4 Stage DIY Buffing System

Contributed by: Tony

A.K.A “TonyL”

4 Stage DIY Buffing System and Parts List by TonyL

Caution: Wear a dust mask and glasses when you use this system. I also keep my dust collector running about 9 inches from my lathe to accommodate the diameter of the buffing wheels.

I use this on my Jet 1221 to finish all non-bare wood finished, plastics, acrylics, CA, etc. It can also be used on bare wood, but I prefer to have at least a few coats of thin (or medium) CA.

Required Items:

(1) - 15 inch Length or so of ½ All Thread Rod (metal threaded rod). It does not have to be stainless steel. The same goes for all of the hardware – you can use SS if you want. Also remember that the threaded rod can be cut down to size. I found 18 inches to be too big and 12 inches slightly small. I would buy the 18 inch length and cut to size AFTER you have installed and spaced-out your buffs. Keep in mind that this can be scaled-up or down to suit the Morse tapers of your lathe and length of your lathe bed.

You can adjust the length of the threaded rod and the number of and distant between sets of buffs (also number paired buffs) to accommodate the Jet 1015.

(8) - ½ inch hex nuts

(8) - ½ inch fender washer (large washers). They do not have to be stainless steel.

(8) - ½ inch lock washer. I prefer using lock washers over nylon locking nuts or Loctite. I have tried all three ways, and I have this to be the easiest and most flexible in terms of installation and removal. Whatever you decide, you must use a means to lock the buffs in place. Otherwise, the rotation of the lathe will cause the nuts to loosen.

You will install the following combination of hardware on each side of your sets of buffs:

a. The fender washer is position right against the buff.
b. Then the lock washer follows and is position against the fender.
c. Lastly, the nut is tightened against the lock washer.

(1) - Wooden or metal 2MT drive center to fit into the headstock and accept the ½ inch diameter threaded rod.

(1) - 2MT live center with a cup or the spur drilled-off to accept the tailstock end of the a ½ inch All Thread rod.

(12) - (3 per stage) 8 inch Cotton/Linen Buffs. I like to place 3 buffs together for each stage. It provides a nice, large buffing surface. **You can certainly use 2 per stage.** I would be concerned about using just one but I am sure it can be done. You can also use smaller and larger diameter buffs.

I space each set of 3 buffs about 3 ½ inches apart on center. You don't want the too close or the stages that are not using are likely to interfere with your hands and wrists.

I found these at: http://www.caswellplating.com/canton-flannel-wheel-8-x-1-2.html

(1) -Tripoli Polish NOT THE WAX (to charge the first stage). No more than a second or two is needed. Less is best, but you will have to experiment.

I found this at: http://www.woodcraft.com/Product/141073/Beall-Tripoli-Bar-6-x-2-x-1.aspx

(1) - White Diamond (to charge the second stage). This polishes and removes the residual Tripoli applied from the first stage. This also requires some experimentation.

I found this at: http://www.woodcraft.com/product/141072/beall-white-diamond-bar-6-x-2-x-1.aspx

Most folks including Beall stop here, and that is fine. I proceed with two more grades to remove even the finest scratches.

(1)- P-22 (to charge the third stage). Even though the seller calls this “ultra-fine”, it is not as fine as the compound below. The seller admits this is confusing to many. Charge for the same amount of time – about a full second or two.

I found this at: http://www.caswellplating.com/buffing-polishing/specialty-buffing-compounds/plastic-glo-ultra-fine-dry-grade-p-22.html

P-22 Plastic-Glo is an ultra-fine cutting and high coloring compound for bringing out a smooth, brilliant finish on practically every type of plastic. Use for polishing plastic, acrylic, wood and lacquered finishes. No. P-22 is a pure white compound on the very dry side. Will not glaze on the buff or load up compound into crevices or recesses of the work. Being exceptionally fine, it will not scratch the softest plastic.

(1) - Final Stage Buffing Compound (P-112)

P-112 is the driest working grade formulated with an extremely fine abrasive particle. Used to impart a brilliant high-gloss finish. Recommended for final finish on all plastics.

I found this at: http://www.caswellplating.com/buffing-polishing/specialty-buffing-compounds/plastic-buffing-compound-fine-p-112.html

You can make your own 2MT to fit into your headstock with a 5/8ths to ¾ inch DEEP hole in it to accept the threaded rod (use Epoxy to secure threaded rod into the 2MT). I also had made a 2MT with a ½ inch female thread tapped into it. I purchased it from Rick Herrell. He a member of IAP. His products are outstanding. Make sure that you tell him the MT and the diameter of the female thread. This is really much better than making your own MT.

Here’s my process:

I dry sand (I prefer reverse, but forward works just as well):

Starting at 220 to 400 grit depending on the tool-finish and material, then 320, 400, 600, 800, 1,000, 1,500, 2,000.

3M makes these (so does Norton, etc.), they are dark grey/black and sold as wet/dry sandpaper. I only use it dry. I used to stop at 600 Abranet, then I experimented with higher grits. I found this to produce better results and reduce buffing time.

I dry sand at no higher than 500 rpms. I sand in reverse, but as stated above, forward works just as well. I also don’t sand length-wise, but I am in the minority.

Then I move the material to the buffing station. MAKE SURE YOU CHANGE THE DIRECTION TO FORWARD WHEN BUFFING in case the lathe was set to reverse. I have buffed between 800 and 1,700 rpms. The faster the rpms, the more cutting you will do, but will also produce more heat. It took me a short while to get a feel for how fast, how long, and how pressure to apply when buffing for each material.

You also want to ensure that you buff the ends of your blanks. Most finished barrels are curved (convex); the buffing wheels are obviously round. It's not always apparent that the buffing wheels are making contact with the sections of the barrel that curve away from the buffing wheels. I examine my work often under a 10X magnification light to measure my progress and finish after each stage. If I don't see the scratches getter finer, I return to the previous stage.

I then use Maguire's 105 and then 205 to remove any polishing compound residue. The last compound will leave some fine residue even though you may not be able to see it. I find just using the Maguire's 205 to be enough. The 105 cuts more and may add scratches that were previously removed from the buffing wheels. I apply a small dab of the Maguire's on to the barrel and rotate the lathe at 1200 rpm while apply light pressure from a clean cotton tee shirt rag. Turn the rag a few times to ensure all of the polish is removed.

It can be found at any automotive supply store.

Finally, (and this is optional), I apply very little non-cleaner wax for protection. I use Rejex, but you can use anything you want as long as it doesn't contain a cleaner or polish (both may have an abrasive in it and you don't want that).

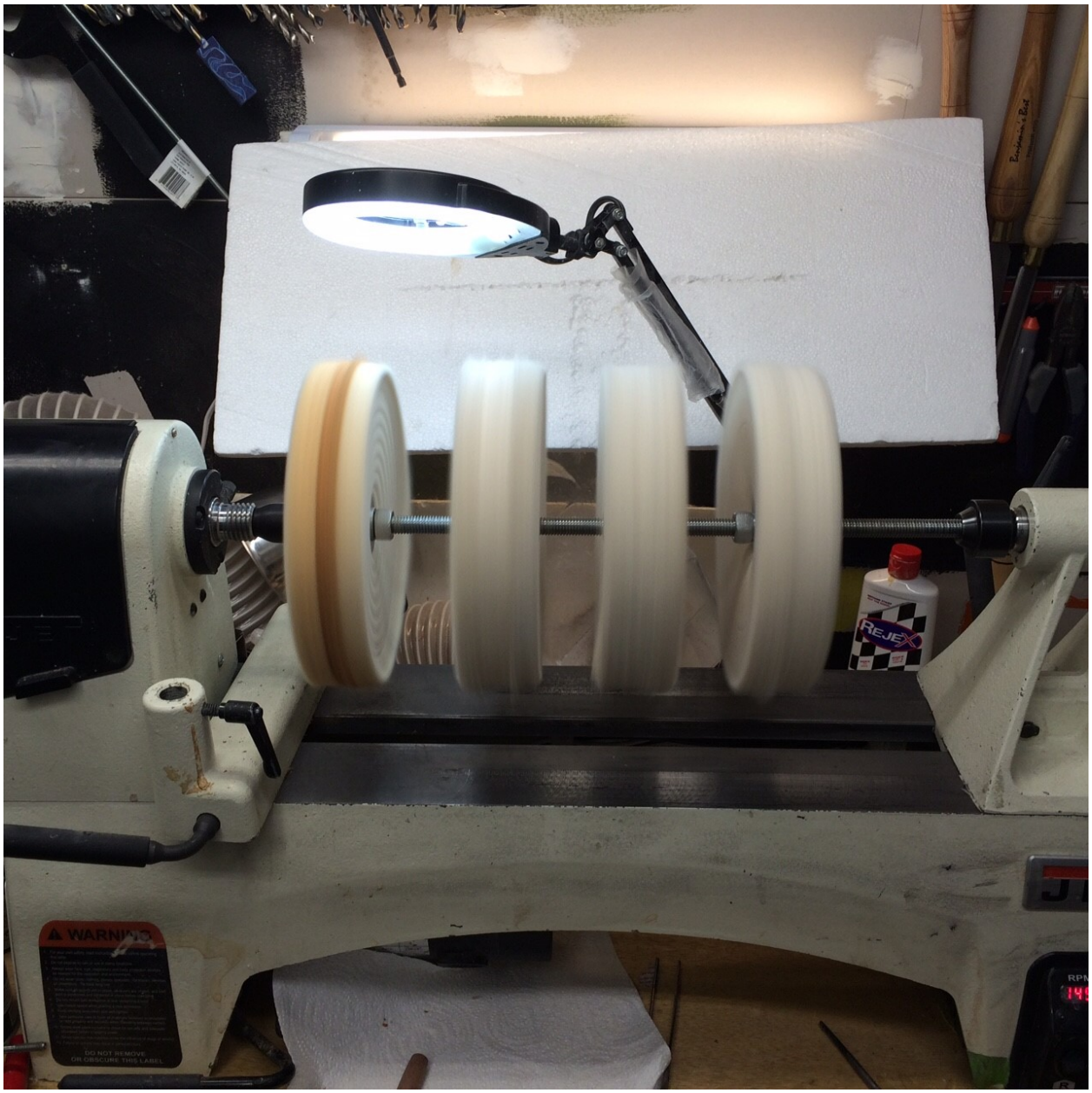
(1) - A wheel rakes make cleaning your buffing wheels easy. Use the jagged blade to the edge on the spinning wheel, and work it across the face until the wheel looks bright and fluffy once more. This action, done periodically, will remove entrapped particles, which could scratch a more delicate part.

After every 10 barrels or so, I use this to "fluff-out" my buffs and clean then with a dedicated dry eraser (same product used to clean sand paper. Both cleaning with the erase first, and fluffing with the rake are performed at under 700 rpms):

I find gently (but firmly holding) the rake against the wheel at no more than 300 to 400 rpms in reverse works best. Needless to say, if you don't have reverse that works too – just make sure you firmly grip the rake with both hands (one of each side of the wooded handle).

I found this at: http://www.caswellplating.com/buffing-polishing/wheel-rake/wheel-rake-complete-unit-handle-teeth.html

Here is what mine looks like when it is spinning.



Remember, this just happens to be the way that I polish pens. You may find another approach better or that you get better results with wet-sanding. I used to wet sand and use MM. I found this to be a better finer finish, more control, easier to observe progressive and doesn't risk the introduction of water to a CA finish.

Happy Turning! TonyL