|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Table 6.16 Measurement of roundness by Dial gauge deflections of 10-mm Diameter Stainless Steel (SS) Round Bar** | | | | | | | | | | | | | | | | | | | | | | | |  | | | | |
|  | **Mean values of Dial Gauge Deflection Readings after straightening of 10 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)** |
|  |  |  |  |  |  |  |  |  | |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| 12 | 148.5 | 149.8 | 151.0 | 151.8 | 152.5 | 154 | 155.5 | 156.3 | 157.0 | | | 157 | | 157.0 | 156.8 | 156.5 | 155.8 | 155.0 | 154 | 153.0 | 151.5 | 150.0 | 149.8 | 149.5 | 149 | 148.5 | 148.5 | | 0.03 |
| 15 | 146.5 | 148 | 149.5 | 151 | 152.5 | 154 | 155.5 | 156.5 | 157.5 | | | 157.3 | | 157.0 | 156.8 | 156.5 | 155.8 | 155.0 | 154.3 | 153.5 | 152 | 150.5 | 149 | 147.5 | 147.3 | 147.0 | 147 | | 0.04 |
| 17 | 147.0 | 148.3 | 149.5 | 151 | 152.5 | 154 | 155.5 | 156.5 | 157.5 | | | 157.3 | | 157.0 | 156.8 | 156.5 | 156 | 155.5 | 154.5 | 153.5 | 152.3 | 151.0 | 149.5 | 148.0 | 147.5 | 147.0 | 147.3 | | 0.04 |
| 20 | 148.5 | 149 | 149.5 | 150.5 | 151.5 | 153 | 154.5 | 155.5 | 156.5 | | | 156.8 | | 157.0 | 157 | 157.0 | 156.8 | 156.5 | 155 | 153.5 | 152.5 | 151.5 | 150.5 | 149.5 | 148.8 | 148.0 | 148.3 | | 0.03 |
| 23 | 146.5 | 147.5 | 148.5 | 149.8 | 151.0 | 151.8 | 152.5 | 153.3 | 154.0 | | | 154.8 | | 155.5 | 155.3 | 155.0 | 154.8 | 154.5 | 153 | 151.5 | 150.5 | 149.5 | 149 | 148.5 | 147.8 | 147.0 | 147 | | 0.03 |
| 25 | 147.0 | 148.3 | 149.5 | 151.3 | 153.0 | 153.8 | 154.5 | 155 | 155.5 | | | 155.8 | | 156.0 | 156 | 156.0 | 155.5 | 155.0 | 153.8 | 152.5 | 151.5 | 150.5 | 149.5 | 148.5 | 148.5 | 148.5 | 148.3 | | 0.03 |
| 27 | 147.5 | 148.3 | 149.0 | 150.8 | 152.5 | 153.5 | 154.5 | 155.5 | 156.5 | | | 156.8 | | 157.0 | 156.8 | 156.5 | 156 | 155.5 | 154.3 | 153.0 | 152.3 | 151.5 | 150.5 | 149.5 | 149 | 148.5 | 148.3 | | 0.033 |
| 30 | 148.0 | 148.3 | 148.5 | 150 | 151.5 | 152.8 | 154.0 | 155.3 | 156.5 | | | 157 | | 157.5 | 157.5 | 157.5 | 156.8 | 156.0 | 155.8 | 155.5 | 154.3 | 153.0 | 151.8 | 150.5 | 149.8 | 149.0 | 148.5 | | 0.034 |
| 32 | 148.5 | 149 | 149.5 | 150.5 | 151.5 | 153 | 154.5 | 155.8 | 157.0 | | | 157.5 | | 158.0 | 157.8 | 157.5 | 157 | 156.5 | 155.3 | 154.0 | 153.3 | 152.5 | 151.3 | 150.0 | 149.3 | 148.5 | 148.5 | | 0.034 |
| 34 | 147.5 | 148 | 148.5 | 149.8 | 151.0 | 153.8 | 156.5 | 156 | 155.5 | | | 156.3 | | 157.0 | 158 | 159.0 | 158.3 | 157.5 | 156 | 154.5 | 153.5 | 152.5 | 150.8 | 149.0 | 148.5 | 148.0 | 148 | | 0.04 |
| 37.5 | 151.0 | 152.5 | 154.0 | 155.3 | 156.5 | 156 | 155.5 | 156.3 | 157.0 | | | 158 | | 159.0 | 159.5 | 160.0 | 159.8 | 159.5 | 158.5 | 157.5 | 156.5 | 155.5 | 154.5 | 153.5 | 152 | 150.5 | 150.5 | | 0.03 |
| 44 | 152.0 | 151.5 | 151.0 | 150.3 | 149.5 | 149.8 | 150.0 | 150.8 | 151.5 | | | 153 | | 154.5 | 155.8 | 157.0 | 158 | 159.0 | 160.3 | 161.5 | 160.8 | 160.0 | 159.8 | 159.5 | 158 | 156.5 | 154.3 | | 0.04 |
| 46 | 152.5 | 153 | 153.5 | 152.5 | 151.5 | 152 | 152.5 | 153.3 | 154.0 | | | 155.3 | | 156.5 | 157.5 | 158.5 | 161 | 163.5 | 163.3 | 163.0 | 161.5 | 160.0 | 159.5 | 159.0 | 158 | 157.0 | 155 | | 0.04 |
| 49 | 151.0 | 151 | 151.0 | 151 | 151.0 | 151.8 | 152.5 | 153.5 | 154.5 | | | 155.3 | | 156.0 | 157.5 | 159.0 | 159.8 | 160.5 | 160.5 | 160.5 | 160 | 159.5 | 158 | 156.5 | 155.3 | 154.0 | 153.3 | | 0.036 |
| 52 | 151.5 | 151.3 | 151.0 | 151 | 151.0 | 151 | 151.0 | 151.5 | 152.0 | | | 153.8 | | 155.5 | 156.5 | 157.5 | 158 | 158.5 | 158.5 | 158.5 | 158.5 | 158.5 | 157 | 155.5 | 154.5 | 153.5 | 153.3 | | 0.030 |
| 55 | 152.0 | 152.3 | 152.5 | 152.8 | 153.0 | 153.8 | 154.5 | 155.3 | 156.0 | | | 157.3 | | 158.5 | 159.5 | 160.5 | 160.8 | 161.0 | 161 | 161.0 | 160 | 159.0 | 157.8 | 156.5 | 155.5 | 154.5 | 154 | | 0.032 |
| 58 | 149.5 | 149.5 | 149.5 | 149.8 | 150.0 | 151.3 | 152.5 | 154 | 155.5 | | | 156.3 | | 157.0 | 157.8 | 158.5 | 159 | 159.5 | 159.3 | 159.0 | 158.3 | 157.5 | 156.3 | 155.0 | 153.8 | 152.5 | 151.3 | | 0.036 |
| 61 | 149.5 | 149.5 | 149.5 | 150 | 150.5 | 151.5 | 152.5 | 153.8 | 155.0 | | | 156.3 | | 157.5 | 158 | 158.5 | 158.8 | 159.0 | 158.8 | 158.5 | 157.5 | 156.5 | 155 | 153.5 | 152.8 | 152.0 | 151 | | 0.035 |
| 64 | 149.5 | 149.5 | 149.5 | 149.8 | 150.0 | 151 | 152 | 154 | 156 | | | 157 | | 158 | 158.8 | 159.5 | 159.5 | 159.5 | 158.8 | 158.0 | 157.3 | 156.5 | 155.3 | 154.0 | 152.8 | 151.5 | 150.8 | | 0.037 |
| 68 | 149.0 | 149.5 | 150.0 | 150.8 | 151.5 | 152.3 | 153.0 | 154.5 | 156.0 | | | 156.8 | | 157.5 | 158.3 | 159.0 | 159 | 159.0 | 158 | 15  7.0 | 156 | 155.0 | 154 | 153.0 | 151.8 | 150.5 | 150.3 | | 0.034 |



**Figure 6.21(a): Box Plot of dial gauge readings dataset of mean values of 10-mm diameter Stainless Steel (SS) round bar before straightening**

**Figure 6.21(b): Error Plot of dial gauge readings on 10 mm Stainless Steel Round Bar after straightening**