

CAPABILITIES:  
General  
Tolerances



Your Complete Manufacturing Solution

**GENERAL TOLERANCES**

Fabrinox institutes general tolerances according to ISO 2768 - **Class mK** for all parts that are laser cut, bent machined, not welded. Should a technical drawing for such parts not specify any tolerances, this tolerance class must be applied to determine acceptability during manufacturing and inspection:

**General Tolerances for Linear Dimensions**

Permissible deviations in millimetres (mm) for ranges in nominal lengths	Linear Dimensions			
	Class f (fine)	Class m (medium)	Class c (coarse)	Class vc (very coarse)
0.5 to 3	+/- 0.05	+/- 0.1	+/- 0.2	-
> 3 to 6	+/- 0.05	+/- 0.1	+/- 0.3	+/- 0.5 +
> 6 to 30	+/- 0.1	+/- 0.2	+/- 0.5	/- 1.0
> 30 to 120	+/- 0.15	+/- 0.3	+/- 0.8	+/- 1.5
> 120 to 400	+/- 0.2	+/- 0.5	+/- 1.2	+/- 2.5
> 400 to 1000	+/- 0.3	+/- 0.8	+/- 2.0	+/- 4.0
> 1,000 to 2,000	+/- 0.5	+/- 1.2	+/- 3.0	+/- 6.0
> 2,000 to 4,000	-	+/- 2.0	+/- 4.0	+/- 8.0

**General Tolerances for Angular Dimensions**

Permissible deviations in degrees and minutes for ranges in nominal lengths	Angular Dimensions			
	Class f (fine)	Class m (medium)	Class c (coarse)	Class vc (very coarse)
Up to 10	+/- 1°	+/- 1°	+/- 1°30'	+/- 3°
> 10 to 50	+/- 0°30'	+/- 0°30'	+/- 1°	+/- 2°
> 50 to 120	+/- 0°20'	+/- 0°20'	+/- 0°30'	+/- 1°
> 120 to 400	+/- 0°10'	+/- 0°10'	+/- 0°15'	+/- 0°30'
> 400	+/- 0°5'	+/- 0°5'	+/- 0°10'	+/- 0°20'

**General Tolerances for Angular Dimensions**

Permissible deviations in millimetres (mm) for ranges in nominal lengths	External Radius & Chamfer Heights			
	Class f (fine)	Class m (medium)	Class c (coarse)	Class vc (very coarse)
0.5 to 3	+/- 0.2	+/- 0.2	+/- 0.4	+/- 0.4
> 3 to 6	+/- 0.5	+/- 0.5	+/- 1.0	+/- 1.0
> 6	+/- 1.0	+/- 1.0	+/- 2.0	+/- 2.0

**General Tolerances for Form & Position**

Ranges in nominal lengths in millimetres (mm)	Straightness & Flatness		
	Class H	Class K	Class L
Up to 10	0.02	0.05	0.1
> 10 to 30	0.05	0.1	0.2
> 30 to 100	0.1	0.2	0.4
> 100 to 300	0.2	0.4	0.8
> 300 to 1,000	0.3	0.6	1.2
> 1,000 to 3,000	0.4	0.8	1.6

Ranges in nominal lengths in millimetres (mm)	Perpendicularity			Symmetry		
	Class H	Class K	Class L	Class H	Class K	Class L
Up to 100	0.2	0.4	0.6	0.5	0.6	0.6
> 100 to 300	0.3	0.6	1	0.5	0.6	1
> 300 to 1,000	0.4	0.8	1.5	0.5	0.8	1.5
> 1,000 to 3,000	0.5	0.8	2	0.5	1	2

Run Out		
Class H	Class K	Class L
0.1	0.2	0.5

Fabrinox institutes general tolerances according to ISO 13920 - **Class BE** for all welded parts and for all Straightness, Flatness, and parallelism tolerances. Should a technical drawing for a welded and straightness, flatness and parallelism part not specify any tolerances, these tolerance classes must be applied to determine acceptability during manufacturing and inspection:

Tolerance Class	Linear Dimensions								Angular Dimensions		
	Range of nominal sizes, <i>l</i> , in mm								Range of nominal sizes, <i>l</i> , in mm (length or shorter leg)		
	2 to 30	> 30 to 120	> 120 to 400	> 400 to 1,000	>1,000 to 2,000	> 2,000 to 4,000	> 4,000 to 8,000	> 8,000 to 12,000	Up to 400	> 400 to 1,000	> 1,000
Tolerances, <i>t</i> , in mm								Tolerances, $\Delta\alpha$ (in degrees and minutes)			
A	+/- 1	+/- 1	+/- 1	+/- 2	+/- 3	+/- 4	+/- 5	+/- 6	+/- 20'	+/- 15'	+/- 10'
B		+/- 2	+/- 2	+/- 3	+/- 4	+/- 6	+/- 8	+/- 10	+/- 45'	+/- 30'	+/- 20'
C		+/- 3	+/- 4	+/- 6	+/- 8	+/- 11	+/- 14	+/- 18	+/- 1°	+/- 45'	+/- 30'
D		+/- 4	+/- 7	+/- 9	+/- 12	+/- 16	+/- 21	+/- 27	+/- 1°30'	+/- 1°15'	+/- 1°

Tolerance Class	Straightness, Flatness & Parallelism						
	Range of nominal sizes, /, in mm (relates to longer side of surface)						
	> 30 to 120	> 120 to 400	> 400 to 1,000	> 1,000 to 2,000	> 2,000 to 4,000	> 4,000 to 8,000	> 8,000 to 12,000
	Tolerances, t, in mm						
E	0.5	1	1.5	2	3	4	5
F	1	1.5	3	4.5	6	8	10
G	1.5	3	5.5	9	11	16	20
H	2.5	5	9	14	18	16	32