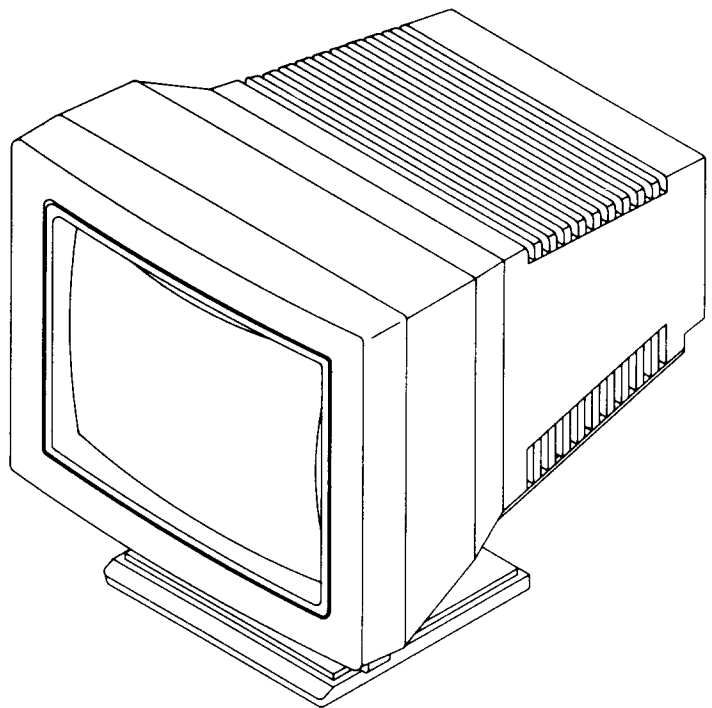


SERVICE MANUAL

CM-335

COLOR VIDEO MONITOR



M624

ADC

ADC

FUTURE

SPECIFICATIONS FOR CM-335 COLOR MONITOR

1. CRT
14" (13V) 90 Deflection, 29mm Neck, 0.28mm Dot Pitch, Non-Glare Screen
2. Display Color:
Unlimited Colors
3. External Controls:
Power On/Off, Contrast, Brightness, V-Size, H-Center
4. Input Video Signal

	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6
	RGB Analog	RGB Analog	RGB Analog	RGB Analog	RGB Analog	RGB Analog
Horiz. Sync:	TTL Level Positive	TTL Level Negative	TTL Level Negative	TTL Level Negative	TTL Level Positive	TTL Level Negative
Vert. Sync:	TTL Level Negative	TTL Level Positive	TTL Level Negative	TTL Level Negative	TTL Level Positive	TTL Level Negative
5. Resolution

Horizontal:	720 (H)	720 (H)	640 (H)	800 (H)	1024 (H)	800 (H)
Vertical:	350 (V)	400 (V)	480 (V)	600 (V)	768 (V)	600 (V)
6. Display Size

Horizontal:	247 mm
Vertical:	187 mm
7. Scanning Frequencies

Horizontal:	30.5KHz~38KHz
Vertical	50 Hz~88 Hz
8. Misconvergence

Center:	0.3 mm Max
Corner:	0.5 mm Max
9. Video Bandwidth:
30 MHz
10. Power Source:
Switching Mode Power Supply
AC 100~240V, 50/60Hz Universal Type
11. Operating Temperature:
5° to 40°C Ambient
12. Humidity:
10% to 85% Relative, Non-Condensing
13. Weight:
12 Kgs (Net), 14 Kgs (Gross)
14. Dimensions Monitor:

Carton:	356(W) × 349(H) × 385(D) mm
	455(W) × 450(H) × 460(D) mm
15. External Connection:
15 Pin D-type Connector

4. ADJUSTMENT

4-1 ADJUSTMENT CONDITIONS AND PRECAUTIONS

1. Approximately 30 minutes should be allowed for warm up before proceeding.
2. Adjustments should be undertaken only on those necessary elements since most of them have been carefully preset at the factory.

4-2 MAIN ADJUSTMENTS

NO.	FUNCTION	LOCATION	DESIGNATION
1.	B + ADJ	PCB - MAIN	VR101
2.	R. B. DRIVE	CRT - BOARD	VR301,303
3.	VERT. SIZE FOR ALL MODE	PCB - MAIN	VR202
4.	VERT. LINEAR	PCB - MAIN	VR201
5.	VERT. CENTER	PCB - MAIN	VR203
6.	PINCUSHION	PCB - MAIN	VR701
7.	HOR. HOLD	PCB - MAIN	VR401
8.	HOR. PHASE	PCB - MAIN	VR402
9.	HOR. CENTER	PCB - MAIN	P405
10.	HOR. WIDTH	PCB - MAIN	L402
11.	SUB-BRIGHTNESS	CRT - BOARD	VR309
12.	R. G. B. CUT-OFF	CRT - BOARD	VR304,305,306
13.	BRIGHTNESS	PCB - MAIN	VR704
14.	CONTRAST	CRT - BOARD	VR308
15.	HV PROTECTION	PCB - MAIN	VR404

4-3 ADJUSTMENT METHOD

1. B+ & HV Protection Voltage Adjustment:
 - A. Chroma-1000 Signal generator or PC equivalent set mode 3 VGA 640 × 480 pattern 1.0.
 - B. Connect a DC Voltage meter between TP103 and ground, then adjust VR101 to be 90VDC.
 - C. Connect a DC voltage meter between TP402 and ground, then adjust VR404 to be 6.4VDC.
2. Horizontal Sync. Adjustment:
 - A. Set mode 4 800 × 600 Fh: 35KHz pattern 1.0.
 - B. Connect TP401 to ground. (Short H-sync signal)
 - C. Adjust VR401 till the image to be stable, then disconnect TP401 from ground.

3. Horizontal Width, Raster Center & Phase Adjustment:

- A. Set mode 3 VGA 640 × 480 pattern 1.0.
- B. Adjust L402 H-width coil to make H-size 247mm.
- C. Inserting the raster center plug (P406 & P405) to make raster position in the center of CRT.
- D. Adjust external VR402 (H-Center) knob to make the display image in the center position of video.

4. Vertical Linearity, Size, Center & Pincushion Adjustment:

- A. Set mode 3 VGA 640 × 480 pattern 1.0.
- B. Adjust VR201 so that vertical linearity is at optimum.
- C. Adjust VR202 V-size knob to make V-size 187mm
- D. Adjust VR203 till the display picture is located at the vertical center of CRT.
- E. Adjust VR701 side-pincushion to make it properly.

5. Focus Adjustment:

- A. Set mode 4 800 × 600 Fh: 35KHz with character full page.
- B. Adjust external VR704 brightness knob to make the raster just cut off, then adjust focus VR to make the display be focused very well.

6. White Balance, Luminance Adjustment:

A. Initial set up

- (a) VR304, 305, 306 clockwise to maximum, VR301, 303, 309 set to middle position.
- (b) External brightness, contrast VR to maximum.
- (c) Warm up more than 20 minutes.

B. Bias (Low light) adjustment:

- (a) Use mode 6 800 × 600 Fh: 37.879KHz raster pattern.
- (b) Adjust screen VR check which color is first to appear, use this color for adjust cut-off voltage base.
- (c) Adjust another two cut-off VR till a faint neutral white raster is produced. (Color code: $Y = 1.0 \sim 1.2F/L$, $x = 281 \pm 5$, $y = 311 \pm 5$).

C. Gain (High light) adjustment:

- (a) Use mode 6 800 × 600 Fh: 37.879KHz full white pattern.
- (b) Brightness VR turn to minimum, then external contrast VR to make $Y = 8 \sim 10F/L$.
- (c) Adjust VR301, 303 to make color code $x = 281 \pm 5$, $y = 311 \pm 5$

D. Recheck item B&C to make sure both of them in spec.

E. Window luminance:

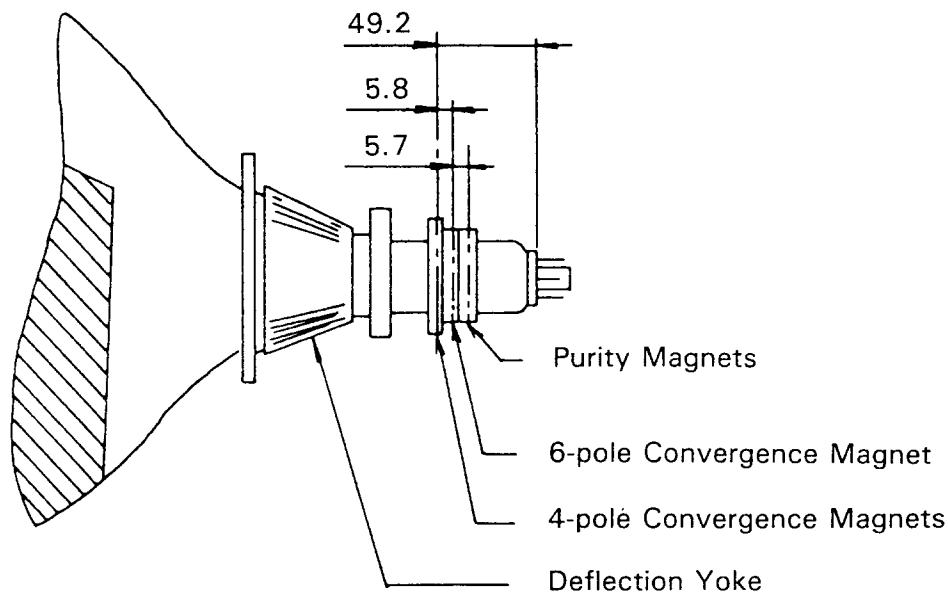
- (a) Use a $6 \times 6\text{cm}^2$ block window pattern.
- (b) Adjust VR309 make the block window luminance to 58F/L.

7. Purity Adjustment

- A. Be sure that the display is not being exposed to any external magnetic fields.
- B. Ensure that the spacing between the Purity, Convergence, Magnet, (PCM), assembly and the CRT stem is 29mm (See below diagram)
- C. Produce a complete, red pattern on the display. Adjust the purity magnet rings on the PCM assembly to obtain a complete field of the color red. This is done by moving the two tabs in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180° .
- D. Check the complete blue and complete green patterns to observe their respective color purity. Make minor adjustments if needed.

RELATIVE PLACEMENT OF TYPICAL COMPONENTS

Dimensions in mm



8. Convergence Adjustment

- A. Produce a magenta crosshatch on the display.
- B. Adjust the focus for the best overall focus on the display.
Also adjust the brightness to the desired condition.
- C. Vertical red and blue lines are converged by varying the angle between the two tabs of the 4 pole magnets on the PCM assembly. (See above diagrams)
- D. Horizontal red and blue lines are converged by varying the two tabs together, keeping the angle between them constant.
- E. Produce a white crosshatch pattern on the display.
- F. Vertical green and magenta lines are covered by varying the angle between the two tabs of the 6-pole magnets.
- G. Horizontal green and magenta lines are covered by varying the two tabs together, keeping the angle between them constant.

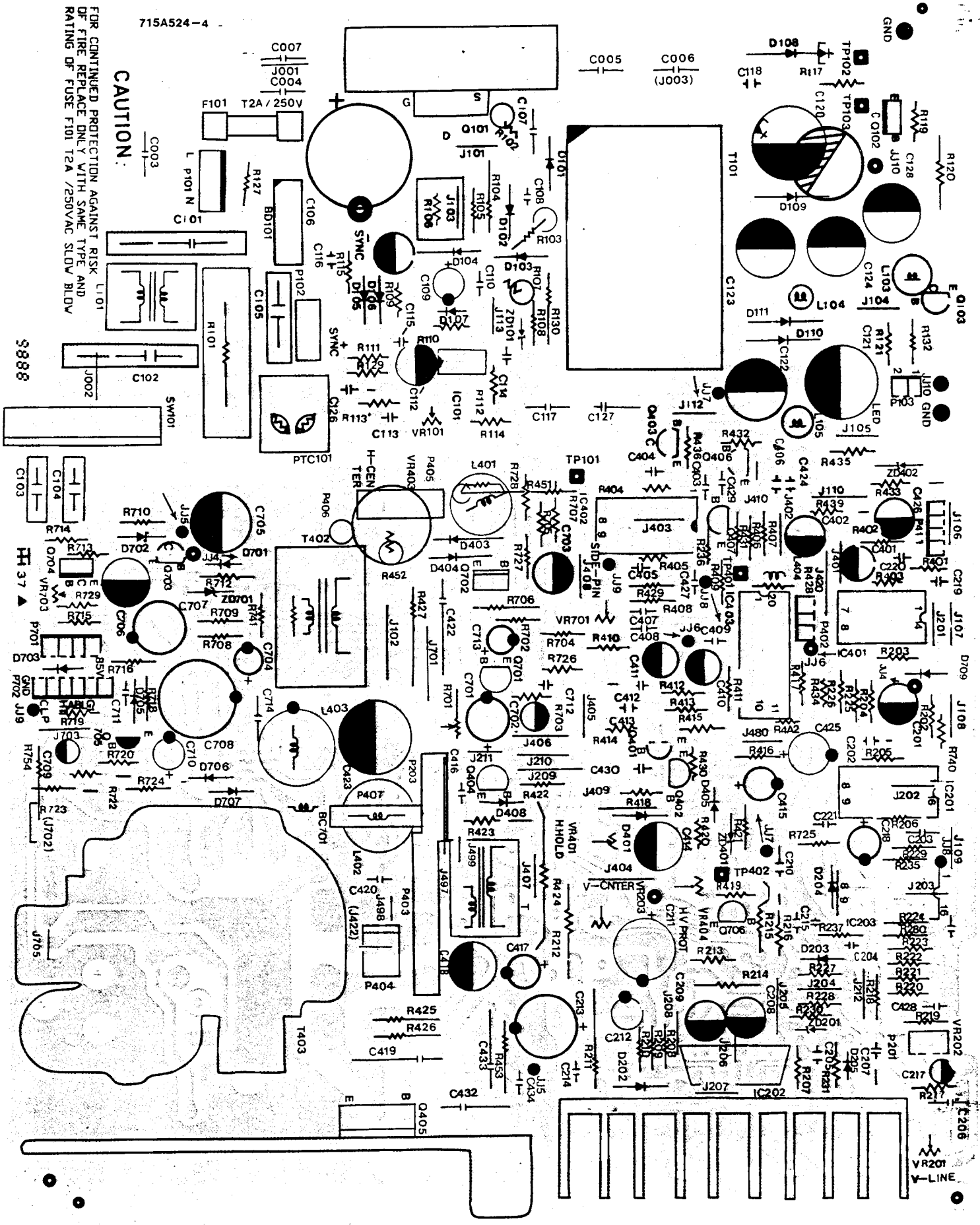
5 PCB LAYOUT

5-1 MAIN PCB LAYOUT

715A524-4

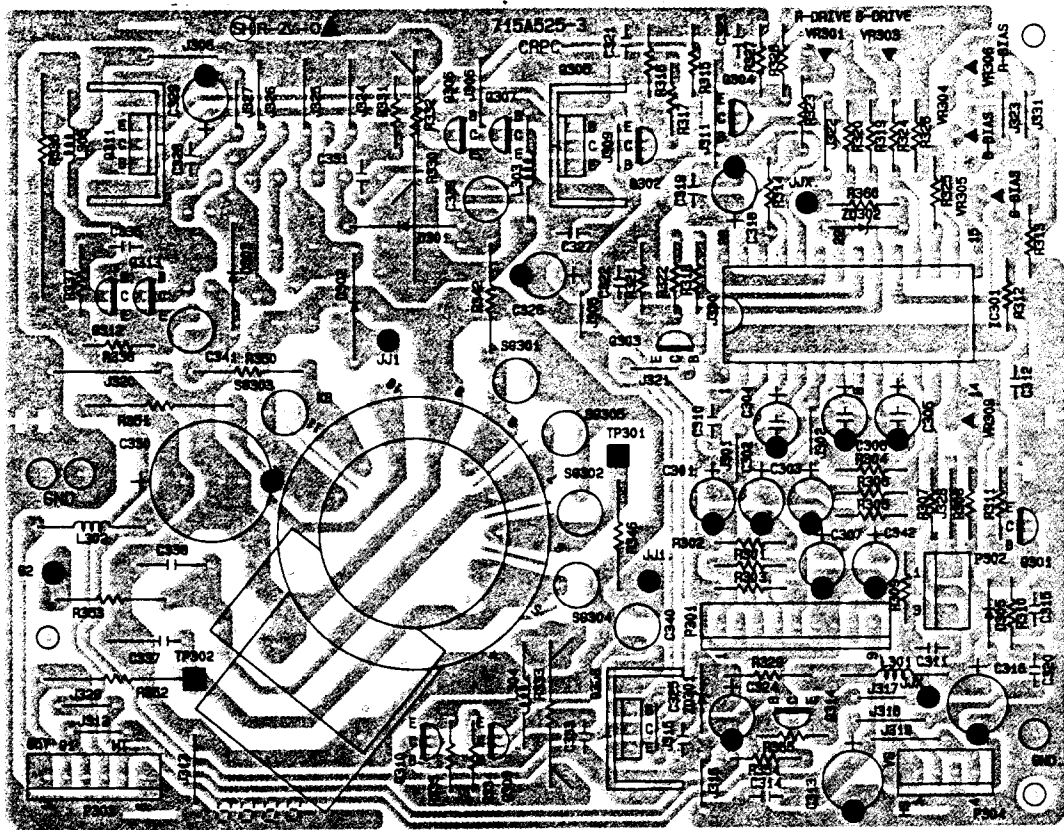
FOR CONTINUED PROTECTION AGAINST RISK L101
OF FIRE REPLACE ONLY WITH SAME TYPE AND
RATING OF FUSE F101 T2A /250VAC SLOW BLOW

CAUTION:

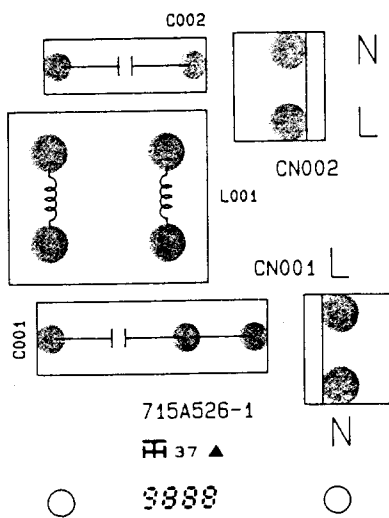


3888

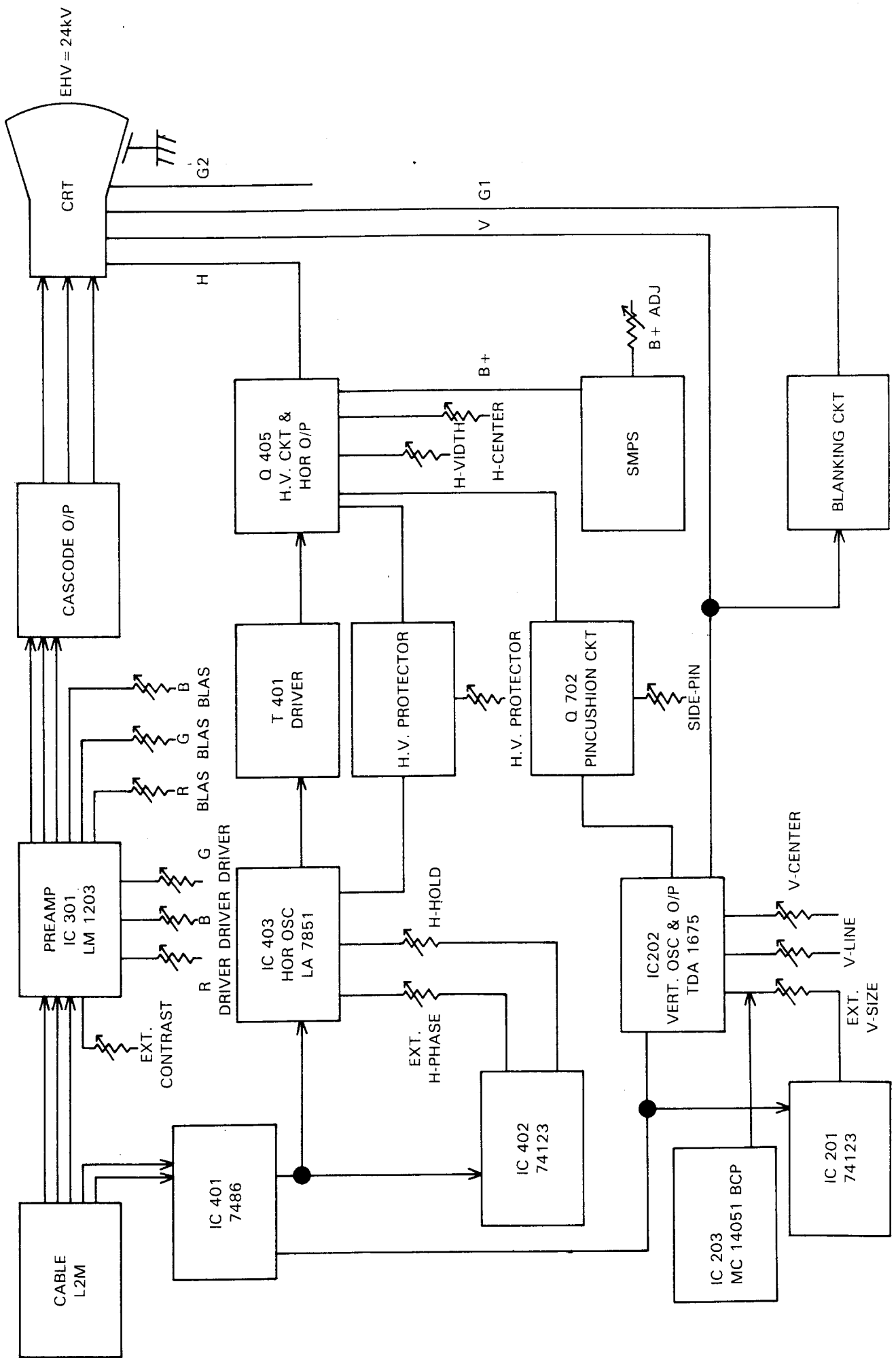
5-2 CRT PCB LAYOUT



5-3 AC LINE PCB LAYOUT

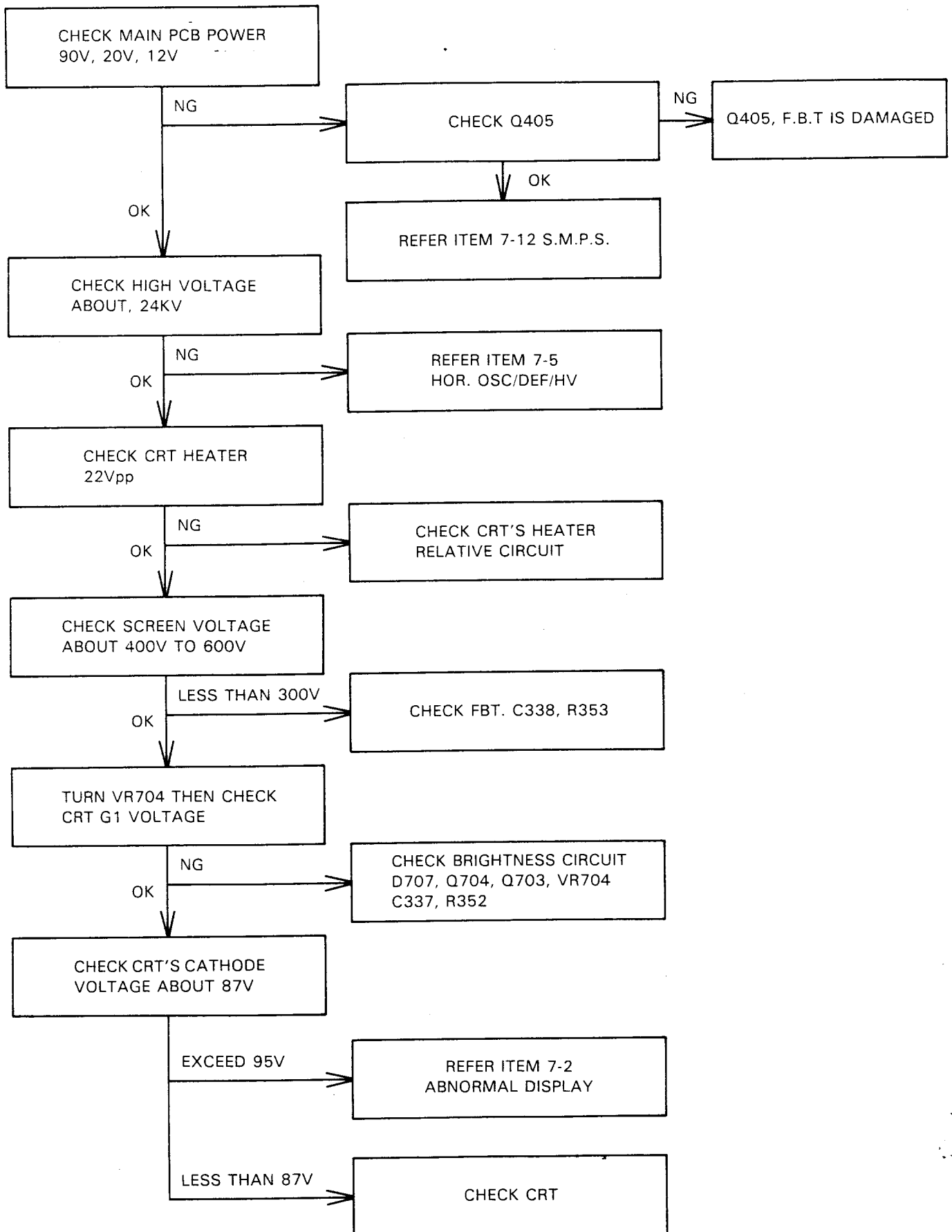


6. BLOCK DIAGRAM

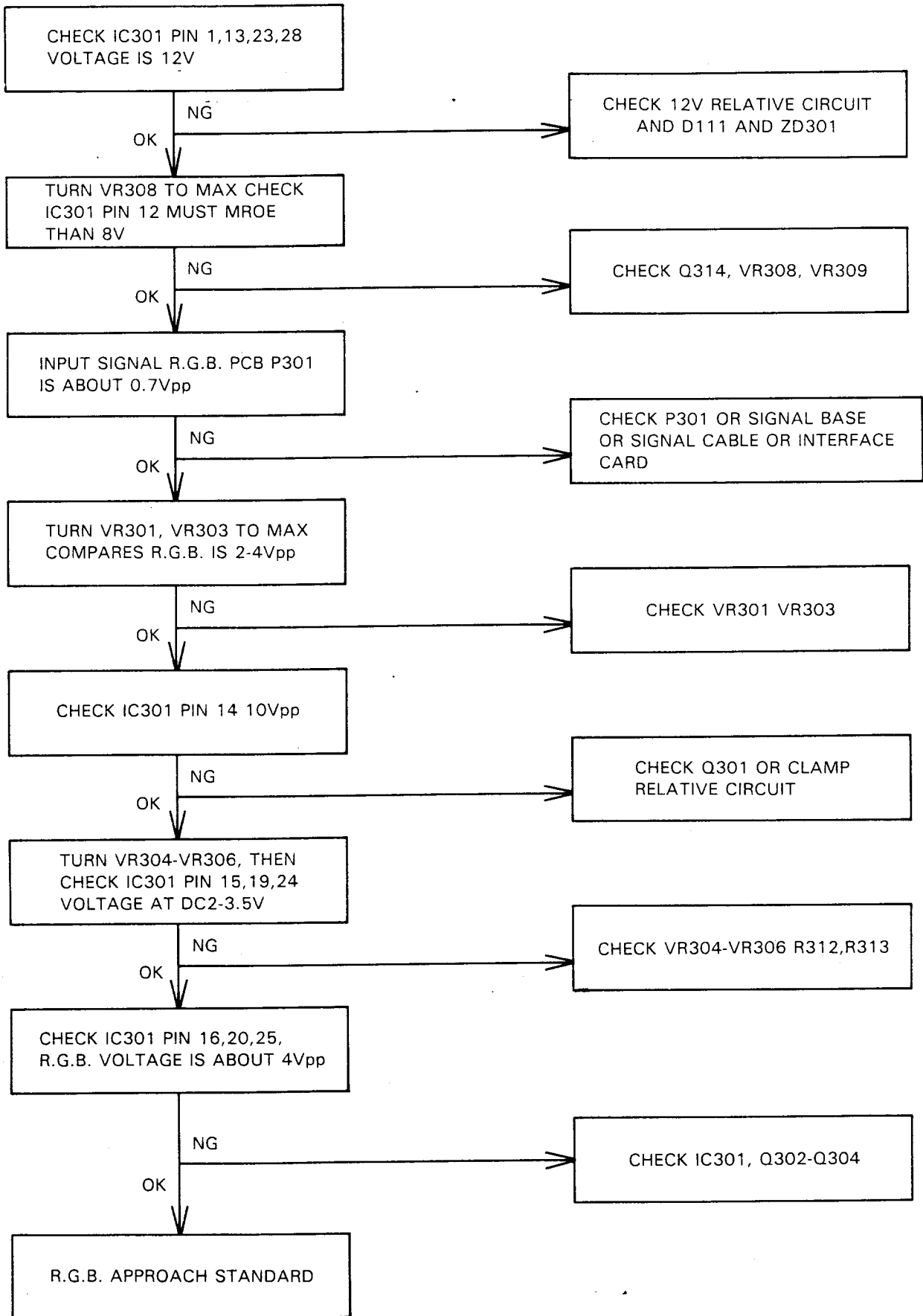


7. TROUBLE SHOOTING CHART

7-1 NO RASTER, CRT RELATIVE CIRCUIT PROBLEMS

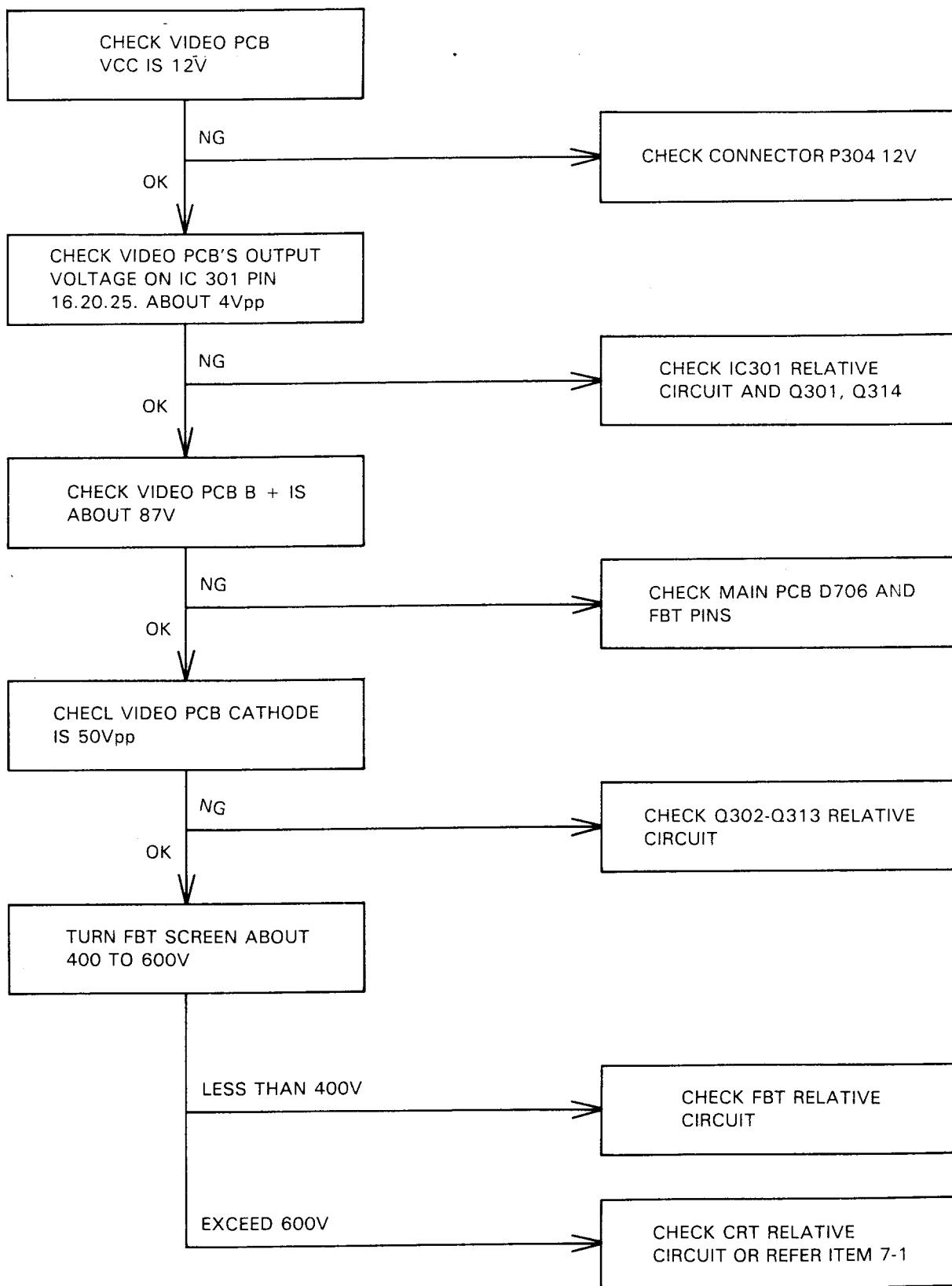


2. ABNORMAL VIDEO LEVEL ON SCREEN

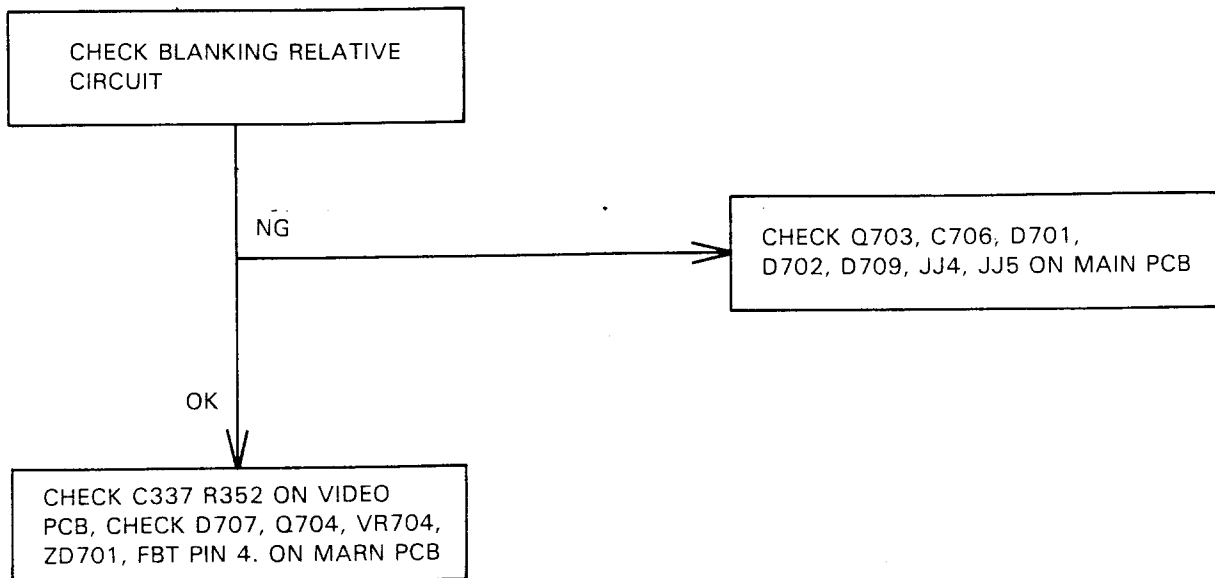


7-2 ABNORMAL DISPLAY

1. NO SIGNAL ON SCREEN

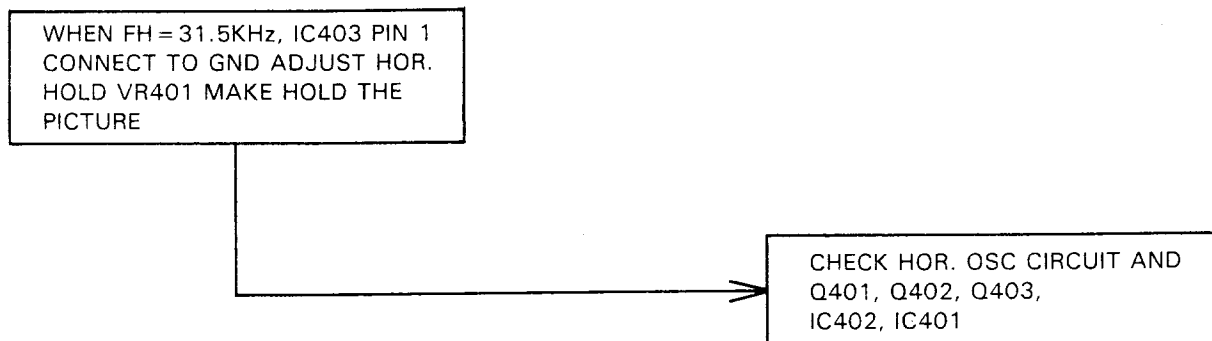


7-3 NO BLANKING

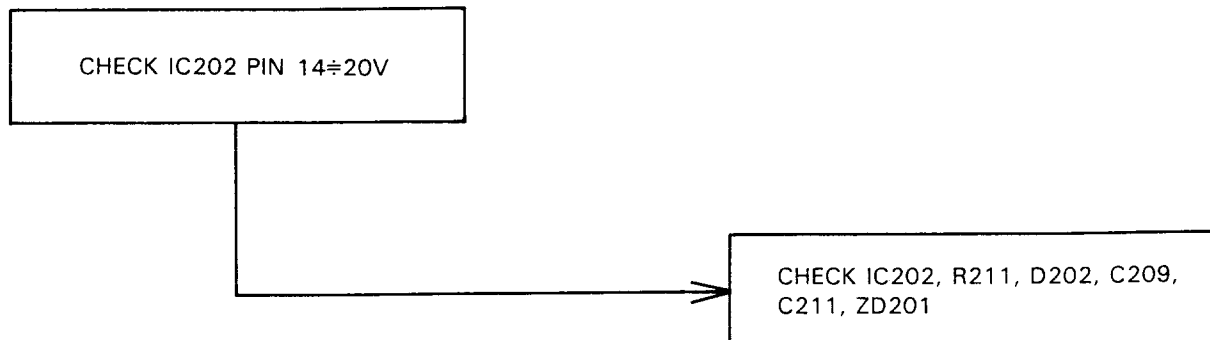


7-4 VIDEO UNSTEADY

1. HORIZONTAL VIDEO UNSTABLE

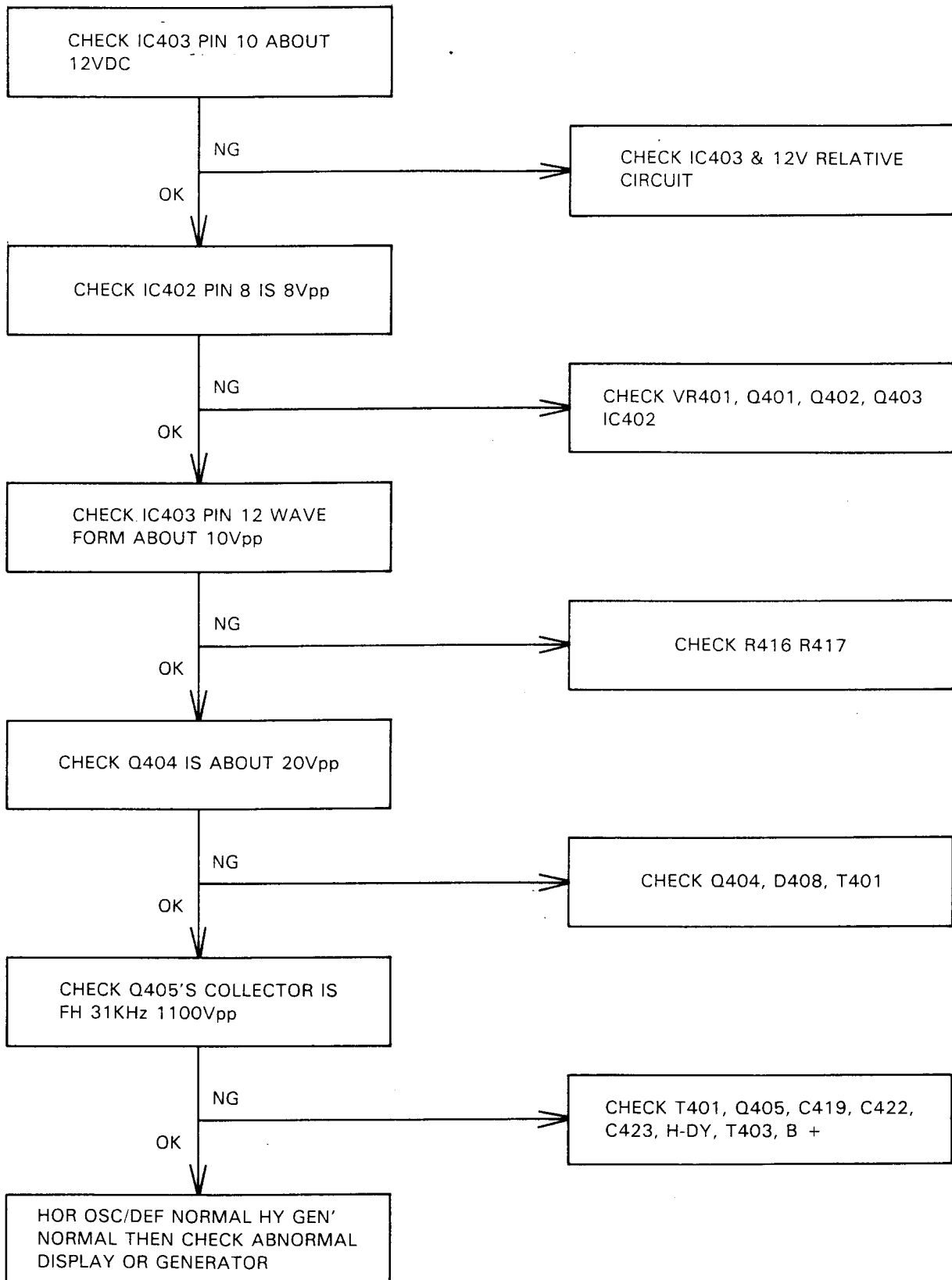


2. VERTICAL VIDEO UNSTABLE



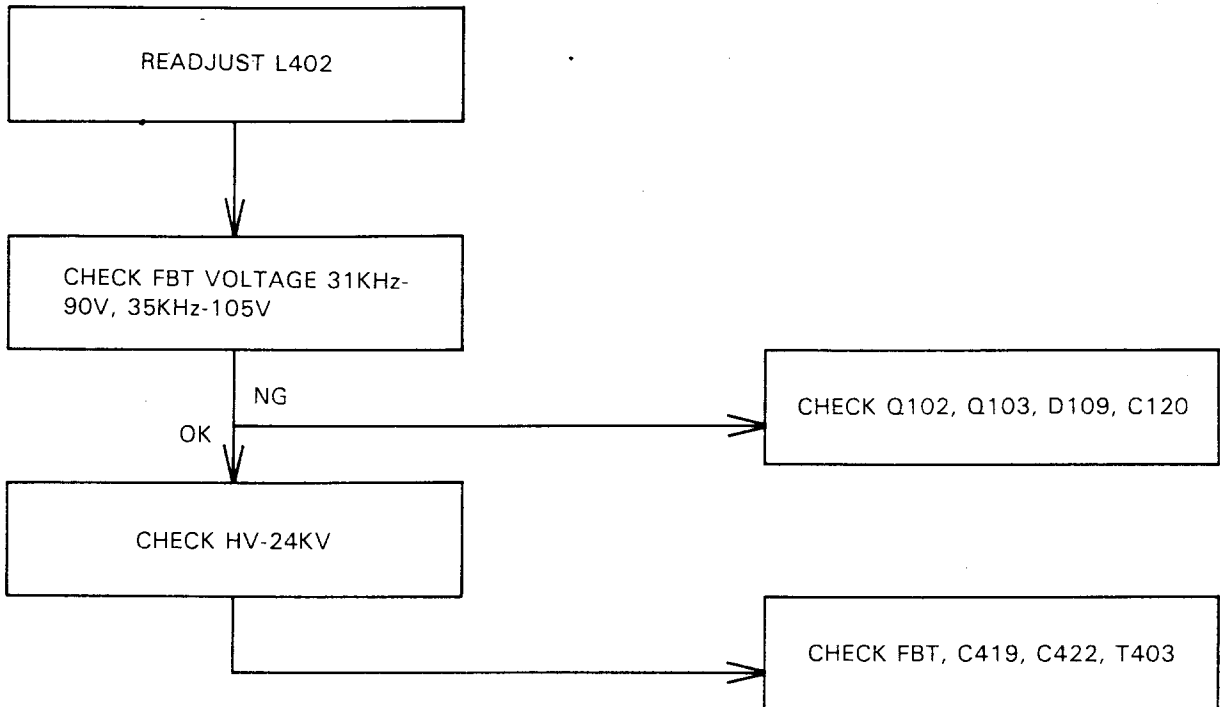
7-5 HOR./OSC/DEF/HV CIRCUIT FAULT

1. NO RASTER (DISCONNECT WITH SIGNAL CABLE)

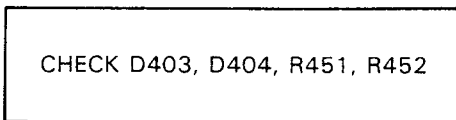


7-6 ABNORMAL HORIZONTAL DEFLECTION

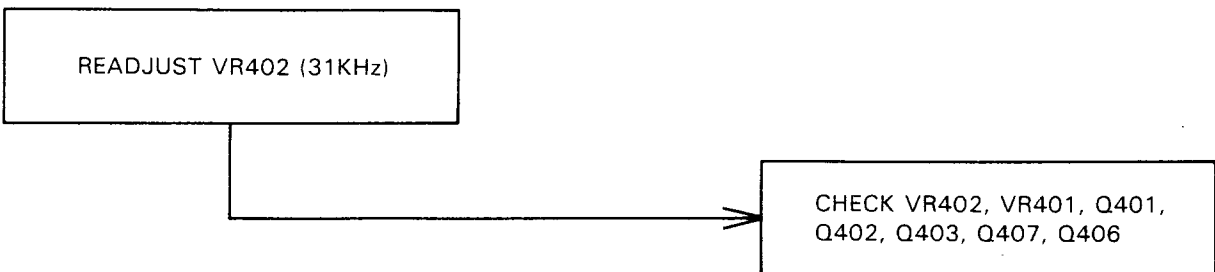
1. ABNORMAL HORIZONTAL WIDTH OF VIDEO



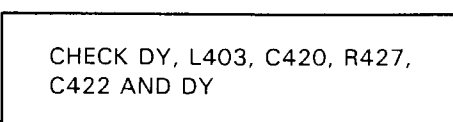
2. ABNORMAL HORIZONTAL RASTER CENTER



3. ABNORMAL HORIZONTAL VIDEO CENTER

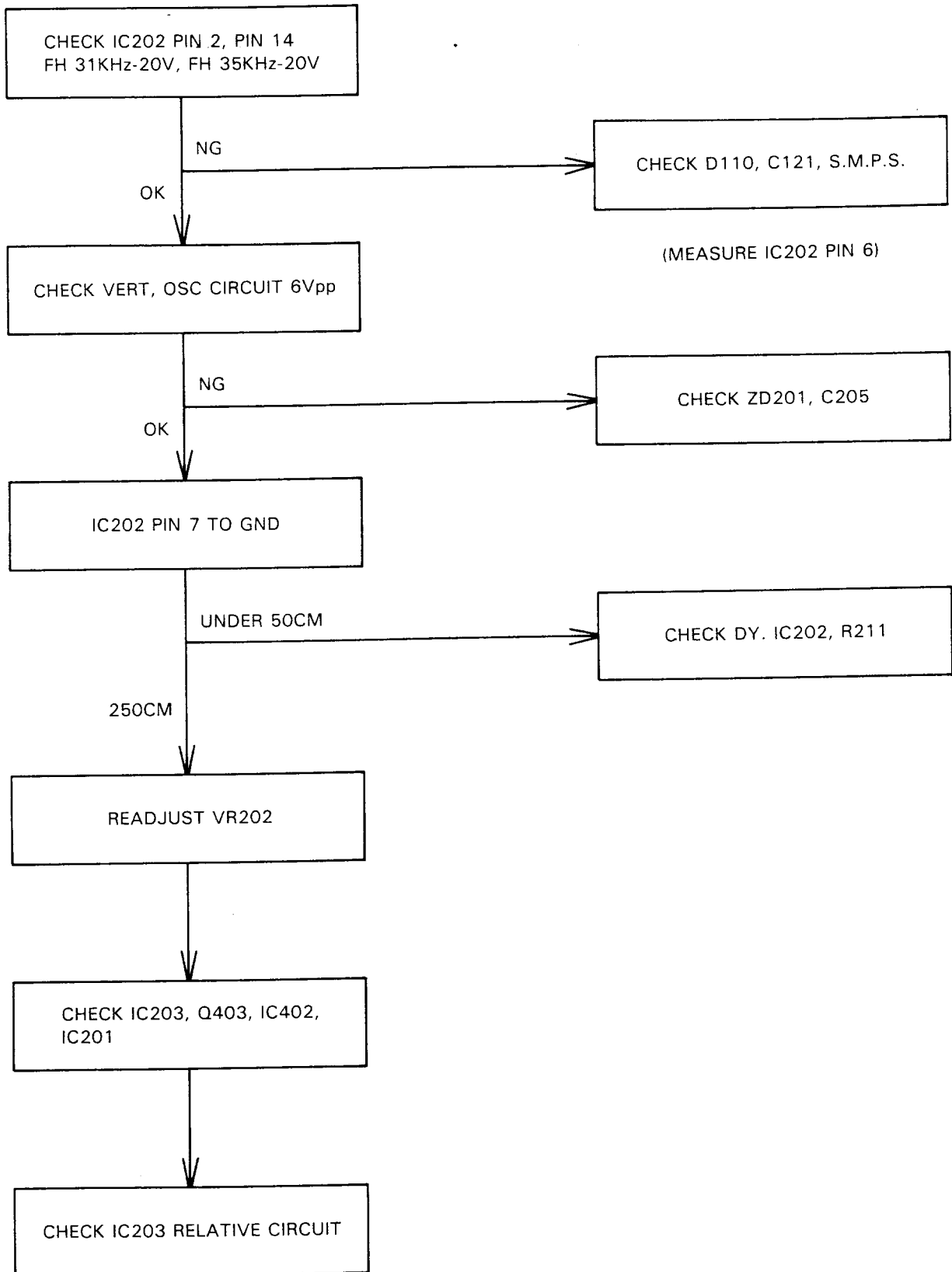


4. ABNORMAL HORIZONTAL LINEARITY

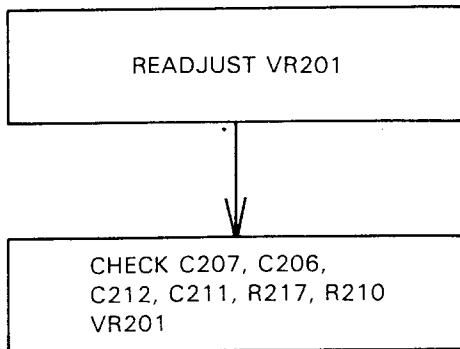


7-7 ABNORMAL VERTICAL SCANNING

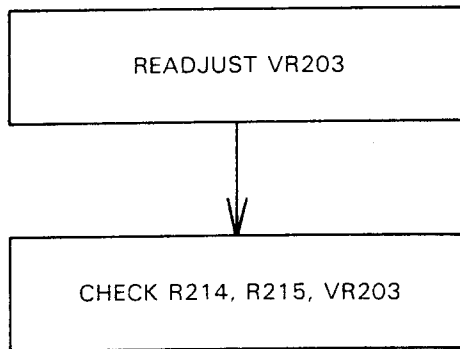
1. ABNORMAL VERTICAL SIZE



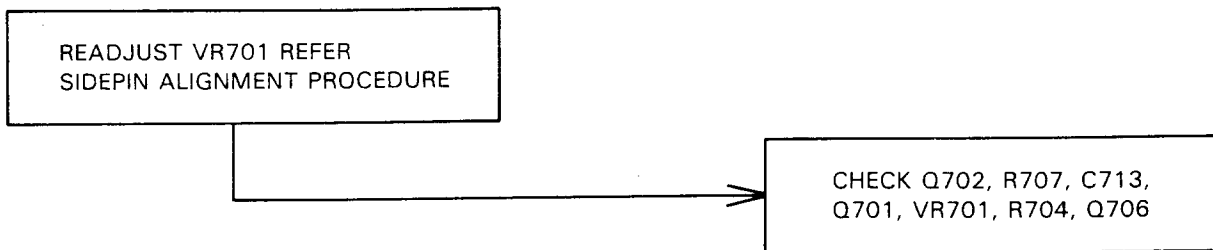
2. VERTICAL LINEARITY



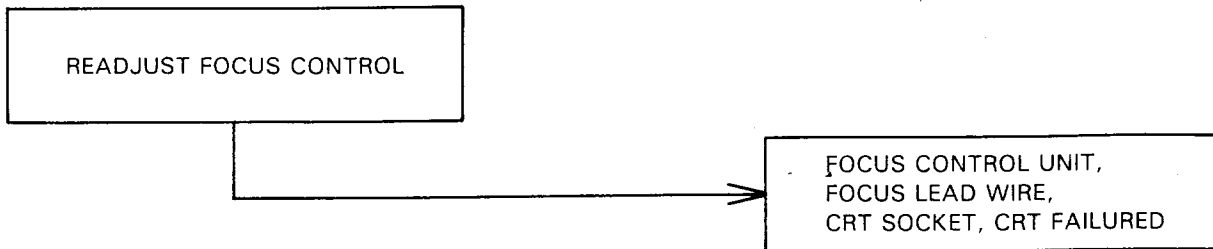
3. VERTICAL CENTER



7-8 SIDE-PIN CUSHION DISTORTION

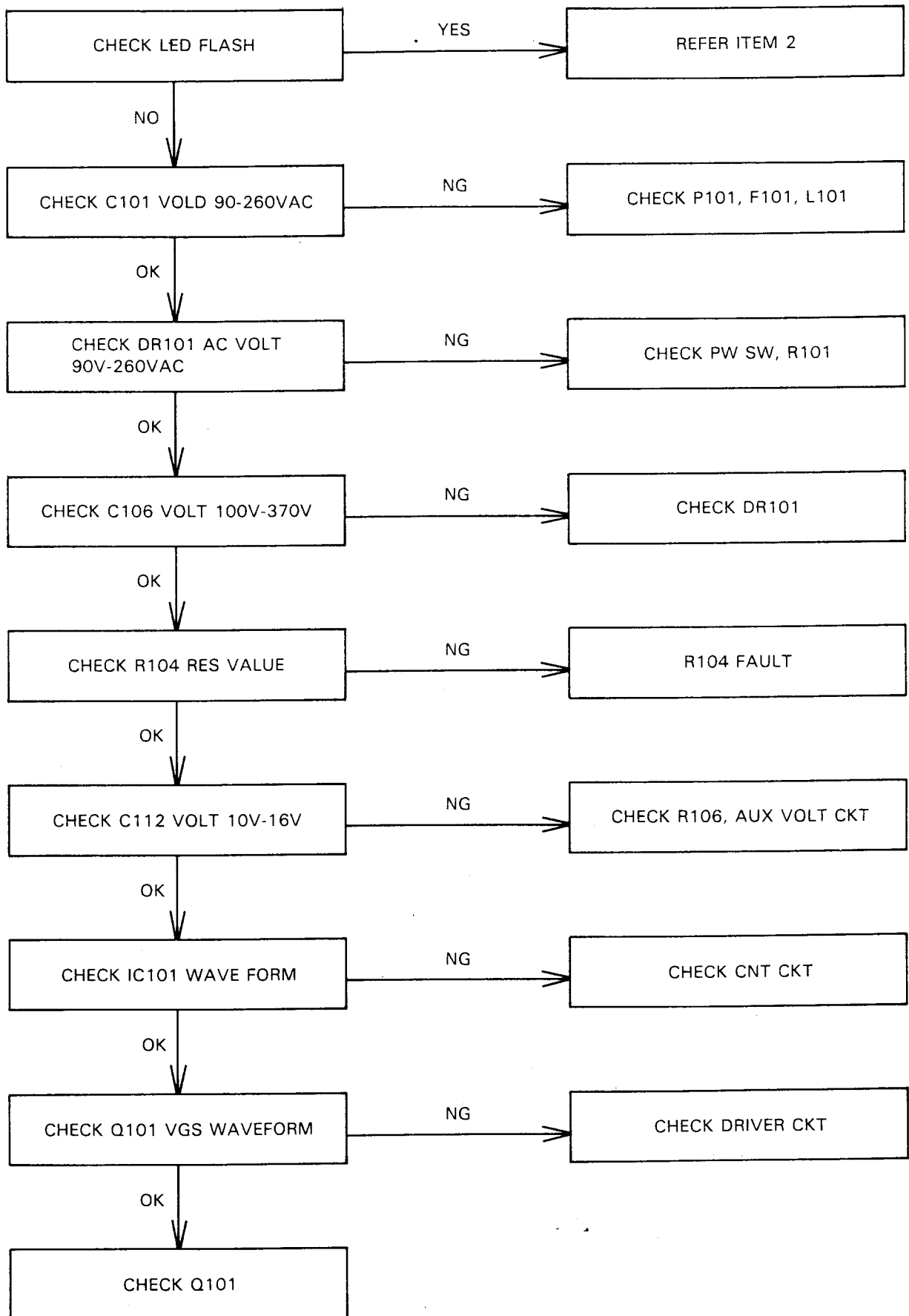


7-9 POOR FOCUS

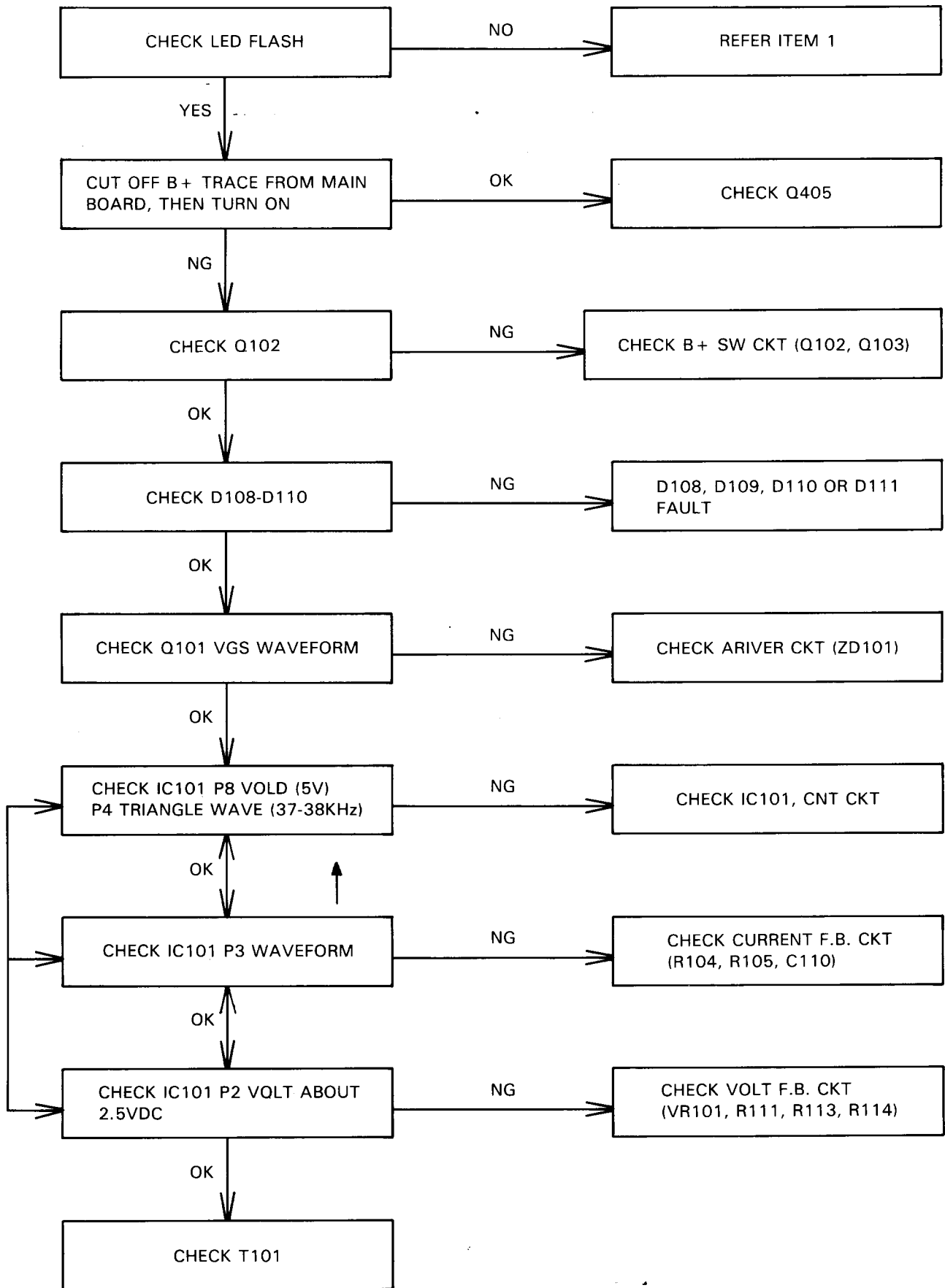


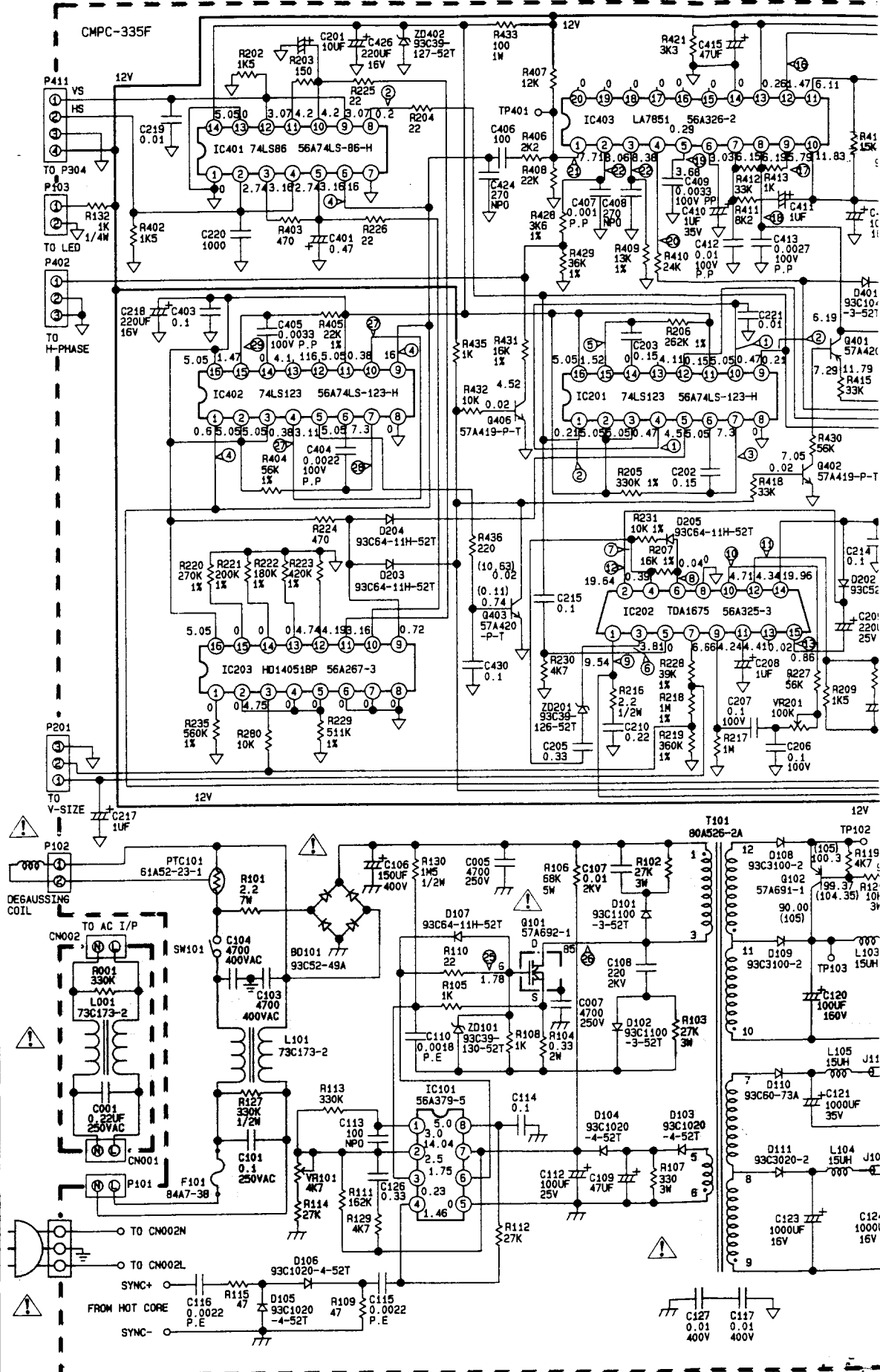
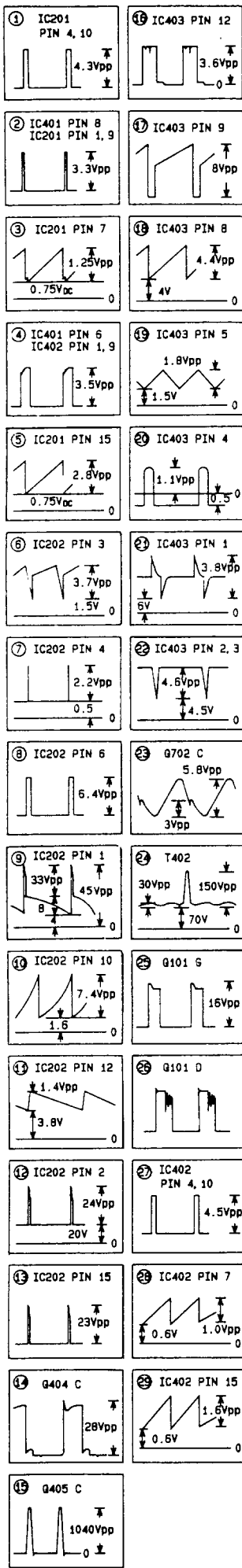
7-10 SWITCHING REGULATOR UNIT

1. SWITCHING P.S. NO OUTPUT (LED OFF)



2. SWITCHING P.S. NO OUTPUT (LED FLASH)

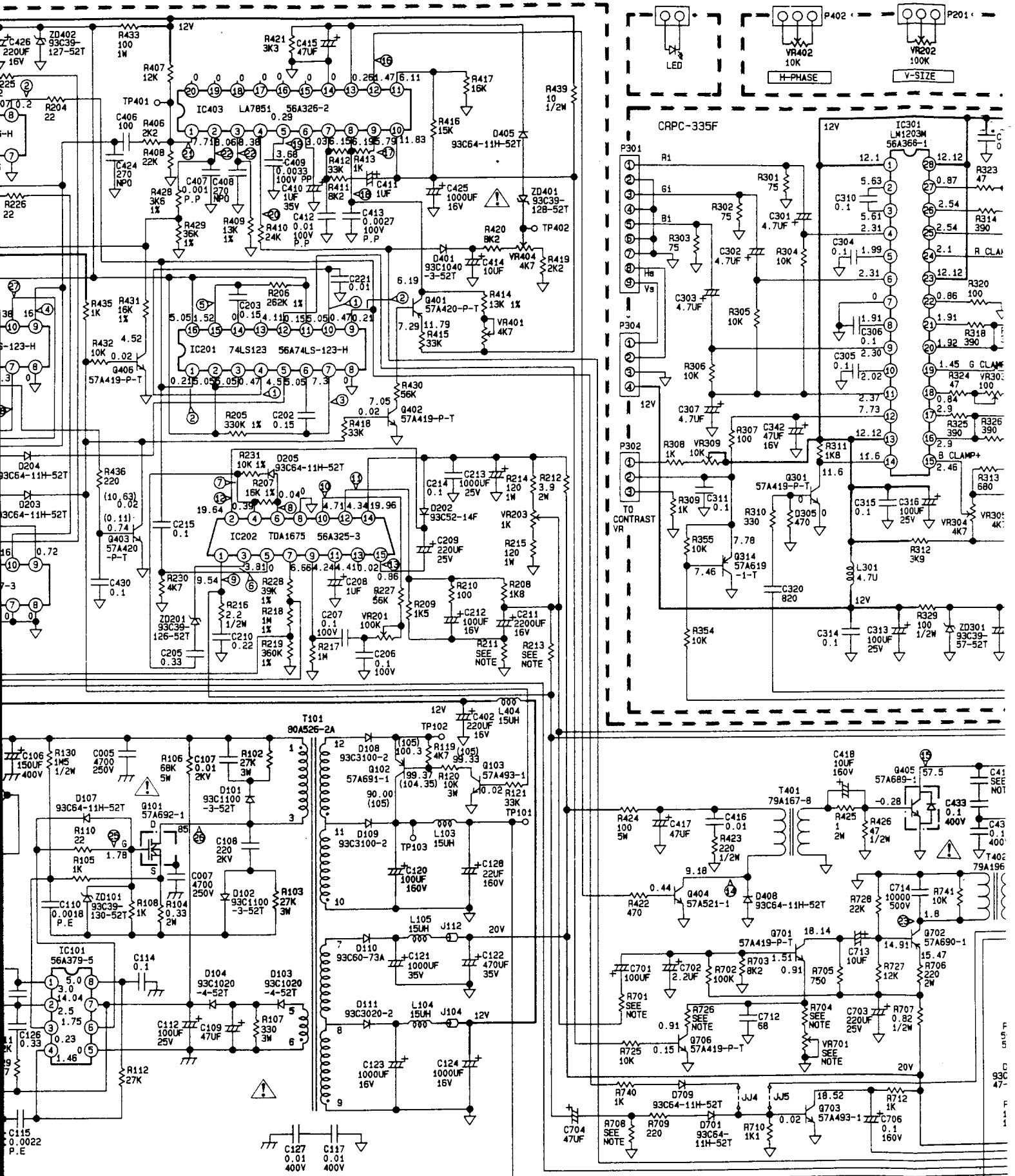




NOTE:

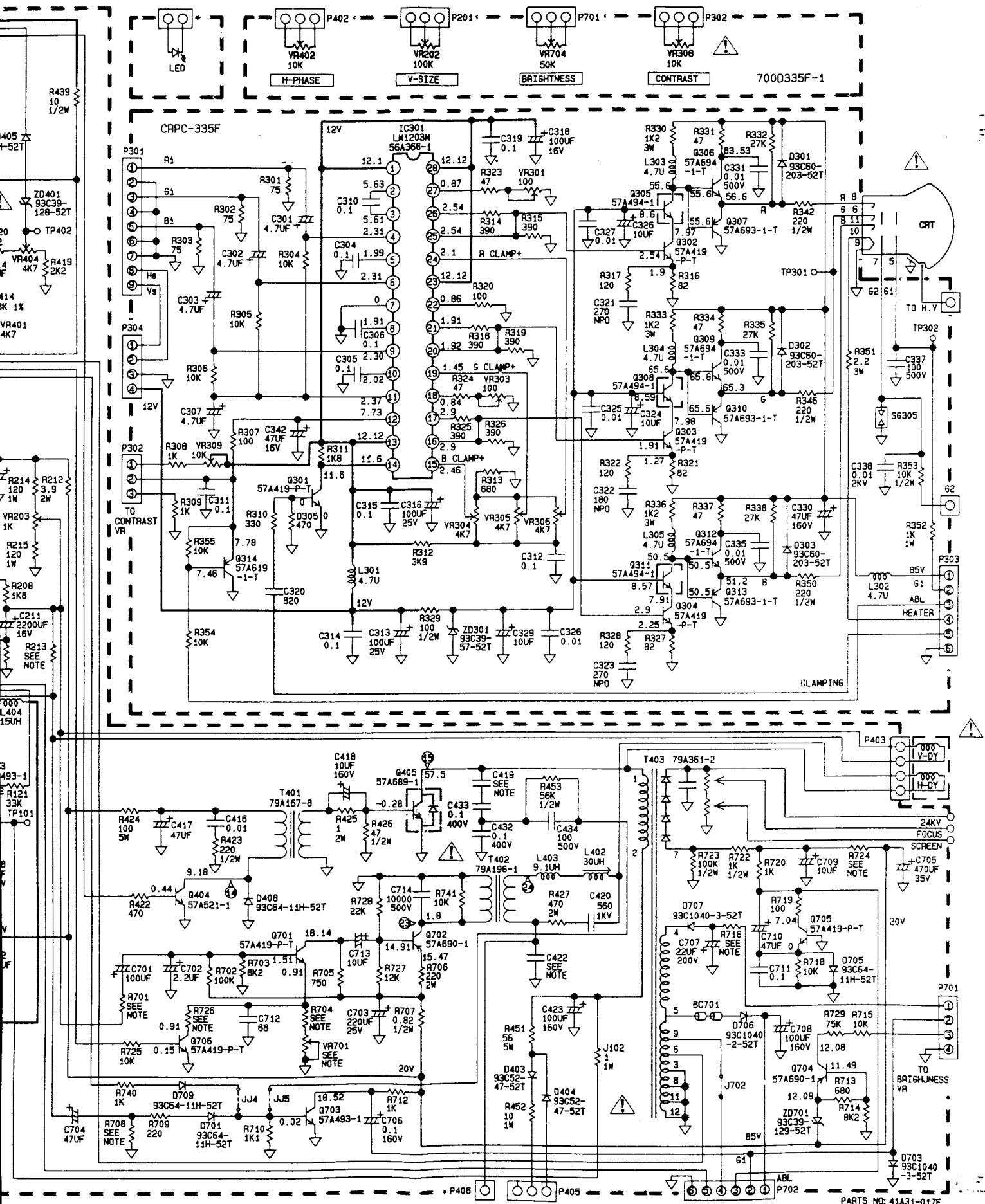
CRT	R724	R716	C422	C419	R708	R211	R213	R704	R726	R701	VR701						
750A5680-2	0.28	GOLD STAR	56K	160K	0.56UF	250V	5600PF	2KV	1K2	0.72	2W	220	1/2W	47	910	1K3	500
750A5350-2	0.39	GOLD STAR	56K	160K	0.56UF	250V	5600PF	2KV	1K2	0.72	2W	220	1/2W	47	910	1K3	500
750A5630-2	0.28	PHILIPS	56K	120K	0.68UF	250V	4900PF	1.6KV	2K2	0.91	2W	47	910	1K3	500	750A5300-	500
750A5630-3	0.28	PHILIPS MPRII	56K	120K	0.56UF	250V	4700PF	2KV	2K2	0.91	2W	47	910	1K3	500	750A5300-	500
750A5360-2	0.39	SAMSUNG	56K	180K	0.56UF	250V	5600PF	1.6KV	1K2	0.72	2W	220	1/2W	47	510	1K3	500
750A5360-26	0.39	SAMSUNG	56K	180K	0.56UF	250V	5600PF	1.6KV	1K2	0.72	2W	220	1/2W	47	510	1K3	500
750A5620-2A5	0.28	TOSHIBA	62K	120K	0.56UF	250V	4500PF	1.6KV	2K7	1	2W	220	1/2W	15	680	2K7	200

750A5650-	500
750A5640-	500
750A5130-	500
750A5300-	500
750A5300-	500
750A5640-	500



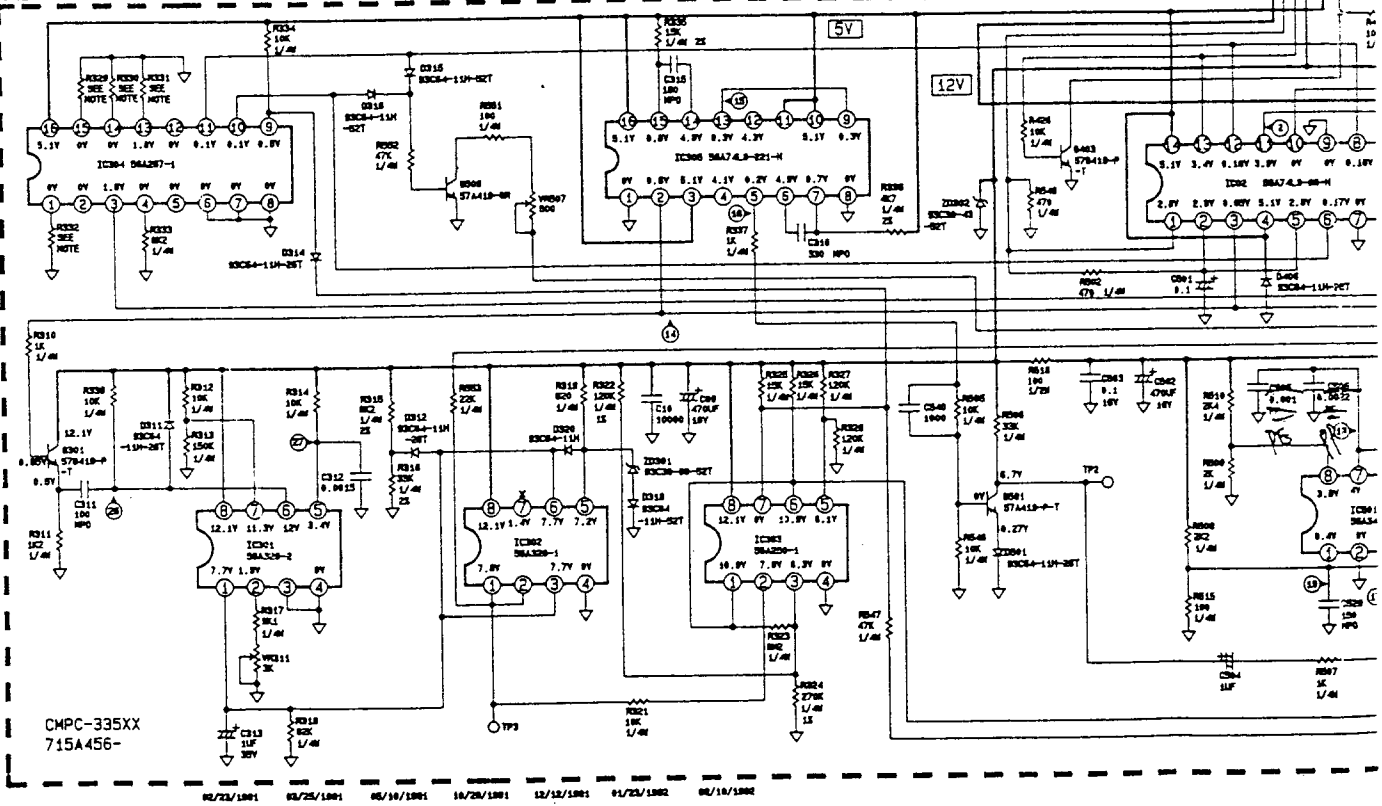
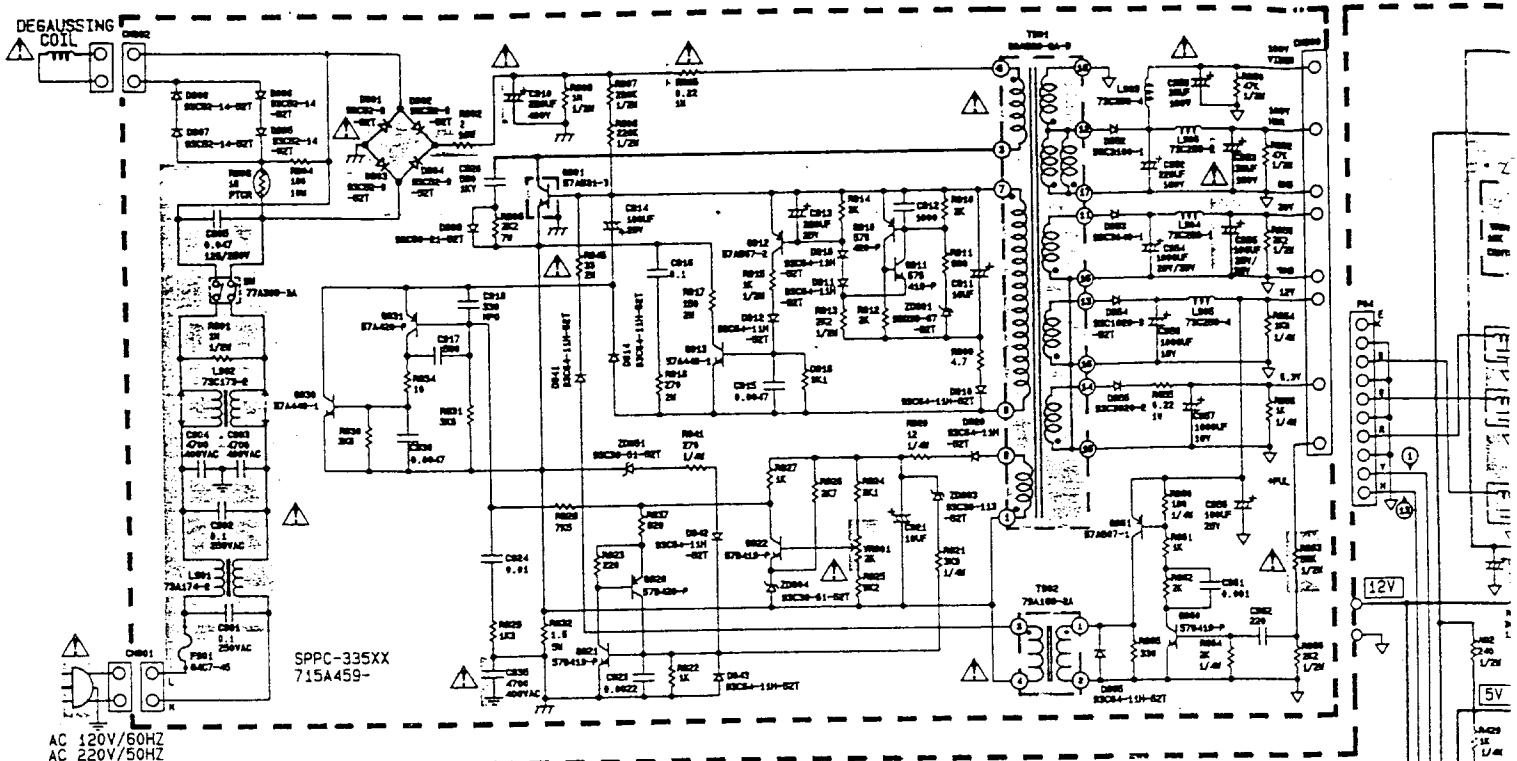
	C419	R708	R211	R213	R704	R726	R701	VR701
50V	5600PF 2KV	1K2	0.72 2W	220 1/2W	47	910	1K3	500
50V	5600PF 2KV	1K2	0.72 2W	220 1/2W	47	910	1K3	500
50V	4900PF 1.6KV	2K2	0.91 2W	47	910	1K3	500	
50V	4700PF 2KV	2K2	0.91 2W	47	911	3K9	500	
50V	5600PF 1.6KV	1K2	0.72 2W	220 1/2W	47	510	1K3	500
50V	5600PF 1.6KV	1K2	0.72 2W	220 1/2W	47	510	1K3	500
50V	4500PF 1.6KV	2K7	1 2W	220 1/2W	15	680	2K7	200

	CRT	R724	R716	C422	C419	R708	R211	R213	R704	R726	R701	VR701			
50V	750A5650-2A	0.28	CHUNG	HWA	62K	120K	0.68UF 250V	5600PF 2KV	1K2	0.72 2W	220 1/2W	47	910	1K3	500
50V	750A5640-3AV	0.28	CHUNG	HWA	62K	120K	0.68UF 250V	4700PF 1.6KV	2K2	1 2W	220 1/2W	15	680	2K7	200
50V	750A5130-2A	0.31	CHUNG	HWA	62K	120K	0.68UF 250V	5600PF 2KV	1K2	0.72 2W	220 1/2W	47	911	1K3	500
50V	750A5300-5A	0.39	CHUNG	HWA	62K	120K	0.68UF 250V	5600PF 2KV	1K2	0.72 2W	220 1/2W	47	910	1K3	500
50V	750A5300-5GA	0.39	CHUNG	HWA	62K	120K	0.68UF 250V	5600PF 2KV	1K2	0.72 2W	220 1/2W	47	910	1K3	500
50V	750A5640-2	0.28	CHUNG	HWA	62K	120K	0.68UF 250V	4500PF 1.6KV	2K2	1 2W	220 1/2W	15	680	2K7	200

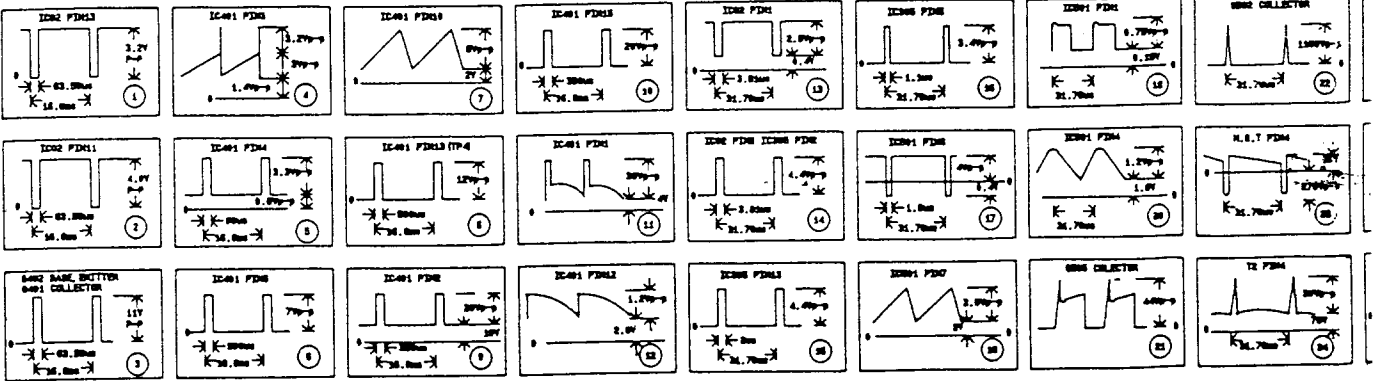


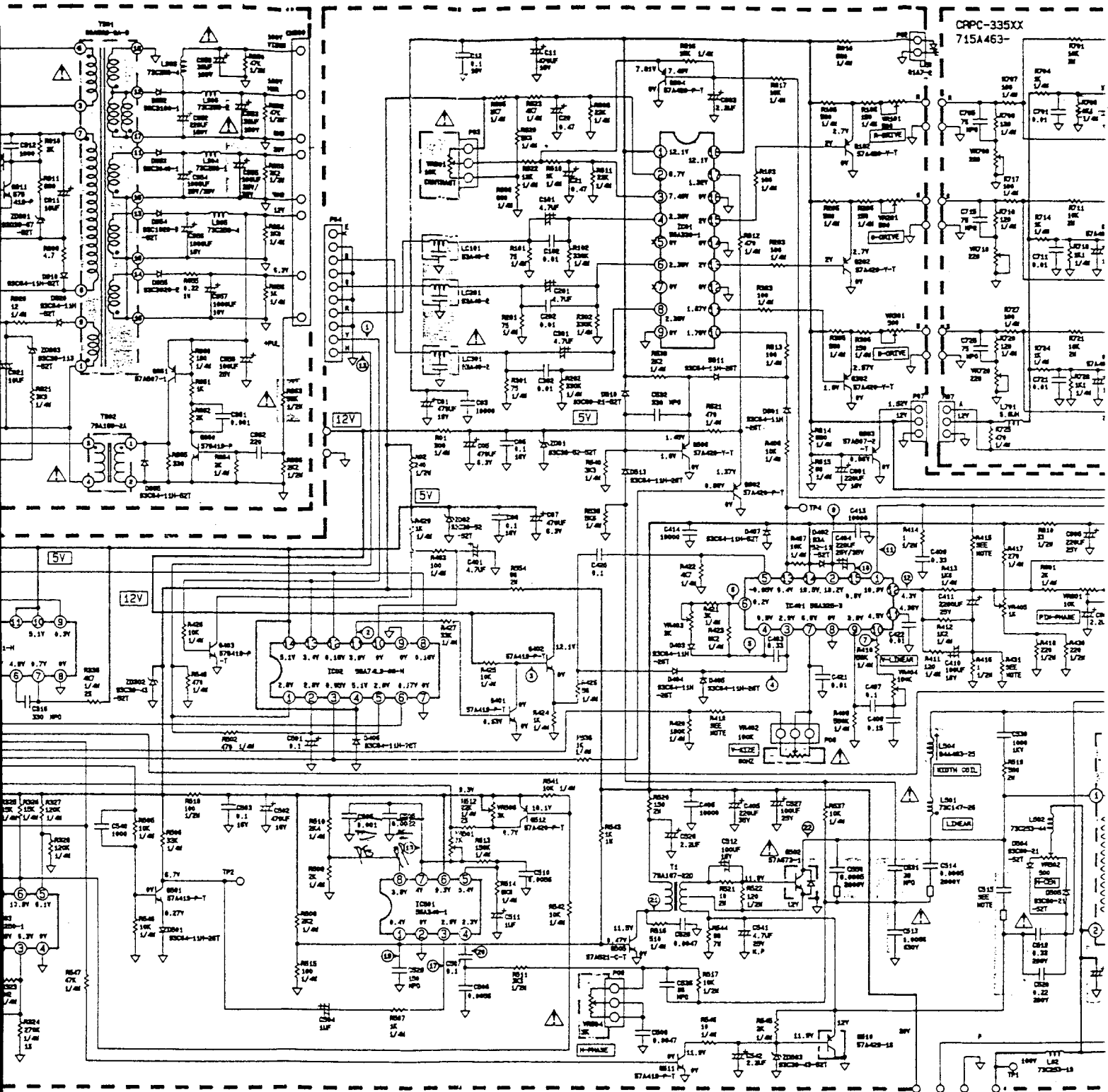
PARTS NO: 41A31-017F

	R724	R716	C422	C419	R708	R211	R213	R704	R726	R701	VR701
CHUNG HWA	62K	120K	0.68UF 250V	5600PF 2KV	1K2	0.72 2W	220 1/2W	47	910	1K3	500
CHUNG HWA	62K	120K	0.68UF 250V	4700PF 1.6KV	2K2	1 2W	220 1/2W	15	680	2K7	200
CHUNG HWA	62K	120K	0.68UF 250V	5600PF 2KV	1K2	0.72 2W	220 1/2W	47	911	1K3	500
CHUNG HWA	62K	120K	0.68UF 250V	5600PF 2KV	1K2	0.72 2W	220 1/2W	47	910	1K3	500
CHUNG HWA	62K	120K	0.68UF 250V	5600PF 2KV	1K2	0.72 2W	220 1/2W	47	910	1K3	500
CHUNG HWA	62K	120K	0.68UF 250V	4500PF 1.6KV	2K2	1 2W	220 1/2W	15	680	2K7	200



FH=31.460KHZ, Fv=59.92KHZ
CONDITION:
CHROMA 1000, PATTAN 12





NOTE: A

I. FOR CRT 750A5610-1 0.28 NON-GLARE (MATSUSHITA) MEDIUM
 750A5610-2 0.28 NON-GLARE (MATSUSHITA) MEDIUM SHOT
 750A5610-3 0.28 NON-GLARE (MATSUSHITA) VLMF+ANTI

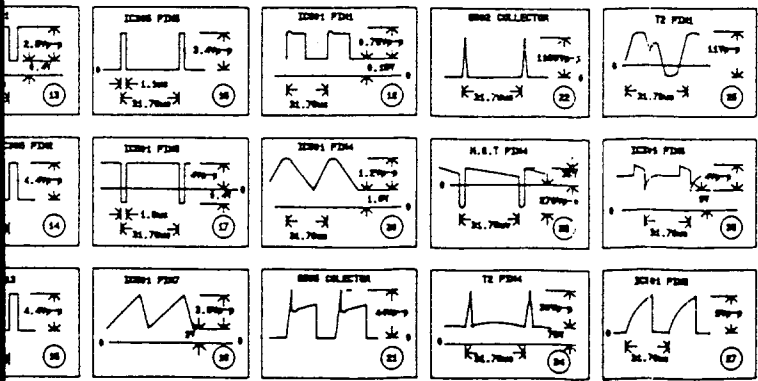
- | | | |
|----------------------|----------------------|-----------------|
| 1. R329 5K1 1/4W 2% | 6. R415 560 1W | 11. R520 150 2W |
| 2. R330 39K 1/4W 2% | 7. R431 NONE | 12. R554 68 2W |
| 3. R331 110K 1/4W 2% | 8. R419 130K 1/4W | 13. R543 1K 1W |
| 4. R332 200K 1/4W 1% | 9. R550 56K 1/4W | |
| 5. C515 3300P 2KV | 10. C520 0.22UF 200V | |

II. FOR CRT 750A5210-1 0.29 NON-GLARE (PHILIPS)
 750A5630-2 0.28 NON-GLARE (PHILIPS)
 750A5210-3 0.29 NON-GLARE (PHILIPS) VLMF+ANTI
 750A5630-3 0.28 NON-GLARE (PHILIPS) VLMF+ANTI

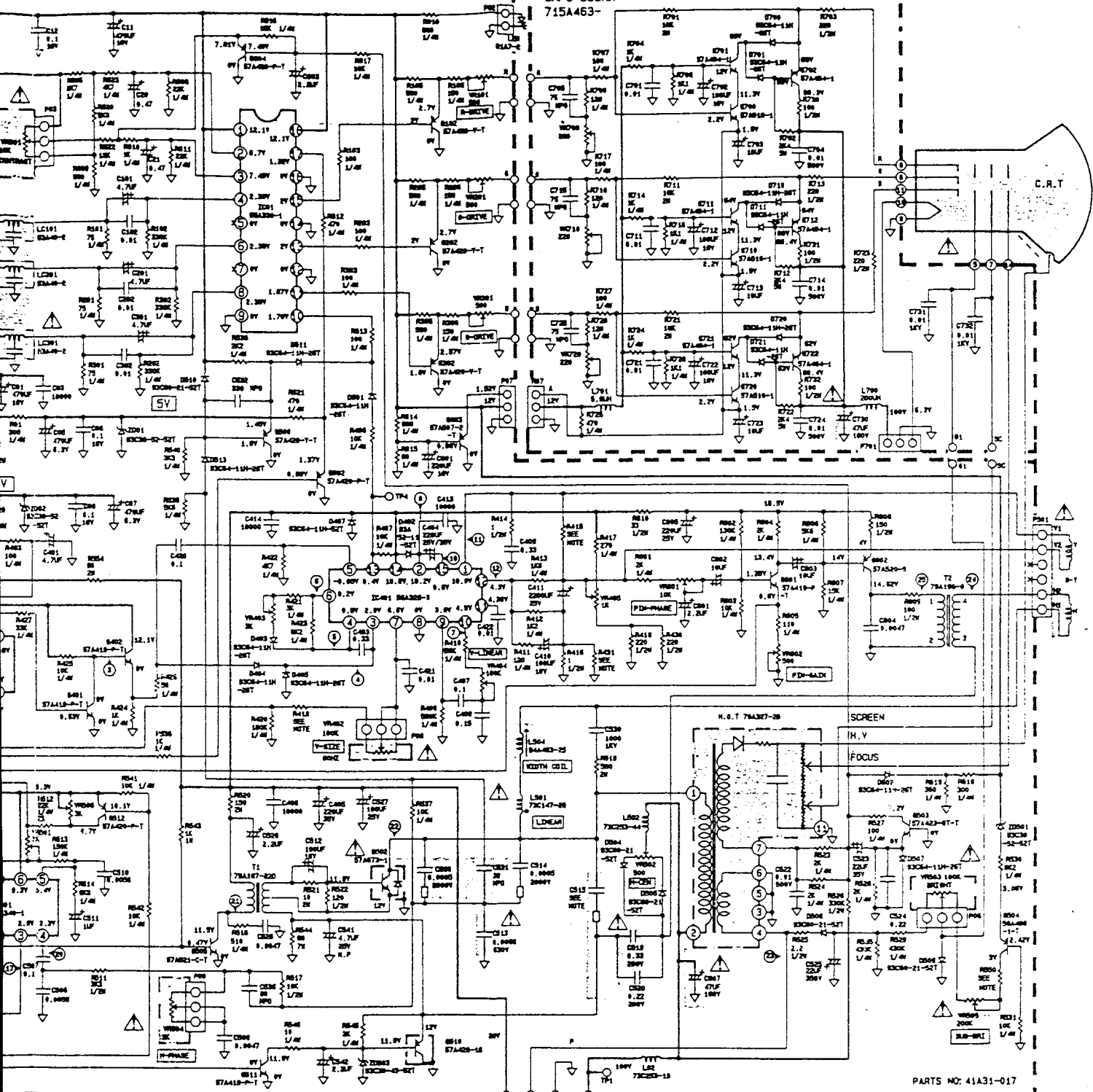
- | | | |
|----------------------|----------------------|-----------------|
| 1. R329 5K1 1/4W 2% | 6. R415 4K7 1W | 11. R520 150 2W |
| 2. R330 39K 1/4W 2% | 7. R431 NONE | 12. R554 68 2W |
| 3. R331 79K 1/4W 2% | 8. R419 100K 1/4W | 13. R543 1K 1W |
| 4. R332 130K 1/4W 2% | 9. R550 56K 1/4W | |
| 5. C515 3500P 2KV | 10. C520 0.22UF 200V | |

IV. CRT 750A5650-2 NON-GLARE (PHILIPS)

- | | |
|----------------------|---------|
| 1. R329 5K2 1/4W 2% | 11. R52 |
| 2. R330 39K 1/4W 2% | 12. R55 |
| 3. R331 91K 1/4W 2% | 13. R54 |
| 4. R332 150K 1/4W 2% | 14. R51 |
| 5. C515 4000P 2KV | 15. C41 |
| 6. R415 330 1W | 16. C40 |
| 7. R431 2.2 1/2W | 17. C52 |
| 8. R419 130K 1/4W | 18. C51 |
| 9. R550 56K 1/4W | 19. R52 |
| 10. C520 0.47UF 200V | 20. R42 |



CRPC-335XX
715A463-



NOTE: A

- I. FOR CRT 750A5610-1 0.28 NON-GLARE (MATSUSHITA) MEDIUM
 - 750A5610-2 0.28 NON-GLARE (MATSUSHITA) MEDIUM SHOT
 - 750A5610-3 0.28 NON-GLARE (MATSUSHITA) VJMF+ANTI
- | | | |
|----------------------|----------------------|-----------------|
| 1. R329 5K1 1/4W 2X | 6. R415 560 1W | 11. R520 150 2W |
| 2. R330 33K 1/4W 2X | 7. R431 NONE | 12. R554 68 2W |
| 3. R331 110K 1/4W 2X | 8. R419 130K 1/4W | 13. R543 1K 1W |
| 4. R332 200K 1/4W 1X | 9. R550 56K 1/4W | |
| 5. C515 3300P 2KV | 10. C520 0.22UF 200V | |

- II. FOR CRT 750A5210-1 0.29 NON-GLARE (PHILIPS)
 - 750A5630-2 0.28 NON-GLARE (PHILIPS)
 - 750A5210-3 0.29 NON-GLARE (PHILIPS) VJMF+ANTI
 - 750A5630-3 0.28 NON-GLARE (PHILIPS) VJMF+ANTI
- | | | |
|----------------------|----------------------|-----------------|
| 1. R329 5K1 1/4W 2X | 6. R415 4K7 1W | 11. R520 150 2W |
| 2. R330 33K 1/4W 2X | 7. R431 NONE | 12. R554 68 2W |
| 3. R331 75K 1/4W 2X | 8. R419 100K 1/4W | 13. R543 1K 1W |
| 4. R332 130K 1/4W 2X | 9. R550 56K 1/4W | |
| 5. C515 3500P 2KV | 10. C520 0.22UF 200V | |

III. FOR CRT 750A5640-2 0.28 NON-GLARE (CHUNG HWA)

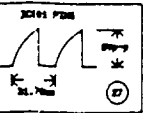
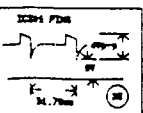
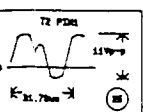
- 750A5620-2 0.28 NON-GLARE (TOSHIBA)
- | | |
|----------------------|---------------------|
| 1. R329 5K2 1/4W 2X | 11. R520 220 2W |
| 2. R330 33K 1/4W 2X | 12. R554 100 2W |
| 3. R331 91K 1/4W 2X | 13. R543 1K2 2W |
| 4. R332 150K 1/4W 2X | 14. R810 39 1W |
| 5. C515 3300P 2KV | 15. R421 1K5 1/4W |
| 6. R415 560 1W | 16. C411 2200UF 35V |
| 7. R431 NONE | 17. C404 220UF 35V |
| 8. R419 130K 1/4W | 18. C527 100UF 35V |
| 9. R550 56K 1/4W | |
| 10. C520 0.22UF 200V | |

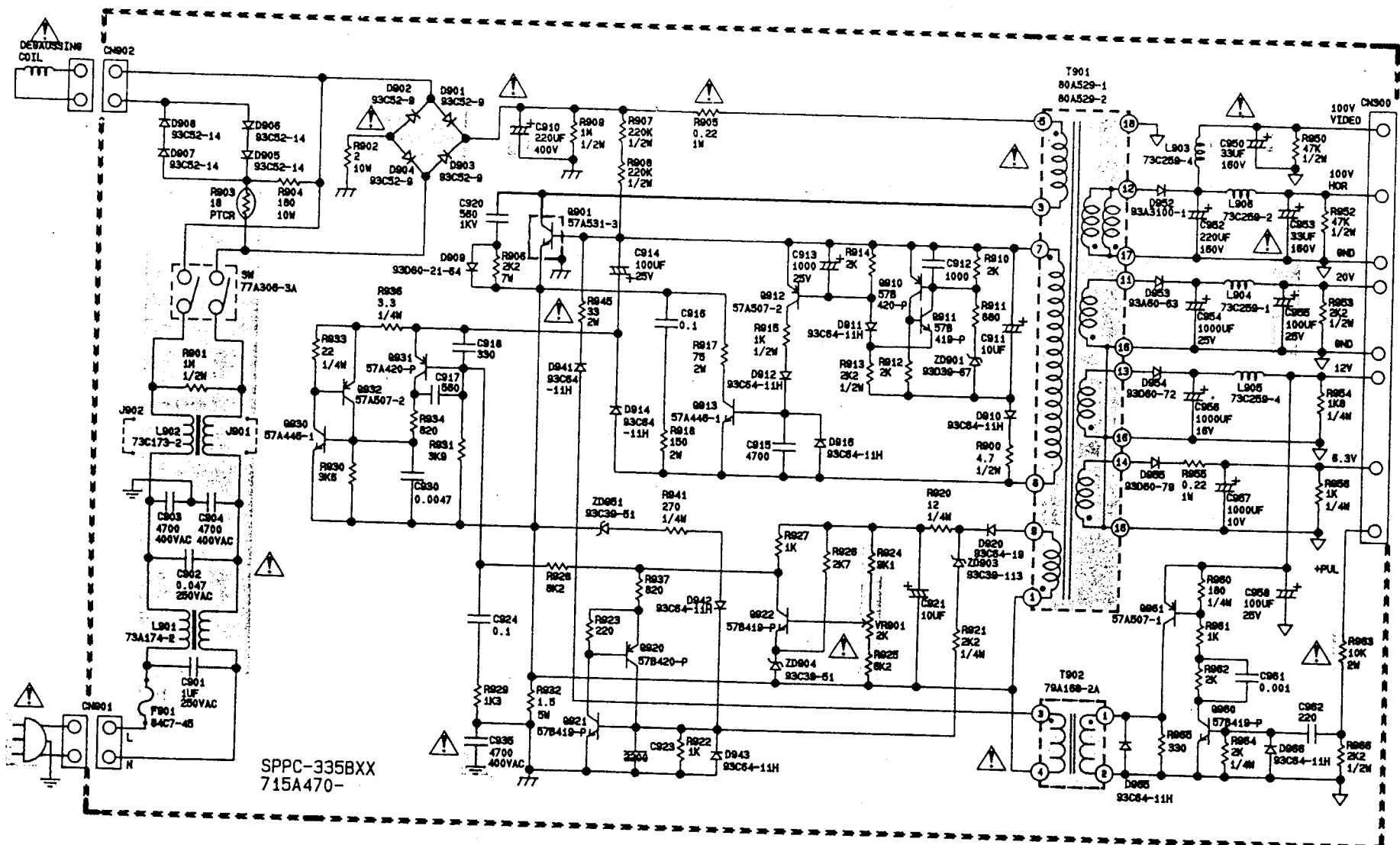
IV. CRT 750A5650-2 NON-GLARE (CHUNG HWA)

- | | | |
|----------------------|---------------------|-------------------|
| 1. R329 5K2 1/4W 2X | 11. R520 150 2W | 21. R801 750 1/4W |
| 2. R330 33K 1/4W 2X | 12. R554 100 2W | 22. C801 1UF 50V |
| 3. R331 91K 1/4W 2X | 13. R543 1K2 2W | 23. R551 300 1/4W |
| 4. R332 150K 1/4W 2X | 14. R810 39 1W | 24. R803 6K8 1/4W |
| 5. C515 4000P 2KV | 15. C411 2200UF 35V | |
| 6. R415 330 1W | 16. C404 220UF 35V | |
| 7. R431 2.2 1/2W | 17. C527 100UF 35V | |
| 8. R419 130K 1/4W | 18. C512 100UF 16V | |
| 9. R550 JUMP WIRE | 19. R521 15 2W | |
| 10. C520 0.47UF 200V | 20. R421 1K5 1/4W | |

NOTE: B

- R526 270K 1/2W FOR MEDIUM CRT
- R526 330K 1/2W FOR MEDIUM SHOT CRT





SPPC-335BXX
715A470-

+PUL

100V VIDEO

100V HOR

20V

12V

8.3V