|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Table 6.18**  **Measurement of roundness by Dial gauge deflections of 6-mm Diameter Aluminium (Al) Round Bar After Straightening** | | | | | | | | | | | | | | | | | | | | | | | |  |
|  | Mean values of Dial Gauge Deflection Readings after straightening of 6 mm Aluminium (Al) 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) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16.5 | 241.0 | 244.0 | 244.5 | 243.0 | 242.5 | 240.0 | 242.0 | 244.0 | 241.0 | 238.0 | 236.0 | 234.0 | 231.0 | 230.0 | 232.0 | 231.0 | 233.0 | 235.0 | 234.0 | 231.0 | 229.0 | 233.0 | 237.0 | 237.5 | 0.0506 |
| 20.0 | 236.0 | 237.0 | 233.5 | 232.0 | 230.0 | 236.0 | 237.0 | 235.0 | 234.0 | 236.0 | 230.0 | 232.0 | 233.0 | 234.0 | 233.0 | 232.0 | 231.0 | 234.0 | 231.0 | 233.0 | 234.0 | 235.0 | 229.5 | 235.0 | 0.0220 |
| 25.0 | 237.0 | 235.5 | 237.5 | 236.5 | 233.5 | 231.0 | 235.0 | 234.0 | 234.0 | 232.0 | 230.0 | 231.0 | 231.0 | 233.0 | 231.0 | 230.0 | 232.0 | 233.0 | 232.0 | 234.0 | 235.0 | 231.0 | 227.5 | 230.0 | 0.0251 |
| 30.0 | 235.5 | 236.5 | 237.0 | 236.0 | 235.0 | 233.0 | 233.0 | 232.0 | 229.0 | 231.0 | 228.0 | 230.0 | 229.0 | 234.0 | 232.0 | 231.0 | 230.0 | 231.0 | 234.0 | 235.0 | 233.5 | 232.5 | 235.5 | 234.0 | 0.0255 |
| 35.0 | 236.0 | 239.0 | 242.0 | 243.5 | 245.0 | 247.0 | 245.5 | 243.0 | 240.0 | 236.0 | 233.0 | 232.0 | 234.5 | 234.0 | 234.5 | 233.5 | 233.0 | 234.0 | 233.0 | 232.0 | 235.0 | 233.0 | 236.0 | 235.0 | 0.0476 |
| 40.0 | 237.0 | 240.0 | 241.0 | 238.0 | 233.0 | 231.5 | 242.0 | 241.0 | 242.0 | 241.0 | 237.0 | 234.0 | 233.0 | 235.0 | 235.0 | 234.0 | 235.0 | 235.0 | 233.5 | 234.0 | 234.0 | 235.0 | 235.0 | 236.0 | 0.0318 |
| 45.0 | 238.0 | 243.0 | 242.0 | 241.0 | 239.0 | 236.0 | 236.0 | 238.0 | 240.0 | 242.0 | 235.0 | 233.0 | 231.0 | 233.0 | 234.0 | 233.0 | 234.0 | 233.0 | 230.0 | 234.0 | 236.5 | 236.0 | 238.5 | 238.0 | 0.0358 |
| 50.0 | 237.0 | 238.0 | 238.0 | 238.0 | 238.0 | 239.0 | 238.0 | 236.0 | 236.0 | 234.0 | 237.0 | 234.0 | 232.0 | 232.0 | 232.0 | 235.0 | 236.0 | 235.0 | 233.0 | 233.5 | 237.0 | 238.0 | 239.0 | 237.0 | 0.0228 |
| 55.0 | 236.0 | 241.5 | 243.0 | 245.5 | 243.5 | 242.0 | 240.0 | 237.0 | 235.5 | 238.0 | 233.5 | 237.0 | 234.0 | 233.0 | 231.0 | 232.0 | 230.0 | 233.5 | 236.5 | 235.0 | 236.0 | 238.0 | 239.0 | 241.0 | 0.0414 |
| 60.0 | 239.0 | 243.0 | 245.0 | 248.0 | 249.0 | 243.0 | 245.0 | 246.0 | 243.0 | 241.0 | 243.0 | 239.0 | 236.0 | 235.0 | 234.0 | 233.0 | 234.0 | 235.0 | 235.0 | 236.0 | 235.0 | 237.0 | 240.0 | 240.0 | 0.0480 |
| 65.0 | 237.0 | 241.0 | 242.0 | 243.0 | 245.0 | 244.0 | 246.0 | 247.5 | 246.5 | 244.0 | 241.5 | 237.0 | 235.0 | 232.5 | 233.0 | 234.0 | 232.0 | 234.0 | 234.0 | 233.0 | 234.0 | 235.0 | 239.0 | 241.0 | 0.0513 |
| 70.0 | 238.5 | 242.5 | 243.0 | 244.5 | 246.0 | 245.0 | 244.0 | 245.0 | 245.0 | 243.0 | 239.0 | 235.0 | 237.0 | 236.0 | 234.0 | 235.0 | 234.0 | 235.0 | 234.0 | 232.0 | 233.5 | 235.0 | 236.5 | 239.0 | 0.0463 |
| 75.0 | 237.0 | 238.0 | 239.0 | 241.0 | 242.0 | 240.0 | 238.0 | 237.5 | 237.0 | 236.0 | 232.5 | 233.0 | 235.0 | 234.0 | 232.0 | 234.0 | 235.0 | 234.0 | 231.0 | 231.0 | 233.5 | 233.0 | 234.0 | 236.5 | 0.0306 |
| 80.0 | 238.0 | 235.5 | 233.5 | 232.0 | 236.0 | 237.0 | 235.0 | 236.0 | 233.0 | 234.0 | 233.0 | 231.0 | 234.0 | 235.0 | 234.0 | 233.0 | 231.0 | 233.0 | 234.5 | 234.0 | 235.0 | 236.0 | 240.0 | 239.5 | 0.0231 |
| 85.0 | 237.0 | 247.0 | 248.0 | 246.0 | 244.0 | 243.0 | 240.5 | 239.0 | 239.0 | 238.0 | 236.0 | 235.0 | 236.0 | 237.0 | 235.0 | 235.0 | 233.0 | 236.0 | 235.0 | 235.0 | 237.0 | 238.0 | 242.0 | 238.0 | 0.0418 |
| 90.0 | 235.0 | 246.5 | 242.5 | 242.0 | 243.0 | 244.0 | 242.0 | 241.0 | 238.0 | 235.0 | 231.0 | 233.0 | 234.0 | 236.0 | 234.0 | 236.5 | 234.0 | 235.0 | 236.0 | 236.0 | 236.0 | 239.0 | 238.0 | 237.0 | 0.0396 |
| 95.0 | 238.5 | 242.0 | 244.0 | 245.0 | 244.0 | 243.0 | 241.5 | 243.0 | 241.0 | 238.0 | 234.0 | 235.0 | 235.0 | 237.0 | 235.0 | 237.0 | 235.0 | 234.0 | 234.0 | 233.0 | 234.0 | 236.0 | 236.0 | 235.0 | 0.0391 |
| 100.0 | 239.0 | 241.5 | 240.5 | 238.0 | 236.0 | 238.0 | 233.0 | 236.0 | 237.0 | 236.0 | 235.0 | 236.0 | 236.0 | 235.0 | 234.0 | 236.0 | 237.5 | 238.5 | 236.0 | 235.0 | 233.0 | 234.0 | 237.0 | 236.0 | 0.0211 |
| 105.0 | 239.0 | 240.0 | 238.5 | 240.0 | 239.0 | 238.0 | 239.5 | 237.5 | 235.5 | 235.0 | 234.0 | 235.0 | 233.0 | 236.0 | 235.0 | 234.0 | 235.0 | 237.0 | 238.0 | 236.0 | 234.0 | 235.0 | 236.0 | 236.0 | 0.0209 |
| 109.0 | 242.5 | 241.0 | 243.0 | 244.0 | 244.0 | 243.5 | 241.0 | 242.0 | 241.0 | 238.0 | 239.0 | 237.0 | 234.0 | 234.0 | 236.0 | 235.0 | 233.0 | 235.0 | 236.0 | 234.0 | 235.0 | 236.0 | 238.0 | 235.0 | 0.0369 |



**Figure 6.23(a): Box Plot of dial gauge readings dataset of mean values of 6-mm diameter Aluminium (SS) round bar before straightening**

**Figure 6.23(b): Error Plot of dial gauge readings on 6 mm Aluminium Round Bar after straightening**