

**TITLE:** Sabre™ Z-Axis Lead Screw Replacement Procedure

**Gerber FastFact #:** 5048

**Supplied by:** Gerber Hardware Support

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**Summary:** The following procedure explains how to replace the Z-Axis lead screw in a Sabre 404 or 408 Router.

**Tools used:**

- Metric Allen Wrench set – “Long-L” type
- Metric Allen Wrench set – “T handle” type
- Torque Wrench – INCH POUND
- Socket for Torque Wrench – 15mm for Lead screw bolts, ¼” for Chapman bits
- Metric Chapman Drive set
- Light duty thread locking compound. Loctite 222 or equivalent and Loctite 245 or equivalent
- Medium duty thread locking compound. Loctite 242 or equivalent
- Isopropyl alcohol for clean-up

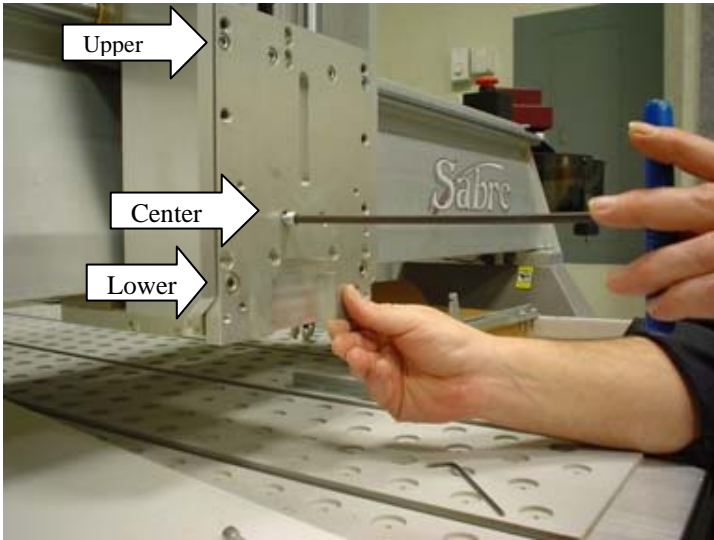
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## Removing the Z-Axis lead screw


### To Remove the Z-Axis lead screw

- 1 Using the keypad, move the carriage to the center of the beam and move the beam to approximately 18” from the front edge of the router.
- 2 Turn off and unplug the router.
- 3 To remove the vacuum shroud remove the four screws (5mm) on the carriage assembly (2 screws on each side).
- 4 Remove the springs from the spring brackets on each side of the motor (this will require 2 people to complete.)
- 5 Remove the spindle motor by removing all the screws attaching the motor to the carriage except the upper-left one. Have someone hold the motor up while the last one is removed, as the motor is very heavy.

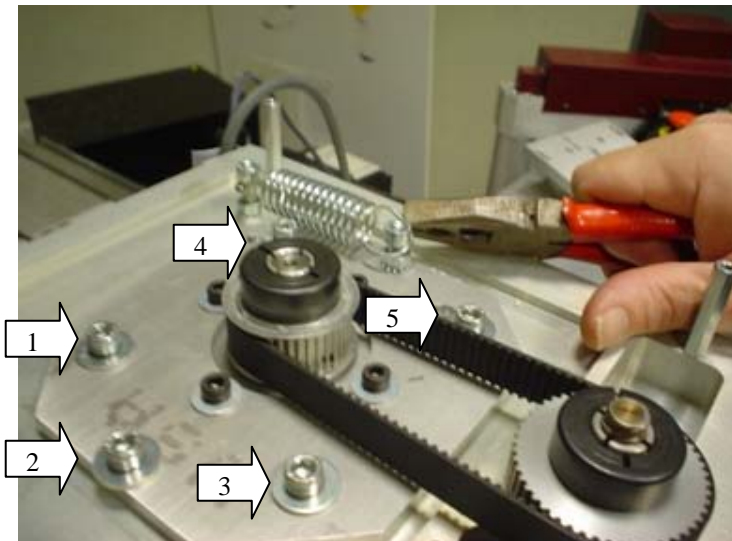
- 6 Use an Allen wrench (5mm) to remove the spring brackets (two on each side – a short one and a long one).
- 7 Remove the four screws (5mm) from the two lower bearing blocks.



- 8 Remove the two screws (5mm) from the center nut block.
- 9 Remove the four screws (5mm) from the two upper bearing blocks.

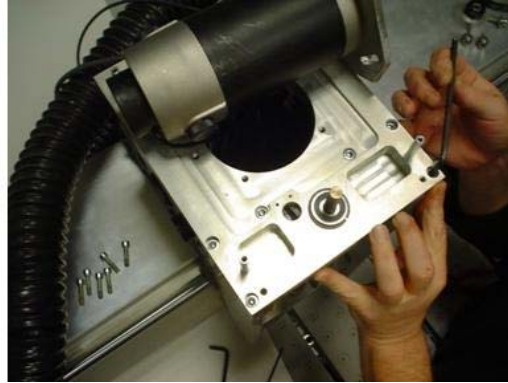
 *Note: Be careful when removing the blocks, the top blocks will fall out.*

- 10 Remove the Z motor plate.
- 11 Remove the four screws (2.5mm) that holds the cover on top of the carriage.
- 12 Remove the spring on the motor plate.

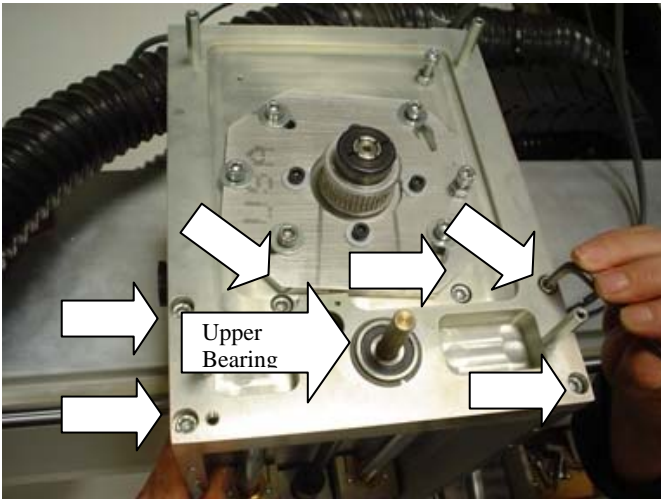


- 13 Remove the five screws and washers (5mm) on the motor plate.

14 Carefully remove the Z motor out of the carriage housing.



15 Remove the pulley, clamp and belt from the top of the lead screw.



16 Carefully lift the upper bearing out of the top of the carriage housing.

17 Remove the six cap screws (5mm) from the top of the carriage housing.



- 18 Remove the two screws (5mm) from the bottom of the bearing block assembly.

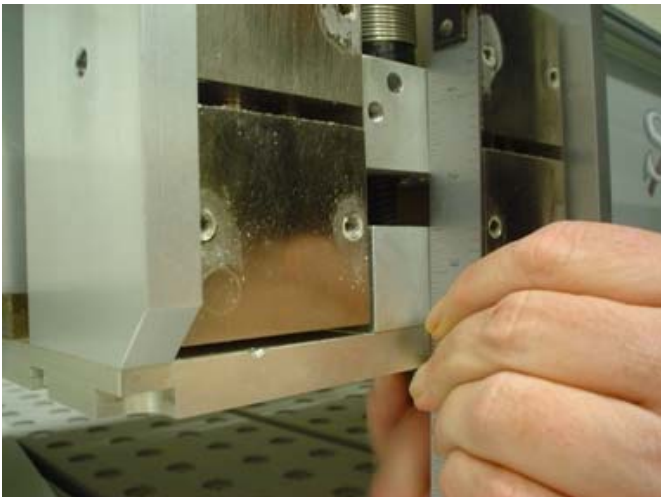


- 19 Carefully lift the top of the carriage housing and remove the Z lead screws, sliding it forward and down.  
20 Remove the bearing from the top of the lead screw assembly and install on the new lead screw assembly.

## Installing the Z-Axis Lead Screw

### To Install the Z-Axis lead screw

- 1 Carefully slide lead screw up and in, while lowering the top of the carriage housing.
- 2 Reinstall two screws (5mm) into lower bearing block assembly.
- 3 Align bearing block assembly to front of carriage assembly (snug screws to finger tight, screws will be torqued later).



- Carefully replace the upper bearing on top of the carriage housing.



- Install six mounting screws (5mm) to the top of the carriage assembly (snug screws to finger tight, screws will be torqued later).
- Carefully slide the Z motor back in carriage housing.
- Reinstall the five mounting screws (5mm) with the washers on the motor plate. Leave the screws loose.
- Reinstall the pulley, belt and clamp on the top of the lead screw. Use a 3mm Allen wrench to tighten the pulley clamp.
- Using pliers reinstall the spring on the Z motor to re-tension the belt.
- Fully tighten the five mounting screws (5mm) to secure the Z motor plate.



- Install the four screws (5mm) to the upper bearing blocks (snug screws finger tight, screws will be torqued later).
- Carefully lift the Z plate and install the two screws (5mm) for the center nut block (snug screws finger tight, screws will be torqued later).

- 13 While holding the top of the Z-Axis lead screw, carefully rotate to align the holes. Install the four screws (5mm) to the lower bearing block (snug screws finger tight, screws will be torqued later).
- 14 Plug in and turn on the router. Orient the machine.
- 15 Using the Sabre keypad, slew the Z-Axis up and down to full length of travel. Repeat several times.
- 16 With the Z-Axis in full upright position, torque the six cap screws (5mm) from the top of the carriage housing to 88 inch pound.
- 17 With the Z-Axis in full low position, torque the two screws (5mm) that holds the lower bearing block, to 88 inch pound.
- 18 With the Z-Axis in the mid position, torque to 88 inch pound the remaining 10 screws (5mm) that hold the bearing block and the nut block assembly.

### **Verifying the encoder pulse position**

- 1 Put a piece of paper (masking) tape vertically on the Z-Axis Plate and on the Z-Axis housing 2 to 3" from the top of it's' travel.



- 2 Plug in and turn on the router.
- 3 Push the A key on the keypad to orient the router.

- 4 Hold a pen horizontally and firmly against the bottom of the lower spring bracket. When the Z-Axis pauses for the first time while orienting, mark both pieces of tape with an accurate line.



- 5 Once the Z-Axis finishes orienting make a second mark on the tape.
- 6 Measure the distance between the two marks on the tape. The distance should measure between 0.16" to 0.20".



- 7 If the measurement is correct, you are finished. Reinstall the cover on the top of the carriage, the spindle motor, the springs, and the vacuum shroud. If it is not, continue this procedure.
- 8 Mark a third line on the tape at .18" from the first line.
- 9 Loosen the Z-Axis motor pulley clamp (3mm).
- 10 Rotate the motor pulley to move the Carriage to line up with the third mark.
- 11 Re-tighten the motor pulley clamp (3mm) and return to Step 1 to verify the adjustment.
- 12 Using the four screws (2.5mm) reinstall the carriage cover.
- 13 Reinstall the upper and lower spring brackets.

14 Reinstall the spindle motor.

**Run a test job to check performance before resuming production**