

Table 5.12**Measurement of roundness by Dial gauge deflections of 6-mm Diameter Aluminium (Al) Round Bar Before Straightening**

Mean values of Dial Gauge Deflection Readings before straightening of 6 mm Aluminium(Al) round bar x 0.01 mm

Length in cm	Angles in Degrees																								STD DEV (mm)
	0°	15°	30°	45°	60°	75°	90°	105°	120°	135°	150°	165°	180°	195°	210°	225°	240°	255°	270°	285°	300°	315°	330°	345°	
16.5	241.0	244.0	244.5	243.0	242.5	239.5	233.5	233.0	231.0	228.0	226.0	222.0	221.5	221.5	221.0	220.0	221.0	223.5	223.0	229.0	229.0	233.0	237.0	237.5	0.0844
20.0	231.0	233.5	233.5	231.5	230.0	229.0	222.5	224.5	221.0	219.5	220.0	218.0	217.0	216.5	215.5	217.0	217.5	217.5	220.0	225.0	223.5	225.5	229.5	235.0	0.0630
25.0	231.5	235.5	237.5	236.5	233.5	231.0	225.5	226.0	224.0	221.0	219.5	216.0	217.0	217.5	215.5	215.0	216.5	218.5	219.0	222.0	226.5	225.0	227.5	230.0	0.0715
30.0	233.5	236.5	237.0	236.0	235.0	233.0	229.0	228.0	229.0	225.0	225.0	222.5	221.5	221.5	222.0	222.0	223.0	224.0	226.5	229.5	233.5	232.5	235.5	238.5	0.0575
35.0	249.0	253.0	254.0	253.5	253.5	251.0	245.5	243.5	240.0	239.0	236.5	235.0	234.5	234.0	234.5	233.5	236.0	237.0	237.5	240.5	243.0	243.5	245.5	248.5	0.0707
40.0	239.0	240.0	239.0	238.0	233.0	231.5	225.0	221.0	224.0	219.5	221.0	219.0	221.0	220.0	222.5	226.0	228.0	229.5	233.5	238.5	239.5	239.0	240.0	238.0	0.0799
45.0	244.5	245.0	244.5	241.0	239.0	236.0	233.0	229.0	226.5	223.0	219.5	219.0	217.5	220.5	219.0	222.5	225.0	228.0	230.0	234.0	236.5	238.0	238.5	240.5	0.0910
50.0	234.0	236.5	238.0	238.0	238.0	239.0	234.0	234.0	233.5	231.0	229.0	228.5	225.0	224.0	222.0	223.5	224.0	226.0	231.0	233.5	237.0	238.0	239.0	237.0	0.0566
55.0	240.0	241.5	245.0	245.5	243.5	242.0	239.0	237.0	235.5	234.0	233.5	230.0	229.5	228.5	228.5	229.5	230.0	233.5	236.5	235.0	240.0	238.0	239.0	241.0	0.0534
60.0	247.5	252.0	254.5	255.5	254.5	256.0	252.5	251.5	247.5	248.0	244.5	244.0	241.0	239.5	238.0	238.5	238.5	239.0	239.0	238.5	243.5	240.0	244.5	246.5	0.0624
65.0	246.5	251.0	253.0	253.0	253.5	253.5	250.0	247.5	246.5	244.0	241.5	239.5	235.5	232.5	233.0	229.5	229.5	230.0	229.5	230.5	238.0	240.0	239.0	241.0	0.0861
70.0	238.5	242.5	243.0	246.5	248.0	249.5	247.0	248.5	245.0	245.5	245.0	242.0	239.0	239.0	237.0	235.0	235.0	235.0	234.0	232.0	233.5	235.0	236.5	239.0	0.0544
75.0	237.0	238.0	239.0	241.0	241.0	240.0	238.0	237.5	237.0	236.0	232.5	230.5	228.5	226.5	227.0	224.5	224.5	224.5	227.0	225.0	233.5	233.0	234.0	236.5	0.0575
80.0	235.5	235.5	233.5	232.0	230.0	224.5	225.5	221.0	220.5	220.0	218.5	217.5	220.0	219.5	221.5	225.5	230.0	230.0	234.5	237.0	238.0	240.0	240.0	239.5	0.0773
85.0	257.0	256.0	252.0	250.0	247.5	244.0	240.5	239.0	239.0	238.0	239.0	239.5	241.5	245.0	246.0	249.0	253.0	252.0	256.5	257.5	259.0	260.0	262.0	260.0	0.0801
90.0	245.0	246.5	242.5	242.0	243.0	238.0	235.5	236.5	234.5	233.0	231.0	229.5	235.0	236.0	238.0	236.5	239.0	243.5	245.0	245.5	248.0	249.0	253.5	249.0	0.0632
95.0	253.5	252.0	250.0	248.0	244.0	243.0	241.5	237.5	238.5	238.0	234.0	236.5	235.0	240.0	240.0	242.5	245.5	243.5	247.5	248.0	250.5	254.5	254.5	251.0	0.0636
100.0	246.5	241.5	240.5	238.0	236.0	235.0	233.0	229.5	225.0	226.5	224.0	225.5	225.5	229.5	229.0	236.0	237.5	238.5	240.5	244.0	241.5	245.5	244.5	245.0	0.0737
105.0	239.0	240.0	238.5	240.0	239.0	238.0	239.5	237.5	235.5	232.0	234.0	233.5	233.0	236.0	237.0	238.0	239.0	238.5	238.0	239.0	239.5	241.5	240.5	242.5	0.0267
109.0	242.5	244.0	245.0	244.0	244.0	243.5	247.0	244.5	246.5	244.5	242.5	244.5	243.5	244.5	241.5	243.0	242.5	244.0	240.5	244.5	243.0	244.0	244.0	242.5	0.0141

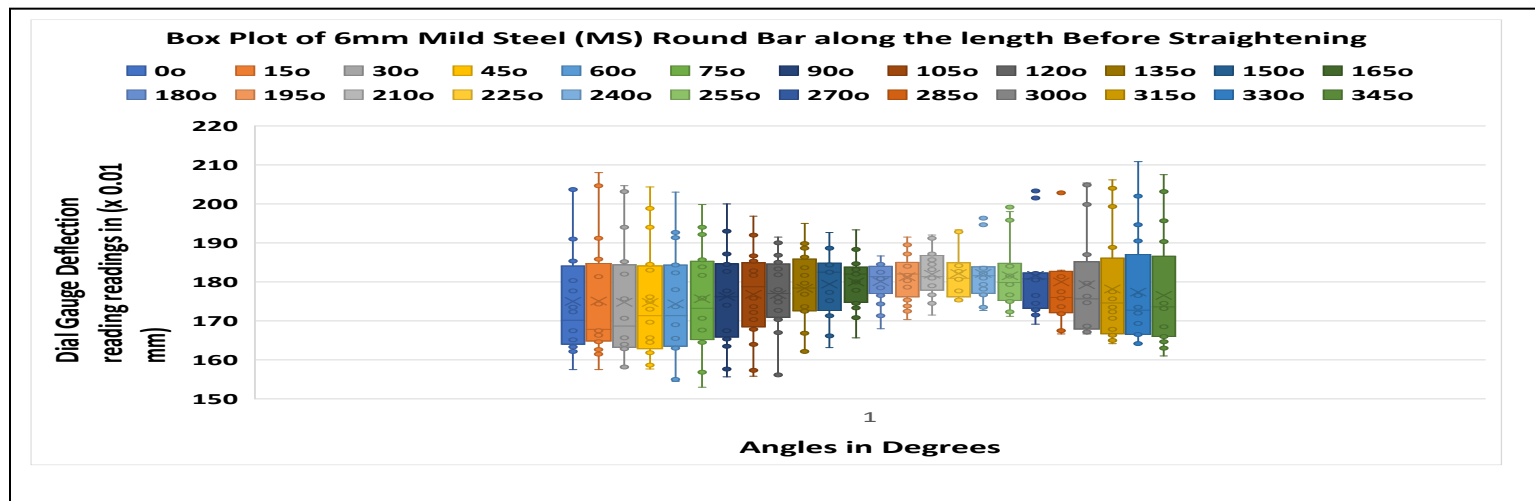


Figure 5.10(a): Box Plot of dial gauge readings dataset of mean values of 6-mm diameter Aluminium (Al) round bar before straightening

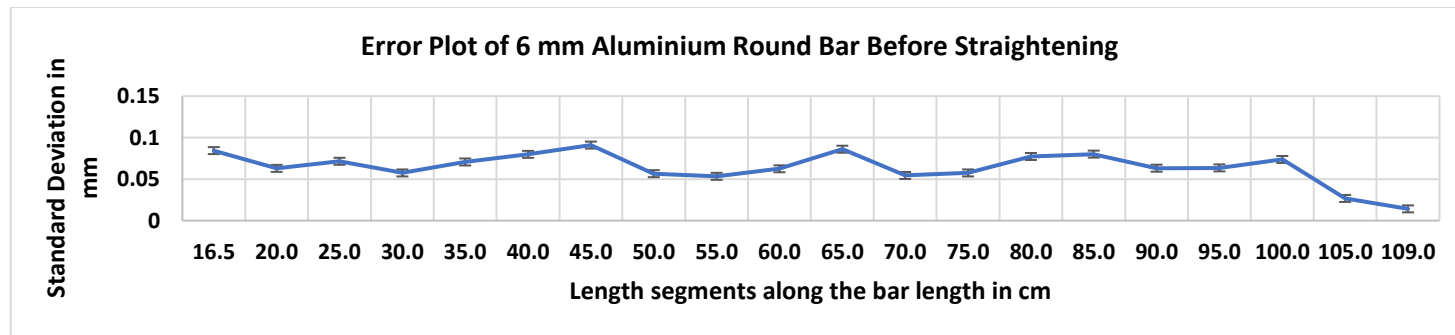


Figure 5.10(b): Error Plot of 6 mm Aluminium Round Bar Before Straightening