CADfix STL FAQs

CADfix STL

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02/11/2021
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Public

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1 Use and support

1.1 Can I get support for CADfix STL?

As a free product, support is not provided for CADfix STL. Providing support for a product requires a large number of resources. As a free product, CADfix STL has a large number of users and this community can generate a very high volume of call.
We do however appreciate knowing how our product is performing for our customer base, and when a problem has occurred. To help provide a balance between these two conflicting requirements, we have provided a feedback form where our users can post a message to give us this valuable information.
If you need to provide feedback to use, then please visit the feedback page on our website.

1.2 Can I buy support?

If you are using CADfix STL in a commercial environment and need support, then consider upgrading to CADfix DX, CADfix PPS, or CADfix VIZ. These products provide greatly enhanced functionality, as well as full support backup and training options. For more information visit our website, or email our sales team (euinfo@iti-global.com).

1.3 What is the license agreement for using CADfix STL

CADfix STL is intended as a free to use product, but there are some specific restrictions. To view the license agreement, look in the 'Help'→'License Agreement…' dropdown menu.
If you still have questions about its use, then please submit feedback explaining your doubts (info.iti-global.com/cadfix-stl-support).

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2 Installation

2.1 What operating systems can CADfix STL be installed on?

The following list shows the operating system versions that have been tested with CADfix.

- Windows: 10
- LINUX: RHEL6 64bit

CADfix STL may run on earlier versions of operating systems, but these have not been tested and may experience unforeseen issues.

2.2 How to install on Windows

CADfix is available for download as:

- Windows installer:
  - For installing on the Windows operating system
  - Automatic addition of a CADfix start-up icon in the Windows menu
  - Requires administrative rights to install
- Windows zip file:
  - For installing on the Windows operating system
  - CADfix start-up icon is not created in menu
  - Does not require administrative rights to install; just decompress the folder and run directly from this location. This allows portability of the program folder
- Linux tar file:
  - For installation on the Linux operating system
  - Does not require administrative rights to install; just decompress the folder and run directly from this location

An overview of installing each download format is shown below.

2.3 How to install using the Windows installer

1. Download the Windows installer file to a temporary location.
2. Start the installation process by double-clicking on the downloaded installer file.
3. Follow the installation instructions.
4. Start CADfix using the CADfix icon in the Windows menu, or by opening the CADfix installation folder and running 'startCADfix.bat'.
5. The downloaded installer file can now be deleted if not needed.

2.4 How to install a Windows zip file

1. Download the zip file to the required installation location.
2. Decompress the zip file. This will add a CADfix installation folder.
3. Start CADfix by opening the CADfix installation folder and running 'startCADfix.bat'; either by double-clicking on it or running it from the command line. Alternatively, CADfix can be started by running the "…\bin\ runcadf.exe" file in the CADfix installation folder.
4. The downloaded zip file can now be deleted if not needed.

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2.5 How to install a Linux tar file

1. Download the zip file to the required installation location.
2. Decompress the zip file:
3. Start CADfix by opening the CADfix installation folder and running “startCADfix”.
4. The downloaded zip file can now be deleted if not needed.

2.6 Uninstalling from Windows

- If CADfix was installed using the Windows installer, then CADfix can be uninstalled through the Windows ‘Apps & features’ program.
- If CADfix was installed using the Windows zip file, then the decompressed CADfix installation folder can just be deleted. If any short-cuts or links have been added to this installation, then these will need to be deleted manually.

2.7 Uninstalling from Linux

Delete the decompressed installation folder.

2.8 Can I run CADfix STL alongside other CADfix products?

CADfix STL is a stand-alone product that can be installed alongside other CADfix products without interference.

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3 Importing

3.1 What import formats are supported?

CADfix STL support imports as STEP and IGES. These formats were selected as they represent the most common formats that our existing customer base are using.

The import menu's 'File type' filter does show other formats, but these are greyed out. This allows the users to see the opportunities available if they were to upgrade to one of our paid-for products.

3.2 Can I buy other import and export formats?

Upgrading to one of our paid-for CADfix products will provide the opportunity to select the import and export options you require. This will of course also provide access to the many other superior tools in each product. Please view our website for further details:

- https://www.iti-global.com/cadfix
- https://www.iti-global.com/cadfix-pps
- https://www.iti-global.com/cadfix-viz

3.3 Do we have any control over the import process?

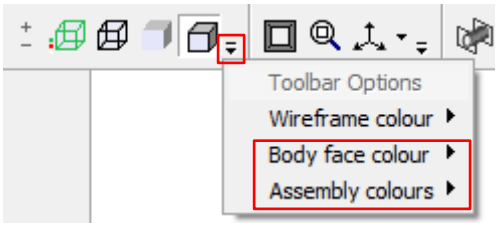
1. Open the 'Open Model' dialogue and select (single-click) the file you want to import.
2. The 'import options' icon then becomes available in the bottom right corner of the dialogue.
3. Open this advanced dialogue to view technical information about the file, and set import options. This dialogue is different for IGES and STEP files.

3.4 Why do the model colours in CADfix not match my CAD system?

A model can have the colours stored on it's faces, body, or assembly nodes.

1. CADfix STL displays model colours in this order:
2. Assembly node, if set.
3. Body, if set.
4. Face, if set
5. If none of the above, then Yellow for bodies.
6. Or Magenta for faces.

The default setting can be changed using the advanced shading options.



If separateing the exported STL file by face colour, it is advantageous to turn 'Assembly colours' off, and 'Body face colour' to 'use assigned face colour'.

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4 User interface and graphics

4.1 How do I clear the mesh preview?

Following a mesh preview, the mesh image will remain on the screen until the user either:

- Generates a new mesh preview
- Exports the model
- Presses the Escape key
- Changes the display type (shaded, wireframe, etc.)

4.2 Can I change the background colour?

This can be changed using the pull-down menu 'View' → 'Display settings'. Using this screen, you can choose a background colour and the style of graduation.

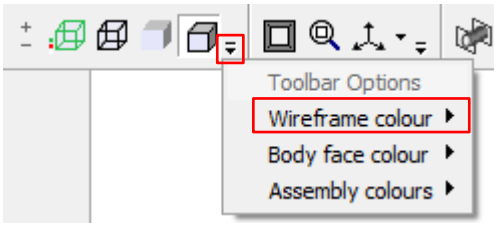
4.3 Can I change the model display colour?

To change the model shading colour, you will need to change the properties on either the body or faces.

1. Locate the required body of face in the model tree
2. Either:
    a. Right-click on the body of face definition and select properties.
    b. Or click in the 'colour' column associated to that entity. You can then choose a new colour.

4.4 Can I change the wire-frame colour?

The default setting can be changed using the advanced shading options.



4.5 How to zoom-all?

In the top toolbar, click on the 'Frame All' button . This will centre the image and zoom all.
The centre of rotation will also be reset back to the default position.

4.6 How to zoom on a face or body?

1. Locate the required entity in the model tree.
2. Right-click on the entity
3. Select 'Frame'

This will centre the display on the entity and zoom it to fill the screen.
The centre of rotation will be set to the centre of the entity.

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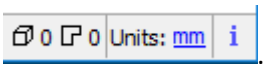
4.7 Where has my model gone?

This can be caused by several things. The usual reasons for new users are:

1. The model has been panned or zoomed so that the model is off-screen – Press the 'Frame All' button .
2. All active displays have been turned off - Turn on one of these displays and then Frame All.
3. You have deleted all of the model. In this case the model status at the bottom-right of the screen will show that there is zero bodies and faces  .
4. All parts are hidden. In this case, the entities in the model tree will be greyed out. Either:
    a. Right-click on the model background and select 'Hide'→'Unhide ALL parts'.
    b. Or right-click on a specific entity in the model tree and select 'Hide'→'Unhide …'.

4.8 Why do circles have flats on them?

The image quality setting to set too low for the detail you are looking at. Turn the image quality up (or down) using the 'Increase display quality' button .
When a model is opened, CADfix STL will assess the model and set this quality setting to what it feels is appropriate. If this setting is turned up further, then displaying a shaded image can become slow. In this case, turn it back down again.

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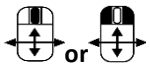
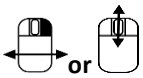
4.9 Hot-key and mouse short-cuts

Selection actions			
Ctrl O	Open	Ctrl Z	Undo
	Select an entity	Ctrl Y	Redo
Ctrl	De-select an entity	Esc	Cancel selection mode
Del	Delete selection	Ctrl X	Clear the selection
		Ctrl A	Select all entities matching current type

View Controls			
Ctrl Space	Centre on selection	Ctrl H	Hide selected item
	Centre on selection	Ctrl U	Un-hide selected item
	Pan the model view	Ctrl Shift U	Un-hide All item
	Zoom the model view	Ctrl Shift N	Hide all not selected
	Rotate the model view		
F2	Rename item in model tree	F7	Pick for centre of rotation
F5	Repaint	F8	Dynamic control on
F6	Box Zoom on/off	F9	Clipping planes tool on

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5 Model editing

5.1 Can I save the CADfix work file?

This function is not available in CADfix STL, but it is available in the paid-for CADfix products.

By being able to save and open CADfix (fbm) work-files, the user is able to save work, continue working at another time, share work-files with colleagues, and recall old jobs.

5.2 Can I repair, edit, or simplify my model?

CADfix STL only provides facilities to:

- Convert a model to STL
- Explode assembly structures
- Delete assembly components, bodies, and faces.
- Rescale the model

The paid-for CADfix products provide enhanced functionality to allow the user to do tasks such as:

- Repair models
- Remove holes and protrusion
- Split and join bodies and faces
- Restructure assemblies

Please view our website for further details:

- https://www.iti-global.com/cadfix
- https://www.iti-global.com/cadfix-pps
- https://www.iti-global.com/cadfix-viz

5.3 Should I explode the assembly structure?

An assembly structure allows components to be reused in many places around a single model. Retaining this assembly structure will ensure that commons components are consistent, and the model file size is as small as possible during processing making operations faster.
If you explode the assembly structure all instanced components are converted to individual parts within the assembly. This can make the model's file size much larger and slow the processing, but it also allows individuals parts to be processed differently.
During the process of exporting the model to STL the assembly structure will always be exploded. This is a limitation of STL and can not be avoided. The user therefore has a chose of when the model's assembly should be exploded: before processing, during processing, or on export. The best answer will depend on the exact processing being done by the user. – In most cases exploding does not need to be done by the user.

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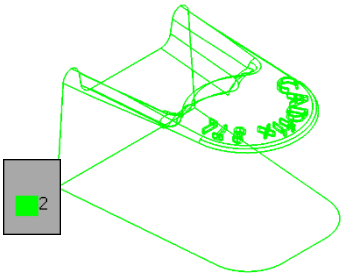
5.4 Models are not orientated correctly

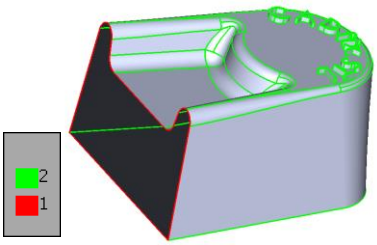
If the default model orientation varies between the source and target systems, when the exported STL model is read into the downstream system it may have the wrongly orientated. To compensate for this, the paid-for versions of CADfix allow the model to be manually reorientated, or a preference set for automatic application during the import stage.

5.5 What is connectivity?

Connectivity is designed to show the physical connection relationship between faces. The connectivity view is a wire-frame image where the edges have a colour designating the number of faces connected to it.
A correctly formed solid body will have green edges where each edge is connected to two faces – Edge connectivity 2.

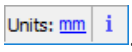


If a model has a face missing it is therefore no longer a solid model. The edges around the missing face are now only connected to a single face. Their connectivity now drops to one, and they are therefore shown in red. (This example image also has faces shaded to aid understanding)



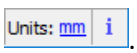
A model can have edge connectivity from zero (0) and above. If connectivity is not two, then it may impair some CADfix functions.

5.6 What is the current unit used, and can I change them?

Most CAD files will contain the measurement unit used when the model was created. However, there are some formats, or poorly defined files that do not contain this information. Also, it may be that the source system had the wrong units defined (e.g. inches instead of millimetres).
Where possible, CADfix STL will read the unit from the source file. If this can not be done, then the user is prompted for a unit to use. When the model is open, the unit used is displayed in the bottom right-hand corner of the CADfix STL screen 

.
Clicking on this unit notification will allow the user to change the units used and rescale the model.

5.7 How to rescale a model?

When the model is open, the unit used is displayed in the bottom right-hand corner of the CADfix STL screen 

. Clicking on this unit notification will allow the user to rescale the model and if necessary change the units.

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6 Facet generation

6.1 Why have different facet styles?

The “minimal number” facet style produces an STL mesh model with the minimum number of facets. This provides STL models with a smaller files size and are faster to view.

The “quality facets” facet style is biased to an STL mesh with equilateral triangle. This provides a larger number of facets on each face but provides a better basis for analysis packages and high quality visualisation.

6.2 Facet sizing

When defining a mesh for your STL file, there are a number of settings that control the facets.

Facet sag is a control that measures how far the triangle’s centre can be from the CAD surface it represents. With a larger sag value, a larger deviation between the facet and surface is allowed. This allows larger facets in that area. On very small faces this may have minimal effect.

Facet turn is a control on the allowable angular difference between neighbouring facets. A larger angle allows larger turn angles giving a more angular effect on smaller detail. This will have minimal effect on large later surfaces.

Facet length is a guide target for the size of the facets. With an ideal model all the facets will match this size. However, in practice the sag and turn values will drive the facet sizes in more detailed areas of the model and the length will provide a size in more planar regions of the model.

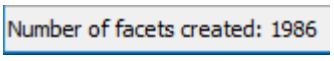
Advanced setting (Quality mesh)

The **Expansion rate** is a measure of how quickly the mesh can expand between areas with different constraints. This is most noticeable as the mesh moves away from the edge and into the centre of a large face.

6.3 What is the largest model that CADfix can mesh?

There is no restriction to the model size that can be read into CADfix STL, but CADfix STL is reliant on the available resources within the computer. As a large model is read in, the performance will drop away quickly once the free memory, disk-space, and CPU power are used up.

6.4 How many facets have been generated?

Following a preview of a mesh, the number of facets within this mesh are displayed in the bottom-left corner of the CADfix screen. 

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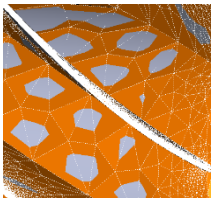
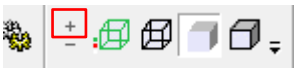
6.5 Why do I see patches on my preview?



During a preview of a mesh, you may be able to see patches of shading across the preview. This is caused by the model's shading showing through the preview.

- Increasing the view quality will reduce this effect



- Or turn off the shaded view prior to a preview.

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7 Exporting

7.1 File location and access writes

When exporting, please check you have read/write access to the export directory. If you do not have this full access, then you will receive a message “Failed to write file:”. In this case, export to another location such as your home folder.

7.2 STL

7.2.1 ASCII versus Binary

ASCII and Binary are the internal formats of an STL file.

ASCII based files are readable by a text editor and allow the model to be separated into individual file.

Binary based files are not readable with a text editor but are smaller. If a model is separated into ‘SOLID’s, then these cannot be saved to multiple files.

The downstream system you are using may be restricted to use one form or another, so this should be checked first.

7.2.2 Separate ‘solids’

If a model can be grouped by either Body, Colour, Label, or Layer, then CADfix STL can put these groups into different ‘SOLID’ definitions in the exported STL. By default, these ‘SOLID’s are all placed in the same single file.

If the export format is Binary, then these ‘SOLID’s can also be separated into individual files by the ‘Export to multiple files’ option.

Note that attributes must be applied to the faces (not the bodies). If applied to bodies, then these are ignored and not included in the output files.

7.2.3 Can I keep the assembly structure in my STL output?

STL files cannot hold an assembly structure. So, if your model contains an assembly structure it will always have to be exploded.

To help retain your assembly structure the ‘Explode assembly to multiple files’ will separate the STL ‘SOLID’ definitions into separate STL files according to your assembly structure. This allows the assembly to be rebuilt in the downstream system.

7.3 Mesh formats

CADfix can export your STL mesh to formats for NASTRAN and ABAQUS. These are based on the STL format and are used for analysis.

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7.4 Why do exported file have a '_cf' suffix?

To ensure the exported file is identifiable as the CADfix output, the file name is suffixed with '_cf'.
e.g. *myfile.stp* will export as *myfile_cf.stl*
This behaviour can be changed in 'File'→'Preferences', or each time during the export process.

7.5 What are 'Water-tight' facets?

The "Enforce 'water-tight' facets" option checks the generated mesh to ensure that all the facets form a continuous surface. If the facets contain a crack, hole, or overlap that does not match the original model, then the export fails, and a message is displayed.

7.6 Can I export model attributes?

STL files can not hold attributes from the CAD model. However, by separating the STL into 'Separate solids', the colour, layer, or label can be inferred by these 'SOLID' groups.

Note that attributes must be applied to the faces (not the bodies). If applied to bodies, then these are ignored and not included in the output files.

7.7 Why are not all parts included in my exported files?

There are several different reasons why all the model is not exported to STL:

1. By applying 'Export to multiple files' parts of the model will be exported to different files. – Try checking to see if multiple files were exported.
2. If part of the model was selected prior to export, then CADfix will only export that portion of the model. This allows a user to control the export process. – If a selection is in place during export, then CADfix displays a message to warn the user.
3. An error may have occurred during the export of one portion of the model

7.8 Can I stop a process that is taking too long?

If inappropriate values are used, then CADfix STL may take a very long time to complete a preview or export.

The 'Interrupt' button will stop this process at the next suitable moment – This may not be immediately.

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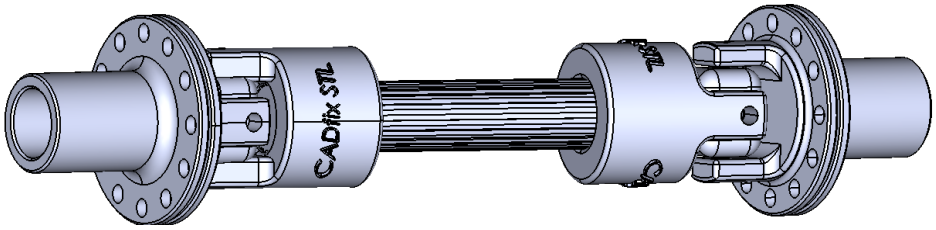
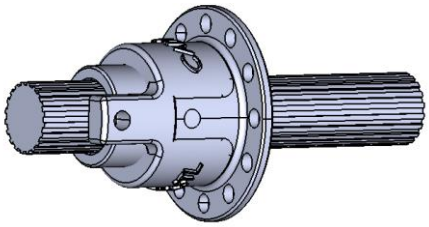
7.9 Why does my assembly look collapsed?

When a model is read in, it will be displayed with 'assembled' view mode . With this view all components are shown in their 'assembled' location:



If the view mode is set to 'unassembled' , each component is displayed aligned to the global coordinate system:



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