Nikon Optiphot 2 Linear Encoder Installation

This procedure outlines the steps necessary to install and align the ASI Heidenhain linear encoder onto the Nikon Optiphot 2 microscope. The linear encoder mounts onto the microscope via an encoder clamp. The linear encoder has a plunger that depresses into the encoder as the focusing position is moved. The plunger tip mates with a plunger stop that is attached to the microscope's stage carrier. The linear encoder installation has two parts:

1. Installing the plunger stop
2. Installing the encoder clamp and aligning the encoder

The procedure requires the following Allen wrenches that are supplied with the unit:

5/64" 3/32"

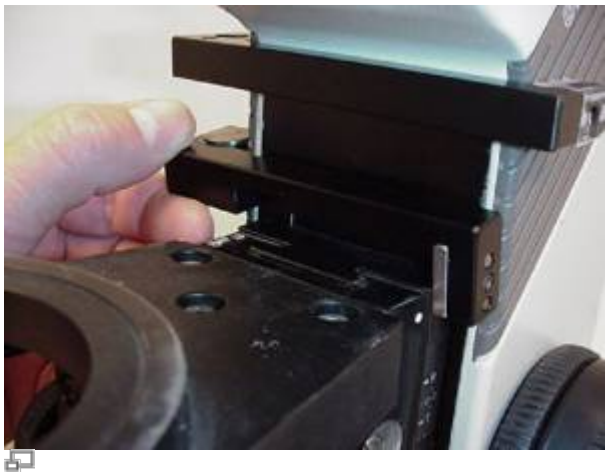

Figure 1a

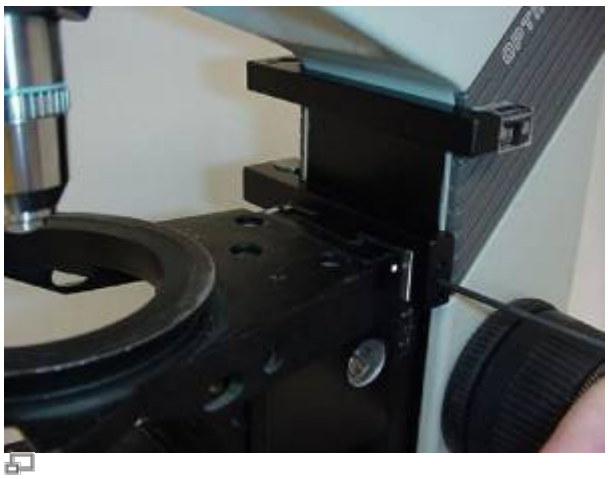

Figure 1b

Step # 1 Installing the plunger stop

Locate the plunger stop and position it on the stage carrier so that the metal press bar is on the right side and the triangular carbide plunger stop is on the left side of the stage carrier as shown in figures 1a & 1b. Slide the plunger stop to the rear of the stage carrier so that it is against the back of the stage carrier as shown. Then use the 5/64 inch Allen wrench to tighten the set screw located on the opposite side of the silver press bar. This will cause the silver press bar to press against the microscope and will hold the plunger stop securely in place.

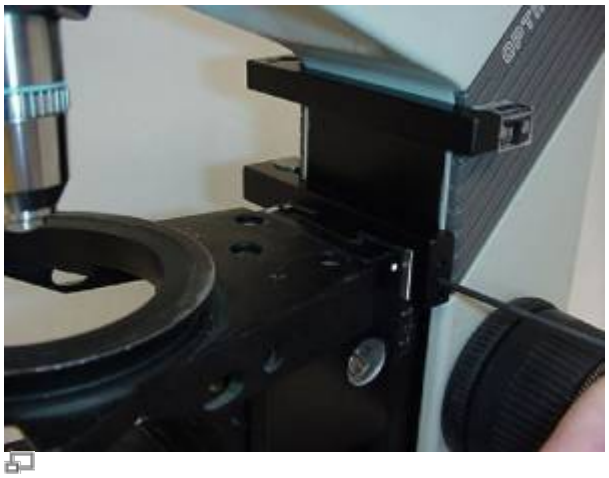

Figure 2a

Step # 2 Installing the encoder clamp & Aligning the encoder

Locate the encoder clamp, use the 3/32 Allen wrench to insure that the screw on the side of the encoder clamp is loose. Install the encoder clamp across the top rear throat of the microscope as shown in figures # 1a & 2a. Use the 5/64 inch Allen wrench to tighten the set screw located on the opposite side of the silver press bar. This will cause the silver press bar to press against the microscope and will hold the encoder clamp securely in place.

Figure 3

Figure 4

Bring the stage up to the correct focal position for the common objectives used. Position the encoder into the encoder clamp, as shown in figure # 3, so that the ball on the end of the encoder's plunger mates with the triangular carbide plunger stop. Slide the encoder down until there is about 1 to 2 millimeters worth of upward travel left on the encoder's plunger as shown in Figure # 4. Hold the encoder in position and use the 3/32" Allen wrench to tighten the screw to secure the encoder within the encoder clamp assembly as shown in figure #3.

After correctly installing and aligning the encoder move the stage up towards the objective so that the encoder's plunger is fully depressed. Then tighten the microscope's clamp adjustment as outlined in the microscopes manual to insure that the microscope stage can not be moved past the upward travel limit of the encoder.

Please note that the encoder has a total travel of 12mm and that it should be positioned to allow the most convenient travel distance for the stage. In most instances the upward movement of the stage/focus will only be a few millimeters from the focal plane. In these applications the above

installation procedure will provide the optimal downward travel range. However, this may vary slightly depending on the application and objectives used. To allow for the maximum upward linear encoder movement the stage can be moved to its upward mechanical stop and the encoder installed with the plunger fully retracted.

WARNING: Please do not move the stage outside of the linear encoder's range without first disengaging the drive, selecting the rotary encoder, or removing power from the controller. Failure to do so could result in a runaway condition. There is a firmware safety feature within the MS-2000 that will limit the runaway time to 0.5 seconds. After this period the drive will attempt to return to the last known encoder position. If the position to the encoder is small the drive may find the encoder. However, if the position to the encoder is large, or movement commands away from the encoder are still being given the limited runaway condition can occur.

This completes the installation and alignment of the ASI linear encoder onto the Nikon Optiphot 2 microscope.

nikon, optiphot2, linear encoder, zdrive