

2. TIGHTENING TORQUE

Use following table for unspecified torque.

1) BOLT AND NUT

(1) Coarse thread

Bolt size	8T		10T	
	kgf · m	lbf · ft	kgf · m	lbf · ft
M 6 × 1.0	0.85 ~ 1.25	6.15 ~ 9.04	1.14 ~ 1.74	8.2 ~ 12.6
M 8 × 1.25	2.0 ~ 3.0	14.5 ~ 21.7	2.73 ~ 4.12	19.7 ~ 29.8
M10 × 1.5	4.0 ~ 6.0	28.9 ~ 43.4	5.5 ~ 8.3	39.8 ~ 60
M12 × 1.75	7.4 ~ 11.2	53.5 ~ 79.5	9.8 ~ 15.8	71 ~ 114
M14 × 2.0	12.2 ~ 16.6	88.2 ~ 120	16.7 ~ 22.5	121 ~ 167
M16 × 2.0	18.6 ~ 25.2	135 ~ 182	25.2 ~ 34.2	182 ~ 247
M18 × 2.5	25.8 ~ 35.0	187 ~ 253	35.1 ~ 47.5	254 ~ 343
M20 × 2.5	36.2 ~ 49.0	262 ~ 354	49.2 ~ 66.6	356 ~ 482
M22 × 2.5	48.3 ~ 63.3	350 ~ 457	65.8 ~ 98.0	476 ~ 709
M24 × 3.0	62.5 ~ 84.5	452 ~ 611	85.0 ~ 115.0	615 ~ 832
M30 × 3.5	124.1 ~ 167.9	898 ~ 1214	169.1 ~ 228.9	1223 ~ 1655
M36 × 4.0	174.3 ~ 235.6	1261 ~ 1703	250 ~ 310	1808 ~ 2242

(2) Fine thread

Bolt size	8T		10T	
	kgf · m	lbf · ft	kgf · m	lbf · ft
M 8 × 1.0	2.17 ~ 3.37	15.7 ~ 24.3	3.04 ~ 4.44	22.0 ~ 32.0
M10 × 1.25	4.46 ~ 6.66	32.3 ~ 48.2	5.93 ~ 8.93	42.9 ~ 64.6
M12 × 1.25	7.78 ~ 11.58	76.3 ~ 83.7	10.6 ~ 16.0	76.6 ~ 115
M14 × 1.5	13.3 ~ 18.1	96.2 ~ 130	17.9 ~ 24.1	130 ~ 174
M16 × 1.5	19.9 ~ 26.9	144 ~ 194	26.6 ~ 36.0	193 ~ 260
M18 × 1.5	28.6 ~ 43.6	207 ~ 315	38.4 ~ 52.0	278 ~ 376
M20 × 1.5	40.0 ~ 54.0	289 ~ 390	53.4 ~ 72.2	386 ~ 522
M22 × 1.5	52.7 ~ 71.3	381 ~ 515	70.7 ~ 95.7	512 ~ 692
M24 × 2.0	67.9 ~ 91.9	491 ~ 664	90.9 ~ 123.1	658 ~ 890
M30 × 2.0	136.9 ~ 185.1	990 ~ 1338	181.7 ~ 248.3	1314 ~ 1795
M36 × 3.0	192.1 ~ 259.9	1389 ~ 1879	261.8 ~ 354.2	1893 ~ 2561

2) PIPE AND HOSE

Thread size	Width across flat(mm)	kgf · m	lbf · ft
1/4"	19	3	21.7
3/8"	22	4	28.9
1/2"	27	5	36.2
3/4"	36	12	86.8
1"	41	14	101

3) FITTING

Thread size	Width across flat(mm)	kgf · m	lbf · ft
1/4"	19	4	28.9
3/8"	22	5	36.2
1/2"	27	6	43.4
3/4"	36	13	94.0
1"	41	15	109

4) TIGHTENING TORQUE OF MAJOR COMPONENT

No.	Descriptions	Bolt size	Torque		
			kgf · m	lbf · ft	
1	Engine	Engine mounting bolt, nut	M16 × 2.0	23.0 ± 2.5	166 ± 18.1
2		Radiator mounting bolt, nut	M10 × 1.5	4.8 ± 0.3	34.7 ± 2.2
3		Coupling mounting bolt	M14 × 2.0	13.5 ± 2.5	97.6 ± 18.1
4	Hydraulic system	Main pump mounting bolt	M12 × 1.75	12.2 ± 1.3	88.2 ± 9.4
5		Main control valve mounting bolt	M10 × 1.5	4.8 ± 0.3	88.2 ± 9.4
6		fuel tank mounting bolt	M16 × 2.0	23.0 ± 2.5	166 ± 18.1
7		Hydraulic oil tank mounting bolt	M16 × 2.0	23.0 ± 2.5	166 ± 18.1
8		Turning joint mounting bolt, nut	M16 × 2.0	23.0 ± 2.5	88.2 ± 9.4
9	Power train system	Swing motor mounting bolt	M16 × 2.0	23.0 ± 2.5	419 ± 62.9
10		Swing bearing upper mounting bolt	M16 × 2.0	29.6 ± 3.2	214 ± 23.1
11		Swing bearing lower mounting bolt	M16 × 2.0	29.6 ± 3.2	214 ± 23.1
12		Front axle mounting bolt, nut	M16 × 2.0	29.6 ± 3.2	214 ± 23.1
13		Rear axle mounting bolt, nut	M16 × 2.0	29.6 ± 3.2	214 ± 23.1
14		Transfer box mounting bolt	M14 × 2.0	19.6 ± 2.9	144 ± 21.0
15		Oscillating cylinder mounting bolt	M16 × 2.0	29.6 ± 3.2	214 ± 23.1
16		Oscillating cylinder support bolt	M12 × 1.75	12.2 ± 1.3	88.2 ± 9.4
17		Wheel nut	M18 × 1.5	33.2 ± 2.6	240 ± 18.8
18		Front drive shaft mounting bolt, nut	M10 × 1.25	5.9 ± 0.6	42.7 ± 4.3
19		Rear drive shaft mounting bolt, nut	M10 × 1.25	5.9 ± 0.6	42.7 ± 4.3
20	Others	Counter weight mounting bolt	M20 × 2.5	57.8 ± 6.4	418 ± 46.3
21		Cab mounting bolt, nut	M10 × 1.5	4.8 ± 0.3	34.7 ± 2.2
22		Operator's seat mounting bolt	M 6 × 1.0	1.0 ± 0.1	7.2 ± 0.7