Some Generic Lathe Maintenance Guidelines

by Brent English

Vibration: All lathes will vibrate if you have out of balance work and run the speed to fast. For systemic vibration problems, start with the legs:

All four feet should be carrying about the same weight. This is more important than having your lathe level. Think of it like a chair with one leg too short. It will always wobble when you shift your weight, which is what happens when you have out of balance work spinning. To get all four legs carrying the same weight you may: 1) adjust leveling pads if present, 2) shim one leg or 3) do other leg adjustments.

If you have leveling pads, loosen one on the tailstock end so that you know that leg is carrying no weight. Put something slightly off balance on the lathe and start at your lowest RPM. Turn up the RPM until the lathe starts to vibrate. Then apply pressure to the loose leveling pad until it the lathe smooths out as good as you can make it.

For shims, again, put something slightly off balance on the lathe and start at your lowest RPM. Turn up the RPM until the lathe starts to vibrate. Reach down and feel which leg is bouncing. Cut a shim into a narrow wedge shape (like the kind you use when installing windows or doors) and tap it in until the lathe stops vibrating. If you go too far, you will make another leg bounce and just chase the problem.

Robust brand lathes are leveled by a "settling" procedure wherein the legs are loosened from the bed and allowed to settle evenly to the floor. If you have a Robust lathe, please consult your manual for more instructions.

Hard rubber pads are also good for minimizing minor vibration. You want them about 1/8" to 1/4" thick. Soft rubber won't do much good. "Baler belting" is available at most farm stores by the foot. It is 4" wide and just about perfect for foot pads.

Another source of vibration is loose mounting of your work. Check that chucks and faceplates seat on the spindle shoulder. If not, you'll most certainly have vibration. Some folks use a thin nylon washer between the spindle shoulder and the chuck or faceplate to help the components seat. The washer also has some benefit for keeping the chuck of faceplate from jamming on the spindle. If your chucks or faceplate won't seat, see the next section on spindle maintenance

Spindle Thread Maintenance: The threads on your spindle, chucks and faceplates must be clean and burr-free.

Every time you put something on the spindle you should clean the threads with compressed air and visually inspect both items for debris. Put a drop of oil on the spindle every now and then. If you are worried about staining the wood with the oil, use mineral oil. It won't have much effect on most finishes. Oiled surfaces will collect dust, so remember the compressed air procedure.

Buy a bottoming style tap and occasionally run the tap in the chucks and face plates to clean out the threads. If your spindle is burred up, get a small three corner file and remove the teeth on one side on your grinder or belt sander. You only need to grind off enough to keep the teeth from cutting. This is your file's "safe side". Visually inspect the spindle and gently file off the offending burrs. The safe side helps locate

the file in the thread and keeps you from filing good material while you're cleaning up the burr. A dull file is the same as no file, only more frustrating. In extreme cases you may need to get a rethreading die and run over the spindle threads.

If your chuck or face plate has set screws (aka: grub screws) to keep it from unthreading when turning in reverse, make darn sure you have them backed out before threading the faceplate or chuck on or off the spindle.

Morse Taper Maintenance: Morse tapers need to be clean and burr-free to work properly. If they are not, the inserted component can spin which may damage both the internal and external tapers.

The "TaperMate Morse Taper Cleaner" (aka: green weenie) is a pretty good item for getting debris out of internal tapers. A quick wipe with your hand or a rag usually suffices for the shank. If your spindle or tailstock tapers have burrs or galls from things spinning in them (usually caused because parts weren't clean when you used them last), get a Morse taper hand reamer of the appropriate size and use it to clean the internal tapers. When you use the reamer, you're not looking to fully restore a shiny internal surface, you are just after getting the high spots off. Use cutting oil liberally on the reamer when you use it. A dull reamer is the same as no reamer. For the external taper, light work with a smooth-cut file or a little sandpaper is usually all you need. Concentrate on the burrs, and leave good surfaces alone.

Spindle Bearings: Most spindle bearings these days are lubricated for life.

If spindle bearings go bad, replacement is the only viable option. If you are not familiar with pressing bearings on and off, get some experienced help.

Belts: Modern belts last a long time.

Many lathes use poly-groove v-belts which are very durable, do a great job of transferring power, and seldom stretch. Keep them clean and they will work a long time. The biggest reasons belts fail is improper tension and trying to run the lathe with the spindle lock engaged.

Keep your belts and pulleys clean. Loosen the belt, and turn it inside out. Clean out the ribs on the belt with a small stiff brush and do the same on the pulley surfaces. Tension on the belt should be snug, but not overly tight. Overtightening the belts stresses the bearings on the spindle and motor and will shorten their life.

If your belt is slipping under heavy cuts, don't put on belt dressing. It just collects dust, makes the belt slick and will worsen your problem. If your belt is good shape, clean and properly tensioned, you are getting everything out of your lathe it is designed to do. If these conditions are met, and you are frequently slipping your belt, it's time to either change your turning technique or get a bigger lathe. In fact, having your belt a bit on the loose side may improve the safety of your turning if you are doing difficult operations like coring.

Tailstock Quill: The tailstock quill should turn in and out easily.

If your quill is not going in and out easily, remove the quill and clean and lubricate the mechanism. Spray grease is handy for the threads and inside of the quill hole. Sometimes burrs will form along the groove

that the lock rides in. It doesn't take much of a burr to cause the quill to bind. Take a small file and remove the burr. Filing a small chamfer on the edge of the groove is a good idea.

Tool Rests: Cast iron toolrests are notorious for getting nicks and dings.

A sharp file will usually clean up the surface quickly. You need to file the whole surface, otherwise you'll end up with a low spot, which may affect your turning. You can also use your belt sander. Run the toolrest surface the long way. Put on a fresh belt, a coarse grit is fine. Be careful for sparks if you use the belt sander for wood. If your toolrest are topped with a hardened rod, and you still manage to get a ding, the belt sander may be your only option.

Locking Levers and Cams: The big locking levers for your banjo and tailstock should be adjusted so that they rotate at least 90 -110 degrees from full loose when locked. You'll get your best locking action there.

Cams and the locking mechanisms generally work best of they are dry and free of grease or dirt. Light lubrication is OK, but wipe off any excess with a paper towel. This is a place for good old WD-40 works well. To adjust where the locking lever stops, adjust the nut underneath the ways that holds the keeper on.

Way Maintenance and Sliding Components: Clean and wax both the ways and underside of any sliding component.

Scotch Brite works great for cleaning the ways and bottoms of the sliding components. Paraffin or paste wax is fine for lubrication. Go hi-tech if you need to, but cleaned and waxed beats dirty and dry all day.

Alignment: Center alignment isn't all that fussy for most spindle turning, but there are two places where it can be critical. First, if you are holding something on a faceplate or chuck and use your live center, you'll want good alignment. Second, for hole drilling.

One of the easiest ways for centers to get out of alignment is debris stuck to the bottom of the headstock or tailstock. A very small amount can make a big difference. If a thorough cleaning does not re-establish alignment, look to your lathe bed:

It is not so important that the lathe bed is level, as much as the lathe bed is not twisted. Yes, cast iron lathe beds twist just as bad as fabricated ones. You may need to adjust your legs to remove the twist. The bigger the swing you have, the more a twisted bed effects alignment. You'll need a precise level to do this, or just run your centers next to each other and adjust the legs until the centers line up.

A third thing to consider is normal play in the components. There is a tenon underneath the tailstock that runs in between the ways. There is some play in the fit, otherwise you wouldn't be able to slide the tailstock. The same holds true if you have a sliding headstock. You may be able to just loosen them and then reposition them a bit to get the centers to align the way you want.

Lathe Maintenance Tool Kit: Here are a few things to have in your tool kit to keep your lathe in good order:

- Paraffin or paste wax for lathe bed and underside of banjo, tailstock and sliding headstock
- Sharp three corner file with one side ground safe for deburring spindle threads

- Bottoming tap the same size as your spindle for cleaning chuck and face plate internal threads
- Spray grease for quill
- Scotch Brite for cleaning lathe bed and underside of banjo, tailstock and sliding headstock
- Small stiff brush for cleaning belt and pulleys
- Mineral oil for lubricating spindle threads
- Light lube oil, like WD-40 or 3-in-1
- TaperMate Morse Taper Cleaner or similar
- Morse taper reamer
- Single cut file (aka: mill file or bastard file). A sharp one.
- General hand tools needed to maintain your lathe (wrenches, screwdrivers, Allen wrenches).