

SHOPSMITH 10ER SPEED CHANGER SET UP

Here is a check list of things for speed changer set up. Take a deep breath, lots of info for such a small mechanism.

Assembly is the complete pulley assembly with floating sheave. Floating sheave is the center portion of the pulley assembly that slides back and forth, not the up and down motion of the speed changer.

1. The outer sheaves of the speed changer pulley assembly are held in place by set screws. They will not all be set correctly because they may have been taken apart at some point. Also, the correct setting will vary with the width of the belts being used. For the GoodYear belts that I sell that setting should be as follows:

Move the table as far to the right as possible.

Remove any arbors so that only the spindle will turn – no blades, sanding disk, etc. attached.

Move the headstock and the speed changer to the middle of the way tubes. This will allow you with room to remove the assembly (to the left) to remove the belts. Remove the large nut (axel knob – part 131-13) and then the assembly can slide off.

Now, with the assembly off, check the "outside" sheaves, as described below:

Set one sheave even with the end of the steel center hub (not the bronze bushing). That is, the outside edge of the sheave should be even with the end of the steel hub. Now set the other outside sheave so that 1/8" of the steel center hub shows outside the edge of the sheave. This setting will allow the belts to position properly at the extremes of the floating sheave range. That is to say, the top of one belt will be even with the outside diameter of the sheaves and the other belt will be deep in the pulley but not bottoming out. If a belt bottoms on the center hub it will slip and cause undue wear on the assembly. If the belt is not very near bottoming out, full speed range will not be achieved.

2. Make sure the motor pulley is oriented the same as the headstock pulley and in line vertically with it. I used a straight edge to make certain that the outside edge of the headstock pulley was vertical and in line with the outside edge of the speed changer sheave and also the outside edge of the motor pulley. The small step should be out and the large next to the motor. This is opposite of the direct drive position.

I set it up for the LOW speed range. Long belt on the large headstock pulley and speed changer right sheave. Then the short belt on the speed changer left sheave and smallest motor pulley.

3. For high range operation: the long belt will be to the inside (next to the headstock) and short to the outside half of the speed changer. The long belt will go to the large step on the motor pulley and the short to the small step on the headstock pulley. The speed changer pulley assembly must be removed to put the belts on. Oil the shaft before replacing the Assembly. Place the belts on the assembly in proper position and install the assembly on the shaft and replace the nut. Crank the Assembly up so you can place the short belt over the small step on the headstock pulley. Keep the long belt clear of the Assembly so the floating sheave can slide to the right (toward the headstock) and crank the

handle to tension the upper belt. Not too tight. The springs on the rear of the crank rod should never be fully compressed. You should be able to push (squeeze) the upper (long belt) in 1" at the center point between the pulleys. Mine was more like 1 1/2".

4. I placed a piece of wood under the motor as a lever to be able to adjust it easier. You'll have to loosen the two allen screws that connect the motor to the headstock. The motor should be all the way up. Place the long belt on the large step of the motor pulley. Now loosen the motor mount screws and lower the motor to tension the belt. It should be about the same tension as the upper belt, push in (squeeze) about 1" at center. Now tighten the motor mount screws.

5. Now replace the belt guard and turn on the machine. I set it up for the low speed, not the high speed, so when I started it it was at about 400 RPM. At this point the machine should be running at the low end of the high range which should be around 2000 rpm. Set the indicator plate at "1". Run the crank to the high end being careful not to compress the springs on the crank rod when it reaches the end of the range. The indicator should read "5" or "8" depending on which you have. If it is a little off, I usually slide the indicator to split the difference of the error. That is a little short of "1" and a little short of "5" (or "8"). I too had to split the difference between 1 & 5. I've never had the privilege of working on a unit that had the "8" indicator so I'm assuming it works the same way. I'm sure there is more but I have to leave for work now.

Version Two

General Info:

The center section is not designed to spin. It should slide from one end to the other with no problem. The belts will be wedged on both sides of it and on the outer sheaves so the center section does not spin on its shaft. The whole assembly spins together on the center shaft and it should spin freely. It should also be oiled regularly. The center floating sheave needs less frequent lubrication. There should be a little end play of the pulley assembly on the center (axle) shaft. I'd put several drops of oil on each end every hour or so of operation.

By the way, there are two versions of the pulley assembly. On early models, the center floating sheave tapers down all the way to the point where it rides on the large center cylinder. In other words, when you move the center sheave to one side you can see the center cylinder that it rides on in the bottom of the groove. There aren't many of these around. Evidently they figured out fairly quickly that this was a poor design and changed it to where the center sheave has a wider base that sides into a recess in the outer sheave. On these you cannot see the center cylinder that the center floating sheave rides on. I recommend removing belts and putting a few drops of oil down in the groove on the outer sheaves. Slide the floating sheave back and forth to make sure the oil gets distributed. I thought about drilling a couple of small holes in the flanges of the floating sheave to make it easier to oil but decided since it does not turn on the shaft, it would not be necessary. Be sure and adjust the belts properly. Not much tension is required if you have the correct belts. If you are using the original belts you probably need to change them out. Get 'cut edge' cogged type belts. They are more flexible and have greater traction with less tension.

Adjustments:

To adjust the belts properly, leave slack in the motor belt (range does not matter). Adjust the speed changer to tension the headstock belt all the way down in its groove. Hold the motor belt up so the floating sheave will slide all the way over and let the headstock belt go all the way down. Don't put too much tension on it. It should be a little floppy. Then lower the motor to put about the same amount of tension on the motor belt and lock it down. One other thing: The outer sheaves on the pulley assembly need to be set properly. With new 1/2" wide belts and a speed changer with little wear, the outer sheave on one side should be set flush with the end of the steel center cylinder and the other one with about 1/8" of the steel cylinder exposed. The idea is that with a belt on one side setting flush with the outer edge of the pulley, the belt on the other side should not bottom out in the groove. If the belt bottoms out it will slip if slack and worse, if it is tight, it will spin the floating sheave on the cylinder and wear it out quickly because it is steel to steel. Check the setting of the outer sheaves by holding a belt around one side of the pulley flush with the outer diameter, then bend the other belt slightly curved inside out (not too sharp or it will distort the v shape of the belt) and stick it in the other groove. I like to keep at least 1/16" space between the belt and the center hub.