# Standard Torque Specifications and Fastener Markings

In the absence of specific torques, the following chart can be used as a guide to the maximum safe torque of a particular size/grade of fastener.

- There is no torque difference for fine or coarse threads.
- Torque values are based on clean, dry threads. Reduce the value by 10% if threads are oiled prior to assembly.
- The torque required for aluminum components or fasteners is considerably less.

## U.S. Bolts

| SAE Grade Number | 1 or 2 | | | 5 | | | 6 or 7 | | |
|---|---|---|---|---|---|---|---|---|---|
| Number of lines always 2 less than the grade number. | | | | | | | | | |
| Bolt Size (Inches)—(Thread) | Maximum Torque | | | Maximum Torque | | | Maximum Torque | | |
| | Ft./Lbs. | Kgm | Nm | Ft./Lbs. | Kgm | Nm | Ft./Lbs. | Kgm | Nm |
| 1/4—20 | 5 | 0.7 | 6.8 | 8 | 1.1 | 10.8 | 10 | 1.4 | 13.5 |
| —28 | 6 | 0.8 | 8.1 | 10 | 1.4 | 13.6 | | | |
| 5/16—18 | 11 | 1.5 | 14.9 | 17 | 2.3 | 23.0 | 19 | 2.6 | 25.8 |
| —24 | 13 | 1.8 | 17.6 | 19 | 2.6 | 25.7 | | | |
| 3/8—16 | 18 | 2.5 | 24.4 | 31 | 4.3 | 42.0 | 34 | 4.7 | 46.0 |
| —24 | 20 | 2.75 | 27.1 | 35 | 4.8 | 47.5 | | | |
| 7/16—14 | 28 | 3.8 | 37.0 | 49 | 6.8 | 66.4 | 55 | 7.6 | 74.5 |
| —20 | 30 | 4.2 | 40.7 | 55 | 7.6 | 74.5 | | | |
| 1/2—13 | 39 | 5.4 | 52.8 | 75 | 10.4 | 101.7 | 85 | 11.75 | 115.2 |
| —20 | 41 | 5.7 | 55.6 | 85 | 11.7 | 115.2 | | | |
| 9/16—12 | 51 | 7.0 | 69.2 | 110 | 15.2 | 149.1 | 120 | 16.6 | 162.7 |
| —18 | 55 | 7.6 | 74.5 | 120 | 16.6 | 162.7 | | | |
| 5/8—11 | 83 | 11.5 | 112.5 | 150 | 20.7 | 203.3 | 167 | 23.0 | 226.5 |
| —18 | 95 | 13.1 | 128.8 | 170 | 23.5 | 230.5 | | | |
| 3/4—10 | 105 | 14.5 | 142.3 | 270 | 37.3 | 366.0 | 280 | 38.7 | 379.6 |
| —16 | 115 | 15.9 | 155.9 | 295 | 40.8 | 400.0 | | | |
| 7/8— 9 | 160 | 22.1 | 216.9 | 395 | 54.6 | 535.5 | 440 | 60.9 | 596.5 |
| —14 | 175 | 24.2 | 237.2 | 435 | 60.1 | 589.7 | | | |
| 1— 8 | 236 | 32.5 | 318.6 | 590 | 81.6 | 799.9 | 660 | 91.3 | 894.8 |
| —14 | 250 | 34.6 | 338.9 | 660 | 91.3 | 849.8 | | | |

## Metric Bolts

| Relative Strength Marking | 4.6, 4.8 | | | 8.8 | | |
|---|---|---|---|---|---|---|
| Bolt Markings | | | | | | |
| Bolt Size Thread Size x Pitch (mm) | Maximum Torque | | | Maximum Torque | | |
| | Ft./Lbs. | Kgm | Nm | Ft./Lbs. | Kgm | Nm |
| 6 x 1.0 | 2–3 | .2–.4 | 3–4 | 3–6 | 4–.8 | 5–8 |
| 8 x 1.25 | 6–8 | .8–1 | 8–12 | 9–14 | 1.2–1.9 | 13–19 |
| 10 x 1.25 | 12–17 | 1.5–2.3 | 16–23 | 20–29 | 2.7–4.0 | 27–39 |
| 12 x 1.25 | 21–32 | 2.9–4.4 | 29–43 | 35–53 | 4.8–7.3 | 47–72 |
| 14 x 1.5 | 35–52 | 4.8–7.1 | 48–70 | 57–85 | 7.8–11.7 | 77–110 |
| 16 x 1.5 | 51–77 | 7.0–10.6 | 67–100 | 90–120 | 12.4–16.5 | 130–160 |
| 18 x 1.5 | 74–110 | 10.2–15.1 | 100–150 | 130–170 | 17.9–23.4 | 180–230 |
| 20 x 1.5 | 110–140 | 15.1–19.3 | 150–190 | 190–240 | 26.2–46.9 | 160–320 |
| 22 x 1.5 | 150–190 | 22.0–26.2 | 200–260 | 250–320 | 34.5–44.1 | 340–430 |
| 24 x 1.5 | 190–240 | 26.2–46.9 | 260–320 | 310–410 | 42.7–56.5 | 420–550 |