INTRODUCTION

About Bee Home

Our lives — and planet Earth as a whole — would be very different if solitary bees didn't exist. They're vital for flowers, trees, animals and people. In fact, a third of what we eat depends on these busy, buzzing insects and other pollinators.

But, because of human impact, bees are in danger of going extinct. We've unwittingly destroyed their homes and natural habitats when building our own homes, gardens and cities. And we've turned to pesticides, chemicals and monoculture in farming, causing wildflower meadows to rapidly vanish across the planet.

That's why we at SPACE10 want to make it easy for anyone anywhere to design a beautiful home for these vital species. Bee Home is an open invitation for everyone to give bees the home they deserve — and to make sure that planet Earth thrives.

A new era for design and fabrication

Bee Home explores how an open-source approach can improve the way we design, fabricate and distribute physical products. At SPACE10 we believe in a future where anyone anywhere feels empowered to design, customise and fabricate their own sustainable products locally.

For more information and a visual reference, please visit beehome.design. For in-depth information, please take a look at the Bee Home Assembly & Maintenance Guide.

FILE DESCRIPTIONS

BEEHOME.gh

The Grasshopper file for generating the Bee Home and manufacturing files.

BEEHOME GEOMETRIES.3dm

The location for all the Bee Home geometries, both 2D and 3D.

Production Stock.3dm

This file is used alongside BEEHOME.gh to define custom stock sizes for nesting.

BeeHome Assembly & Maintenance Guide.pdf

This is the assembly and maintenance guide which is provided together with every Bee Home downloaded from the website: beehome.design

INSTRUCTIONS — HOW TO RUN BEE HOME ON GRASSHOPPER

Welcome to a quick explanation on how to run the Bee Home files by using Grasshopper in Rhino.

Step 1: After installing the provided plugins, open BEEHOME.gh, the file should work on its own.

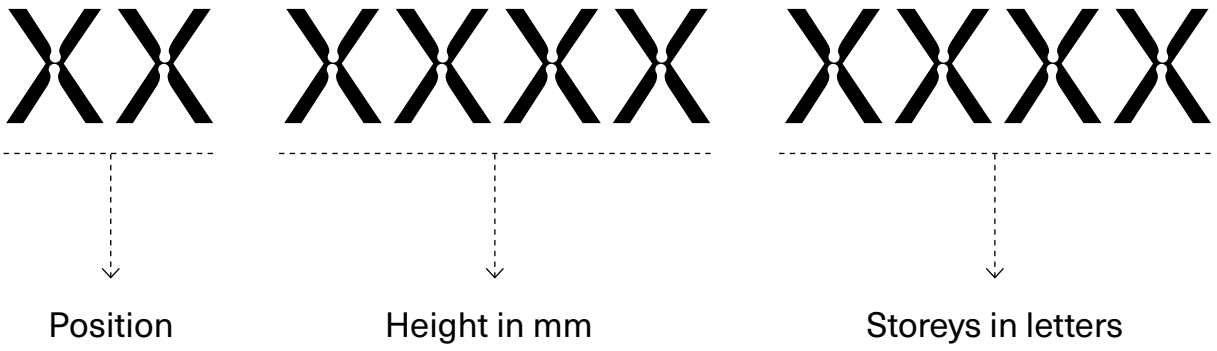
Step 2: In Grasshopper, input the Bee Home ID to create your customised Bee Home — the ID should follow the naming instructions below (Nomenclature). Then the assembled Bee Home and nested files will appear in Rhino. Alternatively, you can get a Bee Home ID using our plat form beehome.design.

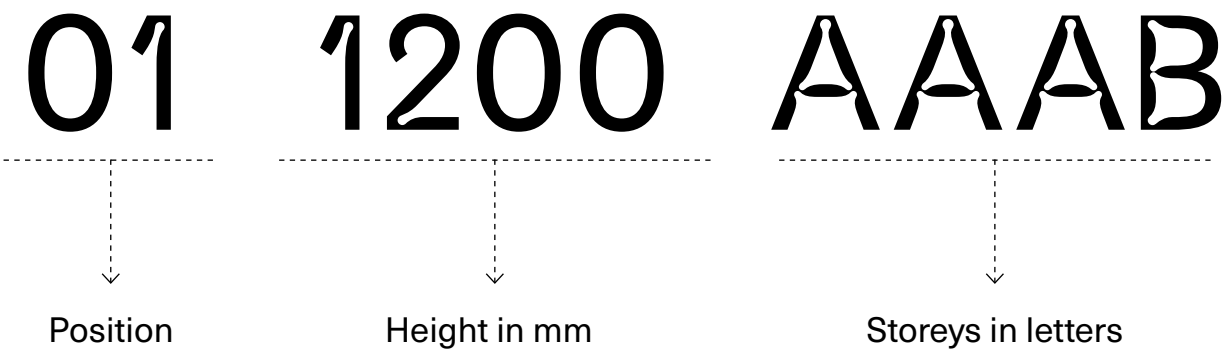
To define your stock material dimensions, open Production Stock.3dm and define your cutting area by adding 2D geometries to the “STOCK” layer.

Step 3: Bake the geometries.

NOMENCLATURE

All the parameters of the Bee Home are defined by a Bee Home ID. This input string will define your Bee Home in terms of type (hanging, standing or grounded), height and design. The Bee Home input works as described below.





	Position	Height	Storeys
Standing	01	Digits e.g. 200	Letters e.g. MDEFD or KLM
Grounded	02	Digits e.g. 1150	Letters e.g. MDEFD or KLM
Fixed	03	N/A	Letters e.g. MDEFD or KLM

Table 1. Description of Bee Home ID inputs

The Bee Home storeys are defined by letters as displayed on image 1 and can be mixed in a variety of ways. However, a few rules and guidelines should be followed.

The storeys are grouped into sets of one, two or three as illustrated on image 2. Some storeys are not compatible with others due to the positioning of the cavities for the bees. The following rules dictate which storeys should not be put on top of each other:

A not on D,E,F,G,H
B not on D,E,F,G,H
C not on D,E,F,G,H
D not on A,G,H,I,J,N,O
E not on A,G,H,I,J,N,O
F not on A,G,H,I,J,N,O

G not on D,E
H not on D,E
I not on D,E,F,G,H
J not on D,E,F,G,H
K not on A,D,E,F,G,H,I,N,O

L not on A,D,E,F,G,H,I,N,O
M not on A,E,F,G,H,I,J,N,O
N not on D,E,F,G,H
O not on D,E,F,G,H
P not on D,E,F,G,H

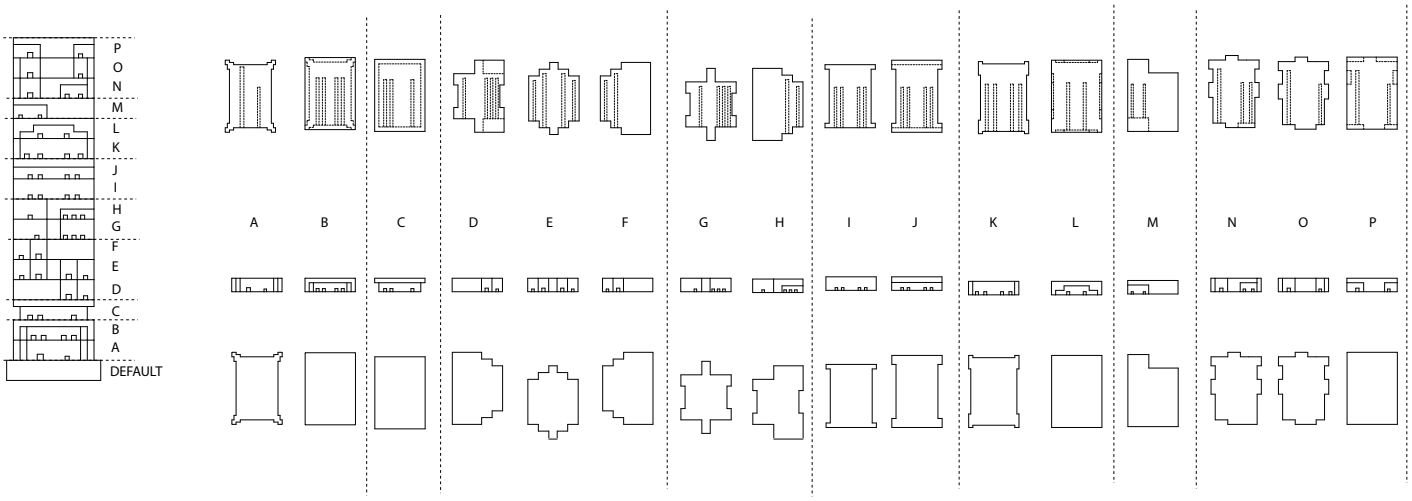


Image 1: Bee home storey groups

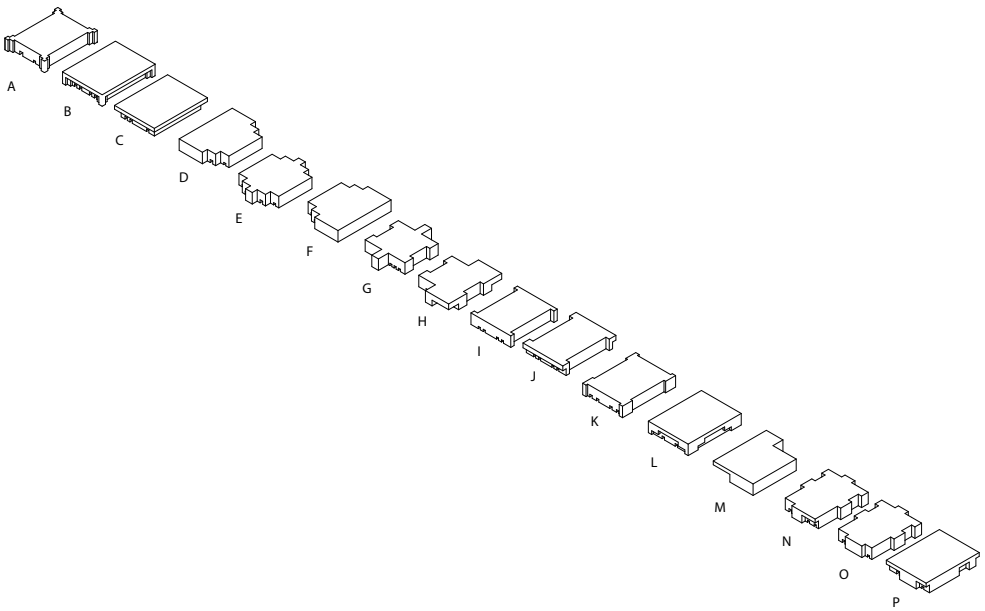


Image 2: Bee home storeys

Examples

A standing Bee Home that is 196mm tall and has 4 storeys with the letters APPM will have the ID: 01196APPM.

A fixed Bee Home that has 6 storeys with the letters NOPJNO will have the ID: 03NOPJNO.

A grounded Bee Home that is 1000mm tall and has 2 storeys with the letters AB will have the ID: 021000AB.

INSTRUCTIONS — MODIFYING THE BEEHOME STOREYS

If you want to modify the original geometries of the Bee Home, do so in BEEHOME GEOMETRIES.3dm. You will then need to re-reference the modified geometries in BEEHOME.gh in Grasshopper. Below is a guide on how to do just that.

Step 1: In Grasshopper and Rhino, open BEEHOME.gh and BEEHOME GEOMETRIES.3dm respectively.

Step 2: Reference each Bee Home storey to its geometry component in Grasshopper.

Step 3: Connect the referenced geometries to the relevant geometry components accordingly (ROOF, FIXED and DEFAULT) and internalise those geometry components.

SHARING ONLINE

Just as we did for our beehome.design website, it is possible to share your work with a wider audience by uploading it to Shapediver.

CREDITS

Project owner: SPACE10
Bee Home design: Tanita Klein
Grasshopper files: ChipChop
Online parametric tool: Shapediver
Digital Interface: Bakken&Bæck