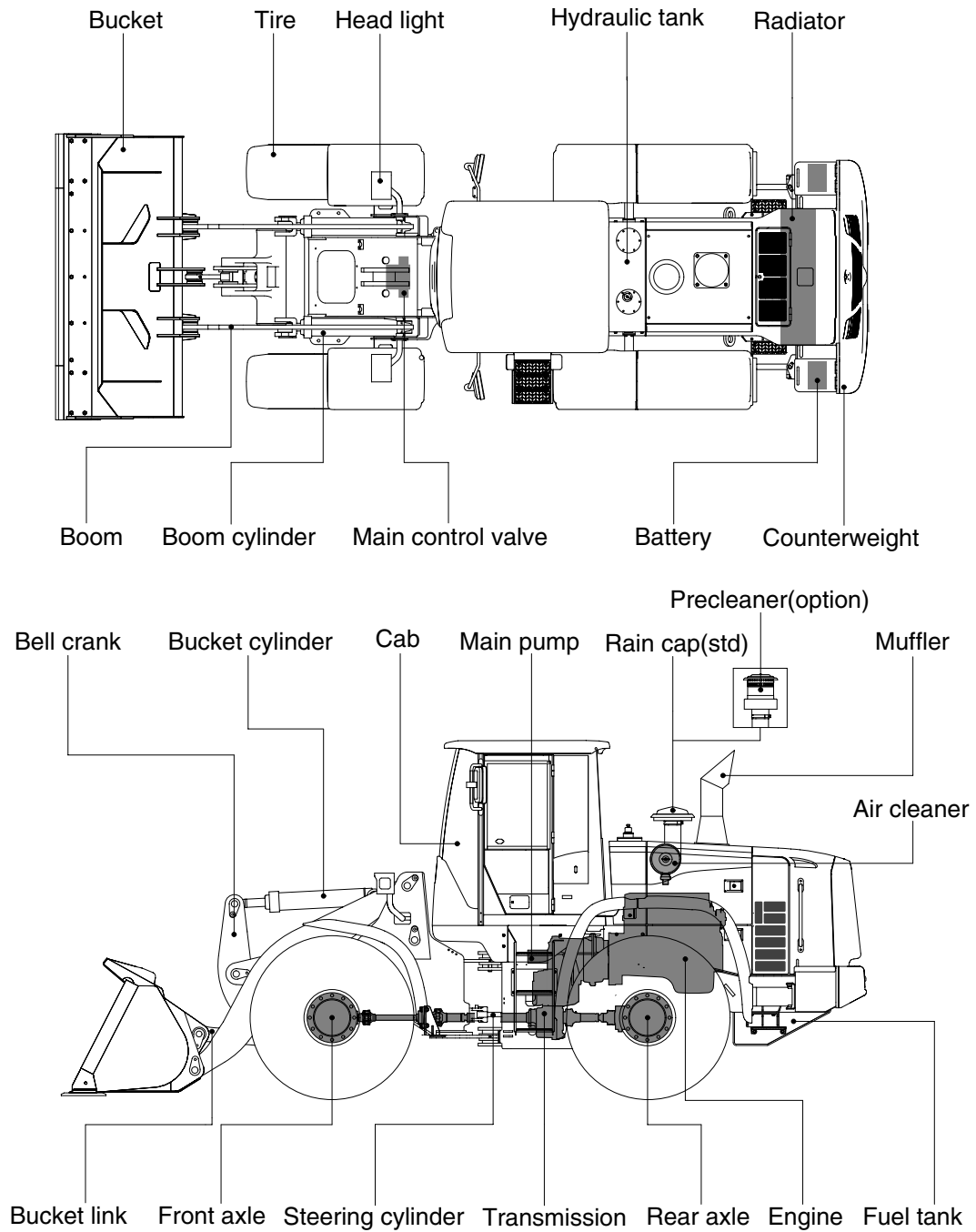


GROUP 2 SPECIFICATION

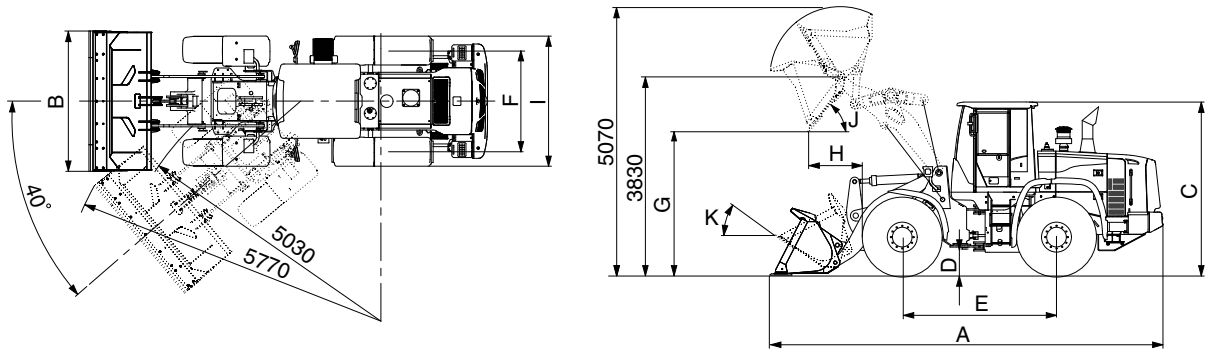
1. MAJOR COMPONENTS



7409S2SP05

2. SPECIFICATIONS

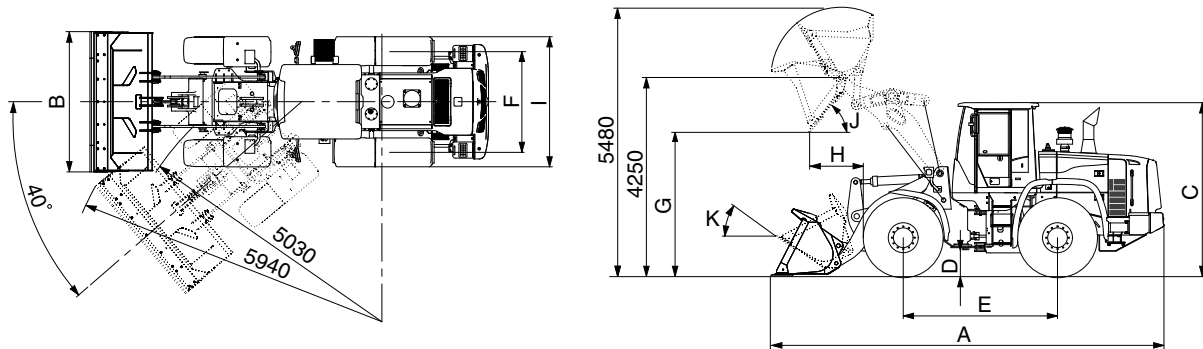
1) WITH BOLT-ON CUTTING EDGE TYPE BUCKET (HL740-9S)



7409S2SP01

Description		Unit	Specification	
Operating weight		kg (lb)	11550 (25460)	
Bucket capacity	Struck	m ³ (yd ³)	1.78 (2.3)	
	Heaped		2.1 (2.7)	
Overall length	A	mm (ft-in)	7260 (23' 10")	
Overall width	B		2550 (8' 4")	
Overall height	C		3310 (10' 10")	
Ground clearance	D		417 (1' 4")	
Wheelbase	E		2900 (9' 6")	
Tread	F		1900 (6' 3")	
Dump clearance at 45°	G		2850 (9' 4")	
Dump reach (full lift)	H		970 (3' 2")	
Width over tires	I		2430 (8' 0")	
Dump angle	J		degree (°)	48
Roll back angle (carry position)	K			47
Cycle time	Lift (with load)	sec	5.8	
	Dump (with load)		1.3	
	Lower (empty)		3.1	
Maximum travel speed		km/hr (mph)	40.0 (24.9)	
Braking distance		m (ft-in)	12 (39' 4")	
Minimum turning radius (center of outside tire)			5.03 (16' 6")	
Gradeability		degree (°)	30	
Breakout force		kg (lb)	11880 (26190)	
Travel speed	Forward (DANA axle/ZF axle)	First gear	6.9 (4.3) / 7.0 (4.3)	
		Second gear	12.5 (7.8) / 12.8 (8.0)	
		Third gear	24.1 (15.0) / 24.5 (15.2)	
		Fourth gear	40.0 (24.9)	
	Reverse (DANA axle/ZF axle)	First gear	7.2 (4.5) / 7.4 (4.6)	
		Second gear	13.2 (8.2) / 13.4 (8.3)	
Third gear		25.3 (15.7) / 25.8 (16.0)		

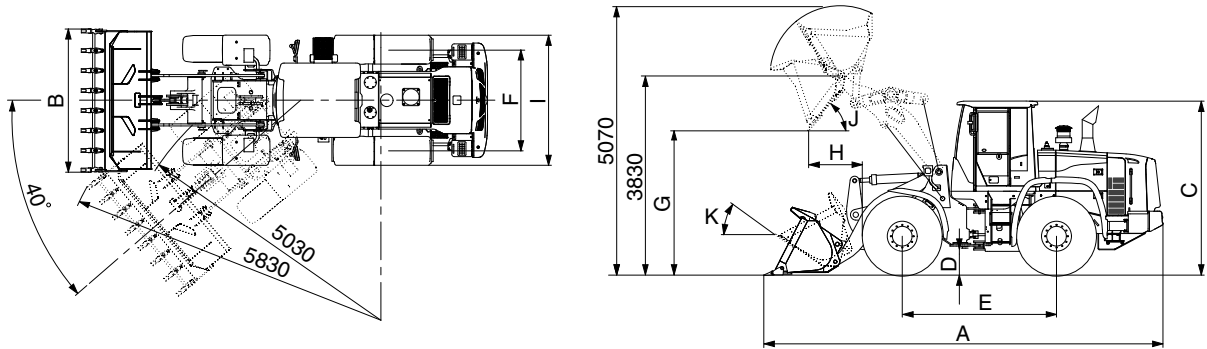
WITH BOLT-ON CUTTING EDGE TYPE BUCKET (HL740XTD-9S)



7409S2SP02

Description		Unit	Specification	
Operating weight		kg (lb)	11850 (26120)	
Bucket capacity	Struck	m ³ (yd ³)	1.78 (2.3)	
	Heaped		2.1 (2.7)	
Overall length	A	mm (ft-in)	7710 (25' 4")	
Overall width	B		2550 (8' 4")	
Overall height	C		3310 (10' 10")	
Ground clearance	D		417 (1' 4")	
Wheelbase	E		2900 (9' 6")	
Tread	F		1900 (6' 3")	
Dump clearance at 45°	G		3270 (10' 8")	
Dump reach (full lift)	H		965 (3' 2")	
Width over tires	I		2430 (8' 0")	
Dump angle	J		degree (°)	47
Roll back angle (carry position)	K			49
Cycle time	Lift (with load)	sec	5.8	
	Dump (with load)		1.3	
	Lower (empty)		3.1	
Maximum travel speed		km/hr (mph)	40.0 (24.9)	
Braking distance		m (ft-in)	12 (39' 4")	
Minimum turning radius (center of outside tire)			5.03 (16' 6")	
Gradeability		degree (°)	30	
Breakout force		kg (lb)	11730 (25860)	
Travel speed	Forward (DANA axle/ZF axle)	First gear	6.9 (4.3) / 7.0 (4.3)	
		Second gear	12.5 (7.8) / 12.8 (8.0)	
		Third gear	24.1 (15.0) / 24.5 (15.2)	
		Fourth gear	40.0 (24.9)	
	Reverse (DANA axle/ZF axle)	First gear	7.2 (4.5) / 7.4 (4.6)	
		Second gear	13.2 (8.2) / 13.4 (8.3)	
Third gear		25.3 (15.7) / 25.8 (16.0)		

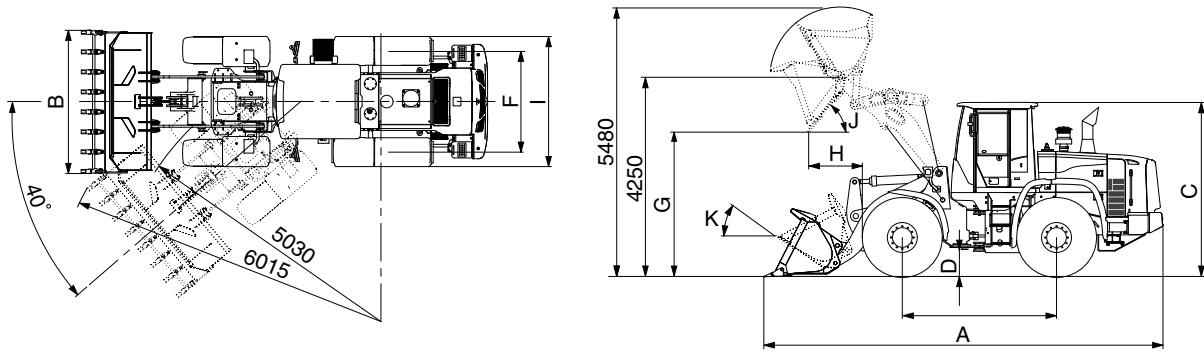
2) WITH TOOTH TYPE BUCKET (HL740-9S)



7409S2SP03

Description		Unit	Specification	
Operating weight		kg (lb)	11550 (25460)	
Bucket capacity	Struck	m ³ (yd ³)	1.7 (2.2)	
	Heaped		2.0 (2.6)	
Overall length	A	mm (ft-in)	7370 (24' 2")	
Overall width	B		2600 (8' 6")	
Overall height	C		3310 (10' 10")	
Ground clearance	D		417 (1' 4")	
Wheelbase	E		2900 (9' 6")	
Tread	F		1900 (6' 3")	
Dump clearance at 45°	G		2770 (9' 1")	
Dump reach (full lift)	H		1035 (3' 5")	
Width over tires	I		2430 (8' 0")	
Dump angle	J		degree (°)	48
Roll back angle (carry position)	K			47
Cycle time	Lift (with load)	sec	5.8	
	Dump (with load)		1.3	
	Lower (empty)		3.1	
Maximum travel speed		km/hr (mph)	40.0 (24.9)	
Braking distance		m (ft-in)	12 (39' 4")	
Minimum turning radius (center of outside tire)			5.03 (16' 6")	
Gradeability		degree (°)	30	
Breakout force		kg (lb)	12810 (28240)	
Travel speed	Forward (DANA axle/ZF axle)	First gear	km/hr (mph)	6.9 (4.3) / 7.0 (4.3)
		Second gear		12.5 (7.8) / 12.8 (8.0)
		Third gear		24.1 (15.0) / 24.5 (15.2)
		Fourth gear		40.0 (24.9)
	Reverse (DANA axle/ZF axle)	First gear		7.2 (4.5) / 7.4 (4.6)
		Second gear		13.2 (8.2) / 13.4 (8.3)
Third gear		25.3 (15.7) / 25.8 (16.0)		

WITH TOOTH TYPE BUCKET (HL740XTD-9S)



7409S2SP04

Description		Unit	Specification	
Operating weight		kg (lb)	11850 (26120)	
Bucket capacity	Struck	m ³ (yd ³)	1.7 (2.2)	
	Heaped		2.0 (2.6)	
Overall length	A	mm (ft-in)	7890 (25' 11")	
Overall width	B		2600 (8' 6")	
Overall height	C		3310 (10' 10")	
Ground clearance	D		417 (1' 4")	
Wheelbase	E		2900 (9' 6")	
Tread	F		1900 (6' 3")	
Dump clearance at 45°	G		3170 (10' 5")	
Dump reach (full lift)	H		1045 (3' 5")	
Width over tires	I		2430 (8' 0")	
Dump angle	J		degree (°)	47
Roll back angle (carry position)	K			49
Cycle time	Lift (with load)		sec	5.8
	Dump (with load)			1.3
	Lower (empty)	3.1		
Maximum travel speed		km/hr (mph)	40.0 (24.9)	
Braking distance		m (ft-in)	12 (39' 4")	
Minimum turning radius (center of outside tire)			5.03 (16' 6")	
Gradeability		degree (°)	30	
Breakout force		kg (lb)	12650 (27890)	
Travel speed	Forward (DANA axle/ZF axle)	First gear	km/hr (mph)	6.9 (4.3) / 7.0 (4.3)
		Second gear		12.5 (7.8) / 12.8 (8.0)
		Third gear		24.1 (15.0) / 24.5 (15.2)
		Fourth gear		40.0 (24.9)
	Reverse (DANA axle/ZF axle)	First gear		7.2 (4.5) / 7.4 (4.6)
		Second gear		13.2 (8.2) / 13.4 (8.3)
Third gear		25.3 (15.7) / 25.8 (16.0)		

3. WEIGHT

Item		kg	lb
Front frame assembly		880	1940
Rear frame assembly		1270	2800
Front fender (LH & RH)		31	68
Counterweight	HL740-9S	700	1540
	HL740XTD-9S	900	1980
Cab assembly		610	1340
Engine assembly		437	963
Transmission assembly		410	904
Drive shaft (front)		18	40
Drive shaft (center)		16	35
Drive shaft (rear)		12	26
Front axle (include differential)		650	1430
Rear axle (include differential)		645	1420
Tire (20.5-25, 16PR, L3)		203	448
Hydraulic tank assembly		170	375
Fuel tank assembly		220	485
Main pump assembly		28	62
Fan & brake pump assembly		7	15
Main control valve (2/3 spool)		21/28	46/62
Boom assembly	HL740-9S	725	1600
	HL740XTD-9S	815	1800
Bell crank assembly		230	510
Bucket link		37	80
2.3 m ³ bucket, with bolt on cutting edge		940	2070
2.2 m ³ bucket, with tooth		905	2000
Boom cylinder assembly		90	198
Bucket cylinder assembly		111	245
Steering cylinder assembly		19	42
Seat		40	88
Battery		28	62

4. SPECIFICATION FOR MAJOR COMPONENTS

1) ENGINE

Item	Specification
Model	Cummins 6BTA5.9
Type	4-cycle turbocharged diesel engine.
Cooling method	Water cooling
Number of cylinders and arrangement	6 cylinders, in-line
Firing order	1-5-3-6-2-4
Combustion chamber type	Direct injection type
Cylinder bore × stroke	102 × 120 mm (4.0" × 4.7")
Piston displacement	5880 cc (359 cu in)
Compression ratio	17.6 : 1
Rated gross horse power	150 hp at 2200 rpm
Maximum gross torque at 1400rpm	68 kgf · m (493 lbf · ft)
Engine oil quantity	17.4 l (4.6 U.S. gal)
Dry weight	437 kg (963 lb)
High idling speed	2300 ± 50 rpm
Low idling speed	950 ± 25 rpm
Rated fuel consumption (at rated)	223 g/kw · hr
Starting motor	Lucas (24 V-4.5 kW)
Alternator	Lucas (24 V-90 Amp)
Battery	2 × 12 V × 115 Ah

2) MAIN PUMP

Item	Specification
Type	Gear pump
Capacity	40.4 + 40.4 cc/rev
Maximum operating pressure	210 kgf/cm ² (2990 psi)
Rated operating speed	2200 rpm
Rated output flow	167 l /min (44.2 U.S.gpm)

3) FAN AND BRAKE PUMP

Item	Specification	
	Fan	Brake
Type	Fixed displacement tandem helical gear pump	
Capacity	9.1 cc/rev	9.1 cc/rev
Maximum operating pressure	120 kgf/cm ² (1710 psi)	150 kgf/cm ² (2130 psi)
Rated operating speed	2200 rpm	2200 rpm
Rated output flow	21 l /min (5.5 U.S.gpm)	21 l /min (5.5 U.S.gpm)

4) MAIN CONTROL VALVE

Item	Specification
Type	2 spool (sectional block)
Operating method	Hydraulic pilot assist
Main relief valve set pressure	210 kgf/cm ² (2990 psi)
Overload relief valve set pressure	240 kgf/cm ² (3410 psi)

5) REMOTE CONTROL VALVE

Item	Specification	
Type	Joystick (or with aux lever)	
Control pressure	Minimum	3.7 kgf/cm ² (52.6 psi)
	Maximum	30 kgf/cm ² (427 psi)

6) CYLINDER

Item	Specification
Boom cylinder	Bore dia × Rod dia × Stroke ø 120 × ø 70 × 738 mm
Bucket cylinder	Bore dia × Rod dia × Stroke ø 140 × ø 75 × 505 mm
Steering cylinder	Bore dia × Rod dia × Stroke ø 65 × ø 40 × 429 mm

7) DYNAMIC POWER TRANSMISSION DEVICES

Item		Specification
Torque converter	Model	ZF 4WG160
	Type	Single-stage, single-phase
	Ratio	2.3 : 1
Transmission	Type	Full-automatic power shift
	Gear shift	Forward fourth gear, reverse third gear
	Control	Electrical single lever type, kick-down system
	Pump rated flow	85 ℓ /min (22.5 U.S.gpm) at 2000 rpm
Axle	Drive devices	4-wheel drive
	Front	Front fixed location
	Rear	Oscillation $\pm 12^\circ$ of center pin-loaded
Wheels	Tires	20.5-25, 16PR (L3)
Brakes	Travel	Four-wheel, wet-disc type, full hydraulic
	Parking	Spring applied, hydraulic released brake on front axle
Steering	Type	Full hydraulic, articulated
	Steering angle	40° to both right and left angle, respectively

5. TIGHTENING TORQUE OF MAJOR COMPONENT

No.	Descriptions	Bolt size	Torque		
			kgf · m	lbf · ft	
1	Engine	Engine mounting bolt, nut (rubber, 2EA)	M20×2.5	57.9 ± 8.7	419 ± 63
2		Engine mounting bolt (bracket, 8EA)	M12×1.75	10.7 ± 1.6	77.4 ± 11.6
3		Engine mounting bolt (flywheel housing, 12EA)	M10×1.5	4.6 ± 0.9	33.3 ± 6.5
4		Engine mounting bolt (flywheel housing, 4EA)	M10×1.5	4.5 ± 0.6	32.5 ± 4.3
5		Radiator mounting bolt	M16×2.0	29.7 ± 4.5	215 ± 32.5
6		Fuel tank mounting bolt, nut	M16×2.0	29.7 ± 4.5	215 ± 32.5
7	Hydraulic system	Main pump housing mounting bolt	M12×1.75	12.8 ± 3.0	92.6 ± 21.7
8		Fan & brake pump housing mounting bolt	M10×1.5	6.9 ± 1.4	50 ± 10.1
9		Main control valve mounting bolt	M12×1.75	12.8 ± 3.0	92.6 ± 21.7
10		Steering unit mounting bolt	M10×1.5	6.9 ± 1.4	50 ± 10.1
11		Pilot supply unit	M8×1.25	2.5 ± 0.5	18.1 ± 3.6
12		Steering valve (EHPS) mounting bolt	M8×1.25	2.5 ± 0.5	18.1 ± 3.6
13		Cushion valve	M8×1.25	2.5 ± 0.5	18.1 ± 3.6
14		Brake valve mounting bolt	M8×1.25	2.5 ± 0.5	18.1 ± 3.6
15		Cut-off valve mounting bolt	M8×1.25	2.5 ± 0.5	18.1 ± 3.6
16		Remote control lever mounting bolt	M6×1.0	1.1 ± 0.2	8.0 ± 1.4
17		Safety valve	M8×1.25	2.5 ± 0.5	18.1 ± 3.6
18		Hydraulic oil tank mounting bolt	M16×2.0	29.7 ± 4.5	215 ± 32.5
19	Power train system	Transmission mounting bolt, nut (rubber, 2EA)	M24×3.0	100 ± 15	723 ± 108
20		Transmission mounting bolt (bracket)	M20×2.5	46.3 ± 7.0	335 ± 50.6
21		Front axle mounting bolt, nut	M27×2.0	135 ± 15	976 ± 108
22		Rear axle support mounting bolt, nut	M27×2.0	135 ± 15	976 ± 108
23		Tire mounting nut	M22×1.5	79 ± 2.5	571 ± 18.1
24		Drive shaft joint mounting bolt, nut	1/2-20UNF	6.0 ± 0.8	43.4 ± 5.8
25	Others	Counterweight mounting bolt	M30×3.5	199 ± 30	1439 ± 216
26		Operator's seat mounting bolt	M8×1.25	3.4 ± 0.8	24.6 ± 5
27		Cab mounting bolt (4EA)	M30×3.5	199 ± 30	1440 ± 217
28		Cab mounting nut (4EA)	M16×2.0	20.5 ± 4.7	148 ± 40

6. TORQUE CHART

Use following table for unspecified torque.

1) BOLT AND NUT

(1) Coarse thread

Bolt size	8T		10T	
	kg · m	lb · ft	kg · m	lb · 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	19.5 ~ 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	615 ~ 832
M30 × 3.0	124 ~ 168	898 ~ 1214	169 ~ 229	1223 ~ 1655
M36 × 4.0	174 ~ 236	1261 ~ 1703	250 ~ 310	1808 ~ 2242

(2) Fine thread

Bolt size	8T		10T	
	kg · m	lb · ft	kg · m	lb · 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	658 ~ 890
M30 × 2.0	137 ~ 185	990 ~ 1338	182 ~ 248	1314 ~ 1795
M36 × 3.0	192 ~ 260	1389 ~ 1879	262 ~ 354	1893 ~ 2561

2) PIPE AND HOSE (FLARE type)

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	9.5	68.7
3/4"	36	18	130
1"	41	21	152
1-1/4"	50	35	253

3) PIPE AND HOSE (ORFS type)

Thread size	Width across flat (mm)	kgf · m	lbf · ft
9/16-18	19	4	28.9
11/16-16	22	5	36.2
13/16-16	27	9.5	68.7
1-3/16-12	36	18	130
1-7/16-12	41	21	152
1-11/16-12	50	35	253

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	9.5	68.7
3/4"	36	18	130
1"	41	21	152
1-1/4"	50	35	253

7. RECOMMENDED LUBRICANTS

Use only oils listed below or equivalent.

Do not mix different brand oil.

Service point	Kind of fluid	Capacity l (U.S. gal)	Ambient temperature °C (°F)						
			-20 (-4)	-10 (14)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)
Engine oil pan	Engine oil	17.4 (4.6)	SAE 30						
			SAE 10W						
			SAE 10W-30						
						SAE 15W-40			
Transmission	Engine oil	25 (6.6)	SAE 10W-30						
						SAE 15W-40			
Axle	UTTO	Front : 21.8 (5.8) Rear : 21.8 (5.8)	*Refer to below list						
Hydraulic tank	Hydraulic oil	Tank: 102 (26.9) System: 165 (44)	ISO VG 32						
						ISO VG 46			
						ISO VG 68			
Fuel tank	Diesel fuel	220 (58.1)	ASTM D975 NO.1						
						ASTM D975 NO.2			
Fitting (grease nipple)	Grease	As required	NLGI NO.1						
						NLGI NO.2			
Radiator	Mixture of antifreeze and water 50 : 50	34 (9.0)	Ethylene glycol base permanent type						

- SAE : Society of Automotive Engineers
- API : American Petroleum Institute
- ISO : International Organization for Standardization
- NLGI : National Lubricating Grease Institute
- ASTM : American Society of Testing and Material
- UTTO : Universal Tractor Transmission Oil

- ★ Recommended oil list
- BP TERRAC SUPER TRANSMISSION 10W-30
- CASTROL AGRI TRANS PLUS 10W-30
- MOBILFLUID 426
- SHELL DONAX TD 10W-30
- TOTAL DYNATRANS MPV