Using the IGES SETUP Dialog Box

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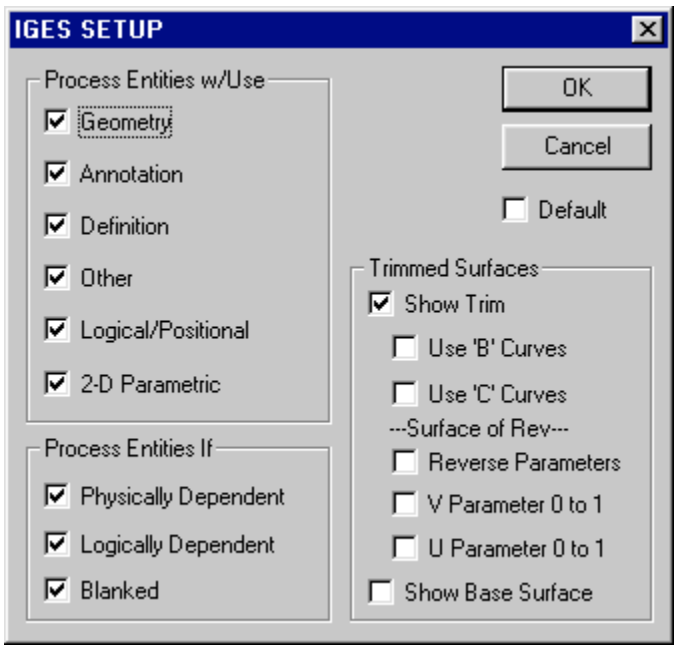
Introduction

PC-DMIS gives you the ability to determine how an imported IGES file will look inside the Graphics Display window. This is controlled by the various check boxes you can select in the **IGES SETUP** dialog box.

The purpose of this document is to give detailed information on the **IGES SETUP** dialog box so that you can better determine what you want displayed in the Graphics Display window.

The information in this document will be made available in th *PC-DMIS Reference Manual* for PC-DMIS version 3.5.

IGES SETUP dialog box



IGES SETUP dialog box

The **IGES SETUP** dialog box allows you to view all or part of the CAD / DIMS image by controlling what gets processed when you import an IGES file.

To view all or part of your CAD / DIMS image:

1. Select the desired check box options.
2. Click the **OK** button. The **IGES SETUP** dialog box will close.
3. Click the **Process** button in the **IGES File** dialog box.

PC-DMIS will draw the selected CAD / DIMS image with the requested features. If the **Default** check box is selected, PC-DMIS will use the current setting to process all future entities.

The **Surface of Revolution** check box is available if trimmed surfaces are being used that have a surface of revolution as a base surface and it is not being read in correctly. If this is the case, simply select the appropriate options in the **Trimmed Surfaces** area of the dialog box.

All the check boxes available on this dialog box are discussed in the following topics.

The 'Process Entities with Use' Area

The **Process Entities with Use** area contains the following six check boxes that allow you to select the possible CAD / DIMS image setup options. They are described in this table:

Check Box	Description
Geometry	Determines whether or not to import the geometric entities from the file. Geometric entities are the curves and surfaces that define the model.
Annotation	Determines whether or not to import the annotation entities from the file. These entities are used to add annotation or description to a file. These include angular dimension, diameter dimension, flag note, general label, linear dimension, ordinate dimension, point dimension, radius dimension, general symbol, and sectioned area entities.
Definition	Determines whether or not to import the definition entities from the file. These entities are used in definition structures of the file. These include general note, leader, associatively definition, line font definition, macro definition, subfigure definition, text font definition, text display template, and network subfigure definition entities.
Other	Determines whether or not to import the other entities from the file. These entities are used for other purposes such as defining features in the file. Currently, these include the color definition entity and the dimensioned geometry associatively.
Logical/Positional	Determines whether or not to import the logical/positional entities from the file. These entities are used as logical or positional reference by other entities. Currently, PC-DMIS does not process any entities that are of this type.
2-D Parametric	Determines whether or not to import the 2-D parametric entities from the file. These entities are positioned in two-dimensional XY parameter space, and are considered a subset

	of three-dimensional XYZ space, by ignoring the Z coordinate. This entity type is intended for use in defining trimming curves on surfaces. Currently, PC-DMIS ignores this check box. For more information, see "The 'Trimmed Surfaces' area" below.

If you select all six check boxes, then all IGES entities in the IGES file will be imported.

The 'Process Entities If' Area

The **Process Entities If** area contains check boxes that allow you to process certain entities when they meet certain conditions. The following table describes the available conditions that are met and the description of each check box:

Condition	Description
Process entities if Physically Dependent	Determines whether or not the base surface of a **Curve on Parametric Surface** will be shown.
Process entities if Logically Dependent	Determines whether or not logically dependent entities will be imported from the IGES file.
Process entities if Blanked	Determines whether or not blanked entities will be imported.

The 'Trimmed Surfaces' area

The **Trimmed Surfaces** area contains check boxes that you may use to properly process Trimmed Surfaces.

Check Box	Description
Show Trim	Shows the trimmed surface.
Show Base Surface	Shows the untrimmed surface (base surface).
Use ‘B’ Curves	If ‘B’ curves are present in the IGES file, select this check box to use them as the trim definition. You may also need to select this check box if the model has poorly defined ‘C’ trimming curves. By selecting this check box, the ‘C’ trimming curves will be regenerated from the ‘B’ trimming curves.
Use ‘C’ Curves	If ‘C’ curves are present in the IGES file, select this check box to use them as the trim definition. You may need to use this option if the model has poorly defined ‘B’ trimming curves. By selecting this check box, the ‘B’ trimming curves will be regenerated from the ‘C’ trimming curves.

If you select the **Show Trim** check box, the other check boxes under it become available for selection. You can use either 'B' or 'C' curves as

your trim definition, depending on the attributes of the trimmed surface.

Note: Be aware that if you use 'C' curves as your trim definition, PC-DMIS will have to calculate the 'B' curves that can be quite time consuming.

Also, if the IGES file contains trimmed surfaces that have a surface of revolution as a base surface these check boxes become available for selection:

Check Box	Description
Reverse Params	Determines whether or not to fix ‘B’ trimming curves that reverse the U and V parameters.
V Param 0 to 1	Determines whether or not to fix the ‘V’ parameter that gets defined in the range 0 to 1, instead of in radians.
U Param 0 to 1	Determines whether or not to fix the 'U' parameter that gets defined with a range of 0 to 1 instead of in radians when the generatrix of the surface of revolution is an arc.
Show Base Surface	Determines whether or not to show the untrimmed surface.

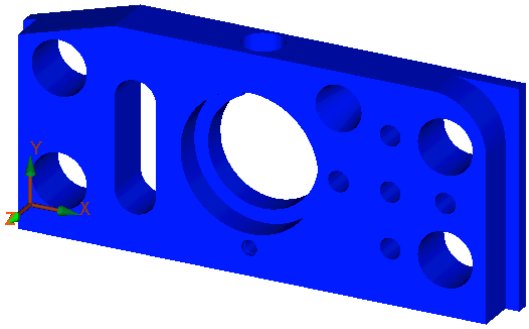
Defining Trimming Curves

You can define trimming curves in two ways:

1.) **Using 3-dimensional coordinates in model space (the coordinates the surface is defined in).** These are known as ‘C’ trimming curves because each coordinate requires three values to position it in model space (1, 2, 3; A, B, C). By definition, the curve must be defined so that it geometrically coincides with the surface. In other words, the curve must lie on the surface. However, a poorly defined ‘C’ trimming curve may break this rule.

2.) **Defining the position of the curve using relative positions on the surface.** These are known as ‘B’ trimming curves because each coordinate requires two values to position it in parametric space. For example, a rectangular surface could have the parametric position (0,0) at one corner and (1,1) at the opposite corner. Every position on the surface could then be represented using two-value pairs between these two extremes. The parametric position (0.5,0.5) would be in the center of the surface. The parametrically defined curve is represented using these 2-dimensional parameter-space points. By definition, the curve must be defined so that it does not go outside the parameter-space of the surface it lies on. However, a poorly defined surface may break this rule.

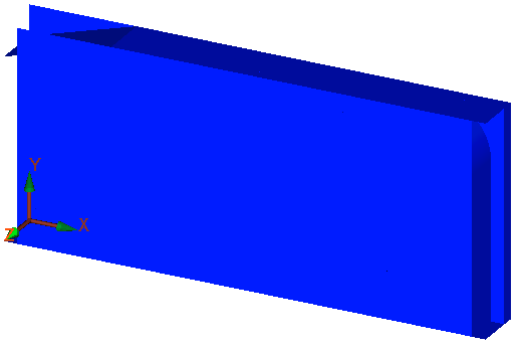
Example of Showing Trim



IGES File with ***Show Trim*** *check box selected*

Example of not Showing Trim

Using the IGES file in the "Example of Showing Trim" topic above, if you deselect the **Show Trim** check box, you will end up with an empty model. This is because this particular IGES file contains *only* trimmed surfaces. However, if you deselect the **Show Trim** check box and select the **Show Base Surface** check box, this is the result:



IGES File with ***Show Trim*** *check box not selected*

Notice that all the holes in the surfaces are gone and that the outer boundaries of the surfaces are not trimmed.

Glossary of Terms

'B' Curves

'B' Curves are trimming curves defined in surface parameter space.

Base Surface

A Base Surface is the surface that defines the underlying geometric representation of a trimmed surface. Trimming Curves

Blanked Entities

Blanked entities are entities marked as blank (not visible) by the originating system. They have a **Blank Status** of 01 in field number nine of the **Directory Entry** section of the **IGES Data** dialog box. For more information on Blanked Entities, see section 2.2.4.4 and 2.2.4.4.9.1 of the *Initial Graphics Exchange Specification IGES 5.3* (ANSI US PRO/IPO-100-1996).

'C' Curves

'C' Curves are trimming curves defined in 3-dimensional coordinate space.

Entities

Entities are the individual items in the IGES file that can be imported. They can be geometric entities such as curves and surfaces, annotation, definition, logical/positional, 2-D parametric, and other entities

Generatrix

A Generatrix is a geometric element, especially a straight line that generates a geometric figure, in this context it creates a surface of revolution by moving in a specified fashion.

Logically Dependent Entity

A Logically Dependent Entity (the child entity) can exist alone in the native database, but is referenced by one or more grouping entities (the parent entity(s)) such as the Group Associatively Entity.

Physically Dependent Entity

A Physically Dependent Entity (the child entity) is referenced by another entity (the parent entity) in the IGES file. The child entity cannot exist unless the parent entity exists. An example of a physically dependent entity is the outer boundary trimming curve on a trimmed surface.

Plane Curve

A Plane Curve is any curve that lies entirely in a single plane.

Radian

A Radian is an arc of any circle equal in length to the radius of the same circle.

Surface of Revolution

A Surface of Revolution is a surface generated by revolving a plane curve about an axis in its plane.

Trimmed Surfaces

Trimmed Surfaces are surfaces whose outer boundary is defined by a curve or set of curves. Trimmed surfaces can also have holes in them that are also defined with curves. These curves on the trimmed surfaces are called trimming curves. “Curve on Parametric Surface” is a specific IGES entity that refers to the trimming curves that define the boundaries for a trimmed surface.

Trimming Curve

A Trimming Curve is a curve on a surface that “trims” away portions of the surface. For example, a trimming curve could trim a circular hole in a flat, rectangular surface.