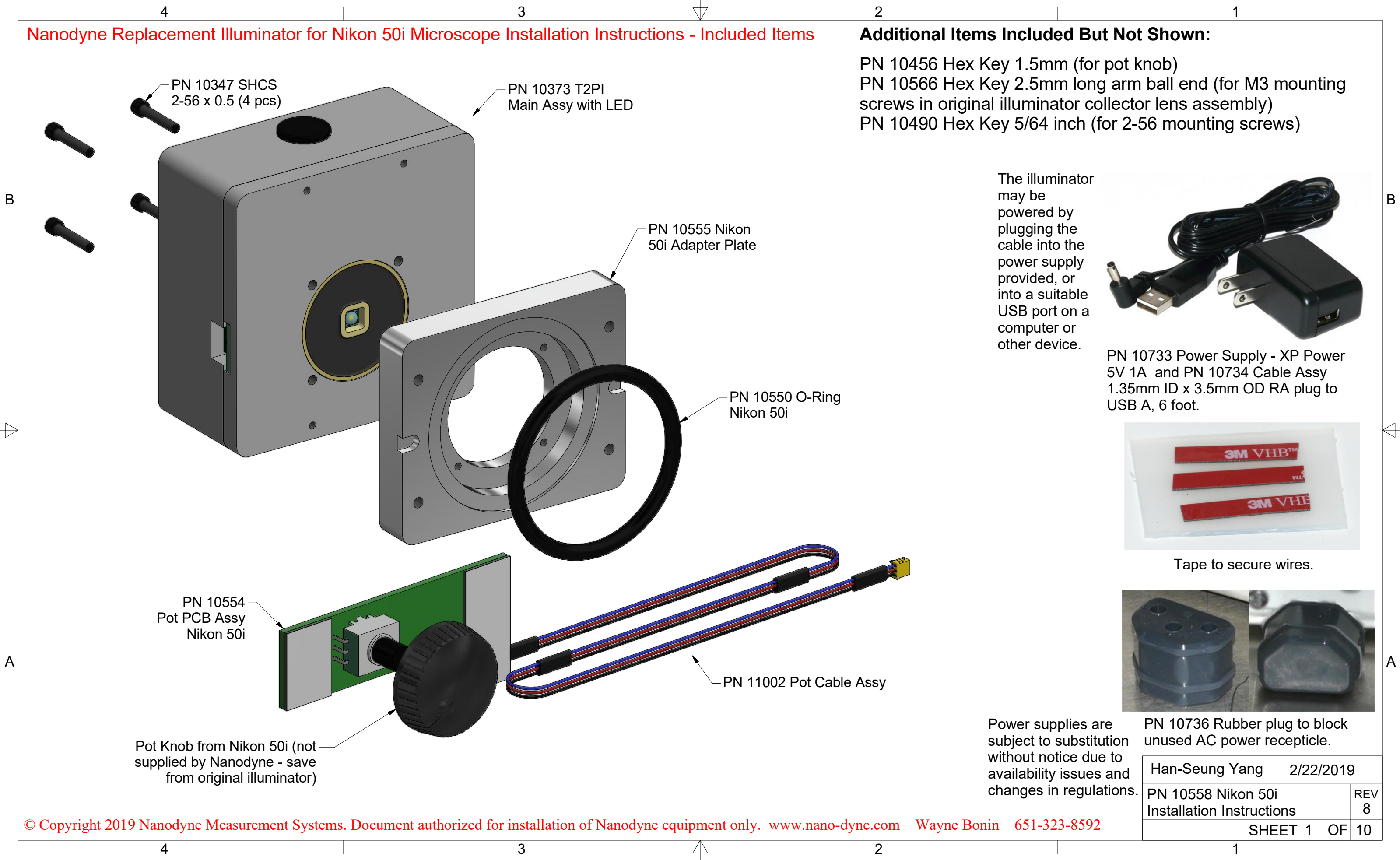


Nanodyne Replacement Illuminator for Nikon 50i Microscope Installation Instructions - Included Items

Additional Items Included But Not Shown:

- PN 10456 Hex Key 1.5mm (for pot knob)
- PN 10566 Hex Key 2.5mm long arm ball end (for M3 mounting screws in original illuminator collector lens assembly)
- PN 10490 Hex Key 5/64 inch (for 2-56 mounting screws)



The illuminator may be powered by plugging the cable into the power supply provided, or into a suitable USB port on a computer or other device.



PN 10733 Power Supply - XP Power 5V 1A and PN 10734 Cable Assy 1.35mm ID x 3.5mm OD RA plug to USB A, 6 foot.



Tape to secure wires.



Power supplies are subject to substitution without notice due to availability issues and changes in regulations.

PN 10736 Rubber plug to block unused AC power receptacle.

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Nanodyne Replacement Illuminator for Nikon 50i Microscope Installation Instructions - Step 1. Remove old lamp and condenser lens assembly.

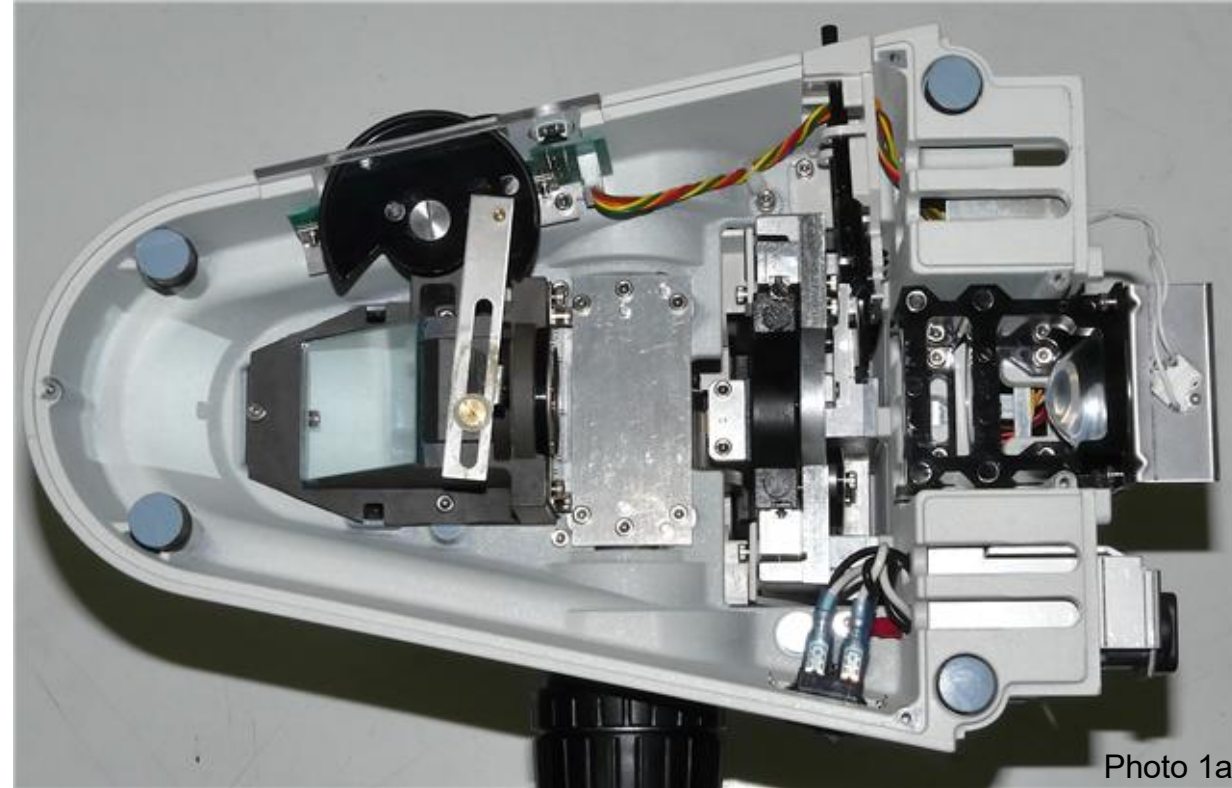


Photo 1a

Bottom of microscope with rear and bottom covers removed.

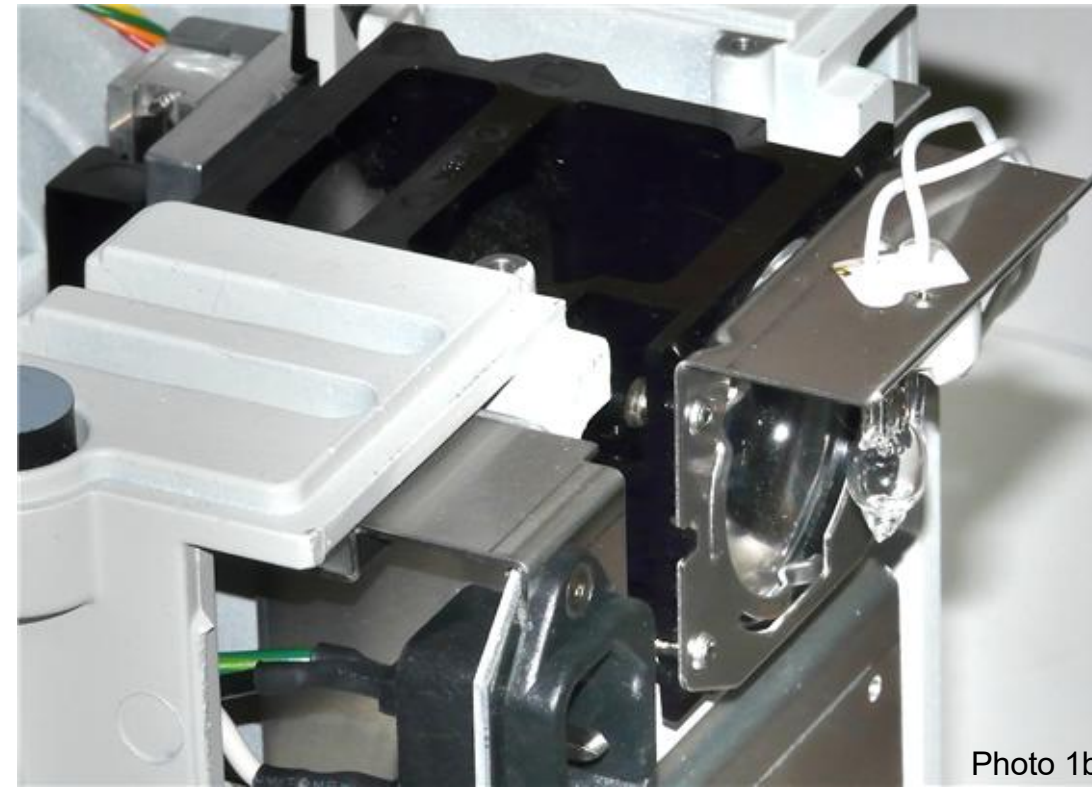


Photo 1b

Lamp and condenser lens assembly.

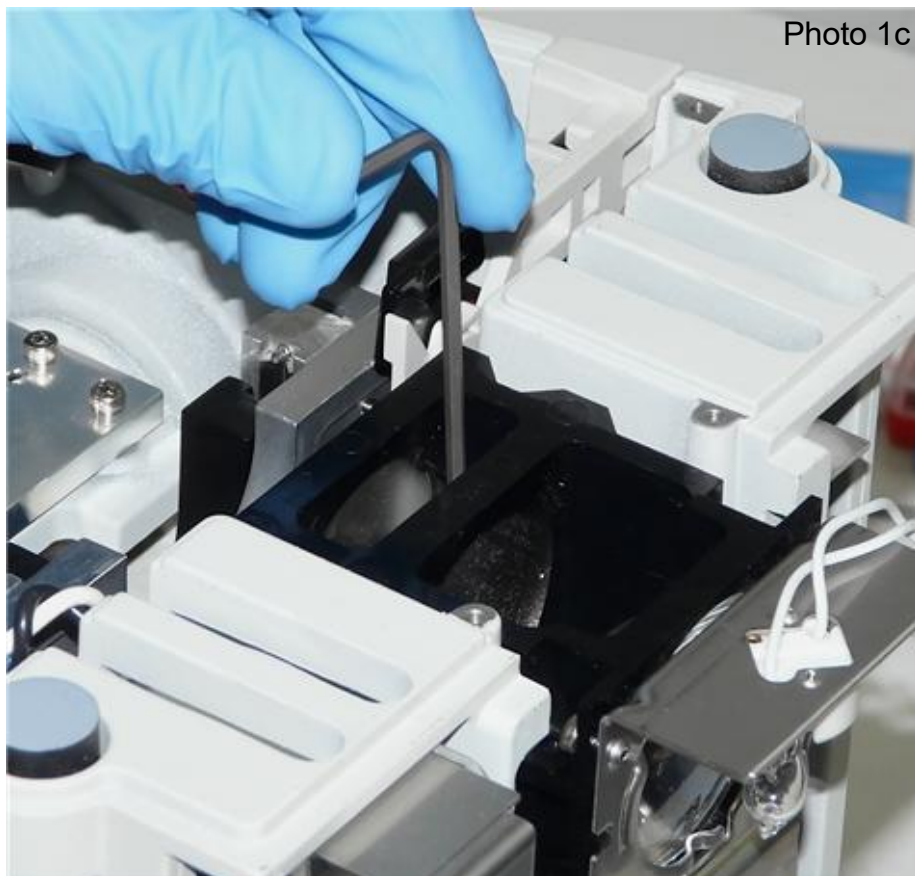


Photo 1c

Removing mounting screws for condenser assembly.

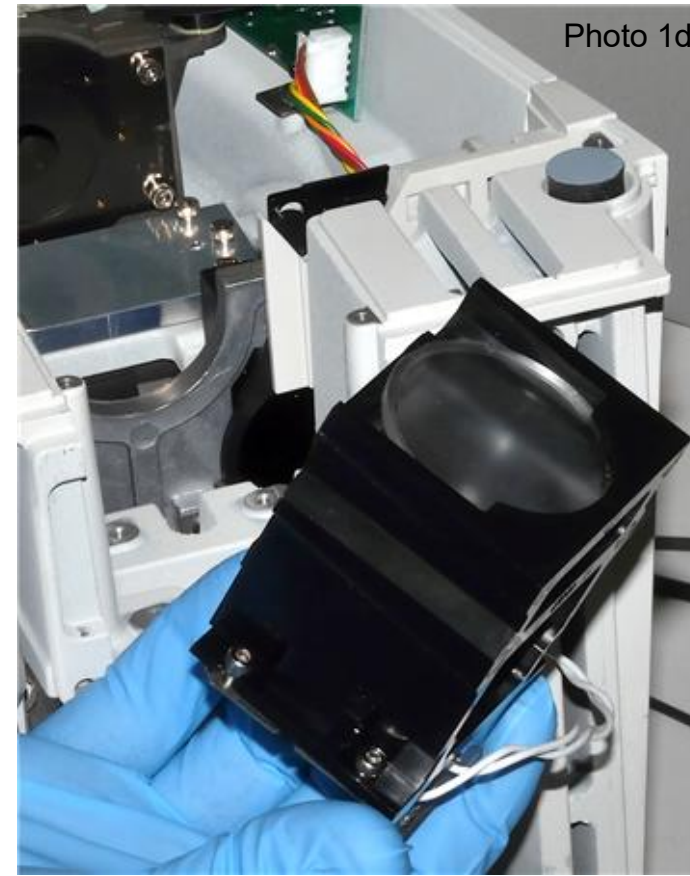


Photo 1d

Removing condenser assembly.

Be sure AC power is disconnected. Remove back and bottom cover plates from microscope. Note that the screws holding the old lamp in place are screws in from behind the lamp, so you need to remove the entire condenser lens assembly.

Remove condenser assembly mounting screws as shown in Photo 1c, then remove the condenser assembly. Two of the four screws holding the lamp plate to the condenser assembly are visible in Photo 1d.

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Nanodyne Replacement Illuminator for Nikon 50i Microscope Installation Instructions - Step 2. Attach Nanodyne adapter to the condenser lens assembly.

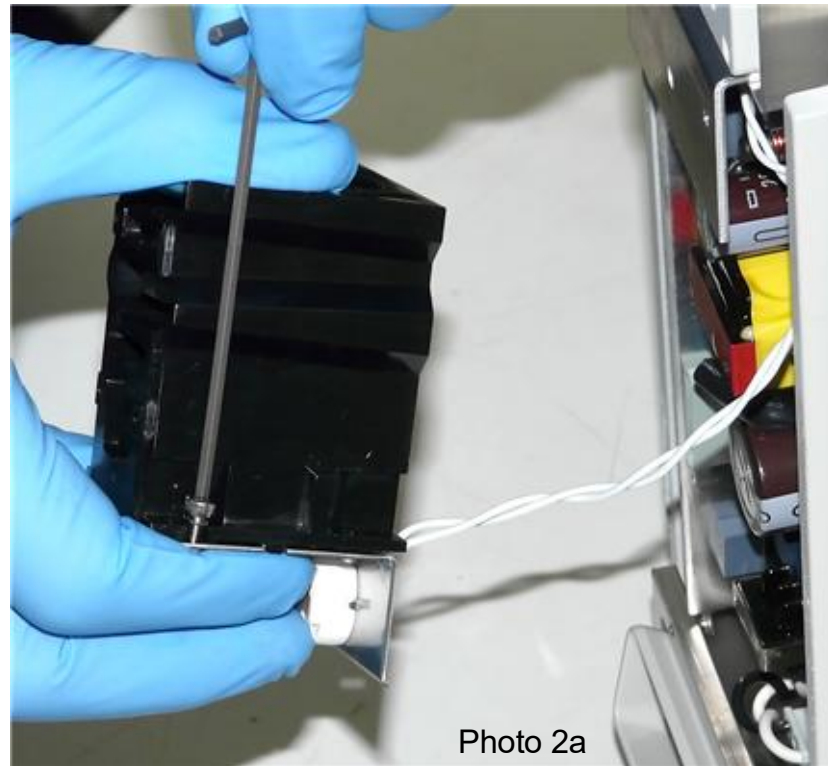


Photo 2a

Remove lamp plate from condenser assembly.



Photo 2b

Condenser assembly.



Photo 2c

Condenser assembly with Nanodyne O-Ring and Adapter Plate.



Photo 2d

O-Ring installation.



Photo 2e

O-Ring placement.

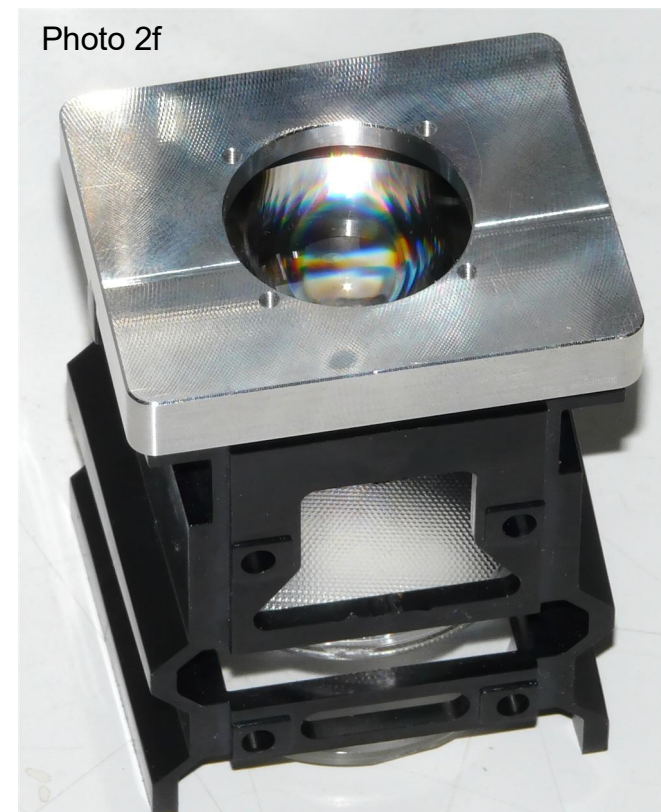


Photo 2f

Adapter Plate placement.

Remove the lamp plate from the condenser assembly (Photo 2a). Don't let the lens fall out. The lamp plate is all that holds it in, so hold the parts together by hand after removing the screws, until you turn it with the lens up as in Photo 2b. (save the screws for attaching the Nanodyne Adapter Plate later)

Install the O-Ring. Note the groove in the black plastic lens housing around the lens in Photo 2d. The O-ring must sit in this groove. If it is off-center, the lens could be crooked, causing the light to be non-uniform, or worst case the plastic housing could be damaged.

Position the Adapter Plate over the O-Ring and condenser lens as shown in Photo 2e. Carefully position it so the recess in the Adapter Plate (see Photo 2c) is centered about the O-Ring, without disturbing the O-Ring placement from Photo 2e.

Nanodyne Replacement Illuminator for Nikon 50i Microscope Installation Instructions - Step 3. Align Nanodyne adapter and carefully install mounting screws.



Photo 3a

Adapter/lens housing positioned to install screws.

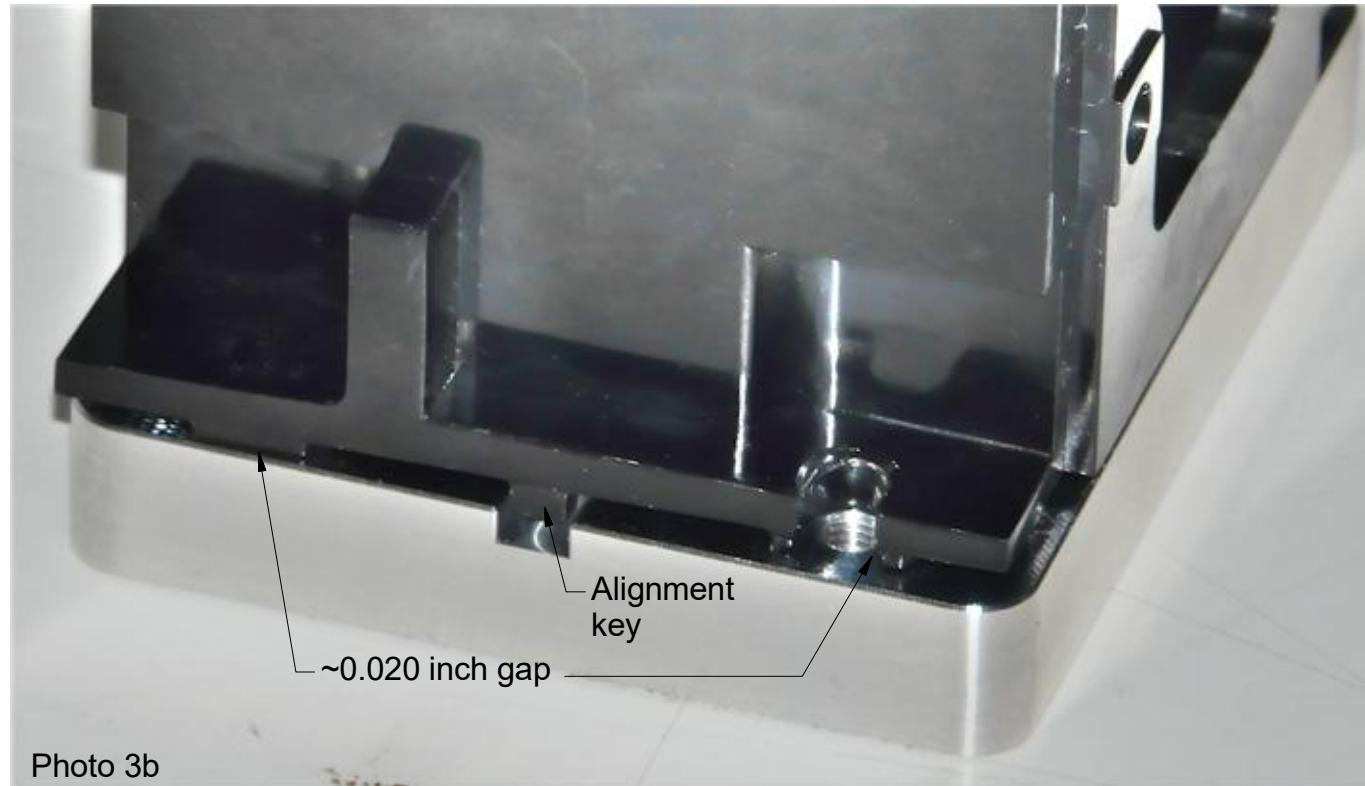


Photo 3b

Adapter/lens housing close-up

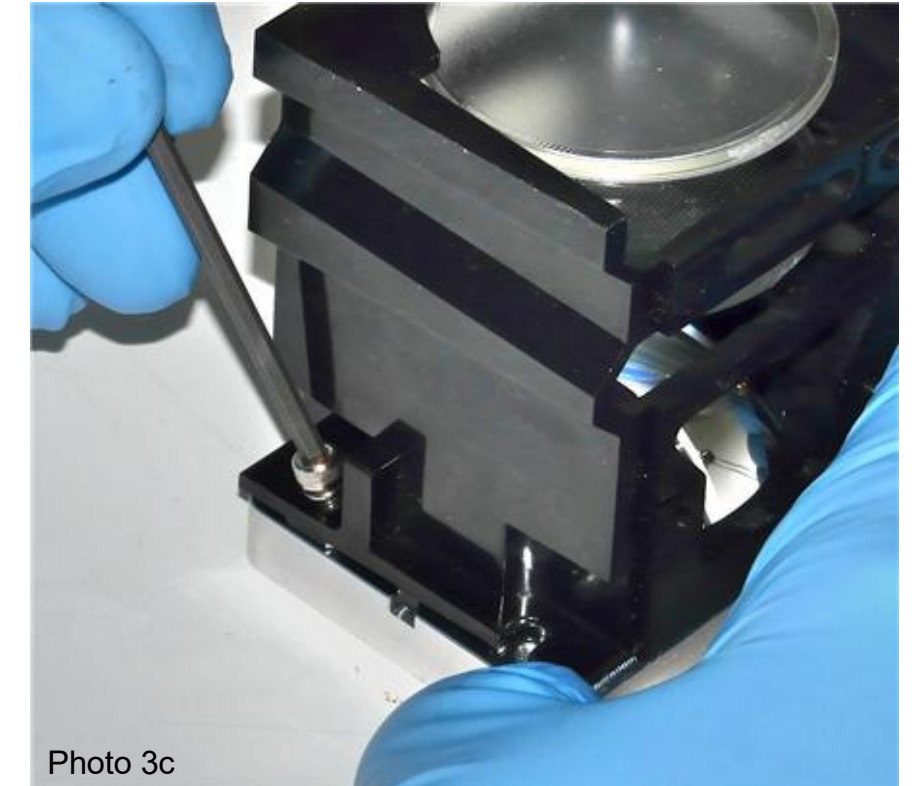


Photo 3c

Installation of mounting screws.



Photo 3d

Mounting screws installed.

While holding the Adapter against the lens housing to keep the O-ring from moving, carefully turn the assembly over, so the Adapter is at the bottom. There should be a small gap of roughly 0.020 inch (or 0.5mm) between the plastic housing and the Adapter where the screws will be installed (Photos 3a - 3c). The Plastic alignment keys (one on each side) must also be aligned to engage the slots in the Adapter Plate when the screws are tightened.

If the gap is significantly larger, and/or not uniform from side to side, the O-ring is probably out place. **Do not go to next step unless the alignment is correct, as in Photo 3b.**

Note that the Nanodyne Adapter Plate is rectangular, whereas the Nikon lens housing is trapazoidal, so two of the edges of the black plastic lens housing will not be parallel with the edges of the Adapter Plate.

(Photos 3c, 3d) Secure the plastic lens housing to the Adapter Plate using the same screws as were removed in step 2 (photo 2a). Install all four screws and turn them just enough for the screw heads to just touch the plastic housing but not compress the O-ring. Then alternately turn each screw 1/2 turn until the plastic housing is tight against the Adapter Plate.

While tightening the screws, very little force should be required until the plastic housing contacts the Adapter Plate, at which point the required force to turn the screw further will increase sharply.

If the force to turn the screws does not behave this way, something is probably misaligned. Correct the problem before continuing to tighten the screws, or you could damage the plastic lens housing.

When setting the final tightness of the screws, keep in mind they are clamping against plastic rather than metal. They should be tight enough to hold the parts securely, but don't overdo it.

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Nanodyne Replacement Illuminator for Nikon 50i Microscope Installation Instructions - Step 4. Re-install condenser lens assembly.

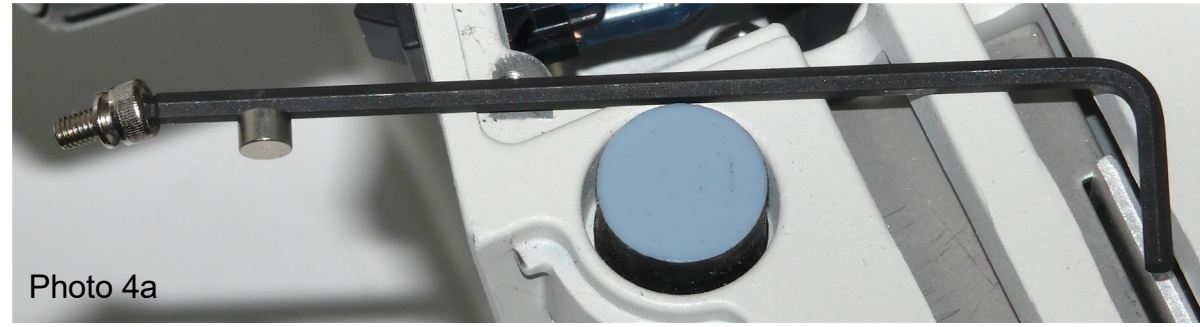


Photo 4a "Trick" to hold screw to wrench.

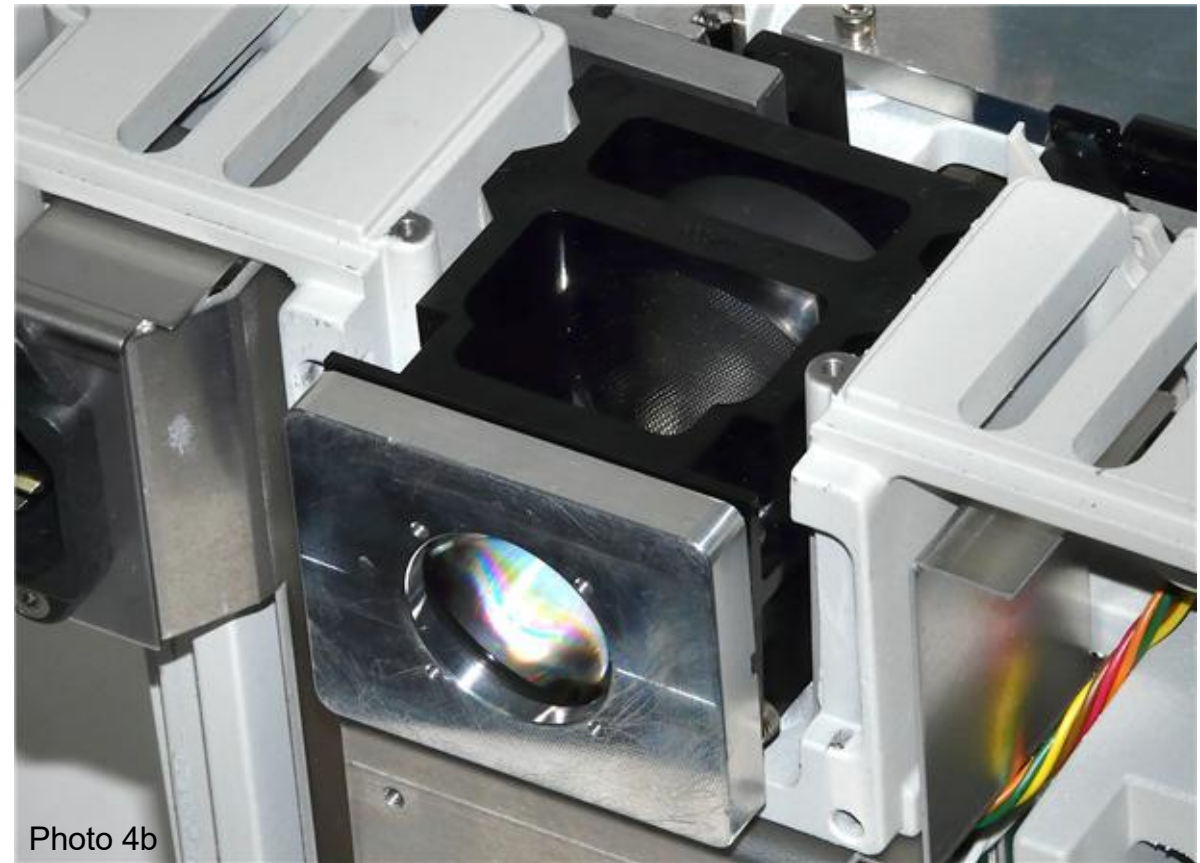


Photo 4b Lens holder/Adapter Plate assembly installed in microscope.



Photo 4c Original lamp plate and cable removed from microscope.

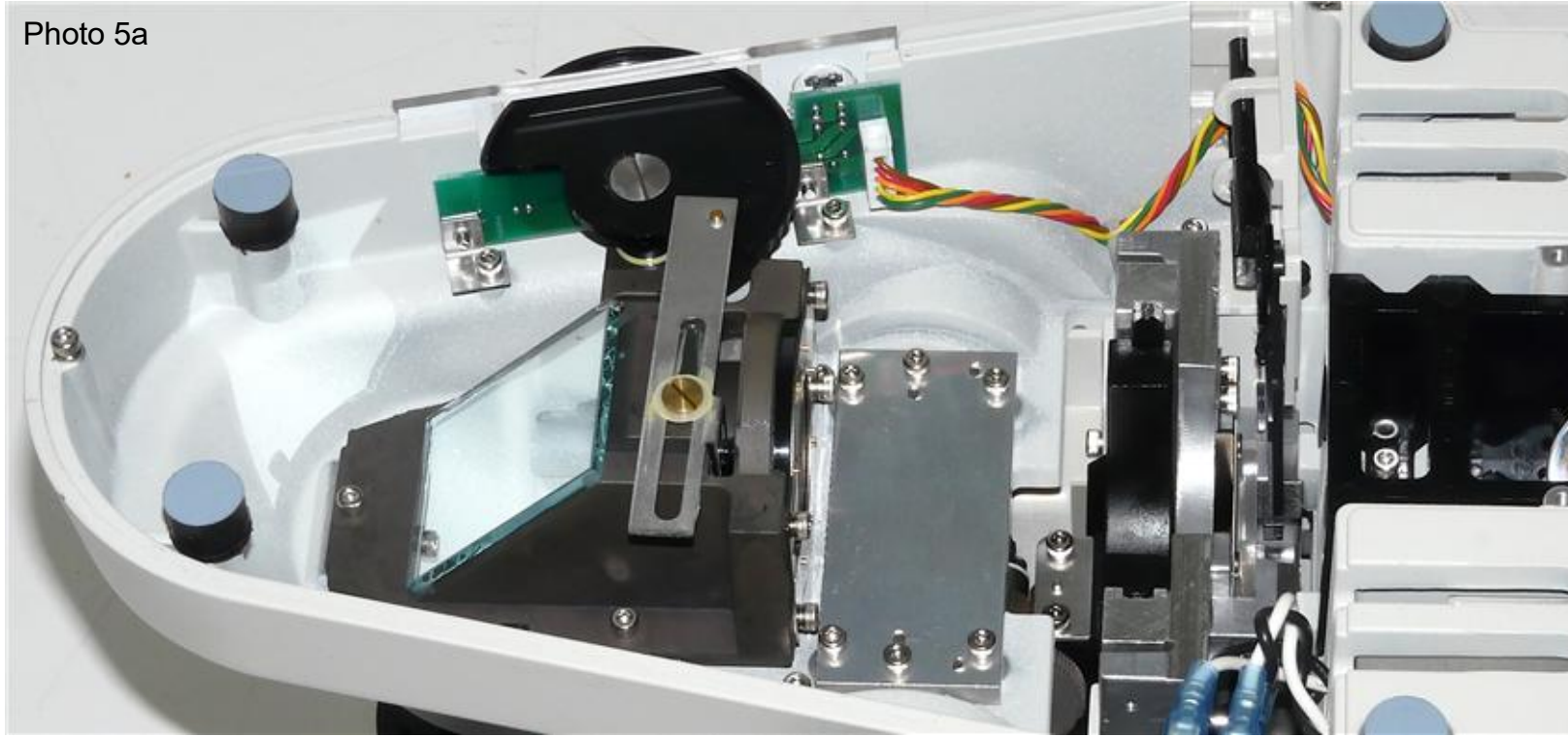
Remove the original lamp plate. You may either just cut the leads to the lamp plate with a wire cutter, or if you want to keep the old lamp useable, unplug the lamp cable from the power supply board and cut the tie wrap holding the cable. As seems to be standard design principle for this microscope, the connector for the lamp cable is hidden and almost inaccessible behind a metal plate (see the top right corner of photo 2a on sheet 3). The cable shown above was removed from the power supply board using a needle nose plier to reach under the metal plate and pull the connector loose.

If you prefer to just cut the cable, the remaining wires should be insulated with electrical tape to prevent a short circuit in case someone plugs in the now obsolete AC power.

Re-install the lens housing (now with the Nanodyne Adapter Plate replacing the original lamp plate) in the microscope using the original screws. Placing a small but powerful magnet near the tip of the hex key wrench to hold the screws in place will eliminate much frustration in getting the screws in the proper position.

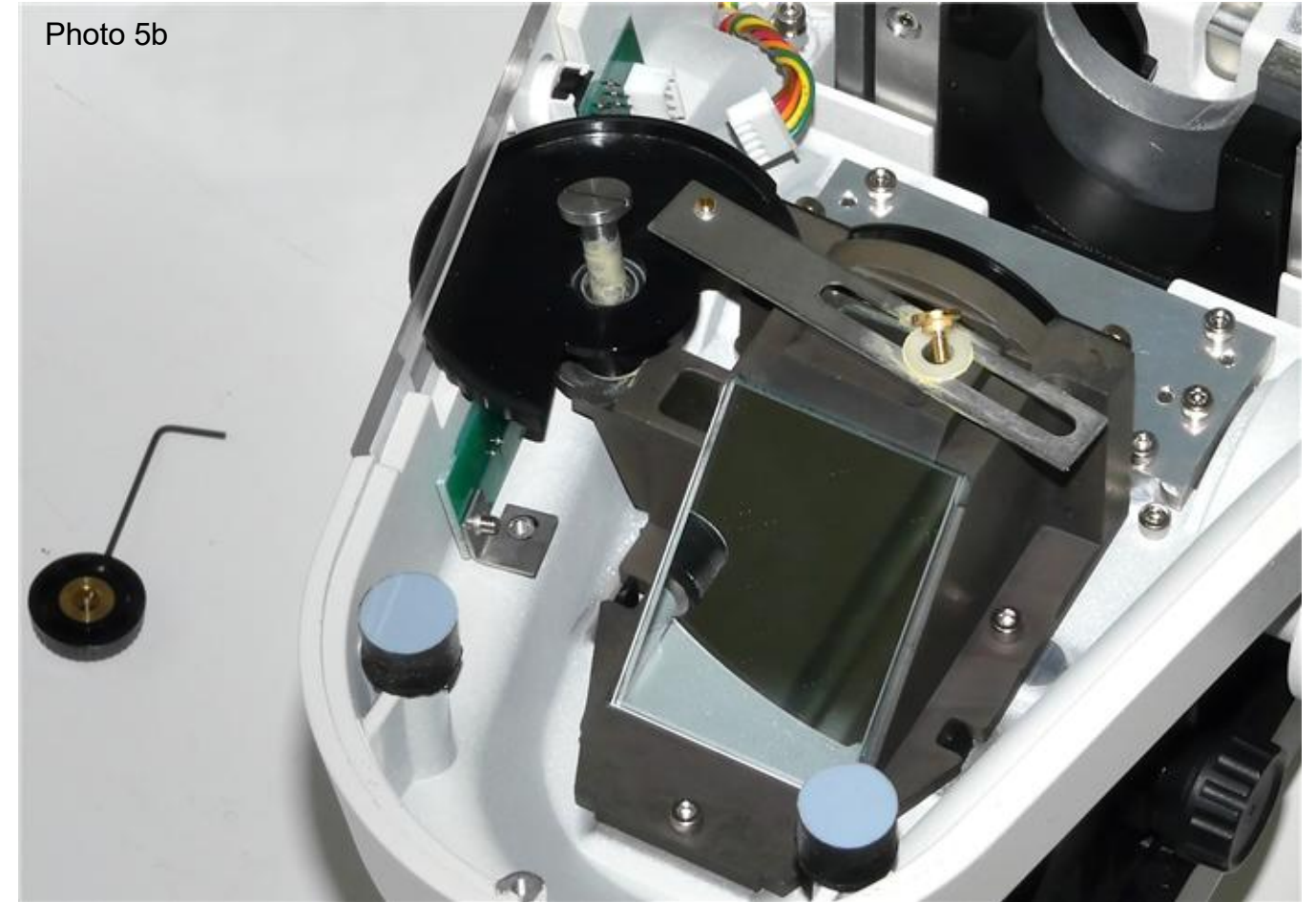
Nanodyne Replacement Illuminator for Nikon 50i Microscope Installation Instructions - Step 5. Remove diaphragm and diagonal mirror.

Photo 5a



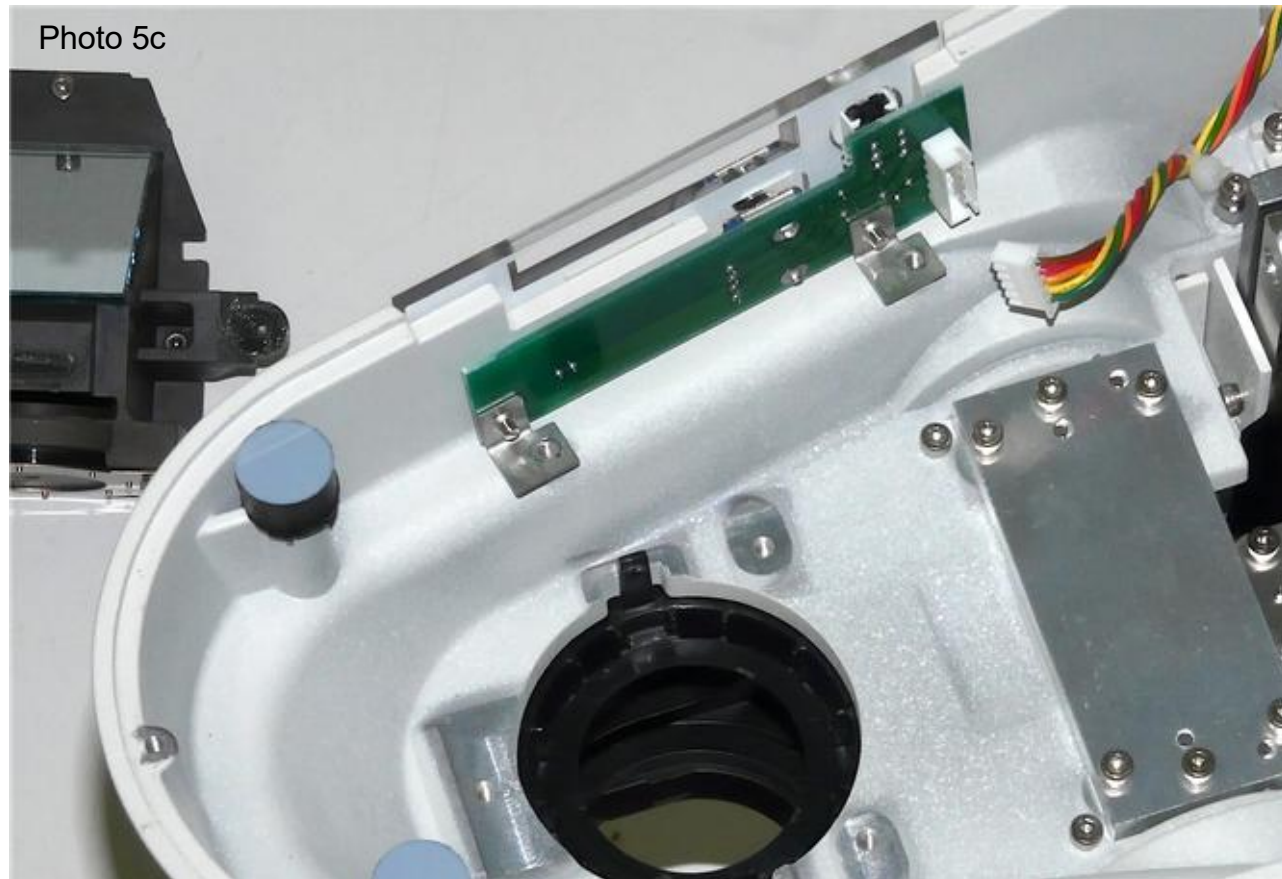
Original intensity control board (underneath the black diaphragm control wheel).

Photo 5b



Removing diaphragm control parts to access intensity pcb.

Photo 5c



Diaphragm and diagonal mirror removed.

Remove the Knob from the intensity adjust pot and unplug the cable from the intensity adjust pcb (see photo 5b).

Remove items blocking access to the intensity adjust pcb. First remove the steel screw holding the black diaphragm control wheel in place. Then remove the brass screw holding the diaphragm control bar in place. remove the two parts as an assembly. Then remove the three screws holding the diaphragm and diagonal mirror assembly, then remove that assembly. (see photo 5c)

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Nanodyne Replacement Illuminator for Nikon 50i Microscope Installation Instructions - Step 6. Remove old PCB and install new one.

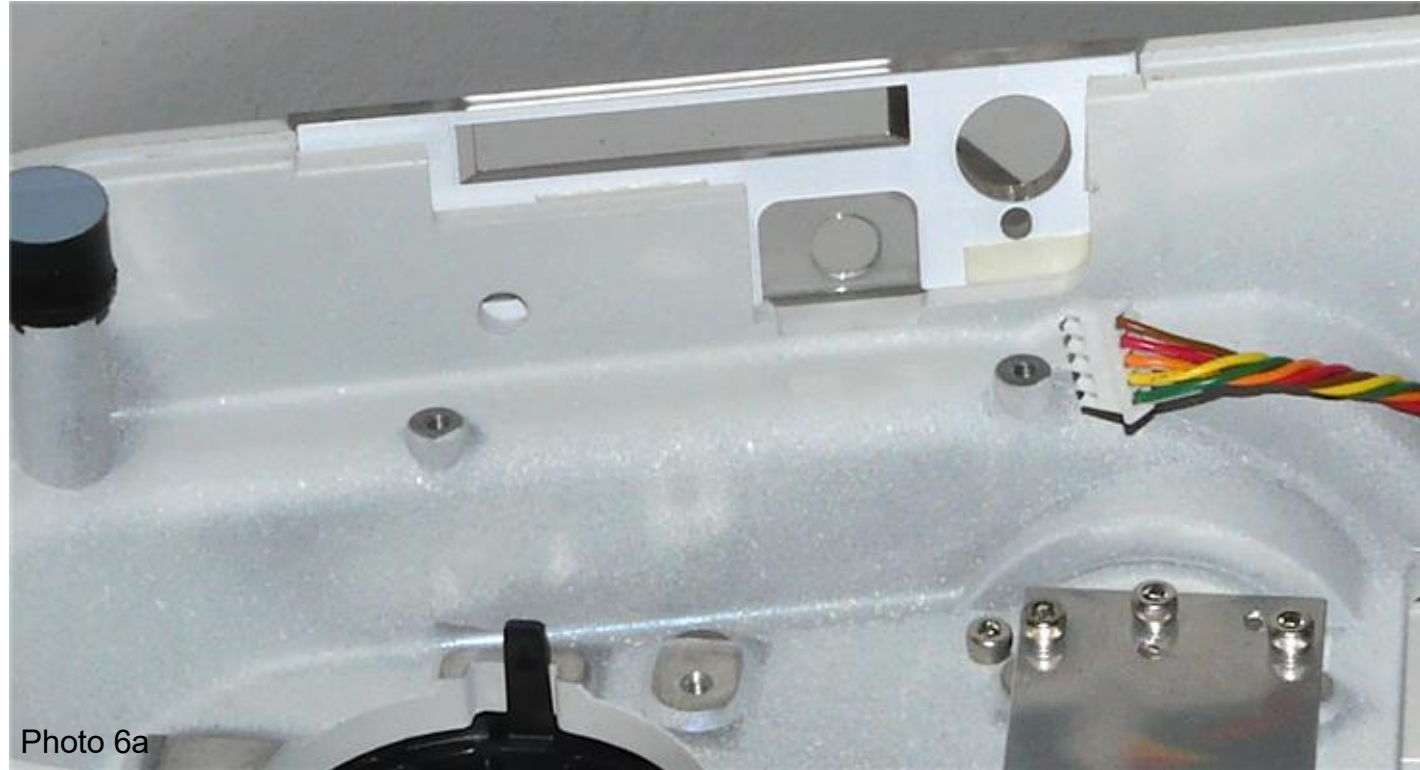


Photo 6a

Original pot pcb removed.



Photo 6c

Nanodyne pot pcb installed.

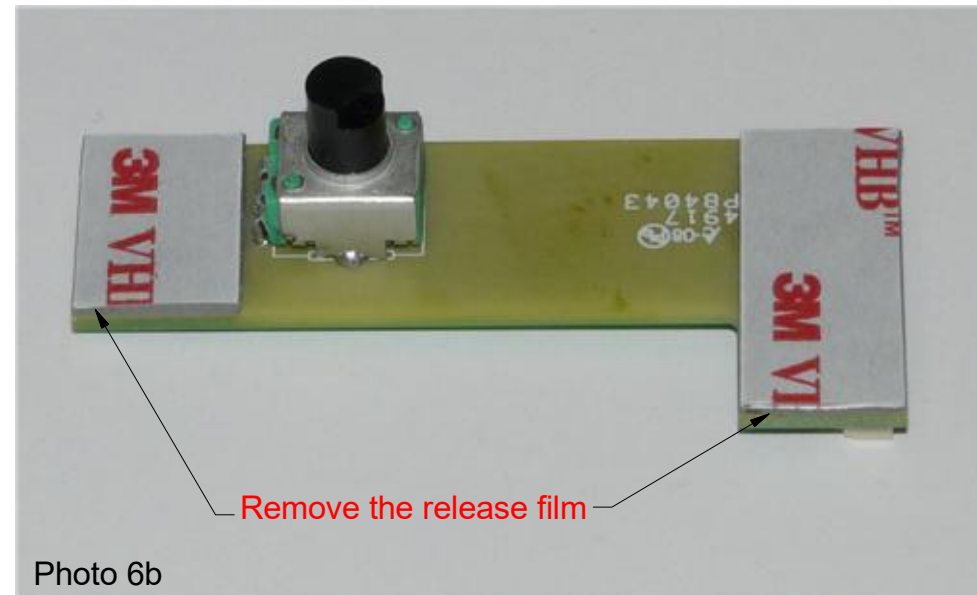


Photo 6b

Nanodyne pot pcb.

*Note: Inserted small images in photos 6c and 6d are the most up to date PN 10553 Pot PCB.

The R2 POT PCB moves the pot cable connector out of the way of the OEM hex key tool, so it may now be kept in its built in storage port in the microscope.

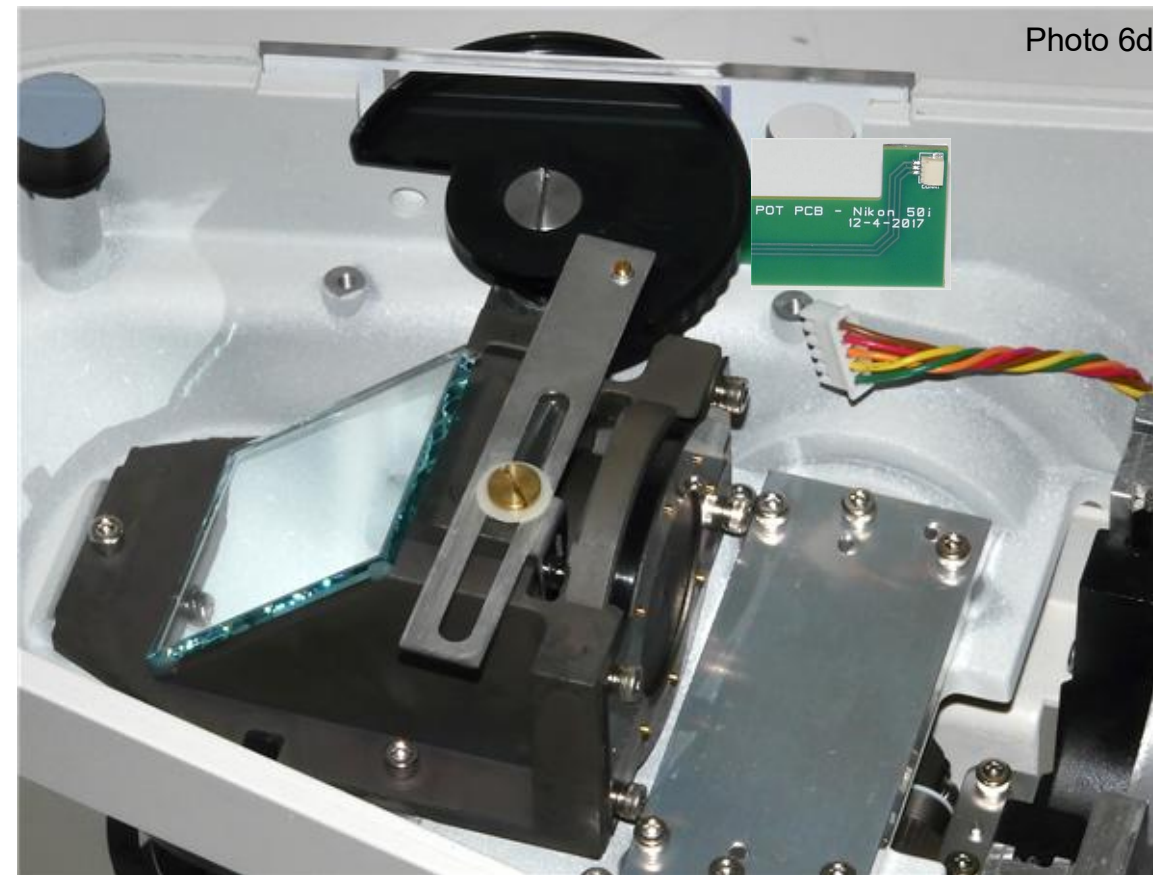


Photo 6d

Diagonal mirror and diaphragm apparatus replaced.

Remove the original pot pcb/intensity adjust board (photo 6a). Remove the release film from the adhesive on the Nanodyne pot pcb (photo 6b).

Position the Nanodyne pot pcb as shown in photo 6c, with the stem of the pot centered in the hole in the plastic faceplate, and firmly press the adhesive against the microscope. Replace the knob on the adjustment pot.

Replace the diagonal mirror/diaphragm assembly, securing it with the three screws that were removed earlier. Then replace the black plastic actuator wheel and bar.

When tightening the brass screw over the actuator bar, be sure the shoulder of the screw is completely in the slot and not pinching the bar, or the mechanism will not move.

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Nanodyne Replacement Illuminator for Nikon 50i Microscope Installation Instructions - Step 7. Attach Nanodyne illuminator and route pot cable.



Photo 7a

Routing the Nanodyne pot cable through back cover of microscope.

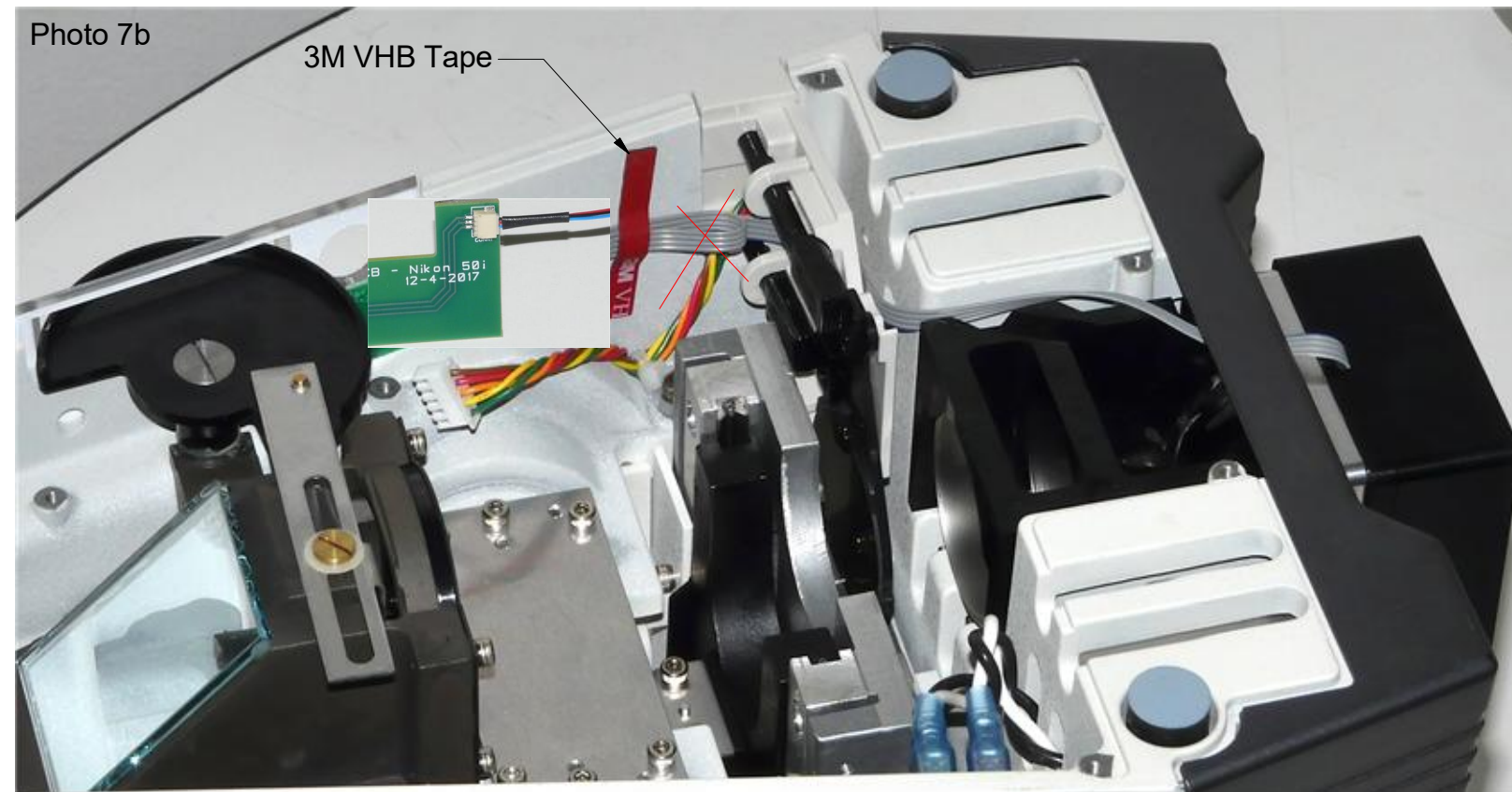


Photo 7b

3M VHB Tape

Complete pot cable routing and attachment to pot pcb..

Position the rear cover of the microscope as shown in photo 7a, but do not install the screws yet. Route the pot cable between the Adapter Plate and microscope back cover as shown in photo 7a and connect it to the Nanodyne illuminator Case Assembly.

The pot cable in photos 7a and 7b (red X) is outdated, and new PN 11002 Pot Cable Assembly and its insertion procedure is shown in next page (sheet 9). Inserted small image in photo 7b is the most up to date PN 10553 Pot PCB and PN 11002 Pot Cable Assembly.

Attach the Nanodyne Case Assembly to the Adapter Plate using the four 2-56 x 0.75 screws provided, and the 5/64 hex key to tighten them. Then attach the microscope rear cover with the original screws.

Route the pot cable as shown in photo 7b. Note that it is now a 3 colored wires, rather than the gray 4 conductor ribbon cable in the photo. Attach the connector at the end of the pot cable to the connector on the pot pcb as shown. Note that the connector is keyed with a narrow slot at the top and wider slot at the bottom (as oriented in the photo). Fold a loop in the cable as required, to take up any extra length, and secure it to the microscope frame with the 3M VHB tape provided. Be sure the cable does not interfere with replacement of the OEM Hex key tool. The original pot cable can be removed to provide more room if needed.

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Nanodyne Replacement Illuminator for Nikon 50i Microscope Installation Instructions - Step 8. Connect the Pot Cable to the Illuminator.

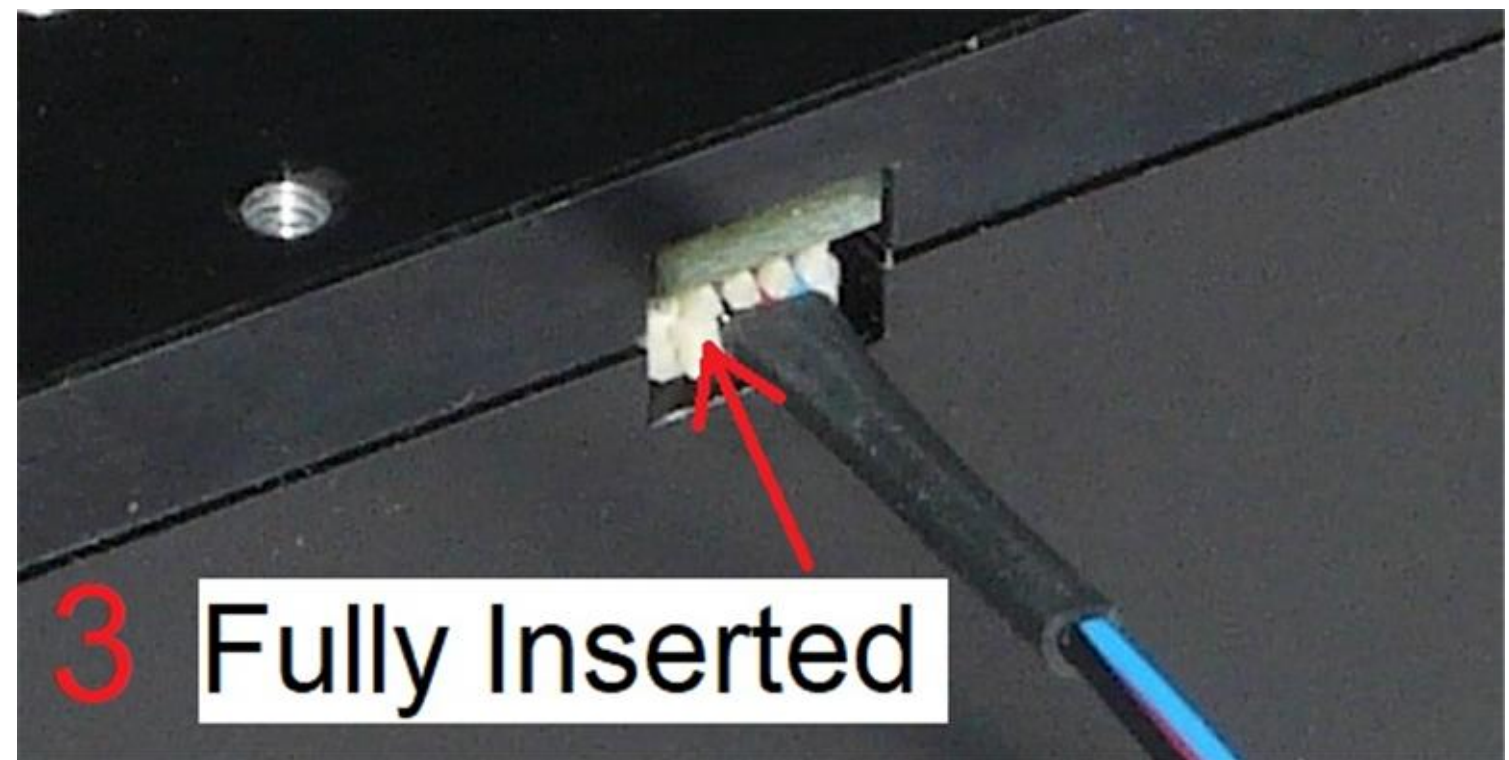
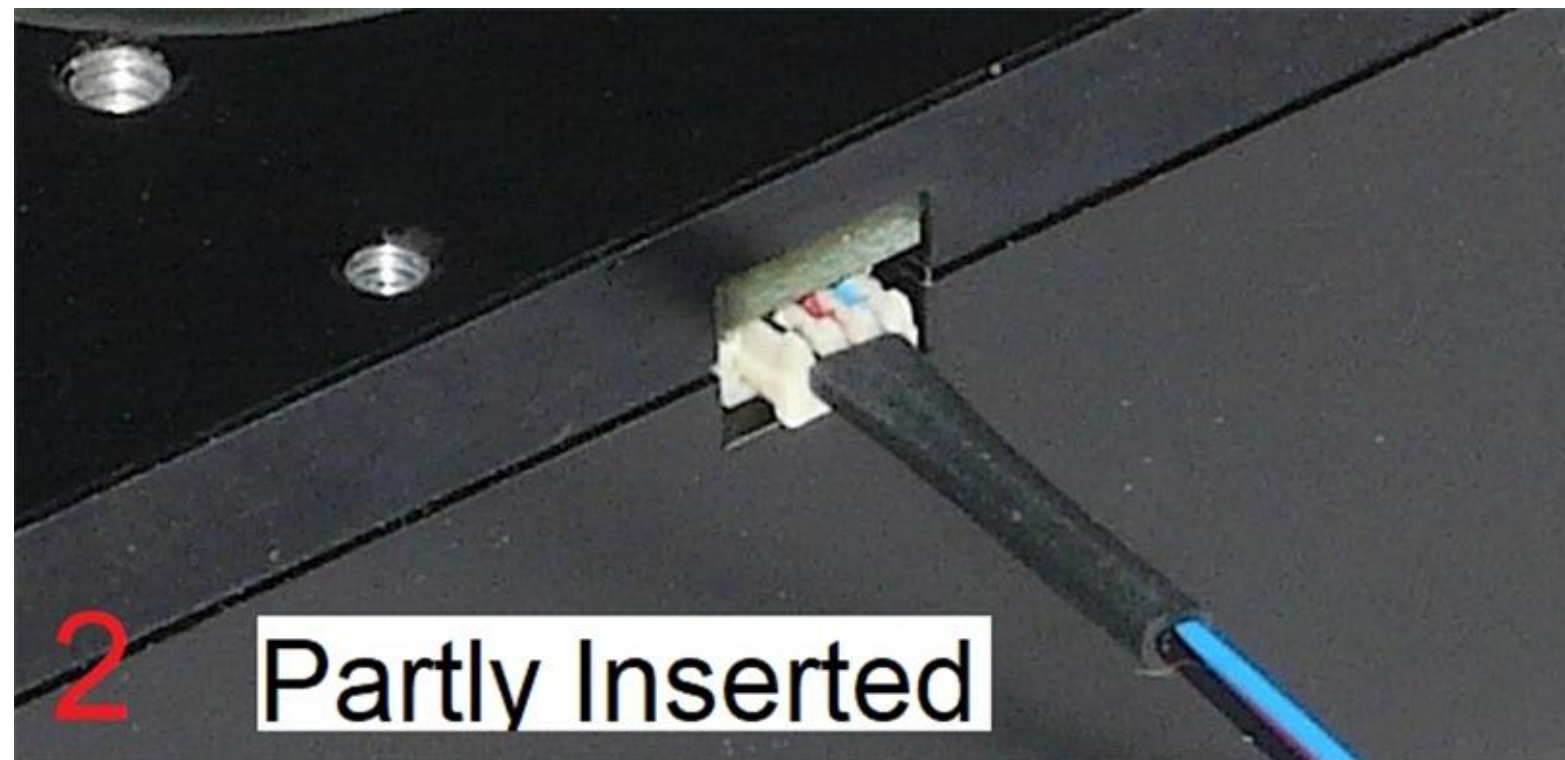
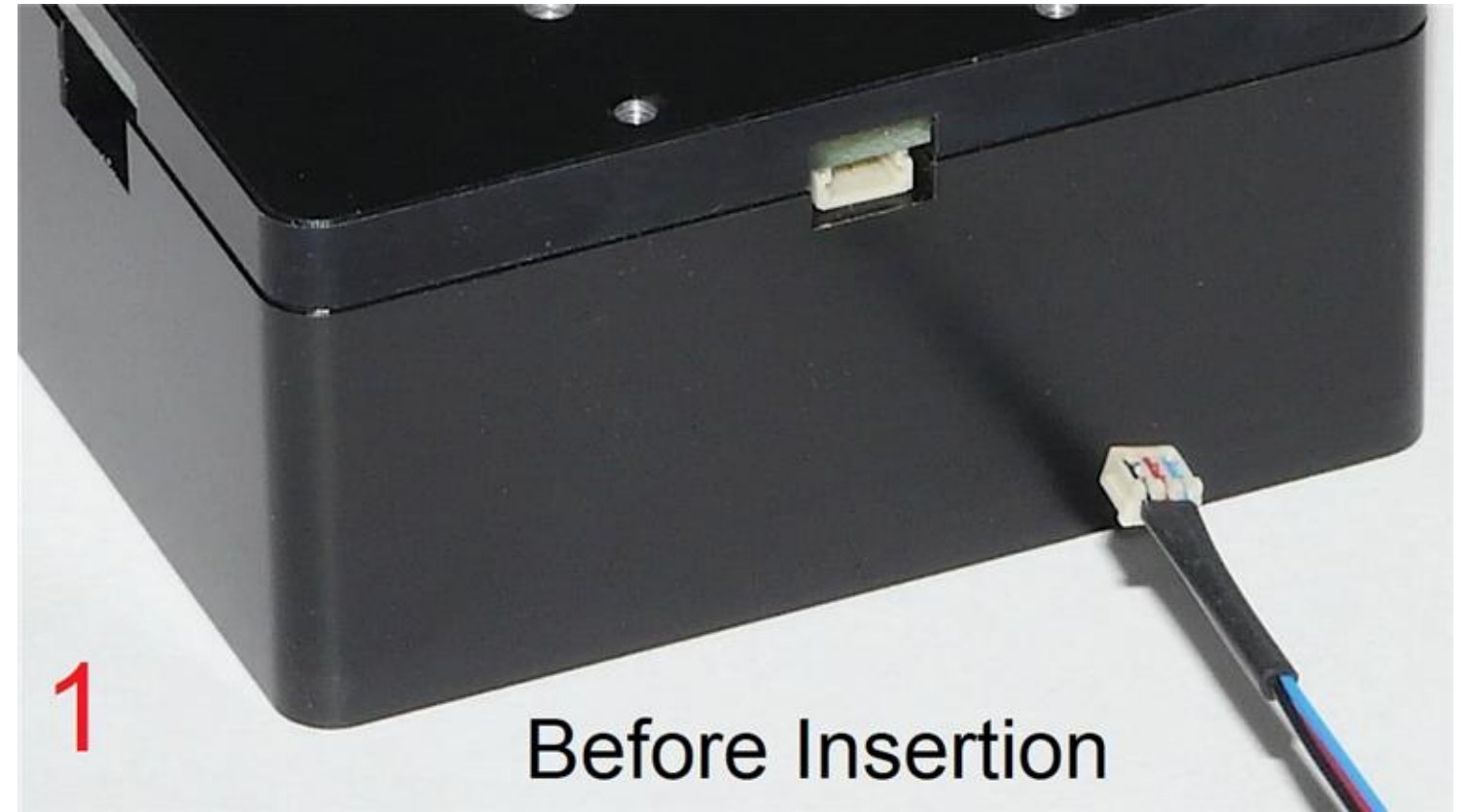
Connect the plug at the end of the Pot Cable Assembly to the mating socket of the illuminator, as shown in the pictures on this page. NOTE THAT THE PLUG IS KEYPED TO ONLY GO INTO THE SOCKET ONE WAY, AS SHOWN.

Partially insert the plug into the mating socket of the illuminator by holding the wire next to the plug with your finger (photo 2).

Use your fingernails, if you have them, or tools like a tiny screwdriver or tweezers pushing on the side of the plug to fully insert it (photo 3).

The socket cannot be fully engaged by pushing on the wires, as the wires would just collapse.

To disconnect it if needed, pull the wire straight out by firmly gripping the black heat shrink tubing.



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Nanodyne Replacement Illuminator for Nikon 50i Microscope Installation Instructions - Step 9. Re-install bottom cover and connect new power supply.

Replace the bottom cover of the microscope (not shown), and plug in the power supply. The Illuminator is now ready to operate.

SAFETY:

Completely removing any connection to the now obsolete AC power receptacle is highly recommended as the old original power supply is no longer needed, and could cause problems if ever connected the AC power, as it is likely defective and could present a fire or shock hazard. The old power supply can be completely removed, or just remove the internal connections to the AC receptacle.

Installing PN 10736 rubber plug in the AC receptacle will help deter connection of an AC power cord in the future by operators not familiar with the new illuminator.



Photo 9a

Completed Installation.



Installation of PN 10736 rubber plug to deter connection of obsolete AC power cord.