Nikon Diaphot TMD Microscope Z Drive Installation Procedure

The procedure below outlines the steps necessary to install the ASI Microscope Focus Controller Drive onto the Nikon Diaphot TMD microscope.

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

1.5 mm, 3mm, 4mm, and 7/64 inch hex wrenches The hex wrenches are provided by ASI.

The procedure has three parts:

1) Removing the right fine focus knob 2) Installing the baseplate, and aligning the motor drive assembly. 3) Installing the motor drive cover plate & fine focus knob.

Part 1 - Removing the Right Fine Focus Knob

Figure 1a. Use 1.5 Allen to Loosen set screw

Figure 1.b Pull Knob off to Remove Fine Focus Knob

Remove the right fine focus knob from the microscope as shown in figures 1a & 1b

Part-2 Installing & Aligning the Motor Drive

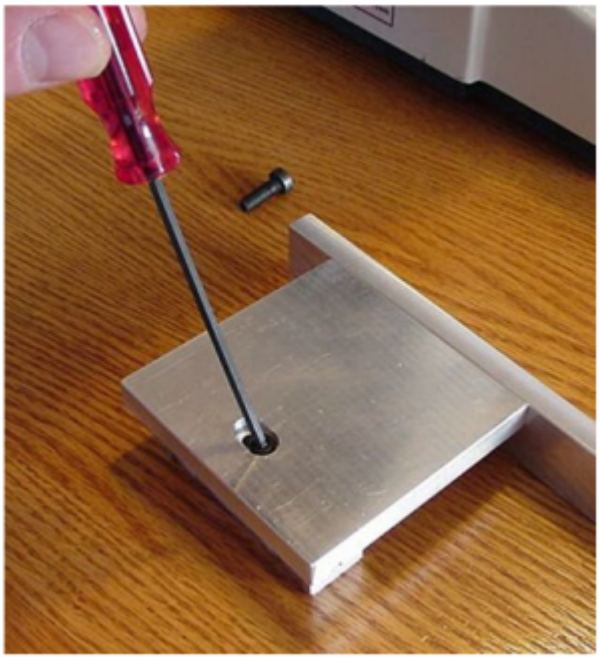

Figure 2a. Loosen horizontal adjustment screw

Figure 2b. Attach side plate to microscope with 5mm screws

Installing the side plate & the horizontal adjustment bar.

The ASI motor drive attaches to the silver horizontal side plate that is attached to the microscope with two 5 x 15mm Allen head screws. The motor drive slides within two lips on either side of the horizontal adjustment bar so that it can slide along the vertical axis and is secured to the adjustment bar via a 3 mm vertical adjustment screw. The horizontal and vertical adjustments allow the drive to be correctly positioned so the drive shaft on the ASI motor drive can be slid over the fine focus shaft of the microscope.

a) Locate the side plate, the motor drive, adjustment bar, and the Allen wrenches. Use the 3mm Allen wrench to loosen the screw securing the adjustment bar as shown in figure 2a. Use the two 5 x 15mm Allen head screws & 4mm Allen wrench to mount the side plate and adjustment bar assembly to the right side of the microscope as shown in figure 2b.

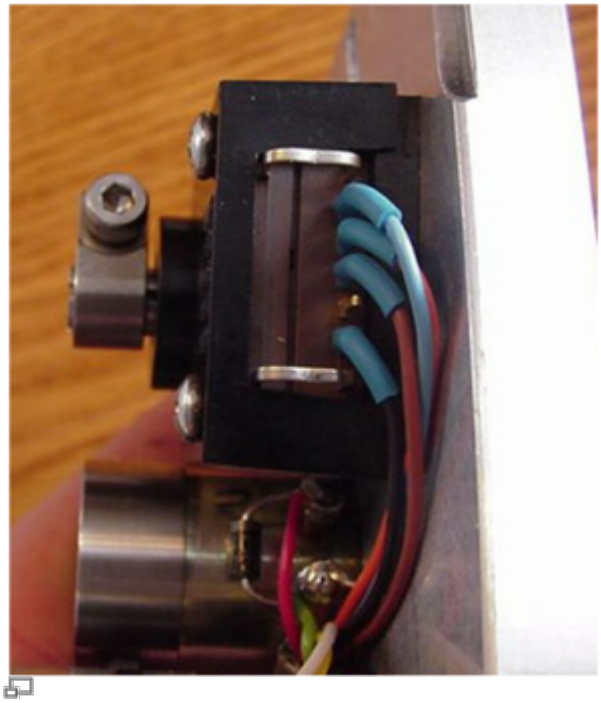

Figure 3a. loosen clamp wrench to on motor drive near encoder and remove 1st drive shaft

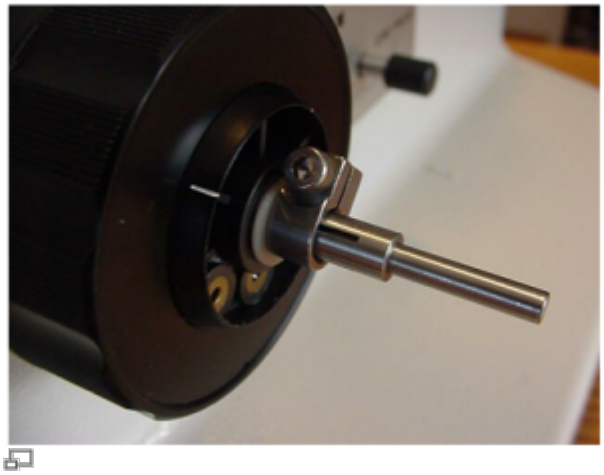

Figure 3b. Install 1st drive shaft on to microscope’s fine focus shaft

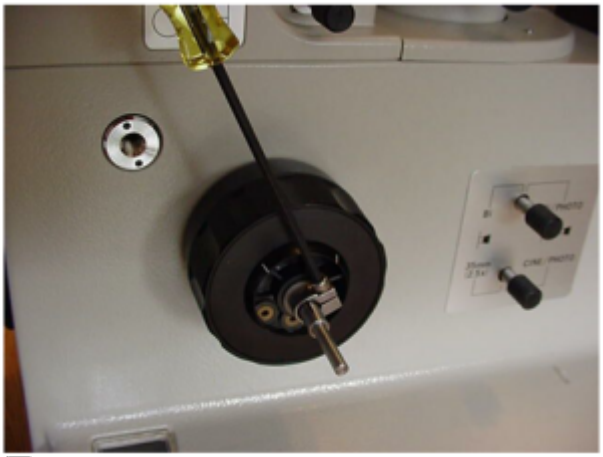

Figure 3c. Use 7/64” Allen securely tighten clamp

Installing the fist drive shaft

Locate the ASI motor drive and use the 7/64” Allen wrench to loosen the two clamps near the black encoder body. Remove the fist drive shaft and install it onto the microscopes fine focus shaft as shown in the above figures 3a, 3b, and 3c. Make sure that you press the fist drive shaft completely against the white nylon washer on the microscopes fine focus shaft, also press the clamp against the white nylon washer as well, and secure the shaft in place by tightening the clamp with the 7/64” Allen wrench. Insure that the clamp is securely tightened to prevent any slippage.

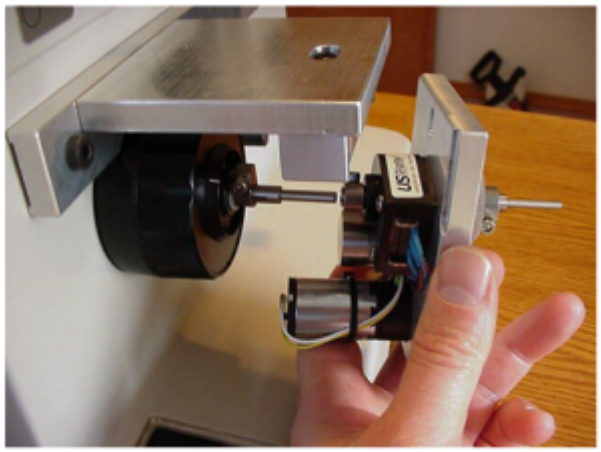

Figure 4a. Install drive by sliding 2nd drive shaft over the 1st drive shaft

Figure 4b. Slip drive into groves and hold in place while screwing in vertical adjustment screw.

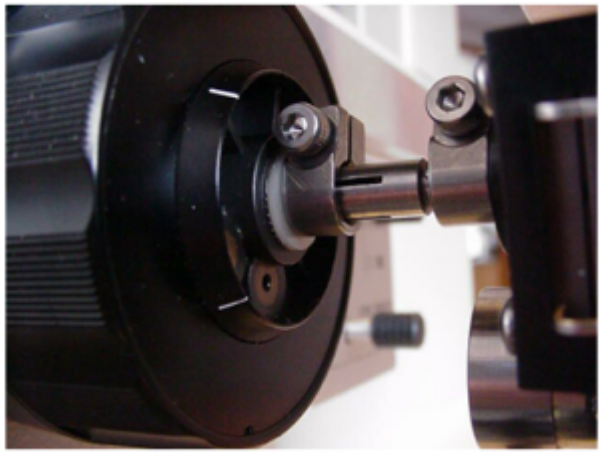

Figure 4c. Drive shaft clamps

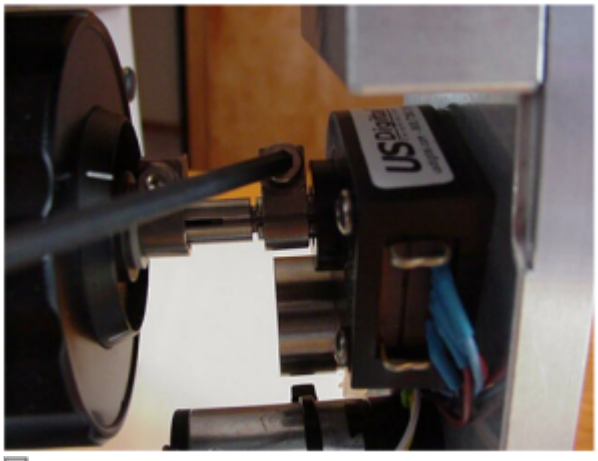

Figure 4d. Tighten 2nd drive shaft

Figure 4e. Check for slippage by holding onto Drive shaft gear while turning the left fine focus Knob on the microscope.

Installing the motor drive

1.) Remove the vertical adjustment screw (figure 4b) from the adjustment bar. 2.) Locate the motor drive assembly and install it as shown in figure 4a and 4b. 3.) Tighten the drive shaft clamps as shown in figures 4c and 4d. 4.) Tighten the vertical adjustment screw, figure 4b, and the horizontal adjustment screw, figure 2a.

Checking for proper alignment & Slippage

After the drive has been installed it should be checked for proper installation alignment. First check to make sure that the two drive clamps have been securely tightened by holding onto the drive shaft gear while turning the left fine focus knob on the microscope as shown in figure 4e. There should be no slippage.

Check for proper alignment by noting the drag feel as you turn the left fine focus knob. The feel should be smooth with no noticeable drag throughout the full 360 degrees of rotation. The drive is usually self-aligning and no alignment is needed. However, if there is any point within the full 360 degrees of rotation where noticeable drag is felt then the drive must be aligned as outlined below.

Aligning the motor drive

Loosen vertical adjustment screw, figure 4b, and the horizontal adjustment screw, figure 2a. Then slide the motor drive up and down, forward and backward slightly while turning the left fine focus knob until it is in the position where minimum drag is felt. Secure the motor drive into position by tightening the horizontal and vertical adjustment screws.

If there is still some noticeable drag at a point within the full 360 degrees of rotation then the microscopes fine focus shaft may have a slight bend in it. To counter the bend, loosen one of the drive clamps, figures 4c. & 4d., and hold on to the drive shaft gear while turning the left fine focus knob on the microscope as shown in figure 4e. Only turn the left fine focus knob on the microscope a small amount at a time and then retighten the drive clamp and check for proper alignment. By doing the steps outlined in this paragraph you should be able to find a point within the two opposing drive shafts (the microscope’s & the ASI drive shaft) that will counteract the bend

Note The Drive Shaft Clamps Must Be Securely Tightened or the drive may slip

Note there should be no point through out the 360º rotation of the fine focus knob where an increase in drag is felt. If drag is felt repeat the above steps.

Part 3-Installing the motor drive cover plate & fine focus knob.

a) Locate the motor drive cover. Remove the 4/40 button head screws from the drive with the 1/16 “ Allen wrench. Position the motor drive covert over the motor drive assembly and secure in place using the 4/40 button head screws.

b) Slide the microscope fine focus knob over the shaft extension and secure it in place buy tightening the set screw, figure 1a.

nikon, zdrive, diaphot