# 2D/3D Libraries : Usage

In this task, you will learn how to install the thinkparts run-time module of ThinkDesign and import the sample catalog. You will also see how easy it is to import and place parts into a model or an assembly.
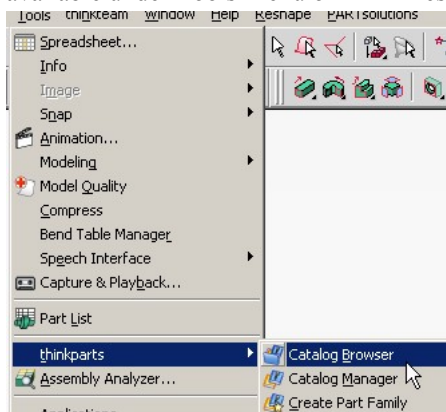
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## 1. Step 1: Import the Sample Catalog

In this step, you are going to become familiar with using both the **Catalog Browser** and the **Catalog Manager**.
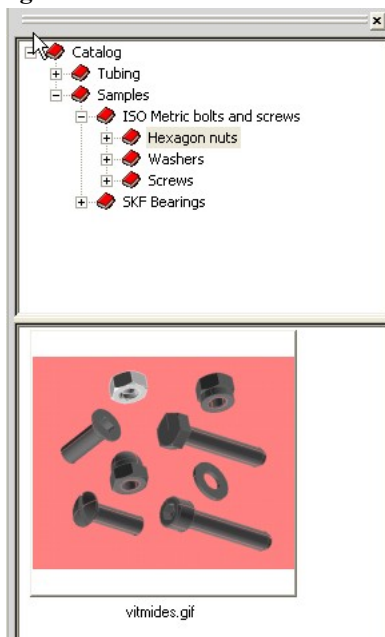
First you should make sure that you have thinkparts installed on your workstation. thinkParts commands are available under Tools Menu of ThinkDesign.

- If you do not see a selection for **Catalog Browser** or **Catalog Manager**. Click here to learn how to install thinkparts.

- If you do see these options, you are good to go.

Next we will import the sample catalog into the **Catalog Browser**

- Select **Catalog Browser** from the pull down menu to open the Catalog Browser window.

Look for a SamplesIndex in the Catalog Tree. If it is not there (and odds are it's not), you should import the sample files. (If it is already there, go on to the next step.)

- With the Catalog Browser open, right click on the catalog item in the library tree and select **Import Catalog** from the context menu.
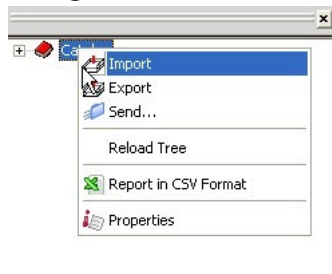
- Select the SAMPLE Catalog file located in the thinkparts import sub-directory of ThinkDesign installation directory and click Open. This may take awhile.
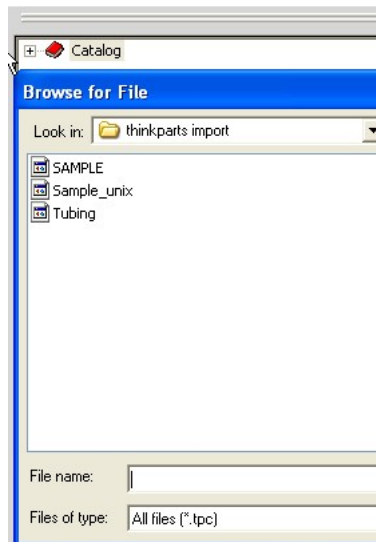
Note the two indexes that are imported as your samples.

- When you click on the name of either of these indexes you will see a graphical view of its contents in the preview frame.
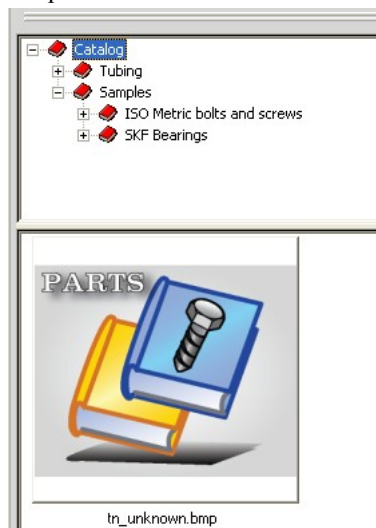


- Now click on the name of one of the fasteners: notice the corresponding picture that highlights when you select that particular fastener.

vitmides.gif

Now that we have imported our samples, leave the catalog browser open. In the next step we will learn how to import a component.

# 2. Step 2: Import the First Component

In this step you will learn how to import a component from the catalog into your assembly model.

- Open the Assembly.e3 file.
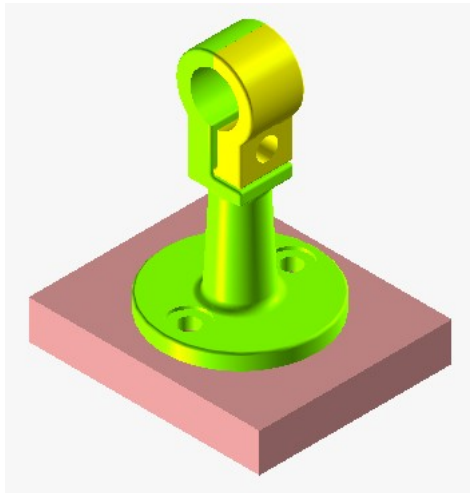


The model has two counterbored holes on its base that take M14 X 60 - 8.8 Hex Head Screws, M14 15 X 28 Washers and M14 Hex Nuts. There is also one hole in the center of the model that takes an M16 X 80 - 8.8 Hex Head Screw, an M16 Hex Nut and an M16 Self-locking Hex Nut

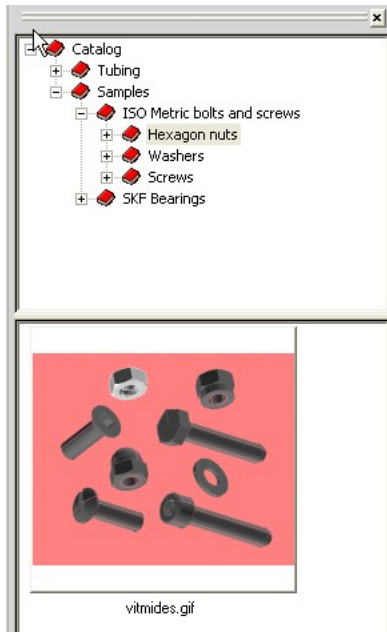- You can extend the Catalog Browser window by dragging the left side to the left or right. Also, you can drag the Catalog Browser window outside of ThinkDesign when you would like more space in the modeling window. The Catalog Browser will always remain in front of ThinkDesign for easy access

tn_unknown.bmp
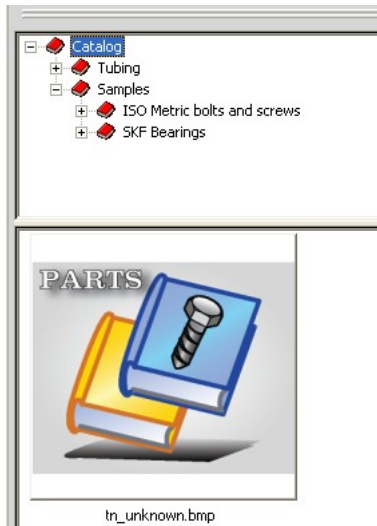
**Important Note to Remember:**

If you make a mistake while importing a component you can either:

- Redefine the mating constraints by going into the History Tree of the model and right clicking on the particular constraint that you want to redefine; or

- Undo up to the point where the component was inserted (selecting undo until the mating constraint(s) disappears in the History Tree), and place the correct mating constraint(s) at that time.



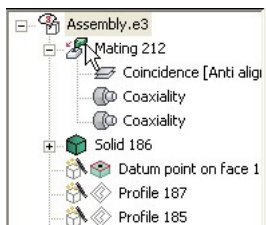Now let's import our first component from the ◆ Washers catalog. We are looking for an M14 15 x 28 washer.

- Expand the ◆ Washers catalog by clicking on the ⊞ Plus sign next to it, and open Washers for hexagon bolts and nuts. You can either Double Click the item or Right Click and select Open from the context menu.

- In the parts window, scroll down in the list view pane. The washer we are looking for has an M value of 14, a d1 value of 15 and a d2 value of 28. Click on the column labels to sort the list and help you locate the part.

- Right click on the entry and select Import from the context menu, or just double click on it to import the washer.
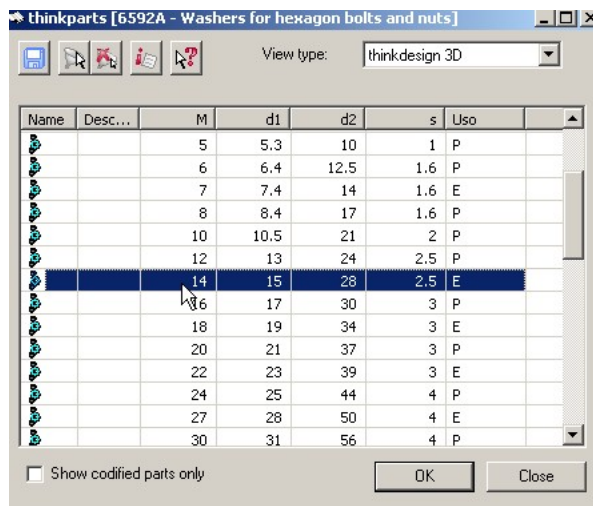
Having initiated the import process, switch to the ThinkDesign model file window. You are now ready to select the points and faces needed to place and constrain the washer.

- At the Enter the new position prompt, select the center of one of the counterbored holes. The exact point is not critical, since we will be constraining the part into place. The system will prompt you for the constraints.
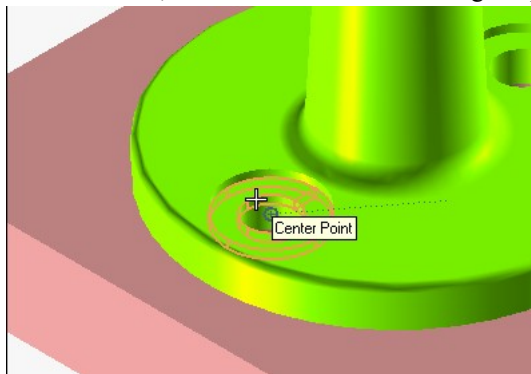


- For the Select the shoulder prompt, select the bottom flat of the counterbored hole. This prompt is for the co-incident constraint that locates the washer's depth correctly in the counterbore.

- Finally, for the Select the hole prompt, select the inside face of the counterbored hole. This will indicate to the system what face to use for constraining the inside face of the washer concentric to.
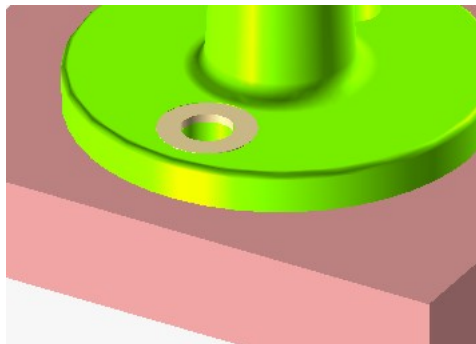


The first piece of the fastener assembly puzzle is in place, so let's move on and add nuts and screws.

# 3. Step 3: Importing the Nut & Hex Head Screw

In this step we will import the remaining parts for our fastener assembly.

Now we are looking for an M14 nut next. We will use the ▤**Filter by Form** to find all the nuts with a nominal diameter of 14.

• Switch back to the Catalog Browser window if its opened.

• Expand the ◆ Hexagon nut catalog and open the Standard hexagon nuts index from the Catalog Browser.

• Click on the Filter by form button. Enter 14 for the Condition(1) value and hit OK to apply the filter.
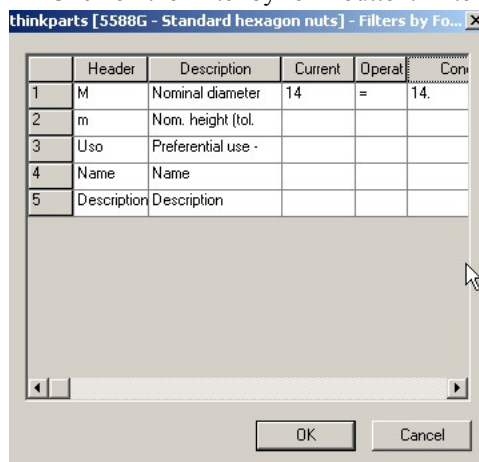


• There is only one nut that passes the filter, so import it by either double clicking it, or by using the context menu.
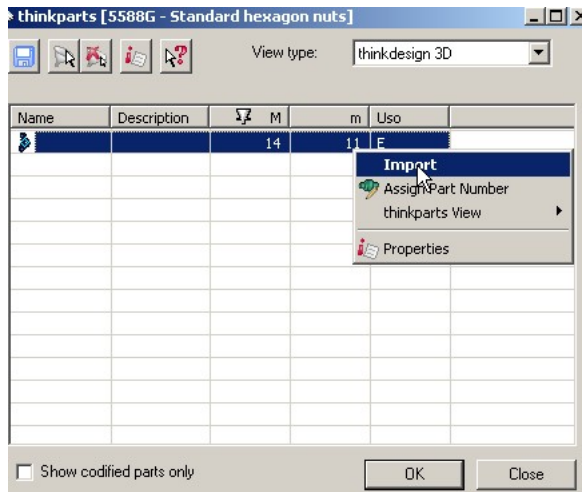
As with the washer, the model window is activated and you are prompted to place the nut. This time, there are four prompts to position and constrain the new component.

- At Enter the new position prompt, select the center of the hole on the bottom of the square base, below the point where you placed the washer.

- Next, you are prompted to Select the shoulder. Select the bottom face of the base to add the coincident constraint between the shoulder of the nut and the bottom of the base.



Continuing with the process, remember that if you get confused about the prompts, look at the part you are importing: the face or feature that you are constraining is highlighted.
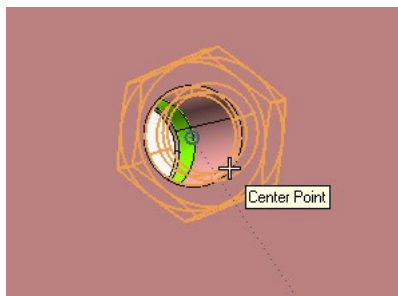
- At the Select the hole prompt, select the hole in the base to apply a concentric constraint.

- Finally, you are prompted to Select the alignment surface. Select the edge of the base to apply a parallel constraint between it and one of the flats on the nut. If the alignment of the nut doesn't matter to you, press `Esc` to skip it.
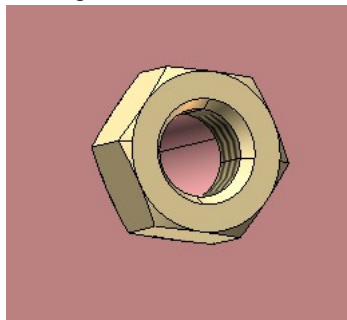


Now we shall insert the screw to complete the fastener assembly. We want an M14 x 60 - 8.8 Hex Head Screw.

- Expand the ◆ Screws catalog and open the Hexagon head screw - partially threaded shank index located within.

- Apply another ▦**Filter by Form** on the Nominal length and diameter. Use a Value of 60 for the length and a Value of 14 for the diameter and hit OK.

| | Header | Description | Current | Operat | Con |
|---|---|---|---|---|---|
| 1 | M | Nominal diameter | 14 | = | 14. |
| 2 | k | Head nom. height | | | |
| 3 | I | Nominal length [mm] | 60 | = | 60. |
| 4 | Uso | Preferential use - | | | |
| 5 | Name | Name | | | |
| 6 | Description | Description | | | |
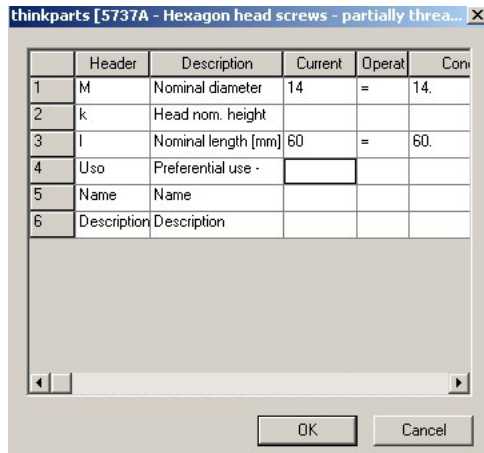
We have now applied filters on both the nominal diameter and the nominal length. This leaves only one possible screw.

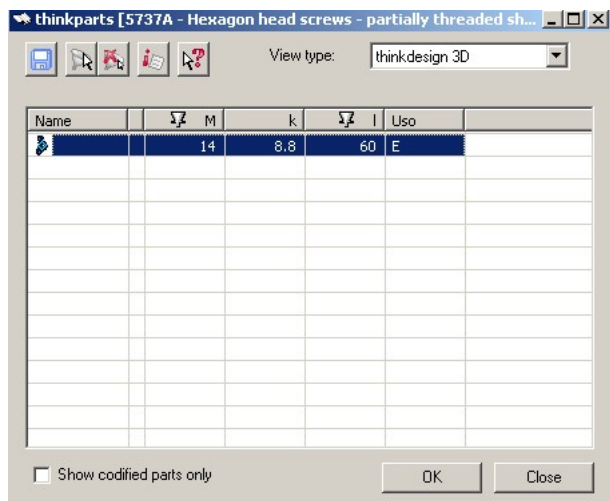| Name | | M | k | I | Uso | |
|---|---|---|---|---|---|---|
| | | 14 | 8.8 | 60 | E | |

Now that you have done this a couple times, you should be able to insert the screw with no problem.

- Select the center of the washer for the initial position of the screw, then select the top face of the washer at the Select the shoulder prompt.

- Next, at the prompt for the concentric constraint select the hole in the green part.

- This time, instead of selecting an alignment surface for the screw head orientation, just hit ⎡Esc⎤ to skip it. We will leave it where it is.
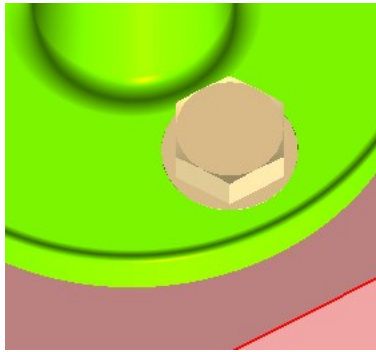
Nice work, but we are not done yet. In the next step we will copy this fastener assembly onto the other hole.

# 4. Step 4: Copy Components

In this step we will copy the fastener components we just created, and insert them into the remaining hole.



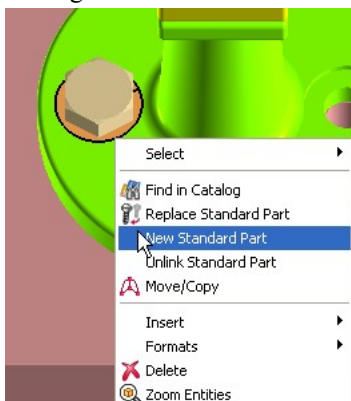We are going to use the same fastener assembly in each hole. Instead of repeating the process we have just completed, let's try a new command.

- Click the washer inserted in the last step so that it's highlighted.

- Right click and select New Standard Part from the context menu.

Hey, we have seen this prompt before. Follow the prompts to insert a new instance of the washer in the other counterbore.

- Select the center of the hole for the initial placement.

- Select the bottom of the counterbore as the shoulder.

- Select the hole in the green part at the prompt.
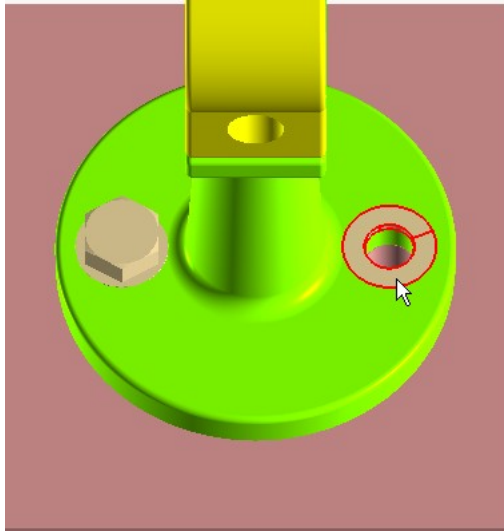


Using New standard part command, we can place new instances of existing parts into the assembly..

- Create new instances of the screw and nut in the other hole.
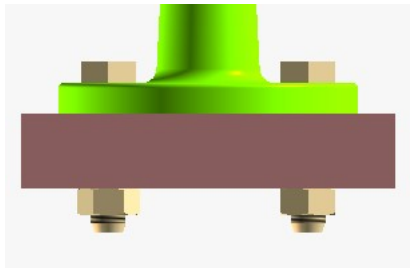


Good going. Now we will see how to replace a component with a different one.

# 5. Step 5: Replace a Component

In this step we will attach the yellow clip to the green post with another fastener assembly. Rather than just searching the database and placing parts like the first fastener assembly, we will use the Replace Standard Part feature.

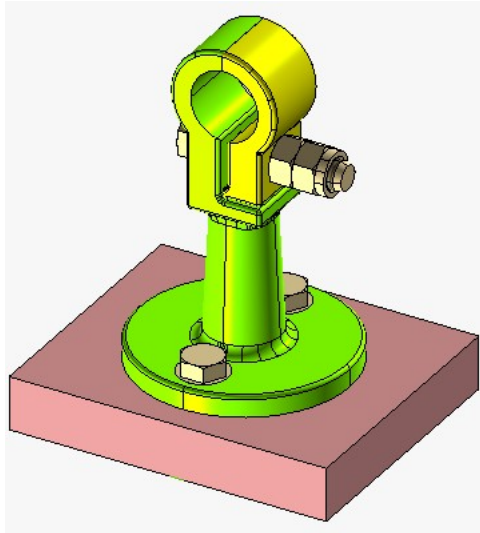Before we can replace a part, we should create a new instance of one of the nuts we used earlier.

- Create a new instance of one of the nuts with New Standard Part command.

- Place the new instance of the nut on the yellow clip at the center of the hole.

- Select the shoulder and hole to constrain the part to the hole in the clip.

- Double click in the graphics area to end the command sequence.
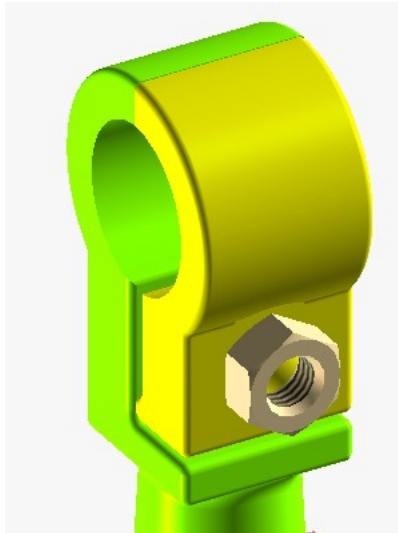


We have a nut, but it's not the right size. We shall use Replace Standard Part to replace this nut with one that's a bit larger.

- Right click on the nut and select Replace Standard Part from the context menu.
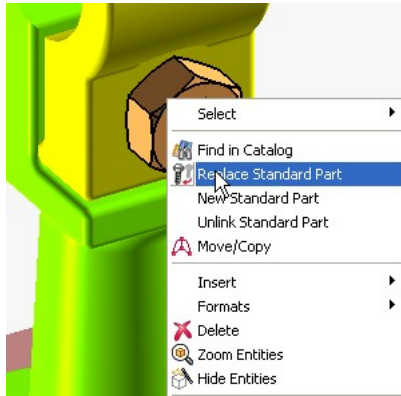
Replace Standard Part automatically opens a new Parts window with the current part highlighted, letting you know what you are replacing.
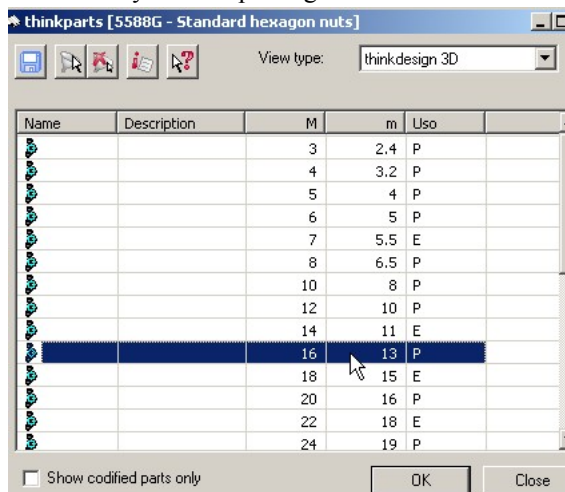


We need to change the existing part to an M16 Hex Nut.

• Scroll down and either double click on the 16 entry in the list view, or right click in it and select Replace to update the part.
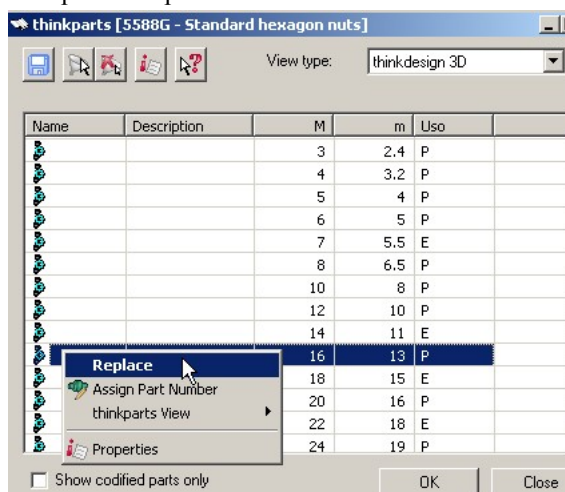


BOOM! It automatically replaces the old component with the new component and uses the same mating constraints.

Now that you are familiar with importing and updating parts, use whatever method you prefer to finish the fastener assembly. If you do not see the part you need, use Remove all filters to display all parts.

- Place an M16 x 80 - 10 Hex head screw on the green base.

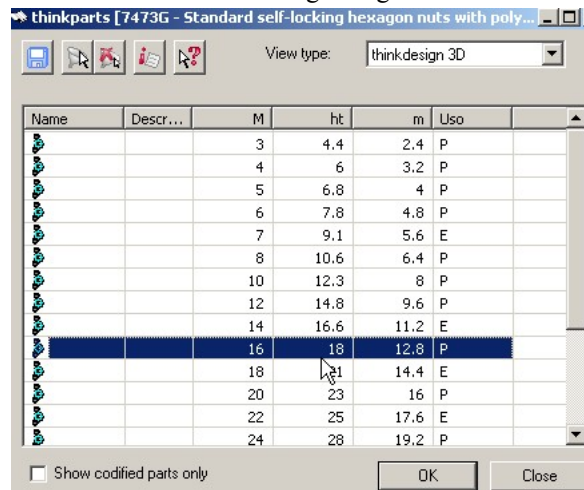| Name | Description | M | k | l | Uso | |
|------|-------------|-----|-----|-----|-----|---|
| | | 14 | 8.8 | 90 | E | |
| | | 14 | 8.8 | 100 | E | |
| | | 14 | 8.8 | 110 | E | |
| | | 14 | 8.8 | 120 | E | |
| | | 14 | 8.8 | 130 | E | |
| | | 14 | 8.8 | 140 | E | |
| | | 16 | 10 | 65 | P | |
| | | 16 | 10 | 70 | P | |
| | | 16 | 10 | 80 | P | |
| | | 16 | 10 | 90 | P | |
| | | 16 | 10 | 100 | P | |
| | | 16 | 10 | 110 | P | |
| | | 16 | 10 | 120 | P | |
| | | 16 | 10 | 130 | P | |

□ Show codified parts only    OK    Close
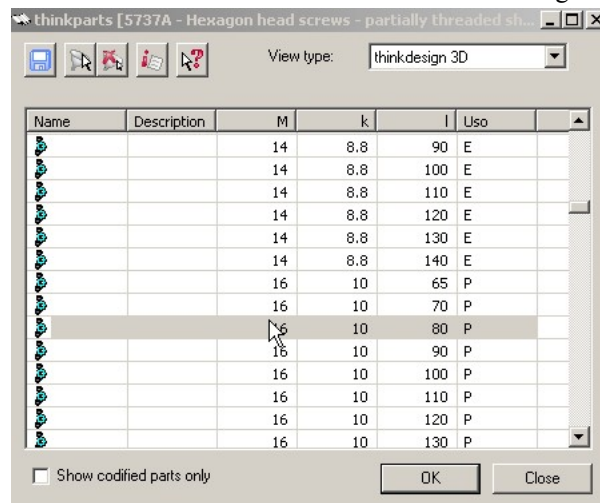
- Use an M16 Self-locking hexagon nut to lock it down.

| Name | Descr... | M | ht | m | Uso | |
|------|----------|-----|------|------|-----|---|
| | | 3 | 4.4 | 2.4 | P | |
| | | 4 | 6 | 3.2 | P | |
| | | 5 | 6.8 | 4 | P | |
| | | 6 | 7.8 | 4.8 | P | |
| | | 7 | 9.1 | 5.6 | E | |
| | | 8 | 10.6 | 6.4 | P | |
| | | 10 | 12.3 | 8 | P | |
| | | 12 | 14.8 | 9.6 | P | |
| | | 14 | 16.6 | 11.2 | E | |
| | | 16 | 18 | 12.8 | P | |
| | | 18 | 21 | 14.4 | E | |
| | | 20 | 23 | 16 | P | |
| | | 22 | 25 | 17.6 | E | |
| | | 24 | 28 | 19.2 | P | |

□ Show codified parts only    OK    Close

By selecting the correct position for the nut, you can skip the 'select hole' prompt, where the hole is obscured by the other parts.
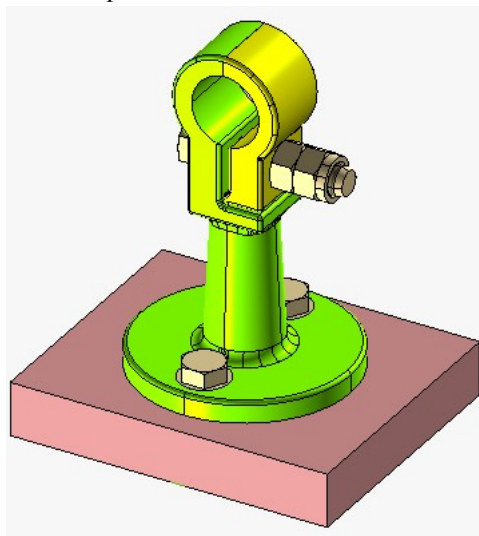
Congratulations! You are now an expert on inserting and manipulating components from the Catalog Browser.