UPDATED 13 May 2015

Installing Zeiss Focus Drives

(H122AXIE, H122AXIO, H122X2/H122X200)

Please note that all instructions contained here should only be carried out by a qualified technician. It involves minor disassembly of critical components. If you are not familiar with this type of mechanical assembly we recommend that you do not attempt any installation described here and contact your microscope dealer or Prior Scientific for advice. If unsure about any aspect of these instructions, please contact Prior Scientific before proceeding.

H122AXIE Zeiss Axio Series Encoded Focus Drive Installation Instructions

The H112AXIE focus drive is only compatible with the focus drives listed below. It is **critical** that the drive be attached to the correct side of the microscope.

Axioplan	Left Side
Axioplan 2*	Left Side
Axioskop/Axioskop 20	Left Side
Axiovert 35	Right Side
Axiovert 100/S100/135	Right Side

***Note that the H122AXIE is NOT COMPATIBLE with the Axioplan 2ie and the Axioplan 2 Imaging models. For these instruments the H122X2/H122X200 is required.**

To undertake this procedure you will need

- 1.3 mm Hex wrench
- 2.5 mm Hex wrench
- 3 mm Hex wrench
- Medium Flat Blade Screwdriver
- 1 pt Philips Screwdriver
- 14 mm AF Spanner or Socket

1) Before starting the installation ensure you are aware of which side of the microscope the focus drive should be installed on.

2) Remove the fine focus control knob using a 1.3 mm hex wrench

3) Using the 14 mm spanner/socket undo the locknut holding the coarse control knob in position. The coarse knob can now be removed by turning it anti clockwise and unscrewing it from the mounting shaft. A black plastic cover should now be visible (see Figure 1.) If this is not the case check above to ensure that the knobs have been removed from the correct side. It is very important that both the coarse and fine control knobs are replaced before removing knobs from the opposite side.

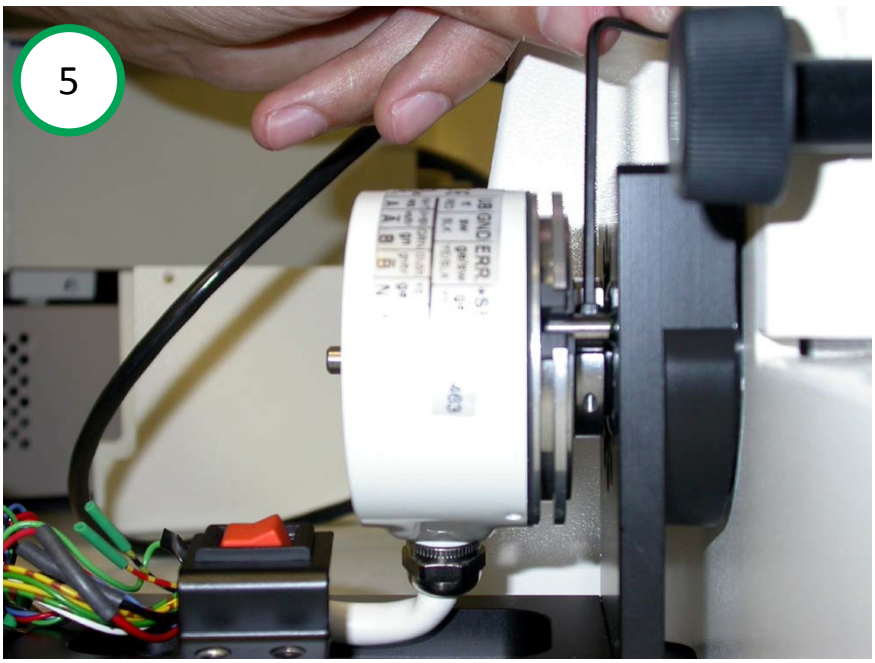
4) Attach coarse focus shaft and tighten using a hex wrench through the second fo the two clearance holes, as shown in Figure 2.

5) Attach the machined flat on the microscope fine focus shaft with the first hole in the coarse focus shaft. Push the extension shaft onto the microscope fine focus shaft and tighten the fixing screw as shown in Figure 3.

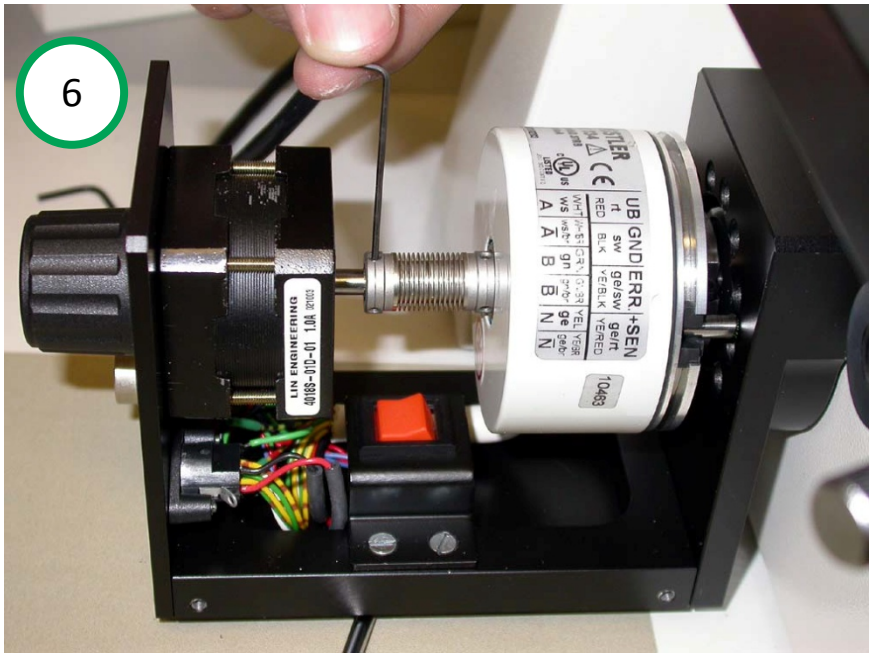
6) It is now necessary to remove three of the five screws that hold the black plastic cap ontop the microscope. Only remove the three screws which are equally spaced. The remaining two are positioned directly opposite each other and these must remain in position.

7) Remove the main cover from the H122AXIE assembly and attach the frame to the microscope using the three M3 x 20 socket cap screws provided. It will be necessary to remove the frame end plate and also the motor direction switch mounting bracket as shown in Figure 4.

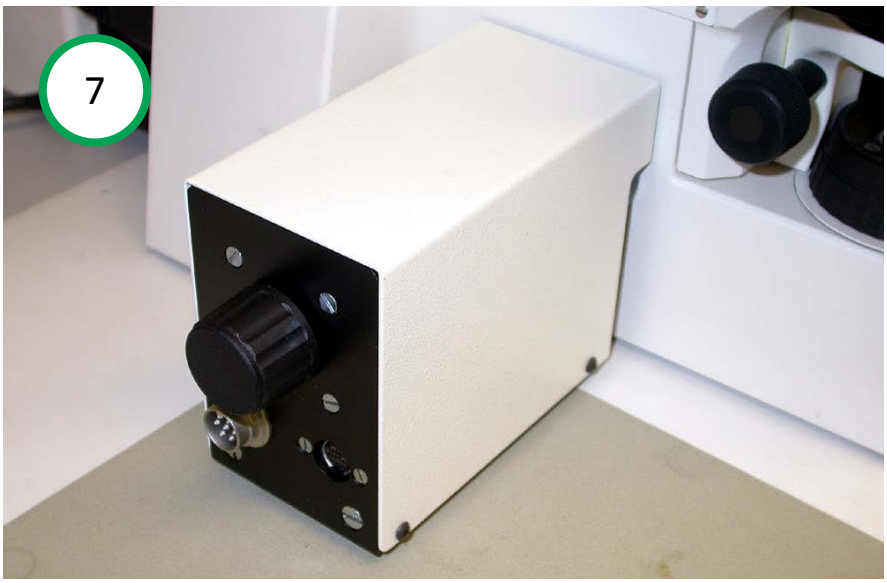
8) Pus the rotary encode assembly over the coarse shaft ensuring that the dowel pin is positioned into the locating slot on the encoder. Tighten the screw on the encoder clamping collar as shown in Figure 5.



9) Attach the flexible coupling to the extension shaft, which should be protruding from the centre of the encoder. Reassemble the switch mounting bracket and frame end plate so that the free end of the flexible coupling can be attached to the drive motor (see Figure 6).



10) Refit the main cover. The installation is now complete.



H122AXIO Zeiss Axio Series Encoded Focus Drive Installation Instructions

The H122AXIO is compatibl with all the Zeiss Axio type microscopes listed below. However it is not compatible with the Zeiss Axioskop 2 and Zeiss Axioplan 2. The focus drive must be attached to the fine focus ball reduction mechanism as follows.

Axioplan	Left Side
Axioskop	Left Side
Axiovert 25	Left Side
Axiotron	Right Side
Axiovert 35	Right Side
Axiovert 100/S100/135	Right Side
Axiolab	Right Side
Standard	Right Side

Note that the H122AXIO is NOT compatible with the Axioskop 2 or the Axioplan 2.

The kit itself consists of the drive motor, motor bracket, switch assembly, mounting block, anti backlash gear and locknut, and a cover and lead. Also included are the screws and hexagon keys required.

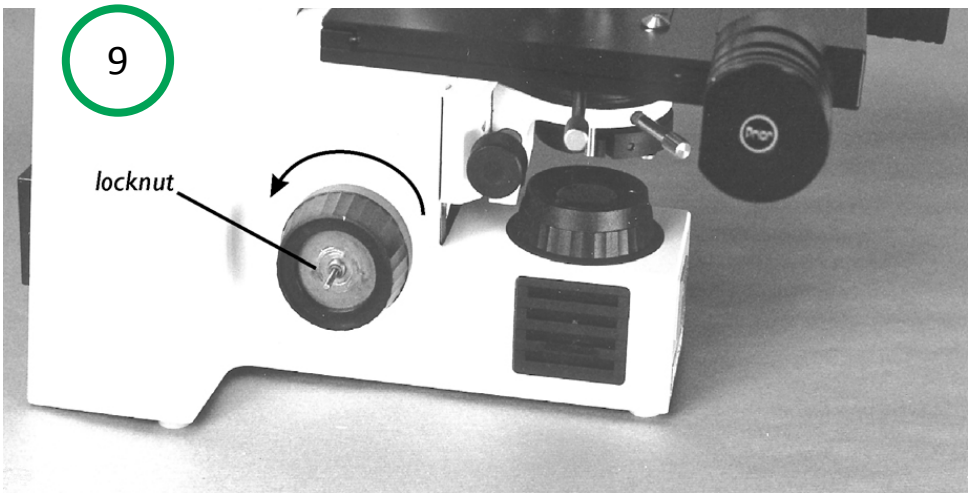
To undertake this procedure you will need

- 14 mm AF spanner or socket
- 1 pt Philips screw driver
- 1.27 mm Hex key (supplied)
- 2.5 mm hex key (supplied)
- 3 mm hex key (supplied)

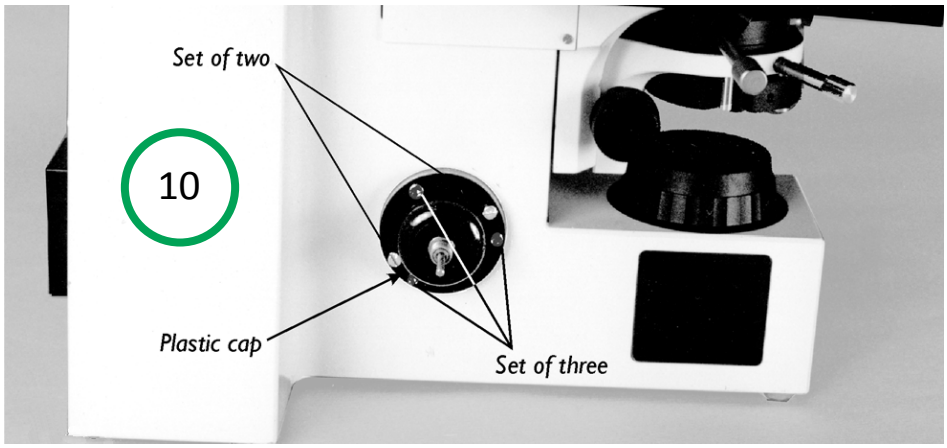
1) First, prepare the focus drive. Remove the cover, remove the bad containing the anti-backlash gear, locknut, and hexagon keys. Using the 3.0 hex key remove the two 4mm cap head screws that hold the mounting block to the motor bracket assembly.

2) Determine which side the focus drive should be installed on. Remove the fine focus knob by using the 1.27 mm hex key to unscrew the set screw. The knob can then be pulled off. See Figure 8.

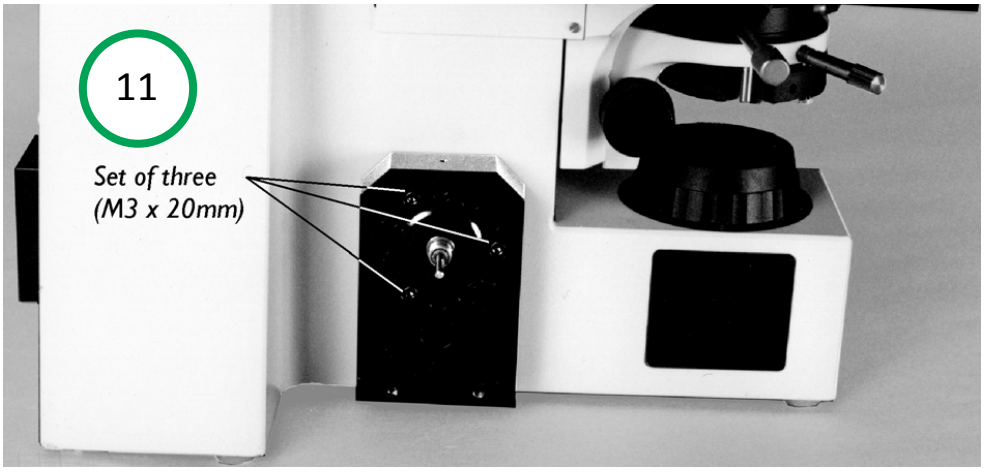
3) Using the 14 mm spanner or socket to remove the lock nut – the coarse knob can now be removed by turning anti-clockwise and unscrewing from the coarse focus shaft. See Figure 9.



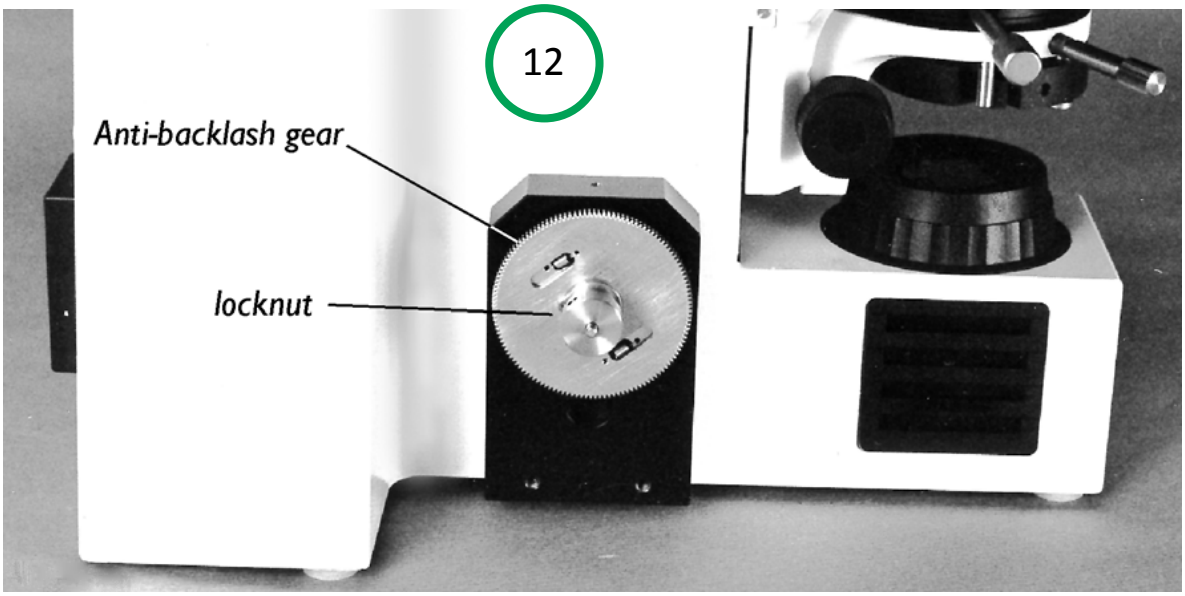
4) A black plastic cover should now be visible – see Figure 10. If this is not the case then check that the knobs have been removed from the correct side. It is very important that you replace both coarse and fine knobs before removing the knobs on the opposite side. The plastic cap is held on with five screws. There is one set of two screws and one set of three screws. If the former are missing then install the two M3 x 6 mm cap head screws supplied. Remove the set of 3 screws using the 2.5 mm hex key.



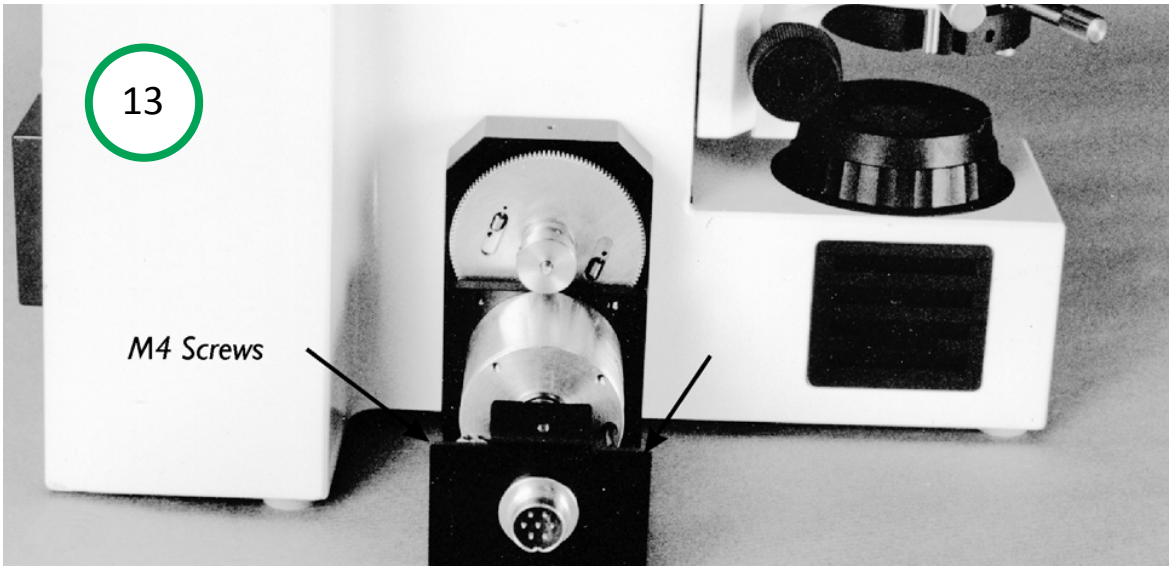
5) Place the mounting block over the plastic cap and hold in place using the 3 M3 x 20 mm cap head screws supplied. See Figure 11.



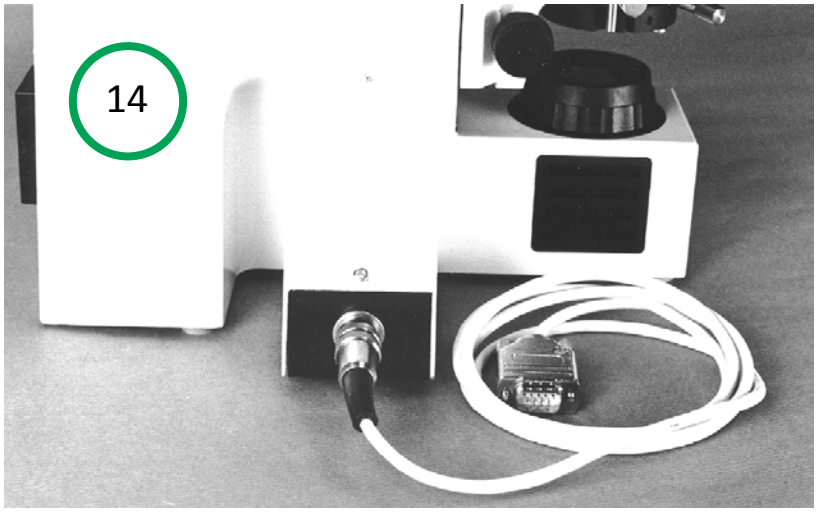
6) Screw the anti-backlash gear onto the coarse drive shaft making sure the gear's boss is facing outwards. Screw the locknut into the boss and tighten. See Figure 12.



7) Attach the motor, bracket and switch assembly to the mounting block using the two M4 cap head screws. The anti backlash gear has two gears. One is fixed, the other is spring loaded and free to rotate. Rotate this gear approximately 6 teeth before aligning with the motor gear. See Figure 13.



8) Replace the cover and attach the lead. See Figure 14.



9) If the focus drive unit appears to drive in the wrong direction – i.e. you ask the controller to move up and the stage moves down – then the switch is set to the wrong position. Disconnect the power supply, remove the cover, move the switch and replace the cover. The drive should now move in the correct direction.

H122X2/H122X200 Zeiss Axio Series Encoded Focus Drive Installation Instructions

The H122X2/H122X20 is compatible with the Axioplan 2ie and the Axioplan 2 Imaging microscopes. For both of these, the drive must be mounted on the **RIGHT HAND SIDE** of the microscope.

To undertake this procedure you will need

- 2 mm hex wrench
- 3 mm hex wrench
- Medium flat blade screwdriver

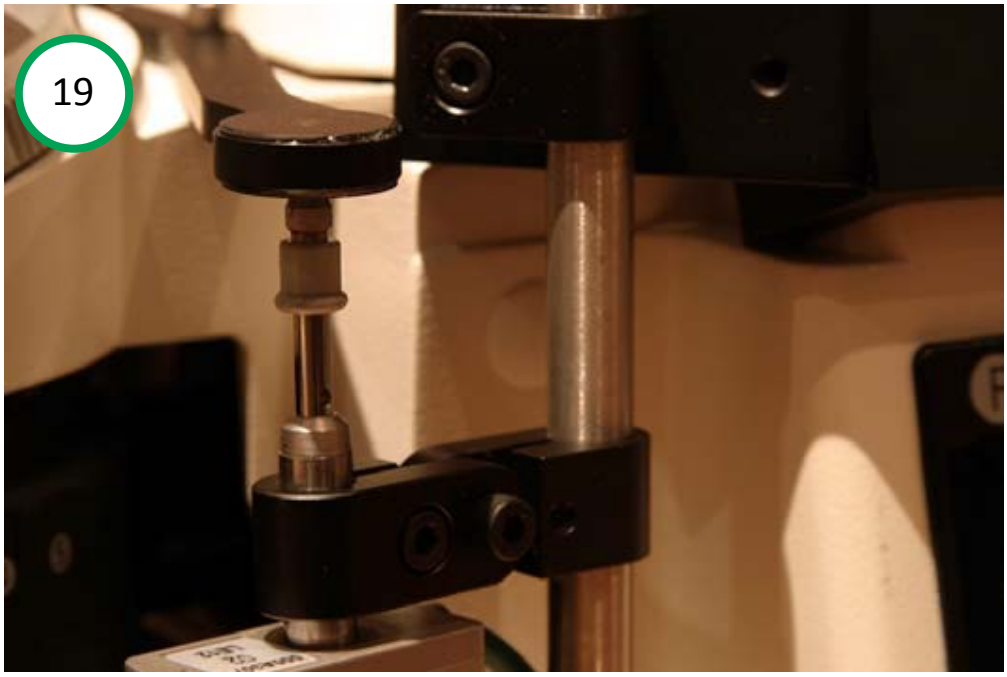
If a stage is fitted to the microscope it will be necessary to remove it prior to the drive installation.

1) Attach the probe reference bracket to the microscope objective holder mount with the two M3 x 10 screws provided. See Figure 15.

2) Using a flat blade screw driver attach the frame mounting bracket assembly as shown in Figure 16.

3) If necessary adjust the triangular end block by loosening its mounting screw and rotating so that the encoder mounting shaft will be as perpendicular as possible when fitted. See Figure 17.

4) Fit encoder mounting shaft and encoder as shown in Figure 18. Ensure that the probe is positioned centrally on the glass reference disk, as shown in Figure 19.



5) It is important that the focus motor assembly is fitted to the **right** hand side of the microscope. Before attaching the focus motor the rubber cover which is normally fitted over the fine focus knob will need to be removed, as shown in Figure 20.

6) Place the two halves of the focus adapter sleeve over the coarse control knob as shown in Figure 21.

7) While holding both halves of the focus adapter sleeve in place, slide the outer housing of the focus motor assembly over them as far as it will go. Tighten the three setscrews that are positioned around the periphery of the outer housing until secure ensuring that they line up with the recess that runs around the outer surface of the sleeve. Care should be taken not to over tighten or position any of the screws over the gaps between the tow halves of the adapter sleeve. Check that the unit has tightened sufficiently by taking hold of it and turning it. If the adapter is correctly fitted it will stay attached.

8) Slide the focus motor into the outer housing as far as it will go and whilst applying gentle pressure to the motor clamp the drive screw, as shown in Figure 22. This will hold the motor in place. The rubber drive bush on the end of the motor spindle should now be pressing against the end surface of the fine focus knob. This can be confirmed by manually rotating the exposed fine knob on the opposite side of the microscope and feeling the resistance caused by the detent positions of the stepper motor as it rotates. This will not cause any damage to the focus motor.

9) Confirm that the controller is switched off before connecting the digipot (if supplied), focus motor and cables to the relevant sockets on the rear of the Prior controller.

10) Refit the stage. The installation is now complete.

IF YOU HAVE ANY PROBLEMS, REQUIRE ANY ADVICE, OR ARE UNSURE ABOUT ANY ASPECT OF THESE INSTRUCTIONS PLEASE DO NOT HESITATE TO CONTACT PRIOR SCIENTIFIC.