

SERVICE ADJUSTMENTS

Purity Adjustment

Caution: This procedure DOES NOT apply to bonded yoke picture tube assemblies.

The instrument should be at room temperature (60 degrees F or above) for six (6) hours and be operating at low beam current (dark background) for approximately 20 to 30 minutes before performing purity adjustments.

Caution: Do not remove any trim magnets that may be attached to the bell of the picture tube.

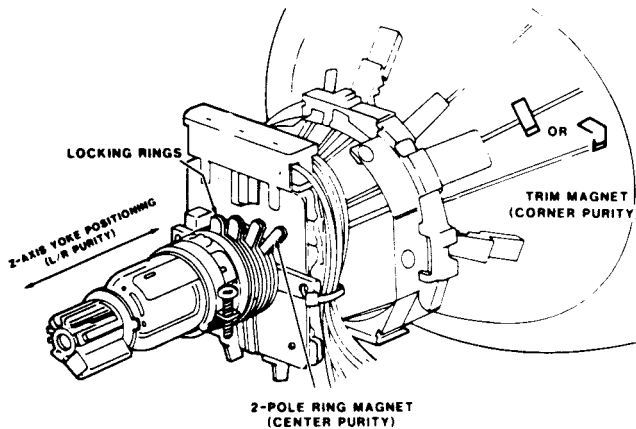


Fig. 1 - Purity Adjustment Locations

1. Remove the AC power.
2. Remove the yoke from the neck of the picture tube.
3. If the yoke has the tape version beam bender, remove it and replace it with an adjustable type beam bender (follow the instructions provided with the new bender).
4. Replace the yoke on the picture tube neck, temporarily remove the three (3) rubber wedges from the bell of the picture tube and then slide the yoke completely forward.
5. Reconnect the internal degaussing coil.
6. Position the beam bender locking rings at the 9 o'clock position and the other three pairs of tabs (2, 4 and 6 pole magnets) at the 12 o'clock position.
7. Perform the following steps, in the order given, to prepare the receiver for the purity adjustment procedure.
 - a. Face the receiver in the "magnetic north" direction.
 - b. Externally degauss the receiver screen with the television power turned off.
 - c. Turn the television on for approximately 10 seconds to perform internal degaussing and then turn the TV off.
 - d. Unplug the internal degaussing coil. This allows the thermistor to cool down while you are performing the purity adjustment. DO NOT MOVE THE RECEIVER FROM ITS "MAGNETIC NORTH" POSITION.
 - e. Turn the receiver on and obtain a red raster by shorting JW418 to ground, increase the red bias control (CW) and decrease the bias controls for the remaining two colors (CCW).

- f. Attach two (2) round magnets on the picture tube screen at 3 o'clock and 9 o'clock positions, approximately one (1) inch from the edge of the mask (use double-sided tape).
8. Referring to Figure 3, perform the following two steps:
 - a. Adjust the yoke Z-axis (See Fig. 1) to obtain equal blue circles.
 - b. Adjust the appropriate beam bender tabs to obtain correct purity (four equal circles).
 9. After correct purity is set, tighten the yoke clamp screw and remove the two (2) screen magnets.
 10. Remove the AC power and rotate the receiver 180 degrees (facing "magnetic south").
 11. Reconnect the internal degaussing coil.
 12. Turn the receiver on for 10 seconds (make sure the receiver comes on) to perform internal degaussing, and then turn the receiver off.
 13. Unplug the internal degaussing coil.
 14. Turn on the receiver and check the purity by holding one (1) round magnet at the 3 o'clock and a second round magnet at 9 o'clock position. If purity is not satisfactory, repeat steps 8 through 14.
 15. Turn off the receiver, remove short from JW418. Reconnect the internal degaussing coil.

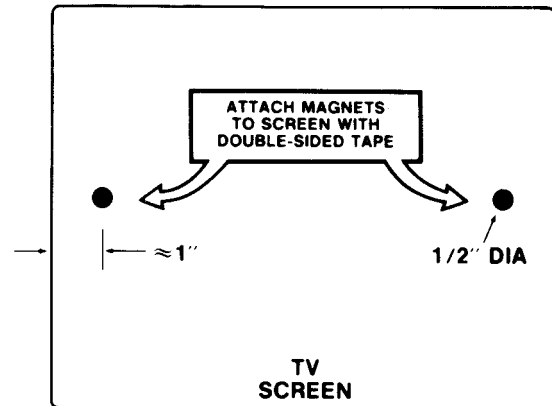


Fig. 2 - Magnets Attached at 3 O'clock and 9 O'clock

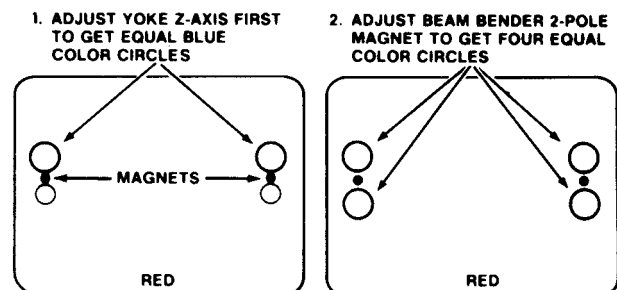


Fig. 3 - Purity Adjustment With Registration Offset Via Screen Magnets

SERVICE ADJUSTMENTS (Continued)

Convergence Adjustment

Caution: This procedure DOES NOT apply to bonded yoke picture tube assemblies.

Caution: Do not use screen magnets during this adjustment procedure. Use of screen magnets will cause an incorrect display.

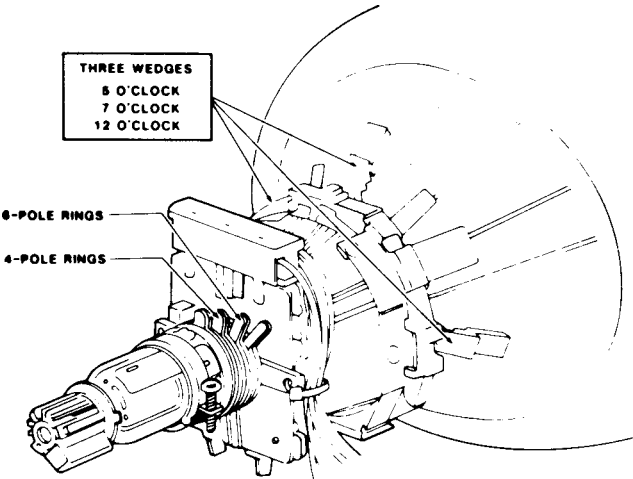


Fig. 4 - Convergence Adjustment Locations

Note: Replace tape type beam bender with an adjustable type beam bender. See parts list for stock number.

1. Remove AC power and disconnect the internal degaussing coil.
2. Obtain a service line by depressing Video Button while holding Setup Button depressed.
3. Turn the *Color* control to minimum.
4. Adjust the *Red*, *Green* and *Blue Bias* controls to get a dim white line.
5. Remove the AC power.
6. Reconnect the internal degaussing coil and apply AC power.
7. Turn the receiver on for 10 seconds to perform internal

degaussing and then turn the receiver off again.

8. Unplug the internal degaussing coil.

9. Turn on the receiver, connect a signal generator to the VHF antenna terminal and apply a crosshatch signal.

Caution: During the convergence adjustment procedure, be very careful not to disturb the purity adjustment tabs that have been previously adjusted. If they are accidentally moved, purity should be confirmed before proceeding with the convergence adjustments.

10. Converge the red and blue vertical lines to the green vertical line at the center of the screen by performing the following steps (Fig. 5).

- a. Carefully rotate both tabs of the 4-pole ring magnet simultaneously in opposite directions from the 12 o'clock position to converge the red and blue vertical lines.
- b. Carefully rotate both tabs of the 6-pole ring magnet simultaneously in opposite directions from the 12 o'clock position to converge the red and blue (now purple) vertical lines with the green vertical line.

11. Converge the red and blue horizontal lines with the green line at the center of the screen by performing the following steps (Fig. 5).

- a. Carefully rotate both tabs of the 4-pole ring magnet simultaneously in same direction (keep the spacing between the two tabs the same) to converge the red and blue horizontal lines.
- b. Carefully rotate both tabs of the 6-pole ring magnet simultaneously in same direction (keep the spacing between the two tabs the same) to converge the red and blue (now purple) horizontal lines with the green horizontal line.

c. Secure the tabs previously adjusted by locking them in place with the locking tabs on the beam bender.

12. While watching the 6 o'clock and 12 o'clock positions on the screen, rock the front of the yoke in a vertical (up/down) direction to converge the red and blue vertical lines (Fig. 6).

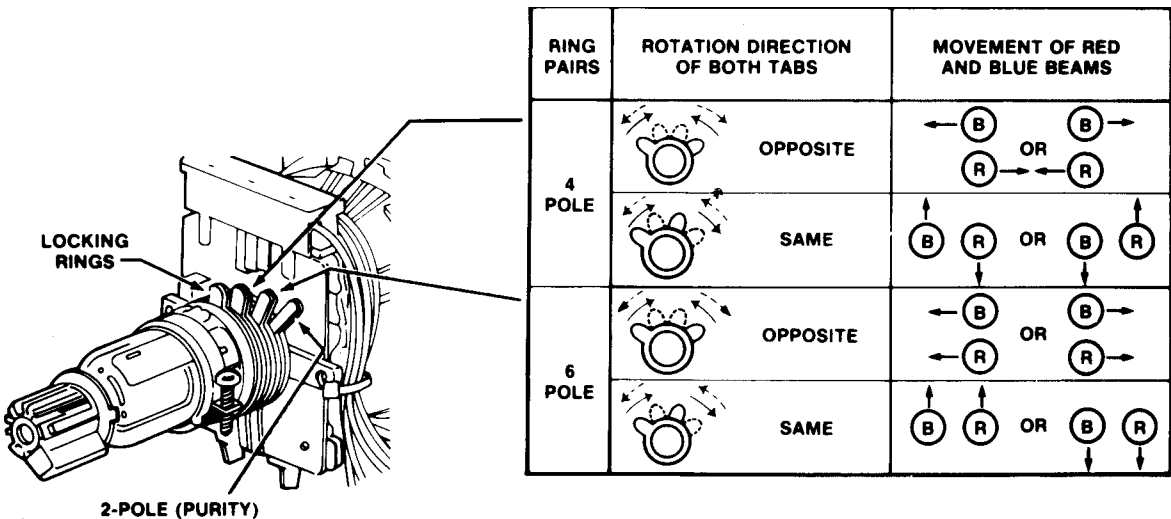


Fig. 5 - In-Line Kine Convergence Ring Adjustment

SERVICE ADJUSTMENTS (Continued)

Convergence Adjustment (Continued)

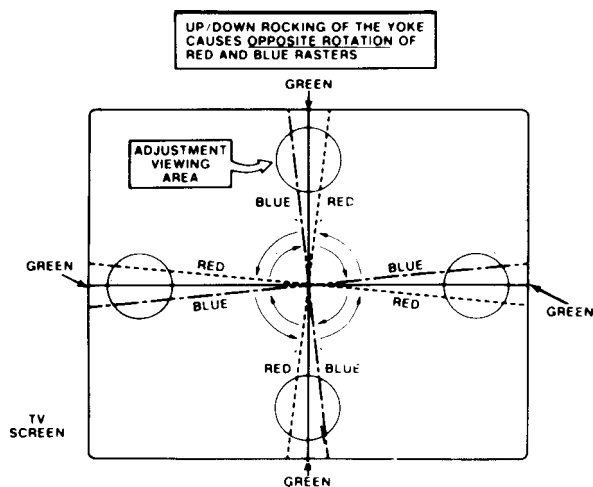


Fig. 6 - Yoke Tilt Convergence Adjustment

13. Temporarily place a rubber wedge at the 12 o'clock position to hold the vertical position of the yoke.
14. Check the 3 o'clock and 9 o'clock areas to confirm that the red and blue horizontal lines are converged. If the lines are not converged, slightly offset the vertical tilt of the yoke (move the rubber wedge if necessary) to equally balance the convergence error of the horizontal lines at 3 o'clock and 9 o'clock and the vertical lines at 6 o'clock and 12 o'clock.
15. Place a 1.5 inch piece of glass tape over the rubber foot at the rear of the 12 o'clock wedge.
16. While watching the 6 o'clock and 12 o'clock areas of the screen, rock the front of the yoke in the horizontal (left to right) motion to converge the red and blue horizontal lines (Fig. 7)
17. Temporarily place a rubber wedge at the 5 o'clock and 7 o'clock positions to hold the horizontal position of the yoke.

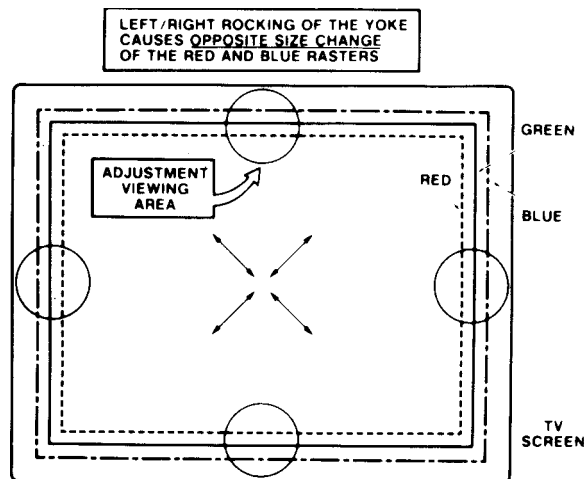


Fig. 7 - Yoke Horizontal Convergence Adjustment

18. Check the 3 o'clock and 9 o'clock areas to confirm that the red and blue vertical lines are converged. If the lines are not converged, slightly offset the horizontal tilt of the yoke (move the temporary rubber wedges if necessary) to equally balance the convergence error of the horizontal lines at 6 o'clock and 12 o'clock and the vertical lines at 3 o'clock and 9 o'clock.
19. Using a round magnet confirm purity at the center, right and left sides and corners. See Purity Adjustment Procedure.
20. Reconfirm convergence and apply a 1.5 inch piece of glass tape over the rubber foot at the rear of the 5 o'clock and the 7 o'clock wedges.

Color Temperature Adjustment

Test Point:	Observe Display	
Adjust:	R4704 (Screen)	Main PCB
	R2913 (Red Bias)	Main PCB
	R2921 (Green Bias)	Main PCB
	R2917 (Blue Bias)	Main PCB
	R2926 (R/B Drive)	Main PCB
	R2928 (G Drive)	Main PCB

1. Tune the instrument to receive a color bar signal.
2. Preset the *Drive* controls to midrange and the *Bias* controls to minimum. Preset the *Screen* control to minimum.
3. Defeat the chroma portion of the signal by either a) turning off the chroma at the signal generator, or b) shorting pin 42 of U1001 (located on the Main PCB) to ground.
4. Select channel 90 (S-VIDEO) for a blank display. Using the Video menu, set *Brightness* to three steps above the Reset value.
5. Defeat vertical scan by shorting the collector of Q4505 to ground.
6. Advance the *Screen* control (R4704) clockwise until a dim colored line just appears, and note which color (red, green or blue) is predominate. Adjust the remaining *Bias* controls (R2913, R2921 and/or R2917) to obtain a white line. Reduce the *Screen* setting, if necessary, to maintain a dim service line.
7. Remove the short from the collector of Q4505. Tune the instrument to receive the color bar signal (with no color).
8. Observe the brightest bar of the display and adjust the *Red/Blue Drive* control (R2926) and the *Green Drive* control (R2928) to obtain a white bar.
9. Repeat steps 4 through 8 as necessary to obtain good white tracking.

SERVICE ADJUSTMENTS (Continued)

Vertical Height Adjustment

Test Point:	Observe Display	
Adjust:	R4522 (V Height)	Main PCB

1. Tune the instrument to receive a local broadcast.
2. Adjust the *Vertical Height* control (R4522) for approximately 1/4" overscan at the top and bottom of the display.

Horizontal Centering Adjustment

Test Point:	Observe Display	
Adjust:	R4306 (H Phase)	Main PCB

1. Tune the instrument to receive a color bar signal.
2. Adjust the *Horizontal Phase* control (R4306) to center the video within the display area.

Focus Adjustment

Test Point:	Observe Display	
Adjust:	R4704 (Focus)	Main PCB

1. Tune the instrument to an unused channel ("snowy" display).
2. Set *Brightness* and *Contrast* to maximum for minimum beam current.
3. Adjust the *Focus* control (R4704) for best overall focus.

Dynamic Focus Adjust

The instruments equipped with dynamic focus are easily identified by the number of controls on the focus/screen block. The instruments with dynamic focus will have three controls versus two on those not equipped with dynamic focus. The top control is for adjusting the focus of the vertical lines and is labeled V. The center control is for adjusting the focus of the horizontal lines and is labeled H. The bottom control is for adjusting the screen voltage. The H and V control adjustments interact, therefore the controls should be adjusted to optimize the focus at the center of the screen.

Adjustment Procedure

1. Connect a crosshatch generator to the instrument and display a crosshatch pattern.
2. Adjust the H and V focus controls to optimize the focus of the horizontal and vertical lines at the center of the screen.

D-PIP Adjustment

1. Tune the instrument to an active channel with color programming.
2. Place instrument in pix-in-pix mode of operation.
3. Adjust R8031 (Y-Adjust) to match the small pix brightness level to the big pix brightness level.

4. Adjust R8037 (C-Adjust) to match the small pix color level to the big pix color level.

Field (Purity) Correction Compensation Adjustment

The 35-inch models have an extra large color picture tube. The effects of geomagnetism (Earth's magnetic field) may cause an uneven (partial colored) picture or splotches of unwanted diffused color (especially in the corners of the picture). The *POLARITY* and *STRENGTH* switches on the back of the TV provide compensation for this effect. These switches are on 35-inch models only.

If discoloration in small areas of the picture occurs, follow these steps to correct it.

1. Make sure the *STRENGTH* switch is in the *OFF* position as the diagram shows.

Note: If the *STRENGTH* switch was not in the *OFF* position, after moving it to the *OFF* position, turn the TV off for approximately 2 minutes. Then turn it back on again. If the discoloration is still there, continue to the next step.

2. Move the *STRENGTH* switch to the *LOW* position. If this improves the discoloration but does not get rid of it, move the *STRENGTH* switch to the *HIGH* position. This should correct the situation. If moving the *STRENGTH* switch makes the discoloration worse, go to the next step.
3. Change the position of the *POLARITY* switch. Make sure the *STRENGTH* switch is returned to the *OFF* position. If the discoloration is still there, move the *STRENGTH* switch to the *LOW* position. If this improves the discoloration but does not get rid of it, move the *STRENGTH* switch to the *HIGH* position. This should correct the situation.

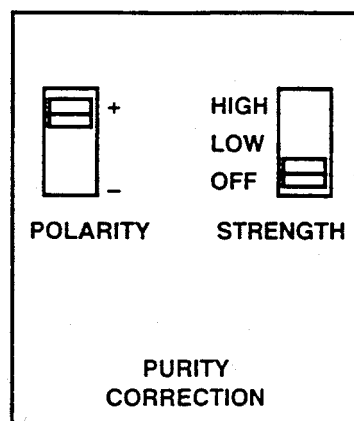


Fig. 1 - Field (Purity) Correction Compensation Adjustment

You may need to reset the *POLARITY* and *STRENGTH* switches if the TV is moved or repositioned in the room, especially if the TV will be facing a different direction.

SERVICE ADJUSTMENTS (Continued)

Field (Pix Tilt) Correction Compensation Adjustment

1. Make sure the *STRENGTH* switch is in the *OFF* position as the diagram shows.
2. Move the *STRENGTH* switch to the *LOW* position. If this improves the tilt but it is still not satisfactory, move the *STRENGTH* switch to the *HIGH* position. This should correct the situation. If moving the *STRENGTH* switch makes the tilt worse, go to the next step.
3. Change the position of the *POLARITY* switch. If this improves the tilt but it is still not satisfactory, move the *STRENGTH* switch to the *HIGH* position. This should correct the situation.

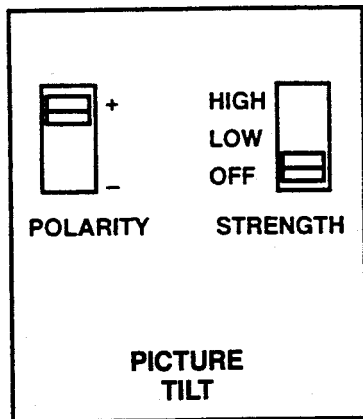


Fig. 2 - Field (Pix Tilt) Correction Compensation Adjustment

You may need to reset the *POLARITY* and *STRENGTH* switches if the TV is moved or repositioned in the room, especially if the TV will be facing a different direction.