

Shaper Power Train, so far...

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Some of this design is looking fairly good but there are still a few open issues. Suggestions are welcome!

You can see my $\frac{1}{4}$ HP motor bolted to a $\frac{1}{4}$ " thick plate. The left end of this plate is attached to a heavy duty hinge. To the right of the motor is a jack shaft. In the foreground you see one of the two cone pulleys. I had to clamp on that piece of rusty angle stock to the right of the motor to keep the assembly from bouncing up and down as load on the shaper increased during cutting.



Now you can see the 8" pulley on the other end of the jack shaft.

All screw holes are drilled and tapped $\frac{1}{4}$ -20. The screws holding on the motor and jack shaft bearings thread through the plate and have locking nuts on the back. This arrangement permits me to have the motor support bolts be a sliding fit on the motor support yet be locked in place. Locking nuts are probably not needed on the jack shaft.



The view from the top. In order to tension the belt on the left, I tighten the lower right mounting bolt on the motor base. On the far side is a screw set in a block that pushes on the back left corner. The motor can then pivot and tighten the belt.

You may notice that the support block for the hinge is not square with the sides of the stand. The stand legs are not perfectly aligned. I plan to weld a length of $\frac{1}{4}$ " thick by 1" angle in this area. It will be parallel with the top on the stand. A second piece of angle will be bolted on that is perpendicular to the top support arms. I can then mount the hinge to a true surface. I like using bolts for this second piece of angle because it will permit me to remove it for machining necessary for mounting the hinge.



You can see that block and screw to the left of the motor. I wasn't thinking clearly about the forces in play so originally had two screws to push on the motor. That could only work if the motor was on a sliding track.

The main problem I have is that the motor assembly bounces up and down when the shaper is under load. A second concern is that the 1/4" plate or slop in the hinge might permit the jack shaft to not stay horizontal when the fixed part of the hinge is horizontal.

One solution to both of these problems would be to add an adjustable support bar near the jack shaft. I'm certain that others will suggest better solutions.

Another big can of worms will be the belt guards and chip shield over the motor. I'm assuming that when the above design is complete, I will be able to weld on supports and add these parts.

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