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M8 · English · bolt-torque-chart-m8-en

Bolt Torque Chart — M8

M8 · 6 property classes · 5 friction states · N·m (typ / min–max) · coarse + fine thread

M8

N·m · As 36.6 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	**8.7**	14 13–15	12 10–14	15 13–17	9 8–10	7 6–8
8.8	640	**16.4**	26 24–29	22 20–26	29 24–33	17 16–20	13 10–16
10.9	940	**24.1**	39 35–42	33 29–39	42 35–48	25 23–29	19 15–23
12.9	1100	**28.2**	45 41–50	38 34–45	50 41–56	29 27–34	23 18–27
A2-70	450	**11.5**	18 17–20	16 14–18	20 17–23	12 11–14	9 7–11
A4-80	600	**15.4**	25 22–27	21 18–25	27 22–31	16 15–18	12 10–15

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 (M8 As = 36.6 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	**9.3**	15 13–16	13 11–15	16 13–19	10 9–11	7 6–9
8.8	640	**17.6**	28 25–31	24 21–28	31 25–35	18 17–21	14 11–17
10.9	940	**25.8**	41 37–45	35 31–41	45 37–52	27 25–31	21 17–25
12.9	1100	**30.2**	48 43–53	41 36–48	53 43–60	31 29–36	24 19–29
A2-70	450	**12.3**	20 18–22	17 15–20	22 18–25	13 12–15	10 8–12
A4-80	600	**16.5**	26 24–29	22 20–26	29 24–33	17 16–20	13 11–16

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 — M8 — 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/m8