Finding Micrometer #1 Offset from Scratch

Finding the hp line – Double Brewers Only

Go into Teletype mode by typing *mm*↵

b,2↵ (turn on the standard lamp)
m,1,0↵ (point the zenith drive to the lamps)
m,9,-1↵ (set the zero position of the bottom micrometer)
m,10,-1↵ (set the zero position of the top micrometer)
r,2,2,5:o↵ (read counts on slits 2 thru 2 for 5 cycles of the slitmask and output to screen)

Now, you have to move the bottom micrometer so that both gratings are set to "measure" the same wavelength. This is done by pressing ***m,9,****STEPNUMBER*↵ *and then do a measurement with r,2,2,5:o*↵

Example:

m,9,150↵
r,2,2,5:o↵

Use steps of 150 until the number of counts increase. Use smaller steps to find the peak in intensity.

Once you have located the peak intensity, leave Teletype mode by pressing the *home* key.

Finding the hg line – All Brewers

Run CI routine

pd,↵
b1,↵
ci, ↵

Select 1 step increments - allow about 5 minutes for bulb warm up then press ↵ . The scan will take about 5 minutes to complete

Plot results in MS Excel

There should be a small peak around 2896, moderate peak at 2967(the one you want) a slightly smaller one at 3022 and a very large one around 3133.

If these peaks occur at different places then locate the one that should be at 2967 and look at the current wavelength for that peak and find the difference. (i.e. if the peak is at 2945, the difference will be 22)

Divide the difference by 0.065. (i.e. 22/0.065 = 338 therefore increase the Mic#1 offset number by 338 to have that peak hit at 2967)

Because positive steps increase wavelength and decrease micrometer setting, if the peak is beyond 2967 than the mic#1 offset must be reduced by the calculated number of steps.

The Brewer MKIII Operators Manual, Appendix H, motor positions for instrument control table, describes micrometer movement as" 576 steps/mm - wavelength change of 0.0065 nm/step (positive steps increase wavelength and decrease micrometer setting) . The above example is in angstroms: 0.0065 nm/step equals 0.065 angstroms / step.