

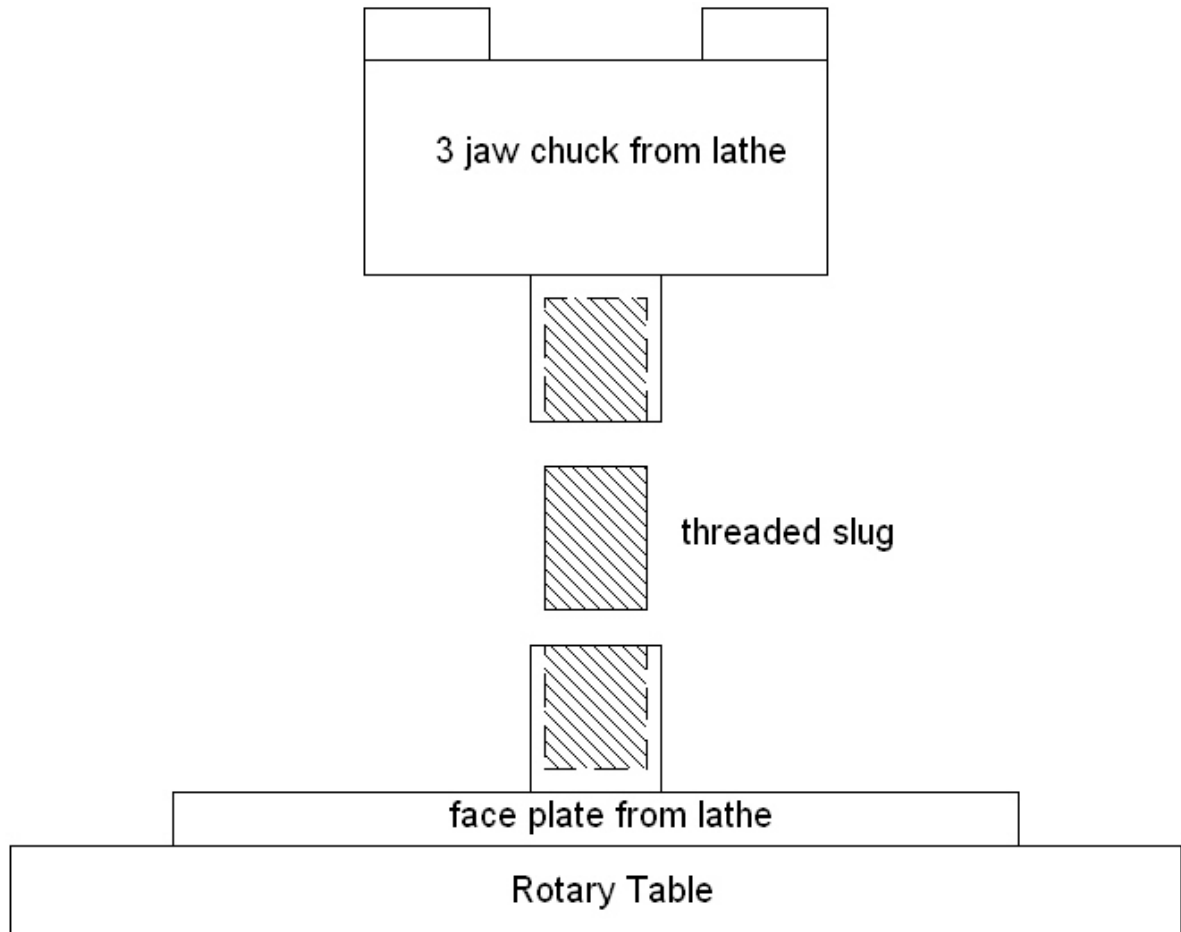
3 Jaw Chuck Mounted on Rotary Table

By R. G. Sparber

12/27/2008

I own a 3 jaw chuck, a face plate, and a rotary table. My goal was to merge them into one, useful mill attachment. The 3 jaw chuck and face plate normally thread onto my Craftsman Atlas lathe.

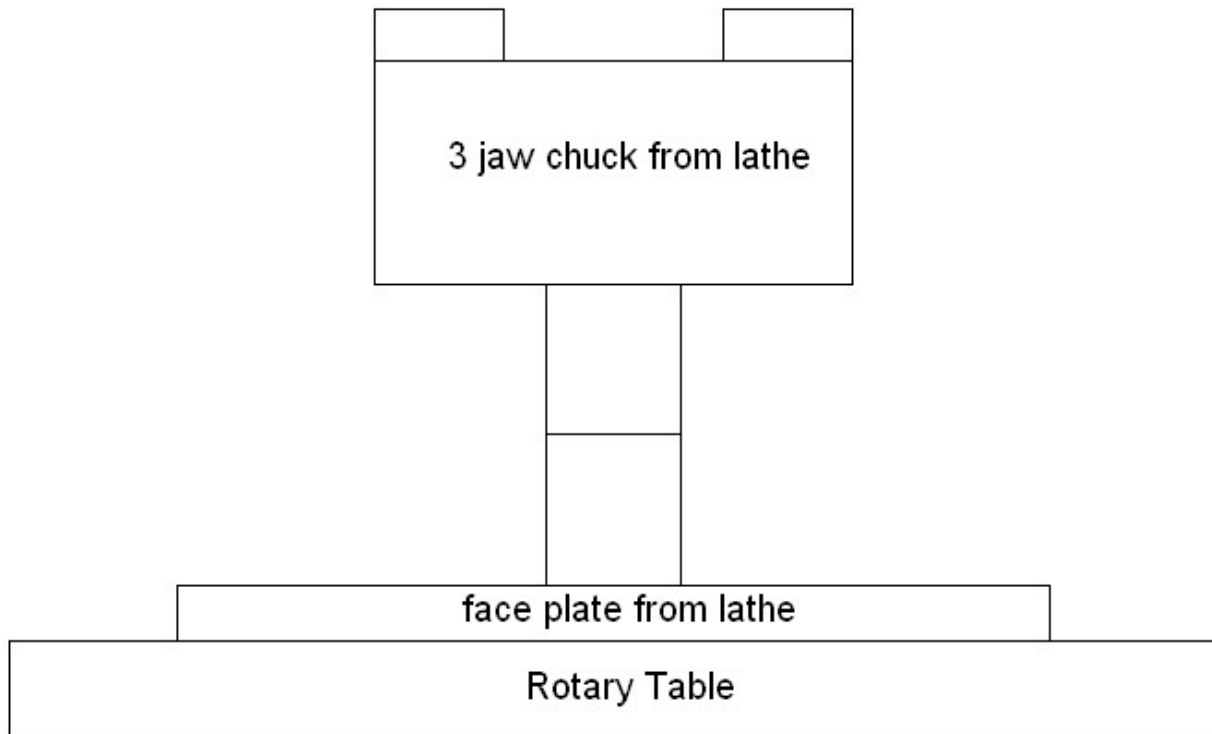
My solution was to turn a short threaded slug that matches my lathe spindle.



The threaded slug bottoms out in the chuck but not the face plate. The outer faces of each are able to squarely seat against each other to provide a relatively solid support.

Nothing special about the threaded slug. It is made of CRS and took a long time to single point cut on my lathe. It is a loose fit in the chuck and faceplate.

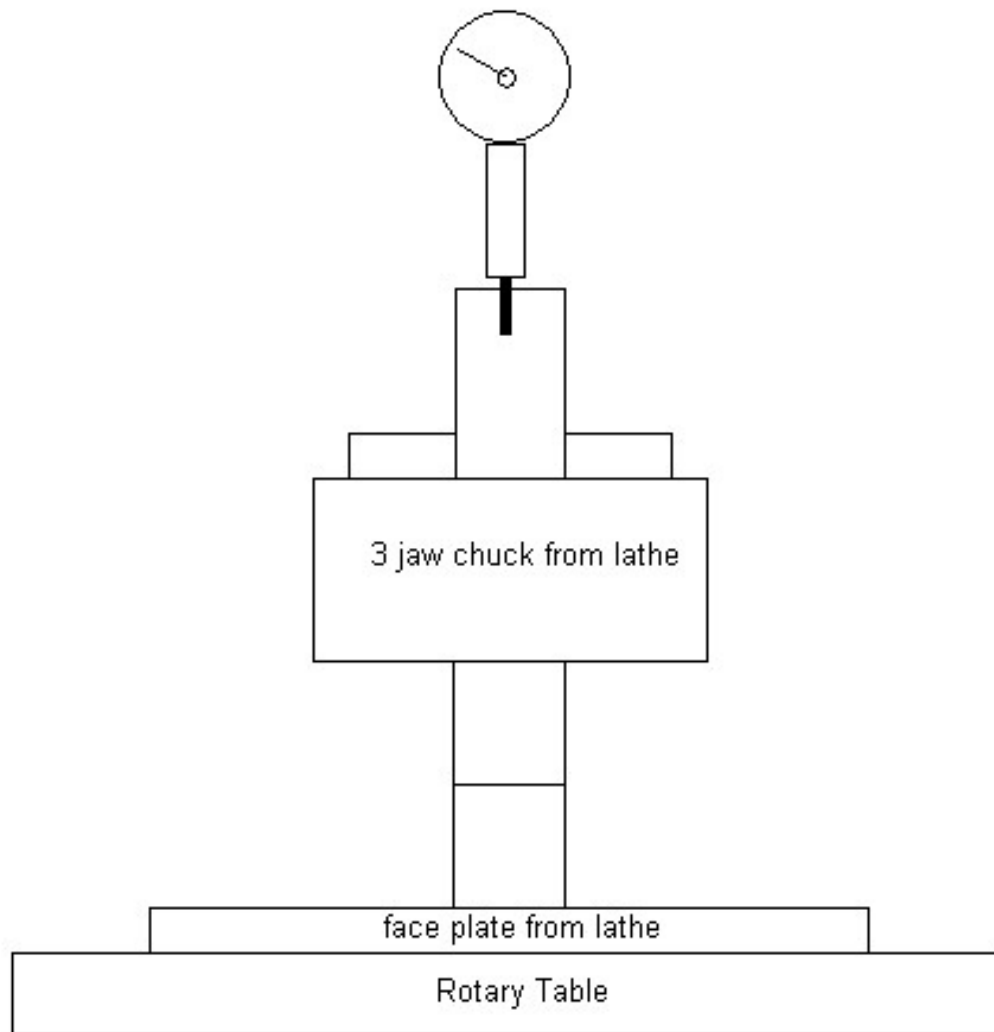
To use, I first screw the threaded slug into the chuck until it bottoms out. I then screw on the face plate.



Set up takes a few minutes.

I start by centering the rotary table under the center of rotation of my mill spindle. The chuck assembly is then loosely bolted to the rotary table and the chuck jaws centered on the spindle.

Tighten the bolts and verify the Total Indicated Run-out is acceptable.



This can be done by clamping a piece of round stock, equal to the diameter of the part to be machined¹, into the jaws.

A Dial Test Indicator is then clamped to the spindle. The finger of the DTI rests on the outside of the round stock. As the spindle is turned slowly by hand, the DTI should read the same value over the full rotation. If you see unacceptable error, repeat the entire set up process. Just moving the mill table will not solve the problem.

This drawing is not to scale and the chuck is not this high above the rotary table. However, the assembly will not be as solid as mounting the part directly on the rotary table. Take light cuts and you will be fine. For a more solid mounting, you can obtain another 3 jaw chuck without back plate and machine this plate to bolt directly to the rotary table.

Rick Sparber
rgsparber@aol.com

¹ The TIR of my chuck is a function of jaw position. If I aligned the assembly with a bar of different diameter, my center could be off.