think[box]
ShopBot (PRSAlpha 96x48)
One Sheet - Capabilities

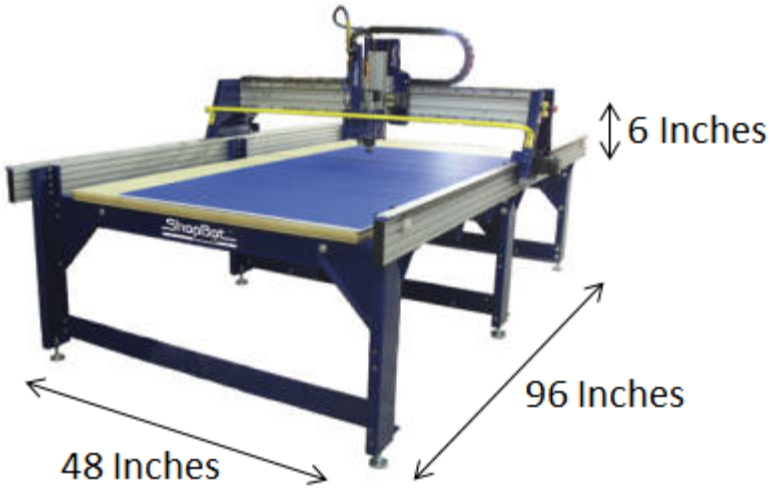
CASE WESTERN RESERVE UNIVERSITY EST. 1826

Introduction
This document covers the capabilities of the ShopBot, including the types of materials it can cut, the tools available in think[box], and the types of toolpaths you can generate.

Materials
96 inch x 48 inch x ½ inch furniture grade birch plywood is sold in think[box]. If you need a different kind of material, you must provide it.

Maximum Material Dimensions:

X-Axis	96 Inches
Y-Axis	48 Inches
Z-Axis	6 Inches



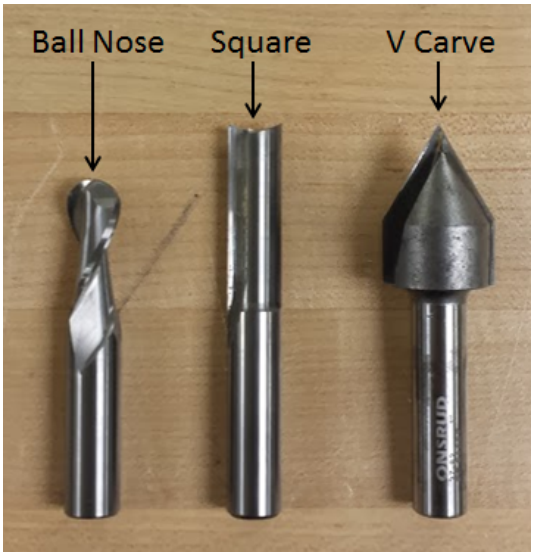
Types of Materials Allowed:

Wood	Plastic	Composite	Metal	Plaster
All OK	All OK	Glass Reinforced Plastics Garolite	NONE	NONE

Tools

In addition to fractional, wire gauge, and letter sized drill bits, think[box] keeps these tools regularly stocked; if you need a different tool, you must provide it.

Available Tools:



Square Mill for Wood

Diameter (inch)	1/8	1/4	1/2
Flute Length (inch)	1/2	1	1 5/8

Square Mill for Plastic

Diameter (inch)	1/8	1/4	1/2
Flute Length (inch)	1/2	7/8	1 5/8

Square Mill for Composites

Diameter (inch)	1/8	1/4	1/2
Flute Length (inch)	1/2	3/4	1

Ball Nose Mill for Wood and Plastic

Diameter (inch)	1/8	1/4	1/2
Flute Length (inch)	1/2	7/8	1 1/8

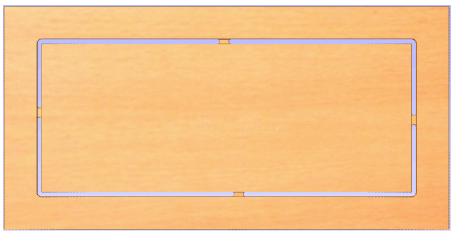
V-Carve Mill For Wood

Angle (Degrees)	60	90
Flute Length (inch)	0.856	3/4

Note: Please treat the think[box] tools with care. Tools are provided for free, but they cost $50 - $100 each. Do not drop them on the hard ground, run them into screws on the table, or otherwise use them in ways they were not intended to be used!!!

Toolpaths

You can generate the following types of toolpaths for the ShopBot:

Toolpath Type	Description	Picture
Drill	Drill holes up to ½ inch in diameter.	
Pocket	Use the ShopBot's end mills to remove all of the material up to a specified depth within a border.	
Profile	Use the ShopBot's end mills to cut the outlines of a shape up to a specific depth.	
V-Carve	Use the angled V bits to engrave letters and designs into your material. The V profile of the tool gives the appearance of square internal corners.	
3D	Use the ShopBot's end mills to cut out complex 3D shapes. You can machine on one side or multiple sides. If you machine on multiple sides, you will need to fixture your part in a way that you can accurately align the toolpaths when you rotate your material. It is not possible to cut out shapes with positive draft angles unless you machine more than one side.