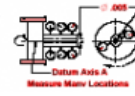


Ultimate - GD&T Wall Chart
 ASME Y14.5-2009 Standard
 Laminated, 24" x 36" - Awesome!



Machinist Drilled Hole Tolerance Capabilities Chart per. AND10387

[Manufacturing Knowledge Menu](#) | [Tolerance Charts Menu](#)

Machinist Drilling Mechanical Tolerance Capabilities Chart - ANSI Size Drills, ISO Metric Drill Sizes

Drilled hole locations and size variations are cumulative of several manufacturing variables. Tool sharpness, accuracy, tool and machine rigidity, machine spindle bearings wear, general quality of machine, use of drill fixtures, material thermal expansion, and material density variations are some to the reasons hole features will never be manufactured perfect.

Most commercial twist drills have a diameter slightly smaller than the stated nominal size, however the actual hole feature will likely be manufactured larger than the nominal size of the drill tool. Compensating for manufacturing tool and process variability is a significant challenge for tight toleranced holes.

For Drill size chart for both Metric and ANSI sizes see:

[Machinist Drill Sizes - ANSI Size Drills, ISO Metric Drill Sizes](#)

[Engineering Design for Manufacturability](#)

Comprehensive guide for proper design of geometry, process capabilities & proper mechanical tolerance specifications.



HOLE DIAMETER TOLERANCE-STANDARD DRILLED HOLE TOLERANCES		
Per. AND10387		
Airforce Navy Aeronautical Design Stanard		
These size and tolerance are for holes drilled with a drilling machine using suitable jigs and fixtures. The hole tolerances depend upon the diameter of the hole and increase as the hole size increases. The following are standard tolerances for general machine work and apply in all cases except where greater or lesser accuracy is required by the design.	Drilled Hole Size	Tolerance
	.0135 THRU .125	+ .004/ - .001
	.1260 THRU .250	+ .005/ - .001
	.2510 THRU .500	+ .006/ - .001
	.5010 THRU .750	+ .008/ - .001
	.7510 THRU 1.000	+ .010/ - .001
	1 .001 THRU 2.000	+ .012/ - .001

Mechanical location tolerance capabilities Chart

Minimum Recommended Position Tolerances for Location of Hole Features in (mm) Less than 1" (25.4mm) in Diameter *		
Method	Normal Tolerance inches (mm)	Tight Tolerance inches (mm)
Manual location techniques (center punch and drill)	.080 (2)	.020 (0.5)
Drill fixture using bushing	.025 (0.635)	.008 (0.2)
Precision milling or CNC machine with fixture	.016 (0.41)	.008 (0.2)
Precision milling or CNC machine with optical or precision orientation	.005 (0.13)	.003 (0.076)
Jig boring with optical or precision orientation	.002 (0.025)	.0005 (0.013)