Part List (BOM)

In these tasks we will create an exploded view of an assembly. While doing so we will learn how the assembly has been put together. We'll also see how to label parts, and how to change those labels. But before we start exploding the assembly, we'll learn about parts data and how to enter it. Data may be a part number and description, as well as parts characteristics like materials, etc. We'll have a closer look as we continue, so put on your hard hat and let's get going.

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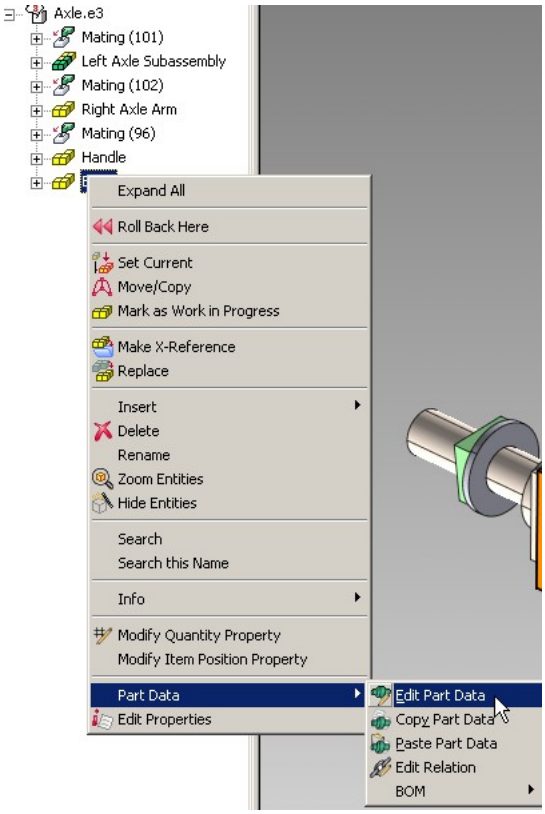
1. Step 1: Part Properties

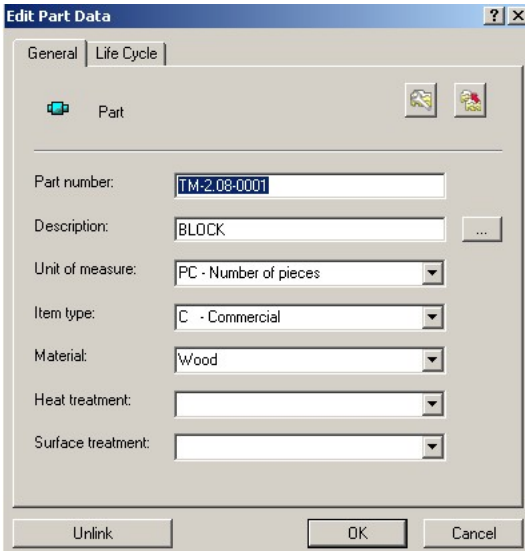
For the first five steps, we'll be inspecting each of the components' part data. We'll make sure that each component contains data and if it doesn't, we'll fill it in.

Let's look at the Block information to make sure we are dealing with the right parts.

- Make sure the History Tree is open.
- Right click the Block.
- Select **Edit Part Data**.



As you can see the part data fields are all filled in. This part has a parts number which identifies it, a description of the part, the unit of measure, the type of part it is, and the material from which it's made. The other two fields are heat treatment and surface treatment. This part has no treatments so those fields are blank.



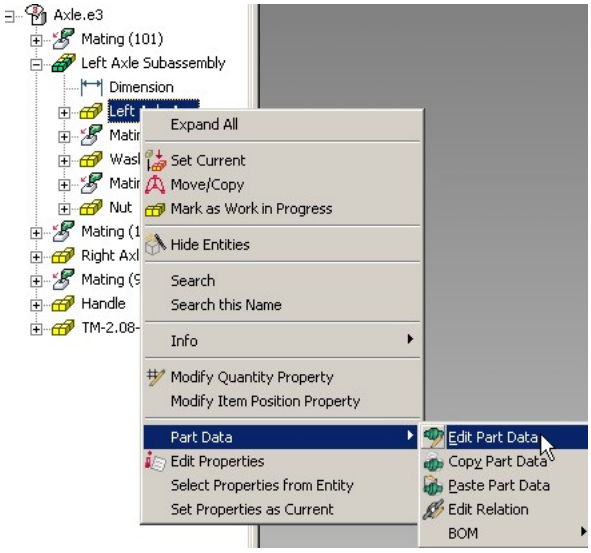
- Hit OK or Cancel.

2. Step 2: This One's Also Full

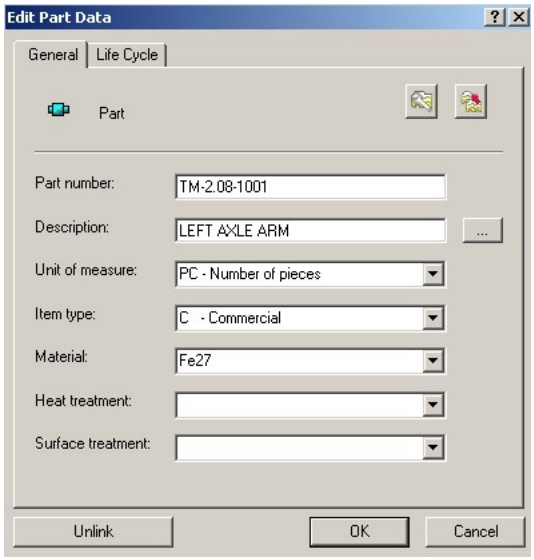
The left axle is a little different from the Block because it's made up of other components. In other words, it's a subassembly. We can still get at the part data though; we just have to go down one level to get at it.

Let's check the left axle.

- Click the ⊞ next to the Left Axle.
- Right click the Left Axle Arm
- Select **Edit Part Data**.



This part's data is complete, so we don't have to do anything here.

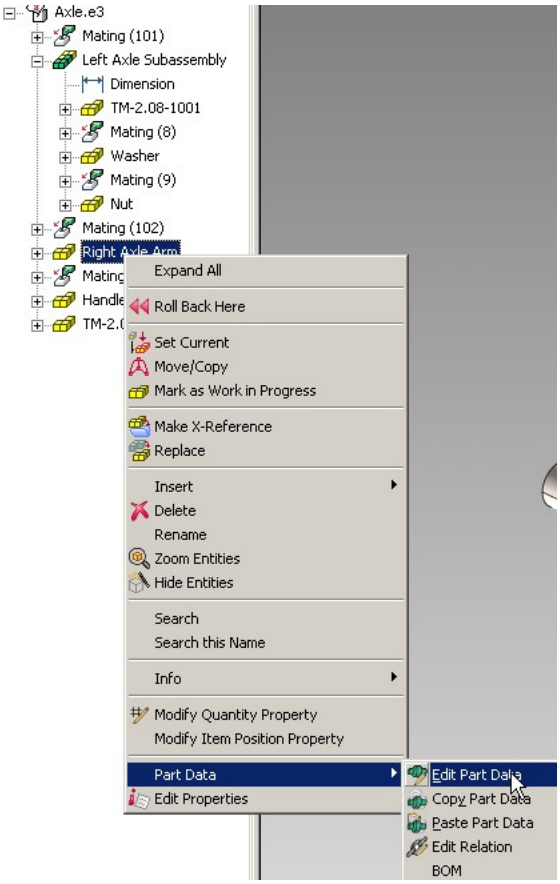


- Hit Cancel and let's move on.

3. Step 3: Fill in the Blanks

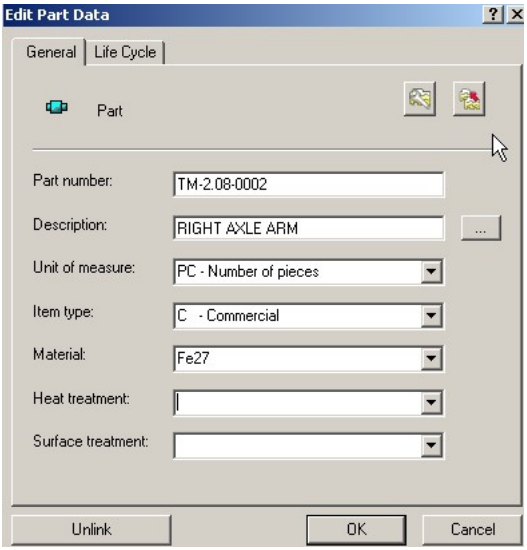
Here's a part without any data.Fill in the data so that it matches the picture below.

- In the History Tree right click the Right Axle Arm
- Select **Edit Part Data**.



The Part Properties dialog is empty.

- Type in the Part number: which is TM-2.08-0002, once you switch to the next field, the number will be entered into the component database.
- Click in the Description: field.
- Type in RIGHT AXLE ARM.

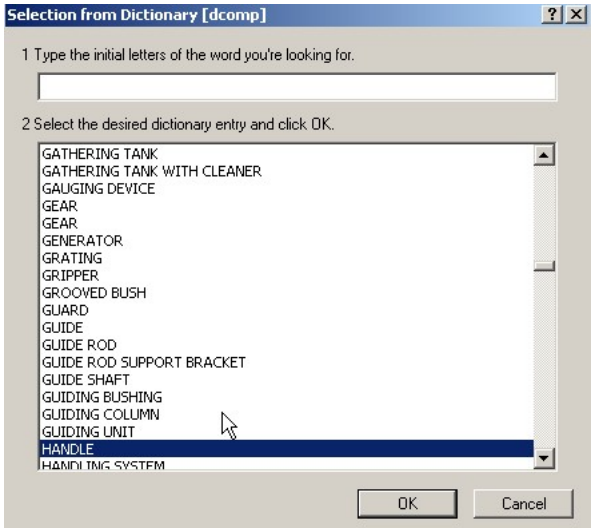


For the rest of the fields, make your selections using the drop down lists. Don't type when you can grab text from a menu!

- Select PC - Number of pieces from the Unit of measure: drop down list.
- Select C - Commercial from the Item type: drop down list.
- Select Fe27 (FYI that's a type of iron) from the Material: drop down list.
- When all the data is in there, hit OK.

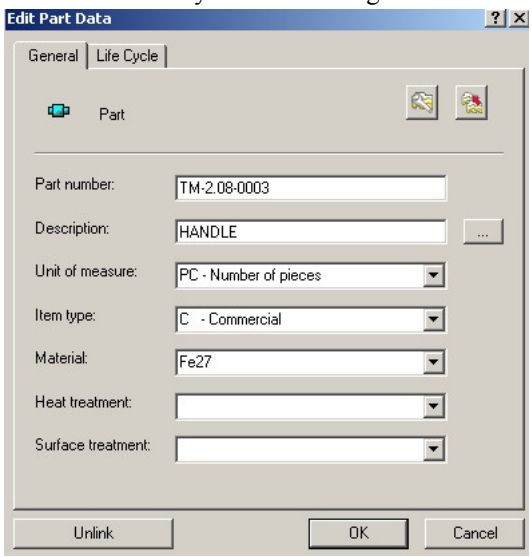
4. Step 4: There's a Dictionary?

Having trouble figuring out what to call your part? Well, thinkdesign comes with a built-in list of generic part names that you can use. Here you'll see how to access this dictionary.



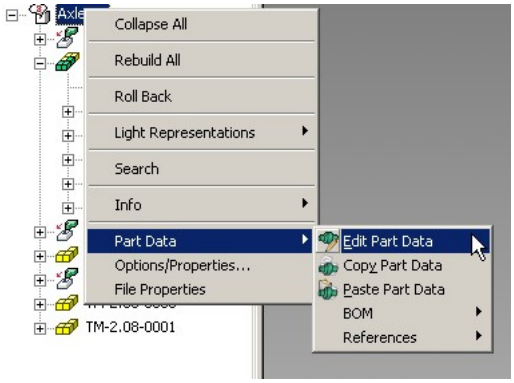
The handle is new, too, so it's going to need part data.

- Right click Handle
- Select Part Data Edit.
- Fill this part's information so that it matches what's shown. However, instead of typing HANDLE in the Description: field, use the ... button and select HANDLE from the dictionary list.
- Hit OK when you finish adding the data.



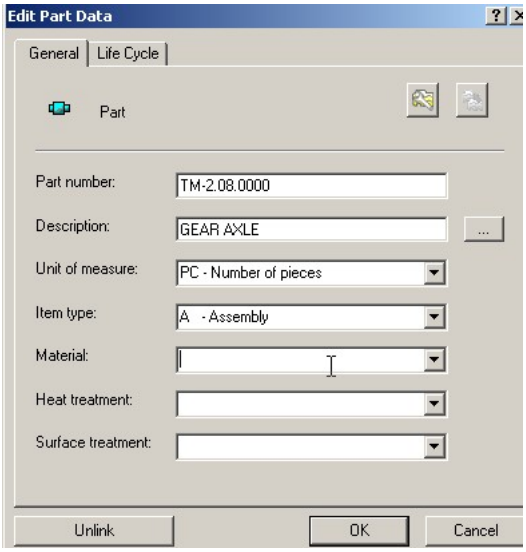
5. Step 5: Part File Properties

Even the file itself can have part data. Go ahead and fill in the part data fields.



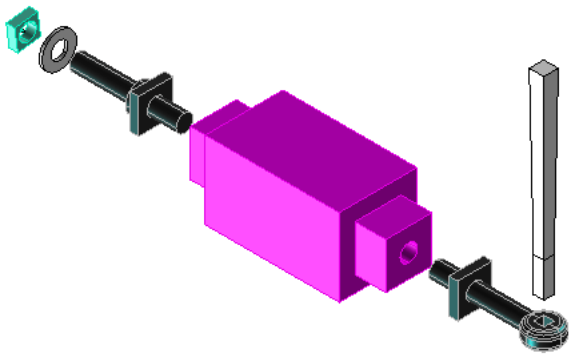
The gear axle itself needs some part data.

- At the top of the History Tree right click Axle.e3
- Right click and say Part Data -> Edit.
- Type 'em like you see 'em.
- For the Description: use the assembly's name, GEAR AXLE.
- Watch that Item type: which is an A - Assembly.
- Hit OK.



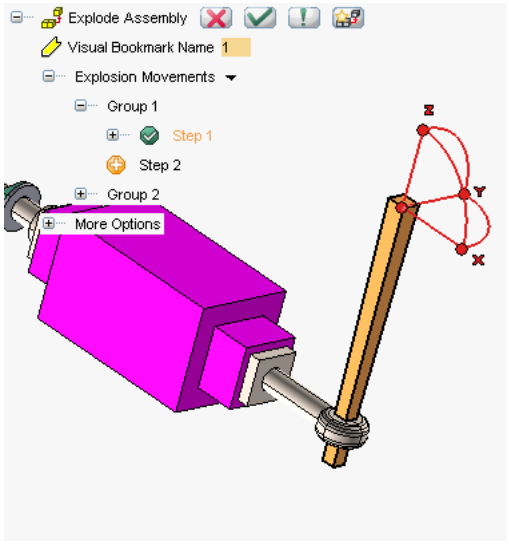
6. Step 6: Explode Assembly

Now that all the part data is in place, we'll move on to exploding this assembly



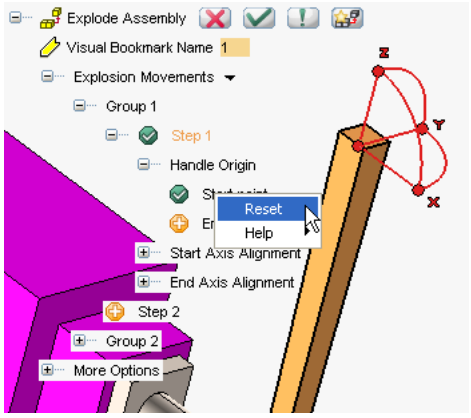
Let's see what this looks like as an exploded assembly.

- Start **Insert**→**Explode Assembly**command.
- In the Selection list, set Visual Bookmark Name as 1.
- Click Step1 and select the component Handle.



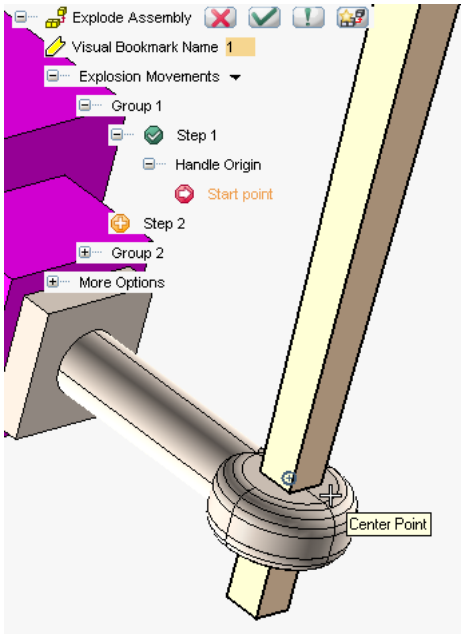
The movement handle appears at the point of click as you see. This is not the correct center of movement that we need. So lets reset the center point.

- Open Step1 in the selection list.
- Right click Start point under Handle Origin and say Reset.

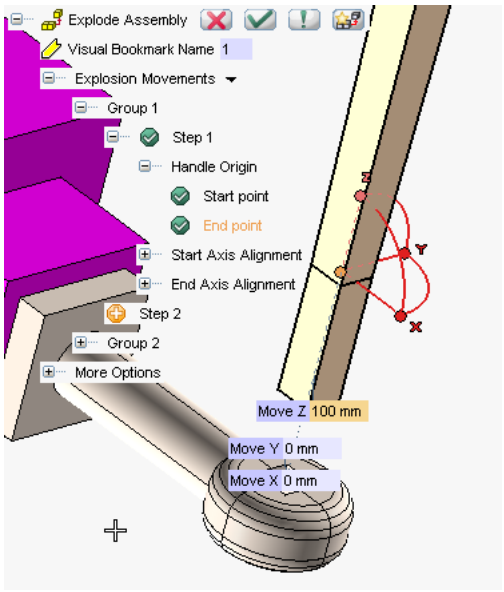


You can now select a new point for the handle origin.

- Click the center of the arc as shown to place the handle origin.

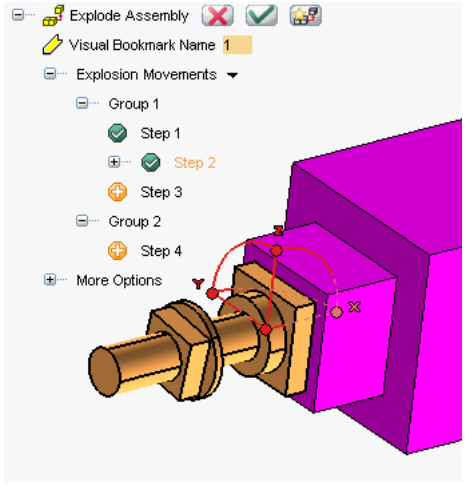


- In the Move Z minidialog, key in value 100 mm to translate the part by 100mm in Z axis.

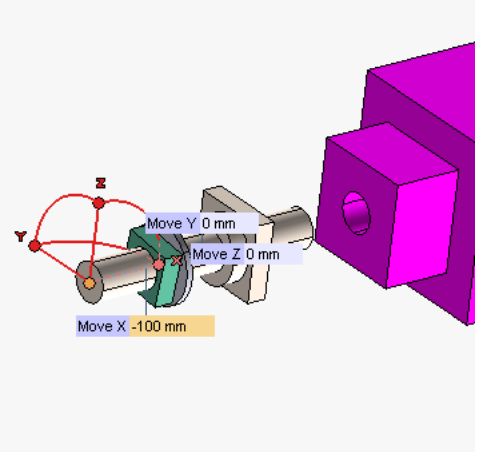


Now we'll move to next component.

- Click Step2 in the selection list and select Left Axle Sub assembly as shown.

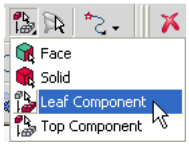


- Again Reset the Start point of the handle origin.
- Select the arc center as shown.
- Give a X axis movement of -100 mm as shown.

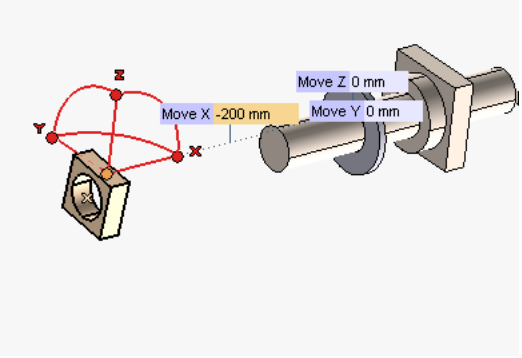


- Click Step3 to select the next component.

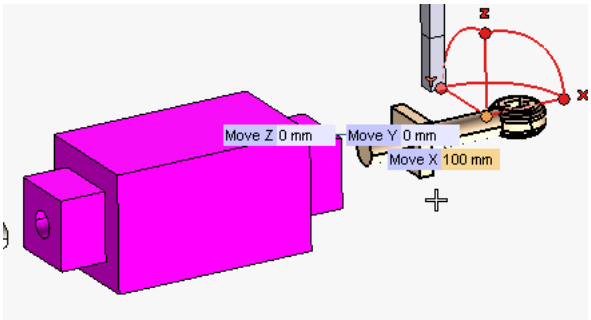
Now we need to select components within the Sub assembly. So set the selection filter to Leaf component.



- Select the component Nut and give a X axis movement of -200 mm as shown.



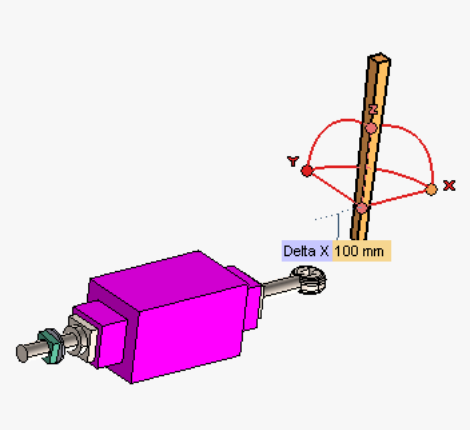
- Click Step4 in the selection list and select the Washer and give a X axis movement of -120 mm .
- Finally click Step5, select the Right Axle Arm and give a X axis movement of 100 mm. The assembly will be as seen at this stage.



We need to realign the Handle to the rest of the components. So we will go back to Step1.

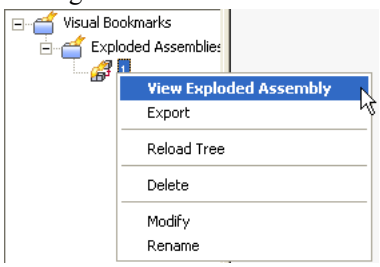
- Click Step1 in the selection list.

- Drag the X axis handle and give a Delta X input of 100 mm.
- Hit OK to confirm the Exploded assembly.

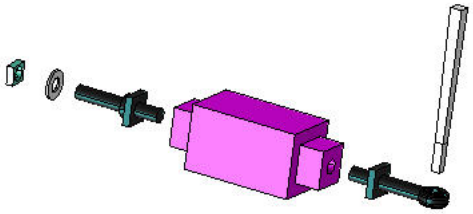


A new Exploded assembly Visual bookmark1 will be created. You can view the bookmark.

- Right click 1 in the VB tree and say View exploded assembly.

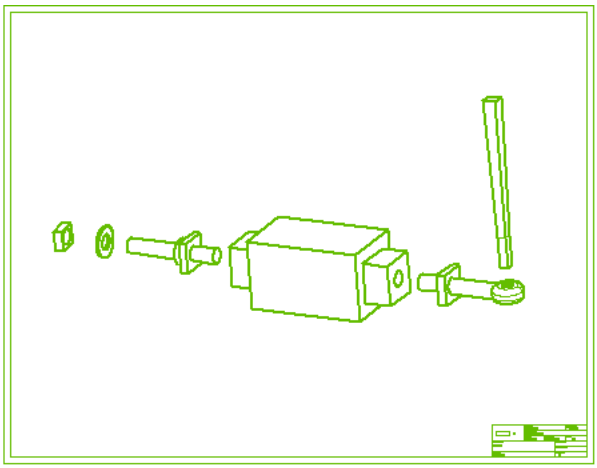


The Exploded assembly that you created appears on screen.



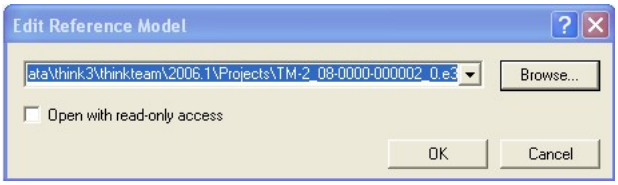
7. Step 7: Insert the Drawing

Okay, so we've added part data to the parts that were missing it. We've set up the assembly so that it explodes the way we want it to. Now we're ready to create an exploded drawing. We'll start with a blank drawing, then add the exploded drawing template and base it on the task model. Then we'll finally clean it up before proceeding with the rest of the task.



Start the drawing.

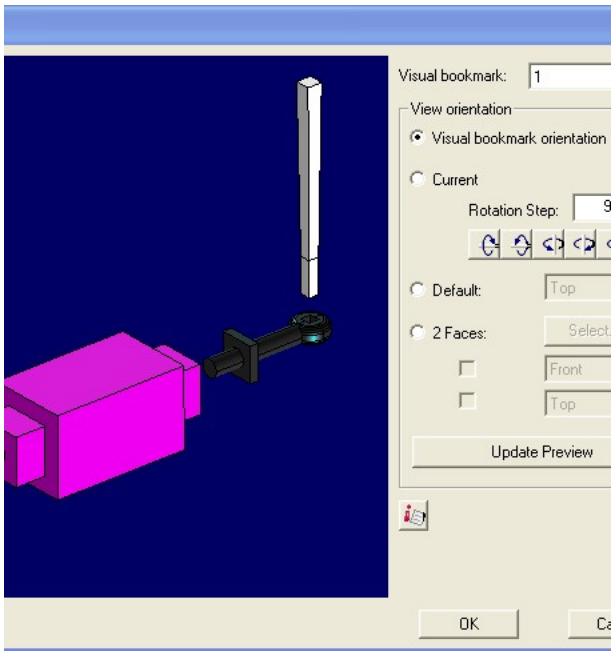
- Pull down **New Drawing**
- Right click in the workspace.
- Select **Insert**➪**Drawing View**➪**Exploded**
- Select Axle.e3 in the Edit Reference Model scroll box.
- Hit OK.



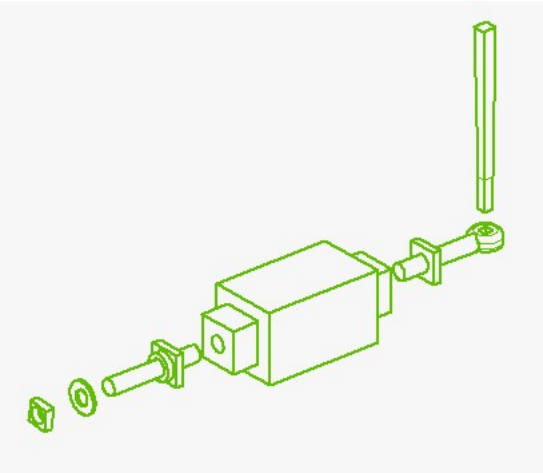
If you get a warning about the drawing units, that's okay, just say Yes. You'll get a dialog with the current view displayed.

Ensure the Visual bookmark menu is set to 1 and View Orientation reads Visual bookmark orientation.

- OK the Edit explosion dialog.

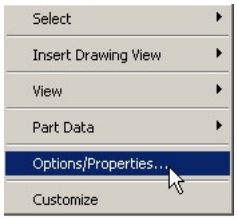


- Click to place the drawing in a convenient spot.
- Hit **Fit View**



Set the drawing size.

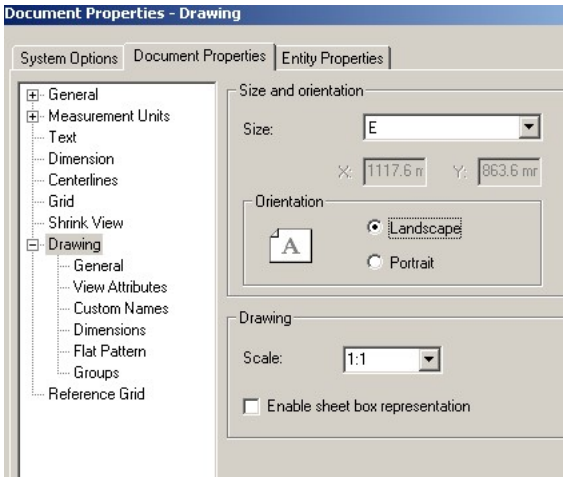
- Right click in the workspace.
- Choose **Options/Properties**.



- From Document Properties -> Drawing, Set size to E (Pull down from the menu if this is not default)

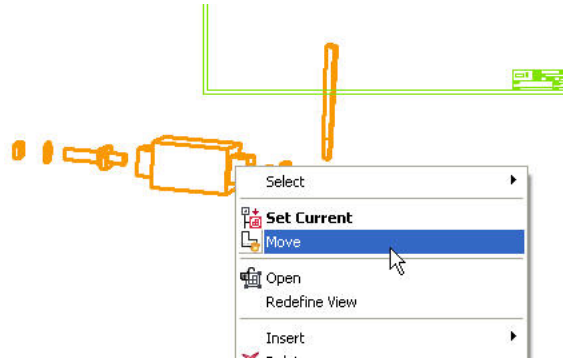
  The title block appears in the background.

- Hit OK.



Adjust the position of the differential gear axle drawing view.

- If you need, you can **Fit View**
- Move the drawing view by: Right clicking on the View and say Move.
- Click to place the view within the drawing border.



- Use **Zoom Entities** to look at the title block.

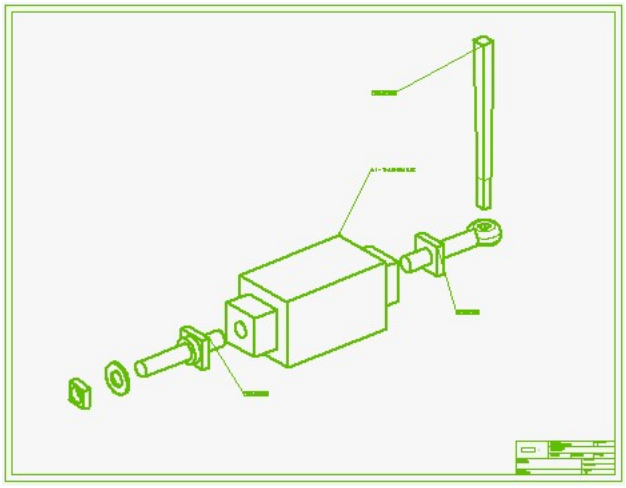
The part description and part number information went in automatically.

You probably want to **Fit View** again before moving on.

8. Step 8: Ballooning

What's wrong with this picture? Your drawing is all nice & neat, and the explosion shows off all the parts. But wait, what if you were to show this drawing off to someone? Say, perhaps the person who's going to assemble

this part. They won't know what's what. This is where the Balloon drawing detail comes in, to allow you to label parts on a drawing.



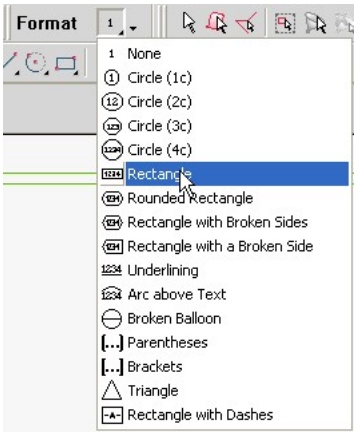
Let's label some parts to make it easier to identify them in the drawing.

- Pull down **Insert→Balloons→Manual**

Why are we doing this manually when there is an option for Automatic ballooning? The difference being that automatic ballooning does not place the part number in the balloon, it places a numeric reference to the Part list. We'll be adding the Part list to this drawing in the next step.Since this is a relatively simple assembly, too many part numbers won't clutter up the drawing.

- Wait a bit and your cursor will change to this:

- In the Parameter Area, set the Format to Rectangle.



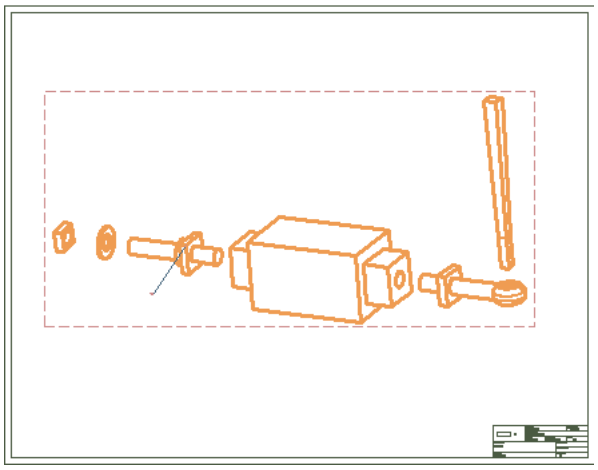
Let's place the first balloon on the drawing.

- Click a part to label. Let's do the Left Axle Subassemby first.

An outline appears around the drawing view, and the cursor changes to cross hairs

- Snap to a point on the component to set the origin of the balloon. The cursor changes to this:

- Next click a location a little downward and to the left for the first leader segment to the balloon.



We could make more leader segments, but we don't need multiple segments for this balloon.

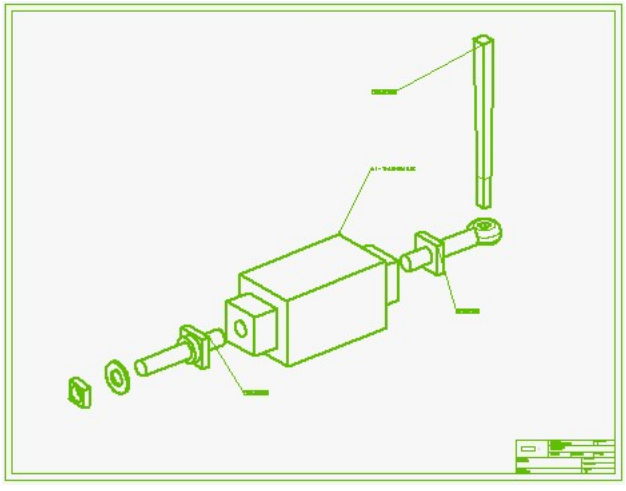
- Right click and say End of Input

Don't stop with one balloon and label also:

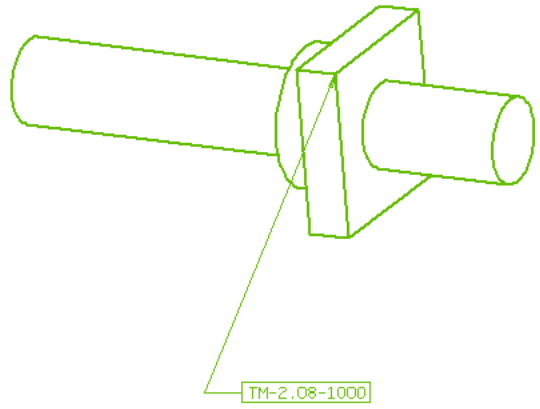
- Block.
- Right Axle Arm.
- Handle.
- Hit Esc when you're done.

9. Step 9: Add a Part List

The balloons only show part numbers. What exactly are the parts? We can add a part list that explains what each part number represents. In this final step, we'll use the **Part List** command to do just that.

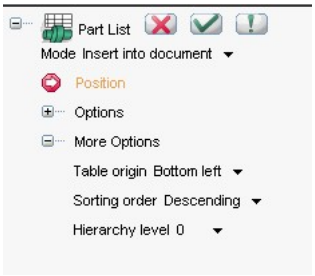


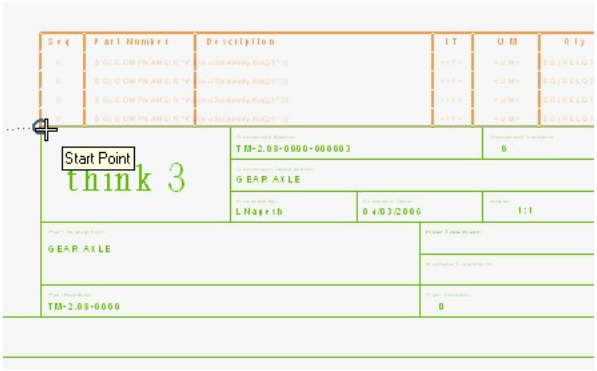
Zoom in for a closer look at one of the balloons. The part numbers are generated automatically.



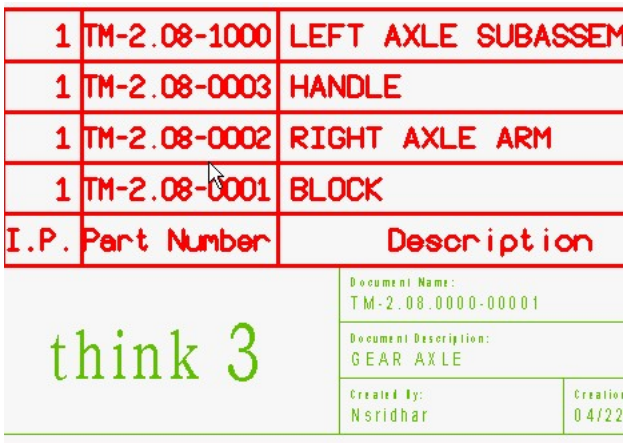
Lets make up our part list:

- Pull down **Part List**. A Part List dialog pops up.
- You want the Order Type: to be Descendant.
- OK the dialog.
- Place the Part List. (You better remember how to dynamically zoom.)
- Click the corner of the title block. Watch for the snap!





- Zoom in to see the part numbers.



- Congratulations!! and **Fit View** to look over your finished drawing!