|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Table 6.17**  **Measurement of roundness by Dial gauge deflections of 12-mm Diameter Stainless Steel (SS) Round Bar After Straightening** | | | | | | | | | | | | | | | | | | | | | | | |  |
|  | **Mean values of Dial Gauge Deflection Readings after straightening of 12 mm Stainless Steel (SS) round bar x 0.01 mm** | | | | | | | | | | | | | | | | | | | | | | | |  |
|  | **Angles in Degrees** | | | | | | | | | | | | | | | | | | | | | | | |  |
| **Length in cm** | **0o** | **15o** | **30o** | **45o** | **60o** | **75o** | **90o** | **105o** | **120o** | **135o** | **150o** | **165o** | **180o** | **195o** | **210o** | **225o** | **240o** | **255o** | **270o** | **285o** | **300o** | **315o** | **330o** | **345o** | **STD**  **DEV (mm)** |
| 5 | 65 | 64.3 | 63.5 | 63.5 | 63.5 | 64.3 | 65 | 65 | 65 | 65.3 | 65.5 | 65.8 | 66 | 65.8 | 65.5 | 65.3 | 65 | 64.5 | 64 | 64.3 | 64.5 | 64 | 63.5 | 63 | 0.0084 |
| 11 | 109.0 | 109 | 109.5 | 110 | 110.5 | 110 | 110.0 | 110 | 110.0 | 110 | 110.5 | 111 | 111.0 | 111 | 111.5 | 111 | 110.5 | 111 | 110.5 | 110 | 110.0 | 110 | 110.0 | 110 | 0.0059 |
| 15 | 108.0 | 108 | 108.0 | 108 | 107.5 | 108 | 108.5 | 109 | 109.0 | 109 | 109.5 | 110 | 110.0 | 110 | 110.5 | 110 | 110.0 | 110 | 109.5 | 110 | 109.5 | 109 | 109.0 | 109 | 0.0087 |
| 19 | 106.0 | 106 | 106.5 | 107 | 106.5 | 106 | 106.0 | 106 | 106.0 | 106 | 106.0 | 107 | 108.0 | 108 | 108.0 | 108 | 108.5 | 108 | 108.0 | 108 | 108.5 | 108 | 108.0 | 108 | 0.0102 |
| 24.5 | 108.5 | 108 | 108.0 | 108 | 108.0 | 108 | 107.0 | 107 | 107.5 | 108 | 108.0 | 109 | 109.0 | 109 | 109.0 | 110 | 110.5 | 110 | 110.0 | 111 | 111.0 | 111 | 110.0 | 110 | 0.012 |
| 31 | 107.0 | 108 | 109.0 | 109 | 108.0 | 108 | 108.0 | 108 | 107.0 | 107 | 106.5 | 107 | 108.0 | 108 | 108.0 | 108 | 108.5 | 109 | 108.5 | 109 | 109.5 | 110 | 109.5 | 110 | 0.009 |
| 35 | 106.0 | 106 | 106.0 | 106 | 106.0 | 106 | 106.0 | 106 | 106.0 | 106 | 106.0 | 106 | 106.0 | 106 | 105.0 | 106 | 107.0 | 107 | 107.0 | 107 | 107.5 | 107 | 105.5 | 106 | 0.0058 |
| 40 | 104.0 | 105 | 105.0 | 105 | 105.0 | 105 | 105.0 | 105 | 105.5 | 106 | 105.5 | 106 | 106.0 | 106 | 106.0 | 106 | 106.0 | 106 | 106.0 | 106 | 106.0 | 106 | 106.0 | 106 | 0.0057 |
| 45 | 106.0 | 105 | 106.0 | 105 | 104.0 | 105 | 106.0 | 106 | 106.0 | 106 | 106.0 | 106 | 106.0 | 106 | 105.0 | 106 | 106.0 | 107 | 107.0 | 107 | 106.0 | 106 | 106.0 | 106 | 0.0062 |
| 48 | 105.0 | 106 | 107.0 | 107 | 107.0 | 108 | 108.0 | 108 | 108.0 | 108 | 108.0 | 108 | 107.0 | 107 | 107.0 | 107 | 107.5 | 107 | 107.0 | 107 | 106.5 | 107 | 107.0 | 107 | 0.0069 |
| 53 | 108.0 | 108 | 107.0 | 107 | 107.5 | 107 | 107.0 | 107 | 106.0 | 106 | 106.0 | 106 | 106.0 | 106 | 106.5 | 107 | 106.5 | 107 | 107.5 | 108 | 107.5 | 108 | 107.5 | 108 | 0.0065 |
| 60 | 107.5 | 108 | 108.5 | 109 | 108.5 | 108 | 108.0 | 109 | 109.0 | 109 | 109.0 | 109 | 108.5 | 109 | 109.0 | 109 | 108.0 | 109 | 109.0 | 109 | 108.0 | 108 | 108.5 | 108 | 0.0039 |
| 65 | 108.0 | 108 | 108.5 | 109 | 109.5 | 110 | 110.0 | 111 | 111.0 | 110 | 109.0 | 109 | 109.5 | 110 | 109.5 | 109 | 109.0 | 109 | 108.5 | 108 | 108.0 | 109 | 109.0 | 109 | 0.0077 |
| 70 | 108.5 | 109 | 109.0 | 109 | 109.5 | 110 | 110.0 | 110 | 110.5 | 111 | 110.5 | 111 | 110.5 | 110 | 110.0 | 110 | 110.0 | 110 | 109.5 | 109 | 109.0 | 109 | 109.0 | 109 | 0.0064 |
| 75 | 108.0 | 110 | 111.0 | 111 | 111.0 | 111 | 110.5 | 111 | 111.0 | 111 | 111.0 | 111 | 111.0 | 111 | 110.5 | 111 | 110.5 | 110 | 109.5 | 109 | 109.0 | 109 | 109.5 | 109 | 0.0086 |
| 80 | 112.0 | 112 | 111.5 | 112 | 112.0 | 113 | 113.0 | 113 | 113.0 | 113 | 113.0 | 113 | 113.0 | 113 | 113.0 | 113 | 112.5 | 113 | 112.5 | 113 | 112.5 | 113 | 112.5 | 113 | 0.0046 |
| 84 | 111.0 | 112 | 113.0 | 113 | 113.5 | 114 | 114.0 | 114 | 113.5 | 113 | 113.0 | 113 | 113.0 | 113 | 113.0 | 113 | 113.0 | 113 | 112.5 | 113 | 112.5 | 112 | 112.0 | 113 | 0.0066 |



**Figure 6.22(a): Box Plot of dial gauge readings dataset of mean values of 12-mm diameter Stainless Steel (SS) round bar before straightening**

**Figure 6.22(b): Error Plot of dial gauge readings on 12 mm Stainless Steel Round Bar after straightening**