



ISO Metric Screw Threads: Limits and Tolerances.

Thread	Pitch	Internal/ External Tol. Class	Major Diameter			Pitch Diameter			Minor Diameter		
			max	tol	min	max	tol	min	max	tol	min
M1.6	0.35	6g (screw)	1.581	0.085	1.496	1.354	0.063	1.291	-	-	1.075
		6H (nut)	-	-	1.600	1.458	0.085	1.373	1.321	0.100	1.221
M2	0.40	6g	1.981	0.095	1.886	1.721	0.067	1.654	-	-	1.408
		6H	-	-	2.000	1.830	0.090	1.740	1.679	0.112	1.567
M2.5	0.45	6g	2.480	0.100	2.380	2.188	0.071	2.117	-	-	1.839
		6H	-	-	2.500	2.303	0.095	2.208	2.138	0.125	2.013
M3	0.50	6g	2.980	0.106	2.874	2.655	0.075	2.580	-	-	2.272
		6H	-	-	3.000	2.775	0.100	2.675	2.599	0.140	2.459
M4	0.70	6g	3.978	0.140	3.838	3.523	0.090	3.433	-	-	3.002
		6H	-	-	4.000	3.663	0.118	3.545	3.422	0.180	3.242
M5	0.80	6g	4.976	0.150	4.826	4.456	0.095	4.361	-	-	3.868
		6H	-	-	5.000	4.605	0.125	4.480	4.334	0.200	4.134
M6	1.00	6g	5.978	0.140	5.838	5.441	0.100	5.391	-	-	4.929
		6H	-	-	6.000	5.645	0.132	5.513	5.378	0.190	5.188
M8	1.25	6g	7.972	0.212	7.760	7.160	0.118	7.042	-	-	6.272
		6H	-	-	8.000	7.348	0.160	7.188	6.912	0.265	6.647
M10	1.50	6g	9.968	0.236	9.732	8.994	0.132	8.862	-	-	7.938
		6H	-	-	10.000	9.206	0.180	9.026	8.676	0.300	8.376

Reference: BS3643 Pt 2, 1981.

Torque and Tension Guidelines.

The usual method for specifying and measuring fastener installation is tightening torque, as this is relatively easy to measure with a torque wrench. Unfortunately, a torque wrench does not give an accurate indication of bolt tension because it does not take friction into account. The friction is dependent on the bolt, nut and washer materials, surface smoothness, machining accuracy, degree of lubrication (including uncured retaining products) and the number of times a fastener has been installed. The torque values provided for the screws in the table below are, therefore, to be used only as a guide, the friction factors mentioned should be considered for each application.

Screw Size	Tightening Torque For 700 MPa Screw (Nm)
M1.6	0.14
M2	0.29
M2.5	0.60
M3	1.10
M4	2.50
M5	5.00



Reliance Standard Materials.

Reliance precision screws are manufactured from the materials listed below. Where the product material is not specified, we reserve the right to change the actual material to an equivalent specification without notice depending on availability.

Material Grade	Treatment	Grain Structure	Tensile Strength MPa (min)	Corrosion Resistance
A2-70	n/a	Austenitic	700	Excellent
A4-70	n/a	Austenitic	700	Excellent
303	n/a	Austenitic	585	Excellent
416	Hardened to HRc 26/32	Martensitic	880	Good

General Properties of Austenitic Stainless Steels.

- Excellent resistance to oxidation and corrosion.
- Essentially non-magnetic.
- Cannot be hardened by heat-treatment.
- Work harden very easily.
- Relatively high coefficient of thermal expansion of 18 microns/metre/°C, close to that of aluminium.

General Properties of Martensitic Stainless Steels.

- Good resistance to oxidation and corrosion.
- Magnetic.
- Readily heat treatable to high strength condition.
- Potential for tensile strengths > 1200 MPa.
- Coefficient of thermal expansion of approximately 11 microns/metre/°C.