

G.E. #25MB COLOR MONITOR

TROUBLESHOOTING MANUAL

For Indy 800 and similar games

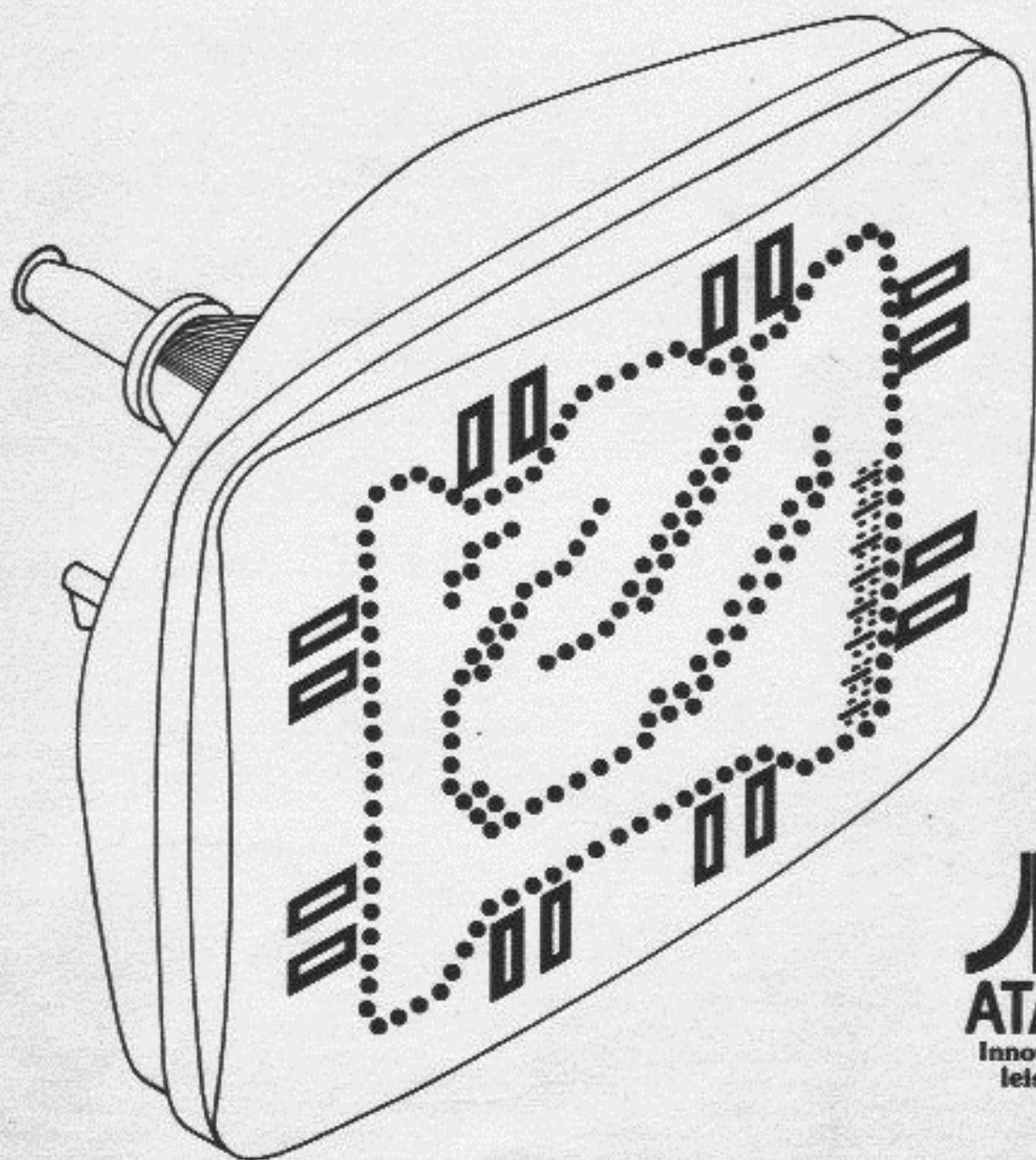


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The primary purpose of convergence is to keep the cars and scores recognizable over the entire playing area at a normal viewing distance. Some imperfections occurring in the corners are normal. Since the picture tube is placed in the vertical position, the earth's magnetic field will greatly affect the purity and convergence. Factory color adjustments are made with the cars in the starting position facing south. ON LOCATION, THE GAME MUST FACE SOUTH TO MAINTAIN THE COLORS.

5.1 STATIC CONVERGENCE

This adjustment is made to converge the three color guns at the center of the picture. The four adjusting magnets are located on the neck of the picture tube on the convergence yoke assembly, right below the main yoke. The red adjustments move the color beam diagonally from left to right, while the green adjustment moves the beam diagonally from right to left. The two blue adjustments are for vertical and horizontal beam movement. See Figure 3 below.

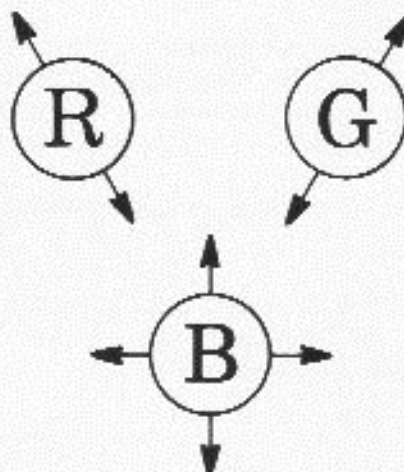


Figure 3: Directions of Red, Green and Blue Adjustments

Proceed as follows using one pylon at the center of the screen. Turn brightness down.

- 5.1.1 Adjust red and green dots until they are on top of one another.
- 5.1.2 Adjust blue vertical and horizontal to coincide with the red/green dot. At normal viewing distance, the dot or pylon should appear white.
- 5.1.3 Readjust red and green, if necessary.

5.2 DYNAMIC CONVERGENCE

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These adjustments are necessary to correct convergence at the centers of all four sides. For this, use three or four pylons located right between pairs of scores at the outer edges of the race track. Do not be concerned with the pylons in the corners of the picture.

The procedure outlined in Figure 4 below is recommended for dynamic convergence. Two basic convergence functions are involved, the vertical (steps 5.2.1 through 6) and the horizontal steps 5.2.7 through 12).

VERTICAL:

5.2.1 Adjust the red/green vertical control until the red and green pylon dots on the far side (between the green and yellow scores) are either on top of one another or side-by-side.

5.2.2 Adjust the red/green vertical control as above except using the near-side pylons between the red and blue scores. Repeat steps 5.2.1 and 2 several times, since these controls affect one another.

5.2.3 Adjust the red/green horizontal control to bring the red and green dots together on the far side.

5.2.4 Adjust the red/green horizontal control as in step 5.2.3 except on the near-side pylons. Repeat steps 5.2.3 and 4 until good red/green convergence is obtained. In some extreme cases, such as a new picture tube, steps 5.2.1 through 4 may have to be repeated.

5.2.5 Adjust blue horizontal control to converge the blue dot on the far side.

5.2.6 Adjust blue horizontal control to converge the blue dot on the near side. Repeat steps 5.2.5 and 6 until the pylons appear white at the normal viewing distance.

HORIZONTAL:

The adjustment steps 5.2.7 through 12 are identical to 1 through 6, except that the pylons between the scores on the right and left sides are converged.

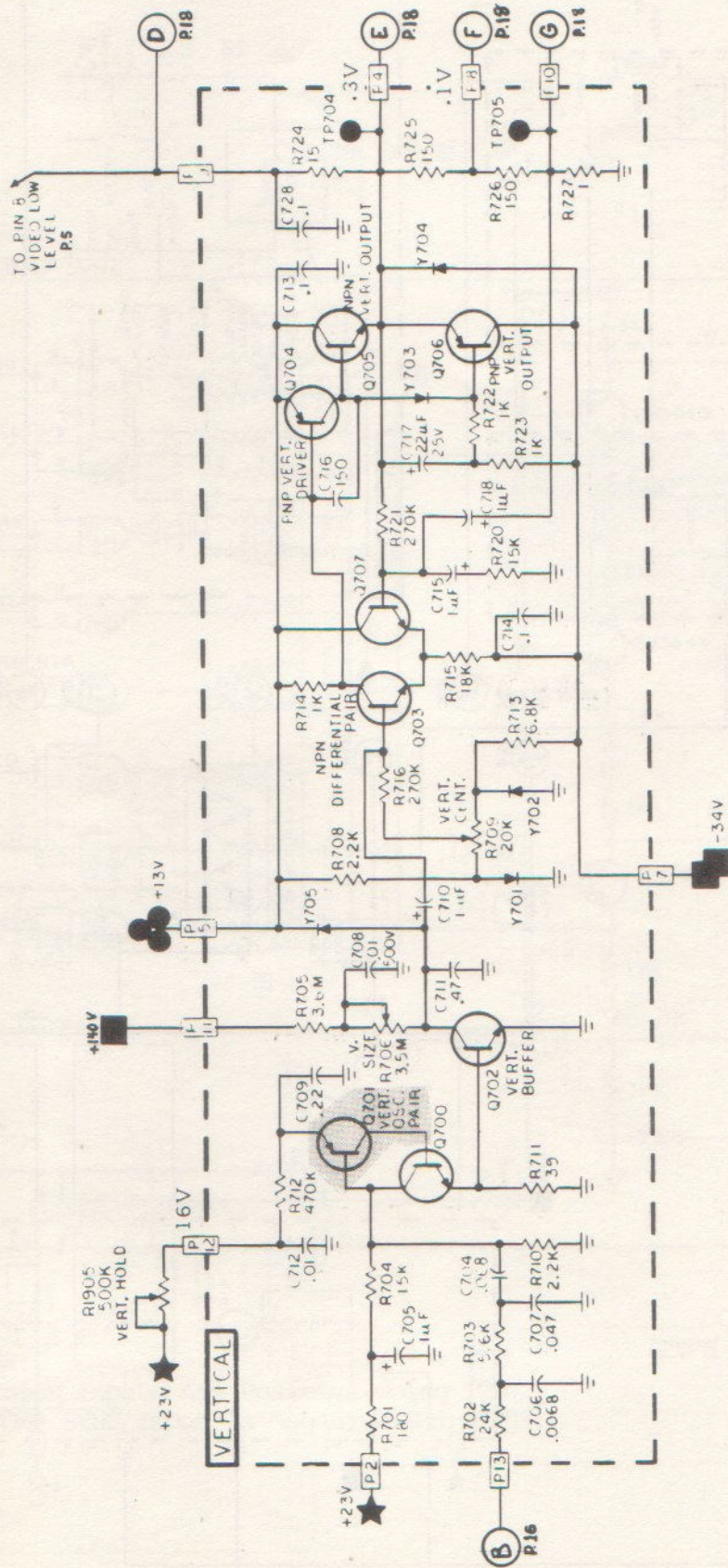
PROBLEM: No Picture, Fuse OK, Circuit Breaker OK, Filament of CRT Visible

STEP	PROCEDURE	LOCATION	VOLTAGE MEASURED	RESULTS	PROCEED TO STEP
1	Measure collector voltage of color amplifier.	Three large heat sinks on RGB board.	115*	Indicates horizontal circuits are operating.	2
2	Measure voltage at pin 12 at input to chroma board.	Chroma board.	0	No 200V from horizontal output.	5
3	Measure 800-volt power supply.	Grey wire on blue-screen drive.	200	23V or -21V power supply defective, RGB board defective.	---
4	Measure high voltage (use a 30KV probe).	CRT high-voltage cap.	28.5KV	Computer problem. No 5V from score board.	---
5	Collector of horizontal buffer transistor.	Buffer module (the can of the large transistor).	85	Computer ok.	3
6	Measure 23-volt power supply.	Pin 12 on signal conditioner board.	800	Boost circuit ok.	4
			0	Defective diode Y1601.	---
			28.5KV	Test picture tube.	---
			85	Horizontal oscillator and buffer ok. Check diode Y1621 (200V diode) and horizontal output transformer.	---
			0	Check 140V power supply; if ok, you have a defective buffer board.	---
			140	No input to transistor.	6
			23	Defective signal conditioner board (horizontal oscillator).	---
			0	23-volt power supply defective.	---

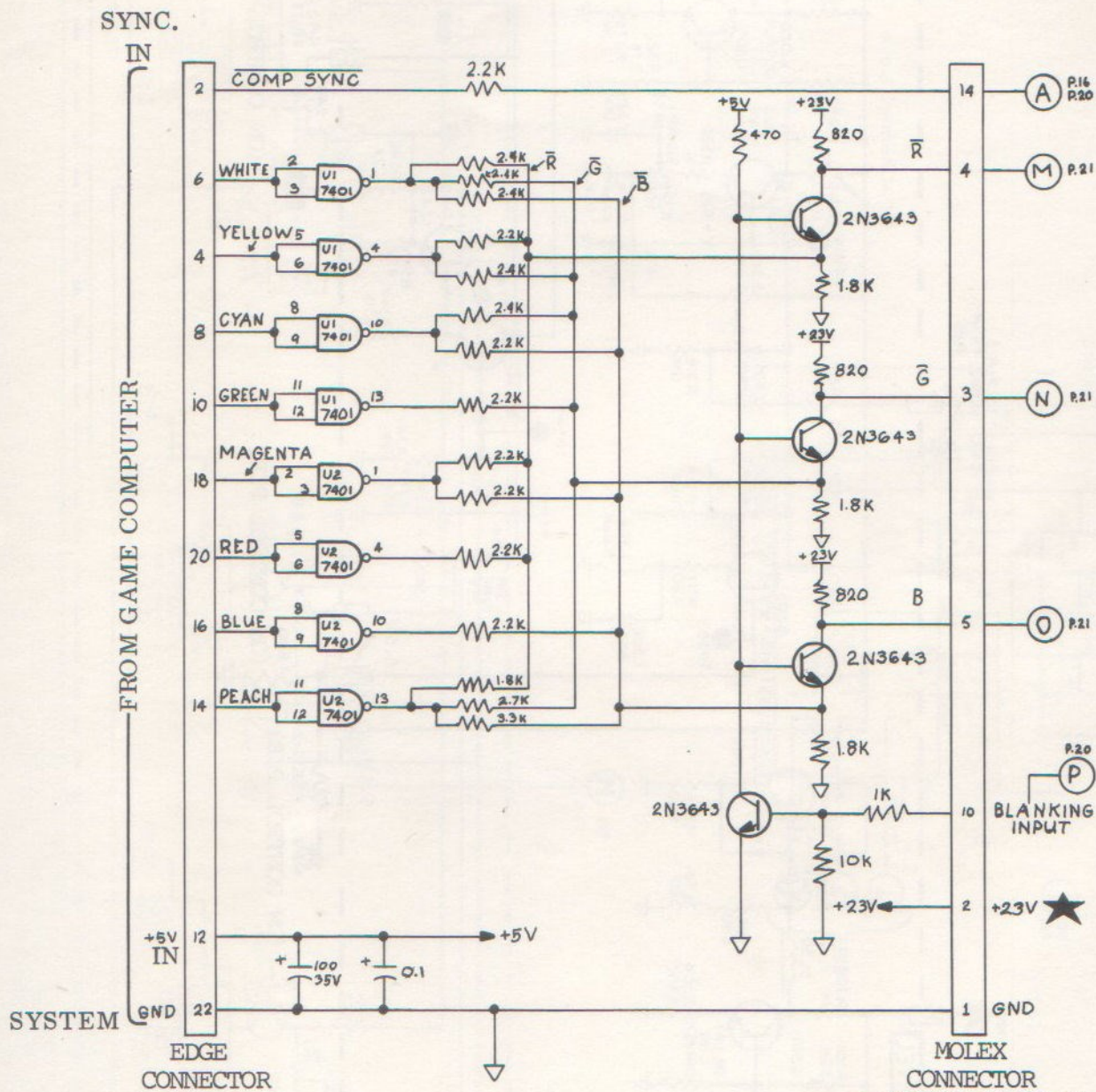
*Range from 85V-145V permissible (a $\pm 25\%$ range)

PROBLEM: Circuit Breaker Opens

STEP	PROCEDURE	LOCATION	RESULTS	PROCEED TO STEP
1	Pull out signal conditioner; turn on.	Lower left (see Figure 2).	Circuit breaker opens (static). Circuit breaker remains closed (dynamic); then one of the following components is faulty: Pulse-limiter diode Y1661 200V diode Y1621 800V diode Y1601, 1602 High-voltage tripler	2 ---
2	Measure collector-emitter resistance of series regulator.	On large heat sink on back of set, right over filter cap. Collector is the red lead and emitter is yellow.	0 ohms: replace transistor and also check Q1301, Q1302, and Y1301 on high-voltage regulator board. 20K ohms or more.	---
3	Measure resistance between emitter of the series regulator and ground. Use positive lead of meter on the emitter.	Same as above.	Less than 100K ohms: check horizontal output transistor and damper diode Y1603. Greater than 100K ohms.	---
4	Remove high-voltage regulator board, turn set on and measure collector voltage of series regulator.	Upper right (see Figure 2).	Voltage is 200V. Regulator board defective. Circuit breaker opens.	---
5	Remove the degaussing coil. Turn on.	Three-pin molex connector containing one black and two white wires located on back of main power supply chassis.	Circuit breaker remains closed. Defective degaussing coil. Circuit breaker opens; defective power supply diodes Y901, 902, 903, 904, or a short within the power supply chassis.	---



CHROMA BOARD



NOTES:

1. Color Inputs Are Positive-Going TTL
2. COMP SYNC Input Is Negative-Going TTL

(TYPE 09-52-3151)

