

# SolidView/Pro

Integrated 2D/3D View and Markup

**SOLID**  
View

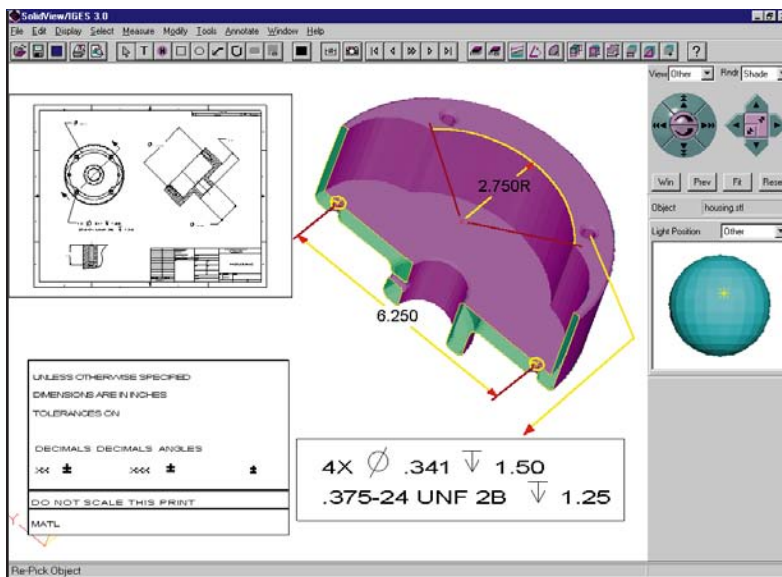
SolidView/Lite

SolidView

SolidView/Pro

SolidView/Pro RP

With the SolidView® family of products, design communication has never been easier. SolidView/Pro is a powerful, yet extremely easy to use, Windows program designed to communicate 2D and 3D data from virtually any CAD system. With SolidView/Pro, anyone with a Windows PC can view, measure, and mark up CAD data. Instead of working with confusing paper drawings, you can now have a real-time shaded view of your CAD designs, without the need for expensive CAD hardware or software, and without extensive training.



SolidView/Pro's measuring, 3D dimensioning, and annotation features make it easy to communicate design intent or to highlight changes or errors. With one mouse click, you can instantly calculate the volume, surface area, mass, and center of gravity of complex designs and assemblies. Note and text features let you add detailed design information, and an electronic grease pencil lets you add red-line markups. Integrated 2D viewing makes it possible to view detailed manufacturing information along with 3D shaded images.

With SolidView/Pro's exclusive publishing capability, you can even send a FREE 2D/3D viewer with your designs. This viewer, called SolidView/Lite, lets the recipient view and optionally measure your designs, without requiring them to purchase any software. SolidView/Pro adds instant value to your existing 3D CAD data by allowing everyone involved in the product development process—engineering, manufacturing, purchasing, Quality Assurance, suppliers, marketing and sales, and even customers—to share the design data on their Windows PC.

## SolidView/Pro Features

- \* Real-time rendering on Windows 95, 98, and NT, without hardware acceleration
- \* Exclusive SolidView/Lite publishing capability
- \* Optional interfaces for Pro/E\*, CATIA, and Unigraphics\*
- \* Advanced OpenGL rendering
- \* Support for STL, SolidWorks, VRML, DWG, DXF, and OBJ CAD files as well as other popular 2D vector and raster formats
- \* Translate, scale, rotate, mirror, copy and combine 3D data
- \* Easy to learn, intuitive user interface
- \* Flexible, multi-level security
- \* Assembly viewing tools
- \* 3D dimensioning of edges, faces, arcs, points, objects, and assemblies
- \* Collaborative engineering review tools
- \* 2D and 3D Web publishing and viewing
- \* Cross-section display and measurements
- \* Options for IGES, VDA/FS, Rapid Prototyping, and network licensing
- \* Complete, on-line, context sensitive help

\*Requires appropriate CAD system license

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# SolidView

3D View and Measure

**SOLID**  
View

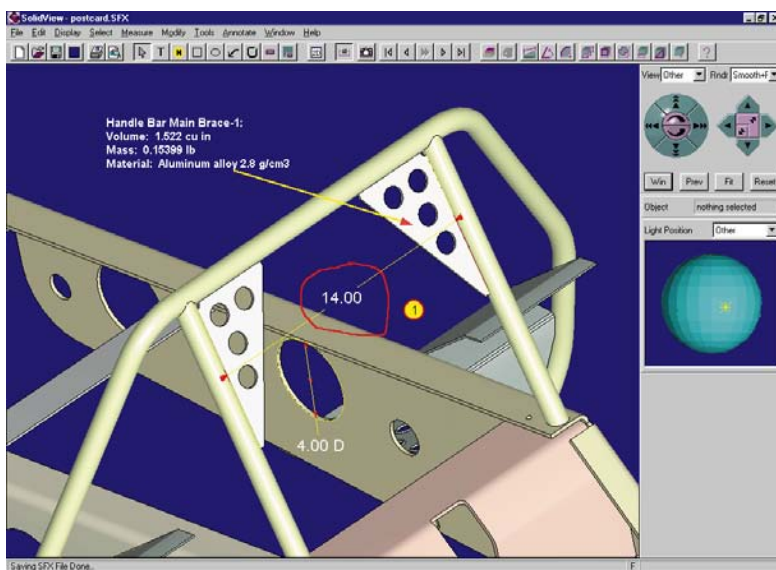
SolidView/Lite

SolidView

SolidView/Pro

SolidView/Pro RP

With the SolidView® family of products, design communication has never been easier. SolidView is a low-cost, easy to use, program for viewing and measuring a variety of 3D CAD data formats. SolidView/Lite is a FREE 3D viewer designed to facilitate the exchange of 3D data in SolidView's Solid File eXchange (SFX) format. With the SolidView family of products, anyone with a Windows PC can view, measure, and mark up CAD data. Instead of working with confusing paper drawings, you can now have a real-time shaded view of your CAD designs, without the need for expensive CAD hardware or software, and without extensive training.



SolidView and SolidView/Lite read STL, SolidWorks, VRML, OBJ, and 3D Face data in DXF format. SolidView and SolidView/Lite also read the SFX file format, and SolidView provides the ability to add notes and markups to an existing SFX file, enabling bi-directional 3D communication. SolidView's measuring, 3D dimensioning, and annotation features make it easy to communicate design intent or to highlight changes or errors. With one mouse click, you can instantly calculate the volume, surface area, mass, and center of gravity of complex designs and assemblies. Note and text features let you add detailed design information, and an electronic grease pencil lets you add red-line markups.

SolidView/Pro adds instant value to your existing 3D CAD data by allowing everyone involved in the product development process—engineering, manufacturing, purchasing, Quality Assurance, suppliers, marketing and sales, and even customers—to share the design data on their Windows PC.

## SolidView Features

- \* Real-time rendering on Windows 95, 98, and NT, without hardware acceleration
- \* 3D dimensioning of edges, faces, arcs, points, objects, and assemblies
- \* Advanced OpenGL rendering
- \* Support for STL, SolidWorks, VRML, DXF, and OBJ CAD files
- \* Reads and writes Solid File eXchange (SFX) files from SolidView/Pro

## SolidView/Lite Features

- \* Real-time rendering on Windows 95, 98, and NT, without hardware acceleration
- \* Reads Solid File eXchange (SFX) files from SolidView/Pro and SolidView
- \* 3D dimensioning of SFX data
- \* Advanced OpenGL rendering
- \* Support for STL, SolidWorks, VRML, DXF, and OBJ CAD files

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# File Formats

Supported 2D and 3D SolidView File Formats



SolidView/Lite

SolidView

SolidView/Pro

SolidView/Pro RP

The SolidView® family of products supports a variety of 2D and 3D file formats. New file types are being developed continually. For the latest information on supported file formats, please visit [www.cadcommunications.com](http://www.cadcommunications.com)

## SolidView/Lite

### 3D Import Formats

| Extension(s) | Description                                               | Notes |
|--------------|-----------------------------------------------------------|-------|
| .dxf         | 3D face data in AutoCAD DXF format                        |       |
| .obj         | Wavefront/Alias 3D format                                 |       |
| .sfx         | SolidView Solid File eXchange format                      |       |
| .sldasm      | SolidWorks assembly file                                  |       |
| .sldprt      | SolidWorks part file                                      |       |
| .stl         | Ascii and binary stereolithography rapid prototyping data |       |
| .wrl         | VRML 1.0 and 2.0 formats                                  | 1     |

**SolidView/Lite 3D Import Notes:**  
1. VRML 2.0 requires the free VRML 2.0 plugin available from [www.cadcommunications.com](http://www.cadcommunications.com)

## SolidView

### 3D Import Formats

| Extension(s) | Description                                               | Notes |
|--------------|-----------------------------------------------------------|-------|
| .dxf         | 3D face data in AutoCAD DXF format                        |       |
| .obj         | Wavefront/Alias 3D format                                 |       |
| .sfx         | SolidView Solid File eXchange format                      |       |
| .sldasm      | SolidWorks assembly file                                  |       |
| .sldprt      | SolidWorks part file                                      |       |
| .stl         | Ascii and binary stereolithography rapid prototyping data |       |
| .wrl         | VRML 1.0 and 2.0 formats                                  | 1     |

**SolidView 3D Import Notes:**  
1. VRML 2.0 requires the free VRML 2.0 plugin available from [www.cadcommunications.com](http://www.cadcommunications.com)

### 3D Export Formats

| Extension(s) | Description                          | Notes |
|--------------|--------------------------------------|-------|
| .sfx         | SolidView Solid File eXchange format | 1     |

**SolidView 3D Export Notes:**  
1. SolidView can edit and save an .sfx file, but new .sfx files cannot be created from other 3D data formats

**SolidView/Pro and SolidView/Pro RP**

**3D Import Formats**

| Extension(s)       | Description                                                                                                                                                                                                                                                                                  | Notes |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| .dxf               | 3D face data in AutoCAD DXF format                                                                                                                                                                                                                                                           |       |
| .cat, .model, .exp | Catia Export and model files produced by the Unix and mainframe versions of Catia. Imports Faces, Solids (Exact and Mockup), Volumes, Skins, Polyhedral Surfaces, and SKD elements. Support for Ditto, Line, Curve, Composite Curve, and Conic wireframe entities. Supports all V4 versions. | 1, 5  |
| .iges              | IGES surface and 3D curve data                                                                                                                                                                                                                                                               | 2, 5  |
| .obj               | Wavefront/Alias 3D format                                                                                                                                                                                                                                                                    |       |
| .prt               | Pro/E part files (R18-2001).                                                                                                                                                                                                                                                                 | 3, 5  |
| .prt               | Unigraphics part and assembly files V16 and earlier.                                                                                                                                                                                                                                         | 4, 5  |
| .sfx               | SolidView Solid File eXchange format                                                                                                                                                                                                                                                         |       |
| .sldasm            | SolidWorks assembly file                                                                                                                                                                                                                                                                     |       |
| .sldprt            | SolidWorks part file                                                                                                                                                                                                                                                                         |       |
| .stl               | Ascii and binary stereolithography rapid prototyping data                                                                                                                                                                                                                                    |       |
| .vda               | VDA-FS (Verband Der Automobilindustrie Flachen Schnittstelle) files. German National Standard DIN 66301                                                                                                                                                                                      | 2, 5  |
| .wrl               | VRML 1.0 and 2.0 formats                                                                                                                                                                                                                                                                     |       |

SolidView/Pro and SolidView/Pro RP 3D Import Notes:

1. Requires SolidView/Pro Catia Import Option. No Catia license required.
2. Requires SolidView/Pro IGES-VDA Import Option.
3. Requires SolidView/Pro Pro/E Import Option. No Pro/E license required.
4. Requires SolidView/Pro UG Import Option and access to UG Gateway license.
5. Imported files may not be suitable for rapid prototyping functions without the use of the SolidView/Pro RP Repair function.

**3D Export Formats**

| Extension(s) | Description                                               | Notes |
|--------------|-----------------------------------------------------------|-------|
| .dxf         | 3D face data in AutoCAD DXF format                        |       |
| .iges        | Planar IGES surface data                                  | 1     |
| .obj         | Wavefront/Alias 3D format                                 |       |
| .sfx         | SolidView Solid File eXchange format                      |       |
| .stl         | Ascii and binary stereolithography rapid prototyping data |       |
| .sv          | SolidView 1.0 format                                      |       |
| .wrl         | VRML 1.0 and 2.0 formats                                  |       |

SolidView/Pro and SolidView/Pro RP 3D Export Notes:

1. Requires SolidView/Pro IGES-VDA Import Option.

**SolidView/Pro and SolidView/Pro RP (continued)**

**2D Import Formats**

| Extension(s)       | Description                   | Notes |
|--------------------|-------------------------------|-------|
| .bmp               | OS/2 or Windows bitmap        |       |
| .cgm               | Computer Graphics metafile    |       |
| .dxf               | Autodesk Drafting Interchange |       |
| .dwg               | Autocad drawing               |       |
| .emf               | Enhanced Windows metafile     |       |
| .gif               | CompuServe                    |       |
| .hpgl, hpgl2, .plt | HP Graphics Language          |       |
| .jpeg              | JPEG group                    |       |
| .pct               | Macintosh PICT                |       |
| .pcx               | ZSoft Paintbrush              |       |
| .png               | Portable Network Graphics     |       |
| .ras               | Sun Microsystems              |       |
| .tga               | Truevision (Targa)            |       |
| .tiff              | Tagged Image File Format      |       |
| .txt               | Text document                 |       |
| .wmf               | Windows metafile              |       |

**2D Export Formats**

| Extension(s) | Description                  | Notes |
|--------------|------------------------------|-------|
| .bmp         | OS/2 or Windows bitmap       |       |
| .eps         | Encapsulated Postscript File |       |
| .gif         | CompuServe                   |       |
| .jpeg        | JPEG group                   |       |
| .pct         | Macintosh PICT               |       |
| .pcx         | ZSoft Paintbrush             |       |
| .png         | Portable Network Graphics    |       |
| .ras         | Sun Microsystems             |       |
| .tga         | Truevision (Targa)           |       |
| .tiff        | Tagged Image File Format     |       |
| .wmf         | Windows metafile             |       |

# IGES/VDA Import

*View and Measure Industry-Standard 3D Data*

**SOLID**  
*View*

*SolidView/Lite*  
*SolidView*

*SolidView/Pro*

*SolidView/Pro RP*

The SolidView® IGES/VDA import option will enable SolidView/Pro and SolidView/Pro RP to read IGES and VDA data. Once the 3D data has been read into SolidView, it can then be measured, moved, scaled and analyzed. If no trimmed surfaces are found, SolidView will read any 3D Curve entities and display them as wireframe data. The following IGES entities are supported:

| Entity # | Name                   | Type    | Notes                                             |
|----------|------------------------|---------|---------------------------------------------------|
| 100      | Circular Arc           | Curve   |                                                   |
| 102      | Composite Curve        | Curve   |                                                   |
| 104      | Conic Arc              | Curve   |                                                   |
| 106      | Copius Data            | Curve   |                                                   |
| 108      | Bounded Plane          | Surface | Unbounded planes not supported                    |
| 110      | Line                   | Curve   |                                                   |
| 112      | Parametric Spline      | Curve   | Supported (126 is preferred)                      |
| 114      | Parametric Surface     | Surface | Supported (128 is preferred)                      |
| 118      | Ruled Surface          | Surface |                                                   |
| 120      | Surface of Rev.        | Surface |                                                   |
| 122      | Tabulated Cylinder     | Surface |                                                   |
| 124      | Transform Matrix       | Matrix  |                                                   |
| 126      | Rat. B-Spline Curve    | Curve   | Preferred Trim Curve Entity Type                  |
| 128      | Rat. B-Spline Surface  | Surface | Preferred Surface Entity Type                     |
| 140      | Offset Surface         | Surface |                                                   |
| 141      | Boundary Entity        | Curve   | Supported in SolidView IGES 2.1 and later         |
| 142      | Curve on Parm. Surface | Curve   |                                                   |
| 143      | Bounded Surface        | Surface | Supported in SolidView IGES 2.1 and later         |
| 144      | Trimmed Parm. Surface  | Surface |                                                   |
| 186      | Manifold Solid B-Rep   | Object  | Supported in SolidView IGES 3.2 and later         |
| 190      | Plane Surface          | Surface | Supported in SolidView IGES 3.2 and later         |
| 192      | Circular Cylinder      | Surface | Supported in SolidView IGES 3.2 and later         |
| 194      | Circular Conic         | Surface | Supported in SolidView IGES 3.2 and later         |
| 196      | Spherical Surface      | Surface | Supported in SolidView IGES 3.2 and later         |
| 198      | Toroidal               | Surface | Supported in SolidView IGES 3.2 and later         |
| 308      | Subfigure Definition   | SubFig  | Supported in SolidView IGES 3.2 and later         |
| 406      | Tabular Data           | Data    | Not currently supported                           |
| 408      | Subfigure Instance     | SubFig  | Supported in SolidView IGES 3.2 and later         |
| 416      | External Reference     | SubFig  | Not currently supported, combine into single file |

**Note:** Optimum IGES translation results with trimmed NURB surfaces/curves IGES entities 128 and 126. Converted IGES files can be saved as SFX, STL, VRML, and 3D DXF for viewing in SolidView/Lite or SolidView. STL files generated from IGES or VDA data may not be suitable for rapid prototyping applications without the use of the SolidView/Pro RP repair function. Users can obtain the latest IGES/VDA import DLL (libgeom.dll) from [www.solidconcepts.com](http://www.solidconcepts.com).

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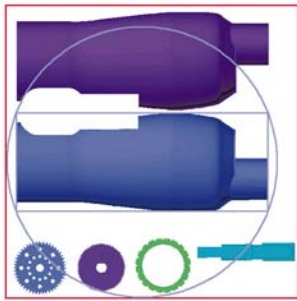
# SolidView/Pro RP

*Prepare Data For Any Rapid Prototyping System*

**SOLID**  
*View*

*SolidView/Lite*  
*SolidView*  
*SolidView/Pro*  
*SolidView/Pro RP*

SolidView/Pro RP combines the 3D communication features of the SolidView® family of products with an extensive array of rapid prototyping functions. SolidView/Pro RP makes it possible to quickly prepare multiple STL files for rapid prototyping on any popular RP system. SolidView/Pro RP includes advanced functions for repairing STL files and for preparing stereolithography rapid prototypes. With SolidView/Pro RP, you can quickly and easily translate, scale and rotate STL files on your Windows PC, instead of using an expensive CAD or RP system. SolidView/Pro RP lets you copy and combine STL files, or split STL files into multiple parts. Drag and drop manual part layout, combined with automatic layout and a build time estimator, make it easy to maximize the throughput of any rapid prototyping system.



*Automatic and manual layout functions let you maximize RP system throughput*

SolidView/Pro RP includes functions for automatically repairing common STL file problems, including closing gaps, correcting normals and fixing vertex-to-vertex problems. SolidView/Pro RP Z-adjust and drain hole functions make it possible to build faster and more accurate stereolithography rapid prototypes. The optional Bridgeworks module enables SolidView/Pro RP users to create stereolithography support structures on their Windows PC.

## SolidView/Pro RP Features

- \* All SolidView/Pro features, including view, measure, annotate and publish
- \* Drag and drop manual part layout
- \* Automatic part layout and build time estimator for all popular rapid prototyping systems
- \* Shell function for creating hollow parts from solid geometry
- \* Verify function to test STL file integrity
- \* Section STL files to create smaller buildable parts
- \* Automatic correction of common STL file problems such as small gaps, incorrect triangle normals, and misaligned triangle vertices
- \* Shell function
- \* Drain hole and Z-adjust for more accurate stereolithography parts

## SolidView/Pro RP Options

- \* **CAD Interfaces:** Provides the ability to directly read Pro/E\*, CATIA, and Unigraphics\* CAD files
- \* **IGES/VDA Import:** Provides the ability to import IGES surface and solid data for viewing and measuring
- \* **Network Licensing:** Allows multiple PCs to access SolidView licenses
- \* **Bridgeworks:** Provides for the automatic generation and slicing of stereolithography support structures

\*Requires appropriate CAD system license

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# **V.SOLID** *View*

- ✓ **Integrated 2D and 3D View and Markup**
- ✓ **View Data from All Popular CAD Systems**
- ✓ **FREE SolidView/Lite Software--  
Share Designs with Anyone**



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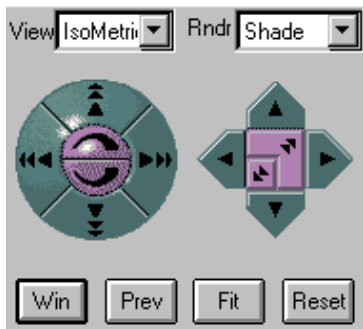
# Getting Started with SolidView

SolidView is a powerful, yet easy to learn Windows application designed to communicate 3D and 2D design information. Typically, this information was created on a Computer Aided Design (CAD) system, but you do not need to be familiar with a CAD system in order to use SolidView. In fact, SolidView is designed to be used by anyone who normally uses 2D drawings. And since SolidView is an interactive 3D application, most people find it easier to use than 2D drawings. This booklet will briefly describe the basic features of SolidView 3.0. For a complete description of SolidView capabilities, see the *Svdemo.sfx* file in the SolidView installation directory or the complete on-line help system.

## Viewing 3D Data

SolidView has three primary functions, View, Measure, and Communicate. The most basic function of SolidView is viewing 3D designs. The first step in using SolidView is to load a 3D file. SolidView can read a variety of 3D file formats such as STL and VRML files, and options are available to read other formats such as IGES. Select the **Open** menu item in the **File** menu to load an STL file. STL files consist of a series of facets or triangles that represent an object or shape, typically a mechanical design generated on a CAD system.

An STL file called *arm1.stl* is included in the SolidView installation directory and it's a good file with which to get started.



SolidView's simple view buttons make it easy to move the model in the direction indicated by the arrows. The curved buttons rotate the model, while the flat buttons move and zoom the model. Simply click with the left mouse button to change the view as required. Using the right mouse button performs the same function, but in bigger steps. Go ahead and see how each button changes the view.

SolidView supports a number of “standard” views, which can be selected by using the **View** drop down list in the view control dialog.

SolidView also supports a number of display or rendering modes. Since SolidView performs very well on standard PC hardware, it is usually best to view models in the default Shaded mode. The other modes can be selected using the **Rndr** drop down list in the view control dialog.

To learn about the functions of the other buttons in the view control panel, simply click on the **Win** button and hit the **F1** function key to activate SolidView's on-line help.


You can also rotate an object by holding down the right mouse button and

moving the mouse over the view area. With practice, you will find that this is a very easy way to position an object. If SolidView detects that it is taking too long to generate the image when you rotate it this way, it will display and move an outline that represents the object until you stop moving the mouse. This way you can still interactively position the object, even if you are using a slow computer, or working with a very complex object.

## Viewing 2D Data

SolidView also lets you view and markup 2D raster and vector images. This feature is designed to enable detailed engineering information, usually only found on 2D drawings, to be displayed alongside SolidView's 3D images. A 2D image or graphic can be added to any SolidView slide by simply clicking



on the Add Graphic  tool button. This will bring up a file open dialog where the proper 2D graphic can be selected. A 2D graphic window can be activated by selecting the 2D graphic.

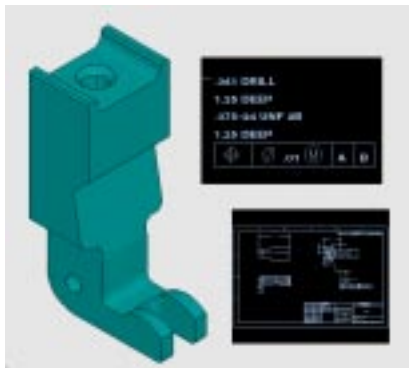
Once activated, the 2D toolbar will be displayed in the 2D graphic window. The function of each tool button can be displayed by moving the pointer over each button without clicking on the button. You can also view a 2D image by using SolidView's **File | Open** menu.

## Managing 2D Images

Once a 2D image has been added, the image size can be changed by simply clicking on the corner or side of the image as you can do with any standard

Window. As with the 3D display in SolidView, you can also pan the image by holding down the **Alt** key while pressing the right mouse button.

The **Windows** menu item makes it possible to cascade and tile the 2D images, as well as hide and show the images. It is important to note that each time a 2D image is added to SolidView, only one copy of that file is loaded and saved in



the SolidView file, even if you use the 2D Graphic button to load the same image multiple times. Depending on your communication intent, you may want to have only one 2D image on each SolidView slide, or you may want to have multiple minimized images on one slide—SolidView gives you the complete flexibility to choose.

A 2D CGM (Computer Graphics Metafile) file called *Arm1.cgm* is included in the SolidView installation directory. Click on the Add Graphic tool button and select this file. Using the 2D tool buttons, you can create a view that displays the 3D object, a 2D GD&T callout, and the full 2D drawing.

## 2D Image Options

Double clicking on a 2D image will display the Markup Graphic Options dialog. This dialog has two tabs, Options and Text. The Options tab enables you to set a variety of options that control the way 2D images are displayed. Use SolidView's context sensitive help to display the functions of each option. The Text tab can be used to set the font, font size, and color of the text of the minimized 2D image.

## Measuring with SolidView

The second primary function of SolidView is measuring a 3D design. For this example, we will use the *Arm1.stl* file that is included in the SolidView installation directory. Please load this file if you have not already done so.


You have probably already noticed the SolidView toolbar along the top of the SolidView window. Each button in the toolbar performs a SolidView function and eliminates the need to use menu items for most SolidView operations. Simply use the mouse to point to a button (but don't click on it!) to see the name of the function to be performed. The buttons can be used to measure various features of a design.

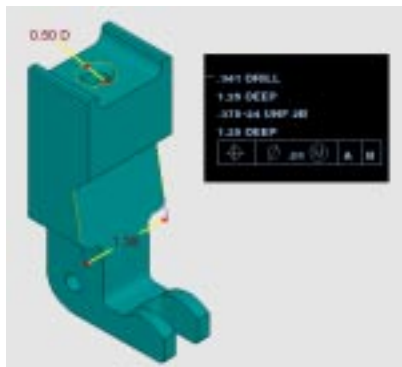


Move the mouse over each one to familiarize yourself with their functions. Click on the Measure Object button and SolidView will calculate everything from the basic dimensions of the object to its volume and surface area.

You will notice the information is displayed in the measure dialog as well as on the model itself.

Clicking on the **Done** button in the dialog will clear the information. If you want to clear the dimensions from the model, use the Erase Annotations button

or Erase ALL Annotations button, as shown here:  You can also use the **Del** key to erase the selected annotation.



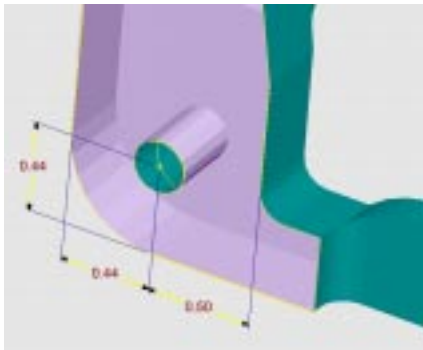
Once you have erased the annotations, use the **View** menu in the view dialog to select the **IsoMetric** view of the Arm1 model. Then click on the Measure Arc button.

Next use the mouse to select the hole on the top of the object. SolidView will then calculate the diameter and other features of the arc and display the information in the dialog on the right. SolidView also creates a diameter dimension on the model. If you

want to change the attributes of the dimension, such as the text size, simply double-click on the dimension. Using the other measurement buttons, you can

measure distances between faces, edges, and vertices, as well as angles and other design features.

With SolidView, you can define a section for viewing, measuring, and exporting to a 2D DXF file. To define a section, use the **Measure | Define Section** menu item, or click on the Define Section tool button.



The Define Section dialog is used to identify the section plane and position, as well as how the section is displayed. To position the section plane, use the slider or click on the object. The **C** button will center the section plane on the object and the **A** button will animate the section through the object or objects. Once the section has been properly positioned, click on the **Done** button to

complete the operation. Once the section has been defined, you can use any of SolidView's measurement tools to measure features of the section. Multiple objects can be sectioned at one time by using the **Select** menu item to select the objects prior to defining the section.

In addition to creating measurement dimensions, SolidView also lets you add

text, notes, boxes, arrows, and red-line markups using the following buttons:



Collectively, these are called annotations, and in the next section you will see how they can be used with SolidView's record and playback capability to facilitate true design communication.

### **Design Communication with SolidView**

With SolidView it's easy to add markups, such as arrows, circles, text, and notes to a 3D view or 2D image. These markups can be used to highlight errors, suggest changes, or to call attention to particular design features. Any markup can be added to a 2D image, with the exception of another 2D image. Markups must begin and end inside a 2D image—they cannot extend outside of the image.

One of SolidView's most powerful features is its ability to record and playback multiple views or "slides". Each slide can have its own set of measurements or annotations, as well as its own views of the model. This makes it possible to create an "electronic" design review for effective design communication.

To create a simple slide show with SolidView, first add a few annotations to the model and then select the Save Slide button:



This will bring up the save slide dialog where you can rename the slide, add a description, and set a display time. After you have saved the first slide, use the Erase ALL Annotations button or the Del key to clear the annotations that will not be in the next slide. You can then add any new annotations or 2D images, change the view, or create a section view before you save another slide.

Once you have saved all the slides, you can replay them using the slide play-

back buttons:



## Managing Annotations

SolidView makes it easy for multiple people to review and comment on a design. A feature called authoring keeps track of who adds annotations to an SFX file and when they were added. Navigation tools enable users to review existing annotations based on author. To use this feature you must select the **Annotate | Authoring Mode** menu item. Once authoring has been enabled, you must register as an author before you create any annotations. Select the **Annotate | Author Registration** menu item to display the Author Registration dialog. If desired, you can add a password to prevent others from changing your annotations, and you can select a color scheme to make your annotations easy to identify. In order to properly review authored annotations, you must save at least one slide, using the SolidView Save Slide button . If authoring is enabled, but no author is registered, any attempt to create an annotation will result in the Author Registration dialog being displayed.

To review annotations, select the **Annotate | Author Navigation** menu item to display the Author Navigation dialog. The Author Navigation dialog has options that enable you to set the way in which annotations are displayed. Once author navigation is enabled, use the slide playback buttons



to review the annotations.

Please note that if author navigation is enabled, but no authors are selected to be shown, no annotations will be displayed.

### **Saving Annotations and Slides**

The STL file format that SolidView uses does not support things like slides and annotations. In order to save these features with your model, you must save the file in SolidView’s SFX format. In addition to saving all the annotation and slide information, SFX files have the additional benefit of being much smaller than standard STL files.

This would be a good time to go ahead and save your file by using the **Save SFX** function in the **File** menu. Once you have saved an SFX file, this file can be sent to anyone who needs to view the slides and annotations you have created. You might think that they would need a copy of SolidView in order to read the SFX file, but that is not the case. In order to provide effective design communication, SolidView can “publish” an SFX file, complete with a copy of SolidView/Lite, which allows the recipient to view the slides and annotations you have created.

In fact, SolidView/Lite includes most of the viewing and measuring capabilities of SolidView, but it only operates on SFX files. You can freely distribute copies of SolidView/Lite, subject to the SolidView/Lite license agreement.

### **Publishing SFX Files**

To publish an SFX file, complete with a copy of SolidView/Lite, simply select the **Publish** function from the **File** menu. SolidView will prompt you for a file name, and then display the publish dialog.

Published files are always executable files (of type EXE) because they are actually multiple files saved as a self-extracting program. Within the publish dialog, you can set a password or include SolidView/Lite. The password is useful if you are sending the published file over the Internet as the file cannot be extracted without the password.

If you publish the file to floppy disks, SolidView automatically takes care of the multiple disks, but you need to make sure the disks are formatted before you start.

Once you have published a file, it can be sent to anyone with a Windows file.

## Printing with SolidView

SolidView is designed to work with both color and monochrome Windows printers. Select the **File | Preferences** menu item and then select the **Printing** tab to set the printing options. Press the F1 function key to display on-line help for the SolidView printing options.

## Creating VRML and HTML data

You can save your SolidView files in VRML and HTML formats for viewing with standard web browsers. Use the **File | Save SFX** menu item and select a file type of HTML, VRML 1.0, or VRML 2.0.

## Interactive Viewing Controls

|                      |                    |                      |
|----------------------|--------------------|----------------------|
| <b>Arc Ball</b>      | Right Mouse        |                      |
| <b>Axis Arc Ball</b> | Right Mouse        | + Ctrl Key           |
| <b>Zoom Window</b>   | Left Mouse         | + Alt Key            |
| <b>Drag Zoom</b>     | Left Mouse         | + Ctrl Key + Alt Key |
|                      | Right Mouse        | + Ctrl Key + Alt Key |
| <b>Drag View</b>     | Right Mouse        | + Alt Key            |
| <b>Move Light</b>    | Right Mouse        | + Shift Key          |
| <b>2D/3D Pan</b>     | Middle Mouse       |                      |
| <b>Zoom</b>          | Intellimouse wheel |                      |

## Supported 3D File Formats

|            |                            |
|------------|----------------------------|
| <b>DXF</b> | 3D face data in DXF format |
| <b>IGS</b> | IGES data (Optional)       |

|               |                                                         |
|---------------|---------------------------------------------------------|
| <b>OBJ</b>    | Object file                                             |
| <b>SFX</b>    | SolidView                                               |
| <b>SLDPRT</b> | SolidWorks part file                                    |
| <b>SLDASM</b> | SolidWorks assembly file                                |
| <b>STL</b>    | Stereolithography                                       |
| <b>SV</b>     | SolidView 1.0 format                                    |
| <b>VDA</b>    | German standard for transfer of surface data (Optional) |
| <b>WRL</b>    | VRML (1.0)                                              |

Plugins for direct support of native CAD data are available from your Authorized SolidView reseller. See

### **Supported 2D File Formats**

|              |                               |
|--------------|-------------------------------|
| <b>BMP</b>   | OS/2 or Windows bitmap        |
| <b>CGM</b>   | Computer Graphics metafile    |
| <b>DXF</b>   | Autodesk Drafting Interchange |
| <b>DWG</b>   | Autocad drawing               |
| <b>EMF</b>   | Enhanced Windows metafile     |
| <b>GIF</b>   | CompuServe                    |
| <b>HPGL</b>  | HP Graphics Language          |
| <b>HPGL2</b> | HP Graphics Language          |
| <b>JPEG</b>  | JPEG group                    |
| <b>PCT</b>   | Macintosh PICT                |
| <b>PCX</b>   | ZSoft Paintbrush              |

continued...

## Supported 2D File Formats (continued)

|              |                           |
|--------------|---------------------------|
| <b>PNG</b>   | Portable Network Graphics |
| <b>RAS</b>   | Sun Microsystems          |
| <b>TARGA</b> | Truevision                |
| <b>TIFF</b>  | Tagged Image File Format  |
| <b>TXT</b>   | Text document             |
| <b>WMF</b>   | Windows metafile          |

## OpenGL Graphics

Starting with release 3.2, SolidView provides the option of using OpenGL graphics instead of SolidView's internal rendering algorithms. OpenGL graphics are supported under Windows 95

**OpenGL graphics are not supported under Windows 3.1.** The advantages of OpenGL are:

- \* More colors
- \* High quality graphics
- \* Support for OpenGL accelerated hardware
- \* Transparency
- \* Spectral highlights (shininess)

The primary disadvantage of OpenGL is that it requires more resources, and will result in longer drawing times, unless you have special OpenGL hardware. The good news is that SolidView makes it easy to switch in and out of OpenGL mode, so you have complete flexibility. Any files you create in SolidView while running in OpenGL mode are fully compatible with SolidView's internal rendering algorithms, but you won't be able to see any

additional colors or transparent objects.

### **Enabling OpenGL Graphics**

You can enable OpenGL graphics selecting “OpenGL mode” from the **Display | Render** menu. OpenGL graphics can be disabled by selecting “Software mode” from the **Display | Render** menu. Please note that your display must be set to 16 bit (high color or 32K colors) in order to enable OpenGL graphics. OpenGL graphics can also be enabled from the Rendering tab in the **File | Preferences** dialog and the Color tab in the **Select | Object** Attributes dialog.

### **Hardware Acceleration**

If you have a graphics board that supports OpenGL accelerated graphics, you can enable this by selecting the Hardware Acceleration option under the Rendering tab in the **File | Preferences** dialog. By default, hardware acceleration is disabled in SolidView as the latest video drivers may be required in order for a particular graphics board to operate correctly. If you encounter problems while using hardware acceleration, you should contact your video board supplier and verify that you have the latest video drivers installed.

### **SolidView DDE Interface**

Starting with release 3.2, SolidView supports dynamic data exchange (DDE). DDE is an established protocol for exchanging data between Windows-based applications. Using DDE, other Windows applications,

such as Microsoft Access, can send information and commands to SolidView. For example, it is possible for Microsoft Access to issue DDE commands to open a particular file in SolidView, and then print that file. The following DDE commands are available in SolidView:

| <b>Command</b>   | <b>Function</b>                |
|------------------|--------------------------------|
| Open(filename)   | Opens a file                   |
| Print()          | Prints the current file        |
| Activate(mode #) | Activates the SolidView window |
| Exit()           | Exits SolidView                |

For more information on SolidView's DDE commands, see the DDE topic in SolidView's online help, or the Access or DDE directory in the Samples folder on the SolidView CD-ROM.

### **Learning More About SolidView**

In addition to the features described in this booklet, SolidView has many more features designed to make it easier to communicate design information. SolidView's complete on-line help provides reference information for all SolidView functions. If you need additional help, or if you have any questions regarding SolidView, you should contact your SolidView reseller, C2C Technologies, Inc., via e-mail at [help@cadcommunications.com](mailto:help@cadcommunications.com). You can contact us via the World Wide Web, phone, or fax, as shown on the back of this booklet.

### **Installing SolidView**

The SolidView CD-ROM contains SolidView software, demonstration files, and sample data files. To install SolidView software, run or install the

demonstration files, or browse the contents of this CD-ROM, following these instructions:

1. Insert the CD-ROM into the CD-ROM drive.
2. From the Start menu, select Run.
3. In the Open field, enter x:\setup, where x is the letter of your CD-ROM drive.
4. Select OK.

At the end of the installation procedure, you will be prompted for an installation password. You must contact your authorized SolidView Reseller,

### **SolidView Network Installation**

SolidView can be installed on a network under a number of concurrent users license. SolidView can only be installed on a network if you have purchased a SolidView network license. A SolidView network license allows a specific number of SolidView clients to access a copy of SolidView installed on a server. The networked version of SolidView will run on any network which supports the following:

#### SolidView Program Directory

A Network Directory mountable with a drive letter by a Windows Client for at least read access. (A Windows client is any Intel or

compatible based system running Windows 95  
Windows NT 3.51 or NT 4.0) This directory will contain the  
installed SolidView executable program.

### SolidView NetLicense Directory

A Network Directory shared for read/write with a UNC name  
(Universal Naming Convention). This directory will contain the  
network license file. **All clients MUST be able to read/write the  
file.**

The Microsoft Windows network meets these requirements.

### **Server Installation**

The server may be a Windows NT Server 3.51 system, any Windows NT  
Workstation 3.51 or 4.0 computer, any Windows 95  
any other FILE SERVER supporting the conditions above. The network in-  
stallation will use the following directories:

#### SolidView Program Directory:

C:\SLDVIEW to be shared as \\<SERVER>\SLDVIEW

This directory must be mapped by the clients with a drive letter  
such as S:

#### SolidView NetLicense Directory:

C:\SLDVIEW\SVIEWNET to be shared as \\<SERVER>\SVIEWNET

This directory is not mapped by the clients.

- 1 Install SolidView on the Server as described under **Installing Single User on Windows 95**  
**NT 4.0.** You will not be prompted for any of the network parameters until after you have entered your SolidView program key.
- 2 You must contact your Authorized SolidView Reseller
- 3 Select the network installation type.  
After entering the SolidView program key, you will be given the choice of selecting a network drive or Windows file sharing installation.
- 4 Specify the NetLicense Directory on the Server.  
SolidView will prompt you for a network directory such as c:\sldview\svnet. This directory will be used to track network licenses and **must be shared with read/write access for all clients.** Using a subdirectory is recommended since it protects application files.
- 5 Specify the UNC name to the NetLicense Directory. SolidView will then prompt you for the UNC network path for the NetLicense directory created above. The network path must follow the UNC (Universal

Naming Convention) format which consists of two back slashes ‘\\’ followed by the server name, followed by another back slash ‘\’ and the network share name such as \\<SERVER>\directory. SolidView clients will use this network path to access the license file ‘sldview.net’.

- 6 Exit SolidView.
- 7 Configure your server to share the SolidView install directory (c:\sldview) with read access for all clients.
- 8 Configure your server to share the SolidView network directory (c:\sldview\sviwnet) with read/write access.

### **Network Client Installation**

- 1 Connect to the server and network drive where SolidView was installed using the Network Neighborhood icon or the File Manager. (The share name \\<SERVER> \SLDVIEW should be what you want. Check with your Network System Administrator, if needed.) **Since you will need access to this same network drive with the same drive letter, it is highly recommended that you specify that the connection is re-established next time you login.**
- 2 Run SolidView.  
Using the File Manager or Explorer, open the drive mounted above and double click on ‘sldview.exe’ or use the Program Manager’s run

command and specify <s>:\sldview.exe where <s> is the drive letter you specified when mounting the SolidView Program Directory above.

- 3 SolidView will prompt you to determine if you want to perform Network Setup (this allows each Client to have its own SolidView defaults). Select **OK** to continue with the Client Network Setup.
- 4 SolidView will then prompt you for a local directory to install defaults and other information (< 200K required). This directory will be used to save the user's default settings in a file called 'sldview.df'.
- 5 SolidView will then prompt you for a Program Group Name. Several icons and start menu options will be created for accessing SolidView and SolidView Help.

**Note:** The Program Manager group icons will be created using the current SolidView network drive. If you disconnect the network drive or connect the drive to a different drive letter the icons will no longer be valid. If the network drive changes often in your network environment then simply skip the Create Program Group setup by selecting Cancel. You can run Network Setup at any time to change settings by selecting Network Setup for the SolidView File menu.

## **About Solid Concepts & C2C Technologies, Inc.**

Solid Concepts Inc. is the world's leading supplier of third-party software for the rapid prototyping industry and is a recognized leader in rapid prototyping and manufacturing. Founded in 1991, the company has enjoyed tremendous growth, fueled by a commitment to service and constant technical innovation.

**C2C Technologies, Inc.** has been heavily involved with SolidView since its Beta Development in early 1994. C2C directly represented SCI & SolidView in the early days and become the first Value Added Reseller (VAR). C2C is solely focused on the sales & service of SolidView, offers the best pricing, an attractive referral program ... Win-Win-Win & our commitment to providing excellent service to our customers. Jack Wallack, President of C2C has been in the CAD/CAM industry since 1978.

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SolidView Serial No :

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