TAXAN

# SERVICE MANUAL

## 12" DISPLAY MONITOR

MODEL **KX-1212/#121**
**KX-1213/#122**

# IMPORTANT SERVICE SAFETY INFORMATION FOR MODEL KX-1212 KX-1213

Operation of monitor outside of cabinet or with back removed involves a shock hazard. Work on these models should only be performed by those who are thoroughly familiar with precautions necessary when working on high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B plus and high voltage RF terminals are exposed which, if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis, escutcheon and picture tube dag cluster when operating chassis. The +B Adj. Control in this monitor is sealed in order to protect the user from X-ray irradiation. The +B Adj. control should not normally have to be adjusted. But if it is, or if it is replaced due to damage, check the +B voltage to assure that it is within specifications after adjustment. Then seal this control according to the manufacture's specification.

Certain H V failures can increase X-ray radiation. Monitors should not be operated with H V levels exceeding the specified rating for their chassis type. The maximum operating H V specified for the chassis used in these monitor is 13.8 KV ± 0.5 at zero beam current with a line voltage of 120 V AC. Higher voltage may also increase possibility of failure in H V supply.

It is important to maintain specified values of all components in the horizontal and high voltage circuits and anywhere else in the monitor that could cause a rise in high voltage or operating supply voltage. No changes should be made to the original design of the monitor. Components shown in the shaded areas on the schematic diagram and/or identified by ⚠ in the replacement parts list should be replaced only with exact Factory recommended replacement parts.
The use of unauthorized substitute parts may create a shock, fire, X-irradiation, or other hazard.
To determine the presence of high voltage, use an accurate, high impedance, H V meter connected between the second anode lead and the CRT dag grounding device. When servicing the High Voltage System, remove static charge from it by connecting a 10K ohms resistor in series with an insulated wire (such as a test probe) between picture tube dag and 2nd anode lead. (AC line cord disconnected from AC supply.)

The picture tube used in this monitor employs integral implosion protection. Replace with a tube of the same type number for continued safety. Do not lift picture tube by the neck. Handle the picture tube only when wearing shatter-proof goggles and after discharging the high voltage completely. Keep others without shatter-proof goggles away.

When removing springs or spring mounting parts from the chassis, shatter-proof goggles must be worn. Keep others without shatter-proof goggles away.

***** SAFETY INSPECTION *****
Before returning the monitor to the user, perform the following safety checks:

***** PROTECT YOUR CUSTOMER *****

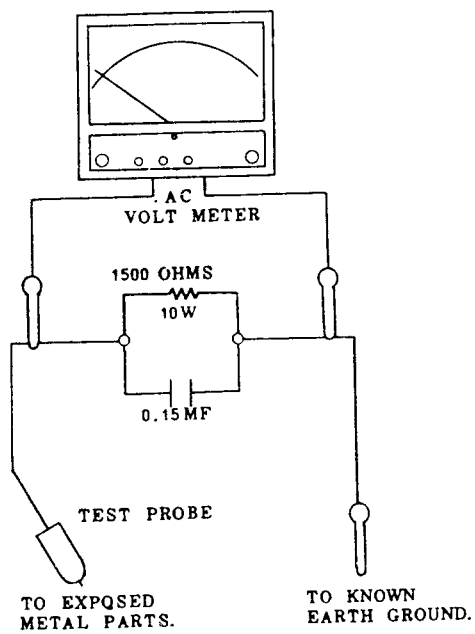
1. Inspect all lead dress to make certain that leads are not pinched and that hardware is not lodged between the chassis and other metal parts in the monitor.

2. Replace all protective devices such as non-metallic control knobs, cabinet back, adjustment covers, shields, etc.

3. To be sure that no shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (jack, cabinet metal, screw heads, knobs, shafts, etc.) in the following manner.

Plug the AC line cord directly into a 120V AC receptacle. (Do not use an Isolation Transformer during these checks.) All tests must be repeated with the AC line cord plug connections reversed. (If necessary, a non-polarized AC adapter plug must be used for the purpose of completing these checks. Do not otherwise operate the monitor with an adapter.)
If available, measure leakage current using an accurate leakage current tester. Any reading of 0.35 MA or more is excessive and indicates a potential shock hazard which must be corrected before returning the monitor to the owner.

If a reliable leakage current tester is not available, this alternate method of measurement should be used. Using two clip leads, connect a 1500 ohms, 10 watts resistor paralleled by a 0.15 MF capacitor, in series with a known earth ground, such as a water pipe or conduit, and the metal part to be checked. Use a VTVM or VOM with 1000 ohms per volt, or higher, sensitivity to measure the AC voltage drop across the resistor. Any reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard. This must be corrected before returning the monitor to the owner.



## Outlined product

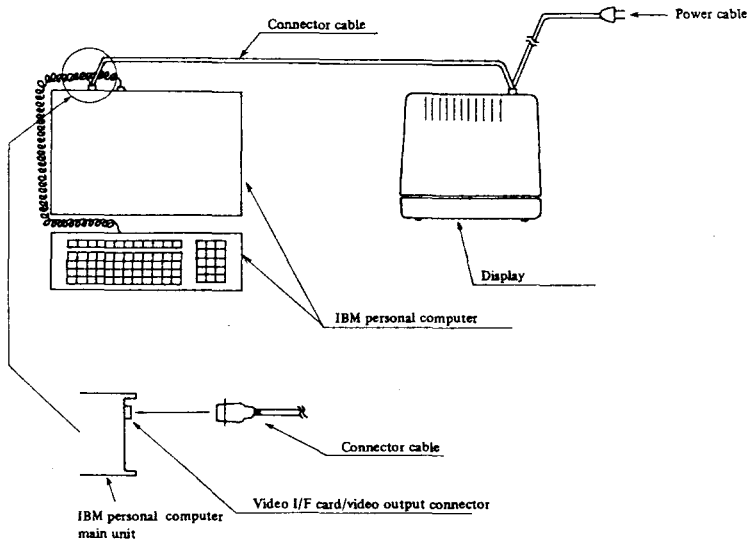
This machine is a 12" display monitor used as a terminal connected to IBM personal computers. TTL separate signals are used for the input.

## Features

This display monitor is designed for use with the IBM personal computer.
The display monitor uses the latest 12-inch CRT with 90-degree deflection and anti-implosion mechanism. This enables display of fine images.
The latest semiconductor technology and high-quality architecture have resulted in high reliability and performance for heavy-duty use.

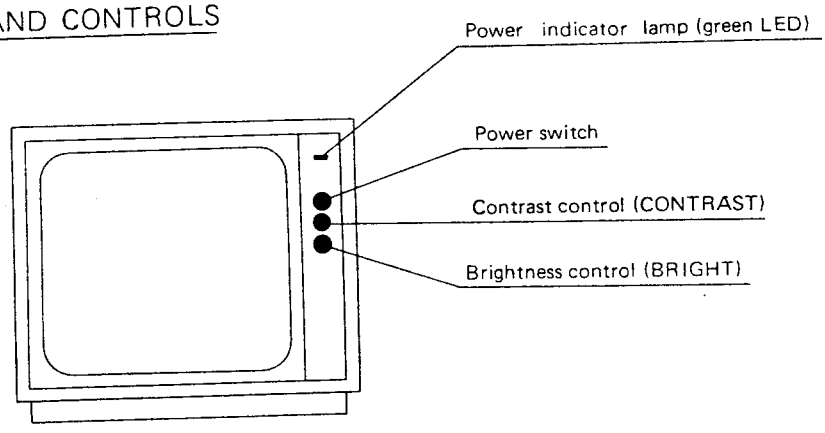
## Operation

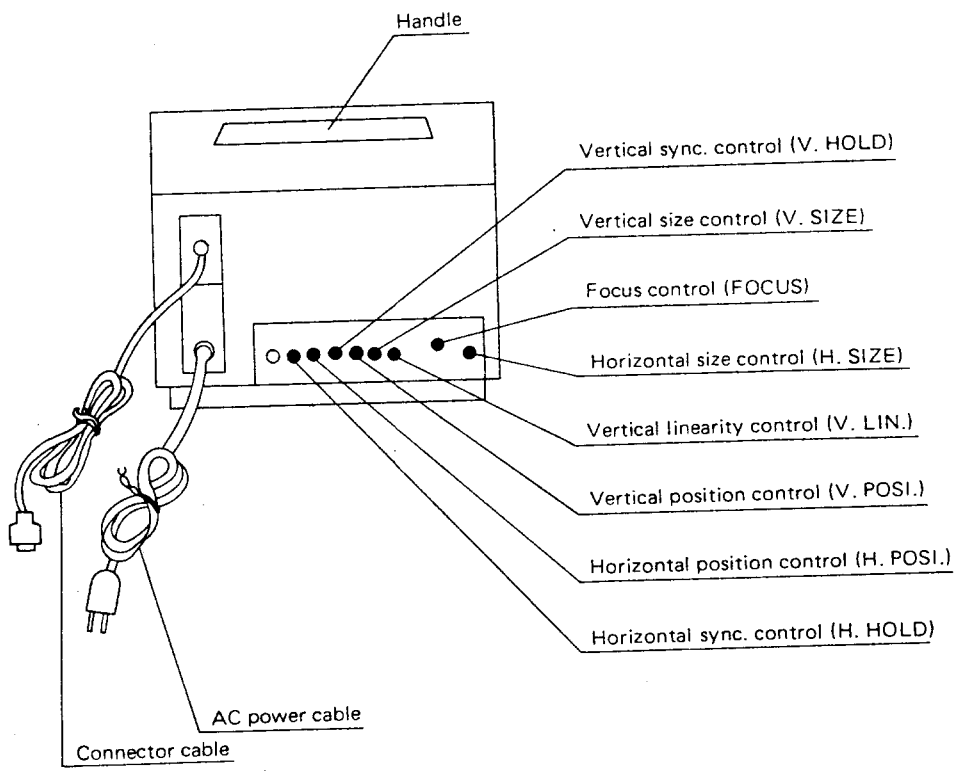
1. Insert the AC power plugs of both monitor and computer in the AC power outlet.
2. Connect the connector cable provided on the rear panel of the monitor to the computer, with the attached video cable. (See the figure below.)
3. Turn on the power switches of both monitor and computer, and the power lamp (green LED provided at the top right of the front panel of the monitor) lights and then the raster (or image) appears on the screen.




Connection Example

## LAMP AND CONTROLS



## Adjusting The Display

1. CONTRAST
   The contrast becomes higher as the CONTRAST control is turned clockwise, and becomes lower as it is turned counterclockwise.

2. BRIGHT
   The screen becomes brighter as the BRIGHT control is turned clockwise, and becomes darker as it is turned counterclockwise.

3. V. HOLD
   When the screen image flows or overlaps vertically, adjust the V. HOLD to get the correct image. (See illustration 1.)

4. H. HOLD
   When the screen image appears to give a horizontally striped pattern or the image shifts left or right, adjust the H. HOLD to get the correct image. (See illustration 2.)

5. V. SIZE
   When the vertical size of the screen image is too short or too long, adjust the V. SIZE to get the correct size. (See illustration 3.)

6. H. SIZE
   When the horizontal size of the screen image is too short or too long, adjust the H. SIZE to get the correct size. (See illustration 4.)

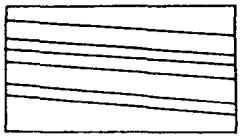
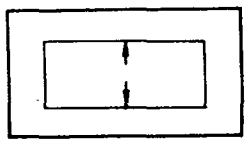
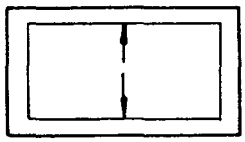
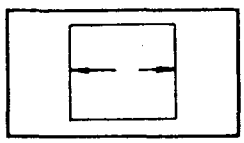
7. V. POSI.
   When the screen image shifts vertically, adjust the V. POSI. to get the correct image. (See illustration 5.)

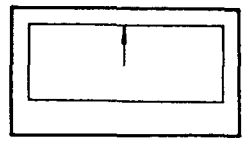
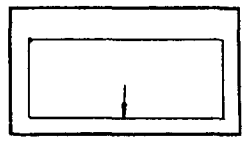
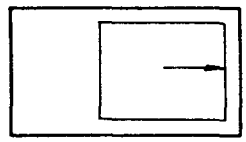
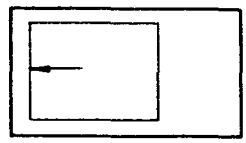
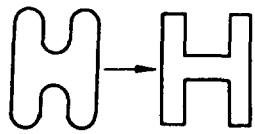
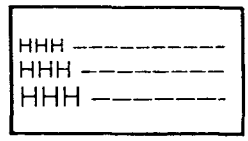
8. H. POSI.
   When the screen image shifts horizontally, adjust the H. POSI. to get the correct image. (See illustration 6.)

9. FOCUS
   Adjust the FOCUS so as to get the sharpest image. (See illustration 7.)

10. V. LIN.
    Adjust the V. LIN. so that the height of characters is even over the whole screen. (See illustration 8.)

11. SUB-BRIGHT
    Turn the BRIGHT control to maximum and the CONTRAST control to minimum. Adjust the SUB-BRIGHT control (R283) just before the video with an intensity signal disappears.

| | Problem | Remedy |
|---|---|---|
| 1 | The screen image flows vertically.  | Adjust the V. HOLD control. |
| 2 | The screen image appears to give a horizontally striped pattern.  | Adjust the H. HOLD control. |
| 3 | The vertical size of the screen image is too short.  | Turn the V. SIZE control counter-clockwise. |
| | The vertical size of the screen image is too long.  | Turn the V. SIZE control clockwise. |
| 4 | The horizontal size of the screen image is too wide.  | Turn the H. SIZE control clockwise with the attached core rod. |
| | The horizontal size of the screen image is too narrow.  | Turn the H. SIZE control counterclock-wise with the attached core rod. |

| | Problem | Remedy |
|---|---|---|
| 5 | The screen image shifts up.  | Turn the V.POSI. control counter-clockwise. |
| | The screen image shifts down.  | Turn the V. POSI. control clockwise. |
| 6 | The screen image shifts right.  | Turn the H. POSI. control counter-clockwise. |
| | The screen image shifts left.  | Turn the H. POSI. control clockwise. |
| 7 | The screen image is unfocused.  | Adjust the FOCUS control with the attached screw-driver. |
| 8 | The height of characters is uneven over the whole screen.   | Adjust the V. LIN. control. |

# KX-1212
# KX-1213 SPECIFICATIONS

## GENERAL SPECIFICATIONS

CRT (Braun) tube:
12" 635 mmR
- Screen:
  Non-glare
- Phosphor:
  P39, PUL

Input signal:
T.T.L. Level Separate signals.
H.SYNC: TTL compatible positive sense.
V.SYNC: TTL compatible negative sense.

Source voltage:
Commercial use power source for each country

Power consumption:
24 W (0.22 A)

Cabinet:
Plastic

External dimension:
355 (W) x 295 (H) x 318 (D) mm
(14 [W] x 11.6 [H] x 12.5 [D] in.)

Weight:
6.8 kgs. (15.0 lbs.)

Scanning frequency:
18.432 kHz (horizontal)
50 Hz (vertical)

## ELECTRICAL SPECIFICATIONS

Video amp. band width:
More than 20 MHz (-3 dB)

Non-linearity:
10% maximum (horizontal)
10% maximum (vertical)

Display area:

| | |
|---|---|
| 205 ± 4 mm | (8.1 in.) |
| 150 ± 4 mm | (5.9 in.) |

Geometric distortion:
2.0% maximum

Storage temperature:
–40 ~ +50°C

Operation temperature:
-10 ~ +40°C

Controls:

| Internal | External |
|---|---|
| a) Focus | a) Vertical hold |
| b) Horizontal size | b) Vertical size |
| c) Sub-brightness | c) Vertical linearity |
| | d) Vertical position |
| | e) Horizontal hold |
| | f) Horizontal position |
| | g) Contrast |
| | h) Brightness |

Type:

| Model number | Phosphor |
|---|---|
| KX-1212-□ | Green (P39) |
| KX-1213-□ | Amber (PUL) |

└ Power source type

U: 121, 122, 120 V AC 60Hz (USA)
A: 240 V AC 50Hz (AUSTRALIA)
E: 220 V AC 50Hz (EUROPE)
B: 240 V AC 50Hz (U.K.)

| SYMBOL NO. | DESCRIPTION | | | Q'TY |
|---|---|---|---|---|
| FIXED RESISTOR | | | | |
| R222 | CARBON | 1/8W | 68–J | 1 |
| R230 | CARBON | 1/8W | 100–J | 1 |
| R232 | CARBON | 1/8W | 100–J | 1 |
| R234 | CARBON | 1/8W | 100–J | 1 |
| R601 | CARBON | 1/8W | 100–J | 1 |
| R730 | CARBON | 1/8W | 100–J | 1 |
| R721 | CARBON | 1/8W | 240–J | 1 |
| R231 | CARBON | 1/8W | 510–J | 1 |
| R632 | CARBON | 1/8W | 820–J | 1 |
| R628 | CARBON | 1/8W | 820–J | 1 |
| R620 | CARBON | 1/8W | 1K–J | 1 |
| R631 | CARBON | 1/8W | 1K–J | 1 |
| R712 | CARBON | 1/8W | 1K–J | 1 |
| R219 | CARBON | 1/8W | 1.5K–J | 1 |
| R220 | CARBON | 1/8W | 1.5K–J | 1 |
| R610 | CARBON | 1/8W | 2.2K–J | 1 |
| R603 | CARBON | 1/8W | 8.2K–J | 1 |
| R604 | CARBON | 1/8W | 10K–J | 1 |
| R605 | CARBON | 1/8W | 10K–J | 1 |
| R613 | CARBON | 1/8W | 16K–J | 1 |
| R702 | CARBON | 1/8W | 13K–J | 1 |
| R706 | CARBON | 1/8W | 15K–J | 1 |
| R615 | CARBON | 1/8W | 20K–J | 1 |
| R614 | CARBON | 1/8W | 20K–J | 1 |
| R609 | CARBON | 1/8W | 20K–J | 1 |
| R701 | CARBON | 1/8W | 68K–J | 1 |
| R612 | CARBON | 1/4W | 3.3–J | 1 |
| R711 | CARBON | 1/4W | 33–J | 1 |
| R710 | CARBON | 1/4W | 47–J | 1 |
| R630 | CARBON | 1/4W | 100–J | 1 |
| R902 | CARBON | 1/4W | 680–J | 1 |
| R618 | CARBON | 1/4W | 680–J | 1 |
| R731 | CARBON | 1/4W | 1K–J | 1 |
| R709 | CARBON | 1/4W | 1.6K–J | 1 |
| R704 | CARBON | 1/4W | 5.6K–J | 1 |
| R607 | CARBON | 1/4W | 30K–J | 1 |
| R285 | CARBON | 1/4W | 82K–J | 1 |
| R619 | CARBON | 1/2W | 6.2–J | 1 |
| R225 | CARBON | 1/2W | 100–J | 1 |
| R910 | CARBON | 1/2W | 330–J | 1 |
| R623 | CARBON | 1/2W | 390–J | 1 |
| R705 | CARBON | 1/2W | 430–J | 1 |
| R784 | CARBON | 1/2W | 1K–J | 1 |
| R720 | CARBON | 1/2W | 8.2K–J | 1 |
| R781 | CARBON | 1/2W | 10K–J | 1 |
| R221 | OXIDE METAL | 3W | 1K–J | 1 |
| R782 | METAL | 1/2W | 560K–J | 1 |

| SYMBOL NO. | DESCRIPTION | | | Q'TY |
|---|---|---|---|---|
| VARIABLE RESISTOR | | | | |
| R233 | CARBON | 1/4W | 500–J | 1 |
| R283 | CARBON | 0.1W | 500K–J | 1 |
| R284 | CARBON | 1/4W | 500K–J | 1 |
| VS690 | CARBON | 0.1W | | 1 |
| R783 | METAL | 1/2W | 2M–J | 1 |
| CAPACITOR | | | | |
| C602 | CERAMIC | 50V | 68P–K | 1 |
| C775 | CERAMIC | 50V | 100P–K | 1 |
| C611 | CERAMIC | | 4700P–K | 1 |
| C230 | CERAMIC | | 10000P–K | 1 |
| C910 | ELECT. | 10V | 330μ–M | 1 |
| C601 | ELECT. | 16V | 10μ–M | 1 |
| C610 | ELECT. | 16V | 22μ–M | 1 |
| C205 | ELECT. | 16V | 100μ–M | 1 |
| C608 | ELECT. | 16V | 100μ–M | 1 |
| C613 | ELECT. | 16V | 470μ–M | 1 |
| C707 | ELECT. | 16V | 470μ–M | 1 |
| C713 | ELECT. | 16V | 470μ–M | 1 |
| C906 | ELECT. | 16V | 470μ–M | 1 |
| C612 | ELECT. | 25V | 1000μ–M | 1 |
| C605 | ELECT. | 50V | 1μ–M | 1 |
| C703 | ELECT. | 50V | 1μ–M | 1 |
| C255 | ELECT. | 100V | 100μ–M | 1 |
| C218 | ELECT. | 100V | 220μ–M | 1 |
| C904 | ELECT. | 25V | 4700μ–M | 1 |
| ⚠ C773 | ELECT. | 25V | 6.8μ–M | 1 |
| C607 | ELECT. | 25V | 1μ–K | 1 |
| C708 | POLYESTER | 50V | 0.001μ–K | 1 |
| C606 | POLYESTER | 50V | 0.0047μ–K | 1 |
| C702 | POLYESTER | 50V | 0.0047μ–K | 1 |
| C709 | POLYESTER | 50V | 0.01μ–K | 1 |
| C204 | POLYESTER | 50V | 0.01μ–K | 1 |
| C701 | POLYESTER | 50V | 0.01μ–K | 1 |
| C603 | POLYESTER | 50V | 0.033μ–K | 1 |
| C604 | POLYESTER | 50V | 0.033μ–K | 1 |
| C705 | POLYESTER | 50V | 0.033μ–K | 1 |
| C609 | POLYESTER | 50V | 0.047μ–K | 1 |
| C710 | POLYESTER | 50V | 0.068μ–K | 1 |
| C704 | POLYESTER | 50V | 0.1μ–K | 1 |
| ⚠ C771 | POLYPRO | 630V | 0.012μ–J | 1 |
| ⚠ C772 | POLYPRO | 630V | 0.012μ–J | 1 |
| C257 | POLYPRO | 630V | 0.022μ–J | 1 |
| C791 | POLYPRO | 630V | 0.022μ–J | 1 |
| ⚠ C901 | POLYPRO | 125V | 0.1μ–M | 1 |
| ⚠ C902 | CERAMIC | AC250V | 1000P | 1 |
| ⚠ C903 | CERAMIC | AC250V | 1000P | 1 |

⚠ : SAFETY CRITICAL COMPONENT.
C901, C902 & C903: Used only by the version U.

| SYMBOL NO. | DESCRIPTION | | Q'TY |
|---|---|---|---|
| COIL | | | |
| L601 | AXIAL | 27μ | 1 |
| ⚠ L771 | LINEAR | | 1 |
| ⚠ L772 | SIZE | | 1 |
| ⚠ L901 | LINE FILTER | | 1 |
| TRANSFORMER | | | |
| T701 | H. DRIVE | | 1 |
| ⚠ T702 | F.B.T | | 1 |
| ⚠ T901 | DRIVE TRANS | | 1 |
| DIODE | | | |
| D710 | SILICON | V06E | 1 |
| D733 | SILICON | V11J | 1 |
| D731 | SILICON | U06C | 1 |
| D210 | SILICON | 1S2076/1S2473H | 1 |
| D701 | SILICON | US1040 | 1 |
| D702 | SILICON | US1040 | 1 |
| D901 | SILICON | SR1K–8 | 1 |
| D902 | SILICON | SR1K–8 | 1 |
| D903 | SILICON | SR1K–8 | 1 |
| D904 | SILICON | SR1K–8 | 1 |
| D734 | SILICON | SR1K–4 | 1 |
| D601 | SILICON | 8U–4 | 1 |
| D732 | SILICON | 8U–4 | 1 |
| D905 | LED | SLP–251B | 1 |
| ZD910 | ZENER | HZ–5 B1 | 1 |
| TRANSISTOR | | | |
| Q203 | SILICON | 2SC945A–K | 1 |
| Q701 | SILICON | 2SC3209 M/L/K | 1 |
| Q702 | SILICON | 2SC2373–K/L | 1 |
| Q216 | SILICON | 2SA844 D/E | 1 |
| Q204 | SILICON | 2SC2688–L | 1 |
| IC | | | |
| IC201 | HD7404P | | 1 |
| ⚠ IC701 | μPC1379C | | 1 |
| ⚠ IC901 | SI–3122V | | 1 |
| LT202 | SPARK GAP | | 1 |
| ⚠ F901 | ST3 | 0.75A | 1 |
| ⚠ F902 | MT4 | 2.0 A | 1 |
| ⚠ DY | DEFLECTION YOKE | | 1 |
| ⚠ B1 | C12M40P39 (D) ARF<br>(FOR KX-1212 TYPE)<br>C12M40PUL (D) ARF<br>(FOR KX-1213 TYPE) | | 1 |

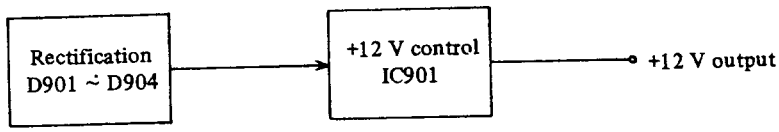
⚠: SAFETY CRITICAL COMPONENT
L901: Used only by the version U.

| SYMBOL NO. | DESCRIPTION | Q'TY |
|---|---|---|
| ⚠ S901 | V577–0052<br>CRT SOCKET | 1<br>1 |

⚠ : SAFETY CRITICAL COMPONENT.

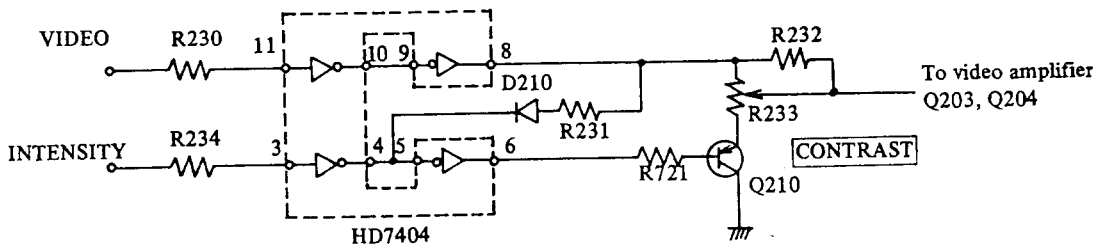
## 1. Operation

### 1-1 Power stabilized circuit



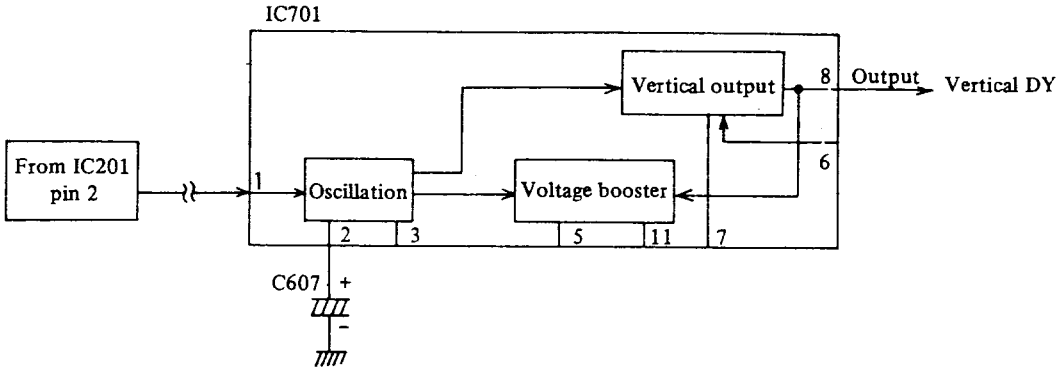

The output voltage is controlled automatically by IC901, which outputs a constant 12 V voltage (12 ±0.2 V).
This IC contains an overcurrent protection circuit which is designed to cause the output voltage to drop to 0 V automatically if the output current exceeds 2.5 A.

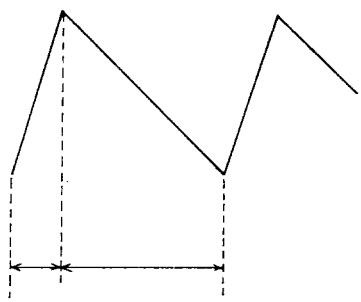
### 1.2 Video signal input circuit




The video signal and the intensity signal (hereinafter referred to as INT. signal) which are received by the TTL IC HD7404 drive the video amplifier (Q203, Q204) directly, and they are output to the CRT cathode. Q210 is in OFF when both the video signal and the INT. output signal are being output. As a result of this, the video signal level and the picture on the screen do not change even if the contrast VR value is changed. Since Q210 is put in the ON state when the INT. signal is not output, changing the contrast value causes the branch point to move. Thus the brightness level changes and the contrast picture appears on the screen.

## 1-3 Vertical deflection circuit



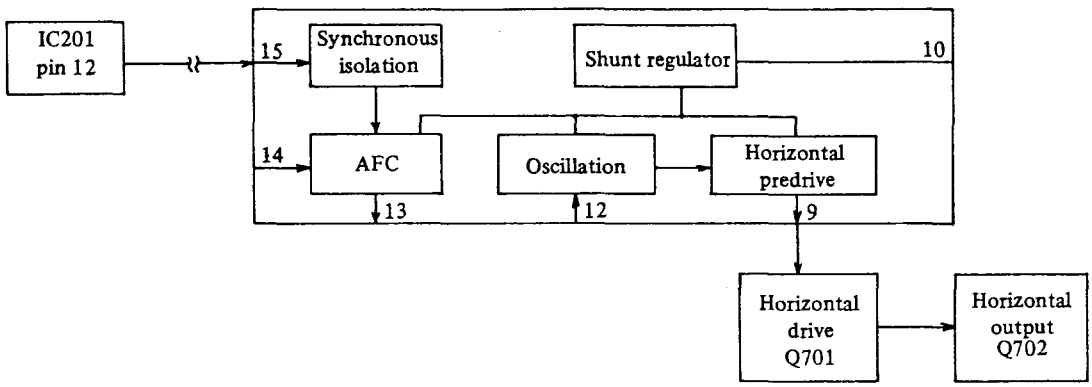
Fly-back time period

Scanning time period

Sawtooth oscillation voltage is generated by C607 charge and discharge. During vertical fly-back, C607 is charged by IC701 pin No. 2 and a switching transistor built into the IC. During scanning the electric potential lwoers gradually, because C607 is discharged by R607 connected to IC terminal pin No. 3 and vertical linearity volume (VS690 ⑥). When the electric potential reaches that electric potential of IC terminal pin No. 1, charge is restarted by switching transistor built into the IC, and electric potential returns to the fly-back.

The output voltage sent to the deflection yoke is amplified by the amplifier circuit built in the IC, and output from IC terminal pin No. 8. This IC incorporates a voltage booster circuit to reduce power consumption, and uses diode D601 and condenser C608 connected to IC terminal pin No. 5 and IC pin No. 7 to boost the fly-back voltage up to about 24 V.

## 1-4 Horizontal deflection circuit




(1) AFC circuit

The triangular waveform voltage generated by the fly-back transformer pulse is sent to IC pin No. 14. The synchronous signal is sent directly to the AFC circuit from the synchronous isolation circuit built into the IC. Both phases are compared at the AFC circuit, and the current in proportion to the phase difference is output from IC pin No. 13. This current is sent to the horizontal oscillation circuit via R701 to control the oscillation waveguide constant.

(2) Oscillation circuit

Oscillation voltage of the triangular waveform is generated by C702. C702 is charged by R702 and H. HOLD volume VS690 ①, and discharged by the circuit built into the IC. From this triangular waveform a square wave of 1:2 is generated, which is output from IC pin No. 9.

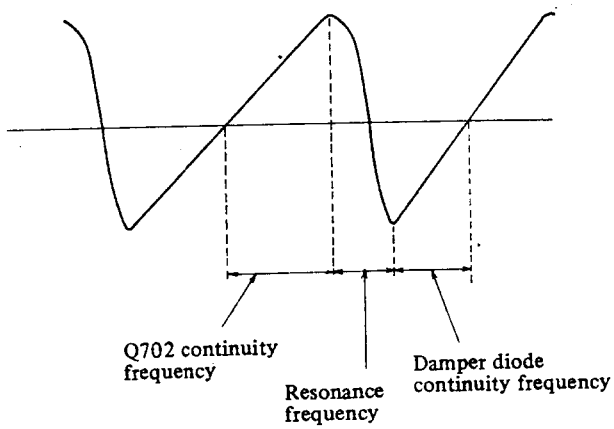
(3) Shunt regulator circuit

Vcc source power of the AFC circuit, oscillation circuit and horizontal predrive circuit is supplied from the shunt regulator circuit. Hence, the horizontal circuit of this IC operates by supplying 6 -7 V to IC pin No. 10.

(4) Horizontal drive output circuit

A 500 mAp-p current must be supplied to the base of horizontal output transistor Q702. Hence, the oscillation voltage is amplified by drive circuit consisting of Q701 and T701. When Q702 continues, fixed voltage accumulated in C773 passes through the horizontal coil. Hence, linearly increasing current passes through the coil. When Q702 enters a discontinuity mode, current which has so far passed through Q702 passes through C771 and C772. As a result, a resonance is caused by the condenser and coil.

At the half resonance cycle the current direction is half-turned. Thereafter current passes through damper diode (D710). If Q702 enters a continuity mode again while the current passes through diode D701, the cyclic sawtooth current passes through the coil.



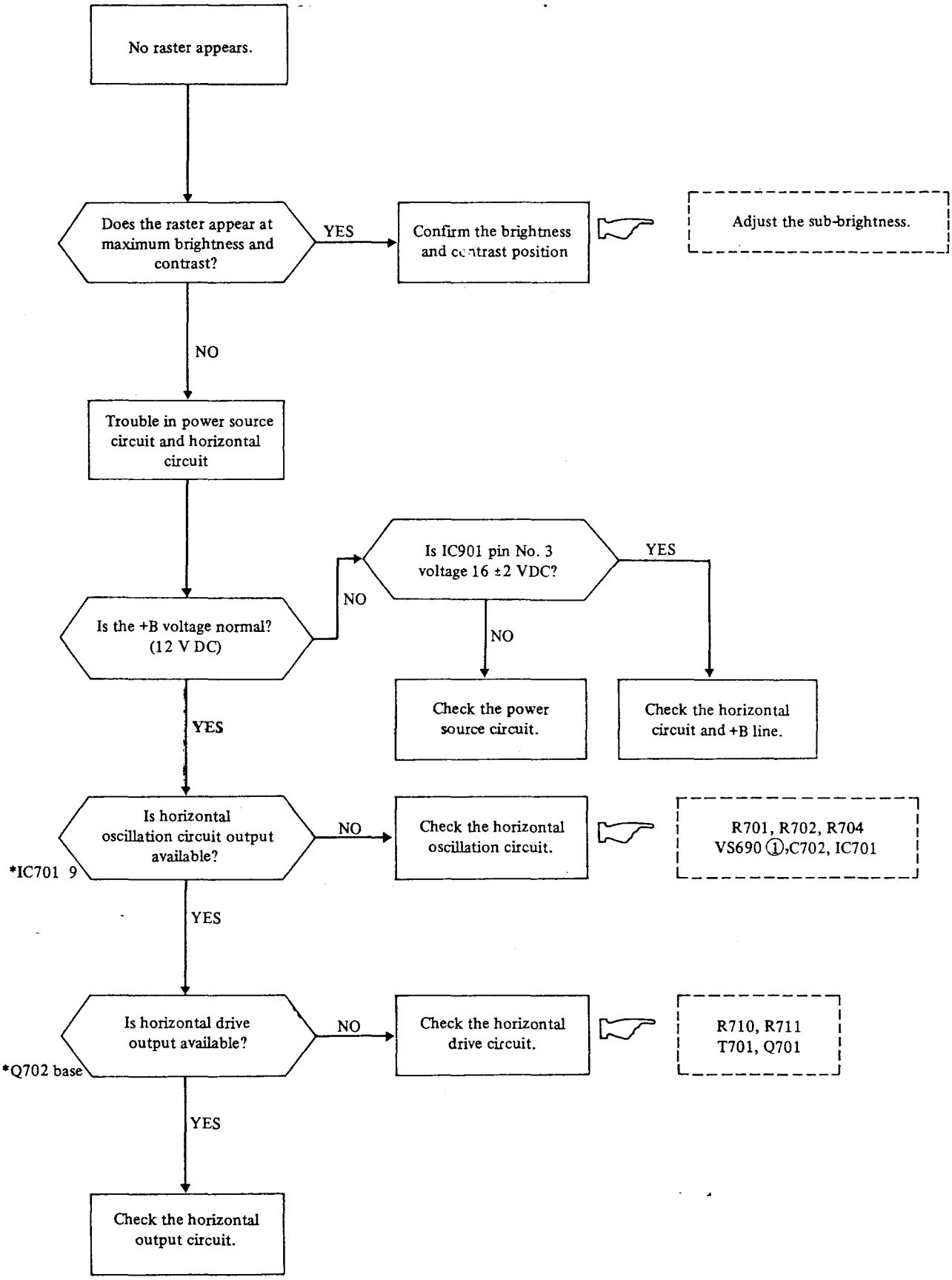

The resonance caused by the condenser and coil generates a 200 Vp-p pulse voltage. This voltage is boosted by T702 (FBT) and supplied to each electrode, video output circuit, etc. of the CRT.

## 2. Repair table

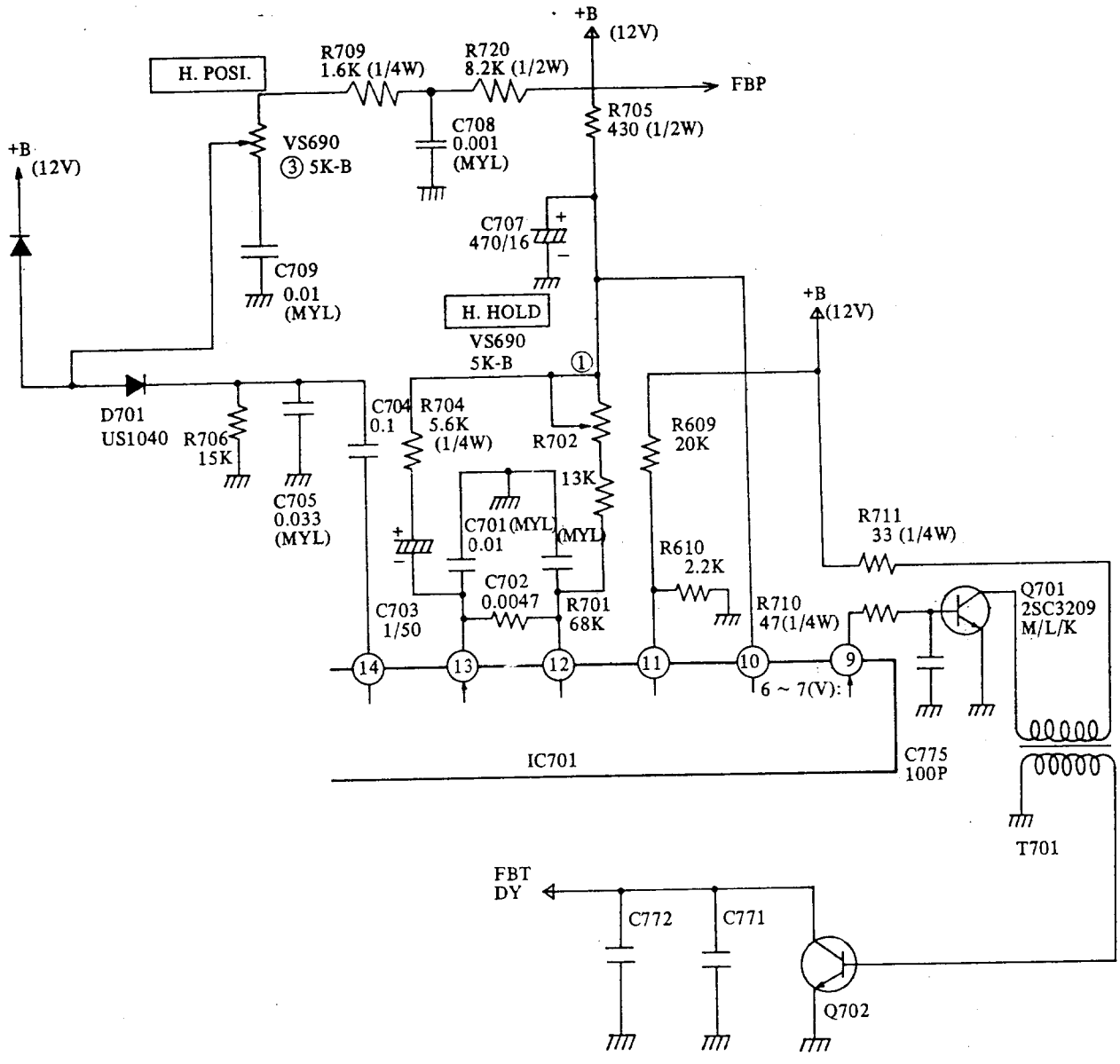
- Turn the power source ON and connect the input signal.
  - No raster appears.
    - The source voltage is abnormal.
      (Check the +B line and horizontal output circuit.)
    - The source voltage is normal.
      (Check the horizontal circuit, CRT circuit and video circuit.)
      - Horizontal stripe on screen (Vertical circuit)
      - Vertical stripe on screen (DY circuit)
  - Raster appears.
    - The horizontal amplitude is short. (horizontal circuit)
    - The vertical amplitude is abnormal. (vertical circuit)
    - The screen is dark. (CRT peripheral circuit)
    - Horizontal synchronization is not available.
      (AFC horizontal oscillation circuit)
    - Vertical synchronization is not available. (vertical circuit)
    - The picture appears.
      - Brightness differs between the vertical character dots and the horizontal character dots. (video circuit)
      - The focus is bad. (CRT peripheral circuit)

## 3. Troubleshooting

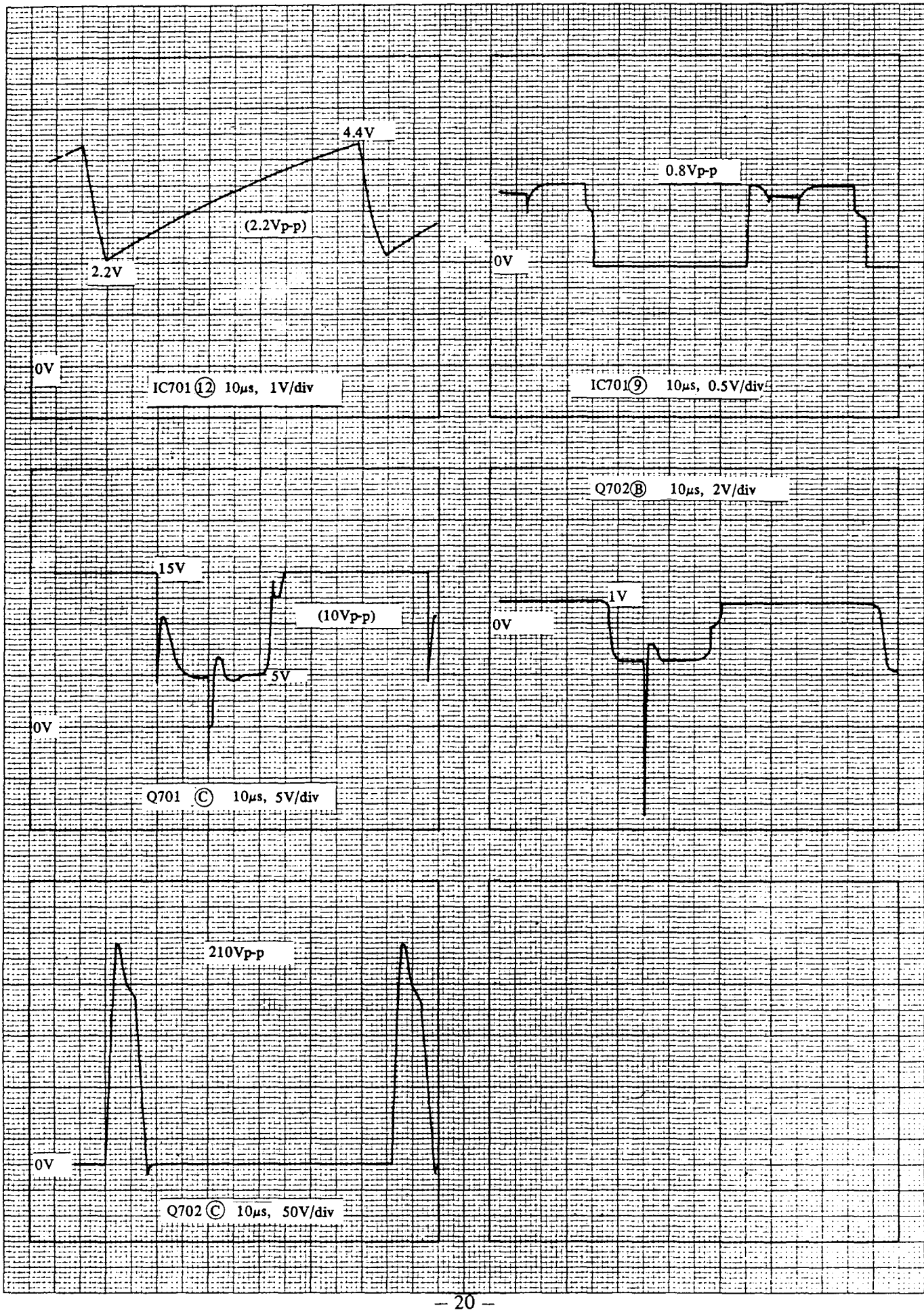
No raster appears. (1) Trouble in power source circuit and horizontal deflection circuit.



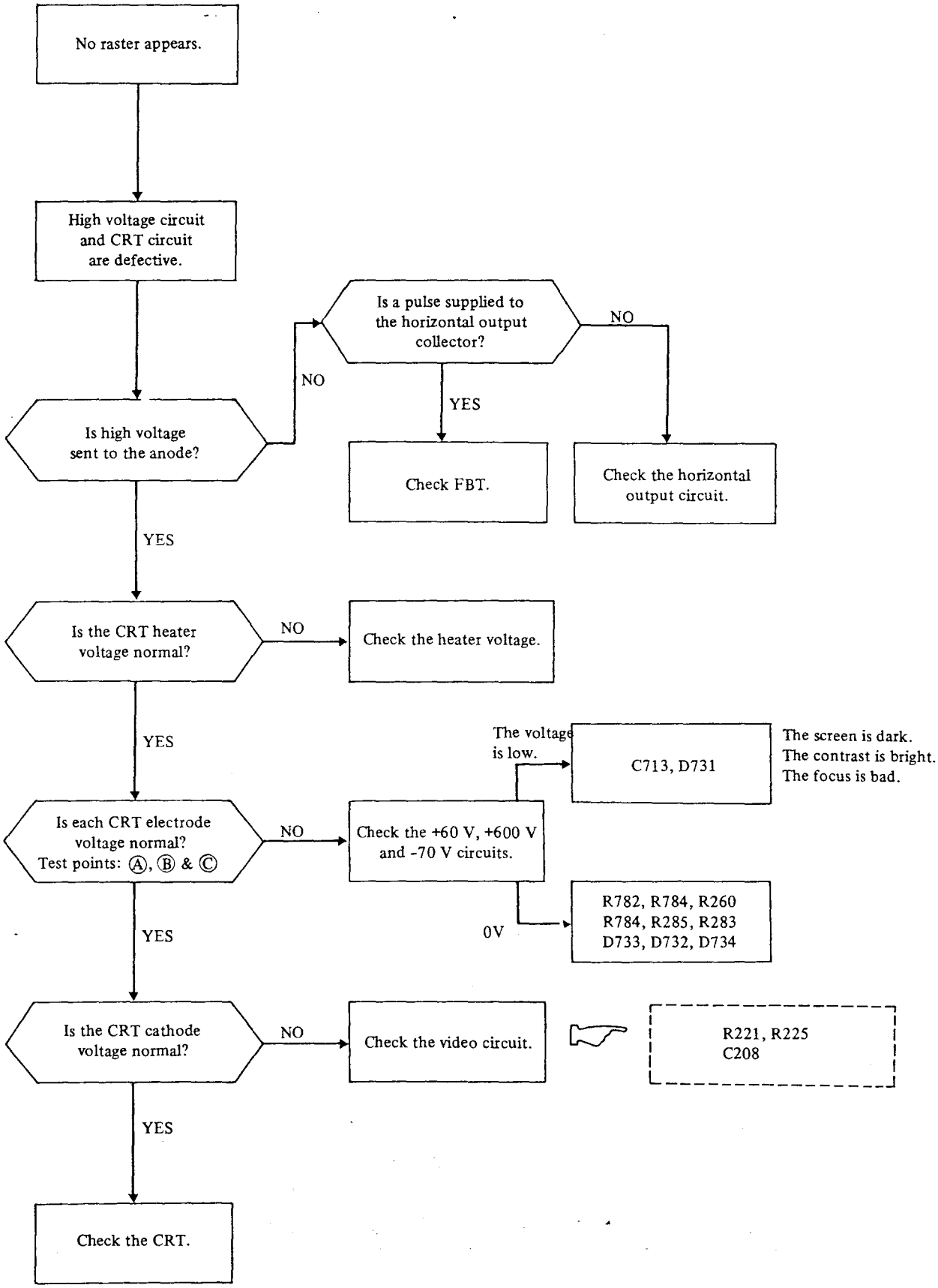
(Horizontal circuit)

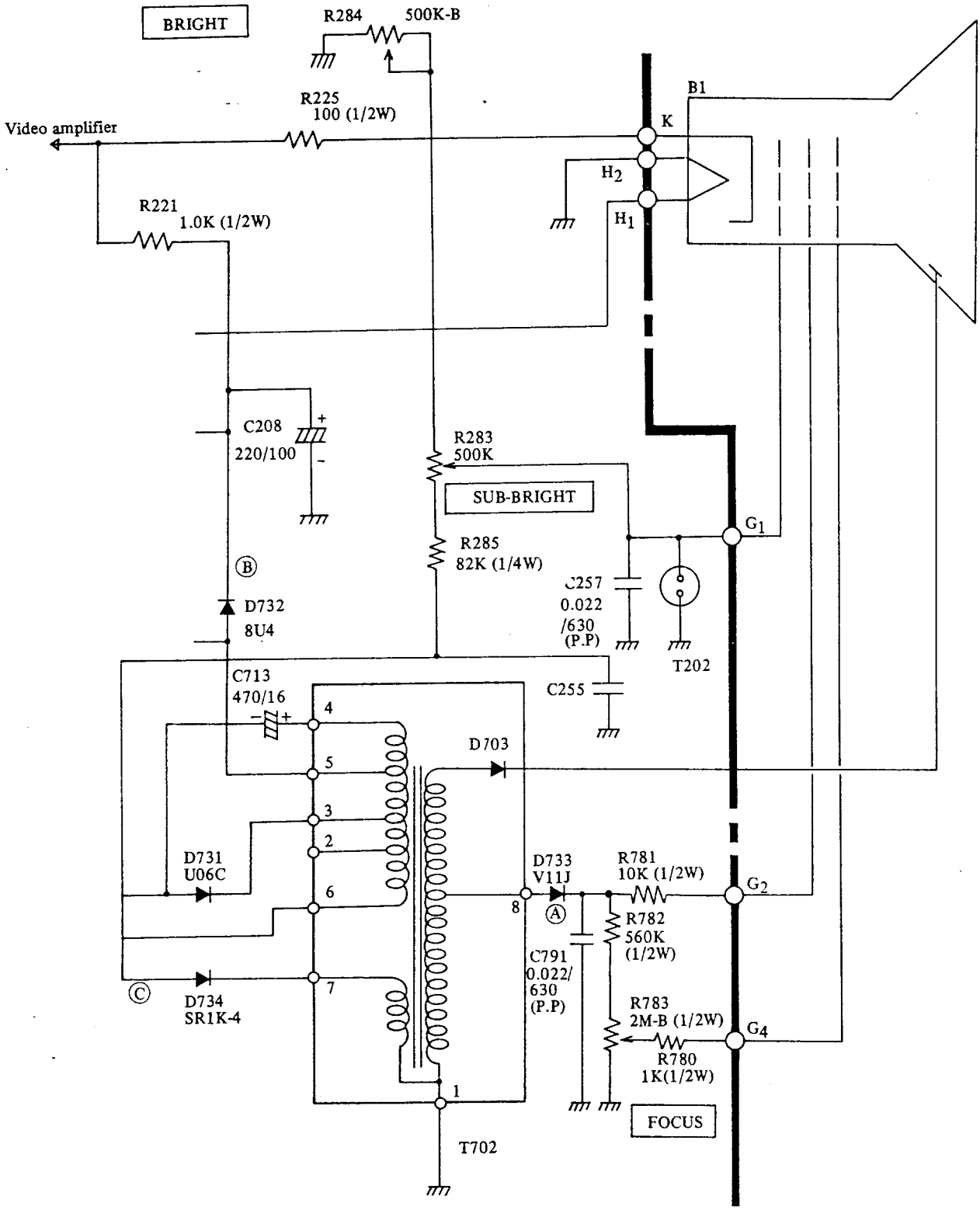



| Positions measured | Voltage | Function |
|---|---|---|
| IC701 pin No. 9 | 0.3 V | Drive output |
| IC701 pin No. 10 | 6.5 V | Power source |
| IC701 pin No. 11 | 1.3 V | Oscillation |
| Q701 base | 0.3 V | |
| Q701 collector | 11.0 V | |
| Q702 base | –6.4 mV | |
| Q702 collector | 20.0 V | |


4.4V
(2.2Vp-p)
2.2V
0V
IC701 ⑫ 10μs, 1V/div
0.8Vp-p
0V
IC701 ⑨ 10μs, 0.5V/div
Q702 Ⓑ 10μs, 2V/div
15V
(10Vp-p)
5V
0V
Q701 Ⓒ 10μs, 5V/div
1V
0V
210Vp-p
0V
Q702 Ⓒ 10μs, 50V/div

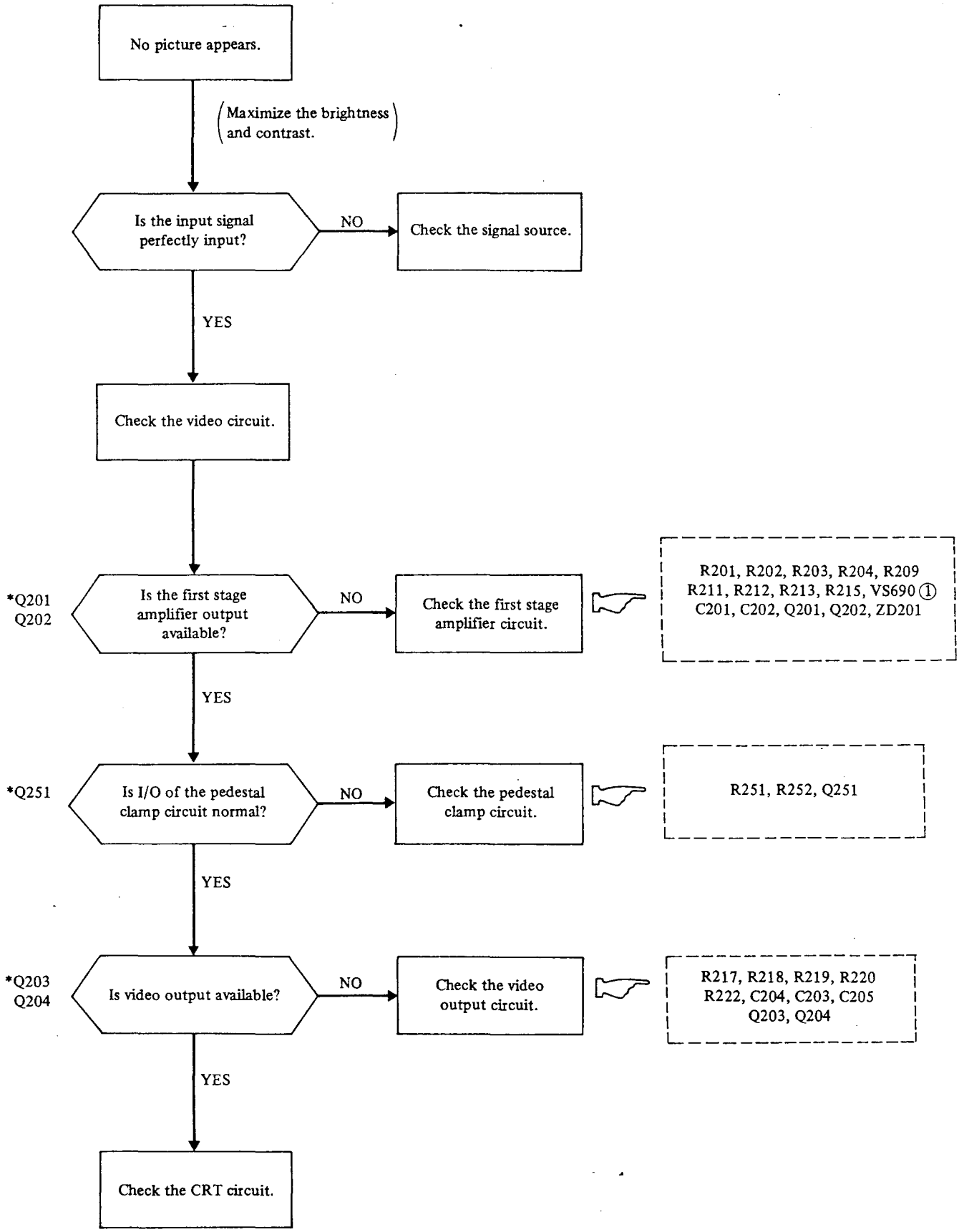
## No raster appears. (2) Trouble in FBT peripheral circuit.

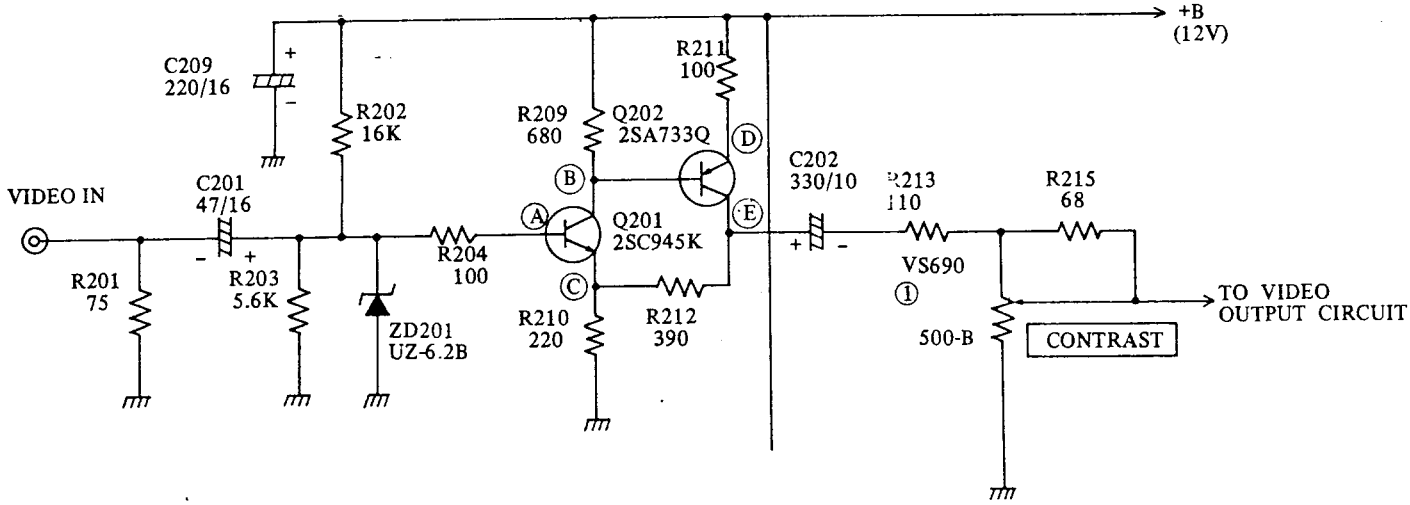





| Positions measured | Voltage | Function |
|---|---|---|
| D733 cathode Ⓐ | 620 V | Power source for G2 & G4 |
| D732 cathode Ⓑ | 60 V | Power source for video amplifier |
| D734 anode Ⓒ | –85 V | Power source for G1 |

## No raster appears. (3) Trouble in video circuit



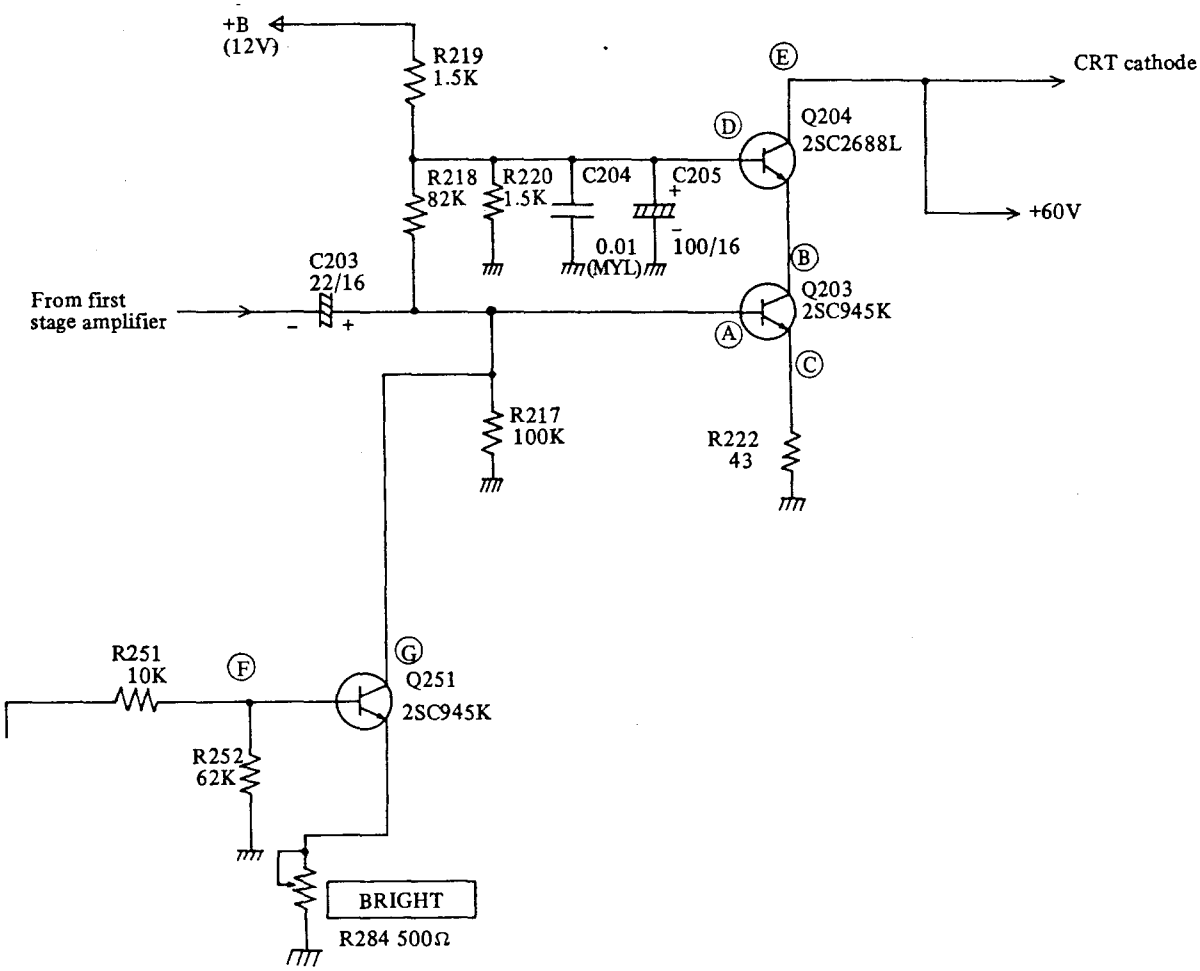



| Symbol | Positions measured | Voltage |
|---|---|---|
| Ⓐ | Q201 base | 3.1 V |
| Ⓑ | Q201 collector | 10.4 V |
| Ⓒ | Q201 emitter | 2.5 V |
| Ⓓ | Q202 emitter | 11.1 V |
| Ⓔ | Q202 collector | 6.1 V |

Note: Conditions for measuring the voltage.

(1) Receive an all-white signal.

(2) Standard brightness and contrast status.

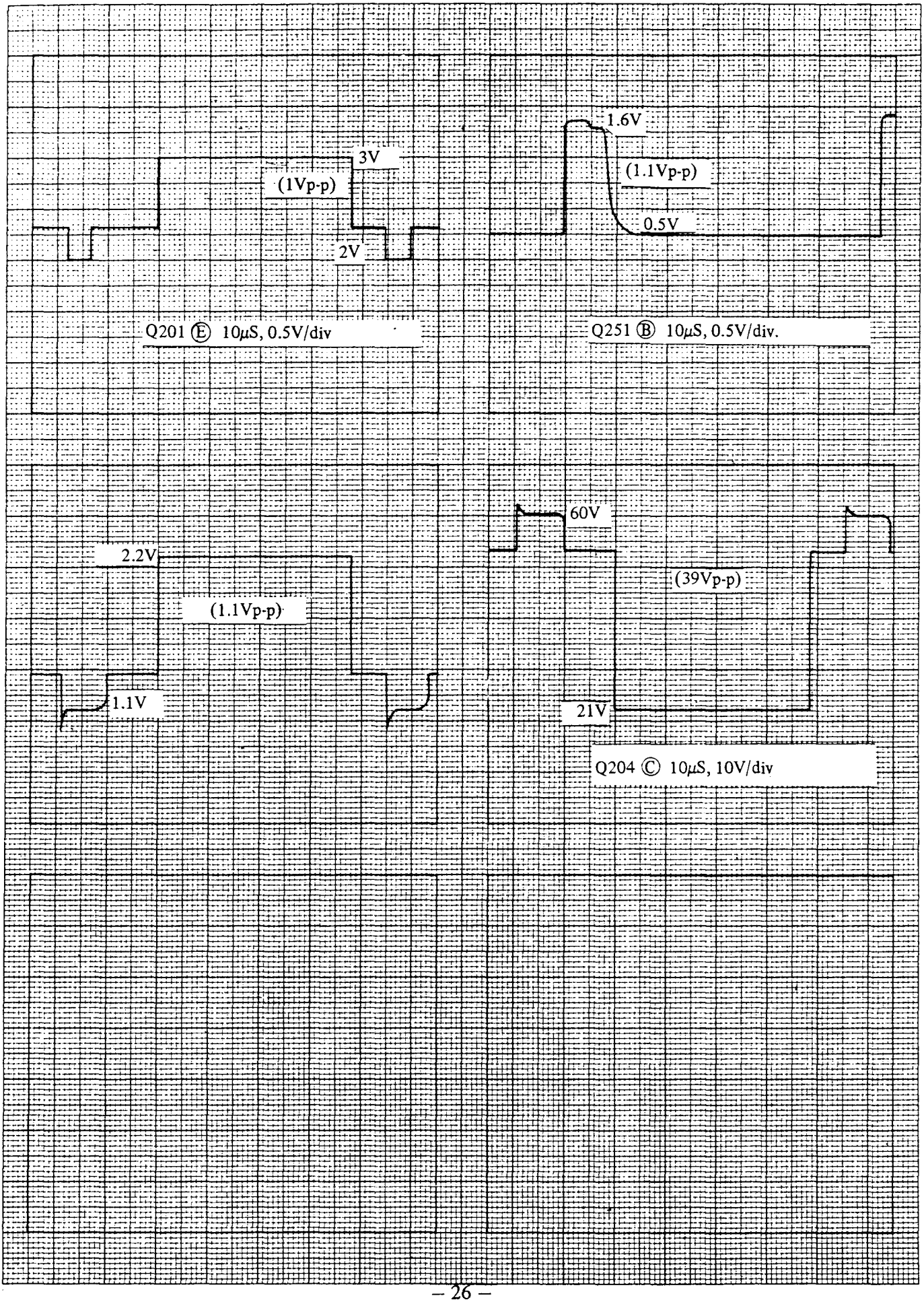


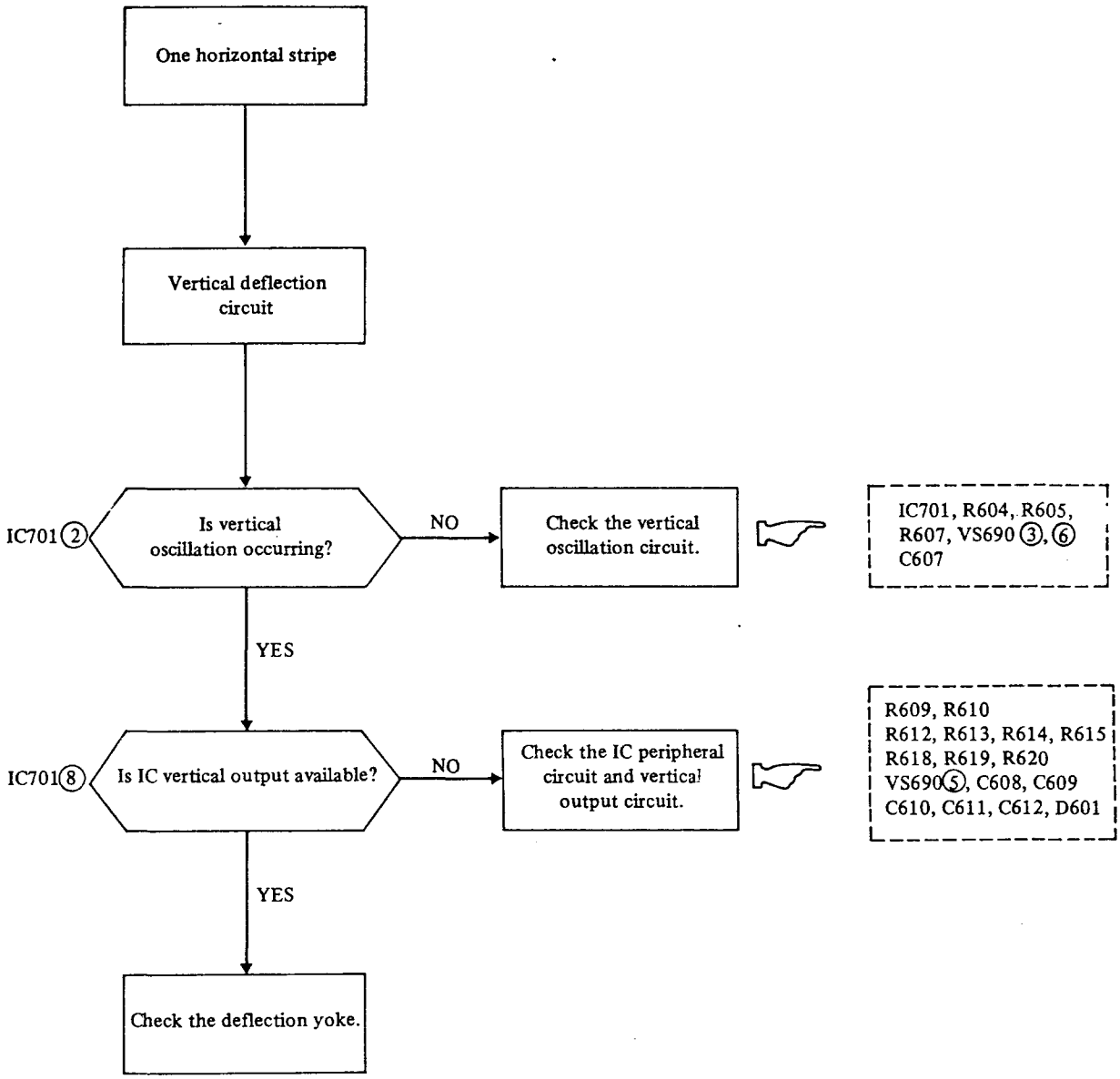

| Symbol | Positions measured | Voltage |
|---|---|---|
| Ⓐ | Q203 base | 1.4 V |
| Ⓑ | Q203 collector | 5.2 V |
| Ⓒ | Q203 emitter | 0.8 V |
| Ⓓ | Q204 base | 5.8 V |
| Ⓔ | Q204 collector | 40.6 V |
| Ⓕ | Q251 base | 0.4 V |
| Ⓖ | Q251 emitter | 0.6 V |

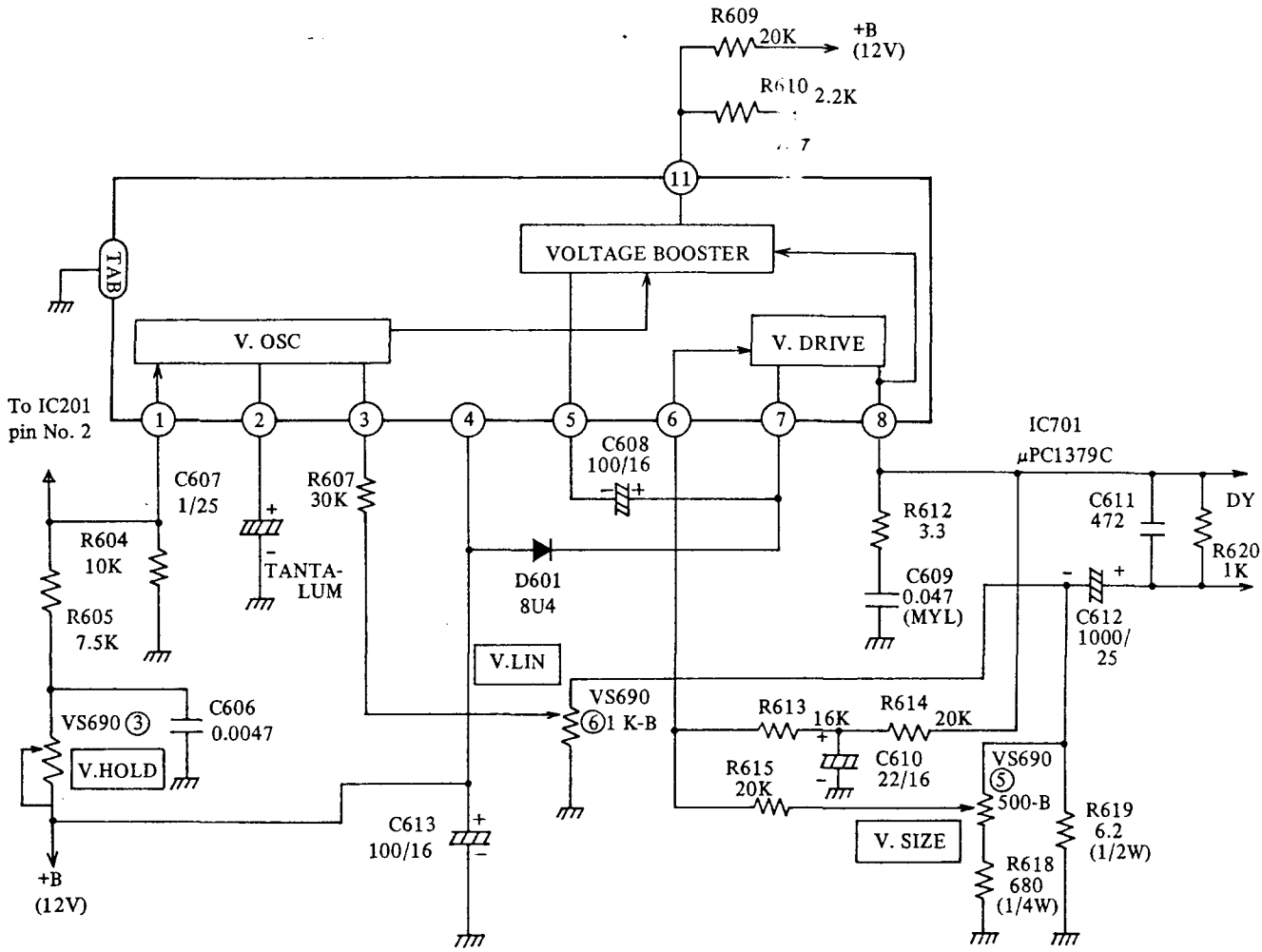
Note: Conditions for measuring the voltage.

(1) Receive an all-white signal.

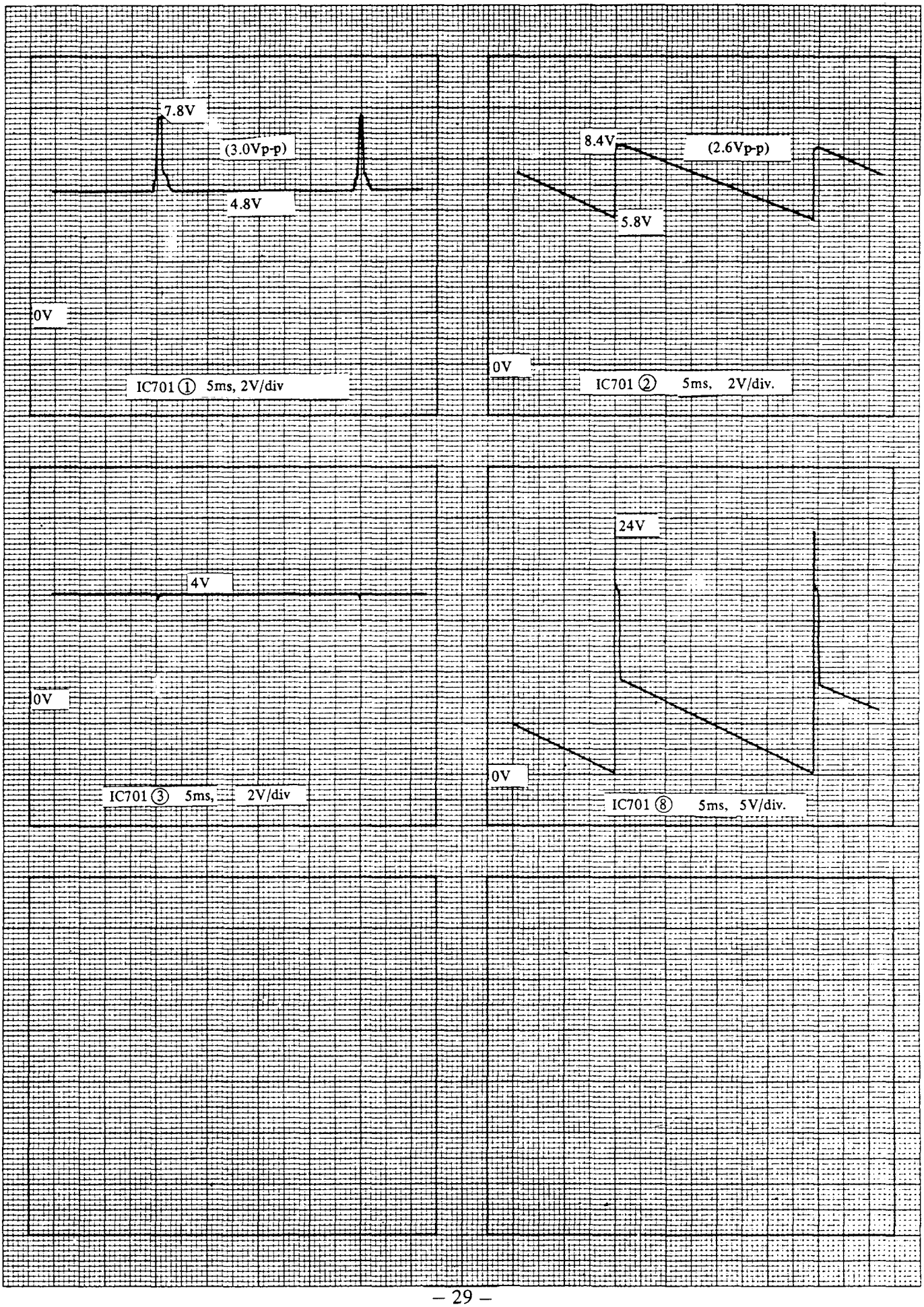
(2) Standard brightness and contrast status.


3V
(1Vp-p)
2V
1.6V
(1.1Vp-p)
0.5V
Q201 Ⓔ 10μS, 0.5V/div
Q251 Ⓑ 10μS, 0.5V/div.
60V
2.2V
(39Vp-p)
(1.1Vp-p)
1.1V
21V
Q204 Ⓒ 10μS, 10V/div

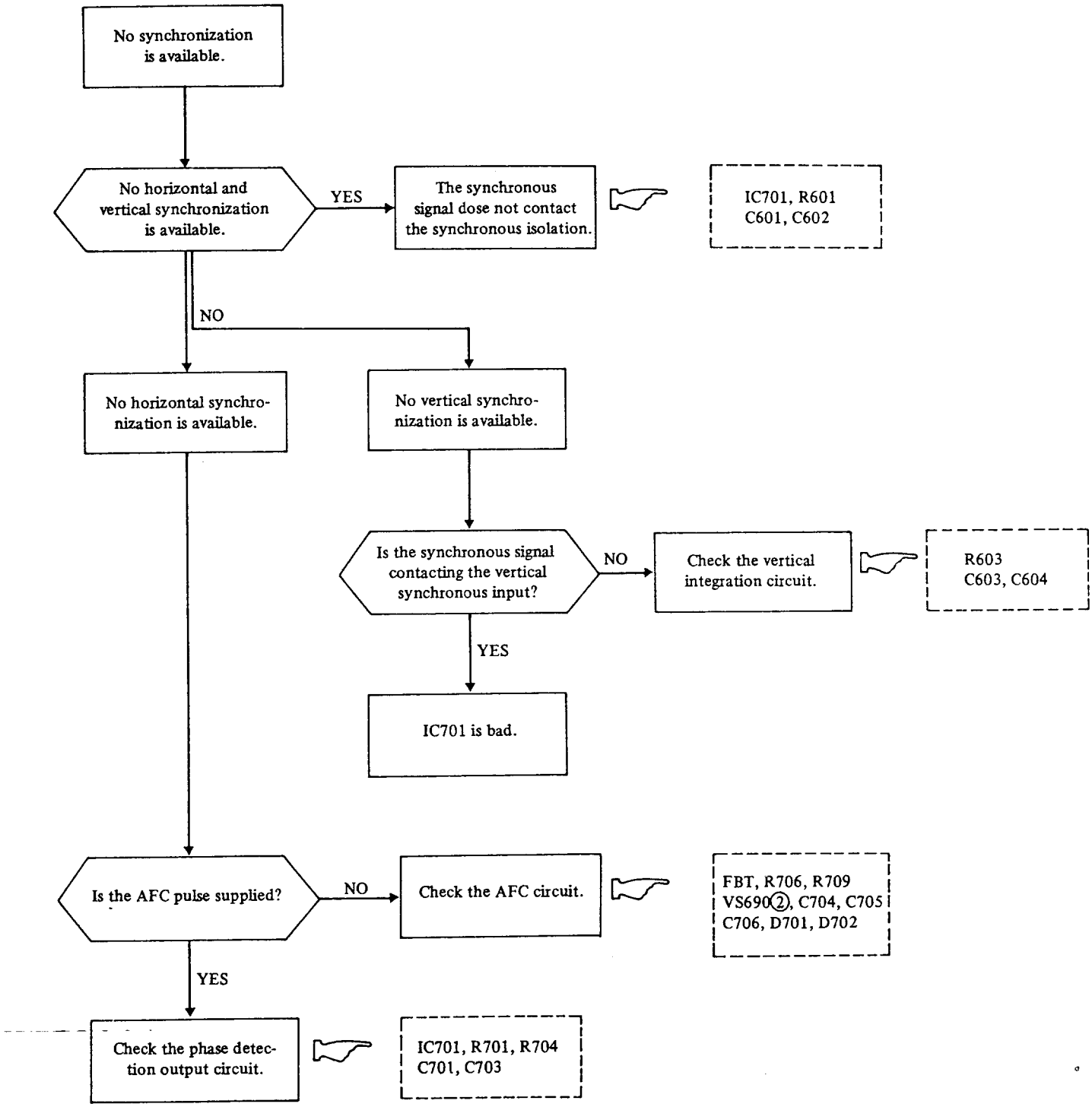

One horizontal stripe
Vertical deflection circuit
IC701 ②
Is vertical oscillation occurring?
NO
Check the vertical oscillation circuit.
IC701, R604, R605, R607, VS690 ③, ⑥ C607
YES
IC701 ⑧
Is IC vertical output available?
NO
Check the IC peripheral circuit and vertical output circuit.
R609, R610 R612, R613, R614, R615 R618, R619, R620 VS690 ⑤, C608, C609 C610, C611, C612, D601
YES
Check the deflection yoke.

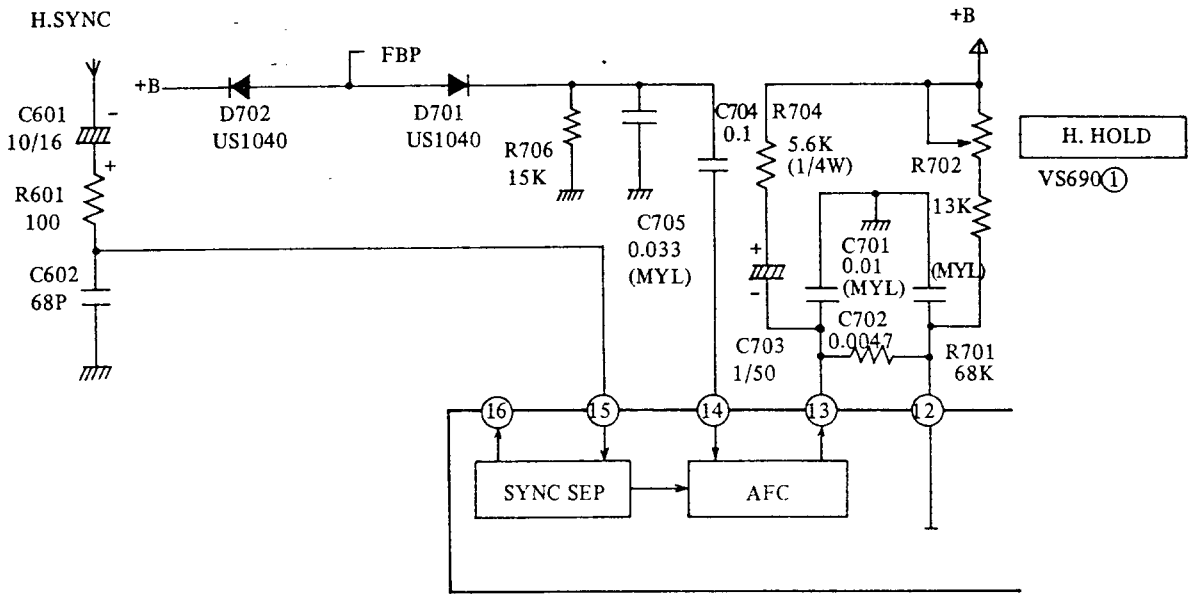



| Positions measured | Voltage | Function |
|---|---|---|
| IC701 pin No. 1 | 4.8 V | Synchronous input |
| IC701 pin No. 2 | 7.2 V | Oscillation |
| IC701 pin No. 3 | 4.0 V | Oscillation |
| IC701 pin No. 4 | 12.0 V | Power source |
| IC701 pin No. 5 | 1.8 V | Booster output |
| IC701 pin No. 6 | 2.1 V | Deflection feedback input |
| IC701 pin No. 7 | 11.7 V | Boost voltage input |
| IC701 pin No. 8 | 5.7 V | Drive output |

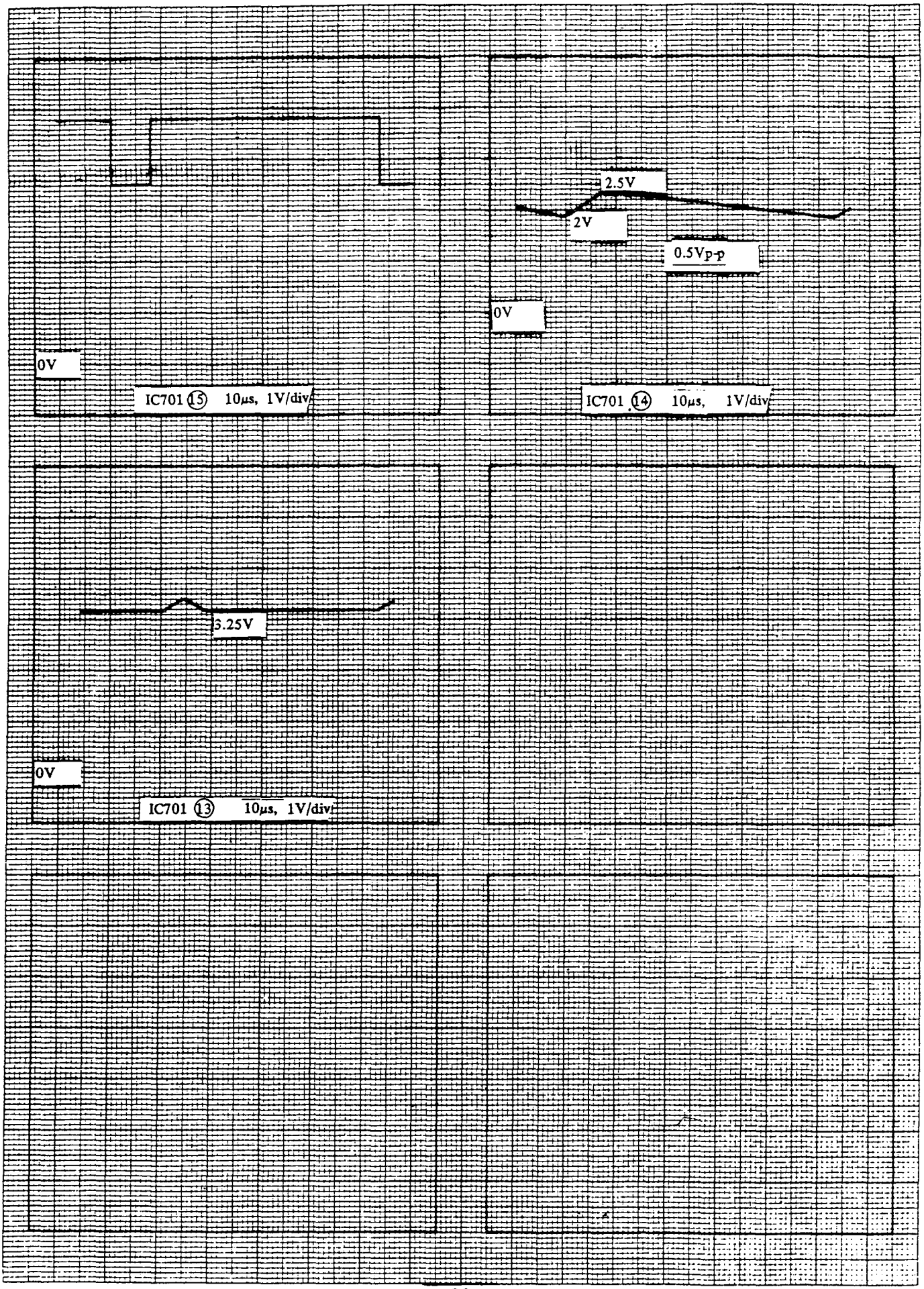

7.8V
(3.0Vp-p)
4.8V
0V
IC701 ① 5ms, 2V/div
8.4V
(2.6Vp-p)
5.8V
0V
IC701 ② 5ms, 2V/div.
4V
0V
IC701 ③ 5ms, 2V/div
24V
0V
IC701 ⑧ 5ms, 5V/div.

No synchronization is available.





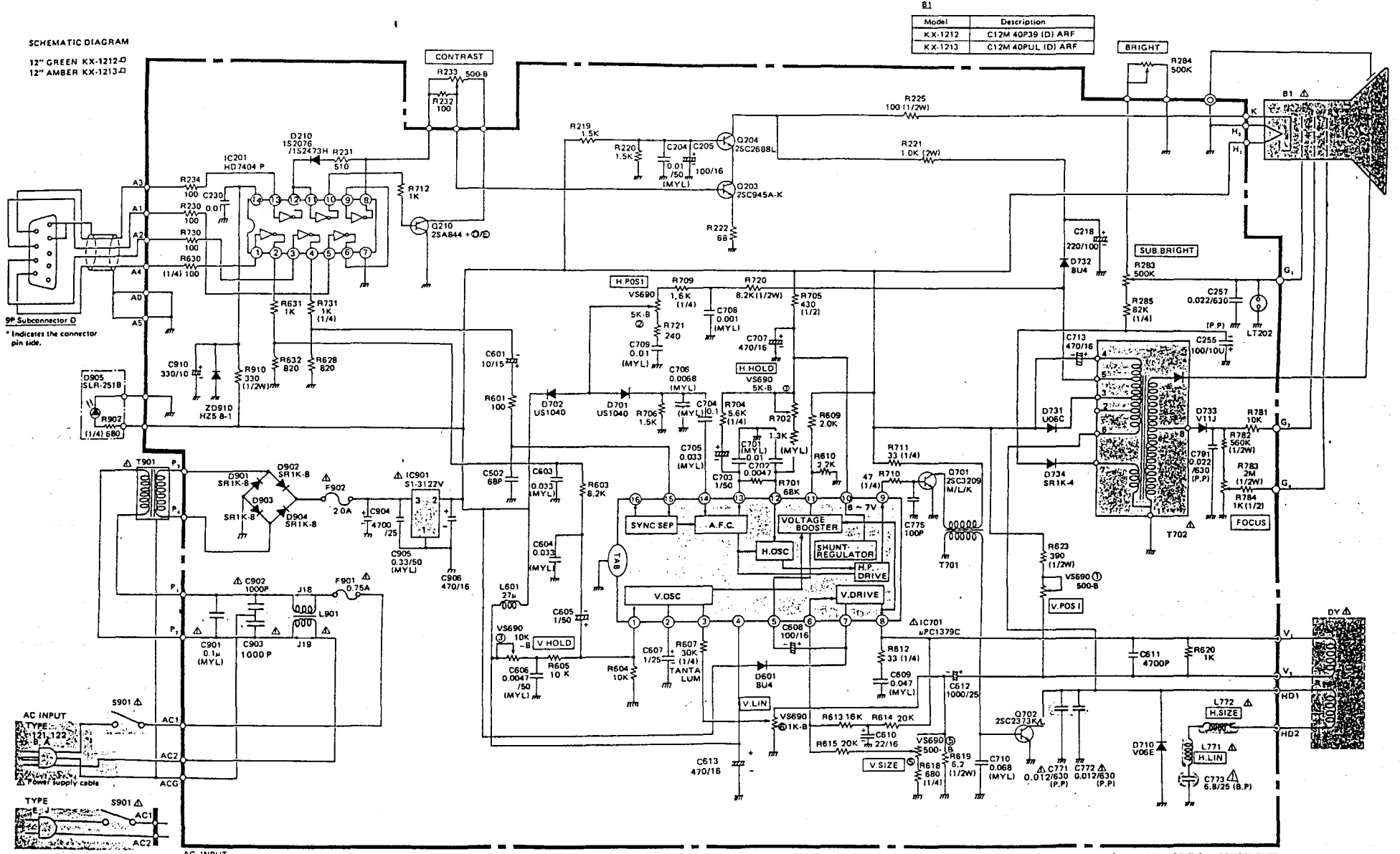

| Positions measured | Voltage | Function |
|---|---|---|
| IC701 pin No. 13 | 3.3 V | AFC output |
| IC701 pin No. 14 | 2.2 V | AFC input |
| IC701 pin No. 15 | 4.6 V | Synchronous signal input |
| IC701 pin No. 16 | 1.9 V | Synchronous isolation output |


0V
IC701 ⑮ 10μs, 1V/div
2.5V
2V
0.5Vp-p
0V
IC701 ⑭ 10μs, 1V/div
6.25V
0V
IC701 ⑬ 10μs, 1V/div

# SCHEMATIC DIAGRAM

12" GREEN KX-1212-D
12" AMBER KX-1213-D

| Model | Description |
|---|---|
| KX-1212 | C12M 40P39 (D) ARF |
| KX-1213 | C12M 40PUL (D) ARF |




AC, INPUT

| TYPE | Rated input | |
|---|---|---|
| E | 220VAC. | 50Hz |
| 121,122 | 120VAC. | 60Hz |
| B, A | 240VAC. | 50Hz |
| J | 100VAC. | 50/60Hz |

⚠ . . . SAFETY CRITICAL COMPONENTS

SAFETY CRITICAL COMPONENTS

THE DESIGN OF THIS MONITOR CONTAINS MANY CIRCUITS AND COMPONENTS INCLUDED SPECIFICALLY FOR SAFETY PURPOSES FOR CONTINUED PROTECTION. NO CHANGES SHOULD BE MADE TO THE ORIGINAL DESIGN AND COMPONENTS SHOWN IN SHADED AREAS ON THE SCHEMATIC SHOULD BE REPLACED WITH EXACT FACTORY REPLACEMENT PARTS.

THE USE OF UNAUTHORIZED SUBSTITUTE PARTS MAY CREATE A SHOCK, FIRE, X-RADIATION, OR OTHER HAZARD.

SERVICE SHOULD BE PERFORMED BY QUALIFIED PERSONNEL ONLY.

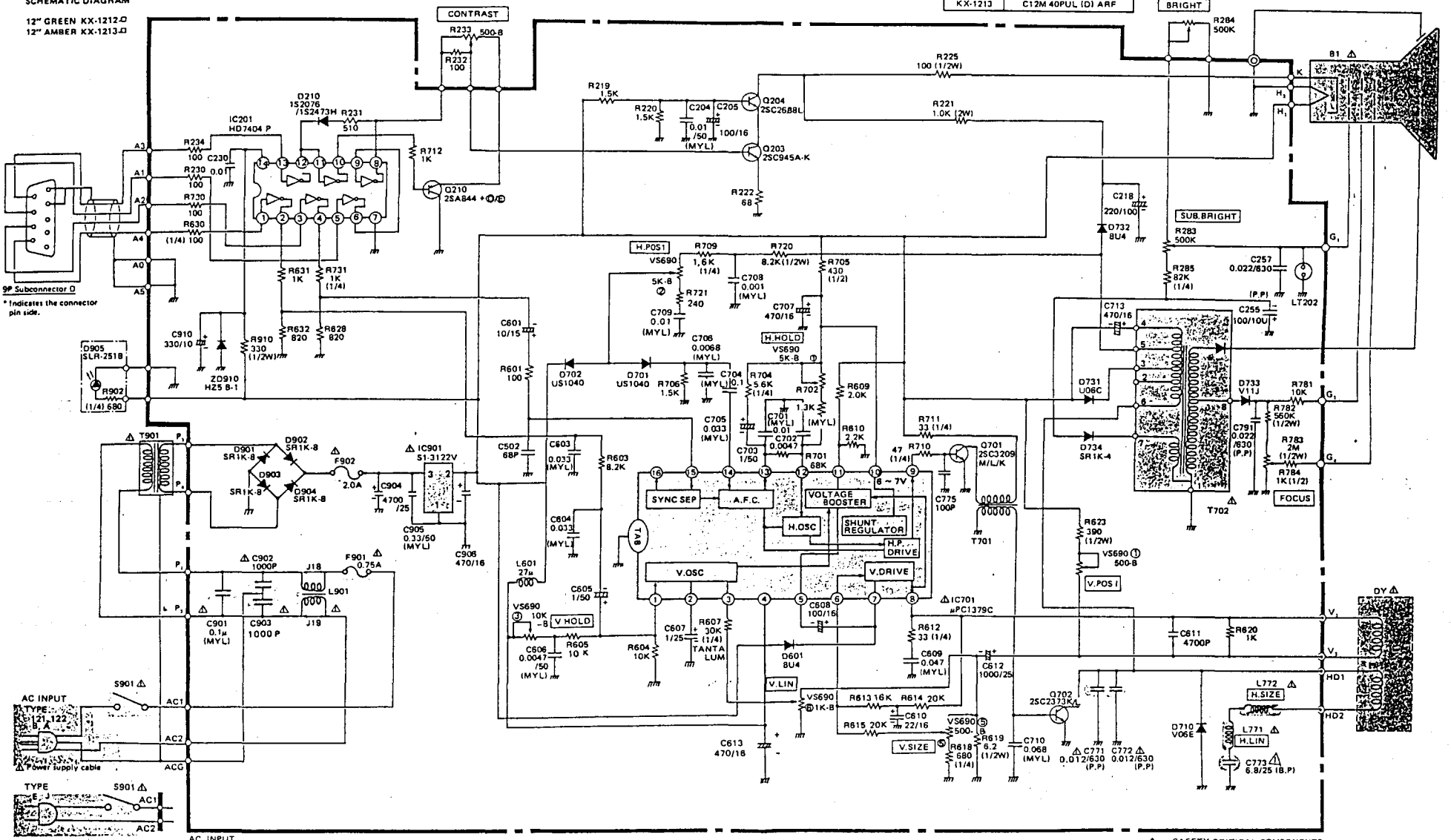
TAXAN®

B1

| Model | Description |
|---|---|
| KX-1212 | C12M 40P39 (D) ARF |
| KX-1213 | C12M 40PUL (D) ARF |

# SCHEMATIC DIAGRAM

12" GREEN KX-1212-□
12" AMBER KX-1213-□




AC, INPUT

| TYPE | Rated input | |
|---|---|---|
| E | 220VAC. | 50Hz |
| 121,122 | 120VAC. | 60Hz |
| B, A | 240VAC. | 50Hz |
| J | 100VAC. | 50/60Hz |

⚠...SAFETY CRITICAL COMPONENTS

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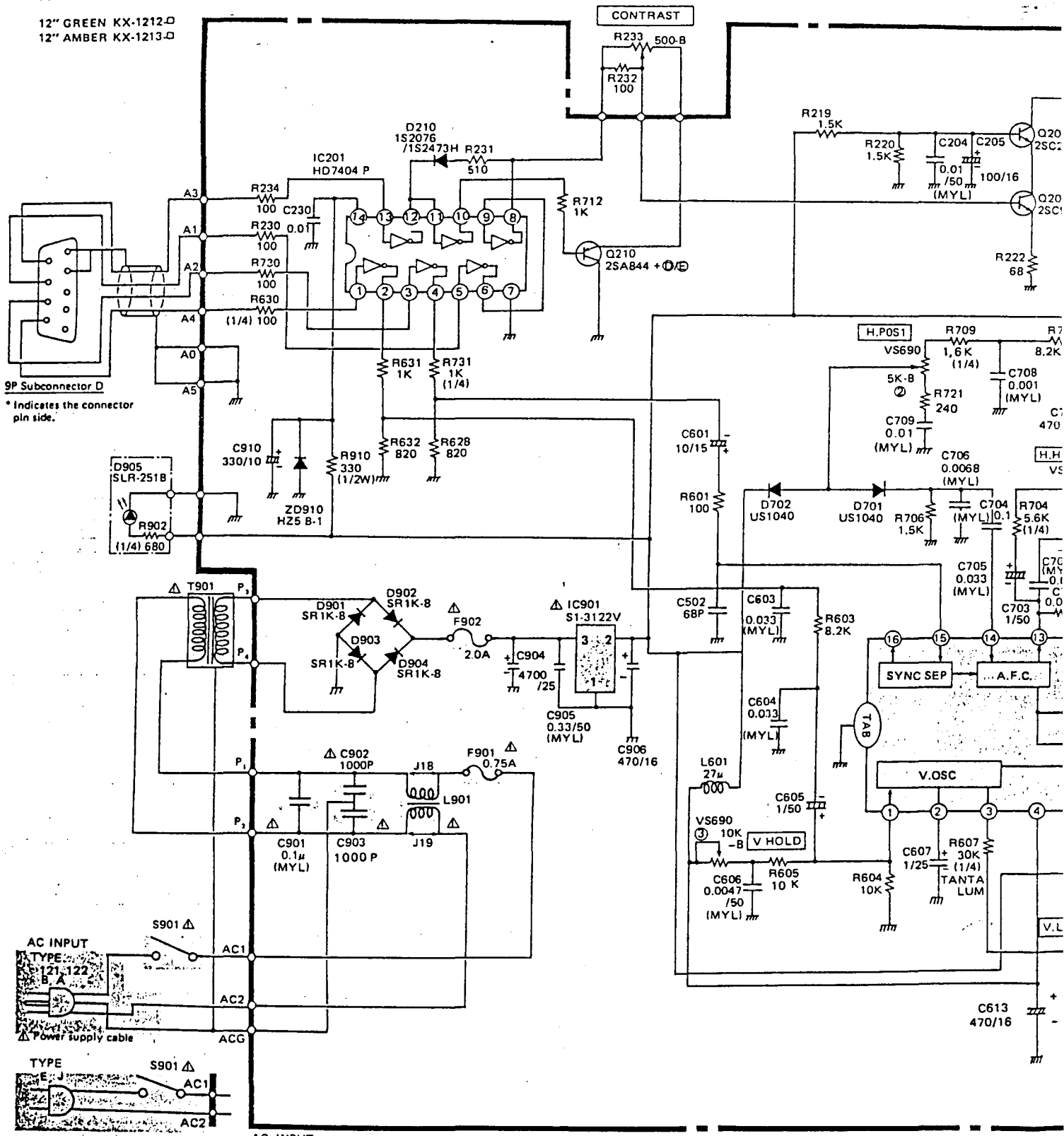
SCHEMATIC DIAGRAM

12" GREEN KX-1212-□
12" AMBER KX-1213-□




AC, INPUT

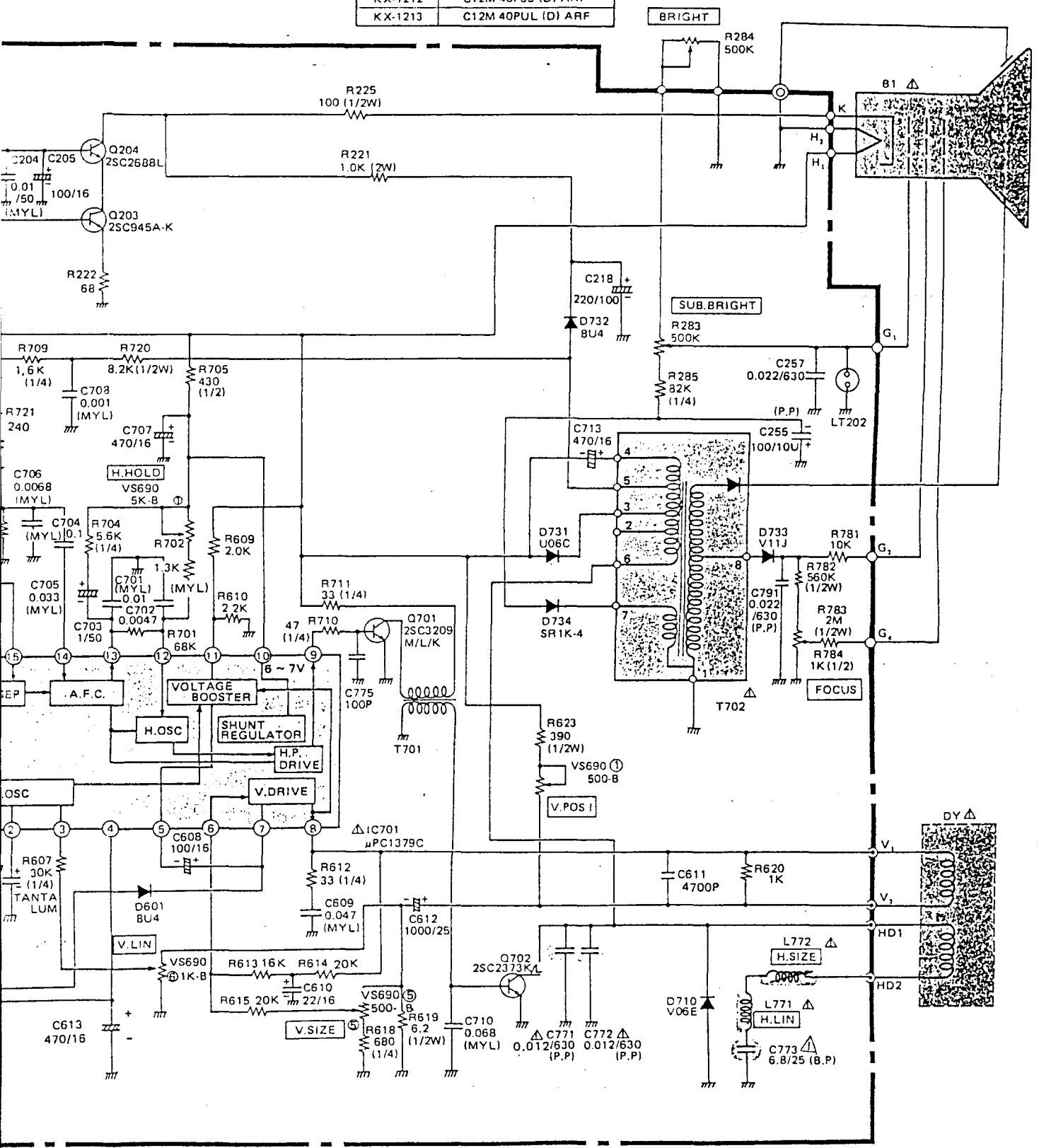
| TYPE | Rated input | |
|---|---|---|
| E | 220VAC. | 50Hz |
| 121,122 | 120VAC. | 60Hz |
| B, A | 240VAC. | 50Hz |
| J | 100VAC. | 50/60Hz |

SAFETY CRITIC

THE DESIGN OF THIS MONITOR CONTAINS MANY CIRCUITS AND COMPONENTS
INCLUDED SPECIFICALLY FOR SAFETY PURPOSES FOR CONTINUED PROTECTI
NO CHANGES SHOULD BE MADE TO THE ORIGINAL DESIGN AND COMPONENTS
SHOWN IN SHADED AREAS ON THE SCHEMATIC SHOULD BE REPLACED WITH

B1

| Model | Description |
|---|---|
| KX-1212 | C12M 40P39 (D) ARF |
| KX-1213 | C12M 40PUL (D) ARF |




⚠. . . SAFETY CRITICAL COMPONENTS

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CIRCUITS AND COMPONENTS — EXACT FACTORY REPLACEMENT PARTS.
S FOR CONTINUED PROTECTION. — THE USE OF UNAUTHORIZED SUBSTITUTE PARTS MAY CREATE A SHOCK,
DESIGN AND COMPONENTS — FIRE, X-RADIATION, OR OTHER HAZARD.
ULD BE REPLACED WITH — SERVICE SHOULD BE PERFORMED BY QUALIFIED PERSONNEL ONLY.

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