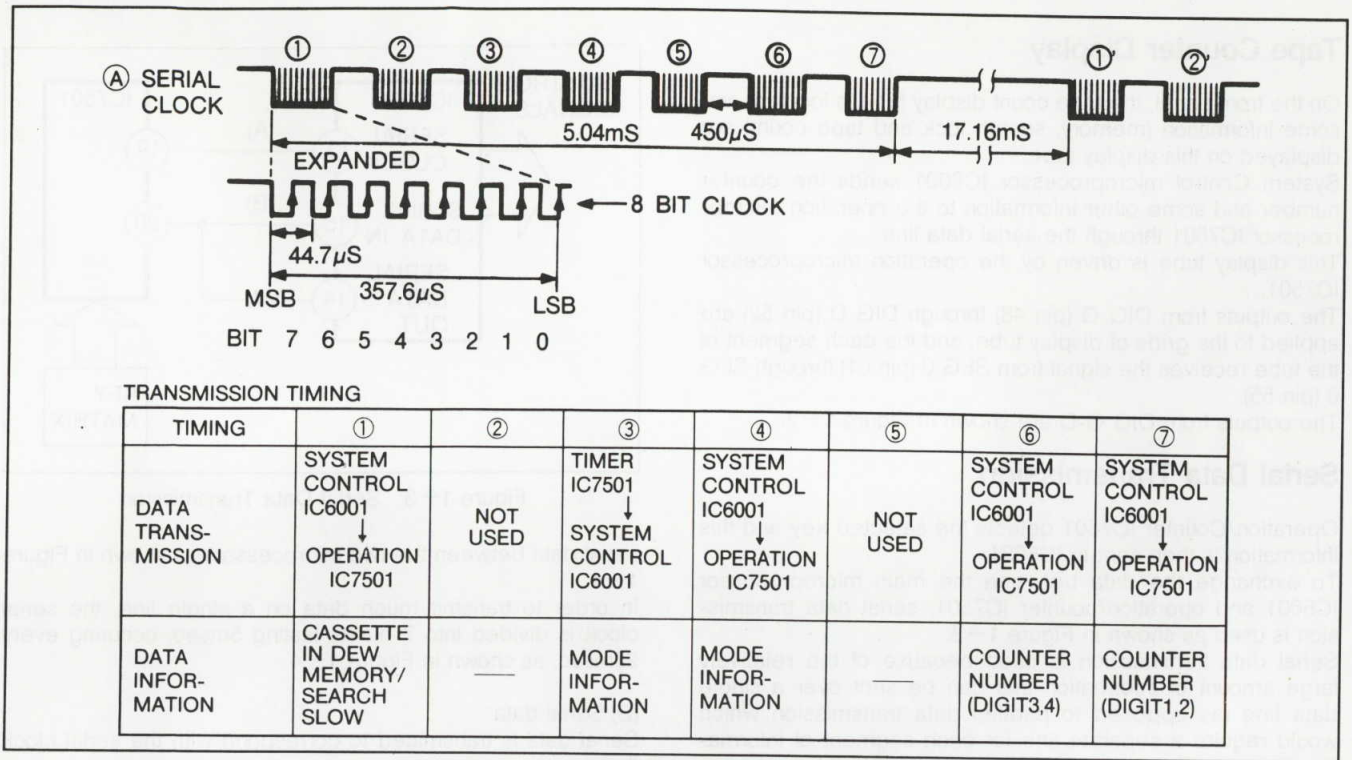


Figure 1-4 Timing of Serial Clock/Transmission

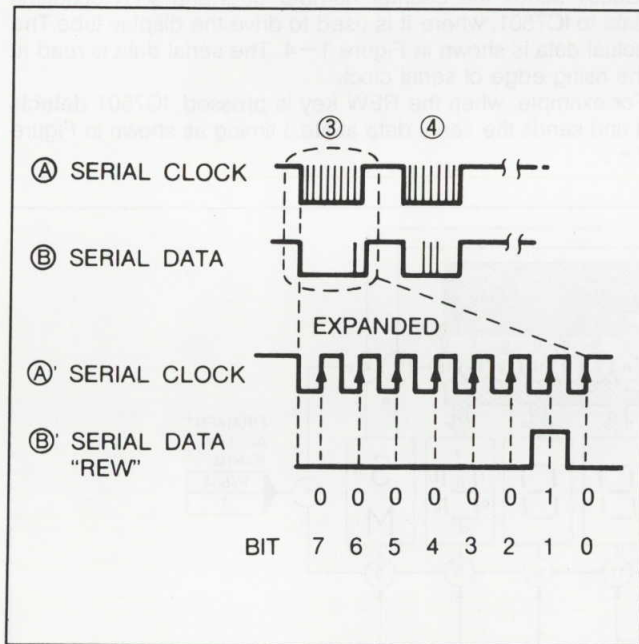


Figure 1-5 Serial Data for "REW"

No.1 Transmission	Information	0	1
BIT 7	Cassette condition	CASSETTE OUT	CASSETTE IN
BIT 6	Dew condition	NORMAL	DEW
BIT 5	Counter display control	BIT 5 0 0 1	BIT 5 0 1 0
BIT 4		DISPLAY NORMAL	MEMORY SEARCH
BIT 3~0	NOT USED	—	

Figure 1-6 Serial Data for No.1 Timing (IC6001→IC7501)

No	FUNCTION	CODE BIT 5 4 3 2 1 0	No	FUNCTION	CODE BIT 5 4 3 2 1 0
1	STOP	0 0 0 0 0 0	7	FRAME ADV	0 0 1 1 0 0
2	EJECT	0 0 0 0 0 1	8	SLOW	0 0 1 1 1 1
3	REW (REVIW)	0 0 0 0 1 0	9	COUNTER MEMORY ON/OFF	1 1 0 0 1 0
4	FF (CUE)	0 0 0 1 1 0	10	COUNTER RESET	1 1 0 0 1 1
5	STILL/PAUSE	0 0 0 1 1 0	11	NO KEY PUSHING	1 1 1 1 1 1
6	PLAY	0 0 1 0 1 0	12	COINCIDENT KEY PUSHING	1 1 1 1 1 0

CODE BIT 7~6 ARE NOT USED.

Figure 1-7 Serial Data for No.3 Timing Bit 5~0 (IC7501→IC6001)

Transmission No.4 BIT 3~0									
BIT 3	2	1	0	CONDITION OF VTR	BIT 3	2	1	0	CONDITION OF VTR
0	0	0	0	STOP	0	1	0	1	CUE
0	0	0	1	EJECT	0	1	1	1	POWER OFF
0	0	1	0	REW	1	0	0	0	PLAY
0	0	1	1	FF	1	0	0	1	STILL
0	1	0	0	REV					

No.4 Transmission	DATA
BIT 7~6	NOT USED
BIT 5	ALWAYS "1" (NOT USED)
BIT 4	ALWAYS "0" (NOT USED)

Figure 1-8 Serial Data for No.4 Timing (IC6001→IC7501)

### Loading and Front Loading Motors-Drive Circuit

- The loading motor drives the loading posts, tension arm, pressure rollers etc., by means of a Cam Gear movement, in accordance with the mode select switch. Timing of the motor drive signal is shown in Figure 1-9.
- The loading motor is controlled by the mechanical status signal coming from Mode select switch, (refer to Mode select switch).  
The Front Loading motor is controlled by the cassettes switches SW1 and SW2 (See Figure 1-9).

### Mode Select Switch

Mechanical modes of the tape transport mechanism are derived from the rotation of the loading motor. The loading motor is controlled by outputs from the system control microprocessor in response to operational input commands. Rotation of the loading motor drives the cam gear. The cam gear drives the loading post and Main Rod. This Main Rod is connected to Mode select switch which works as an interface between the mechanical parts and the electrical circuitry. The operation of the mode select switch is shown in Figure 1-10. The moving contact is operated by the main rod. As one side of the moving contact is connected to GND, a signal which depends on the mechanical position is generated. The mode select switch constantly monitors the mechanical position and sends that data back to the system control microprocessor. In this way the microprocessor can monitor the exact mechanical position at any instant and can stop the loading motors movement when the required position is reached.

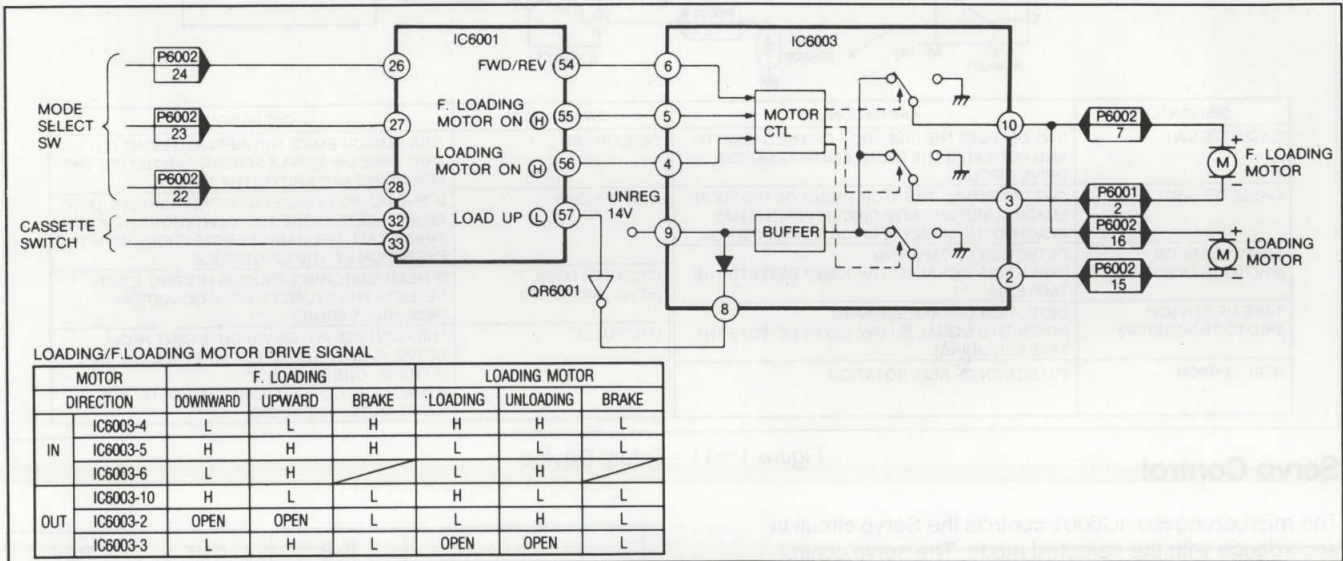


Figure 1-9 Front Loading/Loading Motors Drive

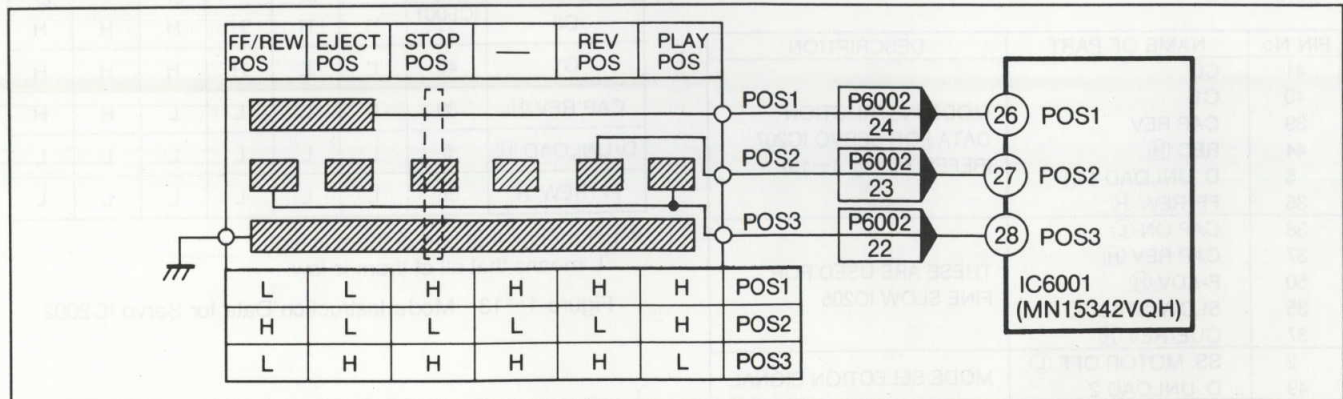


Figure 1-10 Mode Select Switch Circuit

## Safety Device

The microprocessor IC6001 monitors the safety devices of the unit in order to detect conditions that might cause damage to the tape or machine.

IC6001 places the unit into a STOP mode, whenever a safety device operates. Figure 1-11 shows the function of the switches and sensors which monitor the VTRs operation.

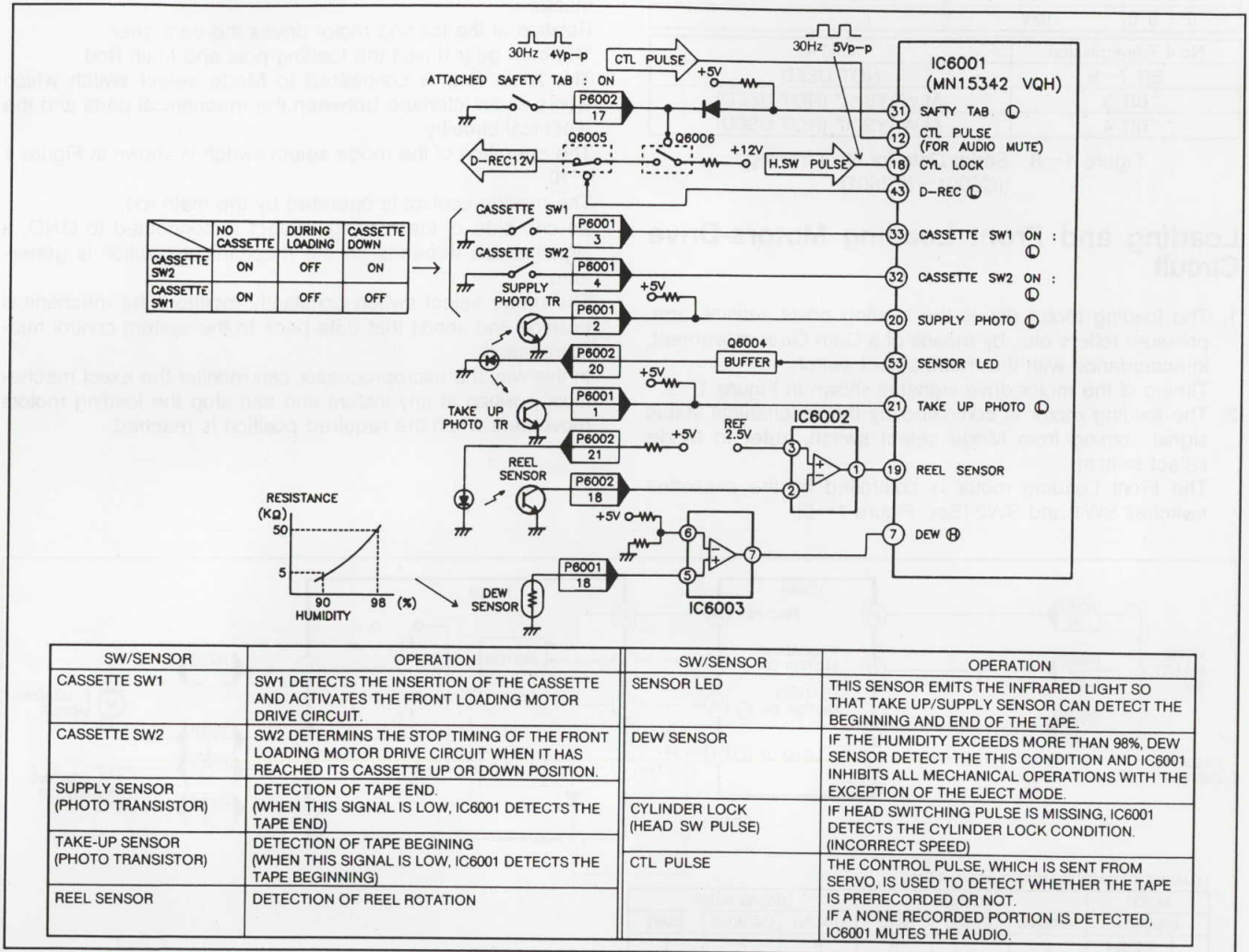


Figure 1-11 Safety Device

## Servo Control

The microprocessor IC6001 controls the Servo circuit in accordance with the selected mode. The servo control outputs from the system control microprocessor are shown in Figure 1-12.

PIN No.	NAME OF PART	DESCRIPTION
41	C0	MODE INSTRUCTION DATA FOR SERVO IC207 (REFER TO Fig. 1-19)
40	C1	
39	CAP REV	
44	REC (H)	
5	D. UNLOAD 1 (H)	
36	FF/REW (H)	
38	CAP ON (L)	THESE ARE USED FOR FINE SLOW IC205
37	CAP REV (H)	
50	F-ADV (H)	
35	SLOW/STILL (L)	
37	CUE/REV (H)	
2	SS. MOTOR OFF (L)	MODE SELECTION SIGNAL
49	D. UNLOAD 2	

Figure 1-12 Servo Control Command

Signal	PIN NO	P·B		CUE		REV	
		SP	SLP LP	SP	SLP LP	SP	SLP LP
C0	IC6001 41	H	H	H	H	H	H
C1	40	L	L	H	H	H	H
CAP REV (H)	39	L	L	L	L	H	H
D·UNLOAD (H)	5	L	L	L	L	L	L
FF/REW (H)	36	L	L	L	L	L	L

\* 1 H means that one of them is high.  
L means that all of them is low.

Figure 1-13 Mode Instruction Data for Servo IC202



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# SUB-SYSTEM CONTROL

## General Description

The sub-system control circuit contains many switching circuits which consist of M.M.V. ICs. or transistors and diodes.

The switching circuits are controlled by digital signals from the main system control or the special playback mode switches on the rear panel.

The functions of this circuit are as follows:

Refer to Figures 1-14~1-25 show the diagrams, signal flow charts and timing charts for each mode.

## 1. Tape beginning/Tape end Auto Repeat

The unit plays back the tape repeatedly from tape beginning to tape end.

Position of Switch

AUTO REPEAT SWITCH: "TAPE END"

Refer to Figures 1-14, 1-15 and 1-16.

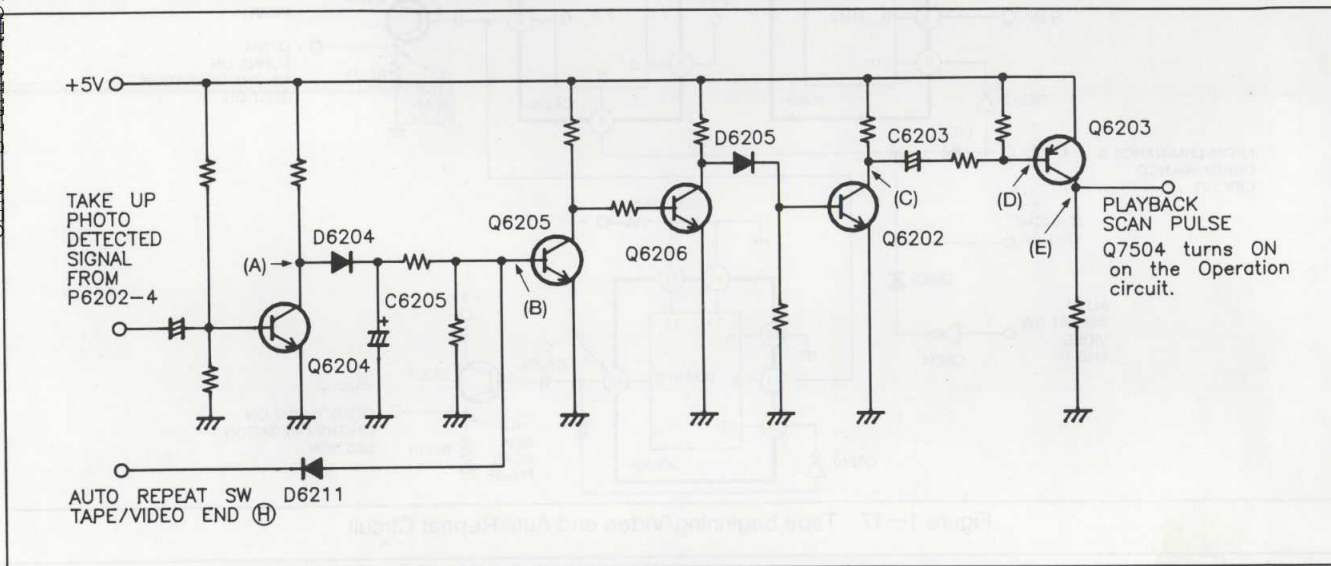


Figure 1-14 Tape beginning/Tape end Auto Repeat Circuit

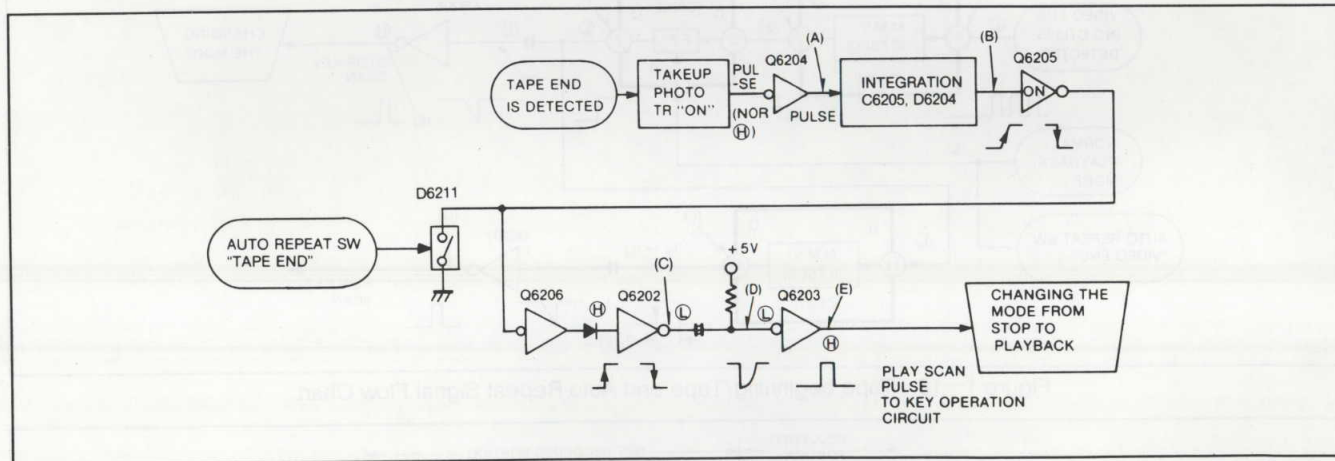


Figure 1-15 Tape beginning/Tape end Auto Repeat Signal Flow Chart

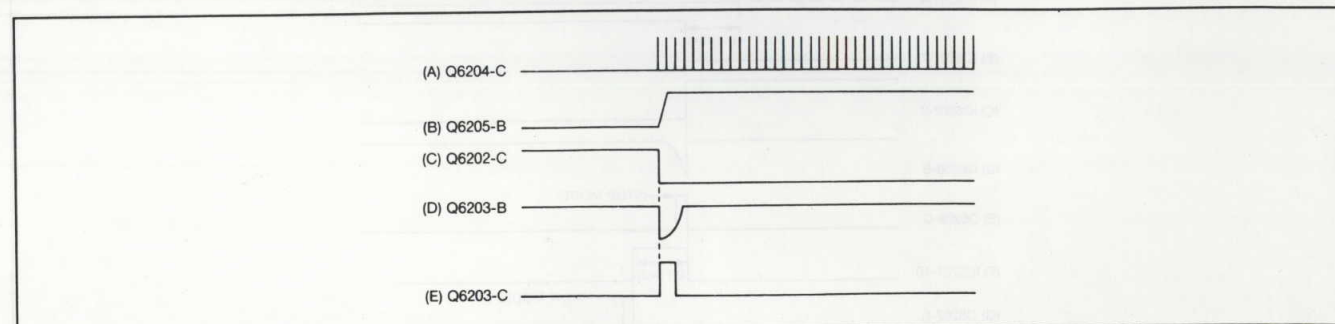


Figure 1-16 Signal Timing Chart

### 2. Tape beginning/Video end Auto Repeat

The unit plays back the tape repeatedly from tape beginning to interruption of video signal (CTL pulse).

Position of Switch  
AUTO REPEAT SWITCH: "VIDEO END"  
Refer to Figures 1-17, 1-18 and 1-19.

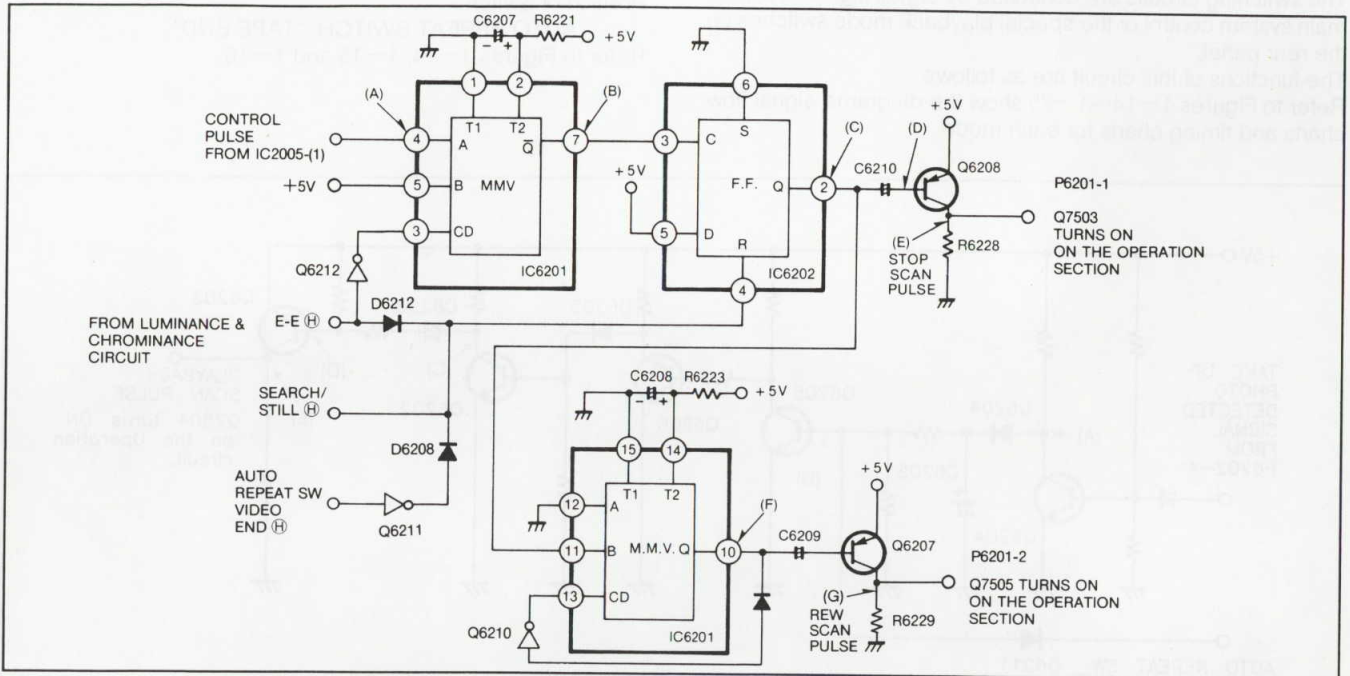


Figure 1-17 Tape beginning/Video end Auto Repeat Circuit

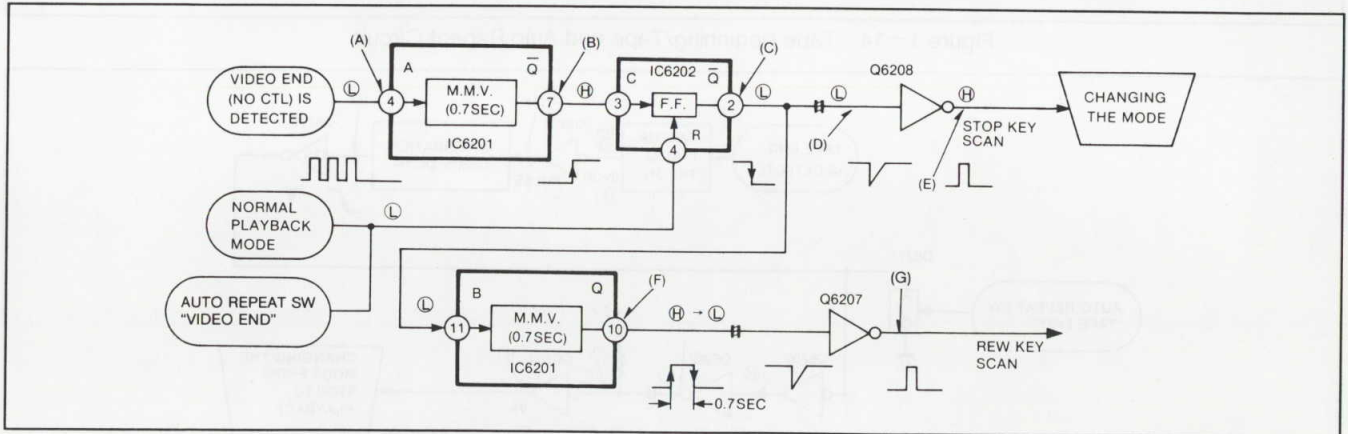


Figure 1-18 Tape beginning/Tape end Auto Repeat Signal Flow Chart

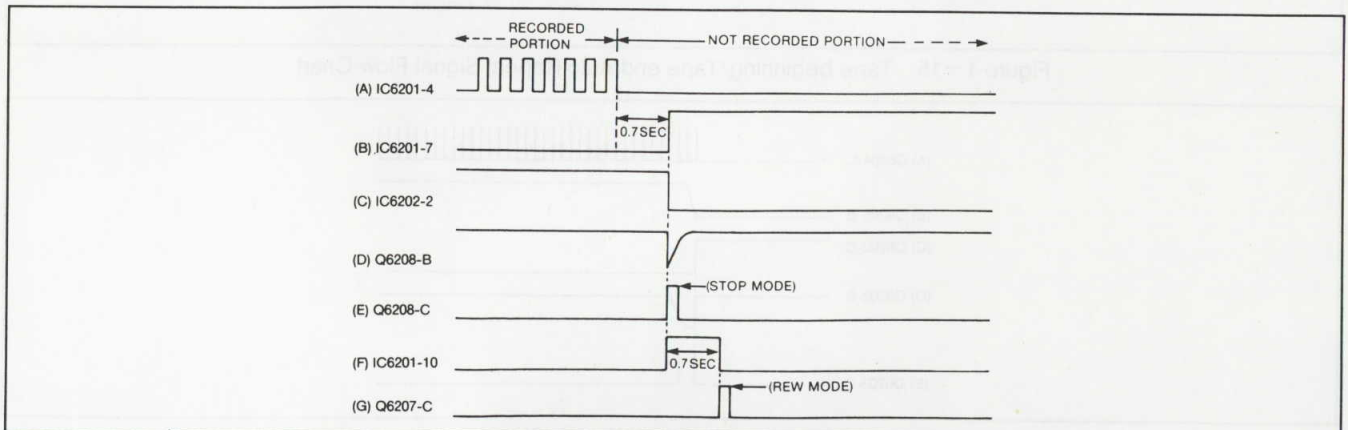


Figure 1-19 Signal Timing Chart

### 3. External Timer Playback

The use of an external timer permits timer playback with this unit.

If the power is turned ON by the external timer, the unit enters the playback mode automatically.

Position of Switch

AUTO REPEAT SWITCH: "TAPE END" or "VIDEO END"  
Refer to Figures 1-20, 1-21 and 1-22.

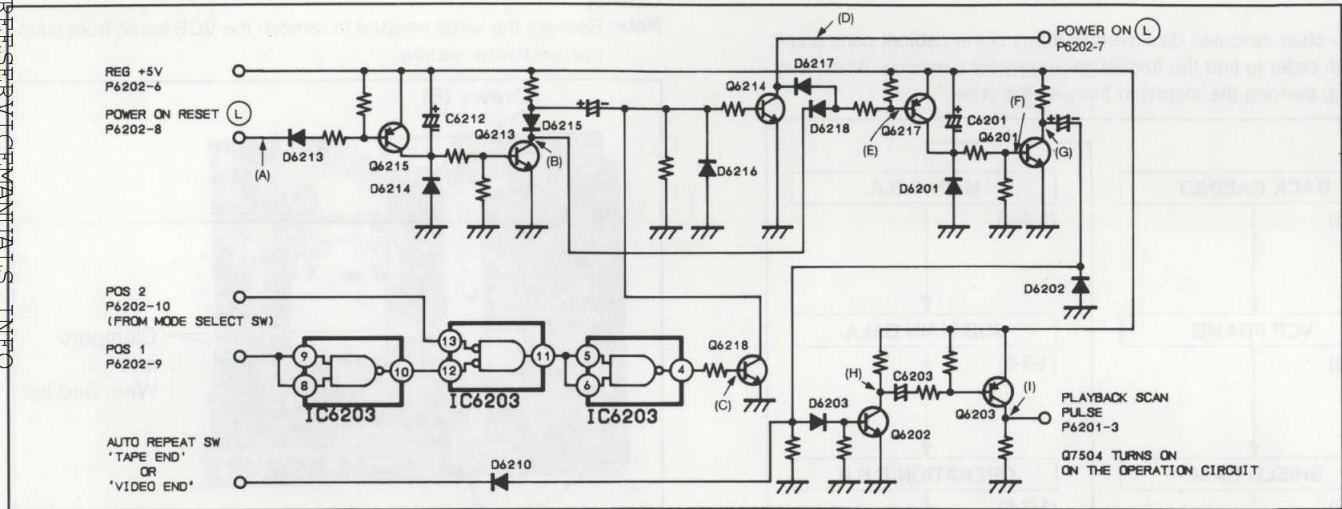


Figure 1-20 External Timer Playback Circuit

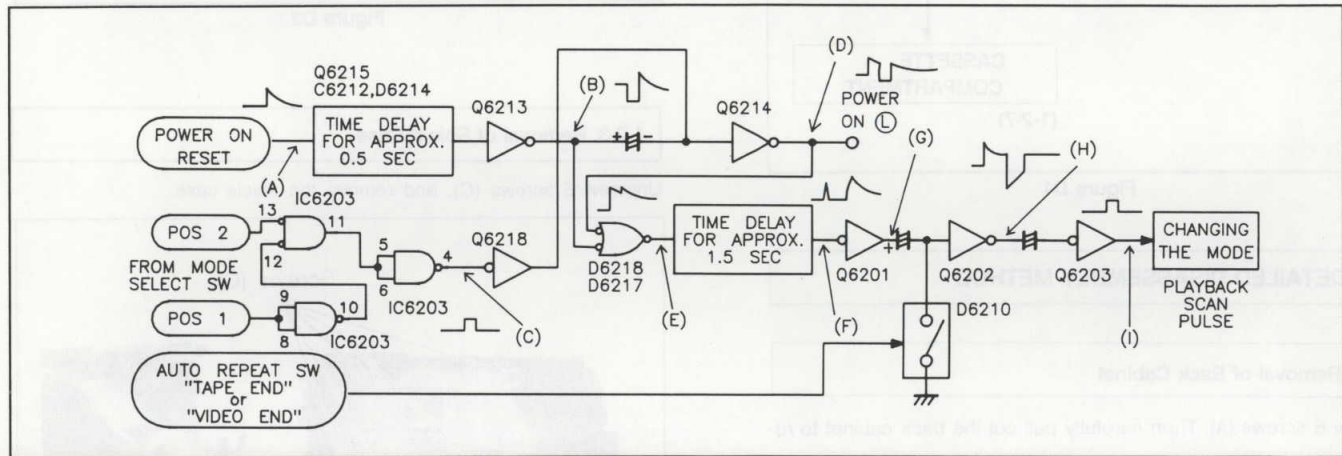


Figure 1-21 Timer Playback Signal Flow Chart

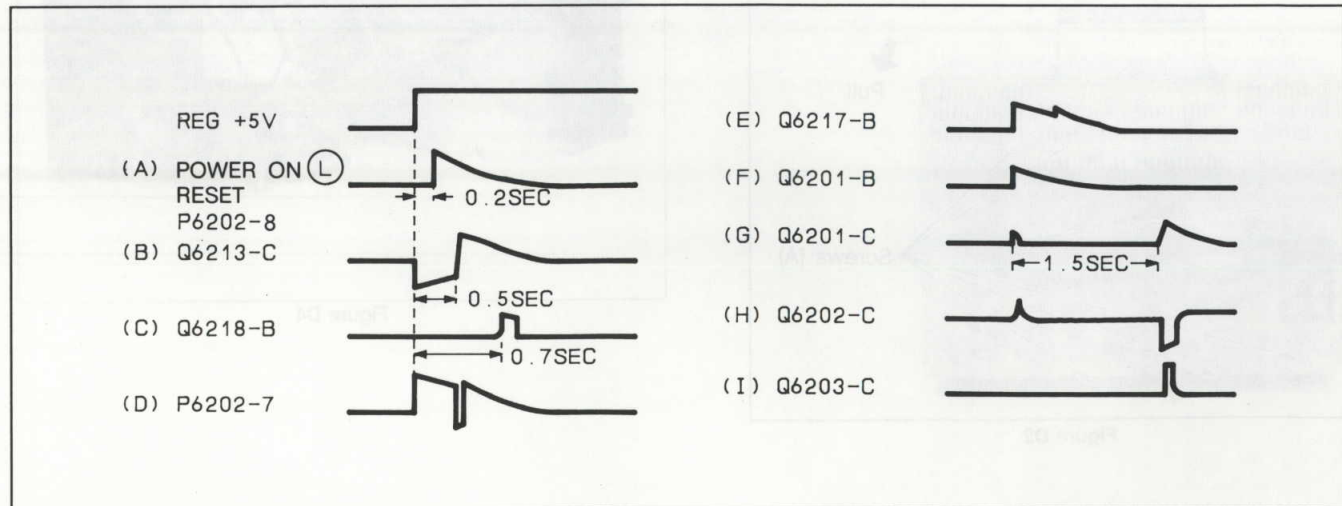


Figure 1-22 Signal Timing Chart

# DISASSEMBLY

## DISASSEMBLY PROCEDURES OF CABINET PARTS

### 1. DISASSEMBLY METHOD

#### 1-1. DISASSEMBLY METHOD

This flow chart indicates disassembly items of the cabinet parts and C. Boards in order to find the item(s) necessary for servicing. When reassembling, perform the step(s) in the reverse order.

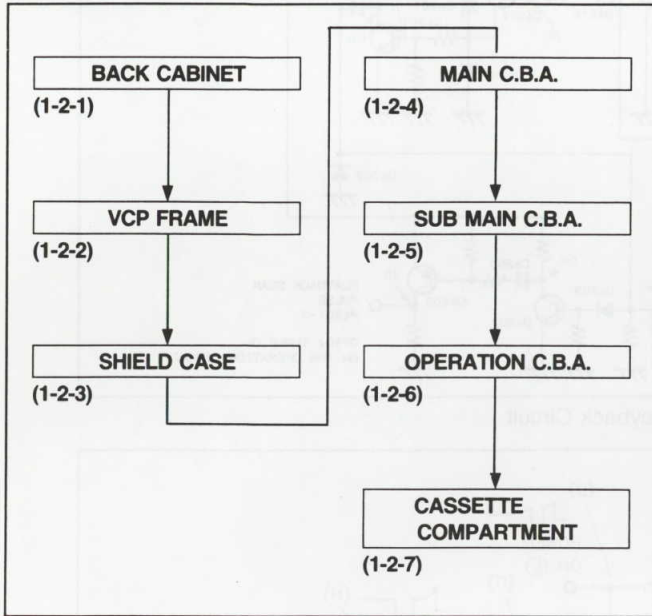


Figure D1

#### 1-2. DETAILED DISASSEMBLY METHOD

##### 1-2-1. Removal of Back Cabinet

Unscrew 6 screws (A). Then carefully pull out the back cabinet to remove.

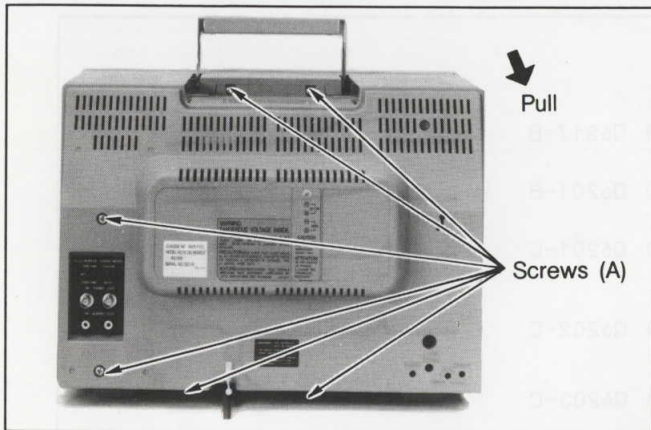


Figure D2

##### 1-2-2. Removal of VCP (Video Cassette Player) Frame

Unscrew 4 screws (B), and remove the VCP frame from Monitor TV Cabinet.

**Note:** Remove the wires needed to remove the VCP frame from clamper and wire saddle.

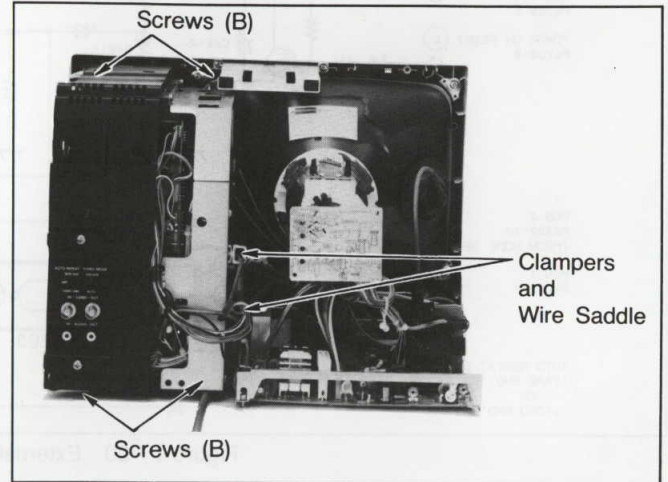


Figure D3

##### 1-2-3. Removal of Shield Case

Unscrew 5 screws (C), and remove the shields case.

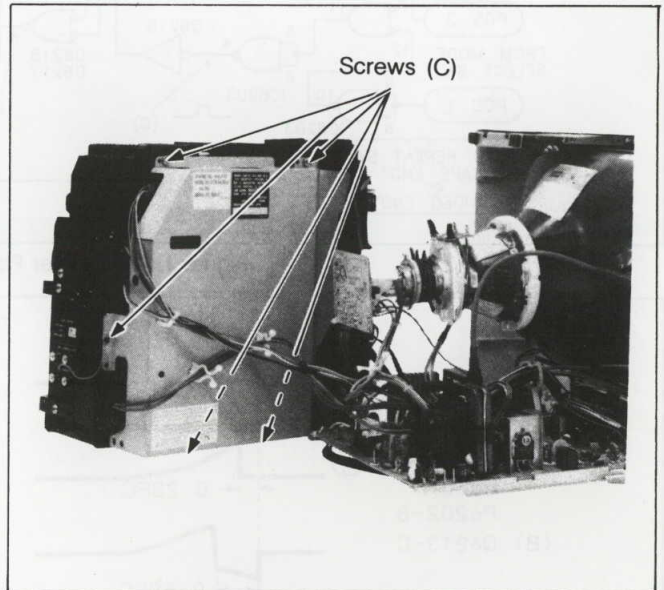


Figure D4

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**1-2-4. Removal of Main C.B.A.**

Unscrew 4 screws (D) and remove the Main C.B.A.

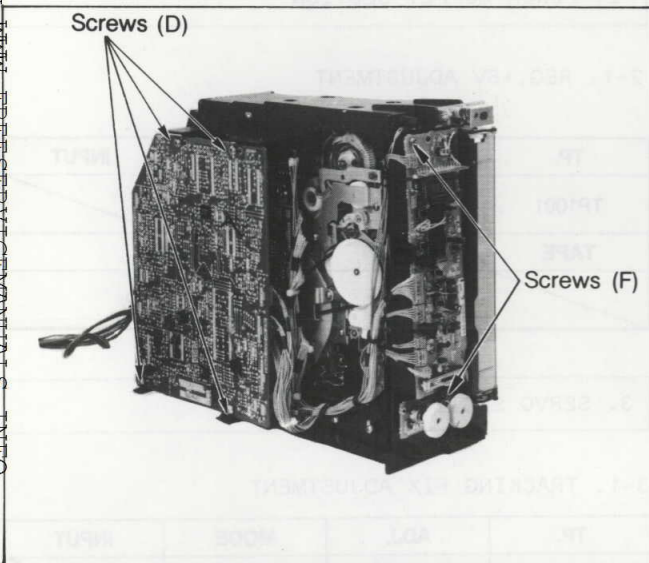


Figure D5

**1-2-5. Removal of Operation C.B.A.**

Unscrew 4 screws (F) as shown in Figure D5, a screw (K) on the chassis as shown in Figure D7, and remove the operation C.B.A.

**1-2-4. Removal of Main C.B.A.**

Unlock 2 locking portions (E), unscrew a screw (J) and turn the Sub Main C.B.A.

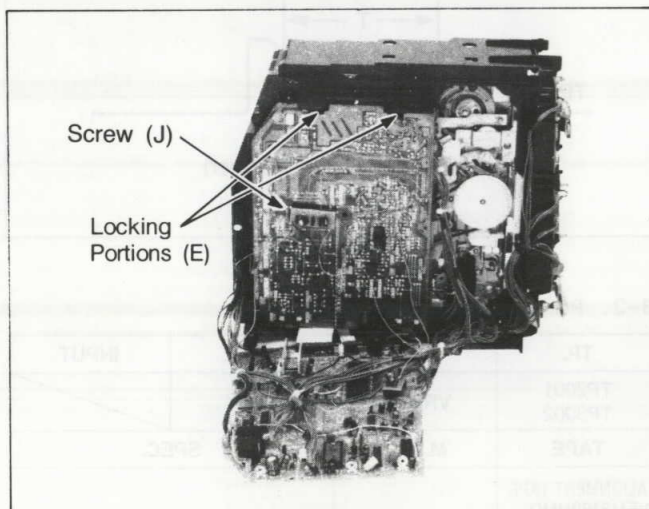


Figure D6

**1-2-7. Removal of Cassette Compartment**

Loosen 4 screws (G) and remove the shield case (H). Remove 4 screws (I) and disconnect the connector P1510 from the Front Loading C.B. Then carefully pull out the cassette compartment.

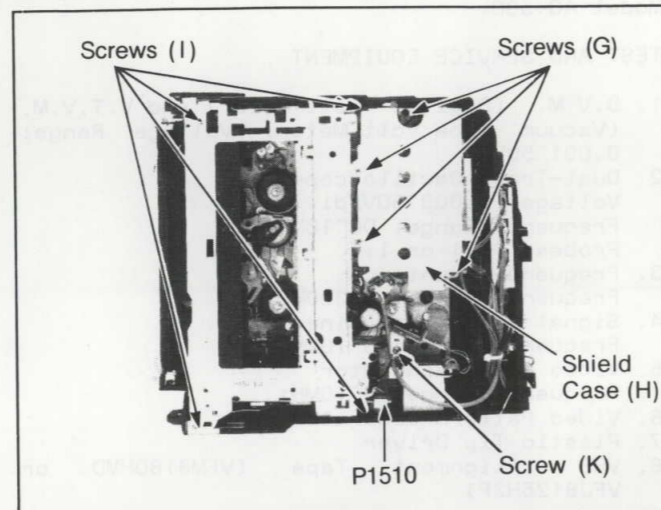
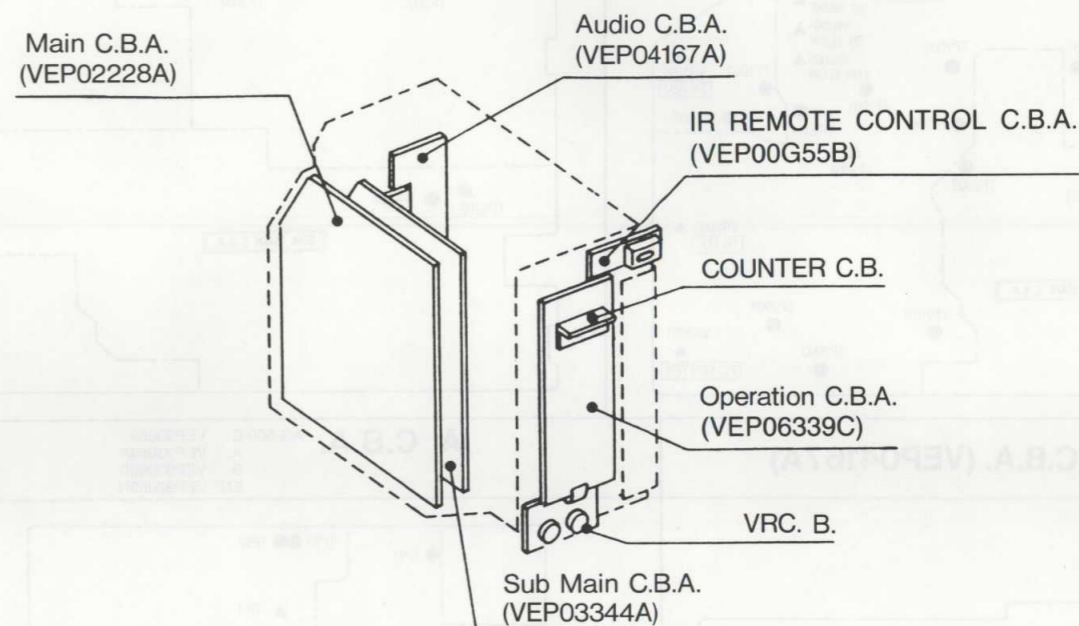


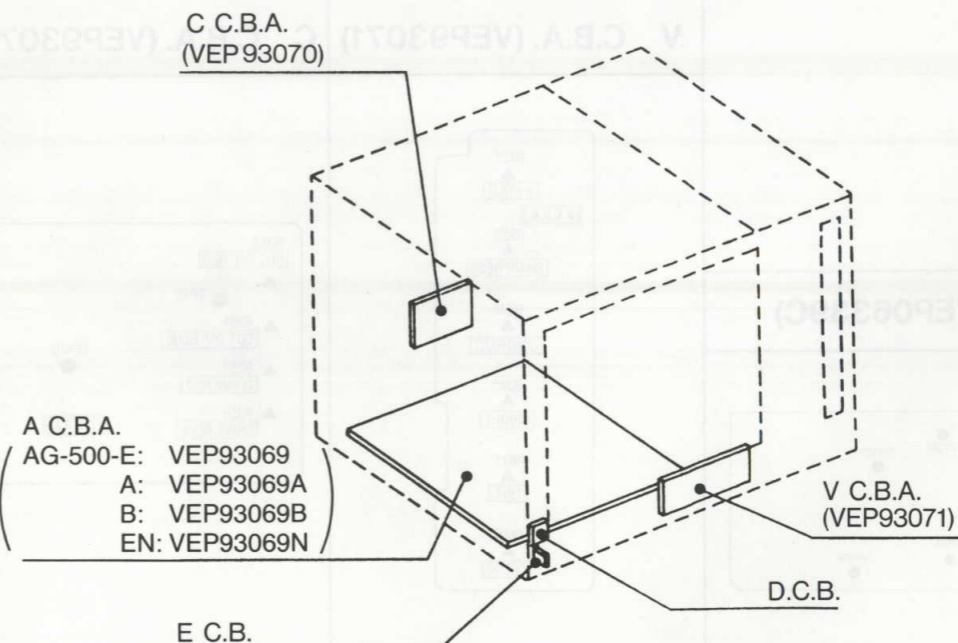
Figure D7

**CIRCUIT BOARD LAYOUT**

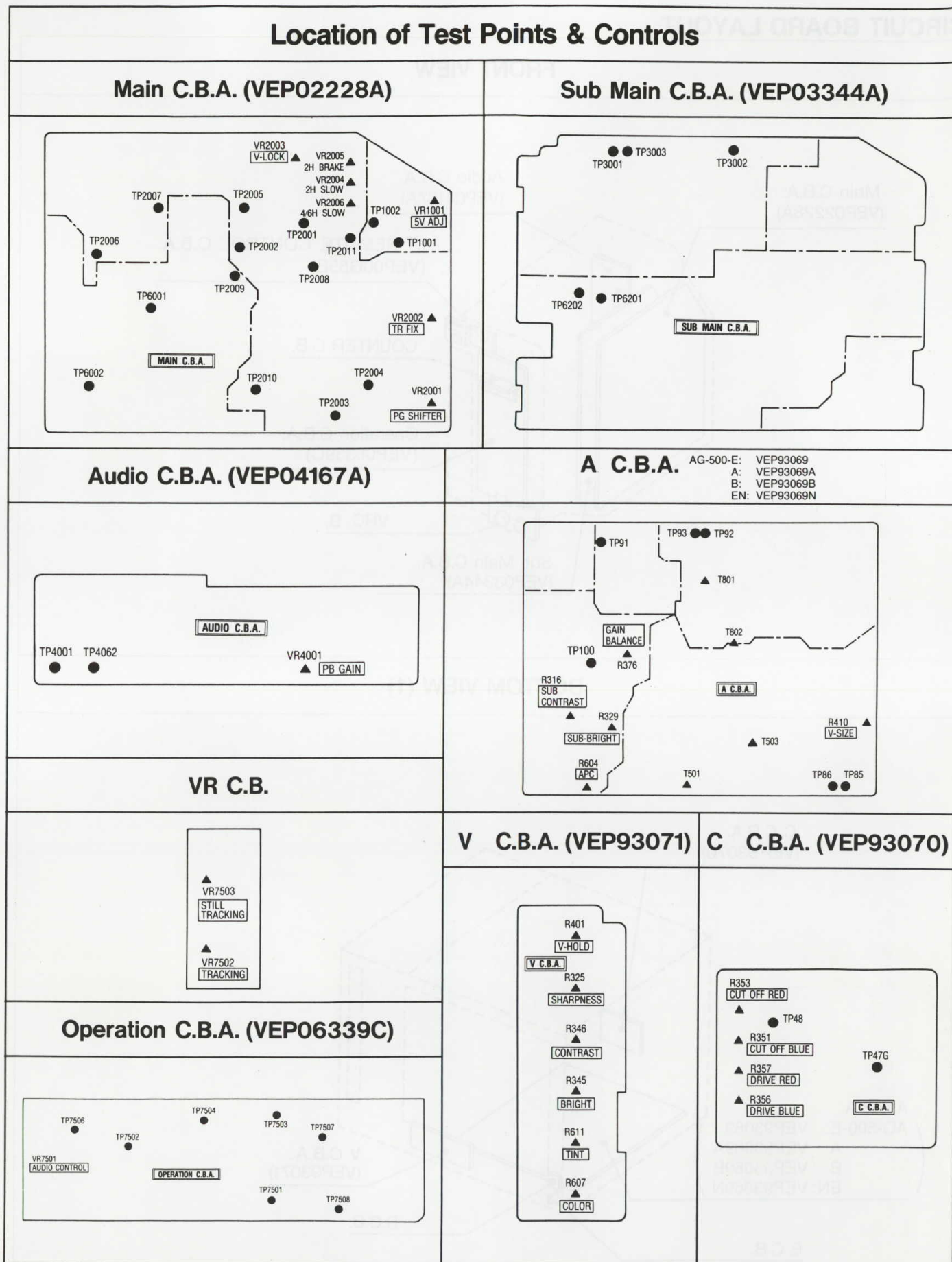
**FRONT VIEW**



**BOTTOM VIEW (1)**



### Location of Test Points & Controls



## ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete electrical adjustment procedures which may be required for electrical circuits of VHS Monitor/Player Model AG-500.

### TEST AND SERVICE EQUIPMENT

1. D.V.M. (Digital Volt Meter) and V.T.V.M. (Vacuum Tube Volt Meter) Voltage Range: 0.001~50V
2. Dual-Trace Oscilloscope Voltage: 0.005~50V/div. Frequency Range: DC~10MHz Probes: 10:1 or 1:1
3. Frequency Counter Frequency Range: 0~300MHz
4. Signal Generator (Sinewave) Frequency Range: 0~10MHz
5. Video Sweep Generator Frequency Range: 0~10MHz
6. Video Pattern Generator
7. Plastic Tip Driver
8. VHS Alignment Tape (VFM8180HMD or VFJ8125H3F)

### 1. HOW TO READ THE ADJUSTMENT PROCEDURES

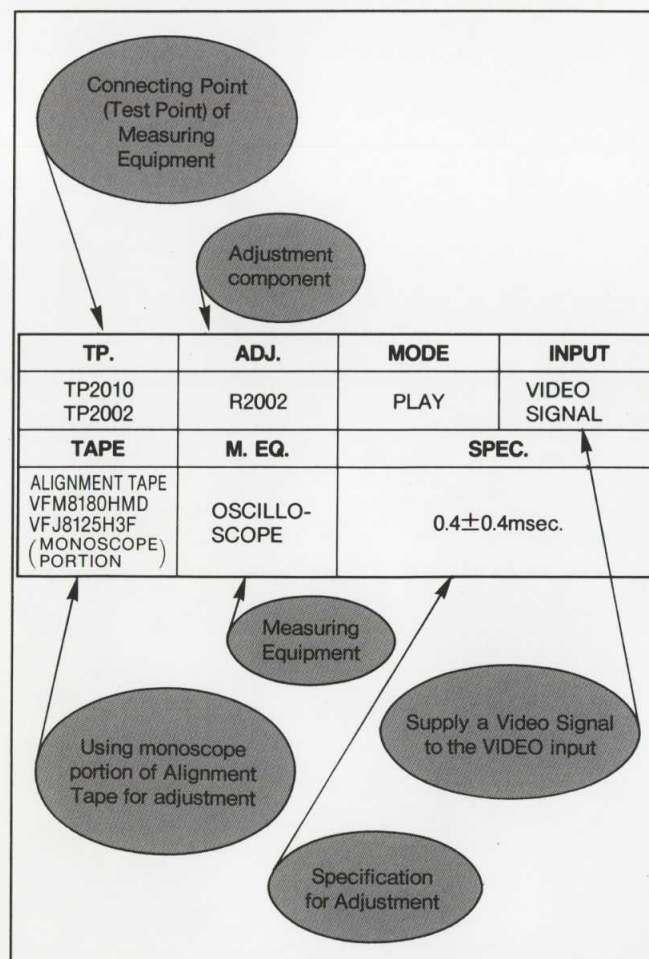


Figure E1

### 2. POWER SUPPLY SECTION

#### 2-1. REG.+5V ADJUSTMENT

TP.	ADJ.	MODE	INPUT
TP1001	VR1001	STOP	
<b>TAPE</b>	<b>M. EQ.</b>	<b>SPEC.</b>	
	D.V.M.	5.1±0.1V	

### 3. SERVO SECTION

#### 3-1. TRACKING FIX ADJUSTMENT

TP.	ADJ.	MODE	INPUT
TP2001 TP2002	VR2002	PLAY	
<b>TAPE</b>	<b>M. EQ.</b>	<b>SPEC.</b>	
ALIGNMENT TAPE VFM8180HMD VFJ8125H3F (MONOSCOPE) PORTION	OSCILLO- SCOPE	T=0.4±0.4msec.	

#### 1. TRACKING VR is fix position.

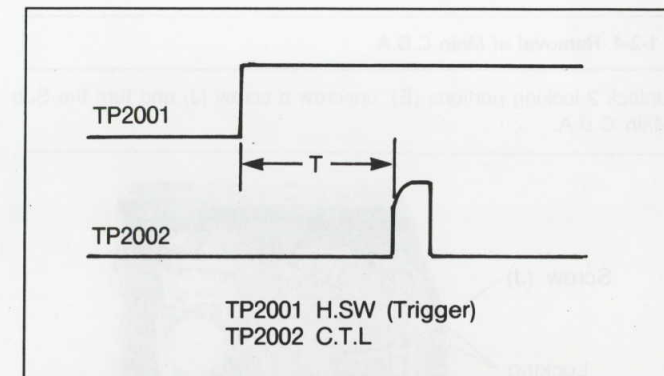


Figure E2

#### 3-2. PG SHIFTER ADJUSTMENT

TP.	ADJ.	MODE	INPUT
TP2001 TP3002	VR2001	PLAY	
<b>TAPE</b>	<b>M. EQ.</b>	<b>SPEC.</b>	
ALIGNMENT TAPE VFM8180HMD VFJ8125H3F (MONOSCOPE) PORTION	OSCILLO- SCOPE	T=6.5±0.5H	

#### Note:

1. This adjustment should be performed only after adjusting the tape interchangeability adjustment.

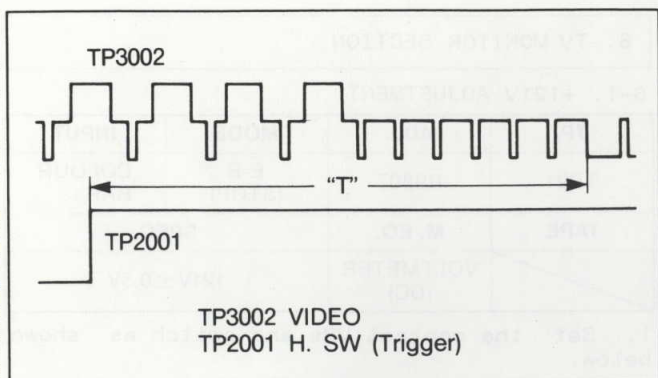


Figure E3

3-3. SLOW TRACKING FIX ADJUSTMENT

TP.	ADJ.	MODE	INPUT
TP2002 TP2007	VR2004	SLOW PLAY	
TAPE	M. EQ.	SPEC.	
ALIGNMENT TAPE VFM8180HMD VFJ8125H3F (MONOSCOPE) PORTION	OSCILLO- SCOPE	T=32.5±2.5msec	

1. Set the slow tracking control to the detent (fixed) position.

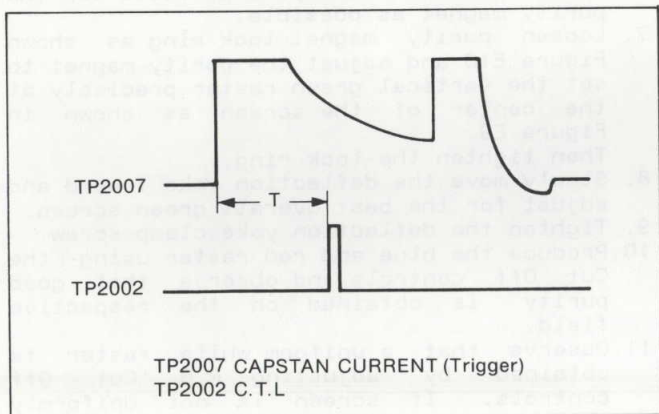


Figure E4

3-4. ARTIFICIAL V-SYNC ADJUSTMENT

TP.	ADJ.	MODE	INPUT
	VR2003	SLOW PLAY	
TAPE	M. EQ.	SPEC.	
ALIGNMENT TAPE VFM8180HMD VFJ8125H3F (MONOSCOPE) PORTION	TV MONITOR		

1. Play back the alignment tape and place the deck in STILL mode.
2. Adjust VR2003 so that the V-dancing does not appear on the TV Monitor screen.

4. VIDEO SECTION

4-1. HEAD AMP FREQUENCY RESPONSE ADJUSTMENT

If the Head Amp Frequency Responce Adjustment is required, the master tape must be made on a properly operating of NV-G10 as the following method.

1. Set the sweep generator output as shown below.
2. Supply the sweep signal to the Video input of NV-G10 and make a short recording.

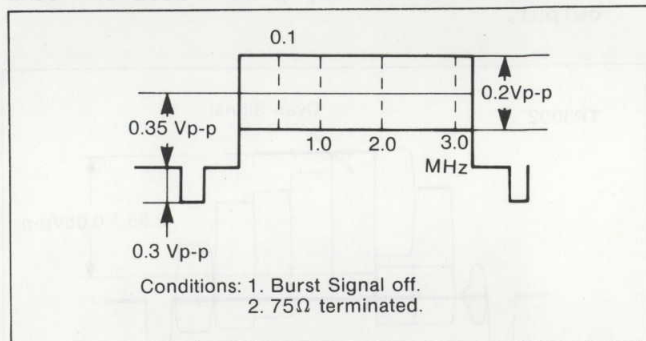


Figure E5

TP.	ADJ.	MODE	INPUT
TP3002	VR3001	PLAY	
TAPE	M. EQ.	SPEC.	
Recorded Sweep Signal Tape	OSCILLO- SCOPE		

1. Set the PICTURE VR at centre fix position.
2. Play back the just recorded sweep signal tape.
3. Adjust VR3001 so that the waveform becomes as shown below.

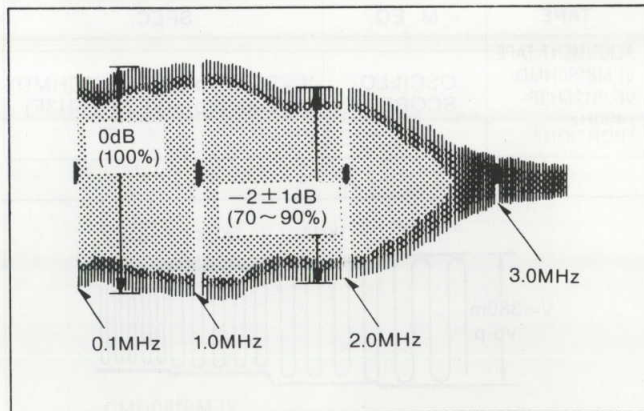


Figure E6

4-2. PLAYBACK CHROMA LEVEL ADJUSTMENT

If the Playback Chroma Level Adjustment is required, the master tape must be made on a properly operating of NV-G10 as the following method.

Supply a Colour bar signal to the video input and make a short recording.

TP.	ADJ.	MODE	INPUT
TP3002	VR801 (VIDEO PACK)	PLAY	
TAPE	M. EQ.	SPEC.	
COLOUR BAR RECORDED TAPE	OSCILLO- SCOPE	0.55±0.05Vp-p (Cyan Level)	

1. Play back the colour bar recorded tape.
2. Adjust VR801 so that the cyan level becomes 0.55±0.05Vp-p at TP3002 or line output.

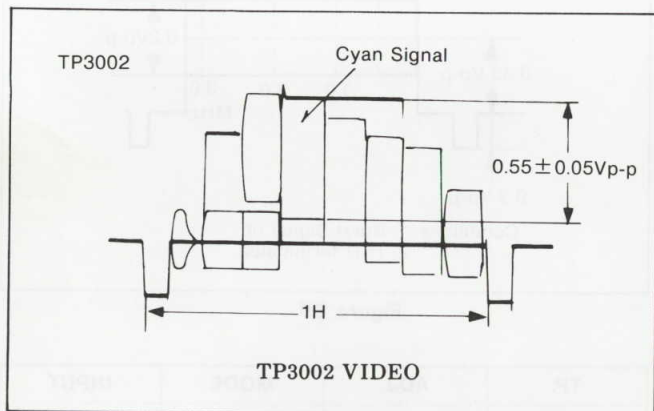


Figure E7

5. AUDIO SECTION

5-1. AUDIO LEVEL ADJUSTMENT

TP.	ADJ.	MODE	INPUT
TP4001	VR4001	PLAY	
TAPE	M. EQ.	SPEC.	
ALIGNMENT TAPE VFM8180HMD VFJ8125H3F (400Hz PORTION)	OSCILLO- SCOPE	V=380mVp-p(VFM8180HMD) V=200mVp-p(VFJ8125H3F)	

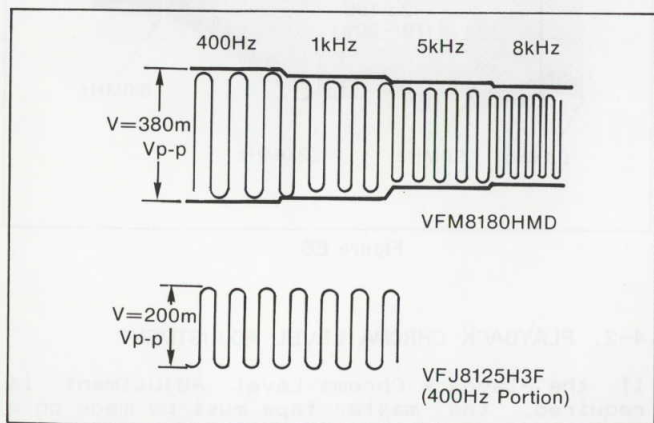


Figure E8

6. TV MONITOR SECTION

6-1. +121V ADJUSTMENT

TP.	ADJ.	MODE	INPUT
TP91	R9807	E-E (STOP)	COLOUR BAR
TAPE	M. EQ.	SPEC.	
	VOLTMETER (DC)	121V±0.5V	

1. Set the control VRs and switch as shown below.

BRIGHT/CONTRAST.....Minimum position  
SERVICE SWITCH.....Service position

6-2. COLOUR PURITY ADJUSTMENT

1. Operate the display for 20 minutes, with Bright and Contrast controls to maximum position to warm up the CRT.
2. Degauss the display fully by using an external degaussing coil.
3. Roughly adjust convergence.
4. Apply a black and white video pattern.
5. Turn Red and Blue Cut Off controls fully counterclockwise to obtain a green field. Adjust Drive controls if green field is not obtained.
6. Loosen the deflection yoke clamp screw and move the deflection yoke as close to the purity magnet as possible.
7. Loosen purity magnet lock ring as shown Figure E10 and adjust the purity magnet to set the vertical green raster precisely at the center of the screen as shown in Figure E9.
8. Then tighten the lock ring.
9. Slowly move the deflection yoke forward and adjust for the best overall green screen.
10. Tighten the deflection yoke clamp screw.
11. Produce the blue and red raster using the Cut Off controls and observe that good purity is obtained on the respective field.
12. Observe that a uniform white raster is obtained by adjusting R,B Cut Off controls. If screen is not uniformly white, repeat above procedure.

Note:  
Purity correction magnet may be effective to control purity slightly.

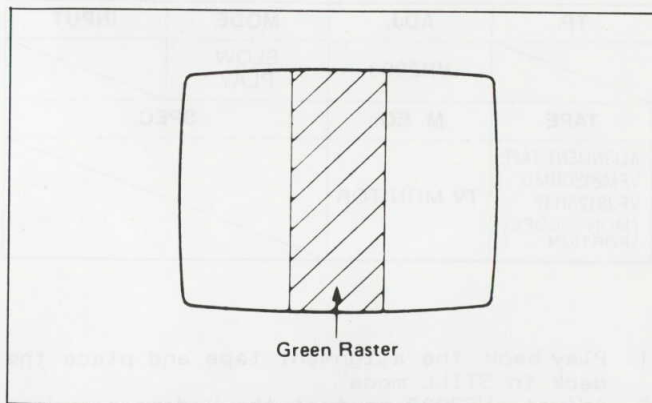


Figure E9



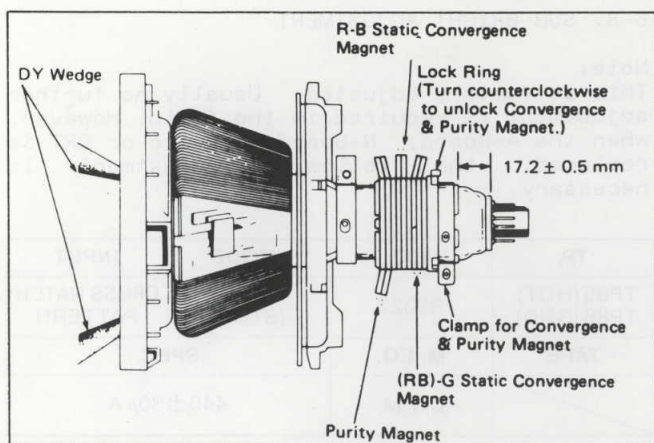


Figure E10

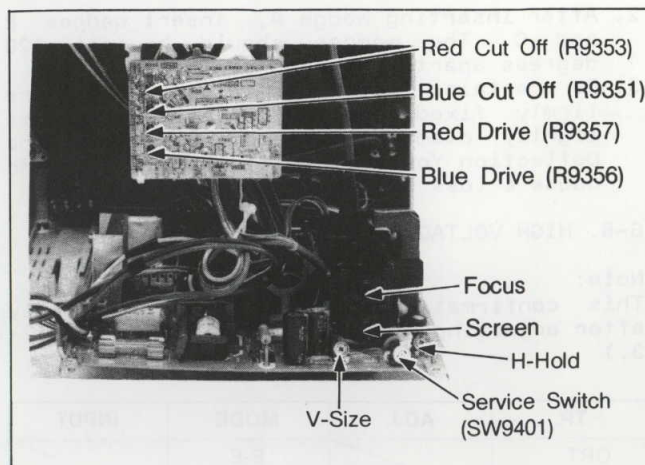


Figure E12

## 6-3. WHITE BALANCE ADJUSTMENT

1. Apply a black and white video pattern.
2. Set Bright, Contrast and Colour controls to minimum position.
3. Set Service Switch to SERVICE position.
4. Turn the two Off controls (R, B on C-Board) fully counterclockwise, then turn each control forward (clockwise) 60 degrees.
5. Turn Screen control fully counterclockwise.
6. Connect VTVM between TP47G and chassis ground on C-C.B.A.
7. Adjust Bright control and Sub-Bright control (R9327) so that the reading of VTVM becomes 105V+1V.
8. Slowly turn Screen control clockwise until a dim green horizontal line appears on the picture tube screen as shown in Figure E11.
9. Make the horizontal line white by turning the two Cut Off controls which were previously set in step 4.
10. Return the SERVICE switch to NORMAL position.
11. Alternately adjust Red and Blue Drive controls to produce a normal black and white picture. Check the black and white picture detail for proper black and white retention (no colouration) from lowlights to highlights and at all brightness levels for proper tracking. Proper tracking at all brightness levels can be obtained when the Screen controls, Cut Off controls, and Drive controls are properly adjusted. If the results are unsatisfactory, repeat all the above steps.

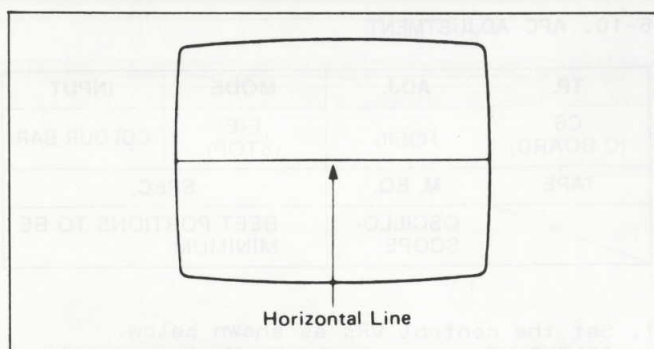


Figure E11

## 6-4. CONVERGENCE ADJUSTMENT

## Note:

Before adjusting convergence, vertical size and focus adjustments must be completed.

1. Apply a dot pattern signal.
2. The brightness level should be no higher than necessary to obtain a clear pattern.
3. Loosen the convergence magnet lock ring and converge the red and blue dots at the center of the screen, by rotating the R-B Static Convergence Magnet as shown in Figure E10.
4. Align the converged red/blue dots with the green dots at the center of the screen by rotating the (RB)-G Static Convergence Magnet as shown in Figure E10.
5. Tighten the convergence magnet lock ring.
6. Remove the DY wedges in Figure E13 and slightly tilt (do not rotate) the deflection yoke horizontally and vertically to obtain good overall convergence.
7. Secure the deflection yoke by reinserting the wedges as shown in Figure E13.
8. If purity error is found, repeat the purity adjustment.

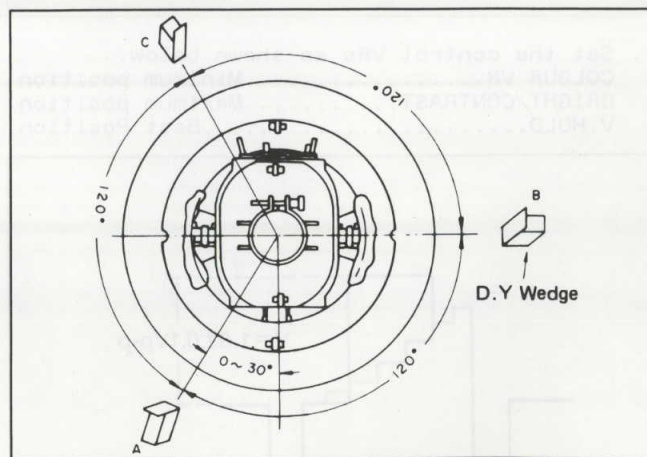


Figure E13

## Note:

1. Wedge A shown in Figure E13 should be fixed within a range of 0 degrees to 30 degrees to the left of the vertical line as shown.

- After inserting wedge A, insert wedges B and C. The wedges should be set 120 degrees apart from each other.
- Be certain that the three wedges are firmly fixed and the Deflection Yoke is tightly clamped in place. Otherwise the Deflection Yoke may shift its position and cause a loss of convergence and purity.

6-5. HIGH VOLTAGE CONFIRMATION

Note:

This confirmation should be performed only after adjusting white balance adjustment. (7-3.)

TP.	ADJ.	MODE	INPUT
CRT ANODE		E-E (STOP)	
TAPE	M. EQ.	SPEC.	
	CALIBRATED HIGH VOLTAGE METER	23.0±1.0kV	

- Set Bright and Contrast controls to minimum and Service switch to SERVICE position.
- Using a calibrated high voltage meter (electrostatic type) confirm that the high voltage is within the range of 23.0kV±1.0kV.

Note:

Be certain that B+ is 121.0±0.5V during the high voltage confirmation.

6-7. SUB-CONTRAST ADJUSTMENT

TP.	ADJ.	MODE	INPUT
TP48	R9318	E-E (STOP)	COLOUR BAR VIDEO INPUT
TAPE	M. EQ.	SPEC.	
	OSCILLOSCOPE	V=1.6±0.1Vp-p	

- Set the control VRs as shown below.  
 COLOUR VR.....Minimum position  
 BRIGHT/CONTRAST.....Maximum position  
 V.HOLD.....Best Position

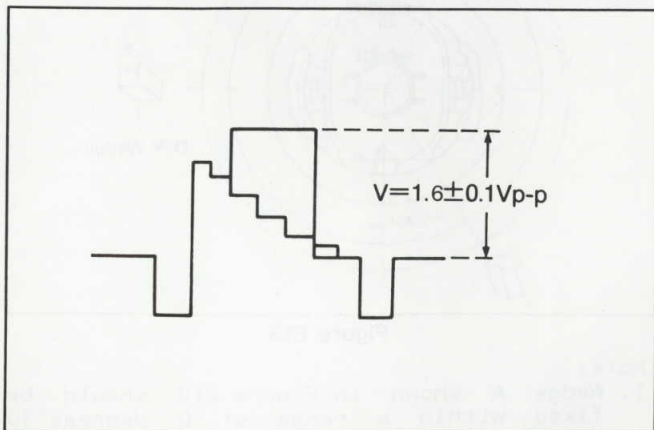


Figure E14

6-8. SUB-BRIGHT ADJUSTMENT

Note:

This is factory adjusted. Usually no further adjustment is required in the field. However, when the A-Board, N-Board, C-Board or CRT is replaced, the following adjustment is necessary.

TP.	ADJ.	MODE	INPUT
TP85 (HOT) TP86 (GND)	R9327	E-E (STOP)	CROSS HATCH PATTERN
TAPE	M. EQ.	SPEC.	
	D.V.M.	440±30µA	

- Apply a colour signal bar.
- Set Bright (R9346) and Contrast (R9348) controls to MAXIMUM.
- Set colour control (R9622) to MINIMUM.
- Connect the D.V.M. between TP85 and TP86 (positive lead of the D.V.M. to TP85 and negative lead to TP86).
- Adjust Sub-Bright control (R9327) so that the reading of the voltmeter becomes 440±30µA for proper picture brightness.

6-9. COLOUR OUTPUT ADJUSTMENT

TP.	ADJ.	MODE	INPUT
C6 (C BOARD)	R9620	E-E (STOP)	COLOUR BAR
TAPE	M. EQ.	SPEC.	
	OSCILLOSCOPE	V=3.5±0.2Vp-p	

- Set the control VRs as shown below.  
 COLOUR VR.....Maximum position  
 CONTRAST VR.....Maximum position

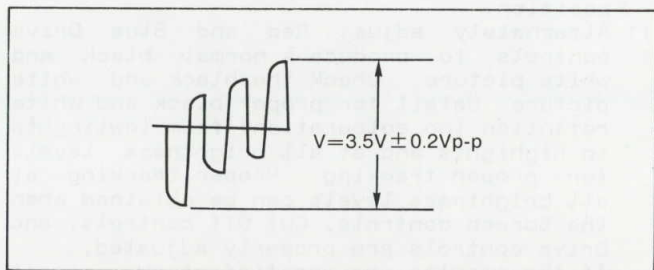


Figure E15

6-10. APC ADJUSTMENT

TP.	ADJ.	MODE	INPUT
C6 (C BOARD)	R9616	E-E (STOP)	COLOUR BAR
TAPE	M. EQ.	SPEC.	
	OSCILLOSCOPE	BEET PORTIONS TO BE MINIMUM	

- Set the control VRs as shown below.  
 COLOUR VR.....Maximum position  
 CONTRAST VR.....Maximum position

2. Adjust R9616 so that the beet portions become minimum.

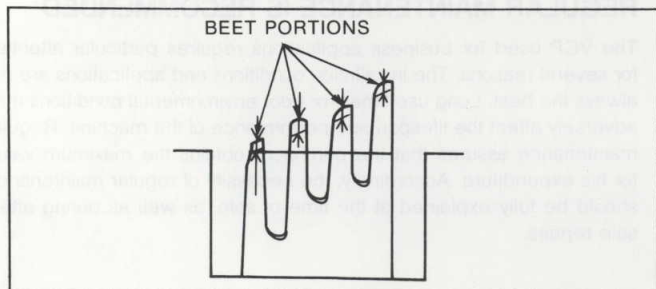


Figure E16

6-11. DELAY LINE ADJUSTMENT

TP.	ADJ.	MODE	INPUT
C6 (C BOARD)	R9604 L9606	E-E (STOP)	COLOUR BAR
TAPE	M. EQ.	SPEC.	
	OSCILLO- SCOPE	BEET PORTION TO BE MINIMUM	

1. Set the control VRs as shown below.  
COLOUR VR.....Maximum position  
CONTRAST VR.....Maximum position
2. Adjust R9604 and L9606 so that the beet portions become minimum.

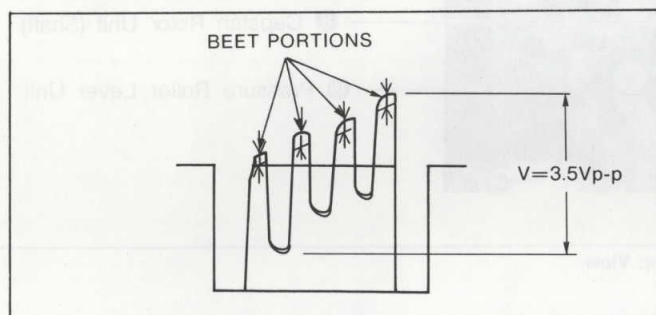


Figure E17

## REPLACEMENT OF UPPER CYLINDER UNIT

Be sure to observe the following procedures when replacing the Upper Cylinder Unit.

### REMOVING THE UPPER CYLINDER UNIT

First remove two screws as shown in Figure E18. Then, unsolder 8 soldered portions indicated by arrows, on the Circuit Board and finally remove the Upper Cylinder Unit by lifting it upwards.

Note:  
Soldered portion can be easily removed by using solder sucking wire, etc.

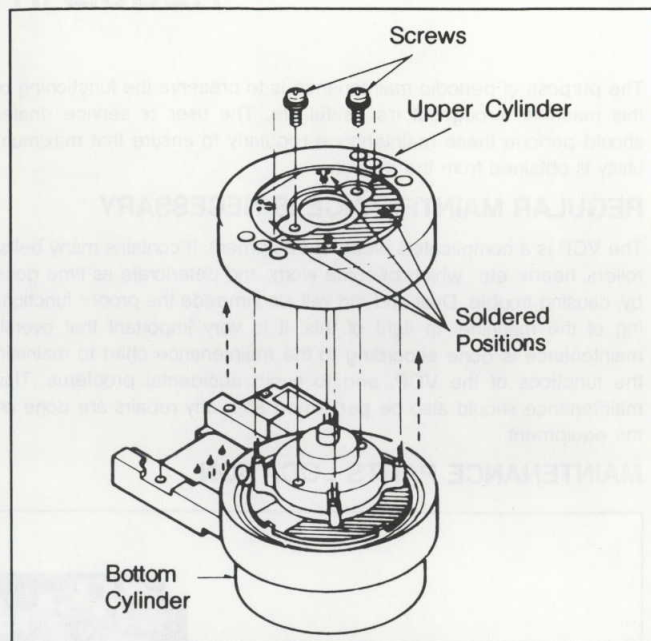


Figure E18

### REINSTALLING THE UPPER CYLINDER UNIT

The Upper Cylinder Unit can be reinstalled by reversing the removal procedure. However, when reinstalling, it should be extremely careful so that both the white and green portions of the C. Board on the Upper Cylinder Unit will correctly match the white and green portions of the C. Board on Bottom Cylinder as shown in Figure E19.

Note:  
If the Upper Cylinder unit is reversely installed, no colour will appear when playing back a pre-recorded tape.

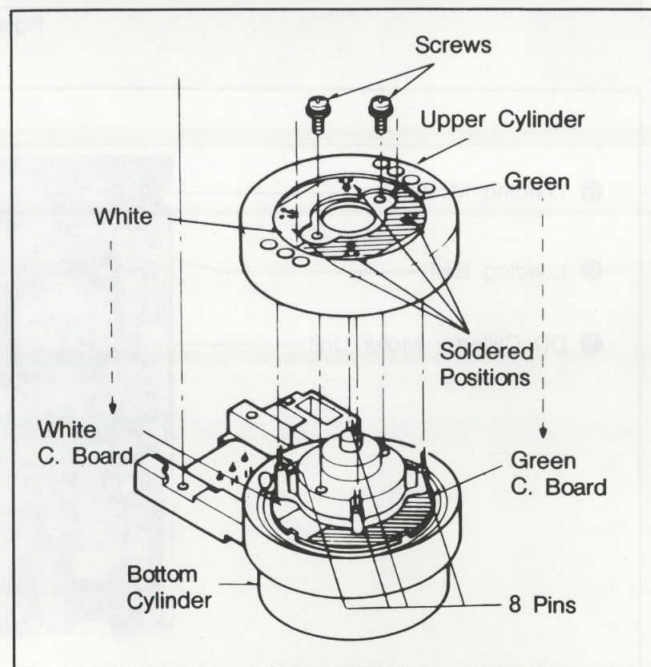


Figure E19

## REGULAR MAINTENANCE

The purpose of periodic maintenance is to preserve the functioning of this machine throughout its useful life. The user or service dealer should perform these maintenance regularly to ensure that maximum utility is obtained from the machine.

### REGULAR MAINTENANCE IS NECESSARY

The VCP is a complicated piece of equipment. It contains many belts, rollers, heads, etc., which become worn, and deteriorate as time goes by, causing trouble. Dust and dirt will also impede the proper functioning of the machine. In light of this, it is very important that overall maintenance is done according to the maintenance chart to maintain the functions of the VCP, and to avoid accidental problems. This maintenance should also be performed after any repairs are done on the equipment.

### MAINTENANCE PARTS LOCATION

### REGULAR MAINTENANCE IS RECOMMENDED

The VCP used for business applications requires particular attention for several reasons. The installation conditions and applications are not always the best. Long use times, or poor environmental conditions may adversely affect the lifespan and performance of the machine. Regular maintenance assures that the purchaser obtains the maximum value for his expenditure. Accordingly, the necessity of regular maintenance should be fully explained at the time of sale, as well as during after-sale repairs.

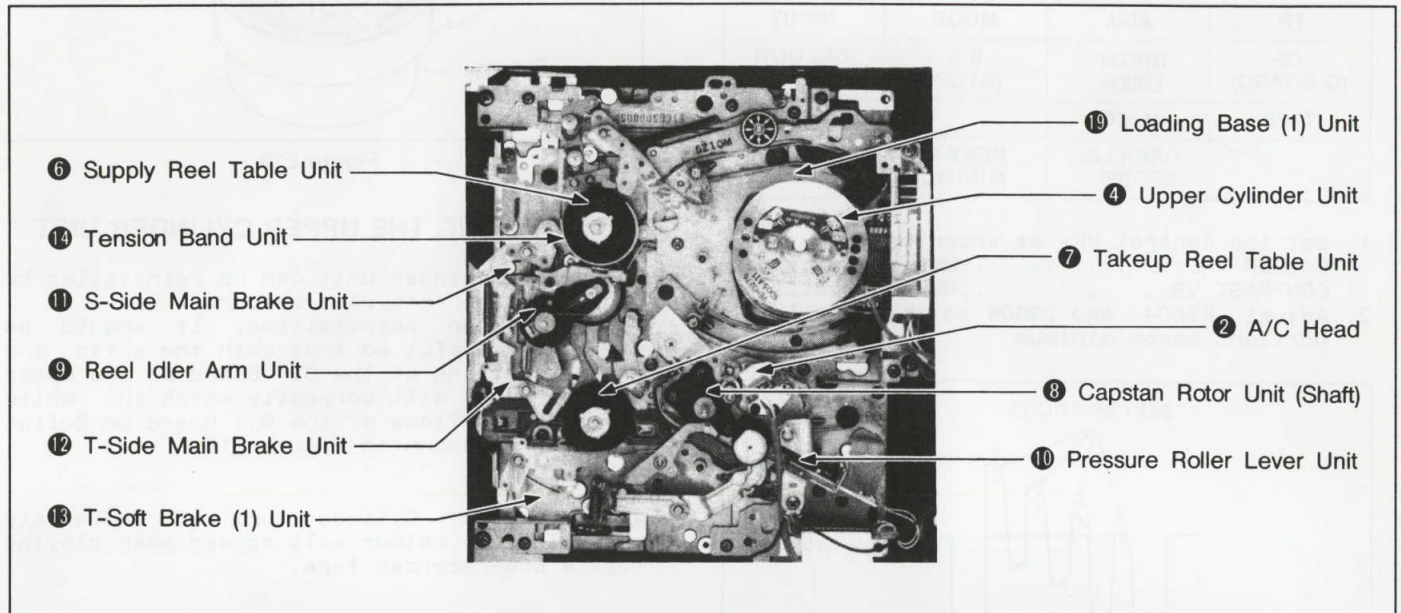


Figure 1 Top View

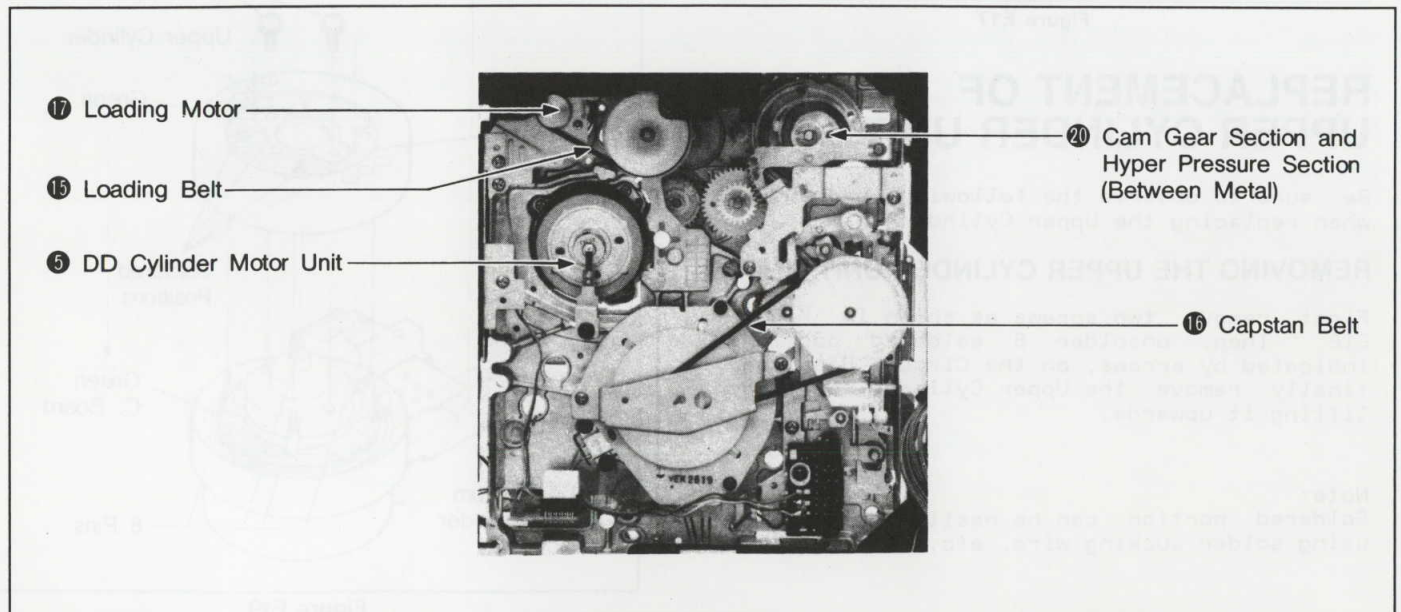


Figure 2 Bottom View

# MECHANICAL ADJUSTMENT PROCEDURES

## MAINTENANCE CHART

Since the parts are keyed to the parts location diagrams, when you replace the following parts, refer to Figures 1 and 2.

The replacement periods of the parts are average of equipment that is used in accordance with the instruction manual.

Note that the periods may vary considerably according to environmental, usage conditions and quality of cassette tape.

	Parts Name	Unit or Part No.	Hour												
			500	1000	1500	2000	2500	3000	3500	4000	4500	5000			
①	Tape Transporters	—	●	●	●	●	●	●	●	●	●	●	●	●	●
②	A/C Head	VBR0091	●	●	●	●	●	●	●	●	○	●	●	●	●
④	Upper Cylinder Unit	VEH0287	●	○	●	○	●	○	●	○	○	●	○	●	○
⑤	DD Cylinder Unit	VEG0352	●	●	●	●	●	●	●	●	●	●	●	○	○
⑥	Supply Reel Table Unit	VXR0118	●	●	●	●△	●	●	●	●	●△	●	●	●	●
⑦	Takeup Reel Table Unit	VXR0136	●	●	●	●△	●	●	●	●	○△	●	●	●	●
⑧	Capstan Rotor Unit (Shaft)	VXP0695	●	●	●	●	●	●	●	●	●	●	●	●	●
⑨	Reel Idler Arm Unit	VXP0521	●	●	●	○	●	●	●	●	○	●	●	○	○
⑩	Pressure Roller Lever Unit	VXL1371	●	○	●	○	●	○	●	○	○	●	●	○	○
⑪	S-Side Main Brake Unit	VXZ0186				○					○				
⑫	T-Side Main Brake Unit	VXZ0189				○					○				
⑬	T-Soft Brake (1) Unit	VXZ0209				○					○				
⑭	Tension Band Unit	VXZ0165				○					○				
⑮	Loading Belt	VDV0158				○					○				
⑯	Capstan Belt	VDV0149				○					○				
⑰	Loading Motor	VEM0242				○					○				
⑱	Front Loading Motor	VEM0243				○					○				
⑲	Loading Base (1) Unit	VXA2445					■								■
⑳	Cam Gear Section and Hyper Pressure Section (Between Metal)	—										■			

\* Note:

Symbol	Maintenance	Requirement	Remark
●	Cleaning	Freon TF, Ethyl-alcohol or Cleaning Liquid (Purchase locally)	Wipe dirt from the parts using soft cloth impregnated with Freon TF or Ethyl-Alcohol. Note: When cleaning rubber parts, avoid using excessive alcohol since it may accelerate deterioration of these parts. After cleaning with alcohol, wipe the alcohol quickly and thoroughly.
○	Replacement	—	—
◎	Replacement (In case)	—	If the regular cleaning has not been done.
△	Lubrication	High Quality Spindle Oil (Purchase locally)	Supply one or two drops of oil.
■	Greasing	Molytone Grease (MOR265)	Wipe the old Grease and apply new grease.

# MECHANICAL ADJUSTMENT PROCEDURES

## 1. MECHANICAL ADJUSTMENT PROCEDURES

### 1-1. ADJUSTMENT FLOW CHART

This flow chart describes the order of steps for adjusting the tape guide posts and A/C head in order to gain access to the items needing servicing.

**Note:**

P1 and P4 posts are precisely adjusted at the factory. Therefore, normally do not change the height.

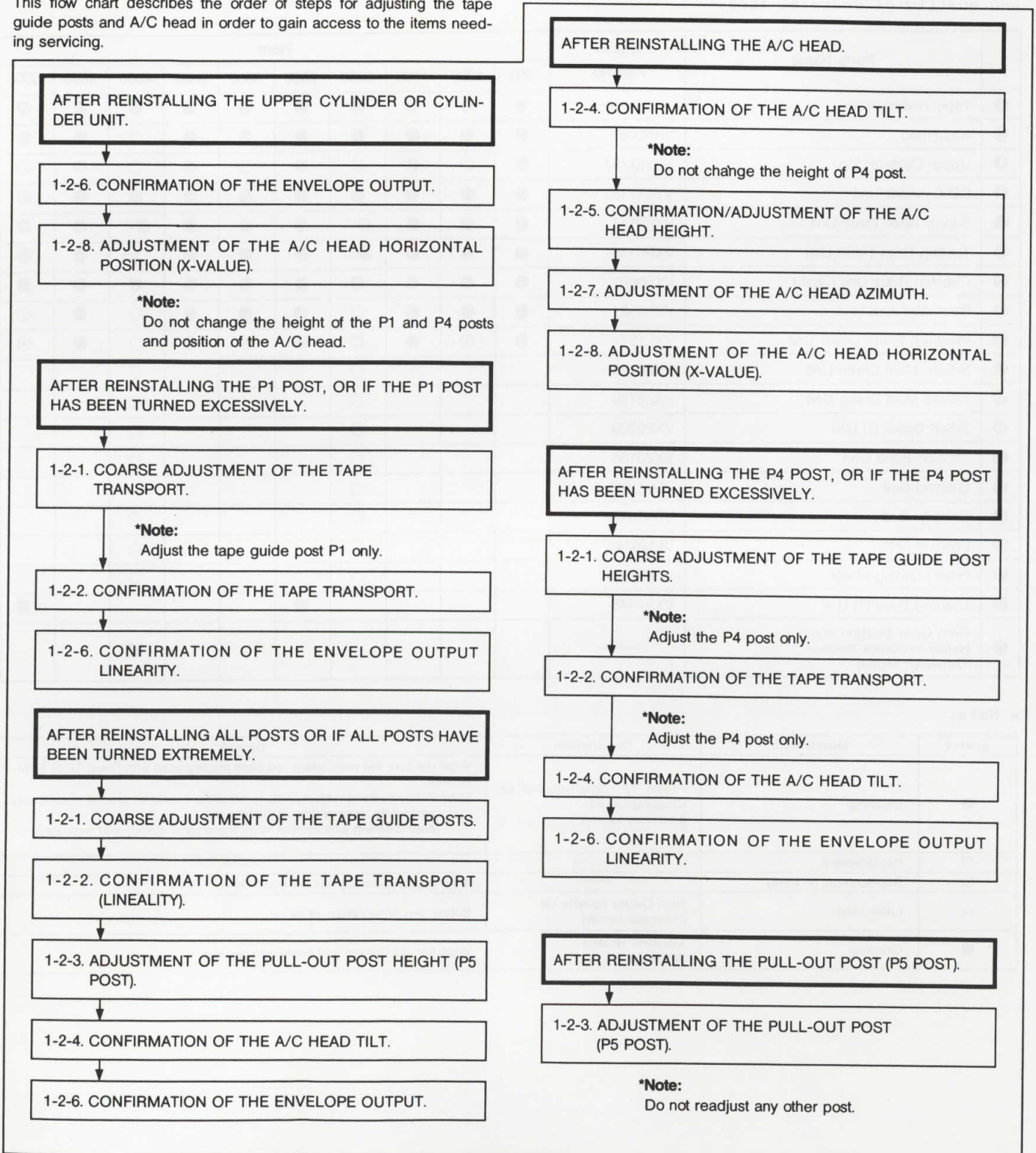


Figure M1

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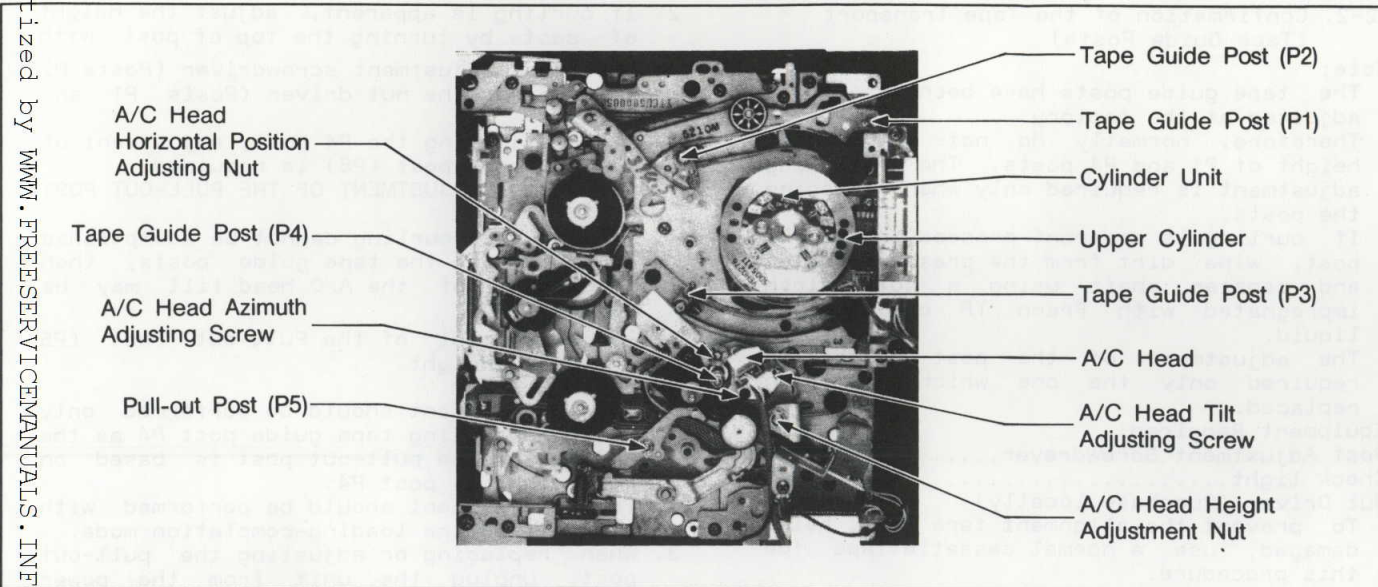


Figure M2

1-2. TAPE INTERCHANGEABILITY ADJUSTMENT PROCEDURES

1-2-1. Coarse Adjustment of the Tape Guide Post Heights (P1, P2, P3 and P4)

\*Equipment Required:

- Post Adjustment plate.....VFK0191
- Reel Table Height Gauge.....VFK0190
- Nut Driver (Purchase Locally)
- Post Adjustment Screwdriver.....VFK0137

1. Remove the Top Panel and the Front Loading Unit.
2. Place the Post Adjustment Plate over the reel tables. Confirm that the Post Adjustment Plate is firmly seated.

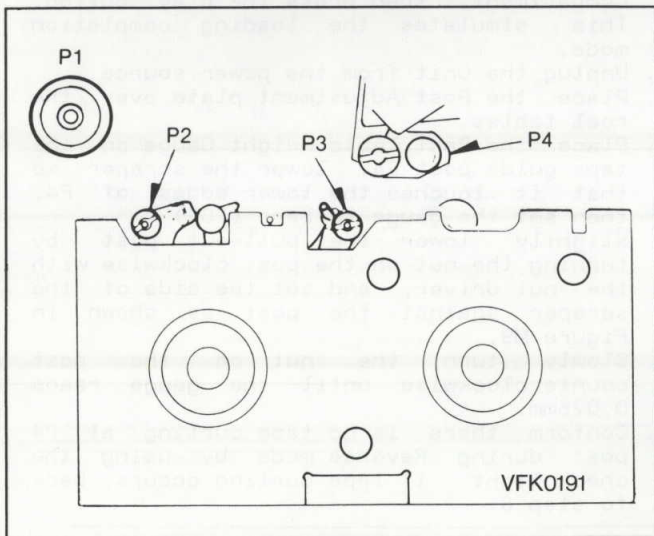


Figure M3

3. Loosen the screw located under the lower tape guide on posts P2 and P3, and turning p4 counterclockwise.

4. Lower all 4 tape guide posts so that the lower tape guide on each post is below the top surface of the adjustment plate. Use the Post Adjustment screwdriver to lower posts P2 and P3, and the Nut Driver to lower posts P1 and P4.

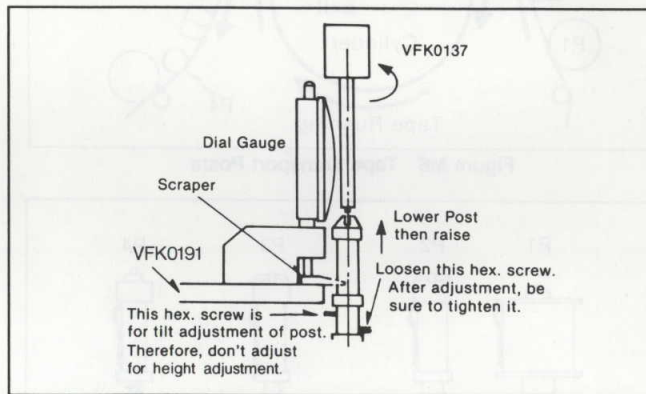


Figure M4

5. Place the Reel Table Height Gauge on the Post Adjustment Plate (VFK0191) and lower the scraper so that it touches the plate. Read the Reel Table Height Gauge.
6. Place the side of the scraper against the each post as shown in Figure M5, then slowly raise the post until the reading of the Reel Table Height Gauge becomes the Post Adjustment Plate's height.
7. Tighten the screws on posts P2 and P3.

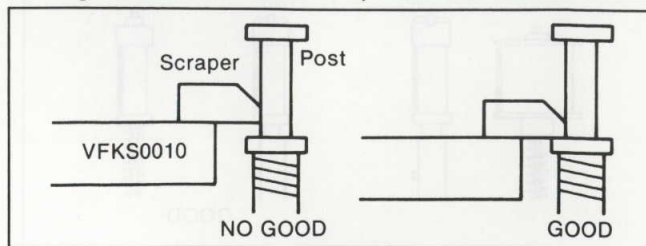


Figure M5

1-2-2. Confirmation of the Tape Transport (Tape Guide Posts)

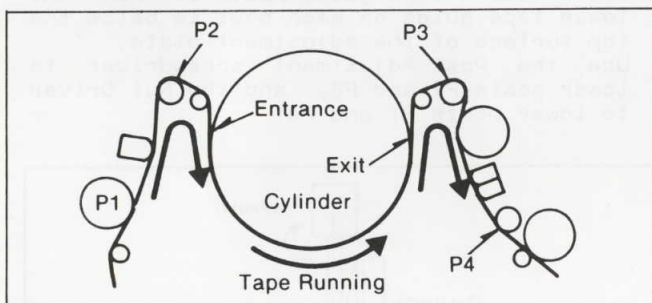
**\*Note:**

1. The tape guide posts have been precisely adjusted at the factory. Therefore, normally do not change the height of P1 and P4 posts. The following adjustment is required only when replacing the posts.
2. If curling is apparent proceed to the P4 post, wipe dirt from the pressure roller and capstan shaft using a soft cloth impregnated with Freon TF or cleaning liquid.
3. The adjustment of the post height is required only the one which has been replaced.

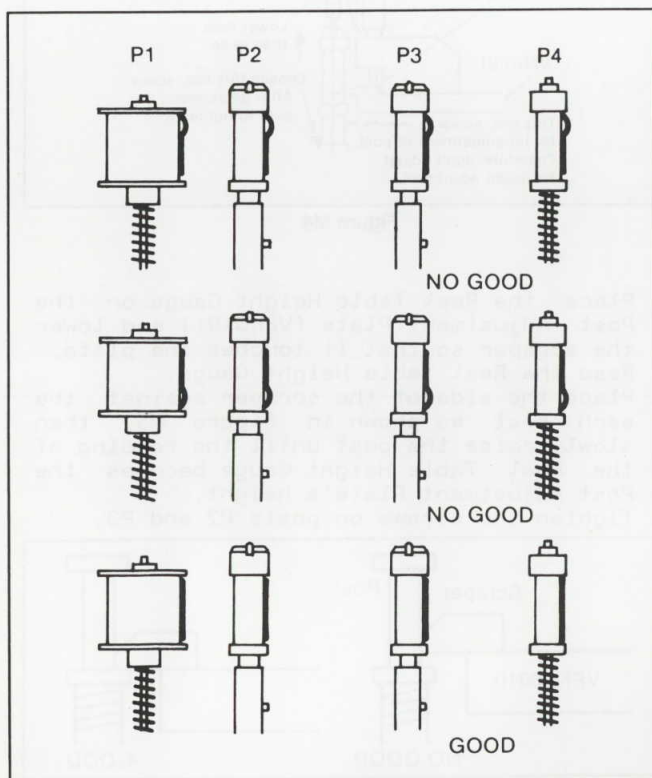
**\*Equipment Required:**

- Post Adjustment Screwdriver.....VFK0137
- Check light.....VFK0343
- Nut Driver (Purchase locally)

1. To prevent the alignment tape from being damaged, use a normal cassette tape for this procedure. Playback the normal cassette tape and confirm that the tape travels without any curling at the edges of all the posts by using the check light.



**Figure M6 Tape Transport Posts**



**Figure M7 Tape Guide Posts**

2. If curling is apparent, adjust the height of posts by turning the top of post with the post adjustment screwdriver (Posts P2 and P3) or the nut driver (Posts P1 and P4).
3. After adjusting the P4 post, adjustment of the pull-out post (P5) is required. (Refer to "ADJUSTMENT OF THE PULL-OUT POST HEIGHT")
4. If the tape curling cannot be accomplished by adjusting the tape guide posts, then adjustment of the A/C head tilt may be needed.

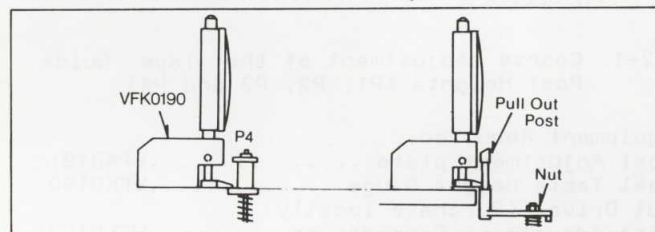
1-2-3. Adjustment of the Pull-out Post (P5 Post) Height

**\*Note:**

1. This adjustment should be performed only after adjusting tape guide post P4 as the height of the pull-out post is based on the height of post P4.
2. This adjustment should be performed with the unit in the loading-completion mode.
3. When replacing or adjusting the pull-out post, unplug the unit from the power source.

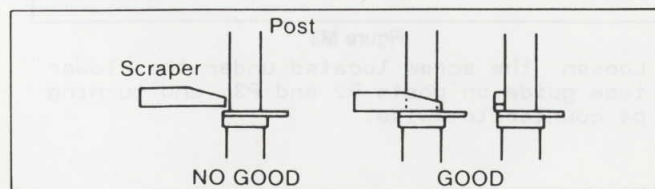
**\*Tools and Equipment Required:**

- Post Adjustment Plate.....VFK0191
- Reel Table Height Gauge.....VFK0190
- Check Light.....VFK0343
- Nut Driver (Purchase locally)



**Figure M8**

1. Remove the Top Panel and the Front Loading Unit.
2. Turn the power switch on.
3. Insert a cassette tape to the Cassette Compartment, then press the play button. This simulates the loading completion mode.
4. Unplug the unit from the power source.
5. Place the Post Adjustment plate over the reel tables.
6. Place the Reel Table Height Gauge on the tape guide post P4, lower the scraper so that it touches the lower edges of P4, then set the gauge to zero ("0")
7. Slightly lower the pull-out post by turning the nut on the post clockwise with the nut driver, and set the side of the scraper against the post as shown in Figure M9.
8. Slowly turn the nut on the post counterclockwise until the gauge reads 0.025mm.
9. Confirm there is no tape curling at P4 post during Reverse mode by using the check light. If tape curling occurs, back to step 8.



**Figure M9 Post Adjustment**



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1-2-4. Confirmation of the A/C Head Tilt

PRE-ADJUSTMENT PROCEDURE

1. Play back a tape and confirm the tape runs between lower and top limiters of the post P4 by using the check light. If the lower or top edge of the tape vibrates with waving or frilling, correct the tilt of the A/C head by turning black screw (B) shown in Figure M13.

Note: Unless the post P4 is pre-adjusted, this adjustment procedure should not be done. (Basically, P4 post should not change the height.)

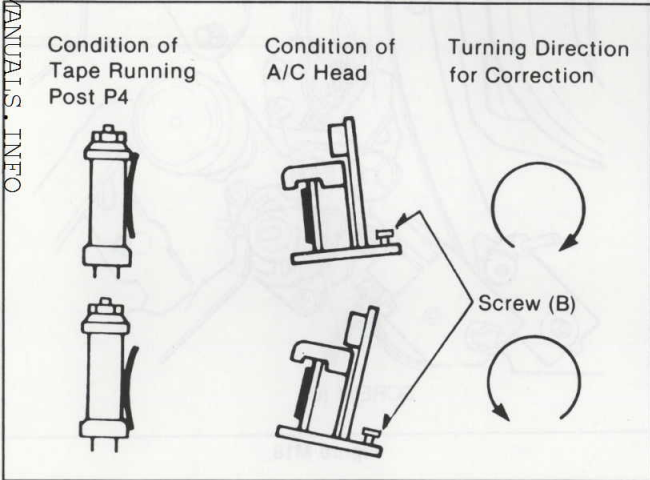


Figure M10 Tilt Pre-Adjustment

B. ADJUSTMENT PROCEDURE

1. Remove the Top Case and Bottom Plate and connect the oscilloscope to Head Amp Output.
2. Play back the mono scope portion of the alignment tape VFJ8125H3F or the 2nd portion of the alignment tape VFM8180HMD and adjust screw (B) so the RF envelope output level becomes maximum at the output.

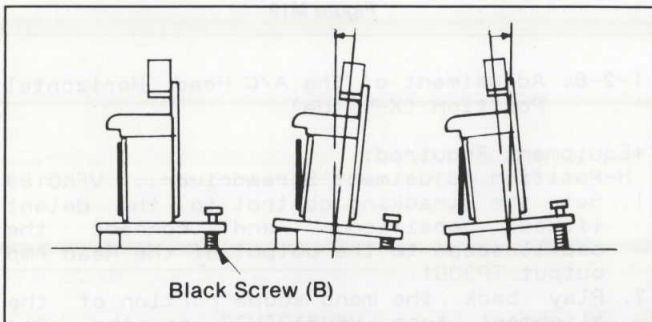


Figure M11

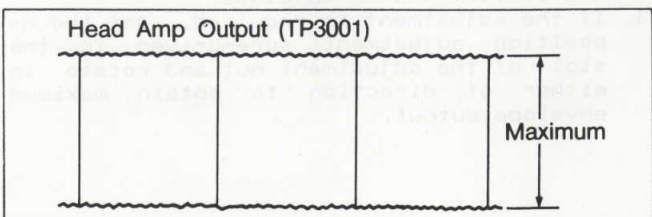


Figure M12

1-2-5. Confirmation/Adjustment of A/C Head Height

A. CONFIRMATION PROCEDURE

1. Looking at the lower edge of the control head with the tape running by using the check light, ensure the lower edge of tape runs along the lower edge of the control head.

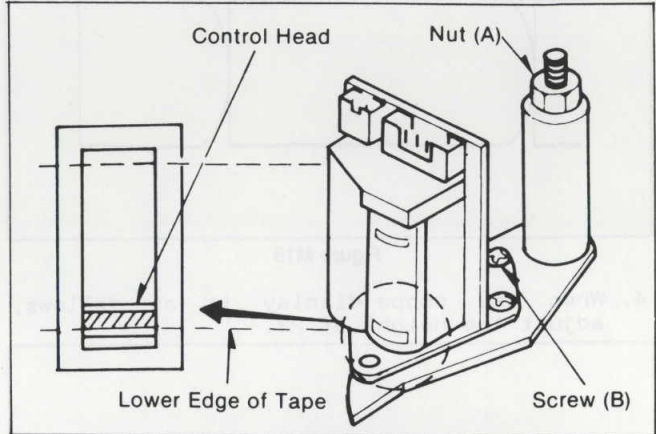


Figure M13

B. ADJUSTMENT PROCEDURE

1. Slightly turn the nut (A) in either directions so that the lower edge of tape runs along the lower edge of the control head. Turn clockwise to lower the head and counterclockwise to raise it.

Note:

Unless the A/c Head is replaced, this adjustment should not be done.

1-2-6. Confirmation of the RF Envelope Output

\*Equipment Required:

Alignment tape....VFM8180HMD or VFJ8125H3F  
Post Adjustment Screwdriver.....VFK0137

1. Set the tracking control to the detent (fixed) position. And connect the oscilloscope to TP3001 on the video section, and TP2001 on the servo section to Ext-Trigger the oscilloscope.
2. Play back the mono scope portion of the alignment tape VFJ8125H3F or VFM8180HMD, the 2nd portion of the alignment tape, adjust posts P2 and P3 by watching the scope display so the RF envelope on the scope becomes as flat as possible.

(V1/V-max. 0.7, V2/V-max. 0.8)

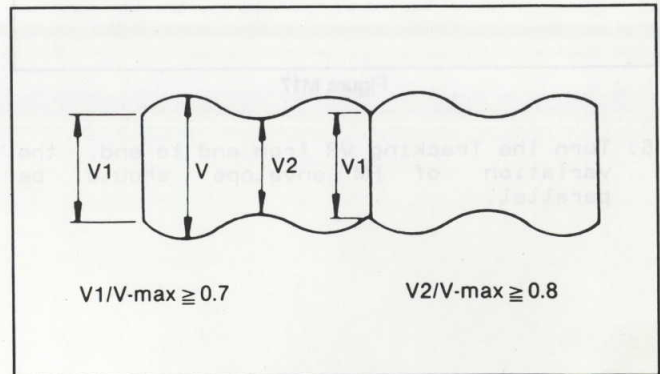


Figure M14

3. When the scope display is as follows, adjust the height of P2.

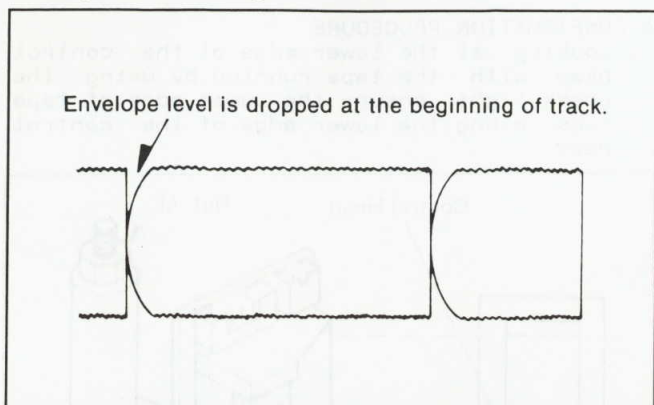


Figure M15

4. When the scope display is as follows, adjust the height of P3.

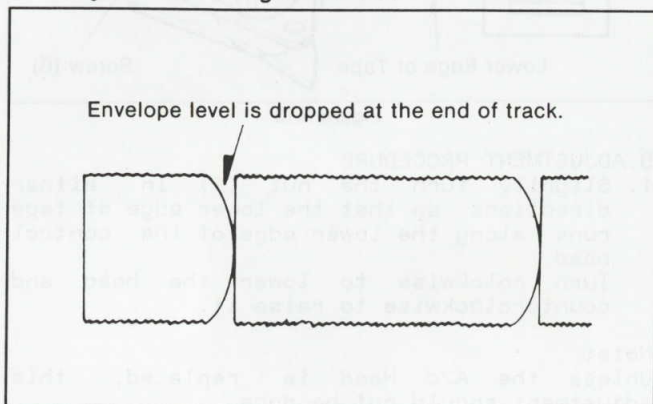


Figure M16

5. The scope display with P2 and P3 adjusted correctly should become as shown below.

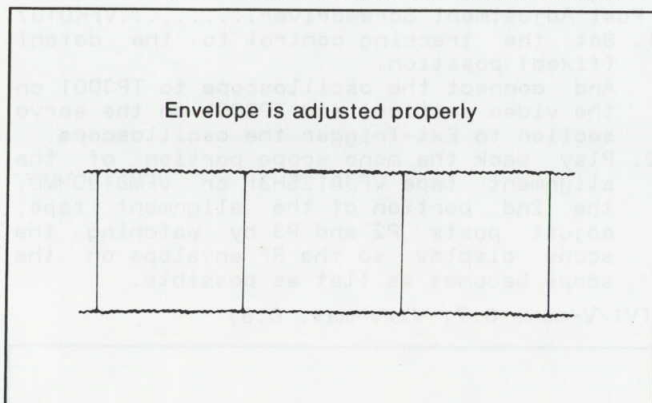


Figure M17

6. Turn the Tracking VR from end to end, the variation of FM envelope should be parallel.

### 1-2-7. Adjustment of The A/C Head Azimuth

#### \*Equipment Required:

VHS Alignment Tape..VFM8180HMD or VFJ8125H3F

1. Connect the oscilloscope to the audio output on the rear of the deck.
2. Play back the mono scope portion of the alignment tape VFJ8125H3F or the 2nd portion of the alignment tape VFM8180HMD.
3. Adjust black screw (C) without spring on the head bass so the output level becomes maximum.

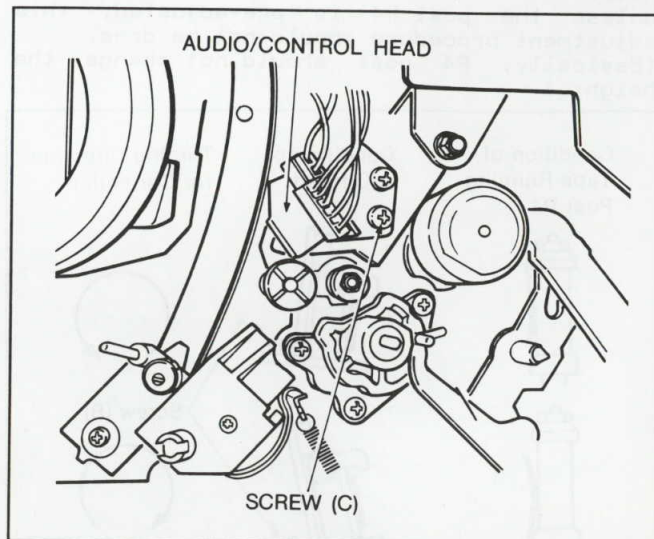


Figure M18

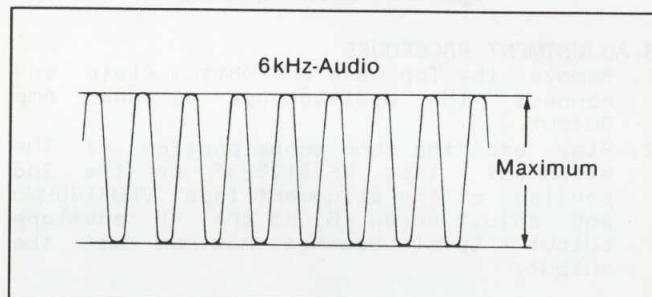


Figure M19

### 1-2-8. Adjustment of The A/C Head Horizontal Position (X-Value)

#### \*Equipment Required:

H-Position Adjustment Screwdriver...VFK0189

1. Set the tracking control to the detent (fixed) position, and connect the oscilloscope to the output of the Head Amp output TP3001.
2. Play back the mono scope portion of the alignment tape VFJ8125H3F or the 2nd portion of the alignment tape VFM8180HMD and confirm the RF envelope.
3. If the adjustment is required, set the H-position adjustment screwdriver to the slot of the adjustment nut and rotate in either of direction to obtain maximum envelope output.

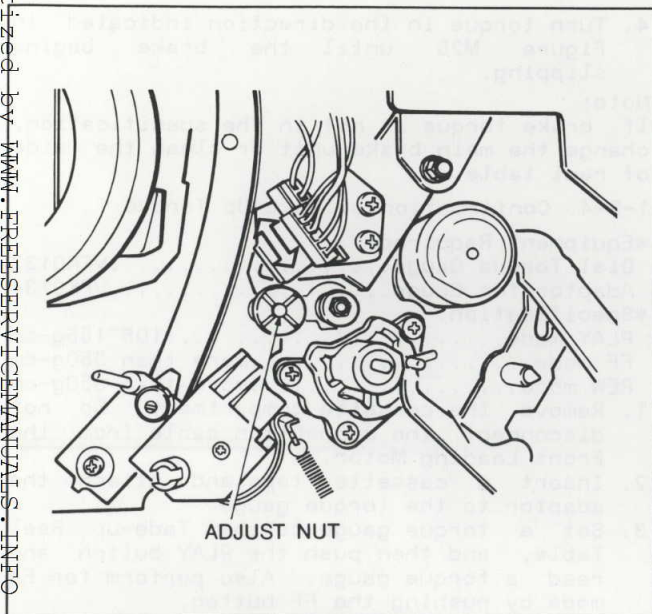


Figure M20

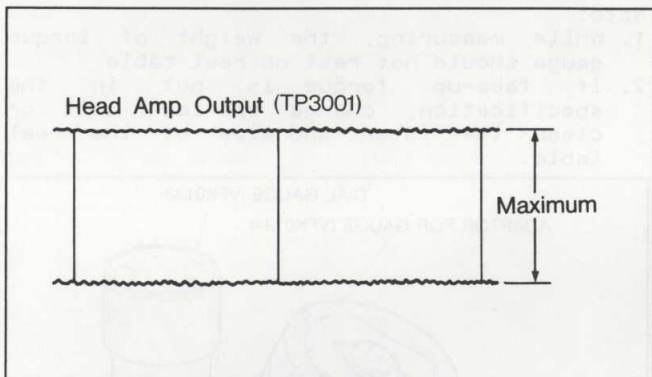


Figure M21

1-3. OTHER MECHANICAL ADJUSTMENT PROCEDURES

1-3-1. Pressing Force Confirmation of Pressure Roller

- \*Equipment Required:  
 Fan-Type Tension Gauge.....VFK66
- \*Specification:.....1350~1950g
1. Remove the cassette compartment. Do not disconnect the connection cable from the Front Loading Motor.
  2. Manually move the cassette compartment in the front loading direction.
  3. Install a cassette tape onto the reel tables as shown below and press the Play back Key to activate the Playback mode.

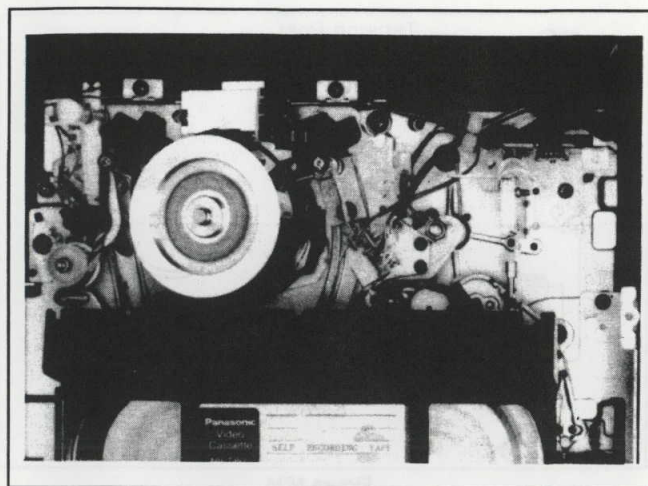


Figure M22

4. Set Fan-Type Tension Gauge to the direction indicated by the arrow as shown in Figure M23.
5. Confirm that reading of the Tension Gauge is 1600+-350g at the moment of roller stop.

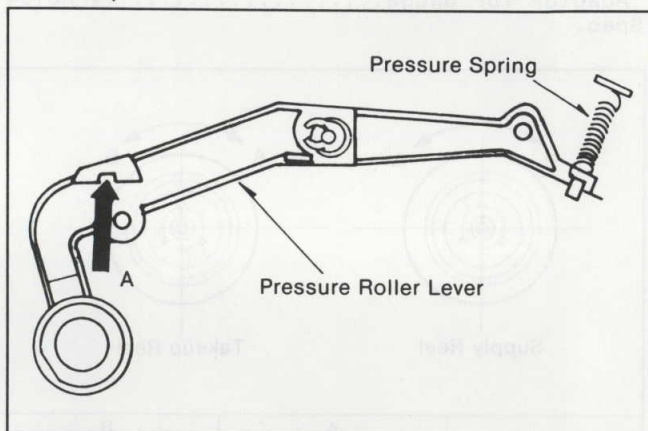


Figure M23

Note:  
 If the pressing force is not in the specification, change the pressure spring.

1-3-2. position Adjustment of Tension Post

- \*Equipment Required:  
 Tension Post Adjustment Plate.....VFK0187  
 Fine Adjustment Screwdriver.....VFK0136
1. Remove the cassette compartment. Do not disconnect the connection cable from the Front Loading Motor.
  2. Insert a cassette tape into the cassette compartment, and push the PLAY button for loading. (Only loading posts move in the forward direction).  
 As soon as the loading is completed, pull out the AC plug.
  3. Place the adjustment plate and slightly loosen a screw securing the tension band bracket.
  4. Insert the fine adjustment screw driver into the hole and move the tension band bracket in either of direction so the tension post just touches the fixture.
  5. After the adjustment, connect the AC plug for unloading.

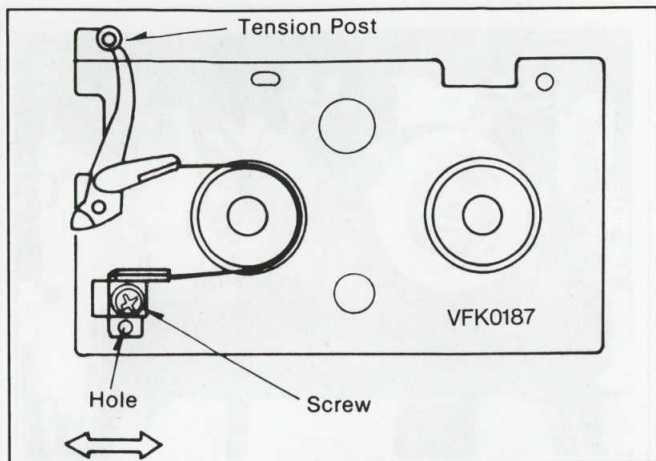


Figure M24

1-3-3. Confirmation of Brake Torque

\*Equipment Required:  
 Dial Torque Gauge.....VFK0133  
 Adaptor for Gauge.....VFK0134  
 Spec.

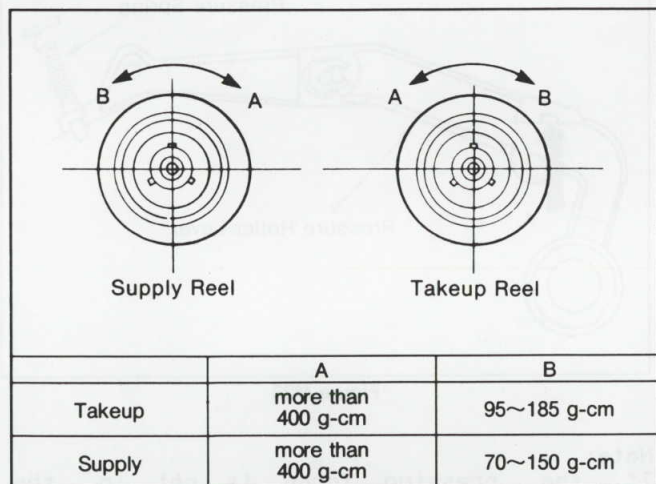


Figure M25 Spec. of Brake Torque

Figure M25 Spec. of Brake Torque

1. Remove the cassette compartment.
2. Attach the adaptor to the torque gauge and place the deck is STOP mode.
3. Place the torque gauge on the reel table. The weight of gauge should be free against the reel table.

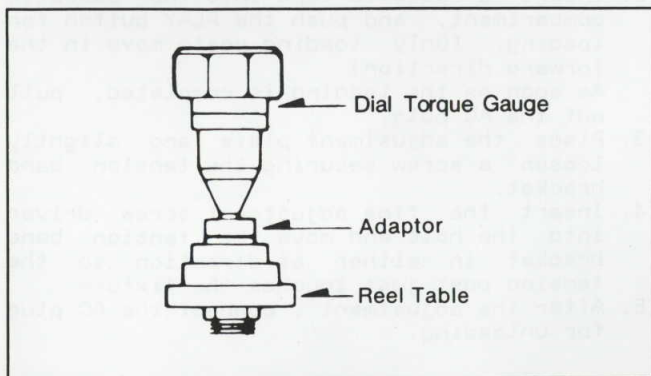


Figure M26

4. Turn torque in the direction indicated in Figure M25 until the brake begins slipping.

Note:

If brake torque is not in the specification, change the main brake unit or clean the side of reel table.

1-3-4. Confirmation of Take-Up Torque

\*Equipment Required:  
 Dial Torque Gauge.....VFK0133  
 Adaptor for Gauge.....VFK0134  
 \*Specification:

PLAY mode.....105~155g-cm  
 FF mode.....more than 350g-cm  
 REW mode.....more than 350g-cm

1. Remove the cassette compartment. Do not disconnect the connection cable from the Front Loading Motor.
2. Insert a cassette tape and attach the adaptor to the torque gauge.
3. Set a torque gauge to the Take-up Reel Table, and then push the PLAY button and read a torque gauge. Also perform for FF mode by pushing the FF button.
4. Set a torque gauge to the Supply Reel Table, and push the REW button and read a torque gauge.

Note:

1. While measuring, the weight of torque gauge should not rest on reel table.
2. If take-up torque is not in the specification, change the idler unit or clean the idler and side of the reel table.

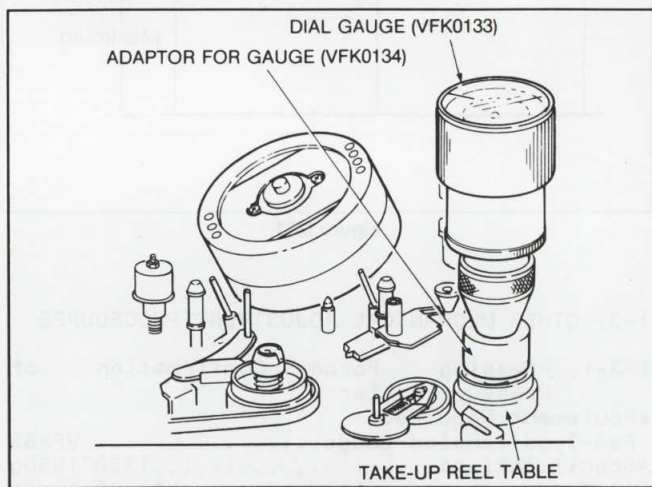


Figure M27

1-3-5. Adjustment of Review Torque

\*Equipment Required:  
 Dial Torque Gauge.....VFK0133  
 Adaptor for Gauge.....VFK0134  
 \*Specification:

Review mode.....200+-35g

1. Remove the cassette compartment. Do not disconnect the connection cable from the Front Loading Motor.
2. Insert a cassette tape and attach the adaptor to the torque gauge.
3. Set a torque gauge to the Supply Reel Table, and then push the PLAY button and REW button for REVIEW mode. (If the unit enters the Auto-Stop mode, the take-up reel sensor functions. Manually keep rotating the take-up reel table while reading the torque gauge.)

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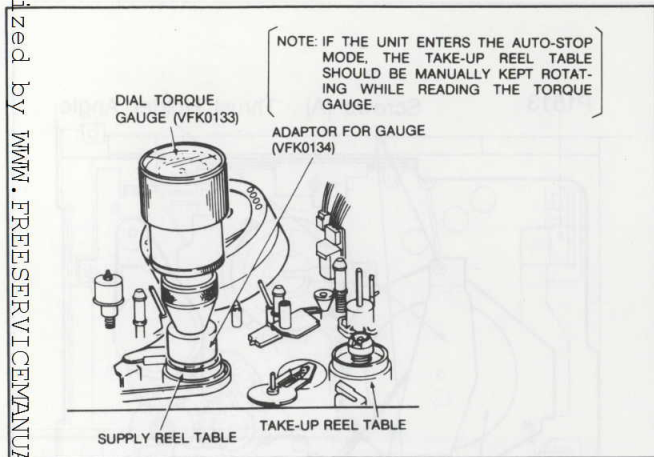


Figure M28

4. Read a torque gauge.

Note: If it is out of spec., change the spring notch or idler unit, or clean the side of reel table and idler.

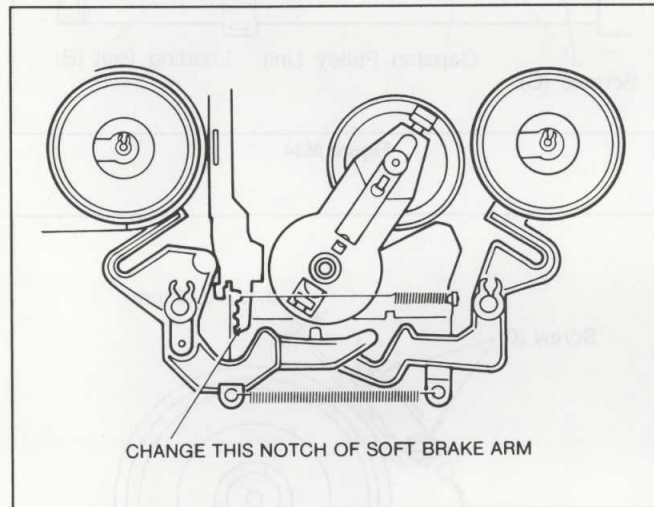


Figure M29

1-3-6. Measurement and Adjustment of Back Tension

A. MEASUREMENT PROCEDURE

- \*Equipment Required:  
 Back Tension Meter (Tentelometer)  
 VHS Cassette Tape (120 minutes tape)  
 \*Specification.....25 ~ 30 g
1. Pull the erase head in the direction indicated by the arrow and hold it by adhesive tape.
  2. Play back the cassette tape from its beginning and wait until tape running has stabilized.  
(for approx. 10 ~ 20 seconds)
  3. Insert tension meter in the path and confirm reading.

- Note:
1. Make sure that the three probes of the meter are all in good contact with tape.
  2. Since the tension meter is very sensitive, it is recommended to measure more than three times.

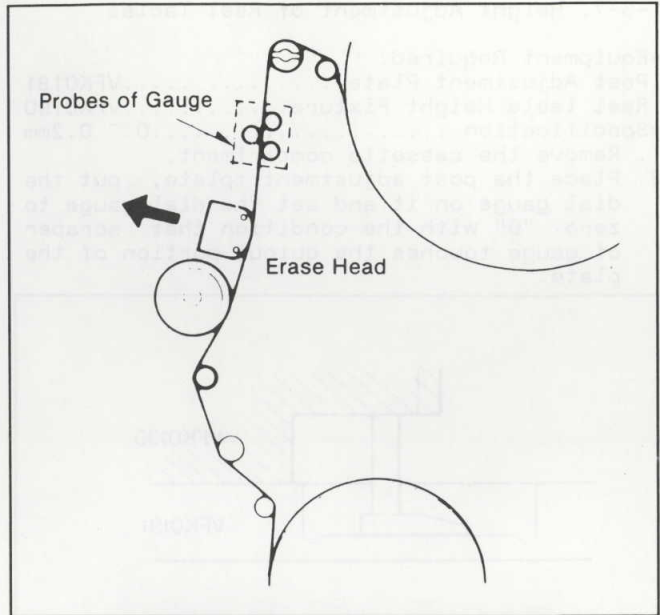


Figure M30 Measurement of Back Tension

B. ADJUSTMENT PROCEDURE

- \*Equipment Required:  
 Fine Adjustment Screwdriver.....VFK0136
1. Loosen a screw (A) and insert the fine adjustment screwdriver into the hole (B).
  2. Move the adjustment driver in either of direction indicated by the arrow to obtain the specified tension.  
 Turn the driver clockwise to raise tension, counterclockwise to lower it.
  3. Tighten the screw (A), and remeasure the tension with the meter to confirm it.

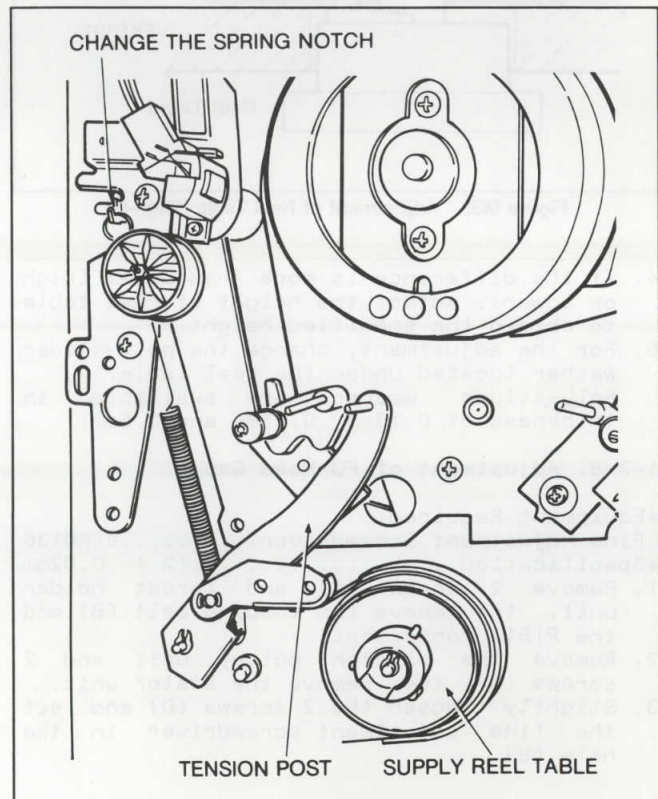


Figure M31

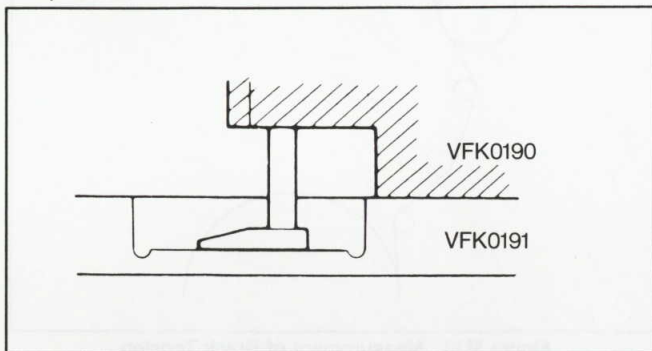
1-3-7. Height Adjustment of Reel Tables

**\*Equipment Required:**

Post Adjustment Plate.....VFK0191  
 Reel table Height Fixture.....VFK0190

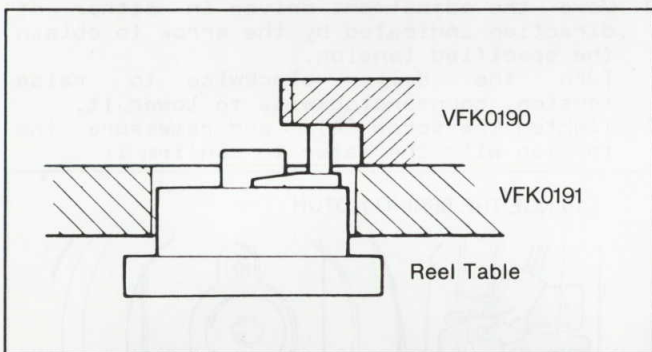
**\*Specification:**.....0 ~ 0.2mm

1. Remove the cassette compartment.
2. Place the post adjustment tplate, put the dial gauge on it and set the dial gauge to zero "0" with the condition that scraper of gauge touches the cutout portion of the plate.



**Figure M32 Adjustment of Reel Table Height(1)**

3. Then measure the top portion of reel table and confirm the difference against the condition just performed in the former step. Also perform the same measurement and confirmation for other reel table.



**Figure M33 Adjustment of Reel Table Height(2)**

4. If the difference is more than 0.1mm (high or lower), adjust the height of reel table to obtain the specified height.
5. For the adjustment, change the poly-slider washer located under the reel table. Poly-slider washers are available in thickness of 0.13mm, 0.25mm and 0.5mm.

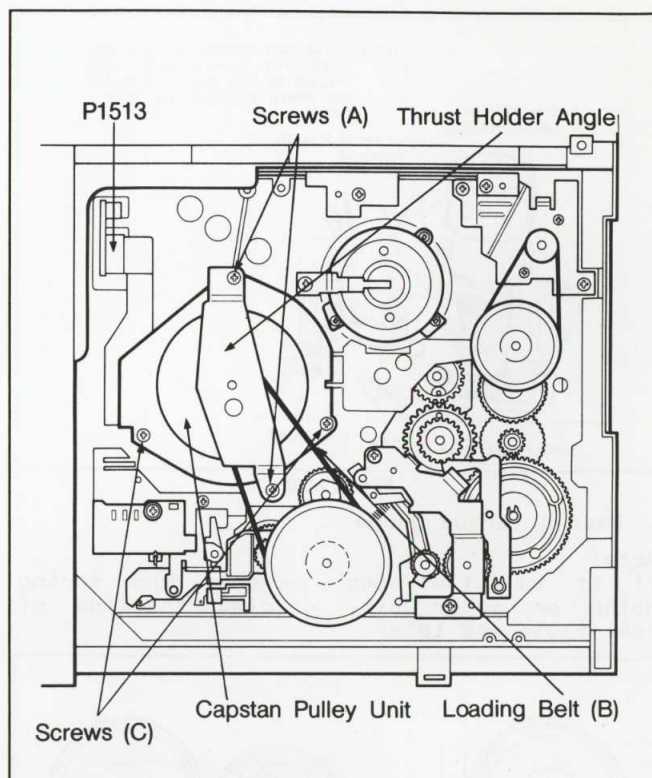
1-3-8. Adjustment of FG Head Gap

**\*Equipment Required:**

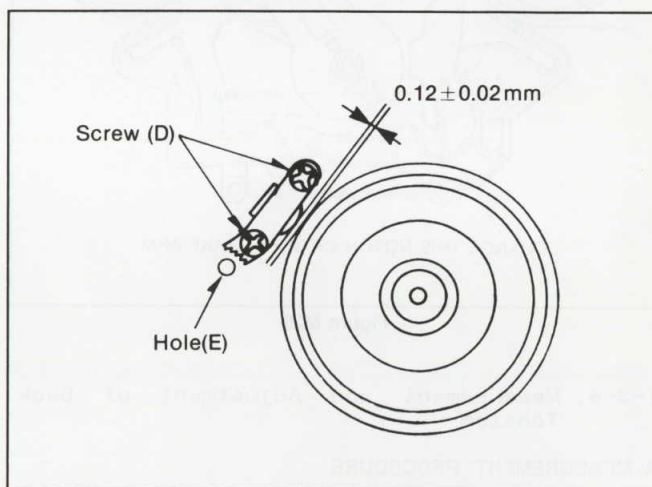
Fine Adjustment Screwdriver.....VFK0136

**\*Specification:**.....0.12 +/- 0.02mm

1. Remove 2 screws (A) and thrust holder unit, then remove the loading belt (B) and the P1513 connector.
2. Remove the capstan pulley unit and 2 screws (C), then remove the stator unit.
3. Slightly loosen the 2 screws (D) and set the fine adjustment screwdriver in the hole (E).



**Figure M34**



**Figure M35 Adjustment of F.G. Head Gap**

1-3-9. Adjustment of Thrust Gap

**\*Equipment Required:**

Reel Table Height Fixture.....VFK0190

Washer.....more than 1mm

**\*Specification:**.....0.05 ~ 0.10mm

1. Set the washer on the capstan pulley unit and place the height gauge on the thrust holder angle, and set the gauge to zero "0".
2. Next, push the capstan shaft by your finger.
3. If the gap is out of specification, then adjust the thrust boss by turning it clockwise or counterclockwise.

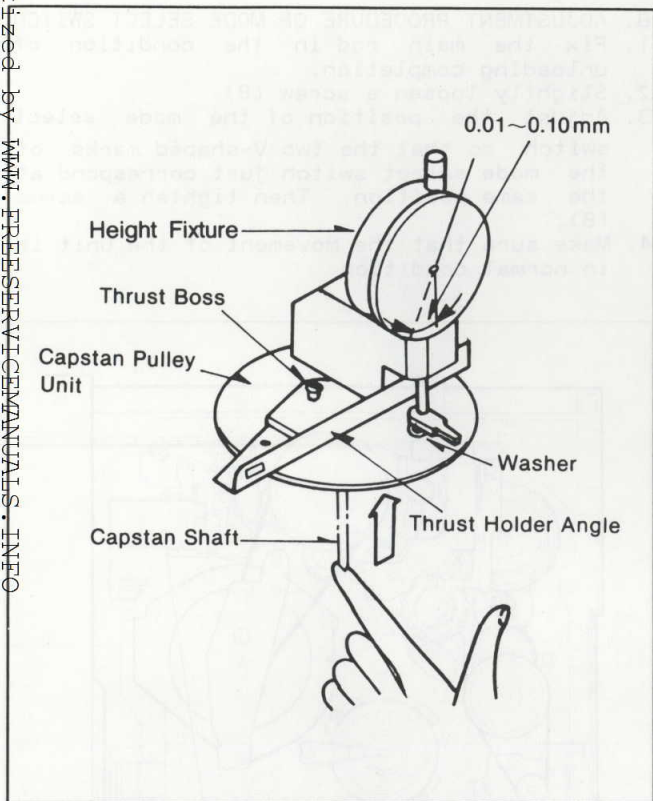


Figure M36 Confirmation/Adjustment of Thrust Gap

1-3-10. Adjustment of Cam Gear and Mode Select Switch

GENERAL CONDITION:

The mechanism of this model is mostly engaged to the electrical circuit, System Control Circuit, through the mode select switch. Therefore the relation between the mode switch and the cam gear decides all further mechanical movement of the mechanical parts such as levers gears, rollers and so on. If the adjustment of this item is performed improperly, the deck will be unloaded or compulsorily stopped. And it will result being damaged at any mechanical or electrical parts.

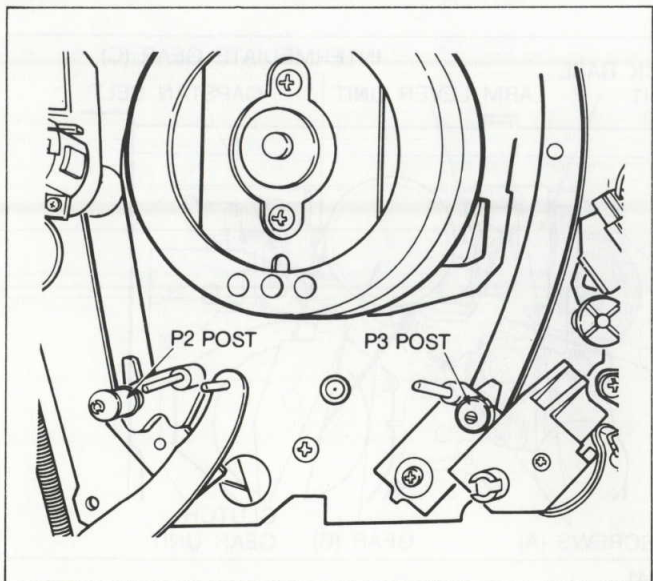


Figure M37

A. ADJUSTMENT PROCEDURES OF CAM GEAR

1. Turn Loading gear clockwise until the P2 and P3 post were fully unloaded. The small projection on the loading gear will be top portion under the condition or Unloading Completion.
2. Install the action gear so the hole on the action gear meets the projection on the loading gear. Ensure that the loading gear is still in the condition of the unloading completion.

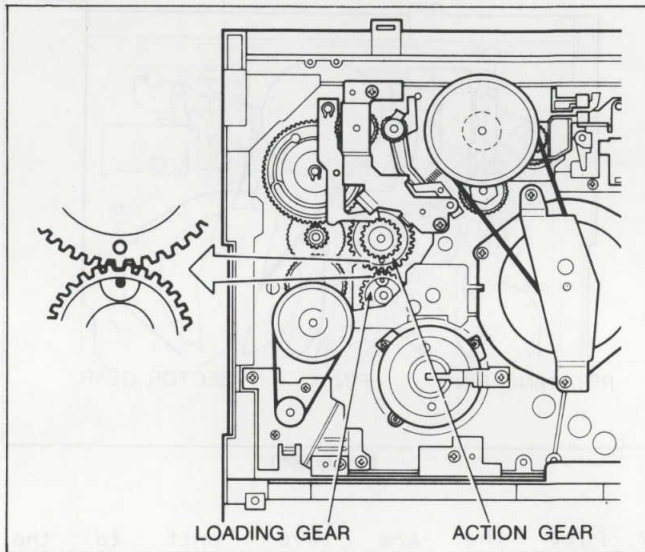


Figure M38

3. Slowly slide the main rod so the V-shaped mark meet the V-shaped mark of the mode select switch. With the result, main rod and mode select switch are in a position to be stop (unloading completion) mode.
4. Insert the cam gear so the hole (A) on the gear meets the hole on the main rod. To meet the two holes easier, use the small hex. wrench (VFK75) or metal pin. Also ensure the two V-shaped marks are fixed.

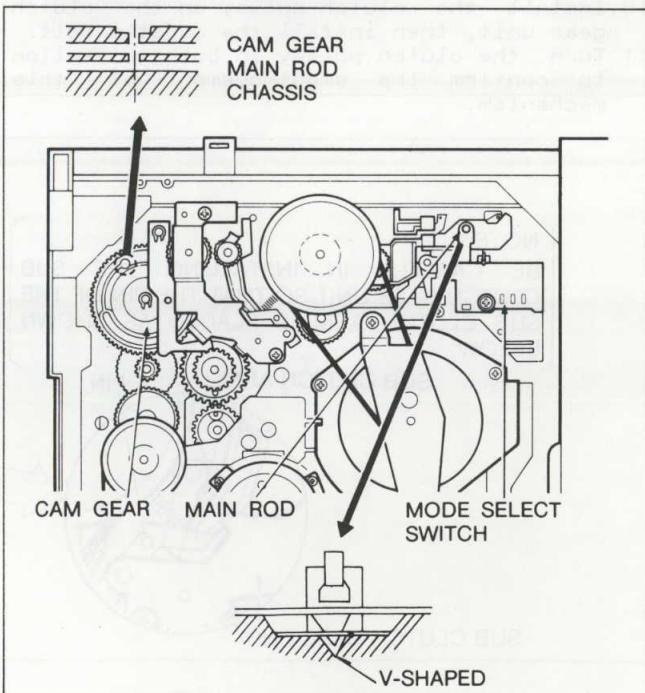


Figure M39

5. Install the sector gear so the pin on the sector gear meets the inner slot of the cam gear (simple slot side), and install 2 retaining rings to mount cam gear and sector gear.
6. Final figure should become as shown below, and at the same time two V-shaped marks are fixed at the mode select switch.

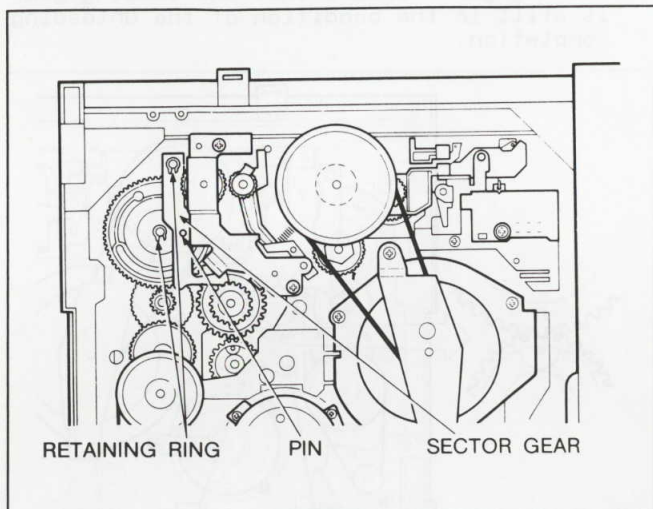


Figure M40

7. Pull the arm lever unit to the counterclockwise, then install the kick base unit on the chassis and tighten 2 screws (A).
8. Pull the gear (B) to the clockwise, then install the clutch gear unit to the post.

**Note:**

When, install the clutch gear unit, match the hexagon format the lower part.

9. Install the intermediate gear (C) to the other post with match the slit on it and install the cut washer to mount it.
10. Install the clutch pulley on the clutch gear unit, then install the capstan belt.
11. Turn the clutch pulley in both direction to confirm the smooth movement of this mechanism.

- B. ADJUSTMENT PROCEDURE OF MODE SELECT SWITCH
  1. Fix the main rod in the condition of unloading completion.
  2. Slightly loosen a screw (B).
  3. Adjust the position of the mode select switch so that the two V-shaped marks of the mode select switch just correspond at the same position. Then tighten a screw (B).
  4. Make sure that the movement of the unit is in normal condition.

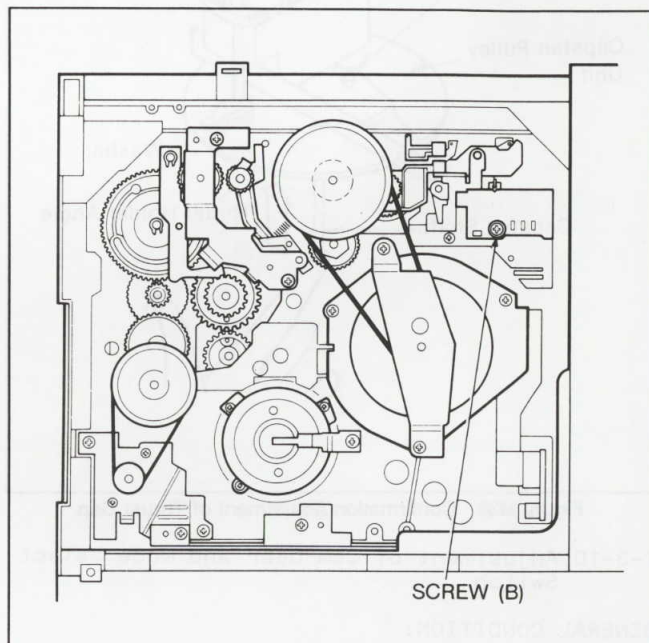


Figure M42

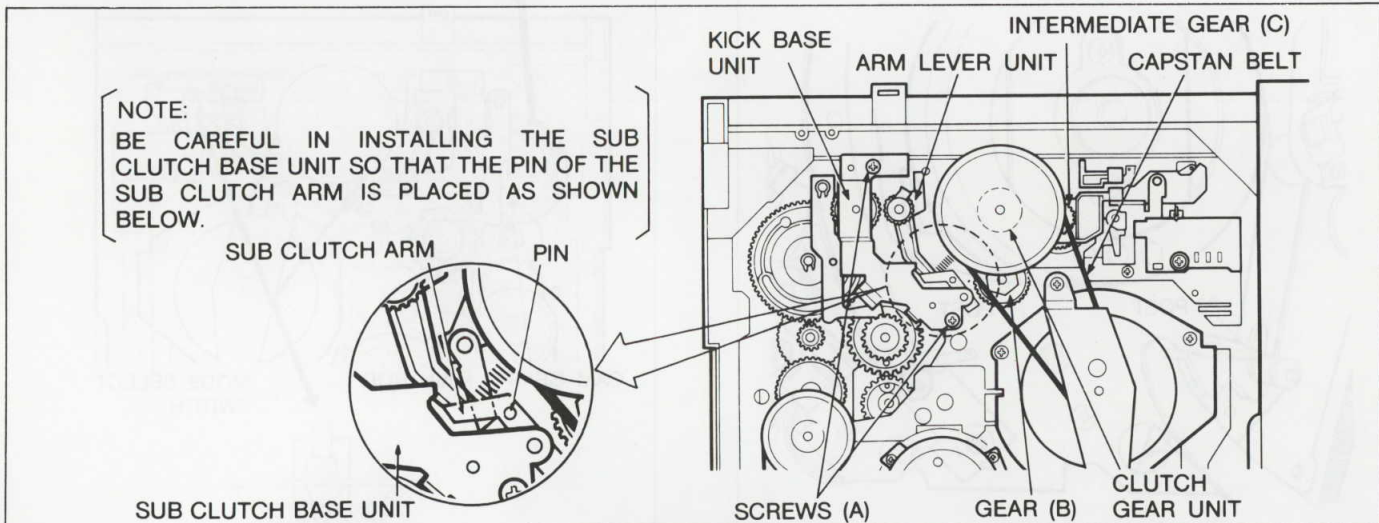
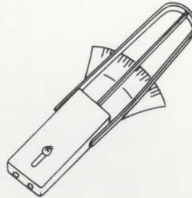
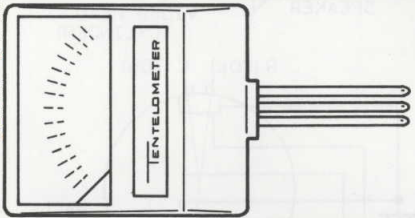
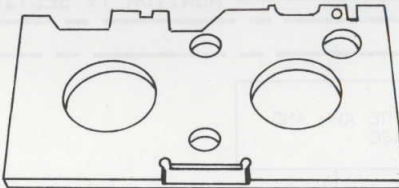
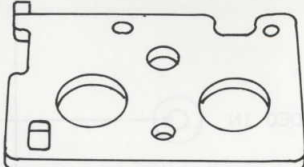
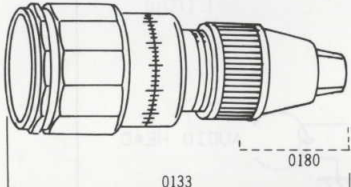
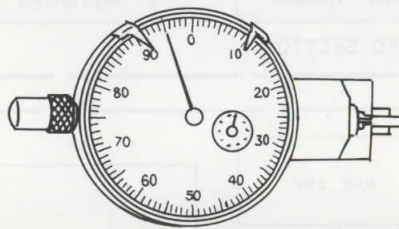
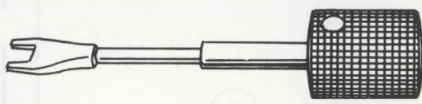
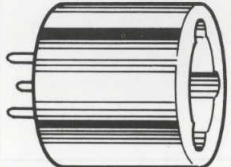
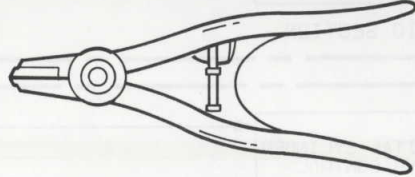
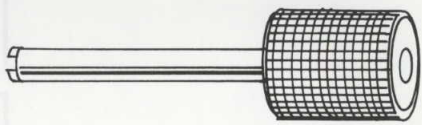
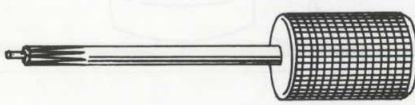
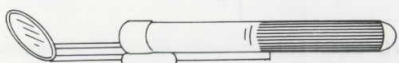

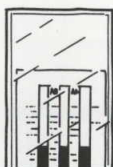


Figure M41

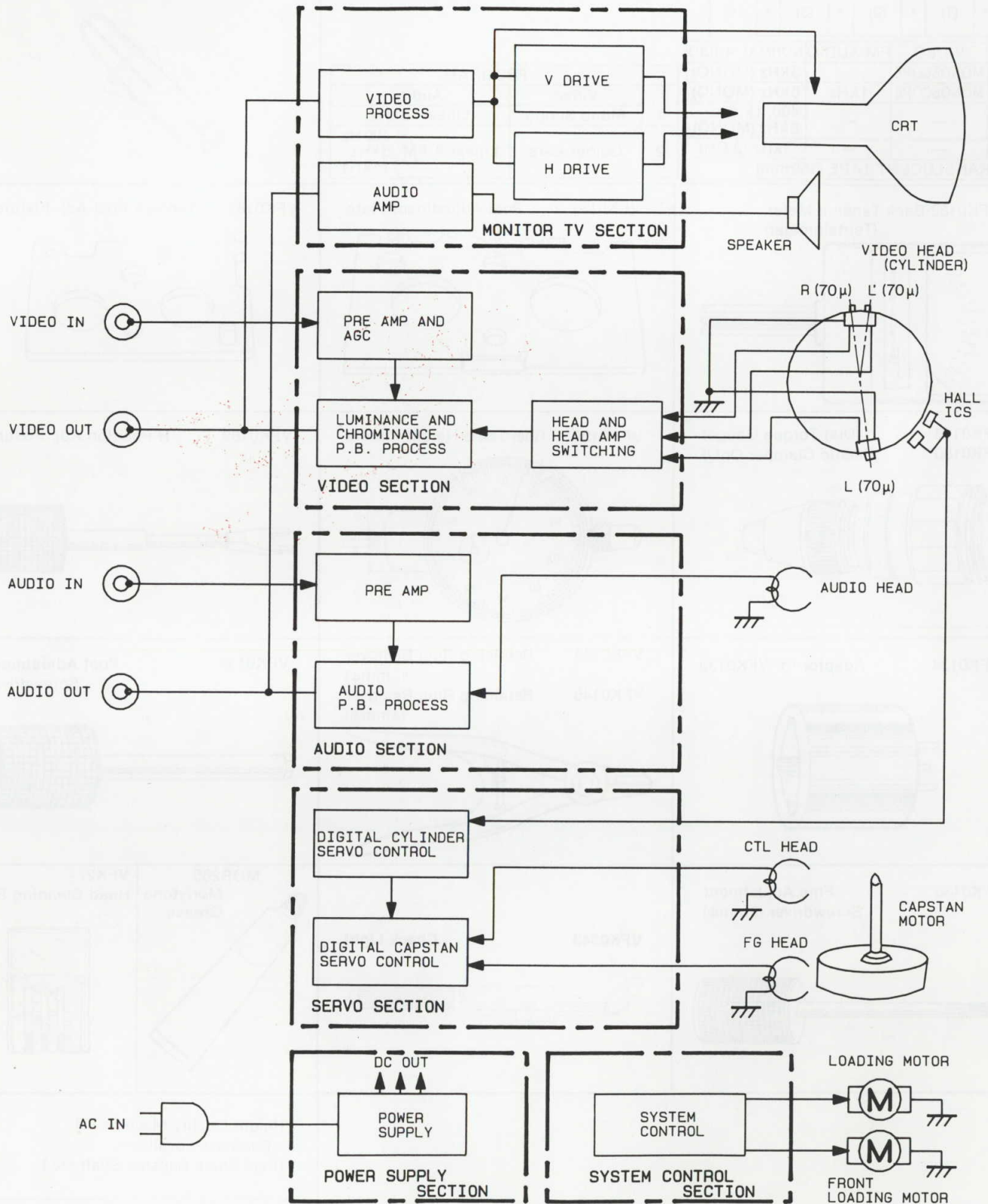


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## Servicing Fixtures & Tools

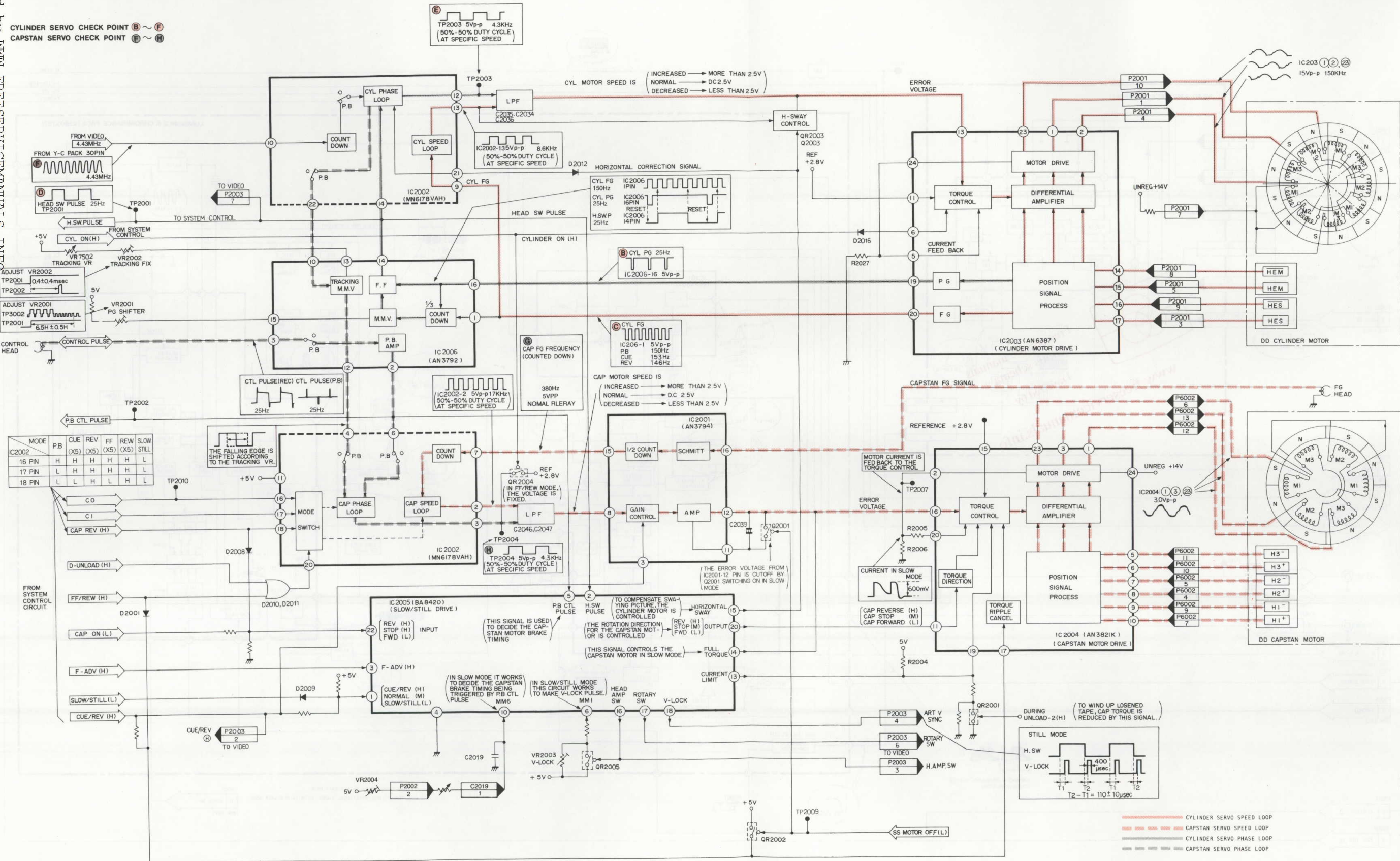
<p>VFM8180HMD VHS Alignment Tape</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>•</td> <td>(1)</td> <td>•</td> <td>(2)</td> <td>•</td> <td>(3)</td> <td>•</td> <td>(4)</td> </tr> </table> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>No.</th> <th>VIDEO</th> <th>FM AUDIO</th> <th>NORMAL AUDIO</th> </tr> </thead> <tbody> <tr> <td>1)</td> <td>MONOSCOPE</td> <td>—</td> <td>3 kHz (MONO)</td> </tr> <tr> <td>2)</td> <td>MONOSCOPE</td> <td>1 kHz</td> <td>6 kHz (MONO)</td> </tr> <tr> <td>3)</td> <td>—</td> <td>—</td> <td>400, 1k, 5k, 8 kHz (MONO)</td> </tr> <tr> <td>4)</td> <td>—</td> <td>—</td> <td>3 kHz (2 CH)</td> </tr> </tbody> </table> <p>• TRANSLUCENT TAPE (150 mm)</p>	•	(1)	•	(2)	•	(3)	•	(4)	No.	VIDEO	FM AUDIO	NORMAL AUDIO	1)	MONOSCOPE	—	3 kHz (MONO)	2)	MONOSCOPE	1 kHz	6 kHz (MONO)	3)	—	—	400, 1k, 5k, 8 kHz (MONO)	4)	—	—	3 kHz (2 CH)	<p>VFJ8125H3F VHS Alignment Tape</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">PROGRAM</th> </tr> <tr> <th>Video</th> <th>Audio</th> </tr> </thead> <tbody> <tr> <td>1 Mono Scope</td> <td>Linear: 6 kHz 400 Hz</td> </tr> <tr> <td>2 Colour Bars</td> <td>Linear &amp; FM: 8 kHz 15 kHz</td> </tr> </tbody> </table>	PROGRAM		Video	Audio	1 Mono Scope	Linear: 6 kHz 400 Hz	2 Colour Bars	Linear & FM: 8 kHz 15 kHz	<p>VFK66 Fan Type Tension Gauge</p> 
•	(1)	•	(2)	•	(3)	•	(4)																															
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<p>VFK0133 (Dial Torque Gauge) VFK0180 (Plastic Clamper Only)</p> 	<p>VFK0190 Reel Table Height Fixture</p> 	<p>VFK0189 H-Position Adj. Fixture</p> 																																				
<p>VFK0134 Adaptor for VFK0133</p> 	<p>VFK0144 Retaining Ring Remover (3mmφ) VFK0145 Retaining Ring Remover (4mmφ)</p> 	<p>VFK0137 Post Adjustment Screwdriver</p> 																																				
<p>VFK0136 Fine Adjustment Screwdriver (3mmφ)</p> 	<p>VFK0343 Check Light</p> 	<p>MOR265 Morlytone Grease</p> 																																				
		<p>VFK27 Head Cleaning Stick</p> 																																				
		<p>Height Quality Machine Oil &lt;Purchase Locally&gt; (Reel Shaft, Capstan Shaft etc.)</p>																																				
		<p>Cleaning Liquid (Fron TF., Alcohol) &lt;Purchase Locally&gt; (Tape Transport Rubber Parts etc.)</p>																																				

# OVERALL BLOCK DIAGRAM

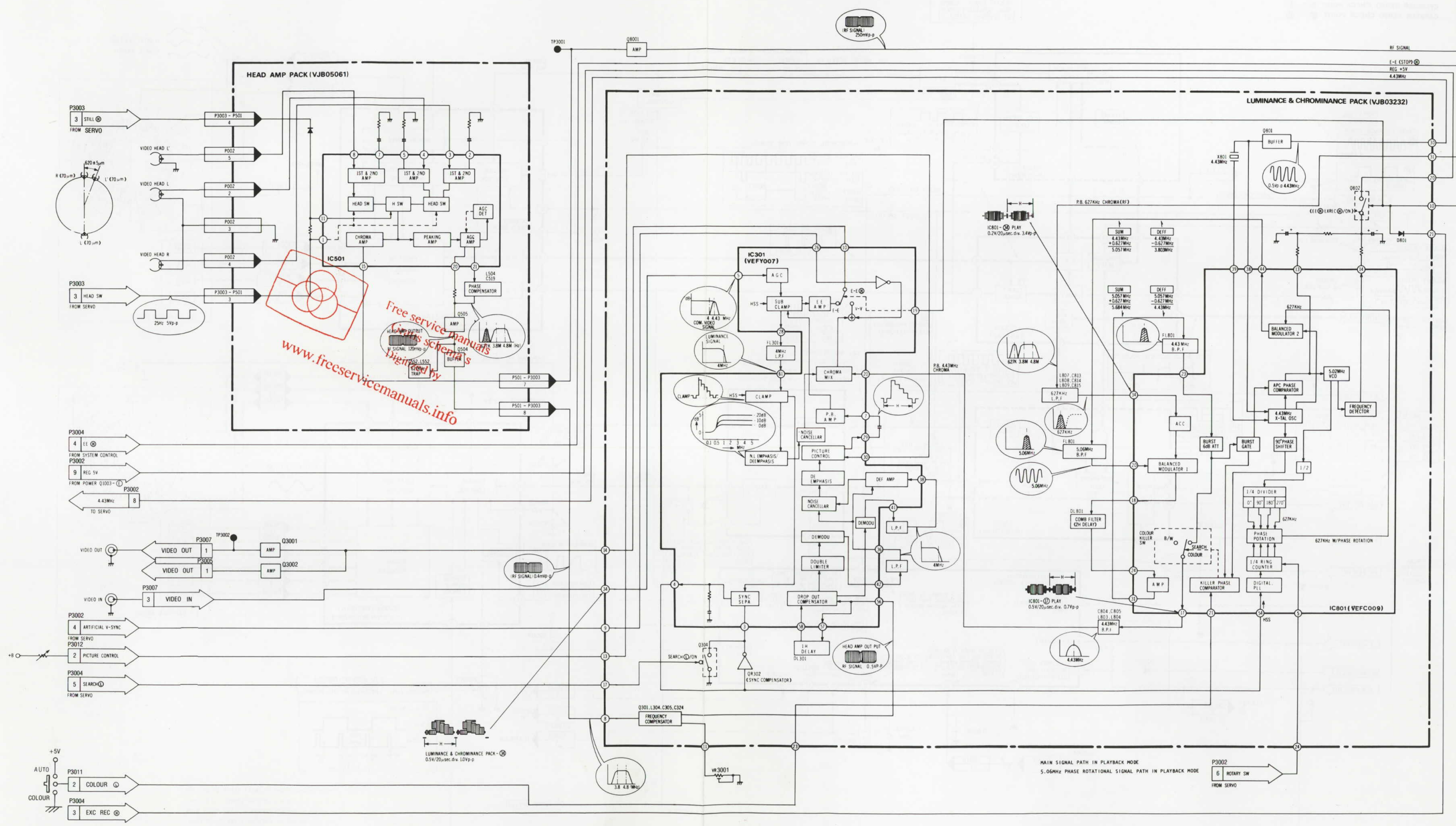


# SERVO BLOCK DIAGRAM

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# LUMINANCE & CHROMINANCE BLOCK DIAGRAM

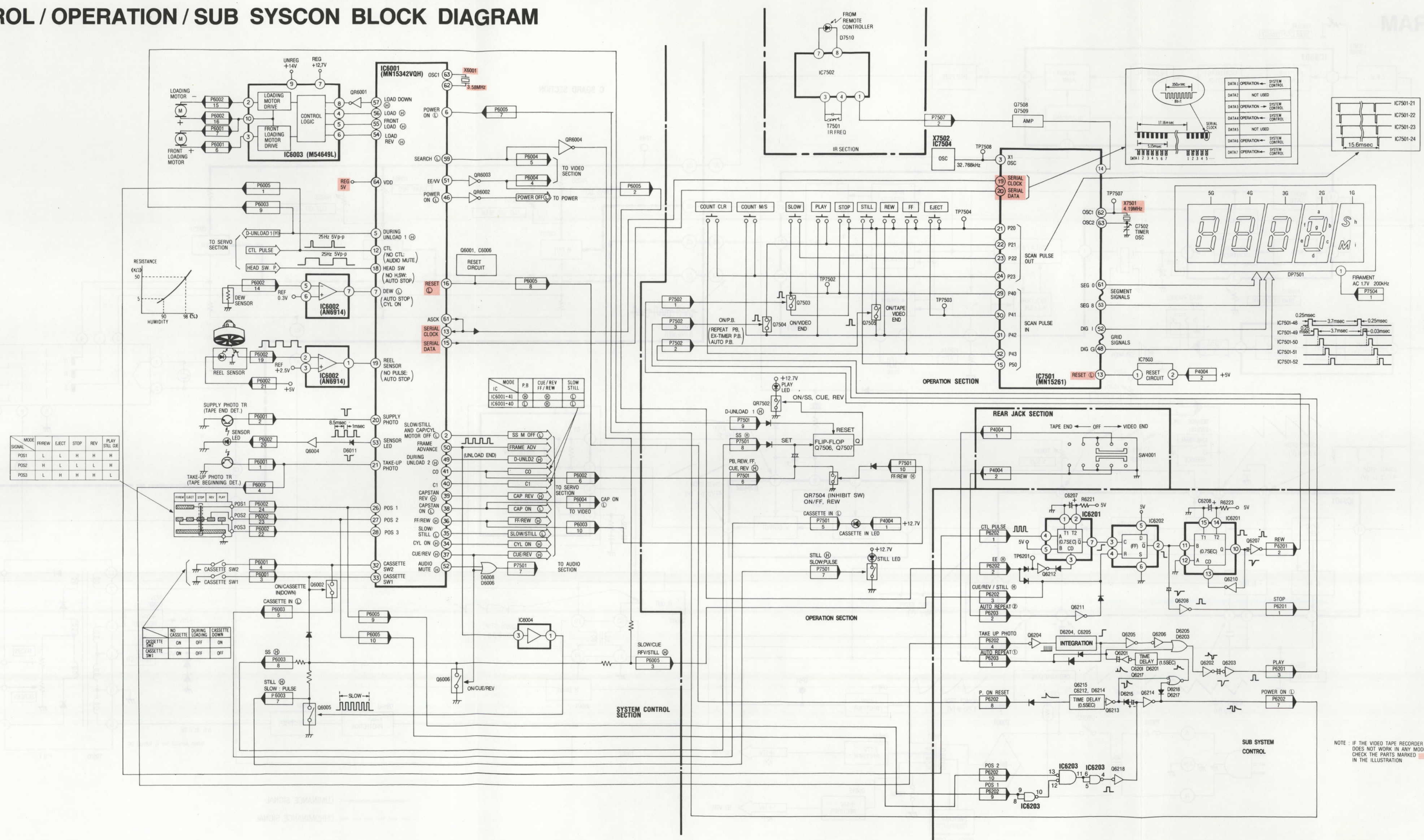


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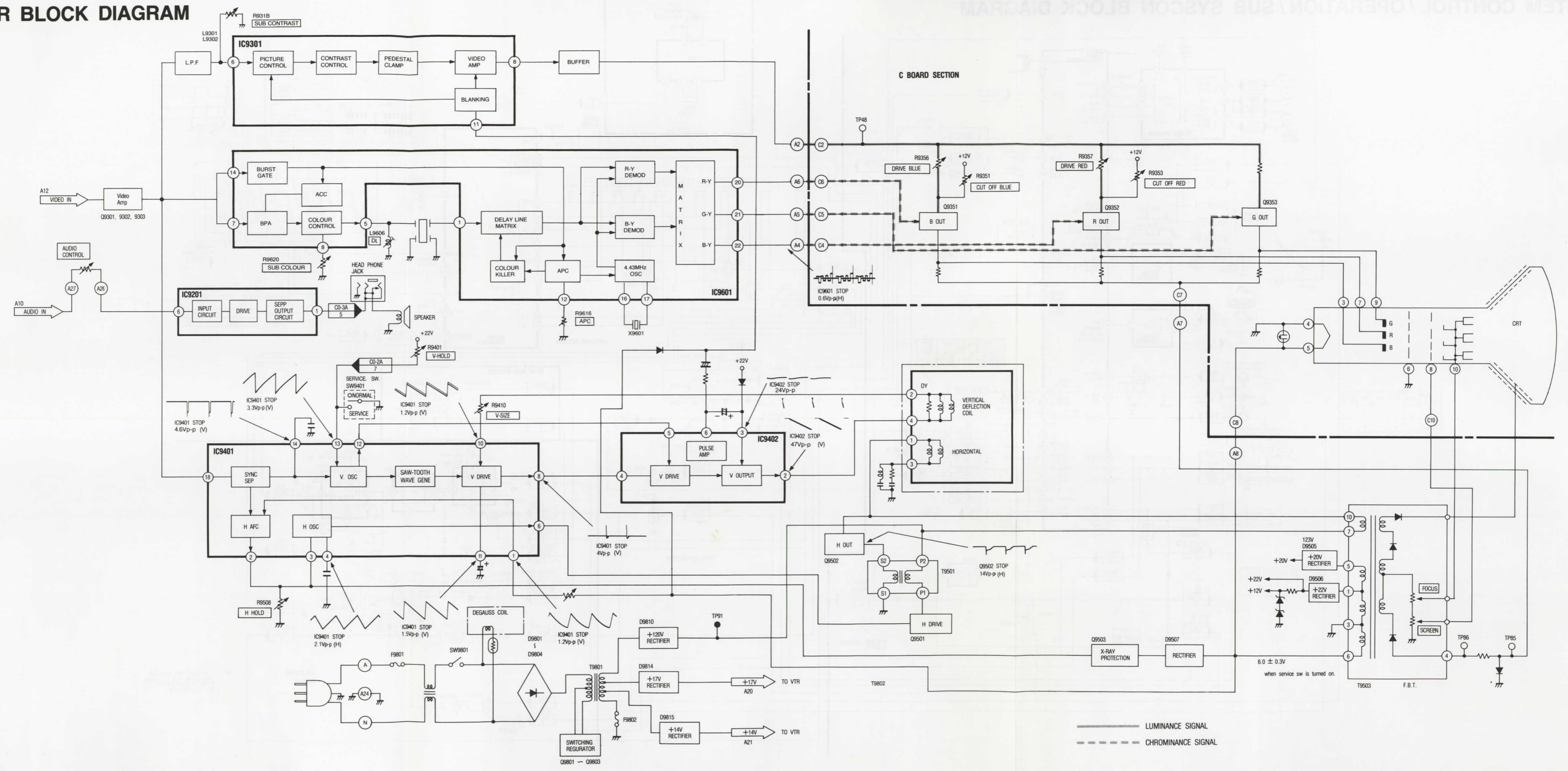
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# SYSTEM CONTROL / OPERATION / SUB SYCON BLOCK DIAGRAM

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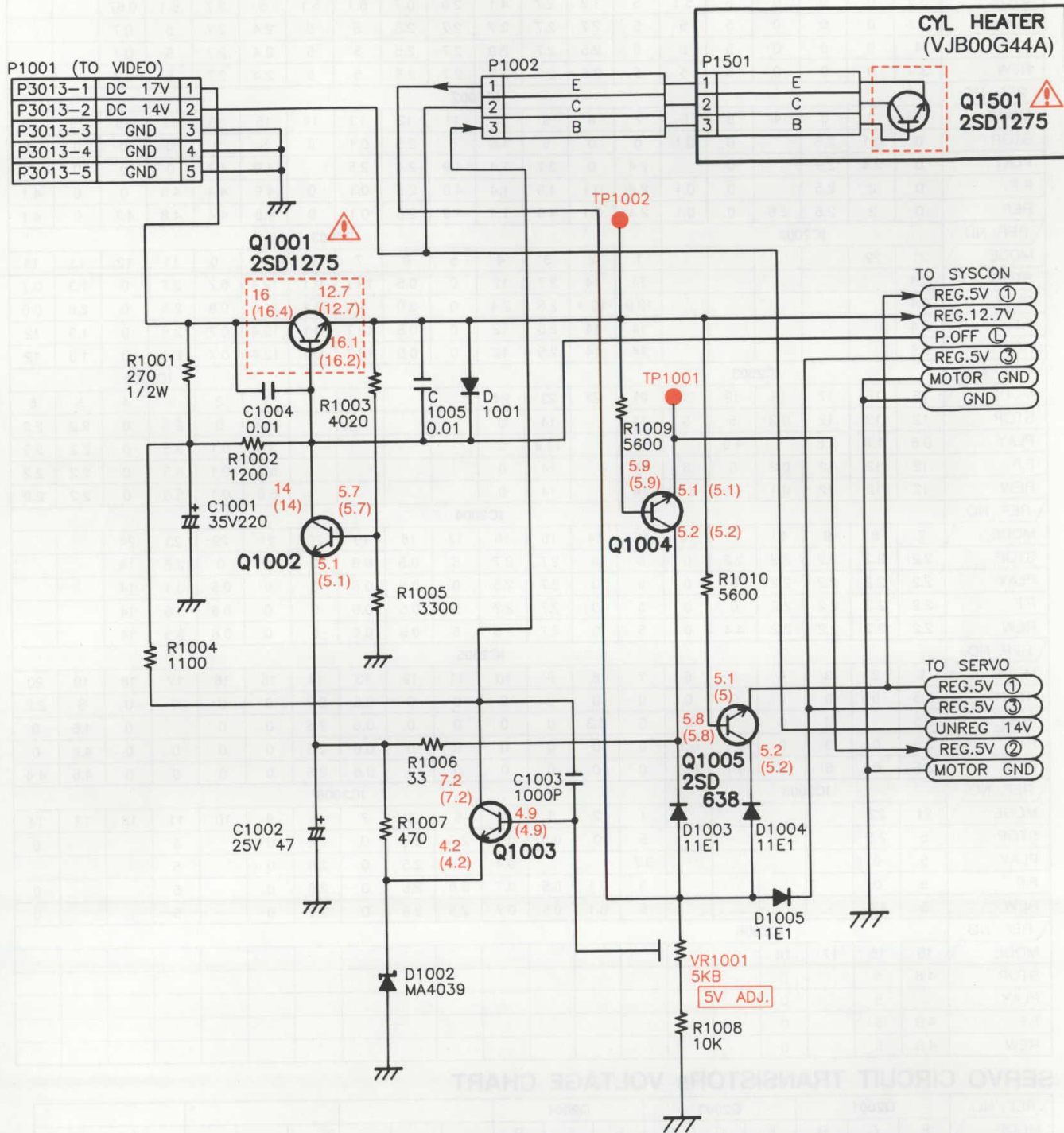
# TV MONITOR BLOCK DIAGRAM



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# POWER SUPPLY SCHEMATIC DIAGRAM

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NOTE: UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165.  
 UNLESS OTHERWISE SPECIFIED, ALL Tr's ARE 2SD636(NPN TYPE).

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOR SIGNAL. THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS IN THIS DIAGRAM IS STOP MODE WITH PAL COLOR SIGNAL.

**IMPORTANT SAFETY NOTICE:**  
 COMPONENTS IDENTIFIED WITH THE MARK HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS. USE ONLY THE SAME TYPE.

**SERVO CIRCUIT ICs VOLTAGE CHART**

REF. NO.	IC2001																							
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18						
STOP	3.9	0	0	0	5	5.1	5	1.2	2.7	4.1	2.9	0.7	5.1	5.1	5	2.7	5.1	0.67						
PLAY	3.7	0	0	0	5	5	5	2.7	2.7	2.7	2.7	2.5	5	5	2.4	2.7	5	0.7						
F.F	4	0	0	0	5	5	5	2.5	2.7	2.9	2.7	2.5	5	5	2.4	2.7	5	0.7						
REW	3.9	0	0	0	5	5	5	2.5	2.7	2.9	2.7	2.5	5	5	2.4	2.7	5	0.7						
REF. NO.	IC2002																							
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
STOP	0	0.1	2.5		0	0.1	0	0	5	1.5	5	2.5	0.1	5	5	0	0	0	0	0				
PLAY	0	2.4	2.9		0		2.4	0	3.7	1.4	4.9	2.4	2.5		4.9	4.7	0	0	0	0				
F.F	0	2	2.5		0	0.1	2.4	0.1	4.9	1.4	4.9	2.5	0.1	0	4.9	4.4	4.8	0	0	4.1				
REF	0	2	2.5	2.6	0	0.1	2.4	0.1	4.9	1.4	4.9	2.5	0.1	0	4.8	4.4	4.8	4.7	0	4.1				
REF. NO.	IC2002										IC2003													
MODE	21	22									1	2	3	4	5	6	7	8	9	10	11	12	13	14
STOP	0.4									14	14	2.7	12	0	0.5	12.7	0.1	12.4	0.7	2.7	0	1.3	0.7	
PLAY	0.4									13.9	13.9	2.5	2.4	0	2.0	12	0.1	11.5	0.8	2.5	0	2.6	0.6	
F.F	0.4									14	14	2.5	12	0	0.5	12.7	0.1	12.4	0.7	2.5	0	1.3	12	
REW	0.4									14	14	2.5	12	0	0.5	12.7	0.1	12.4	0.7	2.5	0	1.3	12	
REF. NO.	IC2003												IC2004											
MODE	15	16	17	18	19	20	21	22	23	24					1	2	3	4	5	6				
STOP	12	12	12	0.2	5	5	14		14	0					2.5	0	2.5	0	2.2	2.2				
PLAY	0.6	1.8	1.8		4.9		14		13.9	0					3.4	0.1	3.3	0	2.2	2.2				
F.F	12	12	12	0.2	5	5	14		14	0					5.5	0.1	5.5	0	2.2	2.2				
REW	12	12	12	0.1	4.8	4.8	14		14	0					5.5	0.1	5.5	0	2.2	2.2				
REF. NO.	IC2004																							
MODE	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24						
STOP	2.2	2.2	2.2	2.2	2.2	0	5	3	2.7	2.7	5	0.5	0.6	0	0	0	2.5	14						
PLAY	2.2	2.2	2.2	2.2	0	0	5	3	2.7	2.5	0	0.5	0.6	0	0	0.5	3.1	14						
F.F	2.2	2.2	2.2	2.2	0	0	5	3	2.7	2.7	5	0.5	0.6	0	0	0.6	5.5	14						
REW	2.2	2.2	2.2	2.2	4.4	0	5	3	2.7	2.5	5	0.5	0.6	0	0	0.6	5.5	14						
REF. NO.	IC2005																							
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
STOP	2.5	0	0	0	0	0	0	0	0	0	0	0	0.6	0.7	0	0	0	0	5	2.2				
PLAY	2.5		0	0		0	0	0.3	0	0	0	0	0.6	2.5	0	0		0	4.6	0				
F.F	2.5	0	0	0	0.1	0.2	0	0	0	0	0	0	0.6	2.5	0	0	0	0	4.6	0				
REW	2.5	0	0	0	0.1	0.2	0	0	0	0	0	0	0.6	2.5	0	0	0	0	4.6	4.4				
REF. NO.	IC2005										IC2006													
MODE	21	22									1	2	3	4	5	6	7	8	9	10	11	12	13	14
STOP	5	2.5								5	0	0.5	0.7	2.5	2.6	0	2.6	0	5				0	
PLAY	5	0								3.7			0.4	2.5	2.5	0	2.5	0	5				0	
F.F	5	0								5	0.1	0.5	0.7	2.5	2.6	0	2.6	0	5				0	
REW	5	4.4								5	0.1	0.5	0.7	2.5	2.6	0	2.6	0	5				0	
REF. NO.	IC2006																							
MODE	15	16	17	18																				
STOP	4.8	5		0																				
PLAY		5		0																				
F.F	4.8	5		0																				
REW	4.8	5		0																				

**SERVO CIRCUIT TRANSISTORS VOLTAGE CHART**

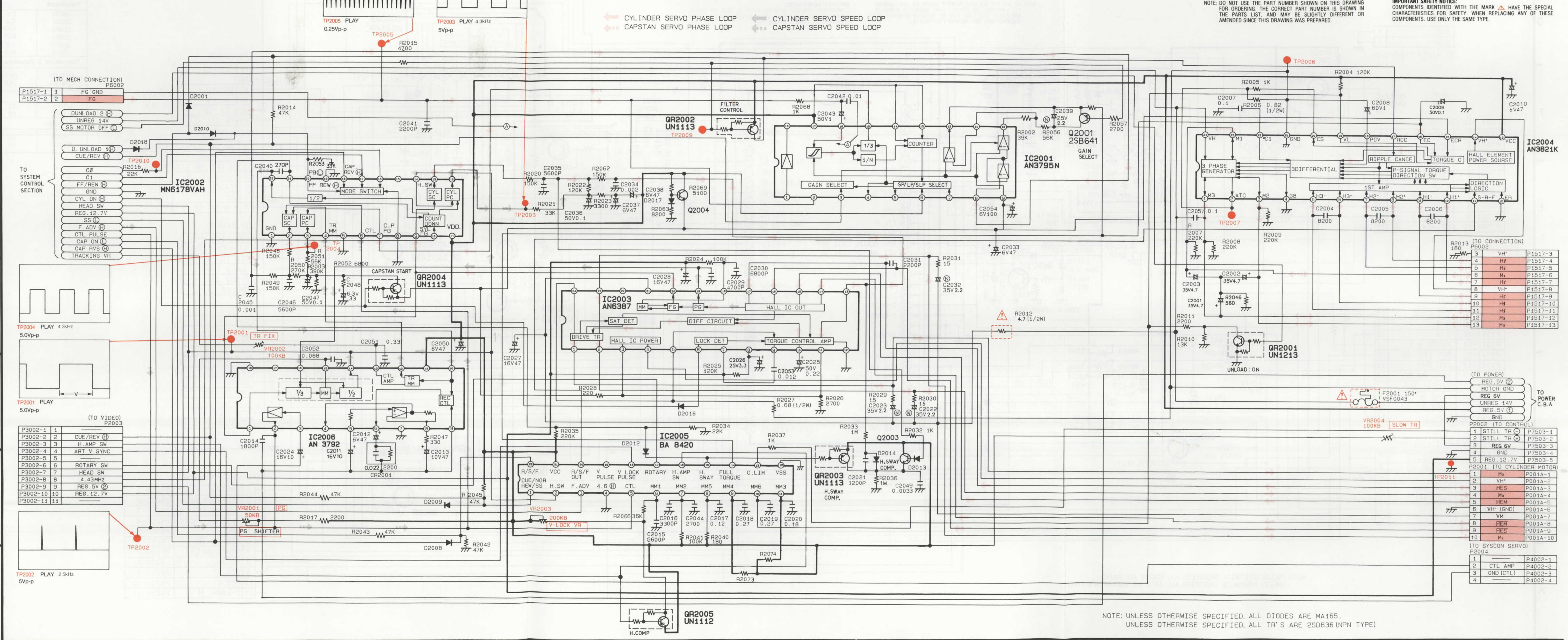
REF. NO.	Q2001			Q2003			Q2004											
MODE	E	C	B	E	C	B	E	C	B									
STOP	0.7	1.5	0.4	4.9	4.9	1.9	2.6	4.9	3.2									
PLAY	2.5	2.7	5	4.9	4.9	3	2.6	4.9	3.2									
F.F	2.3	2.2	1.6	4.9	4.9	2.3	2.6	4.9	3.2									
REW	2.3	2.3	1.6	4.9	4.9	2.3	2.6	4.9	3.2									
REF. NO.	QR2001			QR2002			QR2003			QR2004			QR2005			QR2006		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	0.6	0	4.9	4.9	0.4	4.9	4.9	0	2.6	2.6	0	4.9	4.9	0	4.9	4.9	0
PLAY	0	0.6	0	4.9	0	4.9	4.9	4.9	0	2.6	2.2	4.8	4.9	4.9	0	4.9	4.9	0
F.F	0	0.6	0	4.9	4.9	1.3	4.9	4.9	0	2.6	2.6	0	4.9	4.9	0	4.9	4.9	0
REW	0	0.6	0	4.9	4.9	1.3	4.9	4.9	0	2.6	2.6	0	4.9	4.9	0	4.9	4.9	0



# SERVO SCHEMATIC DIAGRAM

SYSTEM CONTROL SCHEMATIC DIAGRAM

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NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

IMPORTANT SAFETY NOTICE: COMPONENTS IDENTIFIED WITH THE MARK HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

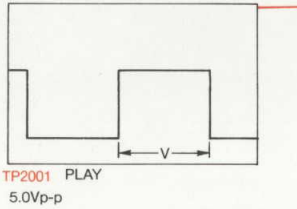
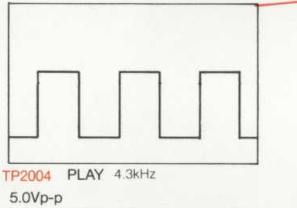
(TO MECH CONNECTION) P6002

P1517-1	1	FG GND
P1517-2	2	FG

DUNLOAD 2 (M)  
UNREG 14V  
SS MOTOR OFF (L)

D. UNLOAD 1 (M)  
CUE/REV (H)

C1  
FF/REW (H)  
GND  
CYL ON (H)  
HEAD SW  
REG. 12.7V  
SS (L)  
F. ADV (H)  
CTL PULSE  
CAP ON (L)  
CAP RVS (H)  
TRACKING VR



(TO VIDEO) P2003

P3002-1	1	CUE/REV (H)
P3002-2	2	H. AMP SW
P3002-3	3	ART V SYNC
P3002-4	4	ROTARY SW
P3002-5	5	HEAD SW
P3002-6	6	4.43MHz
P3002-7	7	REG. 5V (M)
P3002-8	8	REG. 12.7V
P3002-9	9	REG. 5V (M)
P3002-10	10	REG. 12.7V
P3002-11	11	REG. 5V (M)



(TO CONNECTION) P6002

3	VH*	P1517-3
4	H*	P1517-4
5	H*	P1517-5
6	M*	P1517-6
7	H*	P1517-7
8	VH*	P1517-8
9	H*	P1517-9
10	H*	P1517-10
11	H*	P1517-11
12	M*	P1517-12
13	M*	P1517-13

(TO POWER) P6002

REG. 5V (M)
MOTOR GND
REG. 6V
UNREG. 14V
REG. 5V (M)
GND

(TO CONTROL) P2002

1	STILL TR (M)	P7503-1
2	STILL TR (M)	P7503-2
3	REG. 6V	P7503-3
4	GND	P7503-4
5	REG. 12.7V	P7503-5

(TO CYLINDER MOTOR) P2001

1	M*	P001A-1
2	VH*	P001A-2
3	HES	P001A-3
4	M*	P001A-4
5	HEM	P001A-5
6	VH* (GND)	P001A-6
7	VM	P001A-7
8	HEM	P001A-8
9	HES	P001A-9
10	M*	P001A-10

(TO SYS CON) P2004

1		P4002-1
2	CTL AMP	P4002-2
3	GND (CTL)	P4002-3
4		P4002-4

NOTE: UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165.  
UNLESS OTHERWISE SPECIFIED, ALL TR'S ARE 2SD636 (NPN TYPE)

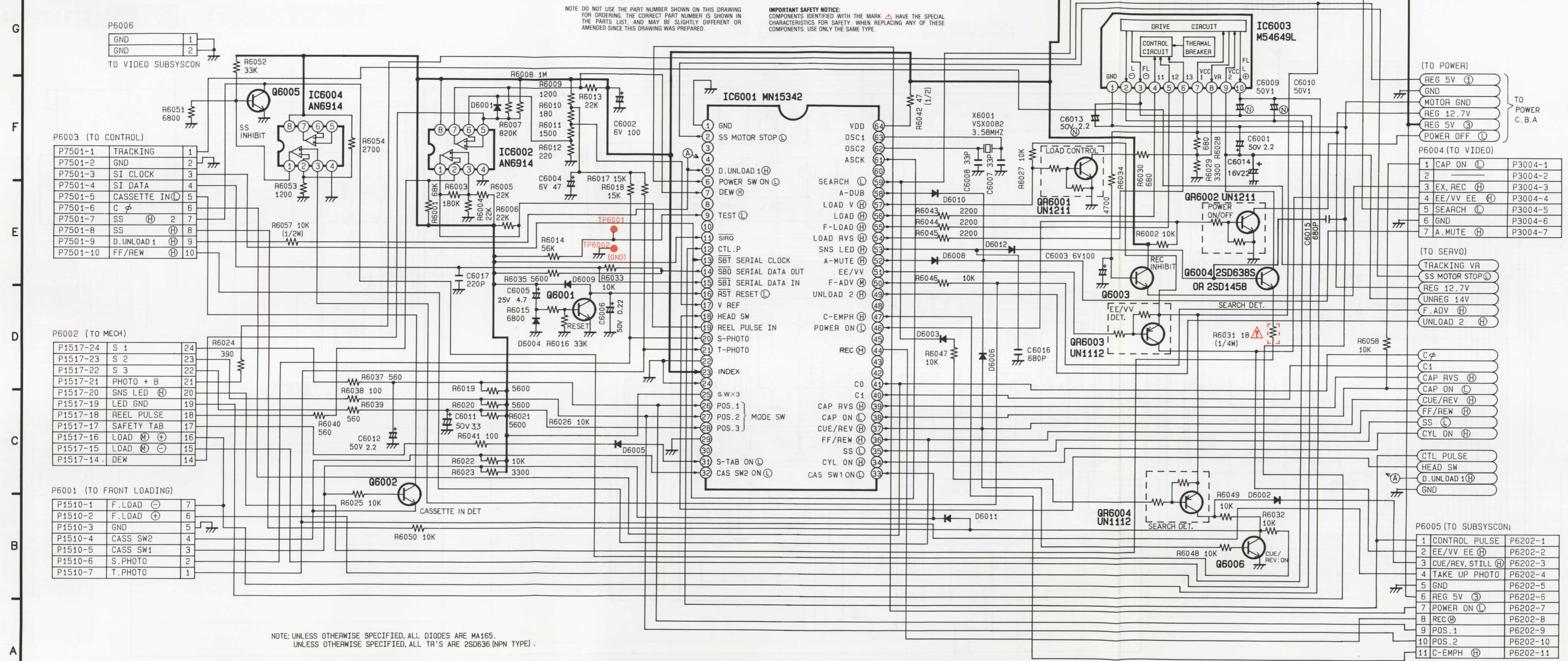
# SYSTEM CONTROL SCHEMATIC DIAGRAM

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

IMPORTANT SAFETY NOTICE: COMPONENTS IDENTIFIED WITH THE MARK  $\Delta$  HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

### ADDRESS INFORMATION

MAIN CIRCUIT BOARD (VEP0228A)	
SYSTEM CONTROL SECTION	
Transistors	
Q6001	D6
Q6002	C4
Q6003	D11
Q6004	D12
Q6005	F3
Q6006	B12
Transistors & Resistors	
QR6003	D11
QR6004	D12
Integrated Circuits	
IC6001	E8
IC6002	F5
Test Points	
TP6001	E6
TP6002	E6



P6003 (TO CONTROL)

P7501-1	TRACKING	1
P7501-2	GND	2
P7501-3	SI CLOCK	3
P7501-4	SI DATA	4
P7501-5	CASSETTE IN	5
P7501-6	C $\phi$	6
P7501-7	SS (H)	2 7
P7501-8	SS (H)	8
P7501-9	D.UNLOAD 1 (H)	9
P7501-10	FF/REW (H)	10

P6002 (TO MECH)

P1517-24	S 1	24
P1517-23	S 2	23
P1517-22	S 3	22
P1517-21	PHOTO + B	21
P1517-20	SNS LED (H)	20
P1517-19	LED GND	19
P1517-18	REEL PULSE	18
P1517-17	SAFETY TAB	17
P1517-16	LOAD (M) (+)	16
P1517-15	LOAD (M) (-)	15
P1517-14	DEW	14

P6001 (TO FRONT LOADING)

P1510-1	F.LOAD (-)	7
P1510-2	F.LOAD (+)	6
P1510-3	GND	5
P1510-4	CASS SW2	4
P1510-5	CASS SW1	3
P1510-6	S.PHOTO	2
P1510-7	T.PHOTO	1

(TO POWER)

REG 5V (1)	
GND	
MOTOR GND	
REG 12.7V	
REG 5V (3)	
POWER OFF (1)	

TO POWER C.B.A.

P6004 (TO VIDEO)

1	CAP ON (L)	P3004-1
2		P3004-2
3	EX. REC (H)	P3004-3
4	EE/VV EE (H)	P3004-4
5	SEARCH (L)	P3004-5
6	GND	P3004-6
7	A.MUTE (H)	P3004-7

(TO SERVO)

TRACKING VR
SS MOTOR STOP (L)
REG 12.7V
UNREG 14V
F.ADV (H)
UNLOAD 2 (H)

C $\phi$
C1
CAP RVS (H)
CAP ON (L)
CUE/REV (H)
FF/REW (H)
SS (L)
CYL ON (H)

CTL PULSE
HEAD SW
D.UNLOAD 1 (H)
GND

P6005 (TO SUBSYSICON)

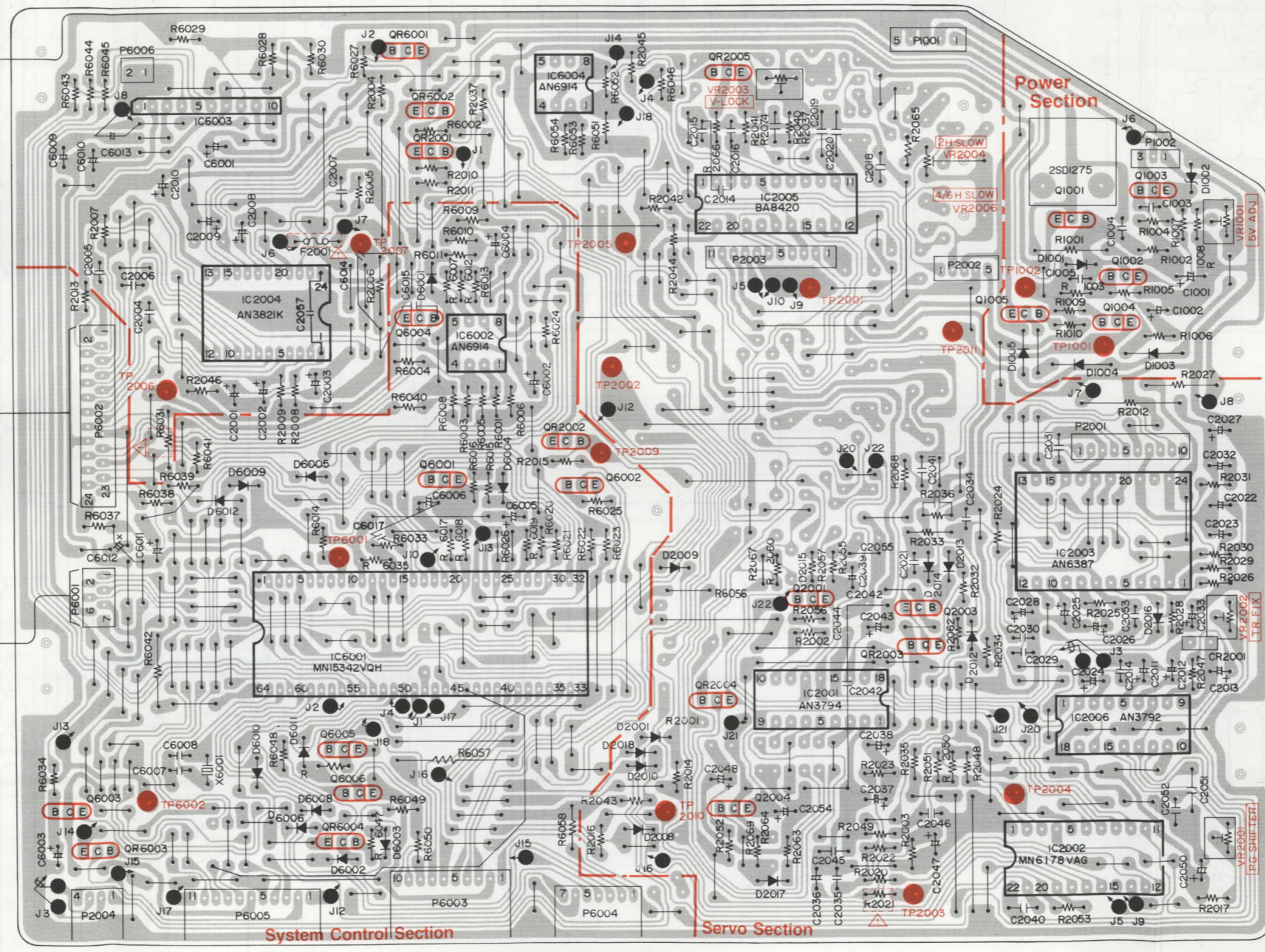
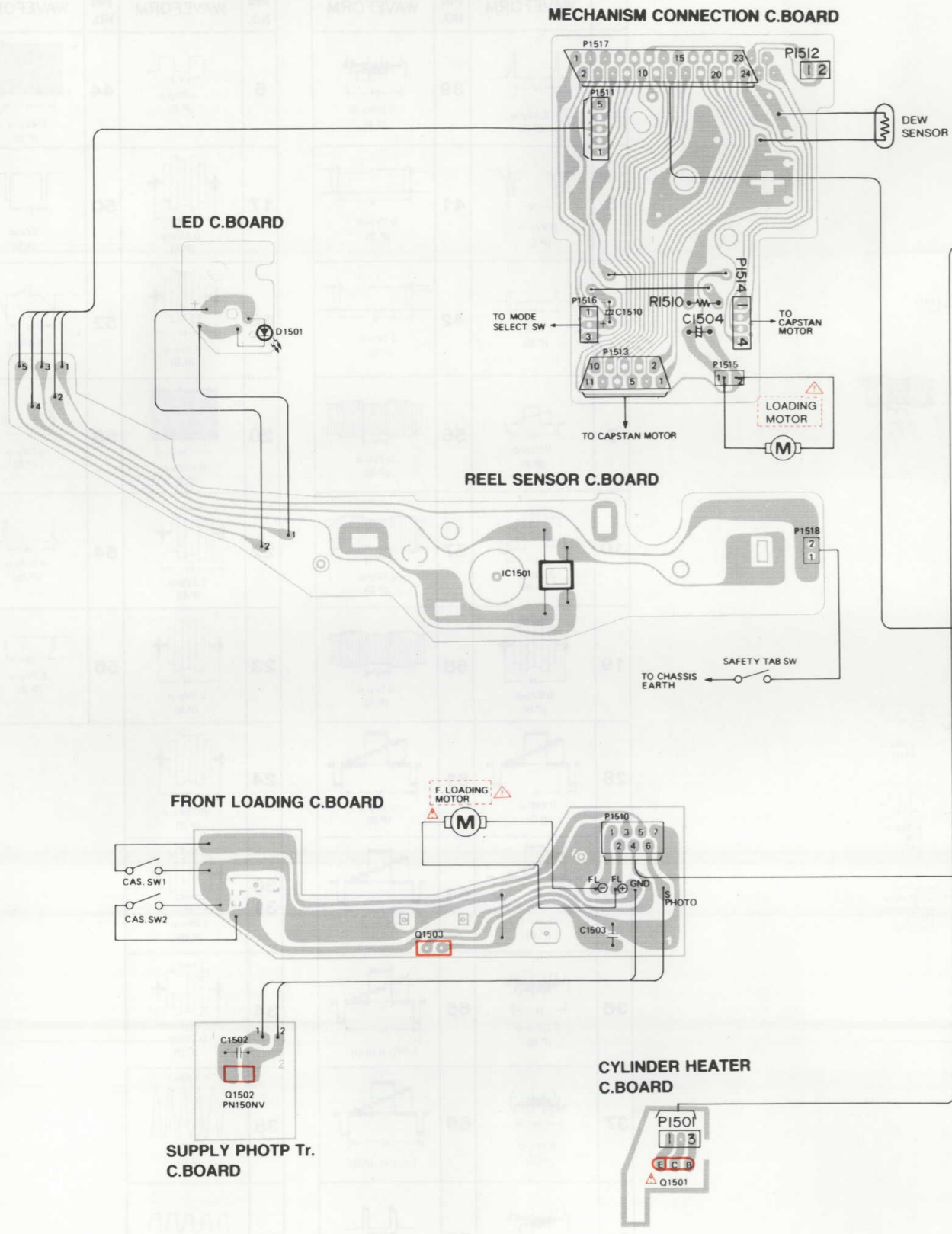
1	CONTROL PULSE	P6202-1
2	EE/VV EE (H)	P6202-2
3	CUE/REV, STILL (H)	P6202-3
4	TAKE UP PHOTO	P6202-4
5	GND	P6202-5
6	REG 5V (3)	P6202-6
7	POWER ON (L)	P6202-7
8	REC (H)	P6202-8
9	POS.1	P6202-9
10	POS.2	P6202-10
11	C-EMPH (H)	P6202-11

NOTE: UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165.  
UNLESS OTHERWISE SPECIFIED, ALL TR'S ARE 2SD636 (NPN TYPE).

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# MAIN [System Control Section, Servo Section, Power Section] C.B.A. (VEP02253A) & SMALL C.BOARDS

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**SYSTEM CONTROL SECTION**

<b>Transistors</b>	
Q6001	D8
Q6002	D9
Q6003	B6
Q6004	D8
Q6005	B7
Q6006	B7
<b>Transistors &amp; Resistors</b>	
QR6003	B6
QR6004	B7
<b>Integrated Circuits</b>	
IC6001	C7
IC6002	D8
IC6003	F6
IC6004	F8
<b>Test Points</b>	
TP6001	C7
TP6002	B6

**SERVO SECTION**

<b>Transistors</b>	
Q2001	C10
Q2003	C10
Q2004	B9
<b>Transistors &amp; Resistors</b>	
QR2001	E8
QR2002	D8
QR2003	C10
QR2004	B9
QR2005	F9
QR2006	F10
QR6001	F8
QR6002	F8
QR6003	B6
<b>Integrated Circuits</b>	
IC2001	B10
IC2002	B11
IC2003	C11
IC2004	D7
IC2005	E9
IC2006	B11
IC6002	D8
IC6003	F6
IC6004	F8
<b>Test Points</b>	
TP2001	E10
TP2002	D9
TP2003	A10
TP2004	B11
TP2005	E9
TP2006	D6
TP2007	E7
TP2009	D8
TP2010	B9
TP2011	D10
<b>Adjustments</b>	
VR2001	A11
VR2002	C11
VR2003	F9
VR2004	E10
VR2005	F10
VR2006	E10

**POWER SECTION**

<b>Transistors</b>	
Q1001	E11
Q1002	E11
Q1003	E11
Q1004	D11
Q1005	D11
<b>Test Points</b>	
TP1001	D11
TP1002	E11
<b>Adjustment</b>	
VR1001	E11

## SYSTEM CONTROL ICs VOLTAGE CHART

REF. NO.	IC6001																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
MODE	1	0	5	0	0	5	0	5	0	5	3.5	5.2	0	4.6	4.7	4.5	5
STOP	0	0	5	0	0	5	0	5	0	5	3.5	5.2	0	4.6	4.7	4.5	5
PLAY	0	5	0	0	0	5	0	5	0	5	3.5	5.2	0	4.6	4.7	4.5	5
F.F	0	0	5	0	0	5	0	5	0	5	3.5	5.2	0	4.6	4.7	4.5	5
REW	0	0	5	0	0	5	0	5	0	5	3.5	5.2	0	4.6	4.7	4.5	5

REF. NO.	IC6001																															
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32																
MODE	17	0	4.7	3.0	3.0	0	5.2	0	5.2	5.1	0	5.1	0	5	5	0																
STOP	2.7	0	4.7	3.2	3.0	0	5.2	3.7	5.2	5.1	5.1	5.1	0	5	5	0																
PLAY	2.7	0		3.2	3.2	0	5.2	0	5.2	5.1	5.1	5.1	0	5	5	0																
F.F	2.7	0		3.2	3.2	0	5.2	0	5.2	5.1	5.1	5.1	0	5	5	0																
REW	2.7	0		3.2	3.2	0	5.2	0	5.2	5.1	5.1	5.1	0	5	5	0																

REF. NO.	IC6001																																															
	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48																																
MODE	4.0	0	5	0	0	0	4.8	0	0	0	0	0	0	0	0	0																																
STOP	4.0	4.8	5	0	0	0	0	0	0	0	0	0	4.8																																			
PLAY	4.0	0	5	4.8	0	0	0	0	0	4.9	4.6																																					
F.F	4.0	0	5	4.8	0	0	0	0	0	4.9	4.6																																					
REW	4.0	0	5	4.8	0	0	0	0	0	4.6	4.9	4.6																																				

REF. NO.	IC6002					IC6003								
	1	2	3	4	5	6	7	8	1	2	3	4	5	
MODE	4.0	4.8	2.3	0	0	0.3	0	5.2						
STOP	0	4.8	2.3	0	0	0.3	0	5.2						
PLAY	4.5	4.6	2.4	0	0	0.3	0	5.2						
F.F	2.5	1.8	2.4	0	0	0.3	0	5.2						
REW	2.6	1.8	2.4	0	0	0.3	0	5.2						

REF. NO.	IC6003				IC6004								
	6	7	8	9	1	2	3	4	5	6	7	8	
MODE	6	12.7	5.8	14	0.6				1	1.6	0	0	0
STOP	0	12.7	5.8	13.8	0.6				0	1.6	0	0	0
PLAY	0	12.7	0.8	13.8	0.6				0	1.6	0	0	0
F.F	0	12.7	0.8	13.8	0.6				0	1.6	0	0	0
REW	0	12.7	5.8	13.8	0.6				0	1.6	0	0	0

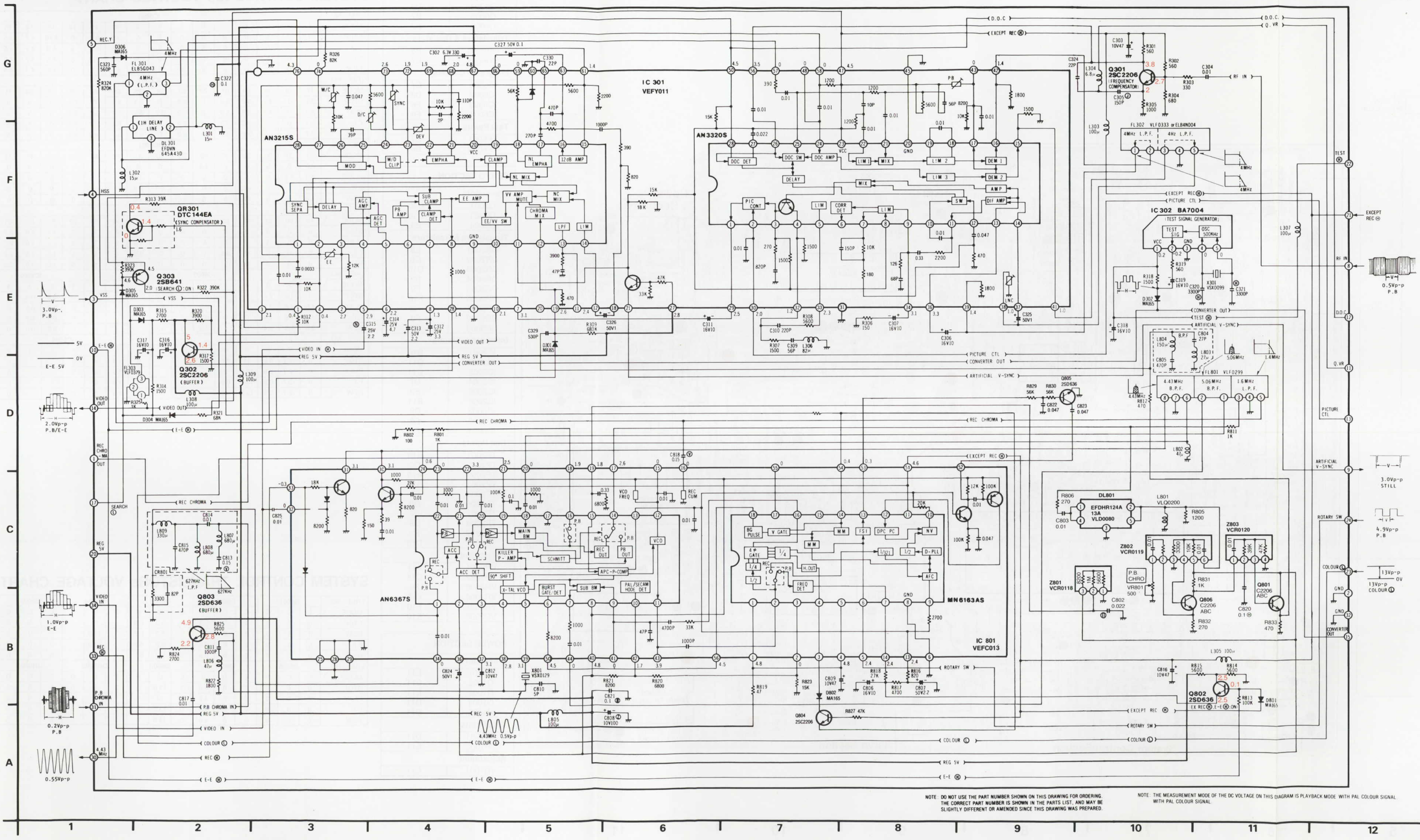
## SYSTEM CONTROL TRANSISTORS VOLTAGE CHART

REF. NO.	Q6001		Q6002		Q6003		Q6004		Q6005				
	E	C	B	E	C	B	E	C	B	E	C	B	
MODE	0	5	0	0	0	0.6	5	5.2	5.8	14	0	0	0
STOP	0	5	0	0	0	0.6	5	5.2	5.8	13.8	0	0	0
PLAY	0	5	0	0	0	0.6	5	5.2	5.8	13.8	0	0	0
F.F	0	5	0	0	0	0.6	5	5.2	5.8	13.8	0	0	0
REW	0	5	0	0	0	0.6	5	5.2	5.8	13.8	0	0	0

REF. NO.	Q6006		Q6001		Q6002		QR6003		QR6004						
	E	C	B	E	C	B	E	C	B	E	C	B			
MODE	0	0	0	0	0	4.9	0	13.8	0	5	5	0	5	0	5
STOP	0	0	0	0	0	4.9	0	14	0	5	5	0	5	0	5
PLAY	0	0	0	0	0	4.9	0	13.8	0	5	5	0	5	0	5
F.F	0	0	0	0	0	4.9	0	13.8	0	5	5	0	5	0	5
REW	0	0	0	0	0	4.9	0	13.8	0	5	5	0	5	0	5

# LUMINANCE & CHROMINANCE PACK SCHEMATIC DIAGRAM



NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MADE OF THE DC VOLTAGE ON THIS DIAGRAM IS PLAYBACK MADE WITH PAL COLOUR SIGNAL WITH PAL COLOUR SIGNAL.

## IC301(VEFY011)

WAVEFORM	PIN NO.	WAVEFORM
	39	
	41	
	42	
	56	
	57	
	58	
	61	
	63	
	65	
	66	
	76	

## IC801(VEFC013)

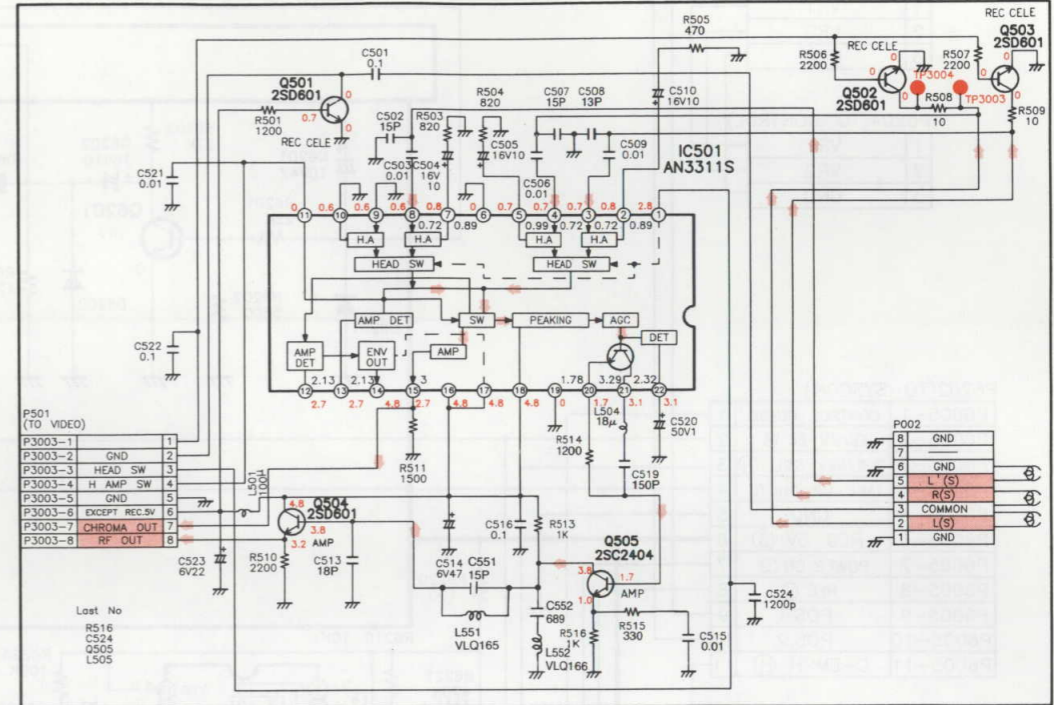
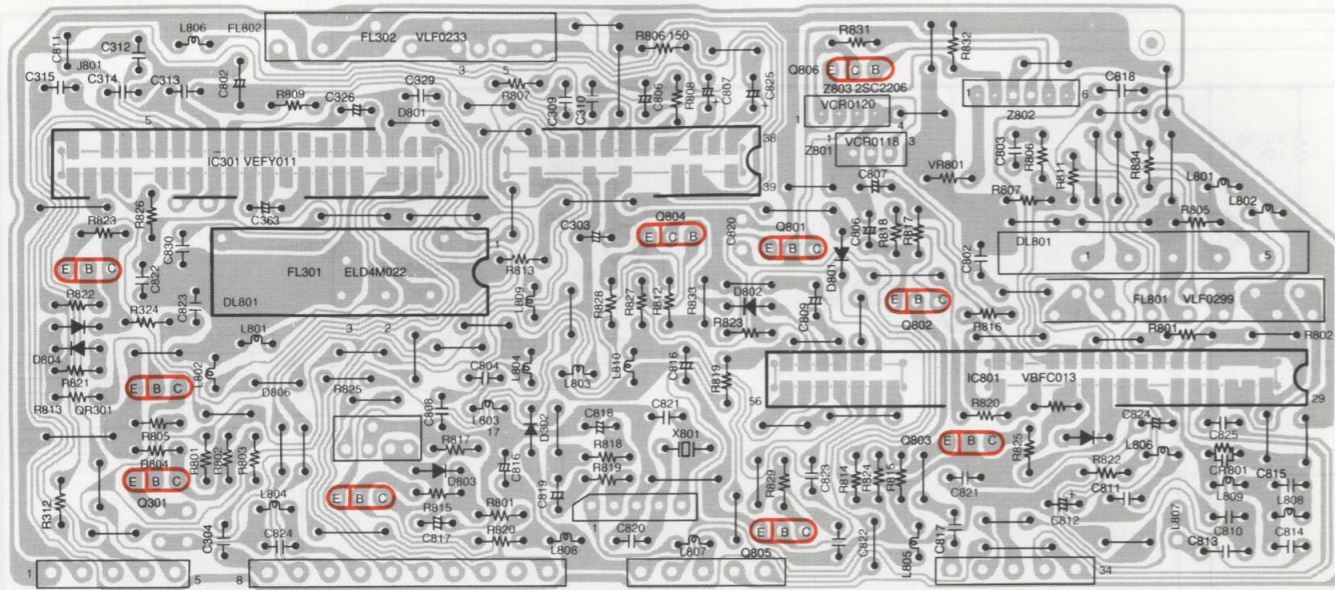
PIN NO.	WAVEFORM	PIN NO.	WAVEFORM
5		44	
17		50	
18		52	
20		53	
22		54	
23		56	
24			
30			
34			
38			
39			

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### LUMINANCE & CHROMINANCE PACK C.B.A. (VEP03374A)

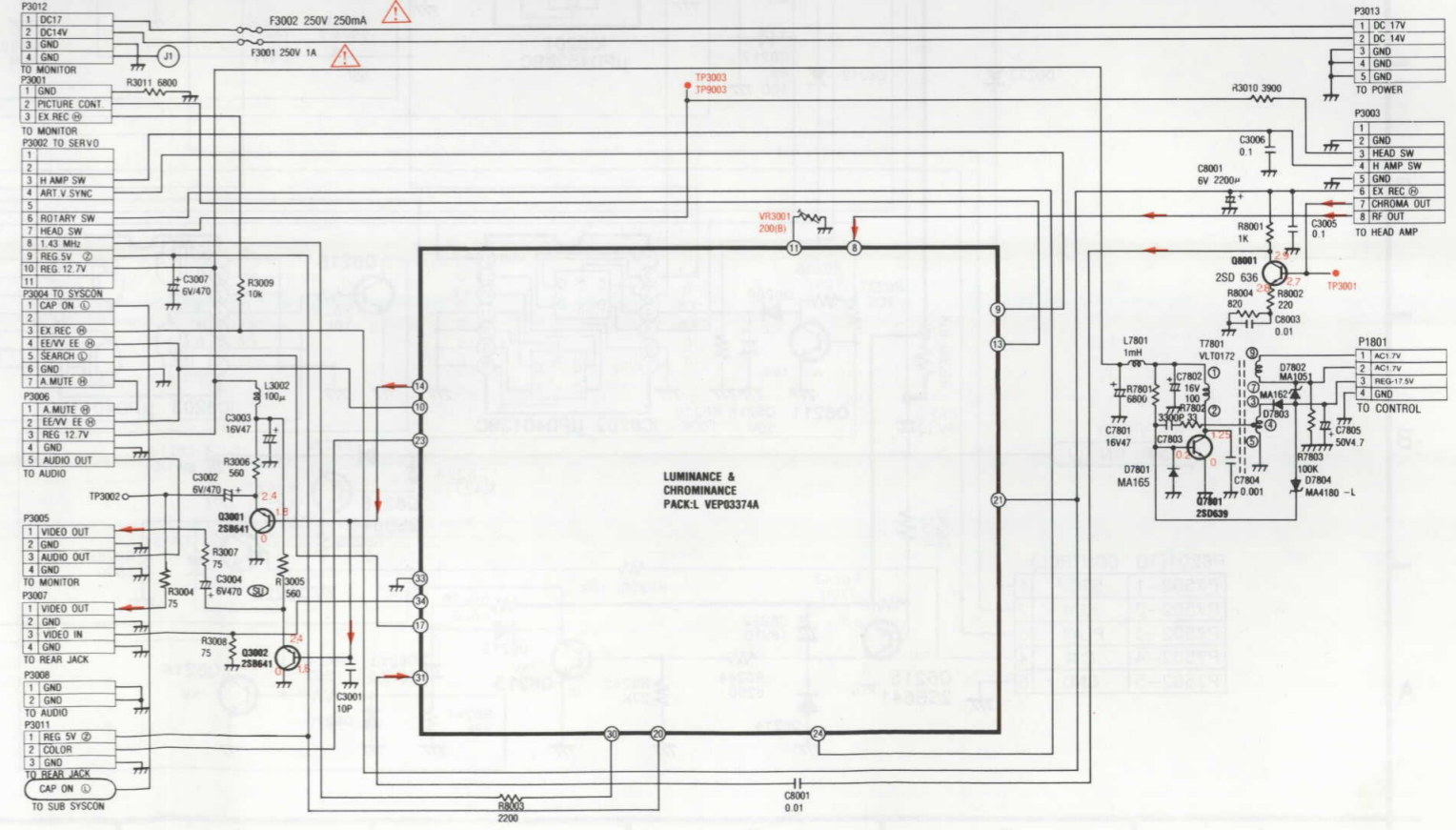
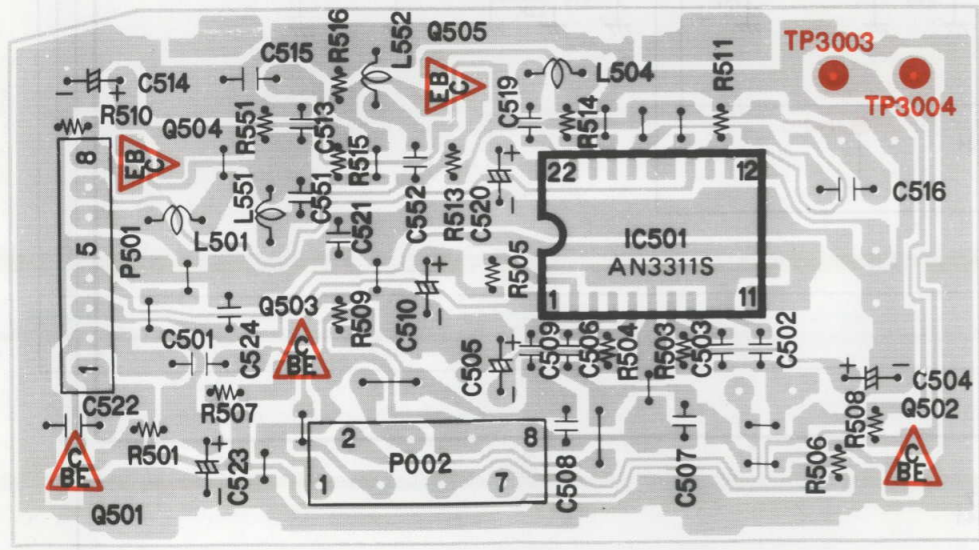
### HEAD AMP SCHEMATIC DIAGRAM



NOTE: UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165. UNLESS OTHERWISE SPECIFIED, ALL Tr's ARE 2SD636(NPN TYPE).

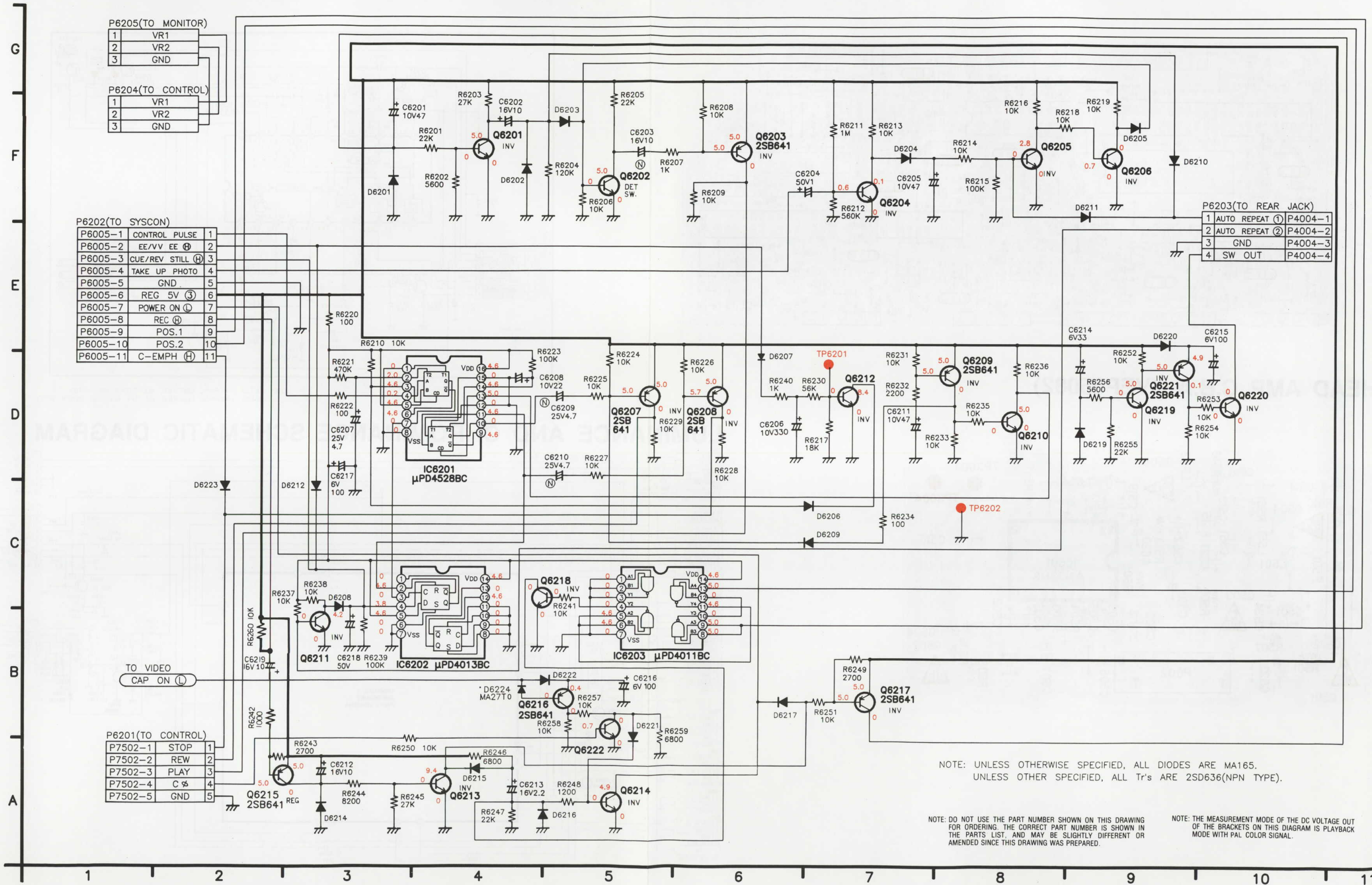
### HEAD AMP C.B.A. (VEP05082)

### LUMINANCE AND CHROMINANCE SCHEMATIC DIAGRAM



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# SUB SYSTEM CONTROL SCHEMATIC DIAGRAM



P6205(TO MONITOR)

1	VR1
2	VR2
3	GND

P6204(TO CONTROL)

1	VR1
2	VR2
3	GND

P6202(TO SYSCON)

P6005-1	CONTROL PULSE	1
P6005-2	EE/VV EE ⊕	2
P6005-3	CUE/REV STILL ⊕	3
P6005-4	TAKE UP PHOTO	4
P6005-5	GND	5
P6005-6	REG 5V ⊕	6
P6005-7	POWER ON ⊕	7
P6005-8	REC ⊕	8
P6005-9	POS.1	9
P6005-10	POS.2	10
P6005-11	C-EMPH ⊕	11

P6203(TO REAR JACK)

1	AUTO REPEAT ①	P4004-1
2	AUTO REPEAT ②	P4004-2
3	GND	P4004-3
4	SW OUT	P4004-4

P6201(TO CONTROL)

P7502-1	STOP	1
P7502-2	REW	2
P7502-3	PLAY	3
P7502-4	C ⊗	4
P7502-5	GND	5

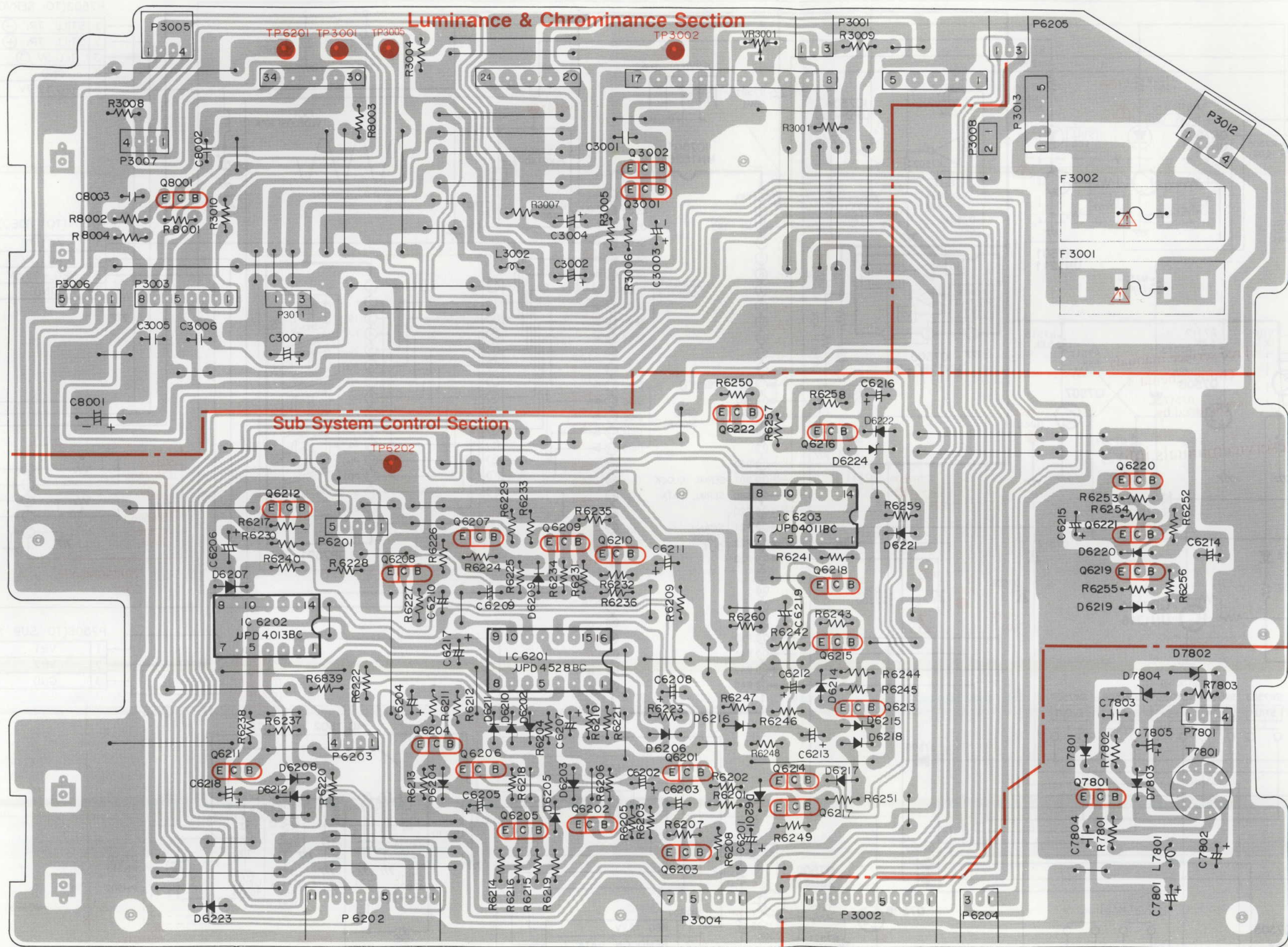
NOTE: UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165.  
UNLESS OTHER SPECIFIED, ALL Tr's ARE 2SD636(NPN TYPE).

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOR SIGNAL.

# SUB MAIN C.B.A. (VEP03344A)

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SUB MAIN CIRCUIT BOARD (VEP03302A)	
<b>Transistors</b>	
Q3001	F5
Q3002	F5
Q6201	B5
Q6202	B5
Q6203	B5
Q6204	B4
Q6205	B4
Q6206	B4
Q6207	D4
Q6208	C4
Q6209	D5
Q6210	C5
Q6211	B3
Q6212	D3
Q6213	B6
Q6214	B6
Q6215	C6
Q6216	D6
Q6217	B6
Q6218	C6
Q6219	C8
Q6220	D8
Q6221	D8
Q6222	D6
Q7801	B8
Q8001	F2
<b>Integrated Circuits</b>	
IC6201	C4
IC6202	C3
IC6203	D6
<b>Test Points</b>	
TP3001	G3
TP3002	G5
TP3003	G4
TP6201	G3
TP6202	D4

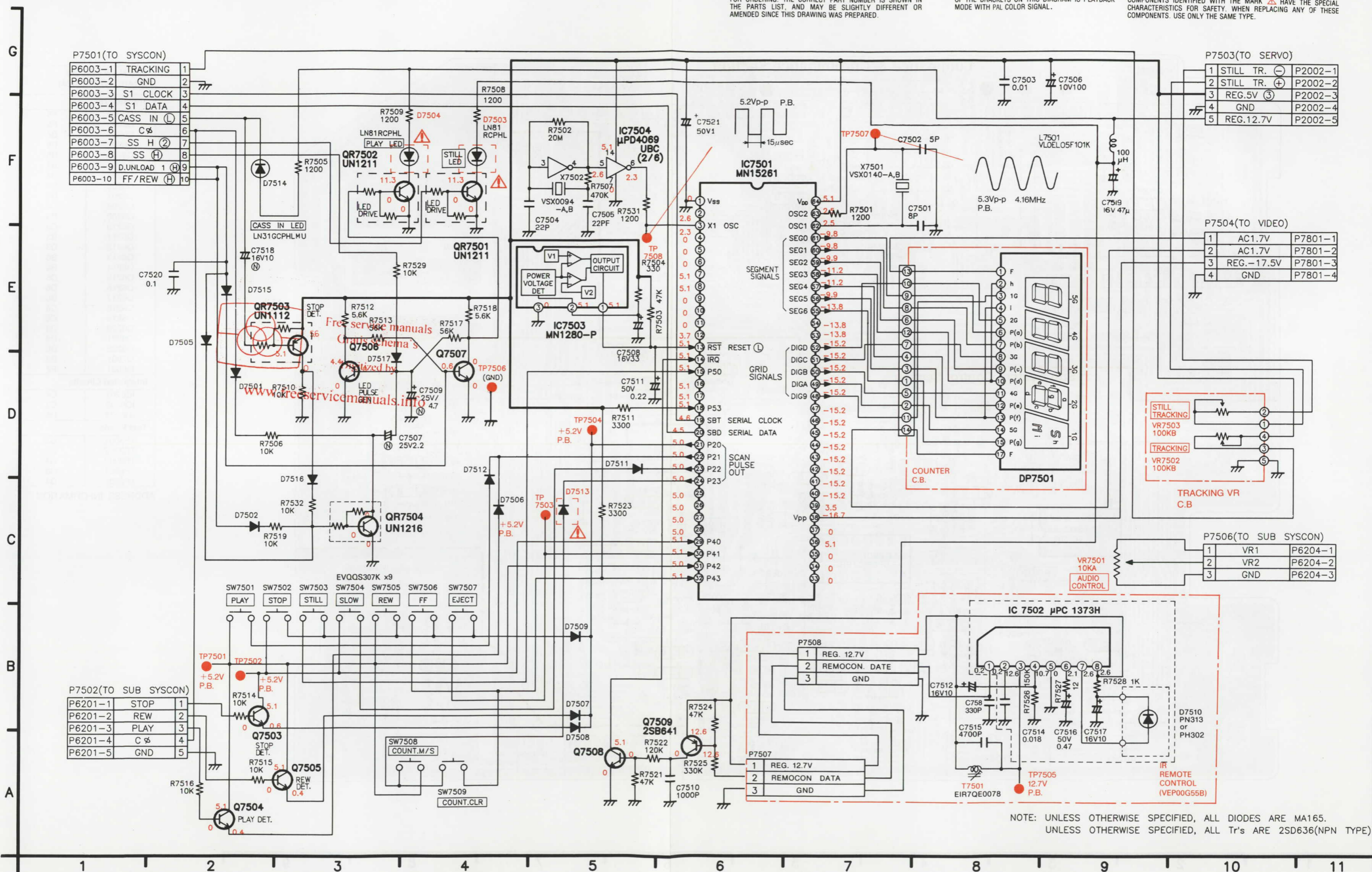
ADDRESS INFORMATION

# OPERATION SCHEMATIC DIAGRAM

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOR SIGNAL.

IMPORTANT SAFETY NOTICE: COMPONENTS IDENTIFIED WITH THE MARK  $\Delta$  HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.



P7501(TO SYSCON)

P6003-1	TRACKING	1
P6003-2	GND	2
P6003-3	S1 CLOCK	3
P6003-4	S1 DATA	4
P6003-5	CASS IN (L)	5
P6003-6	C $\phi$	6
P6003-7	SS H (2)	7
P6003-8	SS (H)	8
P6003-9	D.UNLOAD 1 (H)	9
P6003-10	FF/REW (H)	10

P7503(TO SERVO)

1	STILL TR. (-)	P2002-1
2	STILL TR. (+)	P2002-2
3	REG.5V (3)	P2002-3
4	GND	P2002-4
5	REG.12.7V	P2002-5

P7504(TO VIDEO)

1	AC1.7V	P7801-1
2	AC1.7V	P7801-2
3	REG.-17.5V	P7801-3
4	GND	P7801-4

P7506(TO SUB SYSCON)

1	VR1	P6204-1
2	VR2	P6204-2
3	GND	P6204-3

P7502(TO SUB SYSCON)

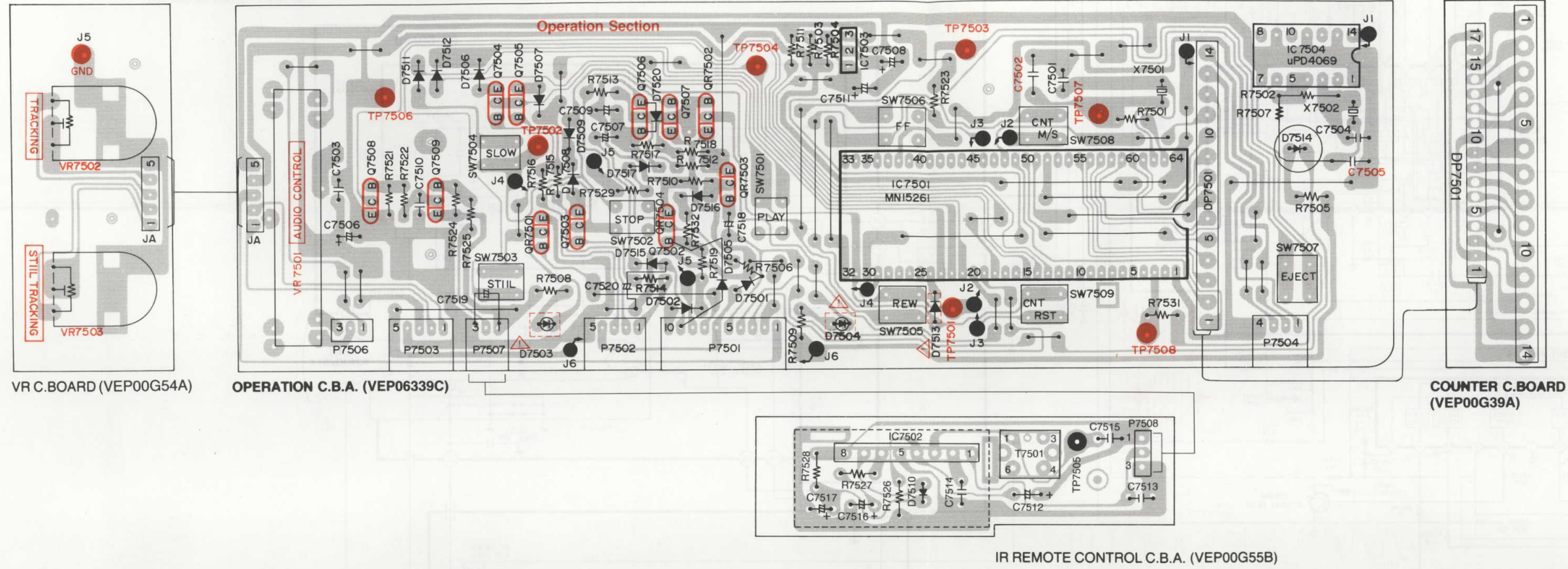
P6201-1	STOP	1
P6201-2	REW	2
P6201-3	PLAY	3
P6201-4	C $\phi$	4
P6201-5	GND	5

NOTE: UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165. UNLESS OTHERWISE SPECIFIED, ALL Tr's ARE 2SD636(NPN TYPE).

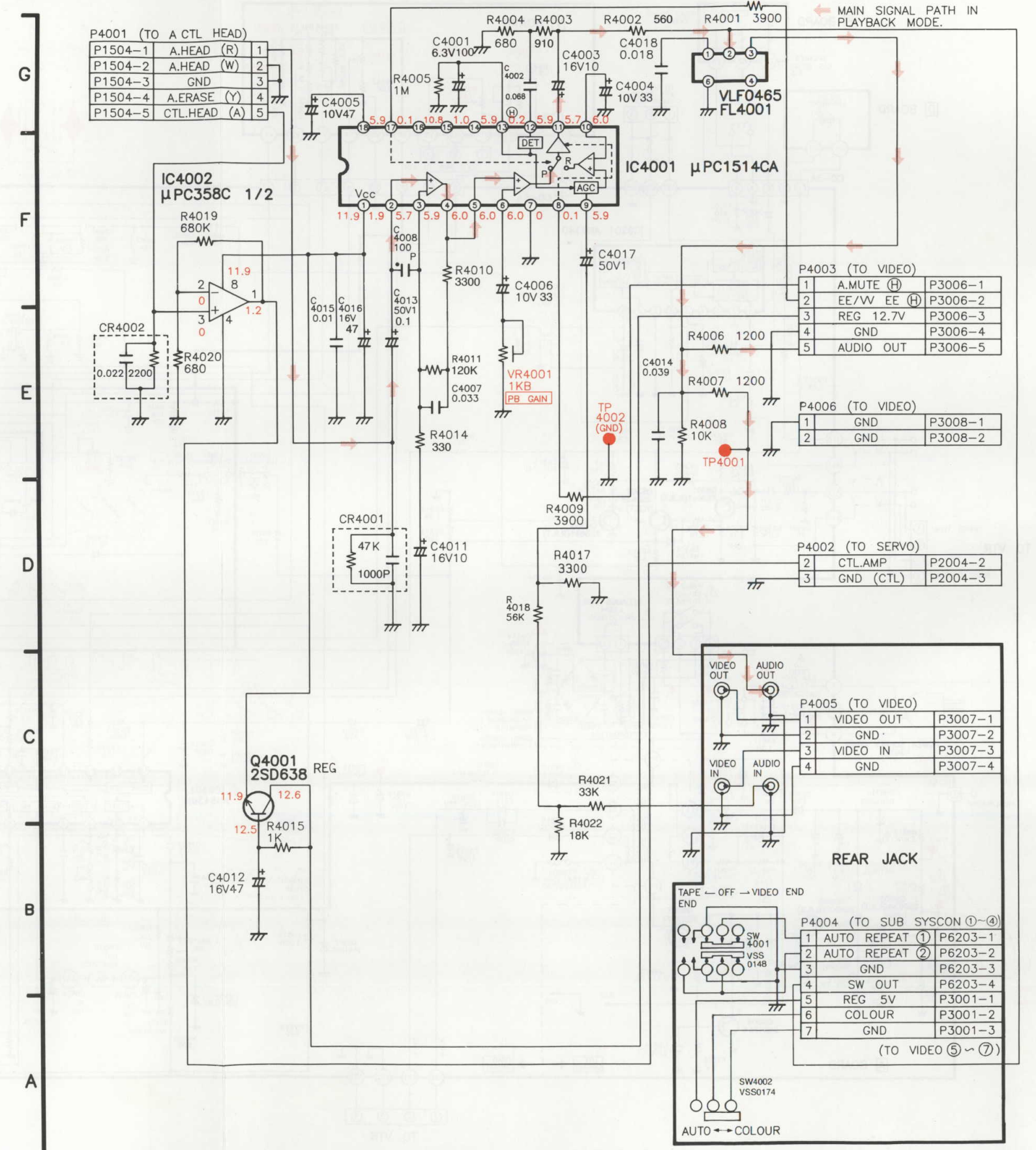
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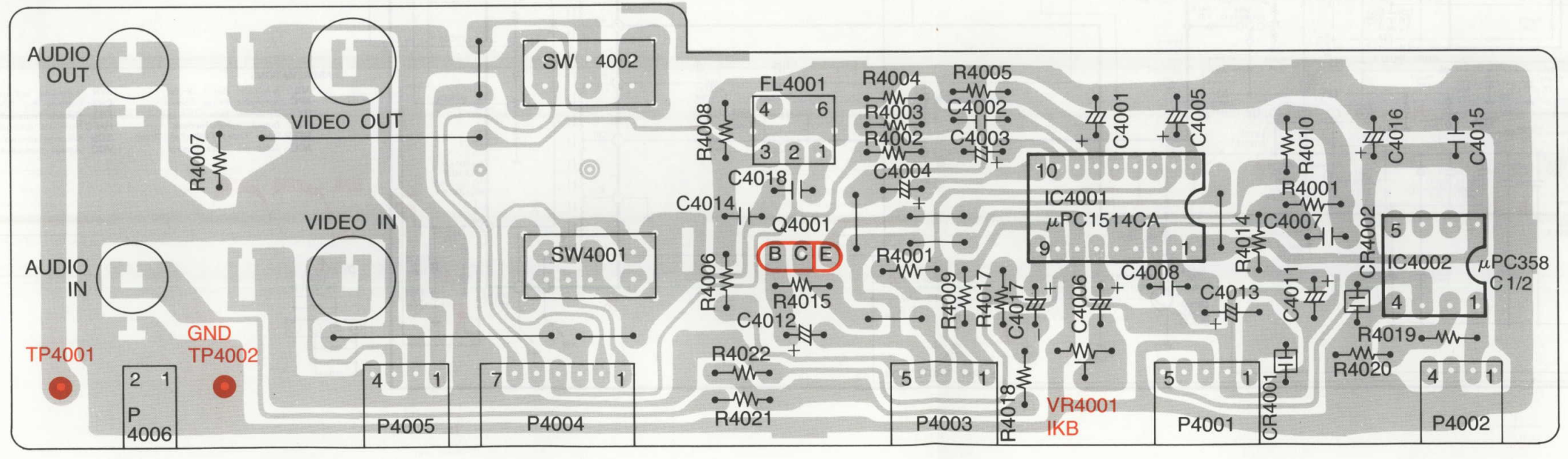
### OPERATION C.B.A. (VEP06339C) & SMALL C.BOARDS



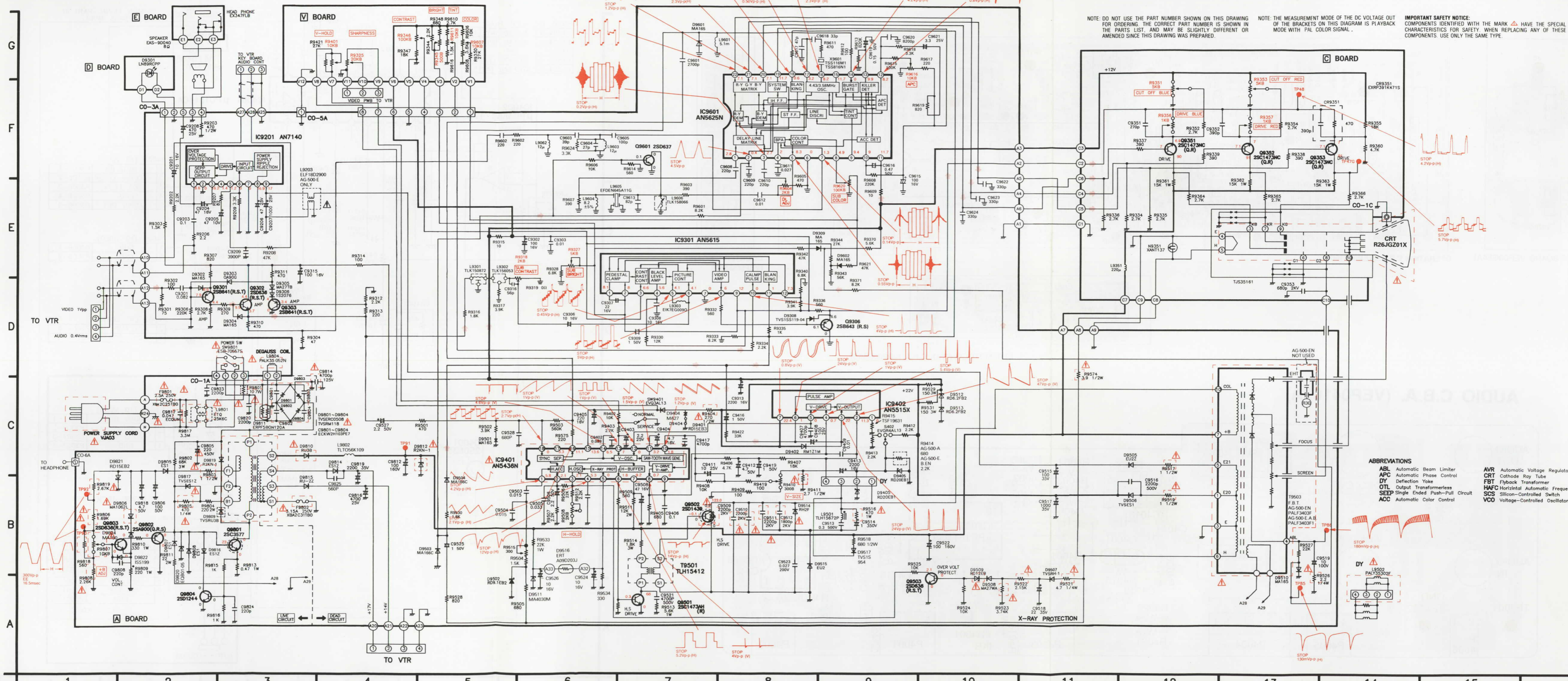
### AUDIO SCHEMATIC DIAGRAM



### AUDIO C.B.A. (VEP04167A)



# TV MONITOR SCHEMATIC DIAGRAM



NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOR SIGNAL.

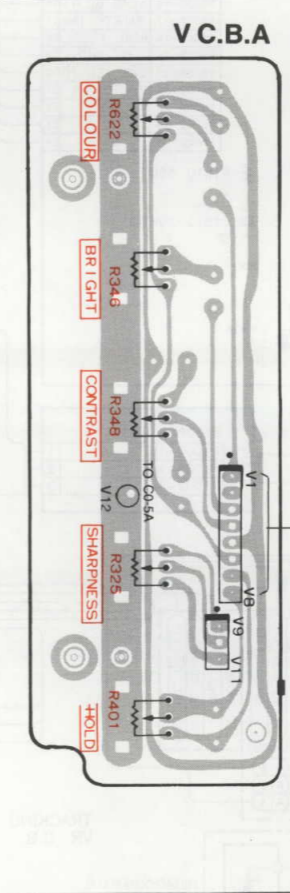
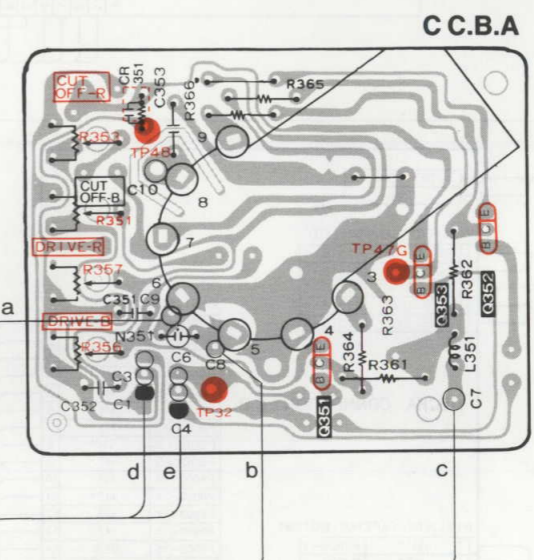
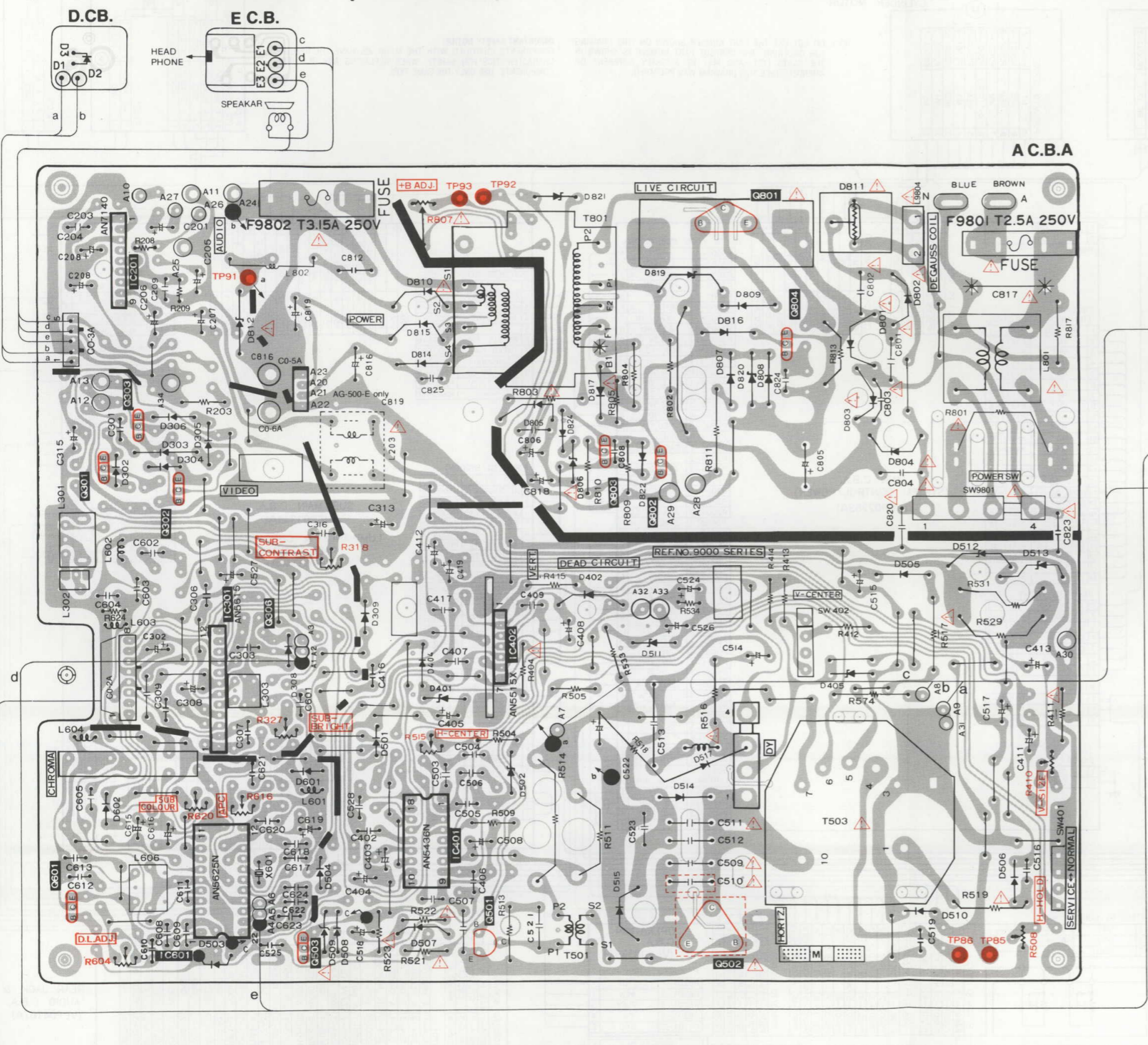
IMPORTANT SAFETY NOTICE: COMPONENTS IDENTIFIED WITH THE MARK  $\Delta$  HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

- ABBREVIATIONS**
- ABL Automatic Beam Limiter
  - APC Automatic Phase Control
  - DY Deflection Yoke
  - OTL Output Transformerless
  - SEEP Single Ended Push-Pull Circuit
  - ACC Automatic Color Control
  - AVR Automatic Voltage Regulator
  - CRT Cathode Ray Tube
  - FBT Flyback Transformer
  - HAF Horizontal Automatic Frequency Control
  - SCS Silicon-Controlled Switch
  - VCO Voltage-Controlled Oscillator

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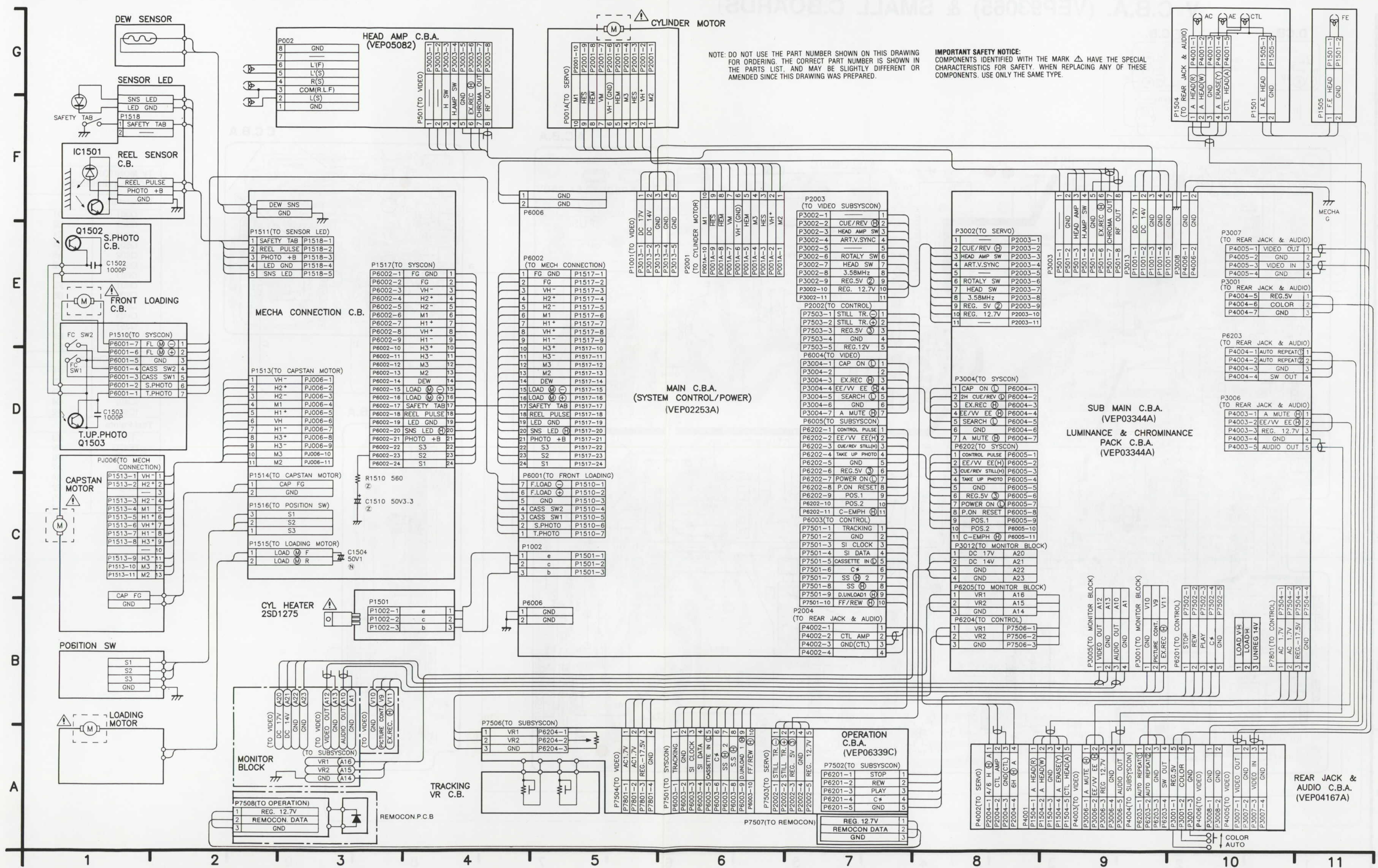
# TV MONITOR [A C.B.A. (AG-500-E:VEP93069 A:VEP93069A B:VEP93069B EN:VEP93069N), C C.B.A. (VEP93064), V C.B.A. (VEP93065) & SMALL C.BOARDS]



TV MONITOR A C.B.A. (VEP93063A)	
<b>Transistors</b>	
Q301	D1
Q302	D2
Q303	E1
Q501	B4
Q502	A5
Q503	A2
Q601	B1
Q801	F5
Q802	D5
Q803	D4
Q804	E5
Q351	E9
Q352	E9
Q353	E9
<b>Integrated Circuits</b>	
IC201	E1
IC301	C2
IC401	B3
IC402	C4
IC601	A2
<b>Test Points</b>	
TP32	E8
TP47G	E9
TP48	F8
TP85	A7
TP86	A6
TP91	E2
TP92	F3
TP93	F4

# INTERCONNECTION SCHEMATIC DIAGRAM

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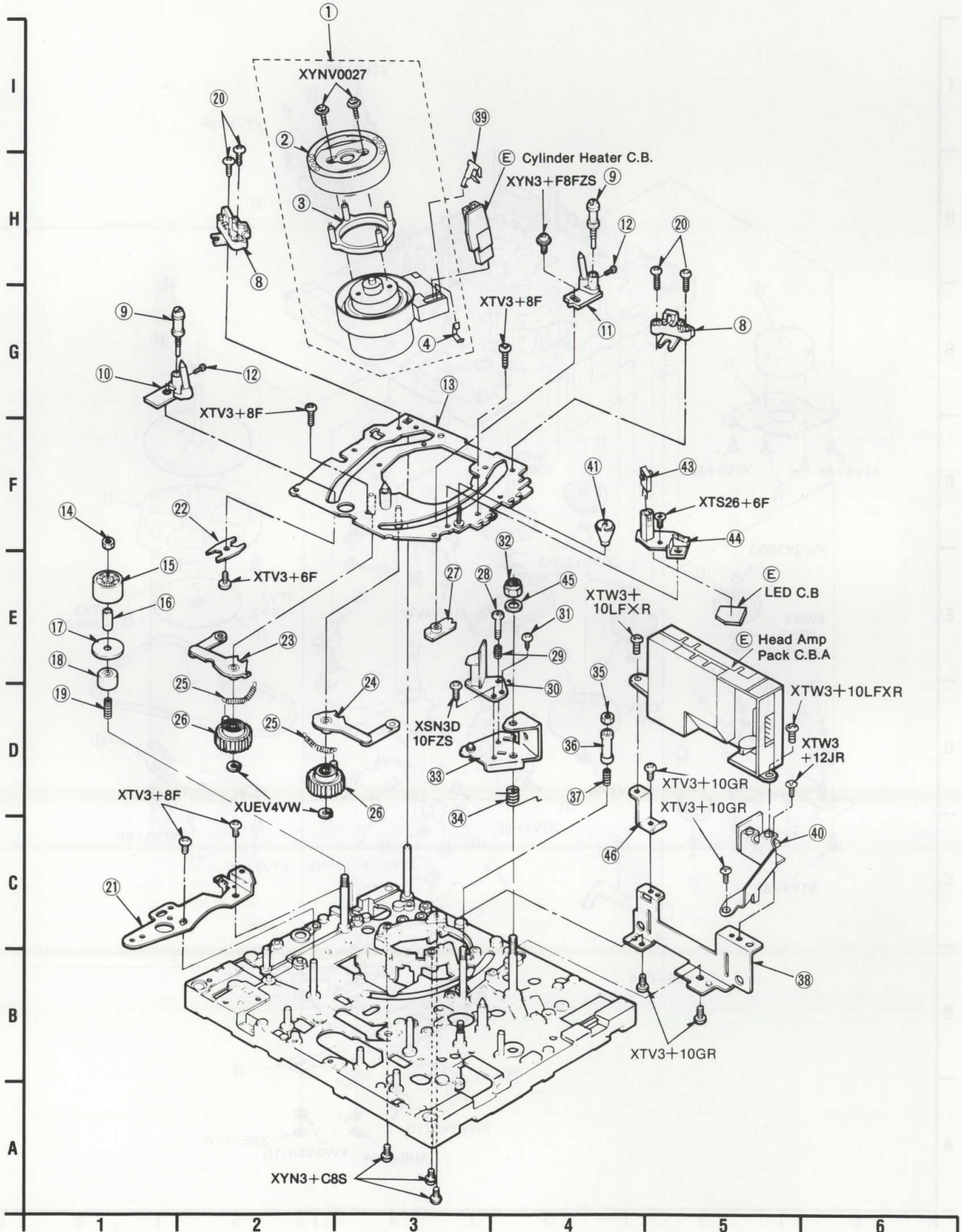


NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

**IMPORTANT SAFETY NOTICE:**  
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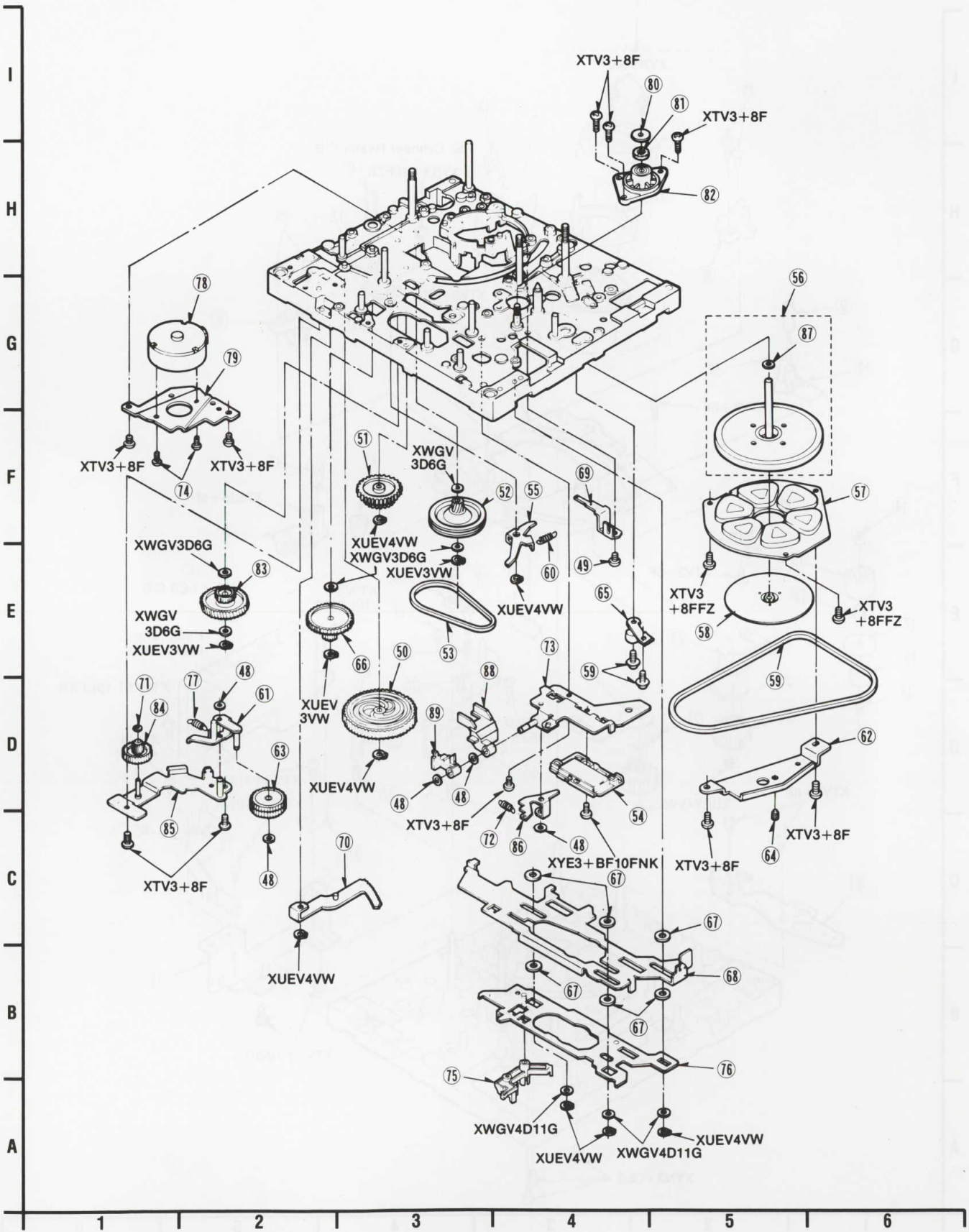
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# EXPLODED VIEWS 1 Transport Section



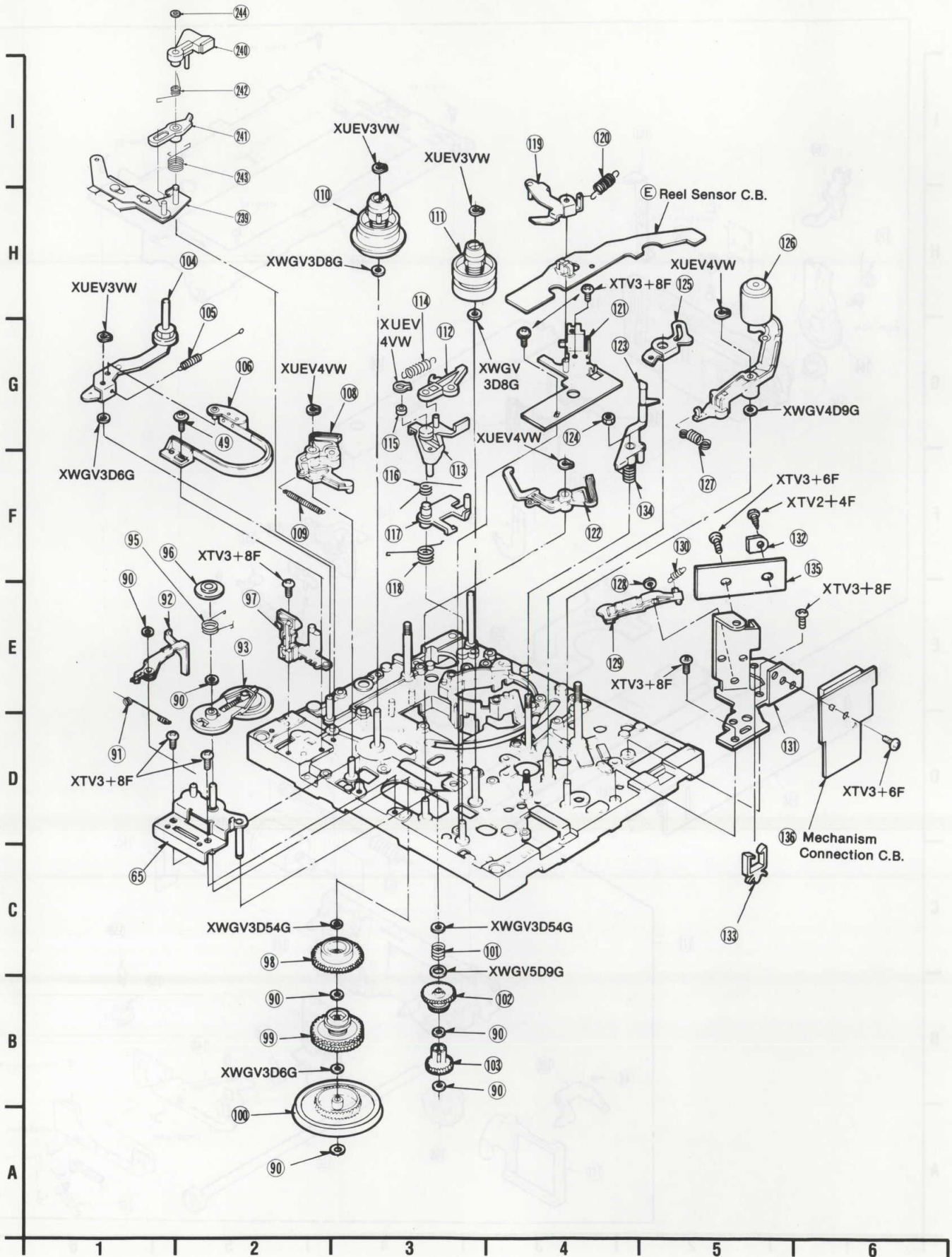
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## 2 Moving Mechanism Section



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# 3 Chassis Parts Section

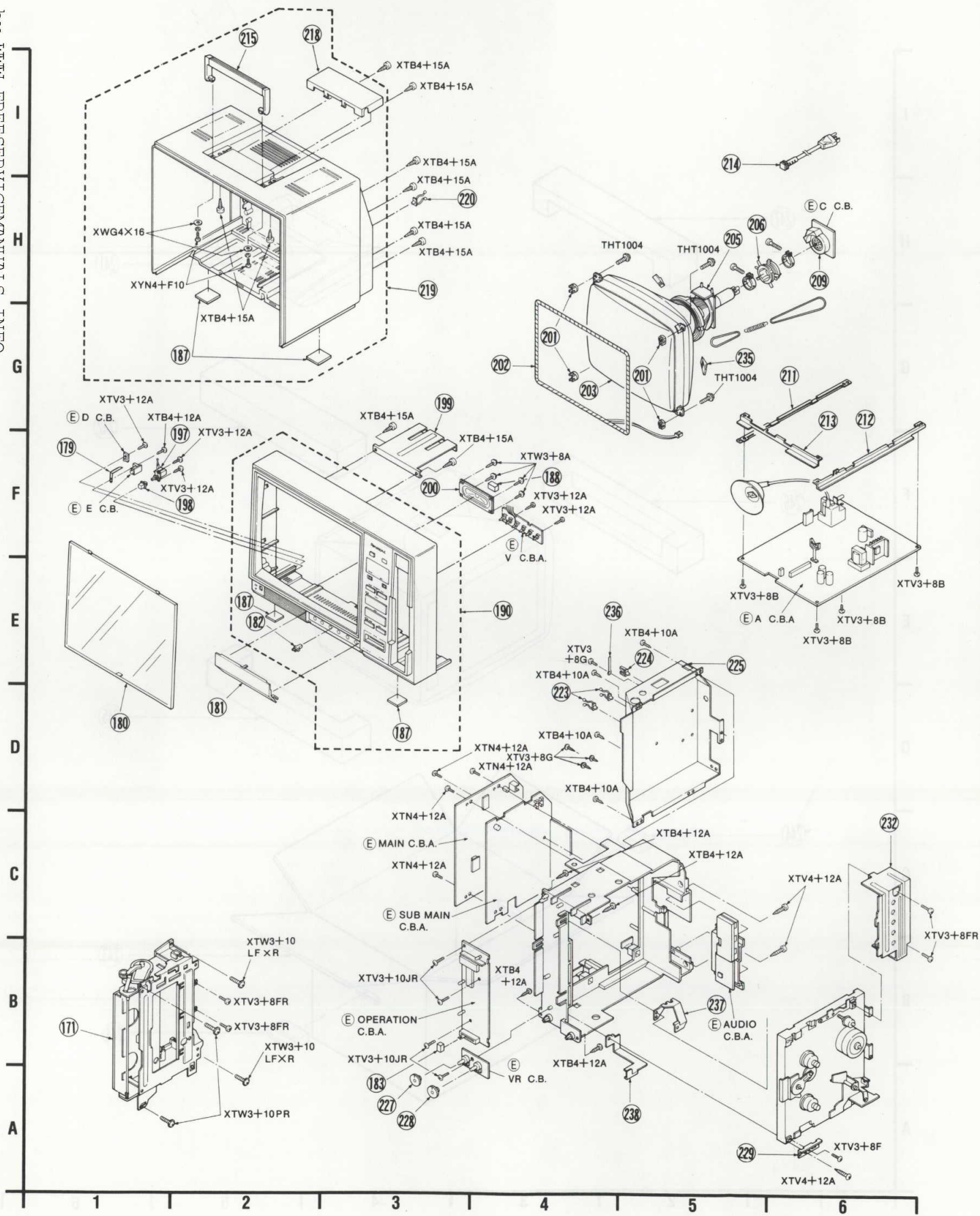






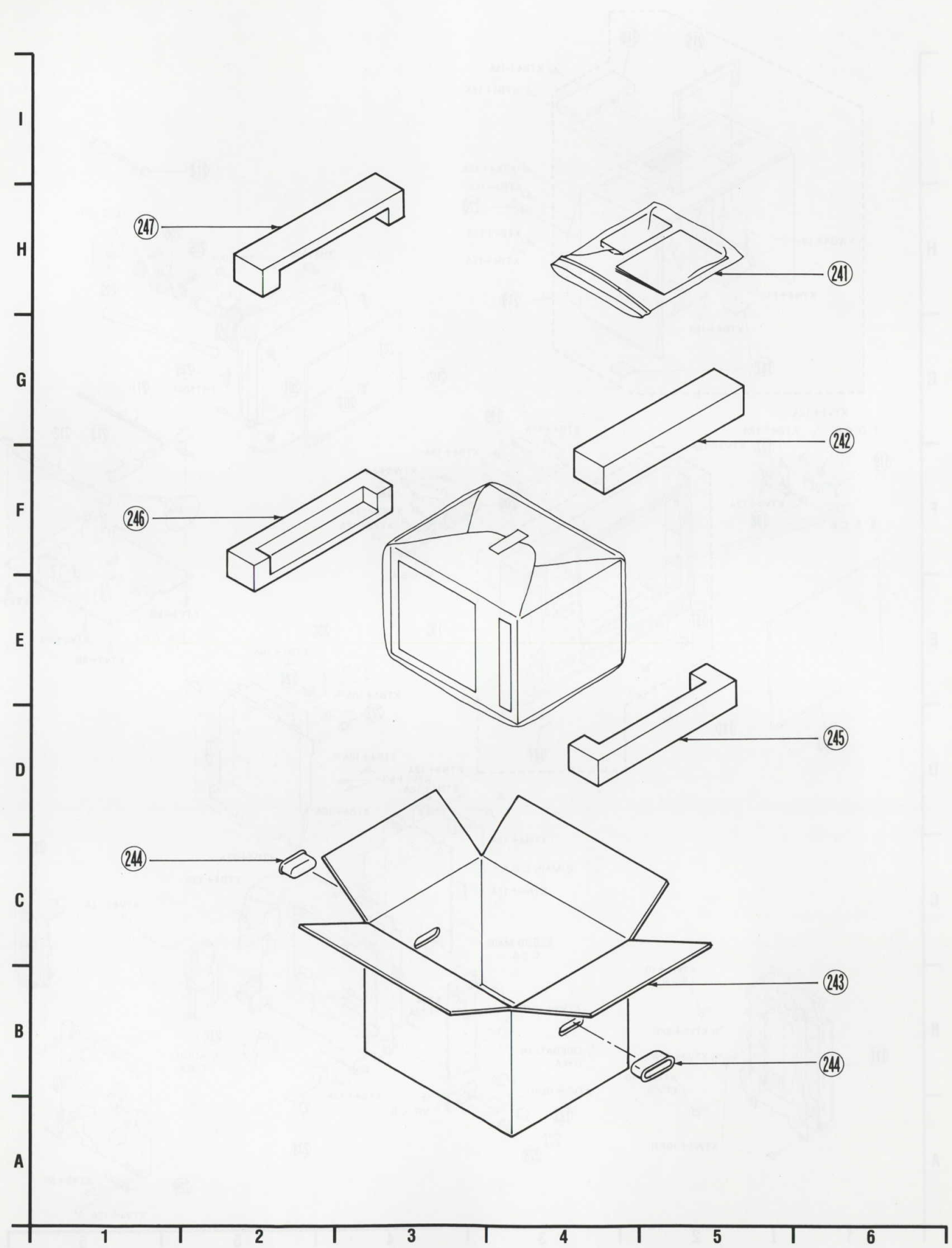
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# 5 Casing Parts Section



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# 6 Packing Parts Section



**National/Panasonic**  
Professional/Industrial Video

PAL

**AG-500**  
-E  
-A  
-B  
-EN

# Replacement Parts List

**Notes:**

- \* Be sure to make your orders of replacement parts according to this list.  
\* "R" in Remark column indicates recomend parts for stocking.
- IMPORTANT SAFETY NOTICE**  
Components identified by "<!>" have special characteristics important for safety.  
When replacing any of these components, Use only the original ones.  
Meaning of simbol <!> on this parts list is exactly same as simbol  $\Delta$  on Schematic and Circuit Board Diagrams.
- Unless otherwise specified;  
All resistors are in OHMS ( $\Omega$ ), K=1,000 $\Omega$ , M=1,000K $\Omega$ .  
All capacitors are in MICROFARADS ( $\mu$ F), P= $\mu\mu$ F.
- C.B.A. or C.B. marked with "■" show below the main assembl'd parts.
- When ordering parts, use part No. only from Part No. colmn.
- This parts list is detouchable from the Service Manual.

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# MECHANICAL REPLACEMENT PARTS LIST

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1(1)	VEG0352	DD CYLINDER UNIT	1	<1><R>
2(1)	VEH0287	UPPER CYLINDER UNIT	1	<R>
3(1)	VJRO082	RT TERMINAL	1	
4(1)	VMCO049	CYLINDER HEATER PRESSURE SPRING	1	
8(1)	VMD0797	POST STOPPER	2	
9(1)	VXPO302A	ROLLER POST UNIT	2	<R>
10(1)	VXA2438	INCLIND BASE(S) UNIT	1	
11(1)	VXA2439	INCLIND BASE(T) UNIT	1	
12(1)	VHDO133	SCREW	2	
13(1)	VXA2445	LOADING BASE (1) UNIT	1	
14(1)	VHDO045	NYLON NUT	1	
15(1)	VDP0908	LIMITER ROLLER	1	
16(1)	VMX0541	COLLAR	1	
17(1)	VMX0456	LOWER LIMITER	1	
18(1)	VMX0663	LIMITER STAND	1	
19(1)	VMB0754	PISPRING	1	
20(1)	VHDO147	SCREW	4	
21(1)	VMA6840	POSITION PLATE	1	
22(1)	VMA6759	SHAFT HOLDER STOPPER(A)	1	
23(1)	VXL0753	LOADING ARM (L) UNIT	1	
24(1)	VXL1152	LOADING ARM (R) UNIT	1	
25(1)	VMB0669	LOADING SPRING	2	
26(1)	VXPO520	LOADING GEAR UNIT	2	
27(1)	VXA1966	INCLIND ADJUSTMENT PLATE	1	
28(1)	VHDO054	ADJUSTMENT SCREW	1	
29(1)	VMB1251	ADJUSTMENT SPRING	1	
30(1)	VBRO091	A/C HEAD	1	<R>
31(1)	VHDO089B	AZIMUTH ADJUSTMENT SCREW	1	
32(1)	VHNO038	M5 NYLON NUT	1	
33(1)	VXA2160	HEAD BASE UNIT	1	
34(1)	VMB1189	A/C HEIGHT SPPING	1	
35(1,2)	VHNO023	M3 NYLON NUT	2	
36(1)	VMX0647	POST SLEEVE	1	
37(1)	VMB1235	P4 POST SPPING	1	
38(1)	VMA6507	CHASSIS BRACKET	1	
39(1)	VMCO117	EARTH SPRING	1	
40(1)	VMA6819	HA ANGLE(R)	1	
41(1)	VHNO050	X ADJUSTMENT NUT	1	
43(1)	GL450	PHOTO DIODE	1	OR LN59
44(1)	VMD0644	LED HOLDER	1	
45(1)	VMX0750	SPACER	1	
46(1)	VMA6717	HA ANGLE (L)	1	OR VMA6508
48(2)	VMX0653	CUT WASHER	5	
49(2,3)	VHDO149	SCREW	3	OR THDO149 M3X8
50(2)	VDGO200	CAM GEAR	1	
51(2)	VDGO278	DRIVE GEAR (2)	1	
52(2)	VDGO275	INTERMEDIATE PULLEY GEAR	1	
53(2)	VDVO158	LOADING BELT	1	<R>
54(2)	VSS0135	MODE SELECT SWITCH	1	<R>
55(2)	VML1618	SUB CLUTCH RELEASE ARM	1	
56(2)	VXPO695	CAPSTAN ROTOR UNIT	1	<R>
57(2)	VEK2634	CAPSTAN STATOR UNIT	1	<1><R>
58(2)	VXPO597	CAPSTAN PULLEY UNIT	1	<R>
59(2)	VDVO149	CAPSTAN BELT	1	<R>
60(2)	VMB1296	SUB LEVER SPRING	1	<R>
61(2)	VXL1237	SUB CLUTCH ARM (1) UNIT	1	
62(2)	VMA6504	THRUST SUPPORT PLATE	1	
63(2)	VXPO601	SUB CLUTCH UNIT	1	
64(2)	VMX0742	THRUST SCREW	1	
65(2)	VEH0275	PG HEAD UNIT	1	<R>
66(2)	VDGO145	INTERMEDIATE GEAR	1	
67(2)	VMX0122	SLIDE WASHR	6	
68(2)	VXL1373	MAIN LEVER UNIT	1	
69(2)	VXS0059	EARTH PLATE UNIT	1	
70(2)	VXL1377	SECTOR GEAR UNIT	1	
71(2)	VMX0967	CUT WASHER	1	
72(2)	VMB1295	SELECT ARM SPRING	1	
73(2)	VXA2469	SWITCH BASE UNIT	1	
74(2)	VHDO267	SCREW	2	
75(2)	VXL1376	KICK ARM UNIT	1	
76(2)	VXL1375	SUB LEVER (1) UNIT	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
77(2)	VMB1294	SUB CLUTCH ARM SPRING	1	
78(2)	VEM0242	LOADING MOTOR	1	<1><R>
79(2)	VMA6765	LOADING MOTOR BRACKET	1	
80(2)	VMX0251	OIL SEAL	1	
81(2)	VMD0104	OIL POOL	1	
82(2)	VXDO092	HOUSING UNIT	1	
83(2)	VDGO146	INTERMEDIATE GEAR	1	
84(2)	VDGO178	KICK GEAR	1	
85(2)	VXA2443	SUB CLUTCH BASE (1) UNIT	1	
86(2)	VML1763	SELECT ARM (A)	1	
87(2)	VMX0265	THRUST WASHER	1	
88(2)	VML1616	SELECT ARM (B)	1	
89(2)	VML1624	SELECT PRESSURE LEVER	1	
90(3)	VMX0653	CUT WASHER	5	
91(3)	VMB1198	S SOFT BRAKE SPRING	1	
92(3)	VML1757	S SOFT BRAKE ARM	1	<R>
93(3)	VXPO521	REEL IDLER ARM UNIT	1	<R>
94(3)	VXA2153	FF LEVER BASE UNIT	1	
95(3)	VMB1496	IDLER BALANCER SPRING	1	
96(3)	VMD0844	IDLER SHAFT CAP	1	
97(3)	VESO262	SAFETY SWITCH UNIT	1	
98(3)	VXPO599	CLUTCH GEAR UNIT	1	<R>
99(3)	VXPO600	CENTER CLUTCH UNIT	1	<R>
100(3)	VDPO985	CLUTCH PULLEY	1	
101(3)	VMB1288	INTERMEDIATE GEAR LIFT SPRING		
102(3)	VDGO188	INTERMEDIATE GEAR (B)		
103(3)	VDGO189	INTERMEDIATE GEAR (A)		
104(3)	VXL1418	TENSION ARM (1) UNIT	1	
105(3)	VMB1497	TENSION SPRING	1	
106(3)	VXZ0165	TENSION BAND UNIT	1	<R>
108(3)	VXZ0186	S SIDE MAIN BRAKE UNIT	1	<R>
109(3)	VMB1289	MAIN BRAKE SPRING	1	
110(3)	VXRO118	SUPPLY REEL TABLE UNIT	1	<R>
111(3)	VXRO136	TAKE-UP REEL TABLE UNIT	1	<R>
112(3)	VXZ0210	T SOFT BRAKE (2) UNIT	1	<R>
113(3)	VXZ0209	T SOFT BRAKE (1) UNIT	1	<R>
114(3)	VMB1455	SOFT BRAKE SPRING (2)	1	
115(3)	VMX0743	STOPPER RING	1	
116(3)	VMB1454	SOFT BRAKE SPRING (1)	1	
117(3)	VML1760	SOFT BRAKE RELEASE LEVER	1	
118(3)	VMB1471	SOFT BRAKE SPRING (3)	1	
119(3)	VXL1230	IDLER STOPPER UNIT	1	<R>
120(3)	VMB1293	IDLER STOPPER SPRING	1	
121(3)	VXA2464	INTERMEDIATE ANGLE (1) UNIT	1	
122(3)	VXZ0189	T SIDE MAIN BRAKE UNIT	1	
123(3)	VXL1244	P5 ARM UNIT	1	
124(3)	VHNO023	M3 NYLON NUT	1	
125(3)	VML1754	P5 PULL OUT LEVER	1	
126(3)	VXL1371	PRESSURE ROLLER LEVER UNIT	1	<R>
127(3)	VMB1001	PIN PRESSURE SPRING	1	
128(3)	VMX0653	CUT WASHER	1+4	
129(3)	VXZ0185	CAPSTAN BRAKE (A) UNIT	1	<R>
130(3)	VMB1292	CAPSTAN BRAKE ARM SPRING	1	(1)
131(3)	VXA2592	DEW ANGLE (1) UNIT	1	
132(3)	VEK2604	DEW SENSOR UNIT	1	<R>
133(3)	VJFO004	WIRE SADDLE	1	
134(3)	VMB1307	P5 SPRING	1	
135(3)	VMA6828	DEW SENSOR PLATE	1	
136(4)	VDGO274	SHAFT GEAR (L)	1	
137(4)	VXA2431	HOLDER GUIDE (L) (1) UNIT	1	
138(4)	VXA2426	SIDE PLATE (L) UNIT	1	
139(4)	VMB1456	SAFETY LEVER SPRING	1	
140(4)	VXA2428	HOLDER GUIDE (R) (1) UNIT	1	
141(4)	VMA6767	CASSETTE GUIDE	1	
142(4)	VSC1577	SHIELD BRACKET (R)	1	
143(4)	VMD0152	SAFETY LEVER	1	
144(4)	VML1585	RELEASE LEVER	1	
145(4)	VMB1259	RELEASE LEVER SPRING	1	
146(4)	VXL1246	PRESSURE LEVER (L) UNIT	1	

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ELECTRICAL REPLACEMENT PARTS LIST

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
147(4)	VXA2430	SLIDER (R) (1) UNIT	1	
148(4)	VMA6760	SWITCH BRACKET	1	
149(4)	VXA2423	SIDE PLATE (R) (1) UNIT	1	
150(4)	VXP0692	MAIN SHAFT UNIT	1	
151(4)	VXL1247	PRESSURE LEVER (R) UNIT	1	
152(4)	VMD0645	PHOTO HOLDER	2	
153(4)	VXP0693	WORM SHAFT UNIT	1	
154(4)	VKFO823	BLINDER PANEL	1 <R>	
155(4)	VML1756	WIPER ARM (R)	1	
156(4)	VMB1300	WIPER SPRING (R)	1	
157(4)	VEMO243	FRONT LOADING MOTOR	1 <!><R>	
158(4)	VXP0691	WORM WHEEL UNIT	1	
159(4)	PN150NV	PHOTO Tr.	2	
160(4)	VML1625	FRONT OPENER LEVER	1	
161(4)	VMB1391	BLINDER SPRING	1	
162(4)	VSH0028	SKELTON SWITCH	2	
163(4)	VSC1578	SHIELD BRACKET (L)	1	
164(4)	VML1620	WIPER ARM (L)	1	
165(4)	VXL1366	CASSETTE OPENER UNIT	1	
166(4)	VMB1257	PRESSURE LEVER SPRING	2	
167(4)	VMA6766	TOP PLATE	1	
168(4)	VXA2181	HOLDER ANGLE UNIT	1	
169(4)	VMA6761	CASSETTE HOLDER	1	
170(4)	VMB1301	WIPER SPRING (L)	1	
171(4)	VXA2575	CASSETTE UP UNIT	1	
179(5)	VMZ0907	EARTH ANGLE	1	
180(5)	VKW0652	FRONT BOARD	1 <R>	
181(5)	VKFO688	FRONT DOOR UNIT	1 <R>	
182(5)	TEK17918	FRONT DOOR CATCHER	1 <R>	
183(5)	VGU2824	VOLUME KNOB	1 <R>	
187(5)	VKA0056	RUBBER	4	
188(5)	TSN63113	MAGNET	1	
190(5)	VYK1370	FRONT CABINET U	1 AG-500-E,B <R>	
190(5)	VYK1369	FRONT CABINET U	1 AG-500-EN,A <R>	
197(5)	ESB70557S	POWER SWITCH	1 <!><R>	
198(5)	VGU2823	POWER SWITCH KNOB	1 <R>	
199(5)	VMP0874	TOP PANEL FIXTURES	1	
200(5)	EAS-9DO4D	SPEAKER	1 <R>	
201(5)	TMM17579	CRT SPACER	4	
202(5)	PALK35951N	DEGAUSS COIL	1 <!><R>	
203(5)	A26JG201X	CRT	1 <!><R>	
203(5)	A26JG203X	CRT	1 <!><R>	
205(5)	PALY35302F	DEFLECTION YOKE	1 <!><R>	
206(5)	ETC26X1A	CONVERGENCE YOKE	1 <R>	
209(5)	TJS35161	CRT SOCKET	1 <!>	
211(5)	VMP0876	SIDE PANEL FIXTURE (L)	1	
212(5)	VMP0875	SIDE PANEL FIXTURE (R)	1	
213(5)	VMP0877	FRONT PANEL FIXTURE	1 <!>	
214(5)	VJA0372	AC CORD	1 AG-500-E,EN <!><R>	
214(5)	VJA0373	AC CORD	1 AG-500-B <!><R>	
214(5)	VJA0374	AC CORD	1 AG-500-A <!><R>	
215(5)	VYH0073	HANDLE U	1 <R>	
218(5)	VKFO690	HANDLE BASE COVER	1	
219(5)	VYK1371	BACK CABINET U	1 AG-500-E,B,A <R>	
219(5)	VYK1445	BACK CABINET U	1 AG-500-EN <R>	
220(5)	TMM7464	CLAMPER	1	
223(5)	VJF0343	CLAMPER	2	
224(5)	VJF0004	WIRE SADDLE	1	
225(5)	VXA2587	SHIELD CASE U	1	
227(5)	VGU2859	SLOW TRACKING KNOB	1 <R>	
228(5)	VGU2858	TRACKING KNOB	1 <R>	
229(5)	VMA6842	MOUNT PLATE	1	
232(5)	VSC1555	SHIELD CASE	1	
235(5)	TMM17538	DY WEDGE	3	
236(5)	VJR3	CLAMPER	1	
237(5)	VSC1175	SHIELD PLATE (L)	1	
238(5)	VSC1554	SHIELD PLATE (R)	1	
239(5)	VXZ0214	S SOFT BRAKE (1) (U)	1	
240(5)	VXZ0215	S SOFT BRAKE LEVER U	1	
241(5)	VML1793	BRAKE RELEASE LEVER	1	
242(5)	VMB1494	SOFT BRAKE SPRING	1	
243(5)	VMB1495	SOFT BRAKE RELEASE SPRING	1	
244(5)	VMX0653	WASHER	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
241(6)	VQF1826	FAN BAG KIT	1	AG-500-E ONLY
				<!><R>
241(6)	VQF1827	FAN BAG KIT	1	AG-500-B,A,EN
				<!><R>
242(6)	VPN1414	CUSHION (UPPER RIGHT)	1	<R>
243(6)	VPG2846	PACKING CASE	1	AG-500-E <R>
243(6)	VPG2847	PACKING CASE	1	AG-500-B <R>
243(6)	VPG2849	PACKING CASE	1	AG-500-A <R>
243(6)	VPG2848	PACKING CASE	1	AG-500-EN <R>
244(6)	VFP0149	HANDLE	2	
245(6)	VPN1416	CUSHION (DOWN RIGHT)	1	<R>
246(6)	VPN1417	CUSHION (DOWN LEFT)	1	<R>
247(6)	VPN1415	CUSHION (UPPER LEFT)	1	<R>

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# ELECTRICAL REPLACEMENT PARTS LIST

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP93069	A C.B.A.	1	AG-500-E <!> <R>
	VEP93069B	A C.B.A.	1	AG-500-B <!> <R>
	VEP93069A	A C.B.A.	1	AG-500-A <!> <R>
	VEP93069N	A C.B.A.	1	AG-500-EN <!> <R>
	VEP93070	C C.B.A.	1	<R>
	VEP93071	V C.B.A.	1	<R>
	VEP02228A	MAIN C.B.A.	1	<R>
	VEP03344A	SUB MAIN C.B.A.	1	<R>
	VEP03374A	LUMINANCE & CHROMINANCE PACK C.B.A.	1	<R>
	VEP04167A	AUDIO C.B.A.	1	<R>
	VEP05082	HEAD AMP C.B.A.	1	<R>
	VEP06339C	OPERATION C.B.A.	1	<R>
	VEP00C55B	IR REMOTE CONTROL C.B.A.	1	<R>
F9801	XBA1F25NU14A	FUSE 125V 2.5A	1	<!><R>
F9802	XBA1C30NU100	FUSE 125V 3A	1	<!><R>
F3001	XBA1C12NS5	FUSE 125V 1.2A	1	<!><R>
F3002	XBA1C025NS5	FUSE 125V 0.25A	1	<!><R>
	VEP93069	A C.B.A.		
		INTEGRATED CIRCUITS		
IC9201	AN7140		1	<R>
IC9301	AN5615		1	<R>
IC9401	AN5436N		1	<!><R>
IC9402	AN5515X		1	<R>
IC9601	AN5625N		1	<R>
		TRANSISTORS		
Q9301	2SB641		1	(R, S, T) <R>
Q9302	2SD636		1	(R, S, T) <R>
Q9303	2SB641		1	(R, S, T) <R>
Q9306	2SB643		1	<R>
Q9501	2SC1473AH		1	(Q, R) <R>
Q9502	2SD1439		1	(Q) <!> <R>
Q9503	2SD636		1	(R, S, T) <R>
Q9601	2SD637		1	<R>
Q9801	2SC3577		1	<!> <R>
Q9802	2SA900		1	(Q, R, S) <R>
Q9803	2SD636		1	(R, S, T) <R>
Q9804	2SD1244		1	<R>
		DIODES		
D9302	MA165		1	<R>
D9303	OA90G		1	<R>
D9304	MA165		1	<R>
D9305	MA27TB		1	<R>
D9306	1S2076		1	<R>
D9308	1SS119		4	<R>
D9309	MA165		1	<R>
D9401	RD15EB3		1	<R>
D9402	RM12M		1	<R>
D9404	MA27		1	<R>
D9405	RD20EB1		1	<R>
D9501	MA165		1	<R>
D9502	RD9.1EB2		1	<R>
D9503	MA166		1	<R>
D9504	MA166		1	<R>
D9505	EU22		1	<R>
D9506	ES1		1	<R>
D9507	RH1		1	<R>
D9508	MA27WA		1	<R>
D9509	RD12EBN		1	<!> <R>
D9510	MA165		1	<R>
D9511	MA4030M		1	<R>
D9512, 9513	RD6.2FB2		2	<R>
D9514	RH2F		1	<R>
D9515	EU2		1	<R>
D9516	ERT-A09D203H		1	<R>
D9601	MA165		1	<R>
D9602	MA165		1	<R>
D9801-9804	RM11B		4	<!> <R>
D9805	ES1		1	<R>
D9806	MA1062L		1	<!> <R>
D9807, 9808	ES1		2	<R>
D9809	RU3B		1	<R>
D9810	RU3B		1	<!> <R>
D9811	ERPW5B0N120A		1	<!> <R>
D9812	R2KN-1		1	<!> <R>
D9814	ES-12		1	<R>
D9815	RU-22		1	<R>
D9816	ES12		1	<R>
D9817	ES12		1	<R>
D9819	R2KN1		1	<R>
D9820	EQB0105		1	<R>
D9821	RD15EB2		1	<R>
D9822	1SS119		1	<R>
D9824	MA150		1	<R>
		RESISTORS		
R9202	ERD25TLJ222	2.2K	1	
R9203	ERDS1TJ471	47	1	
R9206	ERD25TLJ2R2	2.2	1	
R9207	ERD25TLJ820	82	1	
R9208	ERD25TLJ473	47K	1	
R9209	ERD25TLJ332	3.3K	1	
R9301	ERD25TLJ750	75	1	
R9302	ERD25TLJ101	100	1	
R9303	ERD25TLJ152	1.5K	1	
R9304	ERD25TLJ470	47	1	
R9306	ERD25TLJ224	220K	1	
R9307	ERD25TLJ821	820	1	
R9308	ERD25TLJ272	2.7K	1	
R9309	ERD25TLJ271	270	1	
R9310	ERD25TLJ471	470	1	
R9311	ERD25TLJ471	470	1	
R9312	ERD25TLJ222	2.2K	1	
R9313	ERD25TLJ221	220	1	
R9314	ERD25TLJ101	100	1	
R9315	ERD25TLJ102	1K	1	
R9316	ERD25TLJ182	1.8K	1	
R9317	ERD25TLJ392	3.9K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R9318	EVN60AA00B23	VARIABLE	2K	1
R9327	EVN60AA00B53	VARIABLE	5K	1
R9328	ERD25TLJ682		6.8K	1
R9330	ERD25TLJ123		12K	1
R9332	ERD25TLJ561		560	1
R9333	ERD25TLJ822		8.2K	1
R9334	ERD25TLJ222		2.2K	1
R9335	ERD25TLJ102		1K	1
R9336	ERD25TLJ561		56	1
R9340	ERD25TLJ682		6.8K	1
R9341	ERD25TLJ392		3.9K	1
R9342	ERD25TLJ473		47K	1
R9343	ERD25TLJ563		56K	1
R9344	ERD25TLJ273		27K	1
R9370	ERD25TLJ562		5.6K	1
R9371	ERD25TLJ822		8.2K	1
R9402	ERD25TLJ103		10K	1
R9403	ERD25TLJ272		2.7K	1
R9404	ERQ12AJ271P		270	1 <I><R>
R9405	ERD25TLJ681		680	1
R9406	ERD25TLJ472		4.7K	1
R9407	ERD25TLJ183		18K	1
R9408	ERD25TLJ103		10K	1
R9409	ERD25TLJ101		100	1
R9410	EVN60AA00B32	VARIABLE	300	1
R9411	ERQ12AJ2R7P		2.7	1 <I><R>
R9412	ERDS1TJ222		2.2K	1
R9413	ERDS1TJ222		2.2K	1
R9414	ERDS1TJ222		2.2K	1 AG-500-E.B. EN
R9414	ERDS1TJ681		680	1 AG-500-A
R9415	TSF19631		1	1
R9419	ERD25TLJ101		100	1
R9422	ERD25TLJ333		33K	1
R9501	ERD25TLJ471		470	1
R9502	ERD25TLJ392		3.9K	1
R9503	ERD25TLJ564		560K	1
R9504	ERDS1TJ152		1.5K	1
R9505	ERDS1TJ681		680	1
R9506	ERD25TLJ123		12K	1
R9507	ERD25TLJ222		2.2K	1
R9508	EVN60AA00B23	VARIABLE	2K	1
R9509	ERD25TLJ561		560	1
R9510	ERD25TLJ271		270	1
R9511	ERG2ANJ123		12K	1
R9512	ERD25TLJ222		2.2K	1
R9513	ERGISJ562		5.6K	1
R9514	ERG3SJ182		1.8K	1
R9515	EVN60AA00B14	VARIABLE	10K	1
R9516	ERQ1AJ4P471S		470	1 <I><R>
R9517	ERQ12HJ1ROP		1	1 <I><R>
R9518	ERG3SJ681		680	1
R9519	ERQ12HJ1ROP		1	1 <I><R>
R9521	ERQ14AJ4R7P		4.7	1 <I><R>
R9522	ERO25CKF2151		2.15K	1 <I><R>
R9523	ERO25CKF3741		3.74K	1 <I><R>
R9524, 9525	ERD25TLJ103		10K	2
R9526	ERQ14AJ2R2P		2.2	1 <I><R>
R9527	ERD25TLJ223		22K	1
R9528	ERD25TLJ221		22	1
R9529	ERG3SJ151		15	1
R9530	ERD25TLJ182		1.8K	1
R9531	ERG3SJ151		15	1
R9533	ERGISJ223		22K	1
R9534	ERD25TLJ331		330	1
R9574	ERQ12HJ3R9P		3.9	1 <I><R>
R9575	ERD25TLJ221		220	1
R9601	ERD25TLJ822		8.2K	1
R9602	ERD25TLJ221		220	1
R9603	ERD25TLJ391		390	1
R9604	EVN60AA00B23	VARIABLE	2K	1
R9605	ERD25TLJ471		470	1
R9606	ERD25TLJ103		10K	1
R9607	ERD25TLJ391		390	1
R9608	ERD25TLJ224		220K	1
R9609	ERD25TLJ100		10	1

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R9610	ERD25TLJ822		8.2K	1
R9611	ERD25TLJ471		470	1
R9612	ERD25TLJ101		100	1
R9613	ERD25TLJ824		820K	1
R9614	ERD25TLJ561		560	1
R9615	ERD25TLJ104		100K	1
R9616	EVN60AA00B14	VARIABLE	10K	1
R9617	ERD25TLJ221		220	1
R9618	ERD25TLJ332		3.3K	1
R9619	ERD25TLJ821		820	1
R9620	EVN60AA00B15	VARIABLE	100K	1
R9621	ERD25TLJ473		47K	1
R9624	ERD25TLJ332		3.3K	1
R9801	ERF7ZKBR2		8.2	1 <I>
R9802	ERG3ANJ683		68K	1
R9803	ERQ12HJ1ROP		1	1 <I><R>
R9804	ERG2SJ221		220	1
R9805	ERQ14AJ471P		470	1 <I><R>
R9806	ERO25LKF1691		1.69K	1 <I><R>
R9807	EVN61AA00B14	VARIABLE	10K	1 <I><R>
R9808	ERO25LKF2671		2.67K	1 <I><R>
R9809	ERGISJ221		220	1
R9810	ERGISJ331		330	1
R9811	ERG2AN330		33	1
R9813	ERX1ANJR47		0.47	1
R9814	ERG2ANJ223		22K	1
R9815	ERD25TLJ102		1K	1 <I><R>
R9816	ERD25TLJ102		1K	1
R9817	ERCL2GJ335		3300K	1
R9818	ERD25TLJ561		560	1 <I><R>
R9819	ERO25LKF2671		2.67K	1 <I><R>
CAPACITORS				
C9201	ECEA1CU100	ELECTROLYTIC 16V	10	1
C9203	ECQM1H104KV	MYLAR 50V	0.1	1
C9204	ECEA1CU470	ELECTROLYTIC 16V	47	1
C9205	ECEA1AU470	ELECTROLYTIC 10V	47	1
C9206	ECEA1EU470	ELECTROLYTIC 25V	47	1
C9207	ECEA1EU102	ELECTROLYTIC 25V	1000	1
C9208	ECEA1EU471	ELECTROLYTIC 25V	470	1
C9209	ECQM1H392KV	MYLAR 50V	3900	1
C9301	ECQM1H823KV	MYLAR 50V	0.082	1
C9302	ECEA1CU101	ELECTROLYTIC 16V	100	1
C9303	ECKF1H1032F	CERAMIC 50V	0.01	1
C9306	ECEA1CN100	ELECTROLYTIC 16V	10	1
C9307	ECEA1CN220	ELECTROLYTIC 16V	22	1
C9308	ECEA1CU100	ELECTROLYTIC 16V	10	1
C9309	ECEA1HN010	ELECTROLYTIC 50V	1	1
C9313	ECEA1CU222	ELECTROLYTIC 16V	2200	1
C9315	ECEA1CU101	ELECTROLYTIC 16V	100	1
C9316	ECCF1H560J	CERAMIC 50V	56P	1
C9402	ECQM1H333KV	MYLAR 50V	0.03	1
C9403	ECSZ25EF2R2	TANTALUM 25V	2.2	1
C9404	ECSZ16EF4R7	TANTALUM 16V	4.7	1
C9405	ECEA1CU221	ELECTROLYTIC 16V	220	1
C9406	ECQM1H104KV	MYLAR 50V	0.1	1
C9407	ECKF1H472KB	CERAMIC 50V	4700P	1
C9408	ECEA1EU101	ELECTROLYTIC 25V	100	1
C9409	ECKF1H1032F	CERAMIC 50V	0.01	1
C9411	ECEA1EU100	ELECTROLYTIC 25V	10	1
C9412	ECEA1HU4R7	ELECTROLYTIC 50V	4.7	1
C9413	ECEA1CU222	ELECTROLYTIC 16V	2200	1
C9416	ECEA1HN010	ELECTROLYTIC 50V	1	1
C9417	ECQM1H472KV	MYLAR 50V	4700P	1
C9419	ECEA1HU010	50V	1	1
C9503	ECQM1H153KV	MYLAR 50V	0.015	1
C9504	ECQM1H153KV	MYLAR 50V	0.015	1
C9505	ECQM1H333KV	MYLAR 50V	0.033	1
C9506	ECEA1HU2R2	ELECTROLYTIC 50V	2.2	1
C9507	ECQM1682J2	MYLAR 100V	6800P	1
C9508	ECEA1CU470	ELECTROLYTIC 16V	47	1
C9509	ECKD3D222JB	CERAMIC 2KV	2200P	1 <I><R>
C9510, 9511	ECKD3D222JB	CERAMIC 2KV	2200P	2 <I><R>
C9512	ECKD3D182JB	CERAMIC 2KV	1800P	1

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C9513	ECKD3D222JB	CERAMIC 2KV 2200P	1	
C9514	ECEA2VS010	ELECTROLYTIC 350V 1	1	
C9515	ECEA1VU101	ELECTROLYTIC 35V 100	1	
C9516	ECKD2H222KB	CERAMIC 100V 2200P	1	
C9517	ECEA1VU102	ELECTROLYTIC 35V 1000	1	
C9518	ECEA1VU220	ELECTROLYTIC 35V 22	1	
C9519	ECEA2AN100S	ELECTROLYTIC 100V 10	1	
C9521	ECKD2H472KB	CERAMIC 100V 4700P	1	
C9522	ECEA2CS101	ELECTROLYTIC 160V 100	1	
C9523	ECQM2273KZ	MYLAR	1	
C9524	ECEA1HCU100	ELECTROLYTIC 16V 10	1	
C9525	ECEA1HN010	ELECTROLYTIC 50V 1	1	
C9526	ECEA1CU100	ELECTROLYTIC 16V 10	1	
C9527	ECEA1HU2R2	ELECTROLYTIC 50V 2.2	1	
C9528	ECKF1H681KB	CERAMIC 50V 680P	1	
C9601	ECQM1H272KV	MYLAR 50V 2700P	1	
C9602	ECKF1H121KB	CERAMIC 50V 12P	1	
C9603	ECCF1H390J	CERAMIC 50V 39P	1	
C9604	ECCF1H270J	CERAMIC 50V 27P	1	
C9605	ECCF1H101J	CERAMIC 50V 10P	1	
C9608, 9609	ECKF1H221KB	CERAMIC 50V 220P	2	
C9610	ECKF1H221KB	CERAMIC 50V 220P	1	
C9611	ECQM1H273KV	MYLAR 50V 0.027	1	
C9612	ECKF1H1032F	CERAMIC 50V 0.01	1	
C9613	ECCF1H820J	CERAMIC 50V 82P	1	
C9615	ECEA1CU101	ELECTROLYTIC 16V 100	1	
C9616	ECEA1HUR47	ELECTROLYTIC 50V 0.47	1	
C9617	ECCF1H330J	CERAMIC 50V 33P	1	
C9618	ECCF1H330J	CERAMIC 50V 33P	1	
C9619	ECEA50ZR15	ELECTROLYTIC 50V 0.1	1	
C9620	ECQM1H822KV	MYLAR 50V 8200P	1	
C9621	ECEA1EN3R3	ELECTROLYTIC 25V 3.3	1	
C9622	ECKF1H331KB	CERAMIC 50V 330P	1	
C9623	ECKF1H331KB	CERAMIC 50V 330P	1	
C9624	ECKF1H331KB	CERAMIC 50V 330P	1	
C9801-9804	ECKD2H103PU	CERAMIC 100V 0.01	4 <!><R>	
C9805	ECES2WU221	ELECTROLYTIC 450V 220	1	
C9806	ECEA1HU101	ELECTROLYTIC 50V 100	1	
C9808	ECKF1H221KB	CERAMIC 50V 220P	1	
C9812	ECEA2CS101	ELECTROLYTIC 160V 100	1	
C9816	ECEA1EU472	ELECTROLYTIC 25V 4700	1	
C9817	ECQU2A473MN	20V 4.7	1 <!><R>	
C9818	ECEA1HU4R7	ELECTROLYTIC 50V 4.7	1	
C9819	ECEA1VU222	ELECTROLYTIC 35V 2200	1	
C9820	ECKDMS222ME	CERAMIC 2200P	1 <!>	
C9823	ECKDMS222ME	CERAMIC 2200P	1 <!>	
C9824	ECKF1H221KB	CERAMIC 50V 220P	1	
C9825	ECKD2H561KB	CERAMIC 100V 560P	1	
		COILS		
L9301	ELT1023417		1	
L9302	ELB5A003T		1	
L9303	ELT7E013T		1	
L9501	FS0712512J		1	
L9502	PALY35302F		1	
L9601	VLQEL06F120K		1	
L9602	ETQ25K6C		1	
L9603	VLQEL06F120K		1	
L9604	VLQEL06F8R2K		1	
L9606	ETK10E310ZT		1	
L9801	ELF18D216		1 <!><R>	
L9802	TLT056K109		1	
L9203	ELF18D2900		1 AG-500-E <!>	
L9804	PALX359052N		1 <!>	
		TRANSFORMERS		
T9501	ETH14Y18AY		1	
T9503	PALF34703F1	FLYBACK	1 AG-500-E/A/B <!> <R>	
T9503	PALF34703F	FLYBACK	1 AG-500-EN <!> <R>	
T9801	ETS42K20A		1 <!><R>	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		CRYSTAL OSCILLATOR		
X9601	TSS116M1		1 <R>	
		SWITCH		
SW9401	EVQR3AL13		1 <R>	
SW9402	EVQR4AL13		1 <R>	
SW9801	ESB70557S		1 <!> <R>	
		CONNECTORS		
CO-1A	TEL3029		4	
CO-2A	TJS169021		1	
CO-3A	TJS168991		1	
CO-5A	TEL3029		1	
CO-6A	TEL3029		1	
		MISCELLANEOUS		
	PAUC35601	HEAT SINK	1	
	TUC16753	HEAT SINK	1	
	TUC13678	HEAT SINK	1	
	TUC37746	HEAT SINK	1	
	TJC6319	FUSE HOLDERS	2 FOR F9801 <!><R>	
	TJC6320	FUSE HOLDERS	2 FOR F9802 <!><R>	
		VEP93070	C. C.B.A.	
		TRANSISTORS		
Q9351-9353	2SC1473		3	
		RESISTORS		
R9337	ERD25TLJ391		39 1	
R9338	ERD25TLJ391		39 1	
R9339	ERD25TLJ391		39 1	
R9351	EVN61AA00B53	VARIABLE	5K 1	
R9352	ERD25TLJ272		2.7K 1	
R9353	EVN61AA00B53		5K 1	
R9354	ERD25TLJ272		2.7K 1	
R9355	ERD25TLJ183		18K 1	
R9356	EVN61AA00B13	VARIABLE	1K 1	
R9357	EVN61AA00B13	VARIABLE	1K 1	
R9360	ERD25TLJ472		4.7K 1	
R9361	ERG1SJ153		15K 1	
R9362	ERG1SJ153		15K 1	
R9363	ERG1SJ153		15K 1	
R9364	ERC14GK272		2.7K 1	
R9365	ERC14GK272		2.7K 1	
R9366	ERC14GK272		2.7K 1	
		CAPACITORS		
C9351	ECKF1H271KB	50V 27P	1	
C9352	ECKF1H391KB	50V 39P	1	
C9353	ECKD3D681KB		1	
		COMBINATION PARTS (CAPACITOR & RESISTOR)		
CR9351	EXRP221K471S	220P 470	1	



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Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	■ VEP93071	V. C.B.A.		
		RESISTORS		
R9325	EVUF2AE25B24	20K	1	
R9345	ERD25TLJ472	1/4W 4.7K	1	
R9346	EVUF2AE05B52	500	1	
R9347	ERD25TLJ682	1/4W 6.8K	1	
R9348	EVUF2AE05B14	10K	1	
R9350	ERD25TLJ273	1/4W 27K	1	
R9401	EVUF2AE05B14	10K	1	
R9421	ERD25TLJ393	1/4W 39K	1	
R9622	EVUF2AE05B15	100K	1	
R9623	ERD25TLJ102	1/4W 1K	1	
	■	E C.B.		
	EX347FLB	HEADPHONE JACK	1	
		D C.B.		
		DIODE		
D9301	LN89RCP			<R>
	■ VEPO2228A	MAIN C.B.A.		
		INTEGRATED CIRCUITS		
IC2001	AN3795N		1	<R>
IC2002	MN6178VAH		1	<R>
IC2003	AN6387		1	<R>
IC2004	AN3821K		1	<R>
IC2005	BA8420		1	<R>
IC2006	AN3792		1	<R>
IC6001	MN15342VEE		1	<R>
IC6002	AN6914		1	OR UPC393C <R>
IC6003	M54649L		1	OR BA6248 <R>
IC6004	AN6914		1	OR UPC393C <R>
		TRANSISTORS		
Q1001	2SD1275		1	(P,Q,R) <1><R>
Q1002-1004	2SD636		3	(Q,R,S) OR 2SC2021M (Q,R,S) <R>
Q1005	2SD638		1	(Q,R,S) <R>
Q2001	2SB641		1	(Q,R,S) OR 2SA937M (Q,R,S) <R>
Q2003, 2004	2SD636		2	(Q,R,S) OR 2SC2021M (Q,R,S) <R>
Q6001, 6002	2SD636		2	(Q,R,S) OR 2SC2021M (Q,R,S) <R>
Q6003	2SD636		1	(Q,R,S) <R>
Q6004	2SD638		1	(S) OR 2SD1458 (S) <R>
Q6005, 6006	2SD636		2	(Q,R,S) <R>
		COMBINATION PARTS (TRANSISTORS & RESISTOR)		

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
QR2001	UN1213		1	OR DTC144EA<R>
QR2002-2004	UN1113		3	OR DTA144EA<R>
QR2005	UN1112		1	OR DTA124EA<R>
QR2006	UN111D		1	OR UN111E<R>
QR6001, 6002	UN1211		2	OR DTC114EA<R>
QR6003, 6004	UN1112		2	OR DTA124EA<R>
		DIODES		
D1001	MA165		1	<R>
D1002	MA4039		1	<R>
D1003-1005	11E1		3	<R>
D2001-2010	MA165		10	<R>
D2012-2018	MA165		7	<R>
D6001-6006	MA165		6	<R>
D6008-6012	MA165		5	<R>
		RESISTORS		
R1001	ERD50TJ271	270	1	
R1002	ERDS2TJ122	1.2K	1	
R1003	EROS2CKG4021	METAL 4.02K	1	
R1004	EROS2CKG1101	METAL 1.1K	1	
R1005	EROS2CKG3301	METAL 3.3K	1	
R1006	ERDS2TJ330	33	1	
R1007	ERDS2TJ471	470	1	
R1008	ERDS2TJ103	10K	1	
R1009, 1010	ERDS2TJ562	5.6K	2	
R2001	ERDS2TJ103	10K	1	
R2002	ERDS2TJ393	39K	1	
R2003	ERDS2TJ394	390K	1	
R2004	EROS2CKG1203	METAL 120K	1	
R2005	ERDS2TJ102	1K	1	
R2006	ERX12SJR82	METAL 1/2W 0.82	1	
R2007-2009	ERDS2TJ224	220K	3	
R2010	EROS2CKG1302	METAL 13K	1	
R2011	EROS2CKG2201	METAL 2.2K	1	
R2012	ERQ12HJ6R8	6.8	1	<1><R>
R2013	ERDS2TJ181	180	1	
R2014	ERDS2TJ473	47K	1	
R2015	ERDS2TJ472	4.7K	1	
R2016	ERDS2TJ223	22K	1	
R2017	ERDS2TJ222	2.2K	1	
R2018	ERDS2TJ104	100K	1	
R2019	ERDS2TJ393	39K	1	
R2020	ERDS2TJ154	150K	1	
R2021	ERDS2TJ333	33K	1	
R2022	ERDS2TJ124	120K	1	
R2023	ERDS2TJ332	3.3K	1	
R2024	ERDS2TJ104	100K	1	
R2025	ERDS2TJ124	120K	1	
R2026	EROS2CKG2701	METAL 2.7K	1	
R2027	ERX12SJR68	METAL 1/2W 0.68	1	
R2028	EROS2CKG2200	METAL 220	1	
R2029-2031	ERDS2TJ150	15	3	
R2032	ERDS2TJ102	1K	1	
R2033	ERC18GK105	1M	1	
R2034	ERDS2TJ223	22K	1	
R2035	ERDS2TJ224	220K	1	
R2036	ERDS2TJ105	1M	1	
R2037	ERDS2TJ102	1K	1	
R2038	ERDS2TJ104	100K	1	
R2039	ERDS2TJ823	82K	1	
R2040	ERDS2TJ184	180K	1	
R2041	ERDS2TJ104	100K	1	
R2042-2045	ERDS2TJ473	47K	4	
R2046	ERDS2TJ561	560	1	
R2047	ERDS2TJ331	330	1	
R2048, 2049	ERDS2TJ154	150K	2	
R2050	ERDS2TJ274	270K	1	



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Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		CRYSTAL OSCILLATOR		
X6001	VSX0082		1	
		CONNECTORS		
P1001	VJP1143	5P	1	
P1002	VJP1230	3P	1	
P2001	VJP1237	10P	1	
P2002	VJP1232	5P	1	
P2003	VJP1511T	11P	1	
P2004	VJP1231	4P	1	
P6001	VJS1465	7P	1	
P6002	VJS1444	24P	1	
P6003	VJP1237	10P	1	
P6004	VJP1234	7P	1	
P6005	VJP1511T	11P	1	
P6006	VJP1141	2P	1	
		FUSE		
F2001	VSF0043		1	<1><R>
		MISCELLANEOUS		
	VMC0075	HEAT SINK SPRING	1	
	VMC0105	SUPORT ANGLE	1	
	VSC1715	HEAT SINK	1	
	VSC1068	HEAT SINK	1	
	VEP03344A	SUB MAIN C.B.A.		
		INTEGRATED CIRCUITS		
IC6201	UPD4528BC		1	<R>
IC6202	UPD4013BC		1	OR MN4013B <R>
IC6203	UPD4011BC		1	OR MN4011B <R>
		TRANSISTORS		
Q3001, 3002	2SB641		2	(Q,R,S)OR 2SA937M (Q,R,S) <R>
Q6201, 6202	2SD636		2	(Q,R,S)OR 2SC2021M (Q,R,S) <R>
Q6203	2SB641		1	(Q,R,S)OR 2SA937M (Q,R,S) <R>
Q6204, 6205	2SD636		2	(Q,R,S)OR 2SC2021M (Q,R,S) <R>
Q6206	2SD636		1	(Q,R,S)OR 2SA937M (Q,R,S) <R>
Q6207-6209	2SB641		3	(Q,R,S)OR 2SA937M (Q,R,S) <R>
Q6210-6214	2SD636		5	1(Q,R,S)OR 2SC2021M (Q,R,S) <R>
Q6215	2SB641		1	(Q,R,S)OR 2SA937M (Q,R,S) <R>
Q6216	2SB641		1	(Q,R,S) <R>
Q6217	2SB641		1	(Q,R,S)OR 2SA937M (Q,R,S) <R>
Q6218-6220	2SD636		3	1(Q,R,S)OR 2SC2021M
Q6221	2SB641		1	(Q,R,S)OR 2SA937M (Q,R,S) <R>
Q6222	2SD636		1	(Q,R,S) <R>
Q7801	2SD639		1	<1><R>
Q8001	2SD636		1	(Q,R,S)OR 2SC2021M

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
				(Q,R,S) <R>
		DIODES		
D3001, 3002	MA165		2	OR 1SS133T <R>
D6201-6217	MA165		17	OR 1SS133T <R>
D6218-6220	MA165		3	<R>
D6222	MA165		1	<R>
D6223	MA165		1	<R>
D6224	MA27T		1	<R>
D7801	MA165		1	OR 1SS133T <R>
D7802	MA1051		1	<R>
D7803	MA162		1	<R>
D7804	MA4180L		1	<R>
		RESISTORS		
R3001, 3002	ERDS2TJ102		1K	2
R3003	ERDS2TJ472		4.7K	1
R3004	ERDS2TJ750		75	1
R3005, 3006	ERDS2TJ561		560	2
R3007, 3008	ERDS2TJ750		75	2
R3009	ERDS2TJ103		10K	1
R3010	ERDS2TJ392		3.9K	1
R3011	ERDS2TJ682		6.8K	1
R6201	ERDS2TJ223		22K	1
R6202	ERDS2TJ562		5.6K	1
R6203	ERDS2TJ273		27K	1
R6204	ERDS2TJ124		120K	1
R6205	ERDS2TJ223		22K	1
R6206	ERDS2TJ103		10K	1
R6207	ERDS2TJ102		1K	1
R6208-6210	ERDS2TJ103		10K	3
R6211	ERDS2TJ105		1M	1
R6212	ERDS2TJ564		560K	1
R6213, 6214	ERDS2TJ103		10K	2
R6215	ERDS2TJ104		100K	1
R6216	ERDS2TJ103		10K	1
R6217	ERDS2TJ183		18K	1
R6218, 6219	ERDS2TJ103		10K	2
R6220	ERDS2TJ101		100	1
R6221	ERDS2TJ474		470K	1
R6222	ERDS2TJ101		100	1
R6223	ERDS2TJ104		100K	1
R6224-6228	ERDS2TJ103		10K	5
R6229	ERDS2TJ103		10K	1
R6230	ERDS2TJ563		56K	1
R6231	ERDS2TJ103		10K	1
R6232	ERDS2TJ222		2.2K	1
R6233	ERDS2TJ103		10K	1
R6234	ERDS2TJ101		100	1
R6235-6238	ERDS2TJ103		10K	4
R6239	ERDS2TJ104		100K	1
R6240	ERDS2TJ102		1K	1
R6241	ERDS2TJ103		10K	1
R6242	ERDS2TJ102		1K	1
R6243	ERDS2TJ272		2.7K	1
R6244	ERDS2TJ822		8.2K	1
R6245	ERDS2TJ273		27K	1
R6246	ERDS2TJ682		6.8K	1
R6247	ERDS2TJ223		22K	1
R6248	ERDS2TJ122		1.2K	1
R6249	ERDS2TJ272		2.7K	1
R6250	ERDS2TJ103		10K	1
R6251-6254	ERDS2TJ103		10K	4
R6255	ERDS2TJ223		22K	1
R6256	ERDS2TJ562		5.6K	1
R6257	ERDS2TJ103		10K	1
R6258	ERDS2TJ103		10K	1
R6259	ERDS2TJ682		6.8K	1
R6260	ERDS2TJ103		10K	1
R7801	ERDS2TJ682		6.8K	1
R7802	ERDS2TJ330		33	1
R7803	ERDS2TJ104		100K	1

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R8001	ERDS2TJ102	1K	1	
R8002	ERDS2TJ181	180	1	
R8003	ERDS2TJ222	2.2K	1	
R8004	ERDS2TJ821	820	1	
VR3001	EVN50AA00B22		1	
CAPACITORS				
C3001	ECCF1H100JC	CERAMIC 50V 10P	1	
C3002	ECEAOJU471	ELECTROLYTIC 6.3V 470	1	
C3003	ECEA1CU470	ELECTROLYTIC 16V 47	1	
C3004	ECEAOJU471	ELECTROLYTIC 6.3V 470	1	
C3005, 3006	VCYD1C104MR1	CERAMIC 16V 0.1	2	
C3007	ECEAOJU471	ELECTROLYTIC 6.3V 470	1	
C6201	ECEA1AK470	ELECTROLYTIC 10V 47	1	
C6202	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C6203	ECEA1CKN100	ELECTROLYTIC 16V 10	1	
C6204	ECEA1HK010	ELECTROLYTIC 50V 1	1	
C6205	ECEA1AK470	ELECTROLYTIC 10V 47	1	
C6206	ECEA1ASS331	ELECTROLYTIC 10V 330	1	
C6207	ECEA1EK4R7	ELECTROLYTIC 25V 4.7	1	
C6208	ECEA1AK220	ELECTROLYTIC 10V 22	1	
C6209, 6210	ECEA1EK4R7	ELECTROLYTIC 25V 4.7	2	
C6211	ECEA1AK470	ELECTROLYTIC 10V 47	1	
C6212	ECEA1EK4R7	ELECTROLYTIC 25V 4.7	1	
C6213	ECEA1HK2R2	ELECTROLYTIC 50V 2.2	1	
C6214	ECEAOJK330	ELECTROLYTIC 6.3V 33	1	
C6215	ECEAOJK101	ELECTROLYTIC 6.3V 100	1	
C6216	ECEAOJK101	ELECTROLYTIC 6.3V 100	1	
C6217	ECEAOJK101	ELECTROLYTIC 6.3V 100	1	
C6218	ECEA1HK010	ELECTROLYTIC 50V 1	1	
C6219	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C7801	ECEA1CK470	ELECTROLYTIC 16V 47	1	
C7802	ECEA1CK101	ELECTROLYTIC 16V 100	1	
C7803	ECKF1H332KB	CERAMIC 50V 3300P	1	
C7804	ECQM1H102JV	MYLAR 50V 1000P	1	
C7805	ECEA1HK4R7	ELECTROLYTIC 50V 4.7	1	
C8001	ECEAOJSS222	ELECTROLYTIC 6.3V 2200	1	
C8002, 8003	ECKF1H103ZF	CERAMIC 50V 0.01	2	
COILS				
L3001	VLQEL05F151K	150uH	1	
L3002	VLQEL05F101K	100uH	1	
L7801	VLQEL06F1ROJ	1uH	1	
TRANSFORMER				
T7801	VLTO172		1	
CONNECTORS				
P3001	VJP1243	3P	1	
P3002	VJP1251	11P	1	
P3003	VJP1235	8P	1	
P3004	VJP1247	7P	1	
P3005	VJP1244	4P	1	
P3006	VJP1232	5P	1	
P3007	VJP1231	4P	1	
P3008	VJP1141	2P	1	
P3011	VJP1231	4P	1	
P3012	VJP1221	4P	1	
P3013	VJP1143	5P	1	
P6201	VJP1232	5P	1	
P6202	VJP1251	11P	1	
P6203	VJP1231	4P	1	
P6204	VJP1243	3P	1	
P6205	VJP1243	3P	1	
P7801	VJP1231	4P	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
MISCELLANEOUS				
	VJF0318	FUSE HOLDERS	4	<I><R>
	VKCO055	P.C.B. HINGE	2	
■ VEPO3374A LUMINANCE & CHROMINANCE PACK C.B.A.				
INTEGRATED CIRCUITS				
IC301	VEFY011	FIC	1	<R>
IC801	VEFC013	FIC	1	<R>
TRANSISTORS				
Q301, 302	2SC2206		2	<R>
Q303	2SB641		1	(P, Q, R, S) <R>
Q801, 804	2SC2206		2	<R>
Q806	2SC2206		1	<R>
Q802, 803	2SD636		2	(Q, R, S) <R>
Q805	2SD636		1	(Q, R, S) <R>
COMBINATION PART (TRANSISTOR & RESISTOR)				
QR301	UN1213	OR DTC144EA	1	<R>
DIODES				
D301	MA165		1	<R>
D303-306	MA165		4	<R>
D801, 802	MA165		2	<R>
RESISTORS				
R301, 302	ERDS2TJ561	560	2	
R303	ERDS2TJ331	330	1	
R304	ERDS2TJ681	680	1	
R305	ERDS2TJ102	1K	1	
R306	ERDS2TJ151	150	1	
R307	ERDS2TJ152	1.5K	1	
R308	ERDS2TJ562	5.6K	1	
R309	ERDS2TJ684	680M	1	
R312	ERDS2TJ103	10K	1	
R313	ERDS2TJ393	39K	1	
R314	ERDS2TJ152	1.5K	1	
R315	ERDS2TJ272	2.7K	1	
R317	ERDS2TJ152	1.5K	1	
R318	ERDS2TJ273	27K	1	
R320	ERDS2TJ392	3.2K	1	
R321	ERDS2TJ683	68K	1	
R322, 323	ERDS2TJ394	390K	2	
R324	ERDS2TJ824	820K	1	
R325	ERDS2TJ102	1K	1	
R326	ERDS2TJ823	82K	1	
R801	ERDS2TJ102	1K	1	
R802	ERDS2TJ101	100	1	
R805	ERDS2TJ122	1.2K	1	
R806	ERDS2TJ271	270	1	
R807	ERDS2TJ272	2.7K	1	
R811	ERDS2TJ102	1K	1	
R812	ERDS2TJ471	470	1	
R813	ERDS2TJ104	100K	1	
R814, 815	ERDS2TJ562	5.6K	2	
R816	ERDS2TJ821	821	1	
R817	ERDS2TJ472	4.2K	1	
R818	ERDS2TJ273	27K	1	





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Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		TRANSISTORS		
Q7503-7508	2SD636		6	(Q,R,S) OR 2SC2021M (Q,R,S)<R>
Q7509	2SB641		1	(Q,R,S) OR 2SA937M (Q,R,S)<R>
		COMBINATION PARTS (TRANSISTORS & RESISTOR)		
QR7501, 7502	UN1211		2	OR DTC114EA <R>
QR7503	UN1112		1	<R>
QR7504	UN1216		1	<R>
		DIODES		
D7501	MA165		1	<R>
D7502	MA165		1	<R>
D7503, 7504	LN81RCPHL		2	<R>
D7505-7509	MA165		5	<R>
D7511-7513	MA165		3	<R>
D7514	LN31GCPHLMU		1	<R>
D7515-7517	MA165		3	<R>
		RESISTORS		
R7501	ERDS2TJ122	1.2K	1	
R7502	ERC14GJ206	20M	1	
R7503	ERDS2TJ473	47K	1	
R7504	ERDS2TJ331	330	1	
R7505	ERDS2TJ122	1.2K	1	
R7506	ERDS2TJ103	10K	1	
R7507	ERDS2TJ474	470K	1	
R7508, 7509	ERDS2TJ122	1.2K	2	
R7510	ERDS2TJ103	10K	1	
R7511	ERDS2TJ332	3.3K	1	
R7512	ERDS2TJ562	5.6K	1	
R7513	ERDS2TJ563	56K	1	
R7514-7516	ERDS2TJ103	10K	3	
R7517	ERDS2TJ563	56K	1	
R7518	ERDS2TJ562	5.6K	1	
R7519	ERDS2TJ103	10K	1	
R7521	ERDS2TJ473	47K	1	
R7522	ERDS2TJ124	120K	1	
R7523	ERDS2TJ332	3.3K	1	
R7524	ERDS2TJ473	47K	1	
R7525	ERDS2TJ334	330K	1	
R7529	ERDS2TJ103	10K	1	
R7531	ERDS2TJ122	1.2K	1	
R7532	ERDS2TJ103	10K	1	
		VARIABLE RESISTOR		
VR7501	EWANKOS10A14	10K	1	
		CAPACITORS		
C7501	ECCF1H080DC	CERAMIC 50V 8P	1	
C7502	ECCF1H050DC	CERAMIC 50V 5P	1	
C7503	ECKF1H1032F	CERAMIC 50V 0.01	1	
C7504	ECCF1H220JC	CERAMIC 50V 22P	1	
C7505	ECCF1H220JC	CERAMIC 50V 22P	1	
C7506	ECEA1AK101	ELECTROLYTIC 10V 100	1	
C7507	ECEA1EKN2R2	ELECTROLYTIC 25V 2.2	1	
C7508	ECEA1CK330	ELECTROLYTIC 16V 33	1	
C7509	ECEA1EKN4R7	ELECTROLYTIC 25V 4.7	1	
C7510	ECKF1H102KB	CERAMIC 50V 1000P	1	
C7511	ECEA1HKR22	ELECTROLYTIC 50V 0.22	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C7518	ECEA1CKN100	ELECTROLYTIC 16V 10	1	
C7519	ECEA1CU470	ELECTROLYTIC 16V 47P	1	
C7520	ECQV1H104JZ	MYLAR 50V 0.1	1	
C7521	ECEA1HKO10	ELECTROLYTIC 50V 1	1	
		COIL		
L7501	VLQEL05F101K	100uH	1	
		CRYSTAL OSCILLATORS		
X7501	VSX0140		1	
X7502	VSX0094		1	
		SWITCHES		
SW7501-7509	EVQOS307K		9	<R>
		CONNECTORS		
P7501	VJF1250	10P	1	
P7502, 7503	VJF1245	5P	2	
P7504	VJF1244	4P	1	
P7506	VJF1230	3P	1	
P7507	VJF1243	3P	1	
		MISCELLANEOUS		
	KLO4	LED SPACER	1	
	VMX0473	LED SPACER	2	
	VEPOOG55B	IR REMOTE CONTROL C.B.A.		
		INTEGRATED CIRCUIT		
IC7502	UPD1373HA		1	<R>
		DIODE		
D6204	PN313		1	<R> OR PH302
		RESISTORS		
R7526	ERDS2TJ154	150K	1	
R7527	ERDS2TJ120	12	1	
R7528	ERDS2TJ102	1K	1	
		CAPACITORS		
C7512	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C7513	ECKZ1H331KB	CERAMIC 50V 330P	1	
C7514	ECQB1H183JH	MYLAR 50V 0.018	1	
C7515	VCFO006	4700P	1	
C7516	ECEA1HKR47	ELECTROLYTIC 50V 0.47	1	
C7517	ECEA1CK100	ELECTROLYTIC 16V 10	1	
		TRANSFORMER		
T7501	EIR7QE007B		1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		CONNECTORS		
P7508	VJP1230	4P	1	
	VJP1400	2P	1	
		MISCELLANEOUS		
	VSC1517	SHIELD CASE (UPPER)	1	
	VSC1518	SHIELD CASE (MIDDLE)	1	
	VSC1519	SHIELD CASE (LOWER)	1	
	VSC1520	SHIELD PLATE	1	
	■	COUNTER C.B.A.		
DP7501	VSL0086	DISPLAY TUBE	1 <R>	
	■	VR C.B.		
		VARIABLE RESISTORS		
VR7502	EVJFRAF20B15	100K	1	
VR7503	EVJFRAF20B15	100K	1	
	■	HEATER C.B.		
		TRANSISTOR		
Q1501	2SD1275		1 <R><I>	
		CONNECTOR		
P1501	VJP1243	3P	1	
	■	REEL SENSOR C.B.		
		PHOTO INTERRUPTER		
IC1501	QN2170		1 <R>	
		CONNECTOR		
P1518	VJP1229	2P	1	
	■	MECHANISM CONNECTION C.B.		
		RESISTOR		
R1510	ERDS2TJ561	560	1	
		CAPACITOR		
C1510	ECEA50Z3R3	ELECTROLYTIC 50V 3.3	1	
		CONNECTORS		
P1511	VJP1245T	5P	1	
P1513	VJS1473	11P	1	
P1514	VJP1229	2P	1	
P1515	VJP1229	2P	1	
P1516	VJP1230	3P	1	
P1517	VJS1441	24P	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	■	FRONT LOADING C.B.		
		TRANSISTOR		
Q1503	PN150NV		1 <R>	
		CAPACITOR		
C1503	ECKF1H102KB	CERAMIC 50V 1000P	1	
		CONNECTOR		
P1510	VJS1466	7P	1	
		MISCELLANEOUS		
	VMD0645	PHOTO HOLDER	1	
	■	SUPPLY PHOTO C.B.		
		TRANSISTOR		
Q1502	PN150NV		1 <R>	
		CAPACITOR		
C1502	ECKF1H102KB	CERAMIC 50V 1000P	1	
		MISCELLANEOUS		
	VMD0645	PHOTO HOLDER	1	
	■	LED C.B.		
		DIODE		
D1501	GL450	PHOTO DIODE	1 OR LN59<R>	
		MISCELLANEOUS		
	VMD0644	LED HOLDER	1	