



A2Z CNC  
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**NOTE:** The **number one cause of poor performance** is setting your gibs too tight. For best performance we suggest starting with the gibs set loose and then tighten very slightly as you test cutting performance. As soon as you reach a point where there is no chatter your gibs are at the optimum setting. If you adjust the gibs so that you can not feel any play when you try to move the table front to back by hand you will have them too tight and stiction will be so high you will have excessive backlash.

**Number two cause of poor performance** is not preloading the nuts enough.

**Number three cause of poor performance** is using any lubricant other than #2 way lube. The ways & dovetails must always be wet with oil. Running your machine without oil on the ways will cause part failure that is not covered under warrantee.

**WARNING:** Do not overtighten the 10-32x1/2" cap screws that hold the nuts to the saddles. The nuts are resin and the ears will crack if overtightened.



Lubricate all sliding surfaces with way oil or lube of your choice and put the saddle on table. Adjust the gib so the saddle has no play, but moves with little resistance.

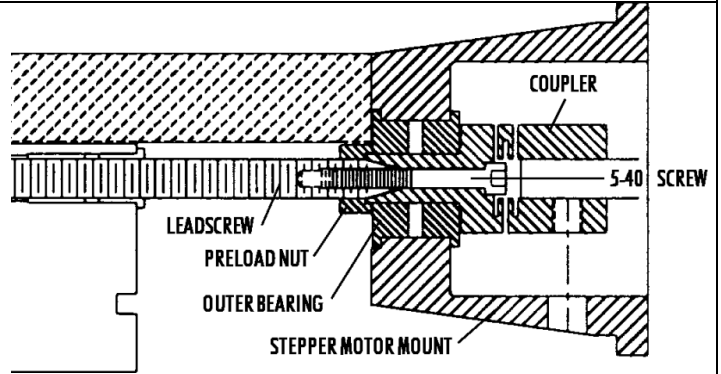


Place the motor adapter on the end of the base using the included 8-32x1/2" cap screws

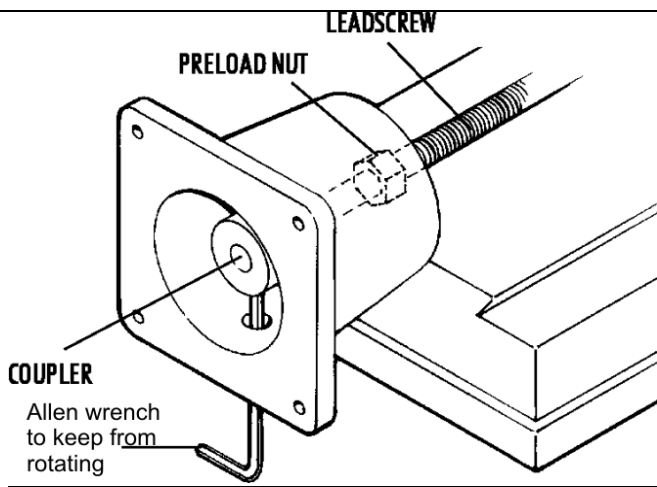


Install the nut on the shorter screw. See the nut preload instructions at the end. **DO NOT** lubricate the screws and nuts, they are designed to run dry. They will not be harmed by splashed lube, but do not lubricate.

Twist the preload section of the nut per the instructions at the end of this sheet.



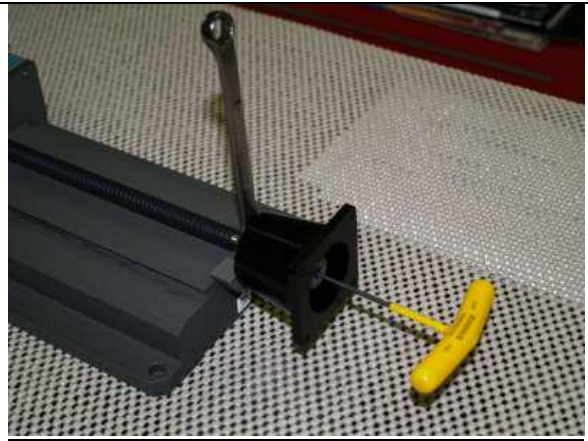
Place the preload nut on the leadscrew



Install the motor mount and coupler on the leadscrew. We recommend a slight amount of Loctite red on the taper portion of the screw. Be **VERY** careful to not get any into the 5-40 hole in the screw or in the bearing. Snug the 5-40 screw, but be careful to not break it by overtightening.



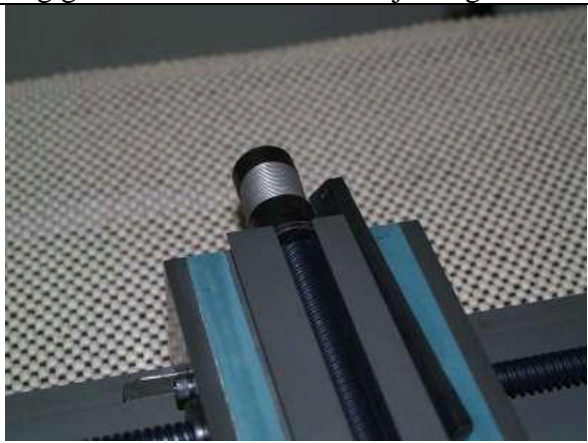
Mount the motor mount to the motor mount adapter with the stock 8-32 screws.



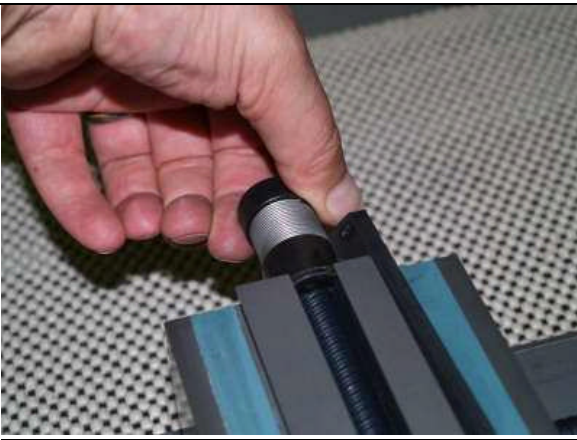
Adjust the preload nut to eliminate play but not bind the bearings. Secure the nut by applying some wicking grade Loctite to it after adjusting.



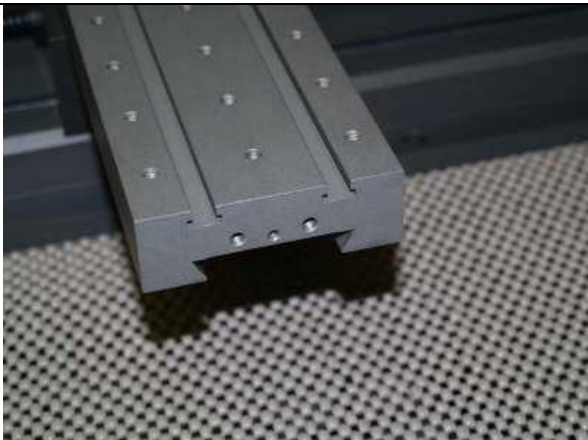
Secure the nut to the saddle with the included 10-32x1/2" cap screws.



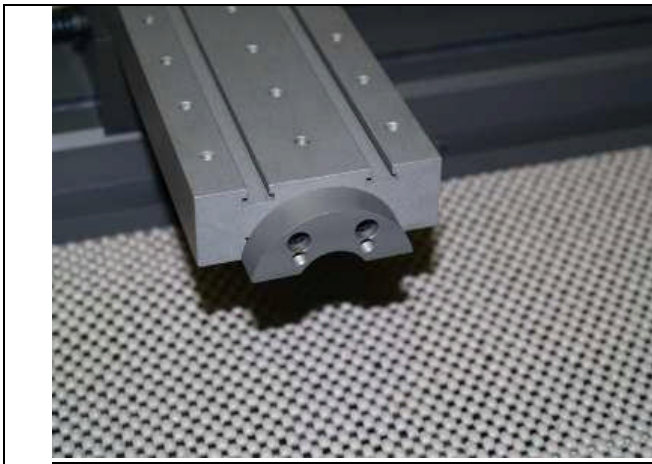
Attach the remaining nut to the end of the saddle with the included 10-32 cap screws. The nut protrudes out from the saddle.



Insert the long screw and set the nut preload just like on the Y axis. Remember, NO Lubrication on the leadscrew or nut.



Slide the X table on the saddle. Lubricate the ways liberally with way oil. Adjust the gib so there is no play, but only slight resistance.



Install the motor adapter on the end of the X table using the included 8-32x1/2" cap screws.



Slide the X table over so that you can install the motor mount using the same procedure as on the Y.



The finished installation will have the leadscrew extending past the end of the X table by about 2-1/2".

The 6-32 tapped holes on the saddle are for the optional A2Z CNC way cover set.

## **IMPORTANT NOTES :**

Do Not lubricate the screws and nuts. They are designed to run dry. Splash from coolant will not affect them, but they should not be lubricated.

Just like with the stock saddle, the ways and dovetails need to be lubricated regularly. Due to the greater loads created by longer travel and faster speed, keeping the ways wet with oil is critical. Just like on large industrial machines, the oil will drip off the ways when correctly lubricated. We only recommend the use of #2 way oil. Grease and thin (motor) oil will not build the correct oil film that is required to reach optimum performance. Damage to the parts that is not covered under warrantee can result from insufficient or improper lubrication of the ways and dovetails.

We have seen some variation in the width of the stock Sherline dovetails. We made the saddle to fit the wider of the two machines on hand. On the narrower machine I had to put a piece of .005" brass shim stock the size of the gib between the gib and the saddle to allow the gib to adjust properly. On my other machine the fit was perfect as is. I have seen cases where to get a new factory table to fit I had to shave/sand down the back side of a gib. I am sure the same could be true for this saddle. If you use a new gib it is extra long and goes from too thin to too thick. They are cut to length to get the correct range of fit. The above process works as well if you just want to use the gib you already have.

The screw is 4 tpi (.250 lead) dual start threads. You will need to adjust your CNC program to for this difference in pitch. You can figure out the correct setting by dividing your current steps per unit by 5.

You will find that you can now greatly increase your maximum rapid speed. On our test machine with 234 oz/in motors we are getting 90 ipm. For stock Sherline motors we suggest starting at 30 ipm and adjusting the speed up until you get stalling. Then reduce the maximum by about 20%.

The KerKote Teflon coating on the screws greatly reduces wear and increases performance. When they coat the screws they apply a heavy coating that covers the entire surface. Eventually as the screws wear in, the coating will appear to wear off and metal will show through. This is not a sign that the coating is wearing out, but actually a sign that the screw is just getting worn in. The coating actually penetrates the pores in the surface of the metal and it is this area where it has the longest life and best effect. The screws and nuts will last a lifetime in all but a full production environment. If used for daily production the screw and nuts will wear over time. But the self compensating nature of the nuts will maintain the performance of the system until the very end. Normal life of the nuts and KerKote screws is 5 – 10 million inches of travel.



**MOTION  
PRODUCTS, INC.**

NTB ASSEMBLY INSTRUCTIONS

Manufacturing Procedure

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1. INSERT THE SCREW INTO THE MOUNTING BODY OF THE NUT.
2. THREAD THE SCREW TO A POINT JUST BEFORE IT ENTERS THE REAR BODY OF THE NUT.
3. HOLD THE MOUNTING BODY AND TURN THE REAR BODY COUNTER CLOCKWISE FOR RIGHT HAND SCREWS AND CLOCKWISE FOR LEFT HAND SCREWS (IN THE DIRECTION TO WIND THE SPRING) TO PRE-LOAD THE TORSION SPRING. TURN UNTIL THE TORSION SPRING IS SNUG.
4. THREAD THE SCREW THROUGH THE REAR BODY OF THE NUT. (YOU MAY HAVE TO SLIGHTLY ADJUST THE ORIENTATION OF THE NUT HALVES BY REMOVING A SLIGHT AMOUNT OF THE PRELOAD FROM STEP 3 TO ALIGN THE INTERNAL THREADS AND ALLOW THE SCREW TO PASS COMPLETELY THROUGH THE NUT).
5. CHECK NUT FIT BY TURNING THE REAR BODY SLIGHTLY COUNTER-CLOCKWISE FOR RIGHT HAND SCREWS AND CLOCKWISE FOR LEFT HAND SCREWS (IN THE DIRECTION TO WIND THE SPRING) AND DETERMINING THAT IT EASILY GOES BACK INTO PLACE.

