

Realistic Fasteners in AutoCAD Plant 3D

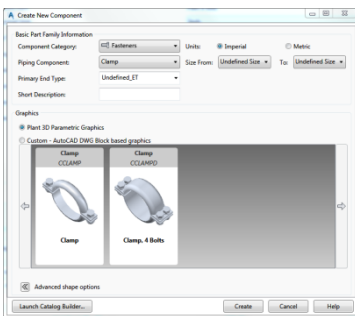
AutoCAD Plant 3D

The default clamp fasteners in AutoCAD Plant 3D are modelled from simple parametric shapes. These shapes are generic and do not necessarily reflect the detailed appearance of industry standard components.

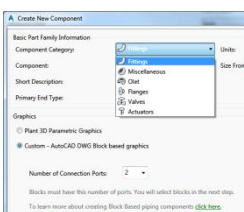
In this White Paper, we will discuss how we can use AutoCAD blocks to create detailed models of clamps that we can use in an AutoCAD Plant 3D Pipe Spec.

Catalog Editor

The Catalog Editor provides just two default parametric shapes to choose from.

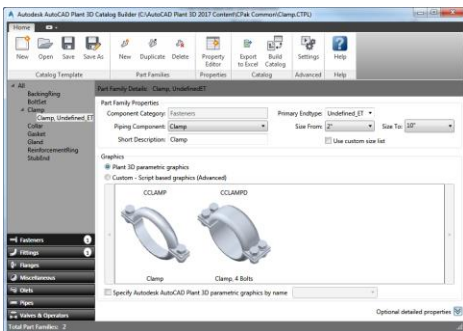


The Custom – AutoCAD DWG Block based graphics option does not show Fasteners in the Component Category, so we cannot use this option to create new block based fasteners in a Catalog.



Catalog Builder

If we look at the options available in the Catalog Builder, we see that it is not possible to specify Custom – AutoCAD DWG Block based graphics as a Graphics option for a Clamp or any other type of Fastener. We have the same parametric shapes available that we have in the Catalog Editor and the option to specify Custom - Script based graphics.



If we have a detailed CAD drawing of a clamp that we want to use, there is no obvious way to do so. However, it can be done indirectly.

We use the Catalog Builder to create a template for another type of component or Part Family to which we assign our CAD drawing. We then edit the Component Category and type in the template before we build the catalogue.

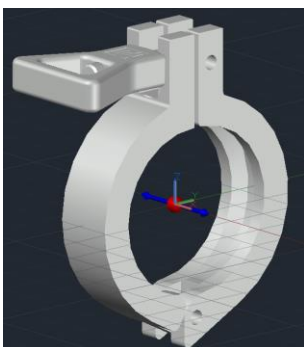
PlantPartConvert

As is the case with any type of fitting for which we want to use a CAD drawing, we must create an AutoCAD block from the drawing and then convert the block to a Plant Part. It is worth remembering at this stage that we will need a unique block for each size of fitting that we want to add to a Piping Catalog.

The best way to manage this is to create a new AutoCAD DWG file and create blocks for the full size range of the fitting within this one file.

If we look at any existing parametric clamps, we can see that they are defined as having 2 connection ports of EndType **Undefined_ET**. The ports are co-located at the centre point of the clamp.

After creating our blocks we run the **PlantPartConvert** command in AutoCAD Plant 3D to add 2 connection ports to the centre of each block as we convert them to Plant Parts.

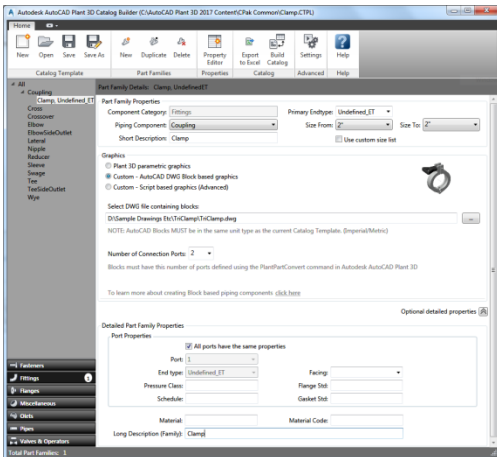


Create Catalog Builder Template

Now that we have created Plant Parts to represent our Clamp fastener, we can launch the Catalog Builder to create a new Catalog Template.

Ideally, we would like to be able to create a new Part Family of type Clamp. But, as explained previously, we do not have the option for Custom – AutoCAD DWG Block based graphics.

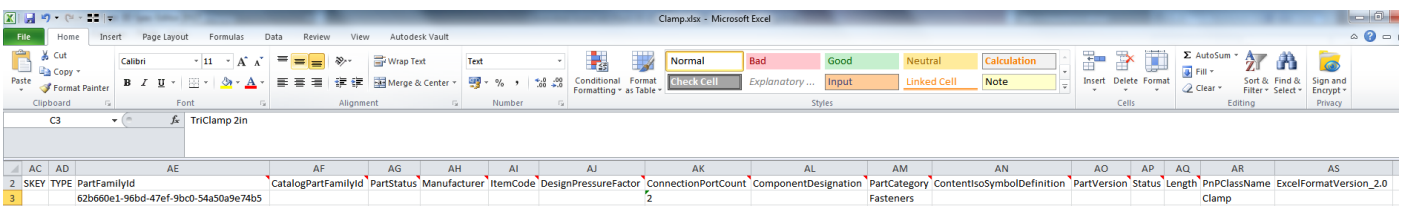
Instead, we will create a new Part Family of type Coupling but fill out the template with the details of our Clamp.



Next, we export the template to Excel.

We edit the Excel workbook and select the sheet containing the definition of our Clamp. We need to expand all columns to full width and scroll across the worksheet to see columns PartCategory and PnPClassName.

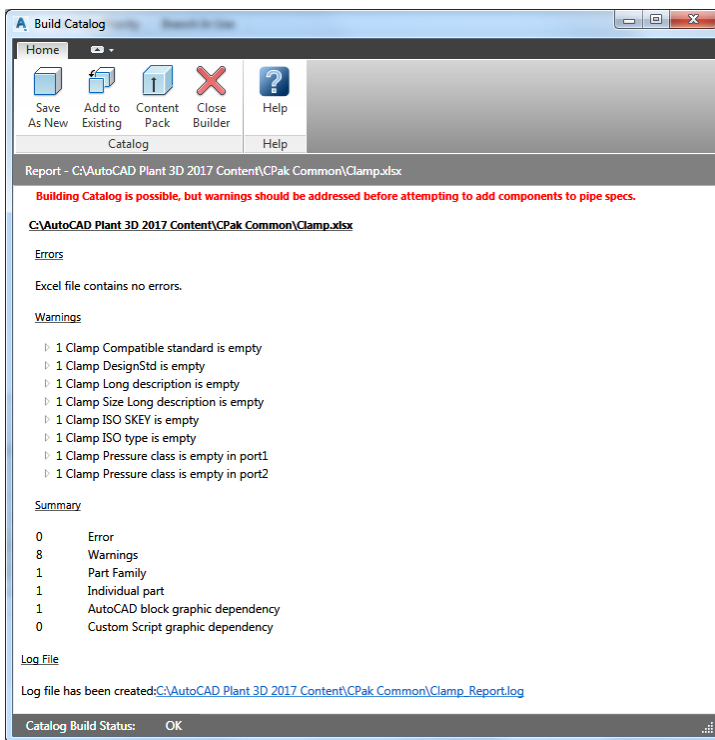
These columns initially contain the values Fittings and Coupling respectively – the values that we specified in the Catalog Builder Template. We will now change these values to Fasteners and Clamp – before we can do so we must Unprotect the Excel worksheet (on the Review ribbon) as these columns are protected – and save the workbook.



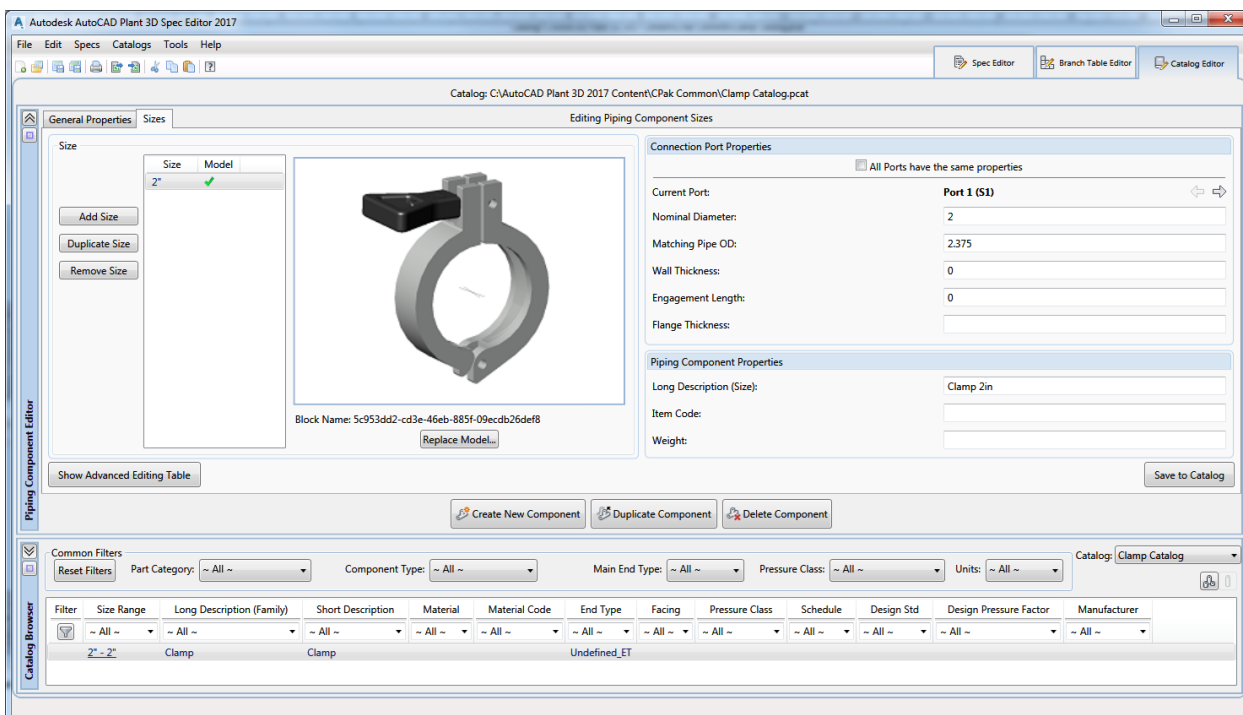
AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	
2	KEY	TYPE	PartFamilyId	CatalogPartFamilyId	PartStatus	Manufacturer	ItemCode	DesignPressureFactor	ConnectionPortCount	ComponentDesignation	PartCategory	ContentIsoSymbolDefinition	PartVersion	Status	Length	PnPClassName	ExcelFormatVersion_2.0
3			62b660e1-96bd-47ef-9bc0-54a50a9e74b5					2			Fasteners					Clamp	

Build Catalog

Having updated the Excel workbook we can now return to the Catalog Builder and build a catalog that contains our Clamp fastener.



The new catalog will contain a placeholder for each size of Clamp that we specified in the template. We must open the catalog in the Catalog Editor, use the **Replace Model...** button to select the correct block for each size of Clamp and save the catalog.



The Clamp is now available to add to a Pipe Spec for use in AutoCAD Plant 3D.

