Z-Axis Assembly
Replacement / Adjustment

TOOLS NEEDED:
1 Set of L-Shaped Allen Wrenches
3 blocks of wood, plastic, or acrylic cut to approximately 2 inches by 3 inches
Household grade White Lithium grease
Flashlight

Left Side Z-Plate Removal and Replacement (if required)

1. Figure 1 – Turn the laser system OFF and unplug it. Remove the Table by removing the (2) Flathead Screws on top on the left side. Remove the (2) Sockethead Screws underneath the table on the right side. Do not remove the Brackets that the Table is attached to. Leave the Brackets in the machine. Slide the Table out the Front Door.

2. Figure 2 – Remove the Belt Cover by removing the (6) Buttonhead Screws that attach the cover to the inside bottom of the laser system (not shown). Loosen Z-Axis Belt by loosening the Lockdown and the Pivot Screw on the Tensioner Bracket (do not remove, only loosen). Slide Bracket towards you to loosen. Remove the (2) Idler Pulleys on the left side by pulling them straight up and off of their pins. The Z-Axis Belt should now be loose enough to work around. It is not necessary to remove the Z-Axis Belt from the system unless you are changing it.

3. Figure 4 – Remove the (3) Lockdown Screws, the (1) Pivot Screw, and remove the entire Left Side Z-Plate with everything attached to it. Install the new Left Side Z-Plate the same way you removed the old one except make sure that the (3) Lockdown Screws are visually centered within their respective slots. The Plate can be rotated around the Pivot Screw.

4. Figures 3 & 4 - Place (2) Blocks on top of the Bracket and rotate the Belt Pulleys until both blocks are lightly clamped into place as shown in the diagram. The purpose of this is to get Table Mounting Plate perpendicular with the Left Side Z-Plate and the Lead Screws. This creates the least amount of turning resistance for the entire Z-Axis System.

5. Figure 5 – Place the third block on top of the Bracket on the Right Side Z-axis and adjust the Belt Pulley until the block is clamped into place as shown in the diagram.

6. Figure 6 – Leaving the blocks in place, re-attach the Z-Axis Belt, Idler Pulleys and adjust the Tensioner just enough to take out the slack. Too tight will cause excessive resistance, too loose will make the action sloppy and might cause the belt to slip. The objective is just to take out the slack. Now tighten down the Tensioner Bracket Lockdown and Pivot Screws.

7. Remove all (3) Blocks from the machine.

8. Figure 1 - Re-install the Table. Install and tighten the Flathead Screws on the left side first, then install and tighten the Sockethead Screws on the right side second.
Adjustments

1. Figure 6 – Move the arm, by hand until it is in Position 1. Place the Focus Tool on the Table and by moving the Z-axis Belt by hand, adjust the table height until you are focused on the Table as Position 1 shows. NOTE: When adjusting the Z-Axis Belt by hand, hold the two left side Idler Pulleys down while moving the belt, otherwise the Idler Pulleys can slip off and then you have to start all over again.

2. Figure 6 – Move the arm to Position 2. Using the Focus Tool, observe whether or not you will need to raise or lower the table. To adjust the front left side of the Table up or down, rotate the entire Left Side Z-Plate, by hand, by loosening the (3) Lockdown Screws and pivoting the entire Plate on the Pivot Screw (figure 4). Observe the Focus Tool on the Table at the same time. Once obtaining focus in the lower left side of the Table, using the Focus Tool and rotating the Plate, tighten down the Lockdown Screws. Repeat steps 1 and 2 of this procedure until Position 1 and Position 2 are exactly at the same focusing height, then go to the next step.

3. Figure 6 – Move the arm to Position 3. Make sure that the Focus Tool is at the far right side of the table and centered vertically. Note whether you need to bring that side of the Table up or down in order to establish focus on the Table. If it is perfect, you can move on to step 5 (I doubt that it is), otherwise go to the next step.

4. Figure 5 – Loosen the Belt Pulley’s Lockdown Screw. This releases a clamping mechanism that attaches the Belt Pulley to the Lead Screw. With your fingers, rotate the Lead Screw by grabbing the threads of the Lead Screw (you will get a little grease on your fingers or you can wear rubber gloves), and adjust the Table until you are focused on the Table as Position 3 shows. You will notice that you can rotate the Lead Screw without it turning the Z-axis Belt (the big one). This is because you loosened the Lockdown Screw on the Belt Pulley. Once you have obtained focus, tighten down the Lockdown Screw on the Belt Pulley.

5. Install the Belt Cover with the (6) Buttonhead Screws. Apply fresh grease to all (3) Lead Screws. Turn the machine ON and run the Table up and down to work in the grease. Make sure that you have a nice even coating of grease, on the Lead Screws, throughout the entire length of travel of the Z-axis Table. After you have the Table running up and down smoothly, re-home the Z-Axis and the process is now complete.

If you have any questions, please contact:

Universal Laser Systems Inc.
Worldwide Service Center
16008 North 81st Street
Scottsdale, AZ 85260
Phone: 602-609-0297
Fax: 602-609-1134
Email: service@ulsinc.com
RIGHT SIDE Z-AXIS ASSEMBLY

- Z motor
- Upper Limit Sensor
- Lower Limit Sensor
- Flag
- Lead Screw
- PLATE
- Gears
- Motor Belt
- Set Screws
- Belt Pulley
- Lockdown Screw
- Table Mounting Plate

FIGURE 5
FIGURE 6

POSITION 1

POSITION 2

POSITION 3

FOCUS TOOL (centered on table vertically)