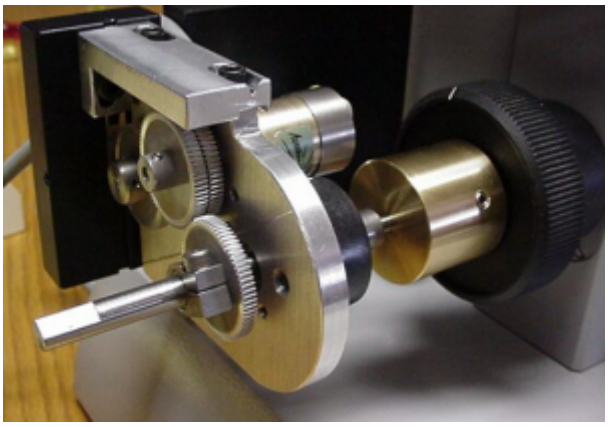
Zeiss Universal Z-Drive Installation Procedure

The procedure below outlines the steps necessary to install the ASI Microscope Focus Controller Drive onto the Zeiss Universal microscope. Please 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:

- Small slotted screw drive
- Medium slotted screw driver3mm, .050 , 1/16, 5/64, 7/64, and 9/64 inch hex wrenches
- The hex wrenches are provided by ASI and have their sizes marked on the side.

The procedure has four parts:

1. Installing the fine focus shaft Clutch plate.
2. Installing the top plate.
3. Installing and aligning the motor drive assembly.
4. Installing the motor drive cover plate & fine focus knob.

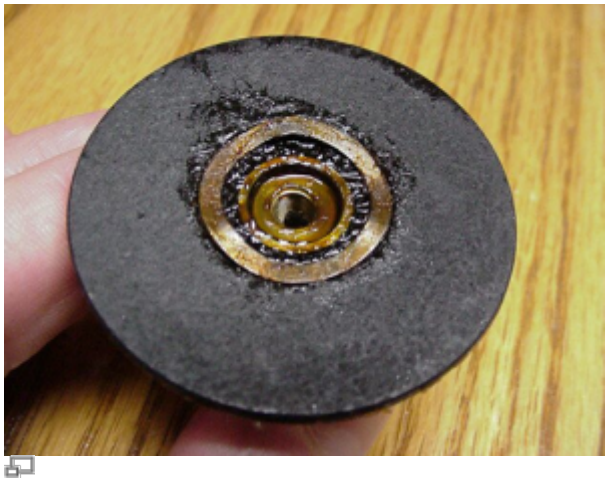
Part 1 - Installing the fine focus shaft clutch plate

1.) The ASI fine focus shaft clutch plate takes the place of the original left fine focus knob. The clutch plate, like the original fine focus knob (ffk) allows the tension of the fine focus assembly to be adjusted. The clutch plate also provides a secure means of extending the fine focus shaft so that the ASI drive can be attached.

2.) There are two versions of the Zeiss Universal microscope. One version like the one shown in the photos in this installation document has black plastic focus knobs. The fine focus shaft for this version has a 5 x 0.5mm thread. The other version of the Zeiss Universal has silver focus knobs. The fine focus shaft for this version has a 10 x 0.5mm thread. If the version of your microscope was not known at the time of the order two brass clutch plate assemblies have been shipped. Please return the unused brass clutch plate assembly to ASI.

Loosen set screw on Fine Focus Knob(FFK)

Hold on to right ffk and turn left FFK counter



If wave washer is stuck to ffk remove and install on clutch plate.

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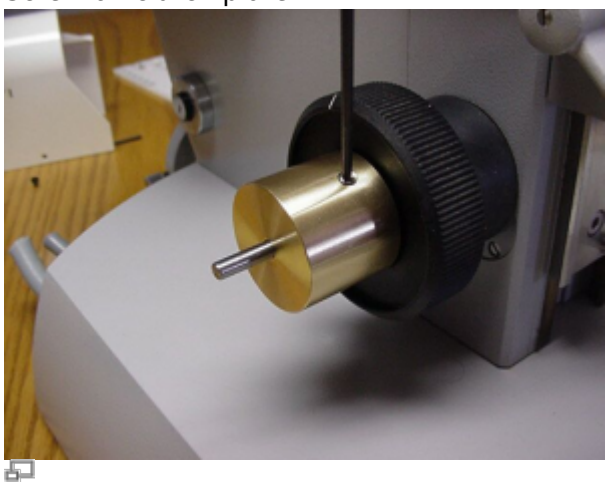
3.) To install the clutch plate the original fine focus knob must first be removed. To remove the knob use a small flat blade screw driver , or 0.05” Allen wrench, to loosen the set screw located on the side of the left fine focus knob. After the set screw has been loosened, the left fine focus knob can be removed. To remove the left fine focus knob securely hold onto the right fine focus knob with one hand and unscrew the left fine focus knob by turning it counter clockwise. It may take some force to loosen the knob, but if the set screw has been loosened, the knob will unscrew. After the knob has been removed check to see if a washer is stuck to it. If there is a wave washer stuck to the inside of the knob remove it and install it on the recess inside of the clutch plate.

Nylon stop assembly for clutch plate

Insure nylon stop is not in threads

Screw on clutch plate

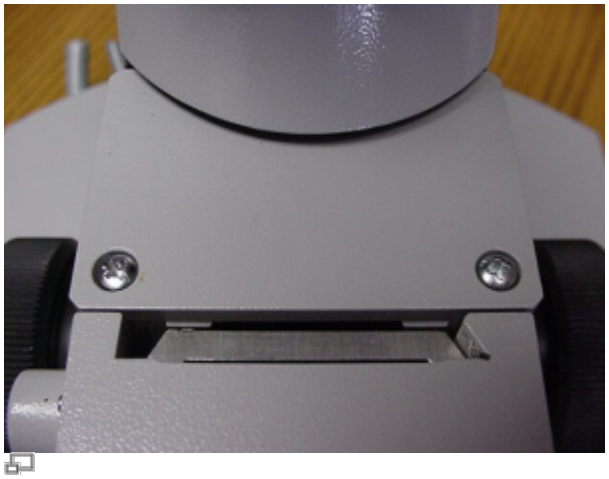


After clutch plate is at the proper position

4.) After the original left fine focus knob has been removed the clutch plate can be installed by screwing it onto the fine focus shaft. Before installing the clutch plate make sure that the wave washer is installed on the clutch plate and that the nylon stop located inside the threaded portion of the clutch plate is not protruding into the threaded area. If it is loosen the setscrew and press the nylon stop back. Screw the extender all of the way onto the shaft so that the wave washer is compressed. After clutch plate is at the proper position use 5/64” Allen wench to tighten setscrew.

Please Note: The adjustment of the tension for the fine focus control is set by the compression of the wave washer (how tight the extender is screwed on). Set the tension of the fine focus to a comfortable setting that will not drift. However, please note that if the tension is set too tight the drive may not work to specifications. In that it will have a difficult time trying to get within 50 nm of an RS232 commanded position. This is because the tension is too tight for the motor to overcome it near the end of the travel when its gain/command signal is very low. The motor will be able to position the feedback encoder/fine focus shaft to within +/- 50 nm of the RS232 commanded position if the tension is properly set.

Part 2 - Installing the top plate



Remove two screws that secure original top plate remove top plate

install ASI top plate

1) The ASI top plate provides a support brace so that the drive assembly can be attached to the microscope. The top plate attaches to the microscope utilizing two existing 3mm threaded holes.

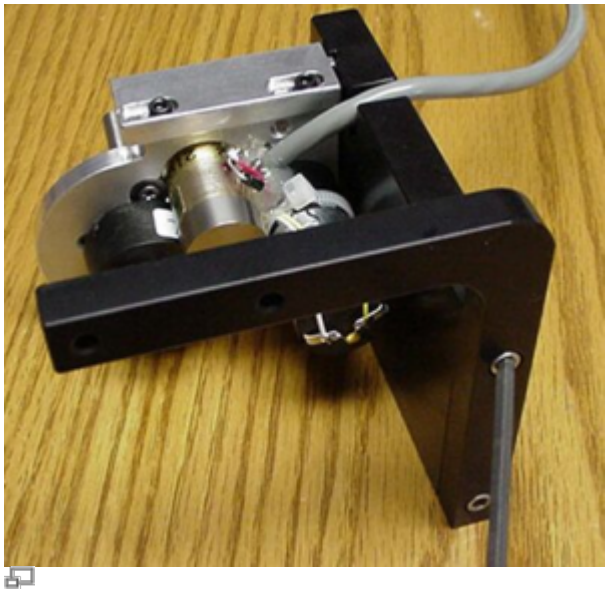
2) To attach the top plate move the existing X,Y stage all of the way forward, or if an automated stage is going to be installed on the microscope, the existing stage should be removed. To remove the stage use the 3mm Allen wrench to remove the four hex head cap screws that secure it to the microscope.

3) Once the stage has either been moved or removed, locate the two 3 x 6mm slotted head screws that secure a small cover plate to the microscope, which is located directly behind the X Y stage. Remove the two screws and remove the cover plate. The original cover plate will not be used and can be stored with the original left fine focus knob.

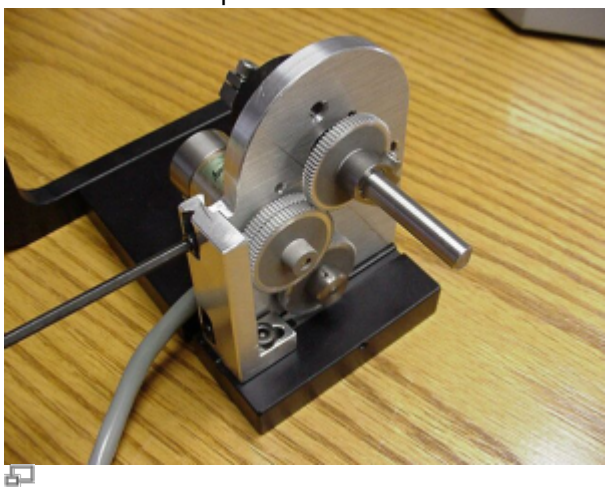
4) Locate the ASI top plate, which may have the ASI motor drive attached to it. If the motor drive is attached use the 9/64” Allen wrench to remove the two 6/32 x 3/8 hex head screws that secure it to the top plate.

5) Position the top plate so that the side that the drive attaches to is on the left side of the microscope and so the drive would be pointing down if it was attached. Position the two holes on the top plate so that they align with the two threaded holes on the microscope. Use the screws that came with the top plate to secure the top plate to the microscope.

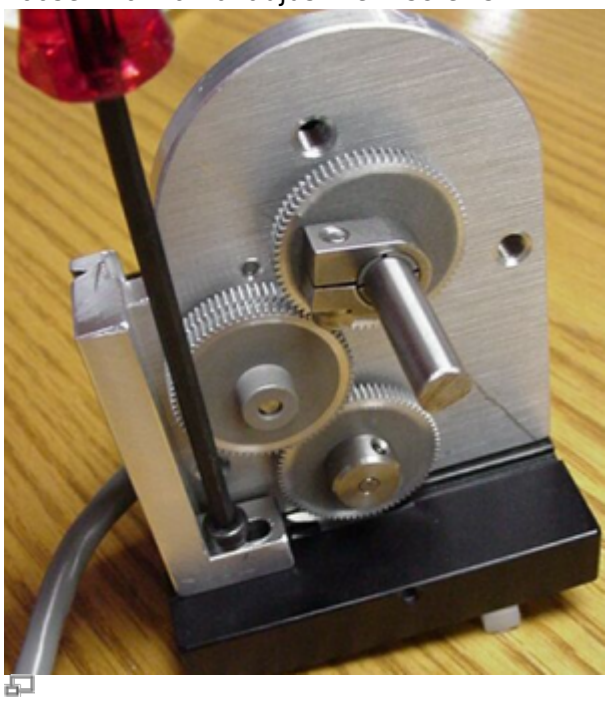
Part 3 - Installing and aligning the motor drive assembly



Attach roll back plate to motor drive



Loosen horizontal adjustment screws

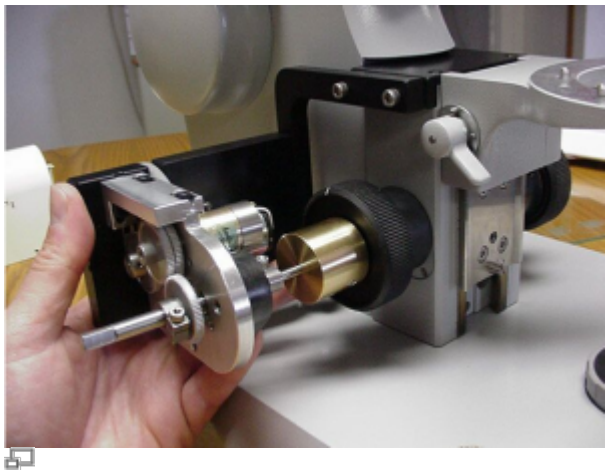


Loosen vertical adjustment screw

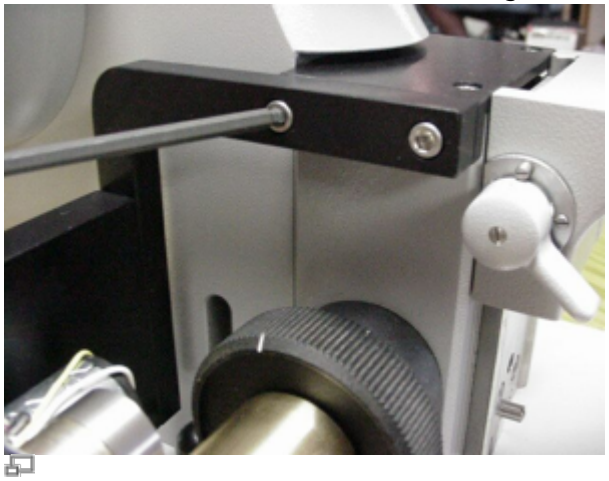
Loosen drive shaft clamp

1) Use the 7/64 inch & 3mm Allen wrenches to loosen the horizontal and vertical adjustment screws enough so that the adjustment bar can be moved back and forth. The two horizontal adjustment screws are located on the top of the adjustment bar and the vertical adjustment screw attaches to the horizontal adjustment bar to the top plate.

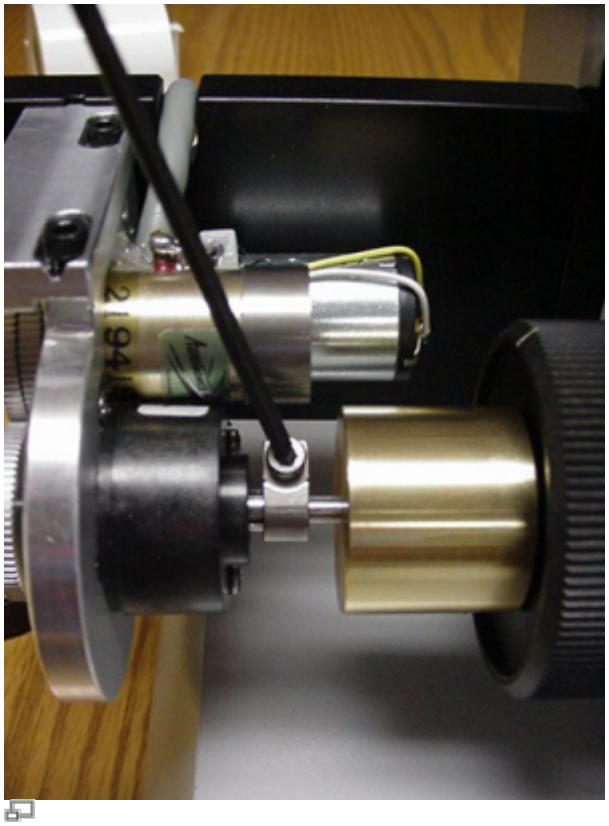
2) On the motor drive insure that the clamp on the ASI drive shaft is loose. The drive shaft is the shaft that extends out of the black encoder and is split at the end. Use the 7/64 Allen wrench to loosen the clamp if it is tight.



Position the motor drive assembly onto the microscope so that the ASI drive shaft goes over the fine focus extension shaft that is extending from the clutch plate.



Position the motor drive so that the two holes in the rollback bar, align with the two holes in the top plat and use the two 8/32 x 3/8 “ to attach the unit.

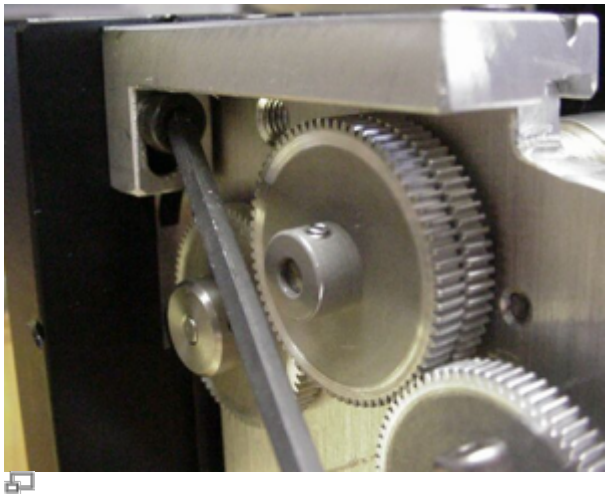


Position the drive shaft clamp midway over the slotted portion of the drive shaft and tighten

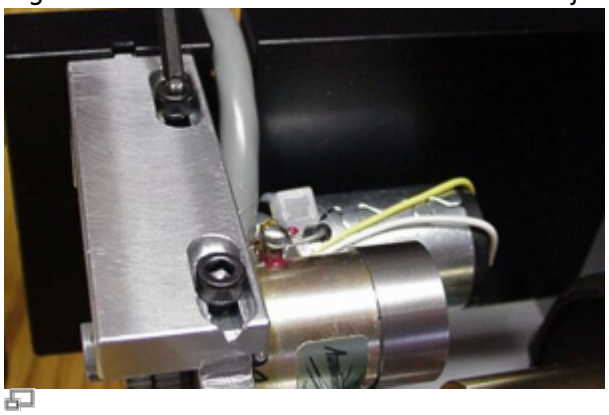
Position the drive in the xy axis while rotating the right fine focus knob. Find a point where no drag is felt and then hold in place and tighten the vertical and horizontal adjustment screws.

3) Position the motor drive assembly onto the microscope so that the ASI drive shaft goes over the fine focus extension shaft that is extending from the clutch plate. Position the motor drive so that the two holes in the rollback bar align with the two holes in the top plat and use the two 8/32 x 3/8 " Allen head cap screws to secure the rollback bar to the top plate.

4) Position the drive shaft 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.**



Tighten both the horizontal and vertical adjustment screws at the point where no drag is felt.



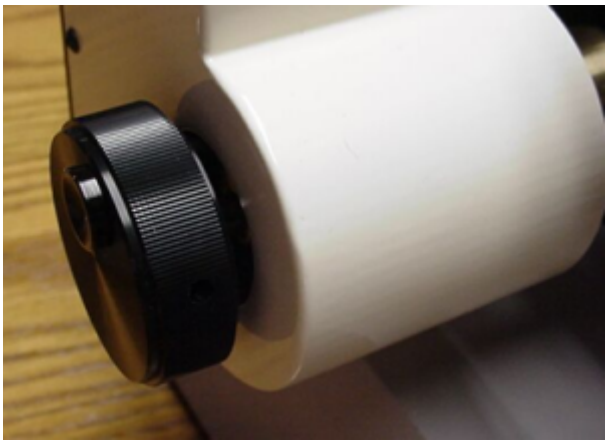
Tighten both the horizontal and vertical adjustment screws at the point where no drag is felt.

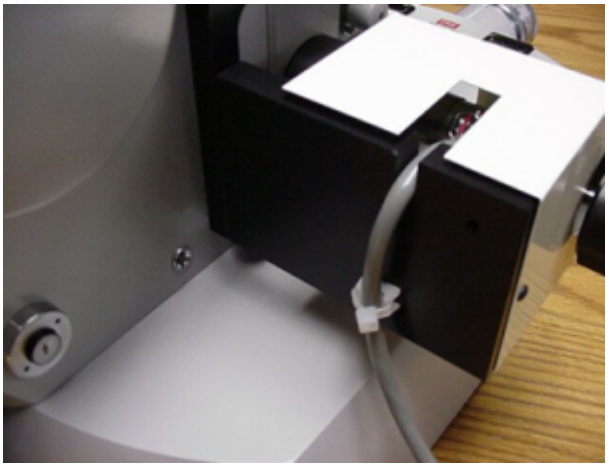
5) To insure perfect axial alignment, hold onto the motor drive and rotate the right fine focus knob. Move the motor drive along the horizontal and vertical axis while rotating the right fine focus knob. Find a point where no drag is felt on the right fine focus knob and

6) After the horizontal and vertical adjustment, screws have been tightened check for proper alignment by rotating the right fine focus knob. If any drag is felt other than a small amount as a result of the gears, 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, and the above steps should be repeated.

Part 4 - Installing the cover plate and fine focus knob

Secure cover in place with two screws (on side & bottom) then install ASI ffk, make sure set crew on ASI ffk mates with flat on shaft. Drive cable is secured to back plate with cable tie.





1) Remove the two screws from the edge of the motor drive 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. Secure the cover plate in place with the screws just removed.

2) Locate the new left 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 small screwdriver.

zeiss, universal, zdrive