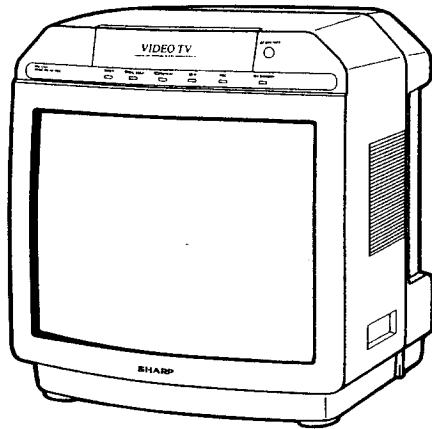


SHARP**SERVICE MANUAL**
维修说明书

S82D1VT1480D/



CEG TECHNICAL
THIS COPY MUST NOT BE
REMOVED FROM CEG OFFICE
VIDEO TV
Chassis No. VT-1

MODELS
型号**VT-1480D**
VT-2198(D)

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used

为了使用者的安全(有些国家用安全规定加以要求), 修理本装置时必须完全保持其原有配件状态, 更换只得使用规定者。

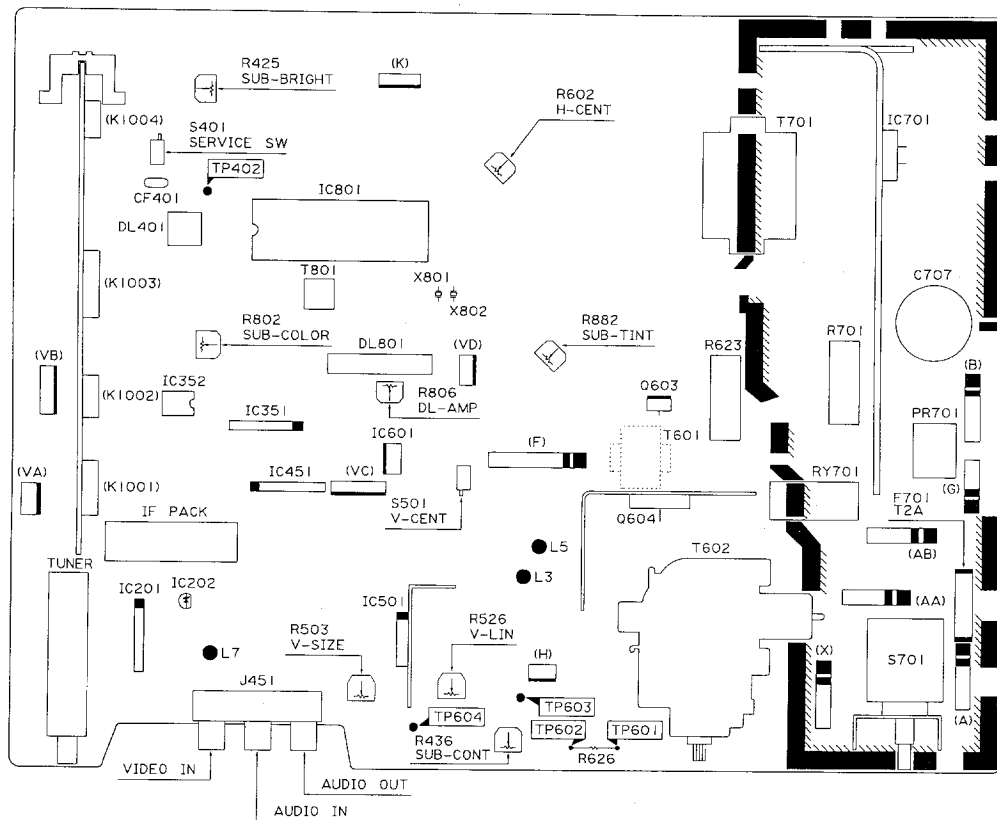
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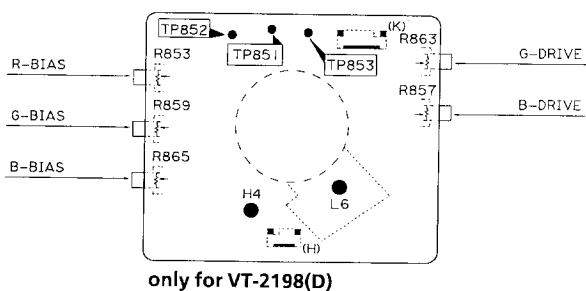
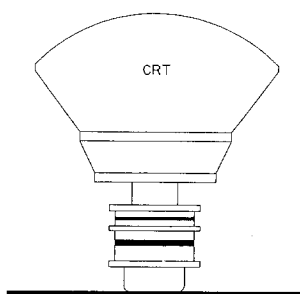
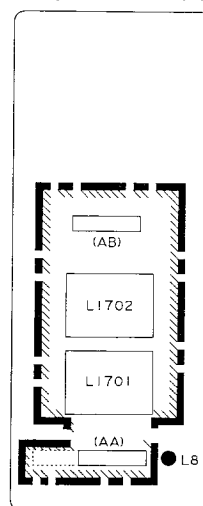
SHARP CORPORATION

ADJUSTMENT OF THE TV ELECTRICAL CIRCUITRY

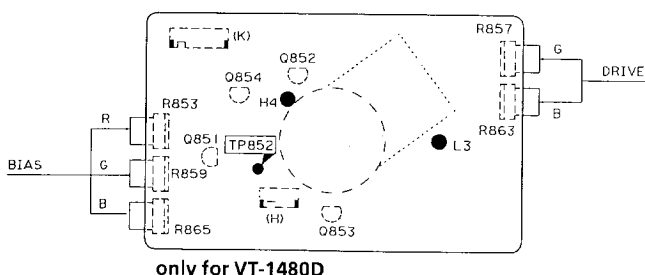
Chassis Layout



only for VT-2198(D)



only for VT-2198(D)




only for VT-1480D

VIDEO/CHROMA ADJUSTMENT

Adjusting Conditions	Adjusting Procedures
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1. CRT Cut-off Adjustment

<p>Adjusting Point</p> <ul style="list-style-type: none"> <input type="checkbox"/> R853: Red Bias control <input type="checkbox"/> R859: Green Bias control <input type="checkbox"/> R865: Blue Bias control <input type="checkbox"/> T602: Screen control (a part of T602) <input type="checkbox"/> R857: Green Drive control <input type="checkbox"/> R863: Blue Drive control <p>Note: <i>Prior to this adjustment, warm up the unit with the beam current of more than 600μA (VT-1480D), 700μA (VT-2198(D)) for more than 30 minutes.</i></p> <ol style="list-style-type: none"> Receive "MONOSCOPE PATTERN" signal with pattern generator. Set Red bias control at MIN (0/10) position. Set Green bias control at MIN (0/10) position. Set Blue bias control at MIN (0/10) position. Set Green drive control at CENTER (5/10) position. Set Blue drive control at CENTER (5/10) position. Set the control at the "NORMAL" position that Contrast is MAX (15/15), Colour is CENTER (7/15) an Brightness is CENTER (7/15) using control, "\wedge" and "\vee" keys. Set the Screen control at MIN (0/10) position. Turn on S401 (Service switch) at the horizontal line position. Connect the oscilloscope to TP852 (Red Cathode). 	<ol style="list-style-type: none"> Adjust the Sub-Brightness control (R425) so that the blanking pulse on oscilloscope is 10 ± 1Vp-p.  <ol style="list-style-type: none"> Slowly turn the Screen control clockwise and stop it where the horizontal raster appears slightly, in one of the three colours. Carefully adjust the Bias controls of the other two colours until the horizontal raster becomes white. Turn the Screen control counterclockwise until the horizontal raster disappears, and stop it.
---	---

2. White Balance and Back Ground Adjustment

<p>Adjusting Point</p> <ul style="list-style-type: none"> <input type="checkbox"/> R857: Green Drive control <input type="checkbox"/> R863: Blue Drive control <input type="checkbox"/> R436: Sub-Contrast control <p>Note: <i>Prior to this adjustment, warm up the unit with the beam current of more than 600μA (VT-1480D), 700μA (VT-2198(D)) for more than 30 minutes.</i></p> <ol style="list-style-type: none"> Receive "MONOSCOPE PATTERN" signal with pattern generator. Set the Contrast and Brightness controls at MAX position. Connect beam ammeter to TP601 and TP602. (Full scale: 3 mA) 	<ol style="list-style-type: none"> <p>VT-1480D: Adjust the Sub-Contrast control so that the beam current becomes 0.8 mA (rough adjustment).</p> <p>VT-2198(D): Adjust the Sub-Contrast control so that the beam current becomes 1.1 mA (rough adjustment).</p> Adjust the Green Drive control and Blue Drive control so that the colour temperature is at 9300°K. <ul style="list-style-type: none"> ● High beam: 0.8 mA (VT-1480D), 1.1 mA (VT-2198(D)) Adjust the Contrast control and Brightness control so that the beam current is approx. 200μA, and check that the colour temperature is at 9300°K. If the temperature is not at 9300°K, go back to "CRT CUT-OFF ADJUSTMENT" and repeat the adjustment. (X = 0.285, Y = 0.292)
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VIDEO/CHROMA ADJUSTMENT (Continued)

Adjusting Conditions	Adjusting Procedures
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3. Sub-Contrast Adjustment

<p>Adjusting Point</p> <p><input type="checkbox"/> R436: Sub-Contrast control</p> <p>Note: <i>Prior to this adjustment, warm up the unit with the beam current of more than 600μA (VT-1480D), 700μA (VT-2198(D)) for more than 30 minutes.</i></p> <ol style="list-style-type: none"> 1. Receive "MONOSCOPE PATTERN" signal with pattern generator. 2. Set the Contrast and Brightness controls at MAX position. 3. Connect DC milliammeter to TP601\ominus and TP602\oplus. (Full scale: 3 mA) 	<ol style="list-style-type: none"> 1. VT-1480D: Adjust Sub-Contrast control so that the beam current becomes 0.8 mA. VT-2198(D): Adjust Sub-Contrast control so that the beam current becomes 1.1 mA.
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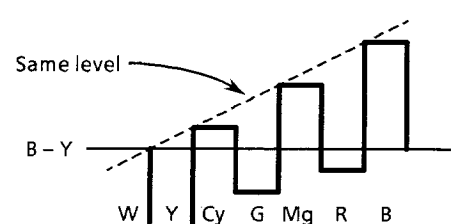
4. PAL Chroma Adjustment

<p>Adjusting Point</p> <p><input type="checkbox"/> R806: 1H Delay Amp. control</p> <p><input type="checkbox"/> T801: 1H Delay Phase control</p> <p>Note: <i>Before this adjustment, the PIFIAFTIAGC adjustment must have been completed.</i></p> <ol style="list-style-type: none"> 1. Receive "PAL COLOUR BAR" signal with pattern generator. 2. Connect the following resistance matrix to pins 3 and 4 of the connector (K), to which an oscilloscope is connected. <div style="text-align: center;"> <p>TP851 (K)-3 $\xleftarrow{22\text{ k}\Omega}$ R-Y</p> <p>TP853 (K)-4 $\xleftarrow{22\text{ k}\Omega}$ B-Y</p> <p style="text-align: center;">Resistance Matrix</p> </div> <ol style="list-style-type: none"> 3. Set the Service switch S401 at the Video Cut position to cut off the Y-signal. 	<ol style="list-style-type: none"> 1. Adjust the Colour control key so that the output waveform of colour difference signal becomes 1.5 Vp-p. 2. Adjust R806 and T801 so that the output waveform shown in Fig. a is corrected to that shown in Fig. b. 3. Return S401 to CENTER (normal position). <div style="text-align: center;"> <p>Figure a. Waveform before the adjustment</p> </div> <div style="text-align: center;"> <p>Figure b. Waveform after the adjustment</p> </div>
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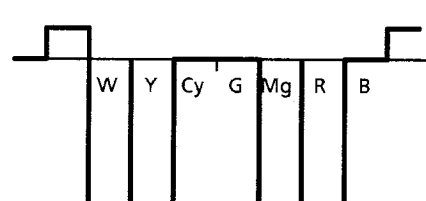
VIDEO/CHROMA ADJUSTMENT (Continued)

Adjusting Conditions	Adjusting Procedures
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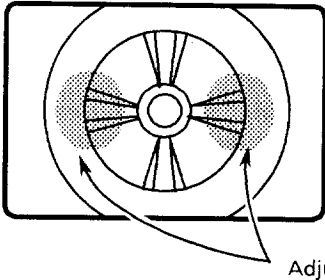
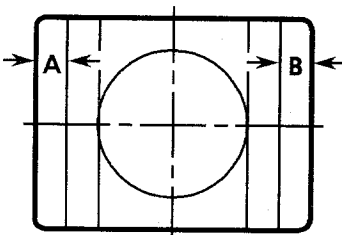
5. Sub-Tint Adjustment

<p>Adjusting Point <input type="checkbox"/> R882: Sub-Tint control</p> <ol style="list-style-type: none"> 1. Feed "NTSC COLOUR BAR" signal to video in jack with colour bar generator at the AV mode. 2. Connect oscilloscope to TP853 (B - Y). 3. Set the Tint control (R1098) at the CENTER (5/10) position. 4. Set Service switch S401 at the Video Cut position to cut off the Y-signal. 	<ol style="list-style-type: none"> 1. Adjust Colour control key to obtain the output of approx. 3Vp-p. 2. Adjust Sub-Tint control (R882) so that the output waveform is as shown in figure below. 3. Return S401 to CENTER (normal position). 
---	---

6. PAL Sub-Colour Adjustment

<p>Adjusting Point <input type="checkbox"/> R802: Sub-Colour control</p> <ol style="list-style-type: none"> 1. Receive "PAL COLOUR BAR" signal with colour bar generator. 2. Set the control at the "NORMAL" position that Contrast is MAX (15/15), Colour is CENTER (7/15) and Brightness is CENTER (7/15) using control, "∧" and "∨" keys. 3. Connect oscilloscope to the TP852 (Red cathode). <ul style="list-style-type: none"> ● Range: 20V / div. ● Sweep time: 20μsec / div. 	<ol style="list-style-type: none"> 1. For PAL colour bar signal reception, adjust R802 so that the white output (75%) and red output will have the same level. 
--	--

DEFLECTION LOOP ADJUSTMENT

Adjusting Conditions	Adjusting Procedures
1. Focus Adjustment	
<p>Adjusting Point</p> <p><input type="checkbox"/> T602: Focus control (a part of T602)</p> <p>1. Receive "MONOSCOPE PATTERN" signal.</p> <p>2. Set the Brightness and Contrast controls at NORMAL position.</p>	<p>● During the adjustment, keep the unit facing the east.</p> <p>1. Adjust Focus control (a part of T602) to have best focus at the central area of CRT.</p> 
2. Horizontal Center Adjustment	
<p>Adjusting Point</p> <p><input type="checkbox"/> R602: Horizontal Center control</p> <p><i>Note: This adjustment should be performed after the purity and convergence adjustments.</i></p> <p>1. Receive "MONOSCOPE PATTERN" signal.</p>	<p>● During the adjustment, keep the unit facing the east.</p> <p>1. Adjust R602 so that the horizontal center of picture is at the position which gives the relation of $A = B$.</p> 
3. Vertical Linearity Adjustment	
<p>Adjusting Point</p> <p><input type="checkbox"/> R526: Vertical Linearity control</p> <p>1. Receive "MONOSCOPE PATTERN" signal.</p>	<p>● During the adjustment, keep the unit facing the east.</p> <p>1. Adjust R526 so that the vertical linearity of picture is at best point.</p>

DEFLECTION LOOP ADJUSTMENT

Adjusting Conditions	Adjusting Procedures
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4. Vertical Size Adjustment

• During the adjustment, keep the unit facing the east.

<p>Adjusting Point</p> <p><input type="checkbox"/> R503: Vertical Size control</p> <p>1. Receive "MONOSCOPE PATTERN" signal.</p> <p>2. Set the Brightness and Contrast controls at MAX position.</p>	<p>1. Adjust R503 so that the vertical size of picture is at the same size as horizontal size.</p> <p>• V-SIZE 9% TYP 11% MAX</p>
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5. Vertical Centering Adjustment

• During the adjustment, keep the unit facing the east.

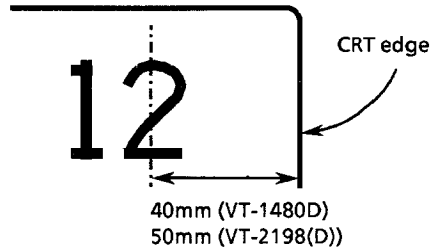
<p>Adjusting Point</p> <p><input type="checkbox"/> S501: Vertical Center Adjust switch</p> <p>Note: This adjustment should be performed after the purity and convergence adjustments.</p> <p>1. Receive "MONOSCOPE PATTERN" signal.</p>	<p>1. Adjust S501 so that the picture's vertical center is identical to CRT geometrical vertical center.</p>
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CRT DISPLAY ADJUSTMENT

Adjusting Conditions	Adjusting Procedures
----------------------	----------------------

1. Sign Position Adjustment

• During the adjustment, keep the unit facing the east.

<p>Adjusting Point</p> <p><input type="checkbox"/> R1001: Sign Position control</p> <p>1. Turn the channel call on (on the infrared remote controller).</p>	<p>1. VT-1480D: Adjust R1001 so that the center of the first-digit figure of the channel number be approx. 40mm from the right edge of the CRT.</p> <p>VT-2198(D): Adjust R1001 so that the center of the first-digit figure of the channel number be approx. 50mm from the right edge of the CRT.</p> 
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PURITY ADJUSTMENT

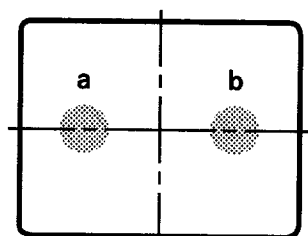
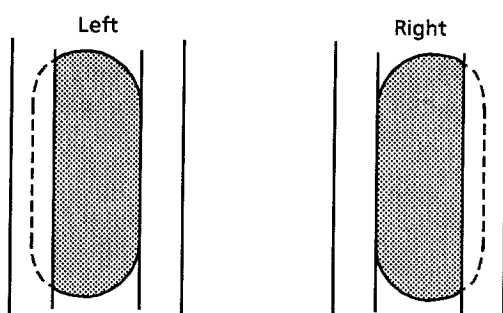
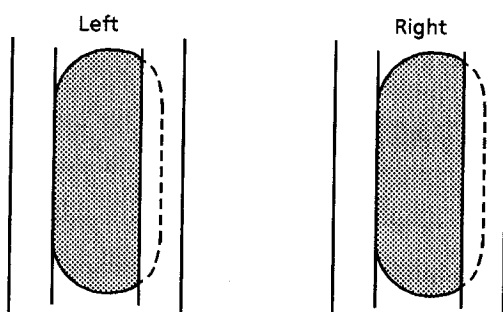


Figure A.



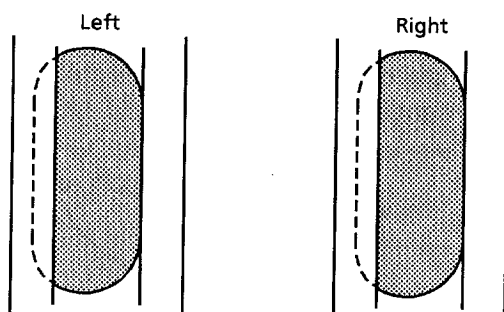
The beam landing is shifted outwards.

Figure B.



The beam landing is shifted to right.

Figure C.



The beam landing is shifted to left.

Figure D.

Adjusting Conditions

1. Prior to the purity adjustment, warm up the unit with beam current of more than 500 μA (VT-1480D), 700 μA (VT-2198(D)), for more than 30 minutes.
2. Receive the green signal alone and adjust the beam current to approx. 500 μA (VT-1480D), 700 μA (VT-2198(D)).
3. Fully degauss the CRT with the degaussing coil.
4. Before the purity adjustment, it is needed to roughly adjust the static convergence.
5. Set the purity magnet at the position which gives zero (0) magnetic field.

Adjusting Procedures

Adjustment:

During the adjustment, keep the unit facing the east.

1. Observe the green spots ("a" and "b") with a microscope as shown in *Fig. A*, and adjust the purity magnet so that they are at the specified landing position.
2. If the right and left green spots are both deviated outwards from their landing positions as shown in *Fig. B*, push the deflection yoke forwards until their positions are corrected.
3. If the beam landing is shifted to right or left as shown in *Figs. C* and *D*, adjust the opening degree of the purity magnet so that the beam landing is correctly positioned.
4. Adjust the purity magnet so that the beam landing is correct at either of the central part, right and left parts of screen, then check that the green beams at four corners of screen are all correctly positioned.
Finally, check that the beam landing at any part of screen is satisfactory with the Rank "B" specifications.
5. If the green beam is positioned to mix with the other colour, pull the deflection yoke backward.
 - Outside of the specified landing:
To front of the deflection yoke.
 - Inside of the specified landing:
To back of the deflection yoke.
6. Set the raster rotation at "0" position (with the unit facing the east).
7. Tighten the screws of the deflection coil.
Tightening torque: 11 kg \pm 2 kg.

CONVERGENCE ADJUSTMENT

Note: During the adjustment, keep the unit facing the east.

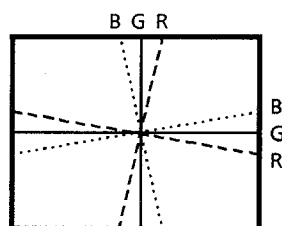
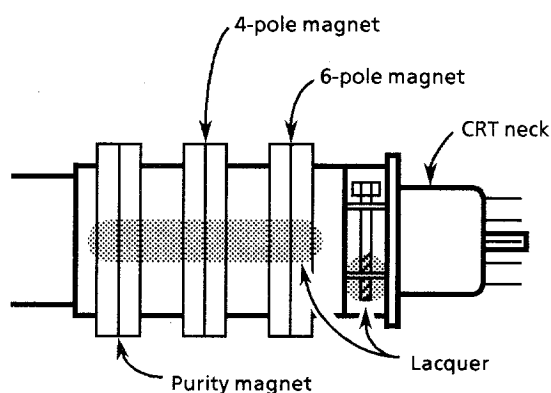
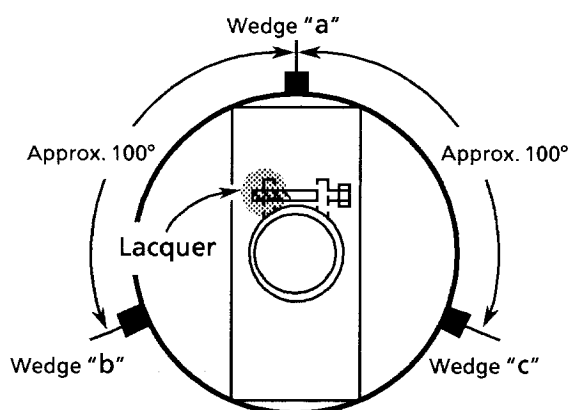


Figure a.

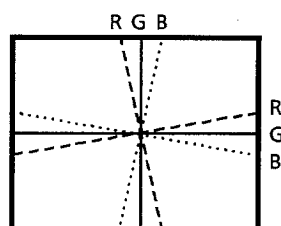


Figure b.

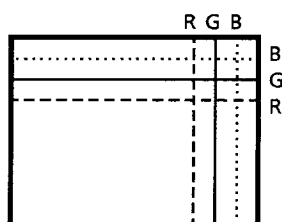


Figure c.

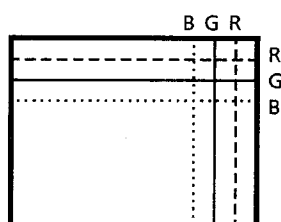


Figure d.

Adjusting Conditions

This adjustment should be performed after the purity magnet adjustment.

1. Receive "CROSSHATCH PATTERN" signal.
2. Set the Brightness control and Contrast control at MAX position.

Adjusting Procedures

STATIC CONVERGENCE

1. Adjust the opening degree of the 4-pole magnet and rotate the magnet to converge red and blue lines.
2. Adjust the opening degree of the 6-pole magnet and rotate the magnet to converge red, blue and green lines.

DYNAMIC CONVERGENCE

3. Dynamic convergence (convergence of the three colour fields) at the edges of CRT screen is accomplished in the following manner.

● Convergence in Fig. a :

Insert wedge "a" between the deflection yoke and CRT, and tilt the deflection yoke upward until the mis-convergence shown in **Fig. a** is corrected.

● Convergence in Fig. b :

Insert wedges "b" and "c" between the deflection yoke and CRT, and tilt the deflection yoke until the mis-convergence shown in **Fig. b** is corrected.

● Convergence in Fig. c :

Insert wedge "c" deeply between the deflection yoke and CRT, and tilt the deflection yoke to right until the mis-convergence shown in **Fig. c** is corrected.

● Convergence in Fig. d :

Insert wedge "b" deeply between the deflection yoke and CRT, and tilt the deflection yoke to left until the mis-convergence shown in **Fig. d** is corrected.

4. Stick the three wedges onto the CRT, and apply glass tapes thereon.
5. Apply lacquer to the deflection yoke screw, magnet unit (made of purity, 4-pole and 6-pole magnets) and magnet unit screw.

After the adjustment, receive either the Red or the Blue signal and check that there is no mixture with the other colour signal.

ADJUSTMENT OF THE VCR ELECTRICAL CIRCUITRY

PRIOR TO THE ADJUSTMENT:

In most cases, necessity for electrical circuits will arise from replacement of mechanical parts including the video head.

Before starting adjustment of electrical circuits, check that mechanical operation of the equipment is complete (the mechanism are adjusted completely).

If the equipment fails electrically, locate a defect or defects first of all using instruments. Then repair or replace parts and make adjustment by the procedures described below.

When required instruments are not available, do not move controls indiscriminately.

INSTRUMENTS

- VTVM
- DC Regulated Power Supply
- Oscilloscope
- Audio Generator
- Colour Bar Generator
- Alignment Tape
- Frequency Counter
- Blank Video Tape (VHS)

ADJUSTMENT OF POWER CIRCUIT

Test Points Layout

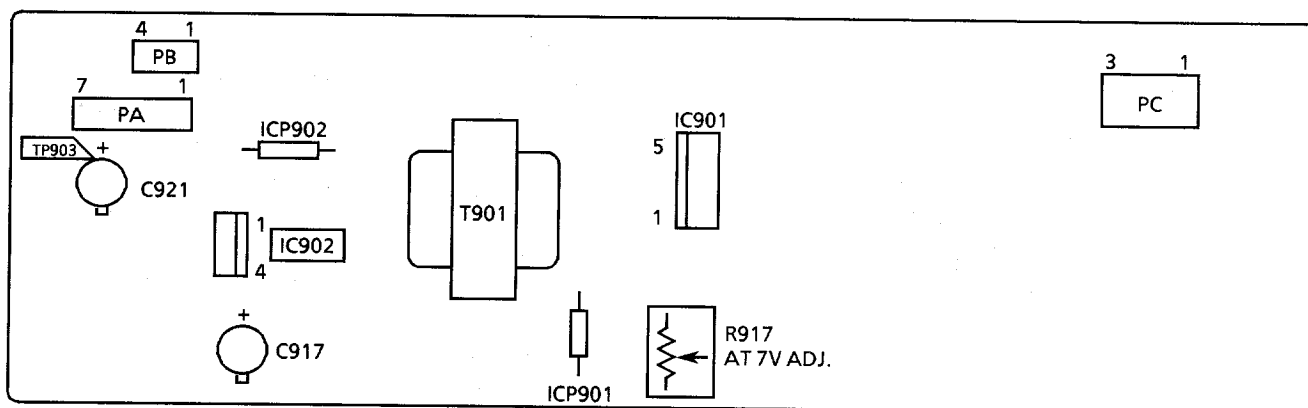


Figure 1-1. VCR Power Unit

Adjustment of power circuit (AT 7V)

Measuring instrument	DC voltmeter
Mode	E-E
Test point	TP903 (C921 ⊕ lead)
Control	R917
Specification	7.8 V ± 0.2

1. Connect a voltmeter to TP903 (C921 ⊕ or pin-4 of connector PA) and ground.
2. Adjust R917 so that the voltmeter reads 7.8V.

Test Points Layout

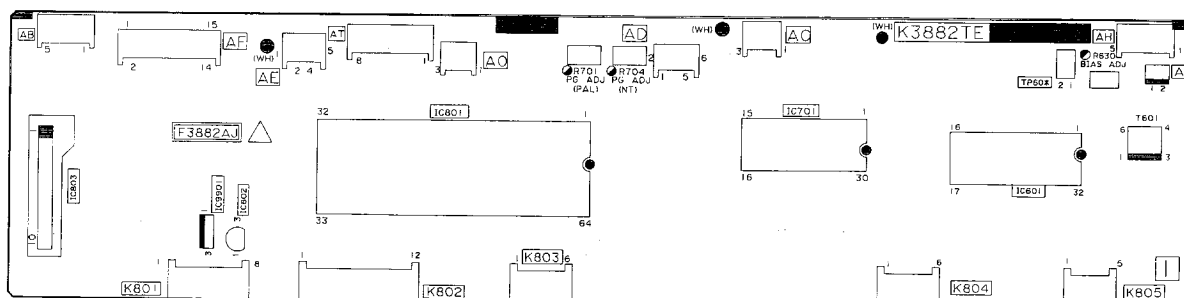


Figure 1-2. System Control / Servo / Audio Unit

■ ADJUSTMENT OF SERVO CIRCUIT

Adjustment of PAL System playback switching point

Measuring instrument	Oscilloscope
Mode	Playback (tracking at center)
Tape used	Alignment tape (VROCPSV)
Test point	CH-1; TP2302 (H. SW. P.) CH-2; Pin (34) of IC201 (video output). (CH-1 trigger slope switch at (+), Internal trigger at CH-1 side)
Control	R701 (50Hz SW. P. ADJ.)
Specification	$6.5 \pm 0.5H$

1. Insert the PAL system alignment tape (VROCPSV) and put the unit in the playback mode.
2. Make the resistor R1058 and R1060 short-circuited with diode in the timer PWB to set the tracking in center. (Cathode of the diode is in R1060 side.)
3. Adjust R701 (PG ADJ. (PAL)) so that the waveform on the oscilloscope screen be as shown in *Figure 1-3*.

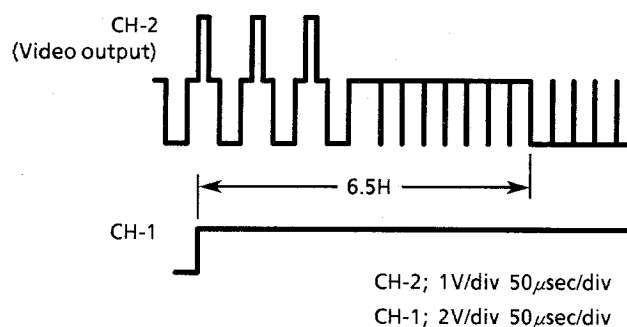


Figure 1-3.

Adjustment of NTSC System playback switching point

Measuring instrument	Oscilloscope
Mode	Playback (tracking at center)
Tape used	Alignment tape (VROATSV)
Test point	CH-1; TP2302 (H. SW. P.) CH-2; Pin (34) of IC201 (video output). (CH-1 trigger slope switch at (+), Internal trigger at CH-1 side)
Control	R704 (60Hz SW. P. ADJ.)
Specification	$6.5 \pm 0.5H$

1. Insert the NTSC system alignment tape (VROATSV) and put the unit in the playback mode.
2. Make the resistor R1058 and R1060 short-circuited with diode in the timer PWB to set the tracking in center. (Cathode of the diode is in R1060 side.)
3. Adjust R704 (PG ADJ. (NT)) so that the waveform on the oscilloscope screen be as shown in *Figure 1-4*.

Note:

- 1). Before the adjustment of NTSC system playback switching point, be sure that the adjustment of PAL switching point is completed.
- 2). To make these adjustments of PAL and NTSC system playback switching point, disable the AUTO TRACKING Function.
When the resistor R1058 and R1060 is short-circuit with diode in the timer PWB, the AUTO TRACKING Function is disabled and tracking is set in center.
When the tracking control buttons are pressed at the same time, the AUTO TRACKING Function is enabled.
Make this adjustment of NTSC System playback switching point after the one of PAL System playback switching point.

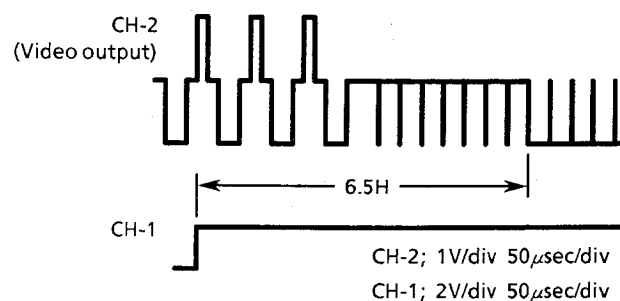


Figure 1-4.

■ ADJUSTMENT OF AUDIO CIRCUIT

Checking of playback level

Measuring instrument	VTVM
Mode	Playback
Input signal	Alignment tape (VROCPV) (1-kHz level control signal)
Test point	Audio output signal
Adjusting point	—
Specification	-9 dBs + 2 dBs, -9 dBs - 1 dBs

1. Play back the alignment tape (1-kHz level control signal).
2. Hook up the VTVM to the audio output terminal.
3. Be sure that the output level be -9 dBs + 2 dBs, -9 dBs - 1 dBs.

Checking of erase voltage and oscillation frequency

Measuring instrument	Oscilloscope
Mode	Recording
Input signal	—
Test point	Both ends of the full-erase head
Adjusting point	—
Specification	Erase voltage; Over 40 Vp-p Oscillation frequency; 70 ± 5 kHz

1. Place the unit to the record mode.
2. Hook up the oscilloscope to both ends of the full-erase head.
3. Make sure the erase voltage is over 40 Vp-p.
4. Be sure that the oscillation frequency is 70 ± 5 kHz.

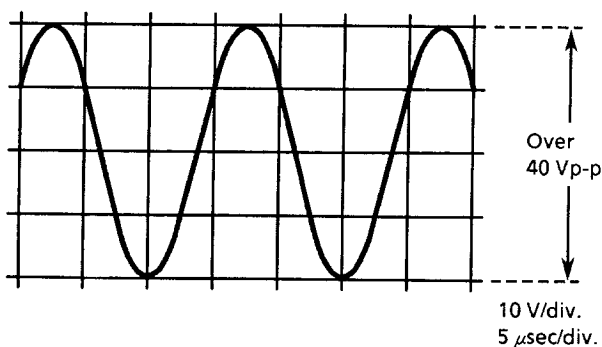


Figure 1-5.

Adjustment of bias current

Measuring instrument	VTVM
Mode	Recording
Input signal	—
Test point	TP601 (SIG), TP602 (GND)
Adjusting point	R630 (bias current control)
Specification	$280 \pm 10 \mu\text{A}$ ($2.8 \text{ mV} \pm 0.1 \text{ mV}$)

1. Place the unit to the record mode.
2. Connect the VTVM to TP601 (SIG) and TP602 (GND).
3. Adjust R630 (bias current control) so that the bias current be $280 \pm 10 \mu\text{A}$ ($2.8 \pm 0.1 \text{ mV}$).

Checking of recording level

Measuring instrument	VTVM
Mode	Self-recording/playback
Input signal	1 kHz / -8 dBs
Test point	Audio output terminal
Control	—
Specification	-8 ± 3 dBs

1. Feed 1kHz, -8 dBs signal to the audio input terminal. Make self-recording and playback of the signal.
2. Make sure the output at the audio output terminal is -8 ± 3 dBs.
3. If out of spec, readjust the bias current.

■ ADJUSTMENT OF Y/C CIRCUIT

Test Points Layout

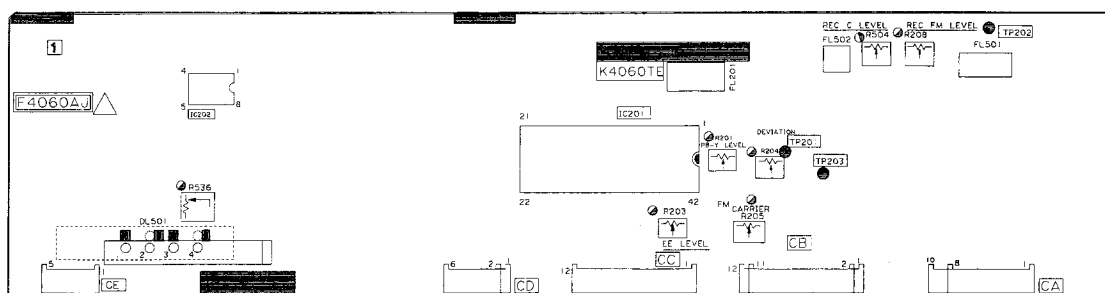


Figure 1-6. Y/C Unit

Adjustment of EE level

Measuring instrument	Oscilloscope
Mode	Recording
Input signal	Standard colour bar (stair-case waveform)
Test point	Pin (34) of IC201 (video output)
Adjusting point	R203 (EE level)
Specification	$2.0 \pm 0.1 \text{ Vp-p}$

1. Set the unit in record mode.
2. Feed the colour bar signal to the video input terminal. Observe the voltage of pin (34) of IC201 on the oscilloscope screen, adjust R203 (EE level) to obtain the value indicated in **Figure 1-7**.

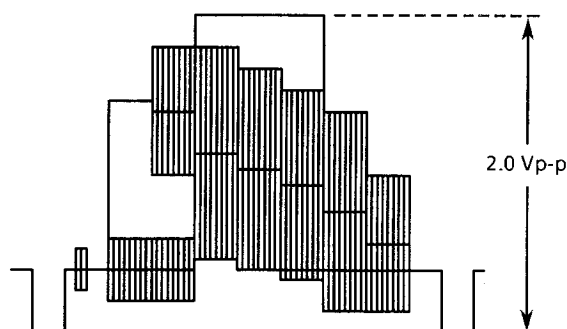


Figure 1-7.

Adjustment of FM 3.8 MHz and 4.8 MHz

Measuring instrument	Frequency counter	Oscilloscope
Mode	Recording	Self-recording/playback
Input signal	External input (no signal)	Standard colour bar (stair-case waveform)
Test point	TP203 (Signal) TP202 (Ground)	Video output pin (34) of IC201
Adjusting point	R205 (FM carrier control)	R204 (Deviation control)
Specification	$3.8 \text{ MHz} \pm 50 \text{ kHz}$	$2.0 \pm 0.08 \text{ Vp-p}$

Note:

Carry out this adjustment only when IC201 has been replaced or when the carrier setting (3.8 MHz) or the deviation (4.8 MHz) is found apparently out of specification.

Make this adjustment after the EE level and playback video signal level have been completely adjusted.

1. First make sure that the EE video signal level and playback video signal level are at the specified levels.
2. Place the unit in the record mode and get it ready for external input.
Note: Do not connect anything to the external input terminal.
3. Hook up the frequency counter to TP203 and TP202. Adjust R205 (FM carrier control) so that the counter reading be 3.8 MHz.
4. Feed the colour bar signal and make self-recording and playback.

5. Observe the voltage of pin (34) of IC201 (video output) on the oscilloscope screen. If the playback video signal level is above 2.0Vp-p, turn R204 (deviation control) clockwise. If below 2.0Vp-p, turn the control counter-clockwise. Now make self-recording and playback again.
6. Repeat the above step-5 to finally get the playback video signal level at 2.0 ± 0.08 Vp-p, as shown in **Figure 1-8**.

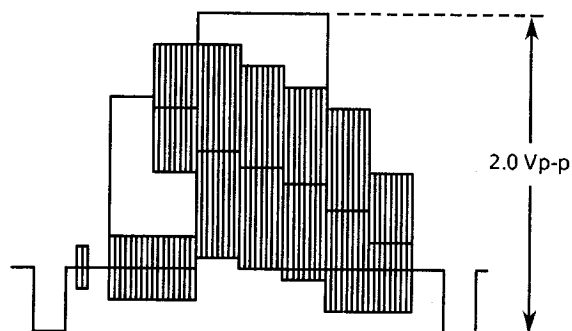


Figure 1-8.

- c) Adjust R504 (recording chroma level control) so that the red level be 24 ± 2 mVp-p as shown in **Figure 1-10**.
4. Adjust R208 (recording FM control) so that the sync tip be 100 ± 5 mVp-p as shown in **Figure 1-11**.

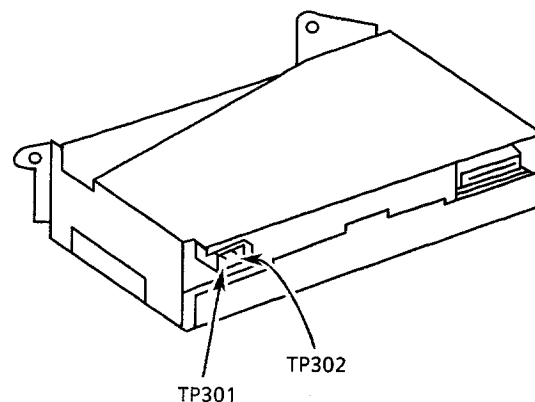


Figure 1-9.

Adjustment of recording current

Measuring instrument	Oscilloscope	
Mode	Recording	
Input signal	Standard colour bar (stair-case waveform)	
Test point	TP301 (GND at TP302) External trigger (video output terminal)	
Adjusting point	R208 (recording FM level control)	R504 (recording chroma level control)
Specification	Sync tip level: 100 ± 5 mVp-p	Red level: 24 ± 2 mVp-p

Note:

TP301 and TP302 are located on the head amp PWB. (Figure 1-9)

1. Place the unit to the record mode.
2. Feed the colour bar signal to the video input terminal.
3. Observing the waveform on the oscilloscope screen [external trigger at pin (34) of IC201 (video output)], take the following steps.
 - a) Connect the oscilloscope's ground and signal leads to TP302 and TP301, respectively.
 - b) Turn R208 (recording FM level control) to minimum.

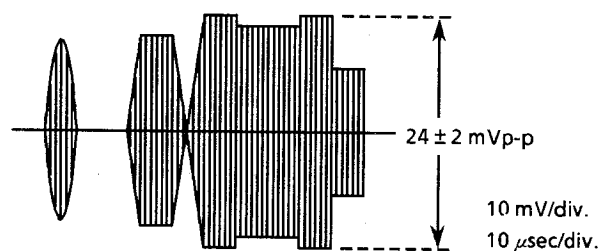


Figure 1-10.

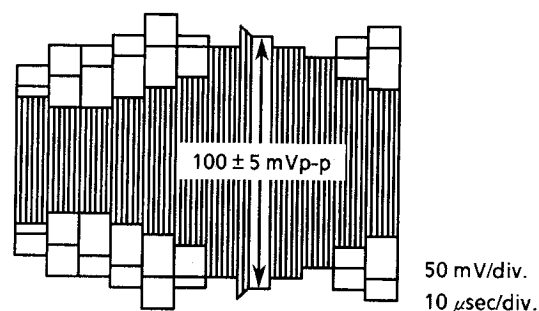


Figure 1-11.

■ ADJUSTMENT OF Y/C PLAYBACK CIRCUIT

Adjustment of playback video signal level

Measuring instrument	Oscilloscope
Mode	Playback
Tape used	Alignment tape (VROCPSV) (stair-case waveform)
Test point	Pin (34) of IC201 (video output)
Adjusting point	R201 (playback level control)
Specification	$2.0 \pm 0.1\text{Vp-p}$

1. Insert the alignment tape and place the unit to the playback mode.
2. Hook up the oscilloscope to pin (34) of IC201 (video output) . Adjust R201 (playback level control) so that the on-screen waveform be $2.0 \pm 0.1\text{Vp-p}$ as shown in **Figure 1-12**.

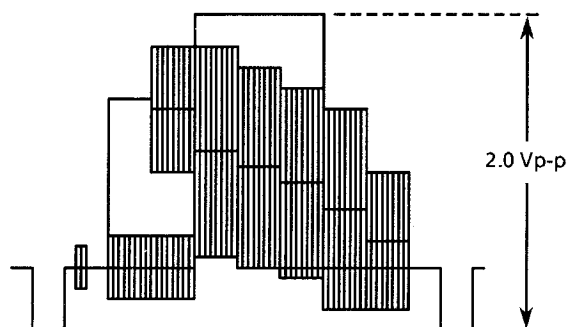


Figure 1-12.

■ ADJUSTMENT OF THE IF CIRCUIT

Adjustment of the RF AGC

Measuring instrument	Oscilloscope Signal generator
Mode	EE
Input signal	Colour bar signal
Test point	Pin (12) of IF Pack (GND) Pin (2) of IF Pack (Video Output)
Adjusting point	VR001 (AGC control)

1. Receive the colour bar signal (input field strength: $80\text{ dB}\mu$).
2. Observe the video output terminal waveform on the oscilloscope. Adjust VR001 (AGC control) in the IF pack until the noise disappears from the oscilloscope screen and the waveform nearly comes into sync.

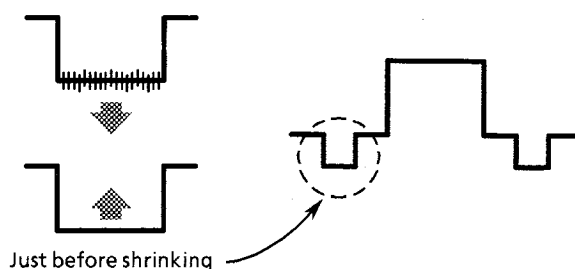


Figure 1-13.

Adjustment of the AFT

Measuring instrument	Oscilloscope Signal generator
Mode	EE
Input signal	PIF frequency uniwave Colour bar signal ($70\text{ dB}\mu$)
Test point	Pin (12) of IF Pack (GND) Pin (2) of IF Pack (Video Output)
Adjusting point	T002 (AFT coil)
Specification	—

1. Receive the colour bar signal (input field strength: $70\text{ dB}\mu$).
2. Using the signal generator, feed the PIF frequency (38.0 MHz) signal (sinewave) to the tuner IF output terminal.
3. Set the tuning switch to the VHF or UHF position. Keep the tuning button (+) or (−) depressed until the beating on the oscilloscope screen be minimum.
4. Set the tuning switch on the normal position. Adjust T002 (AFT coil) so that beating on the oscilloscope screen be minimum.

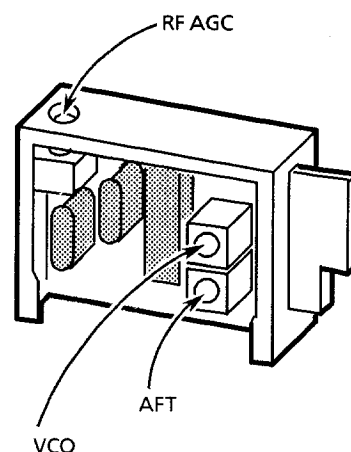
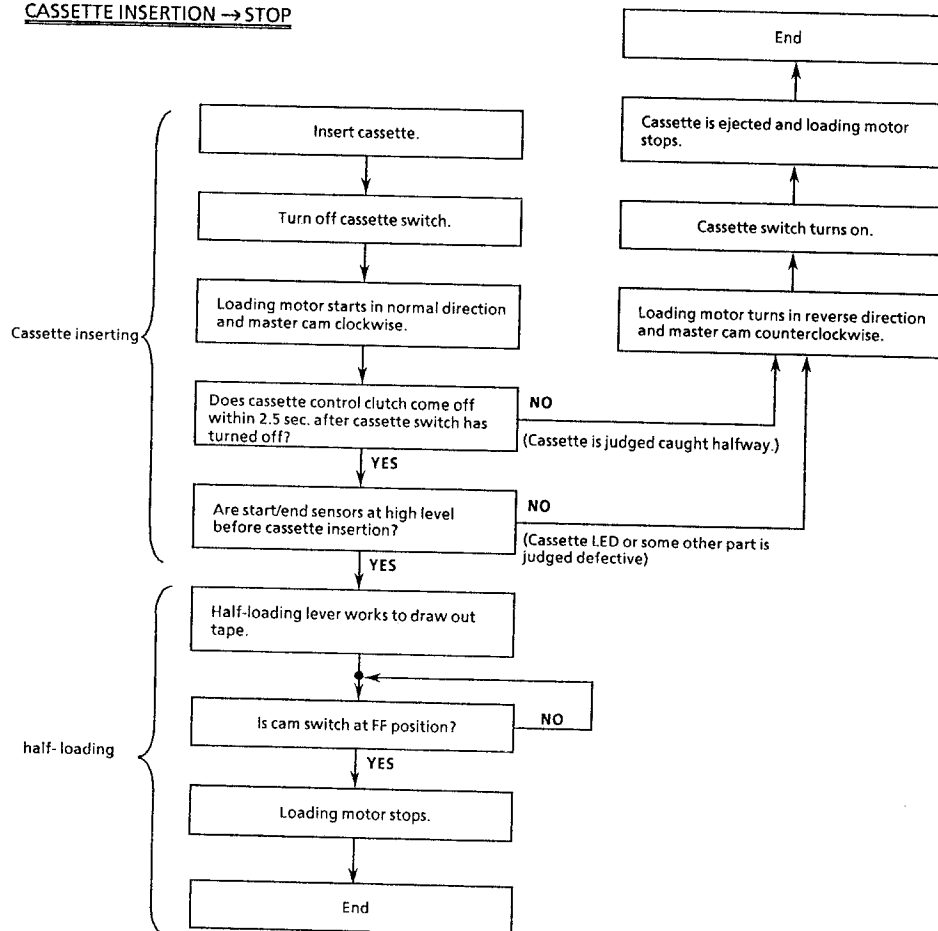


Figure 1-14. IF Pack

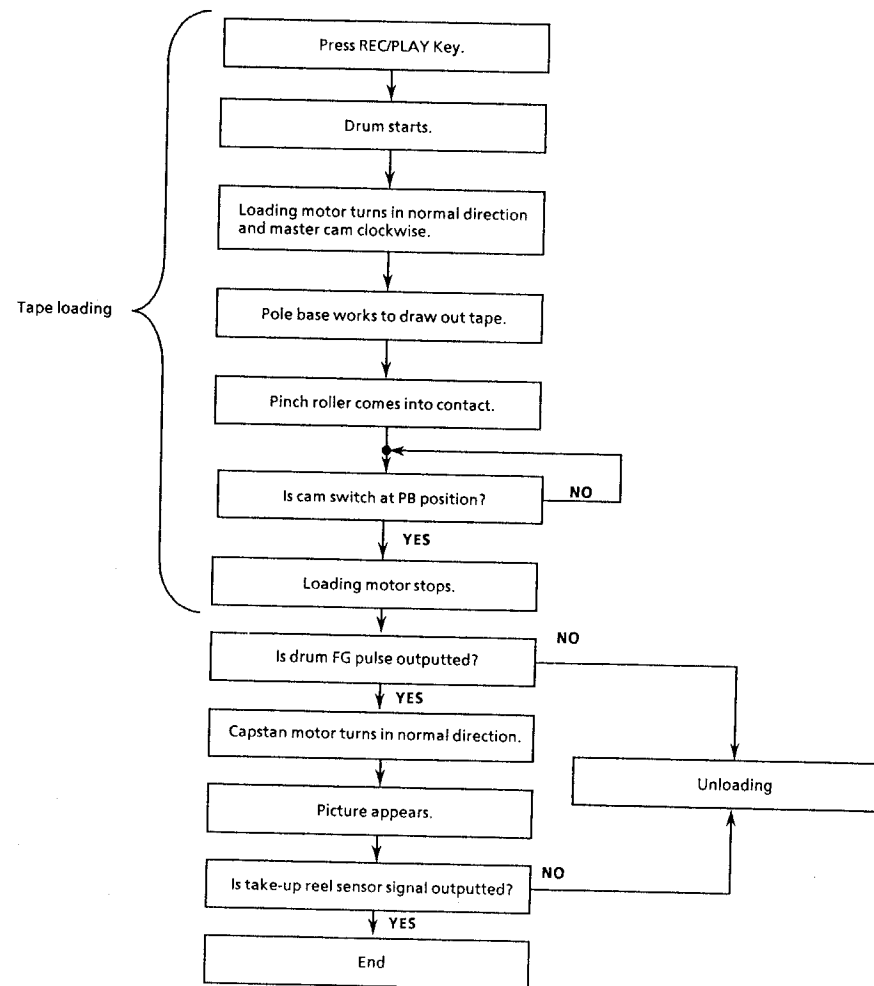
MECHANISM OPERATION FLOWCHART

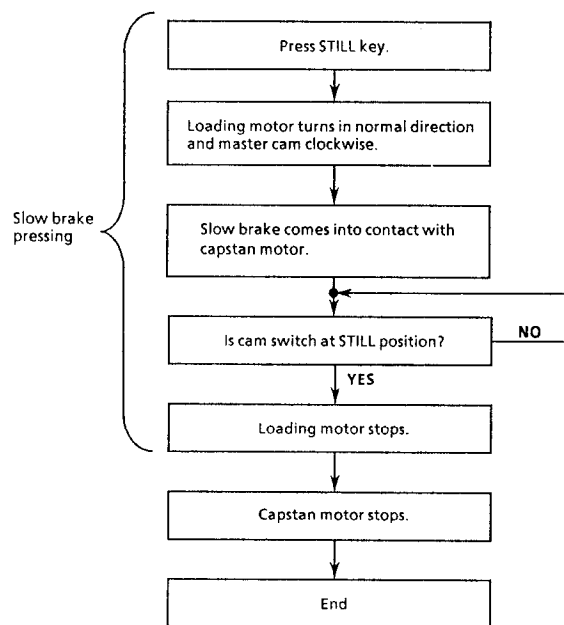
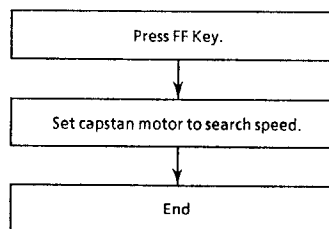
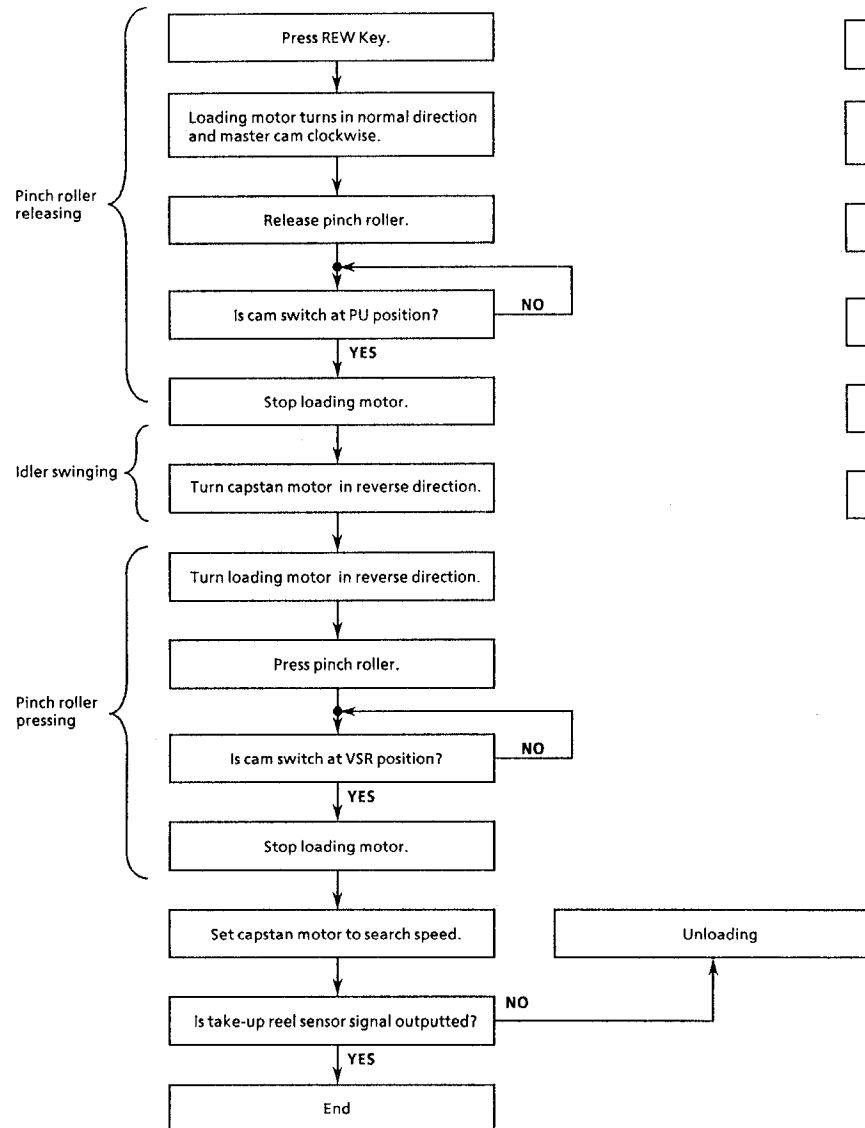
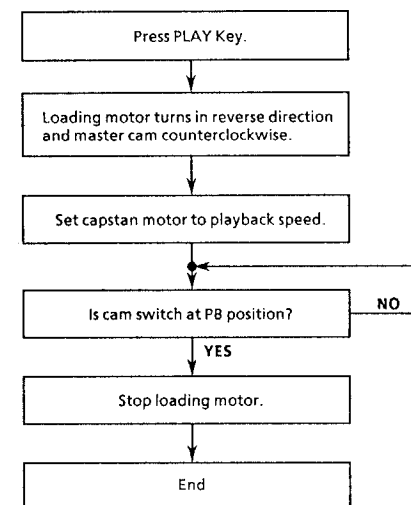
- * This flowchart describes the outline of the mechanism's operation, but does not give its details.
- * For cam switch positions, see Fig 4-2.

CASSETTE INSERTION → STOP

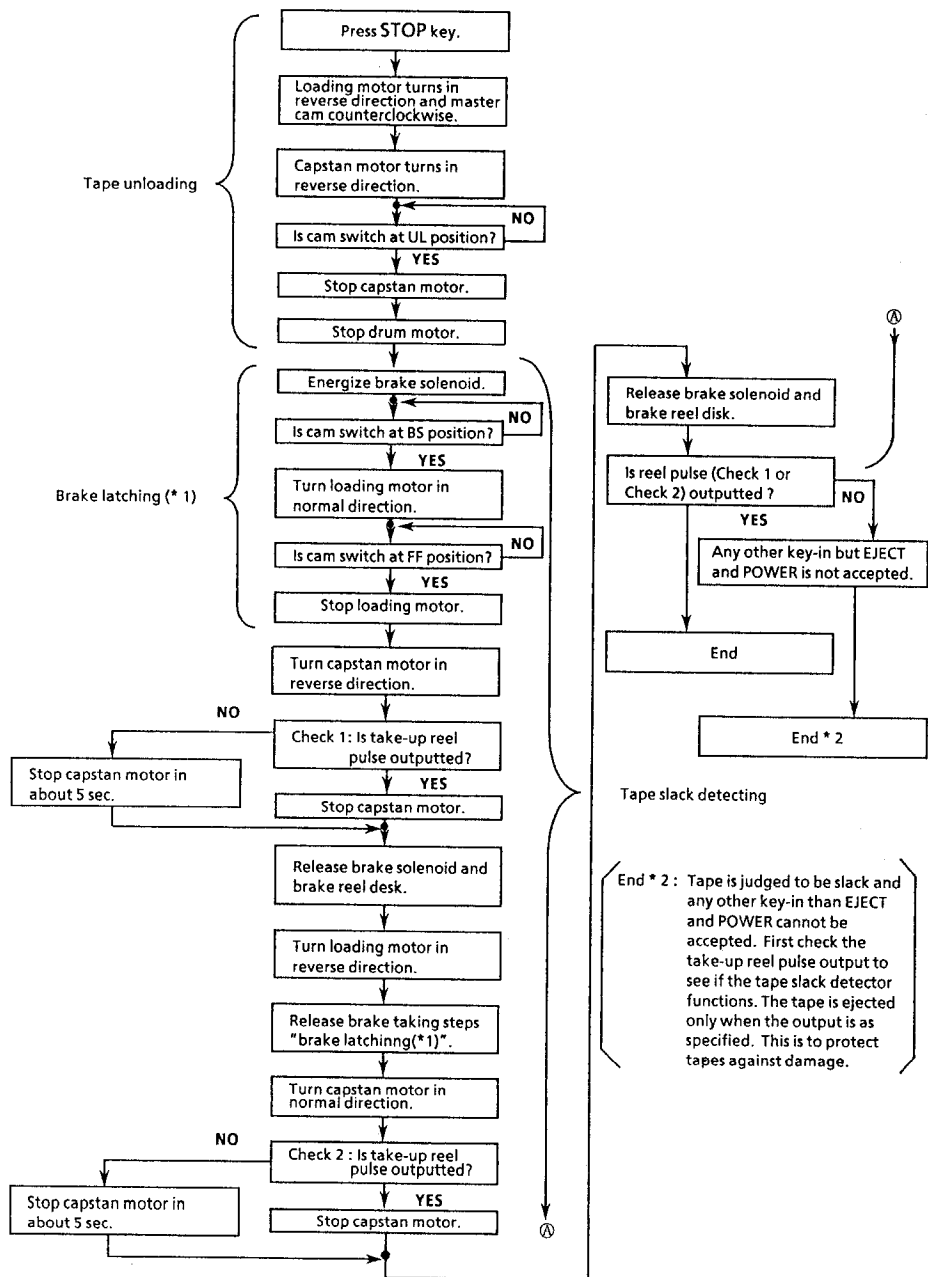


STOP → REC/PLAY

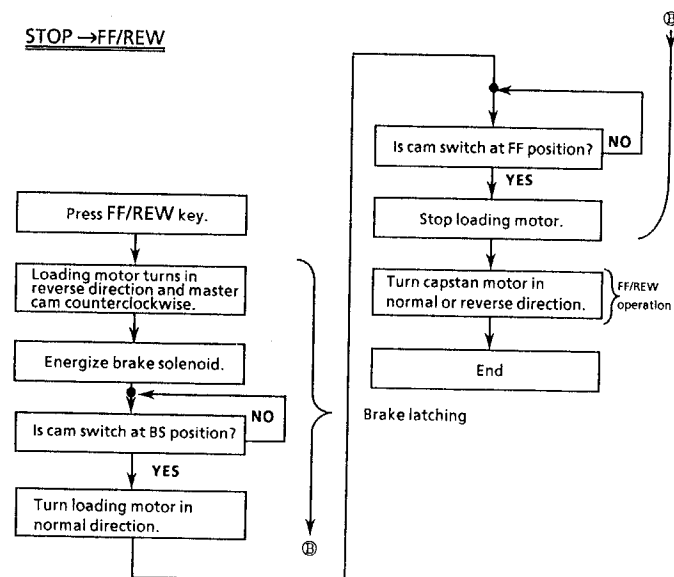


PLAY → STILLPLAY → VSFPLAY → VSRVSR → PLAY

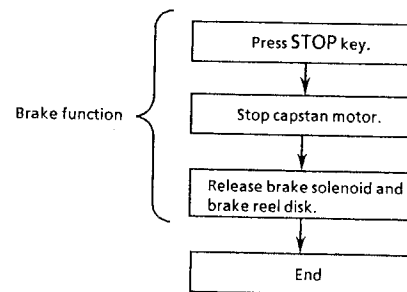
REC/PLAY → STOP



STOP → FF/REW



FF/REW → STOP



STOP → CASSETTE EJECT

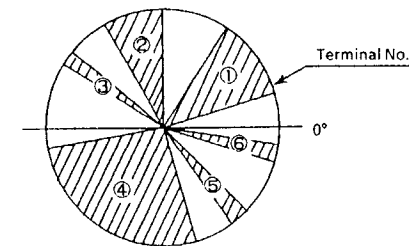
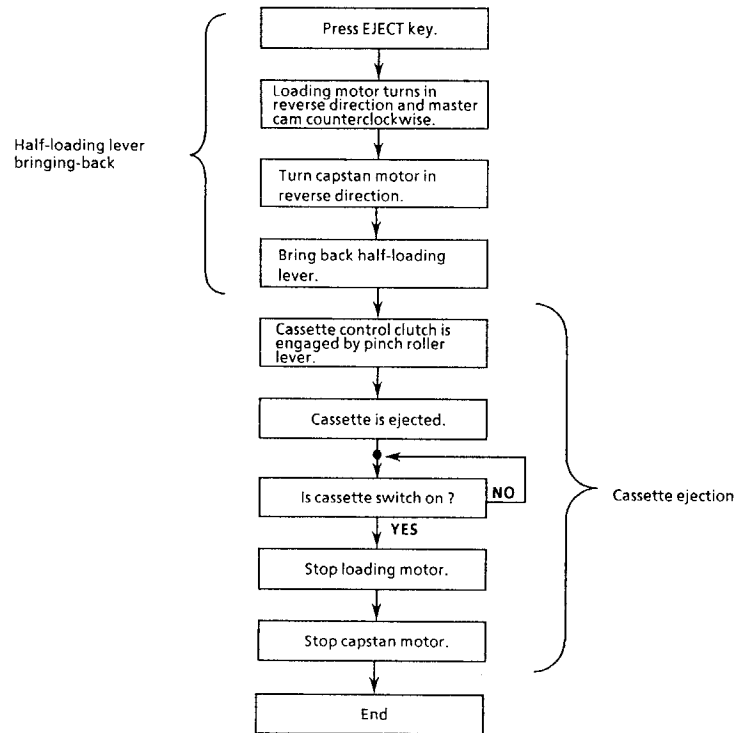


Fig. 4-1 Cam switch pattern

* The cam switch has the pattern as shown in Fig. 4-1. The circuit turns on when the signal comes on the shaded zones on the switch. The six pattern signals are judged to be on or off by the system controller in order to detect the mechanism modes.

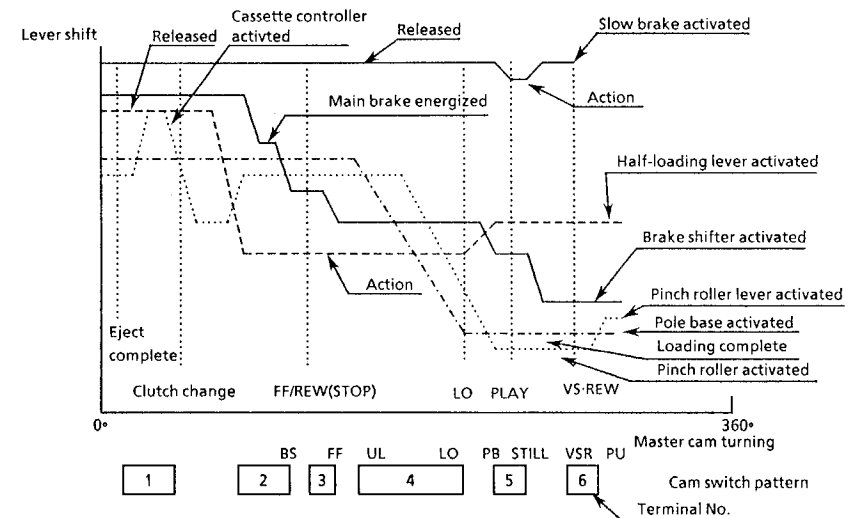
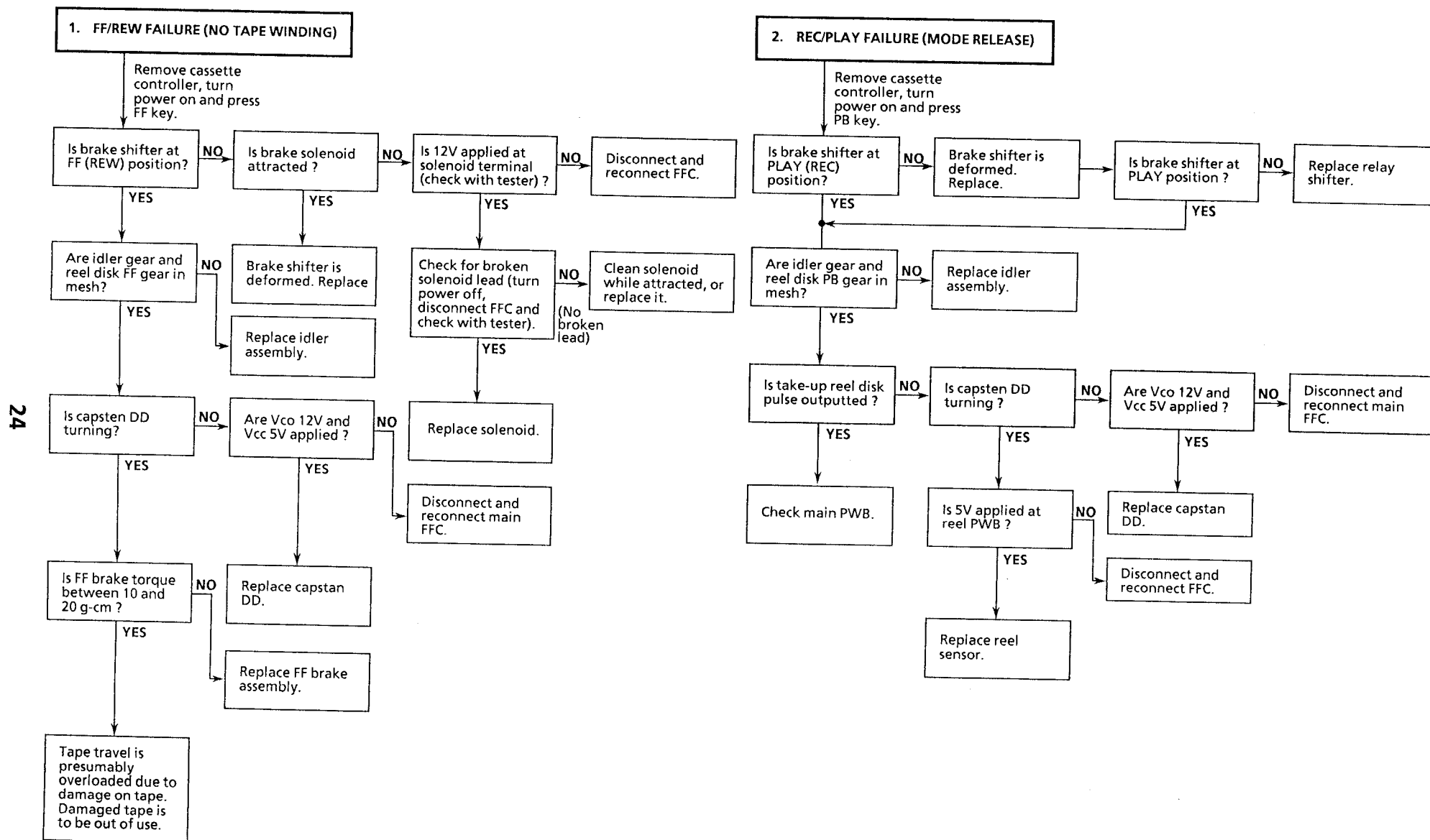
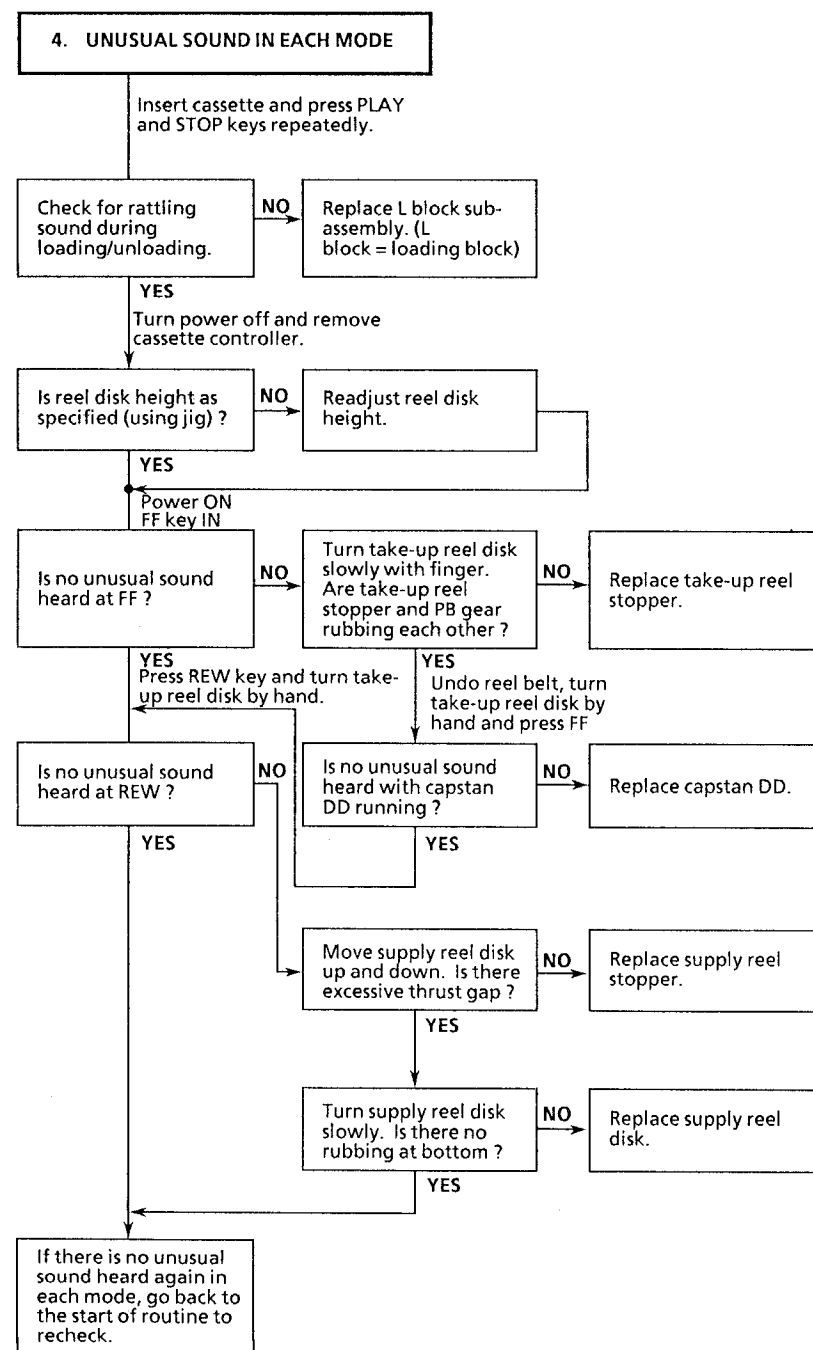
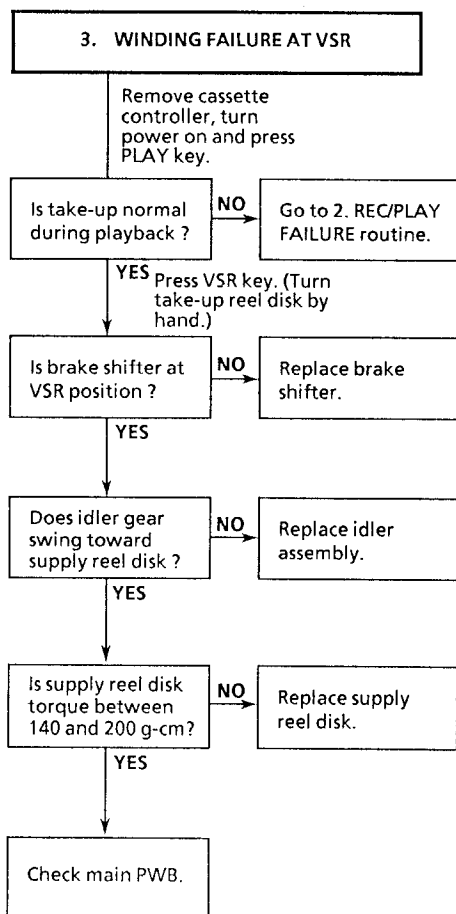


Fig. 4-2 Relationship between cam switch positions and mechanism movement

The relationship between the cam switch positions and the mechanism movement is shown in Fig. 4-2.

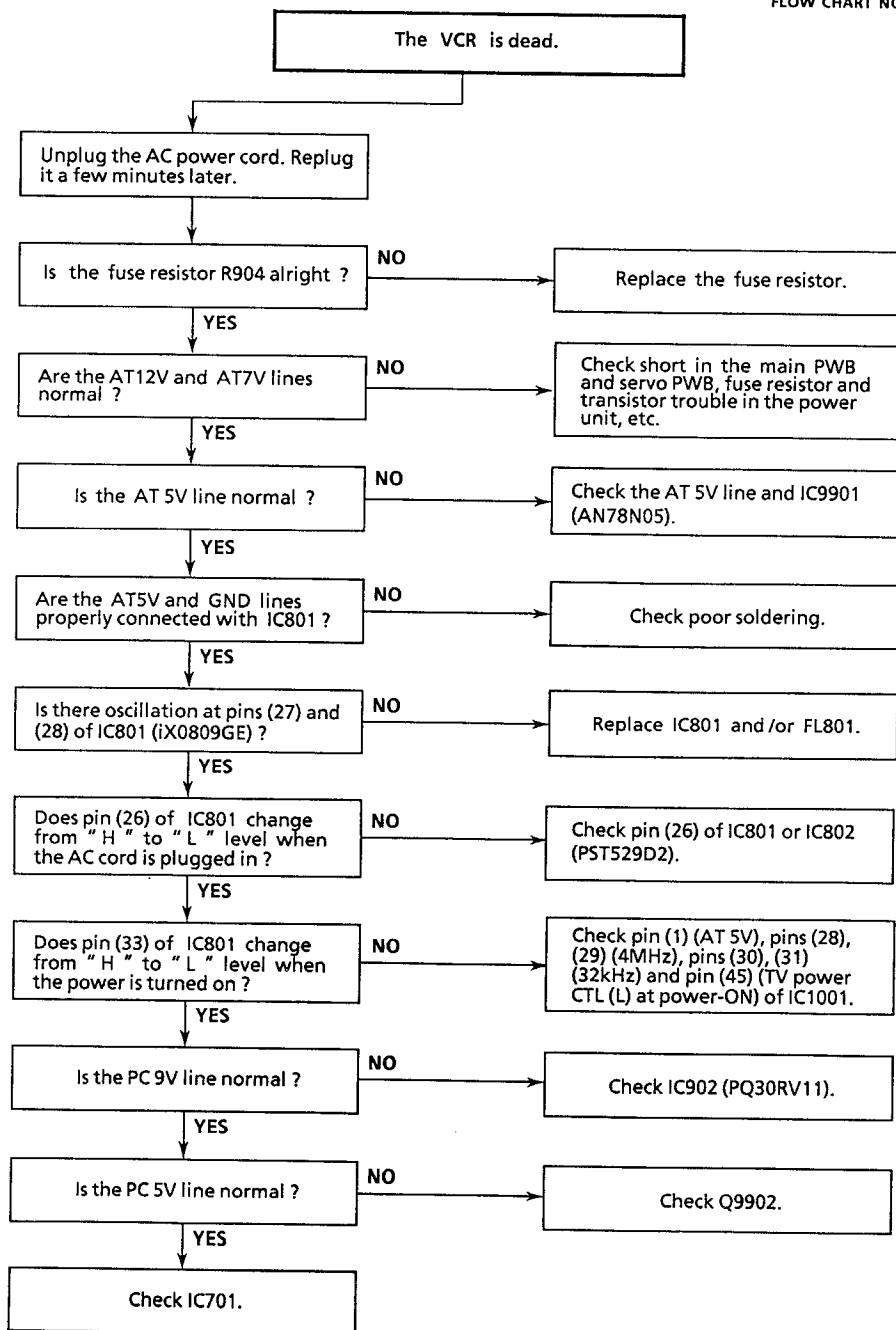
MECHANISM TROUBLESHOOTING





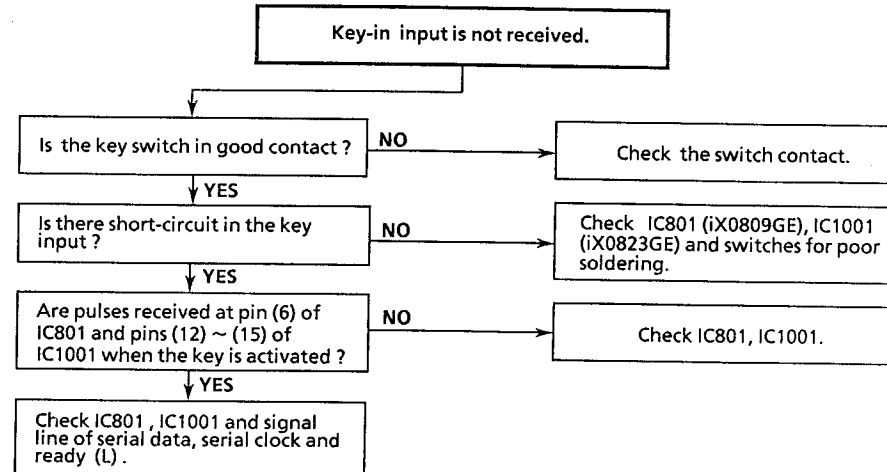
VCR POWER TROUBLESHOOTING

FLOW CHART NO. 1-1



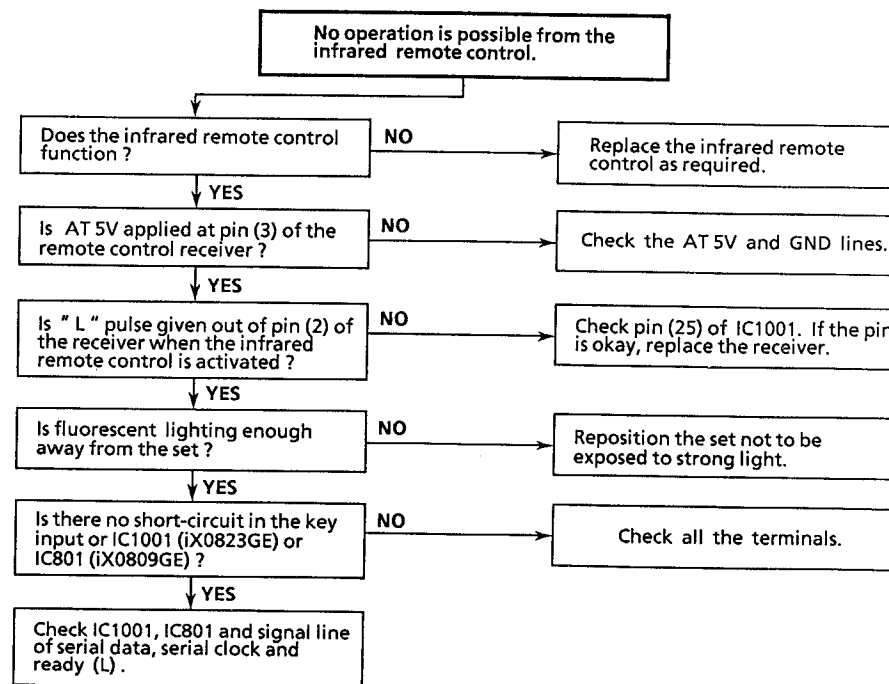
KEY-IN TROUBLESHOOTING

FLOW CHART NO. 1-2



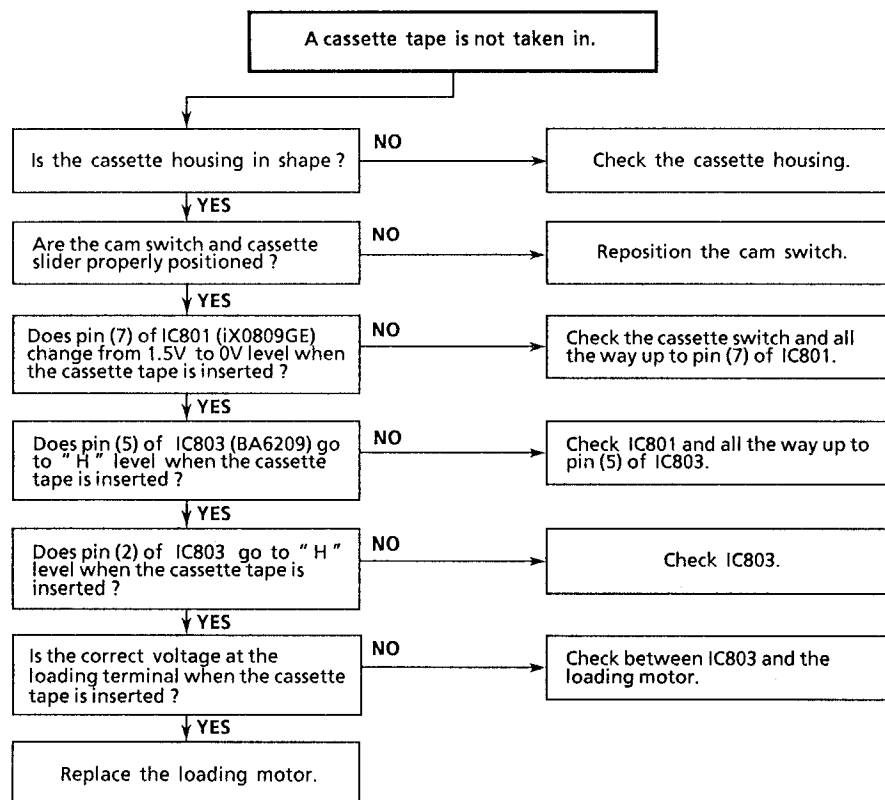
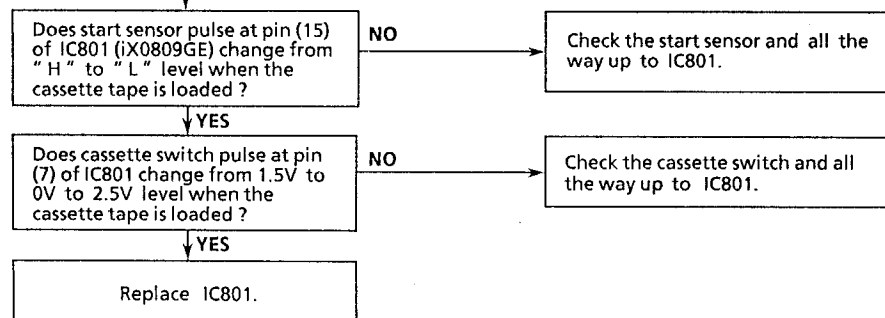
INFRARED R/C TROUBLESHOOTING

FLOW CHART NO. 1-3



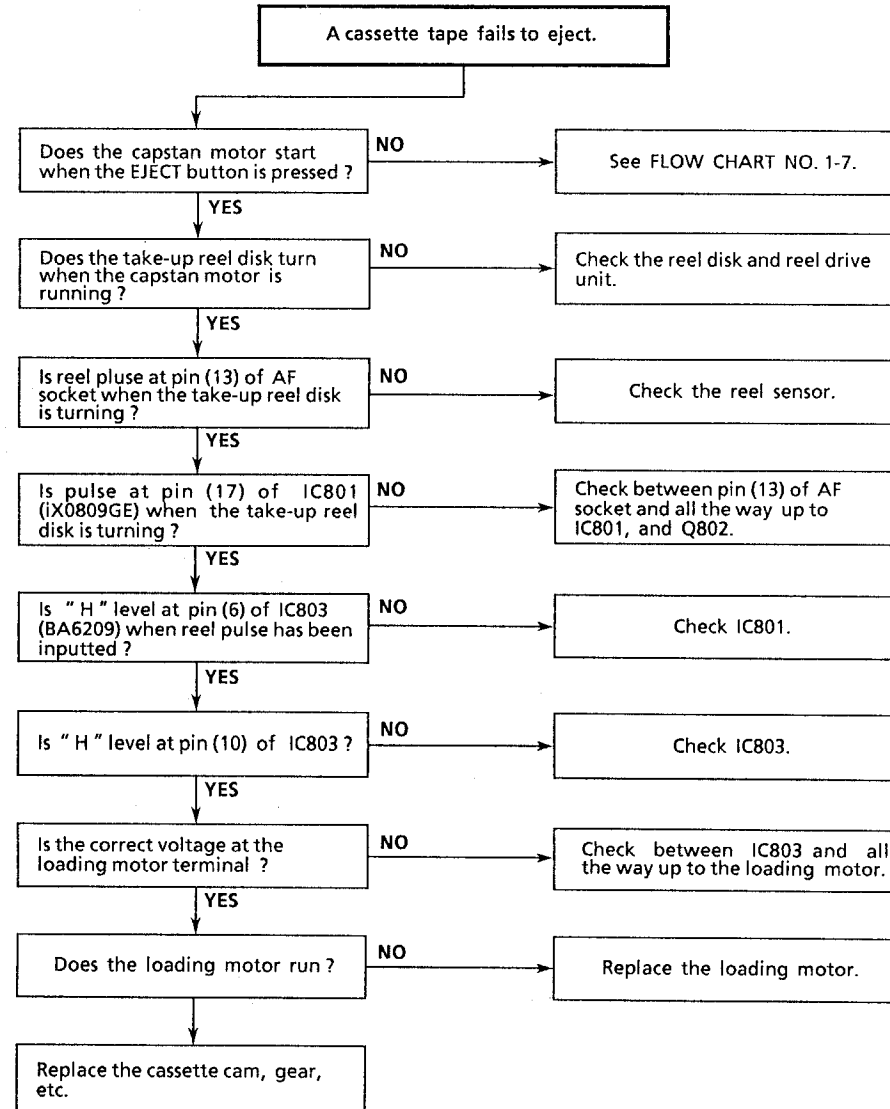
CASSETTE CONTROL TROUBLESHOOTING

FLOW CHART NO. 1-4

**A cassette tape is taken in, but ejected at once.**

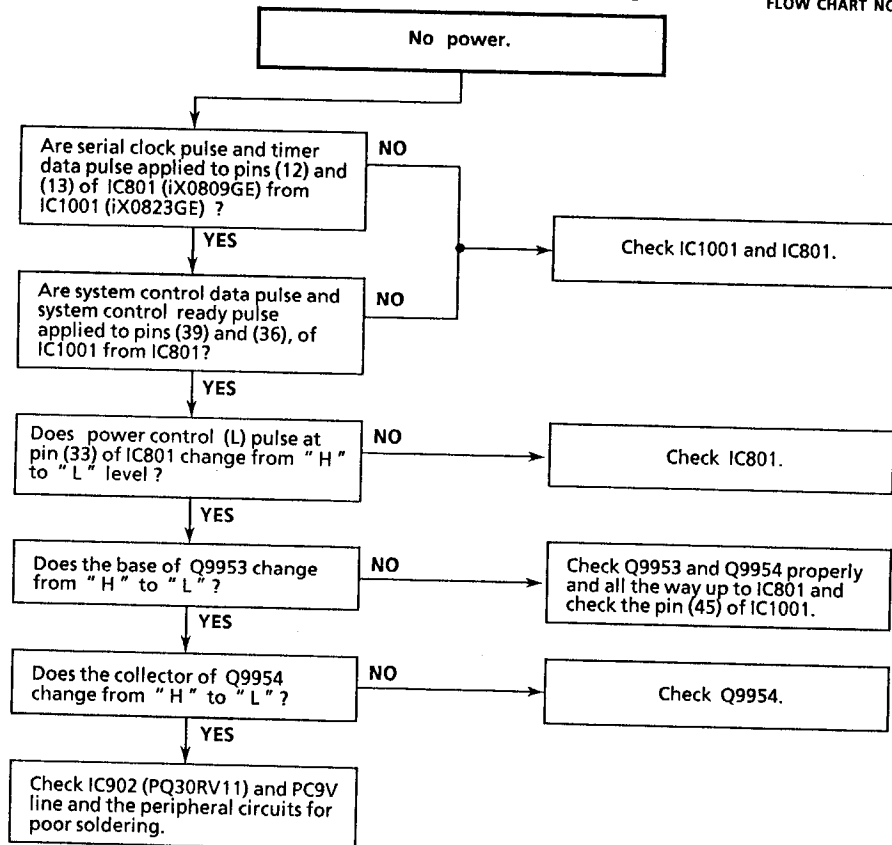
LOADING MOTOR AND EJECT TROUBLESHOOTING

FLOW CHART NO. 1-5



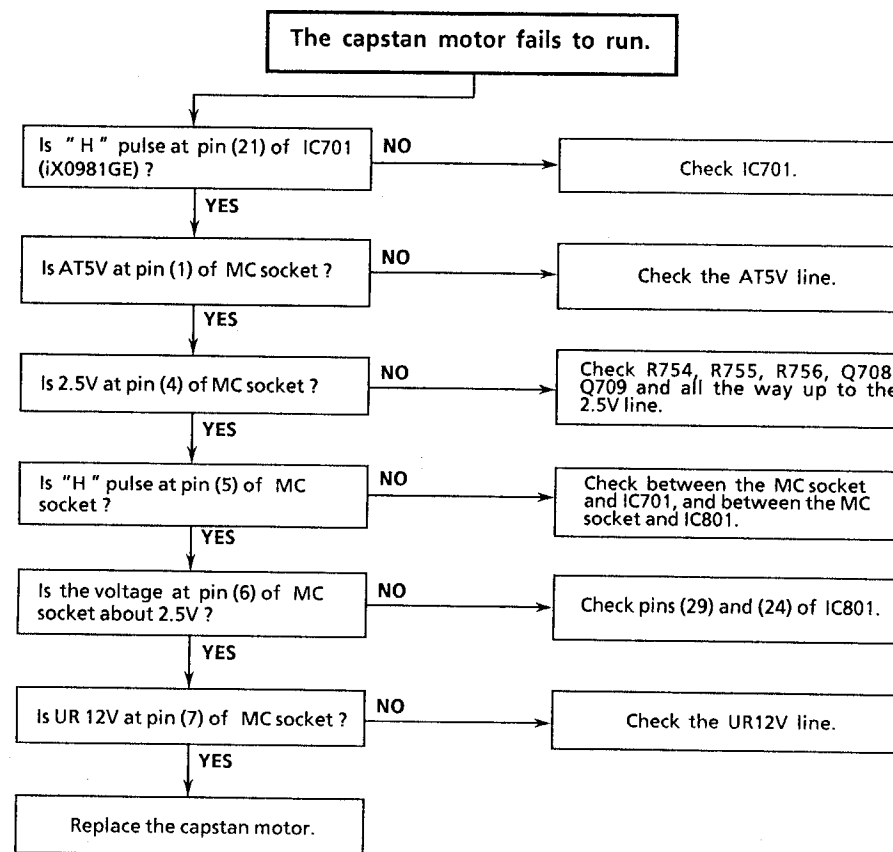
SYSTEM CONTROL TROUBLESHOOTING

FLOW CHART NO. 1-6



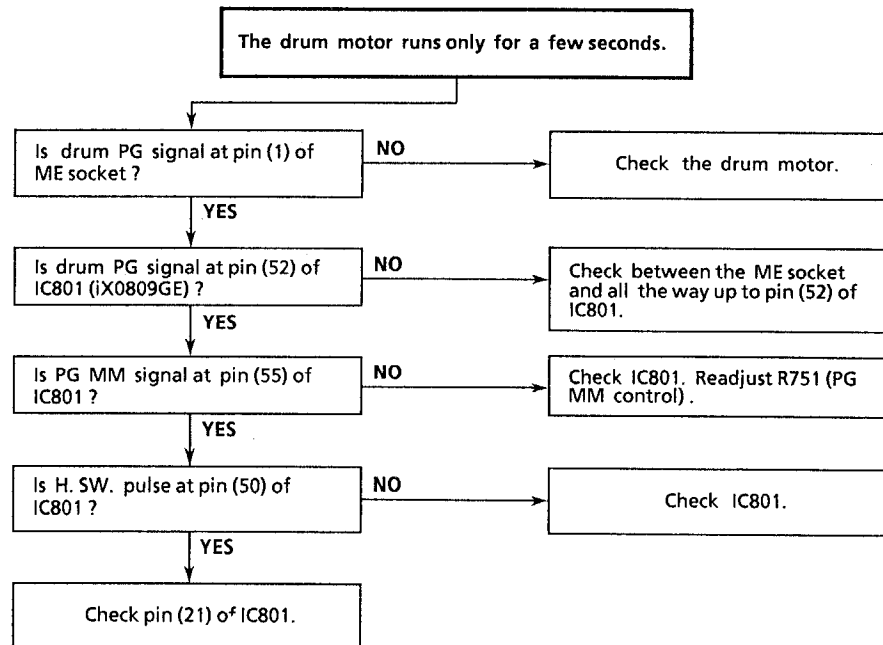
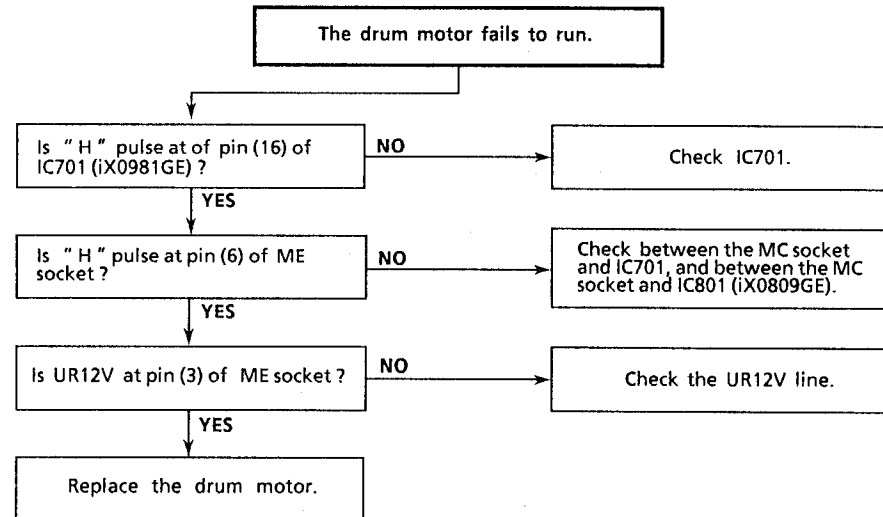
CAPSTAN MOTOR TROUBLESHOOTING

FLOW CHART NO. 1-7



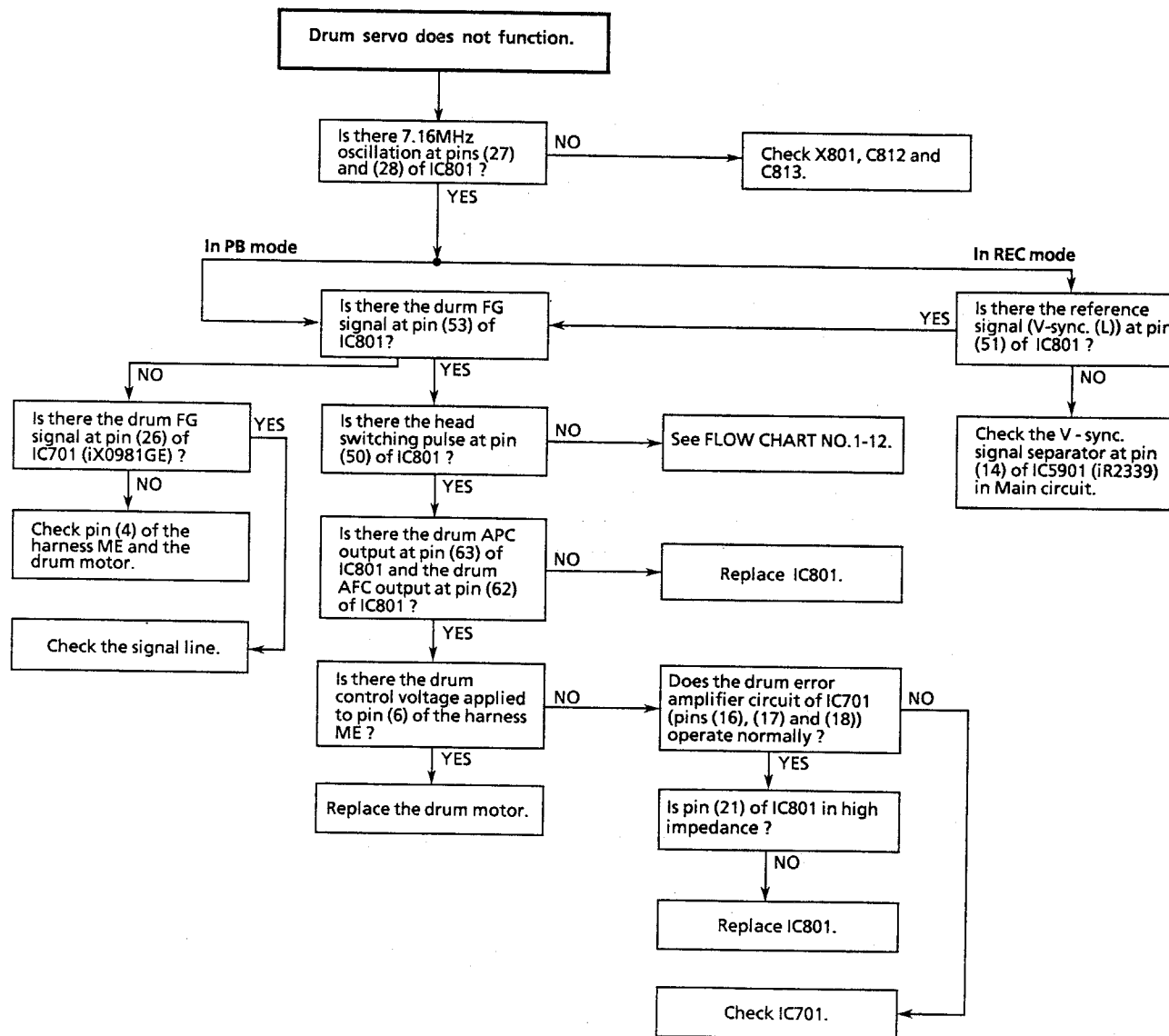
DRUM MOTOR TROUBLESHOOTING

FLOW CHART NO. 1-8



DRUM SERVO TROUBLESHOOTING

FLOW CHART NO. 1-9

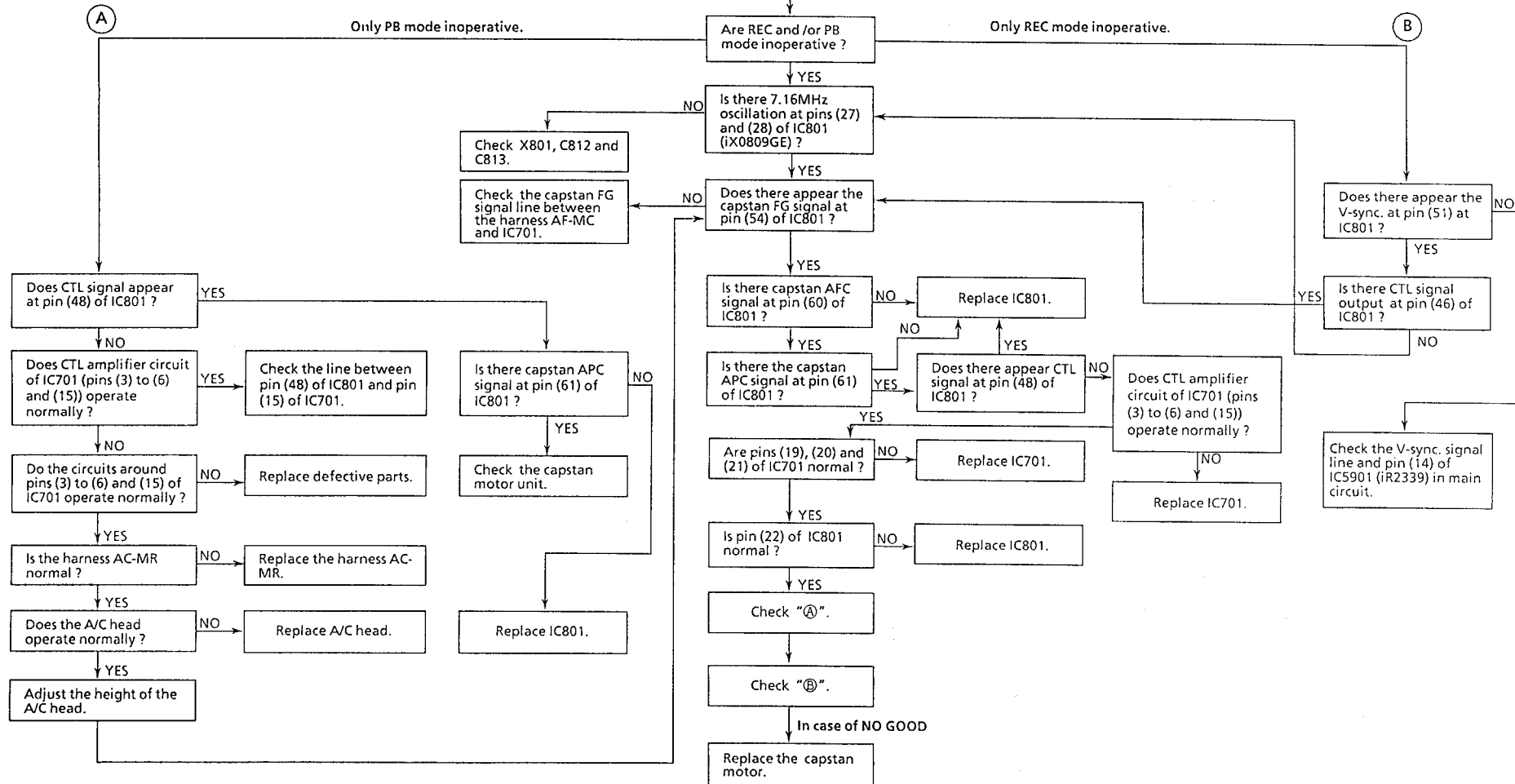


CAPSTAN SERVO TROUBLESHOOTING

Capstan servo does not function.

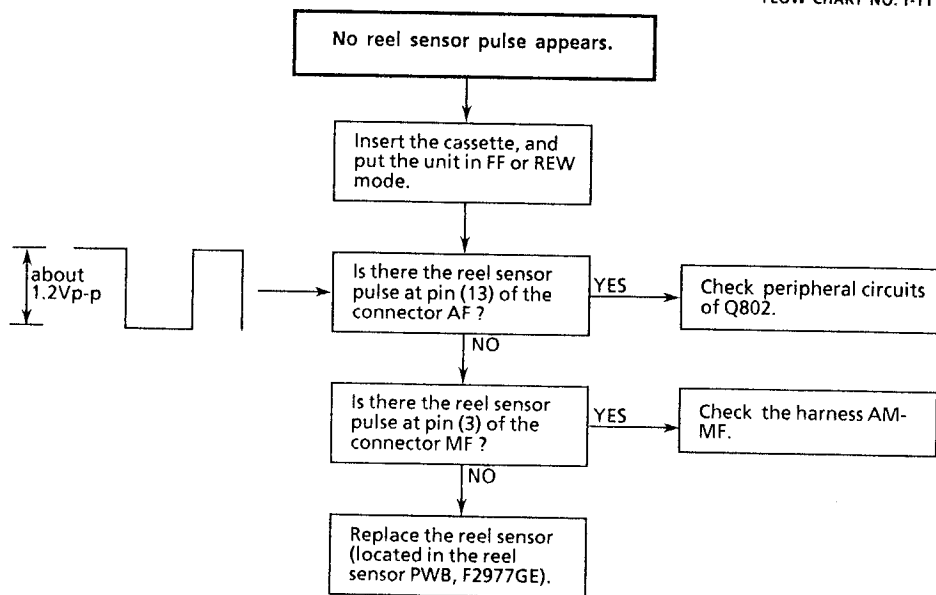
FLOW CHART NO. 1-10

31



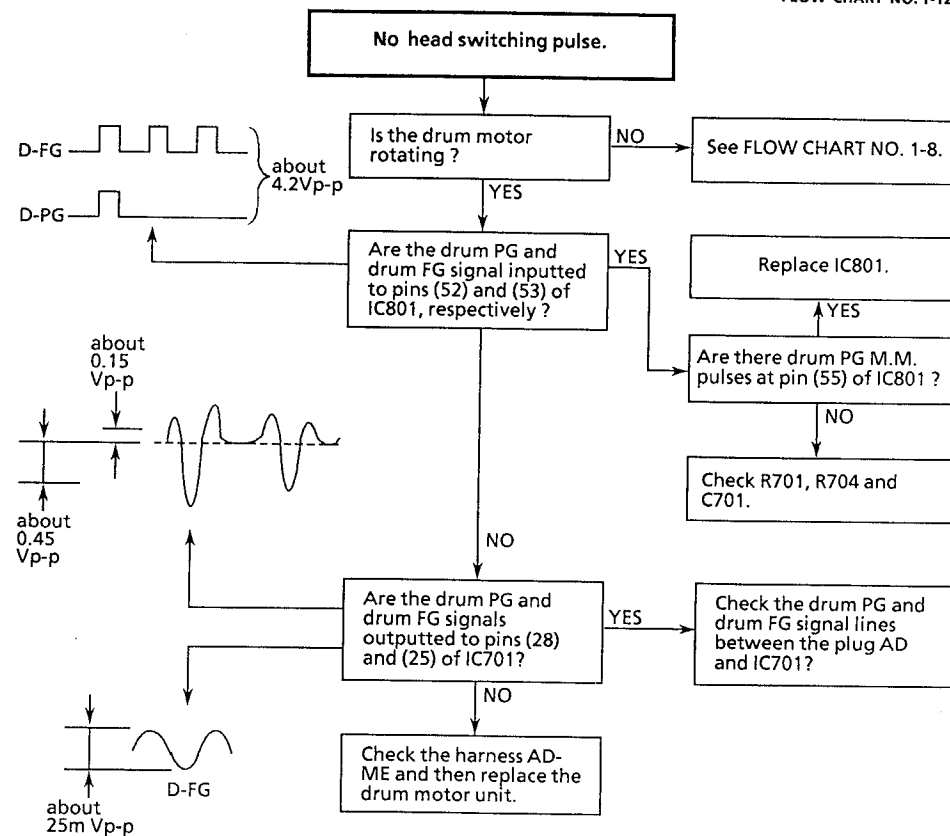
TAKE-UP REEL PULSE GENERATOR TROUBLESHOOTING

FLOW CHART NO. 1-11



HEAD SWITCHING PULSE TROUBLESHOOTING

FLOW CHART NO. 1-12



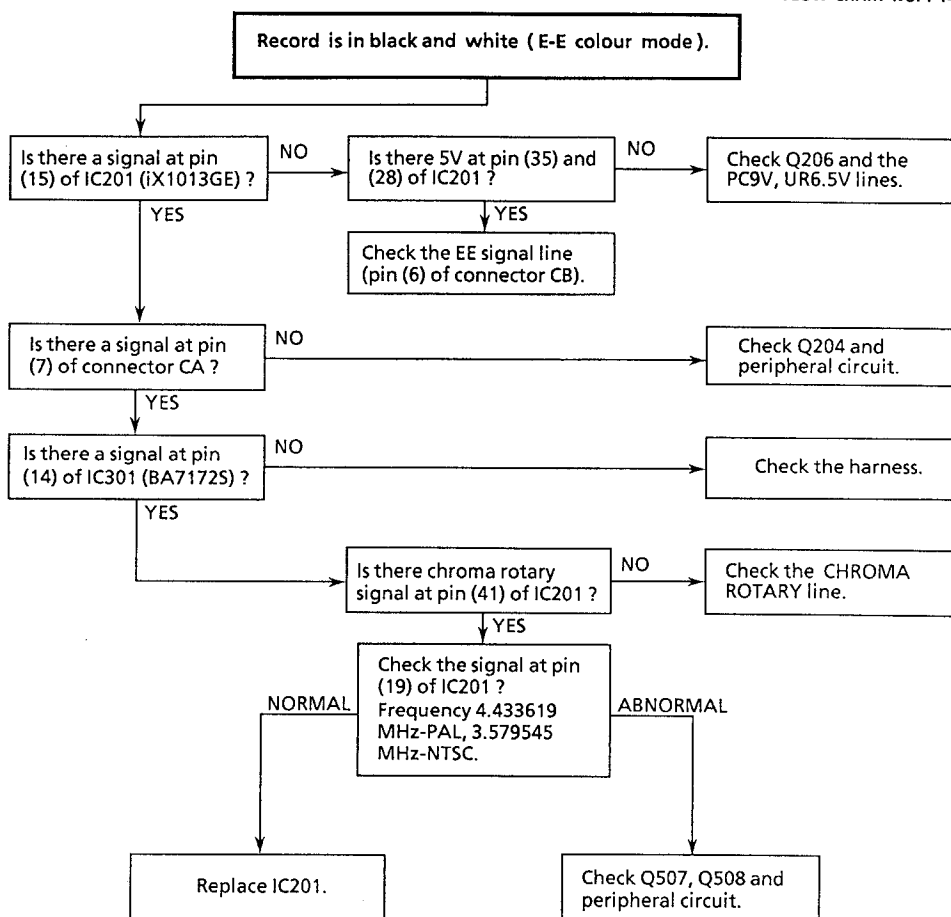
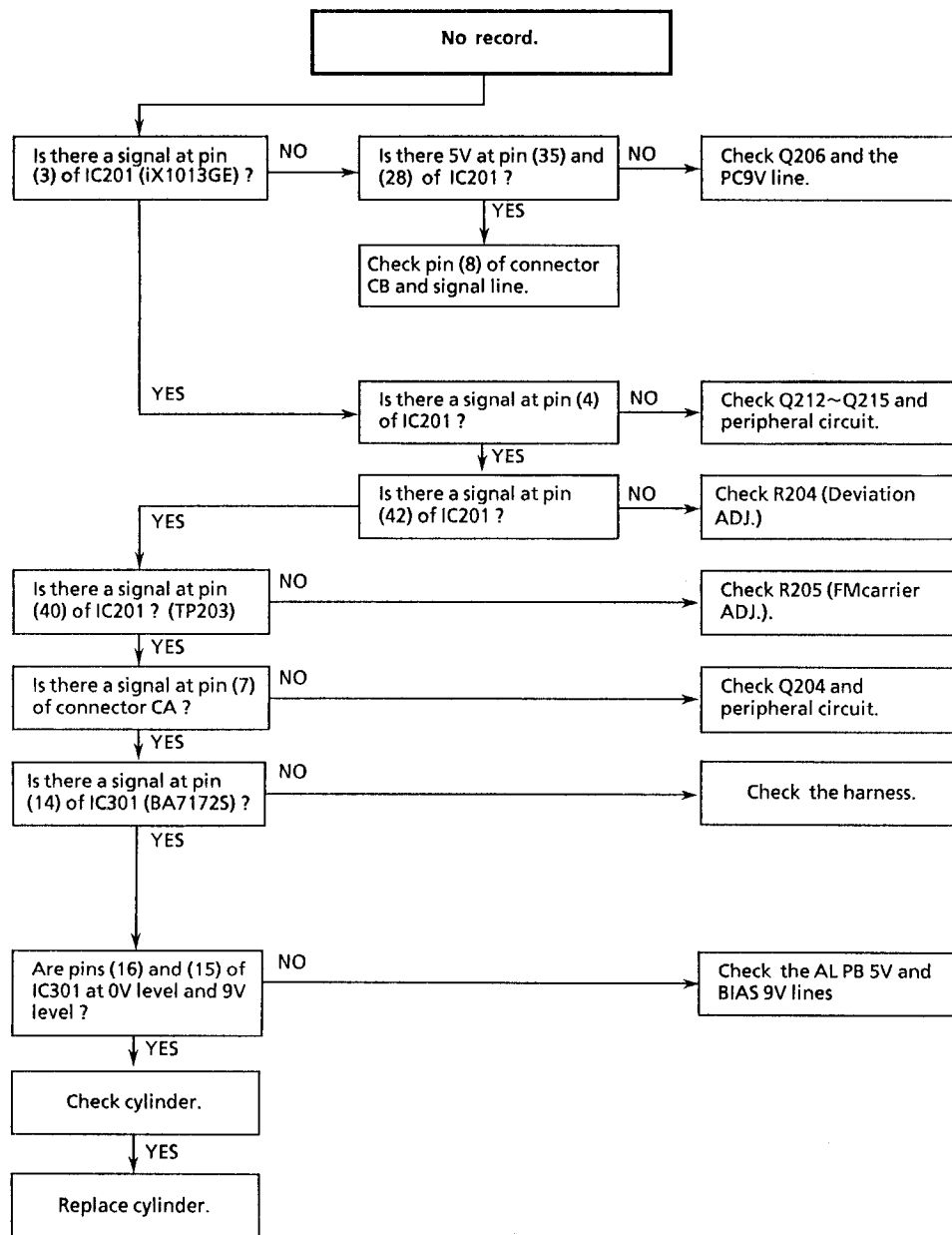
VCR RECORDING MODE (LUMINANCE) TROUBLESHOOTING

FLOW CHART NO. 1-13

VCR RECORDING MODE (CHROMA) TROUBLESHOOTING

FLOW CHART NO. 1-14

33

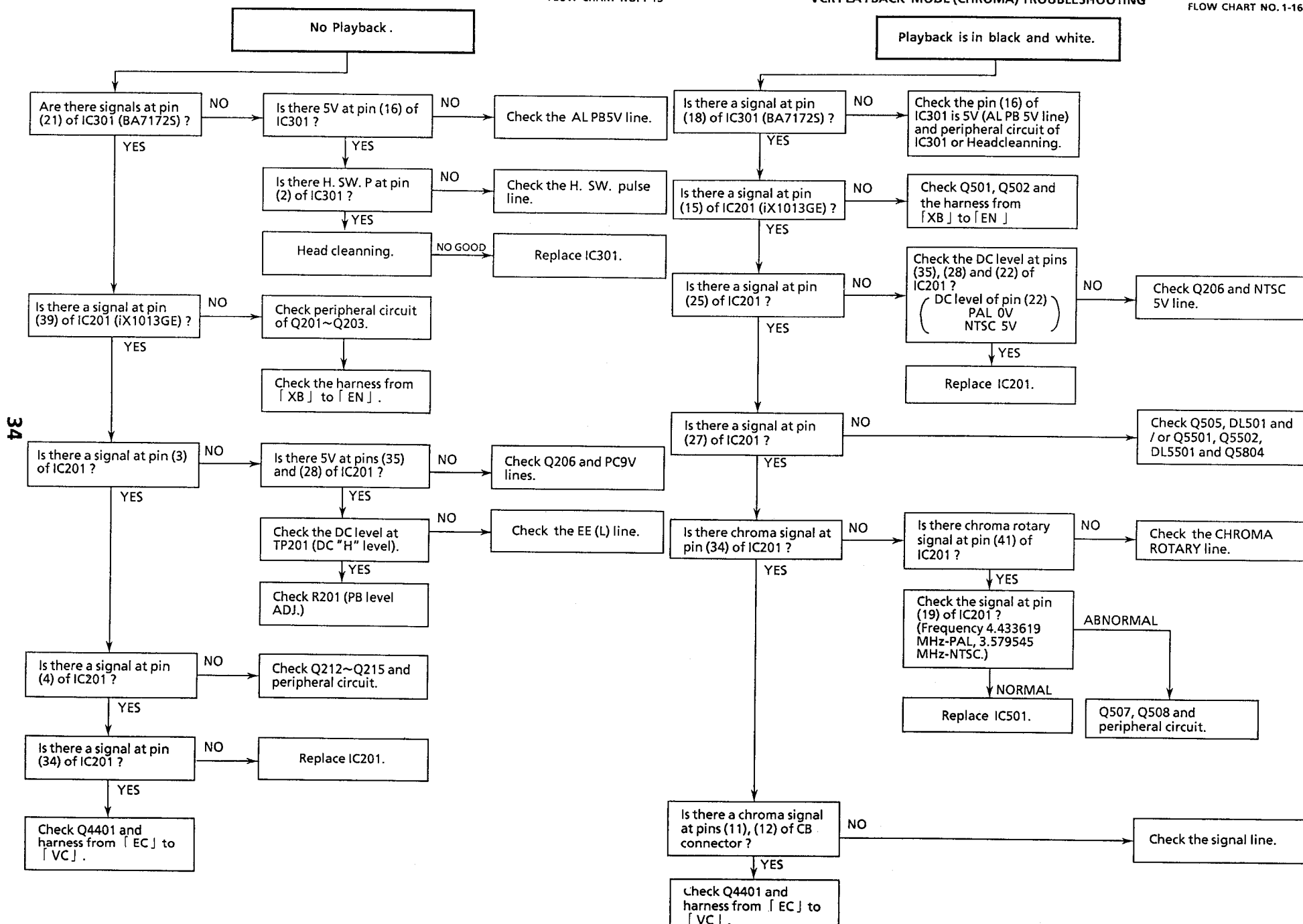


VCR PLAYBACK MODE (LUMINANCE) TROUBLESHOOTING

FLOW CHART NO. 1-15

VCR PLAYBACK MODE (CHROMA) TROUBLESHOOTING

FLOW CHART NO. 1-16



VCR E - E MODE TROUBLESHOOTING

FLOW CHART NO. 1-17

VCR SOUND TROUBLESHOOTING

FLOW CHART NO. 1-18

No E-E signal.

NO SOUND

<EE Sound is not heard>

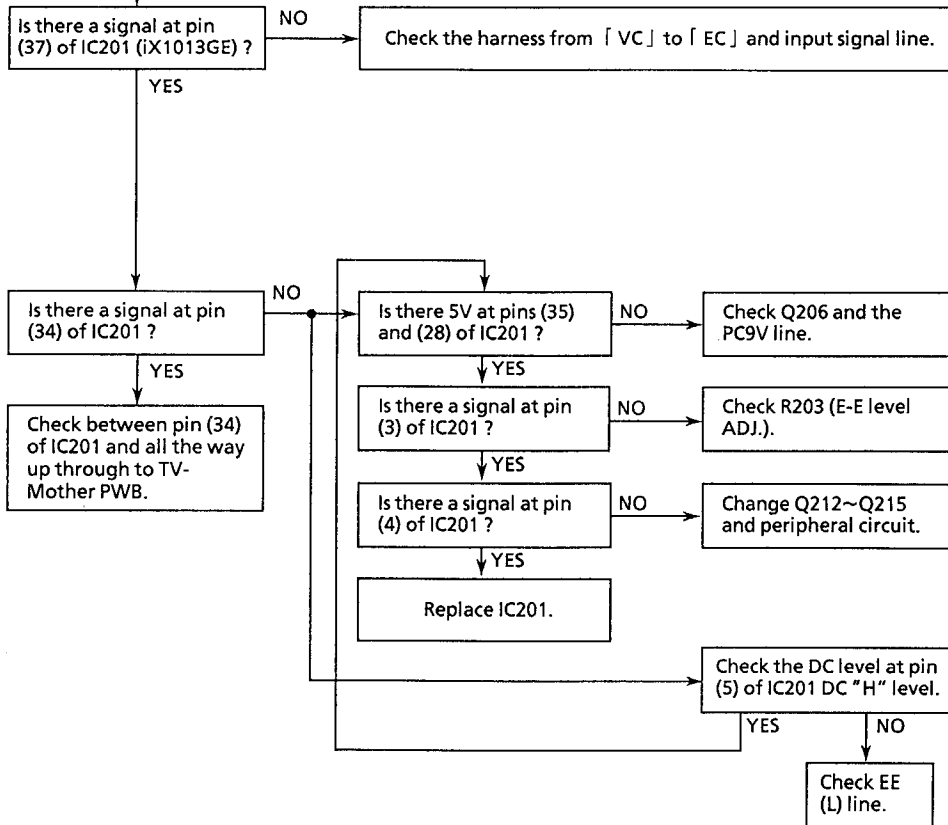
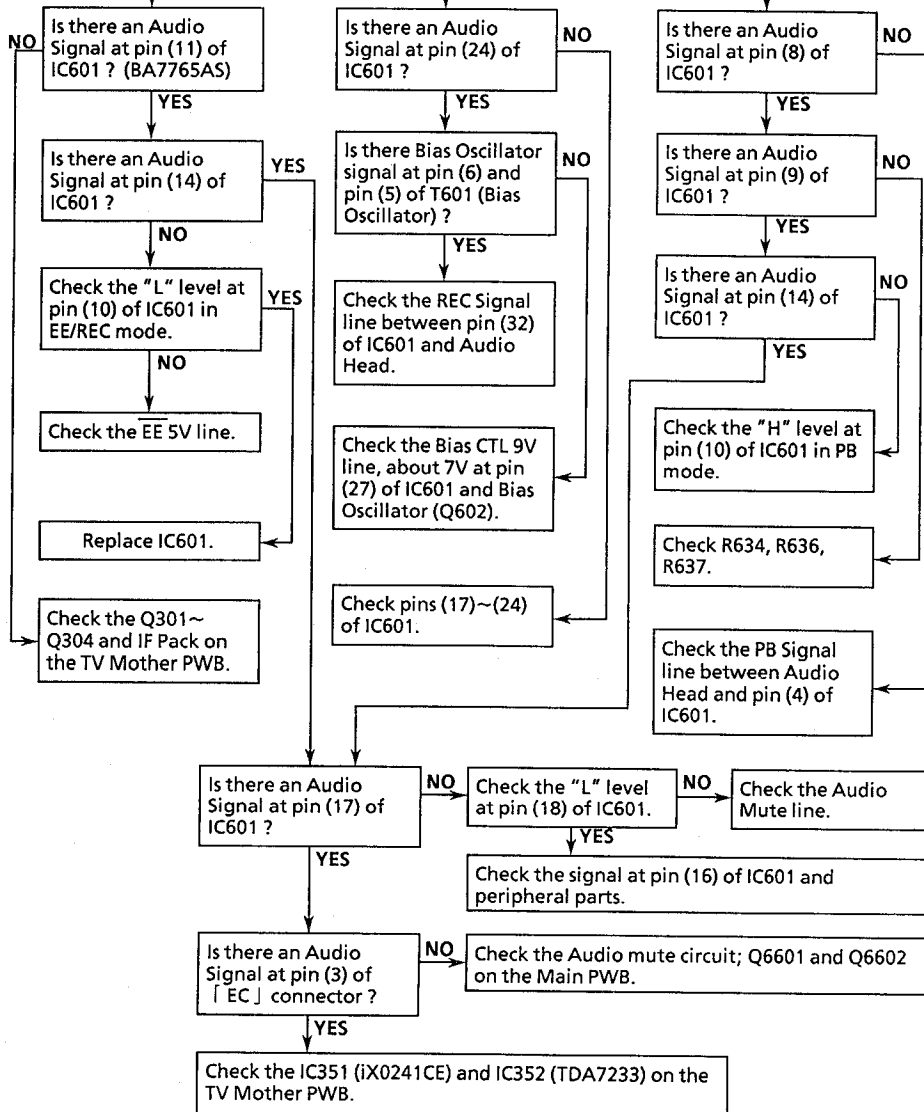
<EE Sound is heard
But audio REC is not
possible>

<PB Sound is not heard>

EE

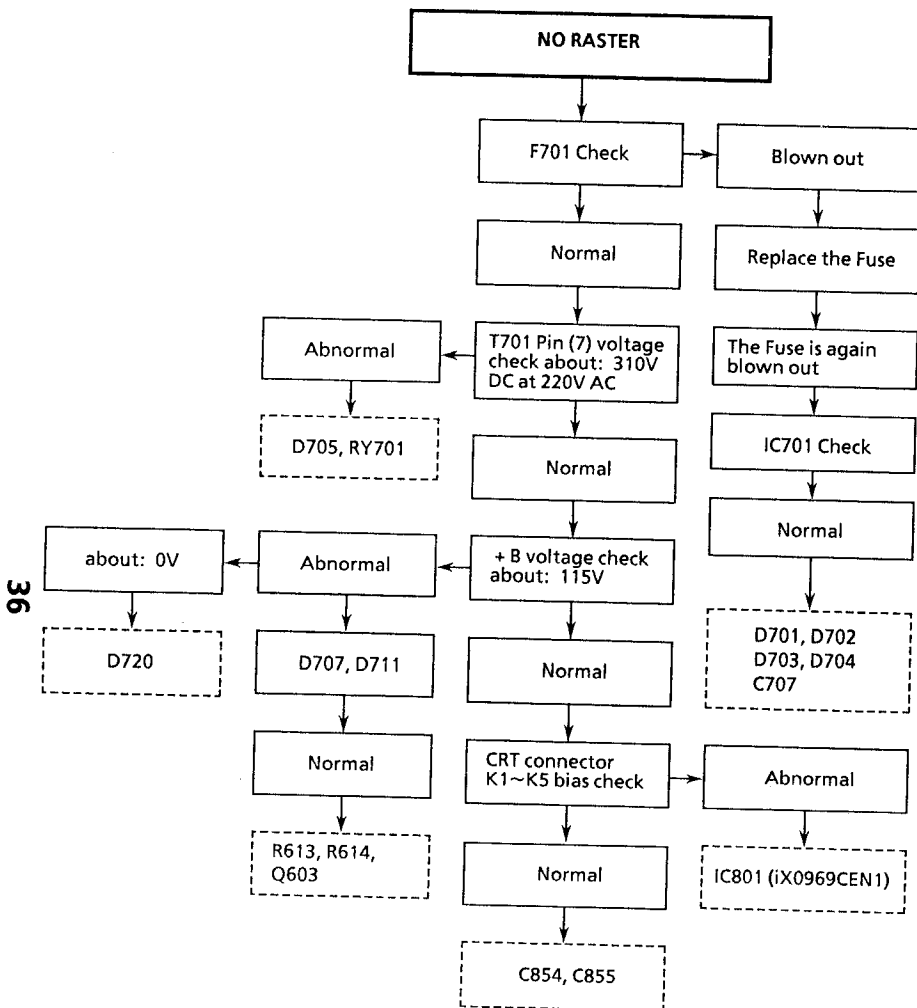
REC

PB



TV TROUBLESHOOTING TABLE

FLOW CHART NO. 2-1

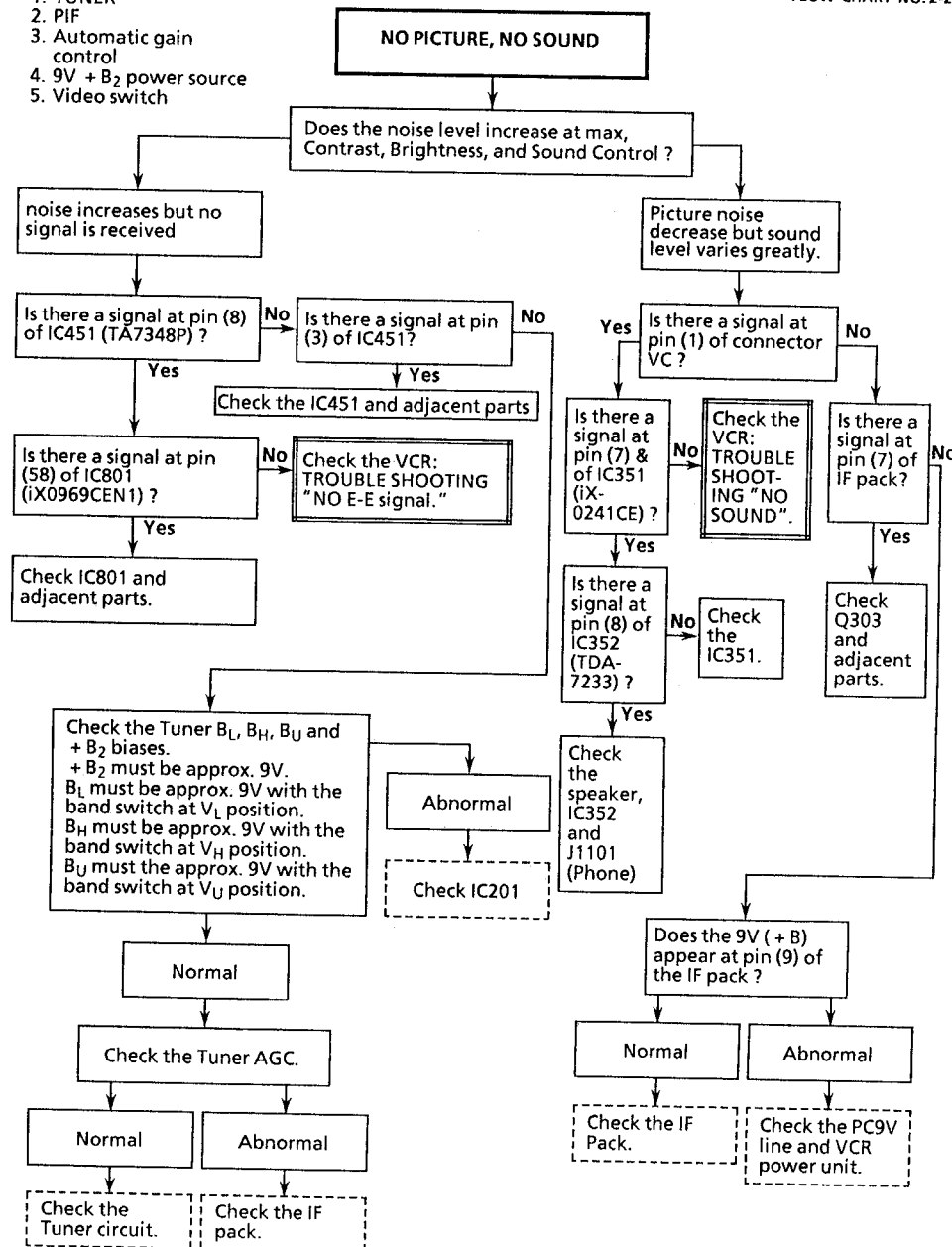


36

Circuit to be checked:

1. TUNER
2. PIF
3. Automatic gain control
4. 9V + B₂ power source
5. Video switch

FLOW CHART NO. 2-2

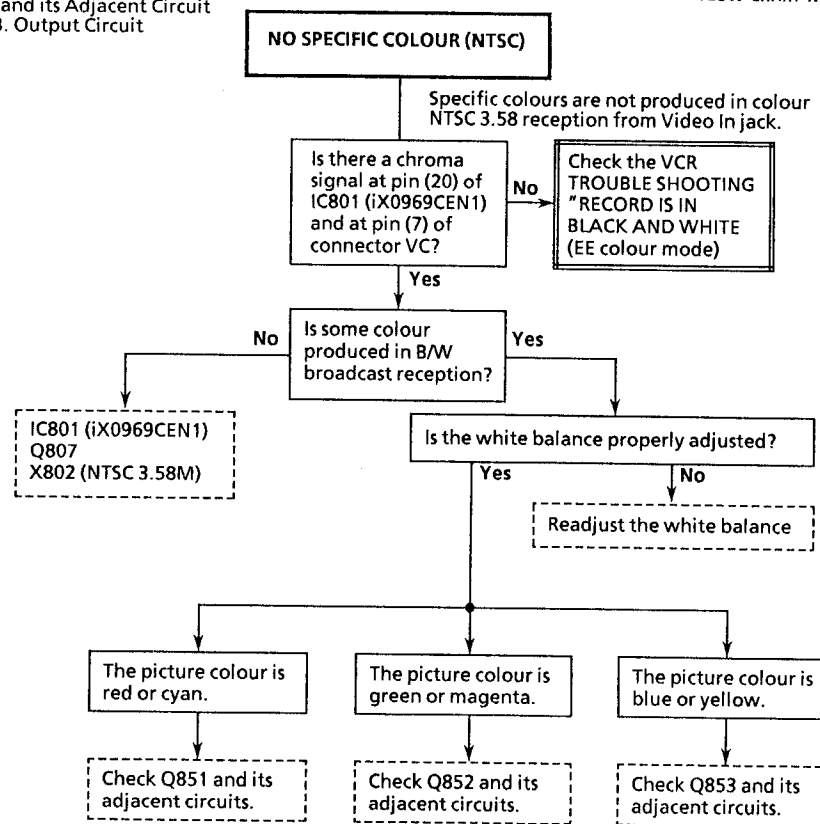
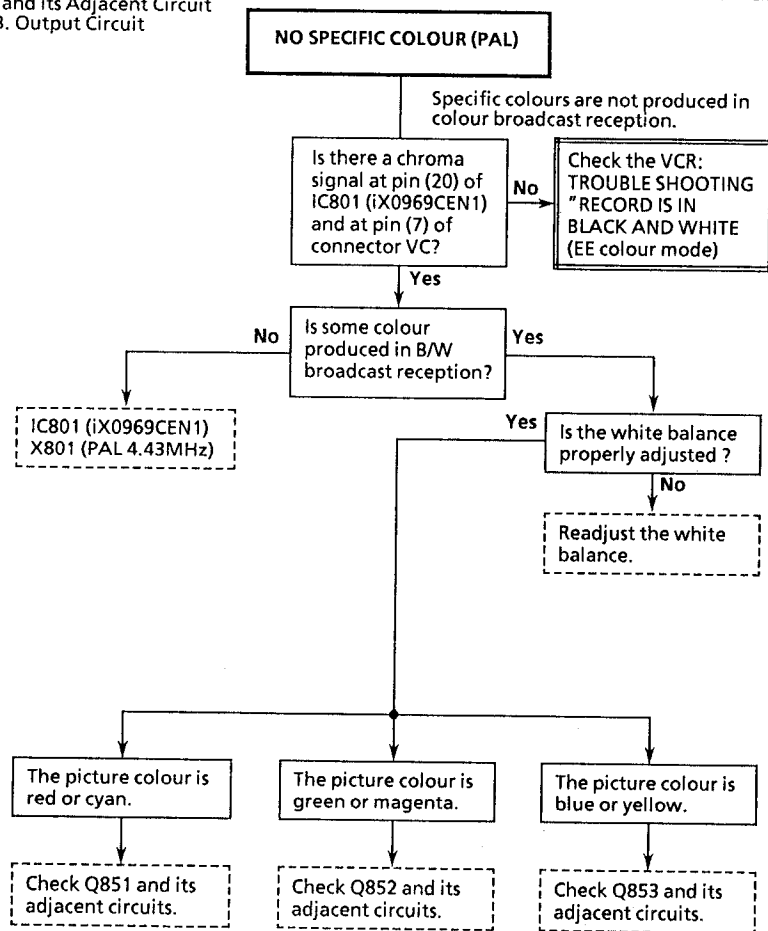


- Circuits to be checked:
- IC801 and its Adjacent Circuit
 - R. G. B. Output Circuit

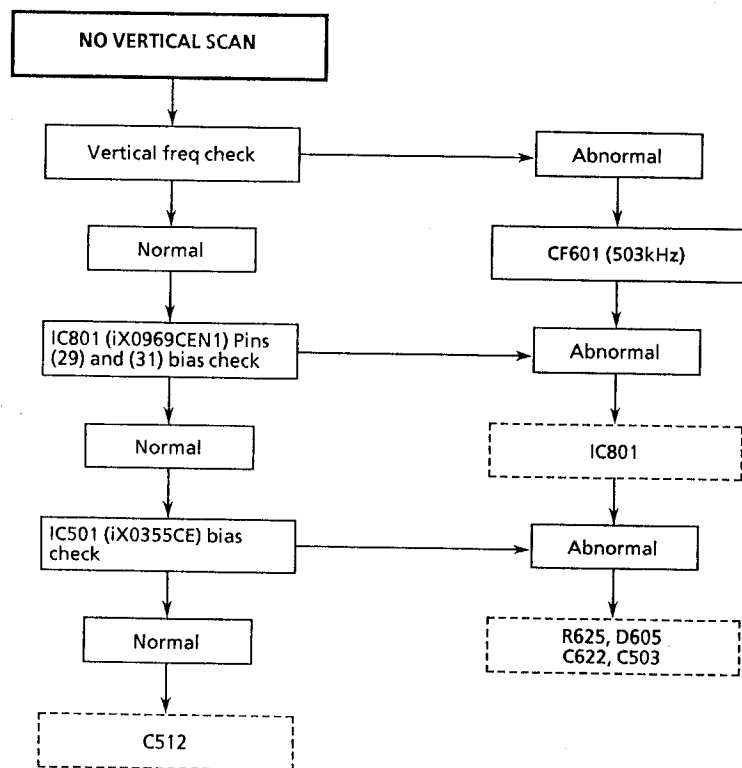
FLOW CHART NO. 2-3

- Circuits to be checked:
- IC801 and its Adjacent Circuit
 - R. G. B. Output Circuit

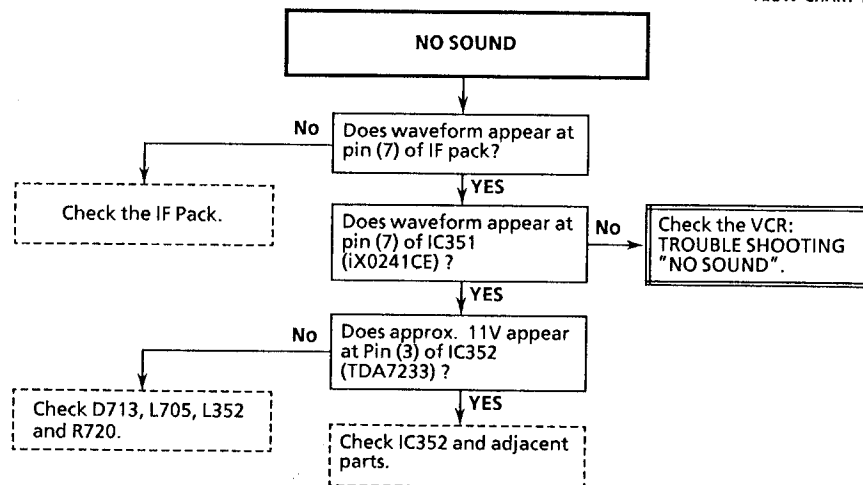
FLOW CHART NO. 2-4



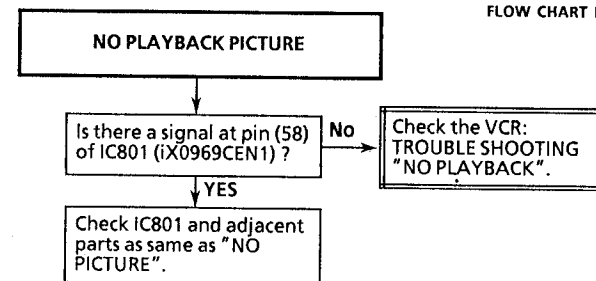
FLOW CHART NO. 2-5



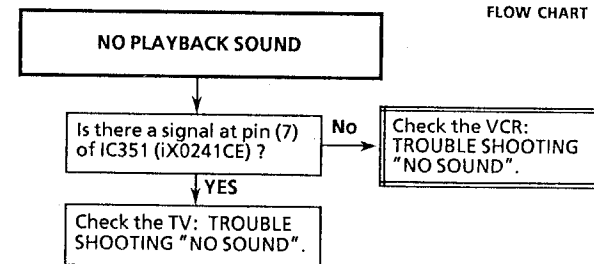
FLOW CHART NO. 2-6



FLOW CHART NO. 2-7



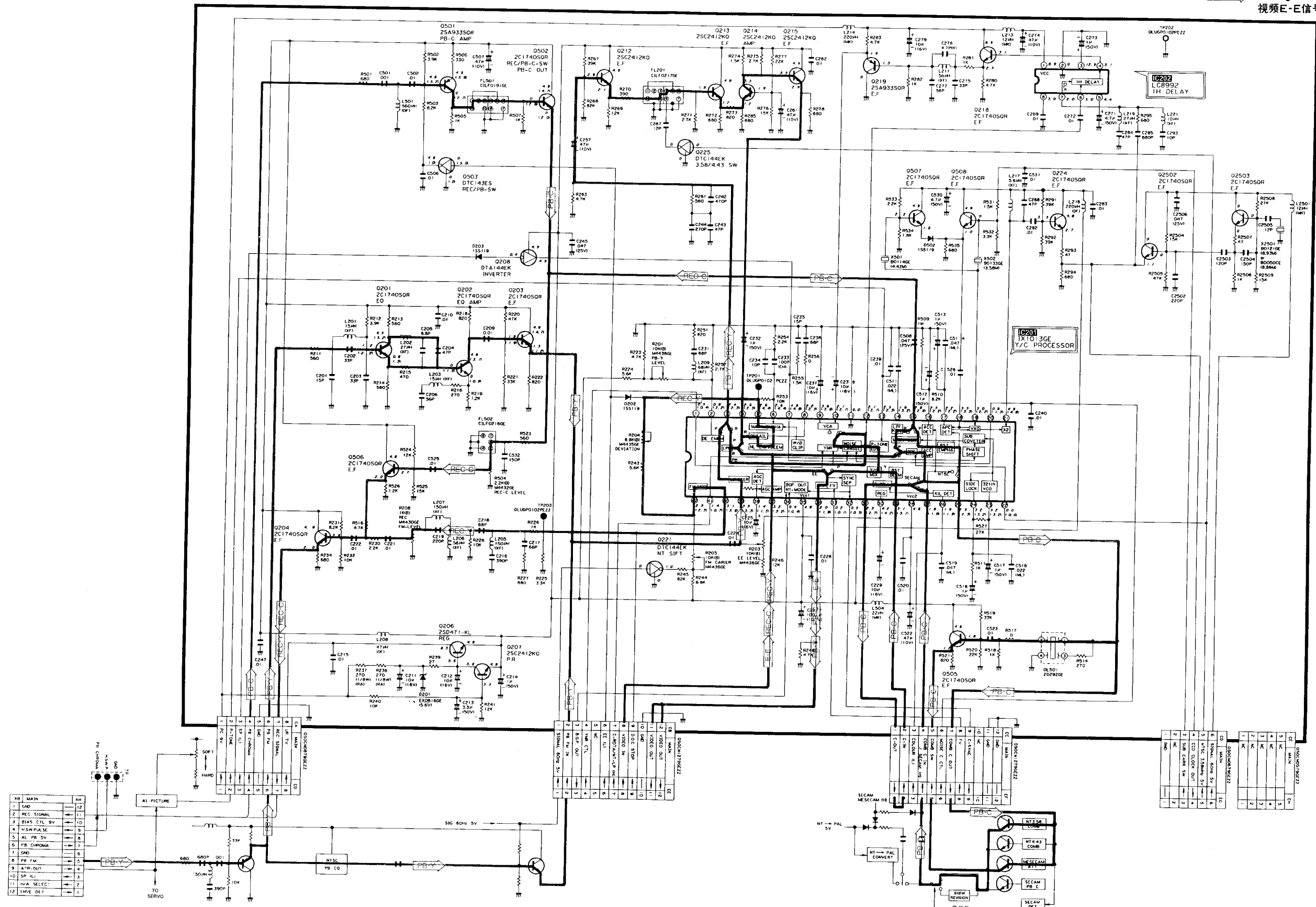
FLOW CHART NO. 2-8



VT-1480D
VT-2198 (D)

亮度/色度(Y/C)信号电路(录象机部分)

	Recording Chrominance Signal 记录色度信号
	Recording Luminance Signal 记录亮度信号
	E-E Signal (Video) 视频E-E信号



★电压测定值
再现：括号中的数值
记录：括号外的数值

115

116

VT-1480D
VT-2198 (D)

VT-1480D
VT-2198 (D)

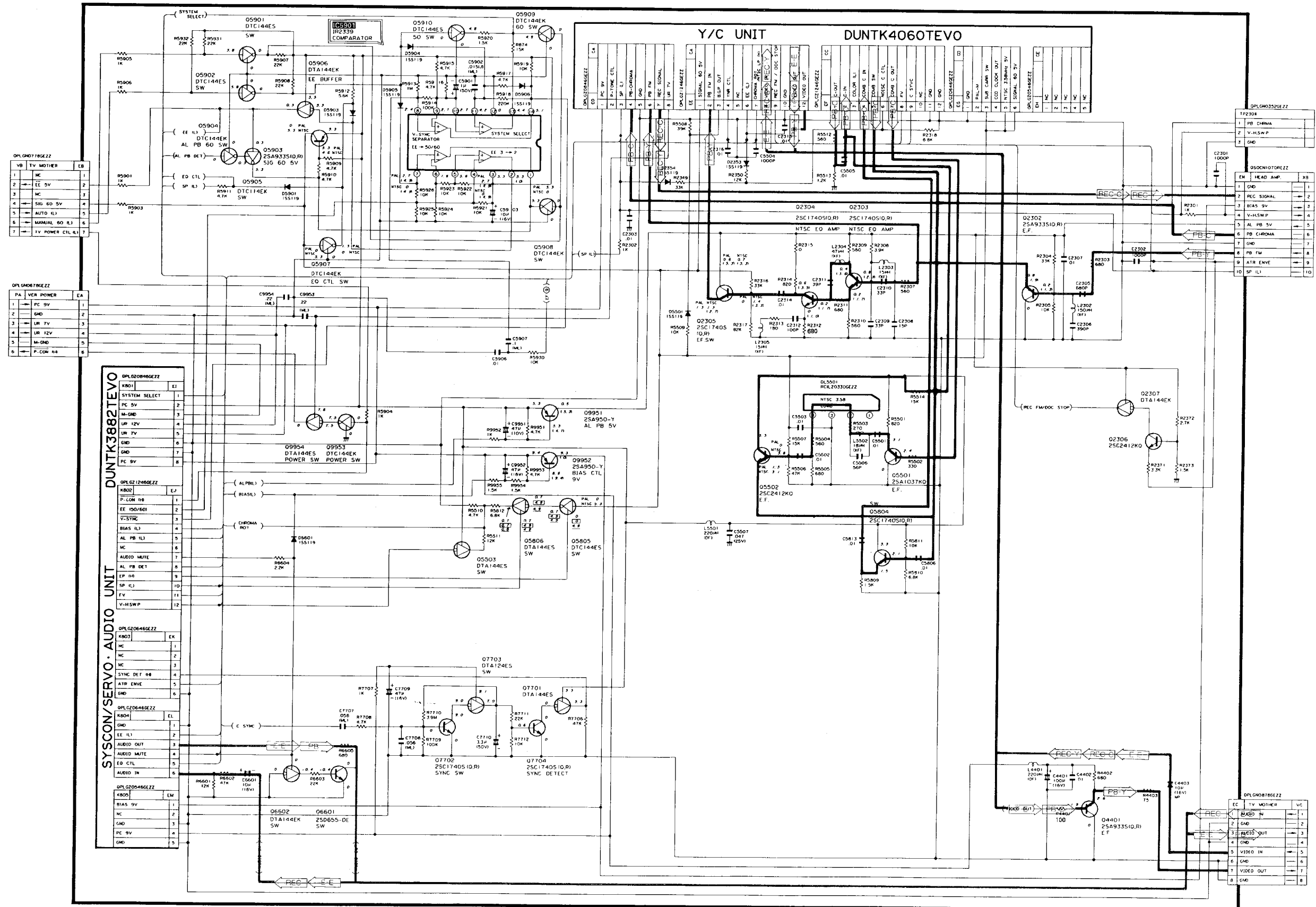
MAIN CIRCUIT (VCR Section)

主电路(录像机部分)

PB-C Playback Chrominance Signal
再现色度信号
PB-Y Playback Luminance Signal
再现亮度信号

REC-C Recording Chrominance Signal
记录色度信号
REC-Y Recording Luminance Signal
记录亮度信号

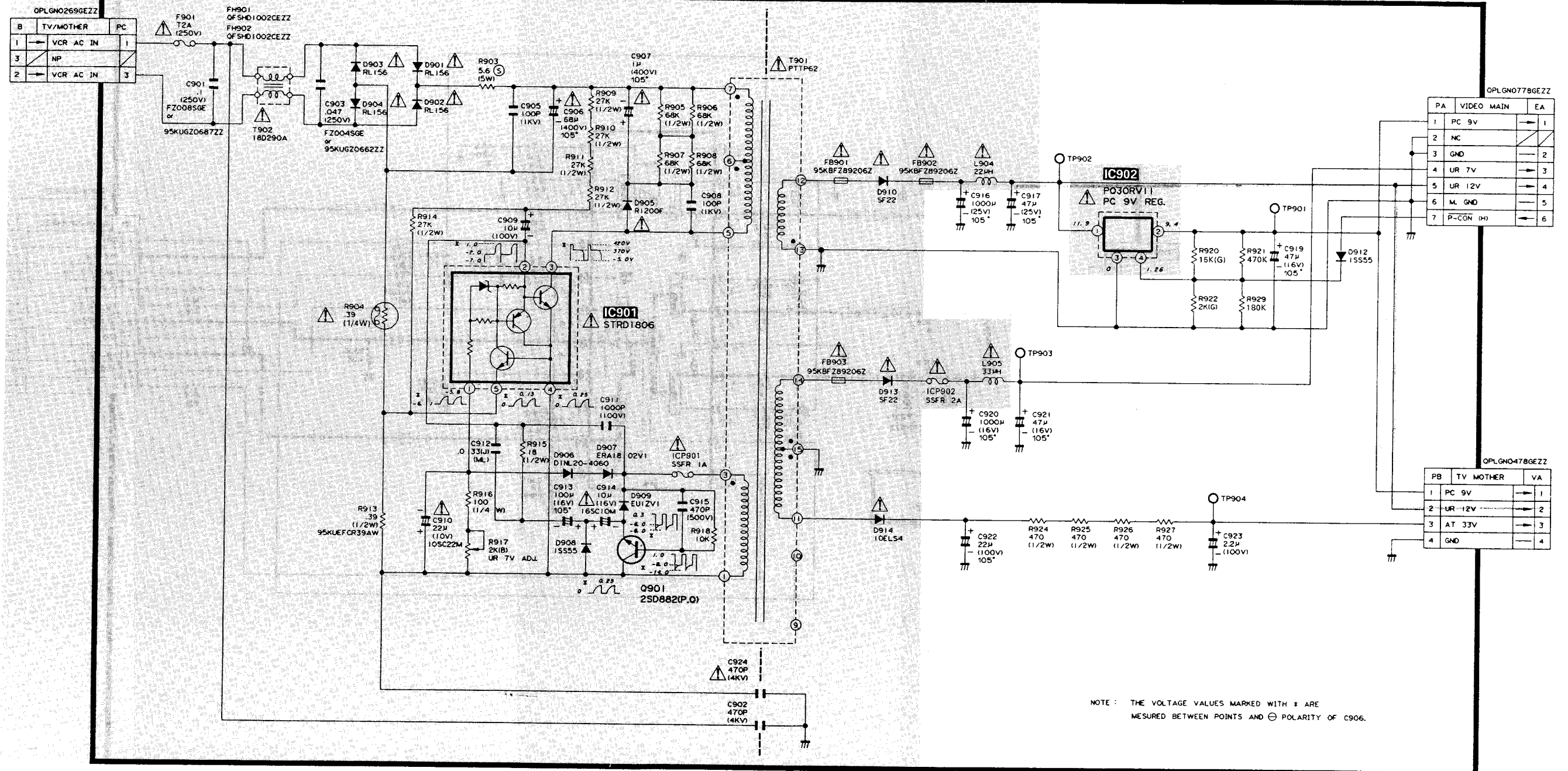
REC Audio Recording Signal
音频记录信号
PB Audio Playback Signal
音频再生信号
E-E E-E Signal
音频E-E信号



* VOLTAGE MEASUREMENT MODE ★电压测定值
PB Parentheses () 再现: 括号中的数值
REC Without Parentheses 记录: 括号外的数值

VCR-POWER CIRCUIT (VCR Section)

录象机电源电路(录象机部分)

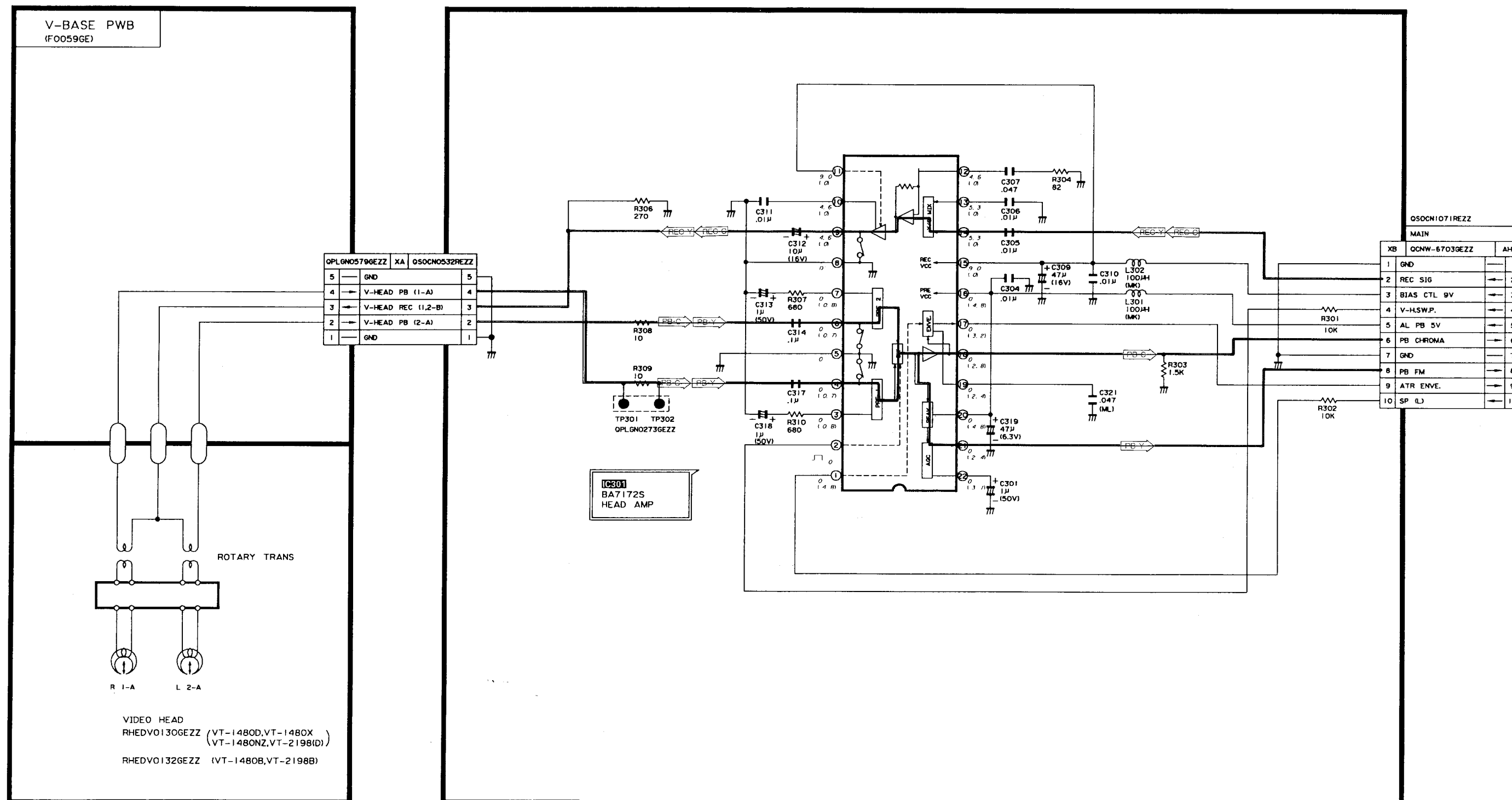


HEAD AMPLIFIER CIRCUIT (VCR Section)

前置放大器电路(录象机部分)

PB-C Playback Chrominance Signal
再现色度信号
PB-Y Playback Luminance Signal
再现亮度信号

REC-Y Recording Chrominance Signal
记录色度信号
REC-C Recording Luminance Signal
记录亮度信号

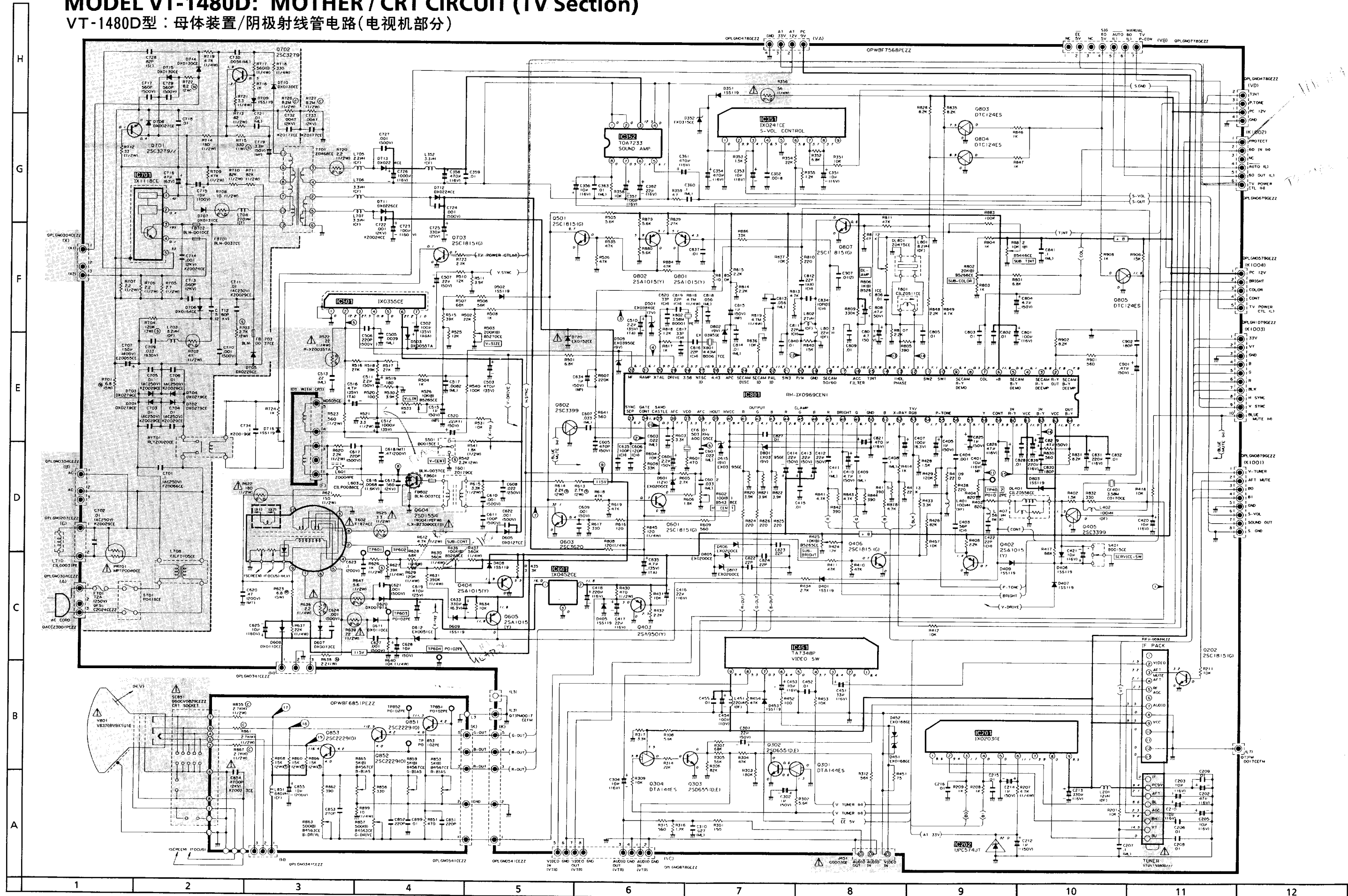


VT-1480D
VT-2198 (D)

VT-1480D
VT-2198 (D)

MODEL VT-1480D: MOTHER / CRT CIRCUIT (TV Section)

VT-1480D型：母体装置/阴极射线管电路(电视机部分)



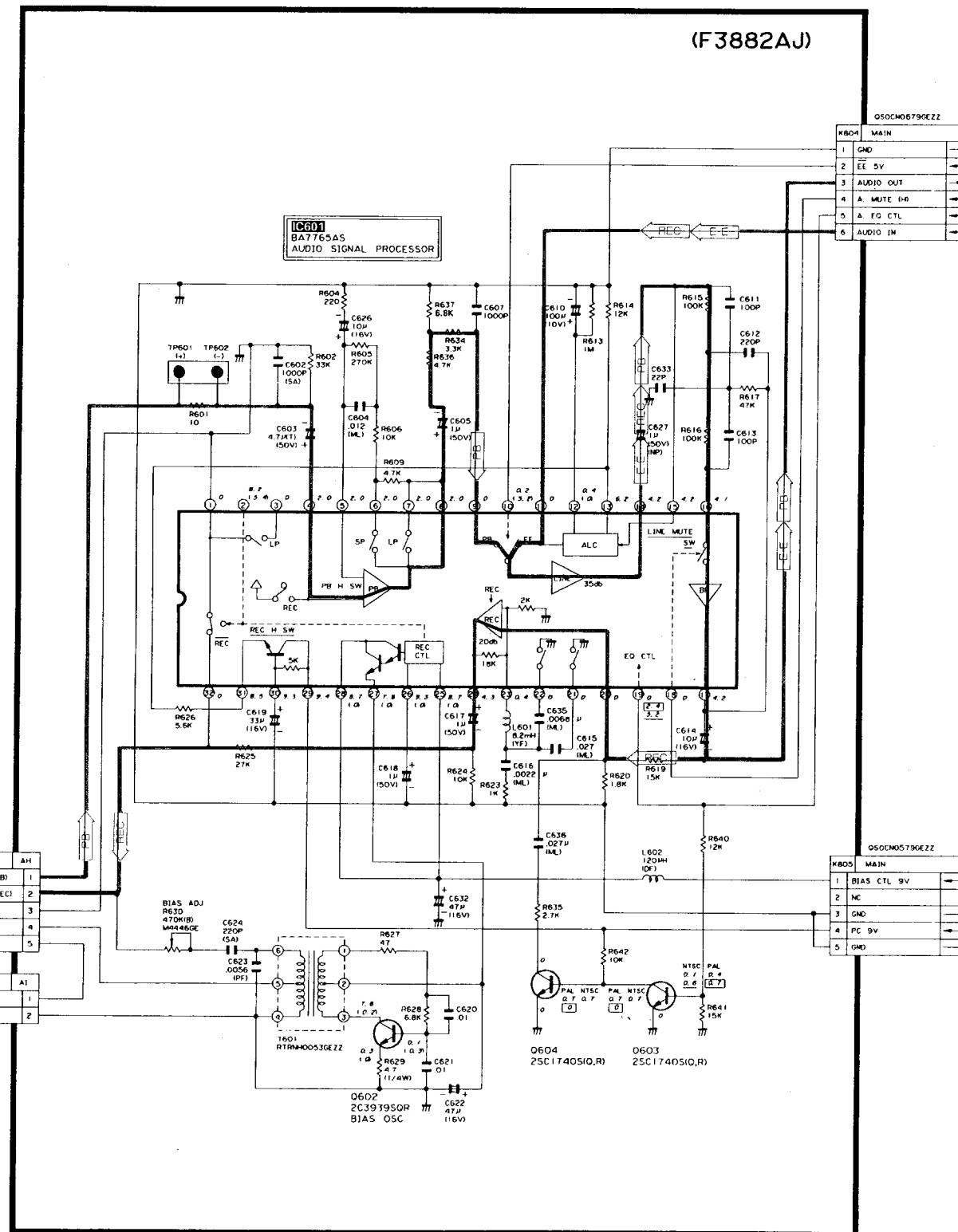
VT-1480D
VT-2198 (D)

VT-1480D
VT-2198 (D)

AUDIO CIRCUIT (VCR Section)

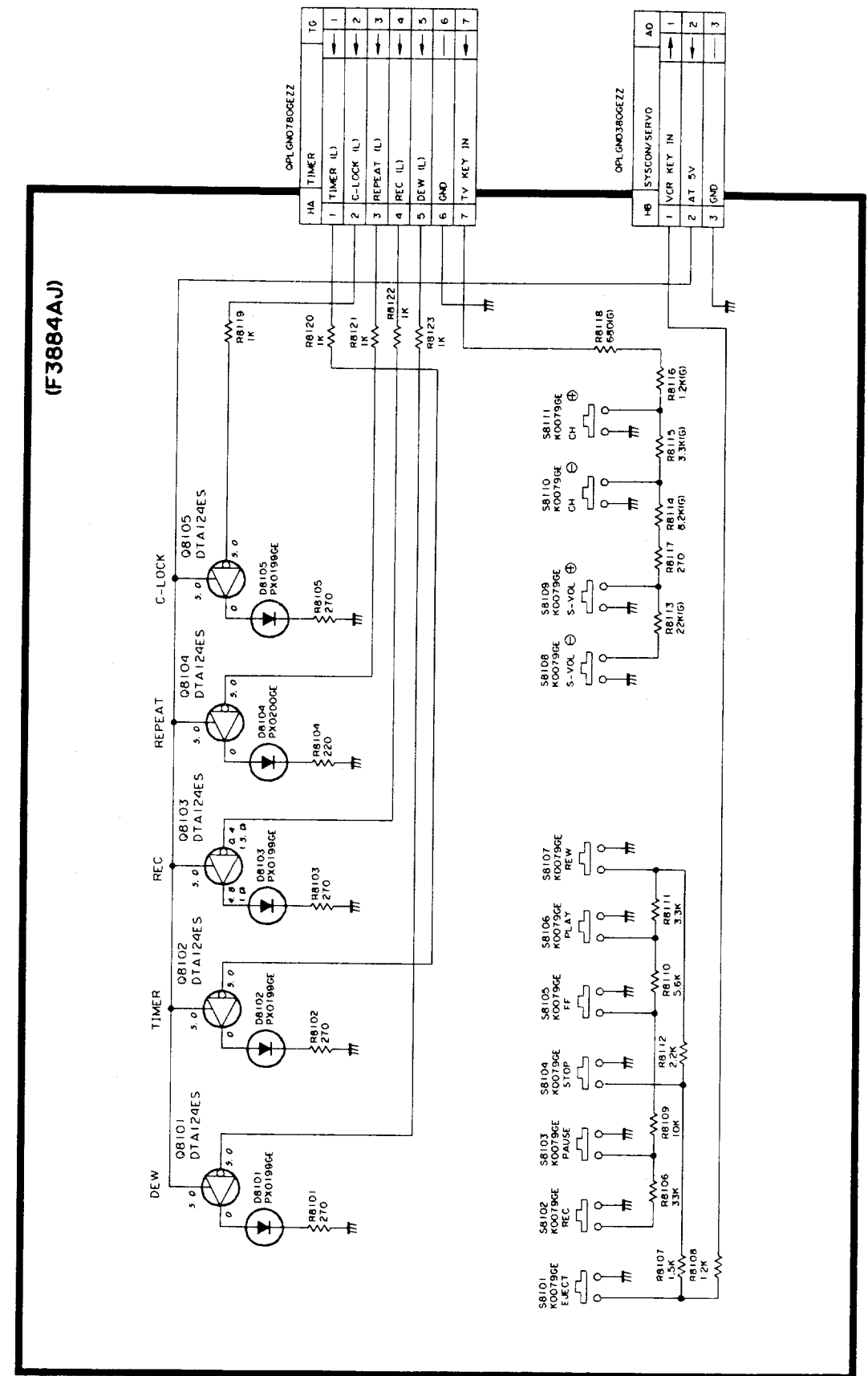
音频电路(录像机部分)

- PB → Audio Playback Signal
音频再生信号
- REC → Audio Recording Signal
音频记录信号
- E-E → E-E Signal (Audio)
音频E-E信号



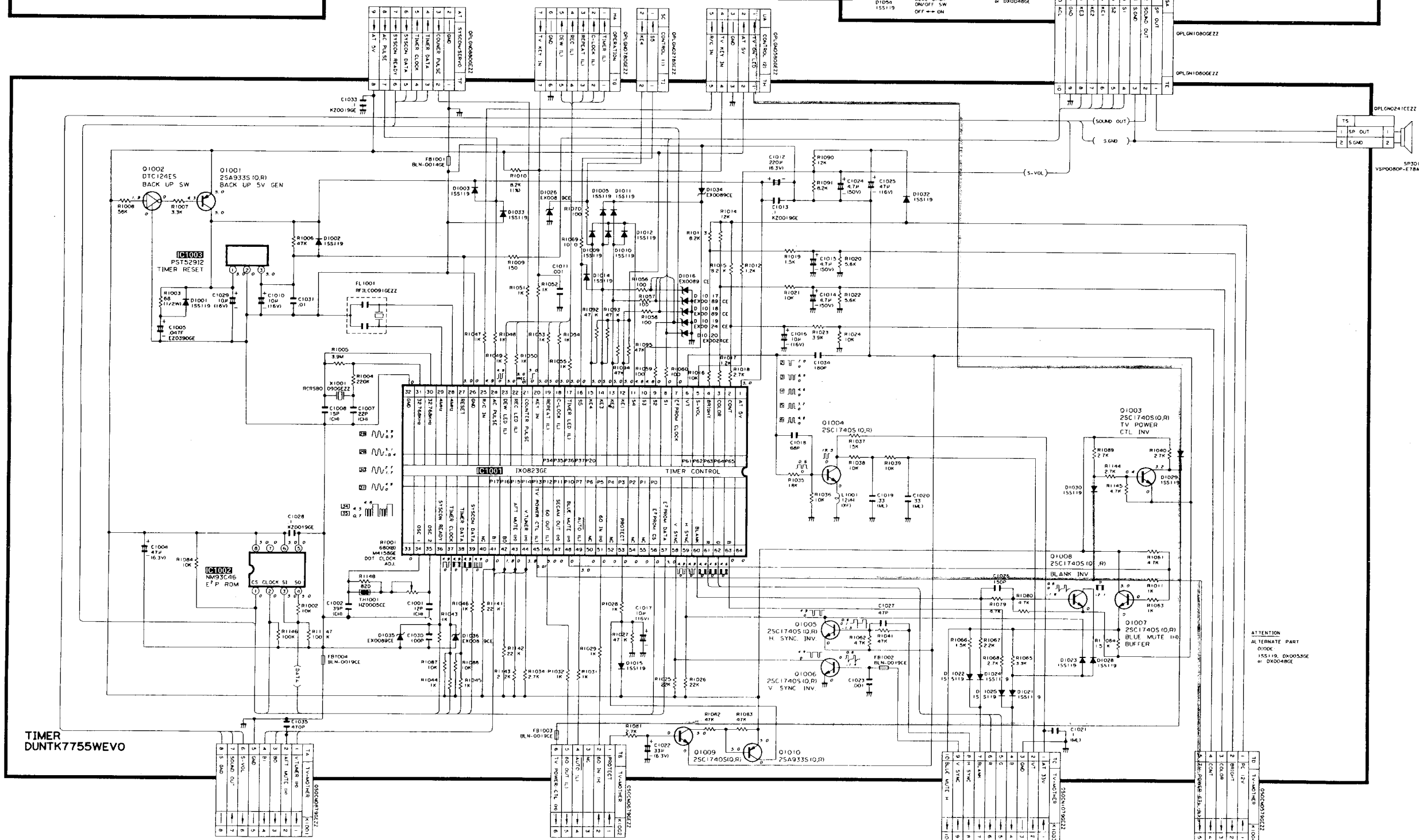
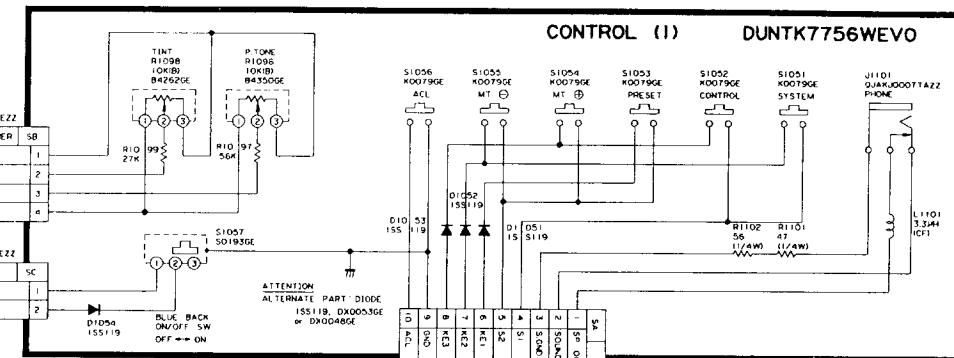
OPERATION CIRCUIT (VCR Section)

操作控制板电路(录像机部分)



VT-1480D
VT-2198 (D)

定时器/控制器(1)、(2)电路(电视机部分)

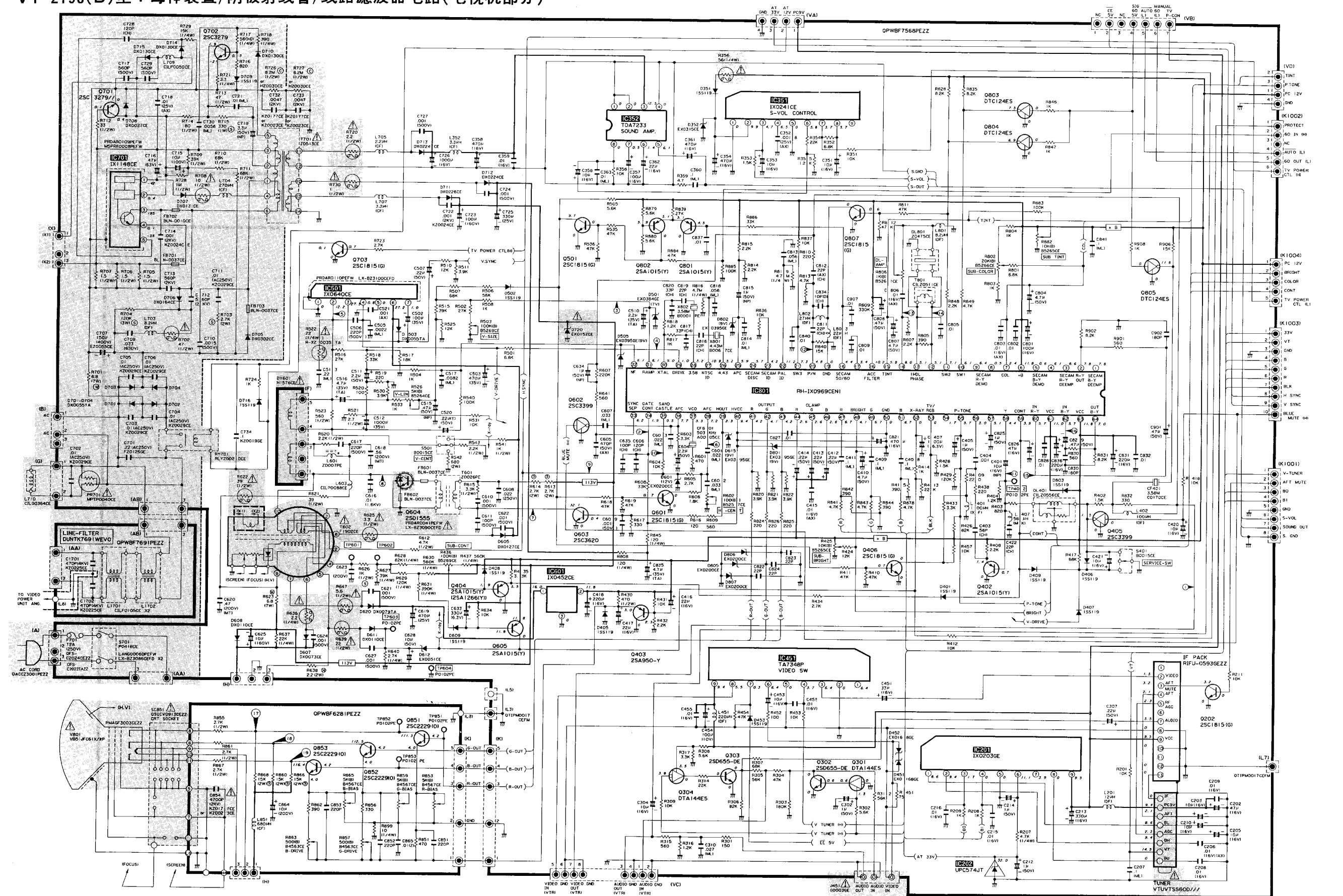


VT-1480D
VT-2198 (D)

VT-1480D
VT-2198 (D)

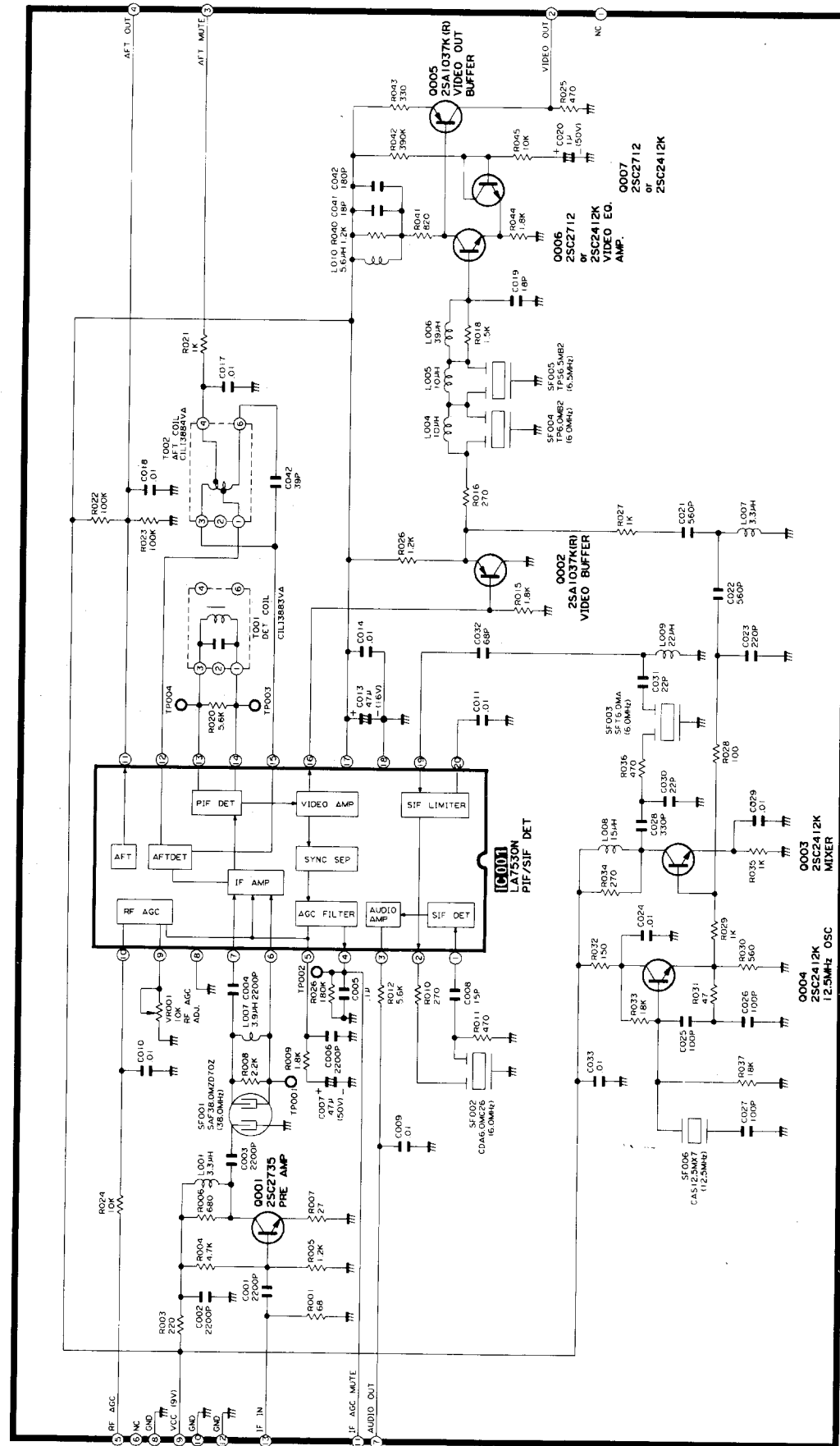
MODEL VT-2198(D): MOTHER / CRT / LINE FILTER CIRCUIT (TV Section)

VT-2198(D)型：母体装置/阴极射线管/线路滤波器电路(电视机部分)



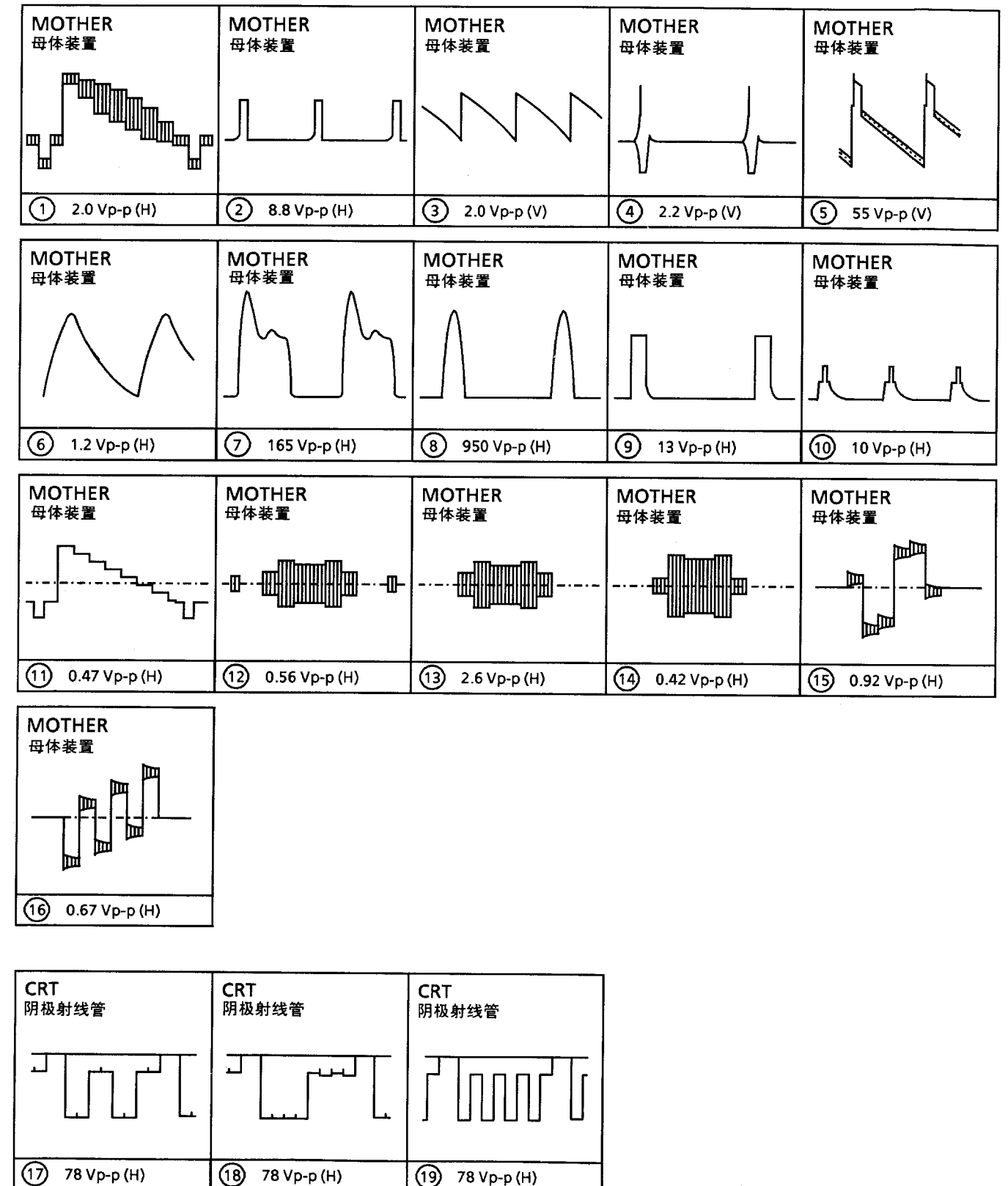
IF PACK CIRCUIT (TV Section) 中频包电路(电视机部分)

RiFU-0593GEZZ

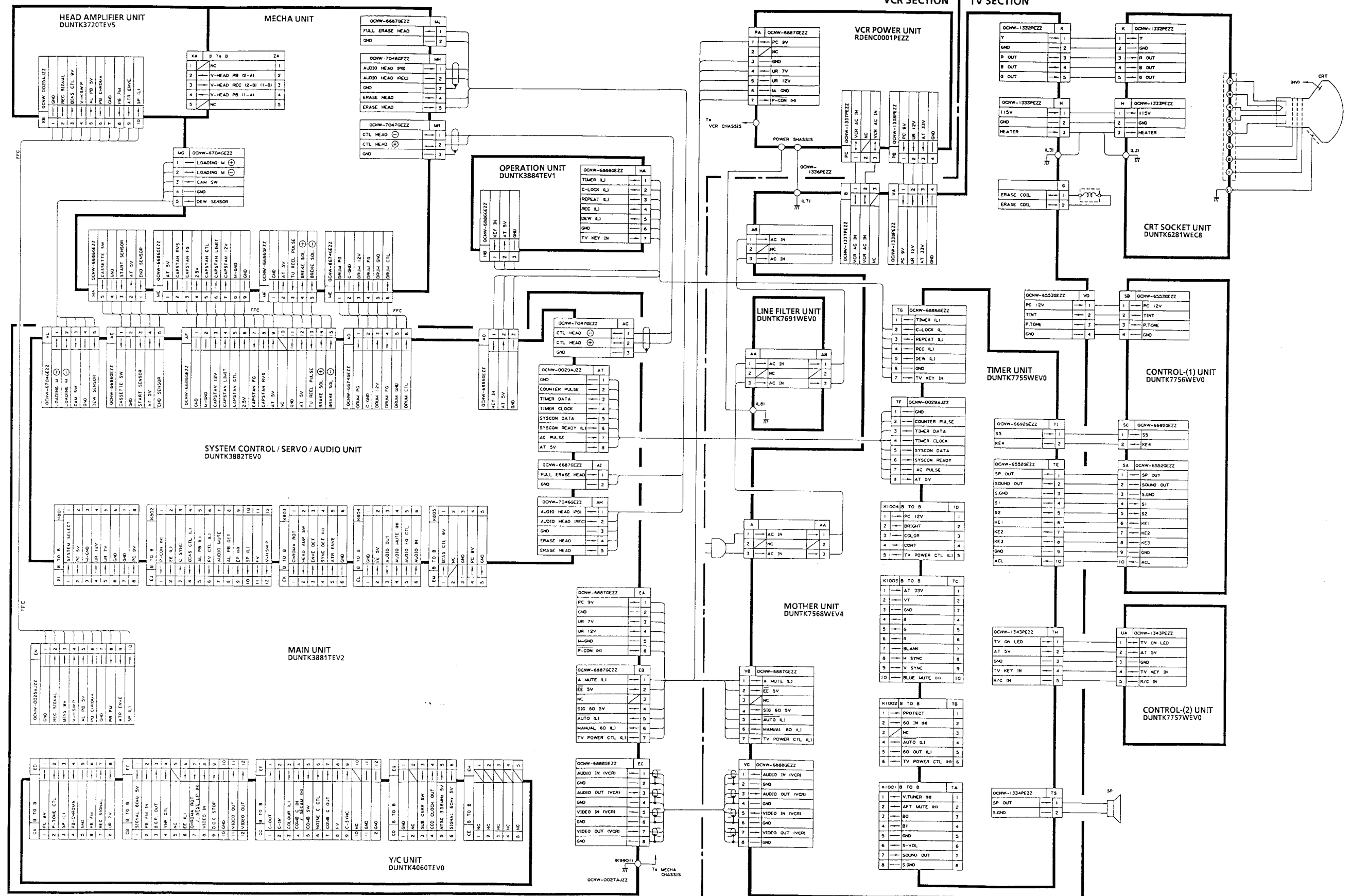


WAVE FORMS (TV Section)

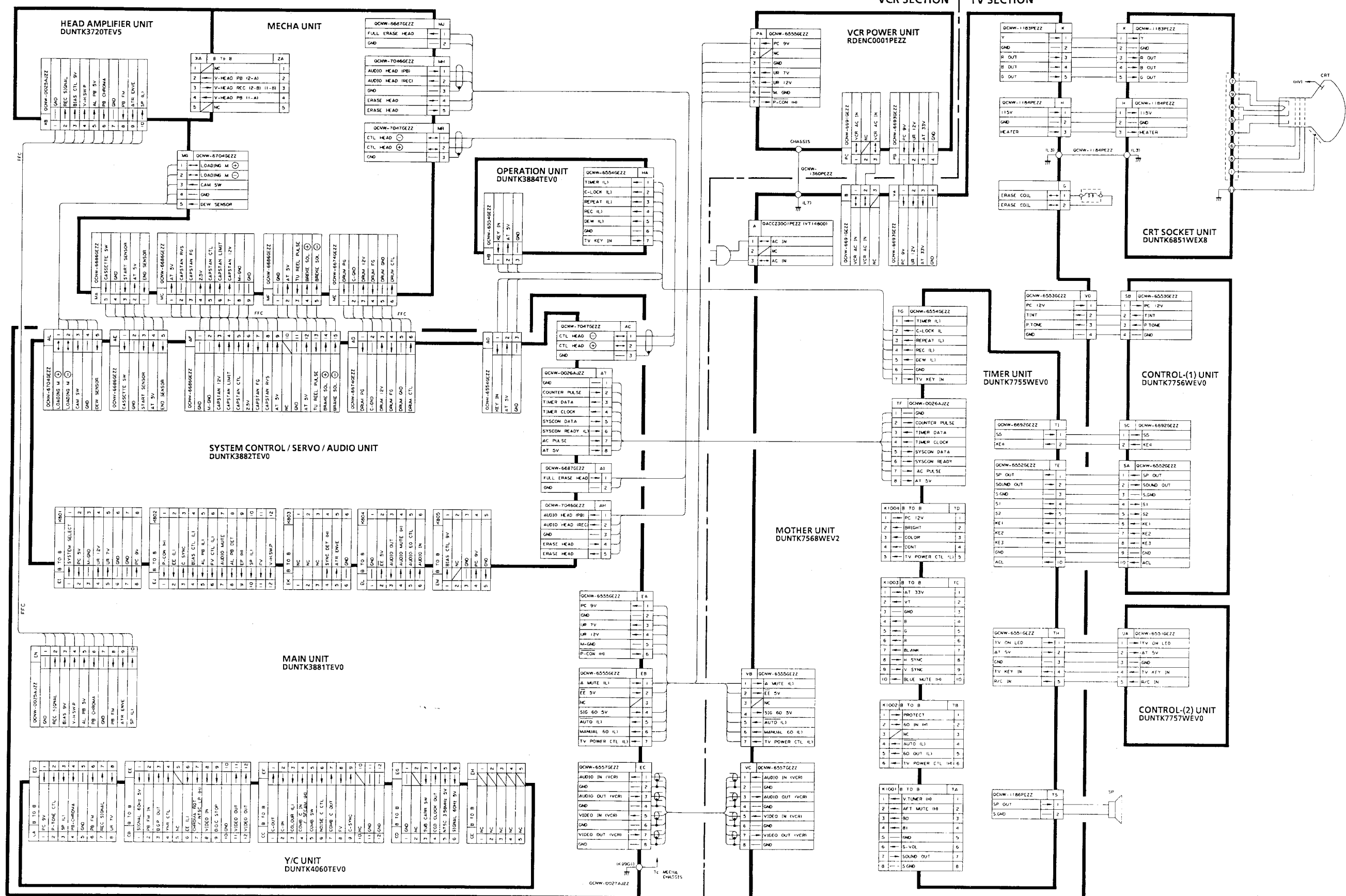
波形图(电视机部分)



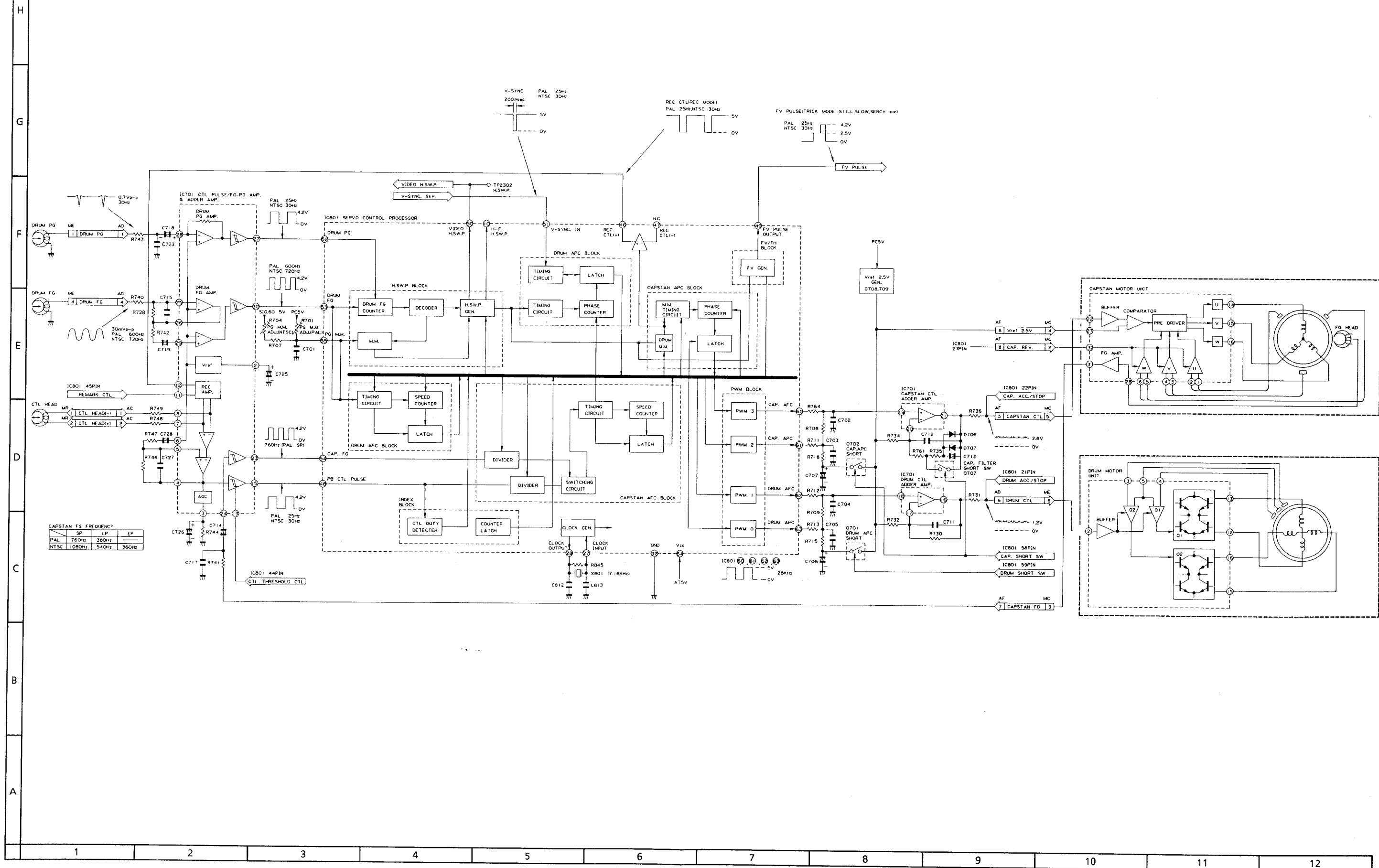
MODEL VT-2198(D): OVERALL WIRING DIAGRAM VT-2198(D)型：全电路图



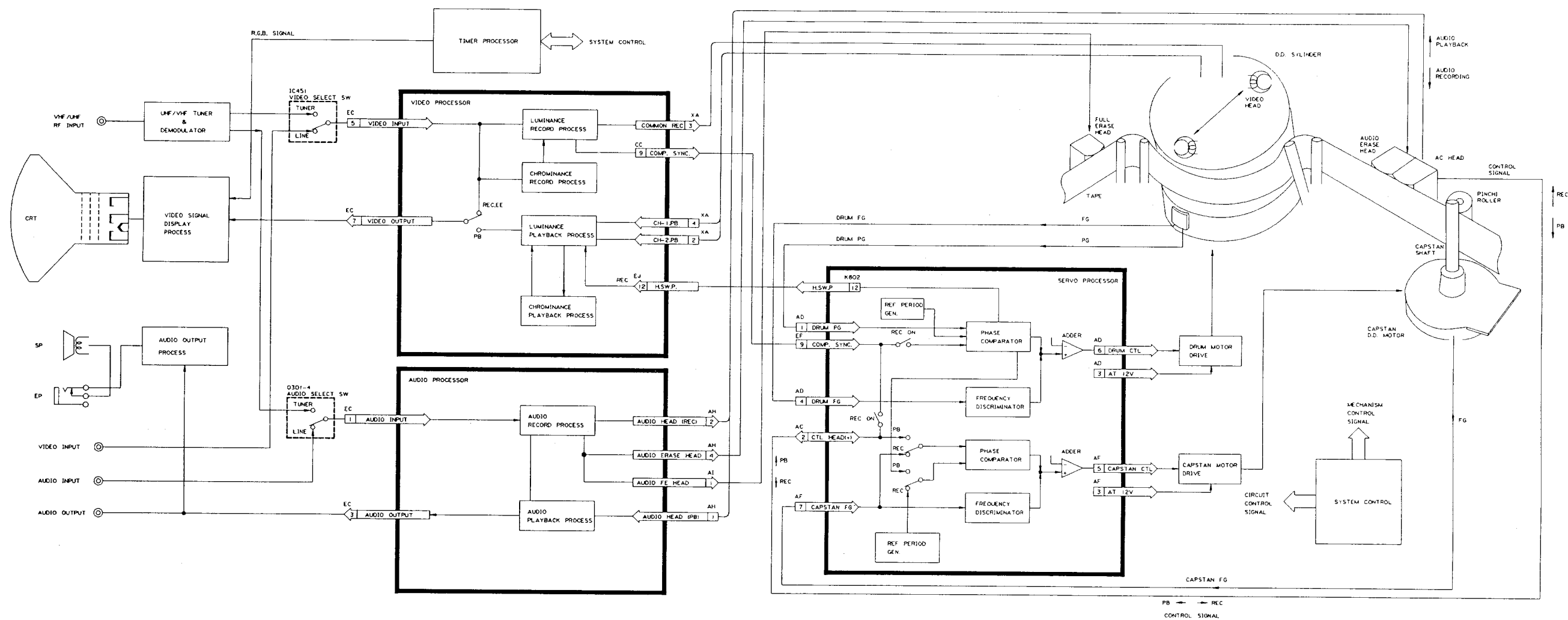
VT-1480D型：全电路图



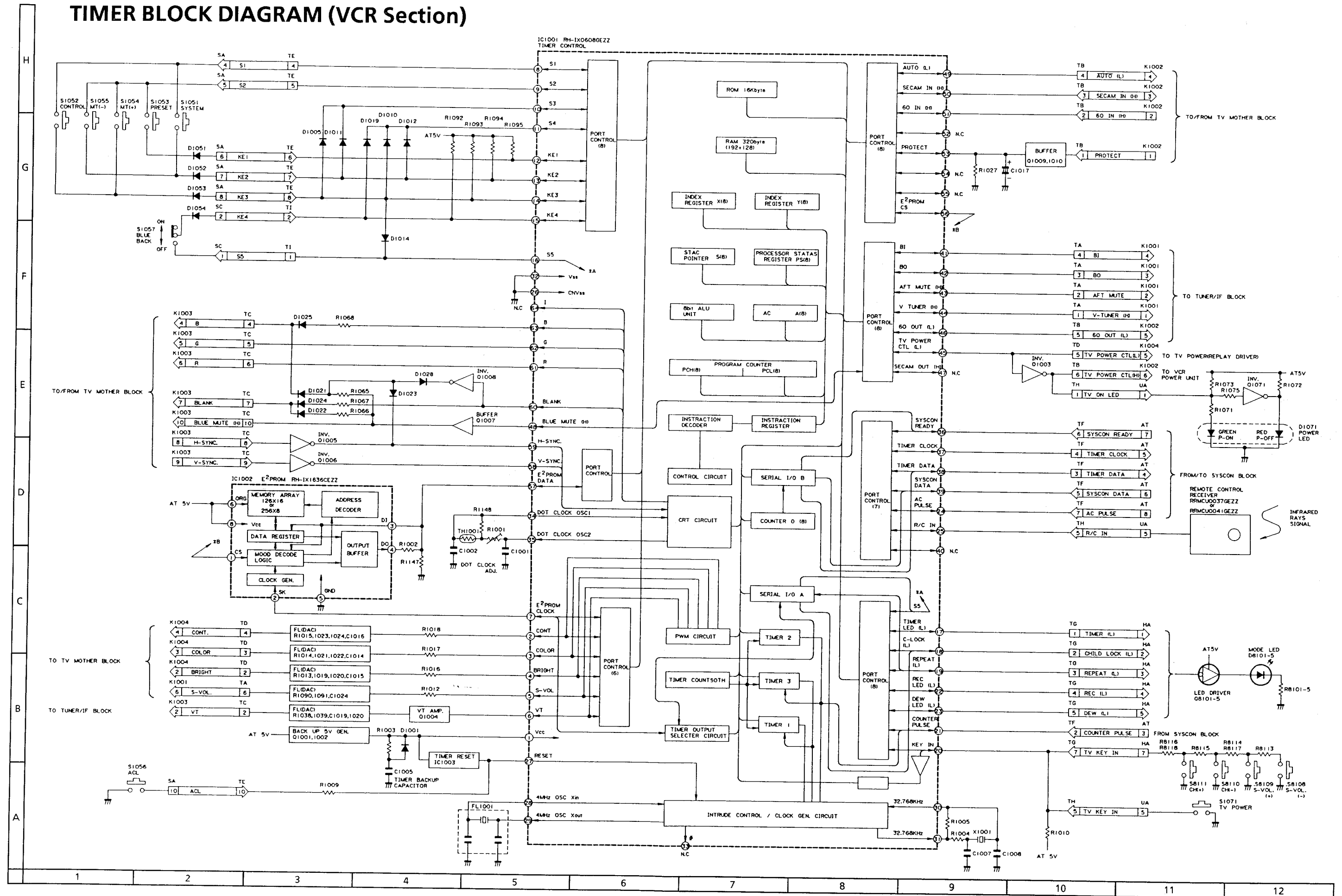
SERVO PROCESS BLOCK DIAGRAM (VCR Section)



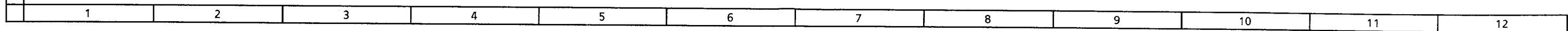
OVERALL BLOCK DIAGRAM



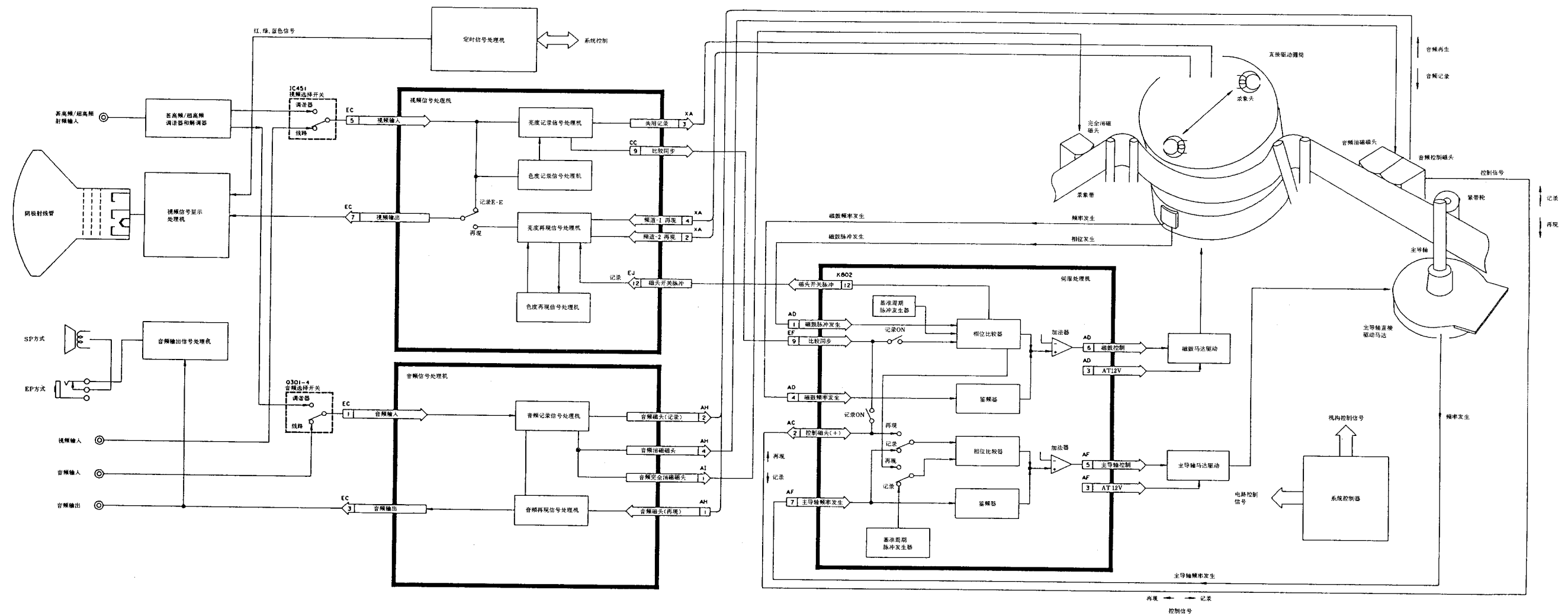
TIMER BLOCK DIAGRAM (VCR Section)



A
B
C
D
E
F
G
H



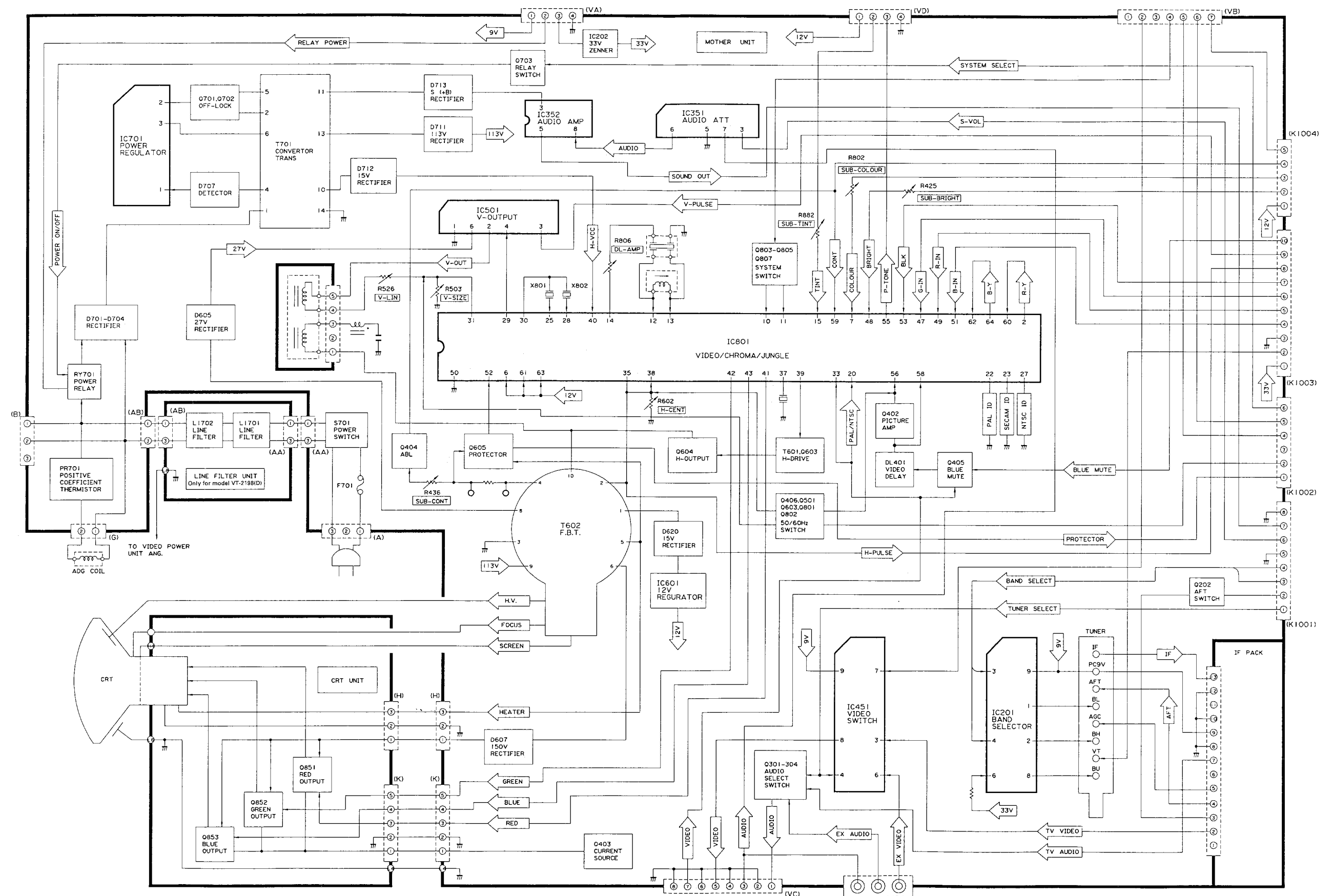
全电路方框图



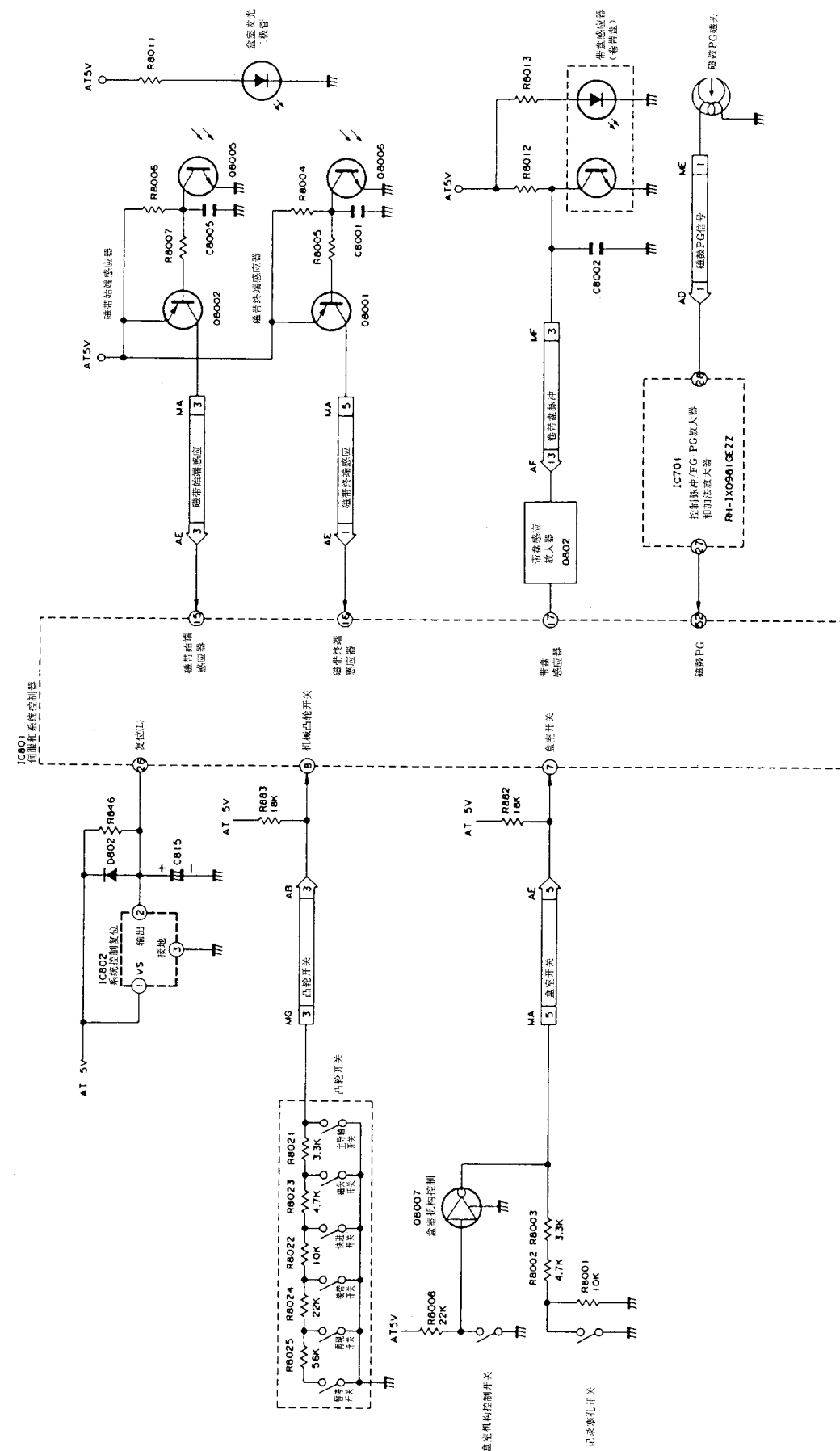
VT-1480D
VT-2198 (D)

VT-1480D
VT-2198 (D)

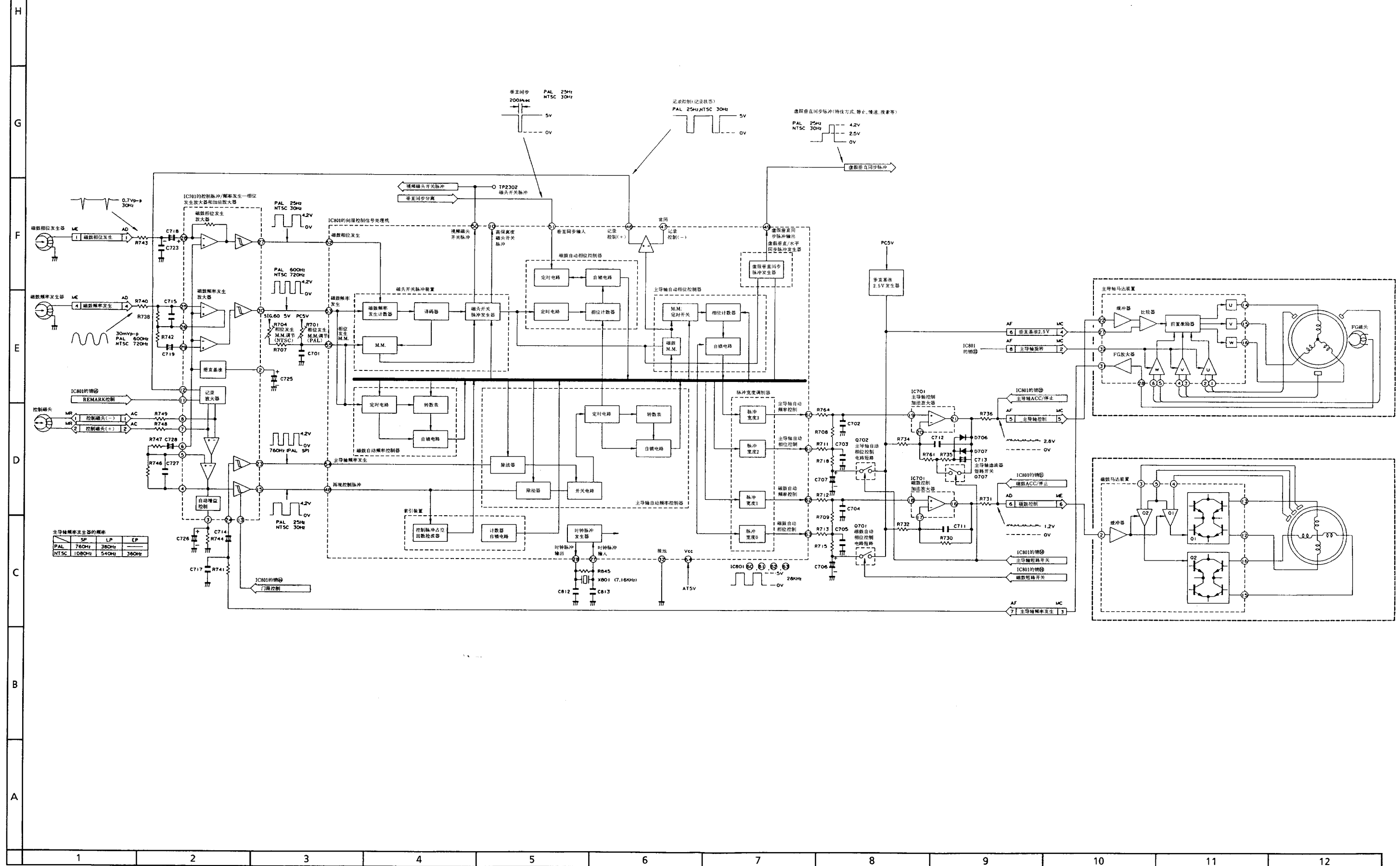
BLOCK DIAGRAM (TV Section)



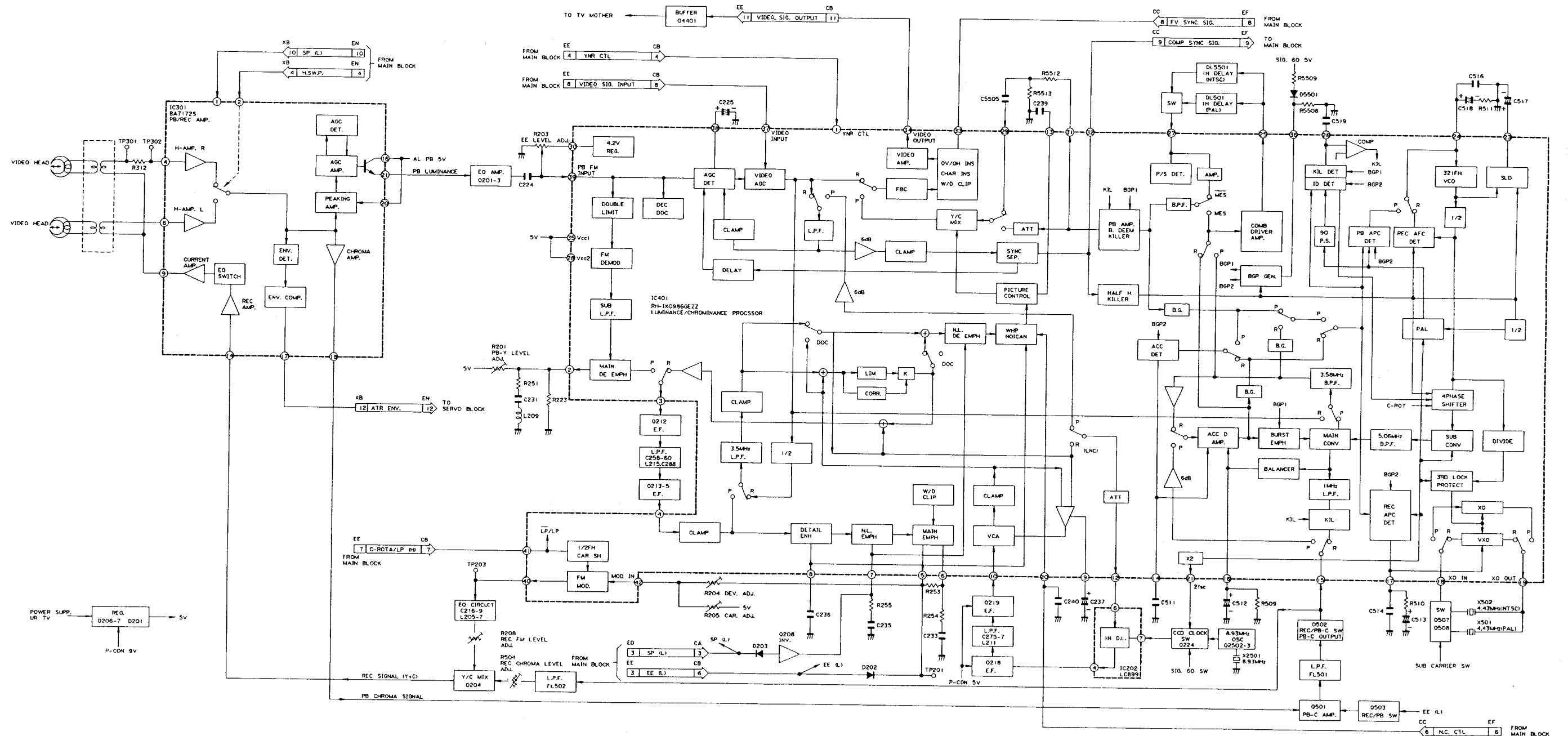
电路保护装置电路方框图(录象机部分)



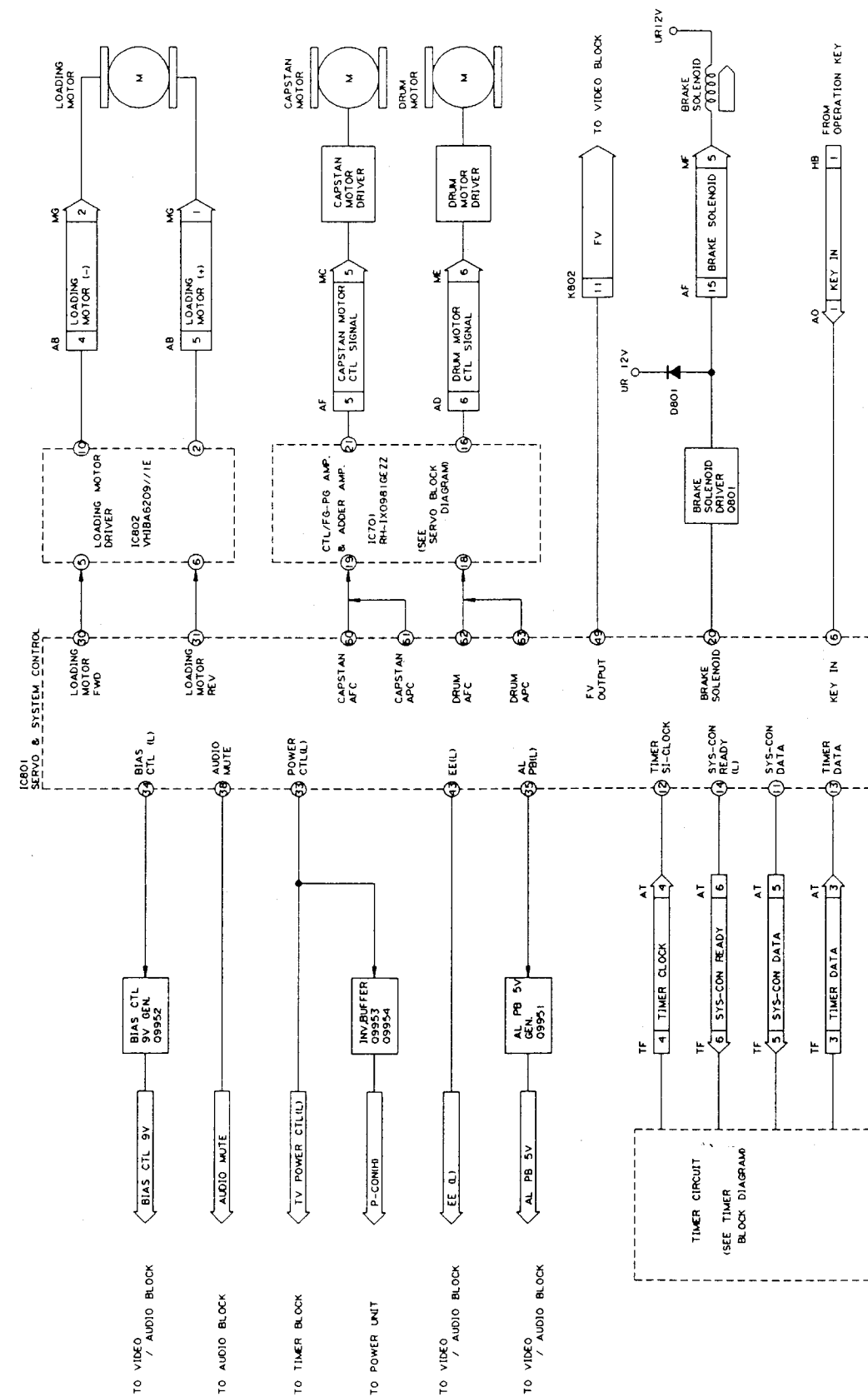
伺服系统电路方框图(录像机部分)



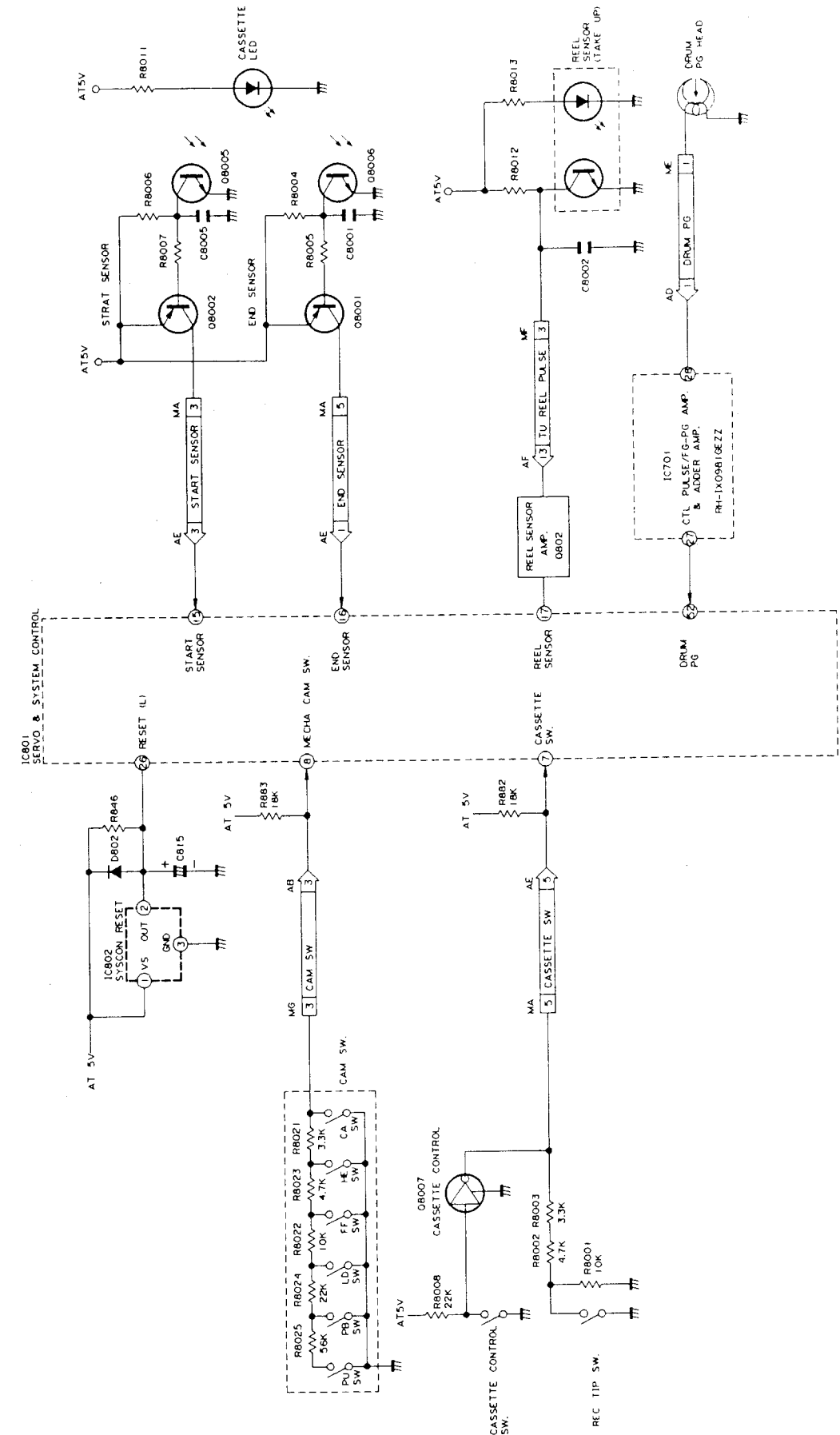
LUMINANCE/CHROMINANCE BLOCK DIAGRAM (VCR Section)



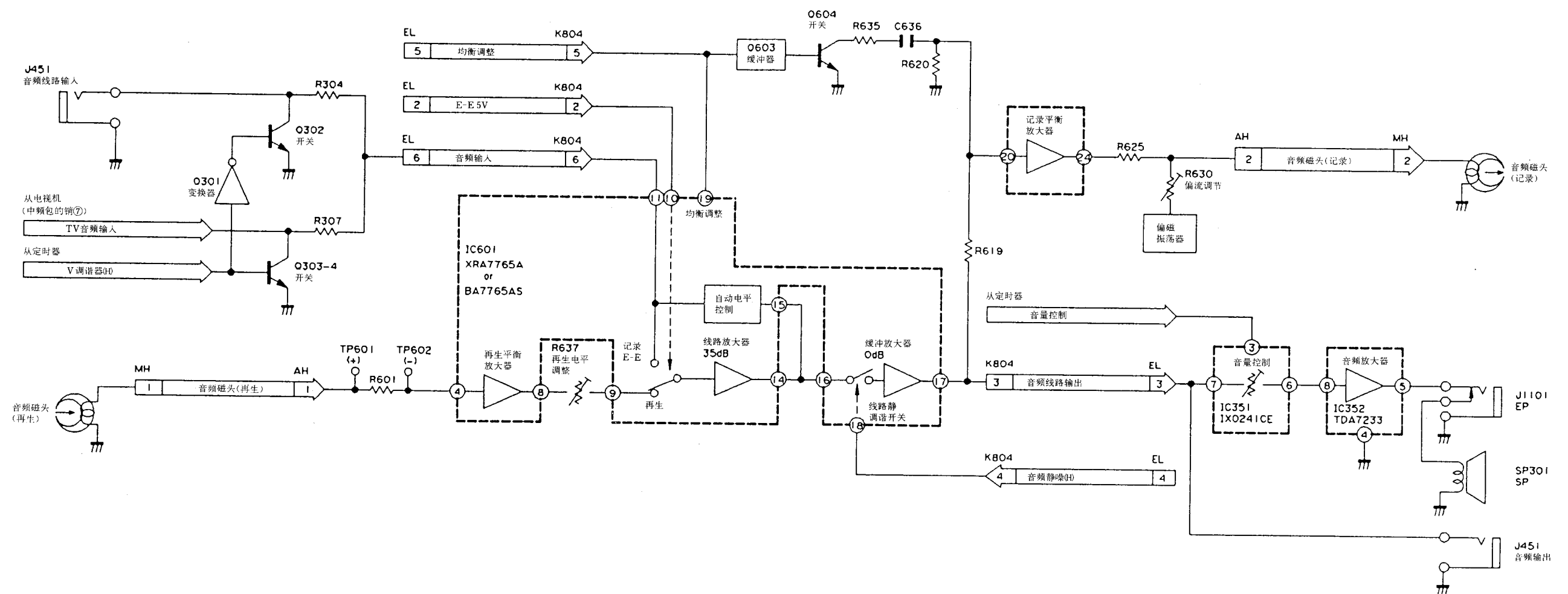
SYSTEM CONTROL BLOCK DIAGRAM (VCR Section)



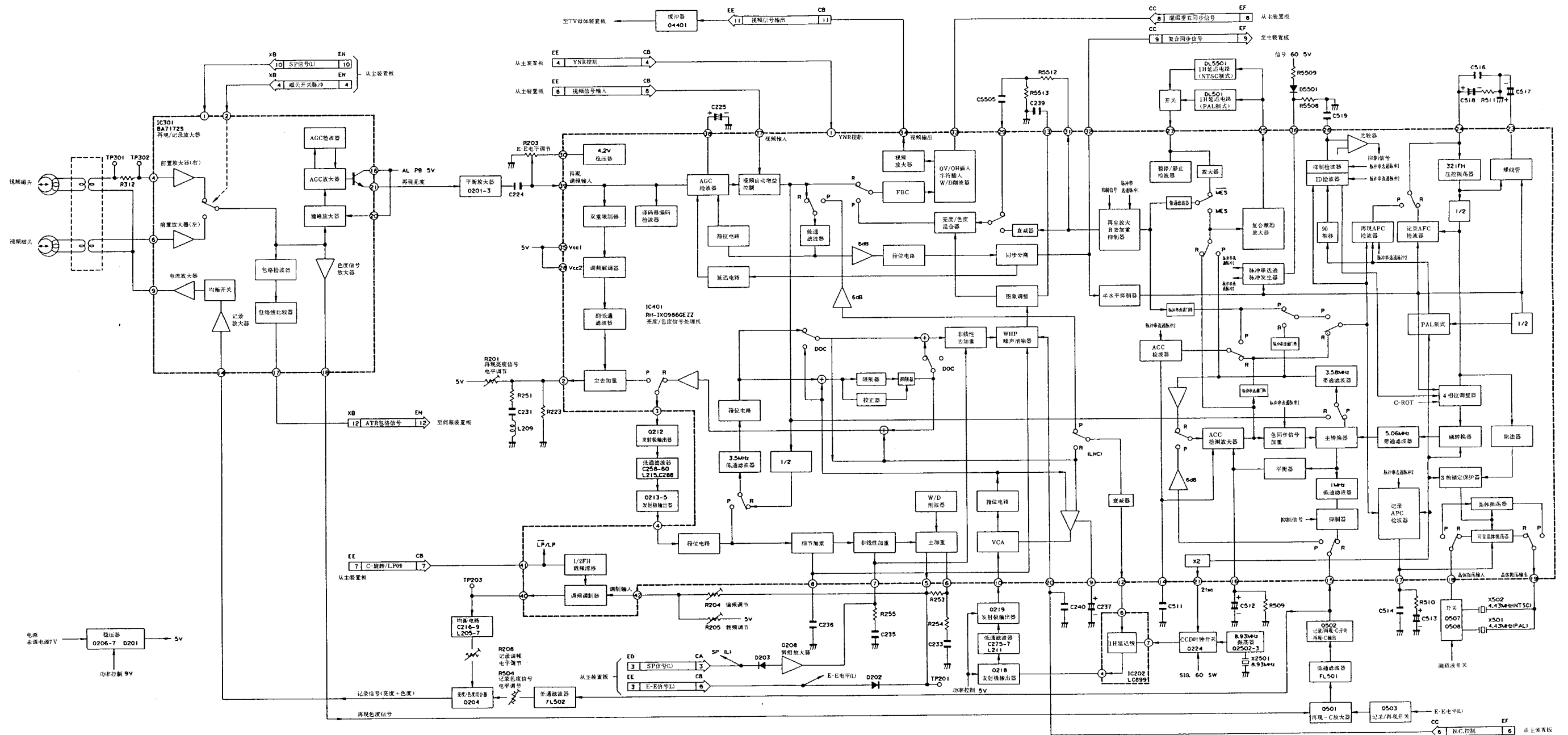
SAFETY DEVICE BLOCK DIAGRAM (VCR Section)



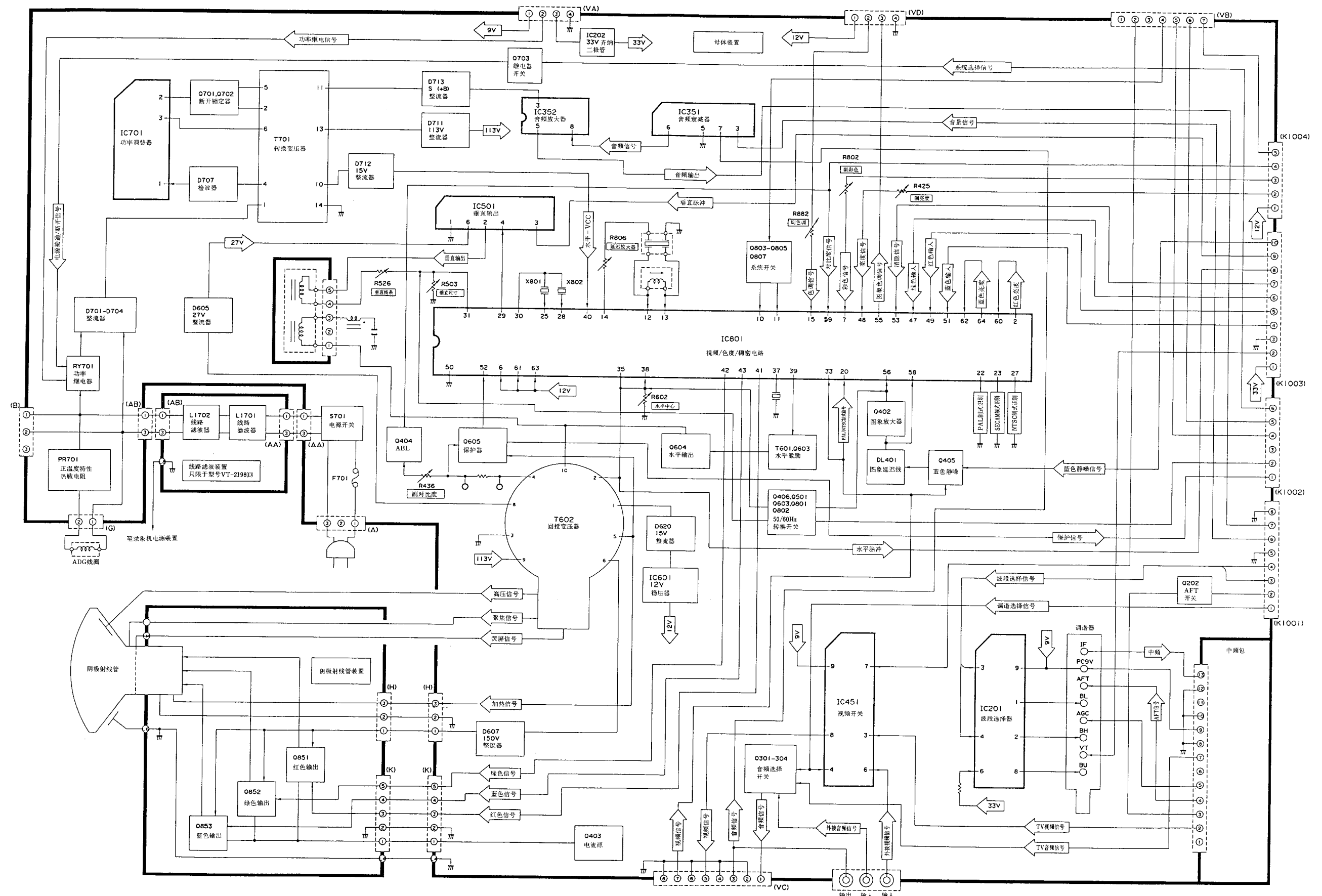
音频信号电路方框图(录象机部分)



亮度/色度信号电路方框图(录象机部分)



电路方框图(电视机部分)



[illegible]

SYSTEM CONTROL / SERVO CIRCUIT (VCR Section)

系统控制/伺服电路(录象机部分)

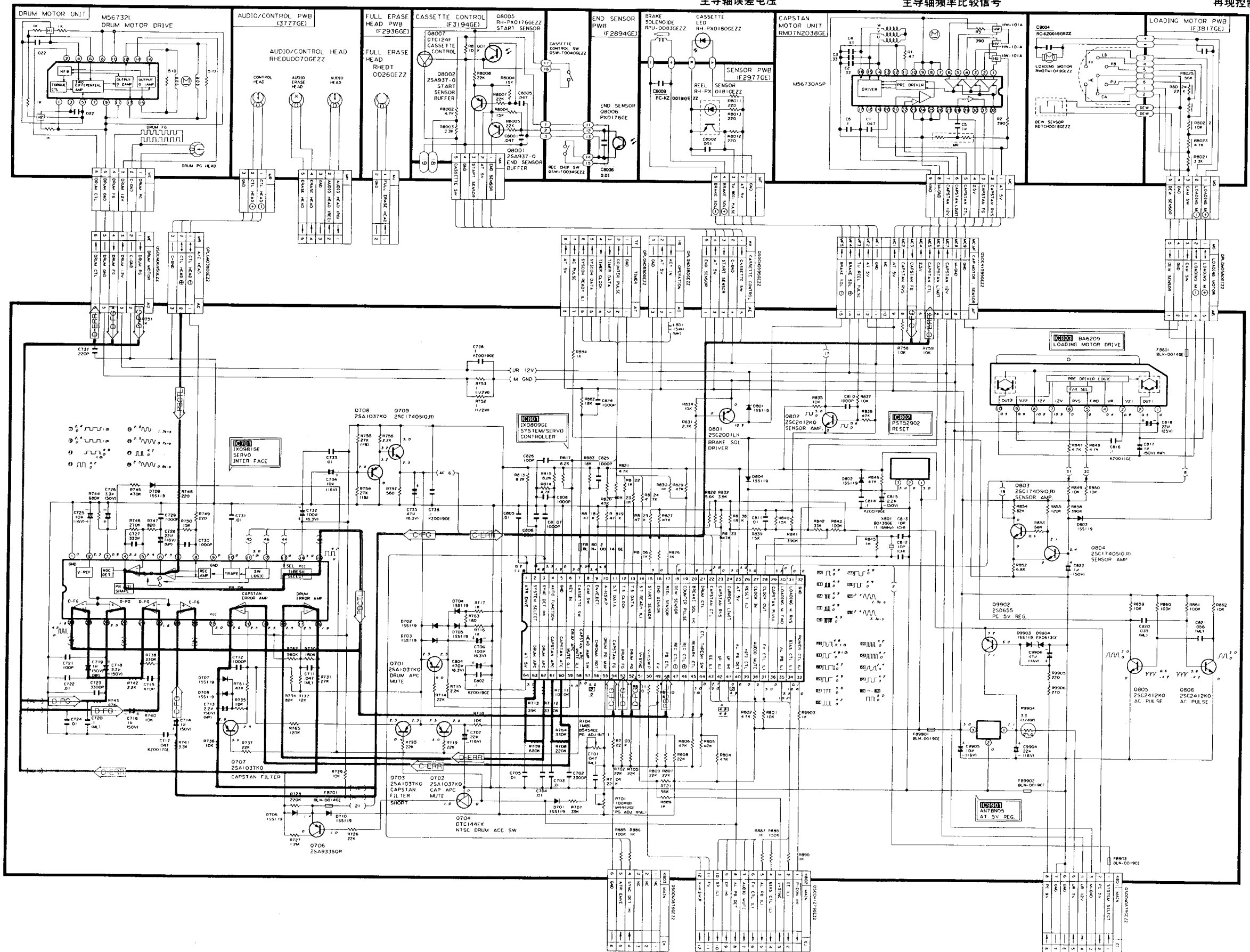
VT-1480D
VT-2198 (D)

VT-1480D
VT-2198 (D)

D-ERR Drum Error Voltage
磁鼓误差电压
C-ERR Capstan Error Voltage
主导轴误差电压

D-FG Drum Frequency Comparison Signal
磁鼓频率比较信号
C-FG Capstan Frequency Comparison Signal
主导轴频率比较信号

D-PG Drum Phase Comparison Signal
磁鼓相位比较信号
PBCTL Playback Control Comparison Signal
再现控制比较信号



* VOLTAGE MEASUREMENT MODE
PB Parentheses ()
REC Without Parentheses


DESCRIPTION OF SCHEMATIC DIAGRAM

电路原理图的说明

SAFETY NOTE:

1. DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.
2. SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.

IMPORTANT SAFETY NOTICE:

BE SURE TO USE GENUINE PARTS FOR SECURING THE SAFETY AND RELIABILITY OF THE SET.
PARTS MARKED WITH "△" () ARE IMPORTANT FOR MAINTAINING THE SAFETY OF THE SET. BE SURE TO REPLACE THESE PARTS WITH SPECIFIED ONES FOR MAINTAINING THE SAFETY AND PERFORMANCE OF THE SET.

SERVICE PRECAUTION:

THE AREA ENCLOSED BY THIS LINE (- - - - -) IS DIRECTLY CONNECTED WITH AC MAINS VOLTAGE.
WHEN SERVICING THE AREA, CONNECT AN ISOLATING TRANSFORMER BETWEEN TV RECEIVER AC LINE TO ELIMINATE HAZARD OF ELECTRIC SHOCK.

CAUTION:

This circuit diagram is original one, therefore there may be a slight difference from yours.

NOTES:

1. The unit of resistance "ohm" is omitted.
($K = 1000 \text{ ohms}$, $M = 1 \text{ Meg ohm}$).
2. All resistors are 1/8 watt, unless otherwise noted.
3. The unit of capacitance "F" is omitted.
($\mu = \mu\text{F}$, $P = \mu\mu\text{F}$).
4. The values in parentheses are the ones in the PB mode; the values without parentheses are the ones in the REC mode.

VOLTAGE MEASUREMENT CONDITIONS:

1. DC voltages are measured between points indicated and chassis ground by VTVM, with AC 220V, 50/60Hz supplied to unit and all controls are set to normal viewing picture unless otherwise noted.
2. Voltages are measured with 10000 μV B&W or colour signal.

WAVEFORM MEASUREMENT CONDITIONS:


10000 μV , 87.5% modulated colour bar signal is fed into tuner.

安全注意事项:

1. 更换电路元件时, 必须先拔出电源插头, 切断电源。
2. 底盘电路处工作状态时, 应注意电路中半导体元件散热片高电位可能导致的电击危险。

安全使用注意要点:

为保证本机的安全以及持久、正常的使用, 电路元件必须使用规定的纯正牌元件。

标有"△" () 的元件为对保证本机长久的安全使用起重要作用的元件。更换这些元件时, 必须使用规定的纯正牌元件, 以保证本机的使用安全以及使用寿命。

维修注意事项:

电路中由粗断续线(- - - - -)所围部分为与交流电源直接相接线路。对这些部分的线路进行维修时, 应于本机与交流电源之间用隔离变压器相接, 以防止不意的电击之危险。

注意:

这里的电路原理图均为最初设计原图, 与您的机器的电路原理图可能有不同之处。

注:

1. 电阻单位为 Ω (欧姆), 图中省略。
($K = 1000 \Omega$, $M = 1000000 \Omega$)
2. 除另加标记者, 所有电阻之功率均为1/8W。
3. 电容单位为"F" (法拉), 图中省略。
($\mu = 1 \times 10^{-6} \text{F}$, $P = 1 \times 10^{-12} \text{F}$)
4. 括号中的数值为再现工作状态时之数值, 括号外的数值为记录工作状态时之数值。

电压测定条件:

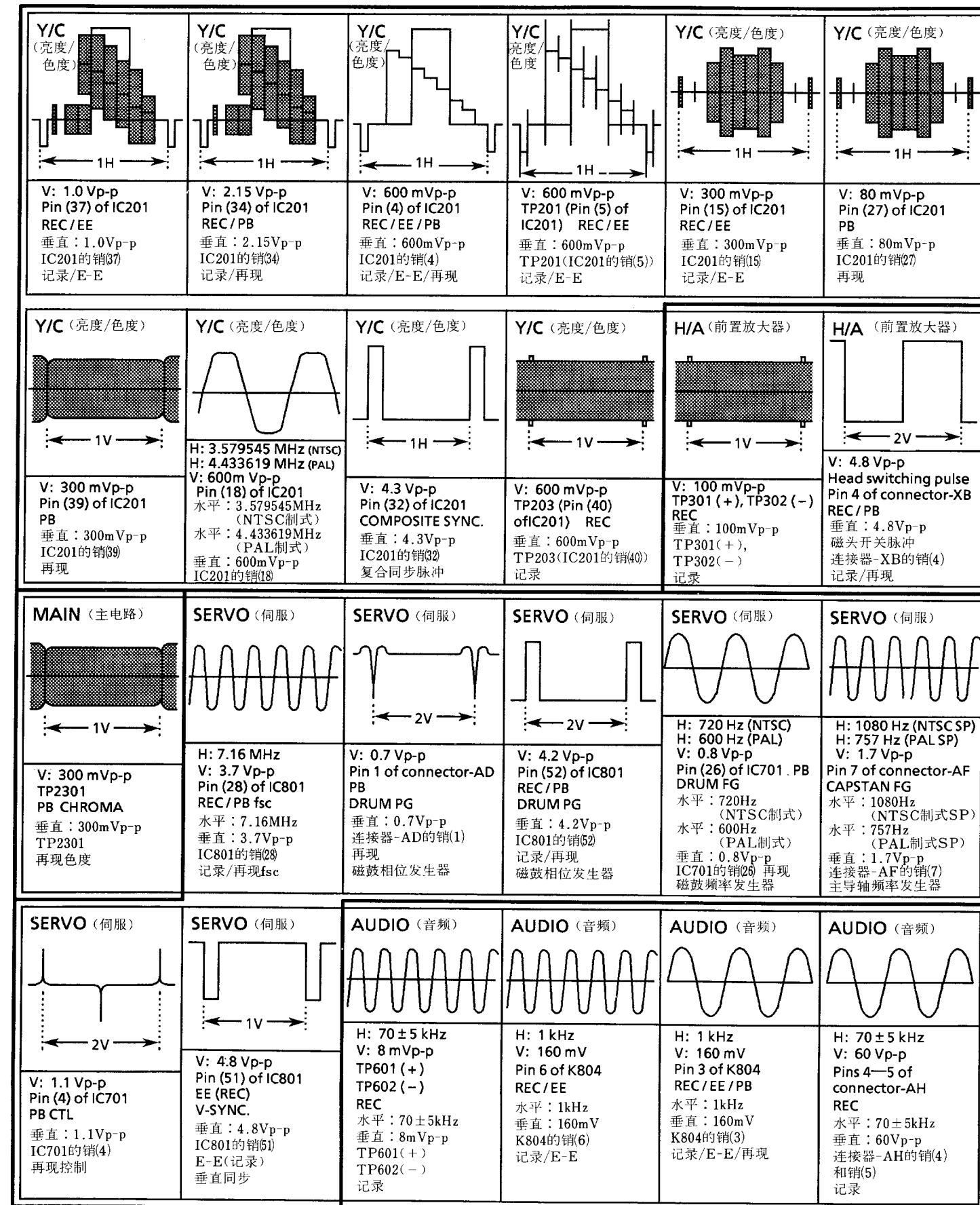
1. 除另加注明者, 直流电压指于本机加220V, 50/60Hz交流电源, 设所有控制调节为标准设定, 用电子管电压表(VTVM)于测点与底盘接地端之间所测电压值。
2. 交流电压由10,000 μV 的黑白或彩色信号所测。

波形测定条件:

向调谐器输入10,000 μV , 87.5%的调制彩条信号加以测定。

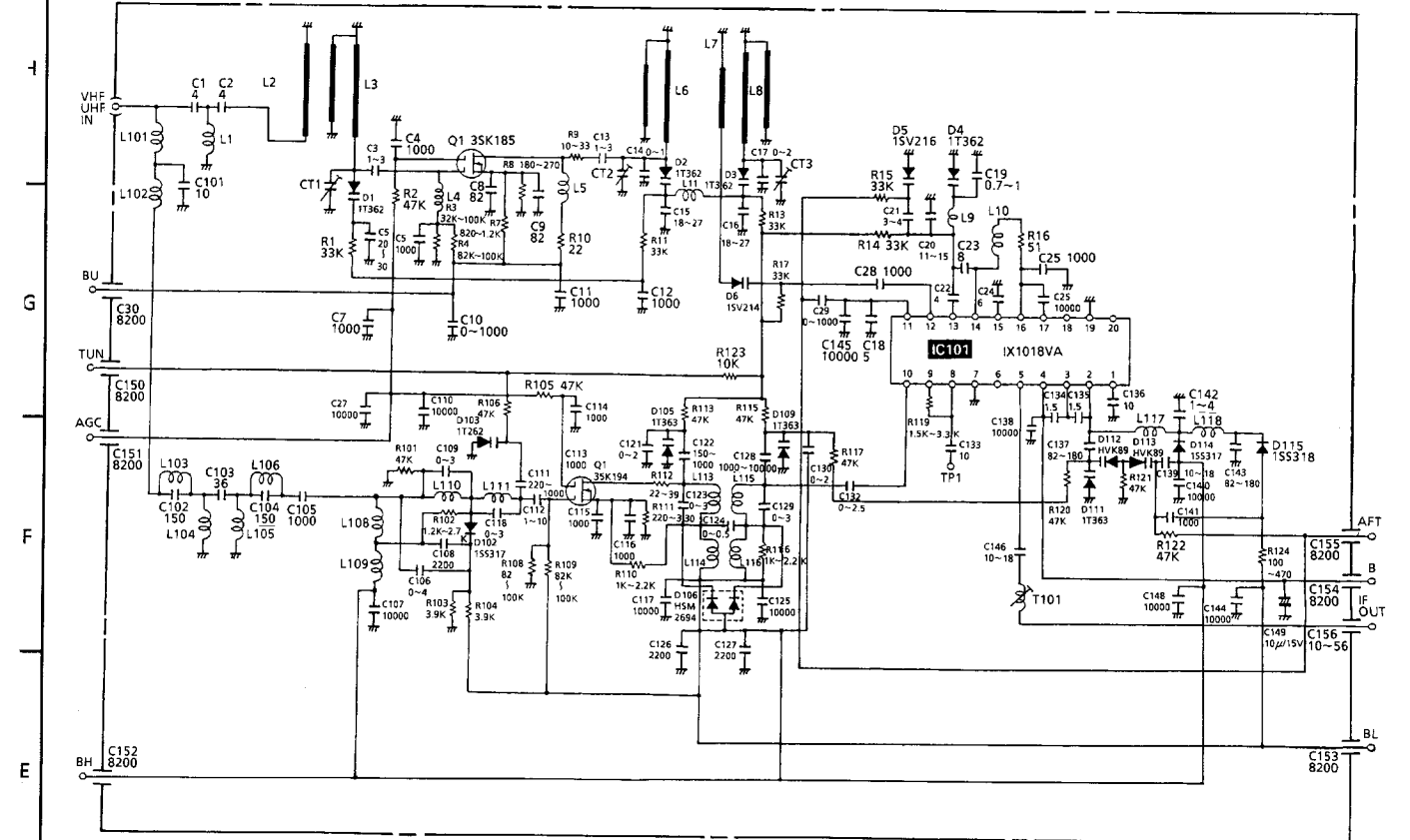
WAVE FORMS (VCR Section)

波形图(录象机部分)



TUNER CIRCUIT (TV Section) 调谐器电路(电视机部分)

△ VTUVTS60D///



INFRARED REMOTE CONTROL CIRCUIT 红外线遥控器电路

RRMCG0894AJSA

