Yaxiio.com

M18 · English · bolt-torque-chart-m18-en

Bolt Torque Chart — M18

M18 · 6 property classes · 5 friction states · N·m (typ / min–max) · coarse + fine thread

M18

N·m · As 192 mm²

Class	Rp0.2 (MPa)	Target preload (kN)	Dry / Black K 0.18–0.22 · N·m	Electro Zinc K 0.15–0.2 · N·m	Hot-Dip Galv. K 0.18–0.25 · N·m	Oiled K 0.12–0.15 · N·m	Wax / PTFE / Anti-seize K 0.08–0.12 · N·m
4.8	340	**45.7**	165 148–181	140 123–165	181 148–206	107 99–123	82 66–99
8.8	640	**86**	310 279–341	263 232–310	341 279–387	201 186–232	155 124–186
10.9	940	**126.3**	455 409–500	387 341–455	500 409–569	296 273–341	227 182–273
12.9	1100	**147.8**	532 479–585	452 399–532	585 479–665	346 319–399	266 213–319
A2-70	450	**60.5**	218 196–240	185 163–218	240 196–272	142 131–163	109 87–131
A4-80	600	**80.6**	290 261–319	247 218–290	319 261–363	189 174–218	145 116–174

Torque follows the K-factor (nut factor) method T = K·D·F: D is the nominal diameter and F the target preload = 70% of Rp0.2 × thread stress area (M18 As = 192 mm²). Yield strengths are published values from ISO 898-1 (carbon/alloy steel) and ISO 3506-1 (stainless A2/A4). K follows published empirical ranges per friction condition (Machinery's Handbook; the wax/PTFE/anti-seize band K≈0.10 follows Machine Design test data). The grease/MoS_2 band (K≈0.11) nearly overlaps anti-seize and is available in the calculator instead of a separate column.

Fine-Thread Torque Matrix

Class	Rp0.2 (MPa)	Target preload (kN)	Dry / Black K 0.18–0.22 · N·m	Electro Zinc K 0.15–0.2 · N·m	Hot-Dip Galv. K 0.18–0.25 · N·m	Oiled K 0.12–0.15 · N·m	Wax / PTFE / Anti-seize K 0.08–0.12 · N·m
4.8	340	**51.4**	185 167–204	157 139–185	204 167–231	120 111–139	93 74–111
8.8	640	**96.8**	348 314–383	296 261–348	383 314–435	226 209–261	174 139–209
10.9	940	**142.1**	512 460–563	435 384–512	563 460–640	333 307–384	256 205–307
12.9	1100	**166.3**	599 539–659	509 449–599	659 539–748	389 359–449	299 240–359
A2-70	450	**68**	245 220–269	208 184–245	269 220–306	159 147–184	122 98–147
A4-80	600	**90.7**	327 294–359	278 245–327	359 294–408	212 196–245	163 131–196

Cell shows the typical value; the small line below is the range (min–max).

Basis of Calculation & Sources

Boundary: this chart is a simplified K-factor estimate, not a full VDI 2230 analysis (which accounts for joint resilience, embedment and assembly method). Friction is the dominant variable — no single torque value exists without its friction state. Always follow the design specification or manufacturer torque table.

References

- ISO 898-1:2013 — Mechanical properties of fasteners made of carbon and alloy steel — https://www.iso.org/standard/60610.html
- ISO 3506-1:2020 — Mechanical properties of corrosion-resistant stainless steel fasteners (A2/A4) — https://www.iso.org/standard/70045.html
- GB/T 3098.1-2010 — Mechanical properties of bolts, screws and studs (CN national standard, official full text) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%203098.1-2010
- GB/T 3098.6-2014 — Mechanical properties of stainless steel bolts, screws and studs (CN, official full text) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%203098.6-2014
- ISO 16047:2005 — Fasteners: torque/clamp force testing (K-factor measurement method)
- Machinery's Handbook (30th ed.) — empirical K-factor ranges
- Machine Design — anti-seize compound friction test (K≈0.10)

Bolt Torque Chart — M18 — Yaxiio full-range reference PDF, pack v1 · generated 2026-09-10 · data source: yaxiio-customer/utils/fastenerCalc.ts (single source of truth) · methodology matches the online tool pages · https://www.yaxiio.com/en/tools/bolt-torque-chart/m18