

Dimensional Tolerances For Bar

Fit Tolerance Systems

The tolerance systems set forth in ISO 286-2 Limit deviations for holes and shafts and ANSI B4.1-1967 are specifically intended for fits between two or more parts that must assemble or function together. These systems include tolerances for internal dimensions (holes) and external dimensions (shafts) that will result in locational fits, running and sliding fits, and force fits.

ISO Dimensional Tolerances for Bar

| ISO Tolerance Designation | Nominal Diameter of Shaft (mm) | | | | | | | | |
|---------------------------|--------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | ≤ 3 | > 3 - 6 | > 6 - 10 | > 10 - 18 | > 18 - 30 | > 30 - 50 | > 50-80 | > 80 -120 | > 120 -180 |
| Shafts | | | | | | | | | |
| Tolerance (mm) | | | | | | | | | |
| H6 | -0.006 | -0.008 | -0.009 | -0.011 | -0.013 | -0.016 | -0.019 | -0.022 | -0.025 |
| H7 | -0.01 | -0.012 | -0.015 | -0.018 | -0.021 | -0.025 | -0.03 | -0.035 | -0.04 |
| H8 | -0.014 | -0.018 | -0.022 | -0.027 | -0.033 | -0.039 | -0.046 | -0.054 | -0.063 |
| H9 | -0.025 | -0.03 | -0.036 | -0.043 | -0.052 | -0.062 | -0.074 | -0.087 | -0.10 |
| H10 | -0.04 | -0.048 | -0.058 | -0.07 | -0.084 | -0.10 | -0.12 | -0.14 | -0.16 |
| H11 | -0.06 | -0.075 | -0.09 | -0.11 | -0.13 | -0.16 | -0.19 | -0.22 | -0.25 |
| H12 | -0.10 | -0.12 | -0.15 | -0.18 | -0.21 | -0.25 | -0.30 | -0.35 | -0.40 |
| H13 | -0.14 | -0.18 | -0.22 | -0.27 | -0.33 | -0.39 | -0.46 | -0.54 | -0.63 |
| JS11 | + / - 0.03 | + / - 0.037 | + / - 0.045 | + / - 0.055 | + / - 0.065 | + / - 0.08 | + / - 0.095 | + / - 0.11 | + / - 0.125 |
| JS12 | + / - 0.05 | + / - 0.06 | + / - 0.075 | + / - 0.09 | + / - 0.105 | + / - 0.125 | + / - 0.15 | + / - 0.175 | + / - 0.2 |
| JS14 | + / - 0.125 | + / - 0.15 | + / - 0.18 | + / - 0.215 | + / - 0.26 | + / - 0.31 | + / - 0.37 | + / - 0.435 | + / - 0.50 |
| JS16 | + / - 0.30 | + / - 0.375 | + / - 0.45 | + / - 0.55 | + / - 0.65 | + / - 0.80 | + / - 0.95 | + / - 1.1 | + / - 1.25 |
| K9 | +0.25 | +0.30 | +0.36 | +0.43 | +0.52 | +0.62 | +0.74 | +0.87 | +1.0 |
| K10 | +0.40 | +0.48 | +0.58 | +0.70 | +0.84 | +1.0 | +1.2 | +1.4 | +1.6 |
| K11 | +0.60 | +0.75 | +0.9 | +1.1 | +1.3 | +1.6 | +1.9 | +2.2 | +2.5 |
| K12 | +0.90 | +1.2 | +1.5 | +1.8 | +2.1 | +2.5 | +3.0 | +3.5 | +4.0 |
| Holes | | | | | | | | | |
| Tolerance (mm) | | | | | | | | | |
| H5 | +0.04 | +0.05 | +0.06 | +0.08 | +0.09 | +0.11 | +0.13 | +0.15 | +0.18 |
| H6 | +0.06 | +0.08 | +0.09 | +0.11 | +0.13 | +0.16 | +0.19 | +0.22 | +0.25 |
| H7 | +0.10 | +0.12 | +0.15 | +0.18 | +0.21 | +0.25 | +0.30 | +0.35 | +0.40 |
| H11 | +0.60 | +0.75 | +0.90 | +1.1 | +1.3 | +1.6 | +1.9 | +2.2 | +2.5 |
| H12 | +1.0 | +1.2 | +1.5 | +1.8 | +2.1 | +2.5 | +3.0 | +3.5 | +4.0 |

Tolerance values shown in mm
 h = all minus
 j = equal
 k = all plus

EXAMPLES
 25.40mm diameter bar to h9 = + Nil, -0.052mm

Flat bar hot finished (HRAP) to ASTM A276/A484M

| Width (mm) | Thickness tolerance for thickness (mm) | | | Width tolerance (mm) |
|-----------------|--|----------|---------------|----------------------|
| | 3.2 to 13 over | 13 to 25 | over 25 to 50 | |
| up to 25 | ± 0.20 | ± 0.25 | - | ± 0.40 |
| up to 25 to 50 | ± 0.30 | ± 0.40 | ± 0.80 | ± 0.80 |
| over 50 to 100 | ± 0.40 | ± 0.50 | ± 0.80 | + 1.60 / - 0.80 |
| over 100 to 150 | ± 0.40 | ± 0.50 | ± 0.80 | + 2.40 / - 1.60 |

Flat Bar Tolerances S.R.E. to ASTM A276/A484M

| Thickness (mm) | Tolerance (mm) | Width (mm) | Tolerance (mm) |
|----------------|-----------------|------------|----------------|
| 3 | + 0.25 / - 0.25 | To 100 | + 2.4 / - 0.8 |
| 4 | + 0.35 / - 0.35 | | |
| 5 - 8 | + 1.25 / - 0.25 | Over 100 | + 2.4 / - 2.4 |
| 10 - 13 | + 1.50 / - 0.25 | | |

Any bars requiring a critical straightness tolerance need to be advised prior to ordering!

Centreless Ground bars are the only bars supplied to a straightness tolerance (> 0-5 mm per metre) ex. mill. Once cut, the straightness tolerance is void.