

General Tolerances to DIN ISO 2768

Tolerance is allowance for a specific variation in the size and geometry of a part. As we all know, nothing is perfect. So engineers have come up with a way to make things close to perfect by specifying Tolerances !

If a part is dimensioned properly, then the intent of the designer is clear to both the person making the part and the inspector checking the part.

General tolerances for linear measures and level squares with four tolerance classes are useful for simplifying drawings. By choosing the tolerance class precision levels common in workshops should be taken into account.

If smaller tolerances are needed or bigger ones are more economical, then these tolerances are indicated next to the nominal sizes

GENERAL TOLERANCES FOR LINEAR AND ANGULAR DIMENSIONS (DIN ISO 2768 T1)

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 limit measures are usually indicated directly at the nominal measure. If general tolerances according to ISO2768-1 are valid, the following has to be inserted in the title box, i.e. for tolerance class medium, it should be inserted as **ISO2768-m** or **general tolerance ISO 2768-m**.

EXTERNAL RADIUS 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

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'

DIN ISO 2768-2 is for simplifying drawing and fixes general tolerances in three tolerance classes for form and position. By choosing a special tolerance class exactly the precision level common in workshops should be taken into account.

If smaller tolerances are needed or bigger are more economical, these tolerances should be mentioned directly according to ISO 1101.

General tolerances for form and position should be used while the tolerance principle according to ISO 8015 is valid and while this is mentioned in the drawing. This tolerance principle says that no opposite relation between measure, form and position tolerance exists (principle of superposition).

General tolerances for form and position are valid for form elements for which form and position tolerances are not indicated individually. They are applicable for all characteristics of the form elements accept cylinders, profiles of any line or surfaces, inclines, coaxiality, position and total movement.

GENERAL TOLERANCES FOR FORM AND POSITION (DIN ISO 2768 T2)

STRAIGHTNESS AND FLATNESS

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

PERPENDICULARITY

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

SYMMETRY

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

RUN-OUT

Tolerance Class		
H	K	L
0.1	0.2	0.5