



THIS TECHNICAL DOCUMENT PROVIDES INSTRUCTIONS ON HOW TO REINDICATE AN LC SERIES MACHINE. READ ALL INSTRUCTIONS CAREFULLY TO PREVENT MACHINE DAMAGE. BE SURE TO TURN THE SPINDLE POWER OFF BEFORE STARTING.


## MATERIALS NEEDED FOR REINDICATION

- Level Beam - PICTURE 1
- M5 Allen Wrench - PICTURE 2
- Mallet - PICTURE 3
- Jack (car jack) - PICTURE 4
- Precision Square - PICTURE 5
- Dial Indicator - PICTURE 6

## INDICATING THE PRECISION SQUARE


**STEP 1:** Attach the dial indicator into the spindle.

**STEP 2:** Place the precision square (18" x 18" or larger) in the center of the LC Series table surface.

 *The Y-axis is the default axis. All other axes are to be squared to the Y-axis.*

**STEP 3:** Set the dial indicator to zero. Using the CNC Interface Software, jog the Y-axis forward and backward.

**STEP 4:** Move the precision square until the indicator reads "zero" over the entire length of the square.

 *Once you zero the precision square, begin reindicating the machine.*

PICTURE 1



PICTURE 2



PICTURE 3



PICTURE 4



PICTURE 5



PICTURE 6




## INDICATING THE X-AXIS TO THE Y-AXIS


**STEP 1:** Jog the X-axis from one side of the precision square to the other. Watch the dial indicator to ensure a constant zero reading while jogging between the sides of the precision square. If the indicator dial shifts, you will have to make adjustments.

### *Making Adjustments:*

- A. Slightly loosen all M6 Screws on both uprights (**PICTURES 1 & 2**).

 Allow minimal tension on the lock washers to keep the X-axis from tipping off the lower beam. These washers are designed to close when tension is applied. Keep them closed, but loose enough so that you can shift the uprights on the lower beam.

- B. Use the mallet to tap the inside and/or outside of the uprights to achieve a zero reading on the dial indicator (**PICTURE 3**).
- C. Jog the X-axis along the square in between upright tappings until your zero reading is both accurate and consistent.
- D. Tighten the M6 Screws when the dial indicator is accurately set to zero; re-check this reading to ensure that the uprights did not shift by repeating **STEP 1** above.

 Once the above steps have been implemented and the X-axis is accurately indicated, continue with **Indicating the X-axis to the Table Surface**, on page 3.

PICTURE 1



PICTURE 2



PICTURE 3



PICTURE 4

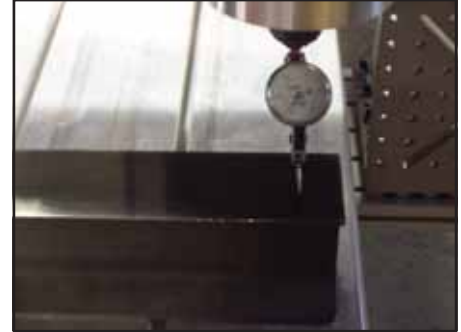


## INDICATING THE X-AXIS TO THE TABLE SURFACE

**STEP 1:** Remove the precision square from the table surface and replace it with a straight level beam that is close to the width of the table.

**STEP 2:** Align the dial indicator to the top of the level so it reads zero. Jog the X-axis along the level from one side of the table to the other. Watch the dial indicator to ensure a constant zero reading while jogging from one side of the beam to the other. If not, you will have to make adjustments. **(PICTURE 1)**

PICTURE 1



### *Making Adjustments:*

- A. Take a standard car jack and place it under the side that needs to be lifted. **(PICTURE 2)**
- B. Loosen the M6 Screws connecting the X-axis to the uprights. Remember to keep minimal tension on the lock washers. **(PICTURE 3)**



*Allow minimal tension on the lock washers to keep the X-axis from falling off the uprights. Only loosen the washers enough to shift the position of the X-axis on the uprights.*

- C. Raise the jack until the dial indicator reads zero; this means you'll need to constantly jog the machine in between raising the jack.
- D. Once the dial indicator reads zero, tighten the M6 Screws and repeat **STEPS 1 & 2** to ensure the X-axis did not shift while tightening.



*Once you have indicated the X-axis to the table surface, continue on with **Squaring the Spindle.***

PICTURE 2




PICTURE 3



## SQUARING THE SPINDLE


**STEP 1:** Jog the X-axis to the center of the level. Offset the dial indicator so it sweeps to an approximated 2"-3" circle.


**STEP 2:** Set the dial indicator to zero, then semi-sweep the dial indicator from one side to the other. Both sides should read zero. **(PICTURE 2)**

 *If the sweep does not read zero, the spindle will need to be adjusted*

### **Making Adjustments:**

A. Slightly loosen the cap screws on either side of the spindle. **(PICTURES 3-4a)**

 *Although your spindle may appear different from the Automatic Tool Change Spindles **(PICTURE 1)**, and the Fixed Collet Spindles **(PICTURES 2 & 4)** shown in the graphics on the right, the adjustments referenced in this section are the standardized procedure for adjusting most spindle models.*

 *These instructions will get your LC machine running smoothly again. If there is shipment-related damage, there may not be enough adjustments in the T-slots to achieve a desired condition. In these cases, call Technical Support for further instructions.*

**IMPORTANT:** If the Spindle needs to be adjusted in the front-to-back position, use shimstock behind the Spindle Mounting Plate to achieve a zero reading. The level beam will determine if this adjustment is needed. Sweep the indicator forwards and backwards on the beam to determine whether you need to add shimstock.

PICTURE 1



PICTURE 2



PICTURE 3



PICTURE 3a





## ADJUSTING THE TORSION BAR

Due to the heavy weight of large spindles, the X-slide may bend downward as the Z-slide moves towards the center of the X-slide, then up again as the Z-slide moves towards the ends where the uprights are supported. A Torsion Bar has been added to the back of the X-slide to support the weight of the spindles, preventing any bending or movement of the X-slide while the machine is in motion.

Below is a list of Torsion Bar parts as they are indicated in **PICTURE 2** on the right:

- a - Torsion Bar
- b - Torsion Bar Brackets
- c - Torsion Bar adjusting Screws
- d - Locking Set Screws

**STEP 1:** Place a straight edge across the width of the table. (**PICTURE 2**)

**STEP 2:** Use a dial indicator to indicate the straight edge by jogging the X-axis from left to right. Obtain a zero reading on the dial indicator at both ends of the straight edge where the uprights are located.

**STEP 3:** Next, jog the X-slide to the center of the table. If the dial indicator does not read zero, you will need to adjust the Torsion Bar.

**STEP 4:** Tighten the Torsion Bar screws (**PICTURE 1c.**) on each end until you achieve a zero reading.

**STEP 5:** Jog the X-axis while making sure the indicator reads zero as the X-axis moves from one side to the other.

**STEP 6:** Once a zero reading has been established, lock the adjusting screws in place by tightening the second set of screws. (**PICTURE 1d.**)

**PICTURE 1**



**PICTURE 2**



**PICTURE 3**

