

## GROUP 2 TIGHTENING TORQUE

### 1. MAJOR COMPONENT

No.	Descriptions	Bolt size	Torque		
1	Engine	Engine mounting bolt, nut	M22 × 2.5	48±2.0	347±14
2		Radiator mounting bolt, nut	M12 × 1.75	12.2±1.3	88.2±9.4
3		Coupling mounting socket bolt	M10 × 1.5	6.9±1.4	50±10
4		Main pump housing mounting bolt	M10 × 1.5	2.8±0.3	20.3±2.2
5	Hydraulic system	Main pump mounting socket bolt	M20 × 2.5	42.0±4.5	303.8±32.5
6		Main control valve mounting bolt	M16 × 2.0	11.7±1.6	84.6±11.6
7		Fuel tank mounting bolt	M20 × 2.5	46.0±5.1	332.7±36.9
8		Hydraulic oil tank mounting bolt	M20 × 2.5	46.0±5.1	332.7±36.9
9		Turning joint mounting bolt, nut	M16 × 2.0	29.6±3.2	214.1±23.1
10	P/Train system	Swing motor mounting bolt	M20 × 2.5	58.4±6.4	422.4±46.3
11		Swing bearing upper part mounting bolt	M24 × 3.0	97.8±10	707.4±72.3
12		Swing bearing lower part mounting bolt	M24 × 3.0	97.8±10	707.4±72.3
13		Travel motor mounting bolt	M20 × 2.5	44±4	318.3±28.9
14		Sprocket mounting bolt	M20 × 2.5	51±4	368.9±28.9
15	Under carriage	Carrier roller mounting bolt	M16 × 2.0	21.0±2.3	151.9±16.6
16		Track roller mounting bolt	M20 × 2.5	54.7±6.0	395.6±43.4
17		Track tension cylinder mounting bolt	M16 × 2.0	29.6±3.2	214.1±23.1
18		Track shoe mounting bolt, nut	M20 × 1.5	79±4.0	571±29
19		Track guard mounting bolt	M20 × 2.5	54.7±6	395.6±43.4
20	Others	Counter weight mounting bolt	M36 × 3.0	308±46	2227±334
21		Cab mounting bolt, nut	M12 × 1.75	12.2±1.3	88.2±9.4

※ For tightening torque of engine and hydraulic components, see each components disassembly and assembly.

## 2. TORQUE CHART

The torques given are standard figures. Any figures specifically described in this manual has priority.

### 1) METRIC BOLT-coarse thread

Bolt size	8T		10T	
	kgf · m	lbf · ft	kgf · m	lbf · ft
M 6 × 1.0	0.9 ~ 1.3	6.5 ~ 9.4	1.1 ~ 1.7	A8.0 ~ 12.3
M 8 × 1.25	2.0 ~ 3.0	14.5 ~ 21.7	2.7 ~ 4.1	19.5 ~ 29.7
M10 × 1.5	4.0 ~ 6.0	28.9 ~ 43.4	5.5 ~ 8.3	39.8 ~ 60.0
M12 × 1.75	7.4 ~ 11.2	53.5 ~ 81.0	9.8 ~ 15.8	70.9 ~ 114.3
M14 × 2.0	12.2 ~ 16.6	88.2 ~ 120.0	16.7 ~ 22.5	120.8 ~ 162.7
M16 × 2.0	18.6 ~ 25.2	134.5 ~ 182.3	25.2 ~ 34.2	182.3 ~ 247.4
M18 × 2.0	25.8 ~ 35.0	186.6 ~ 253.2	35.1 ~ 47.5	253.9 ~ 343.6
M20 × 2.5	36.2 ~ 49.0	261.8 ~ 354.4	49.2 ~ 66.6	355.9 ~ 481.7
M22 × 2.5	48.3 ~ 63.3	349.4 ~ 457.8	65.8 ~ 98.0	475.9 ~ 708.8
M24 × 3.0	62.5 ~ 84.5	452.1 ~ 611.2	85.0 ~ 115.0	614.8 ~ 831.8
M30 × 3.0	124.1 ~ 167.9	897.6 ~ 1214.4	169.1 ~ 228.9	1223.1 ~ 1655.6
M36 × 4.0	174.3 ~ 235.6	1260.7 ~ 1704.0	250.0 ~ 310.0	1808.3 ~ 2242.2

### 2) METRIC BOLT-fine thread

Bolt size	8T		10T	
	kgf · m	lbf · ft	kgf · m	lbf · ft
M 8 × 1.0	2.2 ~ 3.4	15.9 ~ 24.6	3.0 ~ 4.4	21.7 ~ 31.8
M10 × 1.2	4.5 ~ 6.7	32.5 ~ 48.5	5.9 ~ 8.9	42.7 ~ 64.4
M12 × 1.25	7.8 ~ 11.6	56.4 ~ 83.9	10.6 ~ 16.0	76.7 ~ 115.7
M14 × 1.5	13.3 ~ 18.1	96.2 ~ 130.9	17.9 ~ 21.1	129.5 ~ 174.3
M16 × 1.5	19.9 ~ 26.9	143.9 ~ 194.6	26.6 ~ 36.0	192.4 ~ 260.4
M18 × 1.5	28.6 ~ 43.6	206.9 ~ 315.4	38.4 ~ 52.0	277.7 ~ 376.1
M20 × 1.5	40.0 ~ 54.0	289.3 ~ 390.6	53.4 ~ 72.2	386.2 ~ 522.2
M22 × 1.5	52.7 ~ 71.3	381.2 ~ 515.7	70.7 ~ 95.7	511.4 ~ 692.2
M24 × 2.0	67.9 ~ 91.9	491.1 ~ 664.7	90.9 ~ 123.1	657.5 ~ 890.4
M30 × 2.0	136.9 ~ 185.1	990.2 ~ 1338.8	181.7 ~ 248.3	1314.2 ~ 1796.0
M36 × 3.0	192.1 ~ 259.9	1389.5 ~ 1879.9	261.8 ~ 354.2	1893.6 ~ 2561.9

### 3) PIPE & 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

### 4) 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	108.5