



3DXpert™ for SOLIDWORKS®

Analysis Tools

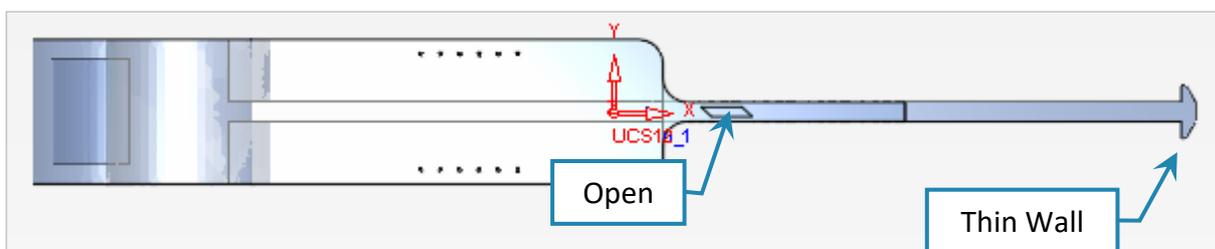
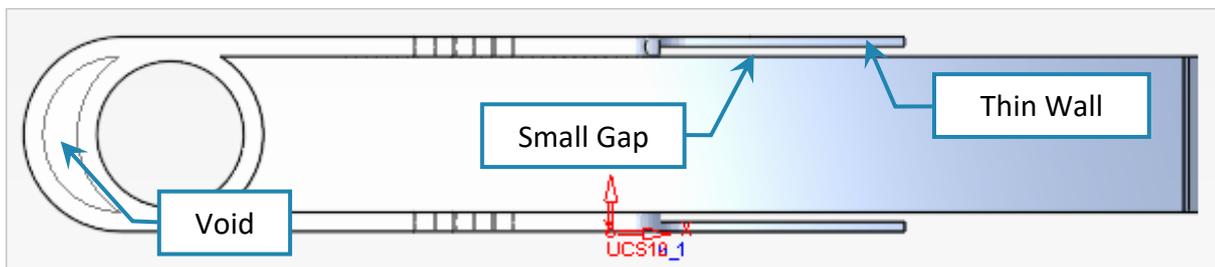
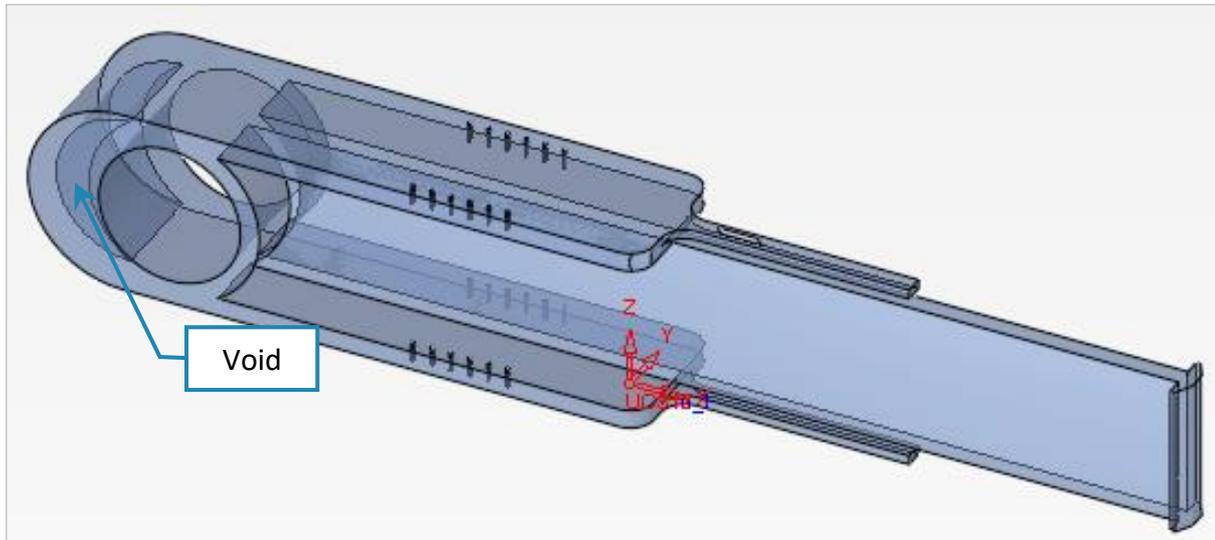
Check and Fix - Mesh

13,0601,1489,1664(SP6P1)

In this exercise, we will learn to use **Check and Fix on a Mesh** model, as part of **Printability Check**.

In general, the possible issues with printing are divided to two categories:

1. Issues with the quality of the input file. Mesh based files are more exposed to such issues, in respect to B-rep cad models (i.e., feature based CAD models). These may be open objects, Non Manifold geometries and more...
2. Design issues, which will become printer related, such as voids in the model, very small holes, thin walls or other small features.

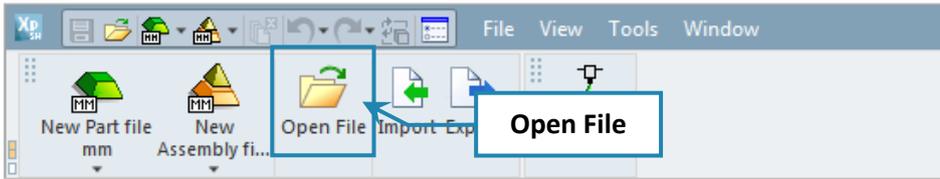


In this exercise, we will follow few steps (guided):

- Open the downloaded **3D Printing Project** from the Initial screen.
- Use **3DP Analysis** tools to **Printability Check** and Fix.

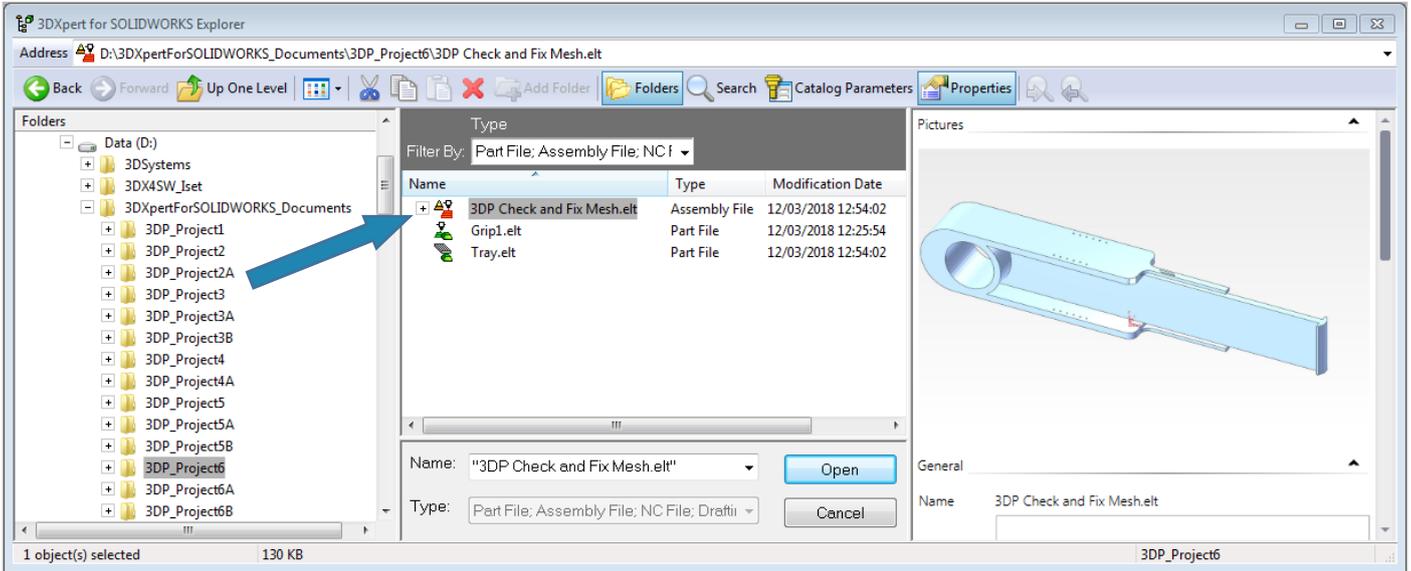
<p>!</p> <p>Notice/ Remember</p>		Left mouse button name is "pick"
		Middle mouse button name is "Exit"
		Right mouse button name is "Click"

1. From the Initial screen **pick Open File.**

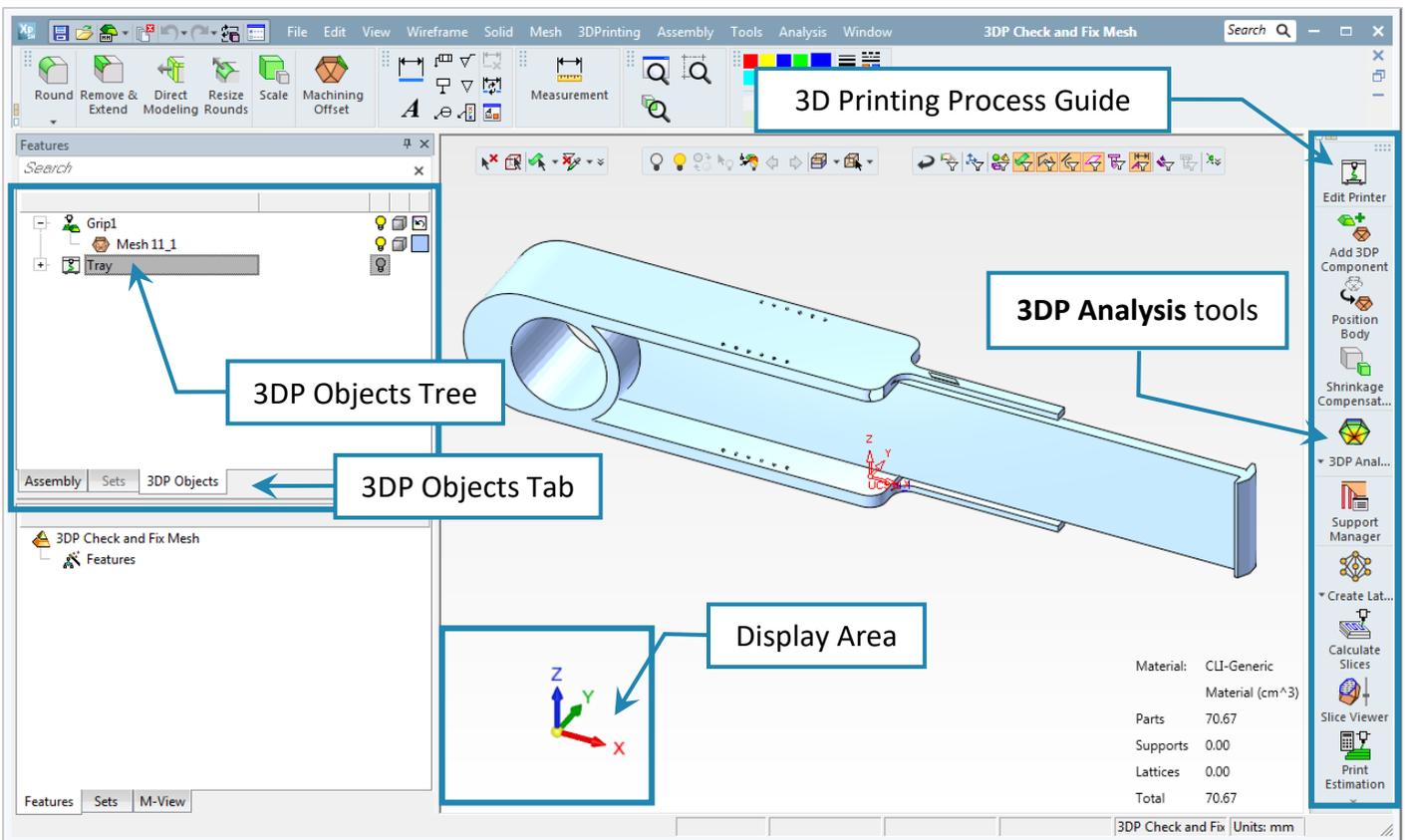


2. This command will open the **3DXpert for SOLIDWORKS Explorer.**

Load project file **3DP Check and Fix Mesh.elt** from the same folder where the downloaded files exist.



After the file is open, the screen looks like this:

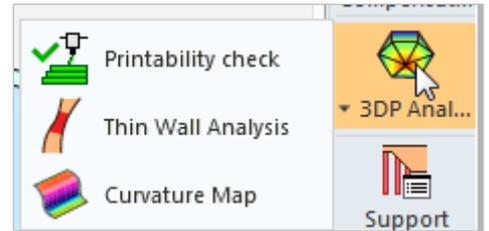


Note that for this exercise we hide the tray.

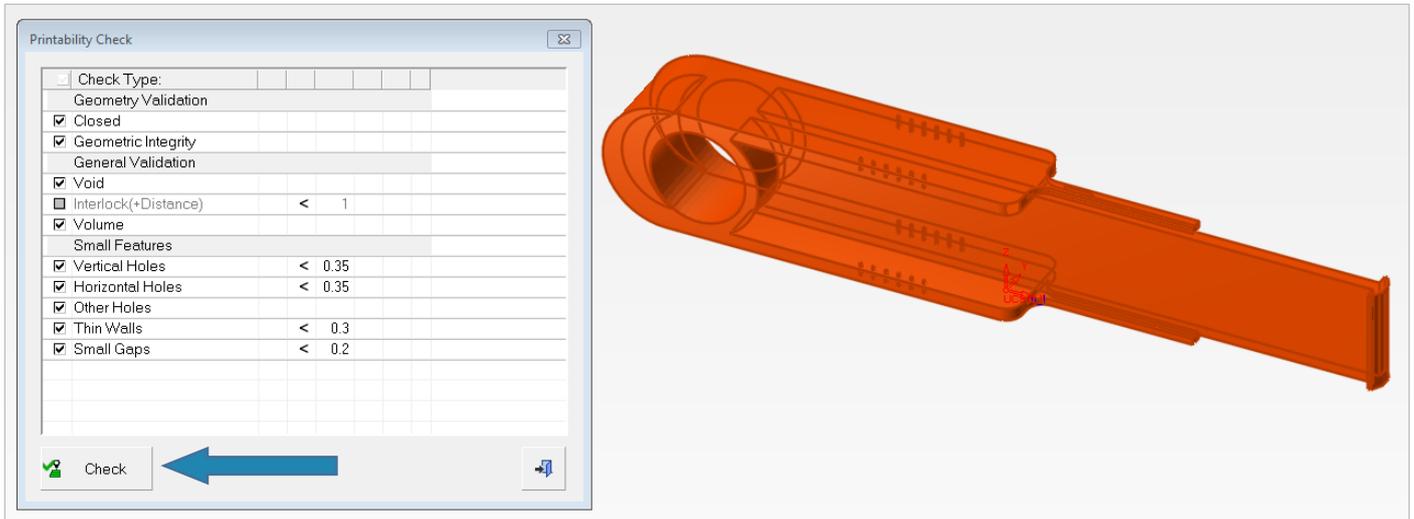
3. Hover over the icon of **3DP Analysis** in the 3D Printing Process Guide to open submenu and



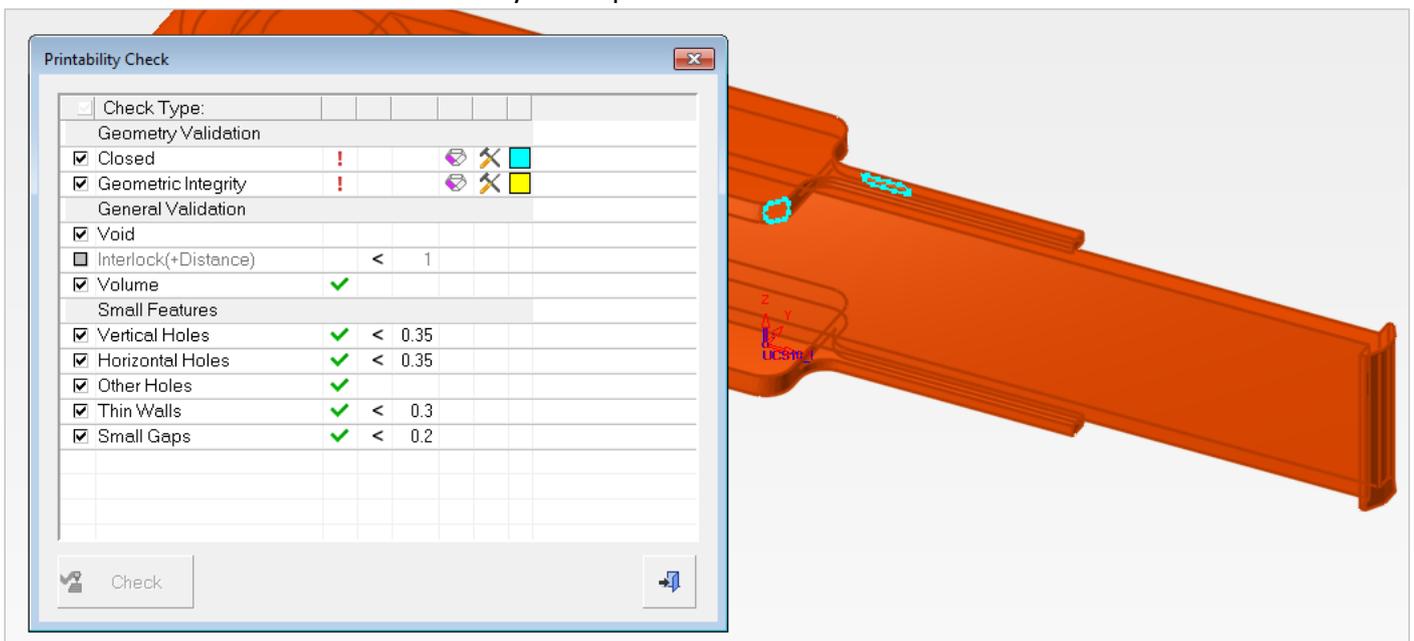
pick the **Printability Check** command.



The **Printability Check** command displays the interaction window and the object(s) is picked automatically.

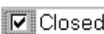


Pick the **Check**  **Check** to analyze the part.



In the picture above we can see that the object is not closed and therefore, its geometric integrity is not ok as well.

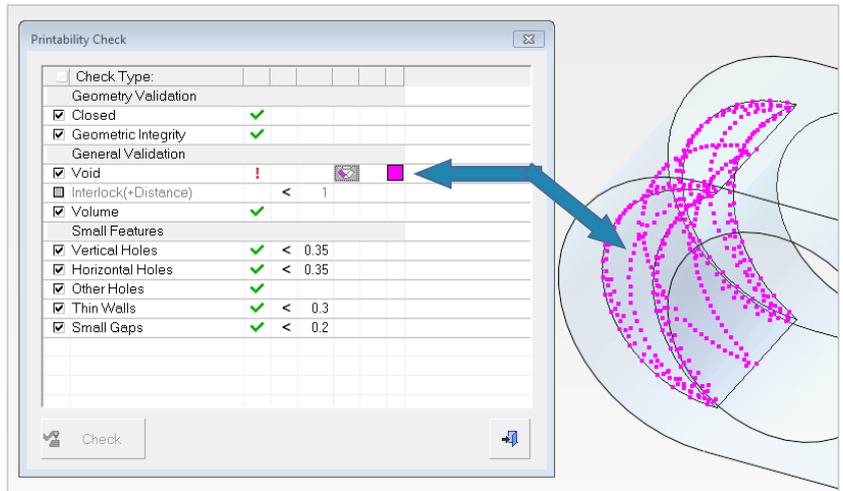
	A problem was found
	OK
	Change display to wireframe
	Fix this problem
	Pick color to display the problem on the object

4. **Pick** the **Fix**  command, which is adjacent to the **Closed**  parameter and then **Recheck**  **Check** the part.

The **Fix** operation succeeded to close the object and now, the model's integrity is also ok. Note that only after the object is closed we can see a Void in the object.

In some cases, the Void is not wanted at all, and in some other cases it doesn't matter, but it can save printing time. In such a case, it might be good to add a drain hole otherwise the materials will be locked inside the void after printing.

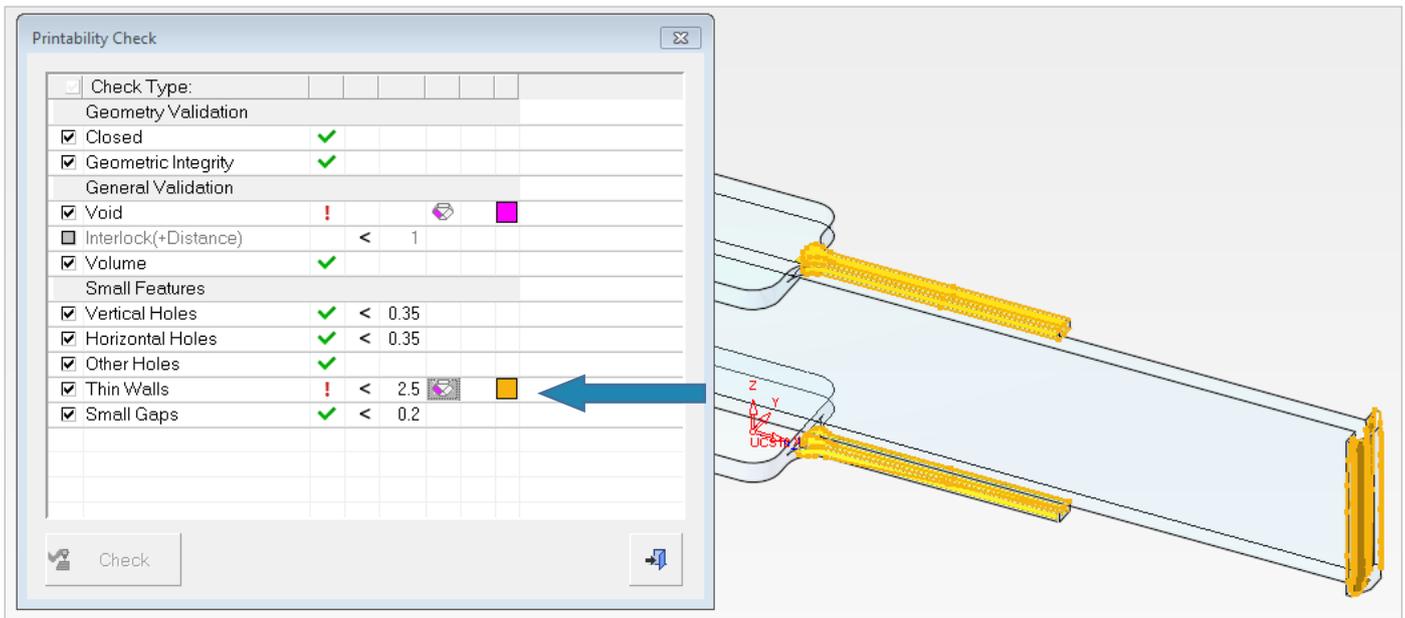
Note: This is a design consideration and hence, the system cannot 'fix' this by itself. The actual change in the model should be carried out by the designer, according to the needs. The same is valid for the following types of checks shown, in this exercise.



5. Modify the **Thin Walls** threshold to **2.5mm** as shown in the picture and **Recheck**  **Check** the part.



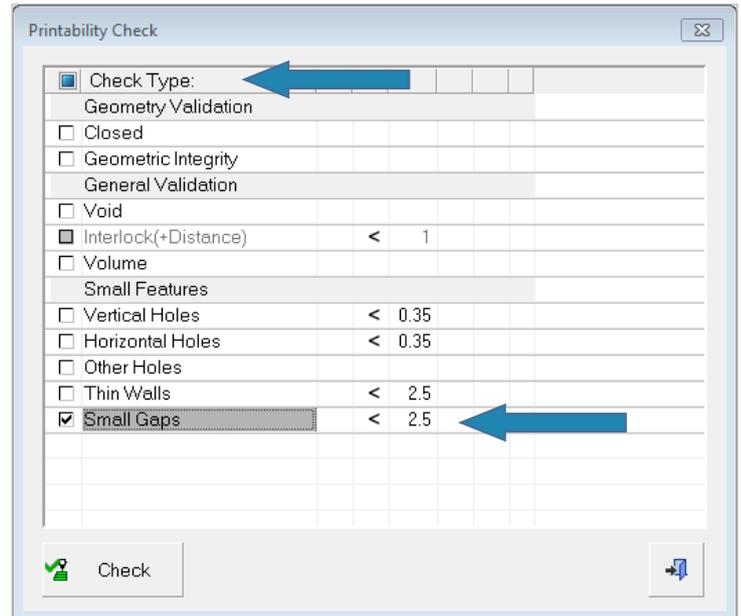
This check shows the areas that their thickness is less than 2.5 mm.



6. Running several check together, the results are all presented on screen. However sometimes you wish to focus on a specific check.

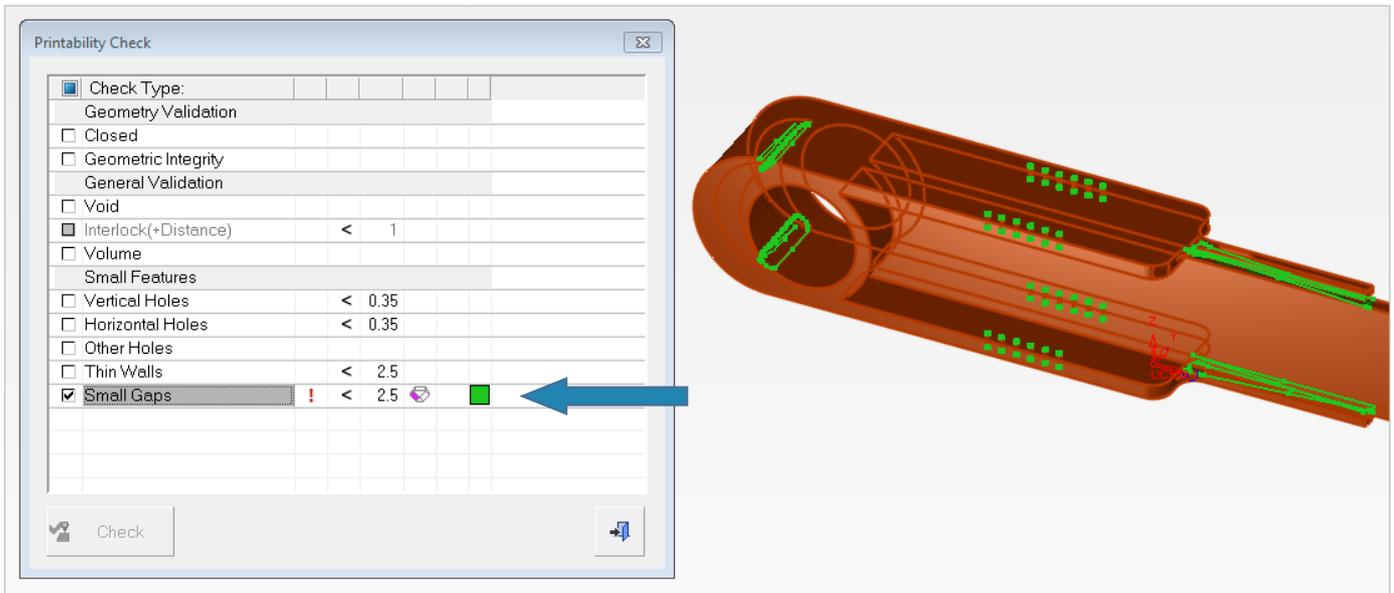
Uncheck all items from the Check type at the top of the window and check only Small Gaps. This way we can focus on the results of a specific check.

Change the **Small Gaps to 2.5**, as shown in the picture and **Recheck**  **Check** the part.



This check finds areas with gaps that are less than 2.5 mm.

In this case, since it is a Mesh model and the "holes" are a collection of facets (instead of a CAD feature), they can be analyzed under **Small Gaps**



It is not necessarily a real manufacturing issue. Also in this case, this is a design consideration.

Interlock (+Distance) – This checks for interference between parts. If more than one part is placed on the tray; for example, if the parts are coincident.

This check is grayed out if there is only a single object on the tray.

End of Exercise.