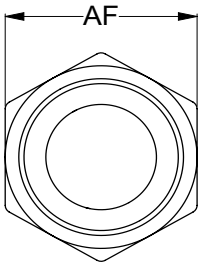
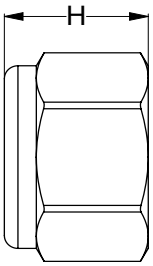
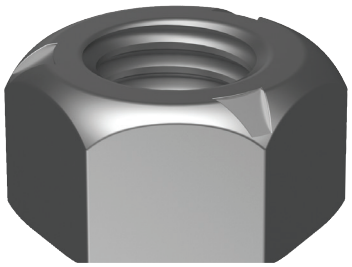
Tightening Torque







METRIC CONE LOCK NUTS - Basic Dimensions & Tightening Torques - DIN980
Property Class 10 - Coarse Threads

Metric Thread	Across Flats (max)	Nut Height (max)	Prevailing Torque 1st Install (max)	Clamp Load (65% Proof)	Installation Torque
	AF	H	T_{pr}		Zinc Plated
	mm	mm	Nm	kN	Nm
M5	8	5.0	2.1	7.67	7
M6	10	6.0	4.0	10.84	13
M8	13	8.0	8.0	19.75	30
M10	17	10.0	14.0	31.29	58
M12	19	12.0	21.0	45.48	97
M14	22	14.0	31.0	62.04	153
M16	24	16.0	42.0	84.70	232
M18	27	18.5	56.0	103.58	317
M20	30	20.0	72.0	132.18	442
M22	32	22.0	90.0	163.47	593
M24	36	24.0	106.0	190.44	746
M27	41	27.0	123.0	247.63	1059
M30	46	30.0	140.0	302.66	1411
M33	50	33.0	160.0	374.41	1890
M36	55	36.0	180.0	440.77	2401
M39	60	39.0	200.0	526.55	3075

Notes:

1. Tightening torque values are given as a guide only and are based on first tightening of single assemblies in isolation.
2. Prevailing torques used in this technical sheet are taken from ISO 2320 and are 50% less than those given by DIN 267-15.
3. Clamp load is calculated as 65% of proof stress for property class 10.9 bolt.
4. Nut factors (k) used for calculation on installation torque: Zinc Plated = 0.14.
5. Zinc Plated applies to both Zinc Yellow Passivated (ZYP) and clear zinc coatings (ZP).

Prevailing Torque Lock Nuts

Prevailing torque nuts are a type of lock nut which uses a built-in element to create friction between the mating threads and prevent the nut from rotating freely. They include nyloc, cone lock, met lock, stover and deformed thread nuts. The installed assembly will have both an axial clamp load from tightening of the nut and a radial clamp load on the mating threads.

Installation of Prevailing Torque Lock Nuts

Standard torque values should not be applied to prevailing torque lock nuts as the additional torque required to rotate the nut along the mating threads will result in a lower-than-expected clamp load. The prevailing torque should be added to the target torque to achieve the desired clamp load.

A torque wrench can be used to measure the amount of prevailing torque required to rotate a particular nut along the mating threads. This can then be added to the torque-tension calculation. Alternatively, the maximum prevailing torque from the relevant product standard can be used but be aware that this will likely result in your clamp load being higher than expected.

$$T = F \cdot k \cdot d + T_{pr}$$

T = *Required Torque (Nm)*

F = *Desired Clamp Load (kN)*

k = *Nut Factor*

d = *Nominal Thread Diameter (mm)*

T_{pr} = *Prevailing Torque (Nm)*

Prevailing torque nuts must have full threads all the way through the built-in element and should have at least one full thread protruding from the nut to achieve the expected performance.

Re-use of Prevailing Torque Nuts

Prevailing torque nuts are reusable but every use will reduce their effectiveness. The install and removal torque values will be similar for second installation onwards. When reusing prevailing torque nuts check that the prevailing torque is still suitable for the application with a torque wrench.