



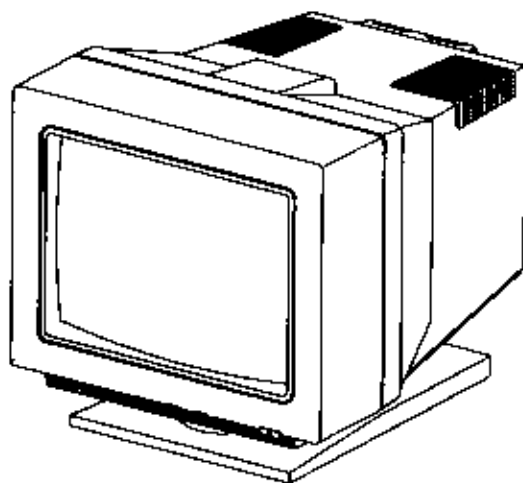
# GoldStar

## COLOR MONITOR SERVICE MANUAL

### CAUTION

BEFORE SERVICING THE UNIT, READ THE "SAFETY PRECAUTIONS" IN THIS MANUAL.

For Service Manuals  
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**MAURITRON SERVICES**  
8 Cherry Tree Road, Chinnor  
Oxfordshire, OX9 4QY  
Tel (01844) 351694  
Fax (01844) 352554

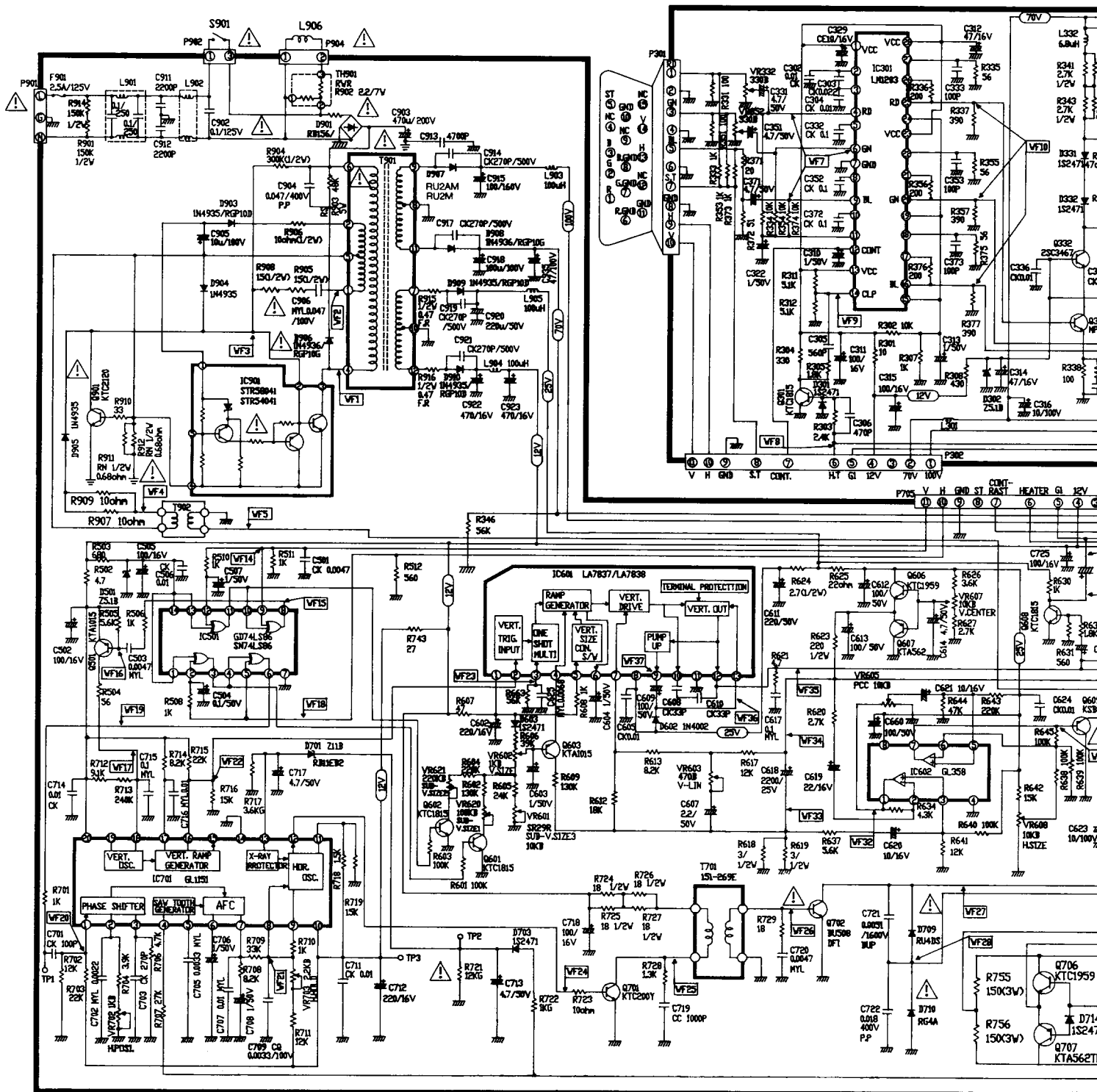


**MODEL: CV430(1430/1425 PLUS)  
CV431, CV432 1423  
(CA-9 CHASSIS)**



# GoldStar

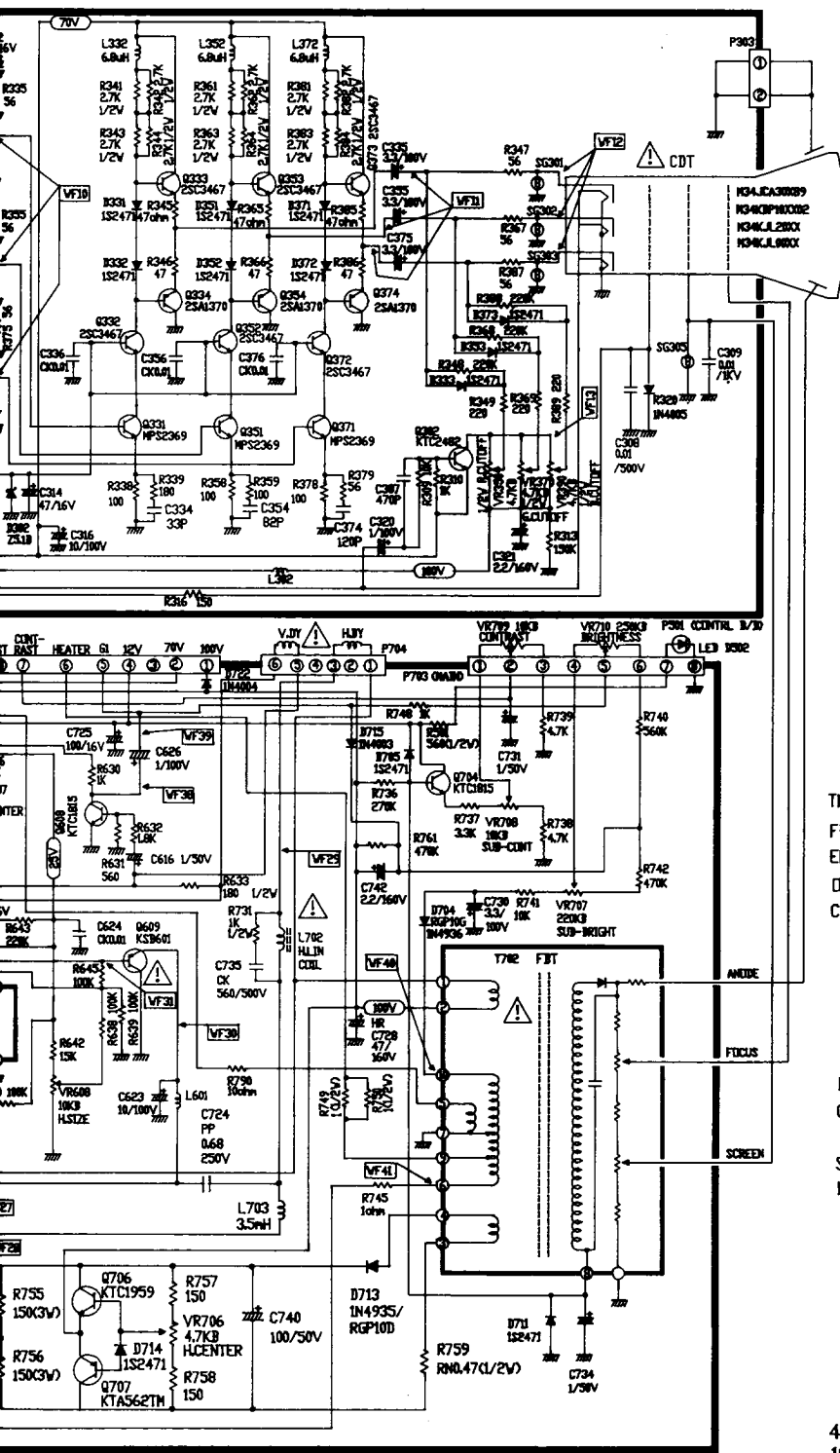
## CA-9 SCHEMATIC DIAGRAM (14" LOW VERSION NEW



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FDR Lh/Lv = 0.45/15mH





NOTES :



1. ALL RESISTORS 1/8W  $\pm 5$  VALUES  
IN OHMS, G =  $\pm 2\%$   
K = 1,000ohm M = 1,000,000ohm
2. ALL CAPACITORS IN uF, PF = 10EXP(-12)F
3. USING M34KJL20XX AND M34KJL00XX CDT,  
THE RESISTANCE OF R642 AND R736  
MUST BE AS FOLLOW;  
R642 : 13K ohm  
R736 : 330K ohm
4. ACCORDING TO ALTERNATIVE USE LOCATED Q702,  
THE OTHER PARTS MUST BE CHANGED AS FOLLOW

|                      |          |          |
|----------------------|----------|----------|
| Q702                 | 2SD1886  | 2SD1849  |
| R724,725<br>R726,727 | 47(1/2W) | 47(1/2W) |
| R728                 | 33(1/8W) | 33(1/8W) |
| T701                 | 151-269D | 151-269D |
| D712                 | RU4DS    | NONE     |

## IMPORTANT SAFETY NOTICE

THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

## IMPORTANT AVIS SUR LA SÉCURITÉ

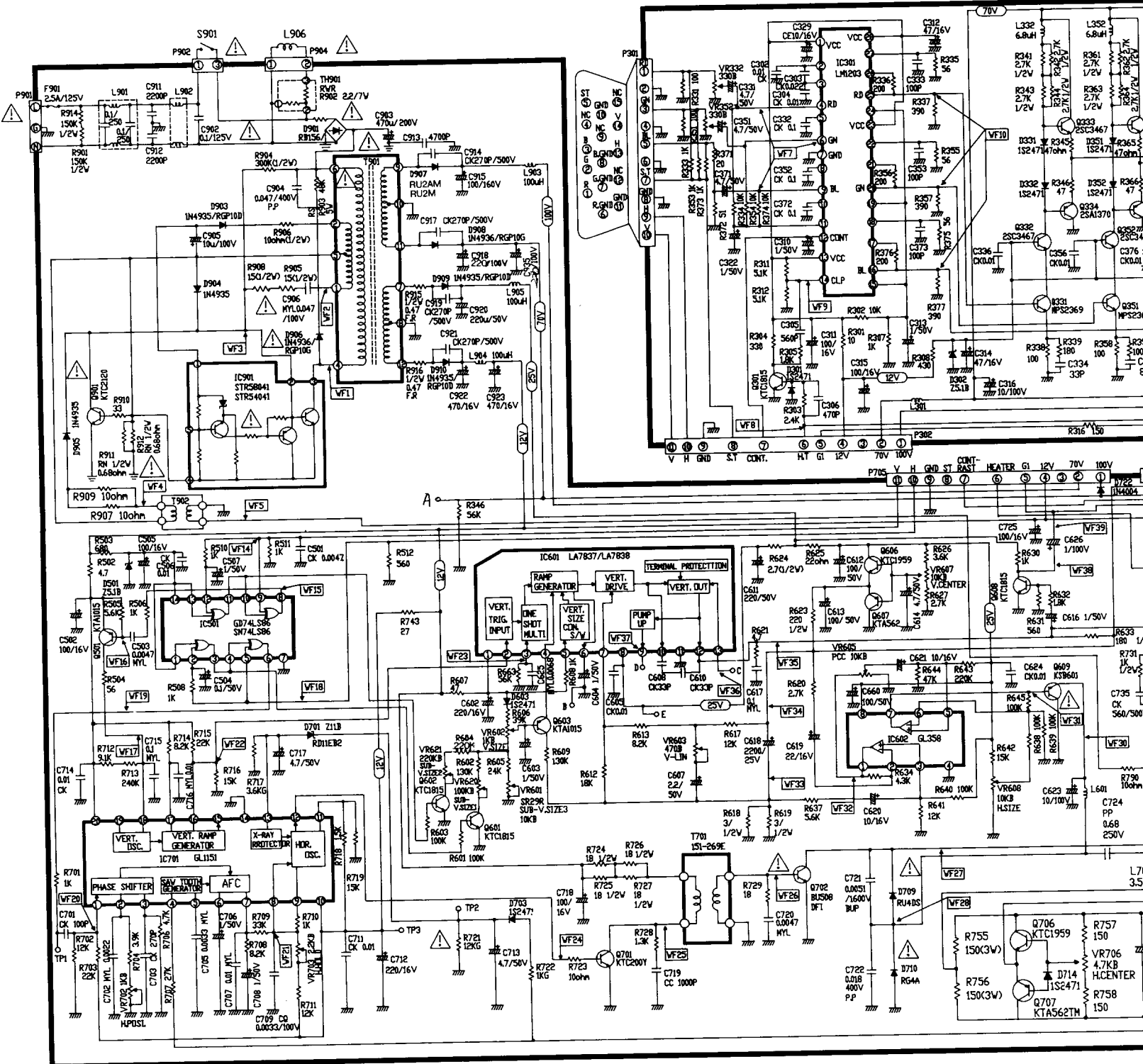
LA  SYMBOLE MARQUE DE CE DIAGRAMME SCHÉMATIQUE COMPREND D'IMPORTANTES CARACTÉRISTIQUES SPÉCIALES CONÇUES POUR PROTÉGER DES RAYONS X, ET DES DANGERS D'INCENDIE ET DE SECOURS ÉLECTRIQUES. EN CAS DE BESOIN SI DES PIÈCES DE CETTE  SYMBOLE MARQUE DOIVENT ÊTRE REMPLACÉES, UTILISEZ QUE DES PIÈCES SPÉCIFIÉES PAR LE MANUFACTURIER.

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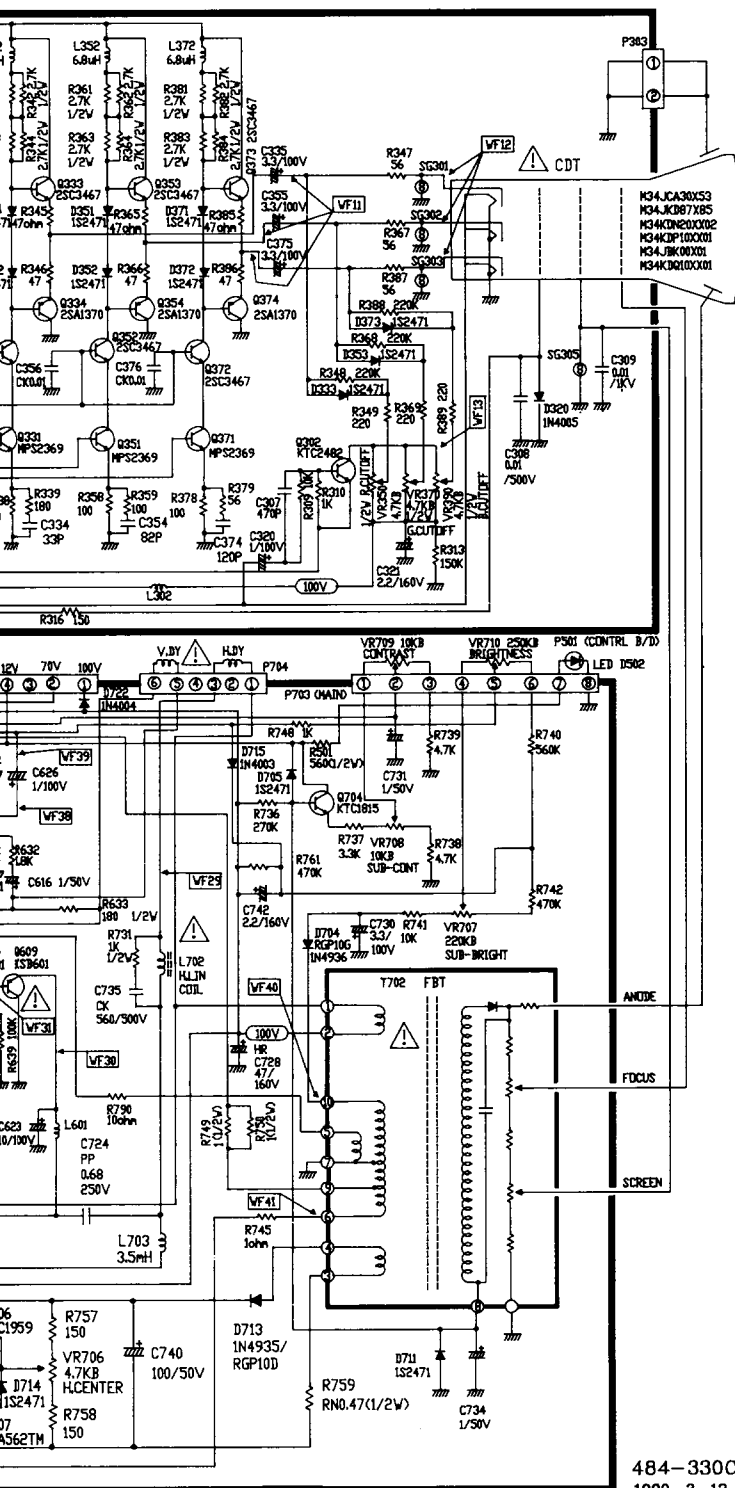
# CA-9 SCHEMATIC DIAGRAM (14" LOW VERSION NEW VGA)



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FOR  $L_h/L_v = 0.45/25\text{mH}$

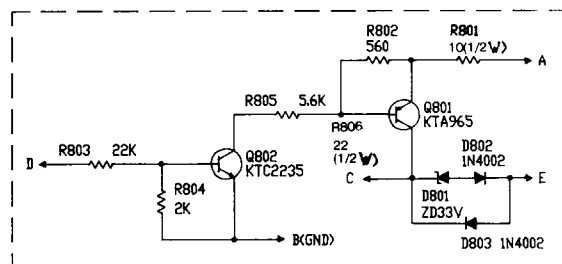


NOTES :



1. ALL RESISTORS 1/8W  $\pm$  5% VALUES  
IN OHMS, G =  $\pm$  2%  
K = 1,000ohm M = 1,000,000ohm
2. ALL CAPACITORS IN uF, PF = 10EXP(-12)F
3. USING M34JBK00X AND M34KDQ10XX CDT,  
THE RESISTANCE OF R633 MUST BE AS FOLLOW/  
R633: 300 ohm(1/2W)
4. ACCORDING TO ALTERNATIVE USE LOCATED Q702,  
THE OTHER PARTS MUST BE CHANGED AS FOLLOW/

|                      |          |          |
|----------------------|----------|----------|
| Q702                 | 2SD1886  | 2SD1849  |
| R724,725<br>R726,727 | 47(1/2W) | 47(1/2W) |
| R728                 | 33(1/8W) | 33(1/8W) |
| T701                 | 15I-269D | 15I-269D |
| D712                 | RU4DS    | NONE     |



5. CONNECTED CIRCUIT AT A,B,C,D,E POINT.



## IMPORTANT SAFETY NOTICE

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## IMPORTANT AVIS SUR LA SÉCURITÉ

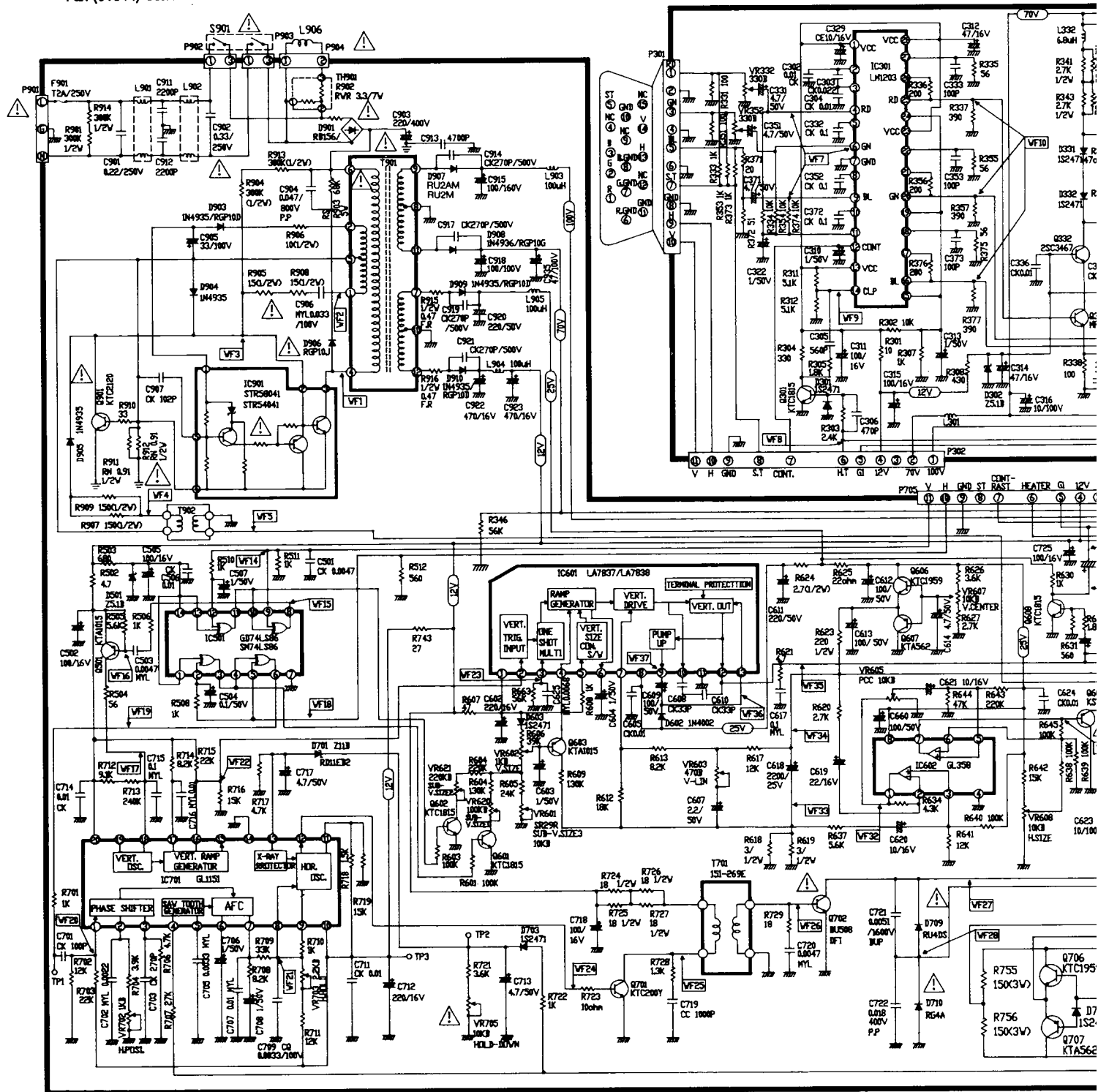
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# CA-9 SCHEMATIC DIAGRAM (14" HIGH VERSION NEW



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FOR  $L_v = 15\text{mH}$



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## NOTES



1. ALL RESISTORS 1/8W  $\pm 5$  VALUES  
IN OHMS, G =  $\pm 2\%$   
K = 1,000ohm M = 1,000,000ohm
2. ALL CAPACITORS IN uF, PF =  $10\text{EXP}(-12)\text{F}$
3. USING M34KJL00XX AND M34KJL20XX CDT.  
THE RESISTANCE OF R642 AND R736 MUST BE AS FOLLOW;  
R642: 13K ohm  
R736: 330K ohm
4. ACCORDING TO ALTERNATIVE USE LOCATED Q702,  
THE OTHER PARTS MUST BE CHANGED AS FOLLOW;

|                      |          |          |
|----------------------|----------|----------|
| Q702                 | 2SD1886  | 2SD1849  |
| R724,725<br>R726,727 | 47(1/2W) | 47(1/2W) |
| R728                 | 33(1/8W) | 33(1/8W) |
| T701                 | 151-269D | 151-269D |
| D712                 | RU4DS    | NONE     |

IMPORTANT SAFETY NOTICE

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IMPORTANT AVIS SUR LA SÉCURITÉ

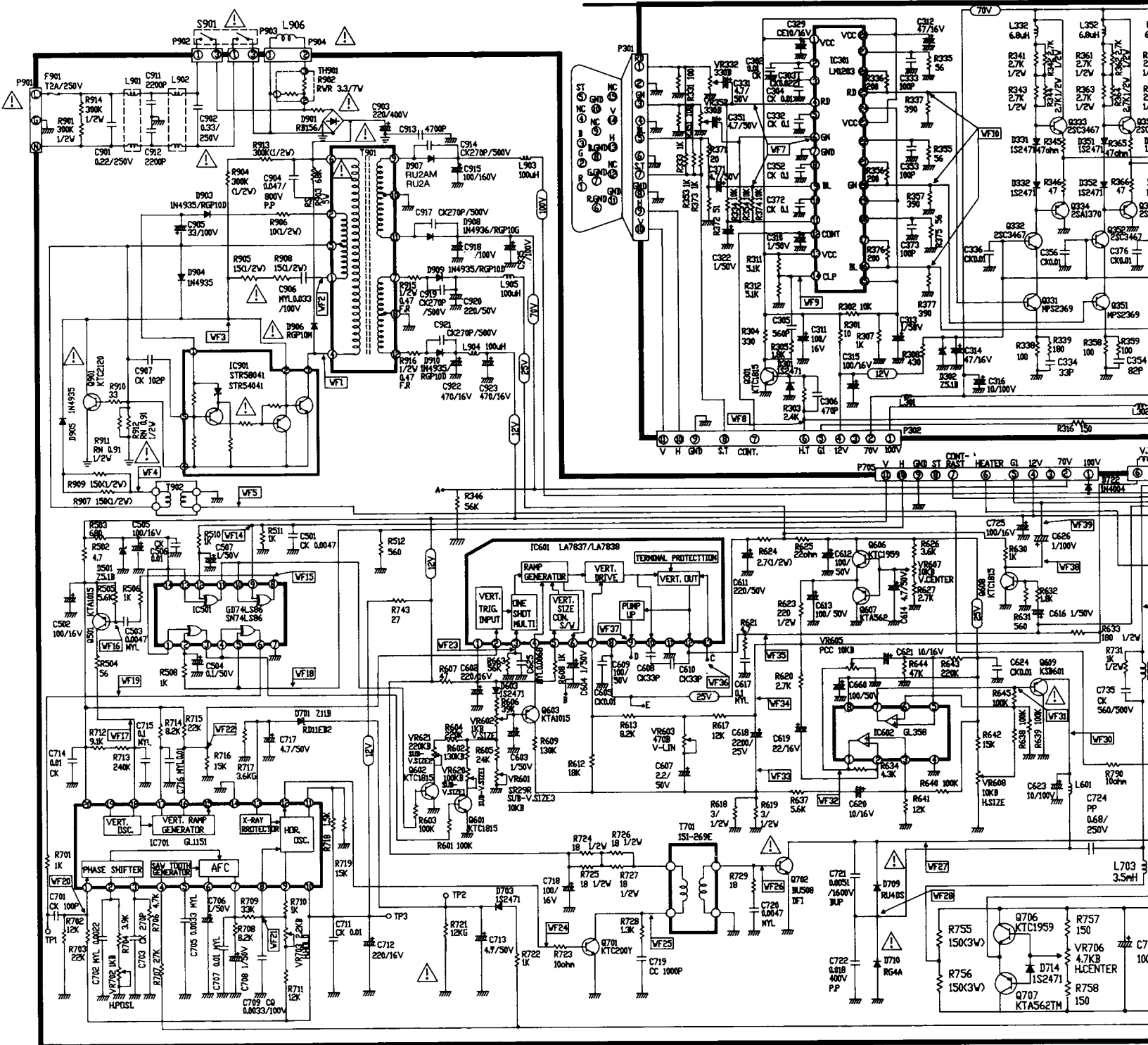
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# CA-9 SCHEMATIC DIAGRAM (14" HIGH VERSION NEW VGA)



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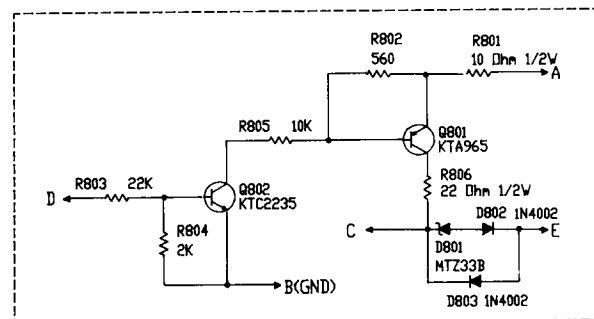
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## NOTES

1. ALL RESISTORS  $1/8W \pm 5$  VALUES  
IN OHMS,  $G = \pm 2\%$   
 $K = 1,000ohm$   $M = 1,000,000ohm$
2. ALL CAPACITORS IN  $\mu F$ ,  $PF = 10EXP(-12)F$
3. ACCORDING TO ALTERNATIVE USE LOCATED Q702,  
THE OTHER PARTS MUST BE CHANGED AS FOLLOW:

| Q702     | 2SD1886  | 2SD1849  |
|----------|----------|----------|
| R724,725 | 47(1/2W) | 47(1/2W) |
| R726,727 | 47(1/2W) | 47(1/2W) |
| R728     | 33(1/8W) | 33(1/8W) |
| T701     | 151-269D | 151-269D |
| D712     | RU4DS    | NONE     |

4. CONNECTED CIRCUIT AT A,B,C,D,E POINT.



## IMPORTANT SAFETY NOTICE

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## IMPORTANT AVIS SUR LA SÉCURITÉ

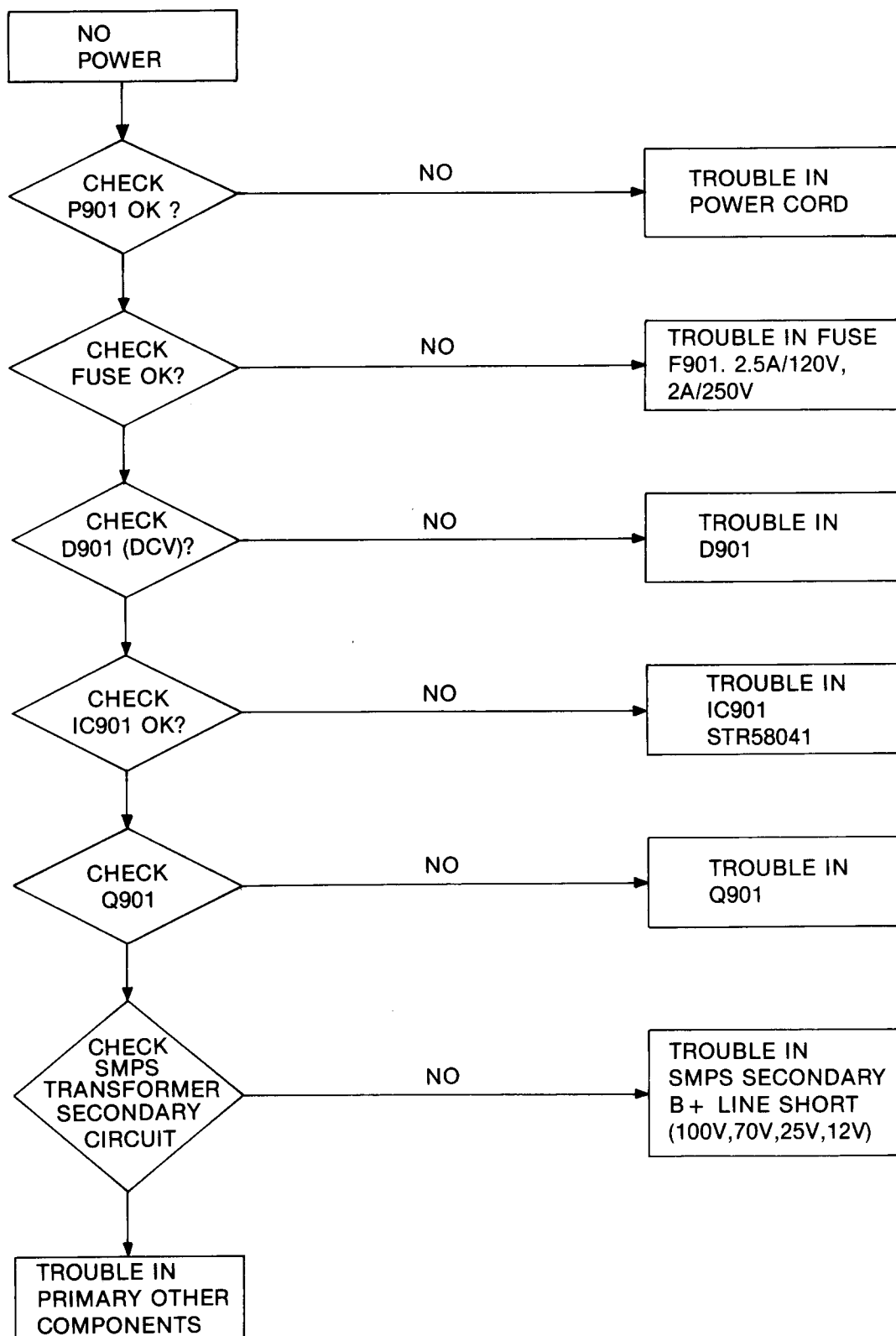
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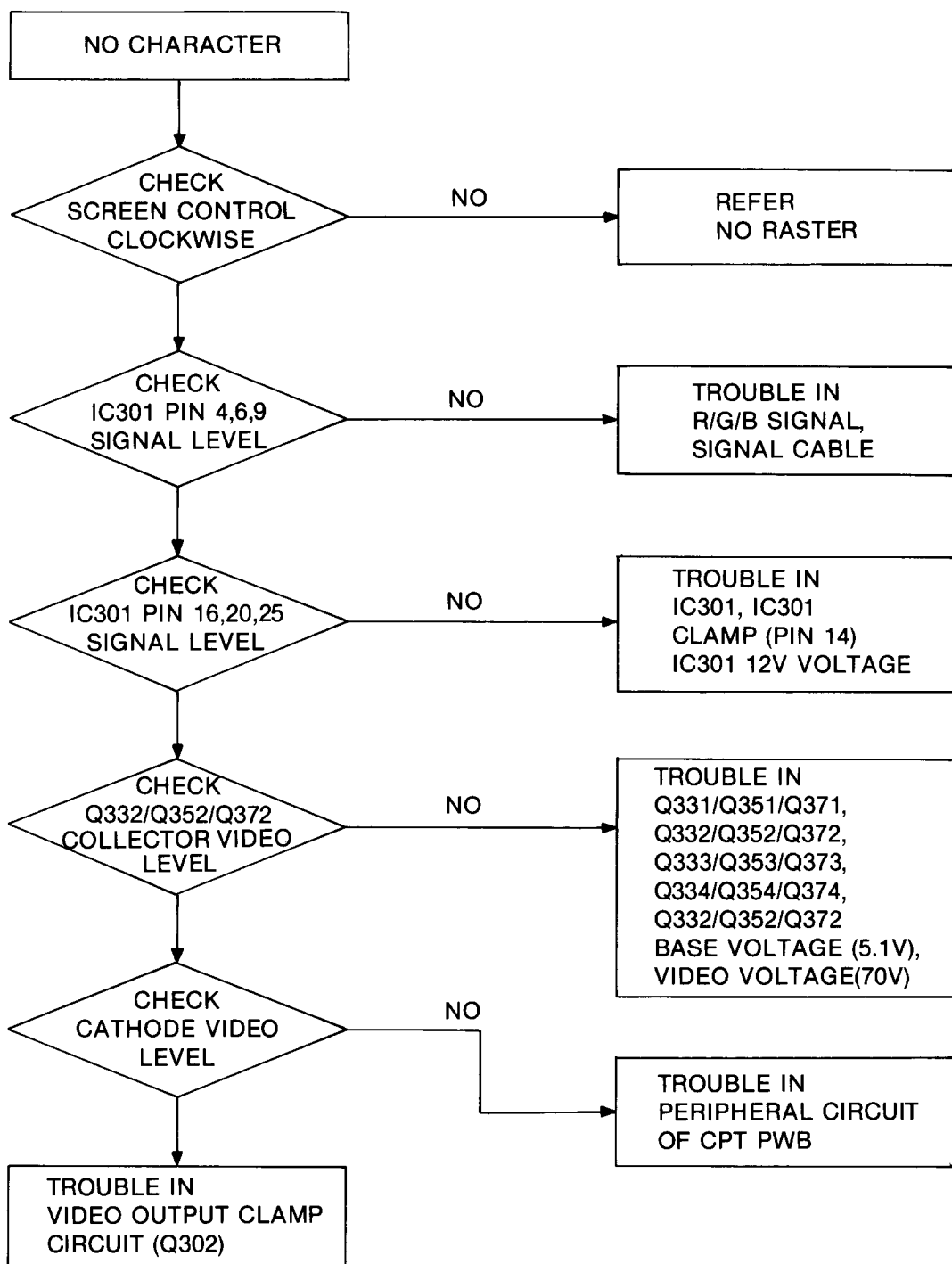
# TROUBLE SHOOTING GUIDE

## NO POWER

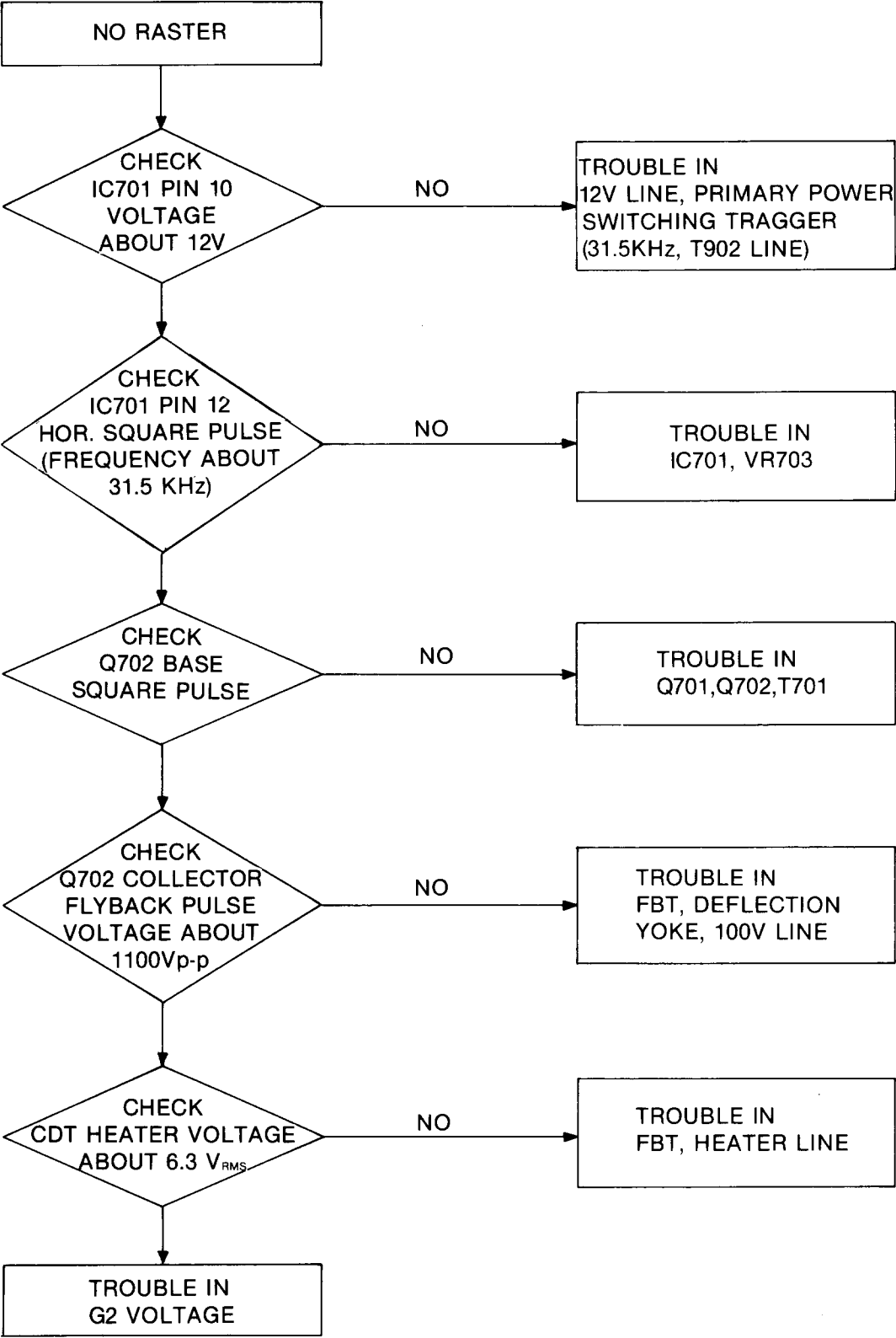


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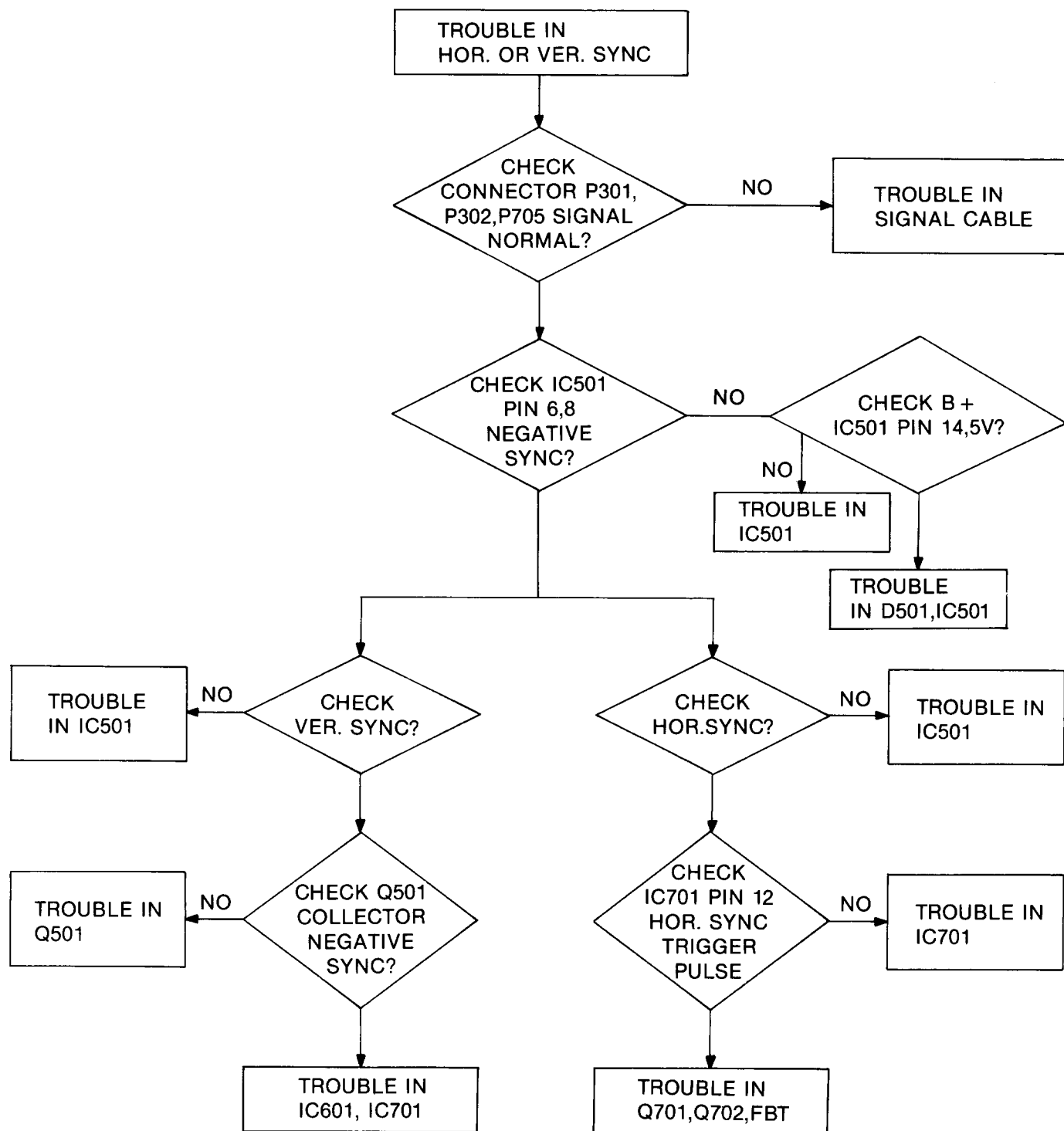
## NO CHARACTER



**NO RASTER**



## TROUBLE IN H,V SYNC



# ADJUSTMENT

## GENERAL INFORMATION

All adjustments are thoroughly checked and corrected when the monitor leaves the factory. Therefore the monitor should operate normally and produce proper color and picture upon installation. However, several minor adjustments may be required depending on the particular location in which the monitor is to operate. This monitor is shipped completely in carton. Carefully draw out the monitor from the carton and remove all packing materials. Check and adjust all the customer controls such as Brightness, and Contrast to obtain a normal picture.

## HORIZONTAL HOLD ADJUSTMENT

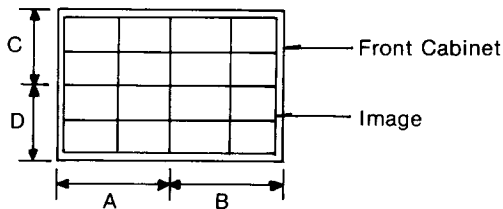
1. Display the Reverse Pattern on the monitor.
2. Disconnect H-Sync signal.
3. Turn the VR703 (H-Hold) for the screen to stand straight.

## VERTICAL LINEARITY ADJUSTMENT

1. Display the Cross Hatch Pattern on the monitor.
2. Turn to the VR603, so that the vertical linearity should be best condition.

## VERTICAL SIZE ADJUSTMENT

1. VERTICAL SIZE ADJUSTMENT
  - Display the MODE 3 Cross Hatch Pattern on the monitor.
  - Set the external V-Size VR(VR602) at center.
  - Adjust the VR602, and then the vertical size should be within  $180 \pm 2\text{mm}$ .



(Fig. 1)

## VERTICAL CENTER ADJUSTMENT

1. Display the Reverse Pattern on the monitor.
2. Adjust the VR607(External VR), and then set the geometric vertical center in the screen.

## SIDE PINCUSHION ADJUSTMENT

1. Display the Reverse Pattern.
2. Adjust the VR605 so as to minimize the pin-cushion distortion.

## HORIZONTAL SIZE ADJUSTMENT

1. Display the Cross Hatch Pattern on the monitor.
2. Set the external H-Size VR(VR608) at center.
3. Adjust the VR606 for the Horizontal Size so as to be within  $247 \pm 2\text{ mm}$ .
4. Then the Bright control should be set at the center, and the Contrast control should be set at the MAX.

## WHITE-BALANCE ADJUSTMENT

1. THE USED INSTRUMENT
  - WHITE-BALANCE METER
  - DEGAUSSING COIL (Degauss the monitor before adjustment).
  - PHOTOMETER.
2. PREPARING ADJUSTMENT(1)
  - Connect the signal cable with PC, and display the Color 0.0 Full Pattern on the monitor.
  - Minimize the screen control of FBT.
  - Set the Sub-Bright (VR707) and the Sub-Contrast (VR708) to mechanical center.
  - Set the Contrast VR and the Bright VR to the Max.
  - Set the G and the B drive to mechanical center.
  - Minimize R,G,B Cut Off VR and turn clockwise B Cut Off VR (VR390) as much as  $1/3$  (about  $90^\circ$ ).

### 3. ADJUSTMENT (1)

- Turn the screen control (G2) to clockwise slowly until the brightness of B raster is 0.5~1 FL.
- Let the R Cut Off VR(VR390) be the reference, and adjust the G and the B Cut Off VR(VR350, VR370) so as to get  $X = 0.282$ ,  $Y = 0.304$ .
- Adjust slowly counter-clockwise the screen VR for raster so as to disappear (Brightness VR Center; contrast VR Max).

### 4. ADJUSTMENT (2)

- 1) Set external Brightness VR to center and external Contrast VR to Maximum.
- 2) Display full white pattern (color 15.0) on the screen.
- 3) Turn the R drive VR(VR332) so that  $X = 0.282$  and the G drive VR(VR352) so that  $Y = 0.304$ .
- 4) Repeat 3) until  $X = 0.282 \pm 0.02$ ,  $Y = 0.304 \pm 0.022$ .
- 5) Set external Brightness VR to min. and adjust external Contrast VR until brightness is 5 FL at full white pattern (color 15.0).
- 6) Confirm  $X = 0.282 \pm 0.02$ ,  $Y = 0.304 \pm 0.022$  unless the color co-ordinate is not in spec, re-adjust R, G cut off VR (VR350, VR370) so that the pattern is white.
- 7) Repeat the number 3),4),5),6) so that the screen should be white.

### BRIGHTNESS ADJUSTMENT

1. Set the external Bright VR at center and the external contrast VR at Min.
2. Display the Cut-Off Level (Color 0.0)
3. Adjust the Sub-Bright VR(VR707) until the back raster disappears.
4. Confirm that whether back raster appears or not when the Bright VR is at Max.

### CONTRAST ADJUSTMENT

1. Set the external Bright VR at center and the external Contrast VR at Max.
2. Display White Pattern (Color 7.0), of which the size is  $50 \times 50$ , on the monitor.
3. At the center of the screen, adjust the Sub-Contrast VR (VR708), so that the brightness should be  $25 \pm 4$  FL.

### FOCUS ADJUSTMENT

1. Set the Bright VR CENTER and the Contrast VR to Max.
2. Display the "H" character in full screen (Color 15.0)
3. Adjust Focus VR, so that the focus should be best condition.

### FAIL SAFETY CHECK

USED INSTRUMENT: DC VOLTMETER.

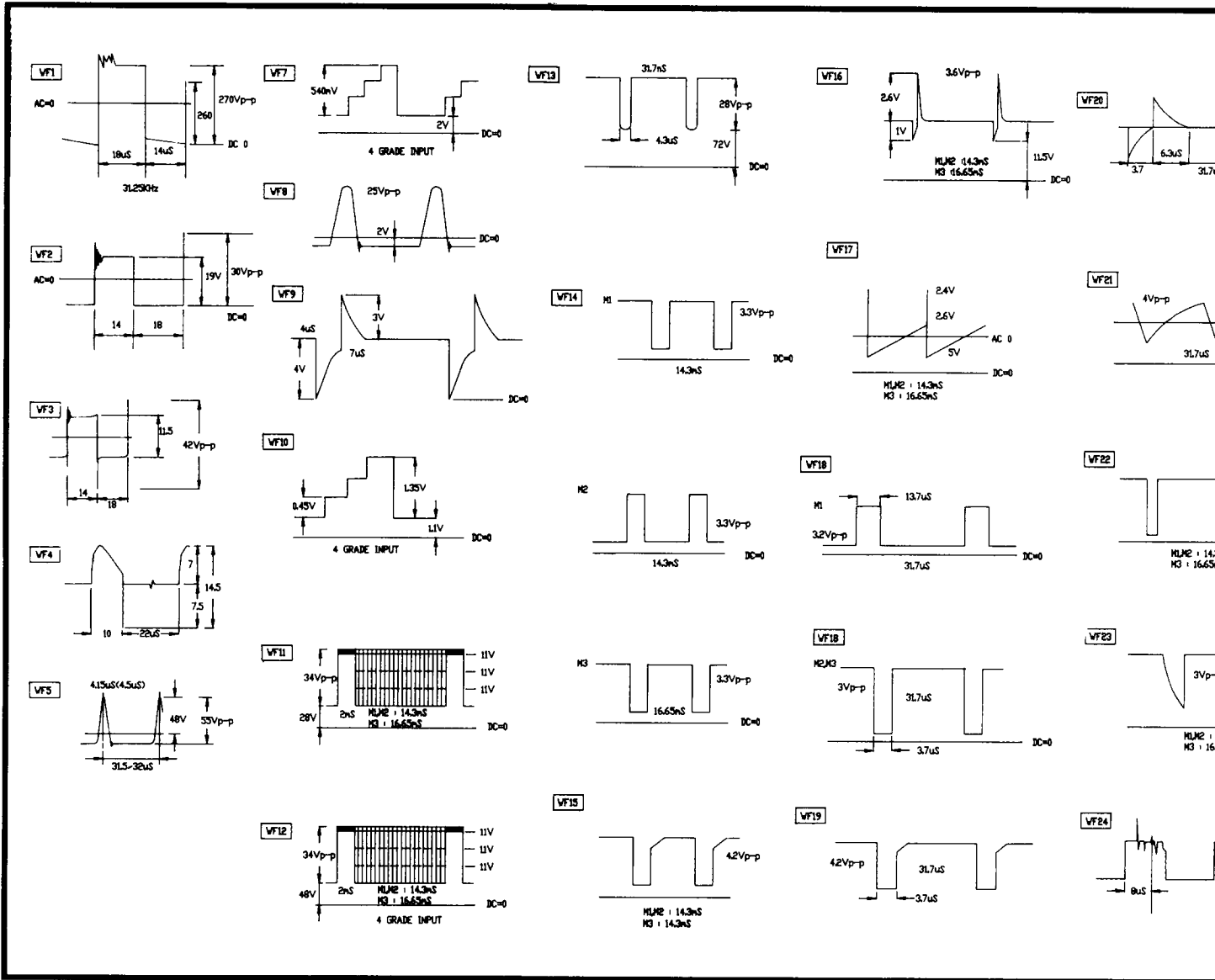
1. Display the reverser pattern on the monitor.
2. Minimize the Contrast and the Bright VR.  
So that the screen should be Cut-Off.
3. Connect DC Voltmeter between TP<sub>2</sub> and chassis ground.
4. The voltage of TP<sub>2</sub> should be 10.2V-10.9V

### CONFIRMING

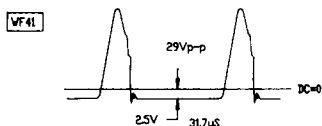
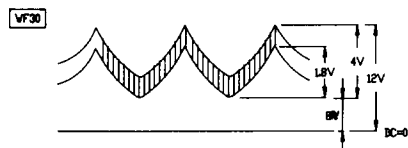
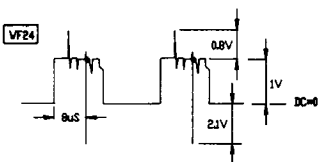
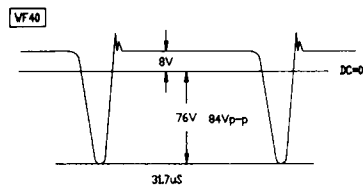
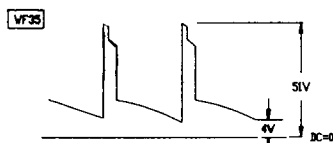
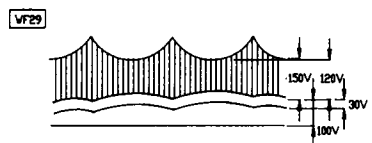
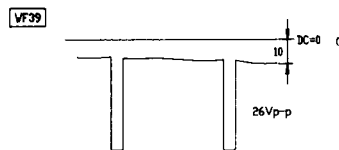
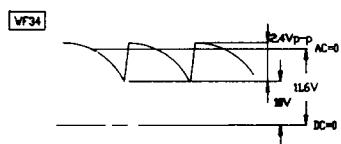
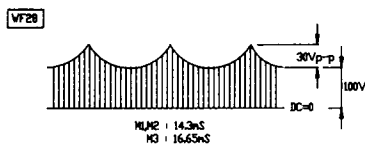
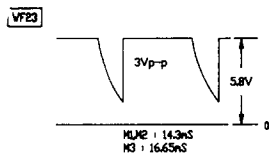
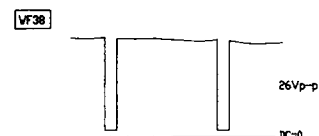
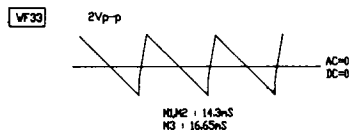
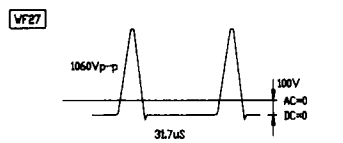
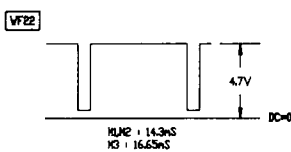
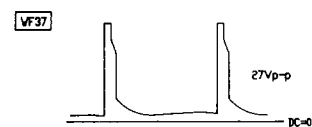
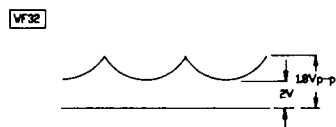
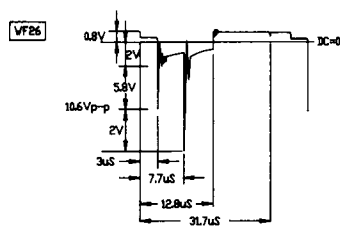
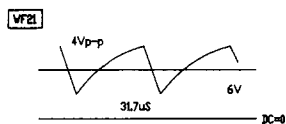
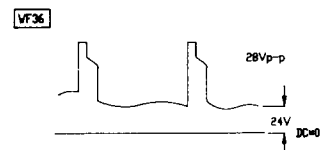
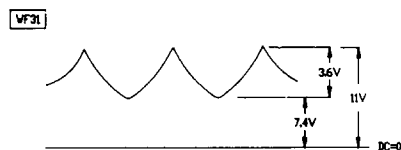
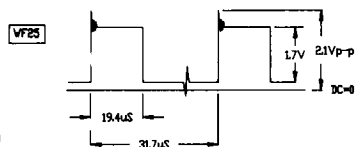
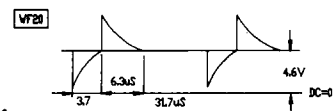
1. Supply the cathode of D702 (TP2) with DC 12.0 + 0.5/- 0V, and then confirm that the monitor should be Hold Down.  
(CAUTION): ALL PROCEDURE MUST BE DONE AFTER THE MONITOR IS FULLY HEAT-RUN.

# SCHEMATIC DIAGRAM (2/2)

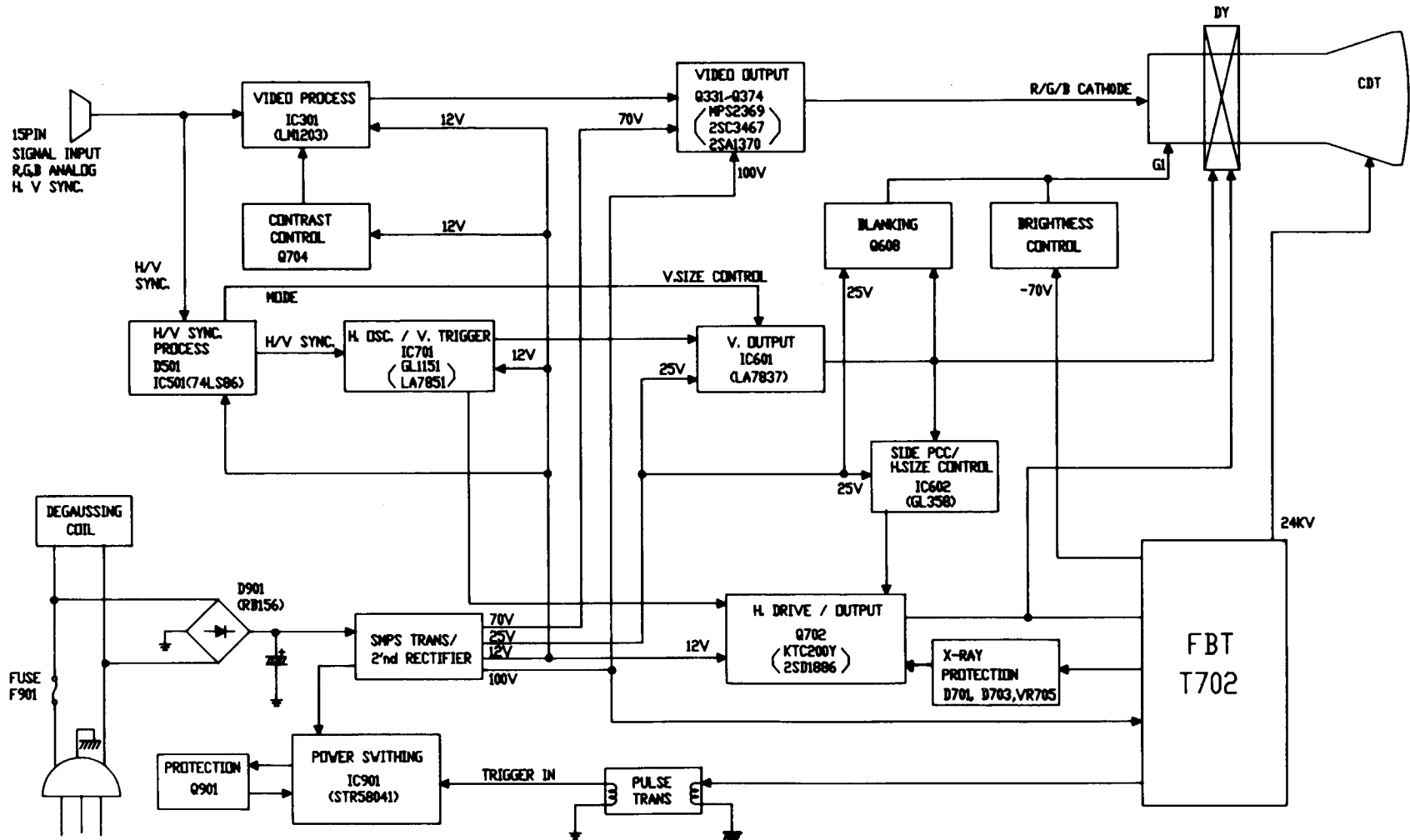
## WAVE PARTS







# BLOCK DIAGRAM



# CIRCUIT DESCRIPTION

## POWER SUPPLY

The power supply is a SMPS (Switching Mode Power Supply) that consists of switching IC(IC901), SMPS transformer (T901) pulse transformer (T902), over current protection transistor (Q901) and the associated components. The primary winding of the SMPS transformer is applied the pulse by operating IC901. Therefore, rectified DC output voltage is obtained by the secondary winding of SMPS transformer T901.

## POWER SUPPLY DESCRIPTIONS

This SMPS (Switching Mode Power Supply) using STR58041 obtains rectified DC 100V, 70V, 25V, 12V from AC120V, 60Hz (USA Version)/AC 220V, 50Hz (Europe version).

Power is supplied in the following procedure:

- 1) AC120V/AC220V supplied from the AC socket is rectified by D901.
- 2) Rectified voltage is supplied to the T901.  
The primarily rectified voltage by D901 is supplied to PIN 6 of T901 through PIN 4 of T901.
- 3) A switching pulse is applied at PIN 2 of the IC901.
- 4) This oscillation causes IC901 to switched, and at the secondary terminal of T901, a voltage (proportional to the turn ratio) is generated.

## HORIZONTAL AFC AND OSCILLATION LIMITTER

The AFC circuit consists of phase detection circuit of IC701 and the associated components. The oscillation limit circuit is necessary to prevent the pulse from excessive high voltage. This circuit is located in IC701 and controls the oscillator to maintain the control signal in its correct frequency and in phase with the horizontal sync signal.

## HORIZONTAL DRIVE CIRCUIT

To obtain horizontal drive pulses from IC701 PIN 12, the horizontal oscillator must be working. Horizontal drive pulses from IC701 PIN 12 are applied to horizontal drive transformer and drive transistor Q701.

The B+ for T701 is supplied from the 12V line.

## HORIZONTAL DEFLECTION OUTPUT

Horizontal drive pulses from IC701 PIN 12 are coupled through T701 to the base of horizontal output Q702. Transistor Q701 is biased on when the beam is at about mid-screen.

The charge stored in C721 causes current to flow through the horizontal yoke winding and Q702 to ground. When the beam reaches the right side of the screen, Q701 is turned off, and the current in the yoke is directed into C722 and C724.

At the same time current flows into C722 and C724 from the regulated B+ via the horizontal choke coil (L702) winding.

Due to resonance, the current then reverses and flows back through the horizontal yoke winding into C721 and C728.

## X-RAY PROTECTION CIRCUIT

The X-RAY protection circuit consists of D701, R717, R721, R722, and the associated component that connected to PIN 13 of IC701. A voltage from the FBT PIN 6 is divided by R722 and R721. Under normal operating conditions, the resultant voltage (TP2) maintains the specified value.

If a malfunction causes excessive high voltage, the voltage of FBT PIN 6 is increasing and TP2 voltage is increasing. As a result, D701 is conducted when the cathode voltage of D701 is arrived as much as Zener voltage. A voltage increase at IC701 PIN 13 makes the X-RAY protection circuit conduct, and the horizontal oscillation operation no longer functional. The circuit latches as above, and it is necessary for the circuit to turn the power off for at least 30 seconds to function again.

## VERTICAL OSCILLATION/DRIVE CIRCUIT

The time constant circuit that determines the vertical oscillation frequency consists of C715, R712 and R713. (IC701 PIN 16).

The vertical trigger input circuit (IC601 PIN 2) is driven by the vertical sync. negative polarity pulse from the IC701 PIN 16.

The drive circuit has a differential input stage driven by the sawtooth waveform generated at IC601 PIN 6. The negative feedback waveform at IC601 PIN 7 driven from the vertical deflection output is applied to the other input of the differential amplifier.