

CNC Machining Tolerance Guide

Standard, precision and best-capability tolerances with inspection methods

This guide summarizes the dimensional tolerances WFX holds across our CNC processes. Achievable tolerance depends on part geometry, material and feature size. ± 0.005 mm (± 0.0002 ") is our benchmark best capability on selected critical features, confirmed per part during DFM review — a case-by-case maximum, not a blanket guarantee.

Tolerance by process

Process	Standard	Precision	Best capability	Inspection
CNC Milling	± 0.05 mm (± 0.002 ")	± 0.01 mm (± 0.0004 ")	± 0.005 mm (± 0.0002 ")	CMM
CNC Turning	± 0.05 mm (± 0.002 ")	± 0.01 mm (± 0.0004 ")	± 0.005 mm (± 0.0002 ")	CMM
5-Axis Machining	± 0.03 mm (± 0.0012 ")	± 0.01 mm (± 0.0004 ")	± 0.005 mm (± 0.0002 ")	CMM
Precision Grinding	± 0.01 mm (± 0.0004 ")	± 0.005 mm (± 0.0002 ")	± 0.002 mm (± 0.00008 ")	CMM
Surface Finish (Ra)	Ra 1.6 μ m	Ra 0.8 μ m	Ra 0.4 μ m	Profilometer

General (linear) tolerances when not specified — ISO 2768-m guidance

Nominal size	Permissible deviation
0.5 – 6 mm	± 0.1 mm
6 – 30 mm	± 0.2 mm
30 – 120 mm	± 0.3 mm
120 – 400 mm	± 0.5 mm
400 – 1000 mm	± 0.8 mm

Inspection & verification

All critical dimensions are verified on Zeiss and Hexagon coordinate measuring machines (CMM) with measurement accuracy to ~ 0.0009 mm. We can supply a full dimensional report or an AS9102-style First Article Inspection (FAI) report on request.

Representative standards for reference only. Confirm part-specific tolerances with WFX engineering during DFM review.