6 Alignment and Adjustments

This section of the service manual explains how to make permanent adjustments to the monitor. Directions are given for adjustments using the monitor Interface Board Ver. 2.0 and software (SoftJig).

6-1 Adjustment Conditions

Caution: Changes made without the SoftJig are saved only to the user mode settings. As such, the settings are not permanently stored and may be inadvertently deleted by the user.

6-1-1 Before Making Adjustments

6-1-1 (a) ORIENTATION

When servicing, always face the monitor to the east.

6-1-1 (b) MAGNETIC FIELDS

Whenever possible, use magnetic field isolation equipment such as a Helmholtz field to surround the monitor. If a Helmholtz field is not available, frequently degauss the unit under test.

Caution: Other electrical equipment may cause external magnetic fields which may interfere with monitor performance.

Use an external degaussing coil to limit magnetic build up on the monitor. If an external degaussing coil is not available, use the internal degaussing circuit. However, do not use the internal degaussing circuit more than once per 30 minutes.

6-1-1 (c) WARM-UP TIME

The monitor must be on for 30 minutes before starting alignment. Warm-up time is especially critical in color temperature and white balance adjustments.

6-1-1 (d) SIGNAL

Analog, 0.714 Vp-p positive at 75 ohm, internal termination
Sync: Separate
(TTL level negative/positive)

6-1-1 (e) SCANNING FREQUENCY

Horizontal: 30 kHz to 70 kHz (Automatic)
Vertical: 50 Hz to 160 Hz (Automatic)

Unless otherwise specified, adjust at the 16″/17″: 1024 x 768 mode (68 kHz/85 Hz), 15″: 800 x 600 mode (54 kHz/85 Hz) signals.

Refer to Table 3-1 on page 3-3.

6-1-2 Required Equipment

The following equipment may be necessary for adjustment procedures:

6-1-2 (a) DISPLAY CONTROL ADJUSTMENT

1. Non-metallic (–) screwdriver: 1.5 mm
   Non-metallic (–) screwdriver: 3 mm
2. Philips (+) screwdriver: 1.5 mm
3. Non-metallic hexkey: 2.5 mm
4. Digital Multimeter (DMM), or
   Digital Voltmeter (DVM)
5. Signal generator, or
   Computer with a video board that uses the ET-4000 chipset (strongly recommended if using Samsung DM 200 software) and that displays: 1024 x 768 @ 85 Hz, or 800 x 600 @ 85 Hz (minimum).
6. Personal computer
7. Required software: Softjig.exe from Samsung which includes the cg17e.c data file Samsung DM200, or DisplayMate for Windows from Sonera Technologies
8. Interface Board Ver. 2.0 Code No. BH81-90001K
9. Parallel communications cable (25-pin to 25-pin); Code No. BH81-90001H
10. Signal cable (15-pin to 15-pin cable with additional 3-pin connector); Code No. BH81-90001J
11. 5 V DC adapter, not supplied

Note: SoftJig Ass'y (includes items 8, 9 and 10) Code No. BH81-90001L

6-1-2 (b) COLOR ADJUSTMENTS

1. All equipment listed in 6-1-2 (a), above
2. Color analyzer, or any luminance measurement equipment

6-1-3 Connecting the SoftJig

Connect the monitor to the signal generator and/or PC as illustrated in Figures 6-1 and 6-2.

Note: The signal cable connector which includes the 3-wire cable must connect to the monitor. If you use Setup 2 (PC only, no signal generator) you can only make adjustments to the signal timing available on that computer system. To make corrections to all factory timings requires the use of an additional signal generator.

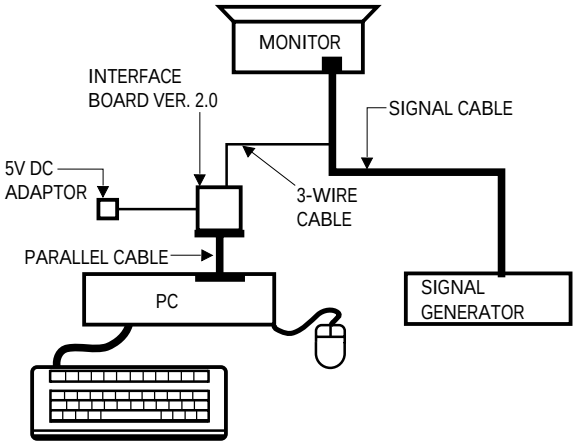


Figure 6-1. Setup 1, With Signal Generator

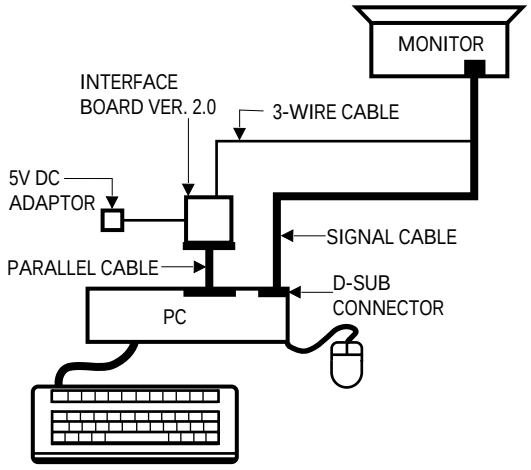


Figure 6-2. Setup 2, Without Signal Generator

6-1-4 After Making Adjustments

After finishing all adjustments, test the monitor in all directions. If, for example, the monitor does not meet adjustment specifications when facing north, reposition the monitor to face east and readjust. This time, try for an adjustment closer to the ideal setting within the tolerance range. Test the unit again in all directions. If the monitor again fails to meet specifications in every direction, contact your Regional After Service Center for possible CRT replacement.

6-1-5

6-1-5 (a) HIGH VOLTAGE ADJUSTMENT

Signal:	No signal
Display image:	Self raster
Contrast:	Maximum
Brightness:	Maximum
Limit:	26 kV ± 0.2 kV (17″)
	25 kV ± 0.2 kV (15″/16″)

Measure the high voltage level at the anode cap. High voltage should be within the limit as above. If the high voltage needs adjustment use the following procedure.

PROCEDURE

1. Increase or decrease **HFV** to adjust the high voltage to limit.
2. Click factory save.

6-1-5 (b) G2 (SCREEN) VOLTAGE ADJUSTMENT

Signal:	No signal
Display image:	Self raster
Contrast:	Maximum
Brightness:	Maximum

Adjust the Screen VR of the FBT so that the G2 (Screen) Voltage
for 17″
SDD CRT: 470 V ± 10 V, TSB CRT: 630 V ± 10 V
for 16″
SDD CRT: 410 V ± 10 V
for 15″
SDD CRT: 560 V ± 10 V, TSB CRT: 630 V ± 10 V.

6-1-5 (c) CENTER RASTER

Adjust SW451 so that the back raster comes to the center when you apply a signal of 60 kHz/75 Hz.

6-2 Display Control Adjustments

6-2-1 Centering

Centering means to position the center point of the display in the middle of the display area. Horizontal size and position and vertical size and position control the centering of the display.

Adjust the horizontal size and vertical size to their optimal settings: 306 mm (H) x 230 mm (V) for 17″, 290 mm (H) x 217.5 mm (V) for 16″, 267 mm (H) x 200 mm (V) for 15″.

Adjust the horizontal position and vertical position to ≤ 4.0 mm of the center point of the screen.

| A-B | ≤ 4.0 mm. | | C-D | ≤ 4.0 mm.

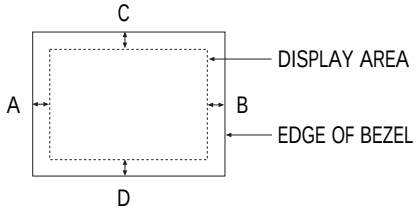


Figure 6-3. Centering

6-2-1 (a) HORIZONTAL SIZE ADJUSTMENT

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Crosshatch pattern
Brightness:	Maximum
Contrast:	Maximum

Click on the << or >> box next to **B+OUT** to adjust the horizontal size of the display pattern to 306 mm (17″), 290 mm (16″) and 267 mm (15″). (Tolerance: ± 3 mm.)

6-2-1 (b) VERTICAL SIZE ADJUSTMENT

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Crosshatch pattern
Brightness:	Maximum
Contrast:	Maximum

Click on the << or >> box next to **V_SIZE** to adjust the vertical size of the display pattern to 230 mm (17″), 217.5 mm (16″) and 200 mm (15″). (Tolerance: ± 3 mm.)

6-2-1 (c) HORIZONTAL POSITION ADJUSTMENT

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Crosshatch pattern

Click on the << or >> box next to **H_POSI** to center the horizontal image on the raster.

6-3-1 (d) VERTICAL POSITION ADJUSTMENT

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Crosshatch pattern

Click on the << or >> box next to **V_POSI** to center the vertical image on the raster.

6-2-2 Linearity

Linearity affects the symmetry of images as they appear on the screen. Unless each row or column of blocks in a crosshatch pattern is of equal size, or within the tolerances shown in Tables 6-2 and 6-3, an image appears distorted, elongated or squashed.

Table 6-1. Standard Modes Linearity: 640x480/75Hz, 800x600/85Hz and 1024x768/85Hz

	Standard Modes Linearity	
	Each block (10 %)	Difference between adjacent blocks (4 %)
4 : 3	Horizontal: 18.2~20.1 Vertical : 18.2~20.1	Horizontal: Less than 0.77 mm Vertical : Less than 0.77 mm
5 : 4	Horizontal: 17.1~18.9 Vertical : 18.2~20.1	Horizontal: Less than 0.72 mm Vertical : Less than 0.77 mm

Table 6-2. Other Modes Linearity: VGA, SVGA, XGA, MAC, etc.

	Supported Timing Mode	
	Each block (10 %)	Difference between adjacent blocks (5 %)
4 : 3	Horizontal: 17.8~20.5 Vertical : 17.8~20.5	Horizontal: Less than 0.96 mm Vertical : Less than 0.96 mm
5 : 4	Horizontal: 16.7~19.2 Vertical : 17.8~20.5	Horizontal: Less than 0.90 mm Vertical : Less than 0.96 mm

6-2-2 (a) HORIZONTAL LINEARITY ADJUSTMENT

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Crosshatch pattern
Brightness:	Maximum
Contrast:	Maximum

To adjust the Horizontal Linearity, refer to Tables 6-1 and 6-2 for the tolerance range.

Increase or decrease **H_LIN** to optimize the image.

6-2-2 (b) VERTICAL LINEARITY ADJUSTMENT

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Crosshatch pattern
Brightness:	Maximum
Contrast:	Maximum

To adjust the Vertical Linearity, refer to Tables 6-1 and 6-2 for the tolerance range.

Increase or decrease **V_LIN** to optimize the image.

6-2-3 Trapezoid Adjustment

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Crosshatch pattern
Brightness:	Maximum
Contrast:	Maximum

Increase or decrease **TRAPE** to make the image area rectangular.

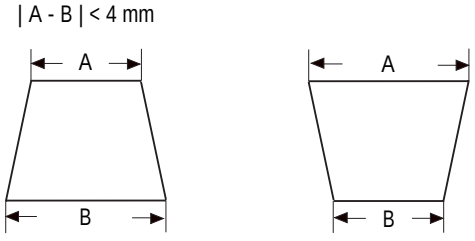


Figure 6-4. Trapezoid

6-2-4 Pinbalance Adjustment

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Crosshatch pattern
Brightness:	Maximum
Contrast:	Maximum

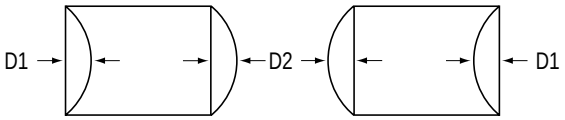


Figure 6-5. Pinbalance

Increase or decrease **PIN_BAL** to optimize the image.

6-2-5 Parallelogram Adjustment

CONDITIONS

Scanning Frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Crosshatch pattern
Brightness:	Maximum
Contrast:	Maximum

Increase or decrease **PARALL** to make the image area rectangular.

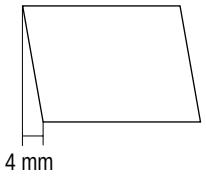


Figure 6-6. Parallelogram

6-2-6 Side Pincushion Adjustment

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Crosshatch pattern

Increase or decrease **BARREL** to straighten the sides of the image area.

| C1 |, | C2 | ≤ 2.0 mm, | D1 |, | D2 | ≤ 2.0 mm.

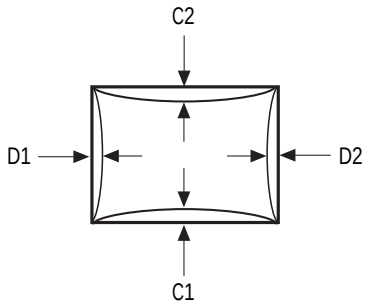


Figure 6-7. Pincushion

6-2-7 Tilt Adjustment

CONDITIONS

Scanning Frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Crosshatch pattern
Brightness:	Maximum
Contrast:	Maximum

Increase or decrease **ROTATE** to correct the tilt of the display.

6-2-8 Degauss

No adjustments are available for the degaussing circuit. The degaussing circuit can effectively function only once per 30 minutes.

6-2-9 To Delete the User Mode Data

To delete the adjustment data from the user modes, click **USER DELETE.**

6-2-10 Save the Data

To save the adjustment data for a mode, press **FACTORY SAVE**.

6-3 Color Adjustments

6-3-1 Color Coordinates (Temperature)

Color temperature is a measurement of the radiant energy transmitted by a color. For computer monitors, the color temperature refers to the radiant energy transmitted by white. Color coordinates are the X and Y coordinates on the chromaticity diagram of wavelengths for the visible spectrum.

CONDITIONS

Measurement instrument:	Color analyzer
Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	White flat field at center of display area
Luminance:	Maximum

PROCEDURE

Use the directions in sections 6-3-2 through 6-3-3 to adjust the color coordinates for:
9300K to x = 0.283 ± 0.02, y = 0.298 ± 0.02
6500K to x = 0.313 ± 0.02, y = 0.329 ± 0.02

6-3-2 Color Adjustments for 9300K

6-3-2 (a) BACK RASTER COLOR ADJUSTMENT

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Back raster pattern
Brightness:	Maximum
Contrast:	Maximum

1. Select **COLOR CHANNEL 1** to control the color for 9300K.
2. Adjust the luminance of the back raster to between 0.5 to 0.7 ft-L using the **G_CUT** controls.
3. Increase or decrease **B_CUT** to set the "y" coordinate to 0.298 ± 0.02.
4. Increase or decrease **R_CUT** to set the "x" coordinate to 0.283 ± 0.02.

6-3-2 (b) G-GAIN ADJUSTMENT

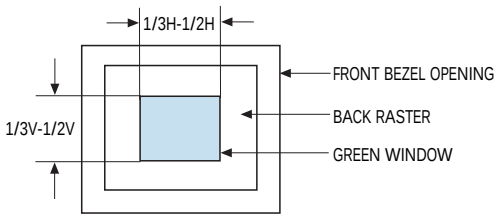


Figure 6-8. Green Box Pattern

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Green box pattern
Brightness:	Maximum
Contrast:	Maximum

1. Increase or decrease **G_GAIN** to adjust the brightness of the Green Gain to 40 ± 1 ft-L. (only 17″ S-2 CDT : 37 ft-L)

   Note: If you can't increase the Green Gain to the appropriate value, click on the >> box next to increase the **ABL** point.

6-3-2 (c) WHITE BALANCE ADJUSTMENT

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Full white pattern
Brightness:	Maximum
Contrast:	Maximum

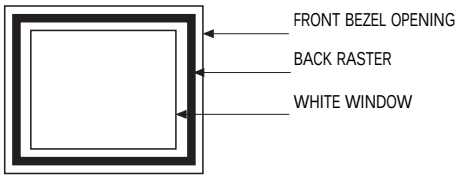


Figure 6-9. Full White Pattern

1. Increase or decrease **R_GAIN** and **B_GAIN** to make the video white.
   (For 9300K color adjustment:
   x = 0.283 ± 0.02, y = 0.298 ± 0.02.)

   Note: Do not touch the **G_GAIN** controls.
2. Check the ABL. If it is not within the specifications (37 ± 1 ft-L), use the ABL controls to adjust it.
   (17″ S-2 CDT: 35 ft-L, 16″ CDT 33 ft-L)
3. Select **COLOR FACTORY SAVE** to save the data.
4. Select **ALL MODE SAVE** to save the CH2.

6-3-2 (d) WHITE BALANCE ADJUSTMENT VERIFICATION

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Back raster pattern
X-Y Coordinates:	x = 0.283 ± 0.02, y = 0.298 ± 0.02
ABL Luminance	35 ± 1 ft-L 33 ± 1 ft-L (16″ CDT)
Brightness:	Maximum
Contrast:	Maximum

1. Check whether the color coordinates of the back raster satisfy the above spec.

   If they do not, return to 6-3-2 (a) and readjust all settings.
2. Display a full white pattern.

Note: Do not touch the **G_GAIN** controls.

3. Adjust the Contrast Control on the monitor so that the luminance of the video is about 5 ft-L.
4. Check whether the white coordinates of the video meet the above coordinates spec.
5. Adjust the Contrast Control again so that the luminance of the video is about 24 ft-L.
6. Check whether the white coordinates of the video satisfies the above spec.

   If they do not, return to 6-3-2 (a) and readjust all settings.

6-3-3 Color Adjustments for 6500K

6-3-3 (a) BACK RASTER COLOR ADJUSTMENT

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Back raster pattern
Brightness:	Maximum
Contrast:	Maximum

1. Select **COLOR CHANNEL 2** to control the color for 6500K.
2. Adjust the luminance of the back raster to between 0.5 to 0.7 ft-L using the **G_CUT** controls.

Note: For 6500K adjustments you must not change the Screen VR of the FBT. To do so changes the 9300K setting values.

3. Increase or decrease **R_CUT** and **B_CUT** to adjust the R-Bias to x = 0.313 ± 0.02 and the B-Bias to y = 0.329 ± 0.02.

6-3-3 (b) G-GAIN ADJUSTMENT

This procedure is the same as that for 9300K, refer to the procedure on page 6-6.

6-3-3 (c) WHITE BALANCE ADJUSTMENT

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	Full white pattern
Brightness:	Maximum
Contrast:	Maximum

1. Increase or decrease **R_GAIN** and **B_GAIN** to make the video white.
   (For 6500K color adjustment:
   x = 0.313 ± 0.02, y = 0.329 ± 0.02.)
2. Refer to the procedure for 9300K, section 6-3-2 (c) steps 2 and 3.

6-3-3 (d) WHITE BALANCE ADJUSTMENT VERIFICATION

Refer to the procedure for 9300K, section 6-3-2 (d).

6-3-4 Luminance Uniformity Check

Luminance is considered uniform only if the ratio of lowest to highest brightness areas on the screen is not less than 7.5:10.

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″) (1024 x 768)
Display image:	White flat field
Brightness:	Cut off point at 24 ft-L
Contrast:	Maximum

PROCEDURE

Measure luminance at nine points on the display screen (see figure below).

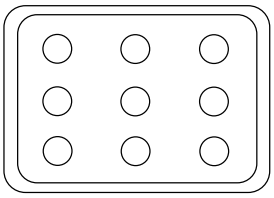


Figure 6-10. Luminance Uniformity Check Locations

6-3-5 Focus Adjustment

CONDITIONS

Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″) (1024 x 768)
Display image:	"H" character pattern
Brightness:	Cut off point
Contrast:	Maximum

PROCEDURE

1. Adjust the Focus VR on the FBT to display the sharpest image possible.
2. Use Locktite to seal the Focus VR in position.

6-3-6 Color Purity Adjustment

Color purity is the absence of undesired color. Conspicuous mislanding (unexpected color in a uniform field) within the display area shall not be visible at a distance of 50 cm from the CRT surface.

CONDITIONS

Orientation:	Monitor facing east
Scanning frequency:	68 kHz/85 Hz (17″/16″) 54 kHz/85 Hz (15″)
Display image:	White flat field
Luminance:	Cut off point at the center of the display area

Note: Color purity adjustments should only be attempted by qualified personnel.

PROCEDURE

For trained and experienced service technicians only.

Use the following procedure to correct minor color purity problems:

1. Make sure the display is not affected by external magnetic fields.
2. Very carefully break the glue seal between the 2-pole purity convergence magnets (PCM), the band and the spacer (see Figures 6-12).
3. Make sure the spacing between the PCM assembly and the CRT stem is 29 mm ± 1 mm.
4. Display a green pattern over the entire display area.
5. Adjust the purity magnet rings on the PCM assembly to display a pure green pattern. (Optimum setting: x = 0.295 ± 0.015, y = 0.594 ± 0.015)
6. Repeat steps 4 and 5 using a red pattern and then again, using a blue pattern.

Table 6-3. Color Purity Tolerances

Red:	x = 0.640 ± 0.015	y = 0.323 ± 0.015
Green:	x = 0.295 ± 0.015	y = 0.594 ± 0.015
Blue:	x = 0.142 ± 0.015	y = 0.066 ± 0.015

(For 9300K color adjustment: x = 0.283 ± 0.02, y = 0.298 ± 0.02)

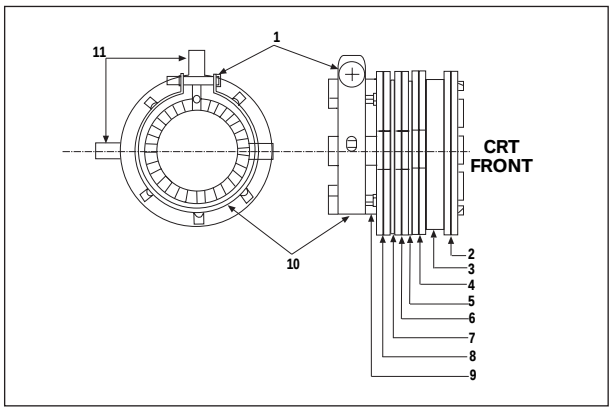
7. When you have the PCMs properly adjusted, carefully glue them together to prevent their movement during shipping.

6-4 Convergence Adjustments

Misconvergence occurs when one or more of the electron beams in a multibeam CRT fail to meet the other beams at a specified point.

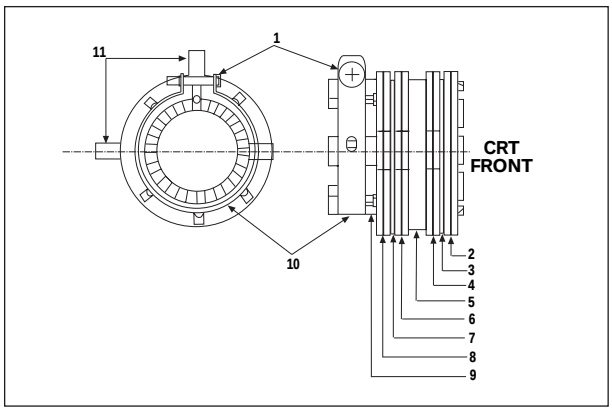
Table 6-4. Misconvergence Tolerances

Position	Error in mm	CRT Dot Pitch
Circle (A)	0.25	0.28
Circle (B)	0.3	0.28
Edge (C)	0.35	0.28



Samsung SDD CRT			
1 Setup Bolt	2 Bow Magnet	3 Band	4 2-Pole Magnet
5 Spacer	6 4-Pole Magnet	7 Spacer	8 6-Pole Magnet
9 Holder	10 Band	11 Tabs	

Figure 6-11. Magnet Configuration



Toshiba CRT			
1 Setup Bolt	2 Bow Magnet	3 Spacer	4 2-Pole Magnet
5 Band	6 6-Pole Magnet	7 Spacer	8 4-Pole Magnet
9 Holder	10 Band	11 Tabs	

Figure 6-12. Toshiba Magnet Configuration

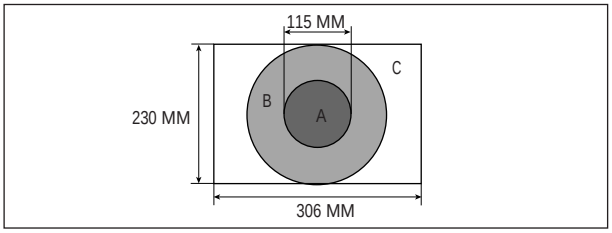


Figure 6-13. Convergence Measurement Areas

6-4-1 Static (Center) Convergence

Static convergence involves alignment of the red, blue and green lines in the center area of the display. See "Dynamic Convergence" for alignment of the color fields around the edges of the display.

CONDITIONS

Direction: Monitor facing east
Warm-up: 30 minutes
Display image: Crosshatch pattern
Tolerances: See Table 6-4

PROCEDURE

As shown in Figure 6-11, the CRT used in these monitors has the same magnet configuration as shown in Table 6-5 below.

Table 6-5. Magnet Order

CRT Manufacturer	Magnet Order from Front of CRT
SDD	Convergence bow, 2-pole, 4-pole, 6-pole
Toshiba	Convergence bow, 2-pole, 6-pole, 4-pole

Use the following steps to correct any static misconvergence:

1. Make sure the display is not affected by external magnetic fields.
2. Locate the pair of 4-pole magnet rings.
3. Unlock the rings and rotate the individual rings (change the spacing between tabs) to converge the vertical red and blue lines.
4. Rotate the pair of rings (maintaining the spacing between tabs) to converge the horizontal red and blue lines.

5. After completing the red and blue center convergence adjustment, locate the pair of 6-pole magnet rings.
6. Rotate the individual rings (change the spacing between tabs) to converge the vertical red and blue (magenta) and green lines.
7. Rotate the pair of rings (maintaining the spacing between tabs) to converge the horizontal red and blue (magenta) and green lines. Don't rotate the 2-pole magnets as they adjust for color purity.
8. Mark the correct position for the magnets and apply a small line of glue to hold the magnets in place. Lock the rings in place.

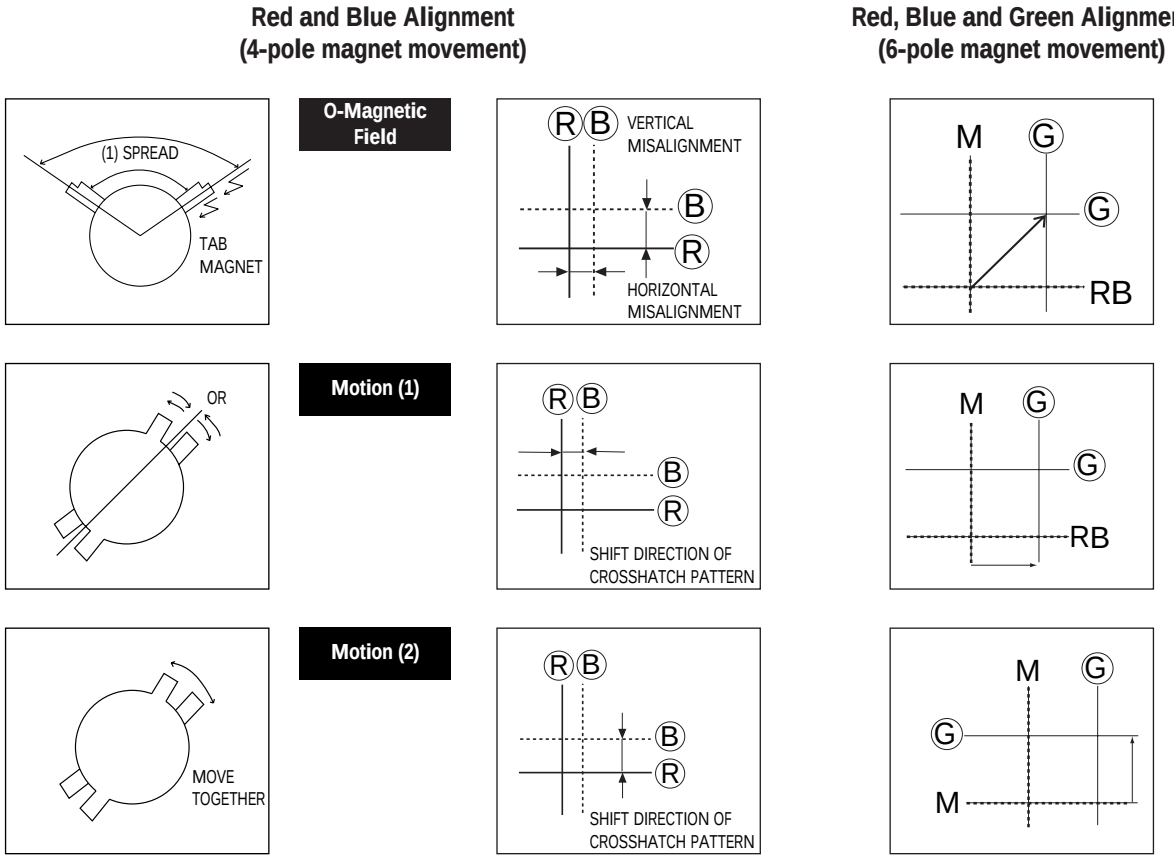
6-4-2 Dynamic (Edge) Convergence

Use the following procedure to correct minor dynamic (edge) misconvergence. If, after using this procedure, dynamic misconvergence around the periphery of the display area is still greater than the tolerance, contact the Regional After Service Center for possible CRT replacement.

1. Make sure the display is not affected by external magnetic fields.
2. Make sure the static convergence is properly adjusted.
3. Strategically place small rubber magnets on the back of the CRT to correct the misconvergence. Be careful not to remove the paper protecting the adhesive on the magnets until you are satisfied with their placement and the dynamic convergence.
4. When you are satisfied with the convergence around the edge of the CRT, permanently glue the magnets to the back of the CRT.

WARNING: Do not remove or change the position of the factory installed wedges. These wedges were installed by the CRT manufacturer and are properly placed for this CRT; their removal may result in damage to the CRT.

Figure 6-14. Magnet Movements



6-4-3 Bow Convergence Adjustments

CONDITIONS

Orientation: Monitor facing east.
Display Image: Crosshatch pattern with mixed RGB colors.
Required tools: Flat-head (–) screwdriver, 1.5 mm
Philips (+) screwdriver, 1.5 mm
Hexkey, 2.5 mm

PROCEDURE

Bow convergence adjustments are not available for the CRTs used in the CHB5**7L/6**7L/7**7L monitors. While all CRTs have bow convergence magnets, they are sealed in the CRT factory and are not user or service technician adjustable. Do not touch these magnets (see Figures 6-12 and 6-13). If bow convergence adjustment is out of alignment, replace the CRT.

Bow misconvergence should not exceed the values listed in Table 6-5: Misconvergence Tolerances.

6-4-4 Balance Convergence Adjustments

Balance Convergence involves alignment of red and blue lines when they are misaligned at one end more so than at the other end. The Deflection Yoke holds the balance coils which can correct balance misconvergences.

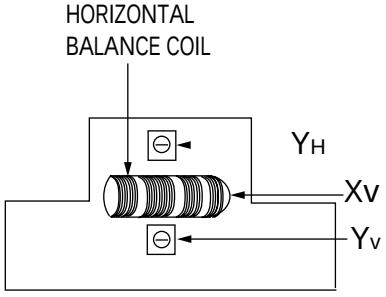


Figure 6-15. SDD Deflection Yoke

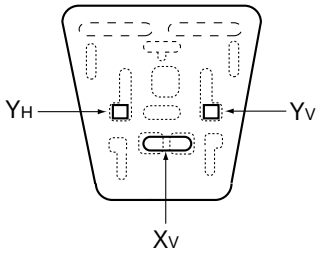


Figure 6-16. Toshiba Deflection Yoke

6-4-4 (a) HORIZONTAL LINE RED AND BLUE BALANCE CONVERGENCE

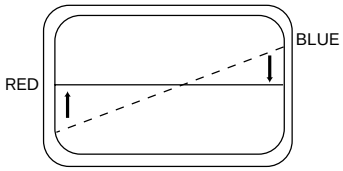


Figure 6-17. Horizontal Line Balance Misconvergence

Use a 2.5 mm hexkey at the Horizontal Balance Coil (XV). Turning it right raises the right end of the blue line and lowers the left end. Turning the VR to the left lowers the right end of the blue line and raises the left end.

6-4-4 (b) VERTICAL RED AND BLUE BALANCE CONVERGENCE

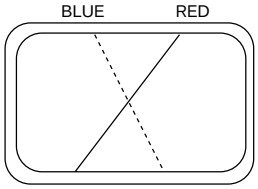


Figure 6-18. Vertical Line Balance Misconvergence

Use a 1.5 mm screwdriver (flat-head [–] for SDD DYs and phillips type [+] for Toshiba DYs) at the YH variable register. Turning the VR left tilts the blue line to the right. Turning it right tilts the blue line to the left.

6-4-4 (c) UPPER AND LOWER HORIZONTAL LINE CONVERGENCE

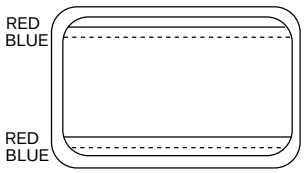


Figure 6-19. Upper and Lower Balance Misconvergence

Use a 1.5 mm screwdriver (flat-head [–] for SDD DYs and phillips type [+] for Toshiba DYs) at the Yv variable register. Turning the VR to the left moves the blue line at the top upward and at the bottom, the line moves downward. Turning it right moves the blue line at the top downward and at the bottom, the line moves upward.

Memo