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**Operating Instructions
for
SP-150 Grating Turret**

Interchanging Gratings in the SpectraPro-150

Removing a Grating Already Installed in the SpectraPro-150:

1. With the grating to be removed in the operating position, set the SpectraPro-150 to a wavelength of 0.0nm (this is referred to as "zero-order").
2. Install a mercury pen-ray light source or similar light source to the entrance slit of the SpectraPro-150.
3. Install the image alignment screen provided to the exit port using one of the 10-32 tapped holes.
4. Check the position of the light source image on the screen, and adjust the screen until the light source image is centered on the screen. It is useful to mark the screen with the image vertical position at this point.
5. Do not move the SpectraPro-150, the alignment screen, or the light source at this point.
6. Remove the cover from the SpectraPro-150.

**Caution: Optics are Now Exposed!
Do Not Talk or Breathe Over, or Contact Any
of the Mirrors or Gratings Inside the SpectraPro-150.
This will cause Permanent Damage!**

7. Remove the grating holder from the SpectraPro-150 and place in a clean area. (Instruction for removal of the grating turret can be found in the SpectraPro-150 instruction manual). Replace the SpectraPro-150 cover.
8. Carefully hold the grating edges, being careful not to contact the grating surface in any manner.
9. The grating is held on the turret by two cap screws which secure an adjustment block (see figure on page 3).
10. Loosen the two cap screws until the grating and adjustment block can be removed. Remove the grating with the adjustment block attached.
11. Remove the adjustment block from the grating by sliding it off of the two metal rods which are epoxied to the grating blank. Place the grating in a clean area for storage.

12. Hold the new grating (to be installed) carefully by the edges. **Do Not Contact the Front Surface!**
13. There are two metal rods epoxied to the top of the grating substrate and one epoxied to the bottom.
14. Place the adjustment block over the two metal rods on the grating substrate (It may be necessary to loosen the adjustment screws slightly to fit the adjustment block over the rods).
15. Place the bottom rod in the conical hole located in the base of the grating turret.
16. Move the grating so that it is vertical and until the adjustment block screw holes align with the bracket of the turret. Secure the adjustment block and grating into position by tightening the two cap screws (removed in step 10).
17. At this point make sure that the bottom grating rod is seated in the conical hole, that the two rods on the top of the grating are in the holes of the adjustment block, and that the grating is firmly held in position. Note: Each of the two top rods should contact a spring plunger and adjustment screw(s). Do not over-tighten the screws.
18. Remove the SpectraPro-150 cover and install the turret (with the new grating) according to the instructions for the SpectraPro-150. The turret is self aligning and installs only one way, so be sure to turn the turret so that the new grating faces the inside of the SpectraPro-150 (This should be the correct position because of the orientation set in Step 1).
19. Check the position of the image on the alignment screen (see step 4) with the new grating installed.
20. There are three adjustment screws in the adjustment block as outlined in the figure below. All adjustments are made in very small amounts!
21. Adjust the zero-order screw until the image centers horizontally on the screen.
22. Adjust the image height screw until the image centers vertically on the screen. Re-adjust the zero-order screw if necessary.
23. At this point the image should be aligned on the screen in the same location as the original grating. It is now necessary to adjust the grating at a high wave-length position.
24. If the new grating is a different groove density than the original (removed) grating, either factor the wavelength display by the difference in groove densities, or install the new grating in the SpectraPro-150 EPROM using the instructions provided. If you factor the groove densities, note that a 600g/mm grating has twice the mechanical scanning range of a 1200g/mm grating, therefore you must

factor the wavelength display by a factor of two. For example, if the SpectraPro-150 is set for a 1200g/mm grating, and you set the wavelength to 500nm, the new 600g/mm grating must be set at 250nm to achieve the same 500nm wavelength.

25. Set the SpectraPro-150 wavelength to a known spectral line produced by the light source being used. If a mercury pen ray lamp is being used, set the wavelength to 546.1nm.
26. Adjust the high wavelength adjustment screw until the image of the light source is centered vertically on the screen.
27. Scan back to 0.0nm and recheck the image of the source. Re-adjust if necessary.

Installation is now complete. If the grating has not been change in the EPROM of the SpectraPro-150, it should be done at this time according to the instructions provided.

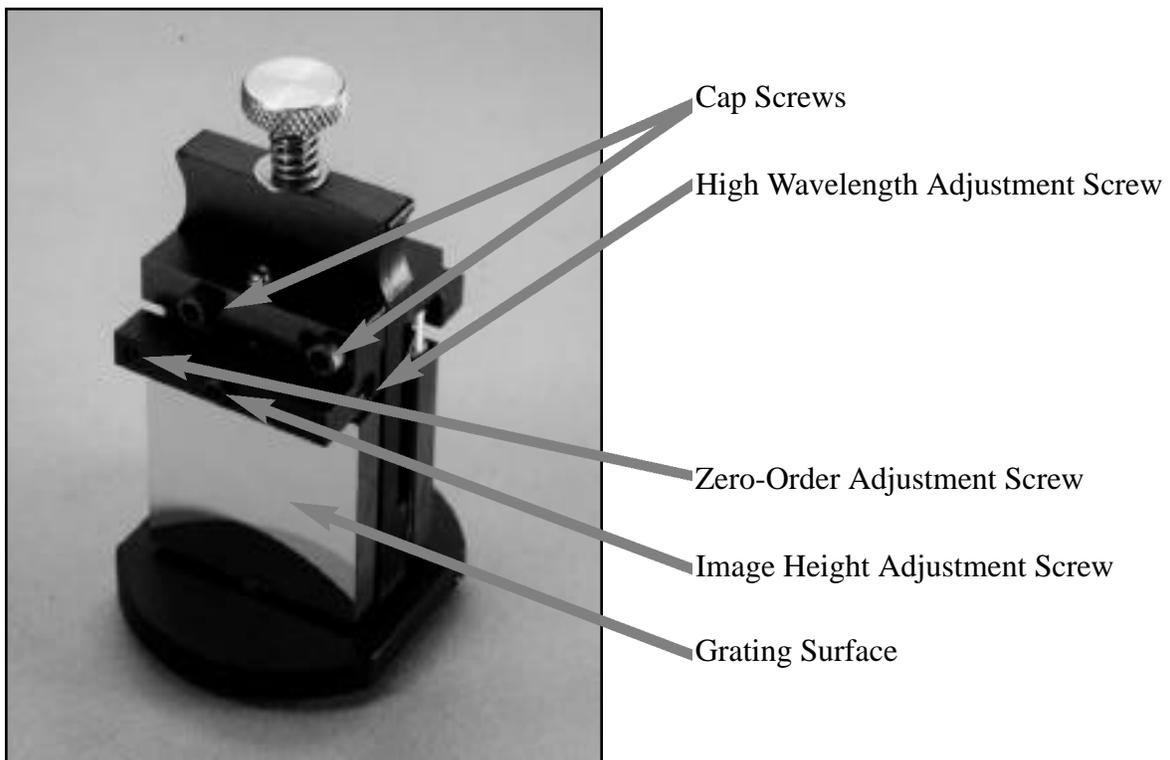


Figure 1: SpectraPro-150 Grating Turret