Measurements: Metrology & Error Analysis Lab 2

2.) L-Block

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| L-Block Measurements | | | | | | | | |
| Measurement #-> | 1  (in) | 2  (in) | 3  (in) | 4  (in) | 5  (in) | 6  (in) | 7  (in) | 8  (in) |
| Trial # |
| 1 (tape measure) | 0.61 | 0.52 | 1.04 | 2.37 | 0.25 | 0.25 | 2.01 | 2.02 |
| 2 (tape measure) | 0.59 | 0.52 | 1.04 | 2.36 | 0.25 | 0.25 | 2.01 | 2.01 |
| 3 (tape measure) | 0.60 | 0.53 | 1.04 | 2.37 | 0.25 | 0.26 | 2.01 | 2.01 |
| 4 (caliper) | 0.602 | 0.521 | 1.043 | 2.366 | 0.251 | 0.254 | 2.011 | 2.009 |
| 5 (caliper) | 0.595 | 0.520 | 1.041 | 2.361 | 0.253 | 0.254 | 2.010 | 2.010 |
| 6 (caliper) | 0.600 | 0.519 | 1.042 | 2.364 | 0.249 | 0.254 | 2.012 | 2.012 |

***Measurement # Details (same as what was drawn on the board in Lab):***

1. Diameter of hole
2. Distance from hole edge to nearest block edge
3. Distance from top hole edge to top of block
4. Width of the block
5. Thickness of bottom part of block
6. Thickness of top part of block
7. Length of top side of the block
8. Length of bottom side of the block

3.) Five\_Hole Block

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Five-Hole Block Measurements (w/ Coordinate Measuring Machine) | | | | | | | |
|  | 1  (in) | 2  (in) | 3  (in) | 4  (in) | 5  (in) | 6  (in) | 7  (in) |
| Measured | 0.4920 | 0.6340 | 0.6337 | 0.6342 | 0.6331 | 0.8738 | 1.7489 |
| Actual | 0.500  +-0.003 | 0.6325  +-  0.007 | 0.6325  +-  0.007 | 0.6325  +-  0.007 | 0.6325  +-  0.007 | 0.875 | 1.750  +-  0.005 |
|  |  |  |  |  |  |  |  |
|  | 8  (in) | 9  (in) | 10  (in) | 11  (in) | 12  (in) | 13  (in) | 14  (in) |
| Measured | 0.8747 | 1.7511 | 1.557 | 1.559 | 3.1183 | 3.1137 | 0.2689 |
| Actual | 0.875 | 1.750  +-  0.005 | 1.500 | 1.500 | 3.000 | 3.000  +-  0.010 | 0.260  +-  0.005 |

***Measurement # Details:***

1. Center hole diameter
2. Top-left hole diameter
3. Top-right hole diameter
4. Bottom-right hole diameter
5. Bottom-left hole diameter
6. Horizontal distance from center of center-hole to center of top-right hole
7. Horizontal distance from center of top-left hole to center of top-right hole
8. Vertical distance from center of center-hole to center of bottom-right hole
9. Vertical distance from center of top-right hole to center of bottom-right hole
10. Distance from center of center hole to bottom edge of block
11. Distance from center of center hole to left edge of block
12. Top length
13. Side Length
14. Thickness