

Tolerances for Surface Plates

Per Federal Specifications for Surface Plates GGG-P-463c,
Paragraph 3.3.3: shows tolerances for repeat reading
measurement.

TABLE 1

Diagonal or diameter range	Grade AA LAB	Grade A INSP	Grade B SHOP	Obtained
Inches	Full indicator movement (FIM) Microinches			
Thru 30				When not specified
Over 30 thru 60	35	60	110	
Over 60 thru 90	45	70	120	
Over 90 thru 120	60	80	160	
Over 120 thru 150	75	100	200	
Over 150	90	120	240	
Over 150	100	140	280	
All sizes 25	25	50	100	When Specified

Per Federal Specifications for Surface Plates GGG-P-463c,
Paragraph 3.3.4 shows tolerances for flatness
measurement.

Rectangular plates Width Length Inches		Grade AA	Grade A	Grade B
12	12	50	100	200
12	18	50	100	200
18	18	50	100	200
18	24	75	150	300
24	24	75	150	300
24	36	100	200	400
24	48	150	300	600
30	48	175	350	700
36	36	150	300	600
36	40	200	400	800
36	60	250	500	1000
36	72	300	600	1200
48	48	200	400	800
48	60	300	600	1200
48	72	350	700	1400
48	96	500	1000	2000
48	120	700	1400	2800
48	144	950	1900	3800
60	60	325	625	1300
60	120	750	1500	3000
60	144	1025	2050	4100
72	72	600	1200	2400
72	144	1100	2200	4400

Per Federal Specification for Surface Plates GGG-P-463c,
Paragraph 3.3.4.1 shows flatness tolerances for unlisted

grade AA plates are obtained from the following formula:

$$\text{Total flatness tolerance in microinches} = 40 + D^2/25$$

Where D=diagonal or diameter of the plate in inches. The Calculated flatness tolerance for grade AA is rounded off to the nearest 25 microinches. The tolerances on the A and B grade shall be 2 and 4 times, respectively, those for grade AA.