Color-Coded Chuck Templates

by James Duxbury

Chucks are a basic accessory that woodturners quickly realize they could never live without. The modern chuck is simple to use and offers a quick, strong, positive grip for most turning projects, and makes turning a real joy. The chuck was originally a metalworker's tool, and for years and years before the chuck was in widespread use by turners, jamb chucking, glue blocks, faceplates, and all sorts of other ingenious devices were used. There are still times and places where those options do a fine job, especially in repetitive production-type woodturning. Most woodturners, however, do not usually hold the same shaped object twice and really enjoy the flexibility of a chuck. In fact, they soon discover that it is a whole new world of woodturning when they get their first chuck.

Modern, 4-jawed, self-centering chucks have screw-on, removable jaws, and each set of jaws is designed to hold a specific range of diameters. Most serious turners, over a period of time, acquire a number of different-size jaws for their chuck. In fact, many turners have several different chucks which are often different brands, each with jaws that are not interchangeable. It can get quite confusing.

CONFUSION ENSUES

A chuck consists of a body that fits onto the threaded drive spindle of a lathe. It has an internal gearing system that opens and closes (usually) four removable jaws that can either go over a cylinder or expand into a recess. Each chuck body has a minimum diameter to which it can contract and a maximum diameter to which it can expand. To add to the confusion, many different sizes of jaws can be mounted onto these chuck bodies, and each set of jaws has a minimum and maximum range of diameters. In other words, each set of jaws has a minimum ID (inside diameter), maximum ID, minimum OD (outside diameter), and maximum OD.

Here is where the fun starts. As I noted above, every set of jaws has four critical dimensions and these are often needed quickly in order to ensure the optimum size tenon or recess. In the past, I made charts, cut sticks to length, drew pictures, or just measured the chuck. Measuring sounds like the easiest way, but many times the chuck is in use, the jaws you want to use are not mounted on the body, or you would just like to know all the different options with which you have to work. The templates described in this project are easy to make, low cost, and provide an instant visual representation of all four critical dimensions. They can really make your day!

START WITH A SKETCH

Draw a rectangle about 3" x 6" (see **Diagram A**). Come in about 1/4" from each side and draw a line. At the upper left, shade in the 1/4" x 1/4" corner. Put the first set of chuck jaws on your chuck and expand them all the way out. Measure the OD of the jaws (see **Fig. 1**). In this example, it measures 4-1/8". Deduct about 1/8" and write that dimension (4") under the bottom long line of the rectangle. Measure the distance between the insides of the jaws and write that ID dimension over the top long line of the rectangle. Now close the chuck all the way, then measure the OD of the jaws (see **Fig. 2**). In this example, it measures 2-3/8", so I wrote that dimension next to the short right side of the rectangle. Next, measure the ID of the jaws, add about 1/8", and write that dimension on the short left side of the rectangle.

MAKE THE TEMPLATE

Take the OD dimension from the bottom and the OD dimension from the right side of your sketch, and add about 1-1/2" to each dimension to determine the size stock required for the template. The template can be made from sheet metal, aluminum, cardboard, or as in this case, 1/8"-thick Masonite.

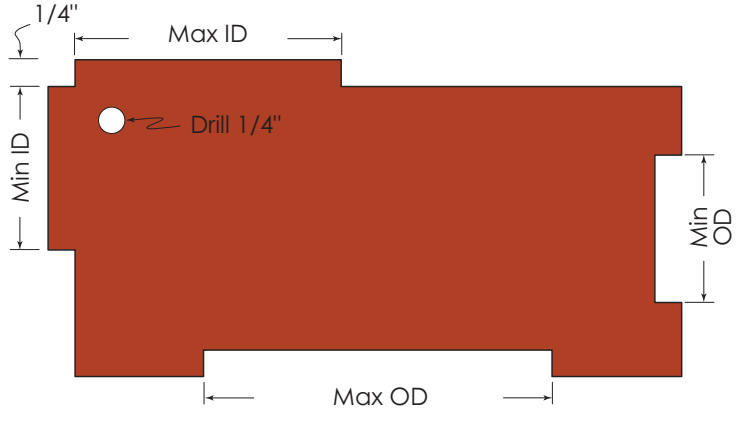

Diagram A
Make an initial template layout on paper first.

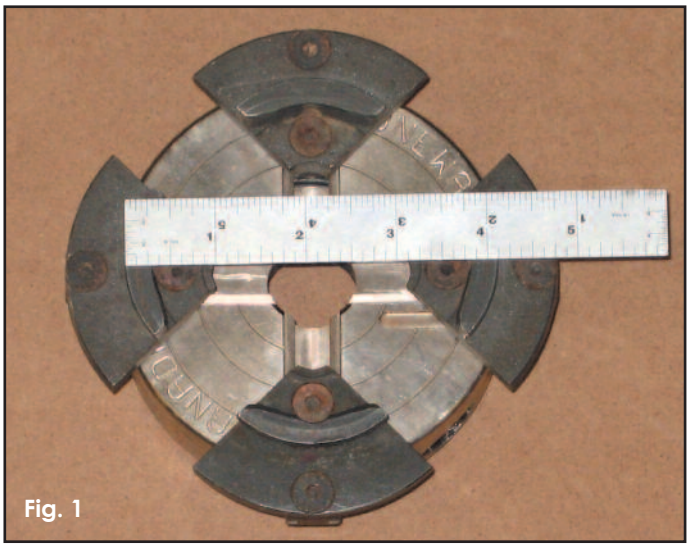

Fig. 1

Open the chuck jaws fully and measure the outside dimension.

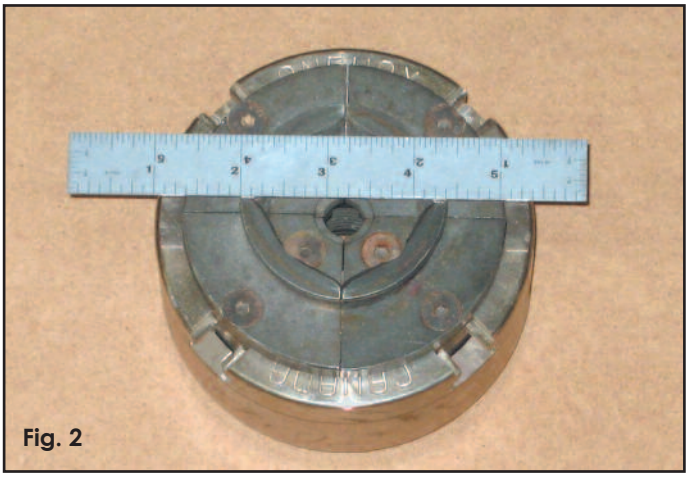

Fig. 2

Close the chuck jaws and record the outside dimension.

Fig. 3

Mask off the jaws prior to painting.

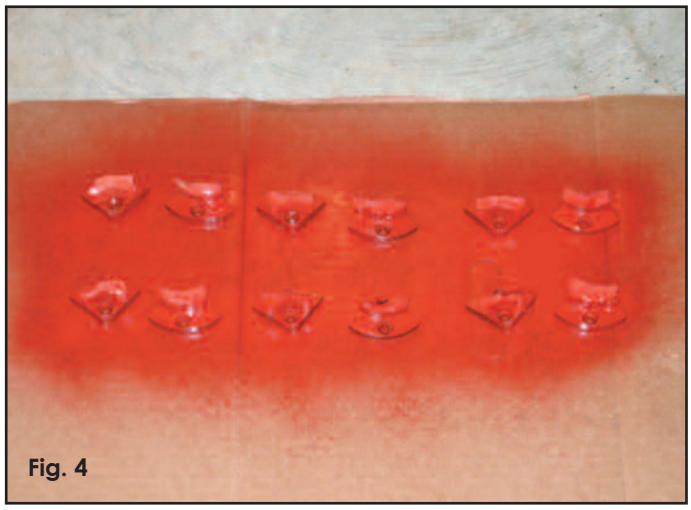

Fig. 4

Spray-paint the jaws with whatever color you desire.

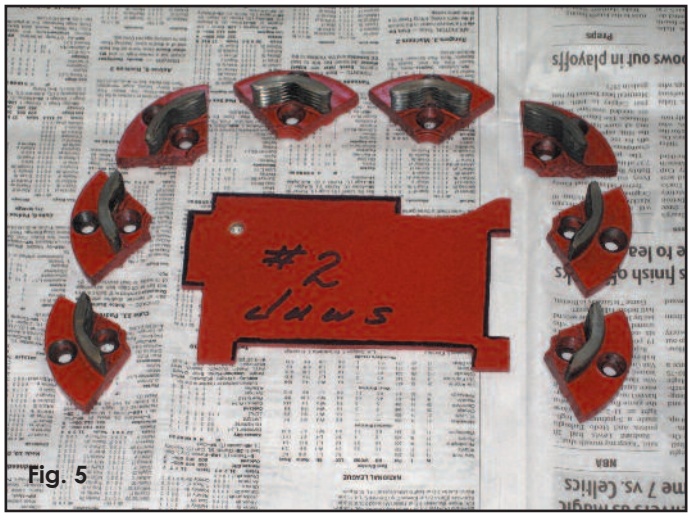

Fig. 5

Reinstall the jaws on the chuck body once the paint has dried.

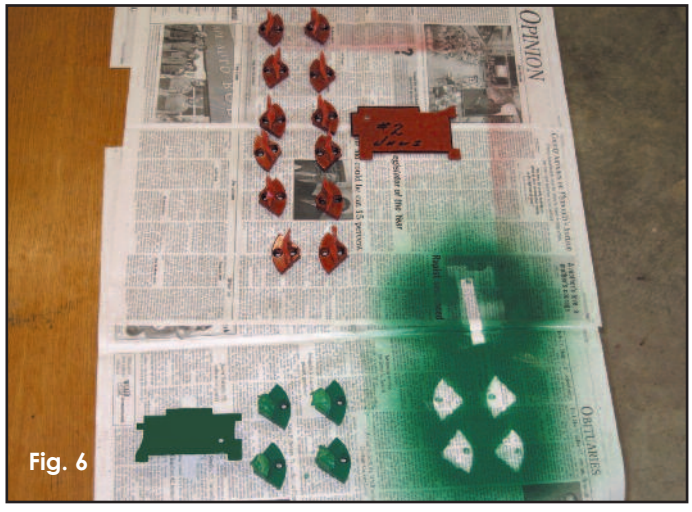

Fig. 6

Repeat this process using a different color for each set of jaws you have.

As in the sketch, come in about 1/4" from each side and draw a line. Shade in the upper left hand, 1/4" x 1/4" corner. On the long upper line, measure the expanded ID dimension and draw a 1/4" line. Shade the rest of the 1/4" space to the right of that line.

Now, from the upper left shaded box, come down the short side of the closed ID dimension, draw another 1/4" line, and shade in the remainder of that 1/4" space. On the bottom, center the OD dimension between the shaded left corner and the other side. Draw two 1/4" lines and shade in the space between those lines. Similarly, on the short right side, center that dimension between the upper shaded area and the lower corner, draw the two 1/4" lines, and shade in the space between those lines. Cut out all the shaded areas, and drill a 1/4" hole near one corner to hang the template on a nail or hook. I usually mark the jaw designation on each template with a felt-tipped marker and then they are ready for use.

COLOR RULES

I have found that color-coding each template to a specific set of jaws makes the template goof-proof—well, almost goof-proof anyway. This is quick and simple to do. Mask off the holding parts of the jaws, so that any fine turnings done later won't be stained (see **Fig. 3**). Set the template and jaws on some old cardboard or newspaper, and spray with the desired color (see **Fig. 4**). When the paint has dried, remove the masking tape and install on the chuck body (see **Fig. 5**). Do this same process in different colors for each set of jaws (see **Fig. 6**). The completed sets of jaws and templates are shown in **Fig. 7**. Note that the templates are shown in various stages of completion. You can quickly see how identifiable they are as the four options available for turning the proper-size tenon or recess.

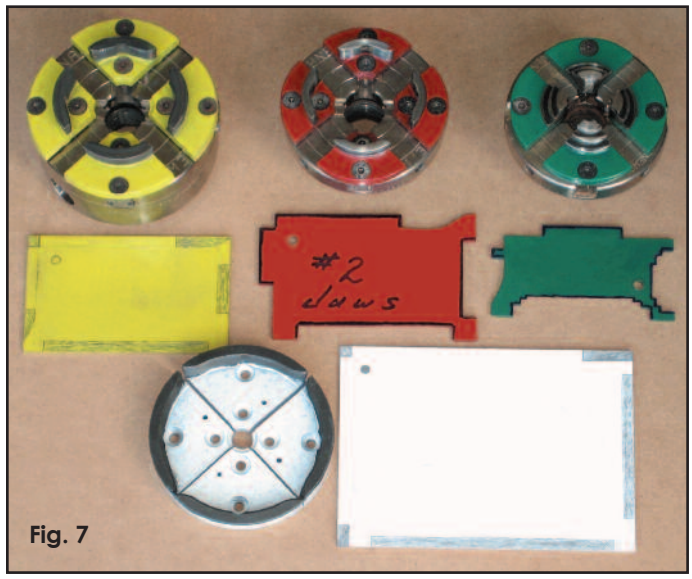

Fig. 7

The completed jaws with matching template.

If you have more than one chuck and different jaws for each, colored stripes or dots can be painted on the chuck body itself to designate which jaws fit which bodies. Or if you are fortunate enough to have a chuck body for each set of jaws, the chuck key can also be painted to make a matching set. There is just no end to the fun you can have!

James Duxbury

James Duxbury, woodturner and inventor, is the kind of guy who thinks and creates "outside the box." His turnings are unique and he seldom turns the same thing twice. With the help of his pet parrotlet, Bean, creativity abounds—all sorts of fine turnings are made from small bottle stoppers to bowls, and even a working Foucault Pendulum.

Jim's kaleidoscopes are a signature item, custom designed, and have been the recipient of numerous blue ribbons. Although Jim quit working in 1996 and has claimed to be retired, he has since obtained two U.S. Patents and has a third one in progress.

The inventor of particulate dust respirators, his company, Duxterity LLC, markets the Resp-O-Rator™ and Resp-O-Rator Jr™, while Elegant Creations markets his gallery of fine wooden objects, including Kaleidoscope Plans, Kaleidoscope Building DVD, and custom wooden Kaleidoscopes. Details can be seen at www.duxterity.com.

Jim welcomes your questions and comments, and can be reached by e-mail at cyberdux@bellsouth.net.

Editor's Notes on Woodturning Safety

There are as many different ways to turn as there are turners. Techniques presented by individual authors represent those methods that work best for them. *Woodturning Design* magazine does not certify any particular method as the "best and only way" to complete any specific turning task and will strive to offer different alternatives. You should always choose the method that you feel comfortable with, the one that works for you, and the one that is safe.

Woodturning can be a dangerous activity. Always wear the proper eye and ear protection, and take the necessary precautions to eliminate nuisance dust. Read and understand the manuals that come with your tools, and never use a tool in a way that endangers you or anyone around you. If you are not comfortable performing any operation or technique presented in *Woodturning Design*, **DON'T**!