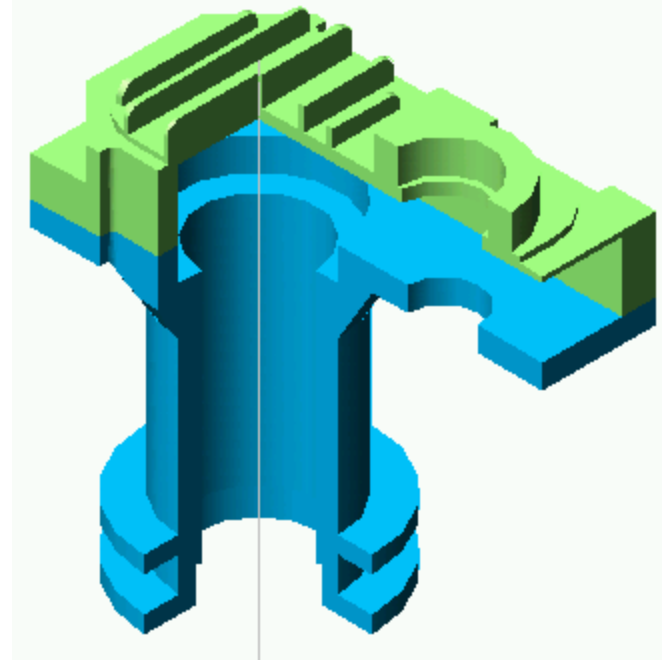


Transferring 3D Parts To Drafting Detailing



This week you will learn how to transfer 3D parts to drafting detailing. The steps to follow are:

- Documentation
- Creating Drawing Views
- Extracting Data From 3D Models
(Physical Data, 2-D drawings,
Associativity)





Transferring 3D Parts To Drafting Detailing

The complete documentation of a product includes more information than just the 3D geometry. Other information required to completely document a product design includes the following.

- Geometry (Topology)
- Dimensions
- Tolerances for each dimension
- Geometric tolerances of features (*Datums, GD&T, feature control frames*)
- Manufacturing information (*Surface finish, welding notation, etc.*)
- Inspection information (*key location points*)
- Assembly instructions
- Product information (*Materials, Suppliers, Part numbers, Bill of Materials, Revision history, etc.*)



Transferring 3D Parts To Drafting Detailing

2D vs 3D DOCUMENTATION

The product documentation listed above has traditionally been recorded on 2D paper drawings. The trend is toward both an electronic paperless environment and using a 3D representation rather than 2D drawings.

Companies tend toward either a “**model-centric**” or a “**drawing-centric**” philosophy of how their products are documented.

A “**drawing-centric**” company may perceive of 3D part models as a preliminary step to create 2D drawings, but the released 2D drawings are archived to document the final design.

A “**model-centric**” company may hold a view that the 3D part model contains the master information, and the 2D drawings are only an intermediate form of communication to transmit information to suppliers who need printed drawings.



Transferring 3D Parts To Drafting Detailing

Individual Roles

Individuals with an Industrial Design role tend to focus on the form and aesthetics of a design. They may work entirely with 3D models and not be interested in 2D drawings or manufacturing information.

Individuals in this role are more interested in the nominal geometry than in tolerance deviations.

They may mainly use 3D models, but occasionally generate an informal 2D drawing to get a prototype made.

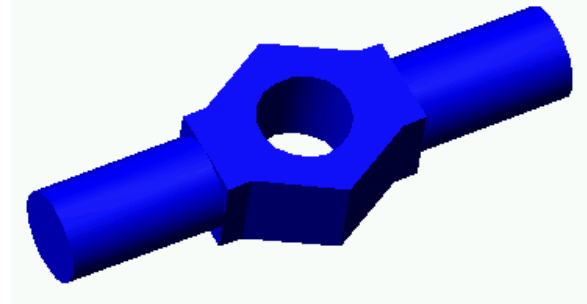


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Manufacturers work with surface finish, dimensions, and tolerance. This information is traditionally presented in 2D drawing views.

Drafting users typically focus on the appearance of 2D documentation. They may create 2D drawings from existing parts and assemblies, or create drawings from scratch.

In their view, dimensions and other notation belong to the drawing view instead of the 3D part.

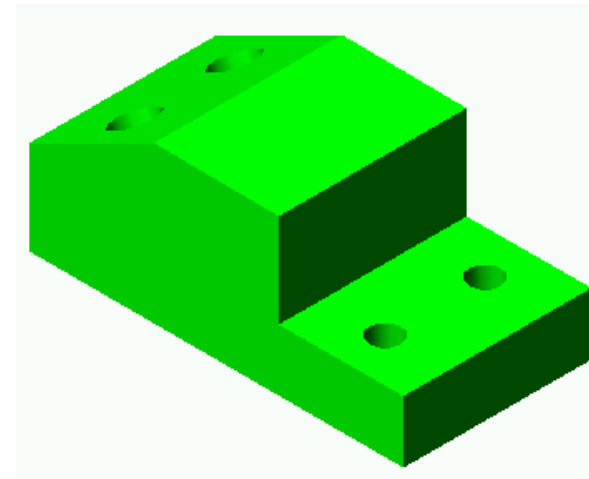


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CREATING DRAWING VIEWS

CADD software may create the drawing views automatically from your 3D part. You start from a base view and then add the different types of views that you desire such as orthographic, auxiliary, or isometric.

A typical process for creating 2D drawings is
get a 3D part,
create the 2D drawing and,
add annotation to it.

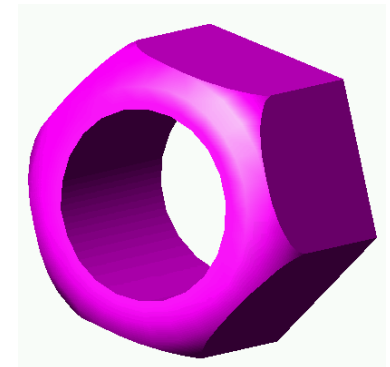
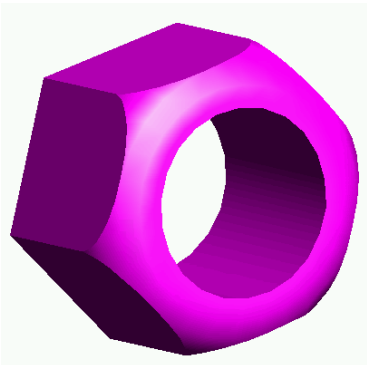


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Another great feature is that the drawings will update automatically as you change your part.

Even the hidden lines can be added automatically.

In addition to the necessary views and the annotation, you may need to include additional “special” views common to engineering drawings.





Transferring 3D Parts To Drafting Detailing

There are six basic view types: base, ortho, aux, iso, detail, and broken. You can add hidden lines and sections to these views.

Base. The base view is the first view to be created since it is used to create other views.

Ortho. This is the typical orthographic view that is projected from another view, either horizontally or vertically.

Aux. This is an auxiliary view that is created perpendicular to a selected edge on another view.


Iso. This type of view represents an isometric view at the standard 30 degree angle.

Detail. The detail view is used to focus on a particular area of an existing view.



Transferring 3D Parts To Drafting Detailing

EXTRACTING DATA FROM 3-D MODELS



It is relatively easy to extract a drawing from a 3-D solid model, and most currently available computer-aided design software packages have this capability.

Other data that you may wish to extract from your 3-D model include on-screen measurements and the physical properties of a model.

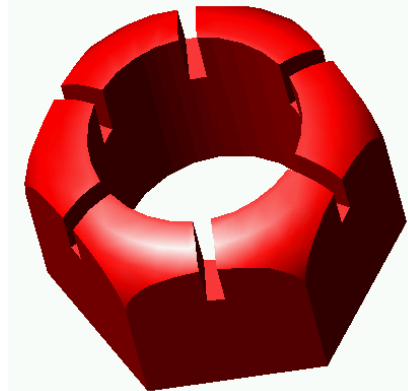
Some applications, such as stereo lithography and rapid prototyping, require that you extract cross sections from models at various locations.

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Extracting Physical Data from 3-D Parts

In some instances, you may wish to compute the physical properties (such as volume or weight) of your 3-D models.

The types of properties that can be typically calculated from a 3-D part definition include the surface area, volume, mass, density, and center of gravity of the part.





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Creating 2-D Drawings from 3-D Models

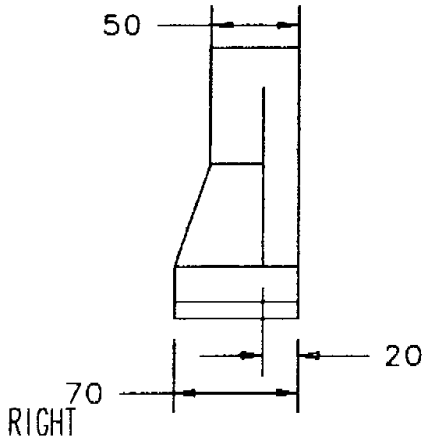
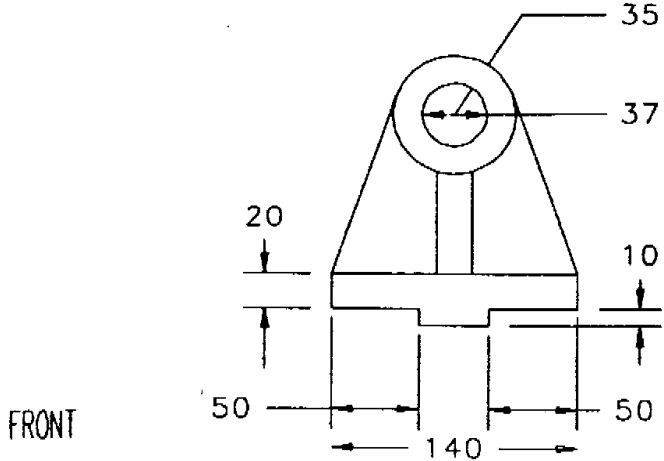
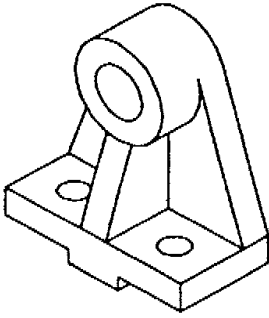
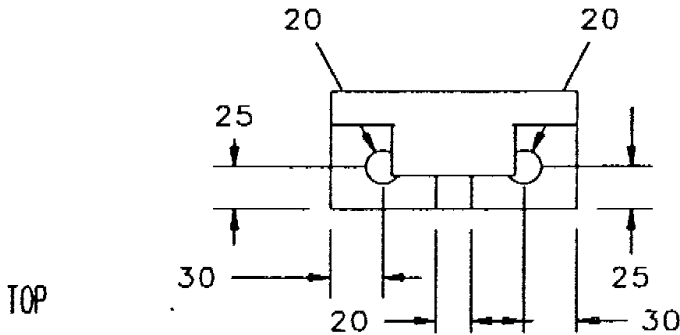
When creating a drawing from a 3-D model, you first typically specify the size of the paper on which you wish to create the drawing.

The scale you use for your drawing will depend on the size of the part relative to the size of the paper you are using.

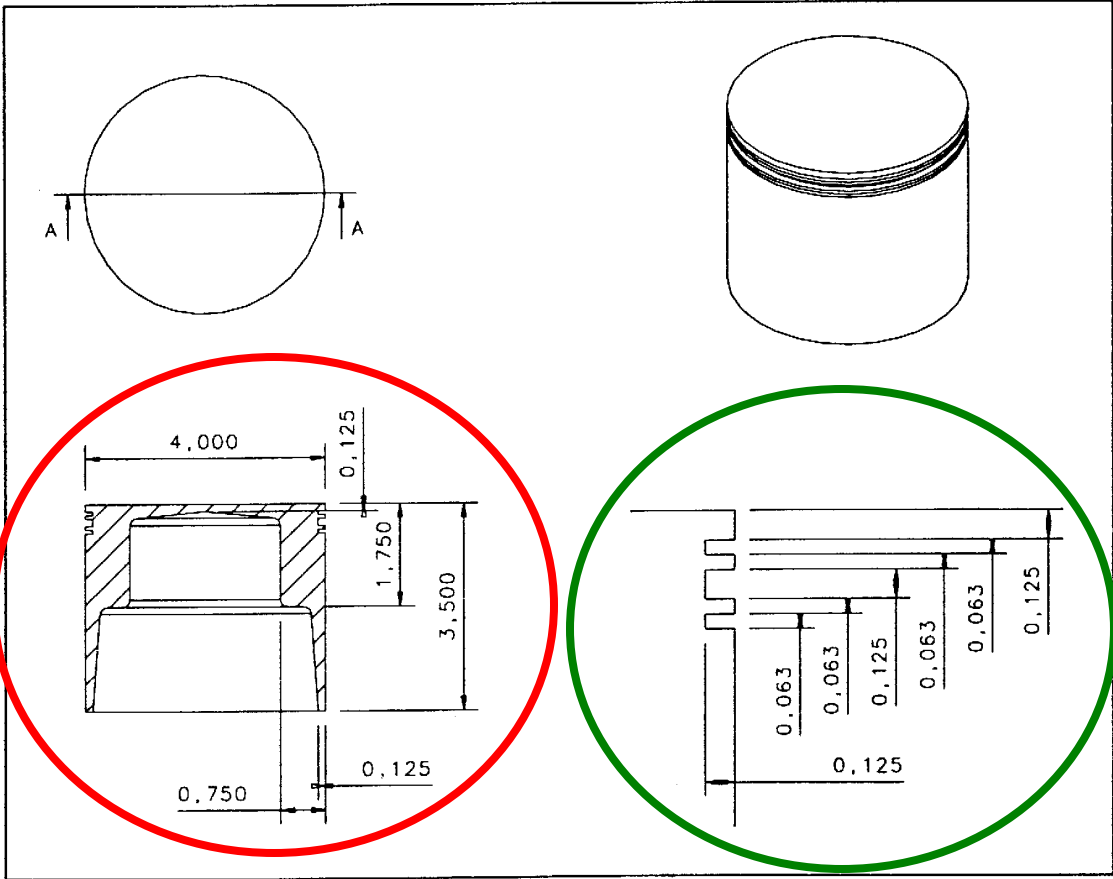


You may need to specify before you create your drawing from an object is whether you wish to include a title block on the drawing.

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Cross-Section

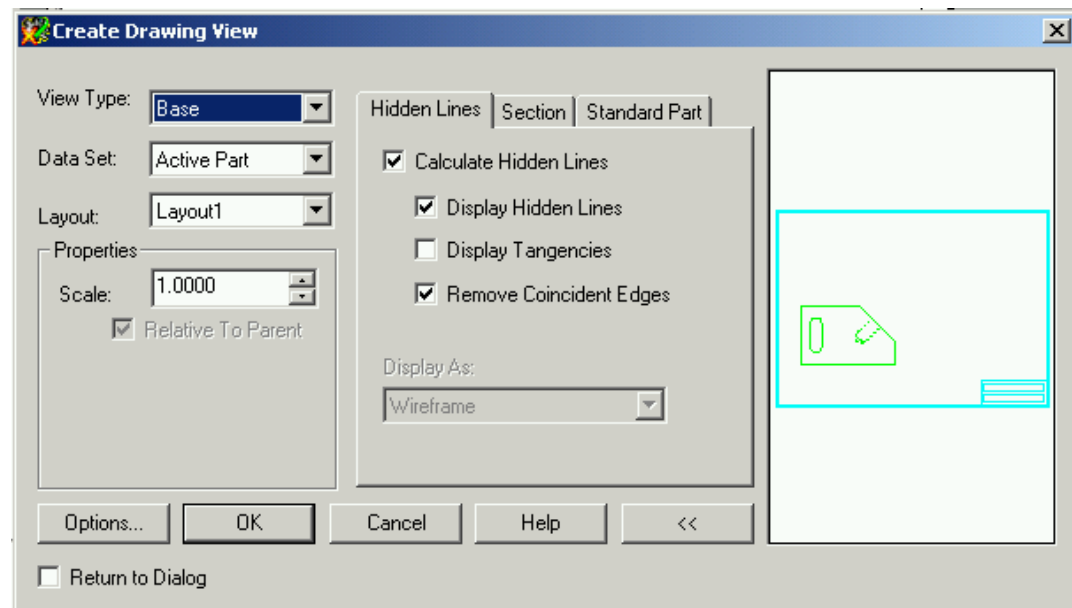
Detail

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Basic Concepts of Creating Drawing Views

The first view you create is a BASE view.

Next you create an orthographic top view for the part.



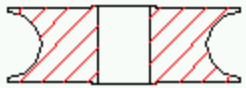
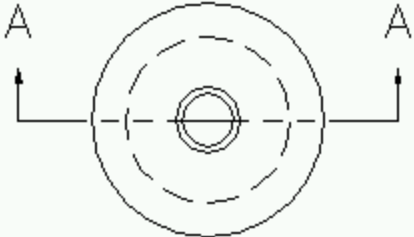
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Basic Concepts of Section Views

The first view you create is a BASE view.

- Set Section tab
- Select BASE view
- Locate orthogonal view
- Enter section type (point or work plane)



SECTION A-A

Transferring 3D Parts To Drafting Detailing

Editing Created Views

To edit created views you may use this dialog box. You can control

- Scale
- Hidden line
- Display
- Standard part drawing

