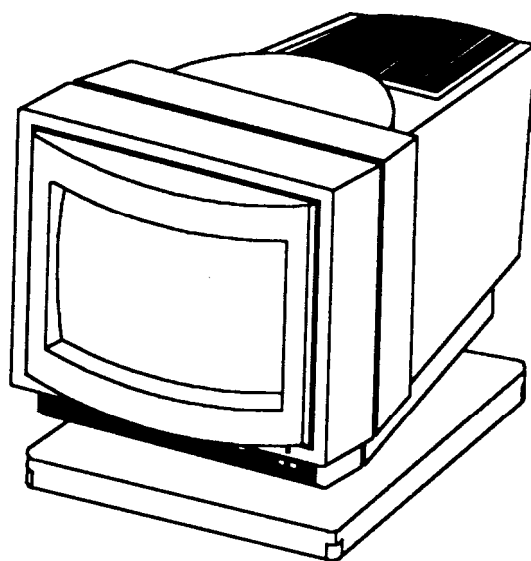


GoldStar

COLOR MONITOR SERVICE MANUAL

CAUTION

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



MODEL : CH462
1465,1465 SSI/01
(CA-22 CHASSIS)



GoldStar

FEATURES

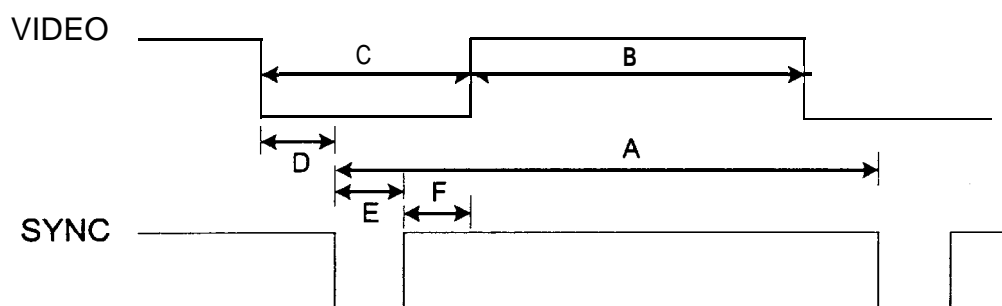
This High Resolution Color Monitor is a high quality, high content Analog Display.

It has the following features:

- 14 inch Color Display
- 3 Different, independent lines to drive the display a RED, a GREEN and a BLUE Line.

- 65 MHz Bandwidth.
- High-Resolution CDT (Color Display Tube) Display; Horizontal 1024 dots, vertical 768 lines without blurring the characters.
- Analog-Compatibility at a H-frequency of 31.5KHz/35KHz/48KHz.

TIMING CHART



	MODE	MODE1	MODE2	MODE3	MODE4	MODE5	MODE6	MODE7
		VGA1	VGA2	VGA3	8514/A	EVGA1	EVGA3	1024X768(N-I)
HORIZONTAL	RESOLUTION	720x350	720x400	640x480	1024x768	800x600	800x600	1024x768
	POLARITY	POSI	NEGA	NEGA	POSI	POSI/NEGA	POSI	POSI/NEGA
	FREQUENCY	31.47KHz			35.52KHz	35.16KHz	48.06KHz	43.36KHz
	A	31.78uS			28.15uS	28.44uS	20.81uS	20.68uS
	B	25.43uS			22.81uS	22.22uS	16.2uS	15.75uS
	C	6.36uS			5.35uS	6.16uS	4.61uS	4.92uS
	D	0.64uS			0.18uS	0.6uS	0.79uS	0.62uS
	E	3.81uS			3.92uS	2.00uS	2.38uS	3.2uS
VERTICAL	F	1.91uS			1.25uS	3.56uS	1.43uS	1.11uS
	POLARITY	NEGA	POSI	NEGA	POSI	POSI/NEGA	POSI	POSI/NEGA
	FREQUENCY	70Hz	70Hz	60Hz	87Hz	56Hz	72Hz	60Hz
	A	14.27mS	14.27mS	16.68mS	11.53mS	17.77mS	13.87mS	16.647mS
	B	11.12mS	12.71mS	15.25mS	10.83mS	17.06mS	12.79mS	15.882mS
	C	3.15mS	1.554mS	1.434mS	0.701mS	0.709mS	1.086mS	0.765mS
	D	1.176mS	0.38mS	0.32mS	0.028mS	0.028mS	0.334mS	0.062mS
	E	0.064mS	0.064mS	0.064mS	0.113mS	0.056mS	0.125mS	0.062mS
	F	1.91mS	1.11mS	1.05mS	0.56mS	0.625mS	0.627mS	0.641mS

A : SYNC. TIME
B : VIDEO ACTIVE TIME
C : BLANKING TIME

D : FRONT PORCH
E : SYNC PULSE DURATION ,
F : BACKPORCH

CIRCUIT DESCRIPTION

POWER SUPPLY

This power supply is a SMPS(Switching Mode Power Supply) that consists of the automatic power selection switch(IC901, in the case of Auto-selection Version), PWM control IC(IC902), switching FET(Q901), SMPS transformer(T901), pulse transformer(T902) and the associated components.

The secondary rectified voltages are 6.3Vdc for heater of CRT, 12Vdc(* 13Vdc) for IC301 and IC701 and other circuit, 20Vdc(* 21Vdc) for IC601 and the horizontal drive circuit, 70Vdc(* 72Vdc) for IC302, 90Vdc(* 93Vdc) for FBT(T702) at 31.5KHz modes(M1, M2, M3), 103Vdc(* 106Vdc) for FBT at 35KHz modes(M4, M5) and 139Vdc(* 142Vdc) for FBT at 48KHz modes (M6, M7) and video cut-off adjustment circuit.

This power supply operates to the following procedure:

- 1) AC input voltage supplied from the AC socket is rectified by D901.
- 2) This rectified voltage is applied to PIN 7 of T901 and starting voltage is applied to PIN 7 of IC902 at the same time.
- 3) IC902 oscillates and supplies this oscillation waveform through R919 for the gate of Q901.
- 4) This oscillation causes Q901 to turn-on and turn-off repeatedly.
- 5) At the secondary terminal of T901, voltages of square waveform are generated in proportion to the turn ratio.



NOTE: "*" means that the voltage is in the case of MPR-II VERSION MONITOR.

MODE CONTROLLER

Mode controller consists of IC801 and some associated components.

IC801 discriminates the input mode with frequency and polarity of input signal and supplies mode output signals for other circuit.

The output of the IC801 at the each pin in accordance with the input signal is as follows:

Mode Pin No.	VGA1 (M1)	VGA2 (M2)	VGA3 (M3)	8514/A (M4)	EVGA1 (M5)	EVGA3 (M6)	VGA + (M7)
1	3.3V	3.3 V	0 V	0 V	0 V	0 V	3.0 V
2	0 V	0 V	3.7 V	0 V	3.7 V	0 V	0 V
8	0 V	0 V	0 V	—	—	—	—
9	—	—	—	0 V	—	—	—
10	—	—	—	—	0 V	—	—
11	—	—	—	—	—	0 V	—
12	—	—	—	—	—	—	0 V
13		←	←	←	←	←	←
14		←	←	←	←	←	←
17	0 V	0 V	0 V	5.1V	5.1V	0 V	0 V
18	0 V	0 V	0 V	0 V	0 V	3.5 V	3.5 V
19	0V	0V	0V	—	—	—	—
20	—	—	—	0 v	—	—	—
21	—	—	—	—	0 v	—	—
22	—	—	—	—	—	0 v	0 v
23	0 V	—	—	—	—	—	—
24	—	0 V	—	—	—	—	—
25	—	—	0 V	—	—	—	—
26	—	—	—	0 V	—	—	—
27	—	—	—	—	0 V	—	—
28	—	—	—	—	—	0 V	—
29	—	—	—	—	—	—	0V

Note

1. "—" means that the voltage is higher than 0.8V, lower than 5.5V with DC voltage meter and that these voltages can vary to the adjustment points of H-Size, V-Size and H-position control potentiometer.
2. "←" means that the waveform is the same as the left side.

VERTICAL OSCILLATION, DRIVE AND OUTPUT

The time constant of R601 and C601 which are connected to pin 3, 4, 6 of IC601 determines the vertical oscillation frequency.

This oscillation circuit is synchronized by V-SYNC through C602, 0601 and R603.

IC601 includes vertical drive and output circuit.

The vertical ramp generator (pin 9 of IC601) drives power amplifier and then power amplifier output (pin 1 of IC601) drives vertical yoke by negative stoped current.

The vertical size control circuit consists of pin 7 of IC601, Q602, Q603, Q604 and some resistors.

The vertical position control circuit consists of Q605, Q606 and some resistors.

HORIZONTAL OSCILLATION

The time constant of C709, C710, VR702, R716, R717 and R718 (VGA mode, 31.5KHz) C709, C710, VR702, R716, R719 and R720 (8514/A, EVGA1 mode, 35KHz) C709, C710, VR702 and R716 (EVGA3, VGA+, 48KHz) which are connected to pin 8 of IC701 determines the horizontal oscillation frequency.

HORIZONTAL DRIVE CIRCUIT

Horizontal oscillation pulses from pin 12 of IC701 are applied to the base of Q707.

Q707 does turn-on, turn-off operation to the horizontal oscillation frequency and the drive transformer (T701) supplies drive current for the horizontal output transistor(Q708).

HORIZONTAL OUTPUT CIRCUIT

When the horizontal drive current is applied to the base of 0708, Q708 does turn-on, turn-off operation.

When 0708 is turn-on, the current flows from B+ through the primary coil of FBT(T702) to collector, emitter of Q708.

At the same time the horizontal deflection current flows from C721 and C722 through horizontal yoke coil to GND.

During retrace time 0708 is turn-off.

At the moment resonance that the charged energy in the FBT and horizontal deflection coil discharges to C719, C720 and C739 will occur.

Therefore, the generated pulse voltage is applied to the collector of Q708 and the primary coil of the FBT(T702).

As a result, the high voltage is generated in the secondary coil of FBT in porportion to turn ratio.

X-RAY PROTECTION CIRCUIT

X-Ray protection circuit consists of C712, C730, R763, R764, D702, R729 and C716.

The flyback pulses from the pin 6 of T702 are rectified by D712 and C730.

And then rectified voltage is divided by R763 and R764.

Under normal operating conditions, the voltage of TP2 (OR JUMP76) is the specified value (approximately 16.8V)

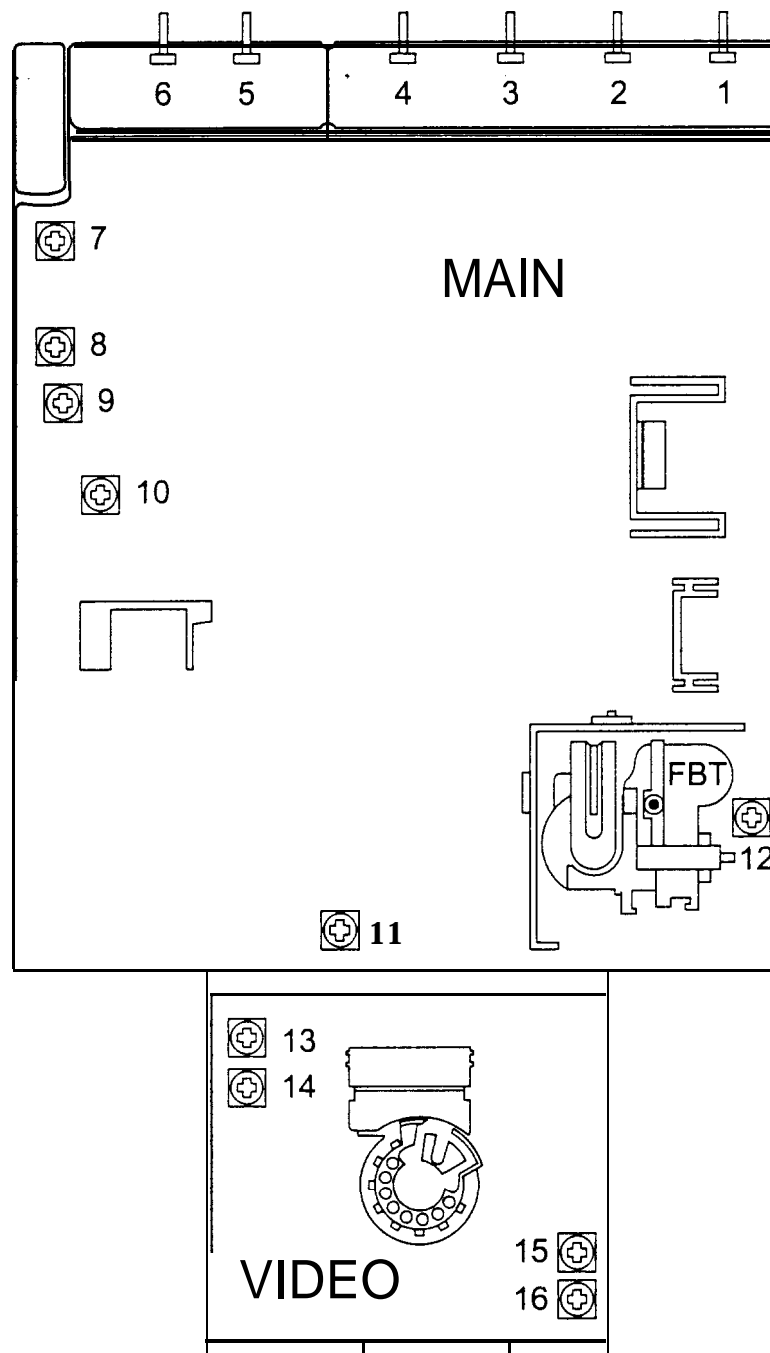
If a malfunction causes excessively high voltage, the voltage of pin 6 of FBT is increasing and TP2 (OR JUMP76) voltage is increasing, too.

As a result, D702 is conducted when th cathode voltage of D702 is reached as much as its zener voltage.

This voltage at pin 13 of IC701 makes the X-ray protection circuit located in IC701 conduct.

And then the horizontal oscillatton operation is no longer functional.

ALIGNMENT AND ADJUSTMENT



NO.	Ref. No.	Control Function	No.	Ref. No.	Control Function
1	VR104	V-CENTER	9	VR706	SUB-BRIGHTNESS
2	VR103	V-SIZE	10	VR901	B+ ADJUSTMENT
3	VR102	H-CENTER	11	VR603	SIDE-PINCUSHION
4	VR101	H-SIZE	12	VR704	RASTER CENTER (H-CENTER)
5	VR106	CONTRAST	13	VR304	G-CUTOFF
6	VR105	BRIGHTNESS	14	VR303	B-CUTOFF
7	VR705	SUB-CONTRAST	15	VR302	B-DRIVE
8	VR702	H-HOLD	16	VR301	G-DRIVE

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 pictures upon installation.

However, several minor adjustments may be required depending on the particular location in which the monitor is operated. 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.

AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing is normally unnecessary after moving the monitor. The monitor should be properly degaussed upon installation. The degaussing coil is switched on.

If the set is moved or faced in a different direction, the power switch must be switched off for at least 10 minutes in order that the automatic degaussing circuit operates properly.

Should the chassis or parts of the cabinet become magnetized to cause poor color purity, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the monitor, and slowly withdraw the coil to a distance of about 2 meters before disconnecting it from the AC source. If color shading still persists, perform the convergence adjustment procedures, as mentioned later.

B+ VOLTAGE ADJUSTMENT

1. Set Contrast VR and Bright VR to MAX. position.
2. Connect Digital Voltage Meter between TP1 (or Jump 156) and Ground.
3. Display cross hatch pattern of Mode 3 (31.5KHz, 60Hz)
4. Adjust VR901 so that the voltage of TP1 (or Jump 156) is $90 \pm 0.2V$ ($93 \pm 0.2V$).

NOTE: "93" means that the voltage is in the case of MPR- II vesion MONITOR.

HORIZONTAL HOLD ADJUSTMENT

1. Display the crosshatch pattern of mode 5 (35.16KHz, 56Hz)
2. Disconnect only H-sync Line of signal cable.
3. Adjust VR702(H-Hold) so that the crosshatch pattern can be straightened up.
4. Connect H-sync Line of signal cable.
5. Confirm whether the crosshatch pattern is straightened any other modes.

SIDE PINCUSHION ADJUSTMENT

1. Display the crosshatch pattern of mode 3 (31.5KHz, 60Hz)
2. Adjust VR603(side pincushion), so as to minimize the side pincushion distortion.

HORIZONTAL RASTER CENTER ADJUSTMENT

1. Display the crosshatch pattern of Mode 5. (35.2KHz, 56Hz)
2. Set the BRIGHT VR maximum position.
3. Adjust the VR704 so that the raster position is horizontal center.

HORIZONTAL LINEARITY ADJUSTMENT

1. Display the crosshatch pattern of Mode 5 (35.2KHz, 56Hz)
2. Adjust L701(H-Linearity coil) so that the horizontal linearity is the best condition.

WHITE BALANCE ADJUSTMENT (AT MODE 3)

1. The Necessary instrument
 - . White Balance meter (Color Analyzer)
 - . External Degaussing Coil (Degaussing the monitor before adjustment)
 - . Photometer
2. Preparing Adjustment
 - . Connect the signal cable the pc, and display the color 0.0 of mode 3 on the monitor.
 - . Minimize the screen control of FBT.
 - . Set the Sub-Bright (VR706) and the Sub-Contrast (VR705) to mechanical center.
 - . Set the Bright VR and the Contrast VR to Maximum position.
 - . Set the G-drive VR(VR301) and the B-drive VR (VR302) to mechanical center.
 - . Turn the B cutoff VR(VR303) and G cutoff VR (VR304) to counter-clockwise extremely.
3. Adjustment(1)
 - . Turn the screen control (G2) of FBT to clockwise slowly until the Brightness of raster is 0.6Fl.
 - . Adjust the B cut-off VR(VR303) and G cut-off (VR304) so as to get the color co-ordinate of $X=0.281$, $Y=0.311$ (white raster screen)
 - . Adjust the sub Bright VR(VR706), so that the brightness of raster screen is $2.7 \pm 0.2Fl$.

4. Adjustment(2)

- 1) Display Full white pattern (Color 7.0) of Mode 3 on the screen.
- 2) Set the Contrast VR Maximum position and Adjust the Bright VR, so that the brightness of screen 14 ± 1 Fl.
- 3) Adjust the B drive VR(VR302) so that $X=0.281$ and the G drive VR(VR301) so that $Y=0.311$
- 4) Repeat 3) until $X=0.281 \pm 0.02$, $Y=0.311 \pm 0.022$
- 5) Display Full white pattern (Color 15.0) of Mode 3 on the screen.
- 6) Set external Bright VR to minimum position, and adjust external Contrast VR until luminance is 10 Fl.
- 7) Confirm $X=0.281 \pm 0.02$, $Y=0.311 \pm 0.022$ unless the color co-ordinate is not in spec, re-adjust G, B cut-off VR so that the screen is white.
- 8) Repeat 3), 4), 5), 6), 7) so that the screen should be white.

LUMINANCE ADJUSTMENT

1. Set the Bright VR and the Contrast VR to MAX.2. Display the crosshatch pattern of Mode 3 (31.5KHz, 60Hz).
2. Adjust the external horizontal and the vertical size VR, so that the size is $H=245 \pm 2$ mm, $V=183 \pm 2$ mm.

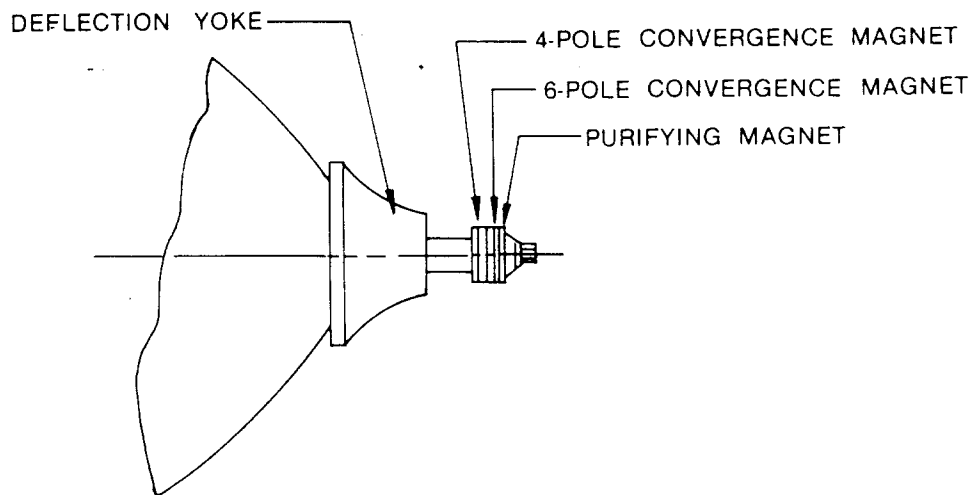
3. Display the Box White Pattern (Color 7, 0) of which the size is 70x70 on the screen.
4. Adjust the Sub Contrast VR(VR705), so that the luminance should be 45 ± 1 Fl at the center of the screen.
5. Display the Full white pattern (Color 15, 0) and confirm that the luminance is higher than 20Fl.

FOCUS ADJUSTMENT

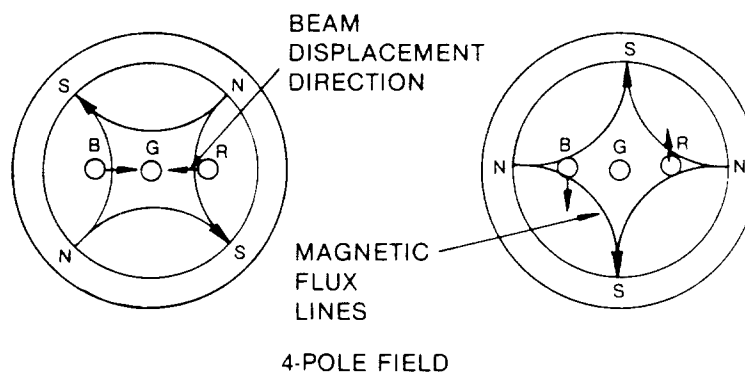
1. Set the Bright VR and Contrast VR to Max.
2. Display "H" character in full screen (MODE 2, color 7.0).
3. Adjust Focus VR of FBT, so that the focus should be best condition.

CONFIRMATION OF HOLD DOWN

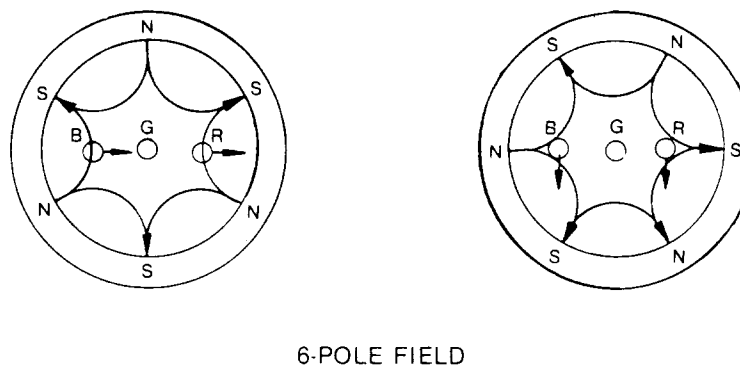
1. Set the Contrast VR to MIN, and Adjust the Bright VR until the screen be seen a little.
2. Display the crosshatch pattern of Mode 3.
3. Check the voltage of TP2 (or JUMP 76) with DC voltage meter whether the voltage is 17V or not.
4. Unless the voltage is 17 ± 1 V, You should repair the monitor.
5. Supply DC 18.5 ± 0.2 V for TP2(or JUMP 76) and confirm that the monitor is HOLD DOWN.



Relative Placement of Components



Beam motion Produced by the six-pole and four-pole Convergence Magnet.



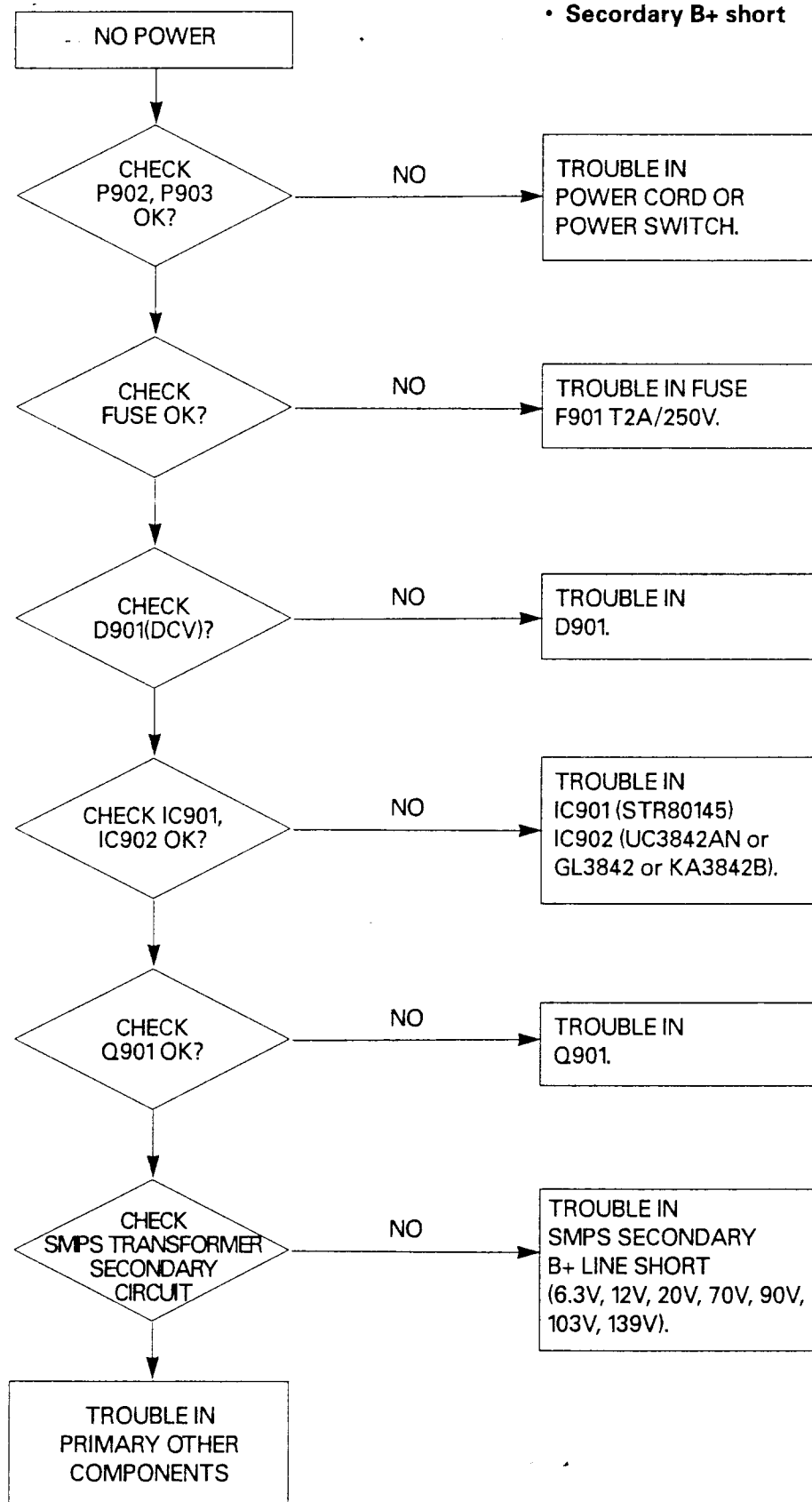
Static Convergence System

TROUBLE SHOOTING GUIDE

1. NO POWER AND POWER PROTECTION

Circuits checked

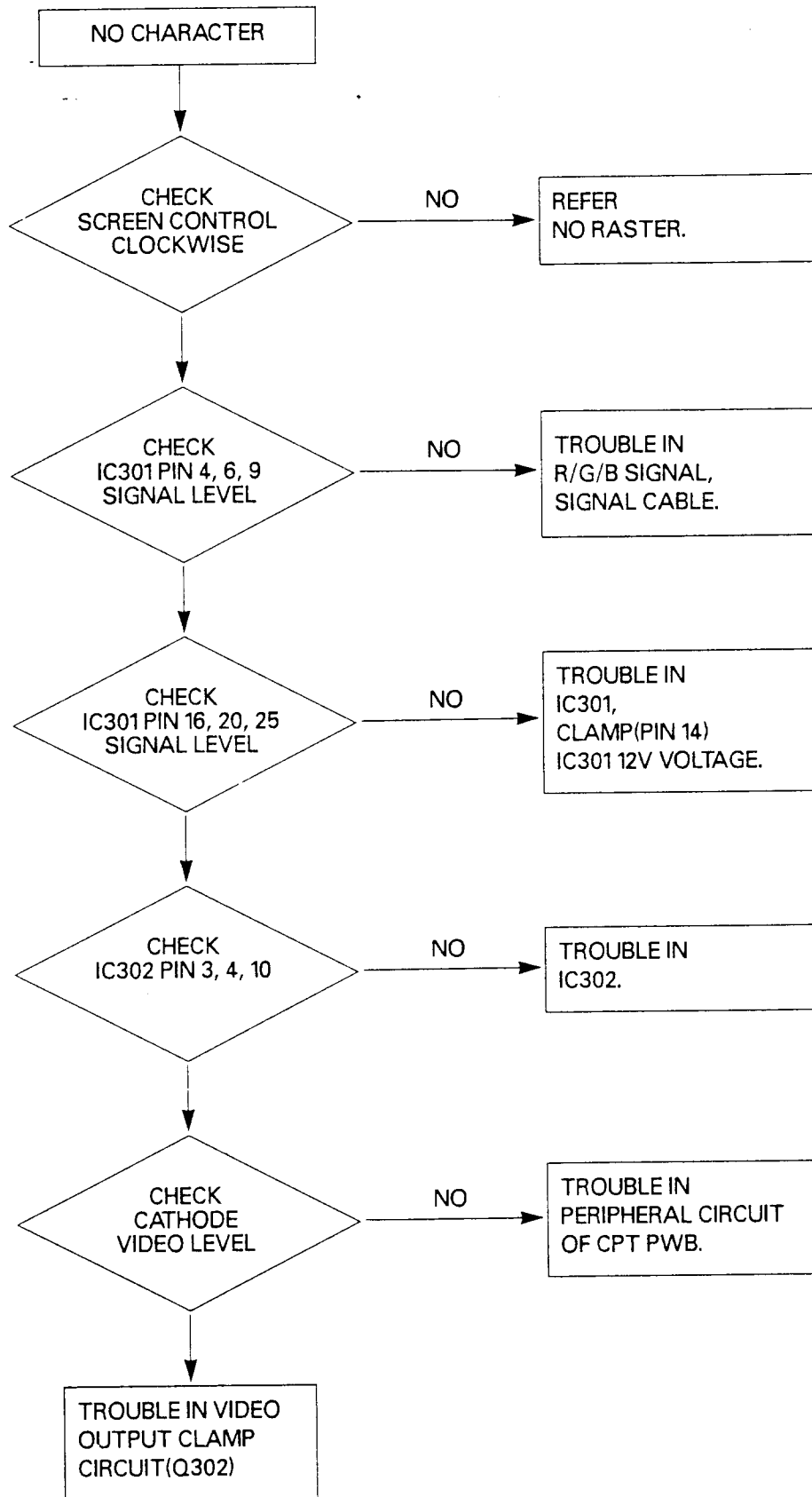
- Power input
- Secondary B+ short



2. NO CHARACTER

Circuits checked

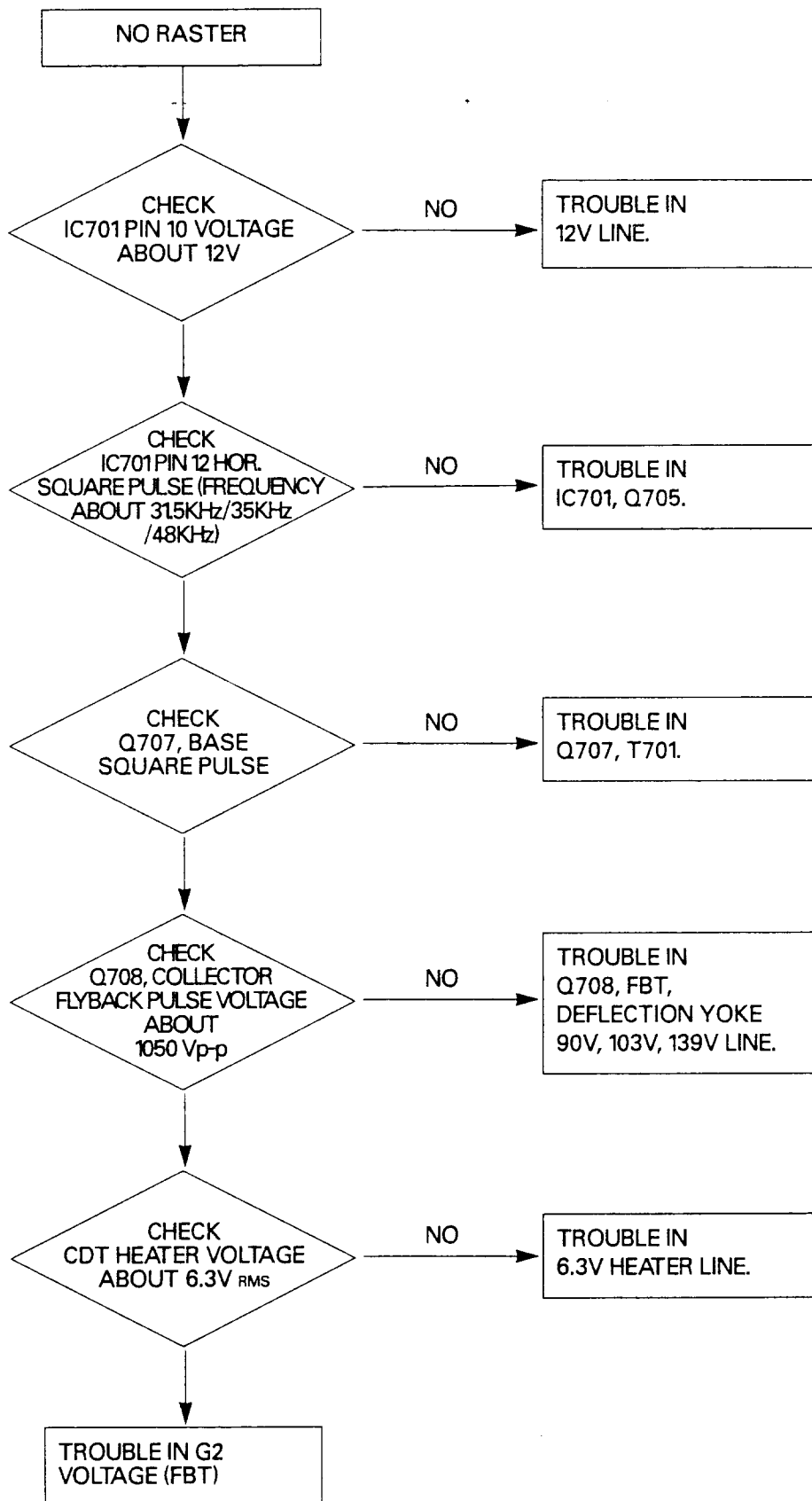
- Video circuit and its related circuits.



3. NO RASTER

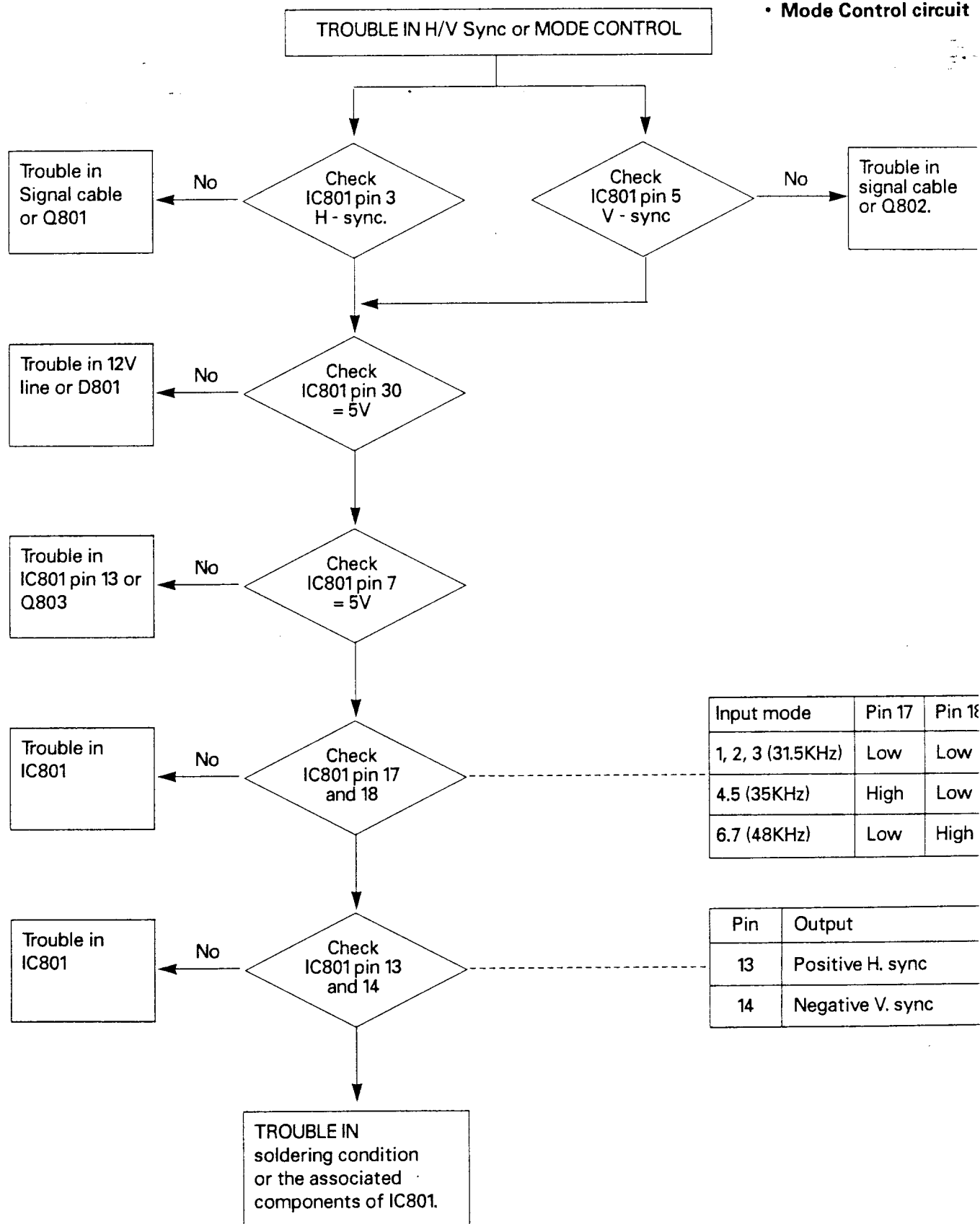
Circuit checked

- High voltage generating circuit

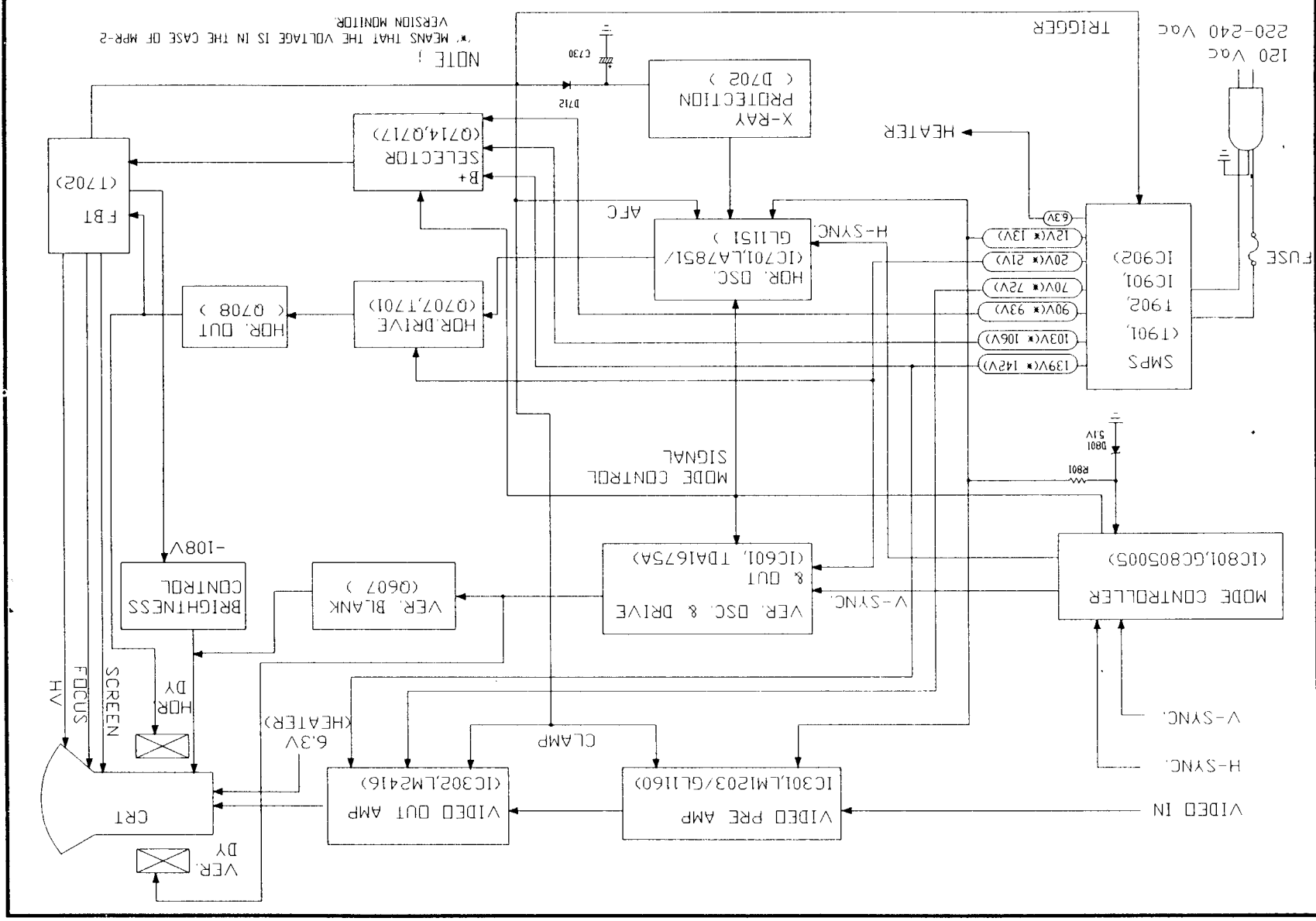


4. TROUBLE IN HOR. VER. SYNC

Circuit checked ;
 • H/V-Sync input circuit
 • Mode Control circuit



BLOCK DIAGRAM



DESCRIPTION OF BLOCK DIAGRAM

1. SMPS

When you push on the power switch, the line voltage is applied to the bridge diode (D901) and the rectified voltage is applied to the primary of transformer (T901). Depending on turn ratio of the transformer (T901), the secondary voltage comes out at the secondary side.

And it is rectified by each diode. The output voltage is as follows:

DC 6.3V, 12V(* 13V), 20V(* 21V), 70V(* 72V), 90V(* 93V), 103V(* 106V) and 139V(* 142V).

2. MODE CONTROLLER

IC801 discriminates the input mode with frequency and polarity of input signal and supplies mode control signal for vertical size control circuit, side pincushion correction circuit, vertical position control circuit, horizontal hold circuit and B+ selector.

3. VERTICAL OSCILLATION, DRIVE AND OUTPUT CIRCUIT

The IC601 does free running oscillation operation with R601 and C601.

If the V-sync signal is applied, IC601 is synchronized to V-sync signal.

And IC601 includes drive and output circuit in itself.

4. HORIZONTAL OSCILLATION CIRCUIT

The IC701 does free running oscillation with C709, C710, VR702, R716 and some resistors.

If the H-sync signal is applied, IC701 is synchronized to H-sync signal.

5. HORIZONTAL DRIVE CIRCUIT

The horizontal drive transformer(T701) supplies drive current for the horizontal output transistor (Q708).

6. HORIZONTAL OUTPUT CIRCUIT

The horizontal output transistor(Q708) drives horizontal deflection yoke and FBT with diode modulator.

NOTE: '*' means that the voltage is in the case of MPR-II VERSION MONITOR.

7. B+ SELECTOR

The input voltage of FBT is selected by mode signal as follow:

31.5KHz mode : 90V(* 93V)

35KHz mode : 103V(* 106V)

48KHz mode : 139V(* 142V)

8. X-RAY PROTECTION

If the high voltage of FBT is reached to approximately 28.5KV with an abnormal condition, IC701 does not oscillating operation. And horizontal output circuit stops its operation.

9. VERTICAL BLANKING

This circuit eliminates the vertical retrace line on the CRT screen.

10. BRIGHTNESS CONTROL

The brightness on the CRT screen can be varied by controlling G1 voltage.

11. VIDEO PRE AMP

The video signal from PC is amplified, and the amplified signal is applied to video out Amp.

The amplification gain of this pre Amp is about from 5 to 9.

When the signal cable is disconnected with PC, the self raster screen will be displayed because this video pre Amp contains the self raster function.

12. VIDEO OUT AMP

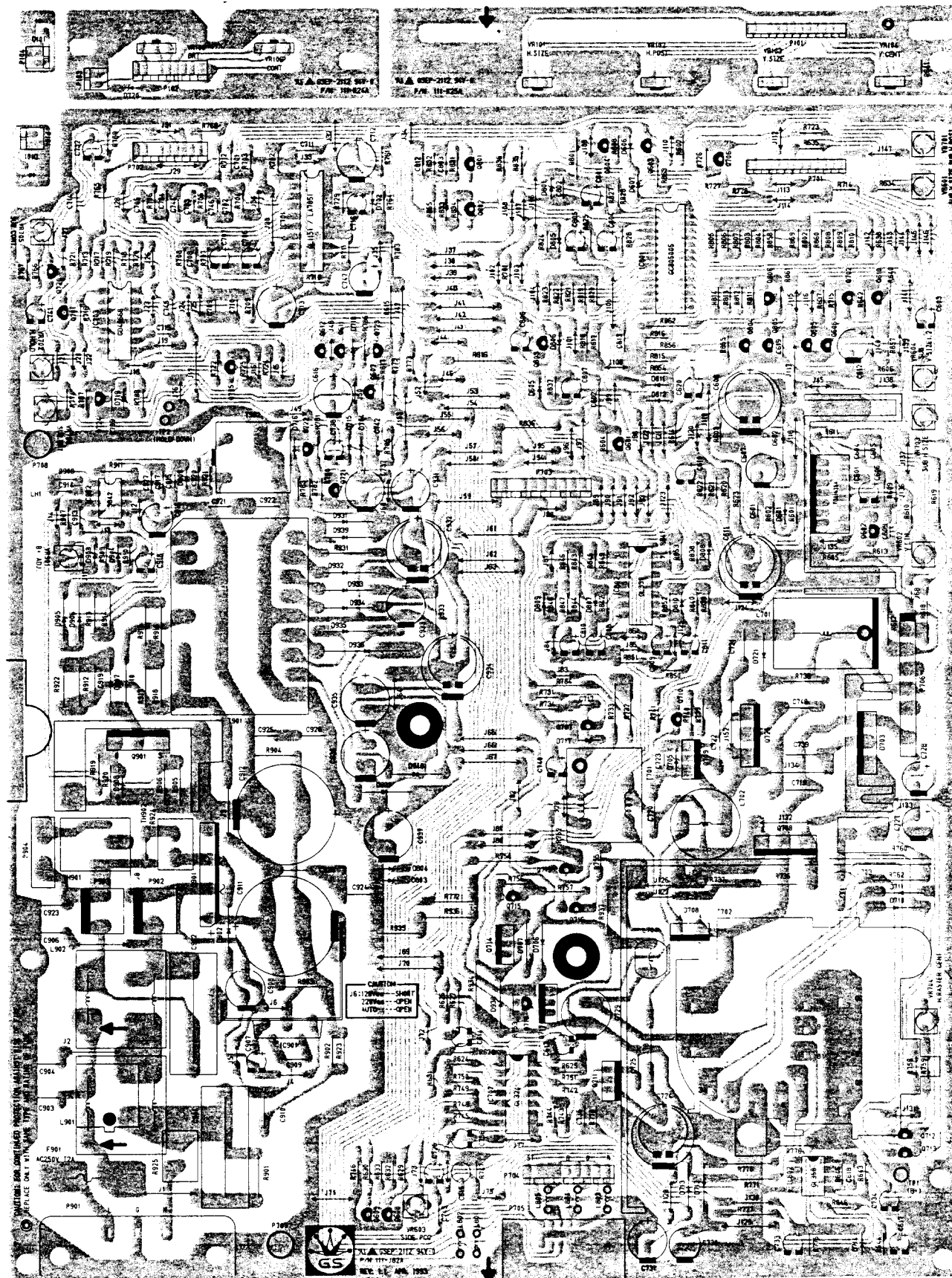
The video signal from video pre Amp is amplified again and applied to each cathode of CRT.

The amplification gain of this out Amp is about from 10 to 15.

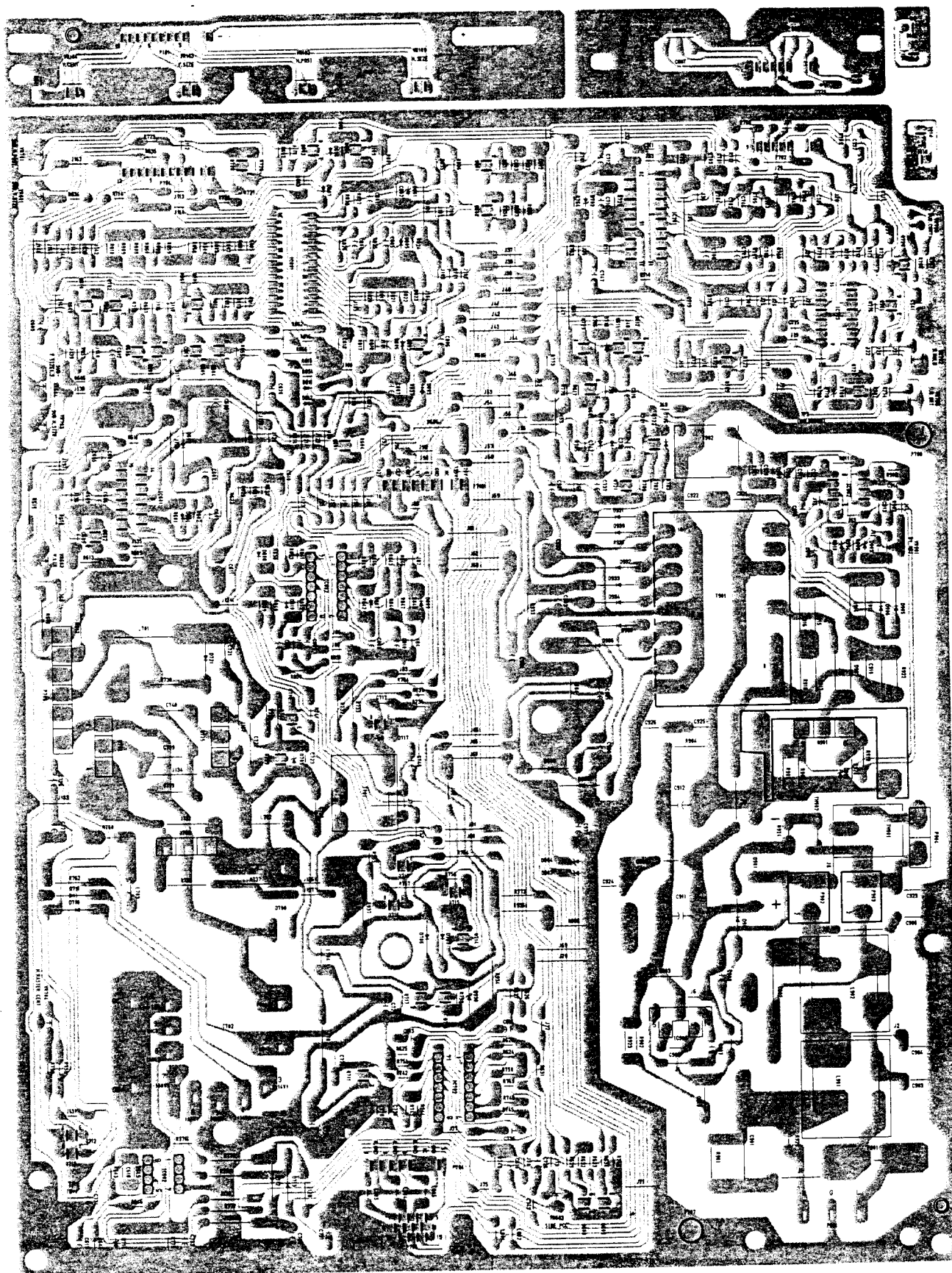
NOTE: '*' means that the voltage is in the case of MPR-II VERSION MONITOR.

PRINTED CIRCUIT BOARDS

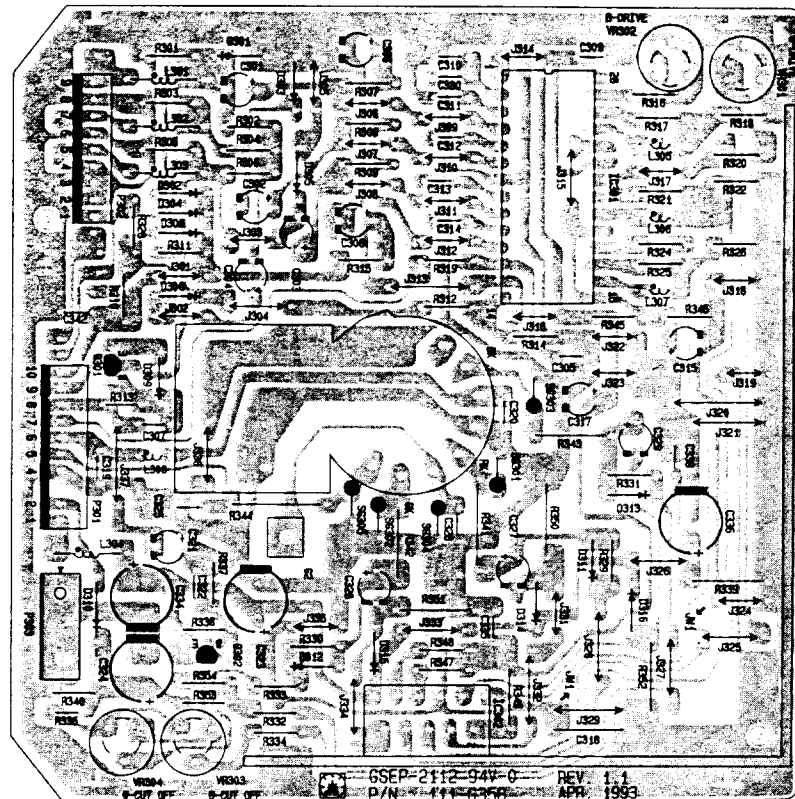
1. MAIN (Top Side)



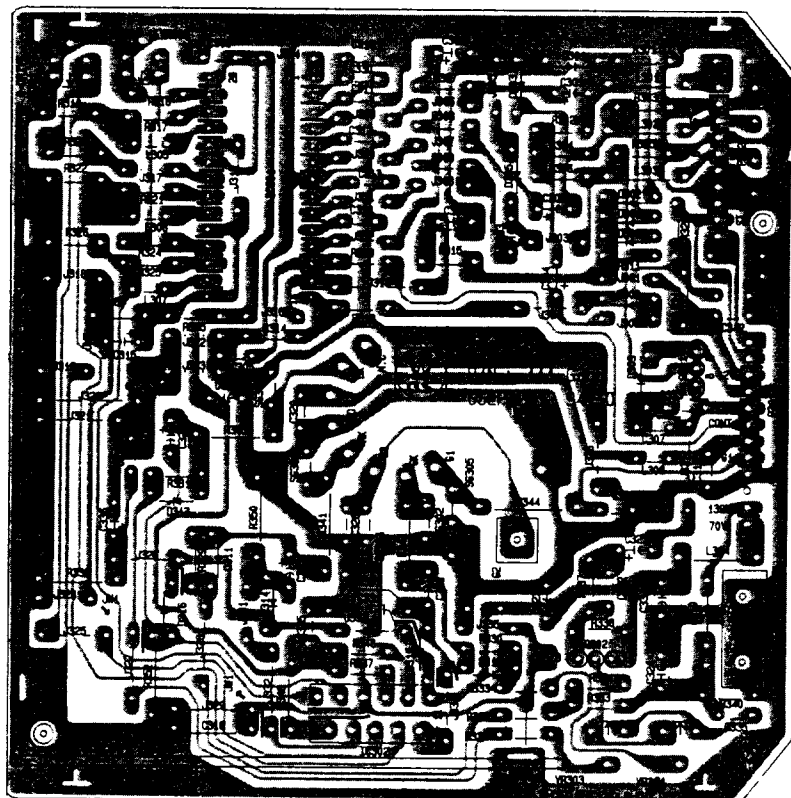
2. MAIN (Bottom Side)



3. VIDEO (Top Side)

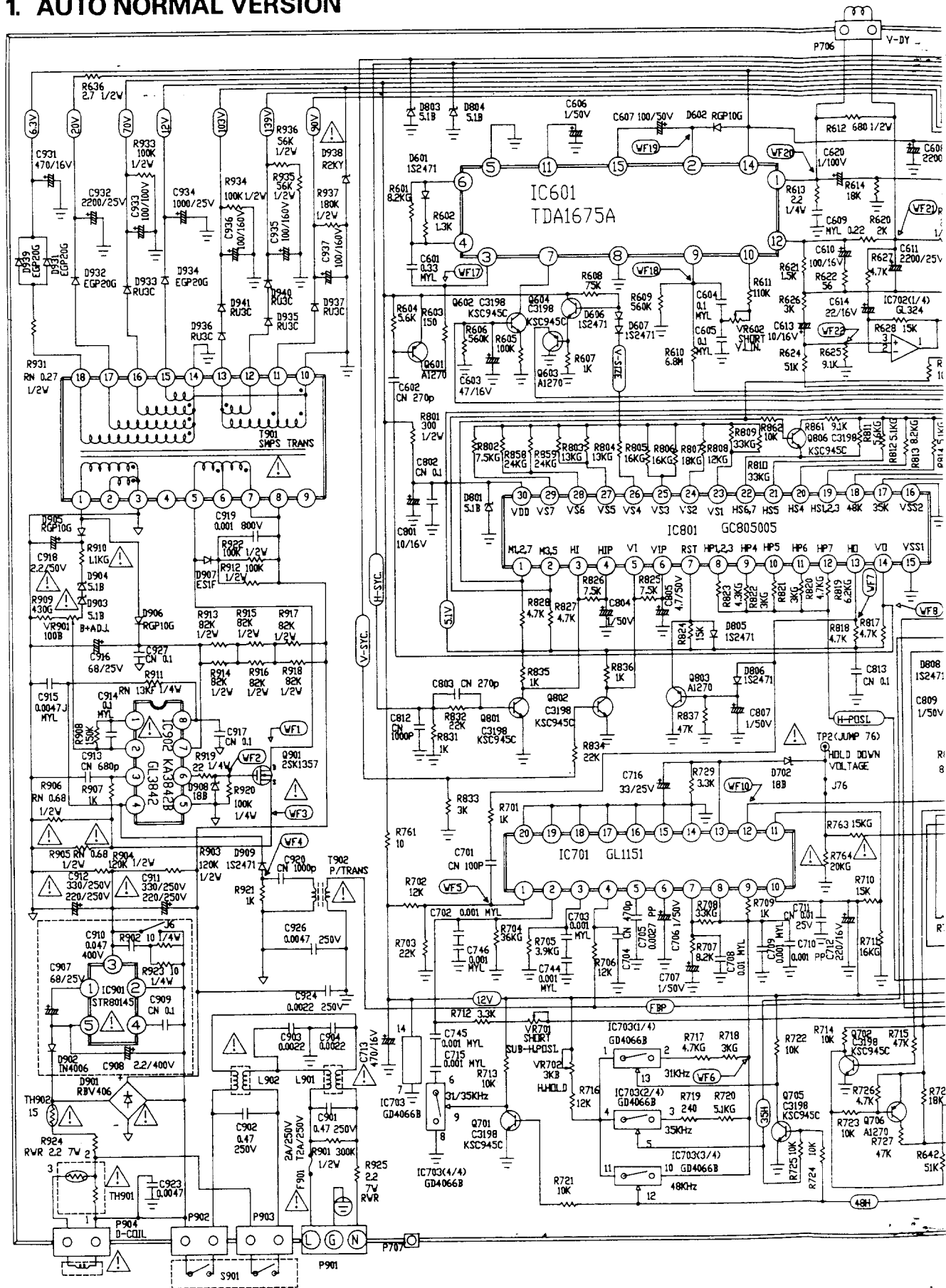


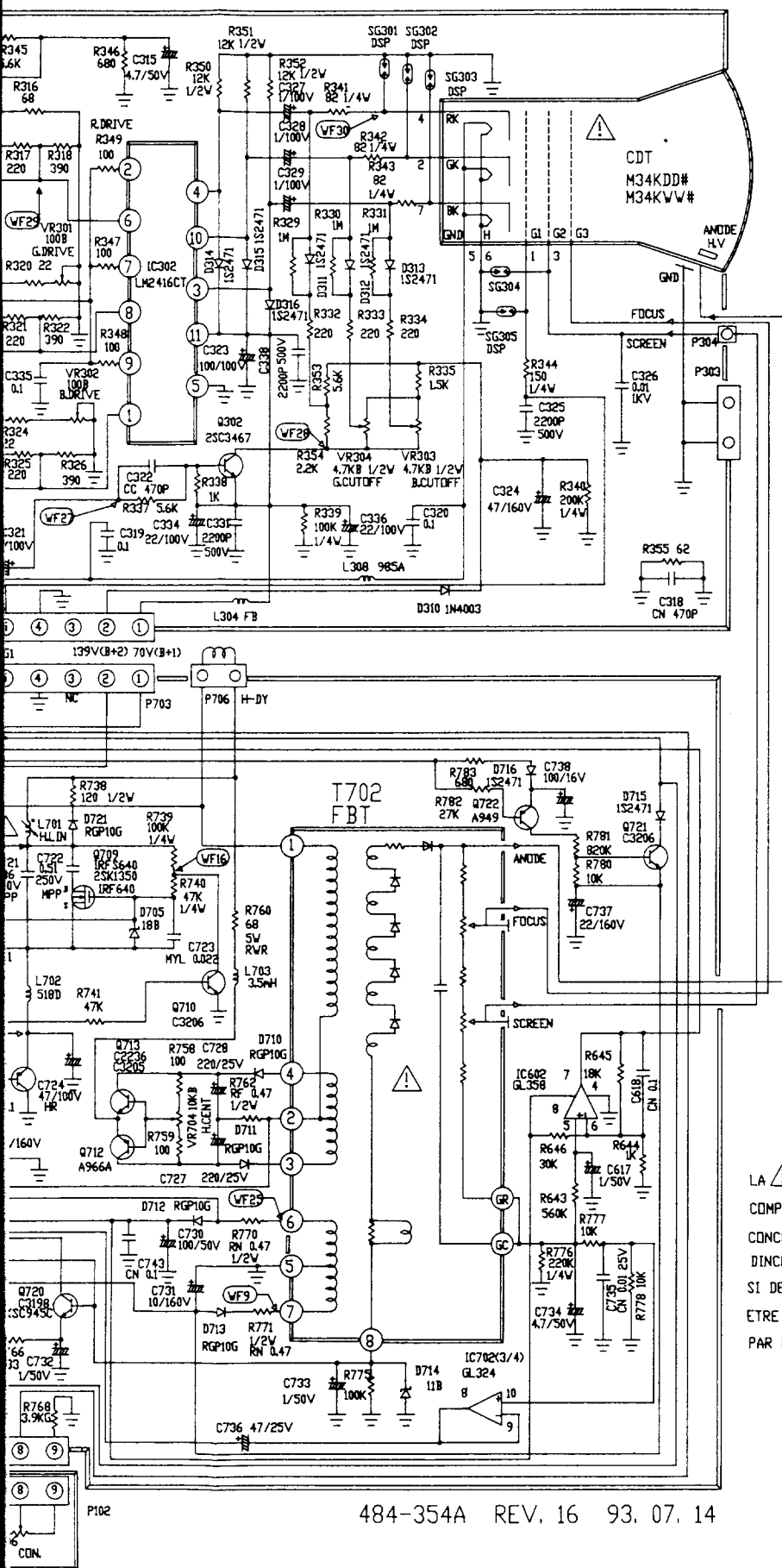
4. VIDEO (Bottom Side)



SCHEMATIC DIAGRAM

1. AUTO NORMAL VERSION





NOTES

- ALL RESISTORS 1/6W \pm 5% VALUES
IN OHMS, F = \pm 1%, G = \pm 2%
K = 1,000ohm M = 1,000,000ohm
- ALL CAPACITORS IN μ F, PF = 10EXP(-12)F
- ∇ INDICATES 'HOT' (NON-ISOLATED)
CHASSIS GROUND
- ∇ INDICATES 'COLD' (ISOLATED)
CHASSIS GROUND
- \oplus INDICATES SAFETY GROUND
- \bullet INDICATES TEST POINT

COMPARISON TABLE

Ref. No.	AUTO(120V&220V)	120V	220 - 240V
C901	0.47 μ F/250V	0.15 μ F/250V	0.47 μ F/250V
C902	0.47 μ F/250V	0.15 μ F/250V	0.47 μ F/250V
C907	CE,68 μ F/16V	not used	not used
C908	CE,2.2 μ F/400V	not used	not used
C909	CN,0.1 μ F	not used	not used
C910	PP,0.047,400V	not used	not used
C924	2200pF/250V	not used	not used
C928	JUMP WIRE	not used	not used
D902	DIODE 1N4006	not used	not used
R902	RD, 10ohm,1/4W	not used	not used
R923	RD, 10ohm,1/4W	not used	not used
R924	RWR,2.2ohm,7W	JUMP WIRE	RWR,2.2ohm,7W
IC901	IC, STR80145	not used	not used
J6	not used	JUMP WIRE	not used

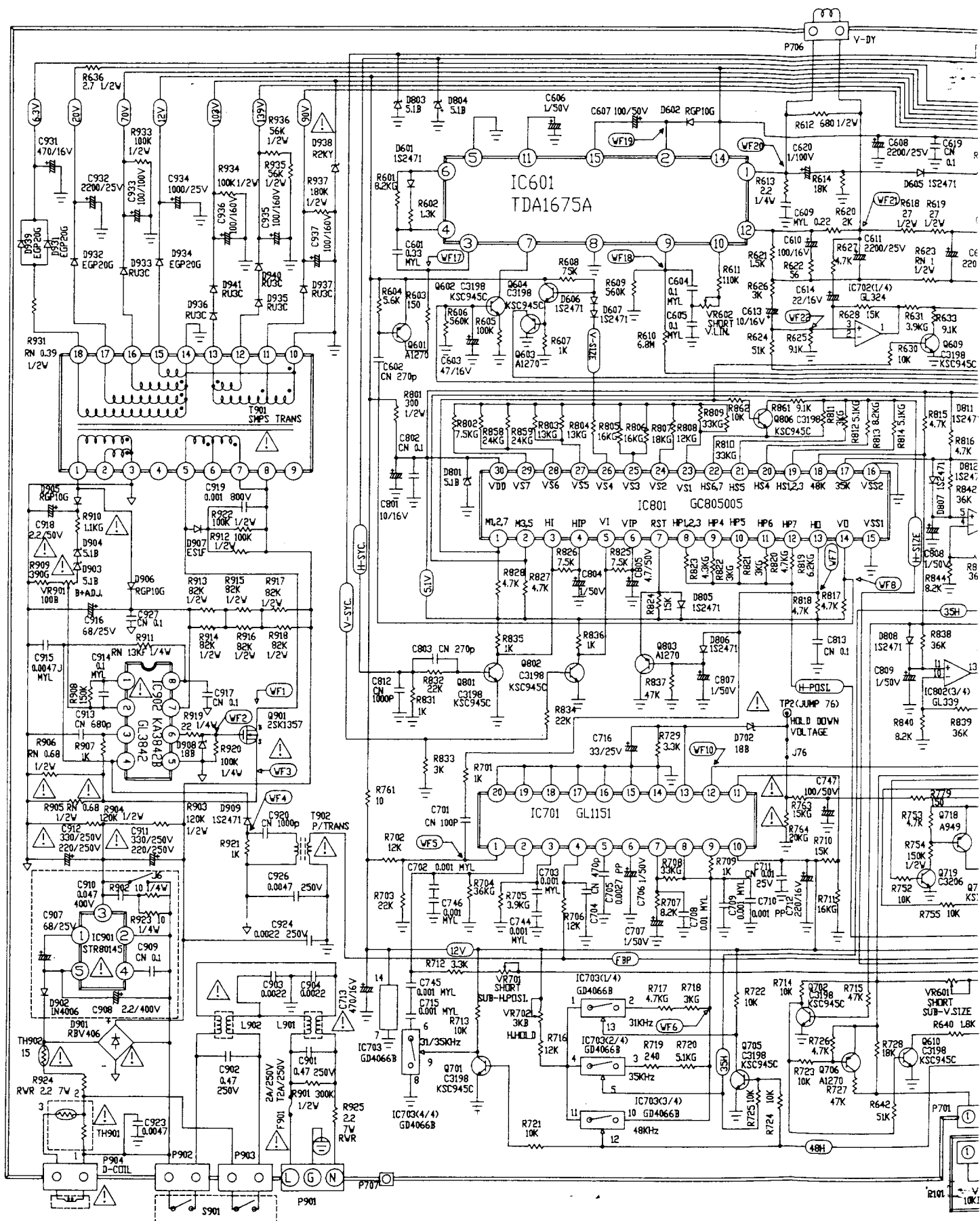
IMPORTANT SAFETY NOTICE

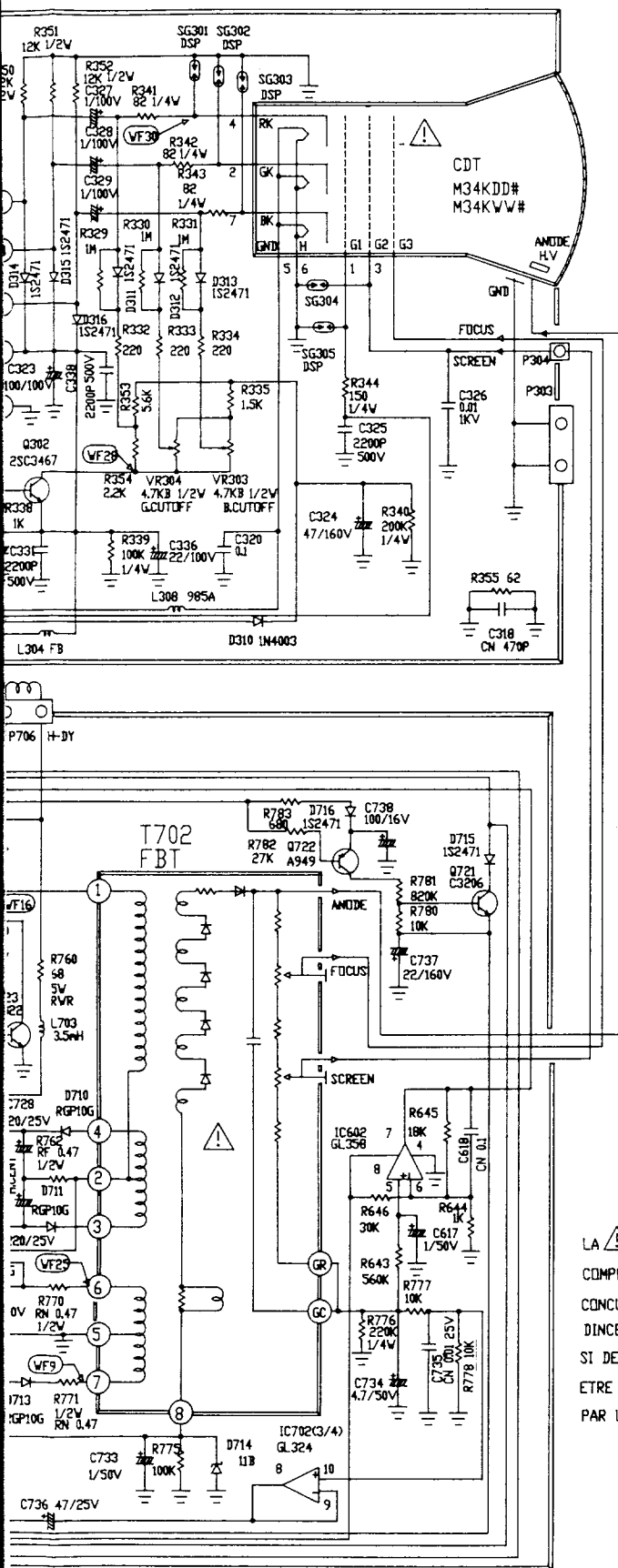
THE ∇ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ∇ SYMBOL MARK OF THE SCHEMATIC.

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 N'UTILISEZ QUE DES PIÈCES SPÉCIFIÉES PAR LE MANUFACTURIER.

2. AUTO MPR-II VERSION





NOTES

1. ALL RESISTORS 1/6W ± 5% VALUES
IN CHMS, F = ±1 %, G = ± 2%
K = 1,000ohm M = 1,000,000ohm
2. ALL CAPACITORS IN uF, PF = 10EXP(-12)F
3. ⚡ INDICATES 'HOT' (NON-ISOLATED)
CHASSIS GROUND
4. ⚡ INDICATES 'COLD' (ISOLATED)
CHASSIS GROUND
5. ⊕ INDICATES SAFETY GROUND
6. ● INDICATES TEST POINT

COMPARISON TABLE

Ref. No.	AUTO(120V&220V)	120V	220 - 240V
C901	0.47uF/250V	0.15uF/250V	0.47uF/250V
C902	0.47uF/250V	0.15uF/250V	0.47uF/250V
C907	CE,68uF/16V	not used	not used
C908	CE,2.2uF/400V	not used	not used
C909	CN,0.1uF	not used	not used
C910	PP,0.047,400V	not used	not used
C924	2200pF/250V	not used	not used
C928	JUMP WIRE	not used	not used
D902	DIODE 1N4006	not used	not used
R902	RD, 10ohm,1/4W	not used	not used
R923	RD, 10ohm,1/4W	not used	not used
R924	RVR,2.2ohm,7W	JUMP WIRE	RVR,2.2ohm,7W
IC901	IC, STR80145	not used	not used
J6	not used	JUMP WIRE	not used

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 MANUFACTURERS 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 N'UTILISEZ QUE DES PIÈCES SPÉCIFIÉES PAR LE MANUFACTURIER.