Removing Bushings from A-Arms by Stephen Nelson

I am slowly working my way through an upgrade of 5332, including upgrading the suspension to Graphite polyurethane bushings. Which means I had to remove the old bushings.

The original bushings had steel washers press-fit onto a steel sleeve. This “hub” of steel was surrounded by rubber, with the rubber set into a second steel sleeve which pressed into the pivot point of the a-arm suspension.

It’s pretty easy to knock off the press-fit washers on the inner sleeve, and to then press out the inner sleeve and the rubber with sockets and a bench vise. I was feeling pretty chuffed by how easy these steps were. Then I looked at the outer sleeve that is pressed into the pivot of the a-arms and realized that the outer face of each sleeve has a flange on it. And that the flange covers the outer face of the a-arm tube into which the bushing sleeve is pressed. Hopefully Figure 1 will give you a better idea of what I am talking about. In the figure you can see the flange and the sleeve that is pressed into the a-arm tube. The picture also shows a 9/16” impact socket that I used to align the sleeve with the headstock in my lathe.

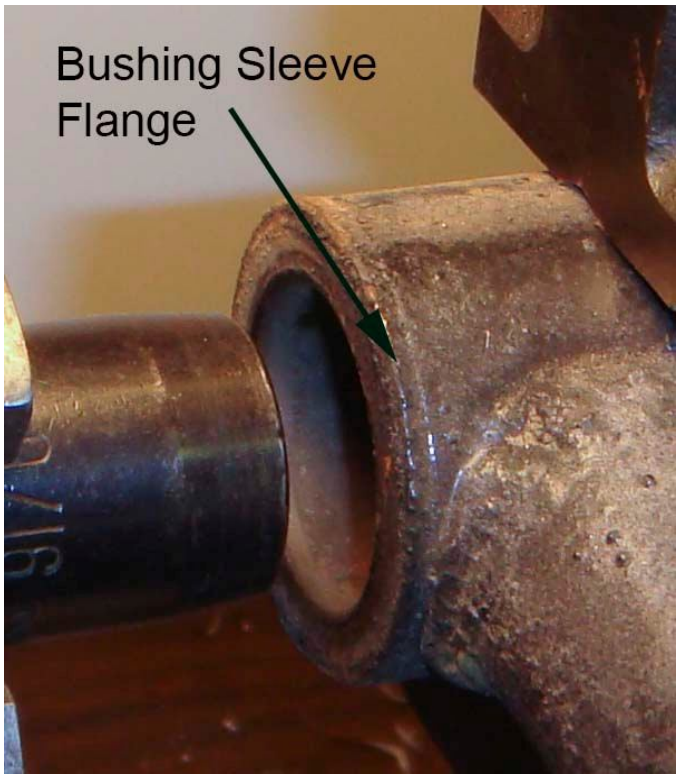

Figure 1 – Bushing Flange in A-Arm Tube

OK, the flange is painted so all you can see is the trace between the flange and the tube that is part of the a-arm. But, hopefully the picture gives you an idea of what has to come off.

I tried milling off the flange and found that awkward. Then I tried using a boring bar to remove the flange – also awkward. Next I bought a 1.25 inch drill bit ($55) and used it to drill out the center of the flange. Worked slick, hence this article.

I have a lathe which made this drilling process fairly straight forward, since a lathe can be turned down to fairly low rpms, and since lathes often have milling attachments that allow one to firmly hold a workpiece while drilling or milling. When I got the hang of it, it took about 3 minutes to drill out each flange.

Note – the 1.25 inch drill is larger than the hole in the tube into which the bushing sleeve is pressed. When drilling I am not drilling into the a-arm tube, I am only drilling until the flange comes off on the drill bit. If the bushing is properly centered on the drill this works very well. I did drill slowly when nearing the inner edge of the flange so that I could see when the flange began to wobble (as in when it was nearly drilled through). Several times I spotted the wobble and then tapped the flange off with a punche. This minimized the chance that I would drill into the tube.

Figure 2 shows the overall set-up I used on my Myford lathe.

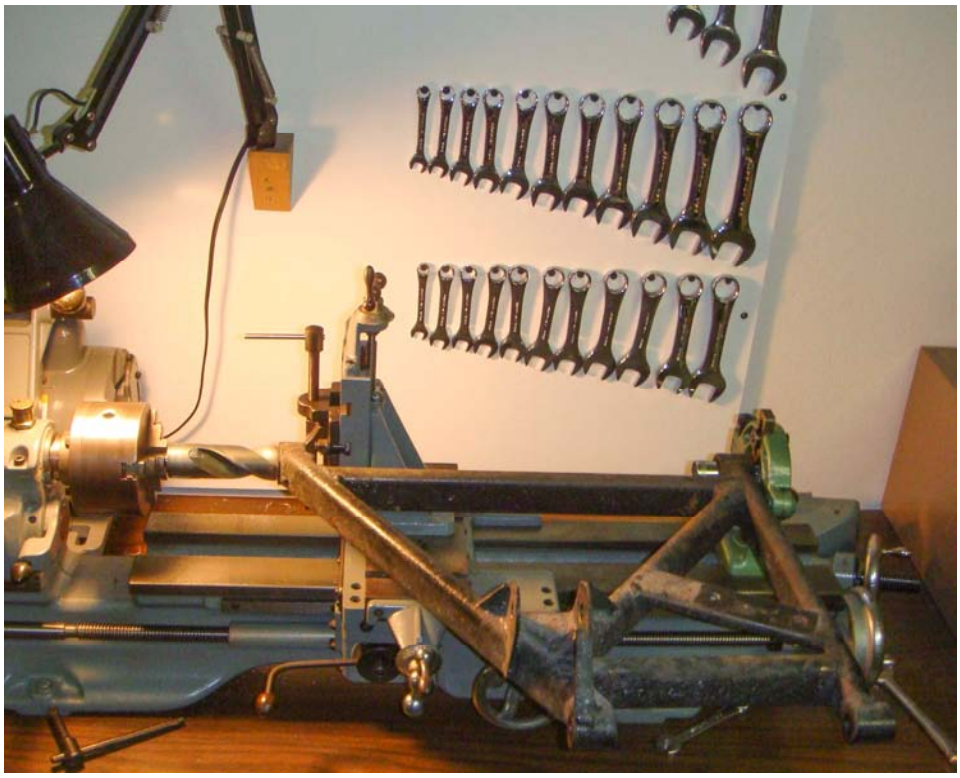

Figure 2 – Lathe Set-Up

The bushing/a-arm tube being drilled is held in vise of my milling attachment while the other bushing is slid over a socket held in my steady rest (green tool to the right of the picture). The socket in the steady assured that the centerline of the a-arm pivots was inline with the centerline of the chuck when the other bushing was centered on the chuck.

Figure 3 shows another view of the steady holding a socket that just slipped into the second bushing.

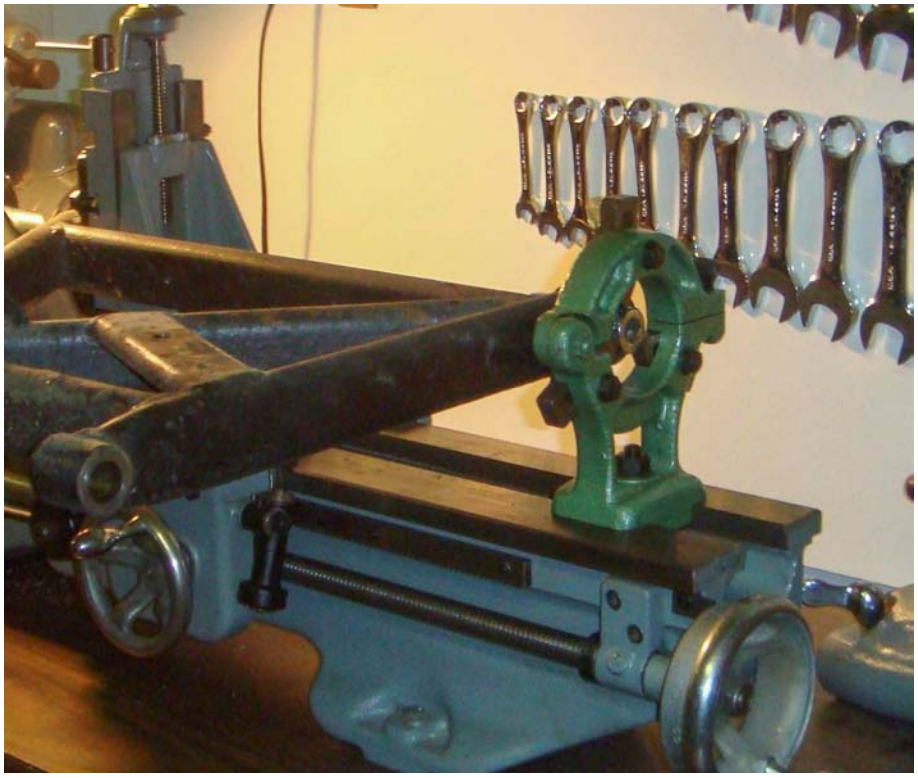

Figure 3 – Steady Set-Up

As mentioned above, I centered the bushing to be drilled by chucking up a 9/16 inch impact socket. This socket had a tapered end (as can be seen in Figure 1) which slid nicely into the bushing. I used the “X” and “Y” adjustments on my cross slide and milling attachment to precisely align the bushing with the socket. This was pretty easy – I just advanced the a-arm toward the socket, made adjustments to the X and Y, then advanced the arm again. Pretty easy to get it precisely centered.

I then backed the cross-slide off (which also slid the steady back) and replaced the socket with a 1/25 inch drill bit.

Figures 4 and 5 show the initial drilling into the bushing sleeve and the way the a-arm tube is held in the milling attachment vise.

Figure 4 – First cuts into the sleeve

Figure 5 – Milling attachment vise set-up

As mentioned above, sometimes I could see the flange begin to move just before I drilled all the way through. And, sometimes I would see a ring of rust in the bottom of the hole being drilled in the flange. When I saw movement or the ring of rust I stopped and broke the flange off with a punch and hammer. Sometimes the flange just broke free on the bit.

Figures 6 and 7 show the flanges coming off – either after being tapped with a punch (Figure 6) or when they came off on the drill bit (Figure 7).

Figure 6 – The flange after being tapped with a punch

Figure 7 – The flange coming free on the drill bit.

When all the flanges were drilled it was pretty anticlimactic to go to my 12 ton press and pop the sleeves out. Only one of them were really really tight. The others came out reasonably easily.

It was interesting to note that the steel in the bushing sleeves was not consistent – sometimes I would get lovely large curls coming off the bit, while other times I would get small chips.

I suspect this same technique could be used on a drill press provided the drill press could be slowed down enough to drill safely, and the drill press had a hefty machinists vice to hold the a-arm tube in place very firmly. I tried it on one of my presses and it worked, but it was so much easier to precisely center and hold the a-arms on my lathe so I went with the lathe for most of them.

This is one of those jobs that will be a lot easier if I ever have to do it again. Hopefully this technique will make future bushing jobs a bit easier for those of you blessed with such a challenge.