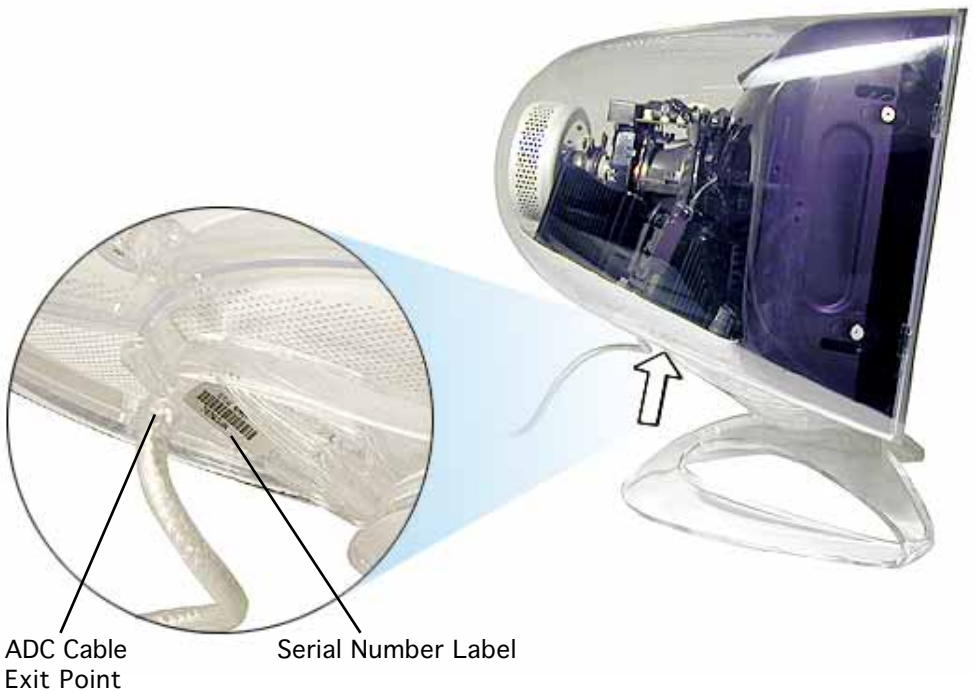


## Serial Number Label Location

The serial number label on the Studio Display (17" CRT, 16" VIS, ADC) may be difficult to locate. To locate the serial number label:

1. Swivel the monitor so the display is tilted down, and you are facing the side of the monitor.
2. Position yourself so you are at eye level with the ADC cable exit point.
3. Locate the serial number label directly in front of the ADC cable exit point.



# Monitor Stand

## Replacement Instructions

Be sure to follow the instructions in this sheet carefully. Failure to follow these instructions could result in damage to your equipment and may void your warranty.

Replacing your monitor stand requires five basic steps:

- Turn off the computer and disconnect the display cable.
- Place the monitor upside down on a thick cloth.
- Remove the monitor stand.
- Install the replacement monitor stand.
- Place the monitor upright, connect the display cable, and restart the computer.

**Note:** Written and video instructions covering customer-installable parts are available at

<http://www.info.apple.com/installparts/>.

### Tools Required

Two jeweler's flat-blade screwdrivers are required for this procedure.

**Note:** If you do not have jeweler's screwdrivers, two long carpenter's nails can be used. However, the head of the nail must be at least 6 mm wide to prevent the nail from sliding into the enclosure.

**Warning:** If any tools or parts drop into the monitor, do not turn on the monitor. Contact Apple for further assistance. Never turn on your monitor unless all of its internal and external parts are in place and it is closed. Operating the monitor when it is open or missing parts can damage your monitor or cause injury.

---

## Removing the Monitor Stand

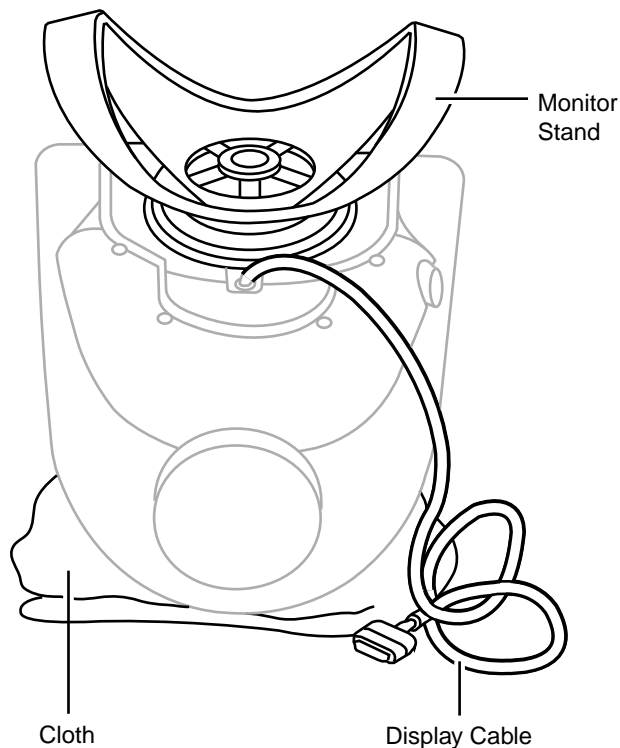
1. **Warning: Turn off your computer and disconnect the display cable as follows:**

- Unplug the display cable from the computer.
- Wait five minutes for the computer's internal components to cool down.

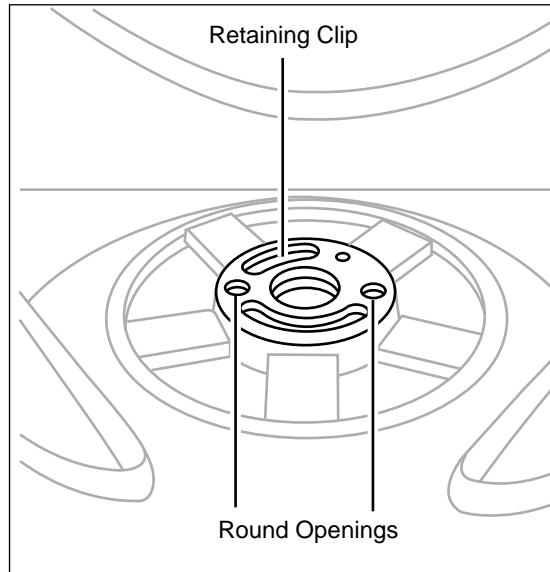
2. **⚠ WARNING:** The monitor weighs 20 kg (45 pounds). Be careful when repositioning the monitor.

Use a thick, soft, clean cloth (such as a folded blanket or towel) as a cushion. Place the monitor upside down on the cloth so the screen is away from you and the monitor stand is in front of you.

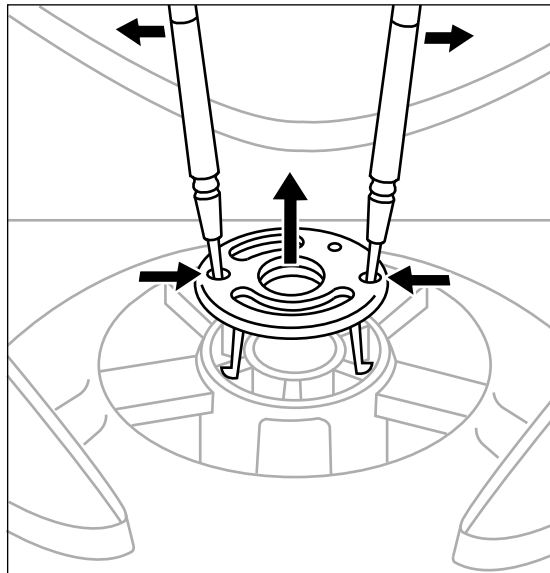
3. Slide the monitor stand toward the display cable.



4. In the center of the monitor stand, locate the two identical round openings in the retaining clip.

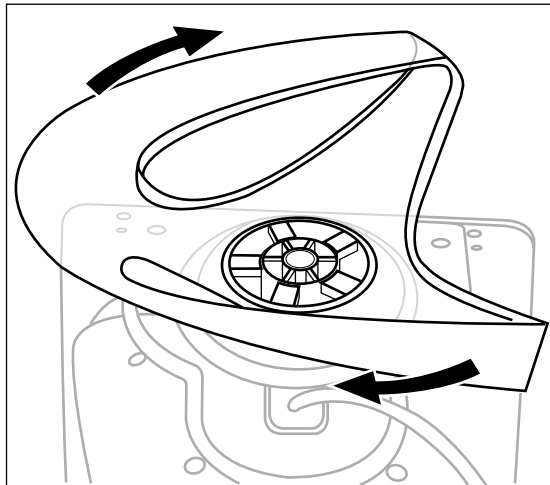


5. Using two jeweler's flat-blade screwdrivers, place one in each of the round openings and gently pry up the retaining clip until it is out of the monitor stand.

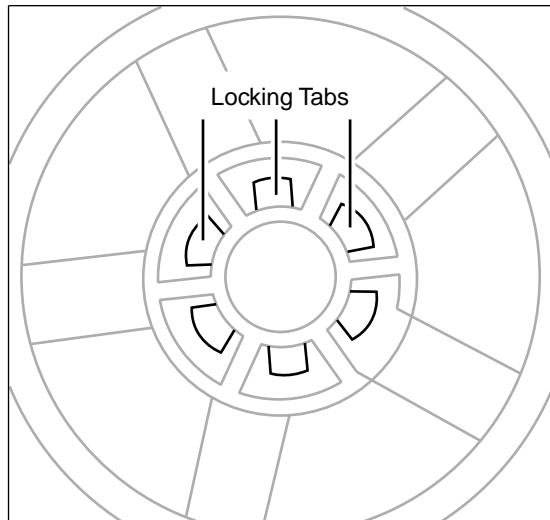


**Warning:** If any tools or parts drop into the monitor, do not turn on the monitor. Contact Apple for further assistance. Never turn on your monitor unless all of its internal and external parts are in place and it is closed. Operating the monitor when it is open or missing parts can damage your monitor or cause injury.

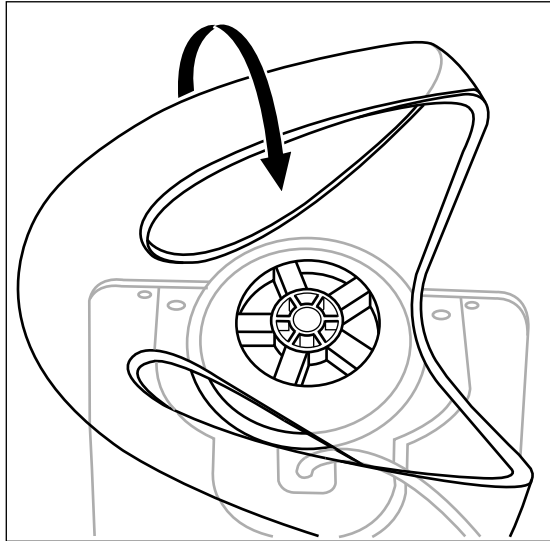
- 
6. Rotate the stand clockwise (1/4 turn) so it is positioned as shown.



7. Peer into the center of the monitor stand and swivel it somewhat until you can see the locking tabs line up with the slots in the base.



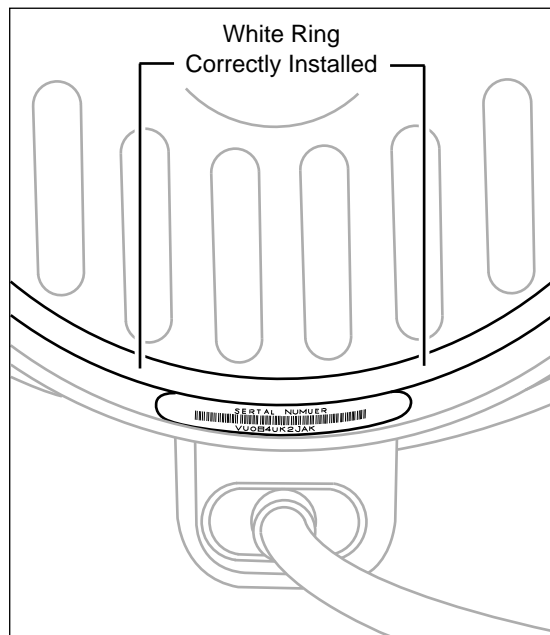
8. With the tabs aligned, gently pull the stand toward you. Then tilt the stand up off the base.



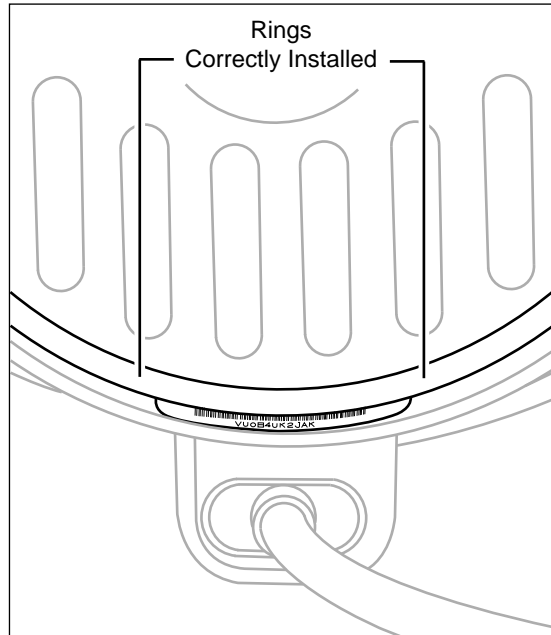
## Positioning the Plastic Rings

After you remove the monitor stand, two plastic rings should remain on the base. These rings are fitted in a special orientation so the replacement stand will fit properly. However, if the rings are dislodged, replace them as follows:

1. Place the white plastic ring on the base so that you can still read the words "Serial Number" when the ring is slid all the way down. Turn the ring over if the words are not visible



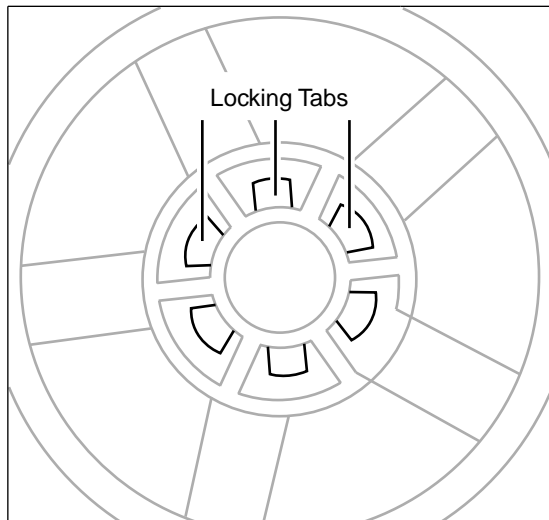
2. Place the clear plastic ring over the white ring so that the white ring fits inside the clear ring.
3. Check that the rings are properly aligned. They should easily slide in unison, and when they are close to the serial number label, you should be able to see the serial number bar code but not be able to clearly see the words "Serial Number."



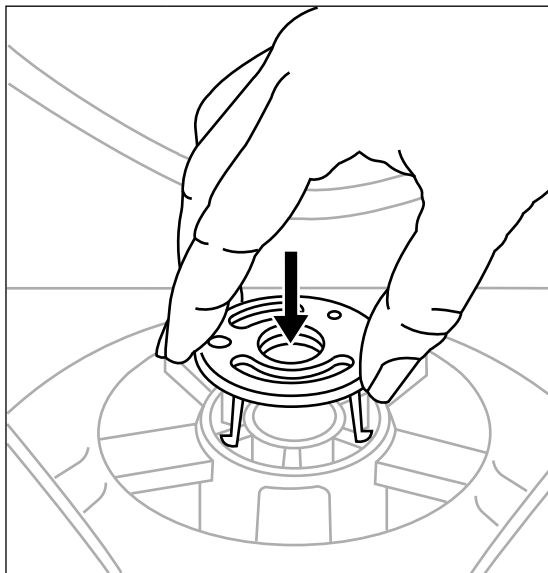
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## Installing the Replacement Monitor Stand

1. Holding the new monitor stand, align the slots in the center of the stand with the tabs on the base of the monitor.



2. Slide the stand up to engage the locking tabs.
3. Turn the stand counterclockwise.
4. Align the retaining clip and press it down until it clicks into place. The retaining clip is keyed and only fits one way.



5. Check that the stand slides easily.
6. Turn your monitor upright and reconnect it to the computer.



- 
7. Restart your computer.

**Warning: Never turn on your monitor unless all of its internal and external parts are in place and it is closed. Operating the monitor when it is open or missing parts can damage your monitor or cause injury.**

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# Screen Adjustment Guidelines

This document describes how to evaluate your screen display and make display adjustments, if necessary.

## What Should a Normal Screen Display Look Like?

### Shape

For a monitor that contains a CRT (cathode-ray tube), the normal screen display should have a uniform shape. That is, the rectangular screen image should have about one-half inch (13 mm) of black border around all four sides.



Normal Shape



Not Normal

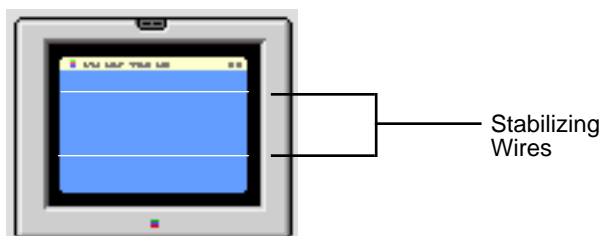


Not Normal

## Two Horizontal Lines

Most CRT-based Apple monitors contain a "tron" style tube. This display contains a Mitsubishi Diamondtron tube, which uses an aperture grill. Electron beams pass through the aperture grill to display the screen image. Two stabilizing wires, which are thinner than a human hair, can be noticed on a light-colored background screen as light gray horizontal lines across the entire width of the display image. The stabilizing wires decrease the vibration of the aperture grill that can occur when the display is bumped. Without the stabilizing wires, the aperture grill's vertical wires could vibrate much like a guitar string—causing display quality problems for several minutes.

These horizontal stabilizing wires are normal and cannot be adjusted out.



## Colors

When you select a single-color screen, you should see no distinct color blotches or areas that are dimmer than the rest of the screen. If you do, check if the same areas of the screen are dim when you select other single-color images.

Refer to the Degauss section in this document or Mac Help for more information.

---

## What About Magnetic or Electrical Interference?

Before assuming that your display requires adjustment or repair, check for magnetic or electrical interference.

Fluorescent lights, computers, other monitors, or electronic appliances such as coffee makers and copy machines can cause screen distortion. Move the monitor to another room or building to determine if external interference is the source of the problem.

If the full-screen image has shifted up/down or right/left only, adjust it using the geometry controls in the Monitors control panel. Keep in mind that if you then move the monitor to another location you may need to readjust the controls. If the display changes (for better or worse) when you move it to another location, the environment is the source of the problem. Move the monitor or the distortion-causing object.

CRT tolerances allow for some distortion. Additional distortion can be caused by magnetized metal objects (desks, file cabinets). Rotate the monitor or move it to a different location if you notice bowing of the screen shape or bent edges. You can also use the Monitors control panel to make geometry adjustments to optimize the screen display.

# Making Screen Adjustments With the Monitors Control Panel


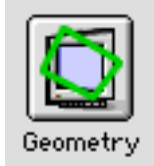
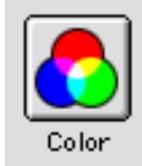

The Monitors control panel is used to make adjustments to the viewable area of your screen display. Because adjustments are made to the screen before the display leaves the factory, you might never have to use the Monitors control panel.

You can open the Monitors control panel by pressing the button on the lower left of the display bezel.



Press to open Monitors control panel

From the Monitors control panel, you can select four main buttons: Monitor, Geometry, Color, and Preferences. From these buttons, you can select the following settings or adjustments:

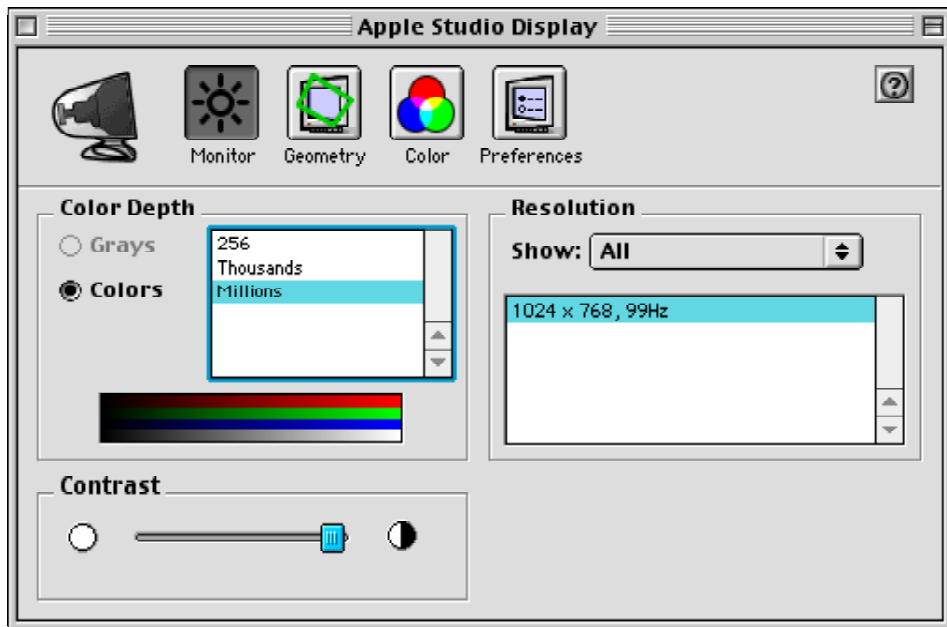
 Monitor	 Geometry	 Color	 Preferences
Color Depth Resolution Contrast	Height/Width Position Pincushion Rotate Keystone Parallelogram Bow  Convergence Degauss Factory Settings	White Point Gamma Curve Ambient Light  Import/Export Preferences Recalibrate  ColorSync Profile	Theater Mode

## Monitor Button

When the Monitors control panel first opens, the Monitor button is selected. From this window, you can change the following settings:

- Color Depth
- Resolution
- Contrast

Under Color Depth, the setting Millions of colors is the default setting. This gives your display the widest range of color options. If you ever want a narrower range of colors (required by some applications), you can temporarily set the Color Depth to Thousands. And if you want your display screen to show colors as shades of gray only, select 256, and then select Grays. All of these settings can be changed in the Monitors control panel at any time.



Under Resolution, you can select another screen resolution. The number of screen resolutions available depend on the amount of video memory (VRAM) in your computer and the capabilities of your display.

To adjust the contrast, drag the Contrast slider control left or right to decrease or increase the screen contrast.

## Geometry Button

When you click Geometry, the Monitors control panel looks like this:



From this window you can change settings to adjust the shape of the viewable screen area.

**Important:** Do not change geometry settings unless your display's screen shape is distorted and you have already tried:

- restarting your system
- allowing the display to warm up for 30 minutes to see if the screen distortion goes away on its own
- unplugging and moving away any electrical motor devices, such as fans, away from your monitor

### Factory Settings

**Important:** Clicking the Factory Settings button (in the lower right corner of the Geometry window) resets only the geometry controls and convergence. The screen image returns to the factory preset levels of geometry and convergence for the current screen resolution.

Adjustments you have made in the Monitor, Color, or Preferences windows are not reset when you click Factory Settings.

## Height/Width



Normal height and width on an Apple CRT display leaves a black border of approximately one-half inch (13 mm) around the screen image.

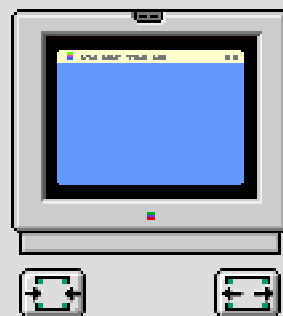
If the display image appears too short or too narrow (compressed vertically or horizontally), you can use the Height/Width controls to adjust the display.

1. Select Height/Width.
2. Move the mouse pointer over the outer edge of the screen rectangle in the picture of the display.
3. Drag the left or right side of the screen rectangle to change the width.
4. Drag the top or bottom edge of the screen rectangle to change the height.

**Note:** Instead of dragging the screen rectangle, you can adjust height and width by clicking the arrow buttons for incremental movement.

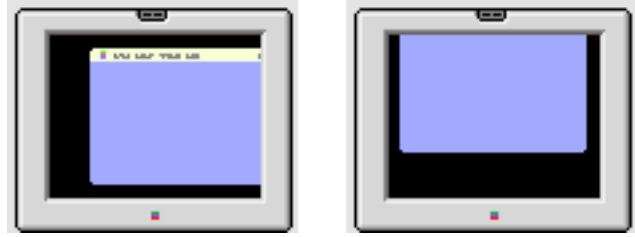
## Settings

- ☒ Height/Width
- ☐ Position
- ☐ Pincushion
- ☐ Rotate
- ☐ Keystone
- ☐ Parallelogram
- ☐ Bow





## Position



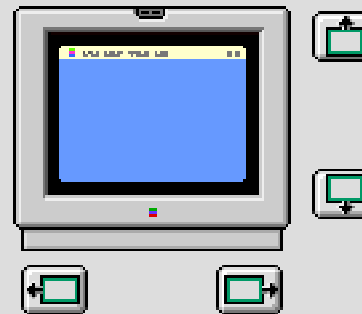
The Position selection refers to the centering of the screen image. If the image appears shifted up/down or right/left only, adjust it using the Position controls. Keep in mind that if you then move the monitor to another location you may need to readjust the controls.

1. Select Position.
2. Move the mouse pointer over the picture of the display.
3. Drag the screen rectangle to center the image.

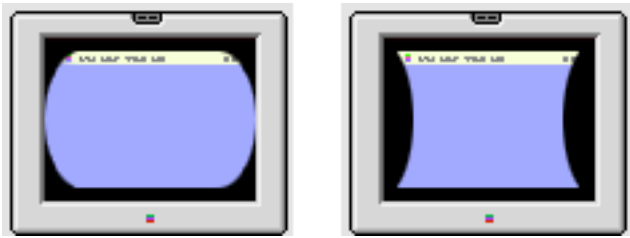
**Note:** Instead of dragging the screen rectangle, you can also adjust the image position by clicking the arrow buttons for incremental movement.

## Settings

- ☐ Height/Width
- ☒ Position
- ☐ Pincushion
- ☐ Rotate
- ☐ Keystone
- ☐ Parallelogram
- ☐ Bow



## Pincushion

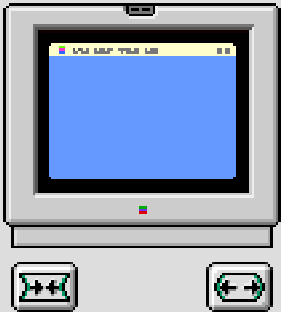


Pincushion is present if the screen image appears bowed in or bowed out on both sides. If just one side is affected, refer to the "Bow" section.

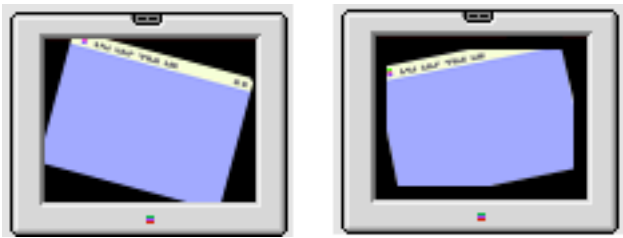
1. Select Pincushion.
2. Move the mouse pointer over the picture of the display.
3. Drag the left or right side of the screen rectangle to adjust the image.  
**Note:** Instead of dragging the screen rectangle, you can adjust the shape of the image by clicking the arrow buttons for incremental movement.

### Settings

- ☐ Height/Width
- ☐ Position
- ☒ Pincushion
- ☐ Rotate
- ☐ Keystone
- ☐ Parallelogram
- ☐ Bow



# Rotate



If the entire screen image appears off balance, use the Rotate controls to correct it.

- 1. Select Rotate.
- 2. Move the mouse pointer over the picture of the display.
- 3. Drag the screen rectangle clockwise or counterclockwise to rotate the image.

**Note:** Instead of dragging the screen rectangle, you can rotate the image by clicking the arrow buttons for incremental movement.

## Settings

☐ Height/Width

☐ Position

☐ Pincushion

☒ Rotate

☐ Keystone

☐ Parallelogram

☐ Bow

# Keystone



Keystone distortion (also known as trapezoid) appears as if the screen image length at the top edge is noticeably shorter or longer than the length at the bottom edge.

- 1. Select Keystone.
- 2. Move the mouse pointer over the picture of the display.
- 3. Drag the screen rectangle left or right to adjust the image.  
**Note:** Instead of dragging the screen rectangle, you can adjust the image by clicking the arrow buttons for incremental movement.

## Settings

☐ Height/Width

☐ Position


☐ Pincushion

☐ Rotate

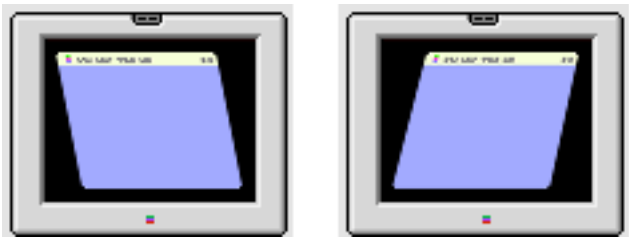
☒ Keystone

☐ Parallelogram

☐ Bow



# Parallelogram



Parallelogram distortion appears as if the screen image is leaning to one side.

- 1. Select Parallelogram.
- 2. Move the mouse pointer over the picture of the display.
- 3. Drag the screen rectangle left or right to adjust the image.  
**Note:** Instead of dragging the screen rectangle, you can adjust the image by clicking the arrow buttons for incremental movement.

## Settings

☐ Height/Width

☐ Position

☐ Pincushion

☐ Rotate

☐ Keystone

☒ Parallelogram

☐ Bow

# Bow

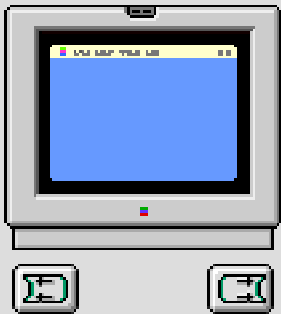


Bow is present if the screen image appears bowed to the left or right side. If both sides are bowed in or both sides are bowed out, refer to the "Pincushion" section.

- 1. Select Bow.
- 2. Move the mouse pointer over the picture of the display.
- 3. Drag the screen rectangle left or right to adjust the image.  
**Note:** Instead of dragging the screen rectangle, you can adjust the image by clicking the arrow buttons for incremental movement.

## Settings

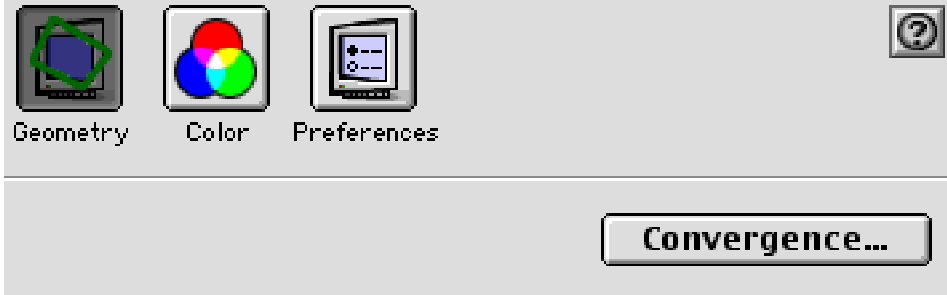
- ☐ Height/Width
- ☐ Position
- ☐ Pincushion
- ☐ Rotate
- ☐ Keystone
- ☐ Parallelogram
- ☒ Bow



## Convergence

Color images may appear blurry and out of focus if Convergence needs adjustment. The convergence adjustment is used to align the red, green, and blue electron guns for a sharper screen image.

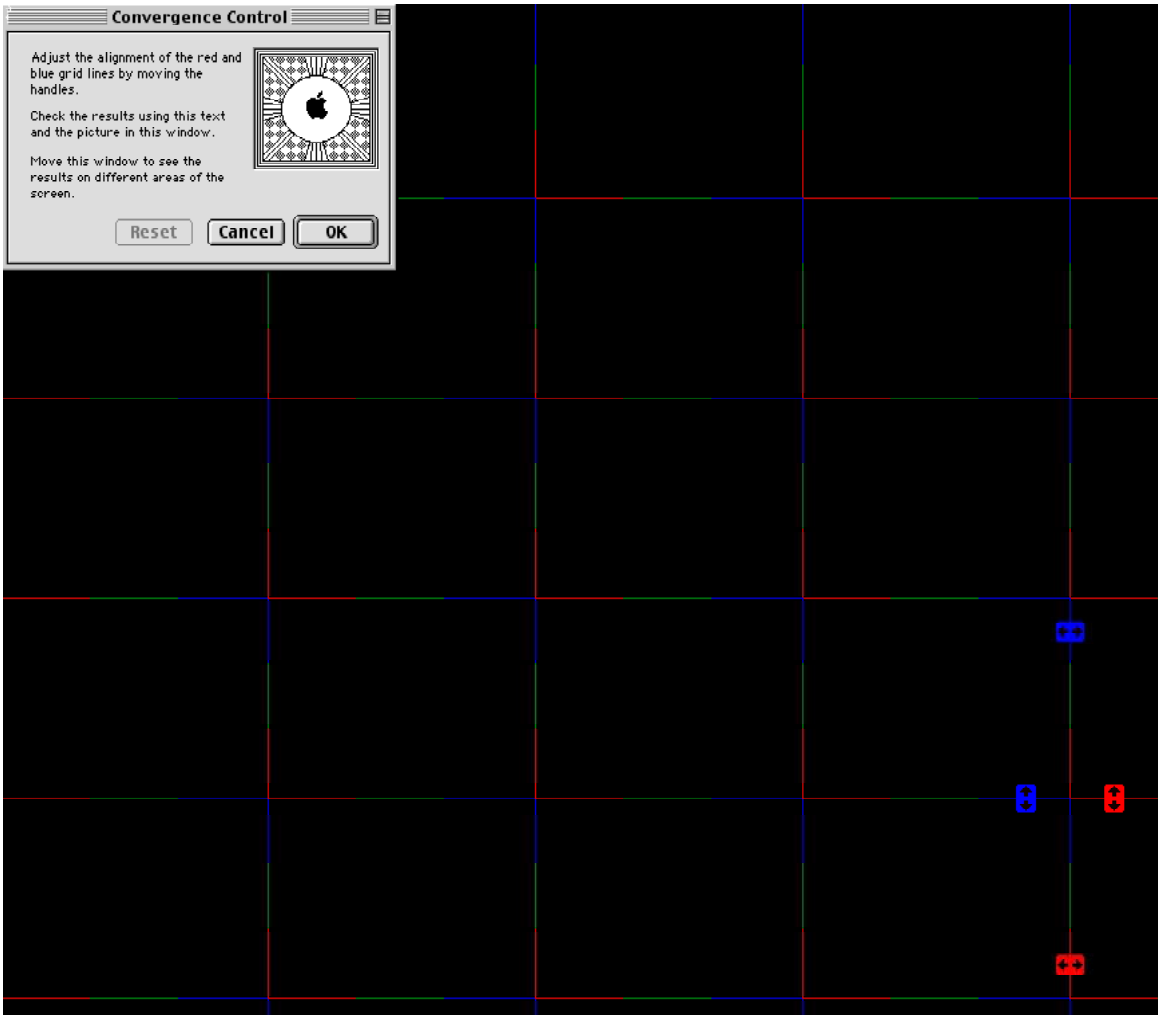
1. If you want to adjust the color convergence, click Convergence.



The Convergence Control window appears (see next page).

**Note:** When you adjust convergence, refer to the center of the screen on the grid outside the Convergence Control window.

2. Click the arrow buttons to adjust convergence. Adjust convergence for the overall best screen color clarity.  
**Note:** The active range for the horizontal convergence controls varies from monitor to monitor. In most cases there is a portion of the range that has no effect. If the horizontal controls seem stuck, move the controls in one direction a large extent and if no effect is seen, move them in the other direction a large extent until a change is detected. Moving back and forth in small increments will have no effect until the controls are moved into the active range.
3. Click OK to save your convergence changes and close the Convergence Control window.



Arrow Buttons  
at Center of Screen



## Degauss

If your screen display shows faint blotches of color on a single-color screen (such as a red, green, or blue screen), clicking Degauss can correct the problem.

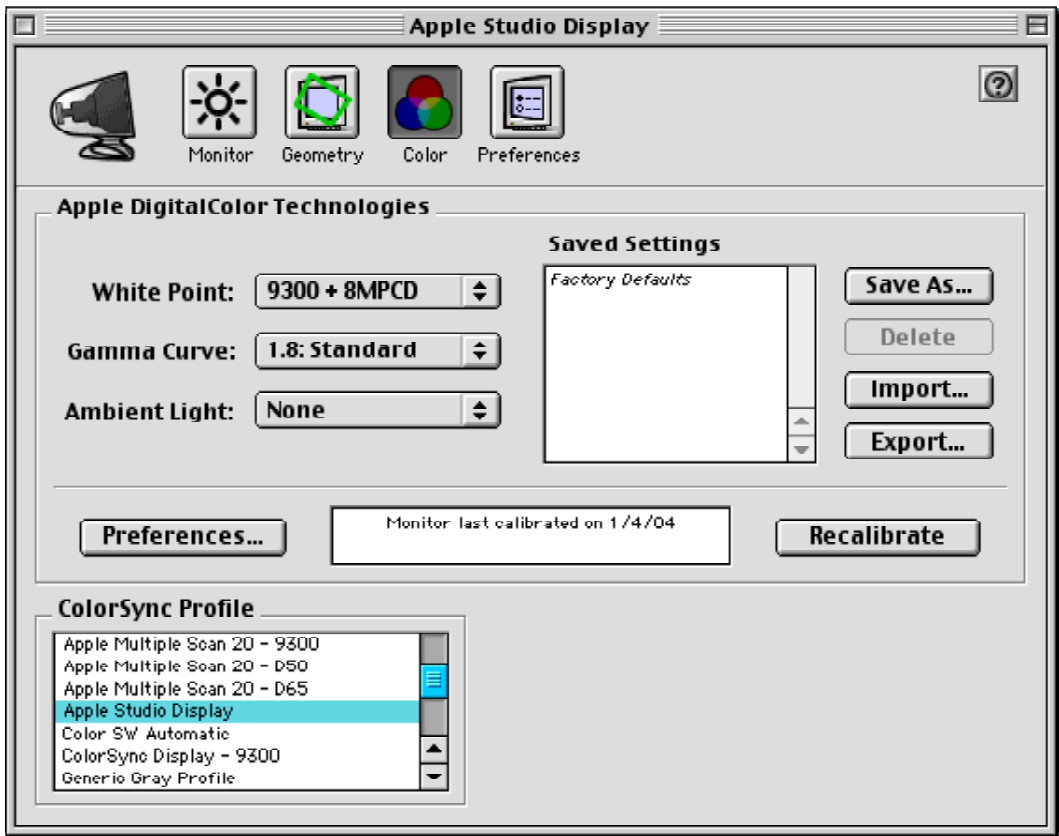
When you click Degauss, the monitor emits an audible beep and degausses itself. The screen darkens for a few seconds, and then it returns to the previous (though improved) screen display. However, if the problem persists, refer to Mac Help.



# Color Button

Click the Color button in the Monitors control panel to access color settings.

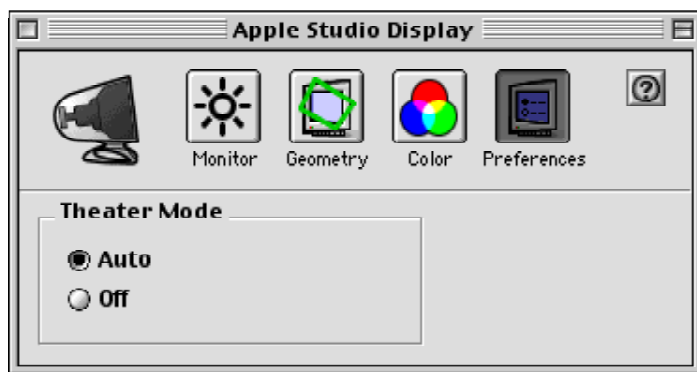
**Important:** Before changing any of the settings, refer to instructions in Mac Help or your computer user manual for specific color adjustments.



## Preferences Button

When you click the Preferences button, the Theater Mode setting is displayed. Theater Mode is either on (set at Auto) or off.

When you show a movie full-screen, Theater Mode enhances the brightness and contrast of video content that is presented at full-screen size. With Theater Mode turned on, your monitor automatically brightens when you use full-screen mode. When you stop using the application's full-screen mode, the screen returns to its normal brightness and contrast levels.



## For more information...

Refer to your computer user manual or Mac Help for more information about adjusting your display. If you experience a problem with your display and require more help, contact Apple for technical support at: <http://www.apple.com/support/products/overview.html>

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## Before Connecting Your Display...

Your display has been carefully tested and repaired according to Apple's stringent repair quality standards. Our technician noted that one or more pins on your display cable connector were bent. The damaged pins have been repaired. However, before plugging in the display cable connector to your computer's display port, please carefully inspect the display port **on your computer** to make sure it has not been damaged.

**Important:** Before you connect the display to your computer,

1. Check the display port on your computer, or video card. If you notice any broken pin dividers, as shown, do not insert the connector into the computer's display port. Instead, call Apple Technical Support (in the U.S., 1-800-767-2775; in Canada, 1.800.263.3394).



2. Check the pins on the end of the display cable. For all three rows of pins, make sure that they are straight, evenly spaced, and do not touch each other. **Note:** It is normal for two of the pins to be slightly longer than the others.



3. If you see one or more bent pins, use a small object such as a jeweler's screwdriver to carefully straighten the pin(s). Contact Apple Technical Support if you are unable to straighten the pins.
4. If both the display cable connector and the computer's display port appear to be undamaged, connect the display to the computer as described in the setup instructions that came with your display.