Stainless Steel Bar Tolerance Guide

ISO 286-2 Standard: h9, h10, h11 Tolerance Charts

Tolerance	Precision Level	Typical Application
h9	High Precision	CNC turning, precision shafts, controlled fits
h10	Medium Precision	Standard machining, general assembly
h11	Standard Precision	Rough machining stock, cut blanks

Source: https://steelfromcn.com

1. Tolerance Comparison Chart

Quick reference comparing h9, h10 and h11 tolerances for common nominal diameters.

Nominal Diameter	h9 Tolerance	h10 Tolerance	h11 Tolerance	Buyer Meaning
10mm	0 / -36 um	0 / -58 um	0 / -90 um	h9 is much tighter for small precision parts
20mm	0 / -52 um	0 / -84 um	0 / -130 um	h9 is often reviewed for shafts and CNC feeding
50mm	0 / -62 um	0 / -100 um	0 / -160 um	h10 or h11 may fit general engineering use

2. h9 Tolerance Table

Application: Medium-precision CNC turning parts, especially 303/304 stainless steel bars

Nominal Size (mm)	Upper Deviation	Lower Deviation (mm)
<= 3	0	-0.025
> 3 to 6	0	-0.030
> 6 to 10	0	-0.036
> 10 to 18	0	-0.043
> 18 to 30	0	-0.052
> 30 to 50	0	-0.062
> 50 to 80	0	-0.074
> 80 to 120	0	-0.087

3. h10 Tolerance Table

Application: Standard machining and general assembly work

Nominal Size (mm)	Upper Deviation	Lower Deviation (mm)
<= 3	0	-0.040
> 3 to 6	0	-0.048
> 6 to 10	0	-0.058
> 10 to 18	0	-0.070
> 18 to 30	0	-0.084
> 30 to 50	0	-0.100
> 50 to 80	0	-0.120
> 80 to 120	0	-0.140

4. h11 Tolerance Table

Application: Rough machining stock, cut blanks or material for further grinding

Nominal Size (mm)	Upper Deviation	Lower Deviation (mm)
<= 3	0	-0.060
> 3 to 6	0	-0.075
> 6 to 10	0	-0.090
> 10 to 18	0	-0.110
> 18 to 30	0	-0.130
> 30 to 50	0	-0.160
> 50 to 80	0	-0.190
> 80 to 120	0	-0.220

5. Cold Drawn Bar Size Reference

Shape	Typical Range	Common Use	Tolerance Note
Round bar	3 - 300mm	Shafts, pins, CNC turned parts	h8, h9, h10, h11 by size & finish
Hex bar	S5 - S75mm	Fasteners, valve parts, couplings	Across-flats size per drawing
Square bar	4 - 100mm	Brackets, profile parts, blanks	Depends on size, finish & quantity

6. Metric to Imperial Conversion

For Southeast Asia buyers with mixed metric/imperial drawings

Metric Size	Approx. Inch	Practical Note
10mm	0.394 in	Close to 25/64 in, but not same as controlled imperial size
20mm	0.787 in	Often reviewed as metric drawing size
50mm	1.969 in	Close to 2 in, tolerance must be confirmed separately

Important: Do not convert only nominal diameter and forget the tolerance. A small conversion mistake can exceed h9 tolerance zone.

Source: https://steelfromcn.com
ISO 286-2:2010 Geometrical product specifications