Workstation Applications

NVIDIA QuadroView User's Guide

Version 2.04.*XX*

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CHAPTER 1

ABOUT NVIDIA QUADROVIEW

This chapter contains the following major topics:

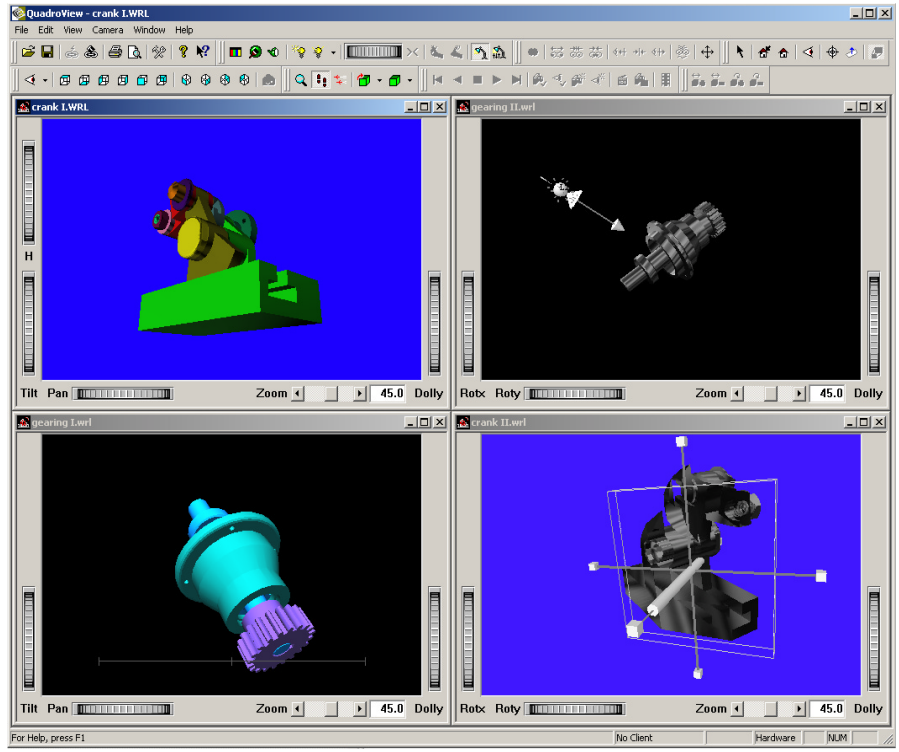
What is NVIDIA QuadroView?

The NVIDIA QuadroView workstation application functions under Windows XP/2000 and Windows NT 4.0 in the following viewer modes:

- **OpenGL-based 3D viewer** for the display and visualization of 3D models under AutoCAD and AutoCAD applications such as Autodesk Mechanical Desktop, Autodesk Architectural Desktop, and as a
- **Stand-alone viewer** for off-line viewing, making it suitable for laptop presentations (Quadro2Go laptop) or viewing models by non-CAD designers, such as those who are decision makers in an organization.

NVIDIA QuadroView Modules

Figure 1.1 Examples of QuadroView Models



Viewer Module

The function of the viewer module (the *main* module) is to render 3D models using easy-to-use controls in real-time. The viewer utilizes the Open Inventor 3D library, which is a scenegraph class library based on OpenGL. The models can be read from files, such as files using the **VRML Internet** (`.wrl`) or **Open Inventor** (`.iv`) file format or received through a communications link from another application. Models read from files do not need an active link to an application. For example, you can create and save your model on a CAD workstation. Then you only need the viewer and the saved files on a customer's system for a presentation, as an example.

Communications Module

Communication modules set up the link to CAD applications. The link allows the application to send a model to the viewer and control it in real-time. The link works in the opposite direction as well; the viewer can send commands and data

to the application. The `QV_C.ARX` module for AutoCAD provides the link to AutoCAD and is part of the QuadroView installation software.

ARX Module

The **ARX (AutoCAD Runtime Extension) module** is *optionally* installed by the QuadroView Setup program and registered for "Demand Loading" for all installed versions of AutoCAD. By default, the Demand Load setting is configured in so that QuadroView starts automatically when AutoCAD is started.

Using the `LoadConfig.exe` configuration tool, you can modify the demand load (startup) functionality of QuadroView for each installed version of AutoCAD.

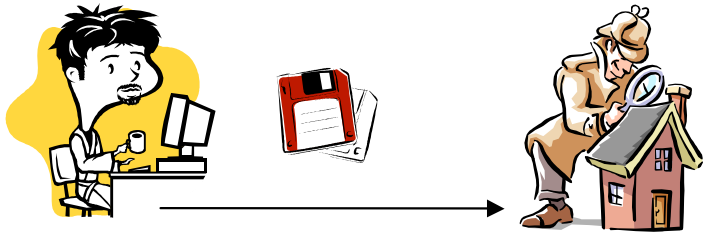
Using QuadroView as a Stand-alone Viewer

Stand-alone viewer for off-line viewing, making it suitable for laptop presentations (Quadro2Go laptop) or viewing models by non-CAD designers, such as those who are decision makers in an organization.

- Demos
- Presentations
- Web Viewer --- Stereo for the Web

Who Needs a Presentation?

- **Decision makers (e.g. the boss of the drafter)**
- **Customers (Building Owner / Client)**



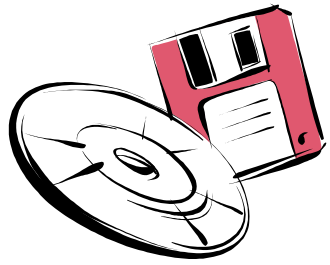
How the Customer Can View Files

QuadroView lets you create exports for the file types and media so that you do not have give the original drafting data to the customer.

- Export / Generate following file types:

  .avi, .wrl, .iv, .eps
- Different bitmap formats:

  .bmp, .rgb, .tif, .jpg, etc.
- View it on a PC
- Burn it to a CD as VCD/ SVCD an play it on a DVD Player
- VCR
- Video recorder



NVIDIA QuadroView as a Demo Viewer

NVIDIA QuadroView can be used to run

- Interactive demos
- Guided demos

at exhibitions, showrooms, and classes.

Using QuadroView as a CAD Viewer

You can use QuadroView ***while*** drafting in AutoCAD to:

- Find and prevent problems
- Perform fast visualizations

You can use QuadroView ***after*** drafting in AutoCAD to:

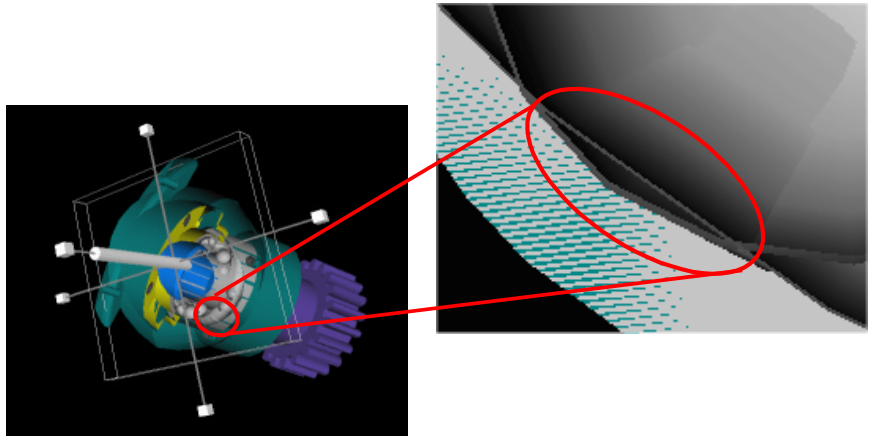
- Script a demo
- Create animation
- Prepare and give presentations

How NVIDIA QuadroView Can Locate and Prevent Problems

For a complete overview of a scene or model, you can use QuadroView to:

- Render a complete scene
- Render parts out of the a complex scene

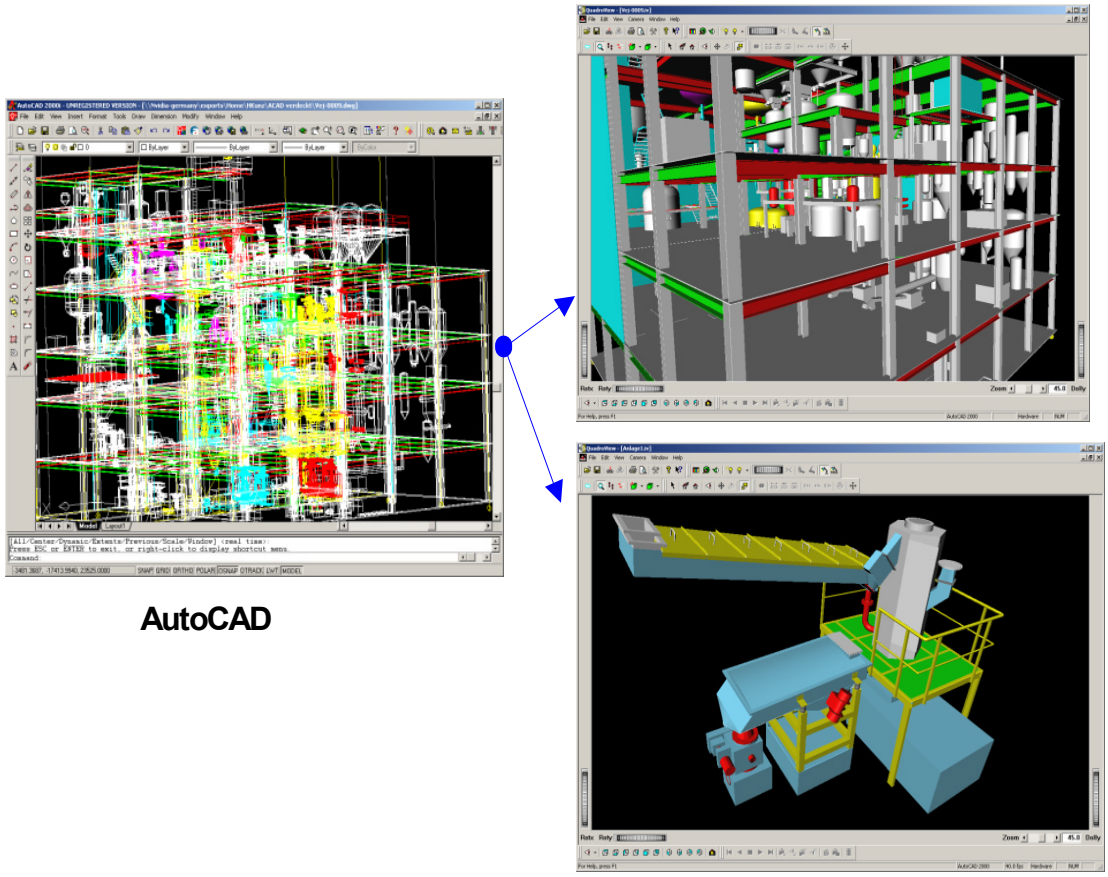
Figure 1.2 Demonstration of a Cutting Plane (Gearing)



To find design problems, you can use QuadroView tools, such as:

- **Cutting planes**
- **Grids**
- **Fly/Walk through**

Figure 1.3 Rendering Parts of a Complete Model: Example – Extract Details / Parts



Note: In Figure 1.3, notice that the AutoCAD rendering of the scene is still fuzzy and does not provide the clarity and detail-orientation provided by the QuadroView rendered scenes.

QuadroView as a Visualization Tool

As a “visualization tool”, QuadroView can

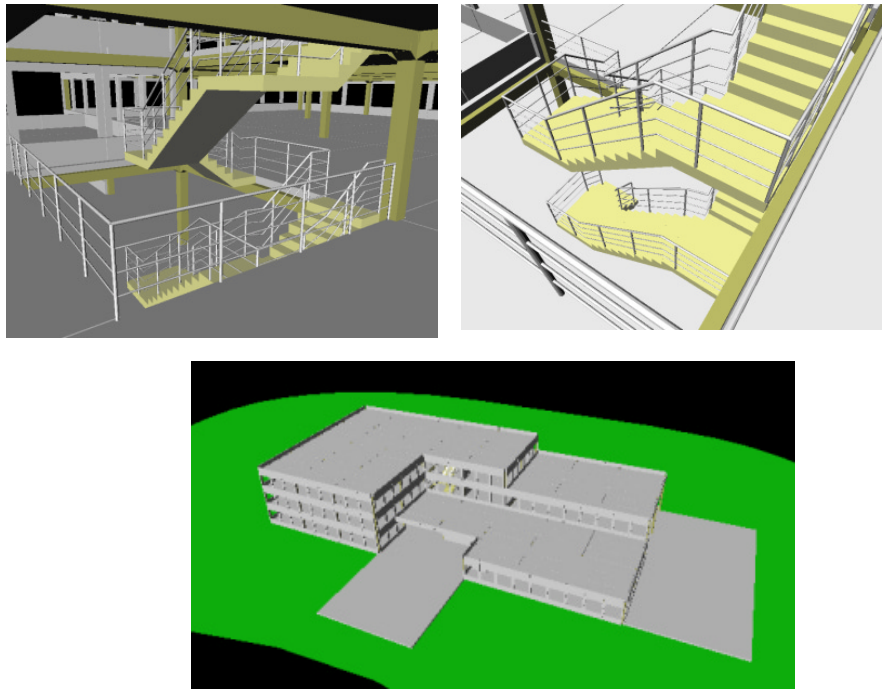
- Display a virtual model for drafters
- Display models in “stereo” using:
  - Stereo glasses

- Stereo monitors

QuadroView provides a clear separation between "drafting" and "viewing" so that the same view port, monitor, or even the same PC is not shared for both drafting and viewing.

Using QuadroView, you can use different materials, transparency, and so on to make the scene more realistic.

Figure 1.4 Examples of QuadroView as a Visual Tool



QuadroView Features and Benefits Summary

- Create AVI presentations
- Easier viewing and navigation through scenes (e.g., Walk, Fly, and Examiner) compared to the default AutoCAD navigation
- Do "virtual" walk-through of models; for example, an architect can design a building, export it to QuadroView, and give the data to a customer. The customer can "virtually" walk to the building and to determine if everything is to his/her liking.

- Save scenes in CAD-independent formats (`.iv` or `.wrl`), which can then be given to customers (decision makers) for their review without releasing your original drafting data.
- While editing in AutoCAD, ability to rotate, zoom, pan, and examine the objects without changing your working view in AutoCAD
- Ability to work in Wireframe (AutoCAD) and at the same time view the model in shaded mode.
- View in Stereo mode and create Stereo presentations
- If you have a multi-monitor CAD workplace, you can run AutoCAD in full size on one monitor and the 3D viewer on the other monitor. So you can do your drafting job on one monitor and can see the result on the other monitor rendered in a nice 3D shaded view (without switching overlapping windows)
- Easily rotate, move, pan, and zoom your model in the viewer and send back the view to AutoCAD and can go on working in this new view with easier light source handling.
- Load different file formats such as `.iv` and `.wrl` and view them
- Show the animation contained in the CAD drawing
- Easily change materials
- Use commands to automate tasks. For example, you can write a scrip or lisp program that performs a sample task such as:
  - `Send the whole model`
  - `Rotate it around the x axis`
  - `Switch to Wireframe`
  - `Rotate it again`
  - `Switch back to Shaded mode, and so on.`

Recent Features and Enhancements

- **HTML Online Help**

  When you have any NVIDIA QuadroView application window open, press **F1** to display online HTML Help, which provides detailed user information about the features.

  For additional information about online Help installation and access, see "Software Components" on page 32.

- **Installation/Setup**

  The Setup program lets you install QuadroView for several installed versions of AutoCAD on one computer.

- **Preference Dialog Box**

  The handling of options through the Preferences dialog box contains the following improvements:

  - The LoadConfig utility can be started through the Preferences dialog box in QuadroView.
  - All sheets are visible, even when you are not linked to AutoCAD.

- **Mouse Wheel Support**

  Mouse wheel support is available for navigation in Examiner, Fly, and Walk viewing modes.

- **Global Environment Mapping**

  When using the Global Environment Mapping (chrome effect) button in the Render toolbar, the model appears to be made of chrome and the environment mirrors on the surface.

- **Extended Full-Screen (Maximized) Render Area**

  The full screen/maximized render area support lets you view the model in a maximized render window, which eliminates the need for menus or toolbars. If you maximize the QuadroView main window before using this mode, the model spans the entire screen without any toolbars.

  The full screen/maximized render area support also includes improved pop-up menu choices in viewing modes, animation, cutting plane, stereo, etc.

- **Extended Stereo Support** includes support for Shutter Glasses/ Quadbuffered Stereo

- **Improved Animation Support**

  - **Improved AVI Settings dialog box** includes 1) Output Size combo box with selectable width, height, and image aspect ratio and 2) Frames per second (fps) support for frame based animation
  - **Improved Animation Editor** dialog box where you can manipulate the key frame settings and path settings
  - **Animation formats** in `.iv` (Open Inventor) and `.dwg` file formats
  - **Animation Toolbar** features improved handling and contains the following options:

Go to start	Stop	Hide camera path
Go to end	Select camera path	Open Animation Editor
Play forward	Select look At path	Send animation data to AutoCAD
Play backward	Show camera path	Create AVI file

- **New Animation Slider** (visible if scene contains animation data) in the viewer window contains:

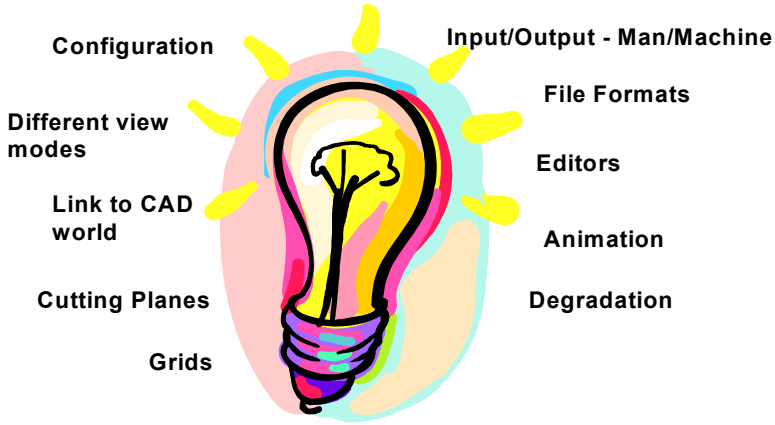
  - Single step Forward and Backward option

  - Frame counter

CHAPTER

2

OVERVIEW OF BASIC COMPONENTS

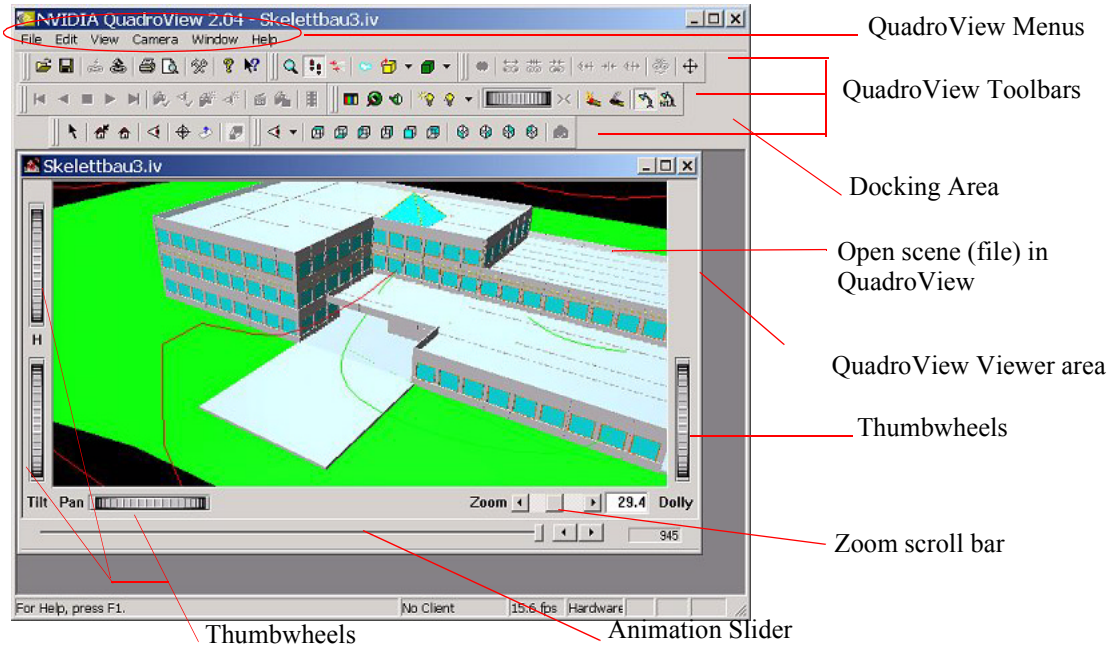


This chapter contains the following major topics:

User Interface

The user interface items labeled below are explained in various sections and chapters in this guide.

Figure 2.1 QuadroView Interface



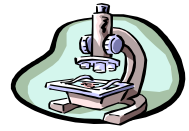
Navigation Aids

Table 2.1 Navigation Aids

Thumbwheels and Scroll Bars	Description
Mouse	The mouse is an important tool in NVIDIA QuadroView and is used to move and shift the scene and/or the current camera. Specific manipulations are possible according to the active viewing mode, i.e, Examiner, Viewer, or Walk.
Thumbwheels 	To control the camera by using the thumbwheels (shown in "QuadroView Interface" on page 12), follow this procedure: **1.** Position the mouse pointer in the central area of the thumbwheel. **2.** Hold the left mouse button down and move the mouse in the appropriate direction. The function of the wheels depends upon the selected viewing mode, i.e, Examiner, Viewer, or Walk.
3D Input Devices	While using the Examiner navigation mode, you can move the scene with a **3D input device** such as the LogiCAD Magellan 3D/Space Mouse or CyberPuck, or the Labtec SpaceController.
Animation Slider	**Note:** The Animation Slider (shown in "QuadroView Interface" on page 12) on the viewer window is visible only if the scene contains animation data. You can use the animation slider to manipulate the frames and the forward & backward arrows to single step forward & backward. The frame counter counts forward & backward

Viewer Modes

The following QuadroView viewing modes are discussed in this section:



- "Examiner Viewer" on page 14
- "Fly Viewer" on page 16
- "Walk Viewer" on page 17

Examiner Viewer

Menu **View > Examiner Viewer**

Button on the Render Toolbar

The “Examiner” viewer allows free movement within three-dimensional space. The camera can be rotated about any desired axis around a central rotation point. The method of control is intuitive and matches an observer’s natural movements. For example, given that a sphere contains the scene and the center of the sphere is the rotation point. The analogy is that you simply need to place a hand on the surface of the sphere in order to move it. Any desired viewing direction is set in this manner.

The Examiner Viewer lets you “walk” through the scene. Figure 2.2 and Figure 2.3 show sample scenes (`.iv` files) with Examiner Viewer mode enabled; the scene in Figure 2.3 also contains “animation” data, causing the Animation slider to appear.

Figure 2.2 Scene in Examiner Viewer Mode

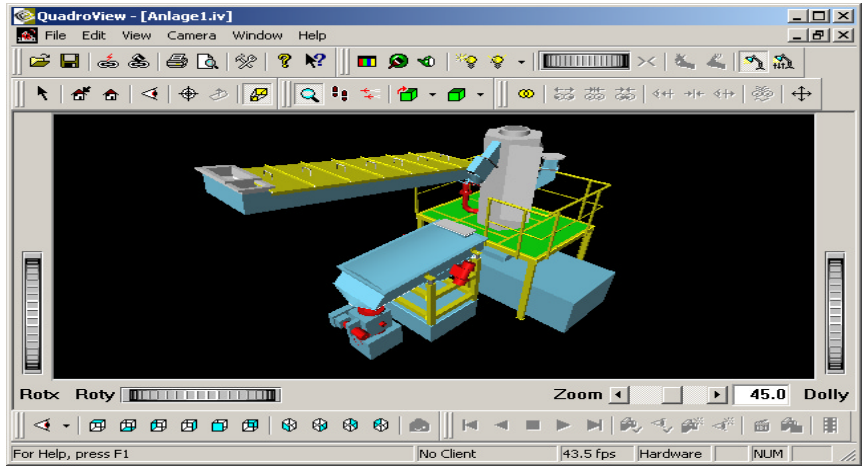


Figure 2.3 Scene with Animation in Examiner Viewer Mode

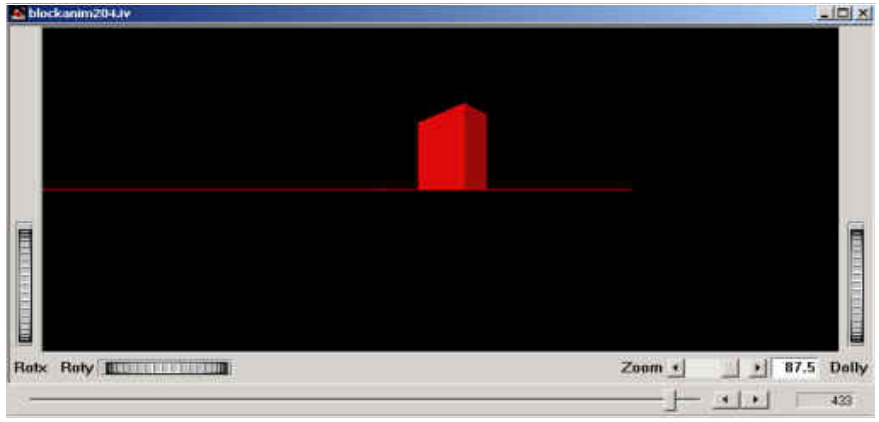


Table 2.2 Thumbwheels & Scroll Bars

Thumbwheels and Scroll Bars	Description
Dolly	The **Dolly** thumbwheel dollies (moves in and out of the scene) the camera. This function is camera tracking along the viewing axis. **Note:** If you are using a wheel mouse, you can use the mouse wheel to perform the same function.
Zoom	The zoom slider adjusts the camera's field of view, measured in degrees.
Rotx	The **Rotx** thumbwheel rotates the scene at the horizontal X-axis that is perpendicular to the viewing axis.
Roty	The **Roty** thumbwheel rotates the scene at the vertical Y-axis that is perpendicular to the viewing axis.

Table 2.3 Additional Navigation Keys

Key	Description
s	Define rotation point.
ESC	Toggles between Observe and Select modes.
ALT + mouse	Temporary switches back to Observe mode.
Right mouse button	Displays the pop-up menu for the Viewer.
Left mouse button	Rotate the object around the rotation point.
Center mouse button	Move parallel to viewing plane (Pan).
Left + center mouse button	Camera tracking (Dolly).

Table 2.4 Alternatives for Center Mouse Button

Key	Description
SHIFT + left mouse button	Moves parallel to viewing plane (Pan).
CTRL + left mouse button	Moves parallel to viewing plane (Pan).

Table 2.4 Alternatives for Center Mouse Button

Key	Description
CTRL + SHIFT + left mouse button	Camera tracking (Dolly)

Tip You can also use a 3D input device to perform these functions.

Fly Viewer

Menu View > **Fly Viewer**

Button  on the Render Toolbar

Using the Fly Viewer option, you can fly freely through the scene in three-dimensional space. A gauge displayed below the scene shows the current speed of the model. You can also fly backwards and stop!

Figure 2.4 shows a sample scene (an `.iv` file) with Fly Viewer mode enabled.

Figure 2.4 Scene in Fly Viewer Mode

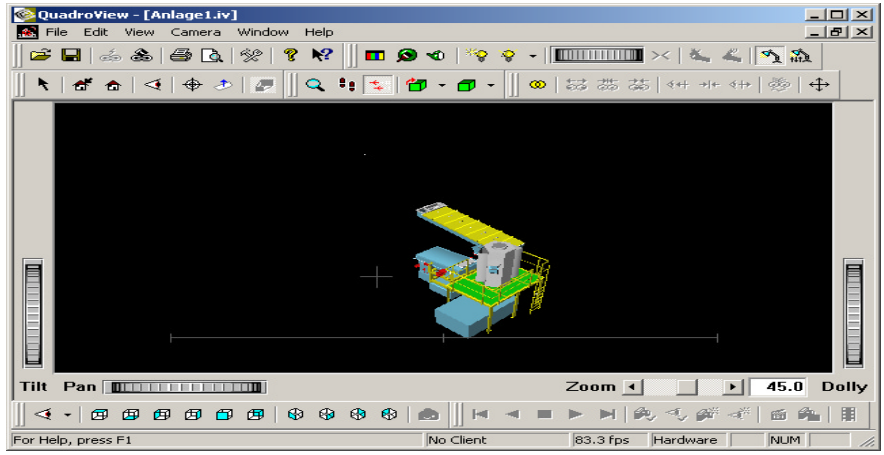


Table 2.5 Thumbwheels & Scroll Bars

Thumbwheels and Scroll Bars	Description
Dolly	The **Dolly** thumbwheel dollies (moves in and out of the scene) the camera. This function is camera tracking along the viewing axis. **Note:** If you are using a wheel mouse, you can use the mouse wheel to perform the same function.
Zoom	The zoom slider adjusts the camera's field of view, measured in degrees.

Table 2.5 Thumbwheels & Scroll Bars (continued)

Thumbwheels and Scroll Bars	Description
Tilt	The Tilt thumbwheel rotates the viewing direction up and down.
Pan	The Pan thumbwheel rotates the scene in place.

Table 2.6 Additional Navigation Keys

Key	Description
u	Define the Up Vector of the scene.
s	Define rotation point.
ESC	Toggles between Observe and Select modes.
ALT + mouse	Temporary switches back to Observe mode.
Right mouse button	Displays the pop-up menu for the Viewer.
Left mouse button	Increases speed.
CTRL + left mouse button	Rotates viewing direction.
Center mouse button or SHIFT + left mouse button	Decreases speed

Walk Viewer

Menu View > **Walk Viewer**

Button on the Render Toolbar

The Walk Viewer lets you "walk" through the scene. Figure 2.5 and Figure 2.6 show sample scenes (`.iv` files) with Walk Viewer mode enabled; the scene in Figure 2.6 contains "animation" data, causing the Animation slider to appear.

Figure 2.5 Scene in Walk Viewer Mode

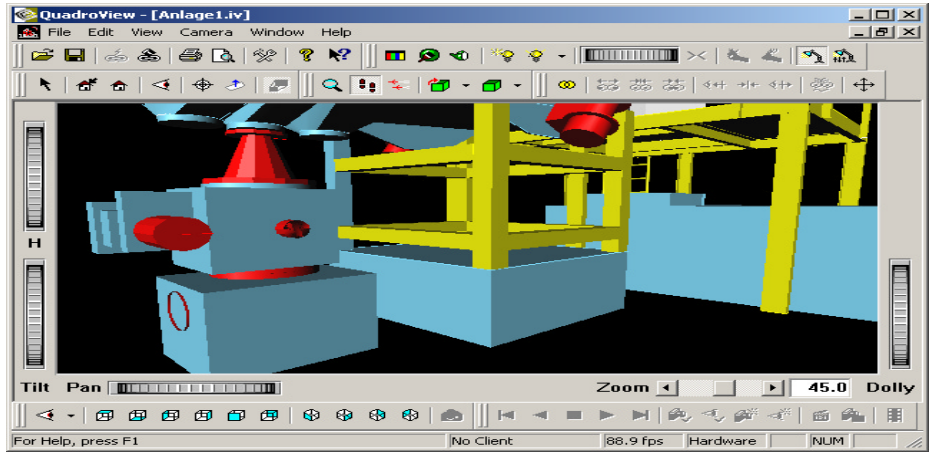


Figure 2.6 Scene with Animation Data in Walk Viewer Mode

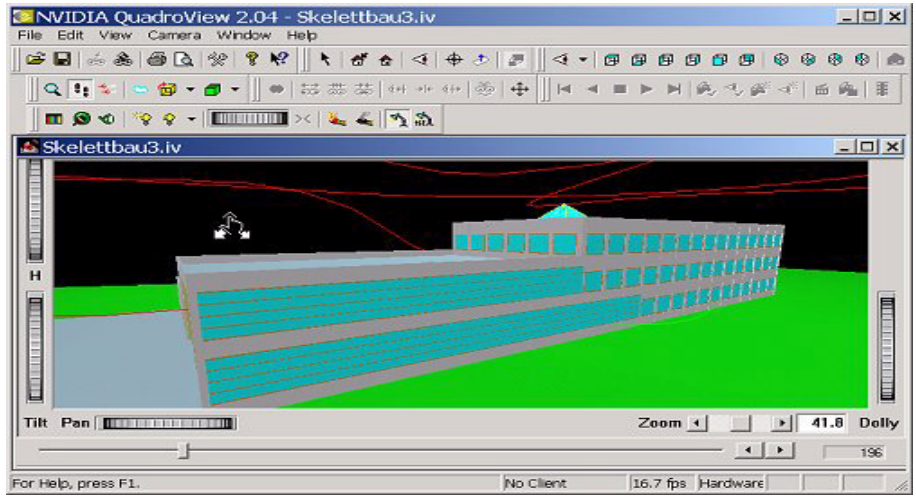


Table 2.7 Thumbwheels and Scroll Bars

Key	Description
Dolly	The Dolly thumbwheel dollies (move in/out of the scene) the camera. This function is camera tracking along the viewing axis. **Note:** If you are using a wheel mouse, you can use the mouse wheel to perform the same function.
Zoom	The zoom slider adjusts the camera's field of view, measured in degrees.
H	The H thumbwheel displaces the scene vertically to “eye level”.

Table 2.7 Thumbwheels and Scroll Bars

Key	Description
Tilt	The Tilt thumbwheel rotates the viewing direction up and down.
Pan	The Pan thumbwheel rotates the scene in place.

Table 2.8 Additional Navigation Keys

Key	Description
u	Defines the Up Vector of the scene.
s	Define rotation point.
ESC	Toggles between Observe and Select modes.
ALT + mouse	Temporarily switches back to Observe mode.
Right mouse button	Displays the popup context menu for the QuadroView viewer.
Left mouse button	Lets you walk around the scene. When you press the left mouse button, a box appears at the cursor position. Cursor movements above or below this box correspond to forward and backward movements. If you move the cursor to the left or right, you turn relative to the object. The speed is determined by the distance of the cursor from the box.
CTRL + left mouse button	Moves in the current viewing direction. Walking direction and viewing direction may be different.
Center mouse button or **SHIFT + left mouse button**	Rotates viewing direction**.** You can look up, as in looking at a ceiling, while you walk along a hallway.

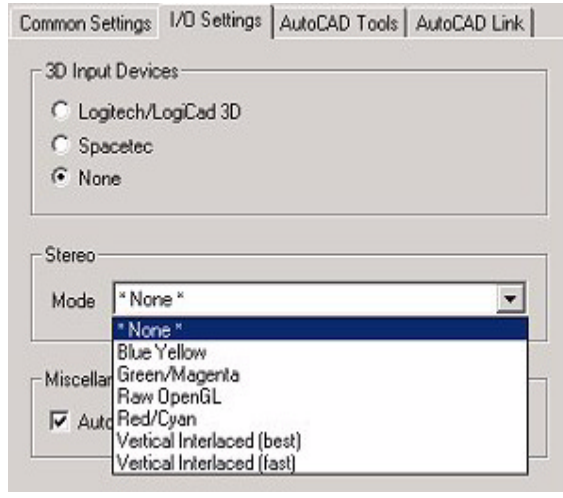
Input Devices & Output Formats

NVIDIA QuadroView is pre-configured to work with the following 3D input devices when you are in QuadroView "Examiner Viewer" on page 14 mode.

Also see "3D Input Devices" on page 76 and "3D Input Toolbar" on page 50.

- **Mouse**
- **Keyboard**
- **3D Devices**
  - Logitech LogiCad Magellan 3D/ Space Mouse, including CyberPuck
  - Spacetec SpaceController
- **3D Output (Stereo)**
  - Anaglyph stereo
  - Raw OpenGL
  - Interlaced stereo

Using the Input/Output (I/O) Settings choices shown on the right, you can select from several different stereo formats. See "Preferences: I/O Settings" on page 76.



Using the Stereo Toolbar shown below (see "Stereo Toolbar" on page 55),

you can:

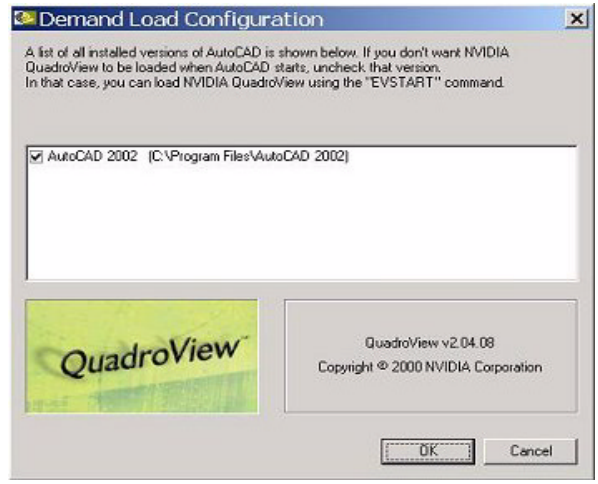
- Manipulate stereo offset, parallaxes, eyes, ...
- Maximize view port to full screen

NVIDIA QuadroView Configuration

Configuration Tool

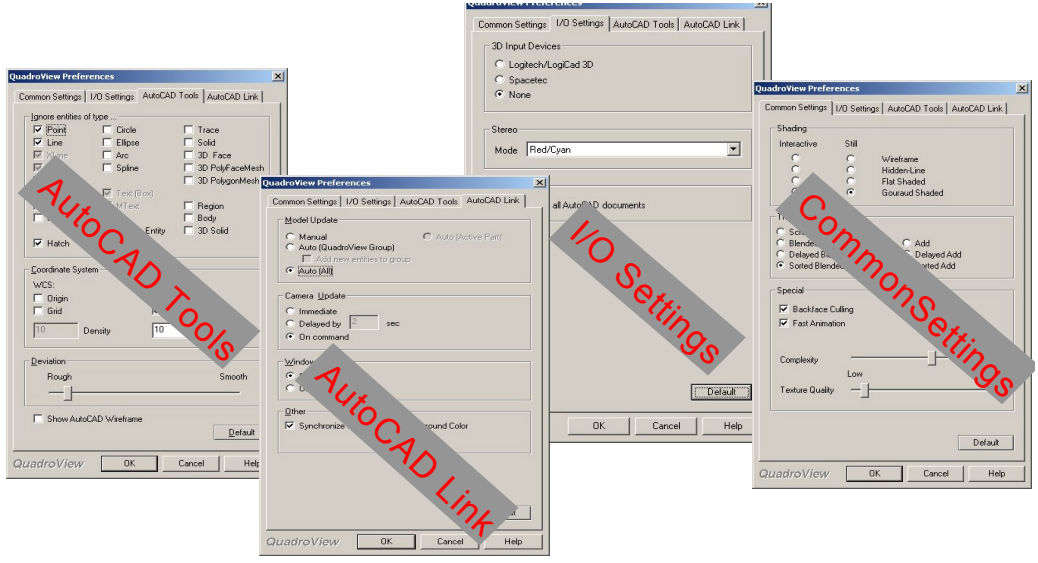
The Demand Load Configuration dialog box is shown on the right. Using this dialog box, you can choose different AutoCAD installations with which to auto-load QuadroView. See "Loading QuadroView in AutoCAD" on page 38.

You can also access this dialog box from the QuadroView **Preferences > AutoCAD Link** dialog box. See Figure 8.4, "Preferences: AutoCAD Link" on page 81.



Common QuadroView and AutoCAD-linked Settings

See "QuadroView Preferences Settings" on page 74 for details.



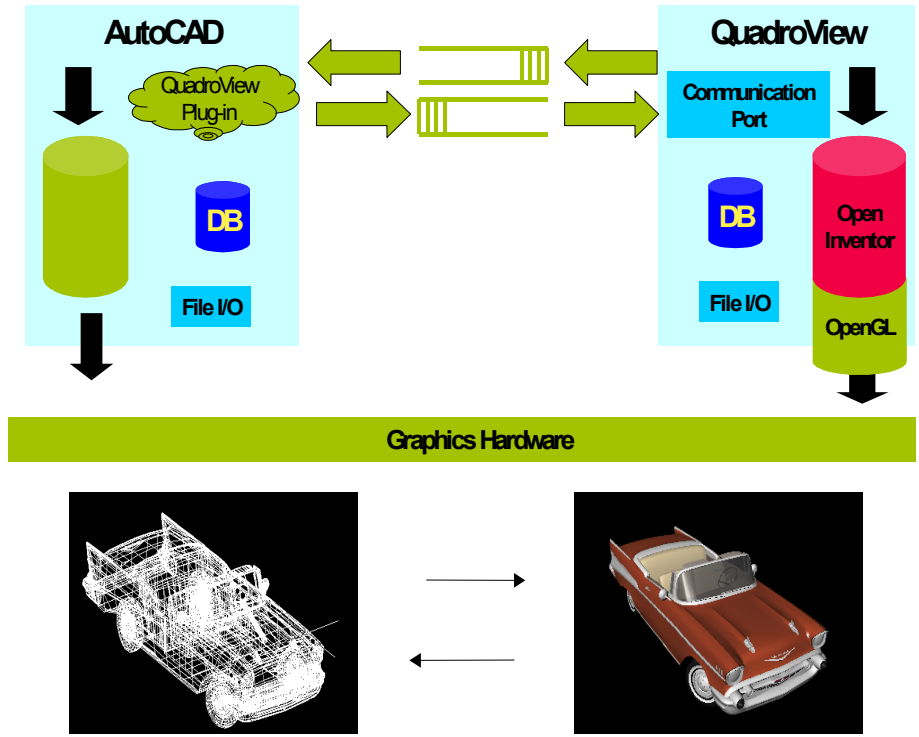
How AutoCAD Link Works

AutoCAD Links	File Link

• AutoCAD
• Mechanical Desktop
• Architectural Desktop
• . . .
	• For example, Pro Engineer, 3D Studio MAX, ...
	• Supported file formats include:
	  ◦ VRML
	  ◦ Open Inventor

Figure 2.7 illustrates how AutoCAD link works. AutoCAD and QuadroView communicate through a memory buffer. To link QuadroView to AutoCAD, a plug-in module inside AutoCAD reads the AutoCAD database and communicates with QuadroView.

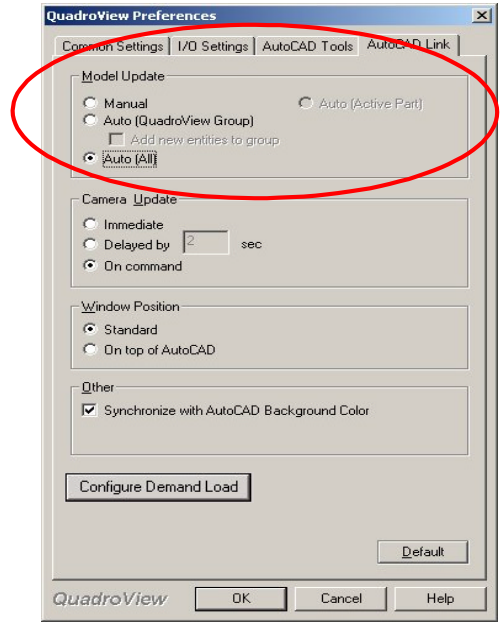
Figure 2.7 How AutoCAD Link Works



AutoCAD Link Modes

- Manual
- Auto (QuadroView Group)
- Auto (All)
- Auto (Active Part) - only Mechanical Desktop

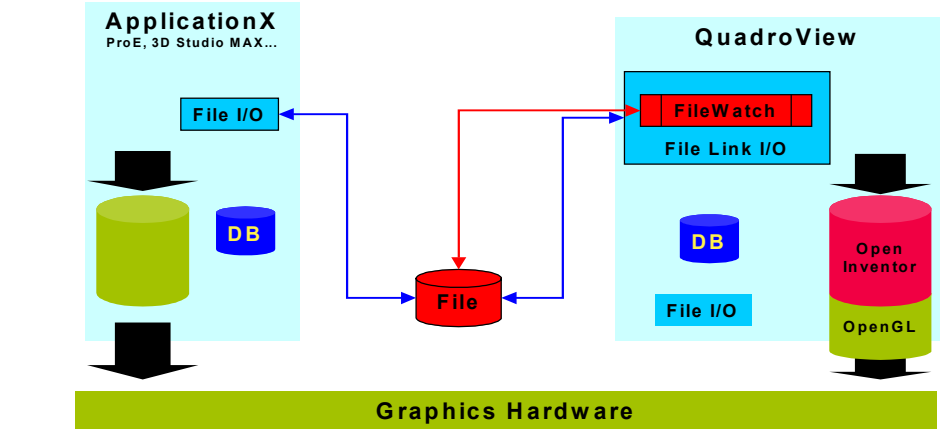
For details on using these link modes, see "Preferences: AutoCAD Link" on page 80.



QuadroView File Link

Using QuadroView, you can link to any application that supports NVIDIA QuadroView file formats. Every change of the file will result in a reload of the entire file into QuadroView.

Figure 2.8 How QuadroView File Link. Works

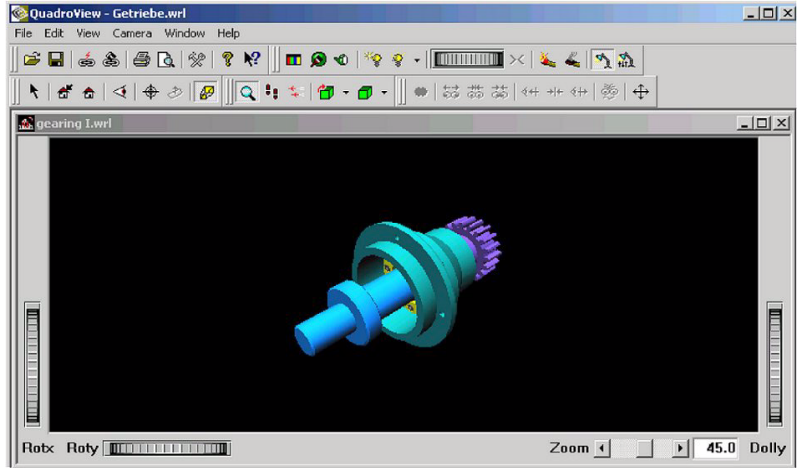


File Formats for File Link Modes

- Open Inventor
- VRML 1.0
- VRML 97

Note: Currently, NVIDIA QuadroView does not support the entire VRML standard.

Figure 2.9 Sample VRML (`.wrl`) file



Animation

Key benefits of using the Animation feature include:

- Creation of animations for presentations
- Quick and easy usage of the new animation data without having to delve into into the details; e.g., tangential camera movement, and so on.
- "Power user" features such as:
  - Key table to control the different frames
  - LookAt path for complex camera movements
- Saving of animation to `.avi` files in a variety of compression formats, based on the installed encoders on the computer.
- Saving of animation data to `.dwg`, `.dxf`, and `.iv` formats.

You can use many Animation options with toolbars available in QuadroView and AutoCAD:

QuadroView Animation Options (AutoCAD)

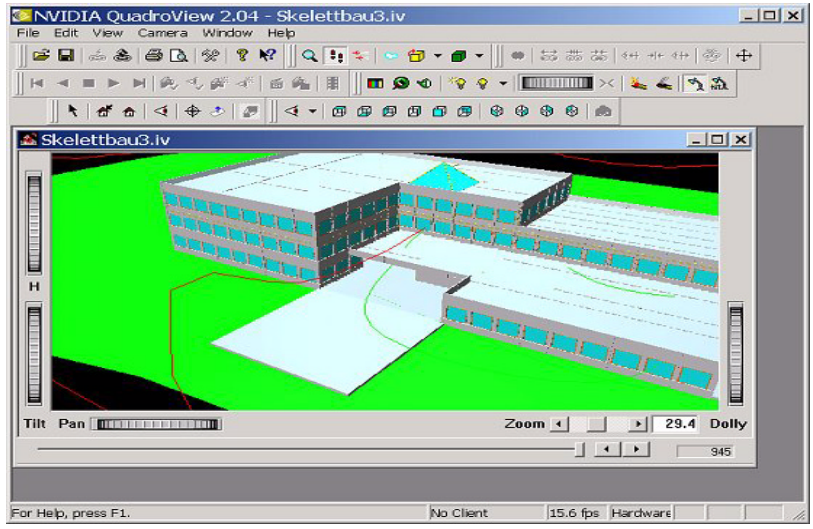
Animation Toolbar in QuadroView

Note: Also see "QuadroView Toolbar Options in AutoCAD" on page 86, "Animation Toolbar" on page 50.

More About Animation

The Camera Animation feature in NVIDIA QuadroView allows you to easily create virtual **Walk-throughs** and **Fly-throughs** of the current scene in two modes: simple and complex.

Figure 2.10 Scene with Animation



Simple mode: You can draw a simple spline in the AutoCAD drawing and declare this spline as the Camera Path. This means the camera moves tangentially along this spline when playing the animation. (See Figure 2.12.)

Complex mode: You can improve this animation sequence by drawing a second spline and declaring it as the LookAt Path. The LookAt Path is the target path of the camera. While moving on the Camera Path, the direction of the

camera points to the corresponding target on the LookAt Path. (See Figure 2.12.)

You also can fine-tune the animation by using the Animation Editor (Figure 2.11), which allows you to define special keys and place them on the paths. A key defines the place on the Camera Path, the target on the LookAt Path, the Timestamp, and the Twist of the camera. Using the Animation Editor, you can also:

- Control the time frames
- Set the "World Up" direction
- Switch to "Loop Mode"
- Turn on real-time rendering
- Define the frame rate

For further information, *see also* "Animation Editor" on page 60.

Figure 2.11 Animation Editor

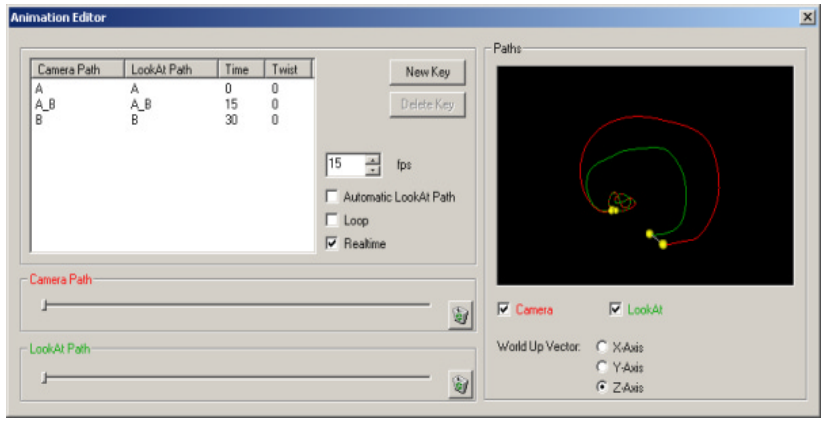


Figure 2.12 Simple Mode: Camera Path (Tangential Camera Animation)

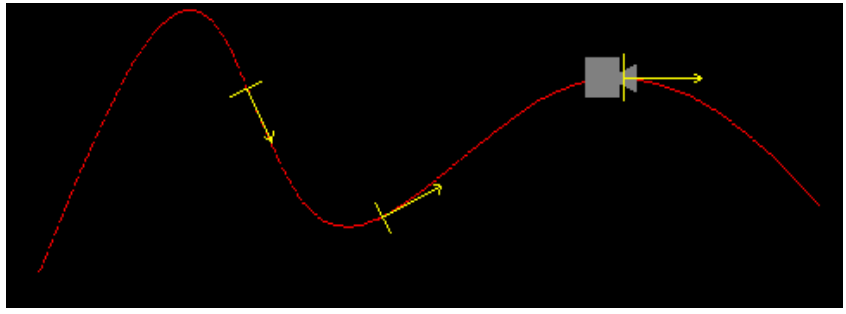
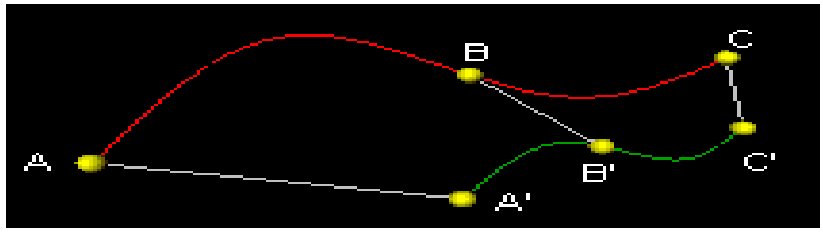


Figure 2.13 Complex Mode: Camera and LookAt Path



Camera Path	LookAt Path	Time	Twists	B and B' are corresponding points; one on the Camera Path and one on the LookAt Path. The animation must reach this key after 15 seconds. There is no rotation around the viewing axis.
A	A'	0	0	
B	B'	15	0	
C	C'	30	0	

Tips

- You can declare a spline as a path using any one of these methods: Animation Toolbar buttons, pop-up menu while a spline is selected in QuadroView, or Animation commands in AutoCAD.
- To prevent the viewer from seeing the paths while animating, or for further work, you can hide the paths by using the appropriate Animation Toolbar buttons, the equivalent options in the Camera > Animation submenu, or the Animation commands in AutoCAD.
- To change the position of a key marker on one of the paths, you can move the marker only between the two boundary markers of the enclosing interval.

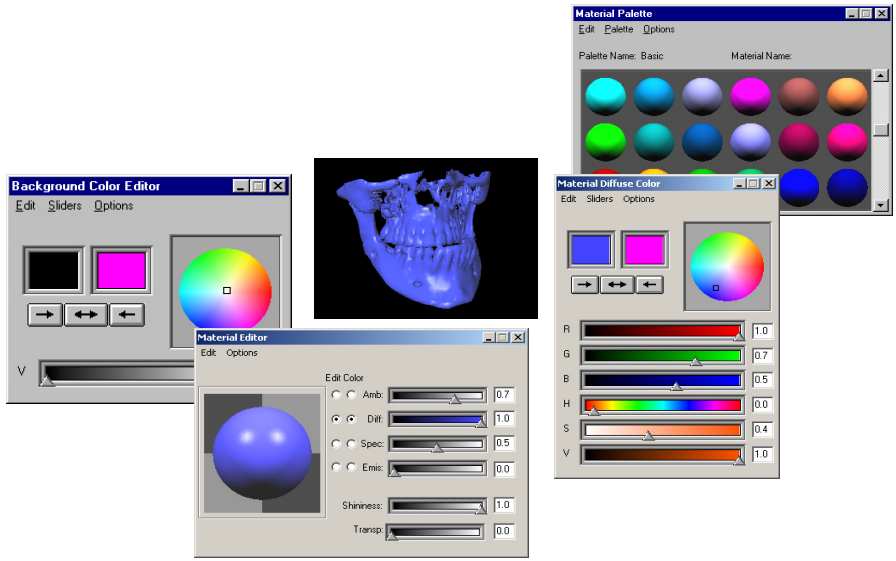
  Note: You cannot overlap intervals.
- The Animation data is saved in the `.DWG` file of AutoCAD (if you have updated the data in AutoCAD using the Update button) and in the `.IV` file of QuadroView, so you can reload and replay it later.
- You also can generate an `.AVI` file and distribute it over the Internet, send it by e-mail, or burn it to a CD as VCD/SVCD (VideoCD/Super VideoCD) and play it on a DVD player.

Color and Material Editors

Using the "Background Color Editor" on page 62 and "Material Editor" on page 65 dialog boxes, you can:

- Assign materials to objects
- Define and manipulate materials
- Create different material palettes and select from them

Figure 2.14 Color & Material Editor Dialog Boxes



More Features

Additional QuadroView features include:

- “Light Source Editor” on page 69
- “Cutting Plane Editor” on page 68
- Rendering Degradation (*See* “Preferences: Common Settings” on page 75.)
- Tools: grids, origins, . . (*See* “Preferences: AutoCAD Tools” on page 78.)
- Global Environment Mapping. (*See* “Render Toolbar” on page 54.)
- Named Views, Standard View, view handling, . . .(*See* “Views Toolbar” on page 58.)
- Scripting languages (*See* “QuadroView Commands in AutoCAD” on page 84.)

CHAPTER 3

SYSTEM REQUIREMENTS AND SUPPORT

This chapter contains the following major topics:

Release History

Table 3.1 contains a summary of NVIDIA QuadroView releases and the versions associated with them. Some versions listed may not have been released outside of NVIDIA.

Table 3.1 NVIDIA QuadroView Release History

Release	Version	Comments
Release 2.04	2.04.00 – 2.04.15	Releases ongoing
Release 2.03	2.03.00 – 2.03.02	

Supported Languages

User Interface

The NVIDIA QuadroView user interface support the following languages:

Chinese (traditional)	German	Norwegian
Chinese (simplified)	Hungarian	Polish
Czech	Italian	Russian
English	Japanese	Spanish
French	Korean	

Online Help

The NVIDIA QuadroView online Help supports the following languages:

Arabic	Finnish	Norwegian
Chinese (simplified)	French	Portuguese (Brazil)
Chinese (traditional)	German	Russian
Danish	Italian	Spanish
Dutch	Japanese	Swedish
English	Korean	Thai

System Requirements

Before you install and use NVIDIA QuadroView, make sure you have the prerequisites as explained in these sections:

Operating System

QuadroView is designed for the Microsoft operating systems listed in Table 3.2.

Table 3.2 Operating System Requirements

Operating System	Minimum Requirements
Windows XP	Home and Professional Editions
Windows 2000	
Windows NT 4.0	Service Pack 4

Disk Space

This release of NVIDIA QuadroView (English version) requires 40 MB of disk space.

Hardware: Supported NVIDIA Products

You need a workstation graphics card based on one of the NVIDIA products *or* an equivalent ELSA graphics card as listed in Table 3.3.

Table 3.3 Supported NVIDIA Products

NVIDIA Workstation Product	Equivalent ELSA Graphics Card (distributed by ELSA)
Quadro™ 4 500 GoGL	
Quadro4 900 XGL Quadro4 750 XGL Quadro4 700 XGL Quadro4 550 XGL	
Quadro™ DCC	ELSA GLoria DCC
Quadro™ 2 Pro	ELSA GLoria III
Quadro2 MXR	ELSA Synergy III
Quadro2 Go	
Quadro2 EX	ELSA Synergy 2000
Quadro™	ELSA GLoria II

Note: NVIDIA QuadroView 2.03.00 and later versions will not run with the ELSA Synergy II graphics card. Older versions (*earlier than 2.03.00*) of NVIDIA QuadroView can run with ELSA Synergy II *and* ELSA driver software.

Trial Period

As a first-time user of QuadroView, you have a 30-day demo/trial period where you may use a graphics card based on a non-NVIDIA graphics processor.

Stereo Requirements

- If you have Quadbuffered OpenGL Stereo mode enabled in QuadroView, then you need stereo shutter glasses such as the ELSA 3D Revelator™ or compatible glasses, such as those in the StereoGraphics product line.
- If you have Interlaced Stereo mode enabled in QuadroView, you need a stereo monitor such as the ELSA Ecomo 4D. (Interlaced stereo can be vertical or horizontal interlaced.)
- If you have Anaglyph Stereo mode enabled in QuadroView, you need special colored filter glasses. (Anaglyph stereo can be red/cyan, blue/yellow, green/magenta.)

NVIDIA Driver Software

You need one of the following NVIDIA Drivers:

- NVIDIA Windows NT 4.0 Display Driver *or*
- NVIDIA Windows XP/2000 Display Driver

Software Components

The NVIDIA QuadroView Setup directory contains the following files:

- **Readme.txt** file
- **Setup.exe** installation program for Windows
- **Other files** required by the Setup program

Note: The NVIDIA QuadroView online HTML Help file `(QuadroView*.chm)` is installed in the NVIDIA QuadroView directory during installation.

AutoCAD Applications

AutoCAD must be installed on your system *before* you install NVIDIA QuadroView.

NVIDIA QuadroView will work with any one of the following applications:

- AutoCAD 2002

- AutoCAD 2000i
- AutoCAD 2000
- AutoCAD Architectural Desktop Version 2
- AutoCAD Architectural Desktop Version 2i
- Mechanical Desktop 6
- Mechanical Desktop 5
- Mechanical Desktop 4

Note: You need to install AutoCAD before installing Architectural Desktop.

Supported Devices

3D Input Devices: Magellan/SpaceMouse / CyberPuck / SpaceController

NVIDIA QuadroView is pre-configured to work with Logitech, LogiCad Magellan 3D /Space Mouse and CyberPuck, and Spacetec SpaceController. These 3D input devices work in QuadroView Examiner Viewer mode; you can rotate and move the scene in real-time.

You can work with AutoCAD and QuadroView without toggling the focus between them. For example, you can use the 3D Mouse in QuadroView and the 2D Mouse in AutoCAD, as you normally do. Use the Mouse cap as if it were the whole scene and rotate or translate the cap as follows:

- **Push or pull the cap** in all directions to translate the scene.
- **Rotate the cap** in all directions to rotate the scene.

For better handling, you can regulate the speed of translation and rotation. For example, you can concentrate on specific movements by turning translation or rotation On/Off. If "dominant input" is turned on, the movement with the greatest magnitude is executed while the other movement is ignored.

Note: The **LogiCad Magellan 3D/Space Mouse keys** have the following functions:

Key	Description
-1-	Reduces sensitivity of translation.
-2-	Enhances sensitivity of translation.
-3-	Switches focus for QuadroView.
-4-	Zooms All.
-5-	Reduces sensitivity of rotation.
-6-	Enhances sensitivity of rotation.
-7-	Shows or Hides rotation point.
-8-	Sends actual camera data to AutoCAD. (This button has no function while rendering in the AutoCAD viewport.)

Note: The following functions apply while **holding down the * key (*Magellan only*)**.

Key	Description
-1-	Sets translation On or Off.
-2-	Sets rotation On or Off.
-3-	Sets dominant input On or Off.
-4-	(Zeroing) Press this key if the image is drifting without moving the cap.
-7-	(Null radius) Use this key to avoid movements caused by vibrations.
-8-	Resets to the driver default, e.g., Null radius.

Note: For further details, carefully read the documentation of your 3D input device.

Note: You can use the 3D Input toolbar to adjust the sensitivity of rotation and translation for any supported 3D input device. The following versions of devices are supported:

- Labtec driver (Version 8.1)
- LogiCad 3D driver (Version 4.5)

Shutter Glasses

QuadroView supports Stereo viewing. To use this feature, you need shutter glasses connected to your NVIDIA GPU-based graphics card.

Note: For further details, see the documentation of your shutter glasses.

Note: Also, refer to the OpenGL the NVIDIA Quadro Workstation User's Guide

CHAPTER 4

INSTALLATION AND UNINSTALLATION

This chapter contains the following sections:

Before You Install QuadroView

Before you install QuadroView, note the following:

- If you received the QuadroView installation package in compressed format, be sure to expand it retaining the subdirectory structure. Use the option "`-d`" for `Pkunzip` or, if you use another packer, use an equivalent option.
- Make sure that AutoCAD is installed but *not* running.

Installing QuadroView

You can install NVIDIA QuadroView using either Standard mode or the Silent mode, as explained in the sections that follow.

Standard Mode

From the installation directory, click the Setup program and follow the prompts from the InstallShield program.

Silent Mode

To run the Setup program without any dialog boxes and user input, you must create a response file. The response file will hold your responses to the dialog boxes that appear in a dialog driven installation.

1 To build the response file, start the Setup program with the `-r` option, as shown:

```
setup.exe -r
```

This command starts a dialog box driven Setup and creates the `Setup.iss` file in your Windows directory. `Setup.iss` stores the information you enter when you run Setup.

No messages are displayed during a Silent Setup. Instead a log file named `Setup.log` captures installation information including whether the installation was successful or not. You can review the log file to determine the results of the installation.

2 To start the Silent Setup, enter the following command:

```
setup.exe -s -f1<path of setup.iss> -f2<path of setup.log>
```

-s indicates that this is a Silent Setup.

-fl tells Setup where to find the response file.

-f2 tells the Setup where to write the log file. Without this option, the log file is created in the current directory. Since it is impossible to create a log file on a CD-ROM, specify another path where this file has to be created.

Example: The following is a sample command line for Silent Setup:

```
setup.exe -s -f1c:\setup.iss -f2c:\setup.log
```

If the installation program stops processing and generates an error message, try to run it with Administrator access rights.

Starting QuadroView

Starting QuadroView in Stand-alone Mode

To start QuadroView in stand-alone mode, from your Windows desktop, click **`Start > Programs > NVIDIA Corporation > QuadroView 2.04 > QuadroView`**.

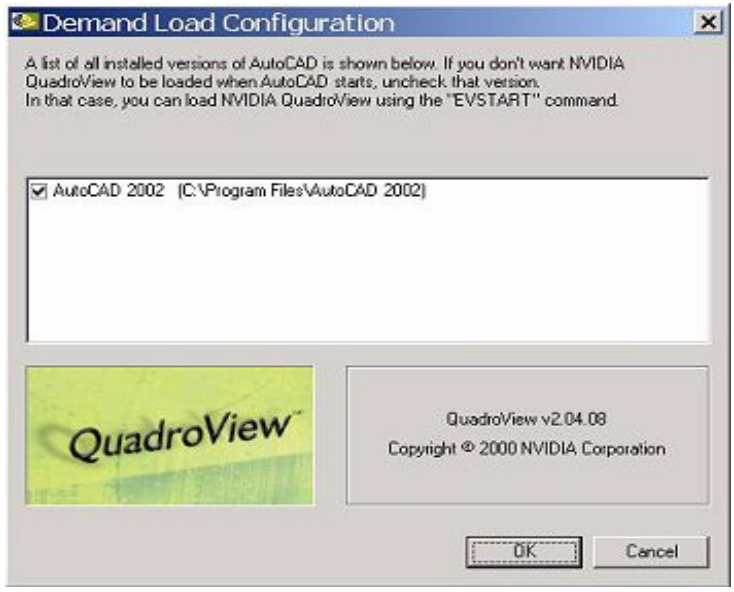
Loading QuadroView in AutoCAD

The loading mechanism for QuadroView in AutoCAD is called Demand Loading. The Demand Load Configuration dialog box appears for configuration during initial installation of QuadroView.

1 To access the Demand Load Configuration dialog box at any time after first installation, from your Windows desktop, click:

`Start > Programs > NVIDIA Corporation > QuadroView 2.04.0x > Demand Load Configuration`

Figure 4.1 Demand Load Configuration



When you run Demand Load Confutation, the Demand Load Configuration box appears and displays a list of all installed versions of AutoCAD (or other AutoCAD-dependent application such as Mechanical Desktop) for which QuadroView is registered. Using the Demand Load Configuration dialog box, you can modify the startup functionality of QuadroView for one or more installed versions of AutoCAD (or other AutoCAD-dependent application such as Mechanical Desktop) for which QuadroView is registered.

Note: AutoCAD & AutoCAD-based applications installed *after* QuadroView installation do not appear in the list.

2 **Automatic Loading:** A check box appears in front of each line that contains the name of the AutoCAD application for which QuadroView is registered. If the check box is checked, QuadroView starts automatically when you start AutoCAD for each checked application. (To check an application that is not

checked, click the check box.) If the checkbox is unchecked, you have to use the NVSTART command to start QuadroView.

3 **Demand Loading:** If you don't want QuadroView to be loaded when AutoCAD starts, uncheck that application. You then have to start QuadroView using one of these methods:

- Enter the command NVSTART from the command line *or*
- Click the  icon on the NVIDIA QuadroView toolbar inside AutoCAD

Note: Older releases of QuadroView provided a different method of automatic loading, which you can still use. If a batch file called Acad.rx exists in an AutoCAD working directory, the file attempts to load the .arx applications specified there. For QuadroView, a command line in the Acad.rx batch file may look like this: C:\…\NVIDIA\QV_c.arx. If needed, you can specify the path where you installed QuadroView followed by the file name QV_c.arx.

4 After you've entered the setting you want, click **OK** to accept the changes.

If you do not want to make any changes or want to cancel the changes you've made, click **Cancel**.

5 If, for any reason, AutoCAD does not start after QuadroView installation, re-install QuadroView.

Uninstalling QuadroView

To uninstall NVIDIA QuadroView, follow these steps:

1 From the Windows desktop, click **Start** > **Settings** > **Control Panel** > **Add/Remove Programs.**

2 Click the **Add/Remove Programs** icon.

3 Click **QuadroView** from the list.

4 Click the **Change/Remove** button.

Follow the instructions from the InstallShield program to complete uninstallation.

CHAPTER 5

QUADROVIEW MENUS

This chapter contains the following major topics:

NVIDIA QuadroView Menus

Main Menus

QuadroView contains the following main menus:

Context-Sensitive Popup Menus

When viewing an image inside the QuadroView window, in most cases, you can press the right mouse button to access a context sensitive pop-up menu. In most

cases, you can press the right mouse button to display a context sensitive pop-up menu. The context menu groups useful tasks available in the current context.

In most cases, you can press the right mouse button to display a context-sensitive pop-up menu. The context menu groups useful tasks available in the current context.

File Menu

The File menu contains the options described below. The options that show an icon are also available from the Standard toolbar.

Table 5.1 File Menu Options

Option	Description
File > Open **Key CTRL + O**	Opens an existing file. The following file formats can be read: Open Inventor (.IV files) VRML version 1.0 (.WRL files) VRML version 2.0 (.WRL files)
File > Open Link **Key CTRL + L**	Opens or close a link to an AutoCAD drawing**.** This command lists all documents opened in AutoCAD in a dialog box. Documents that currently have a link to a document in NVIDIA QuadroView are checked. To establish a link to an AutoCAD document, click the document to place a check next to it. If you uncheck a document, it will be closed in QuadroView. Example: **1** Start AutoCAD with QuadroView **2** Load several drawings. **3** Click **File > Open Link** from QuadroView. A list box displays the names of the opened drawings **4** Select or unselect the drawing in this list. Notice that the unlinked drawings close immediately. **5** Select the unselected drawing. QuadroView will immediately load the drawing from AutoCAD immediately

Table 5.1 File Menu Options (continued)

Option	Description
File > Link **Key** **ALT + CTRL + F**	Establishes a file link to the currently opened document file. The QuadroView viewer will reload the document whenever the file is changed by another program, so that you can see the changes. You can use this option to link the QuadroView viewer to another CAD application that can save files in `.iv` or `.wrl` formats. **Note** To use this option, the file must be located on the same computer on which the QuadroView viewer is started. *The option does not work over the network*. **Example:** **1** Open an application such as ProEngineer and create a drawing. **2** Select Export as VRML and save the drawing to disk; you can use `demo.wrl.` as the file name. **3** Start QuadroView and load the drawing (`demo.wrl`) **4** Click **File** > **Link** in QuadroView. **5** Edit the drawing in ProE and again export it to `demo.wrl`. QuadroView will detect that the file has changed and will automatically reload `demo.wrl`
File > Close	Closes the active document.
File > Save **Key** **CTRL + S**	Saves the model under the current name as an Open Inventor file. This command saves the current model under the current name in an Open Inventor file. If the model has not yet been named, the dialog box for Save As automatically appears so that you can name the file. You can also use this command to save the model under another name or in another directory or create a file with another format.
File > Save As. . . .	Saves the model under a different name and in a specific graphics format. This command opens a dialog box in which you can define the disk drive, directory, file name, and file format of the current file. The following formats are available: • Open Inventor (.iv files) • Bitmap (.bmp files) • Postscript (.eps files) • SGI-RGB (.rgb files) • TIFF (.tif files) • JPEG (.jpg files) • VRML, version 2.0 (.wrl files) If you have already saved the file and you want to save changes under the same name, use **File > Save**.
File > Print **Key** **CTRL + P**	Sends the opened file to the printer.
File > Print Preview	Displays a Print Preview of the file.
Print Setup	Selects and set up an installed printer.

Table 5.1 File Menu Options (continued)

Option	Description
1 . . .[*file name*] 2. . . [*file name*] 3 . . . [*file name*] 4 . . .[*file name*]	Quickly accesses the most recently used files.
Exit	Exits QuadroView.

Camera Menu

The Camera menu contains the options described below. The options that show an icon are also available from the Viewer toolbar.

Table 5.2 Camera Menu Options

Option	Description
Update AutoCAD View	Updates AutoCAD view. Sends the current camera settings to AutoCAD.
Save Home Position	Saves current camera settings as Home position. Saves the current view. You can save only one view at a time. To retrieve the saved view, use the **Restore Home Position** option.
Restore Home Position	Sets camera to Home position. Any view can be retrieved if it has previously been saved using the **Save Home Position** option.
Pre-defined Views	Selects from the AutoCAD pre-defined views.
Animation	Contains the same options as the "Animation Toolbar" on page 50.
View All Key **V**	Zooms out to see the entire scene. The model may lie (partially or entirely) outside of your camera view, or you may wish to change quickly from a close-up view to the total view. Click this button to bring the object back to the center of the view.
Perspective Camera Key **T**	Toggles between the **Perspective** and **Orthogonal** display of the scene.
Seek To Point Key **S**	Seeks object to define rotation point. You can re-orient any desired surface of the object to be parallel to the viewing plane. The selected point becomes the model's new rotation point.
Up Vector Key **CTRL + U**	Sets the Up Vector of the current scene. Defines the "floor" when using the Fly or Walk Viewer.

Table 5.2 Camera Menu Options (continued)

Option	Description
Stereo	Controls stereo handling; contains the same options as the "Stereo Toolbar" on page 55.
3D Input Devices	Adjusts the sensitivity of the 3D input device you may be using; contains the same options as the "3D Input Toolbar" on page 50.

Edit Menu

The Edit menu options are described below. The options that show an icon are also available from the Editors toolbar.

Table 5.3 Edit Menu Options

Option	Description
Edit Mode Key The **ESC** key can be used to toggle between Selection mode and Observer mode.	Toggles between **Observer** and **Selection** modes. **Selection mode:** Use the arrow pointer to mark an object, move "Light Sources" on page 70, or change the direction of Light Sources. **Observer mode**: Use the hand pointer to move the object around. Tip In **Selection** mode, you can temporarily switch back to **Observer** mode by holding down the **ALT** key while using the mouse.
Cutting Plane	Shows the "Cutting Plane Editor" on page 68. This editor allows you to cut away parts of your drawing so you can look into the inner space of your objects. Tip When you enable (turn on) the Cutting Plane Manipulator, additional options are added to the pop-up menu that you can access by clicking the right mouse button.
Background Color	Opens the "Background Color Editor" on page 62.
Material	Opens the "Material Editor" on page 65.
LIGHTS (submenu)	
Create Light Source	Opens the "Light Source Editor" on page 69 where you can create and save a new light source.
Show/Hide Light Sources	Click the part of this icon to toggle between showing and hiding light source icons on the scene. To edit a specific light source, either double click its icon from the scene, or select it from the drop-down list by clicking the down arrow icon.
Adjust Icon Size	Adjusts the icon size of the light source with respect to the current scene size.
All Lights On	Turns on all light sources.
All Lights Off	Turns off all light sources.
Headlight	Toggles on/off the Headlight. The Headlight is the default light source in the viewer.
Headlight Editor	Opens the "Headlight Editor" on page 73 dialog box.

View Menu

The View menu contains the options described below. The options that show an icon are also available from the Viewer toolbar.

Table 5.4 View Menu Options

Option	Description
Toolbars	To display the QuadroView Toolbars submenu, you can follow any one of these options: • Click **View > Toolbars** from the QuadroView main menu and then click to toggle any one of the toolbars you want to display or hide. • Right click while the cursor is in the toolbars docking area or in the viewer area. See "QuadroView Toolbars" on page 48 for details on the various toolbars.
 **Examiner Viewer**	Switches to "Examiner Viewer" on page 14 mode.
 **Walk Viewer**	Switches to "Walk Viewer" on page 17 mode.
 **Fly Viewer**	Switches to "Fly Viewer" on page 16 mode.
Render Still 	Sets the Render mode while the model *is not animated*. Choose from Wireframe, Hiddenline, Flat Shaded, and Gouraud Shaded. See "Render Toolbar" on page 54 for **Tip** You can also access this option from the Render toolbar.
 **Render Interactive Mode**	Sets the Render mode while the model *is animated*. You can choose from the following modes: • Wireframe • Hiddenline • Flat Shaded • Gouraud Shaded The same options are also available from the "Render Toolbar" on page 54.
 **Preferences**	Opens the Preferences dialog box. *See* "QuadroView Preferences Settings" on page 74.

Window Menu

The Windows menu contains the options described below.

Table 5.5 Window Menu Options

Option	Description
Maximize Render Area **Key** **F11**	Toggles between maximizing/restoring the render area and removing/adds items such as toolbars, menus, and titles. To access this option, you can use the shortcut key (F11) or the context menus (right click) to control viewing parameters while the render area is maximized.
Cascade	Cascades open windows.
Tile	Tiles open windows.
Arrange Icons	Arranges minimized windows.
List of Open Windows	Switches to the selected window.

Help Menu

The Help menu options are described below.

Table 5.6 Help Menu Options

Option	Description
Help Topics **Key** **F1**	Opens the QuadroView online Help system. You can press **F1** at any time within QuadroView to open Help.
www.NVIDIA.com	Goes to the web page of NVIDIA Corporation.
About QuadroView	Shows the "About NVIDIA QuadroView" box, which contains information on copyright and the graphics card that is installed.

CHAPTER

6

QUADROVIEW TOOLBARS

This chapter contains the following major topics:

NVIDIA QuadroView Toolbar in AutoCAD

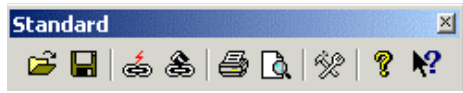
The NVIDIA QuadroView toolbars are loaded when you run AutoCAD for the first time after setting up QuadroView to run within AutoCAD. For details, see"QuadroView Toolbar Options in AutoCAD" on page 86.

Standard Toolbar

To access the Standard Toolbar, right click from inside QuadroView or use the menu sequence shown below.

Menu **View > Toolbars > Standard** (toggles toolbar on and off)

Toolbar



.

Table 6.1 Standard Toolbar Options

Option	Description
Open	Opens an existing file.
Save	Saves the model under the current name as an Open Inventor file.
Open Link	Opens a link to an AutoCAD Drawing.
File Link	Establishes a file link to the currently opened document file. The Viewer reloads the document whenever the file is changed by another application. This option can be used to link the Viewer to another CAD application that can save a file in IV or VRML format. To use this option, the file must be located on the same machine on which the Viewer is started. Note that the option does not work over the network.
Print	Sends the current file to the printer.
Print Preview	Displays a Print Preview of the file.
Preferences	Opens the Preferences dialog box.
About	Shows the “About NVIDIA QuadroView” information. View information about QuadroView and the graphics card that is installed.
Context Help	To receive context-sensitive Help, click the icon, move the mouse to drag the **?** icon to the area of the QuadroView window on which you need Help, and click again to display the Help.

3D Input Toolbar

To access the 3D Input Toolbar, right click from inside QuadroView or use the menu sequence shown below.

Menu **View > Toolbars > 3D Input** (toggles toolbar on and off)

Toolbar 

NVIDIA QuadroView is pre-configured to work with the following 3D input devices: Logitech, LogiCad Magellan 3D/Space Mouse and CyberPuck, and Labtec SpaceController.

Table 6.2 3D Input Toolbar Options

Option	Description
Enhance Translation Sensitivity	If rotation is too slow, you can enhance the rotation sensitivity.
Reduce Translation Sensitivity	If translation is too fast, you can reduce the translation sensitivity.
Enhance Rotation Sensitivity	If rotation is too slow, you can enhance the rotation sensitivity.
Reduce Rotation Sensitivity	If rotation is too fast, you can reduce the rotation sensitivity.

Animation Toolbar

Note: The Animation Toolbar options are only available when you are using the "Examiner Viewer" on page 14 mode in a scene that contains animation data. The options are not available (grayed out) in "Fly Viewer" on page 16 and "Walk Viewer" on page 17 modes *and* if the scene does not contain animation data.

To access the Animation Toolbar, right click from inside QuadroView or use the menu sequence shown below.

Menu **View > Toolbars > Animation** (toggles toolbar on and off)

Toolbar 

Table 6.3 Animation Toolbar Options

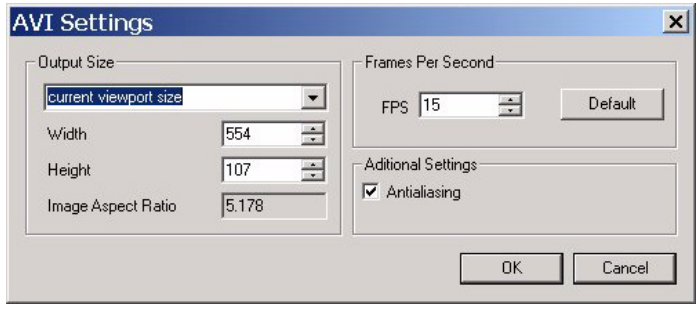
Option	Description
Play Forward	Plays animation forward.
Go to End	Goes to the end (last frame) of the animation.
Play Backward	Plays animation backward (reverse direction).
Go to Start	Goes to the start (first frame) of the animation.
Stop	Stops the animation.
Select Camera Path	The Camera Path is the spline curve on which the camera moves while the animation is playing.
Select LookAt Path	The LookAt Path defines the target curve of the camera.
Show/Hide Camera Path	Toggles the visibility of the Camera Path in the scene.
Show/Hide LookAt Path	Toggles the visibility of the LookAt Path in the scene.
Animation Editor	Opens the Animation Editor dialog box from which you can control the animation sequence.
Send Animation Data to AutoCAD	Sends animation data to AutoCAD and updates the data there.
Create AVI	Saves an AVI file of the current animation to disk. When you click this icon, the **Save As** dialog box appears. **Note:** See Saving an AVI File in the next section for further details.

Saving an AVI File

To create an .AVI file, click the Create AVI icon from the Animation toolbar

1 Enter a file name and click Save to display the AVI Settings dialog box (Figure 6.1).

Figure 6.1 AVI Settings



2 Click the down arrow on the Output Size list box to display choices.

3 You can select one of the pre-defined numeric sizes or select one of the following options:

- Current viewport size, which uses the size of the render area window
- Custom, where you specify the Width and Height from the drop down lists or select an Output Size from the list of values.

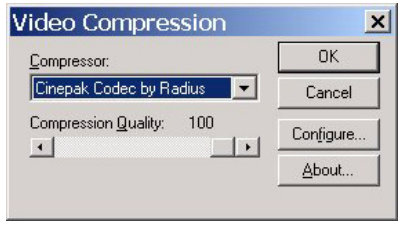
The Image Aspect Ratio value is automatically calculated as Width divided by Height.

4 Select an FPS (frames per second) from the list of values or click Default.

5 (Optional) Check Antialiasing. Using antialiasing makes lines and edges smoother but increases the time required to create the AVI file.

6 Click OK when you are done to open the Video Compression dialog box (Figure 6.2). The Video Compression dialog box lets you select the installed third-party compressors of your system.

Figure 6.2 Video Compression



7 Select the desired compression codes from the Compressor list box or select Full Frames (Uncompressed) if you do not want compression. (If you discover problems using a special compression code, contact the company delivering the compression code.)

8 (Optional) Use the Compression Quality slider to adjust the value.

9 (Optional) Click the Configure button to configure the compressor, then click OK when you're done.

10 Click **OK** again to close the Video Compression dialog box.

Editors Toolbar

To access the Editors Toolbar, right click from inside QuadroView or use the menu sequence shown below.

Menu **View > Toolbars > Editor** (toggles toolbar on and off)

Toolbar

.

Table 6.4 Editors Toolbar Options

Option	Description
Background Color Editor	Click to open the Background Color Editor.
Material Editor	Click to open the Material Editor.
Cutting Plane	Click to show the Cutting Plane Manipulator, which lets you to cut away parts of your drawing so you can look into the inner space of your objects. Enabling the Cutting Plane Manipulator adds additional choices to the pop-up menu, which you can access by clicking the right mouse button.
Create Light Source	Click to open the Light Source Editor dialog box where you can create and save a new light source.
Show/Hide Light Source Icons	Click to toggle between *showing* and *hiding* light source icons. To edit a specific light source, either double click its icon or select it from the drop-down list.
Change Icon Size	Click the icon wheel and move the mouse right or left to change the icon size of the light source.
Adjust Icon Size	Click to adjust the icon size of the light source in relation to the size of the current scene.
All Lights On	Click to turn *on* all light sources.
All Lights Off	Click to turn *off* all light sources.
Headlight	Click to toggle *on*/*off* the Headlight. The Headlight is the *default* light source in the viewer.
Headlight Editor	Click to open the Headlight Editor.
Background Color	Click to open the Background Color Editor.

Render Toolbar

To access the Render Toolbar, right click from inside QuadroView or use the menu sequence shown below.

Menu **View > Toolbars > Render** (toggles toolbar on and off)

Toolbar

.

Table 6.5 Render Toolbar Options

Option	Description
Examiner Viewer	Switches to "Examiner Viewer" on page 14 mode.
Walk Viewer	Switches to "Walk Viewer" on page 17 mode.
Fly Viewer	Switches to "Fly Viewer" on page 16 mode.
Global Environment Mapping	Renders model to chrome-like appearance with the environment mirroring on the surface.
Render Interactive Mode	Sets the Render mode while the model *is animated*. You can choose from Wireframe, Hiddenline, Flat Shaded and Gouraud Shaded.
Render Still Mode	Sets the Render mode while the model *is not animated*. You can choose from Wireframe, Hiddenline, Flat Shaded and Gouraud Shaded.

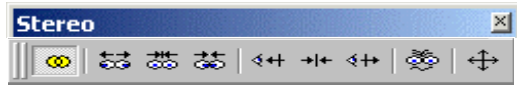
Stereo Toolbar

To access the Stereo Toolbar, right click from inside QuadroView or use the menu sequence shown below.

Note: QuadroView supports a variety of stereo formats and stereo hardware. You can choose different Stereo Modes as described in the "Preferences: I/O Settings" on page 76.

Menu **View > Toolbars > Stereo** (toggles toolbar on and off)

Toolbar



You can configure stereo viewing and handling by using either the Stereo Toolbar options described below in Table 6.6 or by using the same options from the Camera > Stereo submenu.

Table 6.6 Stereo Toolbar Options

Option	Description
Stereo **Key** **F12**	Toggles stereo mode between monoscopic (off) and stereoscopic (on) viewing.
Stereo Offset keys measure the distance between the two rendered pictures. Use stereo offset carefully; too much offset may result in ghosting effects.	
Stereo Offset Default **Key** **F10**	Resets stereo offset to the *default* value. Measures the distance between the two rendered pictures. Use stereo offset carefully; too much offset may result in ghosting effects
Stereo Offset + **Key** **ALT +** →	Increases the amount of stereo offset.
Stereo Offset -- **Key** **ALT +** ←	Decreases the amount of stereo offset.
The *Parallax* affects the virtual position of the objects. By decreasing the parallax balance value, objects appear between you and the screen plane. By increasing this value, the objects appear behind the display plane.	

Table 6.6 Stereo Toolbar Options (continued)

Option	Description
 **Parallax Default** Key **F9**	Sets the parallax balance to the *default* value.
 **Parallax -** Key **ALT +** ↓	Decreases the parallax balance value. .
 **Parallax +** Key **ALT +** ↑	Increases the parallax balance value.
 **Reverse Views** Key **Shift + F12**	Reverses Views. Exchanges the left and the right view
 **Maximize Render Area** Key **F11**	Toggles between maximizing/restoring the render area and removing/adds items such as toolbars, menus, and titles. **Note:** Use shortcuts to control viewing parameters while the render area is maximized.

Viewer Toolbar

To access the Viewer Toolbar, right click from inside QuadroView or use the menu sequence shown below.

Menu **View > Toolbars > Viewer** (toggles toolbar on and off)

Toolbar

Table 6.7 Viewer Toolbar Options

Option	Description
Edit Mode **Key** **ESC** **[ALT + mouse]**	Click the button to toggle between Observer and Selection modes. You can also use the ESC key to perform the same function. **Selection mode:** Use the arrow pointer to mark an object, move "Light Sources" on page 70, or change the direction of Light Sources. **Observer mode**: Use the hand pointer to move the object around **Tip** In **Selection** mode, you can temporarily switch back to Observer mode by holding down the **Alt** key while using the mouse.
Save Home Position	Saves current camera settings as Home position. Click this button to save the current view. You can only save one view at a time. To retrieve the saved view, click the Restore Home Position button.
Restore Home Position	Saves camera to Home position. Click this button to retrieve the last view that was stored using the Save Home Position button.
View All **Key** **V**	Zooms out to see the entire scene. The model may lie (partially or entirely) outside your camera view, or you may want to quickly change from a close-up view to the total view. Click this button to bring the object back to the center of the view.
Seek to Point **Key** **S**	Seeks object to define rotation point. You can re-orient any desired surface of the object to be parallel to the viewing plane. The selected point becomes the model's new rotation point.
Up Vector **Key** **U**	Sets the Up Vector of the current scene. Use this tool to define the "floor" when using the Fly or Walk Viewer.
Perspective Camera **Key** **T**	Toggles between the **Perspective** and **Orthogonal** display of the scene.

Views Toolbar

To access the Views Toolbar, right click from inside QuadroView or use the menu sequence shown below.

Menu **View > Toolbars > Views** (toggles toolbar on and off)

Toolbar

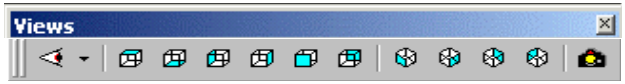


Table 6.8 Views Toolbar Options

Option	Description
Named Views	This option defines (sets) Named Views. You can define a new Named View (to be sent to AutoCAD) or you can choose a pre-defined view from the drop down list of Named Views.
Predefined Views	Select from a list of pre-defined views: **Standard Views**: Top, Bottom, Left, Right, Front, and Back **Isometric Views**: Southwest, Southeast, Northeast, and Northwest
Update AutoCAD View	Sends the current camera settings to AutoCAD.

CHAPTER 7

QUADROVIEW EDITORS

This chapter contains the following major topics:

Animation Editor

For an overview of animation, *see* "Animation" on page 24.

Menu **Camera > Animation > Animation Editor**

Button on the Animation toolbar

You can fine-tune an animation (e.g., an open scene with animation data) with the Animation Editor, which allows you to control the animation sequence. Using this editor, you can define keys on the animation paths, time and twist values, etc.

Figure 7.1 Animation Editor

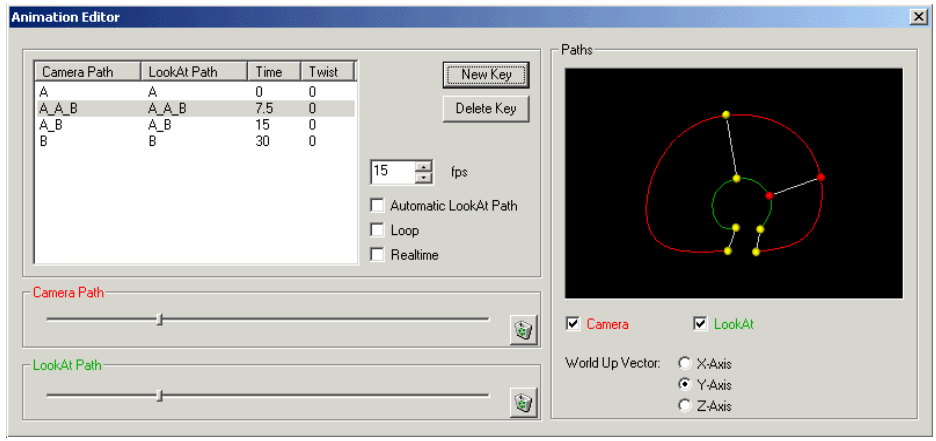


Table 7.1 Animation Editor Options

Option	Description
Paths	The Paths window displays the Camera Path, the LookAt Path, and the different key markers on the paths.
Camera	Click the check box to toggle between *showing* and *hiding* the Camera Path in the path window.
LookAt	Click the check box to toggle between *showing* and *hiding* the LookAt Path in the path window.
World Up Vector	Click X-, Y-, or Z- Axis to define the Up Vector of the world. (The vector points to the “ceiling” or “head” perspective.)
Camera Path slider	Click the slider to move the currently selected key marker on the Camera Path to bring it into the appropriate position.
LookAt Path slider	Click the slider to move the currently selected key marker on the LookAt Path to bring it into the appropriate position.
Path Delete buttons	The path delete buttons are represented by icons (buttons) and appear to the right of the sliders. Click the appropriate button to delete either the Camera Path or the LookAt Path.
Key list table	This table contains animation data; i.e., key names for Camera Path and LookAt Path, Time, and Twist, as shown in the Animation Editor example above. In the example, A_B and A_B are corresponding points; one on the Camera Path and one on the LookAt Path. The animation must reach this key after 15 seconds (Time = 15). There is no rotation (Twist = 0) around the viewing axis. The Twist value can be greater/smaller than +/-360°, which means more than one complete rotation. To edit any value in the table, double-click the item (Camera Path, LookAt Path, Time, or Twist) you want to edit.

Table 7.1 Animation Editor Options (continued)

Option	Description
New Key	A key defines the place on the Camera Path, the target on the LookAt Path, the Timestamp, and the Twist of the camera. When you click the New Key button, a new key is inserted in the middle of the interval before the selected key, unless you are selecting the first key in the list.
Delete Key	Click to delete the selected key entry.
Automatic LookAt Path	Click to check this box if you want to generate an animation sequence without defining a LookAt Path. In this case, the camera moves tangentially on the Camera Path.
Loop	Check this box to automatically restart the animation when it reaches the end.
Real-time	If you check this box, the Animation player attempts to implement the specified time constraint in the key list table. If you do not check Real-time, the specified time is not taken into consideration.
FPS (frames per second)	Click the up or down arrow to set the number of frames per second (FPS) for framed-based support for animation.

Background Color Editor

Menu **Edit > Background Color**

Button on the Editors toolbar

Use the Background Color Editor to easily change the background color of the scene. This section describes the Color Editor dialog boxes

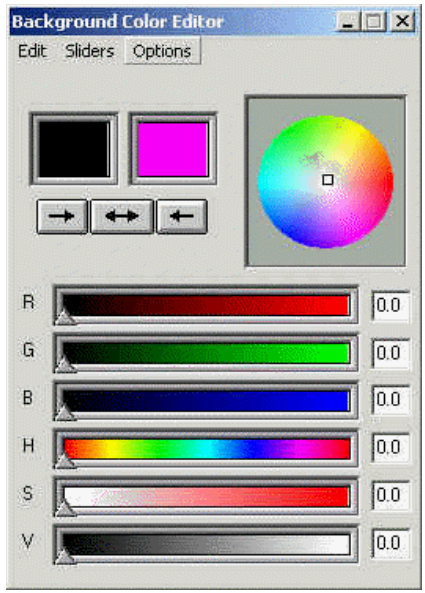
Note: Depending on the type of Color Editor you are using, the dialog box shown for Background Color Editor may be labeled Directional Light Color Editor (included below), Light Source Color Editor, and so on.

Background Color Editor

Menu **Edit > Background Color**

Button on the Editors toolbar

Figure 7.2 Background Color Editor



Use the Background Color Editor to easily change the background color of the scene. The image on the left has the Sliders menu set to RGB HSV

You can drag the marker in the color wheel to select a color. You move the V (value) slider to control the intensity of the color. The Sliders menu offers different color models.

The color boxes display the currently selected color and the previous color. You can use the arrow buttons to switch back and forth between the colors. Use the right arrow to save a color from the left to the right box. Use the left arrow to retrieve a color from the right to the left box. Use the dual-arrow to switch colors between the two boxes.

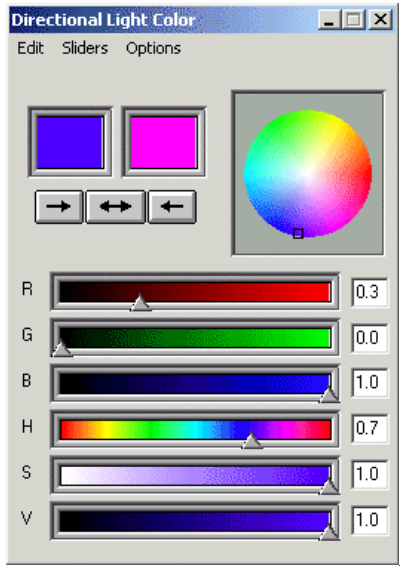
By default, the scene is automatically updated as you modify the color. This can be altered through the Edit menu.

Headlight (Directional Light) Color Editor

Menu **Edit > Lights > Headlight Editor > Edit > Color Editor**

Button on the Editors toolbar

Figure 7.3 Directional Light Color



Note: See the explanation of the options in "Background Color Editor" on page 63.

Material Editor

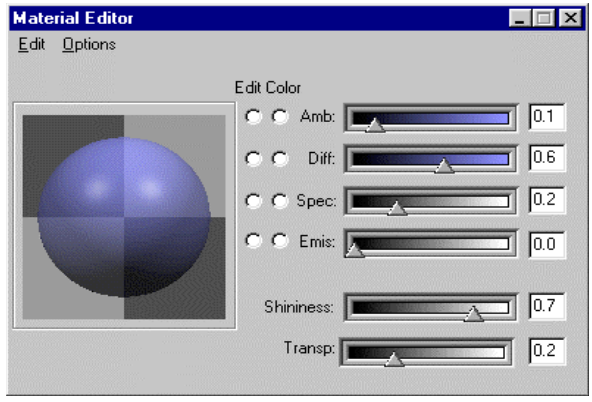
Menu **Edit > Material**

Button on the Editors toolbar

The Material Editor lets you change the material of a selected object. The preview window shows a sphere with the actual Material settings.

Note: You cannot save changes made to Material in the original AutoCAD drawing. You can save the Material only in inventor (.iv) or VRML (.wrl) files.

Figure 7.4 Material Editor.



Edit Menu

Table 7.2 Material Editor: Edit Menu

Option	Description
Material Palette	Opens the Material Palette. (*See* "Material Palette Editor" on page 67)
Continuous	Material changes immediately take effect on the selected object in the scene. This is interactive Material handling.
Manual	Material changes only take effect after you click the Accept button.
Copy	Copies the Material data to the clipboard.
Paste	Pastes the Material data from the clipboard to the editor.

Options Menu

Table 7.3 Material Editor: Options Menu

Option	Description
Always on Top	The dialog box always stays on top of all other windows.

Edit Color: Toggle Buttons

There are two columns of options on the left of the sliders.

Table 7.4 Material Editor: Edit Color Toggle Buttons

Option	Description
Left Column	The left column of options is **Single Selection** edit. For a particular slider, if you select the option in the left column, the option in the right column becomes selected and all other selected options for the sliders are unselected. If you now change the color in the color editor dialog box that appears, you can only change the color of that particular slider.
Right Column	The right column of options is **Multiple Selection** edit. You can click the right column option for more than one slider to simultaneously edit the colors for all the selected sliders in the color editor dialog box.

Sliders

Table 7.5 Material Editor: Sliders

Option	Description
Amb	Changes intensity of Ambient component.
Diff	Changes intensity of Diffuse component.
Spec	Changes intensity of Specula component
Emis	Changes intensity of Emissive component.
Shininess	Changes roughness of Material.

Material Palette Editor

Menu **Edit > Material > Edit > Material Palette**

Button Click on the Editors toolbar, then **Edit** (menu) > **Material Palette**.

This Material Palette dialog box displays various Materials in a preview window. You can click your favorite Material to assign to the selected object in the scene **or** load other pre-defined Material Palettes to select a Material that suits your needs.

Figure 7.5 .Material Palette Editor

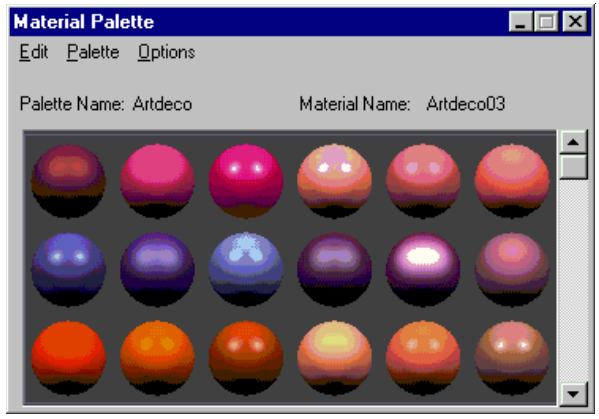


Table 7.6 Material Palette Options

Option	Description
Edit Menu	
• **Color**	Opens the Color Editor
• **Material**	Opens the Material Editor
• **Copy**	Copies Material data to the clipboard
Palette Menu	
• **Basic**	Shows the standard Material Palette. ... Selects your favorite Material Palette.
Options	
• **Always on Top**	The dialog box always stays on top of all other windows.
• **Material Path**	Shows QuadroView the location of the color palettes.

Cutting Plane Editor

Menu **Edit > Cutting Plane**

Button on the Editors toolbar

The Cutting Plane editor lets you look into objects by clipping away unnecessary areas. You can move, size, and rotate the cutting plane by *clipping the manipulator* shown in Figure 7.6.

Figure 7.6 Cutting Plane Editor

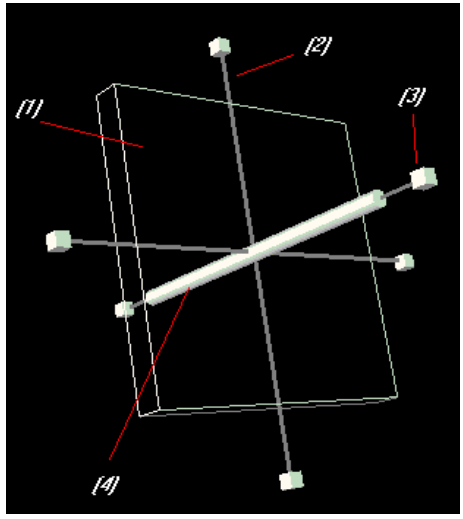


Table 7.7 Cutting Plane Editor Settings

Setting	Description
(1)	Click here to pan the *manipulator* in the *cutting plane*.
(2)	Click here to rotate the entire *cutting plane*.
(3)	Click here to resize the *manipulator*.
(4)	Click here to move the entire *cutting plane* along the axis.

Light Source Editor

Menu **Edit > Lights**

Button  on the Editors toolbar

The Light Source Editor dialog box lets you easily create, edit, and delete Light Sources from within NVIDIA QuadroView.

When the Light Source Editor box is open, all the light sources in the scene are shown as manipulators and the name of every light source is connected directly to the manipulator so that you can easily distinguish among the light sources.

The active (selected) light source name is highlighted in red. You can directly manipulate the light source data using either the mouse and the manipulators or the dialog box. QuadroView supports several types of Light Sources, as described in "Light Sources" on page 70.

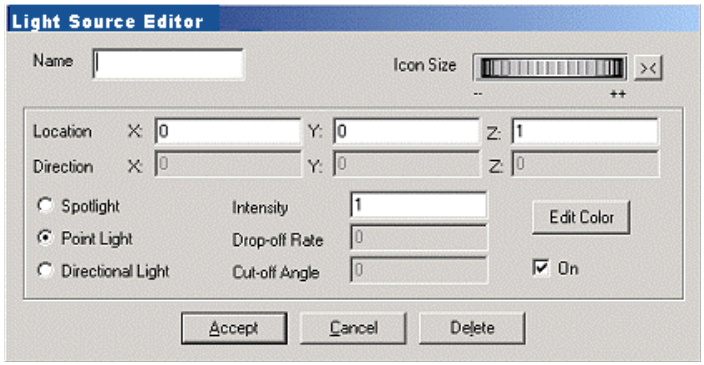
Creating and Editing Light Sources

1 To create a new light source,

- Click the Create Light Source icon  in the Editors Toolbar *or*
- Click the **Edit** menu, then click **Lights** > **Create Light Source**.

  The Light Source Editor dialog box opens. Table 7.8 explains how to use the options.

Figure 7.7 Light Source Editor.



2 Once you have named and created a light source, you can click the Show/Edit Light Sources icon to toggle between *showing* and *hiding* the light light source on the image in the viewer.

3 To edit the light source you created:

a Click the down arrow to select the light source you created

b Click the light source name it to edit it in the Light Source Editor dialog box.

Table 7.8 Light Source Editor Options

Option	Description
Name	Enter a new name or edit an existing name of the Light Source.
Change Icon Size 	Click the icon wheel and move the mouse right or left to change the icon size of the Light Source.
Adjust Icon Size ><	Click to adjust the icon size of the Light Source in relation to the size of the scene.
Location	Shows the actual position of the light source.
Direction	Shows the direction to which the light source points.
Spotlight	Light source is a "Spotlight" on page 71.
Point Light	Light Source is a "Point Light" on page 71.
Directional Light	Light Source is a "Directional Light" on page 72.
Intensity	Intensity is in the range between 0.0 - 1.0.
Drop-off Rate	Drop-off Rate is in the range between 0.0 -- 1.0. This factor defines how quickly the light drops in intensity as it goes outside the specified cone of illumination.
Cut-off Angle	Defines the cone that the light source illuminates.
Edit Color	Opens the Color Editor that lets you change the color of the Light Source.
On	Switches the selected Light Source *on* or *off*.
Accept	Accepts the Light Source data and sends it to AutoCAD.
Cancel	Cancels all changes or deletes newly created light sources, depending on the task (creating or editing) you performed previously.
Delete	Deletes the selected Light Source.

Light Sources

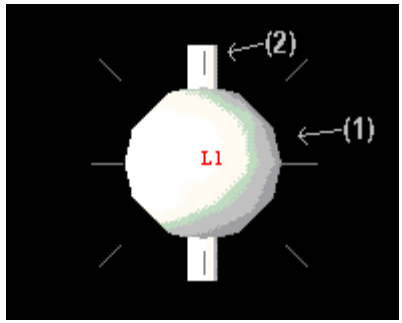
QuadroView supports the following types of light sources:

- "Point Light" on page 71
- "Spotlight" on page 71

• "Directional Light" on page 72

Point Light

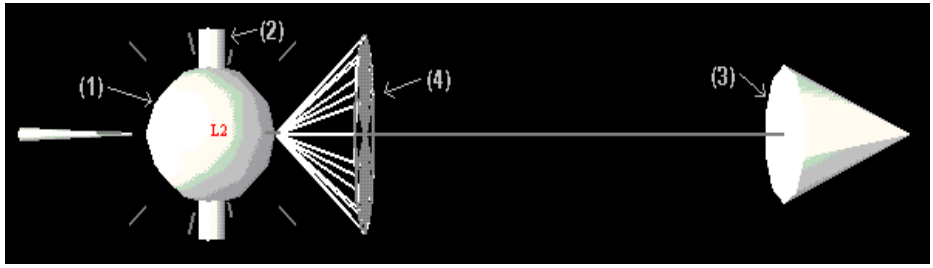
The point light radiates light equally in all directions.



- **To move the light source over a plane**, select the sphere **(1)** of the manipulator
- **To switch to another plane**, select the sphere **(1)** and press the **CTRL** key together.
- **To move the light source along this axis**, select the axis **(2)** on the sphere.
- **To switch to another axis on which to move the light source**, select the axis **(2)** and press the **CTRL** key together

Spotlight

The Spotlight works like the spotlight on your car. It creates a cone of light pointing in one special direction. The intensity drops down to the outer limits of the cone. You can change the drop-off rate and the cut of angle of the cone.

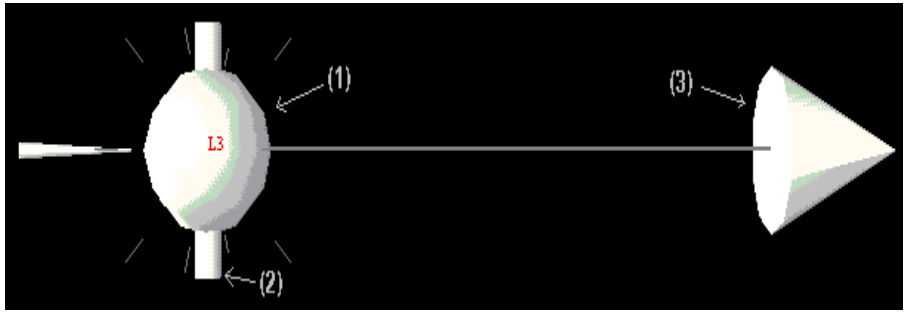


- **To move the light source over a plane**, select the sphere **(1)** of the *manipulator*.
- **To switch to another plane**, select the sphere **(1)** and press the **CTRL** key together.

- **To move the light source** along this axis, select the axis (2) on the sphere.
- **To switch to another axis** along which to move the light source, select the axis (2) and press the CTRL key together.
- **To change the pointing direction** of the light source, drag the arrow (3) to the specified direction.
- **To change the cut-off angle** of the light source, select the cone (4) and change its radius.

Directional Light

The Directional Light illuminates the scene uniformly in its pointing direction. Since the light beams are parallel, they simulate a light source that is infinitely far away and thus do not need a position. For easier handling, a position has been added to place the manipulator.



- **To move the light source over a plane**, select the sphere **(1)** of the manipulator
- **To switch to another pla**ne, select the sphere **(1)** and press the **CTRL** key together
- **To move the light source along this axis**, select the axis **(2)** on the sphere.
- **To switch to another axis on which to move the light source**, select the axis **(2)** and press the **CTRL** key together.
- **To change the pointing direction of the light source**, drag the arrow **(3)** to the specified direction.

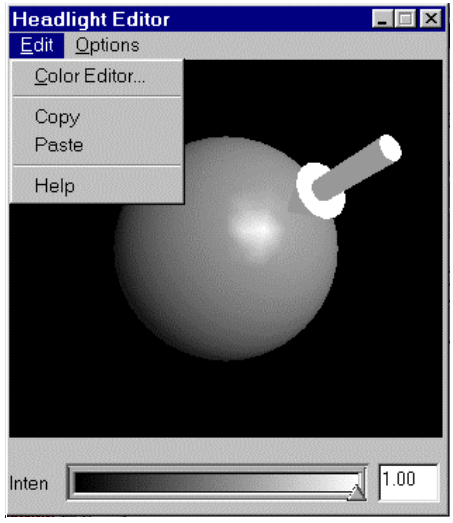
Headlight Editor

Menu **Edit > Lights > Headlight Editor**

Button on the Editors toolbar

Use the Headlight Editor to determine the direction from which the headlight should illuminate the scene and invoke the Color Editor in order to change the Headlight color.

Figure 7.8 .Headlight Editor



- **Intensity Slider** Controls the intensity of the light source.
- **Edit Menu**
  - **Color Editor**: Opens the Headlight (Directional Light) Color Editor.
  - **Copy/Paste**: Saves a previous Headlight position and retrieve it later.
  - **Help**: Starts online Help.
- **Options Menu**
  - **Always on Top** always keeps the Editor in front of other windows.

CHAPTER 8

QUADROVIEW PREFERENCES SETTINGS

This chapter contains the following sections:

Preferences: Overview

Menu **View > Preferences**

Button on the "Standard Toolbar" on page 7

The QuadroView Preferences configuration window lets you define fundamental parameters, such as the object types to be displayed and communication between AutoCAD and QuadroView.

The Preferences window contains the following tabs:

Preferences: Common Settings

Menu **View > Preferences > Common Settings**

Figure 8.1 Preferences: Common Settings

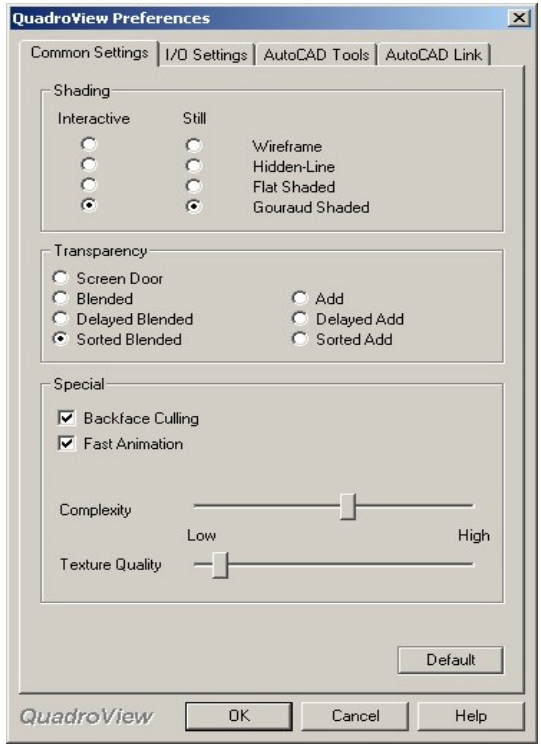


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Table 8.1 Preferences: Common Settings

Option	Description
Shading (Render Degradation)	QuadroView can automatically switch to a less calculation-intense render style as long as the model is moved. Interactive work with complex scenes can be processed faster by switching animated rendering back to the simpler Wireframe representation and using the Shaded representation only in the non-animated state.
Transparency	QuadroView lets you assign Transparency to objects using the "Material Editor" on page 65. You can select from different types of Transparency options.

Table 8.1 Preferences: Common Settings (continued)

Option	Description
Backface Culling	When this option is checked, backfaces of polygons are excluded when rendering the scene, which makes the process of rendering faster. You can also activate this option for transparent objects if you can see rendering artifacts; however, not checking this option yields better results for other types of objects.
Fast Animation	Fast Animation is turned on by default and used to speed up the animation. Each Light Source slows down the rendering while rotating or moving the scene. When Fast Animation is checked, you can turn off all lights and only use the Headlight while moving the scene
Complexity	In order to control the quality of rendering, VRML (.WRL) files and Open Inventor (.IV) files may contain elements that react to the Complexity setting. The higher the complexity, the lower the overall rendering performance.
Texture Quality	To control the quality of rendering, VRML (.WRL) files and Open Inventor (.IV) files may contain textures that react to the Texture Quality setting. The higher the texture quality, the lower the overall rendering performance.
Default	Restores all values to their standard settings.

Preferences: I/O Settings

Menu **View > Preferences > I/O Settings**

Figure 8.2 shows the I/O Settings dialog box.

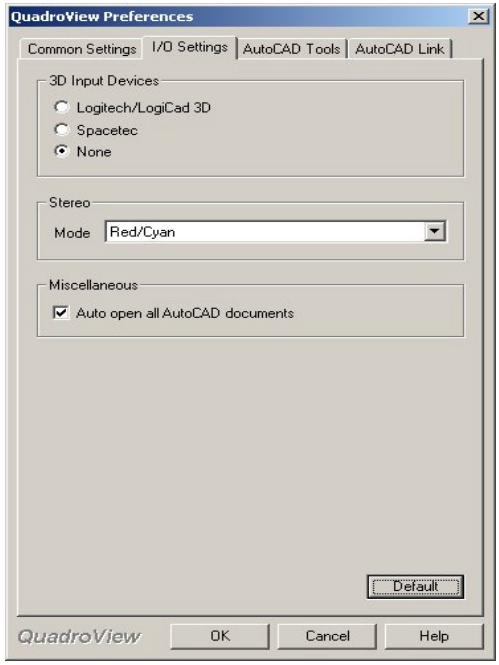
3D Input Devices

NVIDIA QuadroView is pre-configured to work with the following 3D input devices when you are in QuadroView "Examiner Viewer" on page 14 mode.

- Logitech LogiCad Magellan 3D/Space Mouse, including CyberPuck
- Spacetec SpaceController

Using these devices, you can rotate and move the scene in real-time. You can adjust the sensitivity of the 3D input devices by using the "3D Input Toolbar" on page 50 which appears automatically when you select a 3D input device.

Figure 8.2 Preferences > I/O Settings



Stereo Modes

QuadroView supports Stereo viewing of the rendered scene. You can choose from different formats. Click the down arrow in the Stereo Modes field to view and select a mode.

Notes:

- Some formats require the viewer to be restarted.
- Be sure to enable the stereo mode in your graphics card driver settings, if needed.

Table 8.2 QuadroView Stereo Modes

Stereo Modes	Description
Quadbufferred/Raw OpenGL Stereo	Make sure your graphics card supports this stereo format. You will also need shutter glasses, such as a 3D Revelator.
Blue / Yellow Stereo	You need special filters (glasses).
Green / Magenta Stereo	You need special filters (glasses).
Red / Cyan Stereo	You need special filters (glasses).
Vertical Interlaced Stereo	To use this stereo mode, you need a special stereoscopic display; for example, Ecomo 4D

Auto-open all AutoCAD documents

Prevents QuadroView from opening all documents (opened in AutoCAD).

Default

Restores all values to their standard settings.

Preferences: AutoCAD Tools

Menu **View > Preferences > AutoCAD Tools**

Figure 8.3 Preferences: AutoCAD Tools

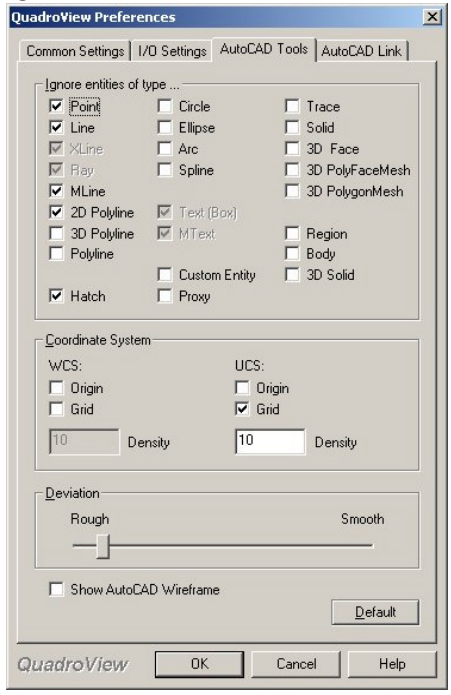


Table 8.3 Preferences: AutoCAD Tools

Option	Description
Ignore entities of type ….	It may make sense for your models to mask off certain entity types. This set of check boxes allows you to filter the basic entity types used by AutoCAD. Depending on your version of AutoCAD, some boxes may be grayed. **Note:** Entity selection is another method you can use to exclude parts of your model from the rendering. Both methods may be combined.
Deviation	QuadroView can adapt the precision of the rendered model to your requirements. The deviation defines the maximum allowed error for rendering curved areas on the screen. The deviation has a *significant* impact on the amount of geometry data to be rendered and thus the performance, in terms of memory consumption *and* speed. Use it carefully! The smoother the deviation, the lower the rendering performance.
Coordinate System	This group panel gives you control over the coordinate system helpers, 3D representations of the AutoCAD world coordinate system (WCS), and user coordinate system (UCS) that are displayed in the Viewer. Each coordinate system can be displayed by a colored icon at the Origin, a grid plane from Origin to Limits, or both. The grid density is adjustable (drawing units). If UCS is identical to WCS, the UCS display is suppressed.
Show AutoCAD Wireframe	You can choose from AutoCAD Wireframe mode (Isolines) or QuadroView Wireframe (Mesh). AutoCAD Wireframe has an impact on the amount of geometry data to be rendered. This, in turn, has a significant impact on the rendering and overall system performance. Therefore, we strongly recommend you use the QuadroView Wireframe mode!
Default	The Default button restores all values to their standard settings.

Preferences: AutoCAD Link

Menu **View > Preferences > AutoCAD Link**

Figure 8.4 shows the AutoCAD Link dialog box.

Model Update

These options control how the Viewer handles changes in your drawing.

Table 8.4 AutoCAD Link: Model Update Options

Option	Description
Manual	The rendered model is not automatically updated. Invoke the commands `NVA` or `NVS` to send a snapshot of your drawing or parts of it to the viewer.
Auto, QuadroView group	All drawing elements found in the NVIDIA QuadroView group are automatically sent to the viewer and kept updated, which allows you to keep your render selection across AutoCAD sessions as the group is saved in the drawing file. **Add New Entities to the Group:** Activate this option if you want to add new entities to the group.
Auto (All)	All drawing elements are automatically sent to the viewer and kept updated.
Auto (Active Part)	**Note:** This update mode works only with Mechanical Desktop. The part that is currently active is sent to the Viewer and kept updated.

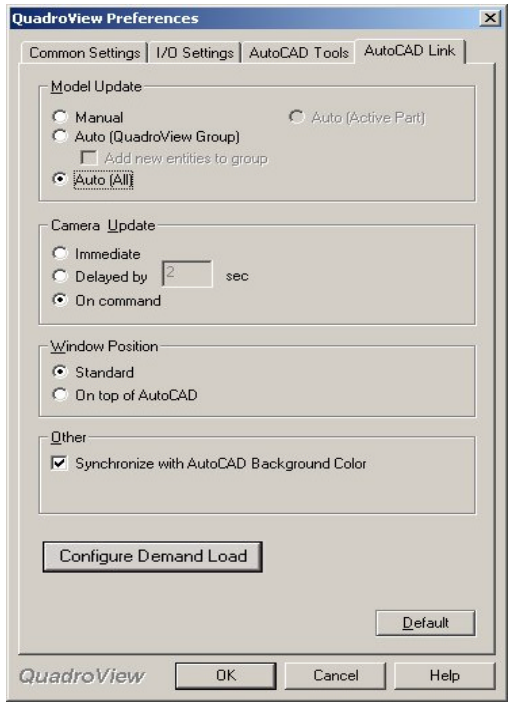
Camera Update

These options can be used to update the AutoCAD View in the active viewport within the Viewer.

Table 8.5 AutoCAD Link: Camera Update Options

Option	Description
Immediate	Every view change is immediately sent to AutoCAD.
Delayed by .. sec	View changes are sent to AutoCAD whenever there is no change for the specified amount of time.
On command	This is the *default* setting. Views are not automatically sent to AutoCAD. You have to click the icon from the toolbar to force an update.

Figure 8.4 Preferences: AutoCAD Link



Window Position

Standard

Displays your NVIDIA QuadroView viewer window underneath AutoCAD when you have both QuadroView and AutoCAD open.

On Top of AutoCAD

Automatically displays your NVIDIA QuadroView viewer window on top of AutoCAD when you have both QuadroView and AutoCAD open.

Other

NVIDIA QuadroView allows you to synchronize the background color of the current document with AutoCAD. To use this feature, make sure that the check box named “Synchronize with AutoCAD Background Color” is checked.

Configure Demand Load

This option opens the Demand Load Configuration dialog box with the added convenience of accessibility from within QuadroView.

See "Loading QuadroView in AutoCAD" on page 38 for details on completing this dialog box.

Default

The *Default* button restores all values to their standard settings.

CHAPTER 9

QUADROVIEW AND AUTOCAD

This chapter contains the following major topics:

QuadroView Commands in AutoCAD

The NVIDIA QuadroView ARX modules add several commands to the AutoCAD command set as listed in Table 9.1. You can create scripts and LISP programs with these commands to automate common actions.

You can also access several of these commands through QuadroView toolbars in AutoCAD. *See* "QuadroView Toolbar Options in AutoCAD" on page 86.

Table 9.1 NVIDIA QuadroView Commands in AutoCAD

QuadroView Command	Description
`NVDA_NVSTART`	Starts the Viewer; the ARX module must be loaded.
`NVDA_NVSTOP`	Unloads the Viewer; the ARX module remains loaded.
`NVDA_NVVERSION`	Shows the version of the ARX module.
`NVDA_NVCFGDEMANDLOAD`	Sets the startup functionality of QuadroView to "automatic start" or "start on command".
`NVDA_NVALL`	Switches "Model Update" on page 80 mode to "Auto, all".
`NVDA_NVSEL`	Switches "Model Update" on page 80 mode to "Auto, group QuadroView" and clears "Add new entities to group"

Table 9.1 NVIDIA QuadroView Commands in AutoCAD (continued)

QuadroView Command	Description
NVDA_NVSELADD	Switches "Model Update" on page 80 mode to "Auto, group QuadroView" and sets "Add new entities to group".
NVDA_NVMANUAL	Switches "Model Update" on page 80 mode to "Manual".
NVDA_NVACTPART	When running with Mechanical Desktop, the "Model Update" on page 80 mode is switched to "Auto, active part".
NVDA_NVA	Transfers the complete drawing to the Viewer.
NVDA_NVS	Transfers the selected part of the drawing to the Viewer.
NVDA_NVVIEW	Transfers the current AutoCAD view to the Viewer.
NVDA_NVMIN	Minimizes the Viewer window.
NVDA_NVMAX	Maximizes the Viewer window.
NVDA_NVNORM	Restores the normal size of the Viewer window.
NVDA_NVFRONT	Brings the Viewer window to the front.
NVDA_NVMINDOC	Minimizes the current document in the Viewer.
NVDA_NVMAXDOC	Maximizes the current document in the Viewer.
NVDA_NVNORMDOC	Restores the normal size of the current document in the Viewer.
NVDA_NVFRONTDOC	Brings the current document in the Viewer to the front.
NVDA_NVMENULOAD	Opens the QuadroView icon bar in the AutoCAD window.
NVDA_NVROTPT	Sets the rotation point.
NVDA_NVROTATE	Performs a 3D rotation about the rotation point by a given axis and angle.
NVDA_NVZOOM	Performs a zoom.
NVDA_NVPAN	Moves the camera parallel to the current view plane.
NVDA_NVWIREFRAME	Switches the Renderer to Wireframe.
NVDA_NVHIDDENLINE	Switches the Renderer to Hiddenline.
NVDA_NVFLAT	Switches the Renderer to Flat Shaded.
NVDA_NVGOURAUD	Switches the Renderer to Gouraud Shaded.
NVDA_NVPREFERENCES	Opens the QuadroView Preferences dialog box.
NVDA_NVLINKDOC	In QuadroView, this command creates a link to the AutoCAD current document.

Table 9.1 NVIDIA QuadroView Commands in AutoCAD (continued)

QuadroView Command	Description
`NVDA_NVUPDBKGCOLOR`	If the background color is in Sync mode, this command updates the background color of the document in the QuadroView viewer that corresponds to the current document in AutoCAD. To synchronize the background color, see "Preferences: AutoCAD Link" on page 80.
`NVDA_NVSELANIMPATHS`	Selects Camera Path and LookAt Path for an animation in the Viewer.
`NVDA_NVSELLOOKATPATH`	Selects only a LookAt Path. A Camera Path must already exist.
`NVDA_NVTOGCAMPATH`	Toggles visibility of the spline that defines the Camera Path.
`NVDA_NVTOGLOOKATPATH`	Toggles visibility of spline that defines the LookAt Path.
`NVDA_NVDELCAMPATH`	Deletes animation data for Camera Path and LookAt Path.
`NVDA_NVDELLOOKATPATH`	Deletes animation data for LookAt Path.

QuadroView Toolbar Options in AutoCAD

The NVIDIA QuadroView toolbar (Figure 9.1) is loaded when you run AutoCAD for the first time after setting up QuadroView to run within AutoCAD.

Note: The options provided in this QuadroView toolbar within AutoCAD provide the same functionality as those toolbars (see "QuadroView Toolbars" on page 48) inside the NVIDIA QuadroView viewer; for convenience, these toolbar options are provided separately through AutoCAD.

For a complete list of additional AutoCAD commands, see "QuadroView Commands in AutoCAD" on page 84.

NVIDIA QuadroView Toolbar

After setting up QuadroView to run within AutoCAD, the first time you run AutoCAD, following these steps to enable the NVIDIA QuadroView toolbar:

1. From AutoCAD, click **View** > **Toolbars**. The Toolbars panel of the Customize window appears.
2. From the "Menu Group" box, click **QuadroView.** In the Toolbars section on the left of the window, you will see the following options:

- Animation
- NVIDIA QuadroView
- Update Modes
- Window position

3 Click the NVIDIA QuadroView toolbar check box; this is the main QuadroView toolbar (Figure 9.2) from which you can access the "fly-out" options for Animation, UpdateModes, and Window position.

Note: If you want to have access to these "fly-out" options as separate toolbars, you can also check these other options in the Toolbars section.

4 Click **Close** when you're done.

Figure 9.1 QuadroView Toolbar in AutoCAD

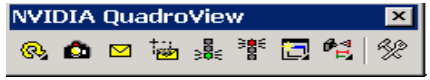


Table 9.2 QuadroView Options in AutoCAD

Option	Description
NVALL	Switches "Model Update" on page 80 mode to "Auto, all". When you click the bottom right arrow, a fly-out list of Update Mode icons (options) appear. See "Update Modes Options" on page 88 for a description of these options.
NVVIEW	Sends current camera settings to the Viewer.
NVA	Sends entire model to the Viewer.
NVS	Sends selection to the Viewer.
NVSTART	Loads QuadroView.
NVSTOP	Closes QuadroView (ARX module remains loaded).
NVLINKDOC	Creates a link to QuadroView for the current document. When you click the bottom right arrow, a fly-out list of Update Mode icons (options) appear. See "Window Position Options" on page 88 for a description of these options.
NVSELANIMPATHS	Use this option to define the spline for the Camera Path and the spline (if any) for the LookAt Path. When you click the bottom right arrow, a fly-out list of Update Mode icons (options) appear. See "Animation Options" on page 89 for a description of these options.
NVPREFERENCES	Opens the QuadroView Preferences dialog box.

Update Modes Options

Figure 9.2 QuadroView Update Modes in AutoCAD

The options in Table 9.3 are also available from inside the QuadroView viewer; see "Model Update" on page 80.

Table 9.3 QuadroView Update Modes Options in AutoCAD

Option	Description
NVALL	Switches Model Update mode to "Auto, all".
NVSEL	Switches Model Update mode to "Auto, group NVIDIA QuadroView" and clears "Add new entities to group".
NVSELADD	Switches Model Update mode to "Auto, group NVIDIA QuadroView" and sets "Add new entities to group".
NVACTPART	When running with Mechanical Desktop, the Model Update mode is switched to "Auto, active part".
NVMANUAL	Switches Model Update mode to "Manual".

Window Position Options

Figure 9.3 QuadroView Window Position Toolbar in AutoCAD

Table 9.4 QuadroView Window Position Options in AutoCAD

Options	Description
NVLINKDOC	Creates a link to QuadroView for the current document.
NVNORM	Switches the QuadroView main window to front.
NVDOCINFRONT	Switches corresponding QuadroView document window to front.

Animation Options

Figure 9.4 QuadroView Animation Toolbar in AutoCAD

In AutoCAD, you can define, hide, and remove the splines for an animation inside the Viewer by using the options in the toolbar.

The options in Table 9.5 are also available from inside the QuadroView viewer; see "Animation Toolbar" on page 50.

Table 9.5 QuadroView Animation Options in AutoCAD

Option	Description
NVSELANIMPATHS	Use this option to define the spline for the Camera Path and the spline (if any) for the LookAt Path. • When you start the command, you are asked to select a spline to be the Camera Path. • If a Camera Path already exists, you can skip selecting the Camera Path and keep the current one. • You can define the LookAt Path in the same way. • If you do not want a LookAt Path, right click or press **ESC** or **ENTER** to end the command. **Note:** If Animation Paths were already defined, the animation data will be deleted and the new paths will define an animation with default settings.
NVSELLOOKATPATH	Defines a path to be the LookAt Path. A Camera Path must already exist. Use this command to select only a LookAt Path without changing the Camera Path.
NVTOGCAMPATH	Toggles visibility of the Camera Path.
NVTOGLOOKATPATH	Toggles visibility of the LookAt Path. Use this command to switch the Camera Path (if any), visible or invisible. Use this command to switch the LookAt Path (if any), visible or invisible
NVDELCAMPATH	**Deletes animation data for the Camera and LookAt Path.**
NVDELLOOKATPATH	Deletes animation data for the LookAt Path.