

# **Your new Stubby S750**

## **An important note – Shipping Damage**

We have experienced very little shipping damage. But, inspect the machine when you are receiving it and if there is any indication that any damage has been done, you must note it on the paperwork. On the other hand, paint scratches, rust, and such are normal and to be expected – I seldom receive a machine from the factory where some paint isn't missing somewhere.

## **Another important note – Lift-To-Reposition Handles**

Almost all the locking screws or bolts on the machine (toolrest, quill, tailstock, bed, motor) have a lift-to-reposition feature. Lift up and the internal splines will disengage so that you can reposition the handle. Drop it down and they will reengage. It is wonderfully convenient only if you remember about it. As a result, for instance, you should NEVER have to readjust the nut on the bottom of the tailstock lock.

## **Breaking down the machine**

The machine is shipped on the stand, nearly ready to run except that the rust preventative has not been removed (it's a mess) and the motor is not installed. Further, it is likely that you will have to disassemble it to get it into your shop and then reassemble it. It is easy to do but is best done by two people. Even if you do not need to disassemble it, it will be helpful if you think through the process since it will help you become familiar with the machine. Much disassembly will also be necessary to get the machine cleaned up properly. Disassembly, re-assembly, and the day-to-day upkeep of the machine will be much more convenient if you own a set of metric Allen drives which fit your 3/8 ratchet wrench. The auto parts stores sell a small set which is not too expensive.

## **WD-40 vs. Cosmoline and rust**

After trying a number of different solvents to remove the rust preventative, I think that WD-40 works as well as anything. And, since you will be using liberal amounts of it on the machine to keep it working properly, it makes sense to buy a gallon can, a funnel, and a spray bottle. In the long run it will cost you less than using the smaller aerosol cans.

WD-40 used with the green abrasive pads made by both 3M and Norton are effective in dealing with rust, after the cosmoline is removed.

## **Disassembly and Cleaning, step by step**

1. Cut the banding from the motor and store the motor in a safe place. Metal banding can be under significant tension and can bite when that tension is released. Be careful with it.
2. Remove the tailstock and clean it up – especially all locking surfaces, top and bottom. Remember, this is one of the lift-to-reposition handles!
3. Remove the banjos and clean them up – again, all surfaces.

4. Remove the auxiliary bed from the main bed using an 8mm Allen wrench.
5. Remove the sliding bed. Release the cam-lock at the back, then slide the bed off the machine base – it is heavy. The cosmoline may make this difficult – if so, wedge a 1 x 4 between the headstock and the bed and lever it to get it started moving. Clean ALL surfaces, top and bottom. Note that the machine's serial number is at the top, tailstock end of the sliding bed.
6. Clean up the base being especially careful to clean all machined surfaces. The bed slides on these surfaces and any cosmoline (or chips) can keep the bed from moving easily and/or indexing accurately.
7. The headstock can be separated from the base by unscrewing the 4 corner bolts using an M8 Allen wrench. The pulley inside the headstock may also have cosmoline which needs to be removed. You will find wrenches and such inside the headstock.
8. The machine base can be separated from the stand using a 1/2" wrench on the 4 corner bolts.

## Positioning and Reassembly

You should find a home for the machine where you have access from the back side, not too close to a wall. The headstock end can be near a wall, just as long as you have sufficient clearance for a knockout bar.

## Assembly, step by step

1. Adjust stand height. Decide on the spindle height you want, then set the top of the stand at that height less 20". The telescoping legs can be adjusted within a range of about 7" and a 9/16" wrench is used on the 3/8" bolts which hold the telescoping legs in place. I like, and suggest, that a good starting height is to put the spindle at about 1" above your elbow. If you own a small hydraulic jack (Harbor Freight usually has them for about \$10.00), the height can easily be readjusted even with the machine mounted. Do a reasonable job leveling the stand, but you'll have a chance to fix it later.
2. Mount the machine base on the stand with the 7/16 bolts using a 1/2" wrench.
3. Mount the headstock and bolt it down with an M8 Allen wrench. The headstock is indexed onto the base with a keyway so proper alignment here is not an issue.
4. Spray the machined surfaces of the base with WD-40, then mount the sliding bed and lock it down.
5. Note that the auxiliary bed can be mounted on the headstock or at 4 different locations on the sliding bed. Further, it can be oriented differently depending on its use.
6. Mount the motor. I find it easiest to do it this way... Don't worry about the belt. Remove the motor pivot bolt and the locking handle. Stand at the motor end, facing forward, support the motor on your left leg with your foot on the lower rail, and get the pivot bolt started in its hole. Tighten the bolt with an M8 Allen wrench. Then, install the locking handle. Now, back the pivot bolt off about just a bit – enough so that the motor can pivot.
7. Install the belt. Loosen the motor locking handle, lift up, and, reaching into the headstock, position the belt. If you are like most of us, 99% of the time you will have the belt on the large

spindle pulley and the small motor pulley. This gives you a speed range from 0 to about 1400 rpm and maximum torque. The grooves on the belt go to the inside. Allow the motor to drop and tension the belt (normally this is sufficient tension) and tighten the motor locking handle.

8. Attach the motor leads The motor has been properly strapped before shipping and you will find a diagram taped to the motor's electrical connection box which should be self-explanatory. Depending on the motor's manufacturer (I use several, all good) the ground screw may be in a slightly different place within the box. They are all in or near the lower right corner, below the other terminals, and possibly hard to see. Tighten down the cable strain relief and make sure that the shielding on the motor cable does not make contact with anything inside the motor's electrical box before installing the cover..
9. Mount and adjust the banjos – see adjustment section. Note that the riser on the banjo (the separate cast piece) can be mounted on either end of the banjo, it can be rotated to a number of different positions (M6 Allen wrench), and that the locking handle can be used in two positions. Also note that because of the eccentric built into the casting, if you are using after-market tool rests and such, you may need to shorten them.
10. Mount and adjust the tailstock – see adjustment section.

## **Various adjustments**

### ***Banjo***

Position the banjo at the end of the bed with the locking mechanism about equidistant from the ends. Adjust the nut on the bottom (M17 wrench) so that the banjo locks solidly at about 5:00 or 7:00, depending on your preference. You will find that if you are using the banjo at either end of its travel, that the locking point will be a little different because of deflection in the cam bar near the center.

### ***Tailstock***

Do not assume that you can adjust the tailstock locking by tightening the nut on the bottom of the stud, under the bed. – you will likely strip the stud. The proper procedure is to use the lift-and-disengage feature of the locking handle. You should be able to find a detent which will allow you to tighten (clockwise) and loosen (counterclockwise) the tailstock with one motion or at the most, two. If you experience problems with the tailstock, there is a document which describes the assembly on the web site.

Check to see that the quill travels without binding. If it binds, slightly loosen the 4 screws holding the end plate on the tailstock and retract the quill almost all the way. Now carefully tighten the bolts.

### ***Bed and headstock to tailstock alignment***

It is important that all 4 legs be sitting firmly on the ground and NOT bolted to the ground. Loosen the 4 bolts holding the machine's base to the stand. Then, at each corner, if the base is in contact with the stand, tighten the bolt. If not, shim between them (paper, sandpaper, etc.) and then tighten the bolt.

Make sure that the sliding bed is installed and locked, then check alignment. If it is not correct, adjust shimming between stand and base until things line up.

## **Spindle lock**

Slightly loosen the spindle indexing mechanism (#3 Phillips head) and drop the lock into a hole in the pulley. Then tighten the screws carefully so as not to disturb its position.

## **Starting up the machine – electrical**

The machine runs on 220 volts and the supplied plug is a NEMA 15-6P which mates with a NEMA 15-6R receptacle (standard 15 amp 220 volts). It will also mate with a 20 amp receptacle if one of the contacts looks like this: “+”.

The machine will not draw more than 7 amps although the smallest circuit breaker you can buy is 15 amps. Normally you will be drawing significantly less than 7 amps.

The large red pushbutton is both the main on/off switch and the e-stop switch. Pull it out to enable power to the VFD (the black electrical “thing” on the plate under the headstock), push in to turn it off. You'll notice that the VFD continues to run for several seconds after power is removed. The switch should NOT be turned off while the spindle is rotating except in the case of an emergency.

The functions of the green and red buttons on the remote control should be obvious. The direction switch is at 11:00 for forward and 1:00 for reverse. There is no problem with reversing the direction while running – the spindle will slow, then reverse and accelerate without complaining. However, there is always the danger of a chuck or faceplate unscrewing itself with a heavy load so you need to be careful here.

During normal running on the high torque pulley (large pulley on the spindle) the number displayed on the VFD is the spindle rpm. On the other pulley setting, you need to double that number. If you are a novice turner, you might consider it useful to have that number more visible and there is an option to “remote” the front panel of the VFD. Please resist the urge – after a few months of turning you will never again care about the rpm as a number.

Normally there should be no need for you to use any of the controls on the face of the VFD. The only exception is if you want to change the machine's braking characteristics (see below).

## **Spindle creep**

You will discover that, even though you turn the speed dial down to zero, the spindle will turn slowly. This is intentional. The proper way to stop the spindle is with the red stop button on the remote control.

## **Resolving problems**

It is entirely possible that you will have problems in the beginning. Whether these are actual machine problems, operator problems, or some combination, I would like to ask you to give me a chance to help you resolve them before you post them to an internet forum or chat group. You may contact me via email ([bill@stubbylatheusa.com](mailto:bill@stubbylatheusa.com)) or phone (314 606 9366, some reasonable hour, central time) and it is most likely that we will be able to resolve the problem.

## **Stubby Users' Group**

If you are not already a member of the Stubby Users' Group, you should be. Go to <http://groups.yahoo.com/group/stubbygroup>, click on “Join this group”, and follow the instructions. The group is closed so that you will need to be approved – you will be.

## **Spindle braking**

There are two possible VFD settings affecting the way the spindle slows and comes to a stop when you hit the stop button. The advantages and disadvantages of each are discussed in a separate document which you should read. It can be found at:

[http://stubbylatheusa.com/manuals/Modifying\\_Braking\\_Characteristics\\_of\\_CH\\_Controller.pdf](http://stubbylatheusa.com/manuals/Modifying_Braking_Characteristics_of_CH_Controller.pdf)