12K Spindle Explain Pulley Ratio Changes

Written By: Trent Plungas



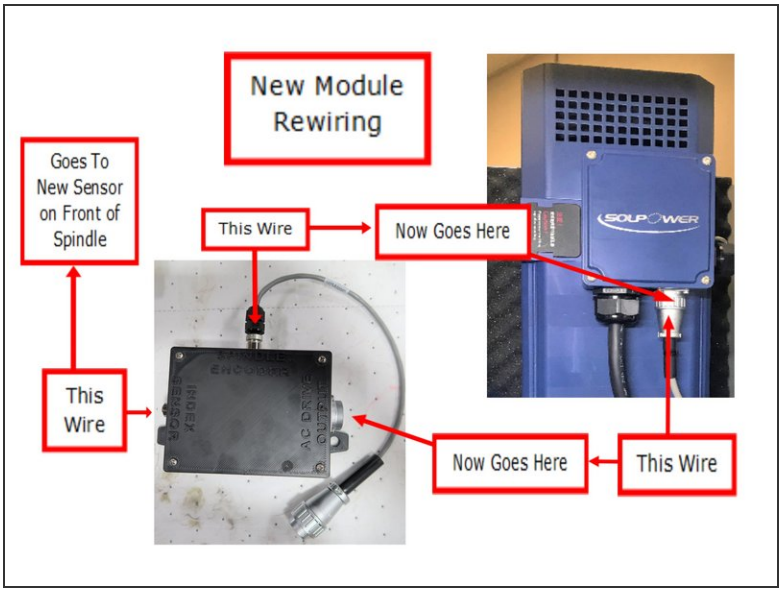
Step 1 — Explaining The Different Pulleys

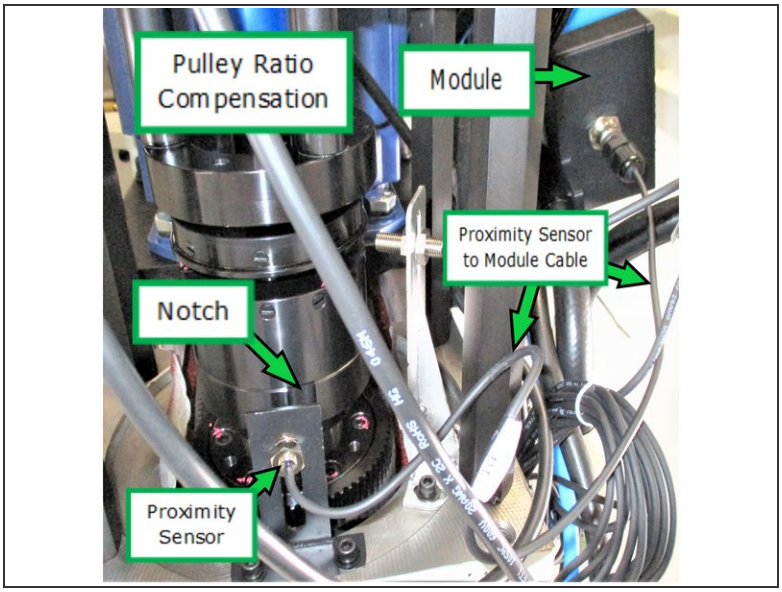




- In order to increase spindle speed, a new pully is installed. The original 8K spindle has a pully that has the same number of teeth as the pully driving the spindle on the spindle motor. So, determining the position of the spindle is easy, they turn at the same rate and each are always in the same position. Ratio of the pulleys is 1 : 1.
- So for the faster spindle speed, a new larger diameter pulley is installed on the spindle motor. However, now with the larger pulley they don't turn at the same rate. Ratio now is 1:1.25. Means every turn of the motor, the spindle turns 1 + 1/4 times. So, in four revolutions of the motor, the spindle turned 5 times.
- There is an module that counts the revolutions and keeps track of the spindle and updates the ProtoTRAK software.

Step 2 — Pulley Ratio Equalizer





- Spindle motor control wire is spliced and a module is added to the circuit. With the help of the proximity sensor checking position, the module is able to compensate for the additional 1/4 turn of the spindle.
- The sensor is activated by the notch in the spindle keeping the ProtoTRAK software current with the correct position of the spindle.