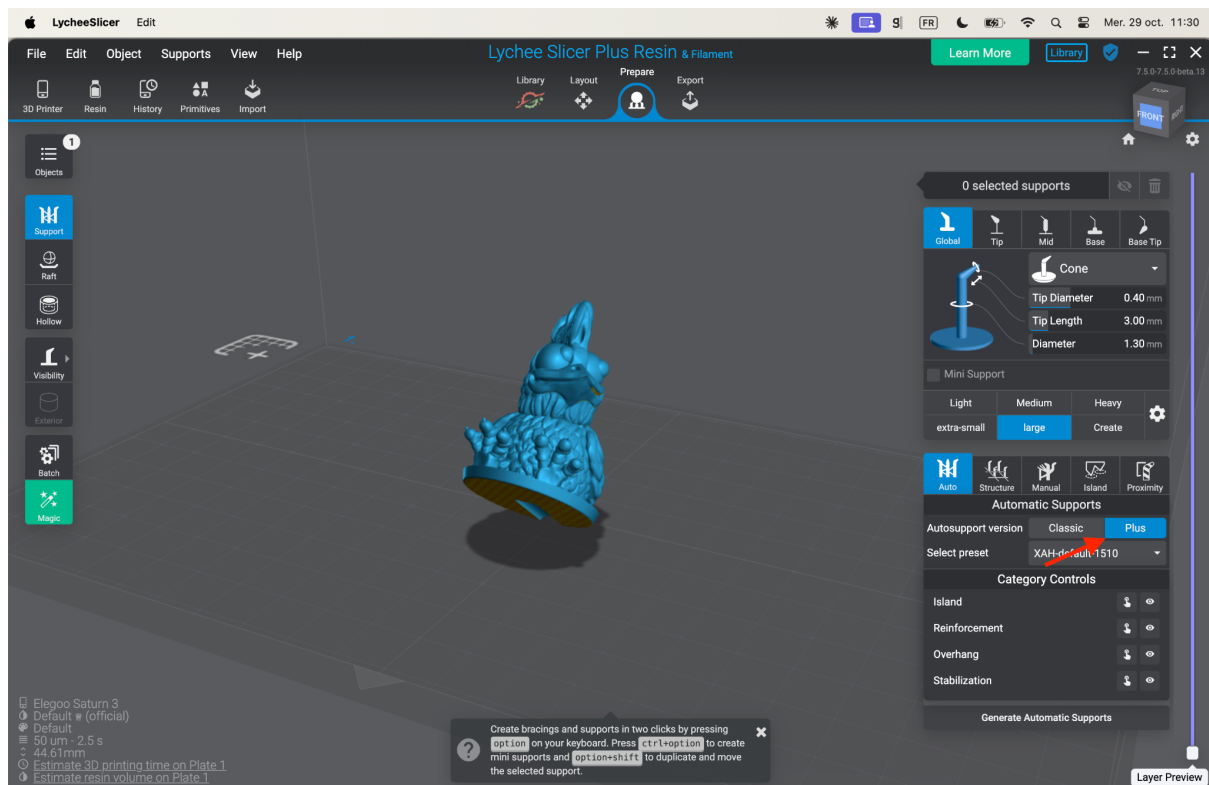


Auto Supports - User Guide

Last Edit: 07/11

Getting Started

Accessing Auto Supports



1. Import your model into Lychee Slicer
2. Navigate to the Supports section
3. Select "Plus" for the Autosupport version
4. Choose your desired preset or create a custom configuration

The Auto Supports Preset Interface

The Auto Supports interface is organized into several tabs:

- **Minima Parameters:** Controls for small island detection and support
- **Reinforcement Parameters:** Settings for structural reinforcement supports
- **Overhang Parameters:** Configuration for overhang angle detection
- **Stabilization Parameters:** Options for model stability supports
- **Additional Parameters:** General settings and advanced options

Understanding Support Categories

Auto Supports categorizes different areas of your model and applies appropriate support strategies:

Minima Detection

Identifies small isolated areas (islands) that need support based on their 3D volume analysis.

How it works:

- The system scans each layer for isolated geometry
- Analyzes the volume above each island until it merges with other geometry
- Categorizes islands as Small, Medium, or Large based on the total volume they need to support
- Applies appropriate support density and preset for each category

Reinforcement Supports

Reinforcement supports provide additional structural integrity for islands by analyzing the 3D volume above each isolated area before it merges with other geometry.

How it works:

- Analyzes the volume above each island
- Calculates the total material volume that will be supported by each island
- Categorizes islands as Small, Medium, or Large based on the volume of material they need to support
- Stops analysis when the island geometry merges with another island, ensuring accurate volume calculations

Overhang Supports

Handles surfaces that exceed an angle threshold.

How it works:

- Scans model surfaces for angles exceeding the threshold
- Places supports at regular intervals based on density settings

Stabilization Supports

Provides stability for tall or potentially unstable structures.

How it works:

- Will use the spacing parameter to control support placement frequency

Parameter Explanation

Status Controls

Each support category can be enabled or disabled independently.

- **Enabled:** The category will be analyzed and supports generated
- **Disabled:** This type of support will be skipped entirely

Area and Volume Thresholds

How Range-Based Classification Works

The system creates automatic ranges between Minimum Area and Minimum Volume values to categorize features:

Area-Based Supports:

- Small Range: 0 to Medium Minimum Area → Small preset
- Medium Range: Medium Minimum Area to Large Minimum Area → Medium preset
- Large Range: Large Minimum Area and above → Large preset

Volume-Based Supports:

- Small Range: 0 to Medium Minimum Volume → Small preset
- Medium Range: Medium Minimum Volume to Large Minimum Volume → Medium preset
- Large Range: Large Minimum Volume and above → Large preset

A drop of water is 50 mm³

Density Parameters

Controls the spacing between individual supports within a category by creating exclusion zones around each support.

Height Parameters

Defines the vertical range above islands where reinforcement supports can be placed.

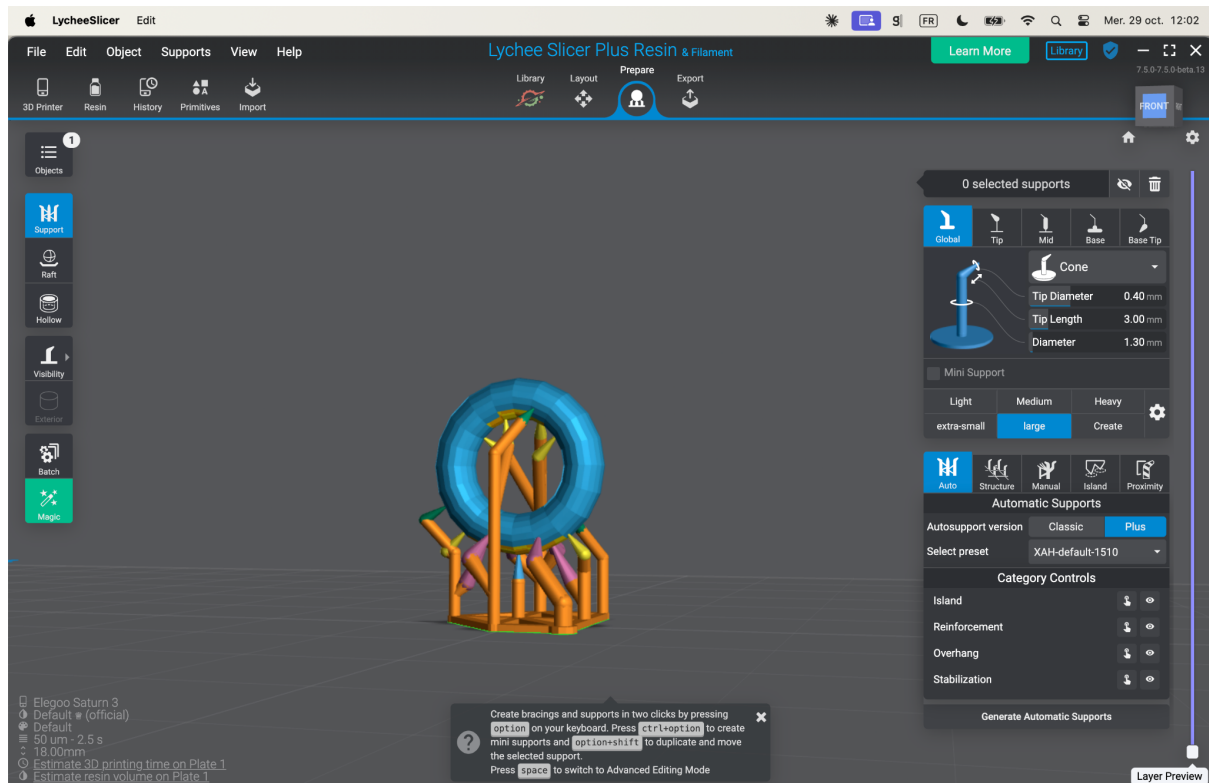
How it works:

- Sets the maximum height above each island where the system will place reinforcement supports

- Limits the vertical analysis zone for reinforcement calculations
- Only geometry within this height range will trigger reinforcement support generation

Important: Works in conjunction with island density parameters - if the sphere of influence from island supports is larger than the height parameter, there may be no available space for reinforcement supports

Preview Results



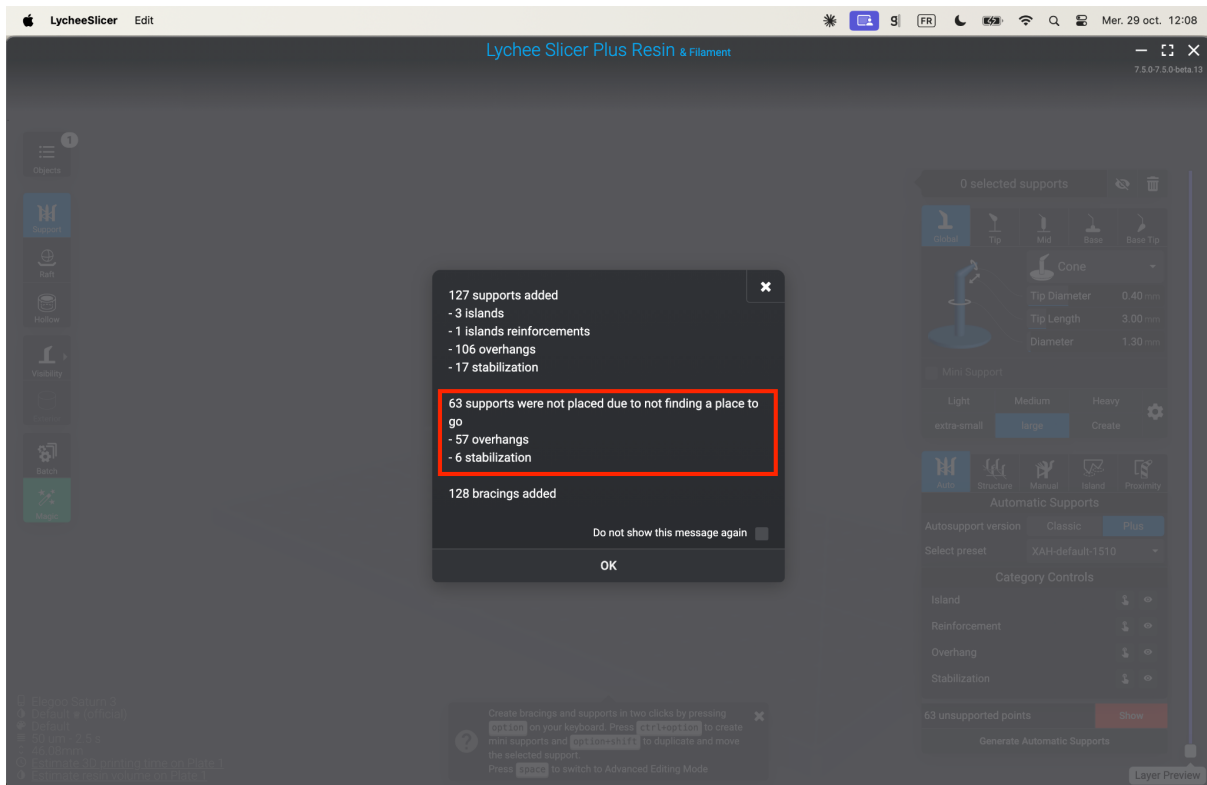
We added visual tags and colored support tips to help identify different support types:

- **Island:** Orange
- **Reinforcement:** Purple
- **Overhang:** Yellow
- **Stabilization:** Green

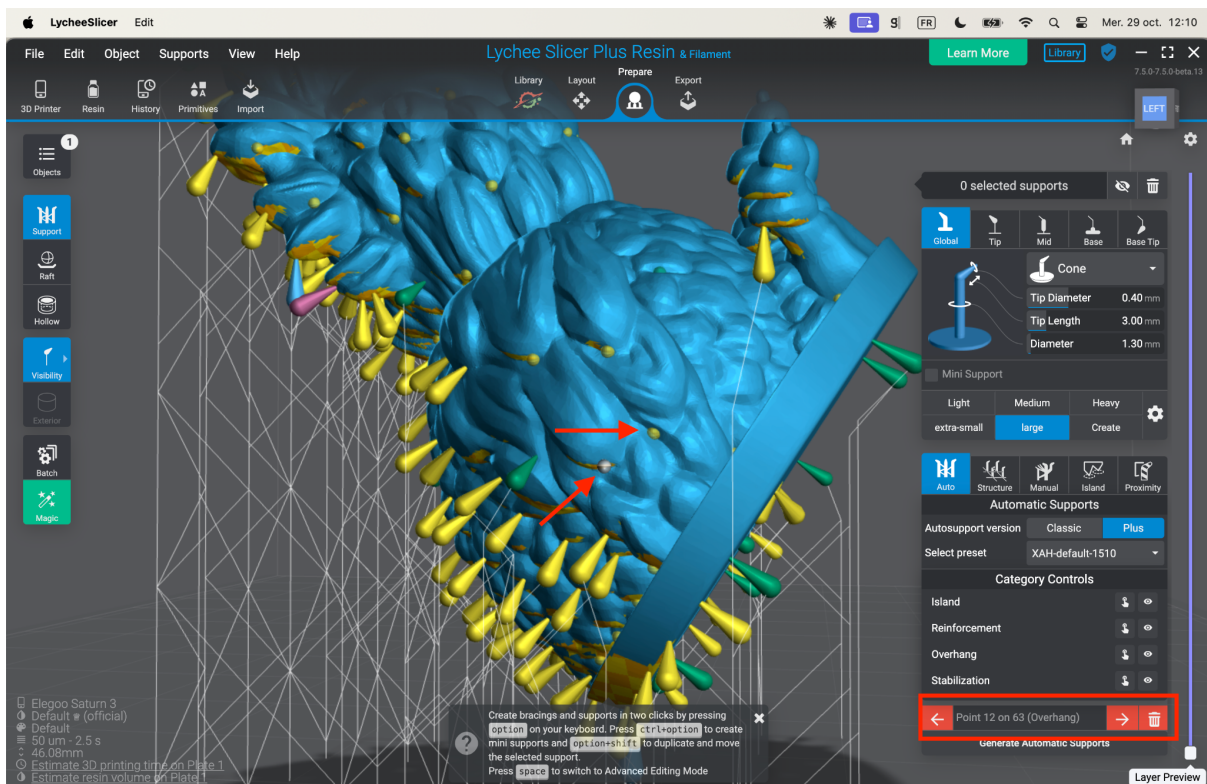
We also added a Category Controls panel that allows you to hide or select supports by category.

Note that this feature have compatibility issues with other selection and visibility options currently available in the slicer.

Finally, some points may not receive supports based on the configured parameters (for example, when "only on plate" is enabled).



We added a navigation tool to show these unsupported points and navigate through them, similar to the existing island navigation tool. The points are colored according to their support type (same color scheme as the support tips), and the currently selected point is highlighted in white.



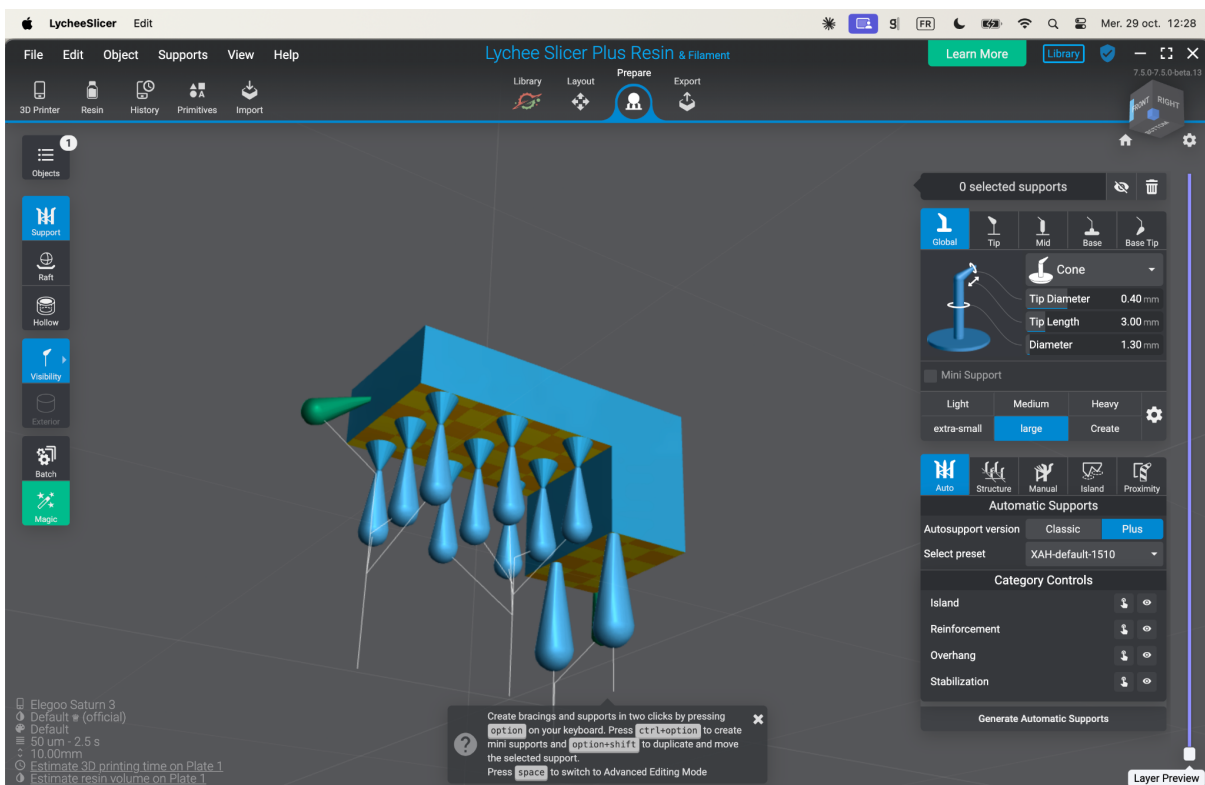
Advanced parameter

Min area threshold: Use for excluding placement of supports for overhang and stabilization. Small overhang surfaces and stabilization areas below this threshold will be ignored and will not receive support structures.

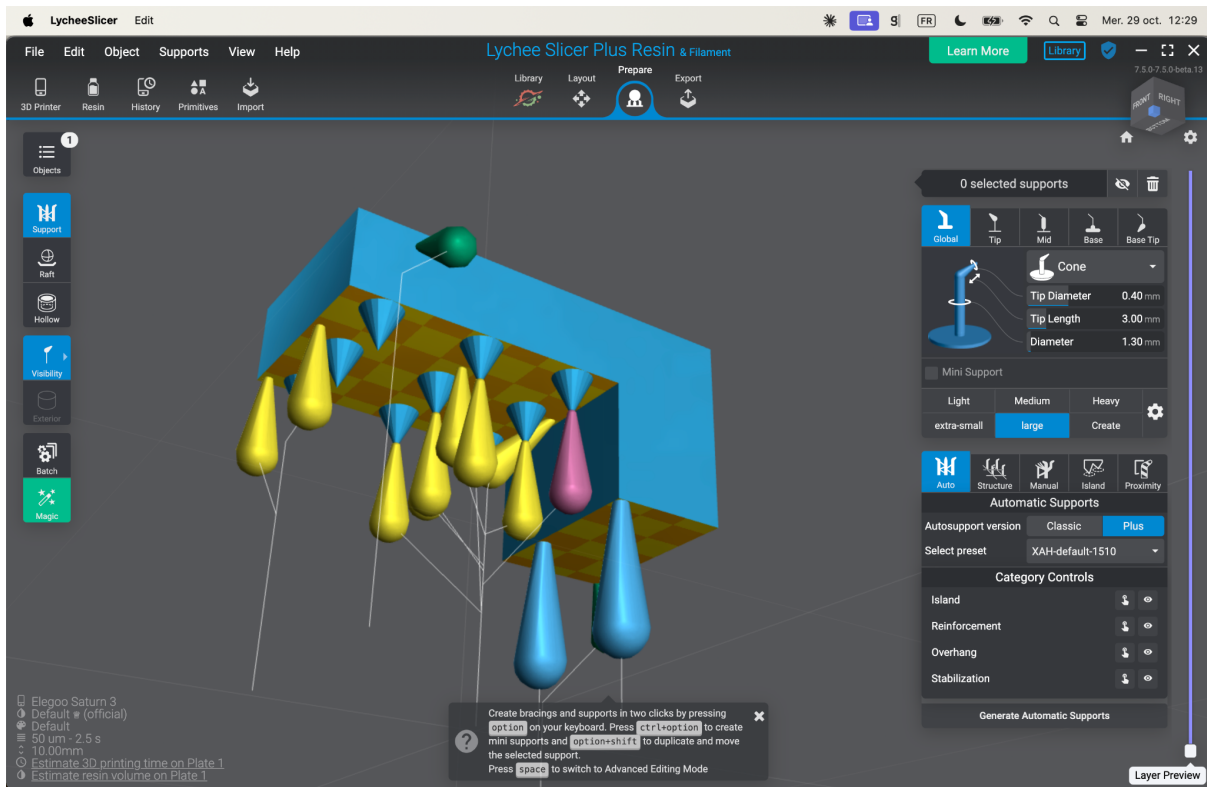
Ignore Small Islands: When enabled, the system analyzes the geometry and identifies islands to ignore based on the defined parameters. It then creates a new geometry without these small islands and applies auto supports to this modified model.

The parameters are height and volume. The system checks if the height of an island (before it merges with the main model) is below the specified value AND if the volume within that space is below the defined threshold.

Screenshots of a test object with and without "Ignore Small Islands" enabled.



Without Ignore Small Islands: All islands are individually supported.



With Ignore Small Islands: Small islands are ignored, so the geometry above them is treated as overhang instead and receives overhang supports rather than island supports.