

Chapter 12

Other Shop Know-how

*Depend on the rabbit's foot if you will,
but remember it didn't work for the rabbit.*

—Laurence J. Peter

Introduction

The title of Master Machinist is earned only after years of training and even more years of experience. This chapter presents a collection of expert advice and practical know-how from these seasoned veterans. Some of their solutions are simple and straightforward, while others are down right ingenious. Their direct answers to common questions are of benefit in two ways. First, they show how others have approached specific machine shop problems, and second, they lead the way to find your own solutions.

Section I – Turning-related Methods

Friction Driving

You require one or more metal, rubber or plastic discs with a diameter tolerance of ± 0.001 inches. The workpiece material is supplied flat and must remain flat after cutting. How can this part be made?

1. Cut two metal back-up cylinders the same diameter as needed for the finished discs.
2. Center drill one of the cylinders.
3. Set up the work in the lathe as in Figure 12–1. Using the tailstock and live center, compress the slightly oversized workpieces between the metal back-up cylinders. This is called *friction driving*. When cutting more than one disc, use double-stick tape between the parts to keep them in place.
4. Reduce the diameter of the workpieces so they are slightly larger than the back-up cylinders, then set the lathe tool bit so it just clears the right-hand cylinder, and “wipe” away the excess workpiece material. *Take light cuts.*

This method works well whether the workpiece material is just a few thousandths of an inch thick to ¼-inch thick. It does not distort thin stock,