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ShopBot PRSAlpha 48x48 CNC Cutting and Carving Guide To Contract Services Offered by NextFab Studio

Overview

The ShopBot cuts and carves parts by moving a spinning router bit along its three axes. Using different router bits, it can perform operations from simple profile cutting in flat material to fully 3D carving. The ShopBot has a 48" x 48" bed, and a Z-axis which allows materials up to 4" thick to be cut and carved. Here is a quick overview of having ShopBot work done at NextFab.

To request contract ShopBot CNC routing services:

1. Submit your design to NextFab, per the guidelines in the File Setup section. We also offer a file creation service, if you'd prefer to submit your design on paper.
2. We will estimate job setup time, machine time, and material cost, then provide a quote for your approval. If requested, we can provide a digital rendering of your job for your approval.
3. Upon approval, we will run your job. We will notify you when your job is complete. See payment terms below.

Materials Suitable for CNC Routing and Cutting:

- Hardwoods (oak, walnut, cherry, etc)
- Softwoods (pine, poplar, basswood, etc)
- Plywood (all grades)
- Fiberboard (MDF, LDF)
- Melamine
- Chipboard
- Oriented Strand Board (OSB)
- Lauan
- High-Density Urethane Foam (HDU, Sign Foam, PrecisionBoard, DunaBoard)
- Expanded polystyrene foam (pink or blue insulation foam)
- Acrylic
- Delrin

NextFab stocks a variety of wood, metal, plastic and prototyping materials. We can also source many other materials. Please contact us with your specific requirements.

Please include the following information in your request for contract CNC milling:

1. Your design, as a file or paper drawing;
2. Material specifications – please specify whether you will be providing material, or would like NextFab Studio to supply material for your job.
3. Desired completion date – typical job turnaround is 2-3 business days depending on the file and size of the job.

File Setup

Please lay out your parts within a rectangle representing the ShopBot bed (48" x 48") or the material size.

Material to be cut must be secured to the bed of the ShopBot, using screws, clamps or a custom-built hold-down system. Your parts must leave room for the hold-down system. If you are laying out a design on a 4'x4' sheet of material, at a minimum allow a 1 1/2" square area free at all four corners for screw placement. Many designs will require additional hold-down elements. NextFab staff will address additional hold-down concerns as part of job setup.

The ShopBot's router bits vary from 1/8" to 1/2" in diameter. Please make sure to allow adequate room between parts for router bit clearance. NextFab staff will verify your layout as part of job setup, but bearing these concerns in mind as you are setting up a file will save time and ensure your job fits properly on the specified material.

2D CNC Routing

Generally, you will need to submit vector-based files for 2D CNC routing. Bitmaps will need to be converted to vectors for CNC routing. NextFab's staff can assist with this process as part of job setup. Please include at least one dimension notation in your drawing so we can verify dimensions as we set up your job. If your parts require pockets, recesses, or any other machining that does not cut fully through the material, please be sure to specify the depth of cut for each feature. If your job requires specific profiles such as ogees, roundovers, or chamfers, please be sure to provide a scale drawing with dimensions of the bit profile so we can source the appropriate bit.

Please do not group your vectors. All profiles and pockets to be cut must be closed vectors (closed rectangles or circles, for example.)

A note on text:

When submitting files, please convert all text to outlines. Some fonts machine more successfully than others, depending on the desired effect. Please be sure to specify whether you would like your text v-carved, as in traditional signmaking, or simply cut as flat-bottomed grooves. NextFab staff are happy to discuss the options for using text with you when setting up your job.

Acceptable file types for 2D routing are:

.ai .dxf
.pdf

We are willing to try other file types, but we cannot guarantee success.

**Email questions, files and ShopBot
contract work to:
quotes@nextfabstudio.com.**

3D CNC Routing/Carving

3D CNC carving requires more extensive job setup and planning than 2D machining, as well as much more machine time. Some guidelines for 3D cutting and carving are:

- Relief-type 3D carving (topographic landscape models, relief plaques) is the simplest type of 3D carving, as the entire part can be machined from one side.
- Full 3D carving requires custom fixturing to allow for rotating the part to be machined from multiple sides. NextFab's ShopBot has an indexer capable of holding parts up to 30" long by 8" in diameter.
- Large-scale 3D objects (i.e. figurative sculpture) can be cut on the ShopBot as a series of 'slices' which are then assembled after cutting. Each 'slice' must fit on the 48" x 48" x 4" bed of the ShopBot, leaving room for a fixturing system.

If your 3D machining job involves more than relief carving, NextFab staff will contact you to discuss a strategy for producing your job.

Acceptable file types for 3D routing are:

.stl .dxf (3D DXF)
.obj .lwo
.sldprt

Please do not include tabs or the material block in your 3D model. If tab placement is critical, please indicate desired placement in a separate file or in written form.

Optional Additional Services

File Preparation

NextFab's staff can transform a sketch on paper or a description of the required parts into a vector file suitable for the ShopBot. Please be sure to include dimensions on your drawing. We can also convert bitmap files to vector files for output. High-contrast .jpg, .bmp, .tif, .psd, or .gif files convert most reliably.

Post-Processing

We can perform a variety of post-processing cleanup and finishing services. Please inquire for more information.

Pricing / Payment Terms

Machine time, job setup time and material figure into the cost of contract work done on the ShopBot. The Job Setup fee includes verifying the file and part layout, generating toolpaths in CAM, and building any custom fixturing required to machine your job. The amount of machine time varies by job. Intricate cuts or 3D machining require much more machine time than simple profile cutting. Similarly, dense materials such as hardwoods require more machine time than foams or softwoods.

Jobs over \$500 require 25% deposit prior to initiation of work. Payment due in full upon delivery. All major credit cards accepted.