Grabbit Documentation

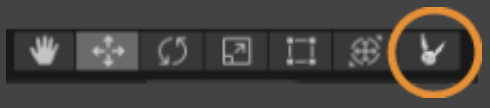
Thanks for Purchasing Grabbit!
In this document you will find all that you need to start to use the tool the best possible way.

The plugin is still in beta, and although it is robust, you may still encounter bugs.
If it is the case, please head over to our Discord channel to report it.

Please remember to backup your data before you start to use Grabbit to avoid any potential data loss / corruption.

Getting Started

In order to start Grabbit, simply press the "U" letter on your keyboard, or click the tool icon in the toolbar.



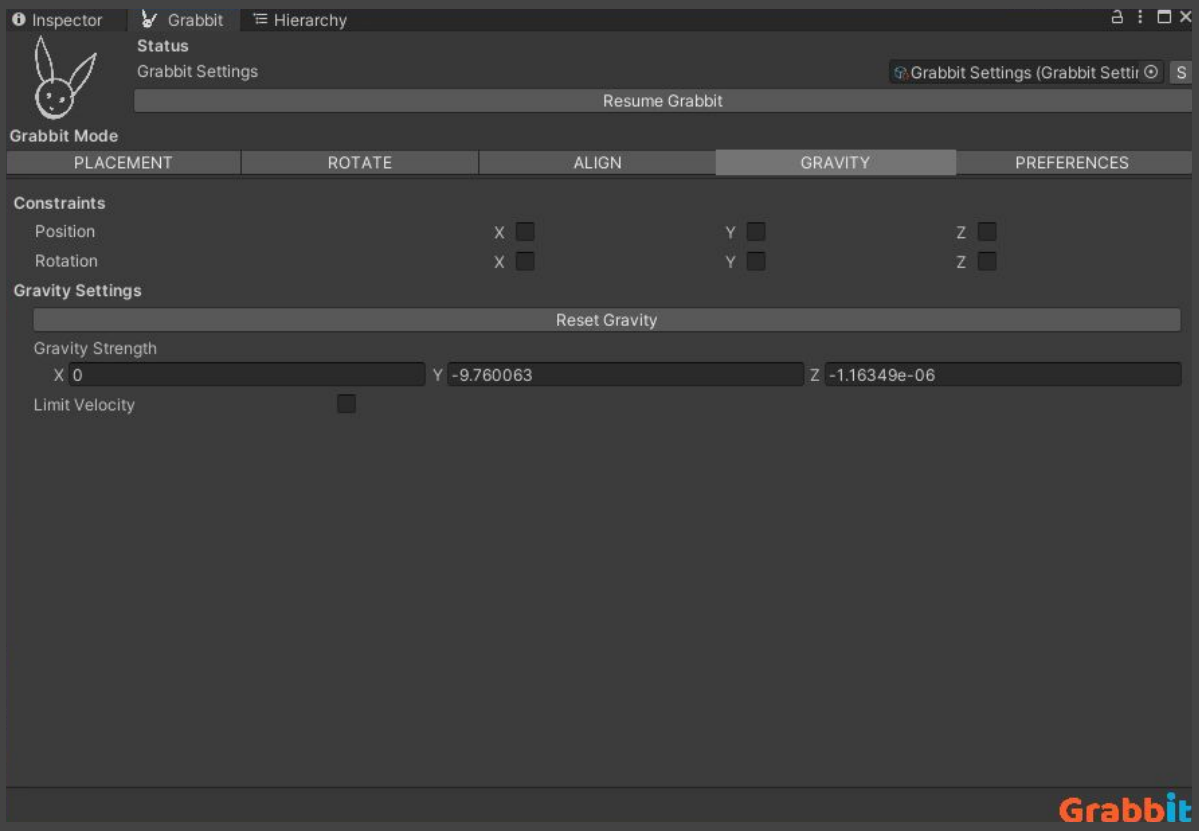
If you opened Grabbit before you will see the Rabbit head, otherwise a toolbox

Each mode of Grabbit is associated with keys starting from U:

- U key: placement mode
- I key: rotation mode
- O key: align mode
- P key: fall mode
- [key: point mode

You can change the assigned key any time using Unity's Shortcut Manager.

When you open Grabbit for the first time, Grabbit's Tool Window will show up for the first time as a popup. The best use for it is to dock it somewhere where it will be easily accessible. The Tool Window can be a tab window, and will simply focus whenever you start the tool.



The Tool Window should look just like this

Grabbit has a few modes available. The placement mode is loaded when pressing U.

A Note On Colliders Before We Continue!

Grabbit uses an advanced Mesh analysis to ensure that non convex objects can be used dynamically.
This means that Grabbit has to analyse meshes before it can safely move them.
By default Grabbit analyses objects it doesn't know when you select them. This means that the first time you try to move an object, Grabbit will need a few seconds. After that, your Mesh will be ready to move instantly forever. You can change the way Grabbit handles the analysis in the settings (see later).

Additionally, you do not need any colliders nor Rigidbodies on your objects in order for Grabbit to move them. Grabbit will automatically create temporary ones and remove them when its work is done.
This process will not corrupt your data or affect your scene in any way.

Grabbit Modes

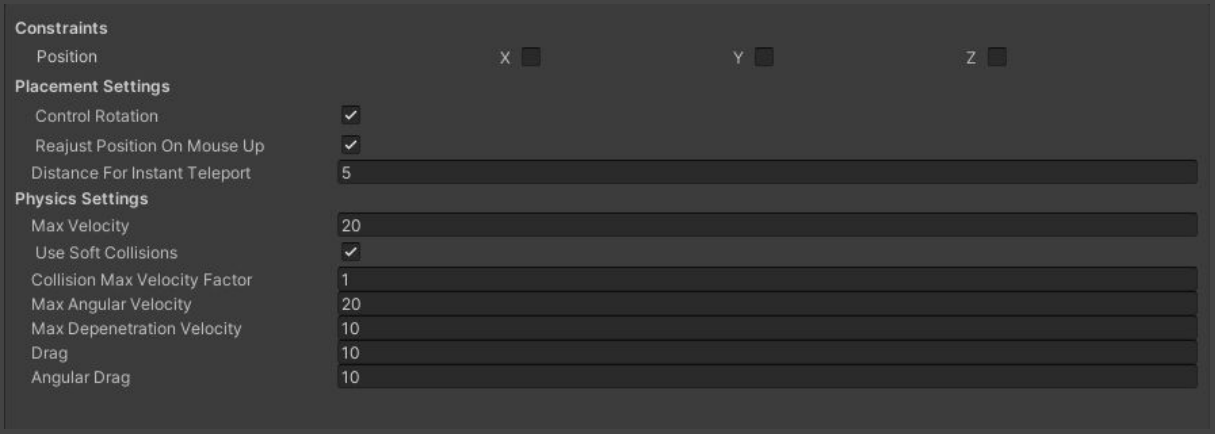
Placement Mode

In this Mode, Grabbit helps you move around objects respecting the collisions.
Pull the transform to attract the object in the indicated direction.

The transform tool works exactly the same as the default transform tool, but you cannot use the local mode (this option may be available in a future update)

When the handle is far enough from the object you want to move, the object will directly teleport to the handle. The cursor will indicate the teleport distance with a red sphere:

Placement Mode Options



Constraints

You may want to constrain the way the object you selected can move or rotate: this lets you lock rotation and translation axes.

Placement Settings

- **Control Rotation** will add a rotation handle to the tool that will try to force a certain orientation on your object while resolving the collision.
- **Adjust Position On Mouse Up:** When turned off, the handle will remain where it is when you release the mouse. This can be useful when wanting to force an object in a location for a while.
- **Distance For Instant Teleport:** Configures the max distance from the object the handle can be before the object teleports back to it
- **Preserve Selection Relative Transform:** makes sure that all the objects selected try to stick to their relative positions and rotation. Useful when you want to move stacks of objects but want to keep the stack together. Options related to this let you decide how much is this taken into account, and whether you want to relative transforms to be reseted when you are done moving the objects

Physics Settings

Those settings are common to many tools, and control the behaviour of objects. Modifying those values can make the tool more responsive, or reduce Jitters.

- **Max Velocity:** Defines the maximum velocity that your objects can reach. Lowering this value will make the object less snappy, and it will lag behind your handle, but it can as well make the placement easier to control and less prone to jitter.
- **Use Soft Collisions:** When turned on, Grabbit will clamp the maximum velocity of the objects you are moving if they are colliding. This can help a lot to reduce the jitter and to make objects easier to place, but it can also create odd behaviours when a lot of objects are selected.
- **Collision Max Velocity Factor:** Defines the maximum velocity an object can reach when it is colliding.

- **Max Angular Velocity:** Limit the turning speed of the object: a high value will make the object rotate reactively, but is also more prone to jitters.
- **Max Depenetration Velocity:** Defines the max velocity in use when resolving collision. A low value will reduce jitter but make the collision less accurate.
- **Drag:** How rapidly the moved objects slow down. The higher the value, the more precise the placement, but may cause objects to be "sticky"
- **Angular Drag:** Similar to drag, but for the rotation.

Limits Of The Placement Mode

When a collision occurs, Grabbit will try to resolve it. When the collision is complex or problematic, you may observe some jitter of your object. This can be mitigated in the options.

Rotation Mode

To enter the rotation mode, press the related button or the "I" letter

In this mode, you can rotate an object while still respecting the collisions. This is similar to the placement mode with rotation on, but this one will disregard the position, which can be very useful to avoid jitter or difficult placement scenarios.

This mode features the rotation handle

You currently can only orient in global mode (but a local mode may be available in the future)

Rotation Mode Options

The rotation mode has the same options as the placement mode.

Align Mode

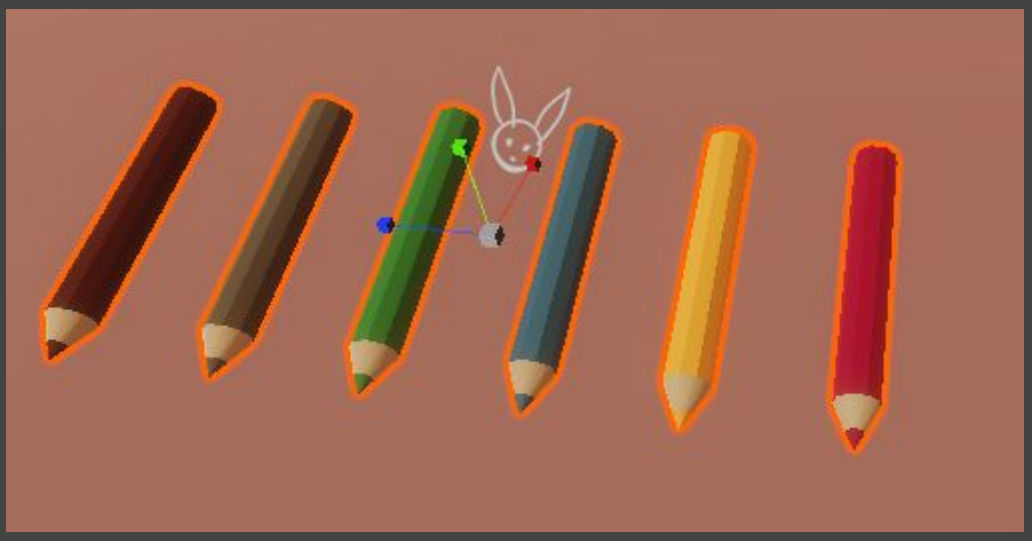
To enter the align mode, press the “O” letter

The Align mode lets you align and spread selected objects.
The objects will align in regard to the centroid of all the selected objects.

The handle looks like the scale handle, but works differently.

In the Align mode, pulling towards the center on one axis will max object closer together on this axis:

Pulling away from the center will make object push away from the center:



This can be very useful when you want to spread equally a few objects or align them on one axis:

Align Mode Options

The Align Mode options are similar to the other modes, with the addition of one option:

- **Align Strength:** Lets you control how strong is the pull towards or away from the center.

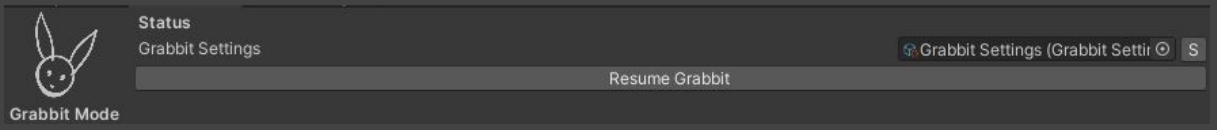
Fall Mode

To enter the fall mode, press the "P" key. Please not that you may have a conflict of shortcut with Unity's prefab mode, in which case you can chose a letter that fits you better for the fall mode, or for the prefab mode

The fall mode simulates gravity on the selected objects. But you can as well make it go in any desired direction thanks to the handle:

The arrow indicates the direction of gravity.

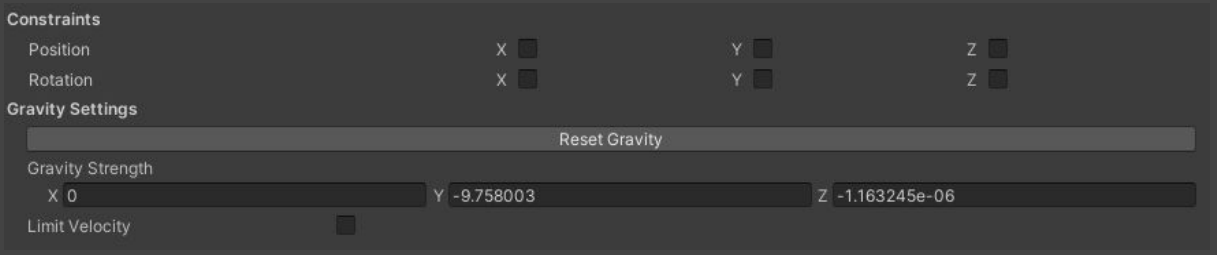
You can change the direction of the gravity by using the rotation handle, or make it stronger using the scale handle that is in the direction of the arrow.
By default, the fall mode **starts paused**, for "safety reasons". In order to unpause, simply press the "Space" key, or press the "Resume" button in the tool window.



You may use the pause mode in any other mode, however it's mostly useful here.

Fall Mode Options

You can use constraints like in the other modes, but you have other options available too:

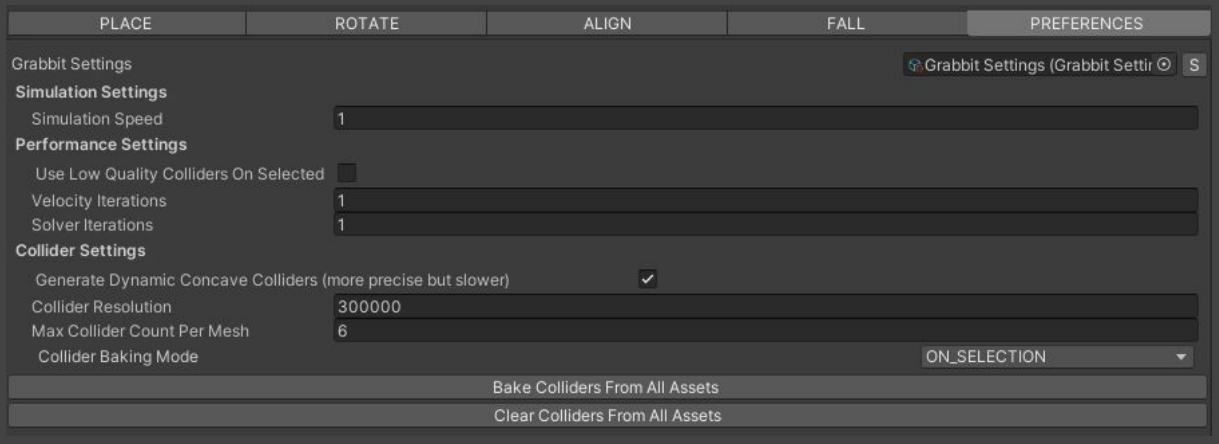


- **Reset Gravity:** Resets the gravity back to its default value, -9.81 on the y axis.
- **Gravity Strength:** Lets you directly change the value of gravity,

- **Limit Velocity:** If this is set to true, then the velocity of objects will be limited similarly to the other modes. It is usually not what you want to ensure gravity behaves naturally, so this is turned off by default.

Preferences

In this section you will find all the options available in the preference section of the tool.



- **Simulation Settings:** How fast is the physics simulation. Leave it at 1 for the default behaviour.
- **Layers To Ignore:** Which layers can be ignore by grabbit when grabbing
- **Use Low Quality Colliders On Selected:** When an object is selected, Grabbit uses precise colliders to make sure that objects behave properly but this can slow down the performance when a lot of objects are selected. If you only manipulate simple objects or do not need high level precision then you can select this option to increase the performances.
- **Velocity Iterations:** The velocity iterations for PhysX. A higher value means more precision, but lower performances.
- **Solver Iterations:** Similar as Velocity Iterations, but for collisions.
- **Generate Dynamic Concave Colliders:** Grabbit generates colliders to ensure that concave objects can behave properly. However this has a high impact on performances. If you only use convex colliders or do not need your object to behave as concave colliders, you can turn this option off for an increase of performance.
- **Collider Resolution:** What is the resolution of the colliders generated by Grabbit. A higher value means that the colliders will take longer to be generated, but this only affects the first time you select a new object. A higher precision also means slower performances.
- **Max Collider Count Per Mesh:** How many convex colliders can Grabbit generate for concave objects. The higher the count, the higher the potential precision, but this has a significant impact on performances.
- **Collider Bake Mode:** Defines the moment when Grabbit generates colliders. By default, Grabbit will generate colliders only to objects you select when their mesh has never been selected before. But if it suits your usage better you can make Grabbit generate colliders for all the meshes on your scene whenever it is opened by grabbit for the first time.

- **Bake Colliders From All Assets:** This option is only recommended for small projects since colliers take up asset size, and the collider generation can take a few seconds per mesh. But it also means that once this is done, there won't be any waiting time when selecting objects
- **Clear Colliders From All Assets:** Use this option only if you notice an off collider behaviour. This means that all the colliders will need to be regenerated

Missing Documentation

In case some options are not described in here, this means that the plugin was updated faster than the documentation: the documentation will eventually be updated, but in case you have any question, please contact us on Discord!

Recommendations

1. Grabbit is meant to be robust and performant, but it uses PhysX on the back. This means that the rules that apply for PhysX also apply for Grabbit. For instance, enabling Adaptive Forces will allow Grabbit to handle much better the stack of objects, and more performant PhysX options will lead to a better usability.
2. Grabbit is not meant to replace the normal transform tools. It has its usage, but trying to only use Grabbit to move things around is likely to not be sufficient.
3. Grabbit must scan the whole scene before it can start properly: for very large scenes this may be a problem. In that scenario, it is better to disable the objects that you do not currently care about, or split your scene into smaller subscenes if you have this possibility.
4. Grabbit relies on PhysX, which means that selecting a lot of objects at once, especially when some are within the boundaries of others, is going to have a significant performance impact. You may experience a lot of jitters if you are pushing the tool too far. In case that happens to you, consider putting all the objects under a single parent gameobject, and then moving the parent game object so that the collision between subobjects is not taken into account.
5. Grabbit is under development, so new features may come in regularly. If you have usability suggestions, please head over to our Discord channel :)