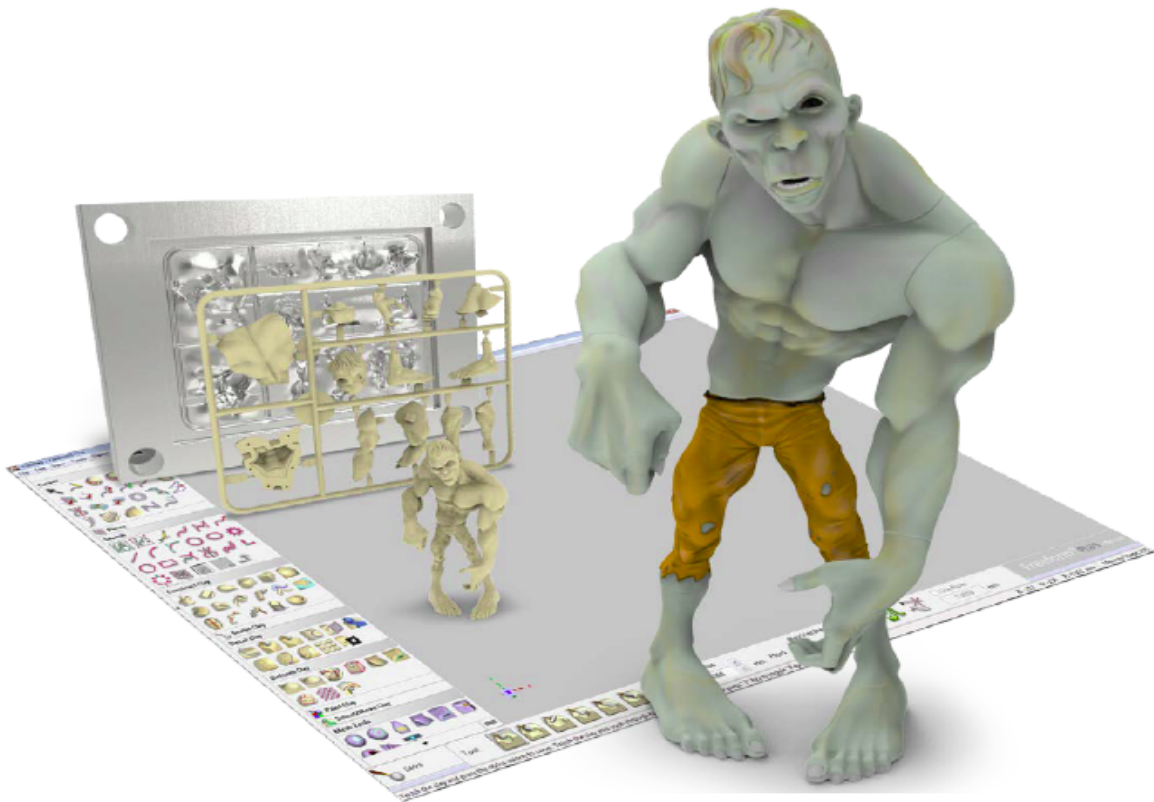


# Geomagic<sup>®</sup> Freeform<sup>®</sup> & Freeform<sup>®</sup> Plus

Precise. Organic. Engineered.



## Release Notes

Geomagic<sup>®</sup> Freeform<sup>®</sup> and Freeform<sup>®</sup> Plus v2017.0

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# 1 INTRODUCTION

Thank you for installing Freeform or Freeform Plus version 2017.0.

We are pleased to announce the availability of the new version of Geomagic Freeform and Geomagic Freeform Plus.

Geomagic® Freeform® and Freeform® Plus enable you to solve complex design and manufacturing challenges with the industry's most comprehensive organic 3D engineering tools combining touch-based sculpting, surfacing, design intent modeling, 3D Scan processing, CAD interoperability and mold preparation. Experience the speed and precision afforded by working in an immersive design environment, where tools and objects can be manipulated with full freedom of motion as well as touch based interactions with objects in the scene. Get the sensation of clay modeling with the benefits of digital design.

This document outlines important information about this release. For information on what is new and improved in this version of Freeform and Freeform Plus, see [New Features and Enhancements](#).

For more information about Freeform and Freeform Plus, please visit [www.3dsystems.com/software/geomagic-freeform](http://www.3dsystems.com/software/geomagic-freeform).

Check out the [Customer Support website](#).

Customer Support can be reached via e-mail at [Geomagic.Support.Americas@3DSystems.com](mailto:Geomagic.Support.Americas@3DSystems.com).

## **COPYRIGHT**

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## 2 INSTALLATION

### SYSTEM REQUIREMENTS

For the latest system requirements information and to learn about specific qualified system configurations, go to the [Support website](#), choose [Freeform Design](#), and from the Freeform Knowledgebase's [Software FAQ](#) section choose the [System Requirements](#) topic. Note that some users have had success running system configurations that deviate from the supported list. In such cases, these configurations are not officially supported by 3D Systems, Inc.

Additionally, we test a variety of hardware platforms in combination with the graphics subsystems. While we make every attempt to be as thorough as possible, hardware manufacturers change their products frequently and may be shipping newer products or have discontinued active support for others. Check the support section of the Web site for the latest system requirement information and specific qualified systems.

### Supported Graphics Cards

For the most current list of graphics cards for use with the Freeform or Freeform Plus system, go to the [Support website](#), choose [Freeform Design](#), and from the Freeform Knowledgebase's [Software FAQ](#) section choose the [System Requirements](#) topic. Click on the link to expand the [Recommended Graphics Cards](#).

### DOWNLOAD AND INSTALL SOFTWARE

You can download and install the software from [gettingstarted.geomagic.com](http://gettingstarted.geomagic.com), select the Freeform or Freeform Plus product, select to download Freeform or Freeform Plus.

In addition, automatic software updates are available if you selected [Check for updated versions of the software](#) in the [Tools>Options>General>Updates dialog](#), a valid maintenance code is activated, and your computer is connected to the Internet. The application will check if a newer version is available and will download it automatically for installation.

If you have a Touch device attached and the Geomagic Touch Device Driver (GTDD) is installed, this option will also prompt you if there is an updated GTDD available to download. Deselect this option if you do not want to be informed that updated versions of the software are available.

### ACTIVATE LICENSE

Geomagic Freeform or Freeform Plus product requires license activation to run the application on your PC. You can choose to use an evaluation license for a 15-day period or activate a permanent license by using a virtual or physical dongle.

After you start your application, the License Utility window opens. The License Utility allows you to activate and use the Freeform or Freeform Plus software.



**NOTE: When you launch the License Utility, you can click the Help button to read the Licensing Guide.**

You should have received an email from 3D Systems with your activation code. If you have not received an email from 3D systems, contact them at [Geomagic.Support.Americas@3DSystems.com](mailto:Geomagic.Support.Americas@3DSystems.com).

If you are an existing user and have already activated the license on your PC with the previous version of the application, you can run the newer version of the application without re-activating the license.

For more information, go to [gettingstarted.geomagic.com](http://gettingstarted.geomagic.com), select the Freeform or Freeform Plus product, then click Licensing.

### LICENSING AGREEMENT

Please see the End User License Agreement (EULA) located in the <Installation Directory>\Licenses for complete terms and conditions of the license.

### GEOMAGIC TOUCH DEVICE DRIVERS (GTDD)

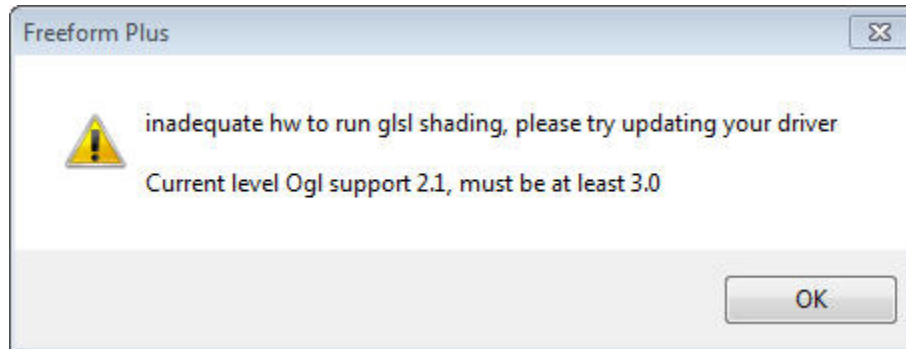
This software is optimized to run with the latest version of the Geomagic Touch Device Driver. As this version of Freeform is released, the current Geomagic Touch Device Driver is v2016.10.13. To download and install the latest GTDD go to [gettingstarted.geomagic.com](http://gettingstarted.geomagic.com), select the Freeform product, select to download Freeform and then select the most up-to-date device driver that is compatible with your device.

## REQUIRED HARDWARE

Freeform v2017 requires a minimum display resolution of 1920 x 1080. Also, using custom desktop display settings that apply font and icon scaling may cause menu and dynabar contents to not fit properly.

Freeform v2017 also minimally requires a graphics card with OpenGL 3.0 support, and OpenGL 4.3 enables the software to provide additional performance enhancements.

**NOTE:** You may receive a warning when you launch the product should either your card or driver not support OpenGL 3.0 as required. If you receive the following warning, go to the manufacturer's website and download the most recent driver



**NOTE:** Some older graphics cards may not have OpenGL 3.0 compatible drivers available. See your manufacturer's options.

When using cards and drivers that support OpenGL 4.3 you will be able to take advantage of the newer high resolution transparency options and improved framerates that are new to v2017.0. While the product may still run without this graphics capability, you will not experience the new capabilities .

For a list of the recommended graphics cards, go to the [Support website](#), choose Freeform Design, and from the Freeform Knowledgebase's [Software FAQ](#) section and choose the [System Requirements](#) topic.

## OPERATING SYSTEM

A 64-bit version of Windows 7, 8, or 10 is required to run this version of the software. 32-bit is not supported.

## BACKWARDS COMPATIBILITY

Old Files - This version will open models that were created in older versions of Freeform or Freeform Plus, however, models created in this version may not be compatible with previous versions (see notation under "Sketch Text" and "Solid Pieces" below).

When a file is opened in Freeform, it is automatically converted to the current format. Once converted and saved, the model may lose compatibility with older versions. We strongly recommend that you save backup copies of all Freeform files from previous versions before opening them in a newer version.

## INSTALLING MULTIPLE COPIES OF FREEFORM SOFTWARE

The Freeform v2017.0 installer allows for up to two side-by-side installations of the same major version or point release. For example, you can have one version of v2016 and the other version of v2017. However, only one can be run at a time.

# 3 NEW FEATURES AND ENHANCEMENTS

The following is a summary of new features and enhancements in FreeForm v2017.0. For a more comprehensive look at the new features and enhancements in the v2017.0 release see the online Help topic titled "What's New?" You can access the help from within the FreeForm application by pressing F1 or from the Help Menu.

 **NOTE: Customer-requested issues are noted with an \*.**

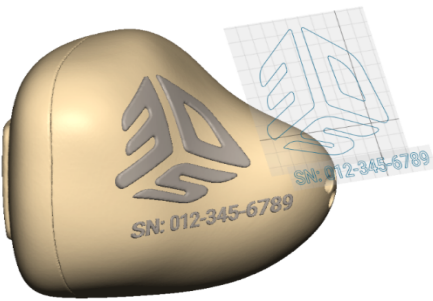
 **NOTE: The ‡ symbol indicates features that are only available in Freeform Plus.**

## WHAT'S NEW IN 2017

### Clay Tools

#### Shell Cut Clay (and Shell Cut Mesh ‡)

The new Shell Cut Clay Tool enables the creation of layered text or details as independent 3D objects that match the surface contours of the underlying part. Starting with a sketch profile, define a thickness and offset to create such things as 3D labels, part sleeves, or regions with secondary material layers. See Construct Clay Palette>Shell Cut Clay in the Freeform Help for more information.



### Mesh Tools

#### Shell Cut Mesh ‡

The Shell Cut Mesh Tool allow you to use a sketch profile to create a surface following object as a new mesh piece, with a defined thickness and defined offset (consistent surface offset). See Mesh Tools Palette>Shell Cut Mesh and Construct Clay Palette>Shell Cut in the Freeform Help for more information.

#### Select Mesh Area Tool

New modes in the Select Mesh Area tool allows you to utilize a Box, Polygon, or Lasso to divide a mesh into multiple pieces, or to convert a selected area of a mesh to clay. See Mesh Tools Palette>Select Mesh Area in the Freeform Help for more information .



### Wire Cut Mesh Tool ‡

The new Wire Cut Mesh tool allows you to create or cut away from a mesh using closed profiles on a sketch plane.

This tool functions in a manner similar to the existing Wire Cut Clay tool.

See Mesh Tools Palette>Wire Cut Mesh in the Freeform Help for more information.

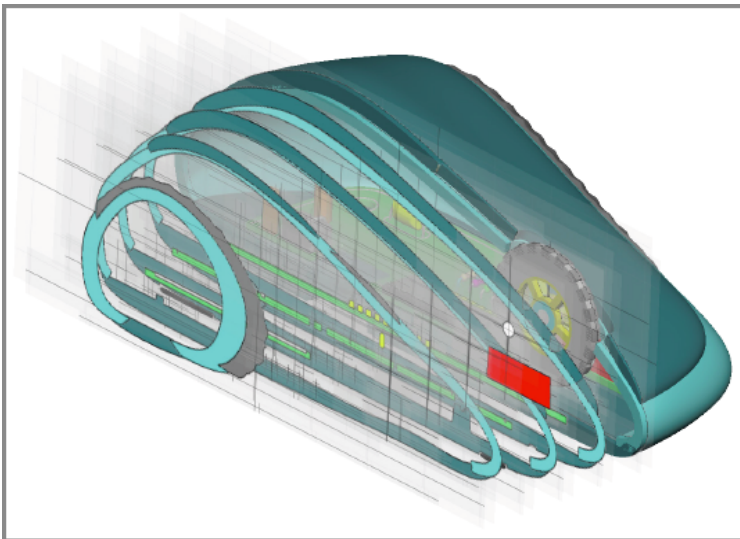


## Analysis Tools

### 2D Slicer Tool

The new 2D Slicer tool allows for the inspection of cross-sectional slice(s) of objects. The inspection can be undertaken interactively using the haptic driven 3D tool, or alternatively generated as slices along an axis or 3D curve. The results can be saved as images, sketch profiles, or 3D curves, with optional export of the image slices to PNG files.

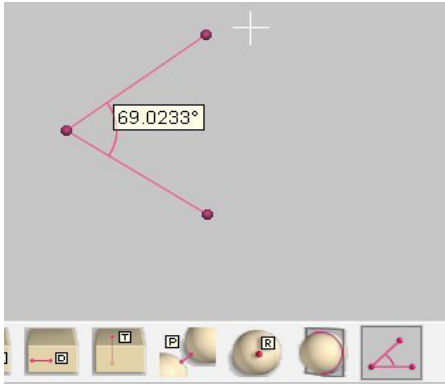
This tool is particularly beneficial for Clay/Voxel parts which can carry interior color or material data (plain clay, paint, masks, buck, selections, voids, etc). See Analysis Tools Palette>2D Slicer in the Freeform Help for more information .



## Ruler: New Measure Angle Mode

The Ruler tool contains a new mode called “Measure Angle”. Assess angular measurements on your part by placing three points to specify the angle to be quantified.

See Analysis Tools>Ruler>Measure Angle in the Freeform Help for more information.



## Sketch Tools

### Sketch Text Tool

The new Sketch Text tool allows you to create outline text profiles on a sketch plane.

This tool includes a text entry field and numerous settings to adjust height, spacing, alignment, and font. Sketch Text objects will be managed as single objects in the Object List, but can be exploded to letters, or further exploded to curves.

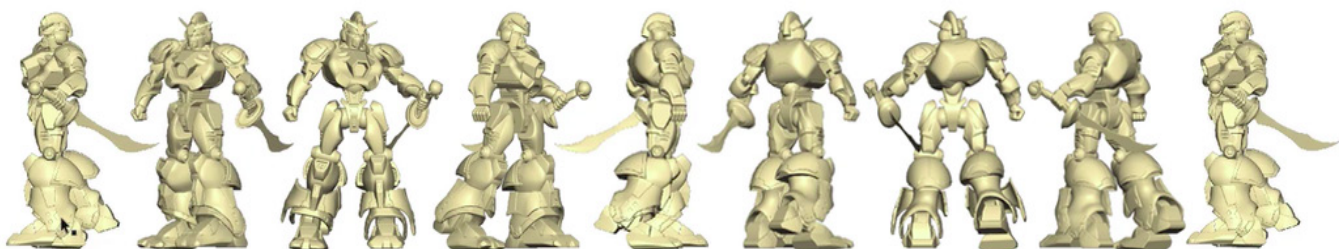
Profiles can be used in many functions that extrude or emboss using profiles. Note that text strings saved as single objects in the Object List are not backwards compatible, and would need to be fully exploded to curves to be supported in older versions of Freeform. See Sketch Palette>Sketch Text in the Freeform Help for more information.



## Documentation

### New Saved Views Features

Advanced documentation tools enable streamlined communication with your customers. Easily create images for downstream documentation with the click of a button. Generate a single image or sets of images based on orthographic views or the new turntable views mode. Utilize options that eliminate downstream editing time such as cropping, centering, object filtering, and background transparency when saving to PNG. See File Menu>Save View Images in the Freeform Help for more information .





## Performance Optimizations

### Reduce for Export

Multi-Piece Reduce-for-Export is now multi-threaded, reducing processing times by as much as 50% or more based on the processing of one piece per logical core.

### Rendering Transparency for Clay (Voxels)

Optimizations to transparency has enabled framerate improvements, increases to rendering quality, and support for a choice of either High or Low Resolution rendering of Clay when using See Through mode. This allows for the best balance of quality and redraw performance in any workflow situation. Availability of this option requires a graphics card that supports OpenGL 4.3.

### File>Save

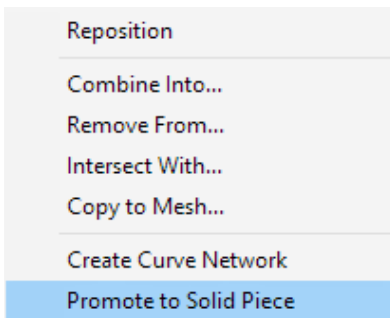
Reduce file sizes by as much as 95% using optional File Compression on Save. Note: files saved with compression are not backwards compatible to v2016.2 or prior.

### Common Solids Can be Promoted to be Solid Pieces ‡

Freeform Plus v2017.0 has a new option to promote legacy **Common Solids** to become **Solid Pieces**. Promoting to Solid Pieces enables solids to have a higher level of architectural support.

Each Common Solid promoted to be a Solid Piece has its own local origin, enabling more precise positioning control. They also acquire a higher status in the Object List, with the ability to be Activated, have dependents (curves, planes, points, and annotations), support per-piece attribute assignment, and have access to a broader set of palette tools such as Pattern Piece, Align tools, Material and Density Tools, and use as a core shape in CellularFX.

In order to create Solid Pieces, use the Promote option in the Object List context menu for Common Solids .



## Additional New Features

### Drag-n-Drop to Import [\* .cly] Files

A set of [\* .cly] files can be selected and dragged into an open Freeform workspace, causing all the files to be imported into the same file session in Freeform.

### New Function to Separate Discontiguous Mesh Shells

The Separate Shells function allows you to explode a mesh part that is comprised of numerous discontiguous shells into individual mesh pieces in the Object List. See [Object List>Mesh Context Menu>Mesh Utilities>Seperate Shells](#) in the Freeform Help for more information .

## New Export Model as [\* .cly] Options

The Export Model Dialog for export of [\* .cly] files contains new preferences that allow for such things as exploding sketch profiles, demoting Solid Pieces, and applying compression upon export of .cly files. See File Menu>Export Model in the Freeform Help for more information .

File name: Untitled\_extracted Save

Save as type: Freeform File (\*.cly) Cancel

Export from: Selected Pieces/Objects

Export pieces as separate files

Use piece names only

Include associated objects with pieces

Demote Solid Pieces to Solid Bodies

Explode Sketch Profile Objects

Compress File (compatible with v2017 or later)

Delete the selected objects from the current file

## Tessellation management for Solid-to-Mesh Conversions

New mesh tessellation controls are now provided in several functions where solids are converted to mesh, such as on import of a CAD part as mesh, on export of Solid as Mesh, or on Copy (of Solid) to Mesh,

Convert Solid To Mesh

Tessellation Options

Relative Min Size: 0.1000 % Max Angle: 2.500 °

Absolute Max Size: 5.0000 % Chord Tol: 0.0000 mm Default

OK Cancel

## Multiple Piece Boolean Removal Enhancements

The Object List Boolean Remove function has been enhanced. The Boolean function can switch the tool and target by using the CTRL key modifier. Using the CTRL key modifier, Multiple pieces may now be removed from one target piece, as opposed to the default behavior where the selection set is removed from the target piece. See [Object List>Context Menu>Boolean](#) in the Freeform Help for more information .

## New Preferences to Control File Display in Freeform Viewer

The Save File options now include the ability to set some file attributes that affect the way a file is displayed in the Freeform Viewer. The specified settings will affect whether certain file attributes are shown when the file is opened in the v2017 Freeform Viewer application. The new v2017 Freeform Viewer, the version that will respect these attributes, will be released in early July 2017.

Freeform Viewer Permissions

Object List: Enabled

Toolbar: Enabled

File Info: Enabled

Save Screen: Enabled

## 4 BUG FIXES



**NOTE: Customer-reported issues that have been resolved are noted with an \*.**



**NOTE: The ‡ symbol indicates features that are only specific in Freeform Plus.**

### Bug Fixes in 2017

This section lists issues that have been resolved since v2016.2:

- GF-2686: Fix Draft: Removed more clay than expected in this case \* ‡
- GF-286: Integrated Intel Graphics Cards: “About Your Computer” Reports incorrect video card on laptop with integrated and discrete graphics \*
- GF-331: Haptic Communication Loss when using KeyShot at the same time as Freeform with ethernet connected devices. (Keyshot defaults to use all cores). Adding note to doc on how to set max cores utilized within Keyshot.
- GF-2087: Emboss with Image: Resize handles (corner arrows) do not stay fixed to plane corners(regression). (Fixed in Haptic Mode for v2017) \*
- GF-2145: Limit to Depth: Regression - “Set” button changes piece icon in OL to empty
- GF-2325: Pattern Piece: Preview remains visible when swapping to sketch objects (layered tool issue)
- GF-3237: Printability Checking: Printing Volume - White box edge colors alters when enabling perspective view
- GF-3284: SubD: Rendering artifact when you undo edits made to divided (not promoted) cage that are outside of the bounding box of the cage
- GF-3430: Keyshot: Live Linking error on terminating process in task manager, must restart Keyshot through Program Files
- GF-3793: Sketch: Offset - Fails silently with large distance...need error message when result would be negative width/height
- GF-3821: Sketch: Offset Tool - Offset did not create properly for this case (Offset is attempted using distance that exceeds radius of arc)
- GF-4341: OL Mesh Utilities: “Make Open Manifold” is incorrectly functioning compared to HF2 \*
- GF-4531: Export of stitched BREP: U3D exporting issues takes a long time. Add warning and integrate ESC functionality.
- GF-4837: Emboss with Wrapped Image tool: Settings no longer persistent on return to tool (regression from v2015) \*
- GF-4896: Graphics: Windows 10 - Redraw and ghosting issues when dragging floating windows when connected to multiple displays
- GF-5017: Tools/Options: Save Screen: Save View JPEG Files - Global pref altered when applying local change via File menu
- GF-5158: Project Image: Grab Mode usage clears selected plane specified for the clipping plane
- GF-5224: Emboss along Curve: Problems loading 10k image
- GF-5312: Custom Carve Tool: Toolhead scaling occurs in cases where the toolhead profile center is not coincident to the Plane center
- GF-5313: Custom Carve Tool: Creation of custom carve tool sometimes fails when the tool handle is coincident to the edge of tool head
- GF-5317: Export Selected Meshes to Mesh: Export to color carrying filetypes currently captures the green selection color
- GF-5335: Import to Plane: Import of AI file from Illustrator (CC 15) fails with the stroked path warning ( outlined, stroked , pdf compatible)
- GF-5342: OL: Batch Reduce - Batch reduce did not apply to all selected pieces ‡
- GF-5346: Import to Plane: Help access in dynabar not triggering the Help topic
- GF-5380: 3d Curves: Performance Regression - Framerate issue being seen as cursor traverses over an existing curve’s bounding box
- GF-5384: Performance - Mainline regression where manipulating the clay piece causes application to be come unresponsive for several seconds
- GF-5420: Object List: OL selection state lost in the OL after collapsing/expanding folder...though still selected in the scene
- GF-5437: Separate Mesh: Separate Mesh with Plane is creating duplicate halves with an extended planar parting surface added to the mesh

- GF-5443: Project Image: Clay not displayed in scene when see through is enabled
- GF-5492: Patches & Solids: Shape Patch - Erratic behavior of node snapping for inner boundary loop ‡
- GF-5631: Copy to Clay: Case where converted clay model does not match surface of original mesh \*
- GF-5637: Mesh Selection Tool: Applying 'G/H/J' keys clears box region in preview (pink)
- GF-5640: OL Folderization Issue (e.g. Sketch Text Tool): Undo/Redo outside of sketch removes folders in OL window
- GF-5652: Sketch Sub-folder: Tools can select profiles that are in hidden sub-folders
- GF-5654: Draw Curve: 3D curve drawing snaps to hidden sketch objects (affects mouse only or haptic modes)
- GF-5665: Inflate: Choppy edges in preview and final results on applied, regression from FFv15
- GF-5680: Wire Cut Mesh: Circular profiles does not create properly ‡
- GF-5803: Sketch: Select Sketch Object - Editing a Freehand sketch curve after changing the Edit Points option causes an endpoint to jump
- GF-5842: Export: Patch - using the export settings of selected objects in conjunction with separate pieces will cause application to crash ‡
- GF-5845: Ruler: Crash on File/New while in a session of Ruler that is layered over the sketch text tool
- GF-5882: Plane Intersection Curve: In single slice mode the "sketch curve" option does not work
- GF-5883: Scale: Mesh, SubD, Solid Pieces - Sketch Profile does not scale, inconsistent with Clay Pieces
- GF-5905: Draw Curve: Fit Curve - Nodes of a curve are not placed correctly on a moved piece when using the mouse
- GF-5909: Sketch: MRS - Import .dxf does not select object in MRS tool
- GF-5949: View Manipulation Widget: Rendering Anomaly surrounds the mouse driven cursor as it passes over the widget's background (skew of view affects behavior)
- GF-5979: Rendering: Plane - Change in the way a plane is rendered for an active piece when a SubD piece is also visible
- GF-6019: Reposition Piece tool: Cannot use the down elevator button with a .001mm increment \*
- GF-6024: Pose: Crash placing pivot on cylinder top face with Auto Center ON, regressed from 16.2 release
- GF-6039: View Manipulation Widget: Axis labels render as colored squares
- GF-6045: Mirror Rectangle and sketch plane is not resized \*
- GF-6052: Slice Deform Clay: Crash Scenario Found \*
- GF-6091: OL: Show/Hide eyeball - Ctrl selecting a Plane and a Sketch created on that plane, will not unhide the sketch if the eyeball is turned on
- GF-6092: OL: Hide/Show Eyeball - Sketch Text object visibility state does not match scene
- GF-6094: Convert to Clay: Convert with Profile - Crash with Preview enabled & Fill when no solid is behind profile, regressed from 15.0.41 ‡
- GF-6102: Project Patch to Clay: Allows multiple selection of sketches ‡
- GF-6109: Wire Cut Solid: To Solid and Plane - Error on create inside when solid is hidden, regressed from 15.0.41 ‡
- GF-6110: Convert to Clay Tool: Selecting Solid via OL window while in Curve Loop mode enables apply options, fails silently on apply ‡
- GF-6121: Ruler: Crash on file new interrupting ruler mid way
- GF-6126: Save Turntable Views to Files - dropping pixels with transparency enabled
- GF-6129: 2D Slicer: Slice at Tool Position - Popping through the model is very difficult when slicing with dynamic tool position
- GF-6130: Sketch Mirror: Extra sketch object created on File/Save
- GF-6131: Sketch: Mirror, Circular & Rectangular Arrays - File save not recognized, on exit app prompts user to save
- GF-6132: Export: PDF - Scale or zoom issue when Freeform is set to inches \*
- GF-6166: Rendering: New transparency - Coincident and intersecting piece surfaces not displayed with as much back facing edge and surface data \*
- GF-6170: Shape Patch: Hiding patches while in shape mode leads to hang ‡
- GF-6180: Reduce for Export (haptics): After decimation - haptic cannot access outside of the main window \*

## 5 KNOWN ISSUES

### Known Issues in 2017

This section lists known issues with v2017.

- GF-3791: Project Image tool: Image file with transparency creates halo at edges of paint if clay has custom piece color (\*.psd is ok)
- GF-323: Repositioning with Precise Movement: Precise Movement is invoking an offsetting behavior. This issues is particularly noticeable if axis snap is on.
- GF-1985: Wrap Image Tool: Significant [Aliasing/EdgeStepping/Blocking] is visible when using "Copy to Paint". The Project Image tool works properly for the same task.



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