

Author's Foreword

Milling and lathing are the cream of the techniques available to today's model makers and hobbyists. They make it possible to produce metal, wood, plastic, and composite components of sufficient strength and precision for today's demanding projects. Combined with computer-based control and 2D or 3D models, they provide an almost limitless world of creative possibilities.

CNC technology has shifted the knowledge required to work milling machines toward the use of preprogrammed applications and other computer-based skills. Increasingly powerful software and hardware have shifted the emphasis from the "how" of machining to the "what." Once you have produced a working model of a component, producing the finished part is often a trivial final step. Milling a part takes only a few minutes and components can be duplicated as often as you like at a constant level of quality.

The two greatest hurdles that prevent many people from acquiring their own CNC machine are the cost and fear of the complex technology involved:

- Do I have the right skills?
- Where do I start?
- Which programs do I need?
- What gear do I need?
- How does the process of turning an idea into a finished part work?
- How much does all this cost?
- Which tools and settings do I need for which materials?

If you can't answer these questions, it can be hard to know where to start. Websites and online forums only really help if you have a good idea of which answers you are looking for. The huge range of information and opinions available makes it virtually impossible for beginners to filter out the input they need and, the deeper you delve into the subject, the more expensive it appears to become. You are sure to find people who claim it's impossible to even start milling without linear guides, a high-frequency spindle, a ball screw, and a whole bunch of other things too, and you might just end up thinking you'd be better off using a nail file. This kind of hocus-pocus is great for people who make and sell milling machines but is based on a flawed approach. Anyone with a little

experience will select such a sophisticated tool based not on its specifications, but rather on what it is actually required to do.

These are the challenges I faced as a model maker, so I began with the part of the process that costs little or nothing: creating models. Using SketchUp, Blender, and other similar programs is a quick and relatively easy way to learn how to create 3D models, and it is essential to become really skilled at modeling if you want to progress from extruding or cutting basic samples to creating top-notch components.

You will only be able to produce adequate models if you properly understand complex geometry, sizing techniques, and other design aids. I gained further insight into the processes involved by getting a friend to create parts from my models using his machine. I quickly learned the principles involved and decided to purchase my own machine. This is a great way to get started, and online forums are full of people who are happy to mill a couple of models for you, usually for a small fee.

It took me a total of about two months to get up and running, and I can now model and mill a lot of the parts I need within an hour or two. Duplicating parts that I have already made often takes just a few minutes.

My experiences have taught me a systematic approach to CNC machining from the ground up. This book addresses all the essential elements of the process and, with a little effort on your part, will help you to quickly start making your own CNC machined parts.

The Book Website

The website that accompanies this book can be found at <http://cncbuch.de/en/>. It includes notes and corrections to the text and, as an appendix to chapter 2, videos explaining how to set up a Stepcraft Series 2 machine.

I will continue to update the site with tips and useful additions, so make sure you check in from time to time.

Thanks

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