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M30 · English · bolt-torque-chart-m30-en

Bolt Torque Chart — M30

M30 · 6 property classes · 5 friction states · N·m (typ / min–max) · coarse + fine thread

M30

N·m · As 561 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	**133.5**	801 721–881	681 601–801	881 721–1001	521 481–601	401 320–481
8.8	640	**251.3**	1508 1357–1659	1282 1131–1508	1659 1357–1885	980 905–1131	754 603–905
10.9	940	**369.1**	2215 1993–2436	1883 1661–2215	2436 1993–2769	1440 1329–1661	1107 886–1329
12.9	1100	**432**	2592 2333–2851	2203 1944–2592	2851 2333–3240	1685 1555–1944	1296 1037–1555
A2-70	450	**176.7**	1060 954–1166	901 795–1060	1166 954–1325	689 636–795	530 424–636
A4-80	600	**235.6**	1414 1272–1555	1202 1060–1414	1555 1272–1767	919 848–1060	707 565–848

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 (M30 As = 561 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	**147.8**	887 798–975	754 665–887	975 798–1108	576 532–665	443 355–532
8.8	640	**278.2**	1669 1502–1836	1419 1252–1669	1836 1502–2087	1085 1002–1252	835 668–1002
10.9	940	**408.6**	2452 2207–2697	2084 1839–2452	2697 2207–3065	1594 1471–1839	1226 981–1471
12.9	1100	**478.2**	2869 2582–3156	2439 2152–2869	3156 2582–3586	1865 1721–2152	1435 1148–1721
A2-70	450	**195.6**	1174 1056–1291	998 880–1174	1291 1056–1467	763 704–880	587 469–704
A4-80	600	**260.8**	1565 1408–1721	1330 1174–1565	1721 1408–1956	1017 939–1174	782 626–939

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)

Disclaimer: This chart is an engineering estimation for selection and budgeting only. It does not constitute assembly instructions or acceptance criteria.

Bolt Torque Chart — M30 — 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/m30