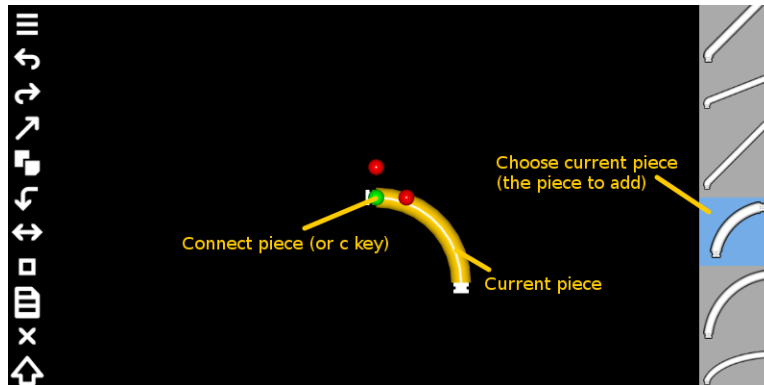# Introduction

Welcome to the web-based Crossbeams Modeller! The Crossbeams Modeller helps you assemble virtual Crossbeams designs in your browser.

Choose a Piece

Scroll through the list of pieces on the right and click on the piece to add (the *current piece*). The current piece will be yellow in the main window with one green and two red dots near one end. Click on the green dot or press c to connect the piece to the model.

Connect a Piece
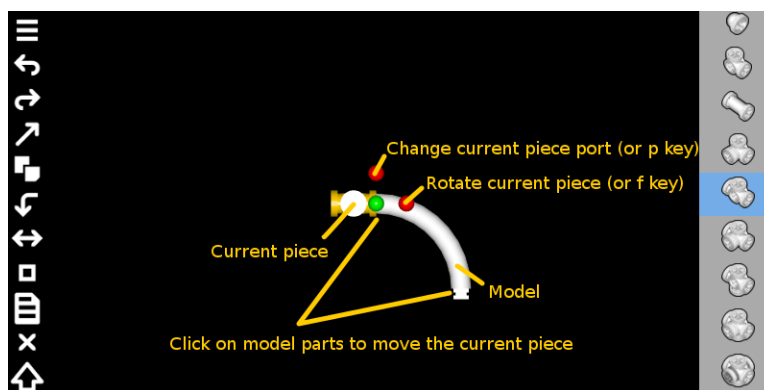
Connected pieces appear white and are part of the model you're building. After connecting, a new piece appears. Unconnected piece ends are called ports. In the figure above, the model has two ports. Click on a model port to move the current piece there. The current piece has three ports. Click on the red dot above the green dot or press p to change the current piece port connected to the model. Click on the red dot to the right of the green dot or press f to rotate (or flip) the current piece around its current port.

Navigate
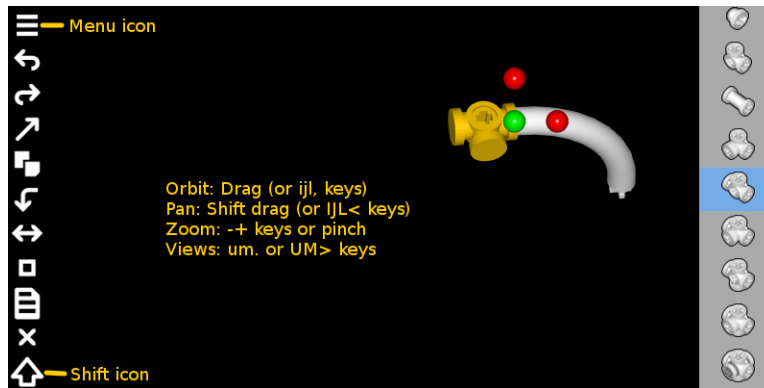
Orbit: Drag the mouse in open space or press `i` (up), `comma` (down), `j` (left), `l` (right), `8` (rotate counter-clockwise), and `9` (rotate clockwise).

Pan: While holding `Shift` or after selecting the *shift* icon, drag your mouse in open space or press `i` (up), `comma` (down), `j` (left), `l` (right), `8` (rotate counter-clockwise), and `9` (rotate clockwise).
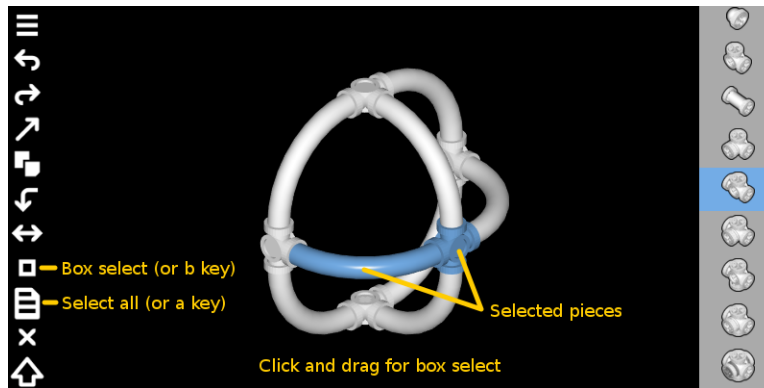
Zoom: Press – or +. For mobile, use the pinch motion.

Views: Press `m` (front), `u` (top), `period` (right), `Shift m` (back), `Shift u` (bottom), `Shift period` (left), `o` (redraw). For mobile, select Menu - Fit for front.

Undo/Redo
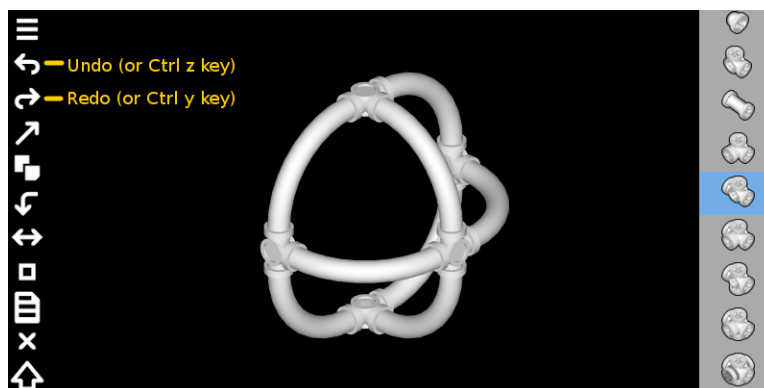
Press the *undo* icon or `Ctrl z` to undo your last model change. Press the *redo* icon or `Ctrl y` to redo your last model change.

Select

Select or deselect a piece by clicking on its center. Selected pieces appear blue. Select or deselect multiple pieces by holding `Shift` or after selecting the *shift* icon while clicking on each piece. Press the *select all* icon or `a` to toggle between selecting or deselecting all pieces. Press the *box select* icon or `b` to begin a box select of parts. Then, move the mouse to the upper left corner of the box, press the mouse button, drag to the lower right corner of the box, and release.

Delete, Move, Copy, Rotate, Mirror
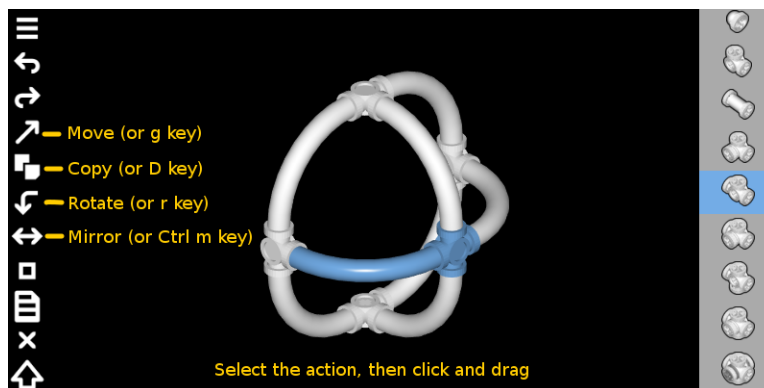
Press the *delete* icon or `x` to delete selected parts.

Press the *move* icon or `g` (for grab) to move the selected parts. Then, move the mouse to a reference point, press the mouse button, drag the selected parts to your desired location, and release the mouse button. Press `Esc` during the drag to cancel the move.

Press the *copy* icon or `Shift d` (for duplicate) to copy the selected parts. Then, move the mouse to a reference point, press the mouse button, drag the selected parts to your desired location, and release the mouse button. Press `Esc` during the drag to cancel the copy.

Press the *rotate* icon or `r` (for rotate) to rotate the selected parts about an axis. Then, move the mouse to a reference point, press the mouse button, drag at various angles to view the rotation, and release the mouse button. Press `Esc` during the drag to cancel the rotation.

Press the *mirror* icon or `Ctrl m` (for mirror) to mirror the selected parts about a point. Then, move the mouse to a reference point, press the mouse button, drag at various angles to view the mirror, and release the mouse button. Press `Esc` during the drag to cancel the mirror.

Wheels, Gears, and Stiff
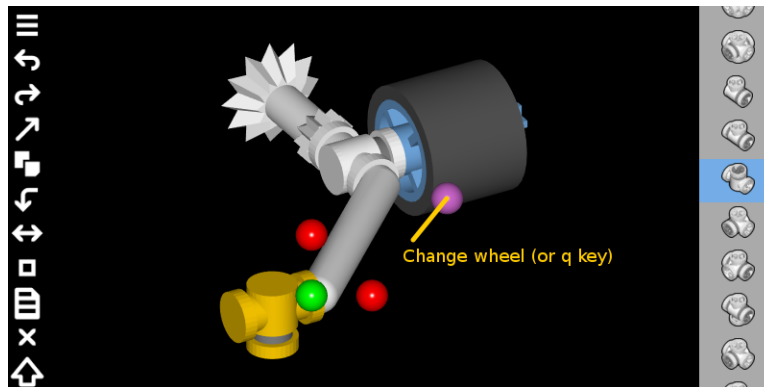
Wheels and gears can be placed on axles. Deselect all. Then, select only the axle. A purple configuration dot appears for one-sided axles; two configuration dots appear for axle_g2. Click on the purple dot or press `q` to place a wheel or gear on the axle. Click on the other purple dot or press `w` to place a gear on axle_g2's other side. Continue clicking or pressing to go through all options. Stiffen rotating joints in the same way.

Menus

The *menu* icon accesses less frequently used actions.

View: Switch between front, top, and side views.

Fit: Fit the model to the screen.

New: Delete the current model and start a new model.

Open: Load a model in .cbm format from file.

Save: Save a model to file. You will have to manually rename it.

Order: Add the model's pieces to a Crossbeams order. Click *Remove All* from the Crossbeams website shopping cart to remove them.

Help: View this manual.