

1 General Tolerances ISO 2768-1

ISO 2768-1 stands for the general tolerances for linear and angular dimensions without individual tolerance specifications, ISO 2768-1 specifies the linear and angular dimensions such as outside dimensions, inside dimensions, step sizes, diameters, radii, distances, outside radii, and chamfer heights for broken edges. This standard covers general tolerances in three 4 tolerance classes:

M – Medium Tolerances

F – Fine tolerances

C – Coarse tolerances

V – Very coarse tolerances

Table 1 – Linear Dimensions

Permissible deviations in mm for ranges in nominal lengths	Tolerance Class Designation (Description)			
	f (fine)	m (medium)	c (coarse)	v (very coarse)
0.5 up to 3	±0.05	±0.1	±0.2	–
over 3 up to 6	±0.05	±0.1	±0.3	±0.5
over 6 up to 30	±0.1	±0.2	±0.5	±1.0
over 30 up to 120	±0.15	±0.3	±0.8	±1.5
over 120 up to 400	±0.2	±0.5	±1.2	±2.5
over 400 up to 1000	±0.3	±0.8	±2.0	±4.0
over 1000 up to 2000	±0.5	±1.2	±3.0	±6.0
over 2000 up to 4000	–	±2.0	±4.0	±8.0

For nominal sizes below 0.5 mm, the deviations shall be indicated adjacent to the relevant nominal size(s).

Table 2 – External Radii and Chamfer Heights

Permissible deviations in mm for ranges in nominal lengths	Tolerance Class Designation (Description)			
	f (fine)	m (medium)	c (coarse)	v (very coarse)
0.5 up to 3	±0.2	±0.2	±0.4	±0.4
over 3 up to 6	±0.5	±0.5	±1.0	±1.0
over 6	±1.0	±1.0	±2.0	±2.0

For nominal sizes below 0.5 mm, the deviations shall be indicated adjacent to the relevant nominal size(s).

Table 3 – Angular Dimensions

Permissible deviations in mm for ranges in nominal lengths	Tolerance Class Designation (Description)			
	f (fine)	m (medium)	c (coarse)	v (very coarse)
up to 10	±1°	±1°	±1°30'	±3°
over 10 up to 50	±0°30'	±0°30'	±1°	±2°
over 50 up to 120	±0°20'	±0°20'	±0°30'	±1°
over 120 up to 400	±0°10'	±0°10'	±0°15'	±0°30'
over 400	±0°5'	±0°5'	±0°10'	±0°20'

#2 General Tolerances ISO 2768-2

ISO 2768-2 stands for the geometrical tolerances for features without individual tolerance indications. It indicates the general geometrical tolerances range of flatness & straightness, cylindricity, and circularity. This standard includes 3 classes of tolerance – H, K, and L:

Table 4 – General Tolerances on Straightness and Flatness

Ranges of nominal lengths in mm	Tolerance Class		
	H	K	L
up to 10	0.02	0.05	0.1
above 10 to 30	0.05	0.1	0.2
above 30 to 100	0.1	0.2	0.4
above 100 to 300	0.2	0.4	0.8
above 300 to 1000	0.3	0.6	1.2
above 1000 to 3000	0.4	0.8	1.6

Table 5 – General Tolerances on Perpendicularity

Ranges of nominal lengths in mm	Tolerance Class		
	H	K	L
up to 100	0.2	0.4	0.6
above 100 to 300	0.3	0.6	1.0
above 300 to 1000	0.4	0.8	1.5
above 1000 to 3000	0.5	1.0	2.0

Table 6 – General Tolerances on Symmetry

Ranges of nominal lengths in mm	Tolerance Class		
	H	K	L
up to 100	0.5	0.6	0.6
above 100 to 300	0.5	0.6	1.0
above 300 to 1000	0.5	0.8	1.5
above 1000 to 3000	0.5	1.0	2.0

Table 7 – General Tolerances on Circular Run-Out

Ranges of nominal lengths in mm	Tolerance Class		
	H	K	L
	0.1	0.2	0.5

This general tolerance allows the manufacturer to choose the appropriate tolerance level that suits their needs best. For example, if the part is expected to be used in a project with high-level tolerance requirements, it would be wise to choose a small tolerance range. On the contrary, a larger tolerance range would be more cost-effective if the part is produced in high volumes for lower-level tolerance applications.