

MECHANICAL/MAINTENANCE:

Alignment/Vibration

- Vibration? Centers Off?
<http://www.sawmillcreek.org/showthread.php?t=116980>
<http://www.sawmillcreek.org/showthread.php?t=79165>

Banjo Loosening

Discussion

here: <http://www.woodcentral.com/woodworking/forum/turning.pl/page/1/md/read/id/450038/sbj/3520b-banjo-behaviour/>

Bearings/Spindle

Spindle Play

<http://www.aawforum.org/community/threads/1056>

Excerpts:

- I've recently noticed play in the bearings on my 6-month-old PM 3520A, is there any adjustments that can be done or do the bearings need replacing after such a short time?
- [First] you need to verify that the play is in the spindle and not your chuck. So,
 1. Remove the chuck, grasp the spindle and try to move it side-to-side in several directions. You should be able to feel, even hear slight lateral play in the bearing/spindle/casting assembly. You can use your live center inserted in the headstock's taper to give a bit more leverage, but make sure that the tapers are clean and that it's seated tightly, or it will wobble in the taper. You can spin on a faceplate for a better grip as well.
 2. Remount your chuck and make sure that the thread adapter is seating tightly against the spindle's shoulder at the back end of the threaded section. If that's not happening, chances are the play you're getting is in the threads because the chuck adapter is not tight. This can happen if a chuck's thread adapter is not cut with sufficient thread relief to allow the collar ring to seat properly. If the chuck doesn't seat tight to the spindle's shoulder, your solution will be to have a machine shop extend the thread relief a bit deeper into the adapter. The temptation is just to use a washer, but they're not uniform in thickness and will throw off alignment of the chuck so don't.
 3. If you couldn't feel play in the bare spindle, and if the chuck adapter is seating tightly on the spindle's shoulder, you need to check how well the adapter is

seated in the body of the chuck. If the adapter has loosened (as it may with reverse turning operations) even a fraction, that's likely your source and your solution will be to reset it. I use a bit (NOT much) of thread lock compound on my adapter threads inside the chuck which, in addition to the grub screw, keeps things tight.

Chances are, PM will ask you about 1, 2, and 3 anyway, so you might as well do them before you contact Tech Support. They're trained to blame the problem on stuff other than their own parts, but you'll be able to say, "Done That" and get them in the mood to send you new parts.

- I have over 2,000 hours on my PM3520a (maybe over 3,000 hours). A few months ago, I noticed a very minor amount of play. I do mean minor. I was able to just barely move the shaft and detect that movement. It was almost undetectable, but it bothered me.

I discussed this with WMH (Powermatic) at the AAW symposium. The procedure to fix it is simple. And they handed out DVDs at the symposium which included the procedure as well as info on the 3520b.

The motor-side of the shaft has a castellated nut on it (aka castle nut). The detents in that retainer can be loosened with a screwdriver. Note the position of the nut before you do this. They suggested just barely tightening the nut so that one of the fingers on the castle nut lined up with a slot. Using this procedure, you will find that one of the castle nut's fingers probably lines up with a different slot.

The amount of castle nut turn was about 1/8"-1/4" of a turn on the nut on my machine. Note that is not 1/8 of a turn, but 1/8 inches - 1/4 inches. I just barely moved the nut. That fixed it on my machine. If you tighten it too much it will overload the bearing. The symptoms of an overloaded bearing is that it will get real hot. And it will fail early. You might want to do a day of turning and feel the bearing. Then do the tightening procedure. That way you have a sense of how warm the bearing normally runs.

You should not have to replace your bearings unless you have a huge number of hours on the machine. You can probably just tighten the bearings to resolve the issue.

Remove/Replace Spindle Discussion

<http://www.aawforum.org/community/threads/4860>

- From WOW discussion 5/23/9:

Henry Ensley says: I have no experience with a Powermatic. I have removed spindles/bearings from 6 different lathes in the last 2 years. I replaced the spindle and bearings in one of these. I can't tell

you how to do this, but I can give you a couple pointers that I learned with other machines:

- Run a dial indicator on it before you start your work. Measure "run out". When you are done your job, the "run out" should be the same or improved. If it is worse, you have a major problem.
- Clean everything before you start. Clean everything as you go. A small speck of dirt could scratch the spindle. A small speck of dirt between the spindle and the bearing could cause increased "run out".
- Use bearing pulls and/or an arbor press for pulling it out and putting it back in. Don't use a hammer. If you have to slide the whole headstock off to do it, go for it.
- You can expand the metal on a stuck pulley by heating it. Don't use a hammer.
- Check for obstructions as you go...you don't want to end up "flaring" your spindle.
- Use pieces of wood between metal and metal whenever you can. This will help protect your parts from getting damaged.
- I would replace the bearings at the same time. Since you will have the whole thing taken apart anyway, why not?
- Find some specific instructions online for your machine.

Joe Ruminski says: Have done this three or four different times and it has gone without a problem every time. There is more than one set screw in the pulley group so be sure they are all loose before using force of any type. I used the rubber hammer just tapping lightly and everything came apart with ease. A little WD 40 or other spray will help after cleaning all parts to start with. You do not want to get this spray on the new belt if you can help it. Good luck!

Belt Replacement

<http://www.aawforum.org/community/threads/8504>

Rob Wallace suggests: Contact "Belts For Anything" in Louisiana

at: <http://www.beltsforanything.com/site6.php> (easiest by phone at 1-337-235-9736) and ask them about poly-V belts. They may even have the PM 3520A & B on their "tool list" and know exactly what belt is needed.

I just checked the Powermatic on-line manual for the 3520B's belt (Part number 62), and you apparently will be looking for a 260-J Poly V-belt (which is 26.0 inches in length, and with a "J" belt section). You will need to determine the number of ribs (usually 6 for a lathe of this size) and then order the belt 260J-6 after confirming this is what you need.

Belt Tension

http://www.woodcentral.com/cgi-bin/archives_turning.pl/bid/2104/md/read/id/37247
http://www.woodcentral.com/cgi-bin/archives_turning.pl/bid/2103/md/read/id/7928

Questions: "I am able to actually get the blank to stop (read catch kind of). It appears that the belt is slipping...is this so?? and....is this normal?? I have the belt set to the low turning speeds and have the motor pulled down as far as will go. Do I have a bad drive belt? Is there something else wrong with the drive unit?"
"What is correct belt tension?"

Excerpts:

- I typically pull the motor lever down slightly when I am tightening the belt to put some tension on it when I am tightening the belt. I found early on that if you do not, on heavy cuts the belt will slip.
-my belt is set so that I can push it in to about a 1/4 inch deflection. I don't have any slippage at that tension.
- ... 5 possibilities. Belt is too big. Belt is too loose. The motor is slowing down. The spur drive is spinning in the bowl blank. The spur drive is spinning in the shaft.

Next time it slips, open the belt cover door and determine if it is the belt or the motor. If it is not either, check your spur drive.

- I spoke to the Factory guys and they said that the set screws may be loose and thus the key may be loose from the pulley. This thought was confirmed by an email I received. I have since retightened the loose set screws and realigned the pulley shaft

Cover

http://www.woodcentral.com/cgi-bin/archives_turning.pl/bid/2108/md/read/id/155172#155172

Excerpts:

- I would think a \$40.00 motorcycle cover would work well enough to

protect the lathe.

- Make sure the cover is made of heavy cloth or canvas that can breathe - plastics will enhance the possibility of condensation that will make the rust situation worse. And you don't want to know how I learned this lesson! Jamie Donaldson

Headstock Noise

<http://www.aawforum.org/community/threads/74964>

<http://www.woodcentral.com/cgi-bin/archives>

[turning.pl/bid/2109/md/read/id/203804#203804](http://www.woodcentral.com/cgi-bin/archives/turning.pl/bid/2109/md/read/id/203804#203804)

<http://www.woodcentral.com/cgi-bin/...pl?read=131754> *

<http://www.woodcentral.com/cgi-bin/...pl?read=115506> *

<http://www.sawmillcreek.org/showthread.php?181565-Clicking-in-PM-3520b>

Excerpts:

- Annoying "click" found and fixed on 3520B Faust M. Ruggiero says: "I've had an annoying click in my 3520B for a month. I really haven't had time to turn during that time but with a few moments here and there I searched out the problem. It was undoubtedly coming from the upper shaft, not the motor shaft. It even happened when I turned the shaft slowly by hand. I had that problem once before and decided it was the square block that passes by the magnetic pickup touching it slightly. A couple spacers fixed that. I'm now beginning to believe that wasn't the problem at all. Today I called PM and the service tech told me to loosen and move the square block. This is the same block that triggers the magnet for the RPM readout and has a milled slot for the bar that serves as the shaft lock. Lo and behold, both set screws on the block were loose already. The key kept the block from rotating on the shaft but there must have been enough play against the key to make the sound. If you have a 3520B or it's brother the Jet with the same mechanism, don't let a click bother you for long. Remove the push button from the housing, reach in with a 4mm allen key and check those set screws."

See: <http://www.sawmillcreek.org/showthread.php?172341-Annoying-quot-click-quot-found-and-fix-on-3520B>

- Clicking Noise: Chuck Jones reports: I finally discovered that the "collar" with the two slots that receive the spindle locking pin was slightly touching the cast iron housing. I moved it about 1/16" away and I now remember what it's like to use a quiet, smooth running lathe. During this two years I noticed that the amount of pressure exerted from the tail stock changed the clicking noise from none to pretty bad. Apparently the spindle moves a tiny amount under the pressure.

John Lucas adds: Chuck, I don't know why I didn't remember this before. Bearings that are out of alignment with the shaft can cause a clicking noise. I had that happen on my old J-line lathe. A machinist friend told me what the problem was. I removed the spindle and tapped the bearing all the way around so it was firmly seated and the clicking went away.

- I noticed an annoying noise in every revolution especially in low rpm. I solved the problem simply. The problem is in the block that holds the spindle behind the spindle lock plate. Remove the screws and plate for the spindle lock and find the blocks, and with an allen key tighten them (there are two, one opposed to the other) and the noise stops.
- I had a noise like that in mine. It was a bearing. Powermatic replaced it. Mine went out at 1 year.
- I had that noise too and traced it to a burr on the shaft from the spindle lock. I filed it off, and it stopped.
- Your upper pulley may have slipped out of alignment with the lower pulley. Look on your upper pulleys regularly for drilled holes. Inside those there are set screws, tighten them. The upper pulley can slip out of alignment if the set screws loosen. If so loosen the screws fully and relocate the upper pulley directly above the lower pulley. Tighten set screws. Consider locking them with additional set screws: see WoodCentral thread: <http://www.woodcentral.com/cgi-bin/turning3.pl?read=185403#185403>
- I concluded the solution is to provide a Key under the slow speed section of the motor pulley that didn't have one even though there was not a keyway in the motor shaft. So I took a piece of brass stock and filed it down so it would fit into the keyway of the slow speed section of the pulley. Actually, this would be only a half key as there is no keyway in the shaft in this area. I made a slight taper on the brass key so when I placed it in the pulley keyway, I could tap it in to take up any slack and stay in place. It has solved the problem and no more click.

Hand Wheel Remove

<http://www.aawforum.org/community/threads/3779>

<http://www.aawforum.org/community/threads/3970>

Using a gear puller to get it off

Head Stock Rocking

http://www.woodcentral.com/cgi-bin/archives_turning.pl?pro=search;pmd=sread;srchid=313963WjZHQHapE

[KJJR51297747737;spage=1;sanc=150254;sbid=2107;md=read;id=150254#m_150254](http://www.woodcentral.com/cgi-bin/archives_turning.pl?pro=search;pmd=sread;srchid=313963WjZHQHapEKJJR51297747737;spage=1;sanc=150254;sbid=2107;md=read;id=150254#m_150254) (Original Problem)

http://www.woodcentral.com/cgi-bin/archives_turning.pl?pro=search;pmd=sread;srchid=313963WjZHQHapEKJJR51297747737;spage=1;sanc=155405;sbid=2107;md=read;id=155405#m_155405 (Update, problem solved)

Lathe Bed Twist

<http://www.woodcentral.com/cgi-bin/turning.pl?frames;read=158708#158708>

Morse Taper Scoring

<http://www.woodcentral.com/cgi-bin/...g.pl?read=76908> *
<http://www.woodcentral.com/cgi-bin/...g.pl?read=62525> *

Excerpts:

- A #2 Morse taper Hand reamer will resolve your problem. Check with a "friendly" local machine shop and you may be able to borrow one for a day. With the lathe OFF, the reamer is GENTLY inserted into the taper and then GENTLY rotated with light hand pressure and a open-end or crescent wrench. Take 2 revolutions, remove the reamer, clean off and shaved metal, reinsert, and repeat several times until the reamer makes even contact in the taper without "catching" when turned. Stress "gently" here because you can really screw up your taper by overdoing this. Once you have the spindle taper restored, you must carefully clean and de-burr the drive center and any other appliance you plan to use. Failure to do this will recreate your current problem all over again because the defect in one will transfer to the other.

You can prevent this in the future buy cleaning both tapers and the inserts (tailstock too) before each use, making sure that any burrs, scratches, dirt (including wood dust), and grit are removed. Packard sells a urethane rubber item called the "TaperMate" that looks just like the reamer and will remove dirt from the female tapers which is probably what caused your problem to begin with.

If you can't borrow a reamer from a shop (local turning clubs often have them as well), ENCO (link) sells the #2 for about \$26 plus shipping. Thing is, if you're careful about keeping things clean, you'll never need the reamer again. Wicked thing looks cool on the tool board though!

Note again that the reamer is only for repairs, not for routine cleaning the tapers; overuse will reshape the tapers and throw your machine's alignment off until you go buy a New Spindle and quill (not a good thing).

[ENCO -Reamer](#)

- Was the rough surface caused by the center getting stuck, or was it already that way?? I would suspect that the taper in the spindle was made with a reamer and was already a little rough. If that is the case, then a ding of "bench rash" on the male taper was what caused the bind.

Turn a matching taper from a piece of Pine, coat it with a little valve grinding compound, and work it around inside the taper (by hand). Wrap some wet sandpaper around it and lubricate with some thinned oil if there is no grinding compound available. Clean it out with some paint thinner. And make that male taper is smoothed out, or it will happen again.

Paint - "Powermatic Gold"

<http://www.woodcentral.com/cgi-bin/...pl?read=110875>

- Powermatic sells a touch up paint in 12oz spray cans. Its called "Powermatic 6612060 Bronze Enamel. You can get it by calling there cust. relations number. 1-800-274-6848
- Or your local hardware store should have Rust-Oleum Farm Equipment Paint, CAT Yellow Model # 7449-830 by [Rust-Oleum](#) I use a wire brush in my sander to clean things up a bit. Scrub down with lacquer thinner. By then I can't wait to order from Powermatic so I found Rust-Oleum Farm Equipment Yellow in my hardware store and it is a very close match. If I make clean mask-off lines and finish a surface I can't tell the difference.

Tail Stock

<http://www.aawforum.org/community/threads/2962>

Question: Live Center Stuck in Tailstock?

- With the Powermatic you should be able to crank the tailstock all the way back and this will automatically eject the live center. However if for some reason the live center is too short try placing a piece of metal between the tailstock housing and the rear flange of the live center. You need to have the quill extended slightly. Then crank the quill in and the metal will act as a wedge and pop the live center out.

I have a Nova live center. It is hollow and can't be knocked out with a knock out bar. probably the same problem your having. The knock out bar simply pushes the front center point out. The front center point is a short #2 morse taper so I just push it back in. On the Powermatic I can simply eject it by cranking the tailstock quill in. On My Nova lathe I use a skew as my piece of metal to go between the tailstock and live center and then crank the quill back and pop it out.

<http://www.woodcentral.com/cgi-bin/...g.pl?read=81120> *

Live Center won't seat in Tail Stock?

- While trying to mount my live center in the tailstock today, I couldn't get it in seat. So I cranked the handle and nothing happened. Still couldn't get the it to seat. Long story short, the shaft was spinning in the tailstock. There was a short pin in the recess in the tailstock. I found a hole for the pin and rotated the shaft so the

pin would seat in the grooved slot on the shaft. I rotated the shaft with the slot to the bottom and was able to insert the pin so the shaft wouldn't spin when I cranked the handle.

How hard should I drive the pin to stay in the hole?

The pin doesn't appear to be tapered. There is a hole in the top of the tailstock that appears to be over the pin. I guess that could be used to drive the pin out if it were ever necessary but I haven't cleaned out the hole to check that.

- The pin is tapered. Try to find the narrow end and put it in. Then tap it with a hammer. I didn't hit mine very hard, just a firm gentle tap. It hasn't come out since. They must not put these in very firmly because my best friend has his drop out also. Neither of us have had any problems after reinstalling them.

I would suggest if you own a 3520 that you check this pin, which is on the underside of the quill inside the tailstock cavity. Just tapp it with a hammer and you shouldn't have any problems.

<http://www.aawforum.org/community/threads/4143>

Tail Stock Quill stuck?

<http://www.woodcentral.com/cgi-bin/turning.pl?frames;read=176252&v1=e2vrt43&v2=Ryobi+tool&v4=lacquer&v5=tyr6gh#176252>

3520A Tail Stock Quill Keyway Dowel Loose?

<http://www.aawforum.org/community/threads/35076>

3520B Tail Stock Quill Scoring and Loose Keyway Screw

<http://www.woodcentral.com/woodworking/forum/turning.pl/page/6/md/read/id/445422/sbj/3520b-quill-replaced/>

Tail Stock Quill Binding

Tool Rest Post Dimpling

<http://www.woodcentral.com/cgi-bin/...g.pl?read=40295>

Excerpt:

- I unpacked tools from AAW demos this morning and found that my tool rest post now wouldn't fit into the post socket on my Stubby banjo- more dimples than a golf ball, due to the small round points on the Powermatic post socket lock screws. The lathe in my demo room was the first model that I have encountered that had 2 lock screws. These dents deformed the post enough that precise positioning is not the quick sure movement it once was on Studly, my Stubby. This dent problem can be eliminated by grinding flat the inside tip of the threaded lock screw(s), and the increased friction will actually improve the holding power as well as eliminate the denting.

* These links from Woodcentral archives use an extra instance of Internet Explorer and

an extra Tab in Firefox to view successive messages in the thread. You need to spot and select the new tab or instance to see the successive messages.