

3D GRAPHICS ACCELERATOR Package Contents List

Please check that your 3D GRAPHICS ACCELERATOR carton contains the following items.

ITEM	Quantity
3D GRAPHICS ACCELERATOR(GLINT Board)	1
Windows NT Display Drivers Diskette (Including OpenGL Installable Client Driver)	1
OpenGL Demos for Windows NT Diskette	2
Installation Guide	1
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3D Graphics Accelerator

The 3D Graphics Accelerator design is based on the GLINT 300SX chip and is intended for use with the PCI bus running Microsoft® Windows NT™. The board accelerates Microsoft's implementation of OpenGL under Windows NT running on the RISCstation with a multi-scan monitor. All OpenGL rendering is implemented in hardware resulting in incredible performance.

BOARD INSTALLATION

Install the board into the system using the following steps.

Safety Precautions

Take care when you work inside the system and when you handle computer components. Avoid electric shock or personal injury by observing the following warning.

WARNING: Before you remove the system cover and work inside the unit, *turn off* all system power and *disconnect* the system and its peripherals from their power sources.

Static electricity and improper installation procedures can damage computer components. Protect your computer components by following these safety instructions:

- Leave an option, such as a board, in its anti-static packaging until you are ready to install it.
- Dissipate static electricity before handling any system components (boards and so on) by touching a grounded metal object.

If possible, use anti-static devices such as wrist straps and floor mats.

- Always hold a board by its edges. Avoid touching the components on the board.
- Take care when connecting or disconnecting cables. A damaged cable can cause a short in the electrical circuit. Misaligned connector pins can cause damage to system components at power-on.

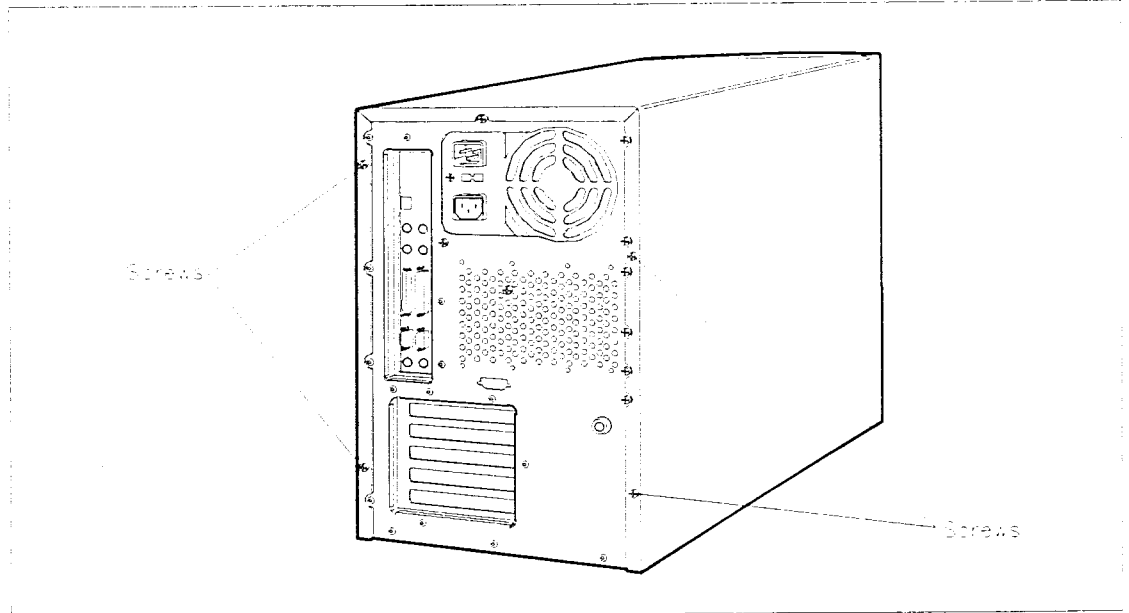
When you install a cable, be sure to route the cable so it is not pinched by other components in the system. Prevent damage to the connectors by aligning connector pins before you connect the cable.

When you disconnect a cable, always pull on the cable connector or strain-relief loop, not on the cable.

Hardware Installation

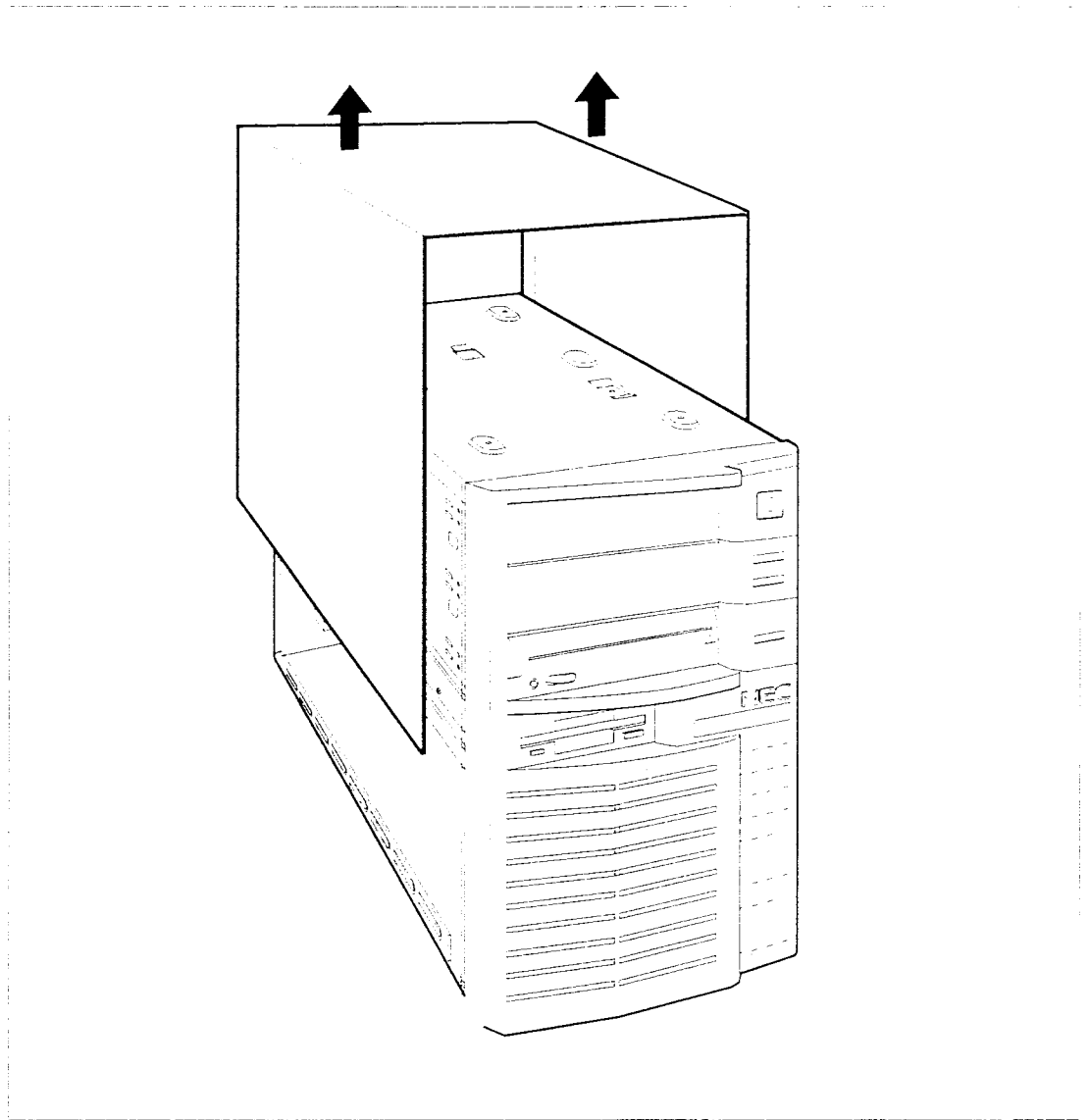
CAUTION: Electrostatic discharge can damage computer components. Discharge static electricity before you remove the system unit cover.

1. Turn off and unplug the system.
2. If connected, disconnect the keyboard and any external options attached at the rear of the system.
3. Remove the four screws that secure the cover to the system.



Locating the Cover Screws

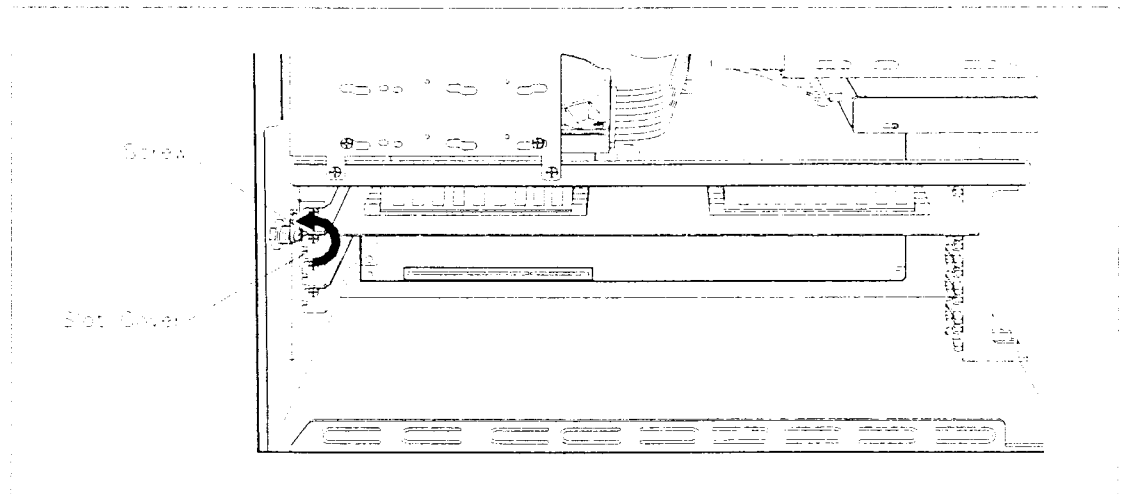
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- Carefully remove the cover by sliding it toward the rear of the system and lifting it off the unit.



Removing the cover

- Locate a PCI slot for the board.

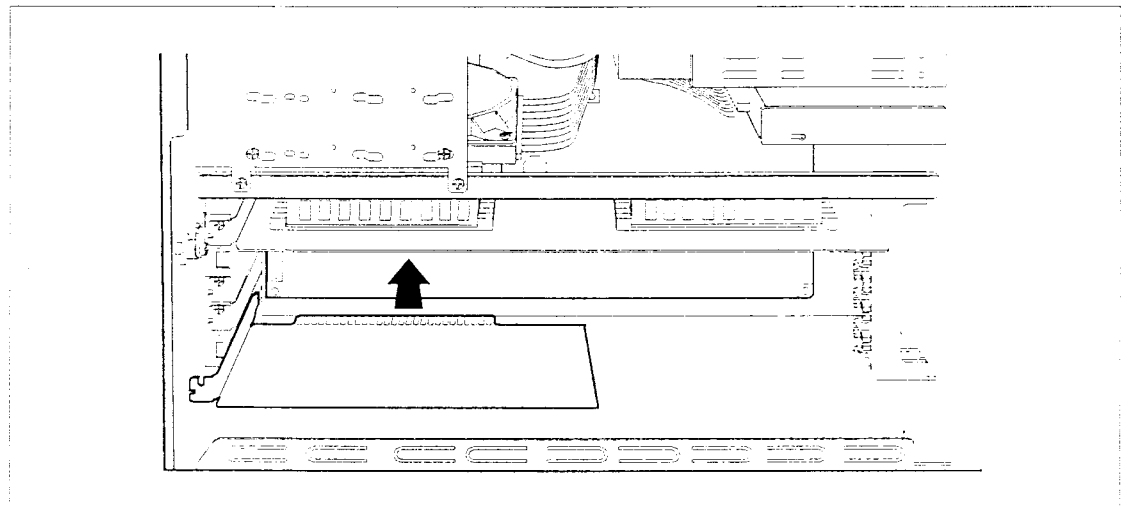
6. Remove the screw securing an expansion slot cover. Remove the slot cover.
Save the screw for installing the board.



Locating a Screw and Slot Cover for the Board

7. Hold the board by its edges, component side up, and insert it into an expansion slot.
Press the board firmly into the expansion slot. You might need to gently rock the board side-to-side to seat it completely into the connector.

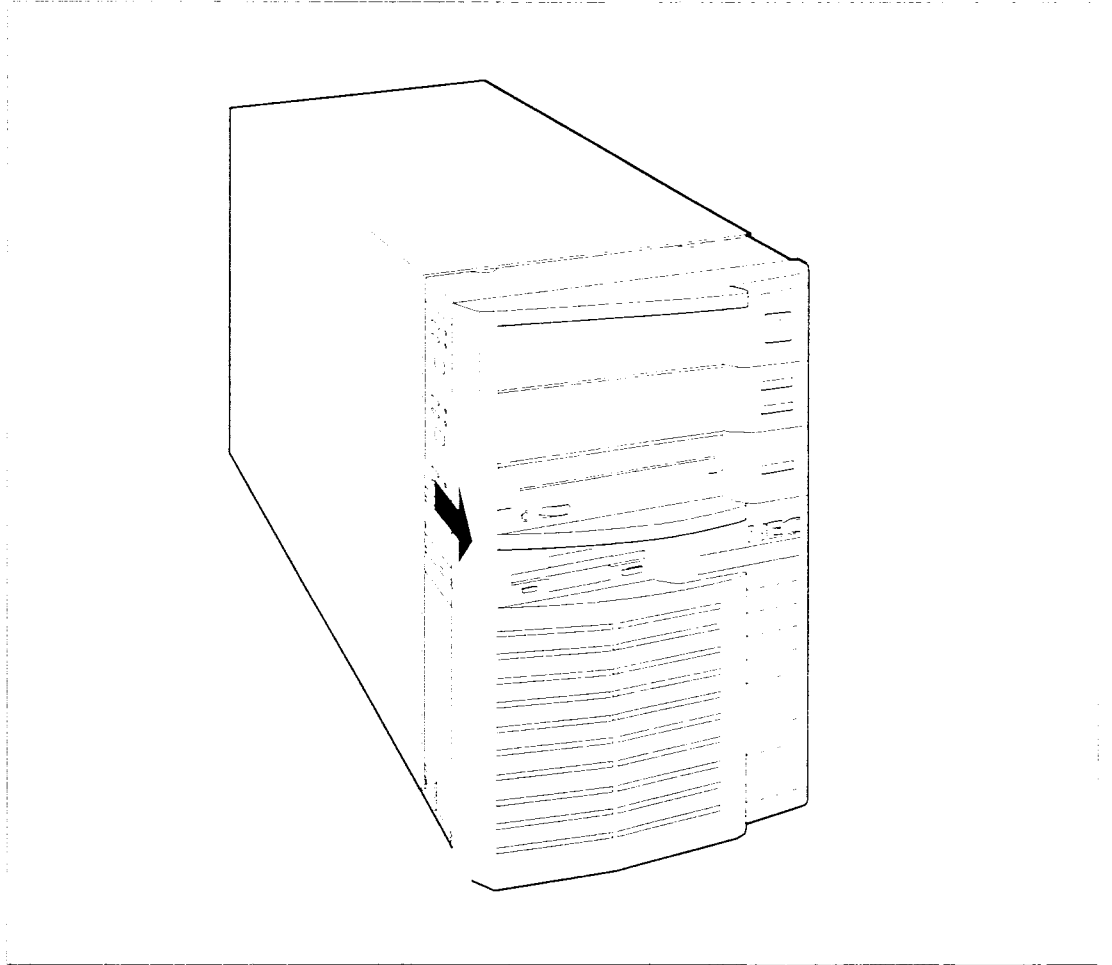
CAUTION: To ensure proper operation of the 32-bit board, check that both rows of connectors on the board are *fully* seated in the connector.



Installing the Board

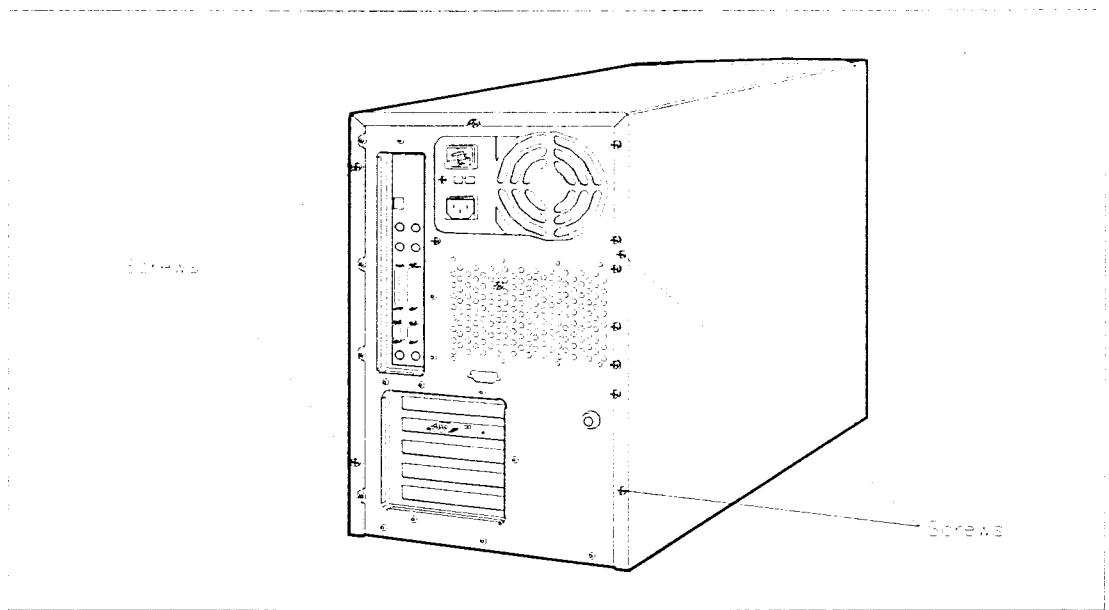
8. Secure the board to the support bracket with the screw you removed earlier.
9. Check that all system cables are out of the path of the cover.

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10. Position the cover on the unit. Be sure to align the bottom edges of the cover inside the base of the system, then slide the cover to meet the front panel.



Replacing the Cover

11. Replace the four cover screws that secure the cover.



Replacing the Cover Screws

12. Connect external peripherals and the power cables.

INSTALLATION OF WINDOWS NT WORKSTATION WITH GLINT DISPLAY DRIVER

Use the following procedure to install the 2D driver located on the diskette.

1. Power on your system.
2. Insert the Windows NT CD in the CD-ROM drive.
3. At the ARC screen, select "Run A Program" from the menu.
4. At the prompt, type **CD:\mips\setupldr** and press **Enter**.
5. When the following messages appear, choose "other" and press **Enter**.

Windows NT Setup

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Setup could not determine the type of video adapter installed in the system.

Select the video adapter you want from the following list, or select "other" if you have a device support disk provided by an adapter manufacturer.

Frame Buffer 300
Frame Buffer 364
NEC Built-in (Cirrus-based)
S3-based
VXL484/485
Digital ZLXp-E
Other

-
6. The following message will appear.

Windows NT Setup

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Please insert the disk labeled Manufacturer-supplied hardware support disk into Drive A: and Press ENTER when ready

Insert the "Windows NT GLINT Display Driver" diskette into drive A: and press **Enter**.

7. The following message will appear.

Windows NT Setup

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You have chosen to configure a video adapter for use with Windows NT, using a device support disk provided by an adapter manufacturer.

Select the video adapter you want from the following list, or press ESC to return to the previous screen.

PCI-300SX (OEM GLINT) 640x480, 16M colors 60Hz

Select "OEM GLINT" and press **Enter**.

8. Follow the instructions on the screen. Select "OK" at the Display Settings window. Select "OK" at the Detected Display window.
9. After you finish installing Windows NT, reboot your system.



Please see the NEC *Windows NT Installation* document that is included in the shipping carton for complete Operating System installation procedures.

INSTALLATION OF THE GLINT DISPLAY DRIVER

Once you have booted and logged in as an administrator, use the following procedure to install the 3D driver located on the diskette.

1. Open the Control Panel in the Main Program Group and start the Display applet.
2. Select "Change Display Type...". A Display Type window appears.
3. Select "Change..". A Select Drive window appears.
4. Select "Other...". An Install from Disk window appears.

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5. Specify the path A:\mips. Insert the Windows NT GLINT Display Driver diskette into drive A: and select "OK". The Select Device window reappears with various options for the 3Dlabs GLINT.
A number of different options for different resolutions, depths and monitor frequencies are supplied. If you know the option you want and you are sure that the monitor supports this option then choose it. If not or you are unsure about the capability of your monitor choose a 640x480 option at 60Hz with a pixel depth of 12. When the machine has rebooted you will be able to select a new option and test the monitor capabilities at this resolution and frequency.
 6. Click on the desired 3Dlabs GLINT option and select "Install". You can change this later when the machine is rebooted.
 7. A window may appear asking you to confirm that you are changing your system configuration. Select "Yes".
 8. Select "Continue" at the Windows NT Setup window.
 9. Two information windows appear. Select "OK" at both.
 10. A Display Setting Change window appears. Remove the diskette from drive A: and select "Restart Now".
 11. To ensure that the system is running hardware accelerator, check the OpenGL library by using regedit32 and examine the registry entry:

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HKEY_LOCAL_MACHINE/SOFTWARE/MICROSOFT/WINDOWSNT/CURRENTVERSION/OPENGLDRIVERS. 3DOGLDRV should be the value.
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 12. Use file manager to copy the file MSVCRT20.DLL from the A:\MIPS directory of the Windows NT Glint Display Driver diskette to the C:\Windows NT\System 32 Directory.

The 3D Graphics Accelerator will be started as the display device. You can check by opening the Display Applet again and selecting "Change Display Type...". The Display Type window should report that it is running on the 3D Graphics Accelerator. Open the Display Applet to define the required resolution, color depth, and monitor frequency. Test this mode to ensure that it can be handled by the monitor. To run the default 3D demos a monitor resolution of 1024x768 with 4096 colors is recommended. If the monitor can support it, a monitor frequency of 75 Hz is desirable. On some double-buffered applications, the higher refresh rate allows higher frame rates to be achieved.

The above procedure installs both the NT Display Driver and the OpenGL installable client driver.

OpenGL DEMONSTRATIONS

The following information instructs how to install the OpenGL demonstrations located on the diskette. Brief descriptions of each demonstration is also provided.

Software Installation

1. For each of the two demo diskettes, insert the diskette into drive A:.
2. Use File Manager to create a directory on your hard disk. Copy all the files on the diskette from the MIPS directory, as is appropriate, into the new directory.
3. Copy the files from the TEXTURES directory on the diskette to the same directories as your demos on your hard disk.
4. Rename the file SSPIPES.SCR to SSPIPES.SAV in the WindowsNT\system32 directory.
5. Copy the file SSPIPES.SCR from the diskette to your WindowsNT\system32 directory.

You are now ready to run the demonstrations. For best results when running a single demonstration it is recommended to use a 1024x768 resolution with 4096 colors. To run multiple demonstrations simultaneously it is recommended to use a 800 x 600 resolution, with either 4096 colors (one demonstration hardware double buffered) or true color (all demonstrations will use Blt double buffering).



If you do not have Microsoft Visual C++ installed on your system, you may need to copy the file MSVCRT20.DLL from the driver disk to your system. Copy it to a directory that is included in your path environment.

These demonstrations are all double buffered. At some resolutions and color depth the OpenGL Driver will dynamically switch to software rendering with consequently lower performance.

RollerCoaster

This demonstration shows the video board's ability to provide real-time simulation. A car moves along a complex roller coaster at high speed. All the objects are lit, Gouraud shaded and depth buffered, with the RollerCoaster world comprising 18,000 polygons. Shadows and fog effects can be enabled for extra realism with minimal performance loss. Smooth animation is achieved using double buffering and the video board's proprietary Z-buffer "Fast Clear" mechanism. Press **h** to get access to on-screen help.

- RCWIN.EXE to run

Tolympic

This is a standard OpenGL demonstration program. It shows smoothly shaded, interlocking Olympic rings being animated, with specular lighting effects. The control keys and run execute command are listed below.

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- Space bar — animate rings
 - b — blending on/off (for green ring)
 - d — normal rings/ doughnuts
 - Esc — quit
 - TOLYMPIC.EXE to run

X29

GLINT is ideally suited to real-time animation of solid models. This demonstration shows an X29 plane being animated in real-time. The plane is lit and smoothly shaded. Fogging effects can be enabled with minimal performance loss.

This demonstration is menu driven. The Speed menu option only applies to the spinning mode. The Help menu can be used to confirm the OpenGL version.

- X29.EXE to run

Chick Berry

This demonstration shows an animated figure on a stage bearing the GLINT logo. The interactive controls let you move the stage and zoom in on the figure.

- 1 — solid, depth buffered, smooth shaded, stenciled (default)
- 2 — wire frame, depth cued
- 3 — hidden line, depth cued (N.B. uses stencil buffer, and has to render every primitive three times, twice wire frame and once as a polygon)
- 4 — antialiased line
- left, right arrow — move left, right
- up, down arrow — move up, down
- Z/z — zoom in/out
- a — auto rotate on/off
- Esc — quit
- CHICK.EXE to run

Chase

This is a simple game with moving targets to be shot/destroyed and ground-based obstacles to be avoided. A radar screen shows remaining targets viewed from above.

- Space bar — fire
- left, right arrow — steer left, right
- up, down arrow — move aiming sight up, down
- f — forwards
- b — backwards

- s — stop game, followed by...
- r — restart with new rarest
- Esc — quit
- CHASE.EXE to run

TexList Demo

The Texlist demo takes a list of textures and texture-maps them onto rotating cubes. The Texlist demo requires a command line argument to run. Using File Manager highlight the Texlist application and select Run from the File menu. After the Texlist command enter the following command:

Texlist -f 1.rgb 2.rgb 3.rgb -db

1.rgb is a texture file and -db specifies that the program runs double-buffered.

Pipes Screen Saver

This is a modified version of the pipes screen saver. The pipes are fogged and the timer that triggers drawing of successive segments is set to a shorter delay to illustrate the high rendering rate.

To select this screen saver, open the Desktop Control panel and select #D Pipes (OpenGL) from the menu.



WARNING: This screen saver may consume significant CPU time and may therefore slow down tasks that are running in the background.

SPECIFICATIONS

The following list shows the board specifications.

- PCI revision 2.0 Target and Read Master interface
- 4 MB VRAM
- 8, 12, 15, and 24/32 bits per pixel
- 8 MB off screen buffer
- 32 bits per pixel contains Z-buffer, stencil field and fast clear control
- GA expansion ROM
- programmable video clock. (maximum 135 MHz)
- pseudo color, true color and direct color output

RESOLUTIONS

The following table lists the supported modes. All of the modes are available at both 60 Hz and 75 Hz monitor refresh rates. The 640 by 480 resolution is also available at 72 Hz.

Supported Modes

RESOLUTION	COLORS	DOUBLE BUFFERING
640 x 480	256	Yes
640 x 480	4096	Yes
640 x 480	32768	Yes
640 x 480	True color	Yes
800 x 600	256	Yes
800 x 600	4096	Yes
800 x 600	32768	Yes
800 x 600	True color	Yes
1024 x 768	256	Yes
1024 x 768	4096	Yes
1024 x 768	32768	Yes
1024 x 768	True color	No
1152 x 870	256	Yes
1152 x 870	4096	Yes
1152 x 870	32768	Yes
1152 x 870	True color	No
1280 x 1024	256	Yes
1280 x 1024	32768	No