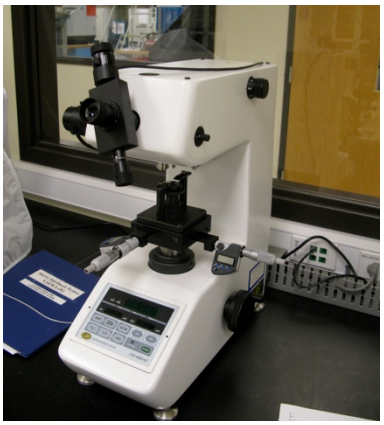
No outside training. For training please see an MSE tech staff member. Thank you.

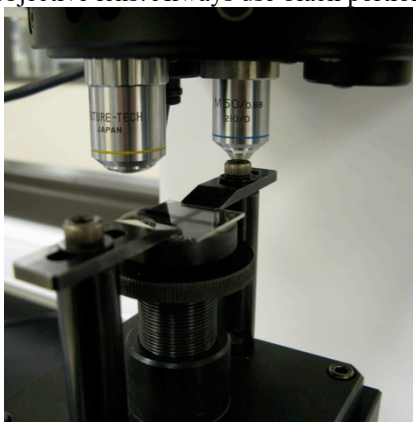
WARNING: Do not move the stage while the indentor is engaged. Also make certain not to drag the indentor across the stage while rotating the turret. These tips cost several hundred dollars. Carefully focus the sample before moving the tip.

1. Remove the plastic cover.

2. Turn on the instrument by pressing the “STANDBY” switch into the on position (do not touch the power switch)

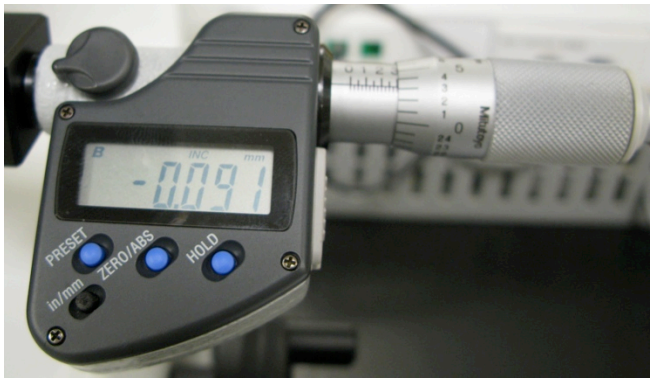
3. If necessary, manually turn the objective turret so that the low magnification lens is over the sample holder. Do not touch the objective lens. Always use black portion above lenses to rotate the objective turret.



4. Place your sample on the sample holder and rotate the holder so that the sample rises (counterclockwise). Stop when the sample is held snugly by the holder and the upper grips. Make sure grips are placed towards the outside portion of the sample. Do not over-tighten.
5. Look through the eyepiece. For both coarse and fine adjustments, focus the sample using the big black knob on the right side of the instrument.
6. Make sure the indentor’s path is free from obstructions. Focus carefully at low magification on the proper surface. Rotate the turret so that the higher magnification lens is over the sample. Focus.

7. Set up the reticules in the eyepiece (center). Bring lines together so they are just touching by adjusting the knob on the right. The knob on the left moves the set of lines for positioning over your indent.

8. Push reset button on the front panel. Note that d1 and d2 on the front display go to 0.
9. Look at your sample again through the eyepiece. If necessary, move the stage to the place that you want indented. The indentation will come down near the middle of the field of view in the eyepiece.



There are built in micrometers to make incremental adjustments in the position for both x and y directions.

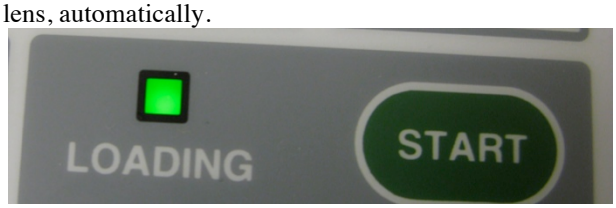
10. Set test load on the knob on the right side of the instrument (toward the back.) The knob on the right side is used for both the calculation of the hardness and the load of the indentor. The load range if from 10g to 1kg.

11. To adjust the time that the load is applied, press the “Dwell/Enter” button. In the left pane should say 1 and the right pane some number is seconds.

By default the load time is 15 seconds. Set the load time. Be consistent from indent to indent on your load time. If the time is adjusted press the “Dwell/Enter” button again, if it is not adjusted press the “Reset” button.

12. Push the start button on the front panel to apply the load. The turret will automatically rotate to the indentor. Do not move the stage or turret at this time.

13. Wait for the indenter to come down, indent for the load time, and then come back up and rotate to the high magnification lens, automatically.



14. With the high magnification lens in place begin to take the measurements.
15. Turn the eyepiece manually so that the reticule is parallel to the vertical diagonal of the indent like in the picture below.

16. Bring line on the left (has three intersecting lines) and the line on the right so that they are barely touching. Then hold down the "Reset" button to zero the d1 and d2 values.
17. Bring the pair of lines to the one side of the diagonal (left knob). Move the single line toward the right (right knob) to the opposite diagonal.
18. Push READ on the eyepiece.
19. Now turn the eyepiece 90 degrees clockwise so that you can get the indent length in the vertical direction.
20. Repeat the measuring procedure and push READ again.
21. The hardness is shown in the screen above d1 and d2.
22. Do more indents on the sample as needed.
23. When you are done, remove your sample, turn off the instrument, and cover up the instrument.
24. Fill in the log sheet with the time used.

For more detailed information, please see the owner's manual in the drawer underneath the indentor.