

S.E.R. FAQ **NotTaR of Television Sets** : **CRT convergence adjustment**

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CRT convergence adjustment

In the good old days when TVs were TVs (and not just a picture tube with a little circuit board attached) there were literally drawers full of knobs for setting convergence. One could spend hours and still end up with a less than satisfactory picture. As the technology progressed, the number of electronic adjustments went down drastically so that today there are very few if any.

Unless you want a lot of frustration, I would recommend not messing with convergence. You could end up a lot worse. I have no idea what is used for convergence on your set but convergence adjustments are never quite independent of one another. You could find an adjustment that fixes the problem you think you have only to discover some other area of the screen is totally screwed. In addition, there are adjustments for geometry and purity and maybe others that you may accidentally move without even knowing it until you have buttoned up the set.

Warning: Accurately mark the original positions - sometimes you will change something that will not have an obvious effect but will be noticeable later on. So it is extremely important to be able to get back to where you started. If only red/green vertical lines are offset, then it is likely that only a single ring needs to be moved - and by just a hair. But, you may accidentally move something else!

If you really cannot live with it, make sure you mark everything very carefully so you can get back to your current state. A service manual is essential!

Convergence is set using a white crosshatch or dot test pattern. If you do not have a test pattern generator, any static scene (from a camcorder or previously recorded tape, for example) with a lot of fine detail will suffice. Turn the color control all the way down so you have a B/W picture.

Static convergence sets the beams to be coincident in the exact center of the screen. This is done using a set of ring magnets behind the purity magnets on the CRT neck.

From the Sams' for the RCA CTC111C: "adjust the center set of magnets to converge blue to green at the center of the screen. Adjust the rear set of magnets to converge red to green at the center of the screen." Your set may have a slightly different procedure.

Dynamic convergence adjusts for coincidence at the edges and corners.

On old tube, hybrid, and early solid state TVs, dynamic convergence was accomplished with electronic adjustments of which there may have been

a dozen or more that were not independent. With modern sets, all convergence is done with magnet rings on the neck of the CRT, magnets glued to the CRT, and by tilting the deflection yoke. The clamp in conjunction with rubber wedges or set screws assures that the yoke remains in position.

From the Sams' for the RCA CTC111C: "Loosen the screws at the 6 o'clock and 10 o'clock positions to permit the yoke to be tilted vertically. Rock yoke up and down to converge the right and left sides of the screen. Tighten screw at 6 o'clock and loosen screw at 3 o'clock to permit the yoke to be tilted horizontally. Rock yoke from side to side to converge the top and bottom of the screen. Tighten screws at 3 o'clock and 10 o'clock."

Many sets simply use the main clamp which locks the yoke to the neck of the CRT in conjunction with rubber wedges between the yoke and the funnel of the CRT to stabilize the yoke position position.

Refer to your service manual. (Is this beginning to sound repetitious?)

For additional comments on convergence adjustments, see the sections: "Tony's notes on setting convergence on delta gun CRTs" and "Saga and General setup for large CRT TVs".

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