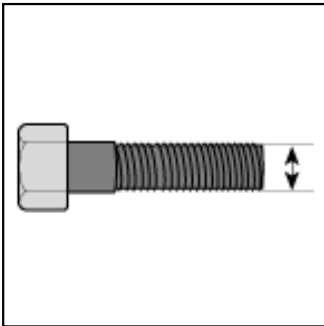
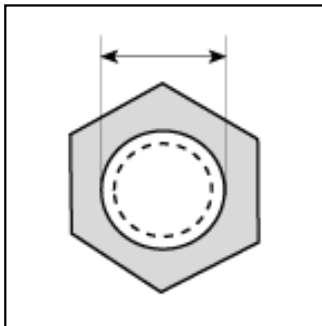
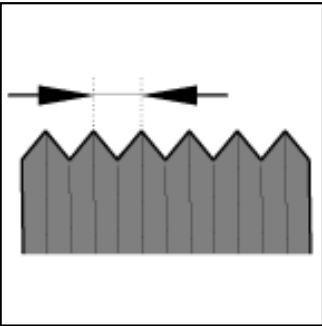
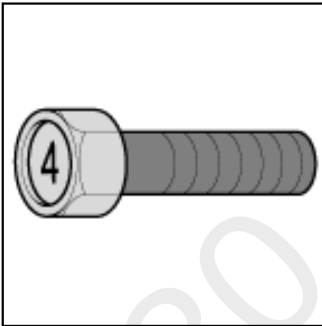
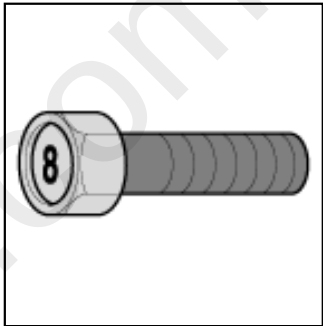
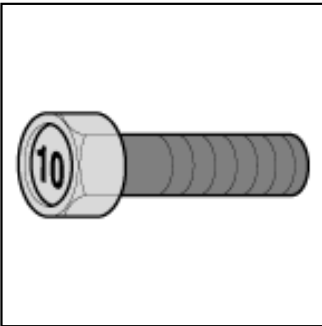
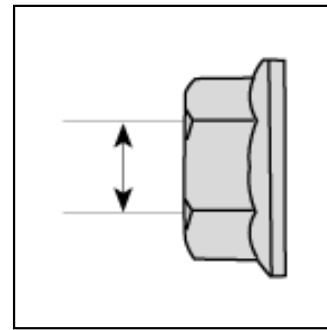
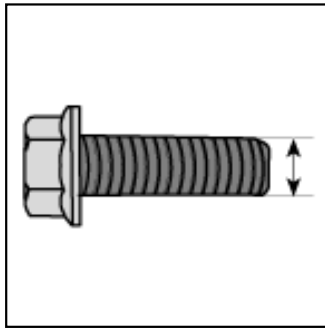


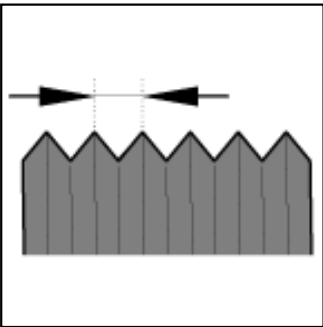
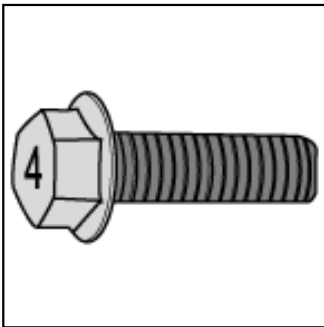
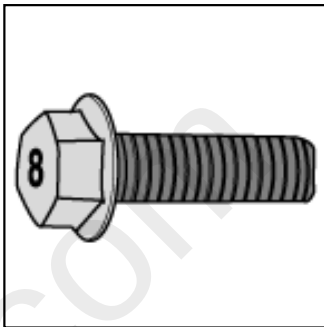
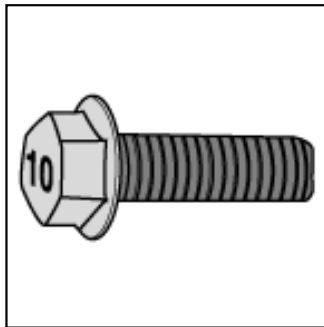
Tightening Torque Table of Standard  
Parts

| BOLT (Nominal diameter)                                                           | NUT (Nominal diameter)                                                              |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |

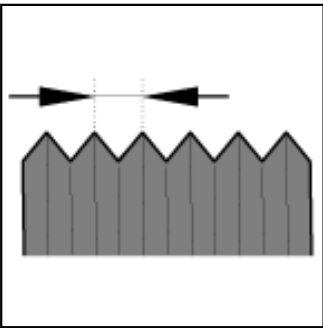
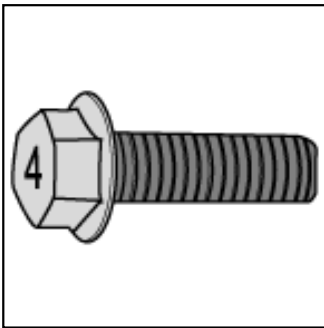
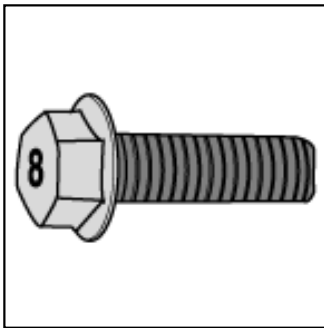
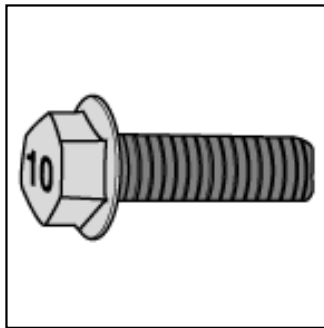
| BOLT/ NUT Normal screw    |                                                                                    | Torque Nm (kg.m, lb-ft)                                                            |                                                                                     |                                                                                      |
|---------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Nominal diameter.<br>(mm) | Pitch [mm (in.) ]                                                                  | 4T                                                                                 | 8T                                                                                  | 10T                                                                                  |
|                           |  |  |  |  |
| M5                        | 0.8 (0.031)                                                                        | 2.0 - 3.0 (0.2 - 0.3, 1.4 - 2.2)                                                   | 4.9 - 6.9 (0.5 - 0.7, 3.6 - 5.1)                                                    | 7.8 - 10.8 (0.8 - 1.1, 5.8 - 8.0)                                                    |
| M6                        | 1 (0.039)                                                                          | 2.9 - 4.9 (0.3 - 0.5, 2.2 - 3.6)                                                   | 8.8 - 12.7 (0.9 - 1.3, 6.5 - 9.4)                                                   | 13.7 - 18.6 (1.4 - 1.9, 10.1 - 13.7)                                                 |
| M8                        | 1.25 (0.049)                                                                       | 8.8 - 11.8 (0.9 - 1.2, 6.5 - 8.7)                                                  | 22.6 - 30.4 (2.3 - 3.1, 16.6 - 22.4)                                                | 33.3 - 44.1 (3.4 - 4.5, 24.6 - 32.5)                                                 |
| M10                       | 1.5 (0.059)                                                                        | 16.7 - 22.6 (1.7 - 2.3, 12.3 - 16.6)                                               | 45.1 - 60.8 (4.6 - 6.2, 33.3 - 44.8)                                                | 65.7 - 88.3 (6.7 - 9.0, 48.5 - 65.1)                                                 |
| M12                       | 1.75 (0.068)                                                                       | 29.4 - 39.2 (3.0 - 4.0, 21.7 - 28.9)                                               | 78.5 - 105.9 (8.0 - 10.8, 57.9 - 78.1)                                              | 114.7 - 154.9 (11.7 - 15.8, 84.6 - 114.3)                                            |
| M14                       | 2 (0.078)                                                                          | 47.1 - 63.7 (4.8 - 6.5, 34.7 - 47.0)                                               | 125.5 - 169.7 (12.8 - 17.3, 92.6 - 125.1)                                           | 183.4 - 249.1 (18.7 - 25.4, 135.3 - 183.7)                                           |
| M16                       | 2 (0.078)                                                                          | 73.5 - 100.0 (7.5 - 10.2, 54.2 - 73.8)                                             | 197.1 - 266.7 (20.1 - 27.2, 145.4 - 196.7)                                          | 288.3 - 390.3 (29.4 - 39.8, 212.7 - 287.9)                                           |
| M20                       | 2.5 (0.098)                                                                        | 144.2 - 195.2 (14.7 - 19.9, 106.3 - 143.9)                                         | 396.2 - 535.4 (40.4 - 54.6, 292.2 - 394.9)                                          | 565.8 - 764.9 (57.7 - 78.0, 417.3 - 564.2)                                           |
| M24                       | 3 (0.118)                                                                          | 249.1 - 337.3 (25.4 - 34.4, 183.7 - 248.8)                                         | 687.4 - 929.7 (70.1 - 94.8, 507.0 - 685.7)                                          | 975.8 - 1320.0 (99.5 - 134.6, 719.7 - 973.6)                                         |





| Flange BOLT/ NUT Normal screw |                                                                                   | Torque Nm (kg.m, lb-ft)                                                           |                                                                                    |                                                                                     |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Nominal diameter.<br>(mm)     | Pitch [mm (in.) ]                                                                 | 4T                                                                                | 8T                                                                                 | 10T                                                                                 |
|                               |  |  |  |  |
| M5                            | 0.8 (0.031)                                                                       | 2.0 - 2.9 (0.2 - 0.3, 1.4 - 2.2)                                                  | 5.9 - 7.8 (0.6 - 0.8, 4.3 - 5.8)                                                   | 8.8 - 11.8 (0.9 - 1.2, 6.5 - 8.7)                                                   |
| M6                            | 1 (0.039)                                                                         | 3.9 - 4.9 (0.4 - 0.5, 2.9 - 3.6)                                                  | 9.8 - 13.7 (1.0 - 1.4, 7.2 - 10.1)                                                 | 14.7 - 19.6 (1.5 - 2.0, 10.8 - 14.5)                                                |
| M8                            | 1.25 (0.049)                                                                      | 8.8 - 11.8 (0.9 - 1.2, 6.5 - 8.7)                                                 | 24.5 - 32.4 (2.5 - 3.3, 18.1 - 23.9)                                               | 35.3 - 48.1 (3.6 - 4.9, 26.0 - 35.4)                                                |
| M10                           | 1.5 (0.059)                                                                       | 17.7 - 24.5 (1.8 - 2.5, 13.0 - 18.1)                                              | 48.1 - 65.7 (4.9 - 6.7, 35.4 - 48.5)                                               | 70.6 - 96.1 (7.2 - 9.8, 52.1 - 70.9)                                                |
| M12                           | 1.75 (0.068)                                                                      | 31.4 - 43.1 (3.2 - 4.4, 23.1 - 31.8)                                              | 84.3 - 113.8 (8.6 - 11.6, 62.2 - 83.9)                                             | 123.6 - 167.7 (12.6 - 17.1, 91.1 - 123.7)                                           |
| M14                           | 2 (0.078)                                                                         | 51.0 - 68.6 (5.2 - 7.0, 37.6 - 50.6)                                              | 135.3 - 182.4 (13.8 - 18.6, 99.8 - 134.5)                                          | 198.1 - 268.7 (20.2 - 27.4, 146.1 - 198.2)                                          |
| M16                           | 2 (0.078)                                                                         | 79.4 - 107.9 (8.1 - 11.0, 58.6 - 79.6)                                            | 212.8 - 288.3 (21.7 - 29.4, 157.0 - 212.7)                                         | 311.8 - 421.7 (31.8 - 43.0, 230.0 - 311.0)                                          |

| Flange BOLT/ NUT Thin screw |                   | Torque Nm (kg.m, lb-ft) |    |     |
|-----------------------------|-------------------|-------------------------|----|-----|
| Nominal diameter.<br>(mm)   | Pitch [mm (in.) ] | 4T                      | 8T | 10T |
|                             |                   |                         |    |     |

|     |  |  |  |  |
|-----|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| M5  | 0.5 (0.019)                                                                      | 2.9 - 2.9 (0.3 - 0.3, 2.2 - 2.2)                                                 | 6.9 - 8.8 (0.7 - 0.9, 5.1 - 6.5)                                                  | 9.8 - 13.7 (1.0 - 1.4, 7.2 - 10.1)                                                 |
| M6  | 0.75 (0.029)                                                                     | 3.9 - 5.9 (0.4 - 0.6, 2.9 - 4.3)                                                 | 10.8 - 14.7 (1.1 - 1.5, 8.0 - 10.8)                                               | 16.7 - 21.6 (1.7 - 2.2, 12.3 - 15.9)                                               |
| M8  | 1 (0.039)                                                                        | 9.8 - 12.7 (1.0 - 1.3, 7.2 - 9.4)                                                | 26.5 - 35.3 (2.7 - 3.6, 19.5 - 26.0)                                              | 38.2 - 52.0 (3.9 - 5.3, 28.2 - 38.3)                                               |
| M10 | 1.25 (0.049)                                                                     | 19.6 - 25.5 (2.0 - 2.6, 14.5 - 18.8)                                             | 51.0 - 68.6 (5.2 - 7.0, 37.6 - 50.6)                                              | 75.5 - 102.0 (7.7 - 10.4, 55.7 - 75.2)                                             |
| M12 | 1.25 (0.049)                                                                     | 35.3 - 48.1 (3.6 - 4.9, 26.0 - 35.4)                                             | 94.1 - 126.5 (9.6 - 12.9, 69.4 - 93.3)                                            | 138.3 - 186.3 (14.1 - 19.0, 102.0 - 137.4)                                         |
| M14 | 1.5 (0.059)                                                                      | 55.9 - 75.5 (5.7 - 7.7, 41.2 - 55.7)                                             | 148.1 - 200.1 (15.1 - 20.4, 109.2 - 147.6)                                        | 216.7 - 293.2 (22.1 - 29.9, 159.8 - 216.3)                                         |
| M16 | 1.5 (0.059)                                                                      | 86.3 - 116.7 (8.8 - 11.9, 63.7 - 86.1)                                           | 229.5 - 309.9 (23.4 - 31.6, 169.3 - 228.6)                                        | 336.4 - 455.0 (34.3 - 46.4, 248.1 - 335.6)                                         |



1) The torques shown in the table are standard values under the following conditions.

- Nuts and bolts are made of galvanized steel bar.
- Galvanized plain steel washers are inserted.
- All nuts, bolts and plain washers are dry.

2) The torques shown in the table are not applicable.

- When spring washers, toothed washers and the like are inserted.
- If plastic parts are fastened.
- If self-tapping screws or self-locking nuts are used.
- If threads and surfaces are coated with oil.