

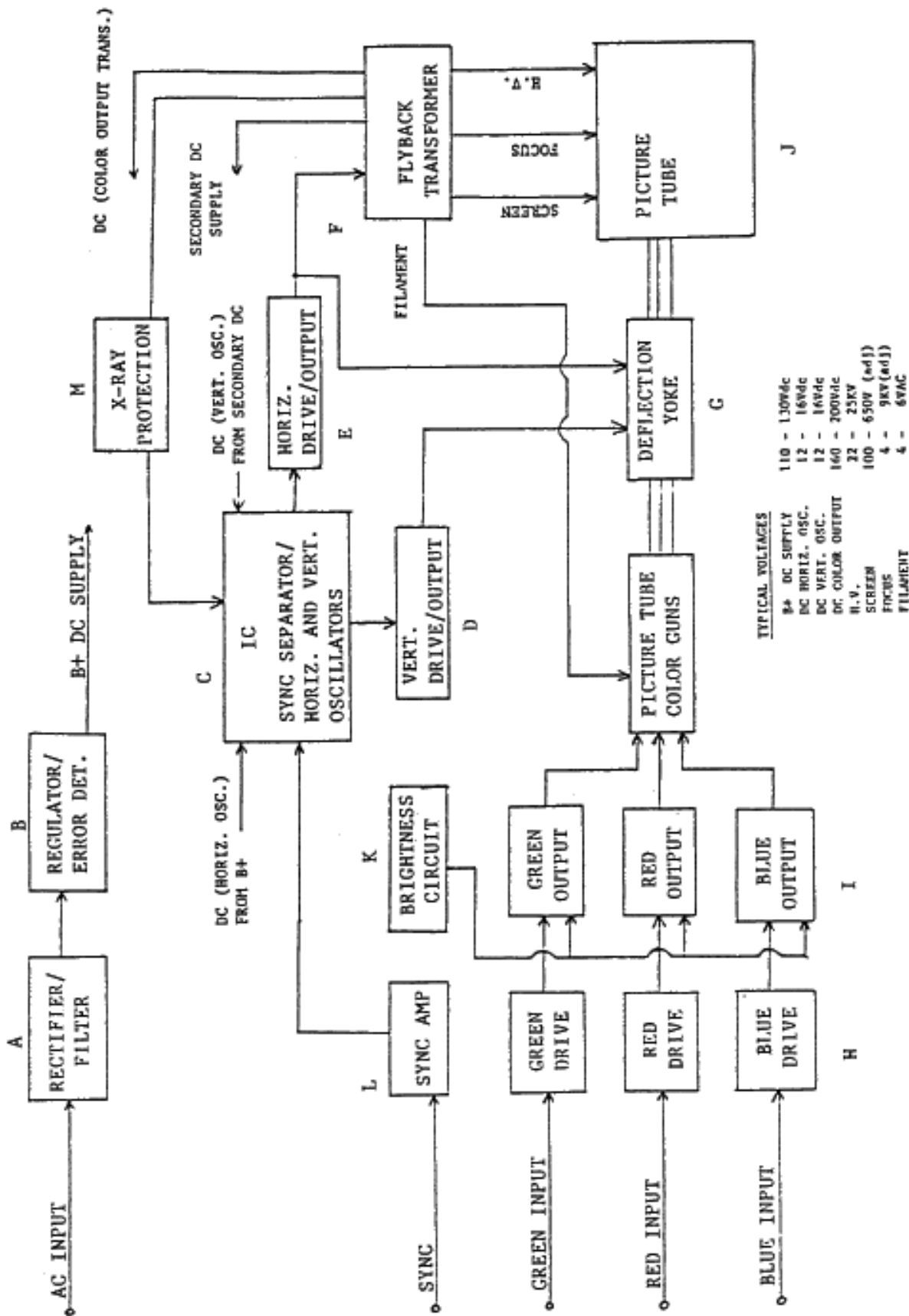
Nintendo

SERVICE DEPARTMENT

SANYO MONITOR

20EZ

RASTER SCAN
VIDEO MONITOR BLOCK DIAGRAM



TYPICAL VOLTAGES

| | | |
|-----------------|-----------------|------------------|
| B+ | DC SUPPLY | 110 - 130Vdc |
| DC HORIZ. OSC. | DC HORIZ. OSC. | 12 - 16Vdc |
| DC VERT. OSC. | DC VERT. OSC. | 12 - 16Vdc |
| DC COLOR OUTPUT | DC COLOR OUTPUT | 160 - 200Vdc |
| H.V. | H.V. | 22 - 25KV |
| SCREEN | SCREEN | 100 - 650V (adj) |
| FOCUS | FOCUS | 4 - 9KV (adj) |
| FILAMENT | FILAMENT | 4 - 6VAC |

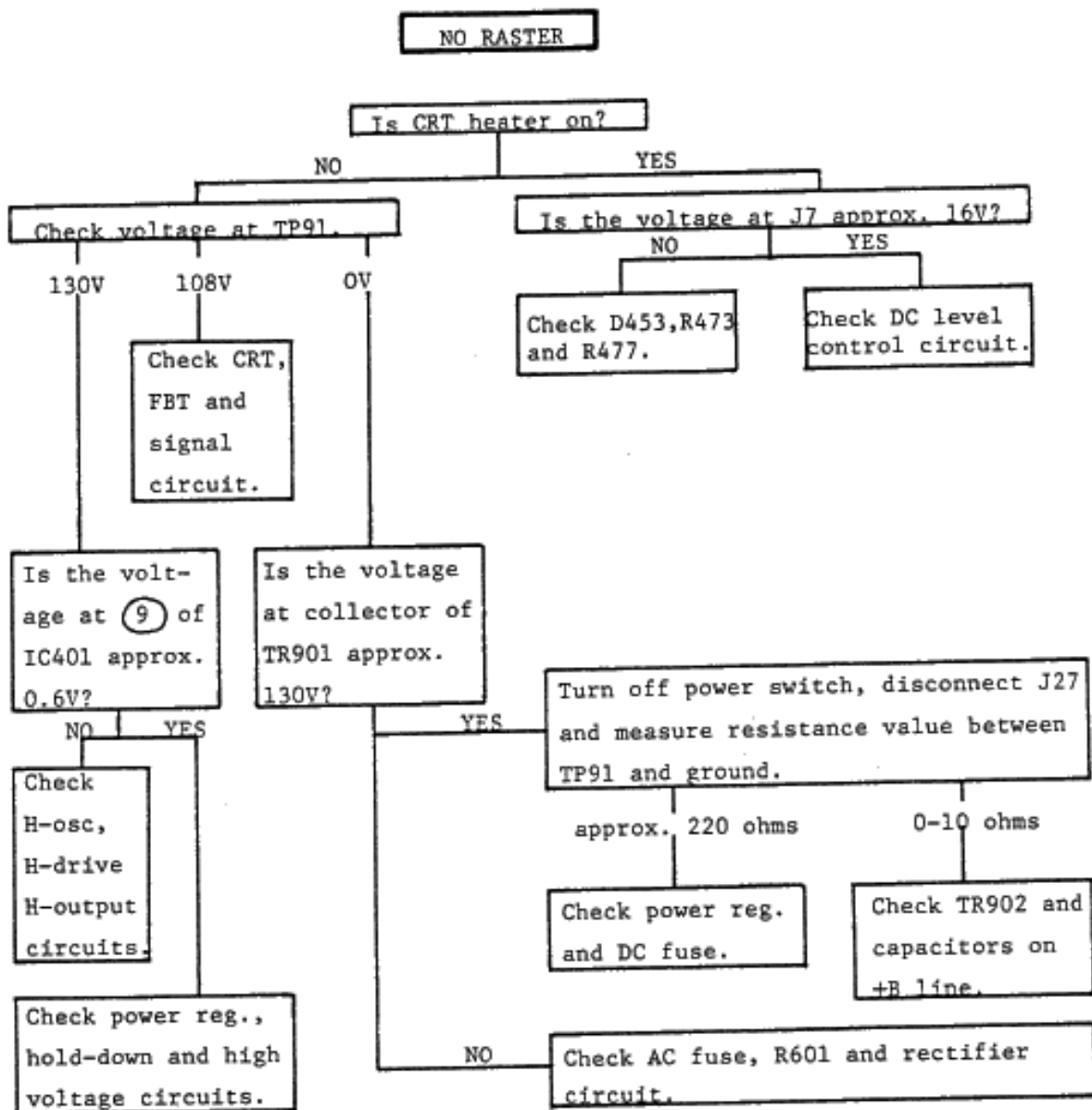
DESCRIPTION OF VIDEO MONITOR BLOCK DIAGRAM

- 1 100VAC is applied
- 2 Rectified by D601, 602, 603, 604
- 3 IC601/TR901 form regulator for B+
- 4 B+ is distributed
-
- 5 R, G, B color signals applied
- 6 Amplified by the respective transistors
- 7 Amplified again at neck board
- 8 Bias provided by brightness voltage
- 9 Applied to picture tube guns
-
- 10 Sync is applied, buffered by TR204
- 11 Apply sync to 1464 sync amp & separator
-
- 12 Vertical pulse out of pin 5 is amplified by TR401, then by TR402/403
- 13 Vertical pulse applied to deflection yoke
-
- 14 Horizontal drive pulse out of pin 10 is amplified by TR451
- 15 Amplified again by TR902 (horizontal output)
- 16 Applied to flyback transformer which distributes voltages
-
- 17 Feedback from flyback monitors pin 7 pulse and will apply hold-down pulse to pin 9 of 1464 should over voltage exist

5. Servicing Procedures Classified by Symptoms

The following are the troubleshooting procedures to use in case of some known typical symptoms. The following flowcharts should be of help in narrowing down the defective section and circuitry at fault.

5-1. No Raster



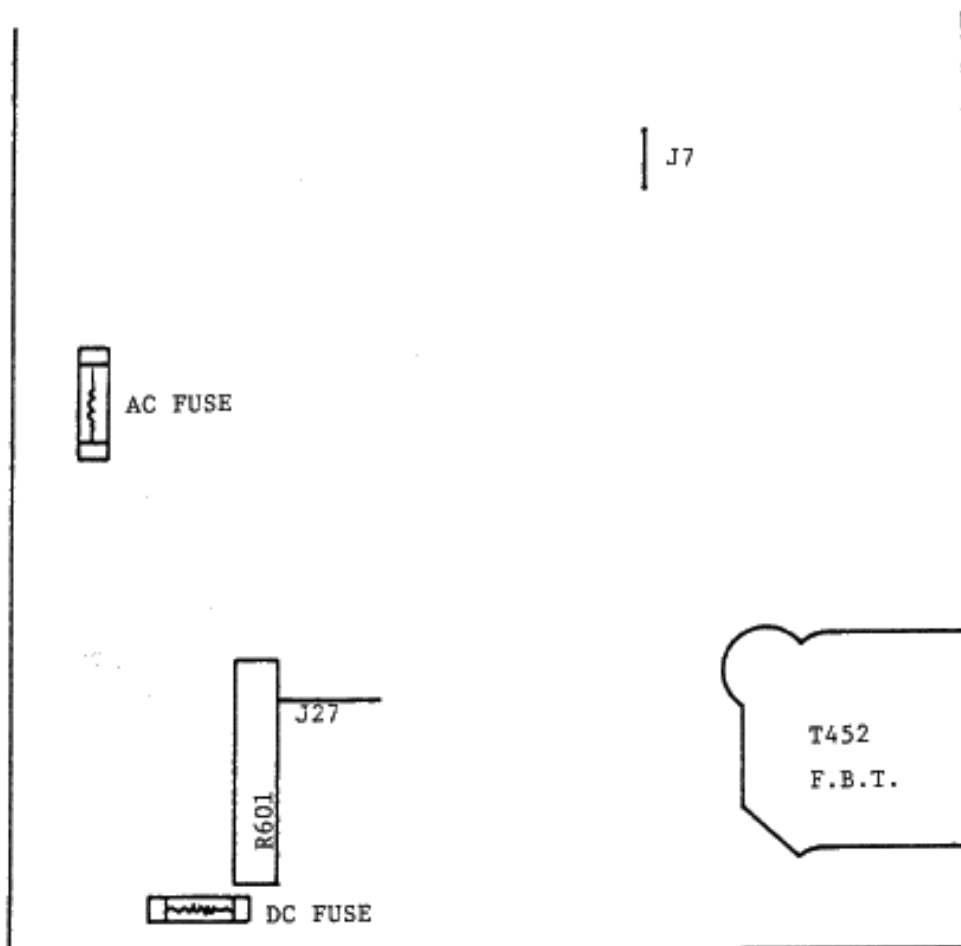
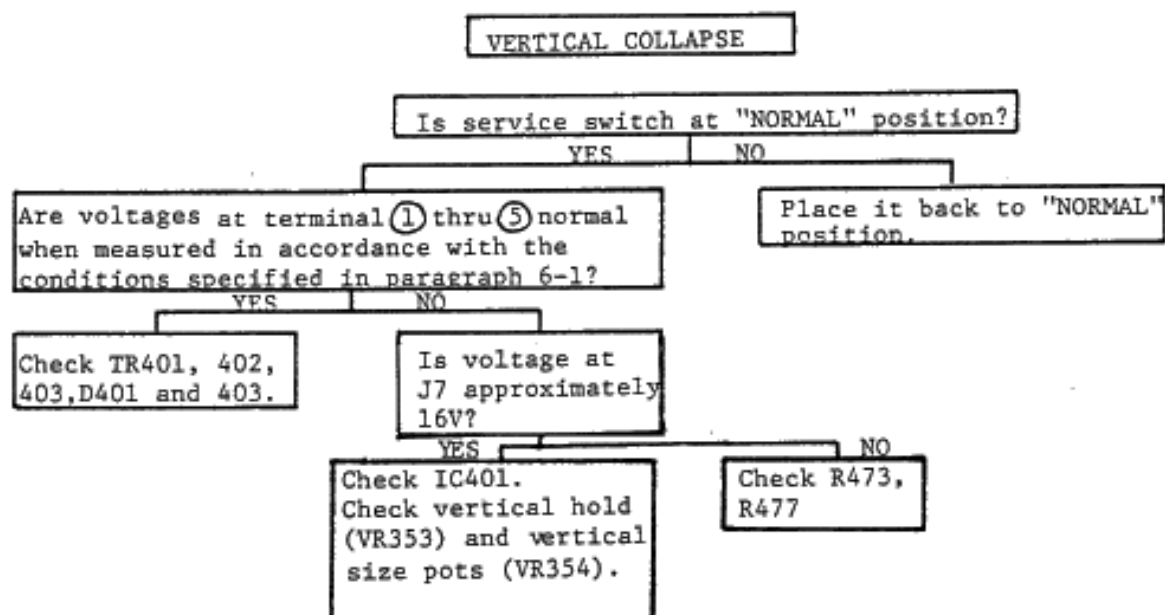
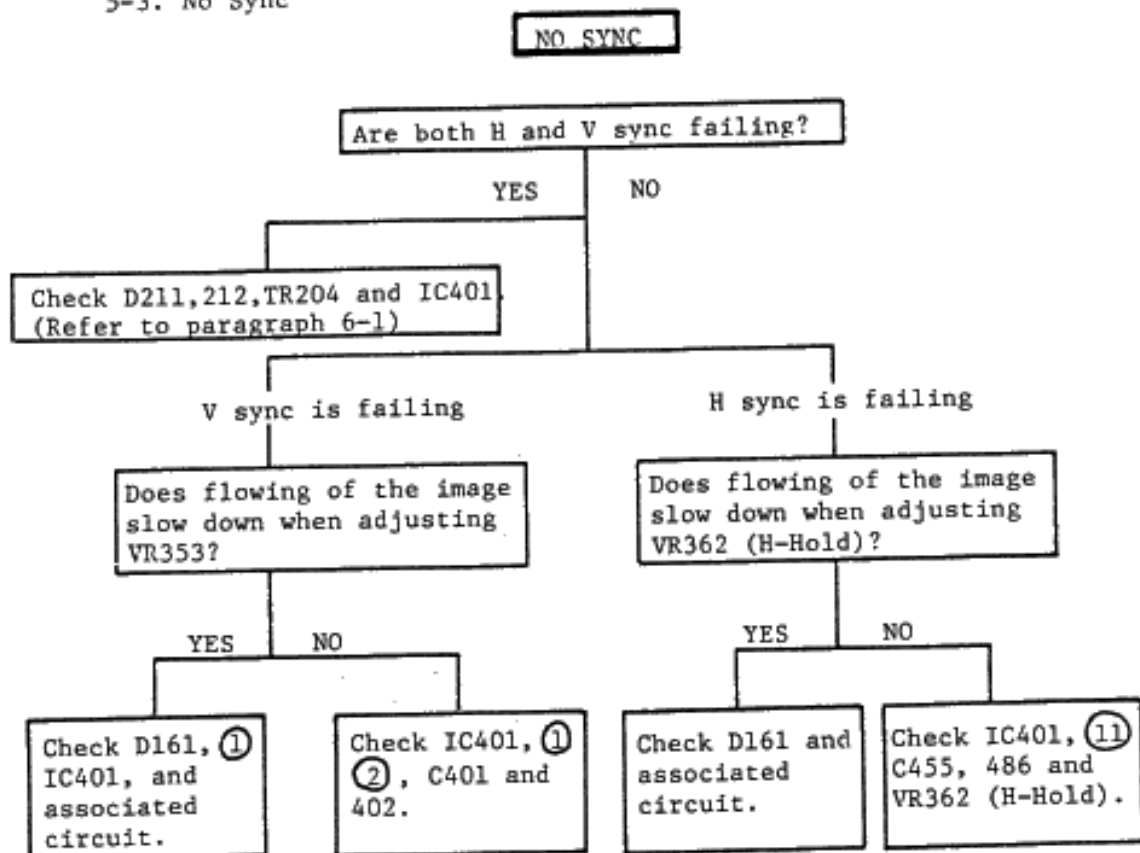


Fig. 17 LOCATIONS OF J7 AND J27

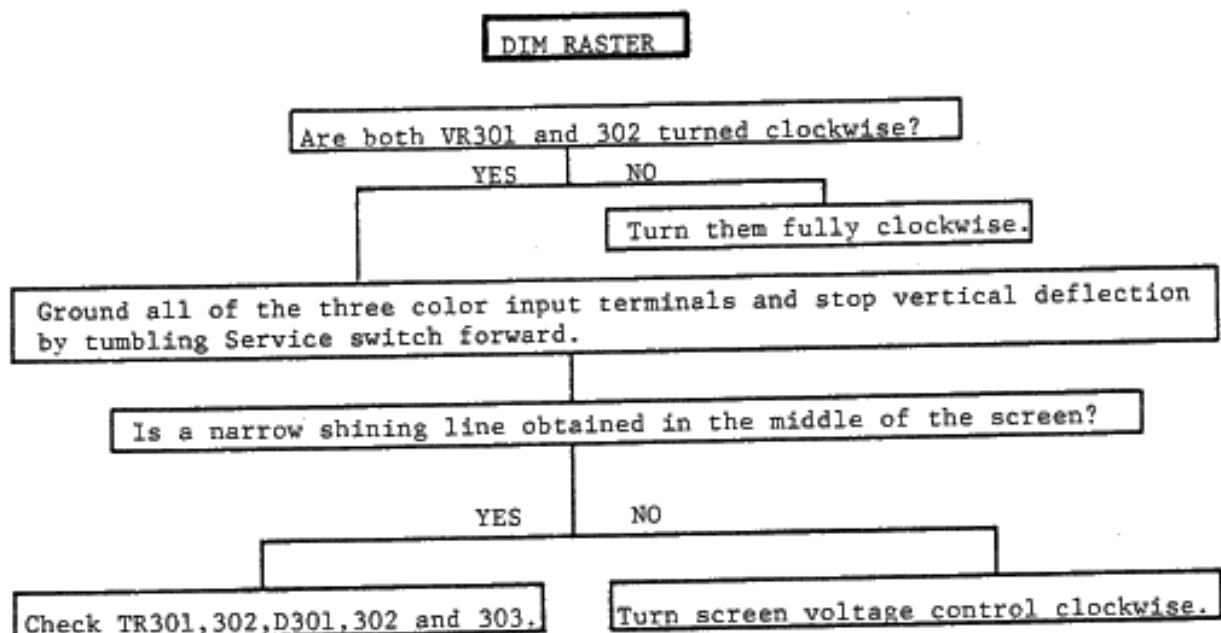
5-2. Vertical Collapse



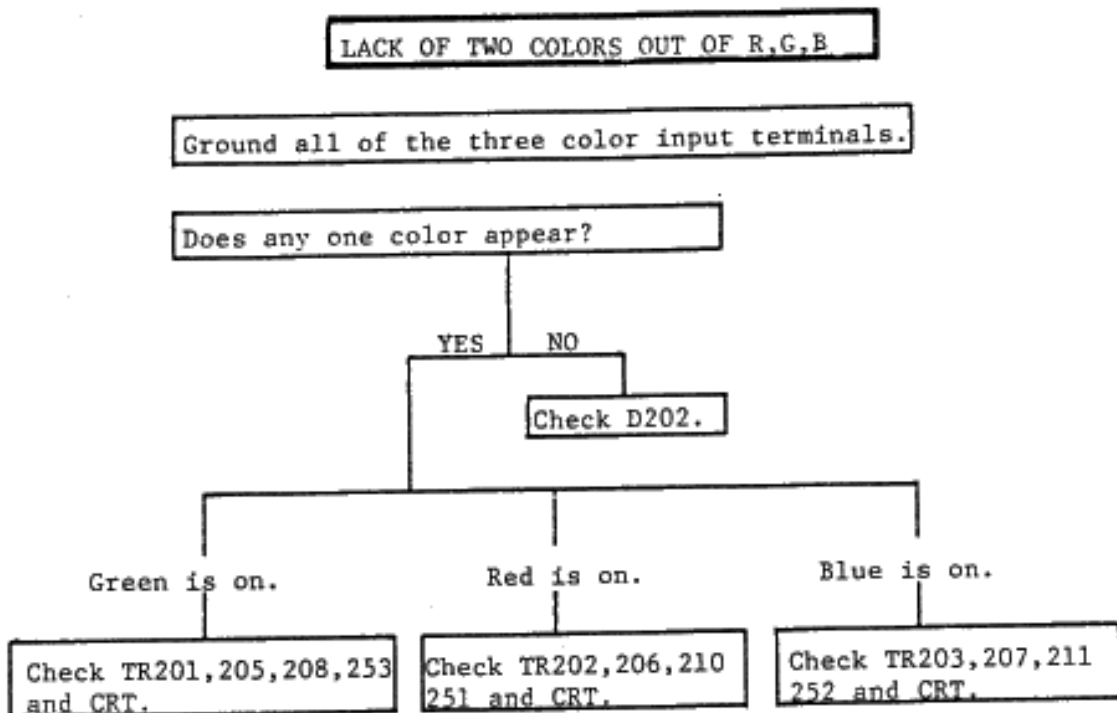
5-3. No Sync



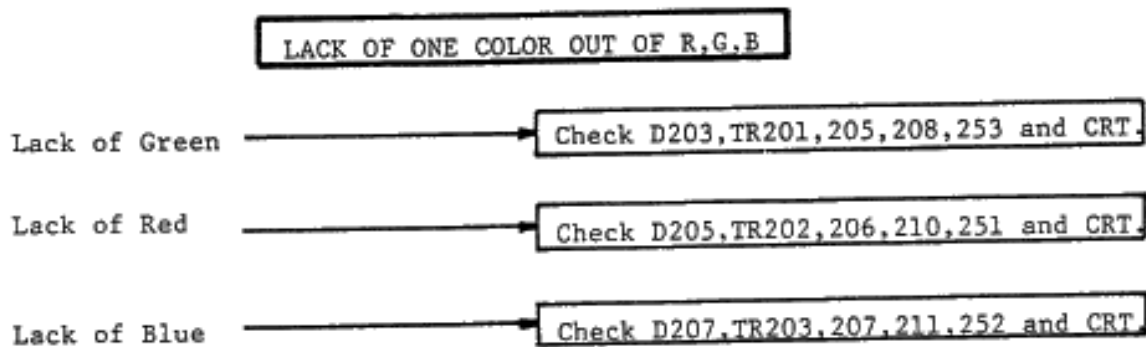
5-4. Dim Raster



5-5. Lack of Two Colors out of R,G,B,



5-6. Lack of One Color out of R,G,B



5-7. Deflection Incomplete

Left side of screen appears to "wrap-around"

Replace C407
10uF/160VDC

5-8. Wave Problem

Waves across entire screen

Replace TR901 (2SD1090)
Replace IC601 (LA5112)

5-9. Blooming White Screen

Screen voltage rises causing screen to go white.

Check R478 (1 ohm, 1/2 watt)

6. Terminal Voltages of IC (Reference Information)

6-1. IC401 LA1464 (Deflection)

| Terminal No. | Voltages when the chassis is in normal operation | |
|--------------|--|--|
| | At IC terminals | At PWB terminals corresponding to IC terminals when IC401 is removed |
| | V DC | V DC |
| 1 | (-3.61V) | 0 |
| 2 | 6.16V | 0 |
| 3 | 1.46V | 29.5 |
| 4 | 1.15V | 0 |
| 5 | .61V | 0 |
| 6 | .01V | 0 |
| 7 | 4.45V | 0 |
| 8 | .01V | 0 |
| 9 | .10V | 0 |
| 10 | 1.90V | 22 |
| 11 | 7.52V | 30.5 |
| 12 | 14.12V | 31 |
| 13 | .29V | 0 |
| 14 | 3.62V | 0 |
| 15 | 7.49V | 30 |
| 16 | 4.23V | 0 |
| 17 | (-.86V) | 0 |
| 18 | 1.50V | 0 |
| 19 | 1.65V | 0 |
| 20 | (-0.01V) | 0 |
| 21 | (-1.09V) | 0 |
| 22 | 5.18V | 0 |
| 23 | 2.11V | 0 |
| 24 | 12.64V | 0 |

Table 1

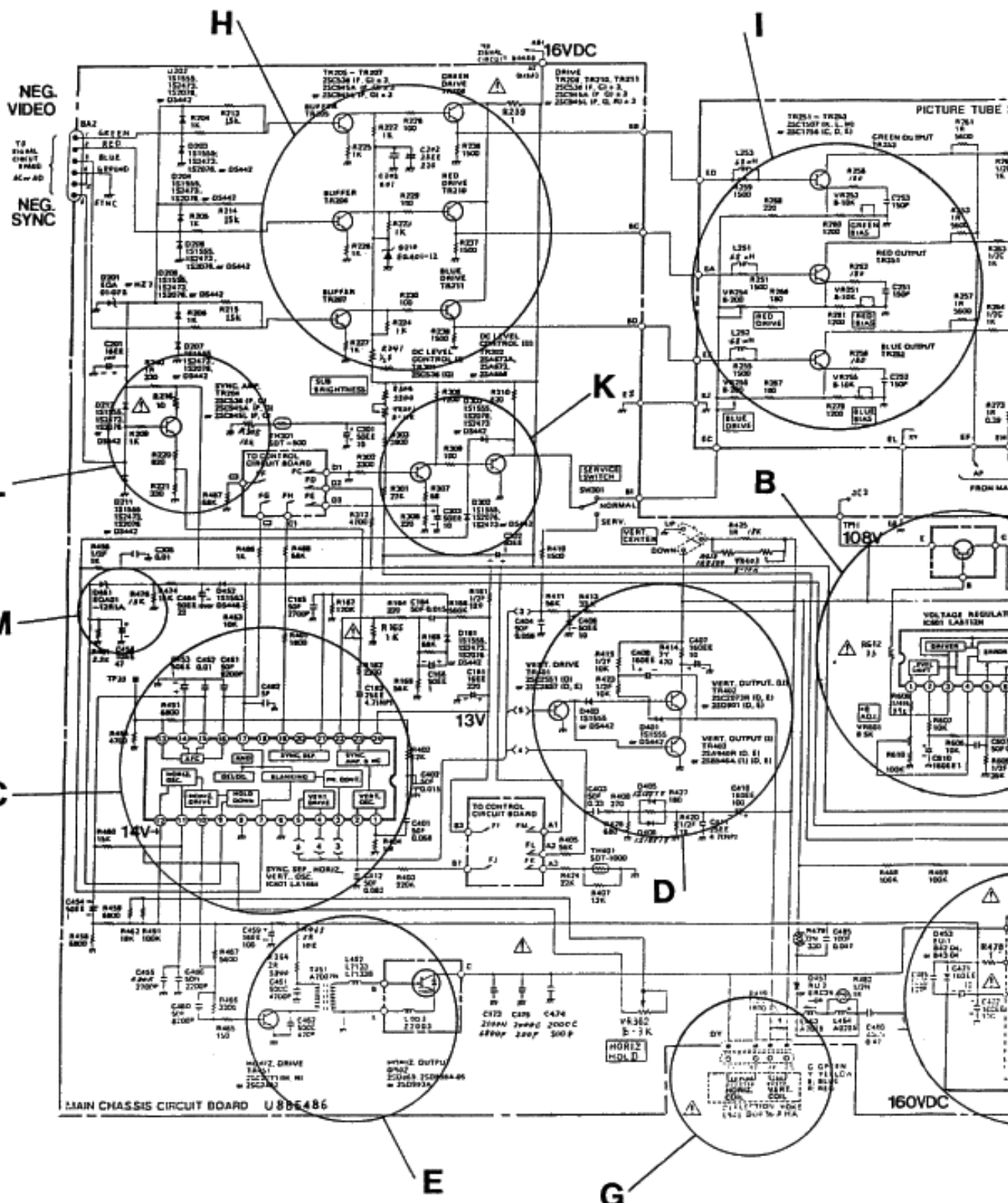
NOTE: Voltages given above are averages. Variances of $\pm 10\%$ would not necessarily indicate a failure.

6-2. IC601 LA5112N (Constant Voltage)

| Terminal No. | Voltages at IC terminals | |
|--------------|--------------------------|-------------------------|
| | In normal operation | When "Hold-Down" occurs |
| | V DC | |
| 1 | 108 | going up |
| 2 | 106 | " |
| 3 | 109 | " |
| 4 | 101 | " |
| 5 | 95 | " |
| 6 | 110 | " |
| 7 | 108 | " |
| 8 | 115 | " |
| 9 | 107.5 | " |

Table 2

NOTE: Voltages given above are averages. Variances of $\pm 10\%$ would not necessarily indicate a failure.



MAIN CHASSIS CIRCUIT BOARD U88E486

NEG. VIDEO
 TP 201AL
 C101V
 R102
 AC=AD

16VDC

PICTURE TUBE 1

13V

14V

108V

200V 2000C
 400V 200V 300V

VR382
 B-3K

160VDC

NEG. SYNC

16VDC

PICTURE TUBE 1

13V

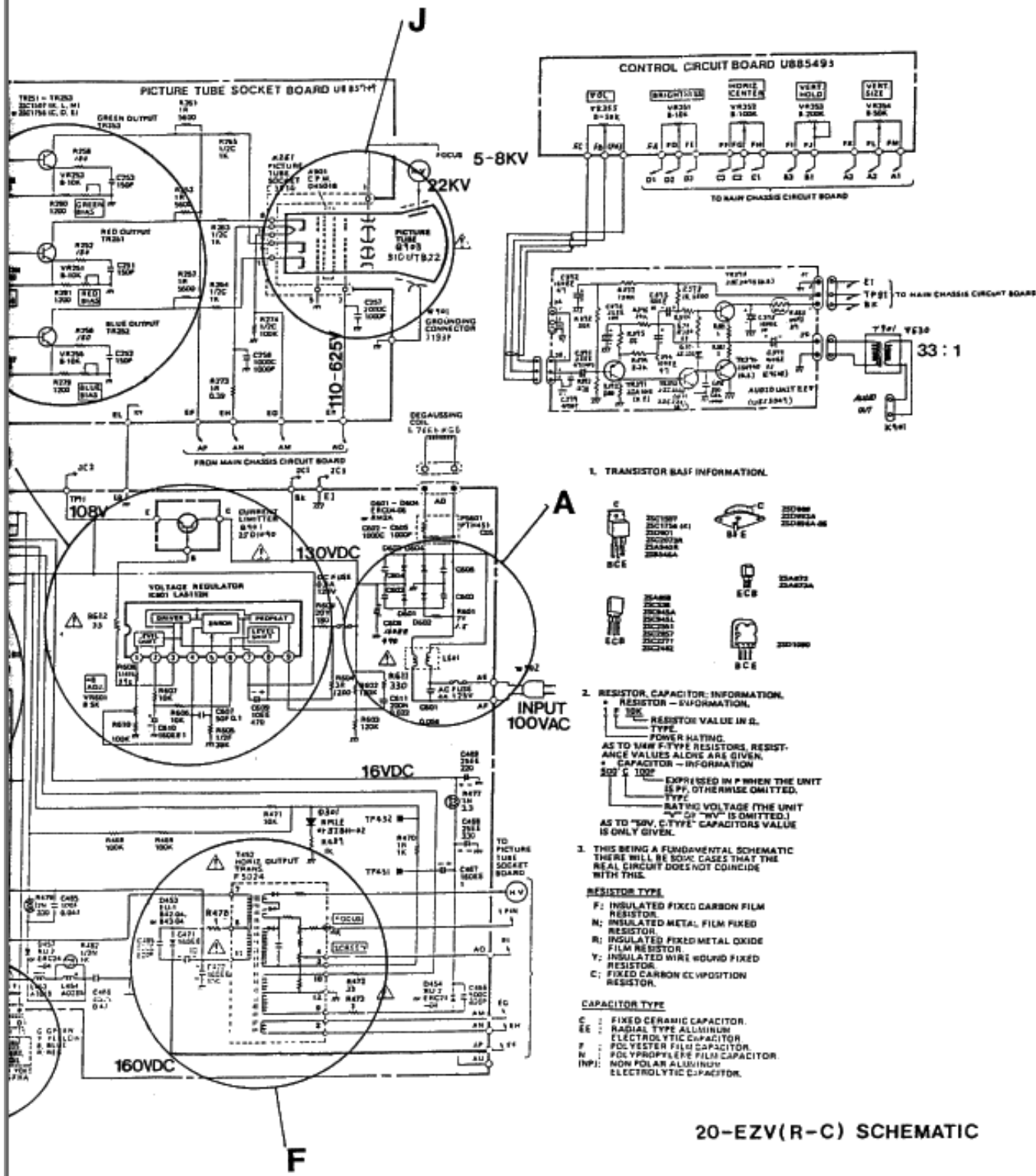
14V

108V

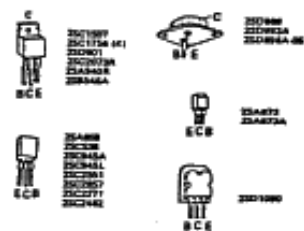
200V 2000C
 400V 200V 300V

VR382
 B-3K

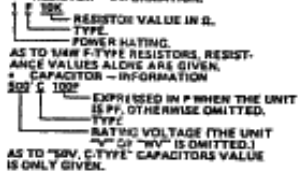
160VDC



1. TRANSISTOR BIAS INFORMATION



2. RESISTOR, CAPACITOR INFORMATION



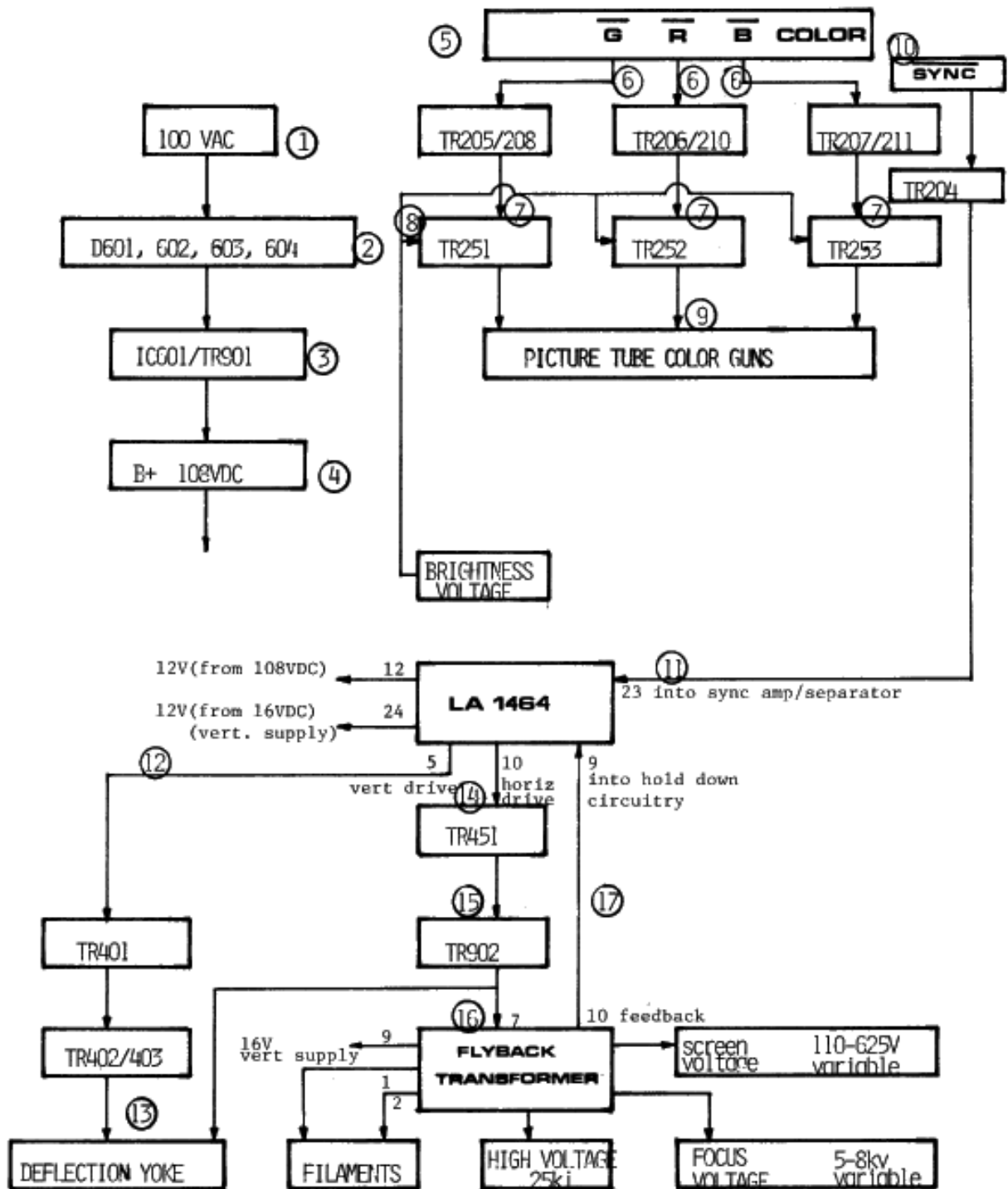
3. THIS BEING A FUNDAMENTAL SCHEMATIC THERE WILL BE SOME CASES THAT THE REAL CIRCUIT DOES NOT COINCIDE WITH THIS.

RESISTOR TYPE
 F: INSULATED FIXED CARBON FILM RESISTOR
 M: INSULATED METAL FILM FIXED RESISTOR
 R: INSULATED FIXED METAL OXIDE FILM RESISTOR
 V: INSULATED WIRE WOUND FIXED RESISTOR
 C: FIXED CARBON ELEMENT POSITION RESISTOR

CAPACITOR TYPE
 C: FIXED CERAMIC CAPACITOR
 EE: RADIAL TYPE ALUMINUM ELECTROLYTIC CAPACITOR
 F: POLYESTER FILM CAPACITOR
 N: POLYPROPYLENE FILM CAPACITOR
 NP: NON POLAR ALUMINUM ELECTROLYTIC CAPACITOR

20-EZV(R-C) SCHEMATIC

Nintendo



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MODIFYING NINTENDO SANYO MONITORS FOR NORMAL CONVERSION KITS:

FIRST REMOVE THE JUMPERS INSTALLED IN PLACE OF TR 201 THRU TR 203,
ALSO REMOVE RESISTORS R213 THRU R215. YOU ARE NOW READY TO INSTALL
THESE PARTS ON THE BOARD:

| | |
|-------------------|---------------------------------|
| R201 THRU R203 | 100K $\frac{1}{4}$ WATT |
| R210 THRU R212 | 100K $\frac{1}{4}$ WATT |
| R213 THRU R215 | 820 Ω $\frac{1}{4}$ WATT |
| R217 THRU R219 | 560 Ω $\frac{1}{4}$ WATT |
| TR201 THRU TR 203 | 2SC1815 TRANSISTOR |
| C 202 | 220 MF @ 16V RADIAL |
| D 210 | 1N4004 DIODE |

NOW THE MONITOR WILL WORK WITH NORMAL CONVERSION KIT GAMES