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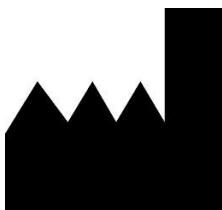
# Materialise 3-matic

Version 18.0 – Release notes

## Regulatory information

**Materialise 3-matic 18.0** is not a medical device. Any reference that is made to the design of medical devices within Materialise 3-matic 18.0 user documentation including user guides or tutorials refers to a research context.

Usage of the software signifies your acceptance of the above.



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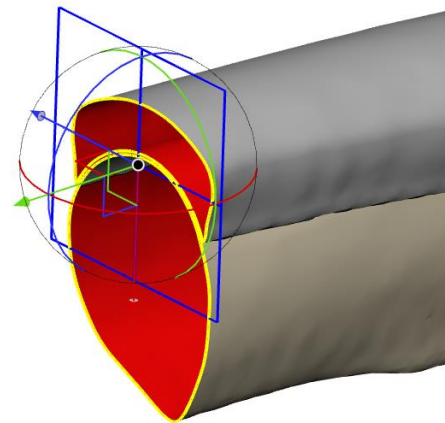
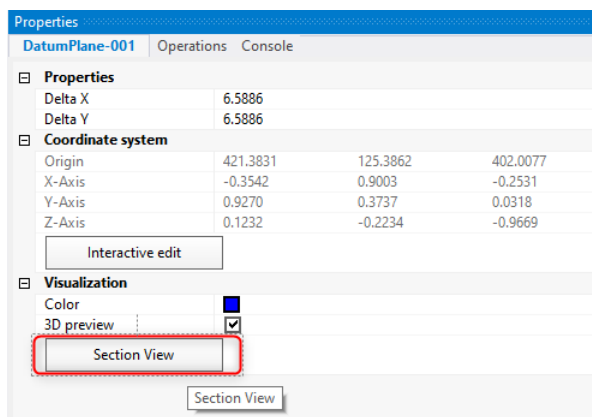
## General

This Release Notes document is intended for customers who were previously using Materialise 3-matic software. All the new features, as well as minor changes and known issues of Materialise 3-matic 18.0, are described in this document.

## What's New

### 1.1. One-click solution from Datum Plane to Section View

In 3-matic 18.0, it is possible to quickly go from a datum plane to a section view. Moreover, the user experience has been enhanced: this quick section view option offers the same experience as when working with the Translate/Rotate tool or the Interactive Plane Cut. To activate it, enter the Properties page of a Datum Plane, and click on 'Section View'.



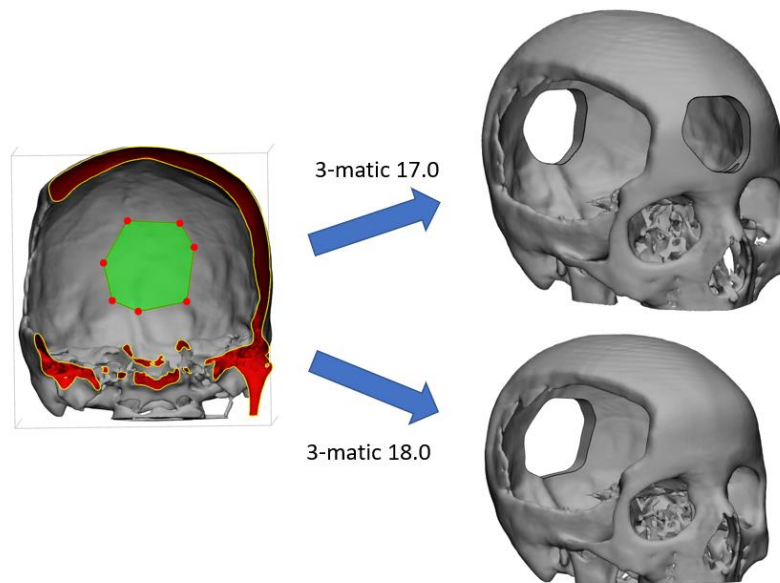
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*Activating the Section View is done through the Datum Plane's Properties page.*

While working with Section View by Datum Plane, section planes can be created via the operation page by clicking the 'Create' button in the Section Plane parameter. By default, the original position of the datum plane is retained when the operation is closed. However, unchecking the checkbox of 'Retain original position' in the Datum Plane parameter will keep the position of the datum plane resulting from the interactive translate/rotate instead.

### 1.2. Compatibility of interactive operations with Section View

When working with a Section View with State 'Clip' on, in previous versions of 3-matic, various interactive operations would work not only on the visible aspects of the part, but also on the aspects that had been made invisible due to the clip that were in front of the user's point of view. In 3-matic 18.0, the user experience has been more intuitive, in that the Trim, Push & Pull, and Local Smoothing operations now work exclusively on those aspects of the part that are visible.



*While working in a clipped view (left), the Trim tool in 3-matic 18.0 works only on the visible part (result shown on bottom right).*

### 1.3. Compatibility of interactive operations with invisible triangles

In addition to working with section views, when working with invisible triangles (e.g. via rectangular clipping), in previous versions of 3-matic, various interactive operations would work not only on the visible aspects of the part, but also on the aspects that had been made invisible in front of the user's point of view. In 3-matic 18.0, the user experience has been made more intuitive, in that the Trim, Push & Pull and Local Smoothing operations now work exclusively on those aspects of the part that are visible.

### 1.4. 3D Connexion SpaceMouse

3-matic 18.0 now supports the SpaceMouse from 3D Connexion. All six degrees of freedom are available for use; speed and direction can be set in the SpaceNavigator application from 3D Connexion. Use of the SpaceMouse may lead to ergonomic benefits and a higher efficiency of work (<https://3dconnexion.com/uk/spacemouse/>).

### 1.5. Scripting

3-matic 18.0 now works with python 3.10. With this update, the latest features and improvements in Python 3.10 can be utilized with 3-matic.

#### List of API improvements

Eight new operations have been added to 3-matic's Python API, in order to allow further automation of workflows via scripting. These include:

<code>trimatic.create_pyramid</code>	<code>trimatic.create_part_by_surfaces</code>
<code>trimatic.create_pyramid_part</code>	<code>trimatic.suspend_logging</code>
<code>trimatic.design.variable_offset</code>	<code>trimatic.resume_logging</code>
<code>trimatic.export_abaqus_single_output</code>	<code>trimatic.show_only</code>

Note that Python scripts written for previous versions of Materialise 3-matic (version 17.0 and before) should be re-validated by the user before being run with Materialise 3-matic 18.0. Further, when adding extra packages to python for autocomplete and connectivity with external IDE's, please make sure jedi 0.9.0 and RPyC 4.0.2, respectively, are installed. For all other versions, the compatibility with Materialise 3-matic 18.0 has not been tested.

### Other API improvements

- The `get_parent` API function is expanded to return the parent group for groups.
- The `create_part` API function is improved to reduce execution time by at least 20-30%.

### Clear Python Console

It is now possible to clear the python console by using the shortcut key `Ctrl + L` while the console is active or by entering "clear" command in the console. Clearing the python console will not delete the history of the executed commands. The history of the previously executed commands is preserved and can be found by pressing the up and down keys while the console is active.

### Callback Notifications

3-matic 18.0 introduces a new method that can be used to improve the speed of execution of scripts. This callback mechanism enables several selected API's to signal the API client when a specific event occurs. The client can then define a function to respond to the event notification. A scenario in which this is useful, includes for example the control of advanced workflows that have been created in PyQT. In such workflows, it is often beneficial to be able to have an accurate reflection in the PyQT UI of the state of each object in 3-matic itself at all times, i.e. without checking this through e.g. collecting the state of objects every 100 ms.

The specific events that can be detected include:

1. An object is created
2. An object is deleted
3. Object name changed
4. Object visibility changed

User can choose to subscribe or unsubscribe to the callback. An example of working with the callback for creation of an object:

```
ON_OBJ_CREATED = "ON_OBJ_CREATED"
def on_obj_created(obj): print("Event: ON_OBJ_CREATED ", obj)
trimatic.obj_created_subscribe(on_obj_created)
```

Then, when creating a box,

```
trimatic.create_box_part((0,0,0),5,5,5)
```

the console will mention:

```
Event: ON_OBJ_CREATED <trimatic.Part(Box-001)>
```

The other three possible callbacks are activated through:

```
trimatic.obj_deleted_subscribe(on_obj_deleted)
```

trimatic.obj\_label\_changed\_subscribe(on\_obj\_label\_changed)

trimatic.obj\_visual\_state\_changed\_subscribe(on\_obj\_visual\_state\_changed)

The included API's and events are:

trimatic.	OBJECT_CREATED	OBJECT_DELETED	OBJECT_NAME_CHANGED	OBJECT_VISIBILITY_CHANGED	Remark
copy_to_part	Y				OBJECT_CREATED exist only if destination is empty
delete		Y			
duplicate	Y				
merge	Y	Y			
move_to_part	Y				OBJECT_CREATED exist only if destination is empty
name			Y		
visible				Y	supports only OP_XP_SHOW and OP_XP_HIDE
create_point	Y				
create_line	Y				
create_line_fit_ruled_surface	Y				
create_line_plane_intersection	Y				
create_line_direction_and_length	Y				
create_arc_3_points	Y				
create_arc_normal_center_radius	Y				
create_circle_arc_3_points	Y				
create_circle_arc_fit	Y				
create_circle_arc_normal_center_radius	Y				
create_cylinder_axis	Y				
create_cylinder_fit	Y				
create_cone	Y				
create_sphere_center_radius	Y				
create_sphere_fit	Y				
create_plane_1_point_parallel_plane	Y				
create_plane_1_point_perpendicular_2_planes	Y				
create_plane_2_points_perpendicular_1_plane	Y				
create_plane_3_points	Y				

create_plane_average_existing	Y				
create_plane_fit	Y				
create_plane_midplane	Y				
create_plane_normal_origin	Y				
attach_graph_to_mesh	Y				attach_graph_to_mesh
convert_lattice_to_organic_mesh	Y			Y	convert_lattice_to_organic_mesh
convert_lattice_to_regular_mesh	Y			Y	convert_lattice_to_regular_mesh
create_uv_based_conformal_lattice	Y			Y	create_uv_based_conformal_lattice
create_uv_based_dual_conformal_lattice	Y				create_uv_based_dual_conformal_lattice
unit_cell_based_lattice	Y			Y	unit_cell_based_lattice
boolean_intersection	Y	Y			
boolean_subtraction	Y	Y			
boolean_union	Y	Y			
circular_sweep	Y				
convert_analytical_to_mesh	Y				
create_box_around_part	Y				
create_box_part	Y				
create_cone_part	Y				
create_connections_automatic	Y				
create_cylinder_part	Y				
create_part	Y				
create_part_by_surfaces	Y				
create_pyramid	Y				
create_pyramid_part	Y				
cut	Y	Y			
extrude	Y				
loft	Y	Y			OBJECT_DELETED exists only if merge is true
sweep	Y				
sweep_loft	Y				
wrap	Y				
import_part_stl	Y				
open_project	Y				
create_non_manifold_assembly_intersection	Y	Y			
warp_part	Y				



More information about the callback notifications is available in the Scripting Guide (Options & Help tab).

## 1.6. HTML-based User Guide

The User Guide has been converted to an HTML-based User Guide. In the HTML-based User Guide, a side navigation menu eases navigating, locating, and switching between different pages or topics. The User Guide has also been updated to reflect the changes in 3-matic 18.0.

Start	
Important Information	▼
Introduction	▼
General Information	▼
Menus and Tabs	▼
Extra Information	▼

*The sidebar menu from the HTML-based User Guide.*

A search bar is also available in the HTML-based User Guide. Keying in a search query and pressing enter or clicking the search icon will show all resulting pages related to the search query.

🔍

**Your search for "guide design" returned 17 result(s).**

---

**Create Guiding Tube**  
 Description This operation is **designed** to offer a way in creating a tube, an element that is commonly seen in a **guide design**. Flexibility is given to **design** the inner cylinder and outer cylinder at different radius and length. Preview is shown once a direction has been selected as input. Extend-into ...  
[D Menu and Tabs/N Design Tab/F Guide operations/C Create Guiding Tube.htm](#)

**Create Flange**  
 Description This operation is **designed** to ease the process of creating flanges for various **guide** types, e.g. Fibula **Guide**, Reconstruction **Guide** etc. The direction parameter can be used to decide if a flange will be created externally or internally to the input in Entity selection. Flexibility is ...  
[D Menu and Tabs/N Design Tab/F Guide operations/E Create Flange.htm](#)

**Create Custom Plate**  
 Description This operation is **designed** to create mandible reconstruction plate with the input of a guiding curve and mandible. Options are given to **design** plate in different dimension with the flexibility to choose the screw position. You can choose bent plate, unbent plate or both as output ...  
[D Menu and Tabs/N Design Tab/G Plate operations/C Create Custom Plate.htm](#)

**Create Cut Slot**  
 This operation is **designed** to ease the process of creating a cut slot, a common element in a **guide design**. Flexibility is given to **design** the cut slot and the cut profile at different dimensions. A preview is shown once an entity has been selected. The orientation of the cut slot and the cut profile ...  
[D Menu and Tabs/N Design Tab/F Guide operations/D Create Cut Slot.htm](#)

*The search bar (left), and search results (right) from the HTML-based User Guide.*

In addition to these, there are also the navigation bar at the top of the page and the Previous/Next topic arrows to aid further in navigating the User Guide.

[Menus and Tabs](#) > [Design Tab](#) > [Guide Operations](#) > Create base



*The navigation bar and the Previous/Next topic arrows at the top of the page.*

## 1.7. Minor Changes

### Finish

- The robustness and speed of the Fillet function has been improved.

### Options & Help

- The Scripting Guide has been updated to reflect the changes in 3-matic 18.0.
- The User Guide has been updated to reflect the changes in 3-matic 18.0.

### Object Tree

- The responsiveness of the context menu has been improved.

### Boolean Subtract

- The Remove original checkbox (Expert mode) has been turned 'Off' by default.

### Edit Curve

- The default value of the influence distance has been set to 33% by default.

## Known Issues

### General

- Visualization of menu icons may blur in certain cases, depending on the Windows display resolution. It is advised to set the Windows display settings i.e. scaling factor and resolution to the settings recommended by Windows.
- Depending on your resolution settings, pop-up dialogs in 3-matic (e.g.: preferences, fix wizard, ...) can be too small to fit all available buttons. In this case, enlarge the window to assure all buttons can be accessed. The same issue appears for the filter options panel.
- For specific monitors, if scaling is set to 125% in display settings, the progress bars might be cut off for certain operations.
- The color scale bar generated for analysis objects can show a partially blurry font.
- Under very specific conditions, there might be an incompatibility between 3-matic and Windows-specific add-ons that cause the file explorer window to malfunction, making it impossible to select files for import. A workaround is to drag and drop files into 3-matic. Do contact our support team in case you face this issue.
- In some very specific customization scenarios, the command cache file to store customization settings may get corrupted. This may result in a crash upon the launch of 3-matic. A workaround is to delete the temp file in AppData\Roaming\Materialise\3-matic. This workaround will also delete any customization done in 3-matic.
- When registering a new local license, it is possible that the new ribbons related to the new license are not immediately shown in 3-matic. If this happens, it is advised to reset the user interface via Options & Help → Reset Defaults → Reset user Interface.
- Connecting to certain floating license servers may cause performance issues. Connecting through a different port (e.g. 7010 instead of 7000) might help in specific cases.
- For users with multiple graphic cards (e.g. integrated graphic card and dedicated graphic card), 3-matic will use the high-performance graphic card. If this dedicated card is not properly installed, it can give rise to rendering issues. If this happens, it is advised to run 3-matic with the integrated graphic card.
- Importing a 3-matic profile from previous 3-matic versions to 3-matic 18.0 might result in misplaced or greyed out icons. A workaround is to use Reset User Interface, however, this will reset any customized tabs.
- When 3-matic is launched in a shared network environment, the “CrashRpt” folder may not be created, which causes a dialog box to appear when launching 3-matic. A workaround is to create an empty folder called “CrashRpt” manually for the first time in the user’s network drive AppData folder (e.g. \\storage-srv\Work Files\User\AppData\Materialise\3-matic\Materialise 3-matic 18.0.0.1589\CrashRpt), before launching 3-matic.
- 3-matic’s renderer only works with linear RGB. This includes import and export in 3-matic. Most external color info will be using sRGB (e.g. 3MF, OBJ, ...), however, upon importing, 3-matic 'reads and renders' it as linear RGB. Exporting the file will then save the RGB info as is, not taking into account if the actual RGB values were linear or sRGB, and also ignoring if the file format expects sRGB.
- Invisible Triangles may not be shown in the object tree after performing operations that create new parts (i.e. Boolean Subtraction, Interactive Plane Cut, UV Based Rectangular Pattern and even Duplicate). However, these invisible triangles are still present in the part. One workaround is to mark the whole object, make it invisible, and then make it visible again.

## Import/Export

- Import \*.X3D does not have the "Import as one part" parameter. By default, the geometries are always imported as one part.
- Upon importing Fluent files, (sur)face names are not retained but renamed to surface-1, surface-2, ...
- Exported analyses to 3D pdf appear too bright in Adobe.
- Export STL fails when ASCII is selected as the file format and at the same time, the selected part's name contains non-English unicode characters (e.g. ã, á, ありがとう, カタカナ, 理, ...). As a workaround, users have the option to export as a binary STL, export with "Include surface structure" checked, or export with common English characters (q, w, e, r, t, y, ...) and rename the part after exporting.

## View

- When zooming in to the maximum amount in the Work area, the Orientation box changes its original position.

## Measure

- Length measurements can give a different value when saving and reopening a project if the coordinate system of the original parts has been updated after the measurement was already executed.

## Curve

- In specific cases, the 'Create Spiral Curve' does not take the user-defined center point correctly into account.
- While the preview of the 'Create Isocurves' operation is not always correct or even missing, the actual resulting curves after applying are correct.

## Design

- When applying the Interactive Plane Cut with the "Finite cut" parameter checked, the clearance parameter is not properly considered when working with graphs/graph sets. The clearance is not reflected in the clipped preview and will only be applied on one side of the cutting plane.

## Finish

- When performing Trim with invisible and visible triangles at the same time using Remove inner, due to limitation of Boolean operators, the operator might sometimes result in a part with bad contours or bad contours with an extended part.
- When performing Trim with invisible and visible triangles at the same time using Preserve inner and outer, the operation may sometimes result in parts with bad contours on the invisible triangles that are completely outside the trimming window.
- Push & Pull and Local Smoothing may not behave as expected when working at certain viewing angles and with 'Selection only' turned on.
- Performance of Push & Pull and Local Smoothing may be negatively affected when working on parts that are very far away from the origin of the WCS.
- Push & Pull and Local Smoothing are not deactivated when Create Point, Line, Arc, or Datum Plane operation is launched.

- Push & Pull and Local Smoothing may create new triangles if the operation is applied to visible triangles at the border (between visible and invisible triangles).
- When using Point-based pattern, the OCS of the target entity affects the orientation of the pattern entity. As such, the operation may produce unexpected results.

### UV Map

- Providing conflicting alignment constraints in the UV alignment operation may lead to an invalid UV Map.

### Texturing

- When applying a square texture on a UV map that has (or had) a non-square texture initially, the aspect ratio of the square texture will be distorted.

### Lattice

- A result of the 'Convert Lattice to Mesh' operation with organic effect is not always smooth for graphs with different thicknesses if they have shared nodes.
- For certain interactive operations (e.g. Interactively Translate Graph Edges) the selection filter might get disabled, preventing you from making a graph selection in the 3D view. As a workaround, the entity selection box should get focused again on the operation page.
- In very specific cases, picking and rotating a part with graphs in the Work area might result in 3-matic freezing for a short time.

### Remesh

- The 'Analyze Mesh Quality' operation is marking only bad volume elements, instead of also marking the corresponding triangles of the surface.
- When applying the Uniform Remesh operation on parts containing invisible surfaces, it will make the invisible surfaces visible again. The output result is not influenced.
- Using the Local volume mesh parameters upon generation of a volume mesh can result in the wrong location of the local refinement. This issue is triggered when the input entities that define the local refinement location are transformed before applying the Create Volume Mesh operation.
- In some cases, the Uniform Remesh operation may produce a non-uniform result in different regions on the part. To obtain a more uniform mesh, an option is to apply the operation a second time. Alternatively, using a different split edge factor or target triangle edge length, depending on the user needs, can help to achieve a uniform mesh.

### CAD Link

- The CAD Link operation might crash on specific input data. It is recommended to fix parts upfront and assign realistic parameters.

### Script

- Using the Procrustes analysis upon creating a subregion SSM with `trimatic.create_subregion_ssm` might result in inverted modes compared to the input SSM. It might help to assure good initial alignment before creating the full SSM (input SSM).

### Compatibility

- 3-matic does not support triangle color information when loading \*.magics files.
- Parts imported with \*.magics file extension can have different orientations in 3-matic and Magics.



- Splines and Thin Structures present in a group in Mimics are moved out of the group when opening the Mimics project in 3-matic. The Splines and Thin Structures will appear on root level after opening in 3-matic and must be re-grouped.

## System Requirements

### 1.1. Minimum Requirements

Software	Hardware
Windows® 10 – 64bit Version 1909, or Windows® 11 21H2	Ninth generation Intel® Core™ i7 or equivalent
Microsoft Edge® or equivalent	16 GB RAM
PDF viewer	DirectX® 12.0 compliant AMD Radeon/NVIDIA® GeForce® graphics card with 2 GB RAM
.NET framework 4.6.1 (or higher)	40 GB free hard disk space
	Resolution of 1920x1080 or higher

The following operating system versions were used to test Materialise 3-matic 18.0:

- Windows 10 Enterprise version 21H2 and 22H2 64-bit.
- Windows 11 Enterprise version 21H2 and 22H2 64-bit.
- Windows Server 2019

Note on additional, optional input devices: 3-matic supports the use of the SpaceMouse by 3D Connexion. Please visit the manufacturer's website for the latest supported driver version for your specific model (<https://3dconnexion.com/nl/drivers/>).

Materialise 3-matic 18.0 is software and does not degrade in performance. Its lifetime is determined by commercial requirements, obsolescence of its techniques or obsolescence caused by changes in its host environment (refer to above requirements). Support can in any case not be guaranteed beyond 24 months after the release of this particular version of the software.

## Contact Information

For technical support, please consult our online help pages: <https://help.materialise.com/>

Otherwise, contact our HQ Customer Support team: [software.support@materialise.be](mailto:software.support@materialise.be) or contact the support team of your local office via <https://www.materialise.com/en/software/customer-services/technical-support>

For more general information, please check our website: <http://software.materialise.com>