

# Technical Bulletin

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**Mettler-Toledo, Inc.**  
**Scales & Systems**

**Number:** MTFW-14-99  
**Date:** 11-30-99  
**Model:** 645 XL  
**Subject:** New Style Linear Actuators with Plastic One-Piece Nut

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There have been occurrences of binding on the new style Linear Actuators. To help alleviate this problem the plastic nut has been modified to give a larger backlash. It is also recommended by the manufacturer to **NOT** lubricate the leadscrew. Lubricating the leadscrew causes dirt and other particles to build up in the plastic nut, which eventually causes binding. To fix these problems do the following:

1. Return all existing nuts, PN 82927800A, for credit. Order new plastic nut, PN A82927800A.
2. Remove the leadscrew and carriage from the linear actuator. (Follow disassembly and reassembly instructions below for centerclamp, lifter, and side clamp) Thoroughly clean the leadscrew using a good degreaser such as "Simple Green" (available at your local hardware or grocery store). When the leadscrew is clean, clean it again. Wipe the five grooves on the leadscrew with a rag until all dirt and black grease is removed from the five grooves. Then clean with alcohol.
3. Remove the plastic nut from the carriage and replace with PN A82927800A
4. Clean and regrease the linear actuator case as necessary.
5. For the Side Clamp Actuator Nut Carriage only, apply Teflon tape PN 83066900A to the top of the carriage as shown in Figure 16. The tape prevents the leadscrew shield from scraping and depositing metal chips into the linear actuator.
6. Reinstall all components, do not grease the leadscrew, or apply lubricant, WD40, FMO etc.
7. Call Russ Wagner or Dave Hoffmann at MTFW 262-835-4411 if problem persists.

Below is the most efficient procedure for changing the plastic nuts.



Plastic Nut Assembly PN A82927800A

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## Centerclamp

Turn off power.

Remove front and rear covers from the machine. Remove the pressure wheel crossbar. Loosen the drive motor and remove the drive belt. Remove the end cap. Figure 1.

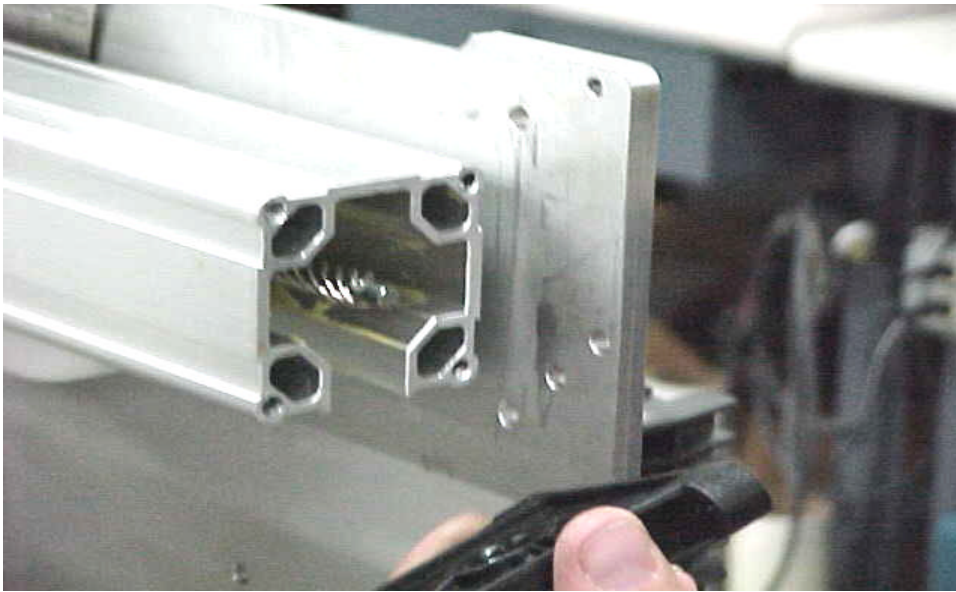


Figure 1

Leaving the centerclamp bolted to the carriage assembly remove both from the end of the actuator case. Figure 2.



Figure 2

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Disconnect sensor harness from sensors and from the actuator case.  
Disconnect and remove the actuator case from the motor support plate by removing the four mounting screws. This will provide access to the lead screw. Figure 3.

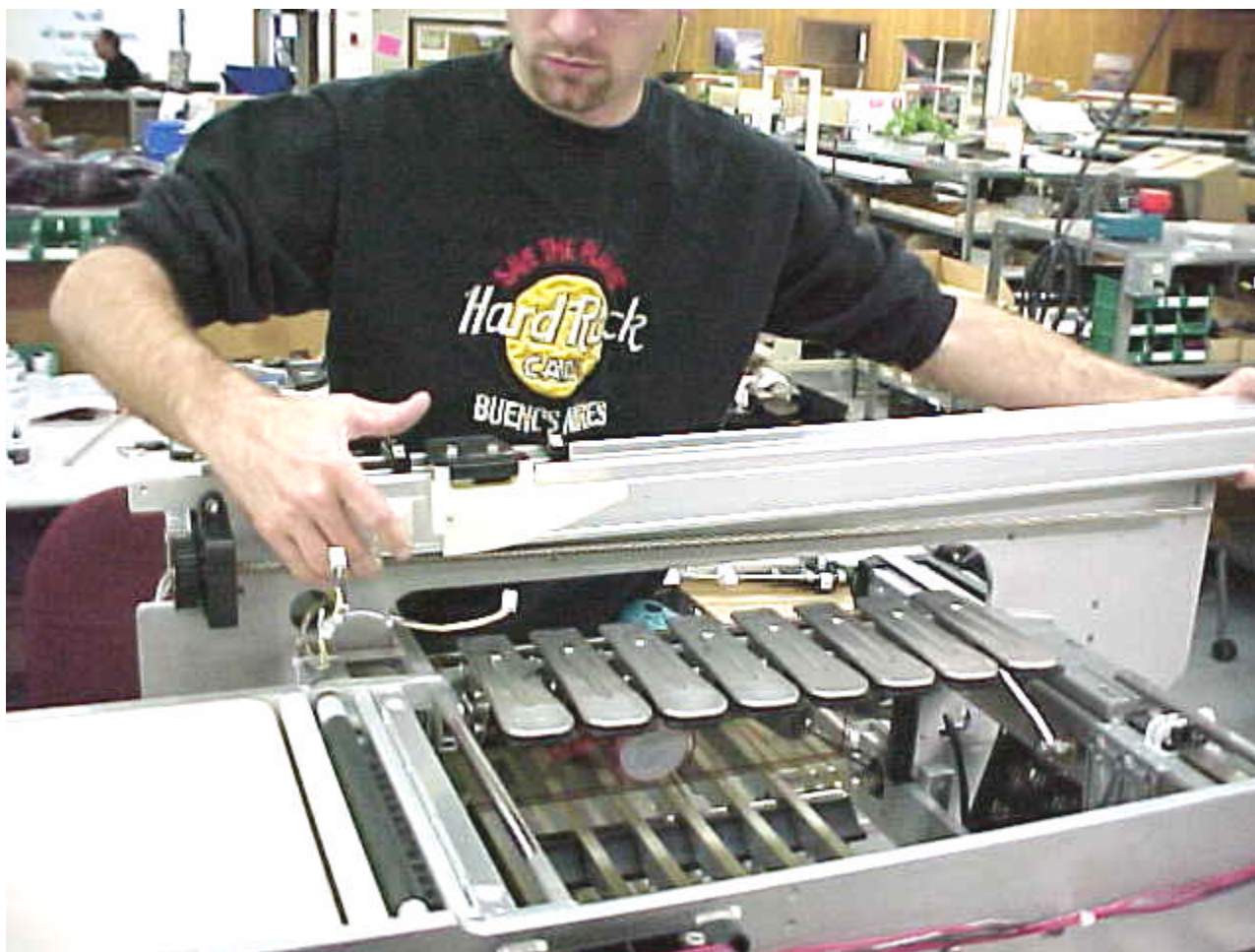


Figure 3.

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Remove the plastic timing pulley from the leadscrew. Figure 4



Figure 4

Remove the nut holding the leadscrew hub to the support plate. Figure 5.

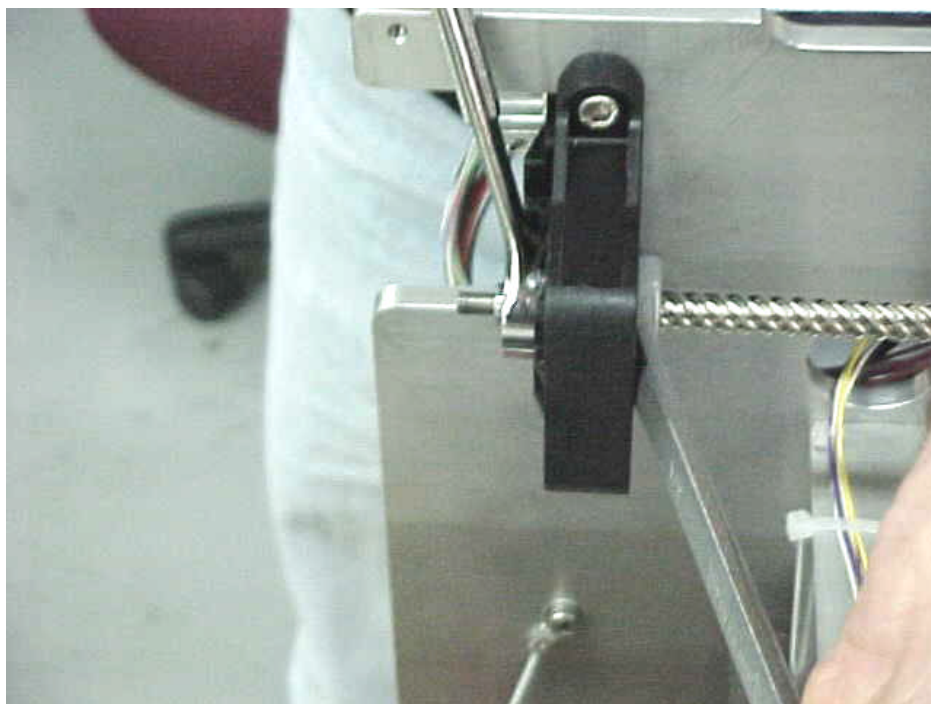


Figure 5

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Replace the plastic nut assembly in the carriage with PN A82927800A.  
Thoroughly clean the leadscrew using a degreaser such as simple green. Use a rag to clean out all five grooves of the leadscrew. Re-clean using alcohol.

Reinstall Leadscrew using locktite on the nut that holds the bearing. Assemble carriage/centerclamp as shown below. Figure 6

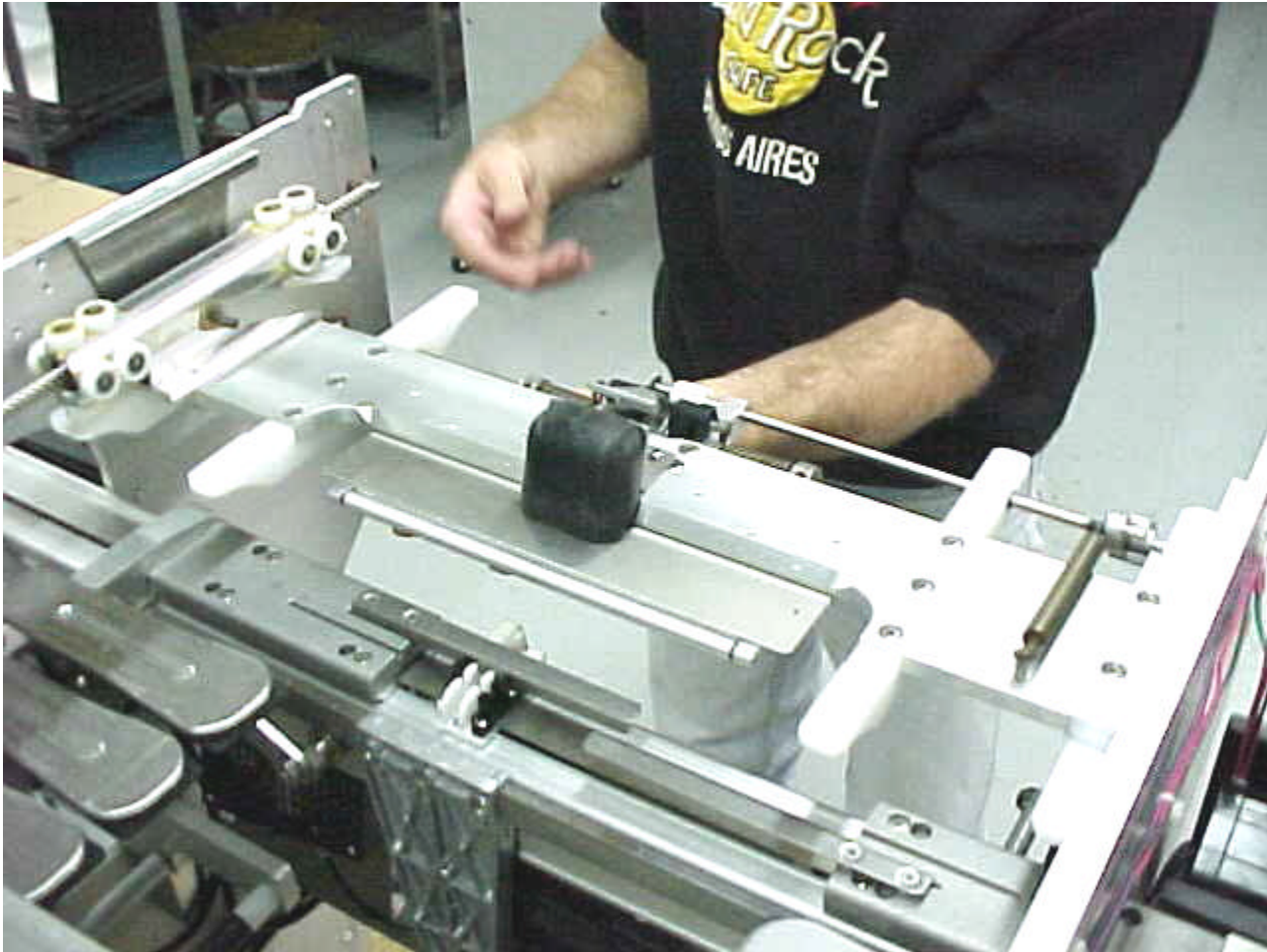


Figure 6

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Reinstall case by sliding it over the carriage assembly. Note: this will keep the leadscrew from becoming contaminated with grease. Figure 7.



Figure 7

After reassembling the linear actuator on the machine, perform all checks and adjustments for the Center Clamp section.

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## Lifter Actuator

Disconnect power

Remove rear cover from the machine.

Unplug the two sensor harnesses, remove ty-wraps and move harness out of the way.

Remove lifter assembly.

Remove the top end cap from the linear actuator case. Figure 8.

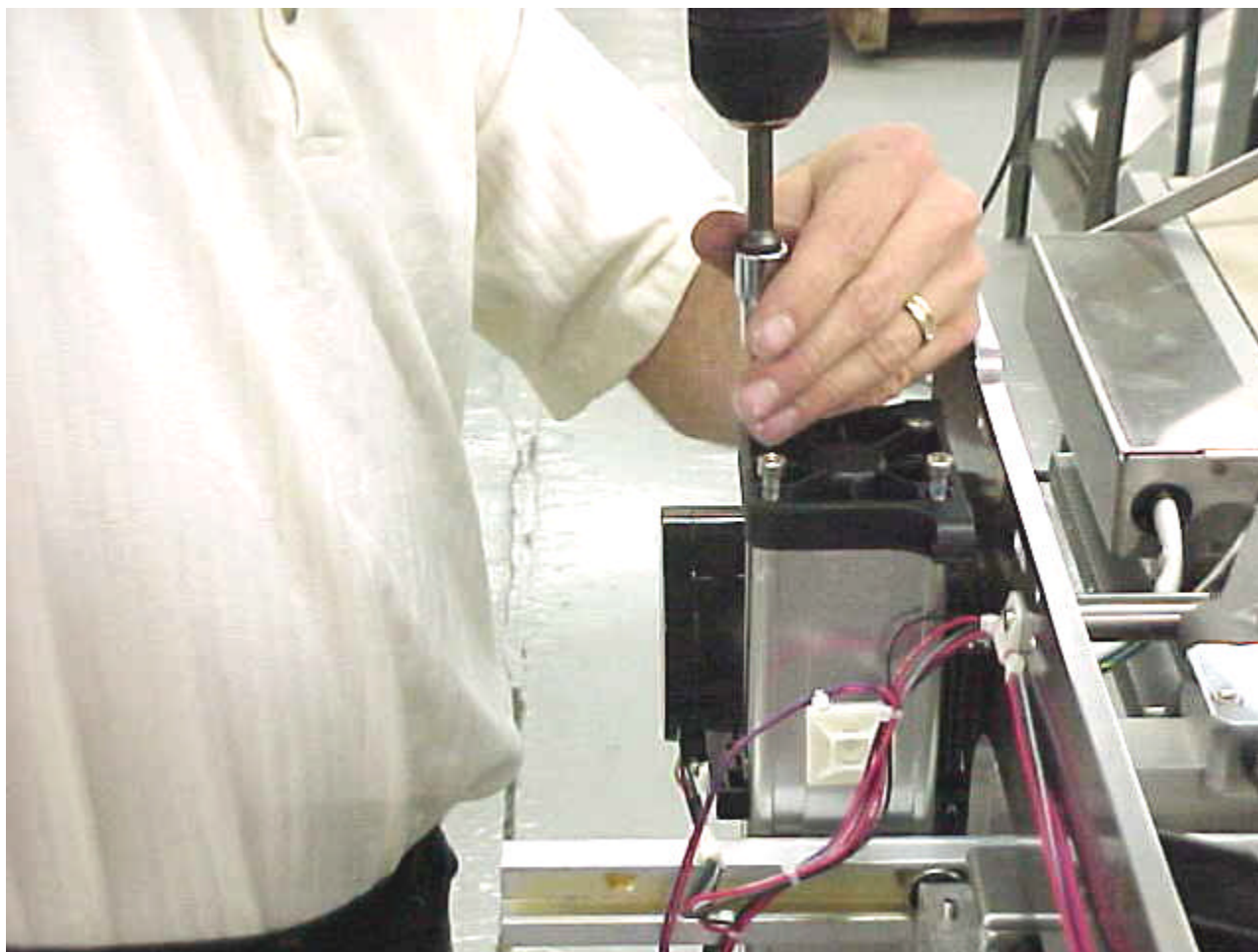


Figure 8

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Remove the timing belt.

Remove the four bolts on the bottom end cap that hold the actuator case. **DO NOT LOOSEN OR REMOVE BOTTOM END CAP TO FRAME BOLTS.** Lift off the case from the bottom end cap. Figure 9.

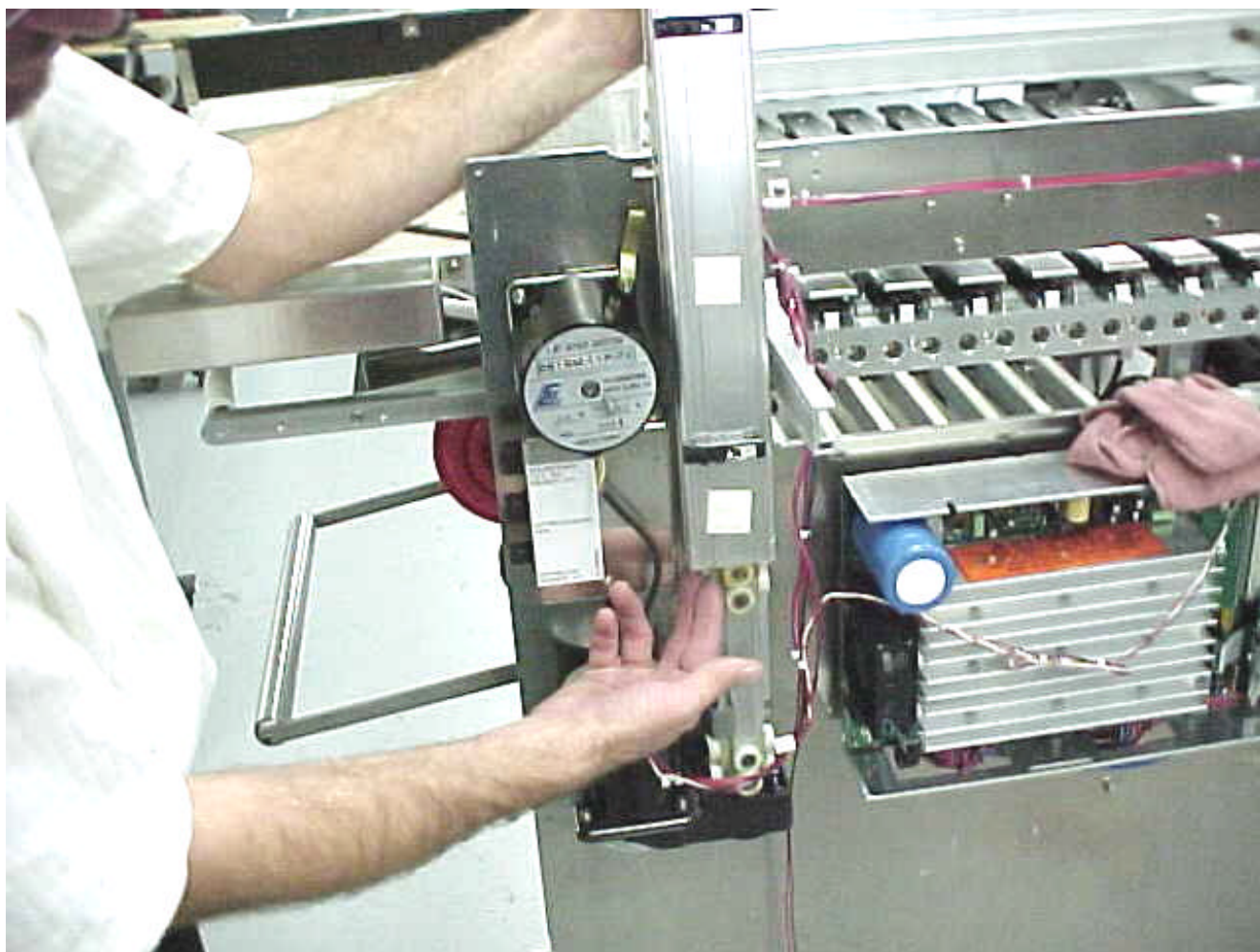


Figure 9

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Raise the carriage, undo the nut that holds the leadscrew hub to the base. The Leadscrew will fall through. Figure 10.

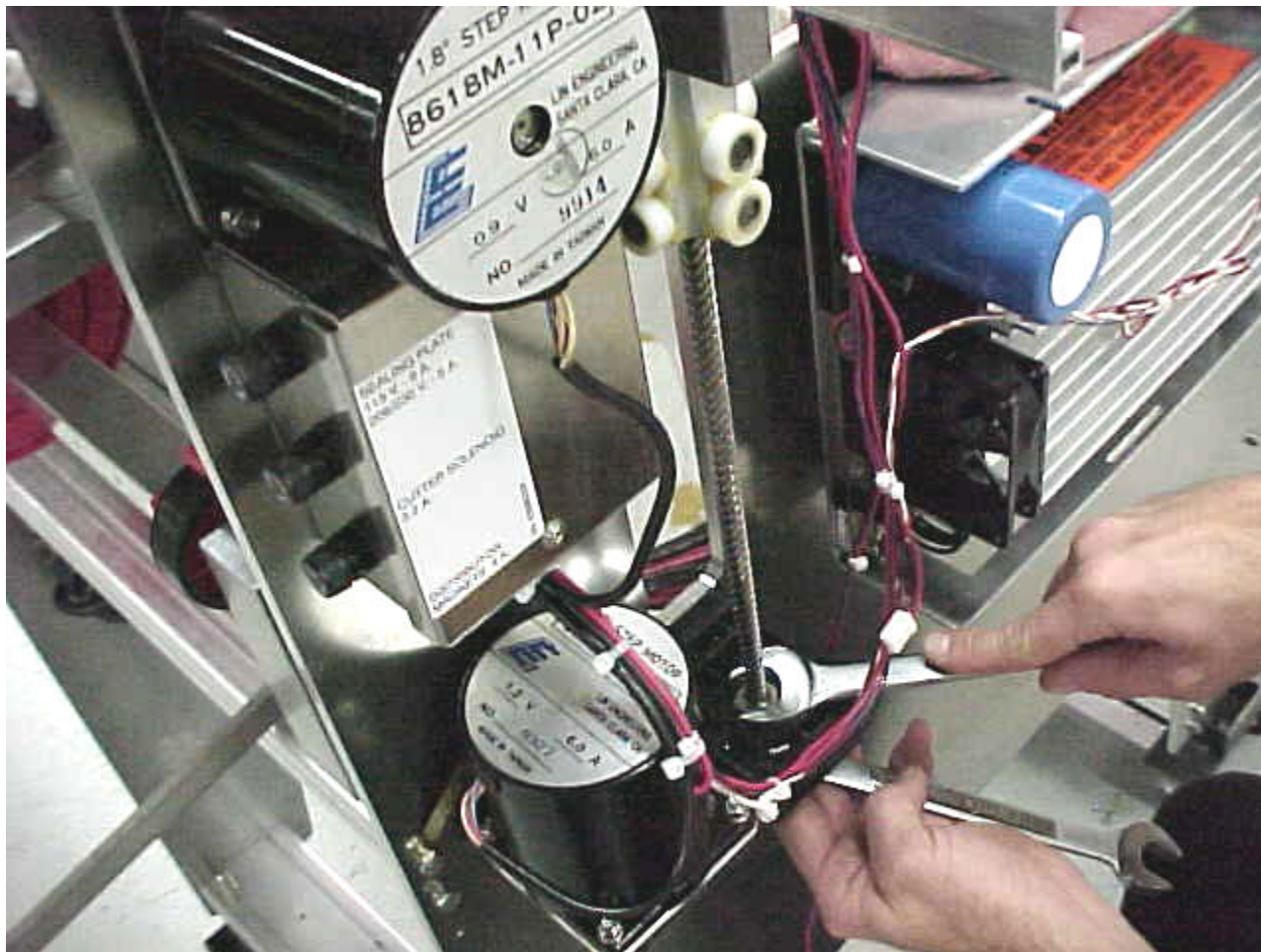


Figure 10

Replace the plastic nut assembly in the carriage with PN A82927800A. Thoroughly clean the leadscrew using a degreaser such as simple green. Use a rag to clean out all five grooves of the leadscrew. Reclean using alcohol.

Reassemble in reverse order.

After reassembling the linear actuator on the machine, perform all checks and adjustments for the Lifter Clamp section.

## Side Clamp Linear Actuator

Turn off power.

Remove leadscrew shield from both ends. Do not bend.

Remove four screws that hold the motor mount from the frame. Figure 11.

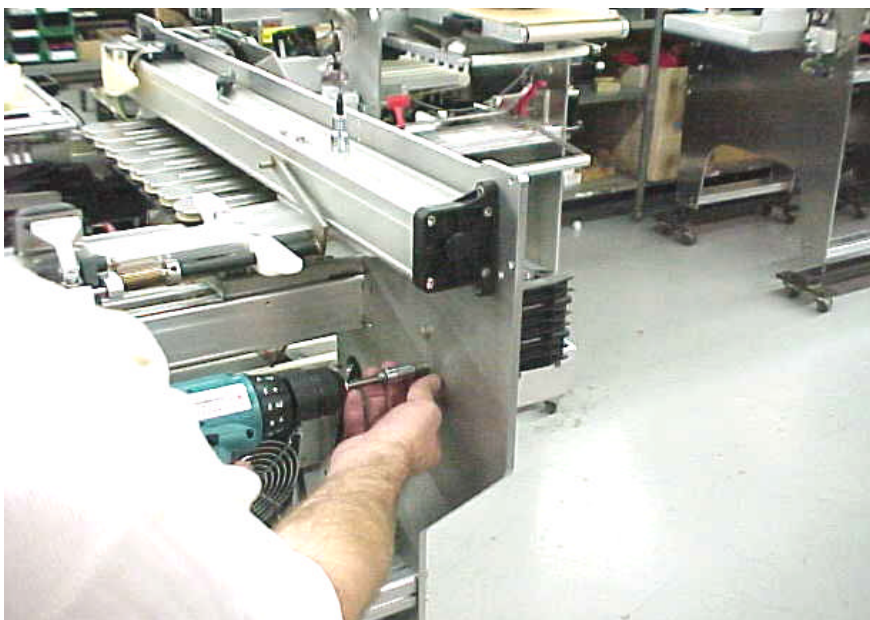


Figure 11

Remove spacer block. Remove timing belt.

Remove four screws on the motor mount to the case housing. Figure 12.



Figure 12

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Remove the Leadscrew from the case. Figure 13.

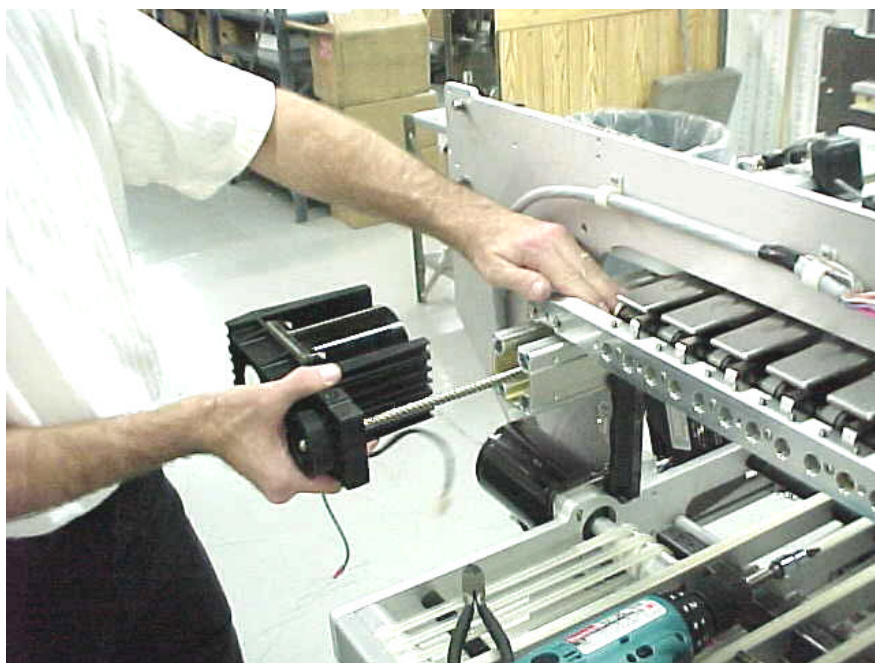


Figure 13

Replace the plastic nut assembly in the carriage with PN A82927800A. Figure 14.

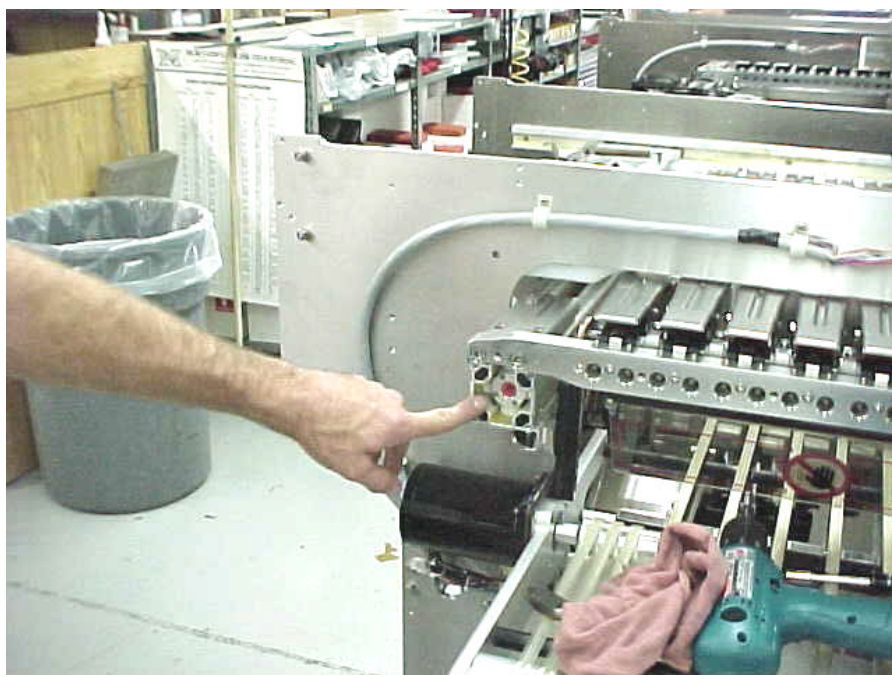


Figure 14

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Thoroughly clean the leadscrew using a degreaser such as simple green. Use a rag to clean out all five grooves of the leadscrew. Reclean using alcohol.  
Remove side clamp with mounting block attached. Figure 15

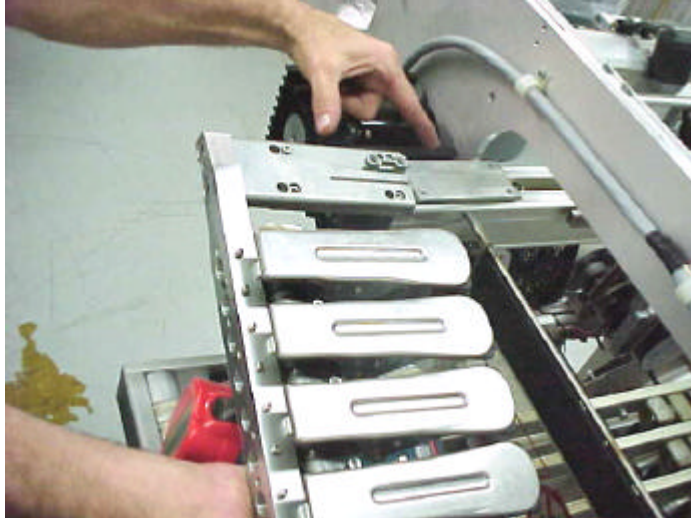


Figure 15

Apply Teflon tape PN 83066900A to the top of the nut carriage as shown. Figure 16. This will eliminate scraping and possible binding of the guard.

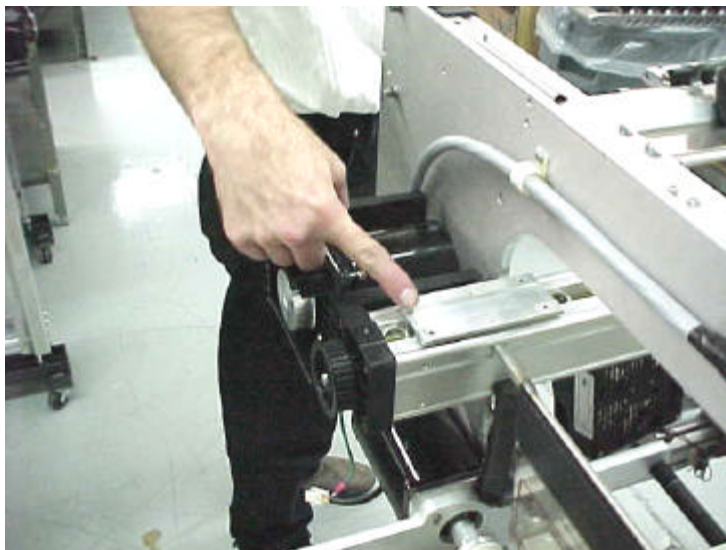


Figure 16

Reassemble in reverse order.

After reassembling the linear actuator on the machine, perform all checks and adjustments for the Side Clamp section.