

# Standard Torque Tables and the U. S. Customary to Metric Conversion Factors



# GE

## Transportation

Below are standard bolt torque tables. These tables can be used when a GE specified value is not listed in the maintenance manual instructions for the particular application. To find the GE specified torque values for your locomotive, refer to the RUNNING MAINTENANCE and BACKSHOP MANUALS.

| Course Thread - Standard Bolt Assembly Torque<br>(NOTE: The torque values in this table are based on the use of lubricated threads.) |                                      |                                      |
|--|--------------------------------------|--------------------------------------|
| Size (Inch)  | Grade 5                              | Grade 8                              |
| 1/4 - 20 (NC)  | 6 - 7 lb.-ft. (8 - 9 Nm)             | 9 - 10 lb.-ft. (12 - 14 Nm)          |
| 5/16 - 18 (NC)   | 12 - 14 lb.-ft. (16 - 19 Nm)         | 18 - 21 lb.-ft. (24 - 28 Nm)         |
| 3/8 - 16 (NC)  | 22 - 25 lb.-ft. (30 - 34 Nm)         | 34 - 38 lb.-ft. (46 - 52 Nm)         |
| 7/16 - 14 (NC)   | 35 - 40 lb.-ft. (47 - 54 Nm)         | 50 - 56 lb.-ft. (68 - 76 Nm)         |
| 1/2 - 13 (NC)  | 55 - 62 lb.-ft. (75 - 84 Nm)         | 83 - 93 lb.-ft. (113 - 126 Nm)       |
| 9/16 - 12 (NC)   | 75 - 80 lb.-ft. (102 - 108 Nm)       | 110 - 123 lb.-ft. (149 - 167 Nm)     |
| 5/8 - 11 (NC)  | 111 - 124 lb.-ft. (151 - 168 Nm)     | 166 - 185 lb.-ft. (225 - 251 Nm)     |
| 3/4 - 10 (NC)  | 197 - 219 lb.-ft. (277 - 297 Nm)     | 296 - 329 lb.-ft. (401 - 446 Nm)     |
| 7/8 - 9 (NC)   | 300 - 330 lb.-ft. (407 - 447 Nm)     | 440 - 490 lb.-ft. (597 - 664 Nm)     |
| 1 - 8 (NC)   | 477 - 530 lb.-ft. (647 - 719 Nm)     | 715 - 795 lb.-ft. (969 - 1078 Nm)    |
| 1-1/8 - 7 (NC)   | 620 - 690 lb.-ft. (841 - 936 Nm)     | 935 - 1040 lb.-ft. (1268 - 1410 Nm)  |
| 1-1/4 - 7 (NC)   | 954 - 1060 lb.-ft. (1293 - 1437 Nm)  | 1431 - 1590 lb.-ft. (1940 - 2156 Nm) |
| 1-3/8 - 6 (NC)   | 1160 - 1290 lb.-ft. (1573 - 1749 Nm) | 1745 - 1940 lb.-ft. (2366 - 2630 Nm) |
| 1-1/2 - 6 (NC)   | 1659 - 1844 lb.-ft. (2249 - 2500 Nm) | 2489 - 2766 lb.-ft. (3375 - 3750 Nm) |



| Fine Thread - Standard Bolt Assembly Torque<br>(NOTE: The torque values in this table are based on the use of lubricated threads.) |                                      |                                      |
|--|--------------------------------------|--------------------------------------|
| Size (Inch)  | Grade 5                              | Grade 8                              |
| 1/4 - 28 (NF)  | 7 - 8 lb.-ft. (9 - 11 Nm)            | 10 - 12 lb.-ft. (14 - 16 Nm)         |
| 5/16 - 24 (NF)   | 14 - 16 lb.-ft. (19 - 20 Nm)         | 21 - 24 lb.-ft. (28 - 33 Nm)         |
| 3/8 - 24 (NF)  | 26 - 29 lb.-ft. (35 - 39 Nm)         | 38 - 43 lb.-ft. (52 - 58 Nm)         |
| 7/16 - 20 (NF)   | 40 - 45 lb.-ft. (54 - 61 Nm)         | 60 - 65 lb.-ft. (81 - 88 Nm)         |
| 1/2 - 20 (NF)  | 63 - 70 lb.-ft. (85 - 95 Nm)         | 94 - 105 lb.-ft. (127 - 142 Nm)      |
| 9/16 - 18 (NF)   | 90 - 100 lb.-ft. (122 - 136 Nm)      | 130 - 145 lb.-ft. (176 - 197 Nm)     |
| 5/8 - 18 (NF)  | 126 - 140 lb.-ft. (171 - 190 Nm)     | 189 - 210 lb.-ft. (256 - 285 Nm)     |
| 3/4 - 16 (NF)  | 220 - 245 lb.-ft. (298 - 332 Nm)     | 330 - 367 lb.-ft. (447 - 498 Nm)     |
| 7/8 - 14 (NF)  | 340 - 380 lb.-ft. (461 - 515 Nm)     | 510 - 565 lb.-ft. (691 - 766 Nm)     |
| 1 - 12 (NF)  | 522 - 580 lb.-ft. (708 - 786 Nm)     | 783 - 870 lb.-ft. (1062 - 1180 Nm)   |
| 1-1/8 - 12 (NF)  | 750 - 830 lb.-ft. (1017 - 1125 Nm)   | 1115 - 1240 lb.-ft. (1512 - 1681 Nm) |
| 1-1/4 - 12 (NF)  | 1056 - 1174 lb.-ft. (1432 - 1592 Nm) | 1584 - 1760 lb.-ft. (2148 - 2386 Nm) |
| 1-3/8 - 12 (NF)  | 1420 - 1580 lb.-ft. (1925 - 2142 Nm) | 2125 - 2360 lb.-ft. (2881 - 3200 Nm) |
| 1-1/2 - 12 (NF)  | 1867 - 2075 lb.-ft. (2531 - 2813 Nm) | 2801 - 3113 lb.-ft. (3798 - 4254 Nm) |



| Course Thread - Standard Bolt Assembly Torque<br>(NOTE: The torque values in this table are based on the use of lubricated threads.) |                       |                        |                         |
|--|-----------------------|------------------------|-------------------------|
| Size (mm)  | Class 8.8             | Class 10.9             | Class 12.9              |
| M4   | 2.7 Nm (2 lb.-ft.)    | 4 Nm (2.9 lb.-ft.)     | 4.7 Nm (3.5 lb.-ft.)    |
| M5   | 5.4 Nm (4 lb.-ft.)    | 7.9 Nm (5.8 lb.-ft.)   | 9.2 Nm (6.8 lb.-ft.)    |
| M6   | 9.3 Nm (6.9 lb.-ft.)  | 14 Nm (10.3 lb.-ft.)   | 16 Nm (11.8 lb.-ft.)    |
| M8   | 23 Nm (17 lb.-ft.)    | 33 Nm (24.3 lb.-ft.)   | 39 Nm (28.7 lb.-ft.)    |
| M10  | 45 Nm (33.2 lb.-ft.)  | 66 Nm (48.6 lb.-ft.)   | 77 Nm (56.7 lb.-ft.)    |
| M12  | 77 Nm (56.7 lb.-ft. ) | 115 Nm (84.8 lb.-ft.)  | 135 Nm (99.5 lb.-ft. )  |
| M14  | 125 Nm (92.1 lb.-ft.) | 180 Nm (133 lb.-ft.)   | 210 Nm (154.8 lb.-ft.)  |
| M16  | 190 Nm (140 lb.-ft. ) | 280 Nm (206 lb.-ft.)   | 330 Nm (243.2 lb.-ft.)  |
| M18  | 275 Nm (203 lb.-ft. ) | 390 Nm (288 lb.-ft.)   | 455 Nm (335.3 lb.-ft.)  |
| M20  | 385 Nm (284 lb.-ft. ) | 550 Nm (405 lb.-ft.)   | 640 Nm (471.7 lb.-ft.)  |
| M22  | 530 Nm (391 lb.-ft.)  | 750 Nm (553 lb.-ft.)   | 880 Nm (648.6 lb.-ft.)  |
| M24  | 660 Nm (486 lb.-ft.)  | 950 Nm (700 lb.-ft.)   | 1100 Nm (810.7 lb.-ft.) |
| M27  | 980 Nm (722 lb.-ft.)  | 1400 Nm (1032 lb.-ft.) | 1650 Nm (1216 lb.-ft.)  |
| M30  | 1350 Nm (995 lb.-ft.) | 1900 Nm (1400 lb.-ft.) | 220 Nm (1621 lb.-ft.)   |



| Fine Thread - Standard Bolt Assembly Torque<br>(NOTE: The torque values in this table are based on the use of lubricated threads.) |                        |                        |                        |
|--|------------------------|------------------------|------------------------|
| Size (mm)  | Class 8.8              | Class 10.9             | Class 12.9             |
| M8x1   | 24 Nm (17.7 lb.-ft.)   | 36 Nm (26.5 lb.-ft.)   | 42 Nm (31 lb.-ft.)     |
| M10x1  | 50 Nm (36.9 lb.-ft.)   | 73 Nm (53.8 lb.-ft.)   | 86 Nm (63.4 lb.-ft.)   |
| M10x1.25   | 47 Nm (34.6 lb.-ft.)   | 69 Nm (50.9 lb.-ft.)   | 81 Nm (59.7 lb.-ft.)   |
| M12x1.25   | 84 Nm (61.9 lb.-ft.)   | 125 Nm (92.1 lb.-ft.)  | 145 Nm (107 lb.-ft.)   |
| M12x1.5  | 81 Nm (59.7 lb.-ft.)   | 120 Nm (88.4 lb.-ft.)  | 140 Nm (103 lb.-ft.)   |
| M14x1.5  | 135 Nm (99.5 lb.-ft.)  | 195 Nm (144 lb.-ft.)   | 230 Nm (170 lb.-ft.)   |
| M16x1.5  | 205 Nm (151 lb.-ft.)   | 300 Nm (221 lb.-ft.)   | 350 Nm (258 lb.-ft.)   |
| M18x1.5  | 305 Nm (225 lb.-ft.)   | 435 Nm (321 lb.-ft.)   | 510 Nm (376 lb.-ft.)   |
| M20x1.5  | 430 Nm (317 lb.-ft.)   | 610 Nm (450 lb.-ft.)   | 710 Nm (523 lb.-ft.)   |
| M22x1.5  | 580 Nm (428 lb.-ft.)   | 830 Nm (612 lb.-ft.)   | 960 Nm (708 lb.-ft.)   |
| M24x2  | 720 Nm (531 lb.-ft.)   | 1050 Nm (774 lb.-ft.)  | 1200 Nm (884 lb.-ft.)  |
| M27x2  | 1050 Nm (774 lb.-ft.)  | 1500 Nm (1106 lb.-ft.) | 1750 Nm (1290 lb.-ft.) |
| M30x2  | 1450 Nm (1069 lb.-ft.) | 2100 Nm (1548 lb.-ft.) | 2450 Nm (1806 lb.-ft.) |



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The conversion table gives U.S. Customary to Metric Conversion factors.

| Pound-Feet<br>(lb.-ft.)  | Newton-Meters<br>(N-m)   | Kilogram-Meters<br>(Kgm)   |
|--|--|--|
| <b>CONVERSIONS</b>   |  |  |
| 1.0000<br>0.7376<br>7.2330   | 1.3558<br>1.0000<br>9.8066   | 0.1382<br>0.1020<br>1.0000   |
| <b>VALUES<br/>(rounded to second decimal place)</b>                  |  |  |
| 1.00<br>2.00<br>3.00<br>4.00<br>5.00<br>6.00<br>7.00<br>8.00<br>9.00 | 1.36<br>2.71<br>4.07<br>5.42<br>6.78<br>8.13<br>9.49<br>10.85<br>12.20 | 0.14<br>0.28<br>0.41<br>0.55<br>0.69<br>0.83<br>0.97<br>1.11<br>1.24 |



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|  |         |        |
|--|---------|--------|
| 10.00  | 13.56   | 1.38   |
| 20.00  | 27.12   | 2.76   |
| 30.00  | 40.67   | 4.15   |
| 40.00  | 54.23   | 5.53   |
| 50.00  | 67.79   | 6.91   |
| 60.00  | 81.35   | 8.29   |
| 70.00  | 94.91   | 9.68   |
| 80.00  | 108.46  | 11.05  |
| 90.00  | 122.02  | 12.44  |
| 100.00   | 135.58  | 13.82  |
| 200.00   | 271.16  | 27.65  |
| 300.00   | 406.74  | 41.48  |
| 400.00   | 542.33  | 55.30  |
| 500.00   | 677.91  | 69.13  |
| 600.00   | 813.49  | 82.95  |
| 700.00   | 949.07  | 96.78  |
| 800.00   | 1084.65 | 110.60 |
| 900.00   | 1220.24 | 124.43 |
| 1000.00  | 1355.82 | 138.25 |
| <b>EXAMPLE</b><br>From Conversions:<br>$175 \text{ lb.-ft.} \times 1.3558 = 237.265 \text{ N-m}$<br>From values table:<br>$5 \text{ lb.-ft.} = 6.78 \text{ N-m}$<br>$70 \text{ lb.-ft.} = 94.91 \text{ N-m}$<br>$100 \text{ lb.-ft.} = 135.58 \text{ N-m}$<br>$175 \text{ lb.-ft.} = 237.27 \text{ N-m}$ |         |        |

