# Zeiss Standard 16 Motor Drive Installation

The procedure below outlines the steps necessary to install the ASI Z-Axis Drive onto the Zeiss Standard 16 microscope. Pleas note that the terms left and right of the microscope refer to viewing the microscope from the front.

**To perform the following steps you will need the following tools:**

- medium Phillips screw driver
- 14mm wrench
- 3mm, .050 inch, 5/64 inch and 7/64 inch hex wrenches
- The 14mm wrench and hex wrenches are provided by ASI.

**The procedure has four parts:**

1. Installing the back plate.
2. Installing the anti-backlash gear.
3. Installing and aligning the motor drive assembly.
4. Installing the motor drive cover plate & fine focus knob.

## Part 1 - Installing the back plate

1.) The ASI back plate slides over the back arch of the microscope with the adjustment bar (large portion of the back plate) on the left side of the microscope. Insure that you push the back plate in so that it is flush with the rear of the microscope.

2.) The ASI back plate secures to the back of the microscope with four “no mar” nylon tip set screws. These screws can be tightened with the 5/64 Allen wrench. Insure that the back plate remains parallel to the back of the microscope when tightening the set screws. Also insure that the set screws are securely tightened.

## Part 2 - Installing the anti-backlash gear

1) Remove the left fine focus knob from the microscope by loosening the set screw Located in the side of the knob using the 0.05inch hex wrench then sliding the knob off the shaft.

2) Remove the left coarse focus knob by first removing the nut using the 14mm wrench provided, then unscrewing the coarse focus knob. The nut and knob turn counter-clockwise to unscrew. It will be necessary to grip the right coarse focus knob as the nut and left knob are loosened to prevent the coarse shaft from turning. Please Note: be careful to not disturb the stop rings located under the left coarse knob.

3) Locate the anti-backlash gear. Screw it onto the coarse focus threaded bushing. Orient it so the protruding (shiny) part of the threaded bushing faces towards the microscope. Tighten this gear firmly

in place by turning it clockwise while gripping the right coarse focus knob.

# Part 3 - Installing and aligning the motor drive assembly

1) Loosen the vertical adjustment screw just enough so that the adjustment bar can slide in the grove. The adjustment bar is attached to the back plate near the left focus knob. The adjustment screw is in the top of the bar. Use the 3mm hex wrench.

2) Remove the horizontal adjustment screw from the side of the adjustment bar. Use the 3mm hex wrench.

3) Locate the motor drive assembly. Prepare it as follows:
Slide the drive shaft to the outside. The drive shaft is the shaft in the middle that goes through the pair of bearings in the drive plate. It has a gear clamped on one side and a slotted hole on the other. The side with the slotted hole has a loose hub clamp which is kept from falling off by a small '0' ring. Slide the shaft so that the loose hub clamp then the 'O' ring are next to the bearing.

4) Orient the motor drive assembly with respect to the left side of the microscope so that the curved portion of the drive plate faces forward the cable extends down.

5) Position the motor drive assembly onto the adjustment bar so that the notches in the edges of the drive plate align with the ridges in the edges of the adjustment bar. Thread in, but do not tighten, the horizontal adjustment screw.

6) While sliding in the drive shaft, maneuver the motor drive plate forward-and-backward, up-and-down, until the drive shaft is axially aligned with the fine focus shaft. Slide the drive shaft part way onto the fine focus shaft. Lightly tighten the horizontal and vertical adjustment screws to keep the drive shaft from binding due to tilting of the drive plate, then slide the drive shaft the rest of the way onto the fine focus shaft. When all the way on, the end of the drive shaft should go inside the anti-backlash gear. It will be necessary to rotate the drive shaft as it is being pushed in the last 3mm so the teeth in the gear clamped to it mesh with the mating gear on the clutch, this is the outer gear.

7) Position the hub clamp midway over the slotted portion of the drive shaft (over the fine focus shaft) and tighten in place using the 7/64 hex wrench. **Please Note:This clamp must be securely tightened to prevent any slippage.**

8) To insure perfect axial alignment, loosen the horizontal and vertical adjustment screws, then re-tighten while rotating the right fine focus knob. There should be no noticeable increase in friction as the screws are tightened. If this is not the case, repeat this step. Please Note: There should be no noticeable drag or friction at any one point through out the complete 360 degree rotation of the right fine focus knob. If you feel any noticeable drag the drive is not properly aligned. If the misalignment can not be corrected by adjustment of the vertical and horizontal adjustments then the back plate may not be parallel with the fine focus shaft.

9) Using the .050 in hex wrench, loosen the small set screw in the small gear below anti-backlash gear. Rotate the anti-backlash gear until the black marks in the gear teeth are visible. Rotate the two gear halves so the black marks are aligned. Slide the small gear forward until it meshes with both anti-backlash gear halves then extends beyond them slightly. It may be necessary to rotate the small gear slightly so the gears can mesh. Tighten the set screw in the small gear. Insure that the set screw in the small gear will not run into the anti-backlash gear.

# Part 4 - Installing the cover plate and fine focus knob

1) Remove the three screws from the edge of the base plate. Locate the motor drive cover plate and install it on the motor drive. The fine focus shaft extension should protrude from the hole in the cover plate and the cable should exit beneath the grommet in the bottom rear of the cover plate. Secure the cover plate in place with the three screws just removed.

2) Locate the original fine focus knob. Slide it onto the fine focus shaft extension until there is a small gap between it and the cover plate. Tighten it in place using the 0.05inch hex wrench.

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