

SPECIFICATIONS

1. PICTURE TUBE

Size	: 17 inch (ez Flat)
Deflection Angle	: 90°
Neck Diameter	: 29.1mm
Dot Pitch	: 0.25mm
Diagonal Inch	: 16.06"
Internal	: Anti-Glare

2. SIGNAL

2-1. Horizontal & Vertical Sync

- 1) Input Voltage Level : Low=0~1.2V, High=2.5~5.5V
- 2) Sync Polarity : Positive or Negative

2-2. Video Input Signal

- 1) Voltage Level : 0 ~ 0.7 Vp-p
 - a) Color 0, 0 : 0 Vp-p
 - b) Color 7, 0 : 0.467 Vp-p
 - c) Color 15, 0 : 0.7 Vp-p
- 2) Input Impedance : 75Ω
- 3) Video Color : R, G, B Analog
- 4) Signal Format : Refer to the Timing Chart

2-3. Signal Connector

15-pin Attached Connector

2-4. Scanning Frequency

Horizontal	: 30 ~ 70 kHz
Vertical	: 50 ~ 120 Hz

3. POWER SUPPLY

3-1. Power Range

AC 100~240V, 50/60Hz, 2.0A

3-2. Power Consumption

MODE	H/V SYNC	POWER CONSUMPTION	LED COLOR
NORMAL (ON)	ON/ON	less than 100W	GREEN
OFF	OFF/OFF	less than 5W	AMBER

4. DISPLAY AREA

4-1. Active Video Area

- Max Image Size - 325.4 x 244.1mm(12.81" x 9.61")
- Preset Image Size - 306 x 230 mm (12.04" x 9.06")

4-2. Display Color : Full Colors

4-3. Display Resolution : 1280 x 1024 / 60Hz (Non-Interlace)

4-4. Video Bandwidth : 110MHz

5. ENVIRONMENT

5-1. Operating Temperature: 10°C ~ 40°C (Ambient)

5-2. Relative Humidity : 10% ~ 90% (Non-condensing)

5-3. Altitude : 3658m

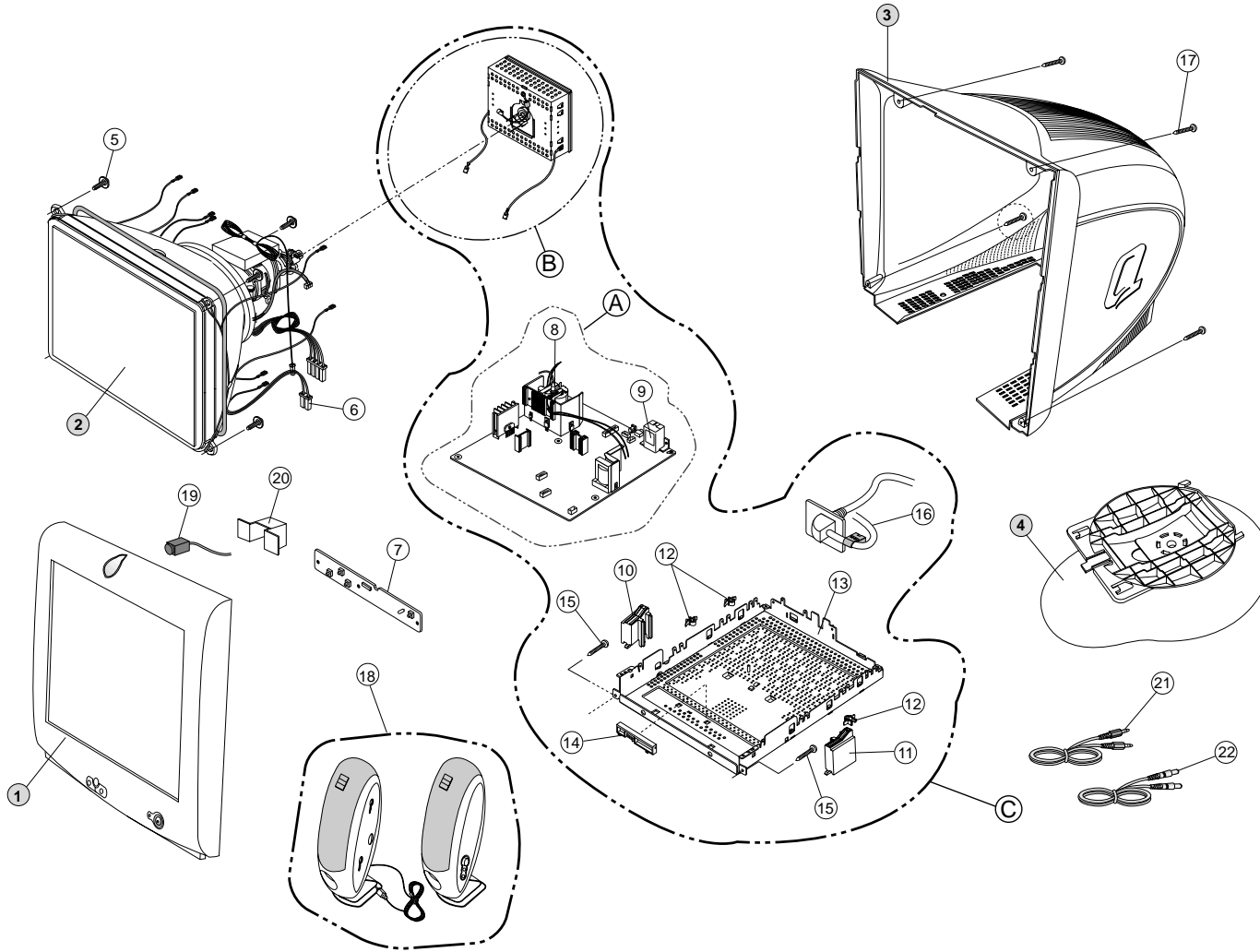
6. DIMENSIONS (with TILT/SWIVEL)

Width	: 416 mm (16.38 inch)
Depth	: 455 mm (17.91 inch)
Height	: 449 mm (17.68 inch)

7. WEIGHT (with TILT/SWIVEL)

Net Weight	: 19.0 kg (41.91 lbs.)
Gross Weight	: 24.0 kg (52.94 lbs.)

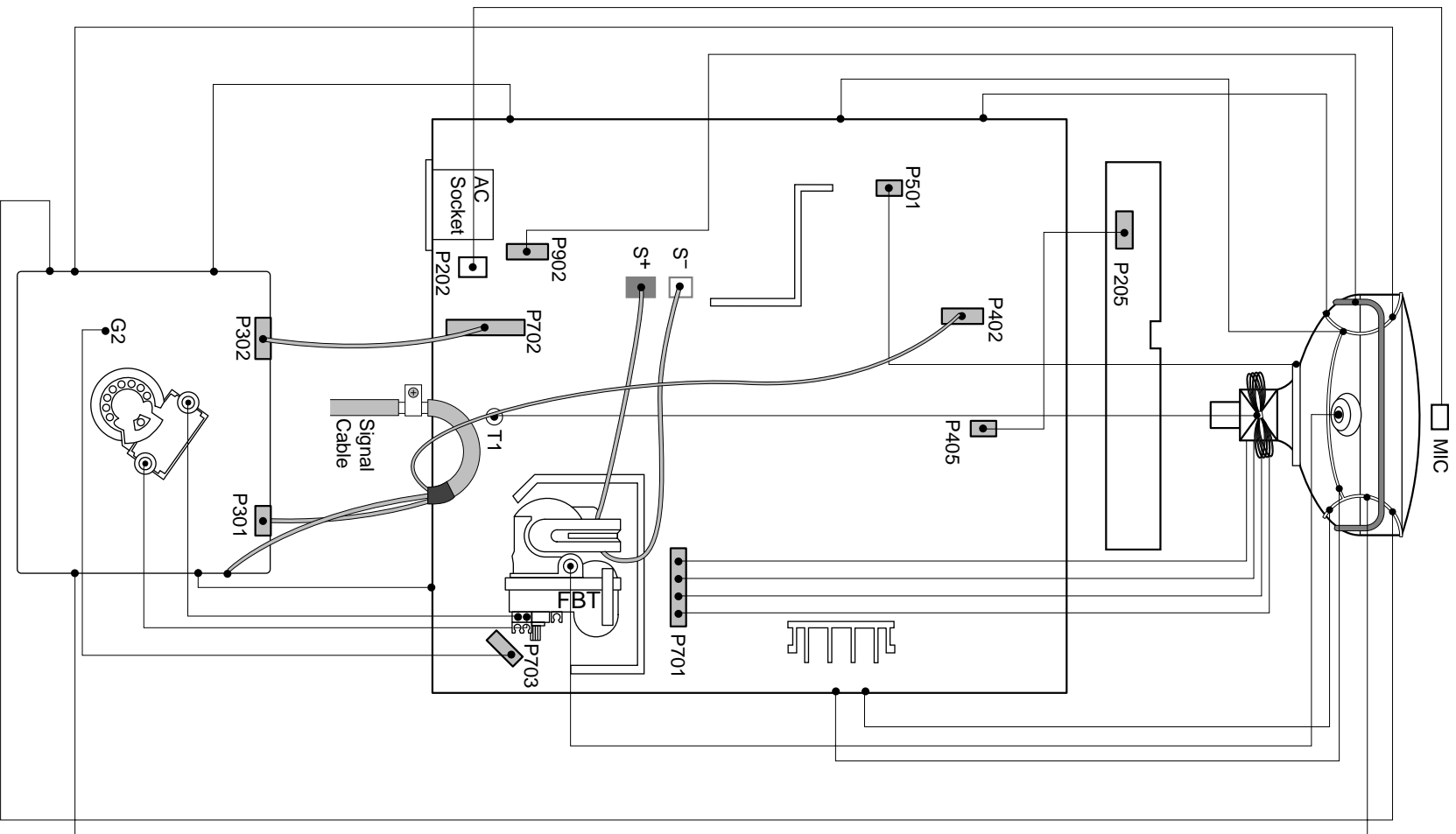
EXPLODED VIEW



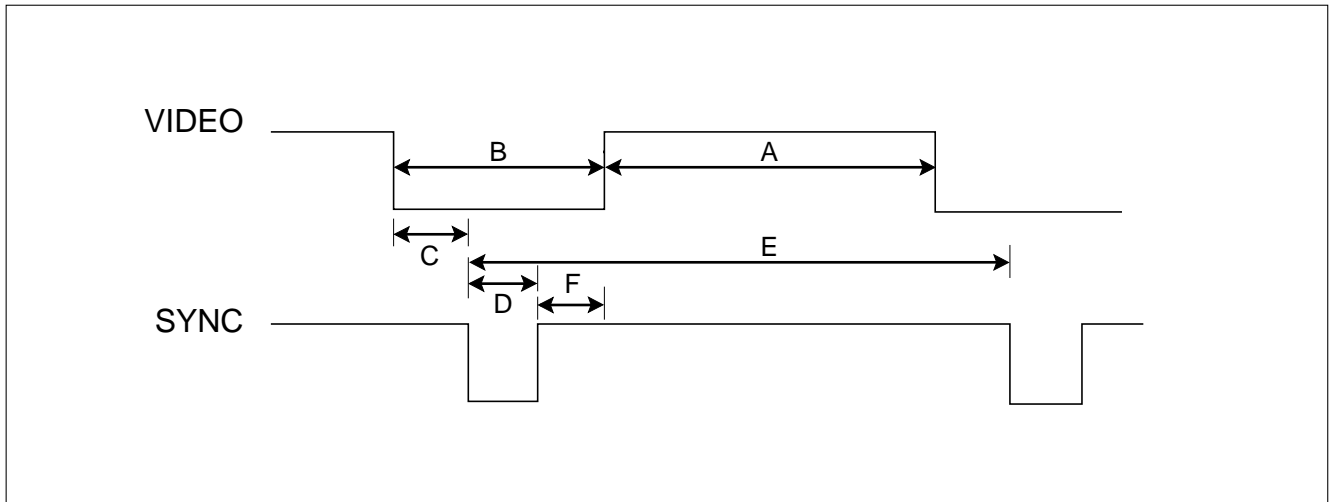
EXPLODED VIEW PARTS LIST

Ref. No.	Part No.	Description
1	3091TKC068B	CABINET ASSEMBLY, EQ770F COMPAQ 3090TKC064A LGESP,LOCAL
2	2423GC4E98A	CDT SET, M41QEE903X 01RLAD
3	3809TKC039B	BACK COVER ASSEMBLY, EQ770F 3808TKC038A LGESP,LOCAL
4	3043TKK083B	TILT SWIVEL ASSEMBLY, EQ770F T059,B053,K024 LGESP,LOCAL
5	339-002K	SCREW ASSEMBLY, TAPTITE P TYPE D5.0 L25.0 MSWR/FZMY
6	6140TC3004A	COIL,DEGAUSSING, 1410MM 16.0OHM 0.5MM 130T 17" WITH EARTH
7	6871TST247B	PWB(PCB) ASSEMBLY,SUB, EQ770F CONTROL TOTAL COMPAQ CA-90
8	6174Z-1048A	FBT (FLY BACK TRANSFORMER), FMMTC91 AM1048A (LIM SANG IL) T701
9	6200TJB001K	FILTER(CIRC), EMC 02MD4P DELTA BK CG773F
10	4810TKK176A	BRACKET, EQ770F SUPPORTER CDT(LEFT,COMPAQ17")
11	4810TKK177A	BRACKET, EQ770F SUPPORTER CDT(RIGHT,COMPAQ17")
12	4930TKK031C	HOLDER, PCB FIX , PC+ABS
13	4950TKS185B	METAL, SHIELD BOTTOM(COMPAQ,CKD,LGESP)
14	4810TKK175A	BRACKET, CQ550F HOLDER ,PCB
15	332-102F	SCREW, PTP+4*20BP(MSWR/FZMY)
16	6866TA9025J	CABLE,D-SUB UL 2990-9C(7.5) AT 1560MM COMPAQ EQ770F DM
17	332-122C	SCREW, TP1+M4*16(FZMW1)
18	6401TZZ022A	SPEAKER ASSEMBLY, CQ550F/EQ770F COMPAQ(231112-001) SPK ASSY(L/R)
19	6513TCA002A	MICRO PHONE ASSEMBLY, CQ550F/EQ770F MWM DM1530-PD1 WITH CORE
20	4950TKK334A	METAL, FIX (MICROPHONE, COMPAQ)
21	6852TAZ006E	CORD,A/V, AUDIO UL 2851 #28-2C 1500MM QUARTZ KSDPWB (MICRO-PHONE CABLE)
22	6852TDZ002A	CORD,LINE, DH-20100D KSD 1000 QUARTZ COMPAQ (12V DC CABLE)
A	6871TMT256B	PWB(PCB) ASSEMBLY,MAIN, EQ770F KQCQMS COMPAQ CA-90 TOTAL
B	6871TVT241B	PWB(PCB) ASSEMBLY,VIDEO, EQ770F VIDEO TOTAL COMPAQ CA-90
C	3313T17239B	MAIN TOTAL ASSEMBLY, EQ770F COMPAQ CA-90

WIRING DIAGRAM



TIMING CHART

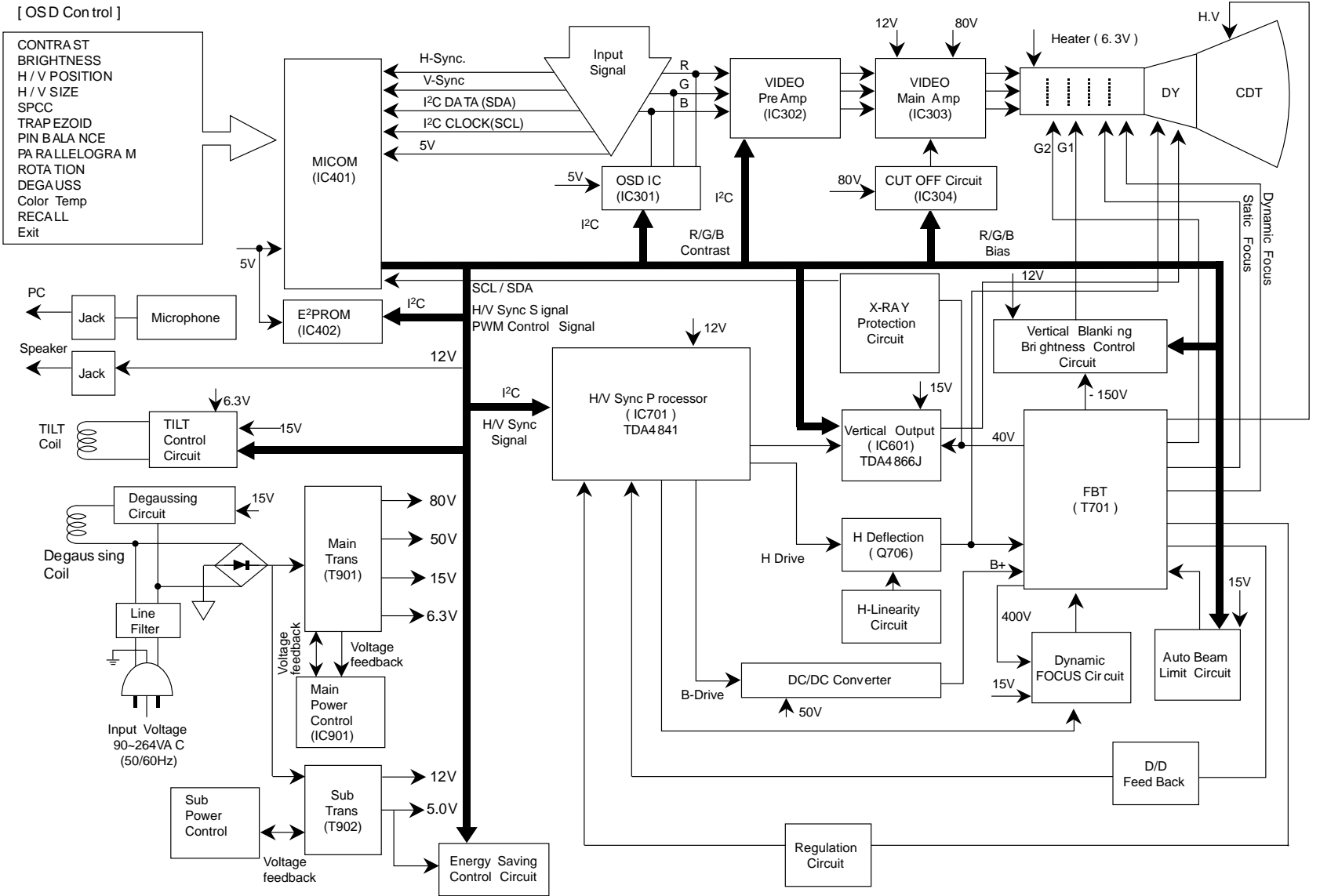


<< Dot Clock (MHz), Horizontal Frequency (kHz), Vertical Frequency (Hz), Horizontal etc... (μs), Vertical etc... (ms) >>

Mode	H/V Sort	Sync Polarity	Frequency	Total Period (E)	Video Active Time (A)	Blanking Time (B)	Sync Duration (D)	Back Porch (F)	Front Porch (C)	Resolution
1	H	+	31.468	31.778	25.418	6.360	3.823	1.909	0.638	640x350
	V	-	70.090	14.268	11.122	3.147	0.064	1.111	0.381	70Hz
2	H	-	31.469	31.778	25.422	6.356	3.813	1.907	0.636	640x480
	V	-	59.940	16.683	15.253	1.430	0.064	1.048	0.318	60Hz
3	H	-	43.269	23.112	17.778	5.334	1.556	2.222	1.556	640x480
	V	-	85.008	11.764	11.093	0.670	0.069	0.578	0.023	85Hz
4	H	-	31.470	31.780	25.420	6.360	3.810	1.910	0.640	720x400
	V	+	70.080	14.270	12.710	1.557	0.064	1.080	0.413	70Hz
5	H	+	37.879	26.400	20.000	6.400	3.200	2.200	1.000	800x600
	V	+	60.316	16.579	15.840	0.793	0.106	0.607	0.026	60Hz
6	H	+	46.880	21.330	16.160	5.170	1.620	3.230	0.320	800x600
	V	+	75.010	13.331	12.798	0.533	0.064	0.448	0.021	75Hz
7	H	+	53.674	18.631	14.222	4.409	1.138	2.702	0.569	800x600
	V	+	85.061	11.756	11.179	0.578	0.056	0.503	0.019	85Hz
8	H	-	48.363	20.677	15.754	4.923	2.092	2.462	0.369	1024x768
	V	-	60.004	16.666	15.880	0.786	0.124	0.600	0.062	60Hz
9	H	+	60.023	16.660	13.003	3.657	1.219	2.235	0.203	1024x768
	V	+	75.029	13.328	12.795	0.533	0.050	0.466	0.017	75Hz
10	H	+	68.677	14.561	10.836	3.725	1.016	2.201	0.508	1024x768
	V	+	84.997	11.765	11.183	0.582	0.044	0.524	0.015	85Hz
11	H	+	67.500	14.815	10.667	4.148	1.185	2.370	0.593	1152x864
	V	+	75.000	13.333	12.800	0.533	0.044	0.474	0.015	75Hz
12	H	+	63.98	15.63	11.85	3.78	1.04	2.30	0.44	1280x1024
	V	+	60.02	16.661	16.005	0.656	0.047	0.594	0.015	60Hz

[OSD Control]

- CONTRAST
- BRIGHTNESS
- H / V POSITION
- H / V SIZE
- SPCC
- TRAP EZOID
- PIN BALANCE
- ROTATION
- DEGAUSS
- Color Temp
- RECALL
- Exit



DESCRIPTION OF BLOCK DIAGRAM

1. SMPS(Switching Mode Power Supply)

When you turn on the power switch, the operating procedure is as follows:

- 1) The AC line voltage is rectified by the bridge diodes D900 and C908.
- 2) The control IC(IC901, IC902) starts switching and generates switching pulses in the primary turns of the SMPS transformer (T901, T902).
- 3) The switching pulses of the primary turns induce the secondary pulse of the transformer by the turn ratio. These pulses are rectified by each diode (D971, D961, D962, D951, D941, D922 and D923).
- 4) Each rectified DC voltage (80V, 50V, 15V, 12V, 6.3V and 5V) is supplied to the main circuit.

2. Over Voltage Protection Circuit

When the input voltage of IC901 Vin(pin 7) is more than Spec Voltage , all the secondary voltages of the SMPS transformer (T901) down to low value.

3. Display Power Management Circuit

- 1) OFF mode

When no input of horizontal and vertical sync, Q903 is turned on and all the secondary voltages of the SMPS transformer (T901) down to low value. Then input power consumption is below 5 watts.

4. X-ray Protection Circuit

If the high voltage of the FBT reaches up to 29KV IN an abnormal case, Q807 operates and IC401 pin 41 came to low level, then IC401 control IC701 to stop Horizontal drive pulse and stop Horizontal deflection.

5. Microprocessor Control Circuit.

- 1) Horizontal and Vertical sync signals are supplied to the microprocessor (IC401).
- 2) Microprocessor(IC401) discriminates the operating mode from the sync. polarity and resolution.
- 3) After microprocessor reads these adjusted mode data stored at EEPROM, it controls operating mode data through IIC.
- 4) Users can control screen condition by the Select, Backward, Forward buttons.

6. D/D Convert Circuit.

To obtain constant high voltage, this circuit supplies controlled DC voltage for FBT and Horizontal deflection circuit according to the horizontal sync frequency.

7. Horizontal and Vertical Sync Processor Circuit.

The horizontal and vertical sync processor IC (IC701) has a sync detector, a saw-tooth generator, and drive function. So output horizontal and vertical drive signal control screen distortions.

8. Horizontal linearity Circuit.

This circuit corrects the horizontal linearity for each horizontal sync frequency.

9. Horizontal drive and Output Circuit.

This circuit is a horizontal deflection amplifier for raster scan.

10. ABL Circuit.

This circuit limits the beam-current for the reliability of the CDT.

11. Vertical Output Circuit.

This circuit takes the vertical ramp wave from the TDA4866J(IC601) and performs the vertical deflection by supplying the saw-tooth wave current to the vertical deflection yoke.

12. Blanking and Brightness Control Circuit.

Blanking circuit eliminates the retrace line by supplying a negative pulse wave to the G1 of the CDT. Brightness control circuit is used for control of the screen brightness by changing the DC level of the G1.

13. Video Processor Circuit.

Video processor circuit consists of the video drive output block. The video drive IC(IC302) receives the video signal from PC. The gain of each channel is controlled by the voltage of contrast pin. The cut-off circuit compensate different voltage of each channel between the cathode and the G1 of the CDT.

14. OSD (On-Screen-Display) Circuit.

This circuit displays on the screen information of the monitor's status.

15. Dynamic Focus Output Circuit.

This circuit takes the vertical parabola waves from the TDA4841(IC701) and amplifies it to maintain constant focus on center and corners in the screen.

16. Image Rotation (Tilt) Circuit.

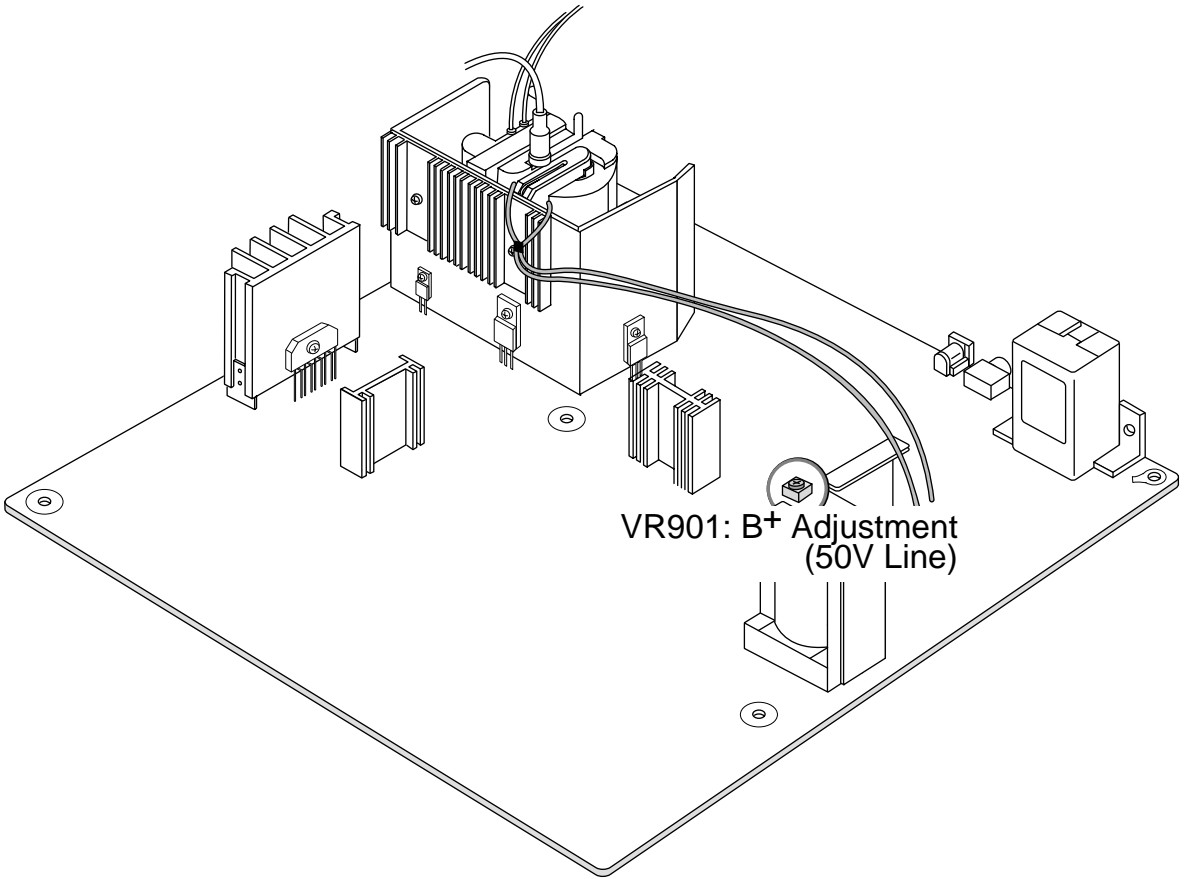
This circuit corrects the tilt of the screen by supplying the image rotation signal to the tilt coil which is attached near the deflection yoke of the CRT.

17. Speaker

Speakers are attached the monitor sides. DC power voltage(12V) is supplied to speakers.

18. Microphone

Microphone attached top of the monitor is connected to PC.



VR901: B⁺ Adjustment
(50V Line)

ADJUSTMENT

GENERAL INFORMATION

All adjustment are thoroughly checked and corrected when the monitor leaves the factory, but sometimes several adjustments may be required.

Adjustment should be following procedure and after warming up for a minimum of 30 minutes.

- Alignment appliances and tools.
 - IBM compatible PC.
 - Programmable Signal Generator.
(eg. VG-819 made by Astrodesign Co.)
 - EPROM or EEPROM with saved each mode data.
 - Alignment Adaptor and Software.
 - Digital Voltmeter.
 - White Balance Meter.
 - Luminance Meter.
 - High-voltage Meter.

AUTOMATIC AND MANUAL DEGAUSSING

The degaussing coil is mounted around the CDT so that automatic degaussing when turn on the monitor. But a monitor is moved or faced in a different direction, become poor color purity cause of CDT magnetized, then press \curvearrowright DEGAUSS on the OSD menu.

ADJUSTMENT PROCEDURE & METHOD

- Install the cable for adjustment such as Figure 1 and run the alignment program on the DOS for IBM compatible PC.
- Set external Brightness and Contrast volume to max position.

1. Adjustment for B⁺ Voltage.

- 1) Display cross hatch pattern at Mode 10.
- 2) Adjust C961 (+) voltage to 50 ± 0.5 Vdc with **VR901**.

2. Adjustment for High-Voltage.

- 1) Display cross hatch pattern at Mode 10.
- 2) DIST.ADJ→CTRL PWM → High Voltage Command.
- 3) Adjust High Voltage to $25.5\text{kV} \pm 0.1$ kVdc.
- 4) Press Enter Key.

3. Adjustment for Factory Mode (Preset Mode).

- 1) Display cross hatch pattern at Mode 10.
- 2) Run alignment program for EQ770F on the IBM compatible PC.
- 3) EEPROM → ALL CLEAR → Y(Yes) command.
<Caution> Do not run this procedure unless the EEPROM is changed. All data in EEPROM (mode data and color data) will be erased.
- 4) Power button of the monitor turn off → turn on.
- 5) COMMAND→PRESET START→Y(Yes) command.
- 6) DIST. ADJ. → CTRL PWM → TILT command.

- 7) Adjust tilt as arrow keys to be the best condition.
- 8) DIST. ADJ. → BALANCE command.
- 9) Adjust parallelogram as arrow keys to be the best condition.
- 10) Adjust balance of pin-balance as arrow keys to be the best condition.
- 11) DIST. ADJ. → FOS. ADJ command.
- 12) Adjust V-SIZE as arrow keys to 230 ± 4 mm.
- 13) Adjust V-POSITION as arrow keys to center of the screen.
- 14) Adjust H-SIZE as arrow keys to 306 ± 4 mm.
- 15) Adjust H-POSITION as arrow keys to center of the screen.
- 16) Adjust S-PCC (Side-Pincushion) as arrow keys to be the best condition.
- 17) Adjust TRAPEZOID as arrow keys to be the best condition.
- 18) Save of the Mode 1.
- 19) PRESET EXIT → Y (Yes) command.
- 20) Display from Mode 2 to 12 and repeat above from number 5) to 19)

4. Adjustment for White Balance and Luminance.

- 1) Set the White Balance Meter.
- 2) Press the DEGAUSS on the OSD menu for demagnetization of the CDT.
- 3) COLOR ADJ. → LUMINANCE command of the alignment program.
- 4) Set Brightness and Contrast to Max position, Sub-Brightness to 80(50) position.
- 5) Display color 0,0 pattern at Mode 10.
- 6) COLOR ADJ.→ BIAS ADJ.→ COLOR No. → 1 command of the alignment program.
- 7) Check whether green color or not at R-BIAS to 0 position, B-BIAS to min position and G-BIAS to 150(96) position. Adjust G2 (screen) command to 0.4 ± 0.1 FL of the raster luminance.
- 8) Adjust R-BIAS and B-BIAS command to $x=0.281 \pm 0.005$ and $y=0.311 \pm 0.005$ on the White Balance Meter with PC arrow keys.
- 9) Adjust SUB-Brightness command to 0.6 ± 0.1 FL of the raster luminance.
- 10) After push the "ENTER" key, and "COMMAND → PRESET EXIT → Y(Yes)" command.
- 11) Set external Brightness to cutoff ($0.06\text{FL} \pm 0.01$).
- 12) Display color 15,0 five Window pattern (50x50mm) at Mode 10.
- 13) DRIVE ADJ.→ No 1. command.

- 14) Set SUB-CONTRAST 110(6E) (decimal) position.
- 15) Set G-DRIVE to 100(64) at DRIVE of the alignment program.
- 16) Adjust R-DRIVE and B-DRIVE command to white balance $x=0.281\pm0.003$ and $y=0.311\pm0.003$ on the White Balance Meter with PC arrow keys.
- 17) Adjust SUB-CONTRAST command to $55\pm1\text{FL}$ of the color 15,0 box pattern (50x50mm) luminance at mode 10 and save in color 1.
- 18) After push the "ENTER" key, and "COMMAND → PRESET EXIT → Y(Yes)" command.
- 19) Display color 15,0 full white patten at Mode 10.
- 20) COLOR ADJ. → LUMINANCE → ABL command.
- 21) Adjust ABL to $33\pm1\text{FL}$ of the luminance.
- 22) Exit from the program.

5. Adjustment for Color Management.

- 1) Display color 15,0 Window pattern(70x70mm) at Mode 8.
- 2) Measure color management data at backraster cut-off, save it in EDID data.

6. Adjustment for Focus.

- 1) Display me pattern in full screen at Mode 10.
- 2) Adjust two Focus control on the FBT that focus should be the best condition.

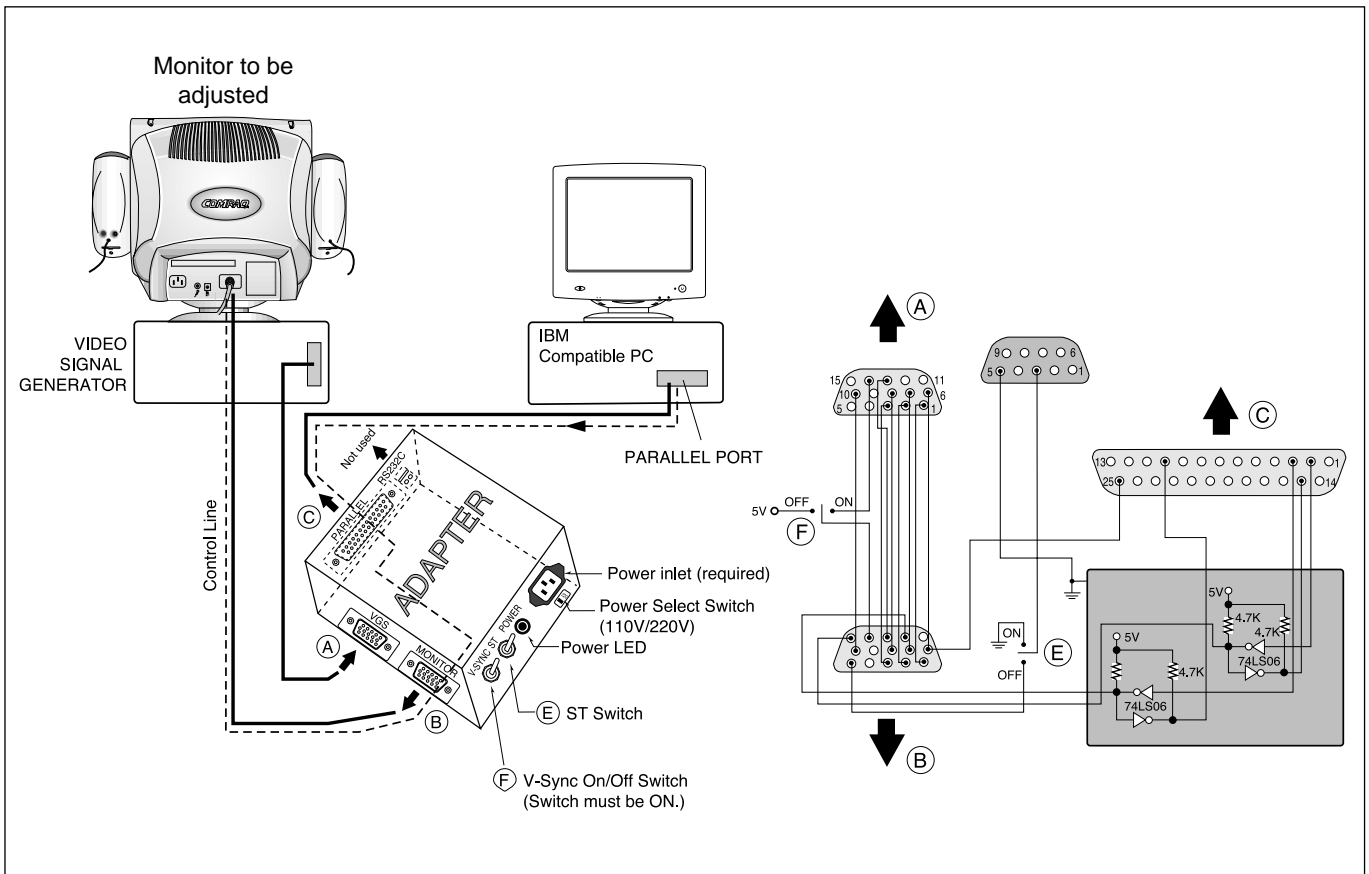
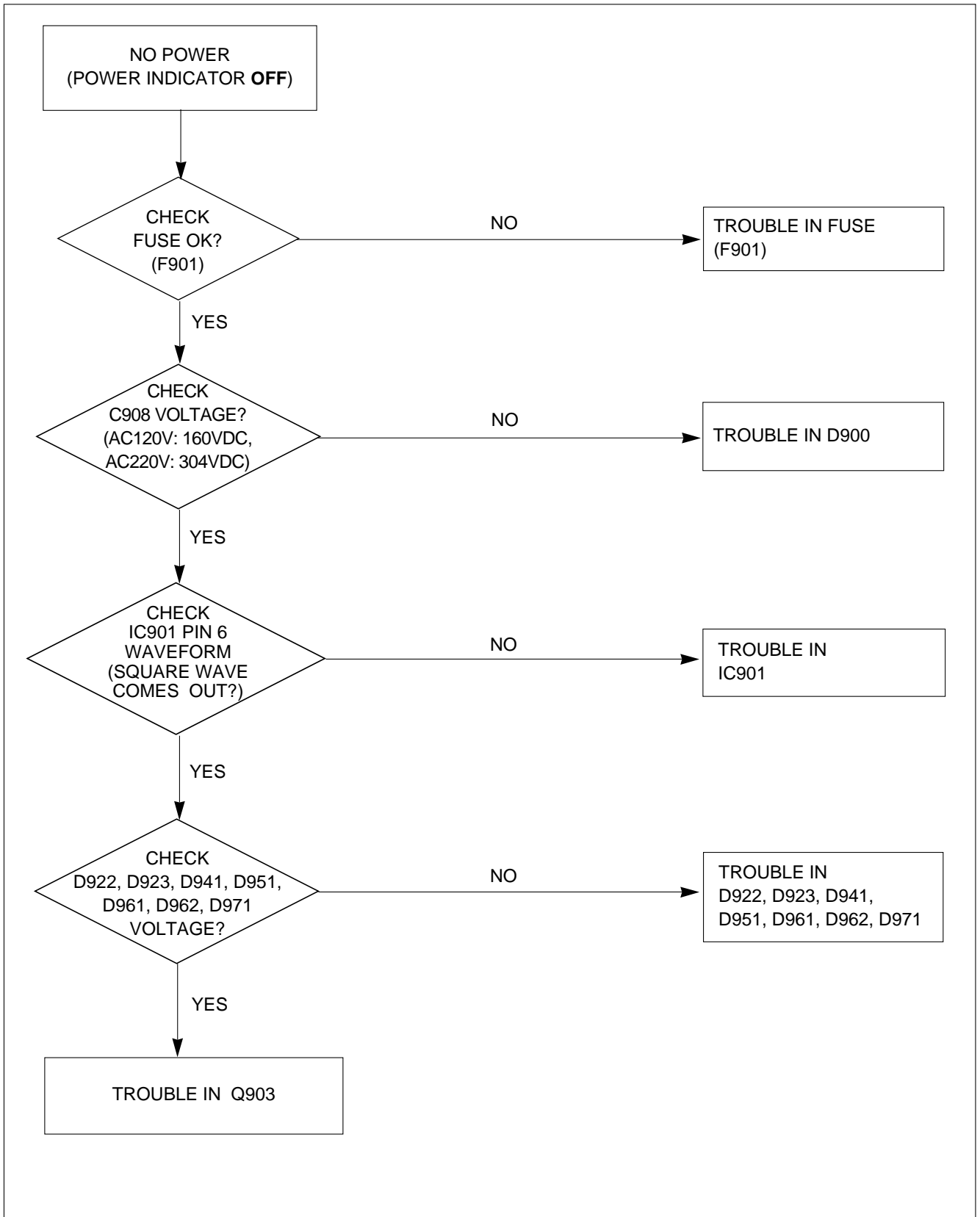


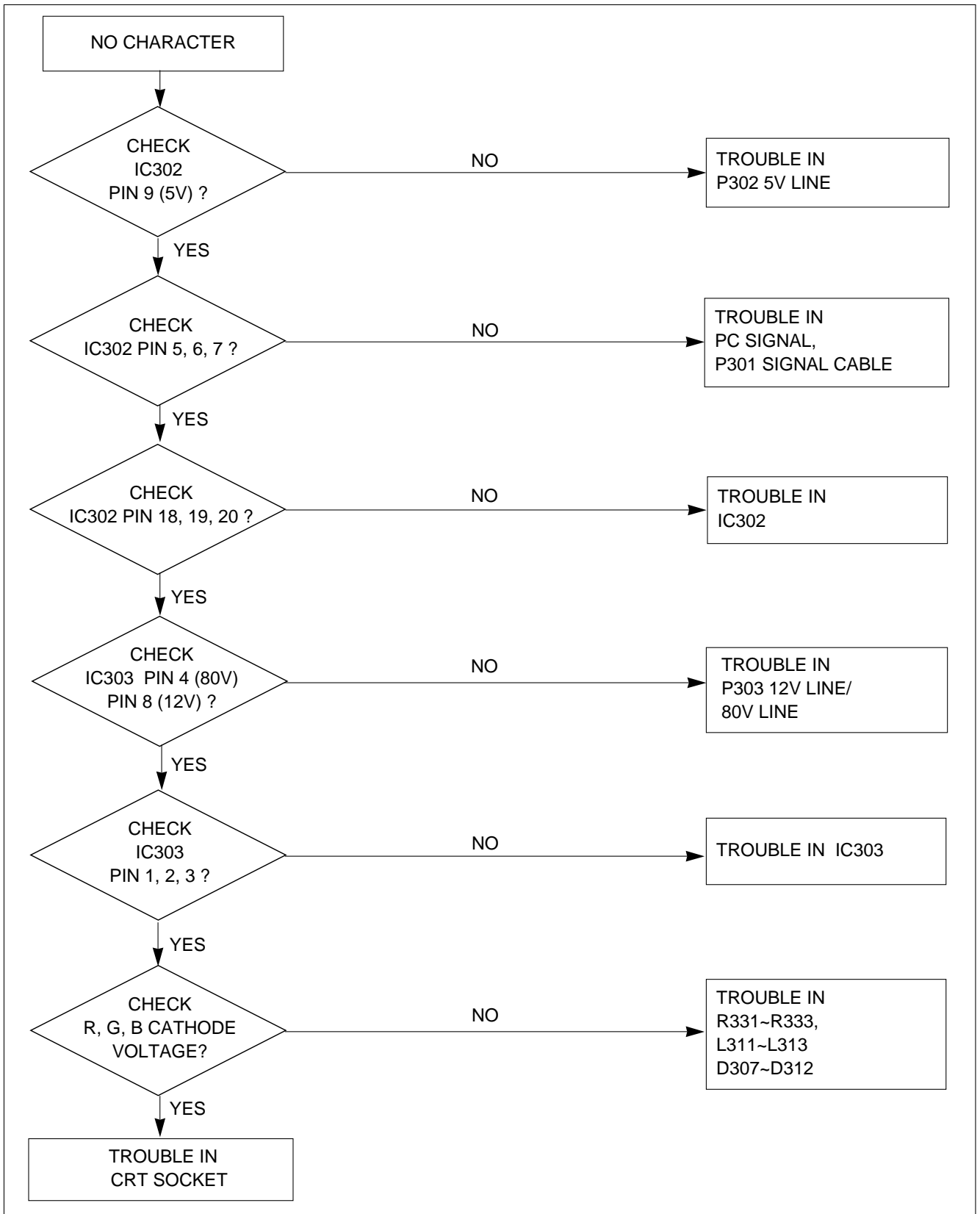
Figure 1. Cable Connection

TROUBLESHOOTING GUIDE

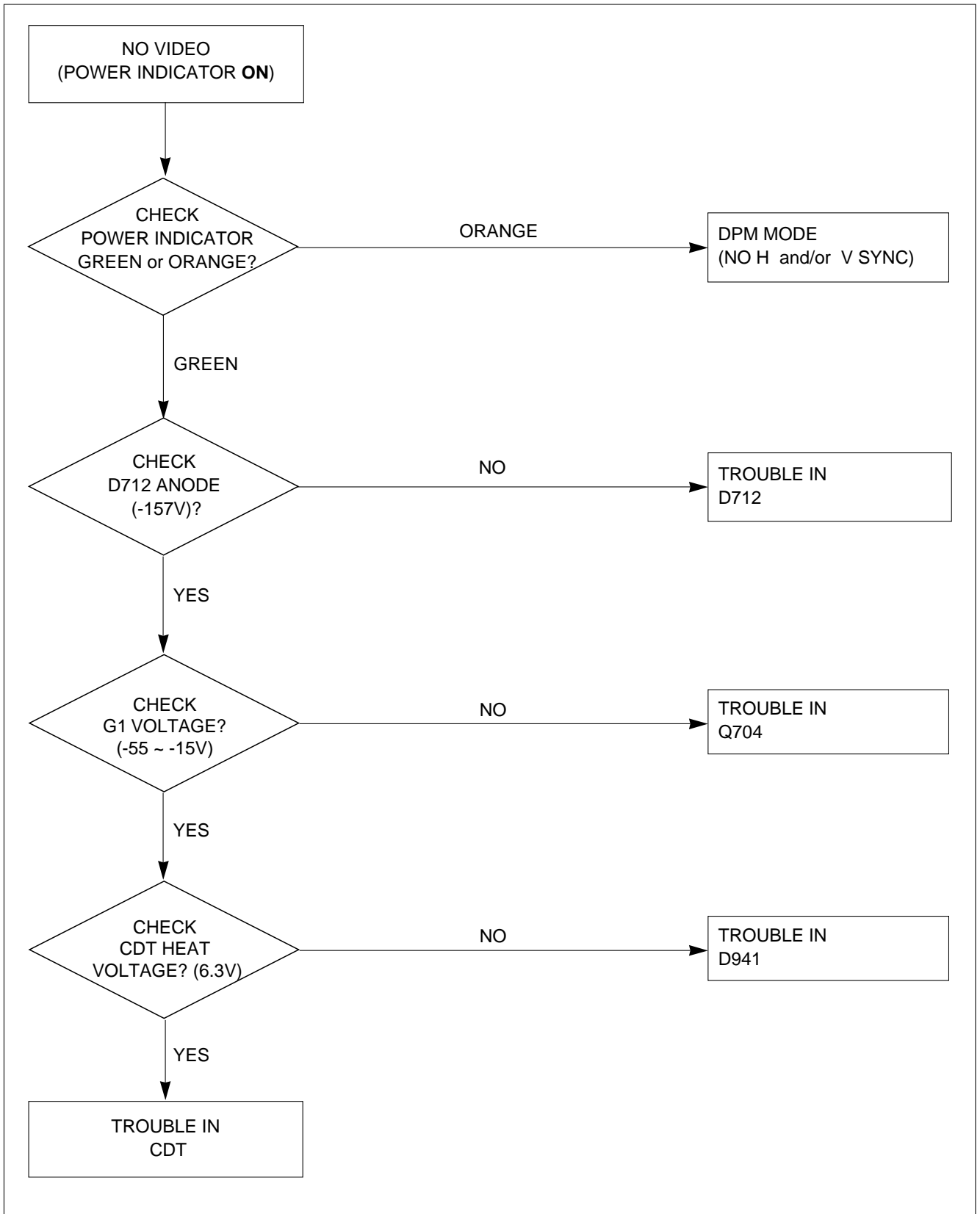
1. NO POWER



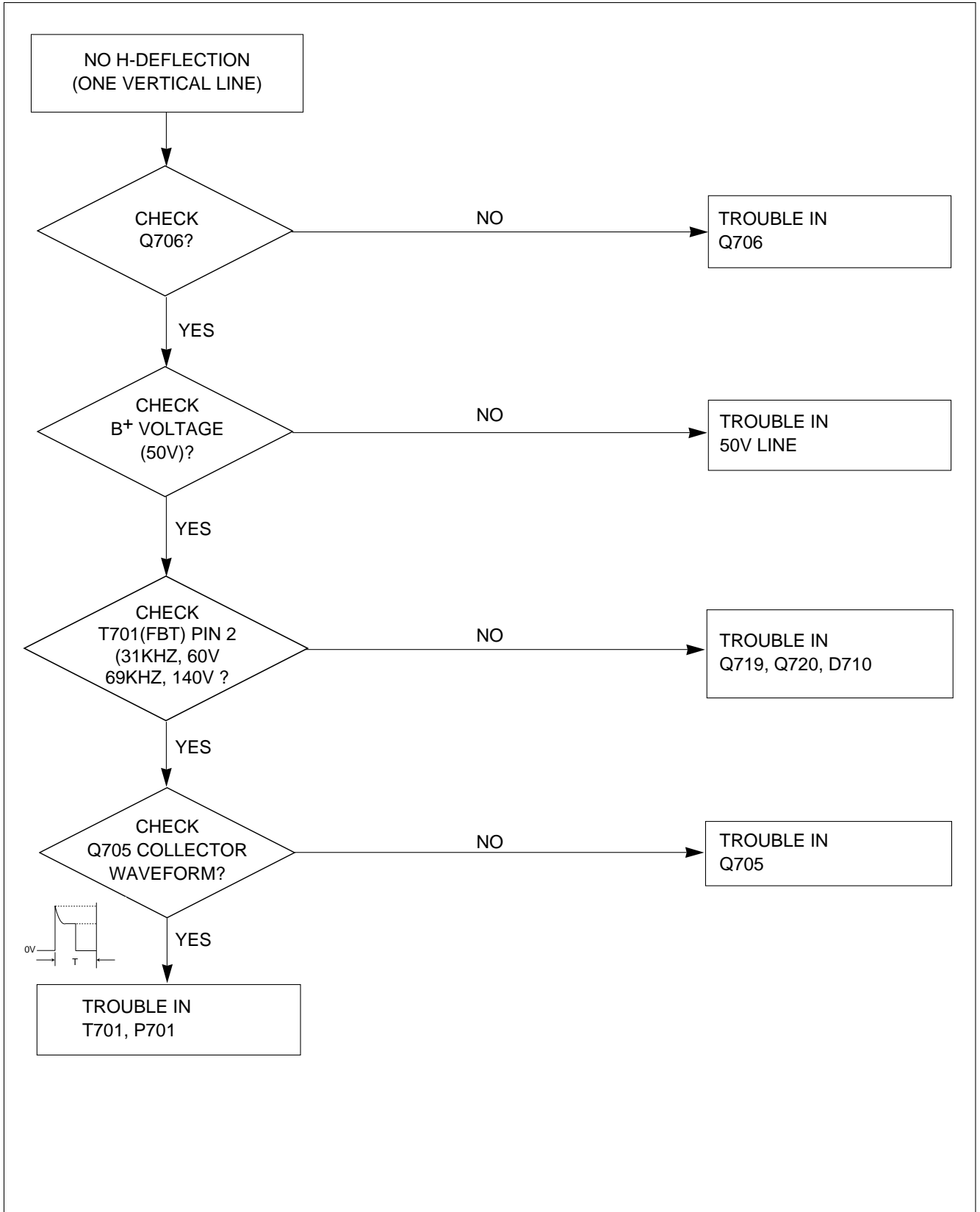
2. NO CHARACTER



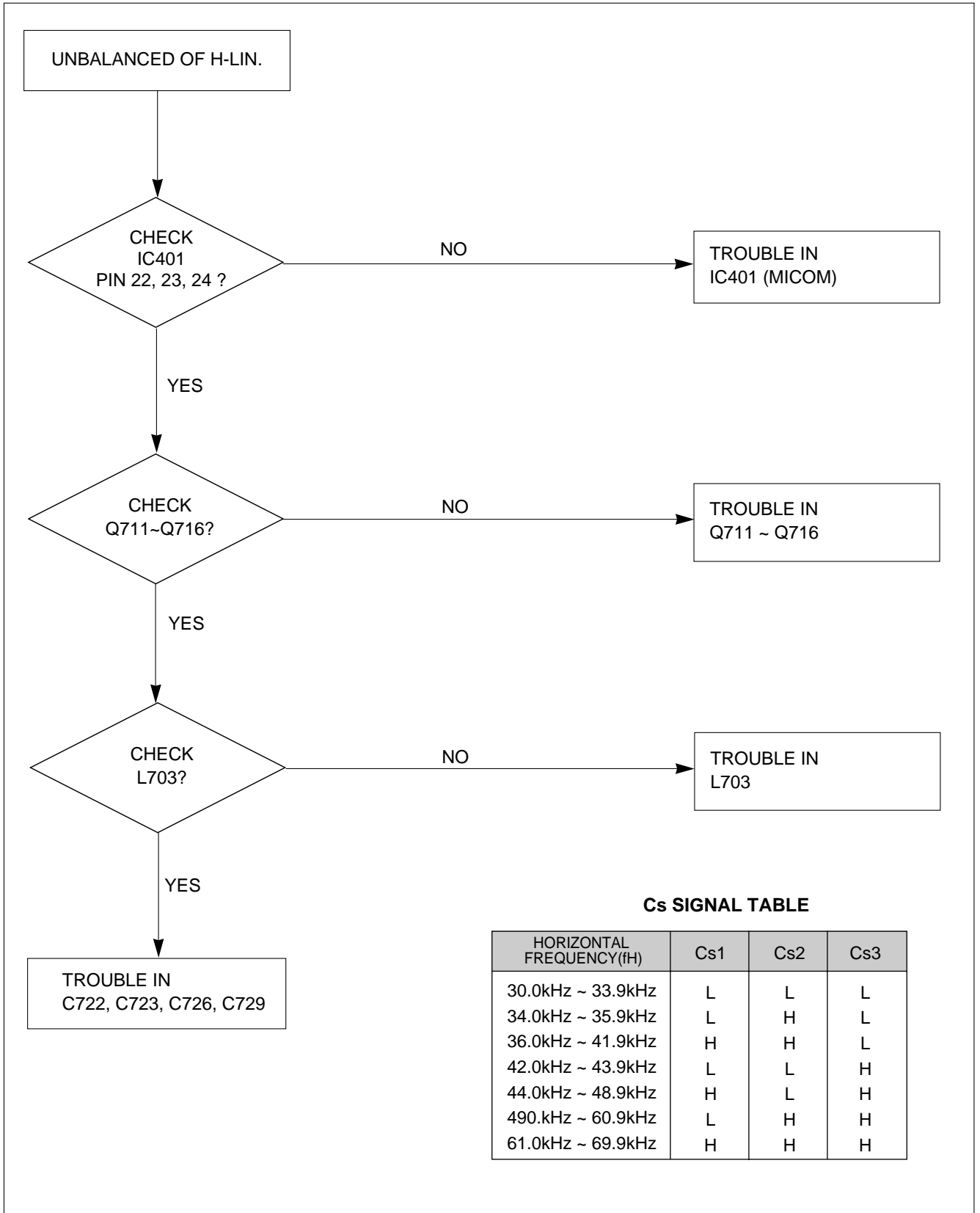
3. NO RASTER



4. NO HORIZONTAL DEFLECTION



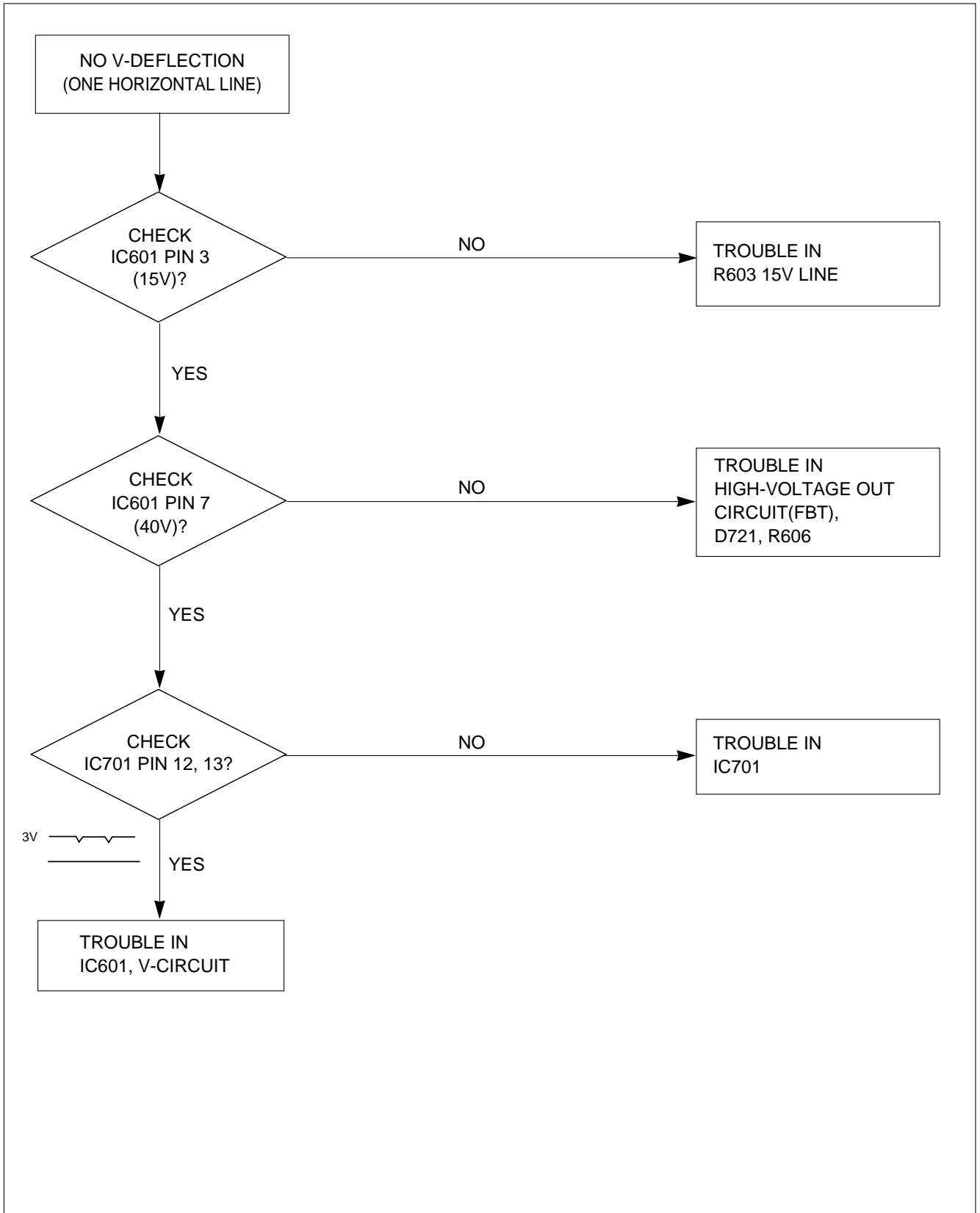
5. TROUBLE IN H-LINEARITY



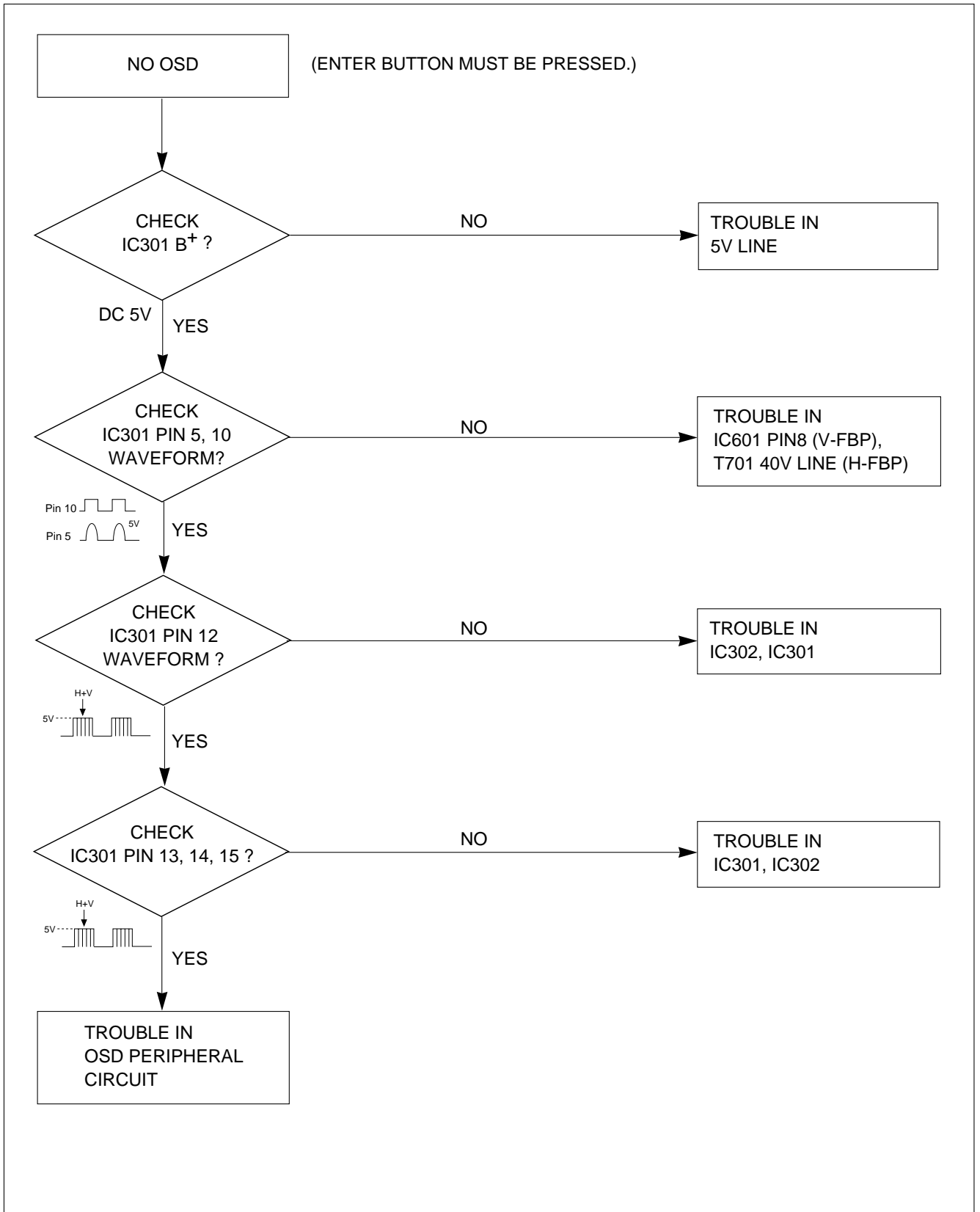
Cs SIGNAL TABLE

HORIZONTAL FREQUENCY(fH)	Cs1	Cs2	Cs3
30.0kHz ~ 33.9kHz	L	L	L
34.0kHz ~ 35.9kHz	L	H	L
36.0kHz ~ 41.9kHz	H	H	L
42.0kHz ~ 43.9kHz	L	L	H
44.0kHz ~ 48.9kHz	H	L	H
49.0kHz ~ 60.9kHz	L	H	H
61.0kHz ~ 69.9kHz	H	H	H

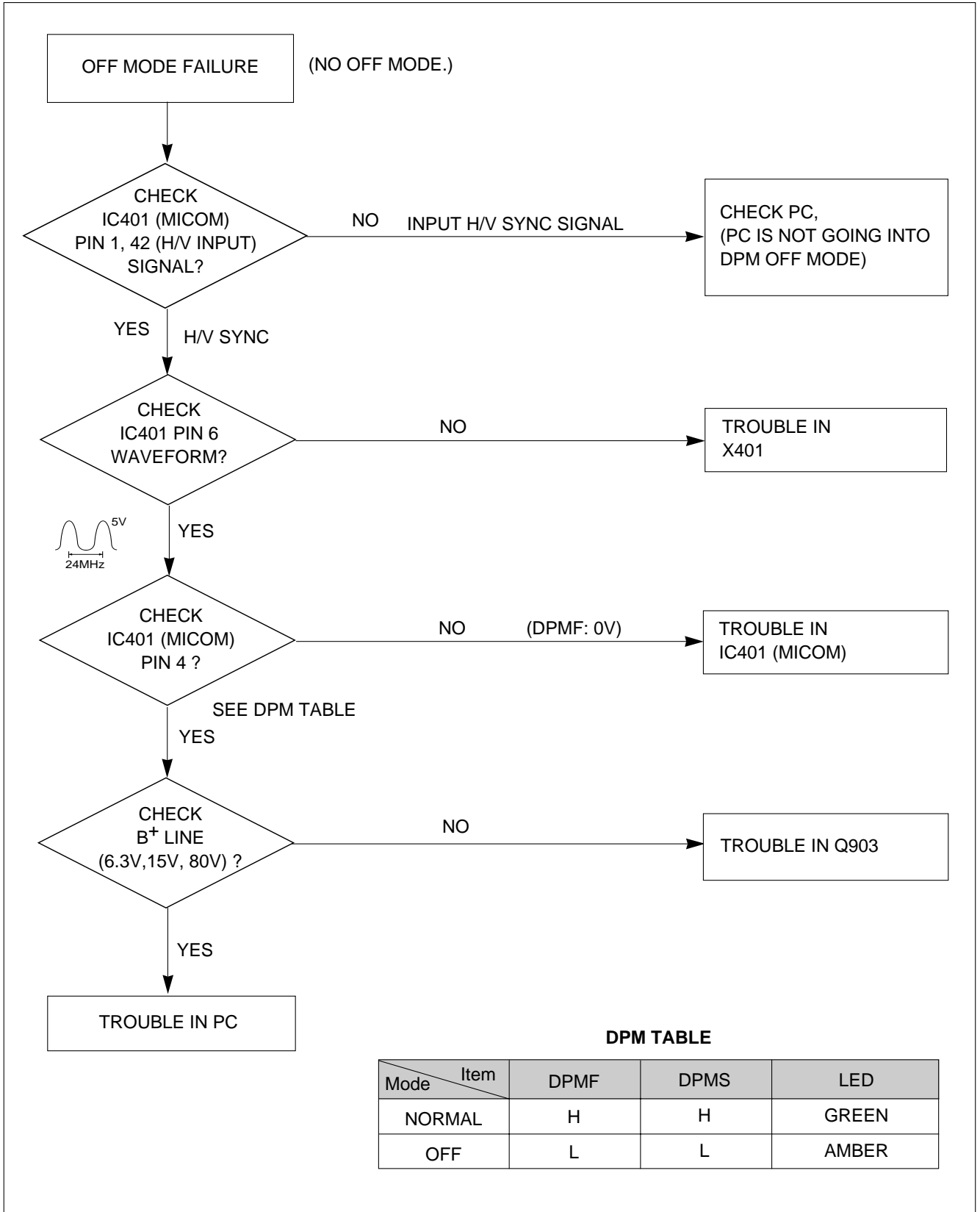
6. NO VERTICAL DEFLECTION



7. TROUBLE IN OSD



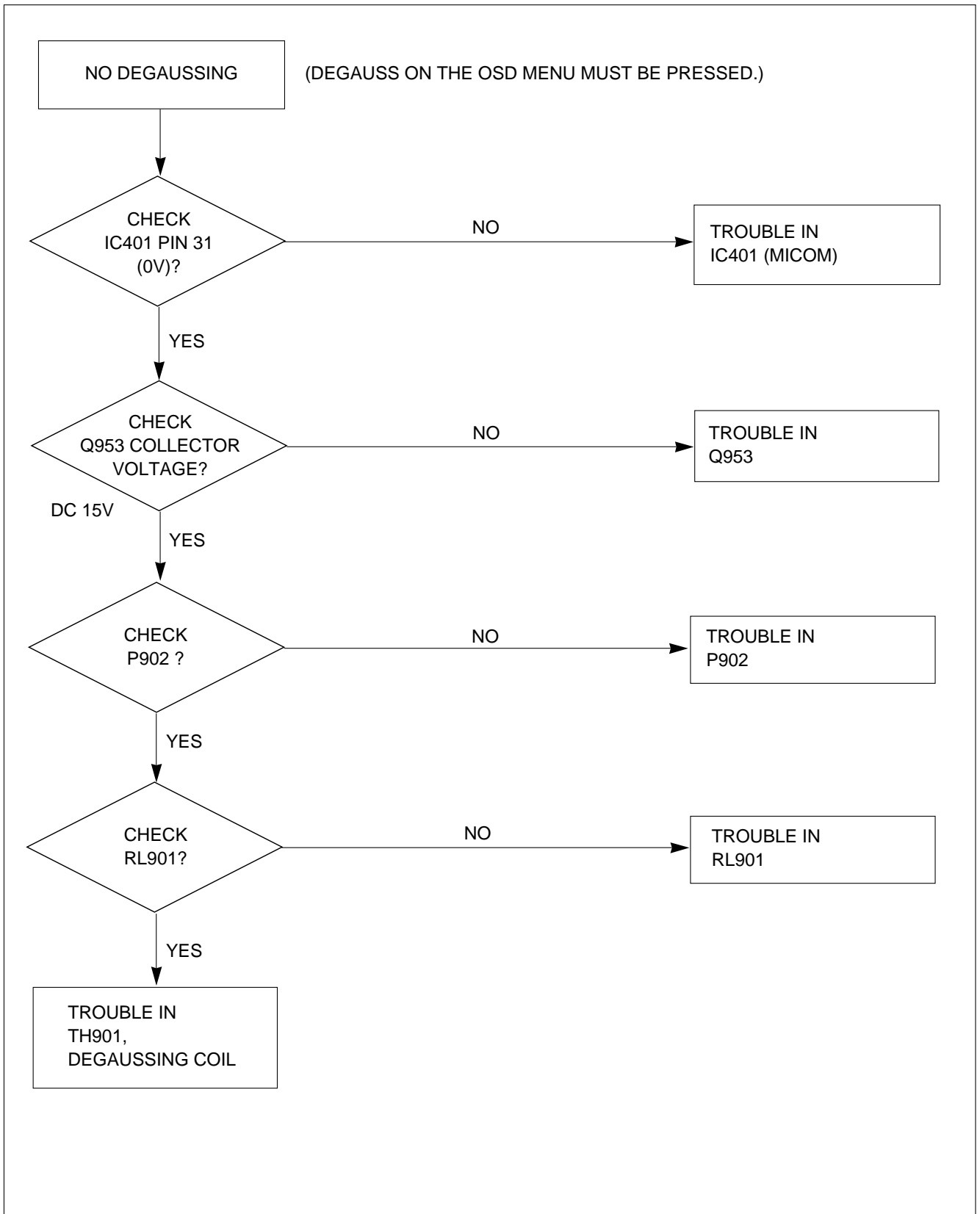
8. TROUBLE IN DPM



DPM TABLE

Mode \ Item	DPMF	DPMS	LED
NORMAL	H	H	GREEN
OFF	L	L	AMBER

9. NO DEGAUSSING



10. NO TILT (NO ROTATION)

