

Anytime you suspect a part is corrupt, you can check it using the **Check Part** menu. We especially recommend that you check parts after importing a model from an external CAD system via IGES or STEP. If **Check Part** detects a problem with the imported model, 3D messages will highlight problem areas.

## Check Part messages

Check Part appears in 2 menus: Modify 3D, Part & Assy. If Check Part (Fig.1) detects a problem with your model, the resulting 3D messages can help you repair your part. Here, we describe 4 common Check Part messages and what you should do when you see them.

### 1. Information: Shell contains no subshell or face

#### Description:

A **shell** or a **subshell** does not contain a face or subshells and **Chk&Fix** is off.

#### Meaning:

First, use **Chk&Fix** and see if the system can automatically repair the problem. Otherwise, no easy repair exists. One possible solution: copy all faces and create a new part (example: use the Surfacing command **Gather**)

### 2. Warning: Body is a non-manifold part (Fig. 2)

#### Description:

This message appears for one of the following reasons:

1. An excessive (more than 2) and even number of faces, (e.g., 4, 6, 8), share a common edge.
2. Two parts share a common vertex. This is very rare and, as such, not described further in this paper.

Note. The message "**Odd number of faces ...**" appears when the number of edges is greater than 3 or odd.

#### Meaning:

While OneSpace Modeling considers the part valid, it is **not manufacturable**. That's because of the zero thickness at the non-manifold edge or vertex. You will have to decide whether the part is valid for your purposes. A manifold solid is a **correct solid**.



Figure 1. Check Part

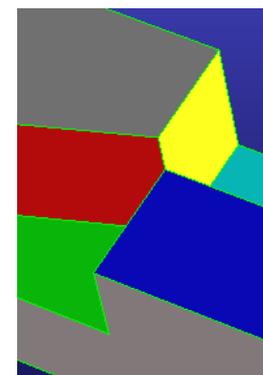


Figure 2. Non-manifold part

## Check Part Messages

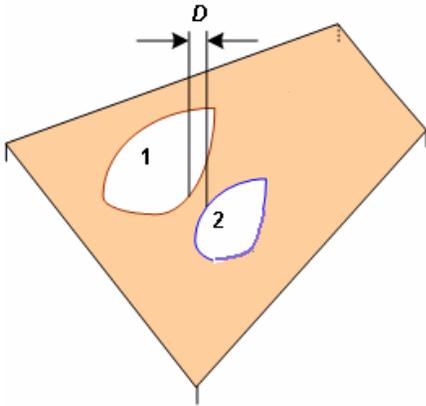
### 3. Error: Illegal loop-loop intersection (Fig. 3)

#### Description:

The distance between 2 loops is smaller than the selected part resolution. As a result, the loops intersect. A loop consists of an ordered set of co-edges with their associated edges. Each co-edge has a **pointer** to the next and previous co-edge in a loop.

#### Meaning:

The part is corrupt and should be repaired. Loops like this arise from inaccurate modeling steps. Those parts are generally not manufacturable. The illustration below shows an example. If the distance ( $D$ ) between loop 1 and 2 is less than the geometric resolution, an illegal loop-loop intersection error will occur.



### 4. Error: Loop self-intersects (Fig. 4)

#### Description:

The distance between vertices or edges is smaller than the selected part resolution. OneSpace Modeling prohibits such geometry.

#### Meaning:

The part is corrupt and should be repaired. Loops like this (see below) arise from inaccurate modeling steps. Those parts are generally not manufacturable.

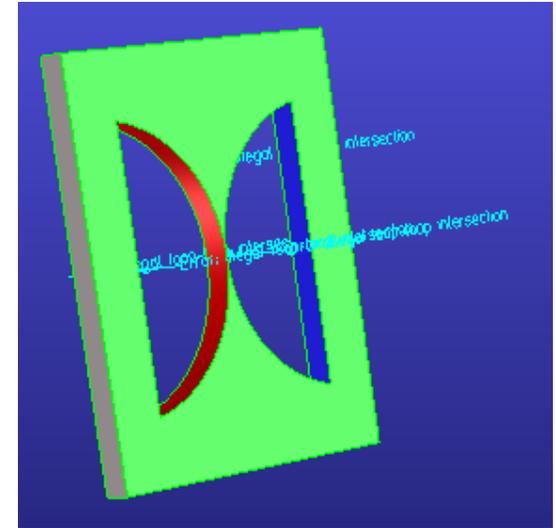
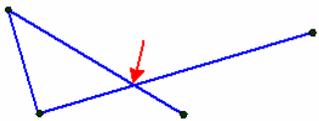


Figure 3. Illegal loop-loop intersection

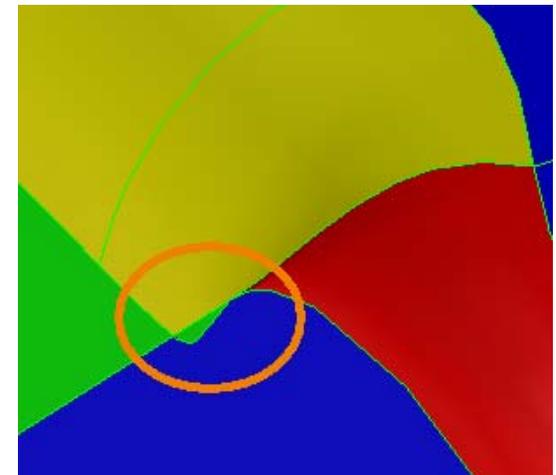


Figure 4. Loop self-intersects