EDGEINSPECTOR

Detect and Repair Edge Defects

QUICKCARD – V1.1
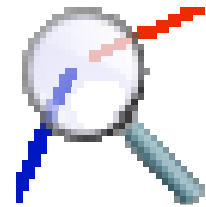
1. Overview

EdgeInspector is a standalone script which inspects, and then fixes, some edge defects in the model, usually resulting from DXF imports and complex model intersections. It currently supports 7 types of edge defects (more may be coming on request):

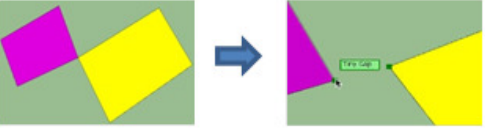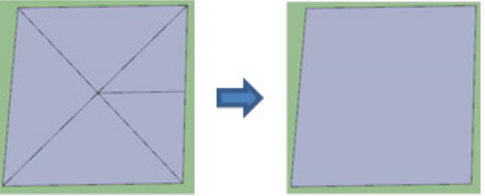| Type of Defects	Description
	OVERLAPS AND QUASI-OVERLAPS Faces are separated by tiny space, or, on the contrary, slightly overlapping at their borders.
	LOST JUNCTIONS Missing junction between the close extremities of two edges
	NEEDLE EYE AND EAR Interlacing of curves or polylines, often resulting from faulty intersection or DXF importation
	TINY EDGES Very small edges, often resulting from complex intersection of shapes
	TINY GAPS Edges or faces are isolated from their close neighbors by a very small distance. The gap is almost invisible.
	SPLIT EDGES – LONELY VERTICES Lonely vertices bordering collinear edges and invisible in normal views.
	COPLANAR EDGES – SPLIT FACES Edges splitting coplanar faces that can be removed to form a larger face (not always a defect actually)

EdgeInspector can be launched on a **pre-selection**, or on the **whole model** if no pre-selection.
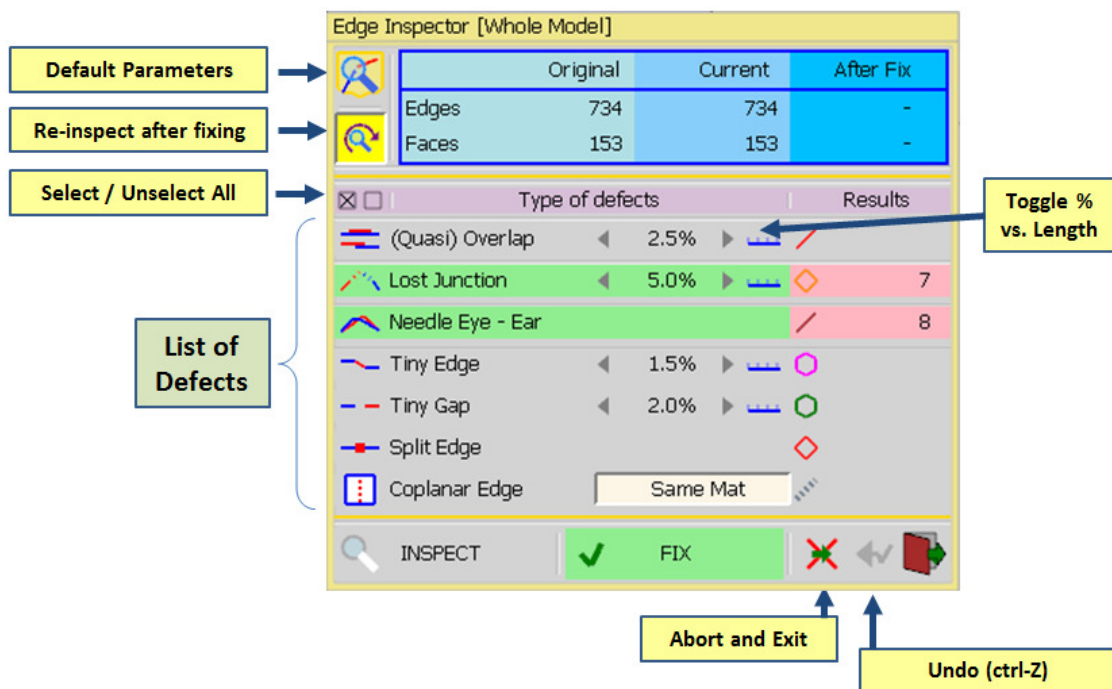
Edge Inspector works across the boundaries of the components and groups at any level. Repairs are always performed in the local context of the faulty edges or vertices.

Press **INSPECT** to launch the detection of defects in the selection / whole model.

Tolerances can be specified either in % of the average length of component, group or model, or instead in absolute length value. A button allows toggling between the two specification modes.

You can then review the defects. Each type has a specific mark (as shown in the palette).

Press **FIX** to perform the reparation of all defects globally

You can freely **rollback** (or Ctrl-Z) to undo the fixing.

Note: some models are tricky. Fixing defects may not be complete in one pass. So it's a good idea to inspect again after fixing (there is an option to do it automatically). Also, the tolerance values refers to the nominal size of component / group. If they are scaled, the tolerance is scaled as well (this default behavior can be changed in the Default Parameters of FredoTools).

2. Magnifier Glass

For convenience, EdgeInspector comes with a **Geometrical Magnifier Glass** which can zoom beyond the native Sketchup capability (2x – 5000x).

To launch the Magnifier Glass, just click in the viewport. A floating palette will appear along with the Magnifier Glass window.
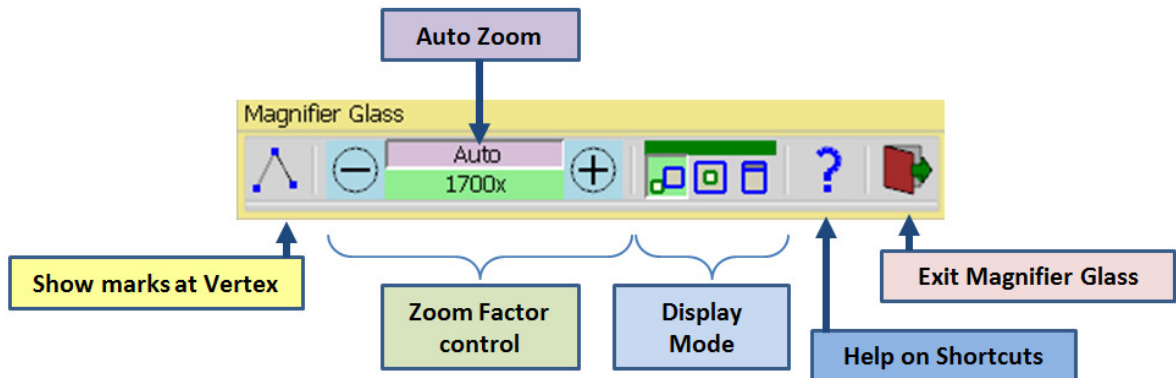
The Magnifier glass comes with **3 possible sizes: Large, Medium, Small**. This setting can be changed in the Default Parameters of LibFredo6 (menu *Windows > LibFredo6 Settings… > Default Parameters*).
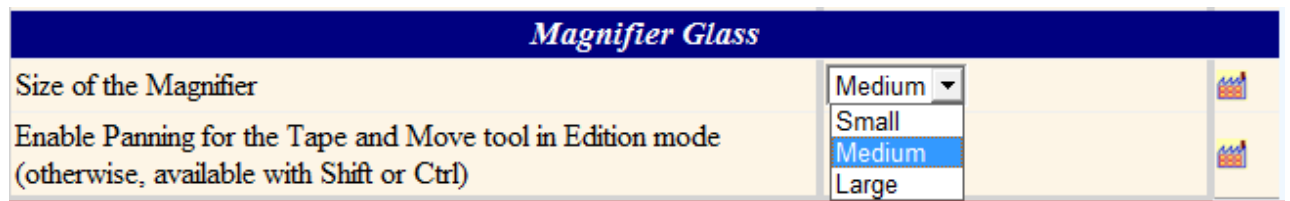
There are **3 display modes**:

| *Shifted* | *Fixed* | *Centered* |

Native Zooming, orbiting, panning in the Sketchup viewport is always reflected in the Glass Window.

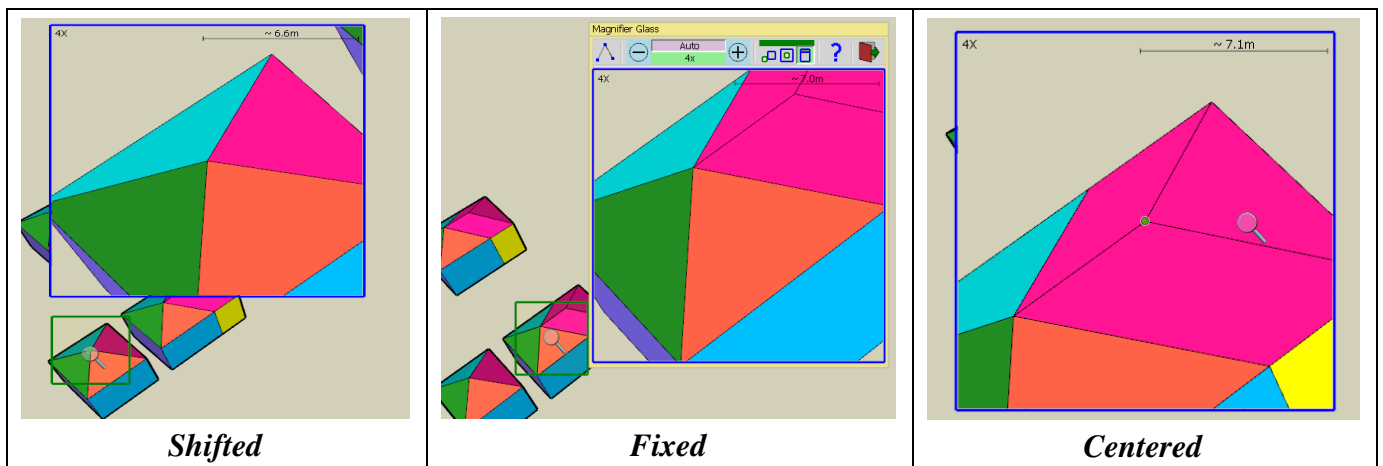But you can also **zoom in the Glass window only** via **Ctrl-Mousewheel**, the **VCB**, the **Arrows** and the **palette buttons**.

Key	Description
ESC	EXIT Magnifier (or Double-click in empty space)
MouseWheel	Zoom in/out in the Sketchup viewport
Ctrl+MouseWheel	Zoom in/out in the Magnifier Glass
VCB	Type the value of the Zoom factor (ex: 30)
Arrow Up	Zoom IN
Arrow Down	Zoom OUT
Arrow Left	Zoom out to MINIMUM value
Arrow Right	Zoom in to MAXIMUM value
TAB	Cycle through display mode (fixed, centered, shifted)

Auto-Zoom: **when an Inspection is active**, hovering over a defect with the magnifier glass will automatically adjust the zoom factor so that you can see the defect (usually it is small).

Quick Zoom: **when you are in the main EdgeInpector mode**, you can click and keep the button down (or drag the mouse). This will start the Magnifier glass, but it will disappear when your release the mouse button.

Major Limitations of the Magnifier Glass

a) **Textures are not rendered**. Instead faces are painted with the dominant color of the texture.

b) **When zooming on small objects from far**, the Magnifier glass may miss some edges or faces. Just zoom in the Sketchup viewport to get closer to the area you want to enlarge.

c) **The Z-Order of faces may not be correct**. This is because the rendering is based on a rudimentary algorithm compatible with acceptable performance. If this happens, try to Zoom-in / out or slightly orbit.

d) **Performance** is depending on the zoom factor and to the number of faces / edges in the area spotted. It is better when zooming factor is large or the number of objects is small.

3. Magnifier Glass – Edition Mode

The magnifier Glass allows **freezing a view** and performing a few operations on the entities (*Edition mode*).

These edition tools are implemented in a similar spirit as the native Sketchup equivalent functions, with some differences however.
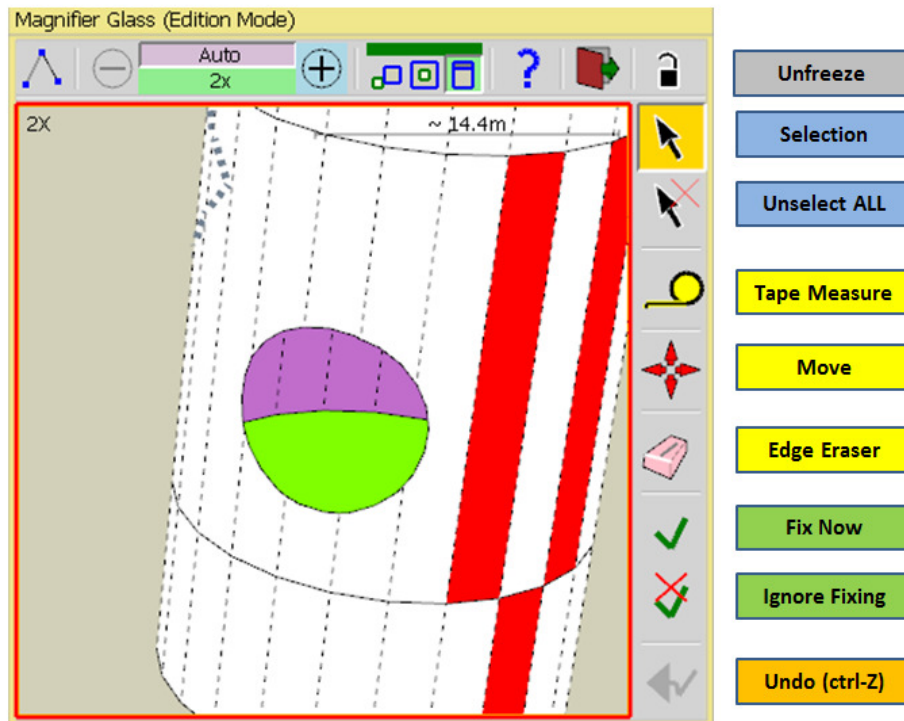
- **Selection of edges and faces** (via click, double-click, triple-click, with modifiers Shift and Ctrl)

- **Tape Measure** with inferencing (point to point or parallel from an edge)

- **Move**: Vertex, Edges or Faces can be moved with inferencing. As in native Sketchup, you can move just a single vertex, or, using the selection tool, pre-select edges and faces and then move them altogether to a given target. Be aware that when edges are part of a curve or an arc, moving a vertex individually will likely move the whole curve or arc and its attached geometry.

- **Edge Eraser**. Applicable to Edges only. I supports only the click-release mode on Edges. The **DEL key** is also supported to erase selected edges and faces

- **Repair Now**, to fix defects individually

- **Ignore Repair**, mark a defect so that it is ignored by the global repairing of EdgeInspector

- **Rollback – Undo**: any operation can be safely undone via this button or via **Ctrl-Z**

Panning: It is performed by a **click-drag-release** and applicable to all tools by default. For *Move* and *Tape* tools, you have an option (in the Default Parameters of LibFredo6) to deactivate panning and use click-drag-release for Move or Tape instead (in such a case, Panning can still be done via Ctrl-click-drag-release or Shift-click-drag-release).