

Ultimate Origin Tools

User Documentation

Version 1.3 · Blender 4.2 – 5.x

A comprehensive origin management addon for Blender, providing over 45 operators for bounding box placement, geometry analysis, axis alignment, modifier-aware computation, interactive editing, batch processing, and more.

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1. Introduction

What is Ultimate Origin Tools?

Ultimate Origin Tools (UOT) is a Blender addon that replaces and dramatically extends the native Set Origin workflow. Instead of a single dropdown with six options, UOT gives you a full suite of tools organized around how you actually work: quickly for common tasks, deeply for complex ones.

Whether you are positioning assets for a game engine, preparing models for 3D printing, rigging characters, or doing architectural work, UOT has a dedicated tool for every scenario.

Key Capabilities

- **Bounding Box** — Set origin to any of 22 named positions (6 face centers, 8 corners, 12 edge midpoints), with per-axis independent control.
- **Geometry** — Geometry center, center of mass (surface or volumetric), origin to selected vertices/edges/faces, active element.
- **Modifier-Aware** — A dedicated Final Mesh section evaluates all modifiers (Mirror, Array, Displace, Shrinkwrap, etc.) before computing.
- **Orient to Selection** — Align local axes to face normals, vertex normals, or edge directions, with or without moving the origin position.
- **Snap to Axis** — Translate objects so their extreme vertex on X, Y, or Z sits exactly at zero — floor, wall, ceiling.
- **Batch** — Apply any operation to every selected object independently in a single click.
- **Interactive** — Grab and drag the origin live in the viewport, like Maya's Affect Pivot Only mode.
- **3D Cursor** — Full bidirectional integration with the 3D cursor. Save and restore cursor positions.
- **Presets** — Save named origin states and reapply them to any object later.
- **Origin Gizmo** — X/Y/Z colored axis lines with two-pass rendering: solid where visible, ghost lines through geometry (like Blender's In Front for bones).
- **Origin to Surface (Raycast)** — Click on any face of another mesh to project the origin onto that surface, with optional Z-axis alignment to the impact normal.
- **Origin Offset (Numeric)** — Displace the origin by an exact XYZ offset (Local or World space) without touching geometry.
- **Origin to Loose Parts** — Automatically place the origin at the bounding-box center of each disconnected island in a multi-part mesh, with optional separation.
- **Batch Drop to Target Z** — Drop multiple objects to a custom Z height or to the surface of a chosen reference object, not just Z=0.

Compatibility

Property	Value
Blender versions	4.2 LTS and above (including 5.x)

Property	Value
Object types	Mesh, Curve, Surface, Font, Meta, Lattice, Armature
Modes	Object Mode and Edit Mode (Mesh)
Platform	Windows, macOS, Linux

2. Installation

Installing the Addon

1. **Download** the file `ultimate_origin_tools.zip`.
2. In Blender, open **Edit** → **Preferences** → **Add-ons**.
3. Click **Install**, navigate to the ZIP file, and confirm.
4. Enable the addon by checking the box next to **Object: Ultimate Origin Tools**.

Note: You do not need to extract the ZIP. Install it directly as downloaded.

Verifying the Installation

After enabling, open the **N-Panel** in the 3D Viewport (press **N**) and look for the **Origin** tab. If it appears, the addon is active.

Updating

5. Disable and remove the current version in **Edit** → **Preferences** → **Add-ons**.
6. Install the new ZIP using the same procedure above.
7. Re-enable the addon.

Tip: Your presets are stored in Blender preferences, not in the addon files. They are preserved when you update.

3. Interface Overview

Accessing the Tools

UOT provides three access points designed for different workflows:

Access Point	How to Open	Best For
N-Panel	Press N in Viewport, click Origin tab	Exploring all features, accessing less-common operations
Pie Menu	Alt + O	Fast one-handed access to the 8 most-used operations
Shortcuts	See Section 5	Repeating the same operation many times in a row

The N-Panel

The N-Panel is organized into collapsible sections. The **Quick** section is always expanded; all others are collapsed by default to keep the panel compact. Click any section header to expand it.

Section	Contents
Quick	Object Mode: Bottom + Center + Interactive. Edit Mode: → Selection, → Active Element, Orient & Move to Face.
Bounding Box	Full 3×3 spatial grid, corner buttons, front/back, space toggle, per-axis control, drop to floor.
Snap to Axis	Translate objects flush to X=0, Y=0, or Z=0 using extreme vertex — floor, ceiling, left/right/front/back wall.
Final Mesh	All operations evaluated on the final mesh after all modifiers.
Geometry	Geometry center, CoM surface/volume, selection-based ops (Edit Mode), inverse operations.
Orientation	Orient to Selection (rotation only) + Align & Move (position + rotation) + Invert/Swap/Reset/Copy axes.
Batch	Bottom / center / floor / rotation-reset applied to every selected object independently.
3D Cursor	Origin ↔ Cursor exchange, axis alignment, save/restore cursor, live cursor coordinates.
Presets	Save, apply, and delete named origin presets. Persist across sessions.
Display	Toggle Origin Gizmo (solid + ghost rendering). Default space and final mesh settings.

Section	Contents
Offset / Numeric	Displace the origin by an exact XYZ offset in Local or World space. Precise numeric placement without the 3D Cursor.

The Pie Menu

Press **Alt + O** in Object Mode or Edit Mode to open the pie menu. The layout adapts to the current mode:

Object Mode:

- West: Left (−X) · East: Right (+X) · South: Bottom · North: Top
- NW: BBox Center · NE: Geo Center · SW: CoM Volume · SE: Interactive

Edit Mode:

- West: Align Face · East: Align Edge · South: To Selection · North: Active Element
- NW: Align Vertex · NE: Orient & Move to Face · SW: Cursor → Origin · SE: Origin → Cursor

The Status Bar

The top of the N-Panel always shows how many objects are selected and the current mode. It turns **red** if nothing is selected in Object Mode, signalling that most operators will not run.

4. Operator Reference

Every operator listed below is accessible from the N-Panel. Operators marked ★ also appear in the Pie Menu. After executing an operator, its parameters appear in the **Last Operator** panel (F9 or bottom-left of the viewport) where you can adjust them.

4.1 Bounding Box

These operators move the origin to a geometric position on the object's axis-aligned bounding box. Each object in the selection is computed independently.

Face Centers

Operator	Description	Pie
Origin to Bottom	Sets origin to the bottom center of the bounding box. The most common single operation for game assets and 3D printing.	★
Origin to Top	Sets origin to the top center.	
Origin to Center	Sets origin to the center of the bounding box.	★
Origin to Left (−X)	Sets origin to the center of the minimum-X face.	★
Origin to Right (+X)	Sets origin to the center of the maximum-X face.	★
Origin to Front (−Y)	Sets origin to the center of the minimum-Y face.	
Origin to Back (+Y)	Sets origin to the center of the maximum-Y face.	

Corners

Use **Set Origin (BBox)** from the N-Panel and choose a corner key such as `CORNER_000` (min X, min Y, min Z) through `CORNER_111` (max X, max Y, max Z). Corner buttons also appear as small icon buttons in the Bounding Box grid.

Per-Axis Control

The **Set Axes Independently** operator (under Bounding Box → Per-Axis Control) lets you set the origin on only selected axes while leaving others unchanged.

- **Affect X / Y / Z** — Toggle which axes are updated.
- **X / Y / Z Mode** — For each active axis: Min, Center, or Max.

Example: To center the origin on X and Y but keep it at the bottom on Z: enable X (Center), enable Y (Center), enable Z (Min).

Drop to Floor

Translates the object (moving both origin and geometry) so the lowest world-space point of the mesh is at $Z = 0$. The origin moves with the object — no geometry distortion occurs.

- **Use Final Mesh** — When enabled, the lowest point is computed from the evaluated mesh, correctly handling Displace, Shrinkwrap, and other deforming modifiers.

4.2 Snap to Axis

New in v1.2: Entire section added in v1.2. Translates objects flush to a world axis plane.

Translate the object so its extreme vertex on a chosen axis sits exactly at zero. Unlike bounding box operators, this moves the **whole object** (origin + geometry together) — no geometry distortion. Works with Final Mesh (modifiers evaluated) when enabled.

Operator	Axis	Side	Effect
↓ Floor	Z	Min	Lowest vertex → $Z=0$. Standard drop to floor.
↑ Ceil	Z	Max	Highest vertex → $Z=0$. Snap to ceiling.
← X Min=0	X	Min	Most-negative X vertex → $X=0$. Snap to left wall.
X Max=0 →	X	Max	Most-positive X vertex → $X=0$. Snap to right wall.
← Y Min=0	Y	Min	Most-negative Y vertex → $Y=0$. Snap to front wall.
Y Max=0 →	Y	Max	Most-positive Y vertex → $Y=0$. Snap to back wall.
Custom...	Any	Any	Full control: axis, side (Min/Max), and Use Final Mesh via Last Operator (F9).

Tip: Enable "Use Final Mesh" via the panel toggle or F9 to account for Displace, Shrinkwrap, etc. when finding the extreme vertex.

4.3 Final Mesh (Modifiers)

The operators in this section always evaluate modifiers before computing. This is critical when your effective mesh shape differs from the base mesh — for example, an object with a Mirror modifier whose bounding box is twice as wide as the base half.

Operator	Description
Final Bbox → Bottom	Bottom center of the final evaluated bounding box.
Final Bbox → Center	Center of the final evaluated bounding box.

Operator	Description
Final Geo Center	Average position of all vertices in the final mesh.
Final CoM (Surface)	Area-weighted centroid of all faces in the final mesh.
Final CoM (Volume)	Volumetric center of mass of the final mesh. A warning is shown if the mesh is non-manifold.
Final Drop to Floor	Drops to Z=0 using the final mesh lowest point.

Note: You can also enable "Use Final Mesh" on the standard Bounding Box and Geometry operators via the Last Operator panel (F9) after running them.

4.4 Geometry

Object Mode

Operator	Description
Origin to Geometry Center	Sets origin to the average position of all vertices (unweighted mean). Works on Mesh, Curve, Surface, Font, Meta, Lattice.
Origin to CoM (Surface)	Sets origin to the area-weighted centroid of all faces. Only for Mesh objects.
Origin to CoM (Volume)	Sets origin to the volumetric center of mass using the signed tetrahedron method. A warning is shown if the mesh is non-manifold; the result may be approximate.
Geometry to Origin	Shifts all vertices so the bounding-box center aligns with the current origin. The origin does not move — the geometry does.
Move to World Origin	Translates the object so its origin is at world (0, 0, 0). Geometry moves with the object.

Edit Mode

Operator	Description
Origin to Selection	Sets origin to the average position of all selected vertices. Works with any selection method including box-select.
Origin to Active Element	Sets origin to the active vertex (position), edge (midpoint), or face (median center). The active element is the last one you clicked.

Note: Edit Mode origin operators automatically switch to Object Mode to apply the change, then switch back. Your selection is preserved.

4.5 Orientation

The Orientation section is divided into two distinct groups with different behaviors:

Orient to Selection (rotation only — Edit Mode required)

New in v1.2: Orient ops are new in v1.2. They change local axes WITHOUT moving the origin position.

These operators **only change the rotation** of the local axes. The origin position stays exactly where it is. Use these to realign axes to geometry without disturbing placement.

Operator	Description	Pie
Orient Z → Face Normal	Rotates local axes so Z aligns with the active face normal. Position unchanged.	
Orient Z → Edge Dir	Rotates local axes so Z aligns with the active edge direction. Position unchanged.	
Orient Z → Vertex Normal	Rotates local axes so Z aligns with the active vertex normal. Position unchanged.	
Orient & Move to Face	Rotates local axes to face normal AND moves origin to the face center. One combined click.	★

Tip: Select the mesh element first (click it to make it active — highlighted orange), then run the operator.

Align & Move (position + rotation — Edit Mode required)

These operators move **both the origin position and its rotation** to the selected element.

Operator	Description
Align Z → Face Normal	Moves origin to face center and rotates Z to face normal.
Align Z → Vertex Normal	Moves origin to vertex position and rotates Z to vertex normal.
Align Z → Edge Dir	Moves origin to edge midpoint and rotates Z to edge direction.

Modify Axes (Object Mode)

These operators use **pure rotations** (not reflections). Mesh normals and backfaces are never affected.

Operator	Description
Invert Axis (X / Y / Z)	Rotates the origin 180° to effectively flip one axis. Uses a pure rotation (det=+1) — mesh normals and backfaces are never affected.

Operator	Description
Swap Axes ($X \leftrightarrow Y$, $X \leftrightarrow Z$, $Y \leftrightarrow Z$)	Exchanges two local axes using a rotation (not a reflection). One axis adjusted to maintain valid basis. Normals unchanged.
Reset to World Axes	Resets all local axes to world X/Y/Z. Position unchanged.
Align to Cursor Rot	Matches origin rotation to the 3D cursor rotation. Optionally also moves to cursor position.
Copy from Active Object	Copies origin location and/or rotation from the active object to all other selected objects.

4.6 Interactive Mode

Interactive Mode lets you drag the origin freely in the viewport, similar to Maya's Affect Pivot Only. Press **Alt + Shift + O** or click the button in the Quick section.

Input	Action
Mouse Move	Drag the origin position in the view plane.
Shift + Move	Slow mode — 10× slower movement for precise placement.
LMB	Confirm — apply the new origin position.
Enter	Confirm — same as LMB.
RMB	Cancel — restore all objects to their original origin positions.
ESC	Cancel — same as RMB.

Note: Interactive Mode works on all selected objects simultaneously. Each object's origin moves by the same world-space delta.

Origin to Surface (Raycast)

Projects the origin onto the surface of another object. Click on any visible face in the viewport and the origin snaps to the hit point. This is ideal for level design and game development workflows such as placing props on floors, walls, or irregular terrain — operations that would otherwise require multiple steps with the 3D Cursor.

Option	Behavior
Align Z to Normal	When enabled, the local Z axis is rotated to match the face normal at the hit point. When disabled, only the position is updated.
LMB click	Casts a ray from the cursor into the scene. If it hits a face on another mesh, moves the origin to the hit point (and optionally aligns Z to the normal). RMB or ESC cancels.

4.7 Batch

Batch operators apply an operation to every selected object, each computed independently. For example, **Batch: Origin to Bottom** computes a separate bounding box for each object and moves its own origin — objects do not share a combined bounding box.

Operator	Description
Batch: Origin to Bottom	Sets every selected object's origin to its individual bottom center.
Batch: Origin to Center	Sets every selected object's origin to its individual bounding box center.
Batch: Drop to Floor	Drops every selected object to Z=0.
Batch: Reset Origin Rot	Resets rotation of all selected object origins to world axes.
Copy Active Origin → All	Copies the active object's origin (position and/or rotation) to all other selected objects.
Origin to Loose Parts	For a single object containing multiple disconnected geometry islands, automatically places the origin at the bounding-box center of each island, then optionally separates each into its own object. Designed for weapon packs and modular prop sets stored as a single mesh.
Batch: Drop to Target Z	Variant of Batch: Drop to Floor. Instead of snapping to Z=0, drops every selected object so its lowest point sits at a user-defined Target Z value, or at the top surface of a chosen reference object (e.g. a Floor Plane). Essential in archviz and level design where the floor is not at world zero.

4.8 3D Cursor

Operator	Description
Origin → 3D Cursor	Sets origin position (and optionally rotation) to the current 3D cursor.
3D Cursor → Origin	Moves the 3D cursor to the active object's origin. Optionally copies the origin rotation to the cursor.
Align Axes to Cursor	Matches origin rotation to cursor rotation, without moving origin position (unless 'Also Move' is enabled).
Save Cursor	Saves the current cursor position and rotation to a scene property.
Restore Cursor	Restores the cursor to the last saved position and rotation.

4.9 Presets

Presets save the full origin state (position + rotation) of the active object and allow you to reapply it to any object later. Presets are stored in addon preferences and survive Blender restarts.

- **Save** — Opens a dialog for a name, then saves the active object's current origin.

- **Apply (✓)** — Applies the preset to all selected objects. You can choose to apply Location only, Rotation only, or both via the Last Operator panel.
- **Delete (X)** — Removes the preset permanently.

4.10 Offset / Numeric

The Offset / Numeric section provides precise, value-based origin placement. It complements Interactive drag (which is intentionally free-form and approximate) and avoids the need to manually enter coordinates via the 3D Cursor.

Operator	Description
Origin Offset	Displaces the origin by a user-entered XYZ delta relative to its current position. Space is selectable: Local (offset along the object's own axes) or World (offset along world X/Y/Z). Example: entering Z = 0.5 in Local space moves the origin 0.5 m along the object's local Z axis. Geometry does not move.

5. Keyboard Shortcuts

UOT registers the following shortcuts by default. You can remap the Pie Menu shortcut in **Edit** → **Preferences** → **Add-ons** → **Ultimate Origin Tools**.

Shortcut	Action
Alt + O	Open Pie Menu (Object Mode and Edit Mode)
Alt + Shift + O	Start Interactive Mode (Object Mode)
Ctrl + Shift + B	Quick: Origin to Bottom (Object Mode)
F9	Show Last Operator — adjust parameters of last run operator

Customizing the Pie Menu Shortcut

- Go to **Edit** → **Preferences** → **Add-ons**, find **Ultimate Origin Tools**, and expand it.
- Under **Pie Menu Shortcut**, toggle the modifier keys (Alt, Ctrl, Shift) and type the desired key letter.
- Restart Blender to apply the change.

Note: All UOT operators are registered under the `uot.*` namespace. You can also add custom hotkeys to any individual operator via Blender's standard keymap editor (**Edit** → **Preferences** → **Keymap**, search for "uot.>").

6. Settings & Preferences

Access addon preferences via **Edit** → **Preferences** → **Add-ons** → **Ultimate Origin Tools**. These settings persist across sessions.

Default Settings

Setting	Default	Description
Default Space	Local	Coordinate space used for bounding box calculations. Local is recommended for rotated objects.
Use Final Mesh by Default	Off	When on, all bbox/geometry operations will evaluate modifiers. This is slower but more accurate.
Show Origin Gizmo	On	Draws X/Y/Z axis lines at each selected object's origin in the viewport.

Local vs World Space

The **Default Space** setting controls how bounding boxes are computed:

- **Local** — The bounding box is computed in the object's local coordinate system. This means "bottom" always refers to the object's own $-Z$ axis, regardless of its rotation in the world. Recommended for most workflows.
- **World** — The bounding box is computed in world space. "Bottom" means the lowest point in the world Z axis. Useful when objects must align to the world grid regardless of their local rotation.

Tip: You can override the default space per-operation using the Last Operator panel (F9) after running any bounding box operator.

The Origin Gizmo

When enabled, UOT draws colored axis lines at the origin of every selected object:

- **Red line** — Local X axis
- **Green line** — Local Y axis
- **Blue line** — Local Z axis

This helps you quickly see the current orientation of the origin without having to enable Blender's Axes overlay. Toggle it from **N-Panel** → **Display** → **Origin Gizmo** or from the Preferences.

7. Common Workflows

Preparing Assets for a Game Engine

Most game engines (Unity, Unreal, Godot) expect the origin at the bottom center of a character or prop.

11. Select one or more objects.
12. Press **Alt + O** → **Bottom**, or click **Bottom** in the Quick section.
13. If the object has modifiers (Mirror, Array, etc.), use **Final Mesh** → **Final Bbox** → **Bottom** instead, to account for the full final shape.

Tip: Use Batch: Origin to Bottom to process an entire asset library in one click.

Drop to Floor / Snap to Wall (Updated in v1.2)

The **Snap to Axis** section handles all six directions — floor, ceiling, and four walls:

14. Select your model.
15. In **Snap to Axis**, click ↓ **Floor (Z Min=0)** for floor, or any other direction button.
16. For walls: ← **X Min=0, X Max=0** →, ← **Y Min=0, Y Max=0** →.
17. For a displaced mesh, enable **Use Final Mesh** in the Snap to Axis panel.

Note: Snap to Axis moves the whole object. To move only the origin to Z=0, use Origin to Bottom from the Bounding Box section instead.

Correcting Axis Orientation After Import

Some file formats import with Z-up or Y-up conventions different from Blender's default.

18. Select the affected object.
19. In **Orientation** → **Modify Axes**, use **Swap** to exchange the appropriate axes (e.g., Y↔Z).
20. If an axis points the wrong way, use **Invert** to flip it.

Note: Invert and Swap use pure rotations (det=+1), not reflections. Mesh normals and backfaces are never affected.

Orient to Selection (New in v1.2)

After rotating geometry in Edit Mode, local axes no longer match the mesh. Orient to Selection realigns axes without moving the origin:

21. Tab into Edit Mode.
22. Select and click the face, edge, or vertex to make it active (highlighted orange).
23. In **Orientation** → **Orient to Selection**, click the matching operator.
24. Tab back to Object Mode — axes realigned, position unchanged.

To move origin **and** orient in one click: use **Orient & Move to Face** (Quick Edit Mode or Edit Mode Pie Menu).

Placing Origin on a Specific Face for Rigging

25. Tab into Edit Mode.
26. Select and click the target face to make it active.
27. In **Orientation** → **Align & Move**, click **Align Z** → **Face Normal**.
28. Tab back to Object Mode.

Result: The origin is now positioned at the face center with local Z pointing outward from the surface. Ideal for placing hinges, attachment points, or bone heads.

Saving and Reusing Origin States

29. Set up the origin exactly as needed on one object.
30. Open **N-Panel** → **Presets** and click **Save Current Origin as Preset...**
31. Give it a descriptive name and confirm.
32. Later, select any other objects, open Presets, and click ✓ next to the preset to apply it.

Interactive Origin Placement

33. Select the object(s).
34. Press `Alt + Shift + O` to start Interactive Mode.
35. Move the mouse to drag the origin to the desired position.
36. Hold `Shift` for precise slow movement.
37. Click `LMB` or press `Enter` to confirm, or `RMB/ESC` to cancel.

8. Tips & Troubleshooting

Tips

- **Use F9 after every operation** to reveal and adjust parameters such as Space, Use Final Mesh, or axis selection without re-running the operator.
- **Interactive Mode + Shift** gives you sub-millimeter precision. Combine it with snapping (enabled separately in Blender's header snapping controls) for grid-aligned origins.
- **The Origin Gizmo** is a quick visual sanity-check: if the blue (Z) line doesn't point the direction you expect, use Orientation operators to fix it.
- **Batch operators work on 1 or more objects** — you don't need to have multiple objects selected.
- **Copy from Active** is the fastest way to standardize origins across a group of similar objects: set up one correctly, then copy to the rest.

Troubleshooting

The panel does not appear in the N-Panel

- Confirm the addon is enabled in **Edit** → **Preferences** → **Add-ons**.
- Make sure you are in the **3D Viewport**, not in the UV Editor or other editors that also have N-Panels.
- Look for the **Origin** tab specifically — it may be off-screen if you have many tabs. Scroll the tab list by hovering over the tabs and scrolling the mouse wheel.

Bounding Box result looks wrong on a scaled object

- If your object has a non-applied scale (visible in the N-Panel → Item tab), the bounding box may not match what you expect.
- Apply scale first: **Ctrl + A** → **Scale**, then run the operator again.
- Alternatively, switch from **Local** to **World** space, which always uses world-aligned dimensions.

Center of Mass Volume warning: Non-manifold

- The volumetric CoM requires a watertight, closed mesh to be accurate. If your mesh has holes, open edges, or overlapping faces, the result is an approximation.
- Use **CoM Surface** as an alternative — it works correctly on any mesh, closed or open.

Modifier result does not match base mesh

- When you have modifiers like Mirror or Array, the base mesh is only half or a fraction of the final shape.
- Use the **Final Mesh** section operators, which evaluate all modifiers before computing.

Interactive Mode is not responding to mouse

- Interactive Mode requires the mouse to be over the **3D Viewport** window when it starts.
- If it launched from a panel click, move the mouse into the viewport immediately after starting.

Pie menu shortcut not working

- Go to **Edit** → **Preferences** → **Add-ons** → **Ultimate Origin Tools** → **Pie Menu Shortcut**.
- Select a key from the dropdown. The change applies **immediately** — no restart needed.
- Check for conflicts in Edit → Preferences → Keymap if the shortcut is still inactive.

Invert / Swap causes backfaces or flipped normals

- This was a bug fixed in v1.2.1. Invert and Swap previously used reflection matrices ($\det=-1$) which flipped all mesh normals.
- Fixed: both operators now use pure rotations ($\det=+1$). Normals and backfaces are never affected.
- If you still see this, you have an older version — reinstall v1.2.1 or later.

Grayed-out buttons in Edit Mode

- Object Mode operators (CoM, Geometry Center, Snap to Axis, etc.) are intentionally grayed out in Edit Mode.
- These require Object Mode to apply changes. UOT operators that support Edit Mode (selection ops, Orient, Align) are active in Edit Mode.

9. Operator Quick Reference

Complete list of all UOT operators and their `bl_idname` identifiers (for use in scripts, custom keymaps, or macros).

Label	ID	Mode
Origin to Bottom	<code>uot.origin_bottom</code>	Object
Origin to Top	<code>uot.origin_top</code>	Object
Origin to Center	<code>uot.origin_center</code>	Object
Origin to Left	<code>uot.origin_left</code>	Object
Origin to Right	<code>uot.origin_right</code>	Object
Origin to Front	<code>uot.origin_front</code>	Object
Origin to Back	<code>uot.origin_back</code>	Object
Set Origin (BBox)	<code>uot.bbox_set_origin</code>	Object
Set Axes Independently	<code>uot.origin_axis_only</code>	Object
Drop to Floor	<code>uot.drop_to_floor</code>	Object
Snap to Axis (generic)	<code>uot.snap_to_axis</code>	Object
Snap to X = 0	<code>uot.snap_to_x</code>	Object
Snap to Y = 0	<code>uot.snap_to_y</code>	Object
Geometry Center	<code>uot.origin_geometry_center</code>	Object
CoM Surface	<code>uot.origin_com_surface</code>	Object
CoM Volume	<code>uot.origin_com_volume</code>	Object
→ Selected Vertices	<code>uot.origin_to_selection</code>	Edit
→ Active Element	<code>uot.origin_to_active_element</code>	Edit
Geometry → Origin	<code>uot.geometry_to_origin</code>	Object
Object → World (0,0,0)	<code>uot.move_to_world_origin</code>	Object
Final Mesh Bbox	<code>uot.final_bbox_origin</code>	Object
Final Geo Center	<code>uot.final_geo_center</code>	Object
Final Drop to Floor	<code>uot.final_drop_to_floor</code>	Object
Final CoM	<code>uot.final_com</code>	Object

Label	ID	Mode
Orient Z → Face Normal	uot.orient_to_face	Edit
Orient Z → Edge Dir	uot.orient_to_edge	Edit
Orient Z → Vertex Normal	uot.orient_to_vertex	Edit
Orient & Move to Face	uot.orient_and_move_to_face	Edit
Align Z → Face Normal	uot.align_origin_to_face	Edit
Align Z → Vertex Normal	uot.align_origin_to_vertex	Edit
Align Z → Edge Dir	uot.align_origin_to_edge	Edit
Copy from Active	uot.copy_origin_from_active	Object
Reset Rotation	uot.reset_origin_rotation	Object
Invert Axis	uot.invert_axis	Object
Swap Axes	uot.swap_axes	Object
Align to Cursor Rot	uot.align_origin_to_cursor	Object
Interactive Origin	uot.interactive_origin	Object
Batch: Bottom	uot.batch_origin_to_bottom	Object
Batch: Center	uot.batch_origin_to_center	Object
Batch: Drop Floor	uot.batch_drop_to_floor	Object
Batch: Reset Rotation	uot.batch_reset_rotation	Object
Origin → Cursor	uot.origin_to_cursor	Object
Cursor → Origin	uot.cursor_to_origin	Any
Save Cursor	uot.save_cursor	Any
Restore Cursor	uot.restore_cursor	Any
Save Preset	uot.preset_save	Object
Apply Preset	uot.preset_apply	Object
Delete Preset	uot.preset_delete	Any
Toggle Origin Gizmo	uot.toggle_origin_gizmo	Any

Label	ID	Mode
Origin to Surface (Raycast)	uot.origin_to_surface	Object
Origin to Loose Parts	uot.origin_loose_parts	Object
Batch: Drop to Target Z	uot.batch_drop_to_z	Object
Origin Offset	uot.origin_offset	Object

10. Changelog

v1.3.0

- **New: Origin to Surface (Raycast)** — Interactive raycast operator (uot.origin_to_surface). Click any face of another mesh to project the origin onto that surface. Option: Align Z to Normal rotates the local Z axis to match the impact face normal. Integrated in the Interactive section. Addresses the core level design and game dev use case of snapping props onto surfaces without using the 3D Cursor.
- **New: Origin to Loose Parts** — Batch operator (uot.origin_loose_parts) for objects containing multiple disconnected geometry islands. Automatically computes the bounding-box center of each island and repositions the origin there, then optionally separates each island into its own object. Distinct from existing batch ops that operate on already-separated objects.
- **New: Origin Offset (Numeric)** — New section “Offset / Numeric” in the N-Panel. Operator uot.origin_offset displaces the origin by an exact XYZ delta in Local or World space. Complements Interactive drag for workflows that require sub-millimeter precision. No geometry movement.
- **New: Batch Drop to Target Z** — Operator uot.batch_drop_to_z extends Batch: Drop to Floor. Accepts a numeric Target Z value (default 0) or a reference object whose top surface defines the floor height. All selected objects are dropped so their lowest point lands at the target. Designed for archviz and level design scenes where the floor is not at Z=0.

v1.2.1

- **Invert / Swap axes — normals bug fixed:** Invert and Swap were using reflection matrices ($\det=-1$) which flipped all mesh normals, making every face appear as a backface. Fixed: both operators now use pure rotations ($\det=+1$) by reconstructing the third axis via cross product. Mesh normals and face visibility are never affected.

v1.2.0

- **New: Snap to Axis section** — 6 one-click buttons to snap any object flush to X=0, Y=0, or Z=0 using its min or max vertex on that axis. Covers floor, ceiling, left/right/front/back wall. Includes Use Final Mesh toggle and a full generic operator (uot.snap_to_axis).
- **New: Orient to Selection** — 4 operators that change local axis rotation WITHOUT moving the origin position: Orient Z → Face Normal, Orient Z → Edge Dir, Orient Z → Vertex Normal, Orient & Move to Face. Addresses the key use case from the Orient and Origin to Selected addon.

- **Orientation section restructured** — Two sub-groups now clearly labelled: Orient to Selection (rotation only) and Align & Move (position + rotation). No more ambiguity between the two behaviors.
- **Pie Menu Edit Mode** — NE slot changed from CoM Surface to Orient & Move to Face.
- **Quick Edit Mode** — Added Orient & Move to Face shortcut.

v1.1.0

- **Origin Gizmo — Two-pass rendering:** solid lines where visible + ghost lines through geometry (depth_test ALWAYS). Axes always distinguishable, like bones with In Front enabled.
- **N-Panel — Redundancy cleanup:** every operator in exactly one section.
- **Pie Menu shortcut — Complete fix:** EnumProperty with valid key identifiers. update= callbacks apply immediately.
- **Keymaps — load_post handler:** re-registered after every file load.

v1.0.3

- **Pie shortcut fix:** `_get_prefs()` now reads prefs safely with fallback defaults at register time.

v1.0.2

- **Geometry ops mode_set() safety. Dead code removed. Batch poll() fixed. Cursor restore IDPropertyArray fix.**

v1.0.0

- Initial release. 40+ operators across all categories.