

When Your Chuck Stops Chucking

After 12 years and several thousand bowls, four hundred boxes, and some number of hollow forms and other projects, my Vicmarc VM120 decided to quit working. At least it waited until after the Retreat. I had used it in a demo at the retreat and was going to put my 4" Shark jaws back on it, that is when I couldn't turn the key. Thirty minutes later after taking the back off I found that two teeth on the ring gear side of the scroll had partially sheared and wedged in the pinion gears. An hour later I finally had it to where the scroll would turn and open and close. Looking at the ring gear, I noticed that the sheared teeth were 180 degrees apart. When I place the jaws back on the slides, the sheared teeth were exactly where 90+% of my chucking takes place. Anyplace else and I would have kept it, but since it was in the most used location there was no way I could trust it. A call to Woodworker's Emporium had a new scroll and pinion gears on the way.

While I was waiting, I disassembled to chuck down to the bare body. You have to drive out a roll pin which keeps the jaw slides from opening too far and coming out. There are two retaining pins the hold the pinion gear in place, one came out while turning the pinion gear and the other required a few taps with a dead blow hammer on the face of the chuck. After that the scroll comes out. Somewhere along the way, a bit of metal had gotten around the hub and galled the scroll requiring me to drive the scroll out. The galling was in five spots on the hub and needed two hours of spot sanding with some 220 wet or dry silicon carbide paper. The scroll would spin on the hub as it should.

When I had put the chuck on the lathe to change jaws, I thought that the air conditioning at the Retreat had really caused it to rust. The sad fact was, it had gradually rusted from all the years of a sweaty hand and wet wood. That and



getting in a hurry and not making sure it was wiped down. As with all gradual aging, I had gotten used to the look. I decided that while I had it apart I would fix that and sand it down, but then it would happen all over again. Next thought was to do the same thing that I had done to some guns I had built up, brown them. I like the look of a browning finish better than a blued one. But, I couldn't find any browning solution locally that didn't require heating the chuck up to 275 degrees. The solution I used before only needed 130 degrees, something I did in the oven.

I finally settled on Birchwood Casey Blueing Paste as I could get that now and the browning would wait. I picked that and some Birchwood Casey Rust and Blueing Remover up and all I needed was some clean metal. Putting the bare body on the lathe, covering the ways, getting out some more Wet or Dry 220 paper, two hours later I had a clean chuck body.

Once you get the body sanded to a “ground” finish, it has to be clean before you can do any blueing. There are a number of things you can use from soap and water to metal cleaners used in painting. I used lacquer thinner and acetone. You clean it thoroughly, being careful not to touch the surface with your bare hands, then clean it again and when you think you have it clean you clean it one more time.



It should look like this when you are ready to start. You need two pieces of cotton cloth cut to the size of a credit card and folded over to make pads. One is for the Rust and Blue Remover, the other for the blueing paste. A box of nitrile gloves for the hands, or least several pairs. A plastic pan filled with clean water to a level that the covers the chuck body when placed upside down. Some plastic lids for setting the pads on, and a piece of cardboard to cover your steel workbench (the one you use for cutting boards with). Birchwood Casey Rust and Blueing Remover and Birchwood Casey Blueing Paste for the chemical side. I blueed the jaw slides and pinion gear faces, so add a plastic tray for the jaw slides and a 4” piece of 2”x4” with a couple of holes for the pinion gears.

The first step is to take one of the pads and wet it with the Rust and Blue remover, then swab the surfaces. Keep the pad wet and rub all over the metal surfaces. After you get the surface

covered, watch the clock and when two minutes go by (and no more) place the metal in the water. Wash it off using a soft paper towel. I did the body, pinion gears, and slides separately. I also left the chuck insert on so I could use that as a handle and not touch the chuck body.

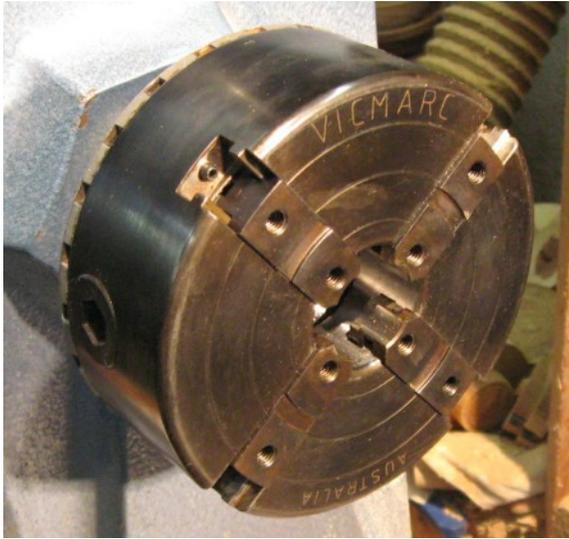
Dry the parts using a hair dryer or heat gun so as not to get any rust started. Once they are dry, change gloves and get the other pad. Apply a little of the blueing paste on the pad and apply to the metal surface, covering the metal thoroughly. It should start turning blue or black. After the surface is covered, watch the clock and after forty five seconds to one minute (and no more) place the piece in the water. I did half the body at a time, followed by the face just to make sure the blueing wasn't on the chuck too long. Wash the parts off using a paper towel, you probably want to keep a roll handy, followed by wiping dry. Make sure you have gloves on and don't touch with your bare hands at this point.

I went through the whole process three times, according to their website after three or four times the metal won't get any darker. If you want it lighter, stop after two. But the main reason for going three times was to even out the color. After the last time, I wiped it dry and then heated the body up to around 130 degrees using a heat gun. While it was still hot, I rubbed it down with bee's wax. This is a finish I had used on an antique rifle I browned and it seemed to hold up fairly well so we will see how it works on a chuck. The jaw slides and pinion gears were done the same way, except for the bee's wax.

After everything was blueed, it was time to reassemble the parts with the new scroll. With the galling spot sanded away, the new scroll spun on the hub. I dry fit the jaw slides to make sure everything worked as it should, then took it back apart. The Vicmarc comes with some sort of red grease on the gears and the bearing surface of the pinion gears. Not having any red Australian grease and having already tried high temp wheel bearing grease, I decided to give the Lucas Red and Tacky #2 Grease a try. It is supposed to be good on open gears, so it should work on the ring gear of the scroll. A little on the hub, more on the ring gear of the scroll, and some on the bearing surface of the snap ring. The snap ring goes in next, followed by the pinion gears. I put some grease on all the pinion gear bearing surfaces. A little grease on the pinion retaining pins will keep them in place and then the back goes on.

At this point you can place the chuck on the lathe and wind the jaw slides back on, starting with #1 through #4 going counter clockwise. It is a good idea to run the jaws all the way in to make sure you didn't get them off a tooth. After they check out, tap the roll pin back in place and you are good to go just like it was when new. After I saw how it looked, I started blueing some of my jaw sets and will eventually blue or brown all of them. Next I plan on getting some browning solution and brown some of my small chucks, I just like the look much better than the blue. But, either one is better looking than the “rust color” that was on.

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Chuck after blueing and back on lathe. The name is filled in with a Birchwood Casey Gold Stick



Chuck with blued Shark Jaws ready for the next project