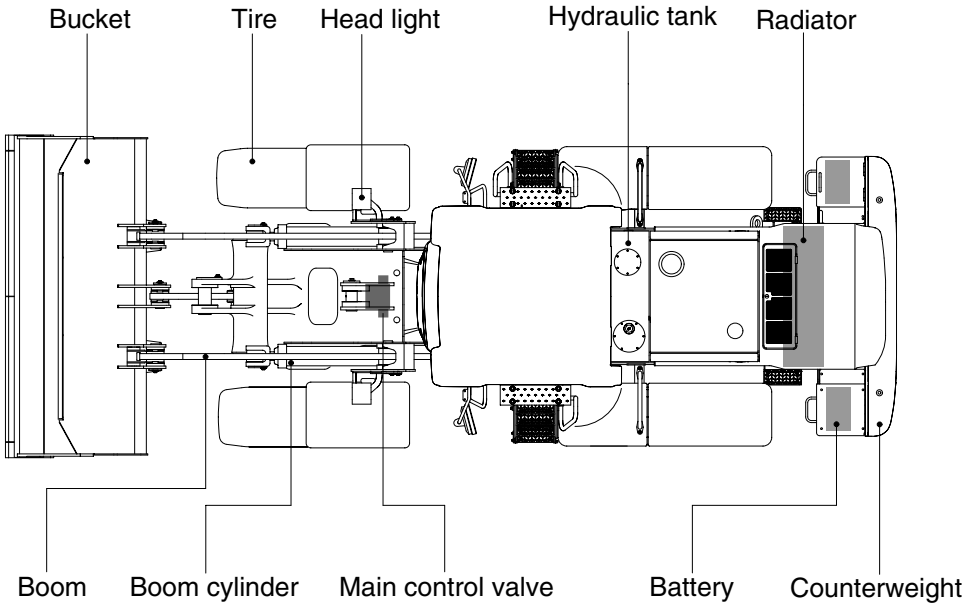
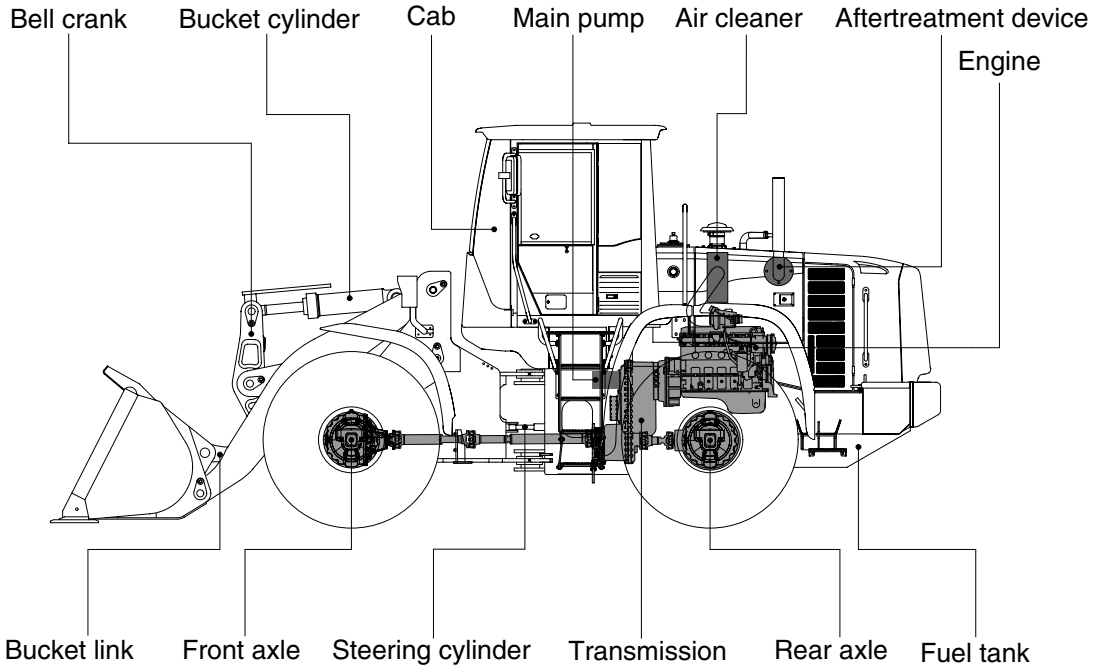
GROUP 2 SPECIFICATION

1. MAJOR COMPONENT

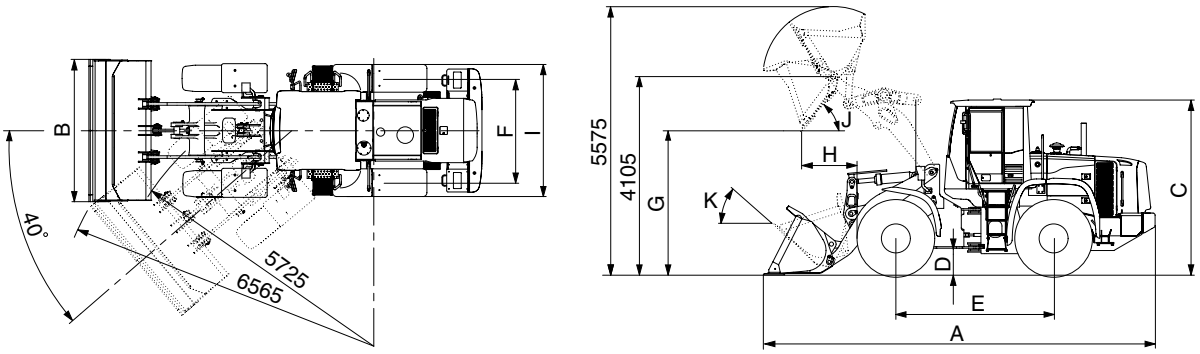




7609A2SE01

2. SPECIFICATIONS

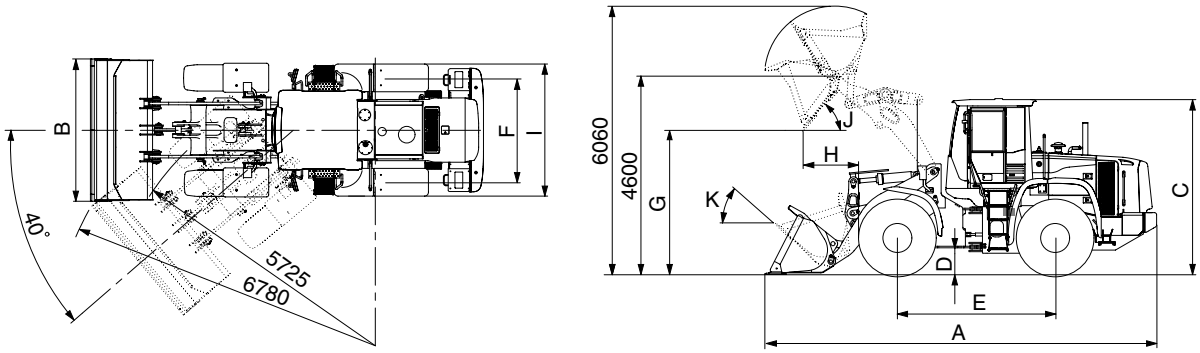
1) WITH BOLT-ON CUTTING EDGE TYPE BUCKET (HL760-9A)



7609A2SE03

Description			Unit	Specification
Operating weight			kg (lb)	18350 (40450)
Bucket capacity		Struck	m^3 (yd^3)	2.8 (3.7)
		Heaped		3.3 (4.3)
Overall length		A	mm (ft-in)	8105 (26' 7")
Overall width		B		2900 (9' 6")
Overall height		C		3488 (11' 5")
Ground clearance		D		420 (1' 5")
Wheelbase		E		3300 (10' 10")
Tread		F		2160 (7' 1")
Dump clearance at 45˚		G		2970 (9' 9")
Dump reach (full lift)		H		1220 (4' 0")
Width over tires		I		2770 (9' 1")
Dump angle		J	degree (˚)	47
Roll back angle (carry position)		K		47
Cycle time		Lift (with load)	sec	5.8
		Dump (with load)		1.2
		Lower (empty)		3.1
Maximum travel speed			km/hr (mph)	38.5 (24.0)
Braking distance			m (ft-in)	13 (42' 7")
Minimum turning radius (center of outside tire)				5.73 (18' 9")
Gradeability			degree (˚)	30
Breakout force			kg (lb)	16230 (35980)
Travel speed	Forward	First gear	km/hr (mph)	6.3 (3.9)
		Second gear		12.0 (7.5)
		Third gear		24.0 (15.0)
		Fourth gear		38.5 (24.0)
	Reverse	First gear		6.7 (4.2)
		Second gear		12.6 (7.9)
		Third gear		25.2 (15.7)

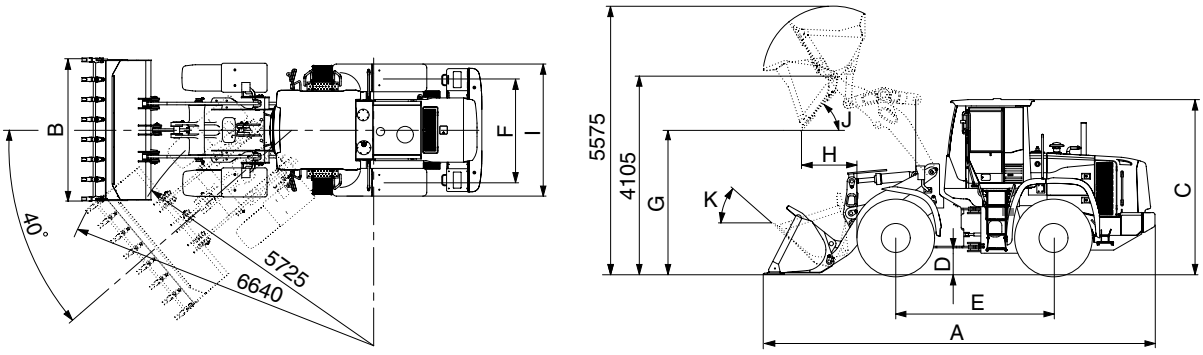
WITH BOLT-ON CUTTING EDGE TYPE BUCKET (HL760XTD-9A)



7609A2SE03-1

Description			Unit	Specification
Operating weight			kg (lb)	19150 (42220)
Bucket capacity		Struck	m^3 (yd^3)	2.8 (3.7)
		Heaped		3.3 (4.3)
Overall length		A	mm (ft-in)	8665 (28' 5")
Overall width		B		2900 (9' 6")
Overall height		C		3485 (11' 5")
Ground clearance		D		420 (1' 5")
Wheelbase		E		3300 (10' 10")
Tread		F		2160 (7' 1")
Dump clearance at 45˚		G		3460 (11' 4")
Dump reach (full lift)		H		1235 (4' 1")
Width over tires		I		2770 (9' 1")
Dump angle		J	degree (˚)	47
Roll back angle (carry position)		K		49
Cycle time		Lift (with load)	sec	5.8
		Dump (with load)		1.2
		Lower (empty)		3.1
Maximum travel speed			km/hr (mph)	38.5 (24.0)
Braking distance			m (ft-in)	13 (42' 7")
Minimum turning radius (center of outside tire)				5.73 (18' 9")
Gradeability			degree (˚)	30
Breakout force			kg (lb)	15820 (34880)
Travel speed	Forward	First gear	km/hr (mph)	6.3 (3.9)
		Second gear		12.0 (7.5)
		Third gear		24.0 (15.0)
		Fourth gear		38.5 (24.0)
	Reverse	First gear		6.7 (4.2)
		Second gear		12.6 (7.9)
		Third gear		25.2 (15.7)

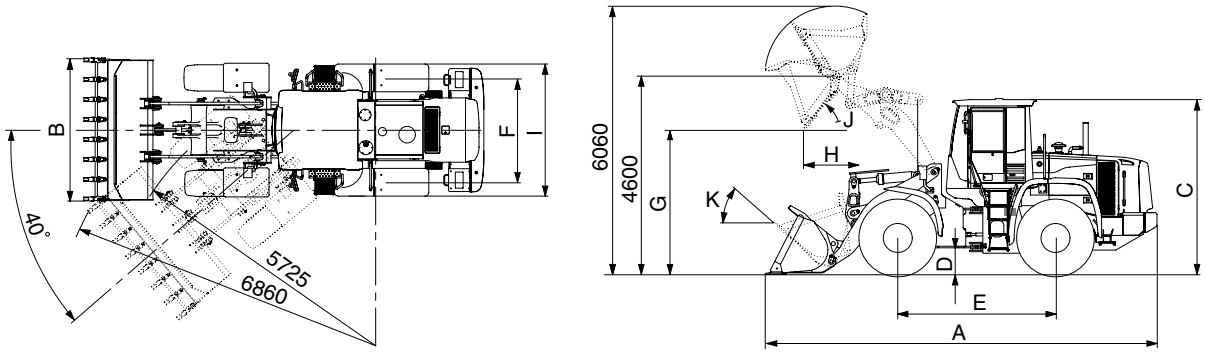
2) WITH TOOTH TYPE BUCKET (HL760-9A)



7609A2SE02

Description			Unit	Specification
Operating weight			kg (lb)	18350 (40450)
Bucket capacity		Struck	m^3 (yd^3)	2.7 (3.5)
		Heaped		3.2 (4.2)
Overall length		A	mm (ft-in)	8260 (27' 1")
Overall width		B		2950 (9' 8")
Overall height		C		3485 (11' 5")
Ground clearance		D		420 (1' 5")
Wheelbase		E		3300 (10' 10")
Tread		F		2160 (7' 1")
Dump clearance at 45˚		G		2845 (9' 4")
Dump reach (full lift)		H		1305 (4' 3")
Width over tires		I		2770 (9' 1")
Dump angle		J	degree (˚)	47
Roll back angle (carry position)		K		47
Cycle time		Lift (with load)	sec	5.8
		Dump (with load)		1.2
		Lower (empty)		3.1
Maximum travel speed			km/hr (mph)	38.5 (24.0)
Braking distance			m (ft-in)	13 (42' 7")
Minimum turning radius (center of outside tire)				5.73 (18' 9")
Gradeability			degree (˚)	30
Breakout force			kg (lb)	17280 (38090)
Travel speed	Forward	First gear	km/hr (mph)	6.3 (3.9)
		Second gear		12.0 (7.5)
		Third gear		24.0 (15.0)
		Fourth gear		38.5 (24.0)
	Reverse	First gear		6.7 (4.2)
		Second gear		12.6 (7.9)
		Third gear		25.2 (15.7)

WITH TOOTH TYPE BUCKET (HL760XTD-9A)



7609A2SE02-1

Description			Unit	Specification
Operating weight			kg (lb)	19150 (42220)
Bucket capacity		Struck	m^3 (yd^3)	2.7 (3.5)
		Heaped		3.2 (4.2)
Overall length		A	mm (ft-in)	8825 (28' 11")
Overall width		B		2950 (9' 8")
Overall height		C		3485 (11' 5")
Ground clearance		D		420 (1' 5")
Wheelbase		E		3300 (10' 10")
Tread		F		2160 (7' 1")
Dump clearance at 45˚		G		3335 (10' 11")
Dump reach (full lift)		H		1330 (4' 4")
Width over tires		I		2770 (9' 1")
Dump angle		J	degree (˚)	47
Roll back angle (carry position)		K		49
Cycle time		Lift (with load)	sec	5.8
		Dump (with load)		1.2
		Lower (empty)		3.1
Maximum travel speed			km/hr (mph)	38.5 (24.0)
Braking distance			m (ft-in)	13 (42' 7")
Minimum turning radius (center of outside tire)				5.73 (18' 9")
Gradeability			degree (˚)	30
Breakout force			kg (lb)	16840 (37130)
Travel speed	Forward	First gear	km/hr (mph)	6.3 (3.9)
		Second gear		12.0 (7.5)
		Third gear		24.0 (15.0)
		Fourth gear		38.5 (24.0)
	Reverse	First gear		6.7 (4.2)
		Second gear		12.6 (7.9)
		Third gear		25.2 (15.7)

3. WEIGHT

Item		kg	lb
Front frame assembly		1640	3620
Rear frame assembly		2040	4500
Front fender (LH & RH)		31	68
Counterweight	HL760-9A	900	1980
	HL760XTD-9A	1540	3400
Cab assembly		1050	2320
Engine assembly		614	1350
Transmission assembly		535	1180
Drive shaft (front)		25	55
Drive shaft (center)		30	66
Drive shaft (rear)		12	26
Front axle (include differential)		1020	2250
Rear axle (include differential)		1040	2290
Tire (23.5-25, 20PR. L3)		300	661
Hydraulic tank assembly		250	550
Fuel tank assembly		362	798
Main pump assembly		55	121
Brake pump assembly		16	35
Main control valve (2/3 spool)		58/73	128/161
Steering valve (EHPS)		10	22
Boom assembly	HL760-9A	1135	2500
	HL760XTD-9A	1285	2830
Bell crank assembly		360	794
Bucket link		57	126
3.3 m^3 bucket, with bolt on cutting edge		1740	3840
3.2 m^3 bucket, with tooth		1690	3730
Boom cylinder assembly		150	331
Bucket cylinder assembly (HL760-9A)		172	379
Bucket cylinder assembly (HL760XTD-9A)		190	419
Steering cylinder assembly		29	64
Seat		40	88
Battery		44	97

4. SPECIFICATION FOR MAJOR COMPONENTS

1) ENGINE

Item	Specification
Model	Cummins QSB6.7
Type	4-cycle turbocharged, charge air cooled diesel engine
Control type	Electronic control
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	107×124 mm (4.2"×4.9")
Piston displacement	6730 cc (410cu in)
Compression ratio	17.3 : 1
Rated horse power (Net)	222 hp at 2100 rpm
Maximum torque	97 kgf · m (700 lbf · ft)
Engine oil quantity	18 ℓ (4.8 U.S. gal)
Wet weight	614 kg (1354 lb)
High idling speed	2230 ± 50 rpm
Low idling speed	800± 25 rpm
Rated fuel consumption (at rated)	216 g/kW · hr
Starting motor	Denso PA90L (24V-7.8kW)
Alternator	Delco Remy 24SI (24V-70Amp)
Battery	2×12V×160Ah (20 hr)

2) MAIN PUMP

Item	Specification	
	Steering	Loader
Type	Variable piston pump	
Capacity	60 cc/rev	51 cc/rev
Maximum operating pressure	280 kgf/cm^2 (3980 psi)	
Rated oil quantity	126 ℓ /min (33.3 U.S.gpm)	107 ℓ /min (28.3 U.S.gpm)
Rated speed	2100 rpm	

3) FAN AND BRAKE PUMP

Item	Specification
Type	Variable piston pump
Capacity	28 cc/rev
Maximum operating pressure	250 kgf/cm^2 (3560 psi)
Rated oil quantity	59 ℓ /min (15.6 U.S.gpm)
Rated speed	2100 rpm

4) MAIN CONTROL VALVE

Item	Specification
Type	2 spool
Operating method	Hydraulic pilot assist
System pressure	280 kgf/cm^2 (3980 psi)
Overload relief valve pressure	340 kgf/cm^2 (4840 psi) / ★300 kgf/cm^2 (4270 psi)

★ : Bucket dump

5) REMOTE CONTROL VALVE

Item		Specification
Type		Pressure reducing type
Operating pressure	Minimum	6.5 kgf/cm^2 (92.4 psi)
	Maximum	22 kgf/cm^2 (312.9 psi)
Single operation stroke	Lever	80 mm (3.4 in)

6) CYLINDER

Item		Specification
Boom cylinder	Bore dia × Rod dia × Stroke	ø 140 × ø 80 × 757 mm
Bucket cylinder	Bore dia × Rod dia × Stroke	ø 160 × ø 85 × 530 mm (HL760-9A) ø 160 × ø 85 × 515 mm (HL760XTD-9A)
Steering cylinder	Bore dia × Rod dia × Stroke	ø 75 × ø 45 × 424 mm

7) DYNAMIC POWER TRANSMISSION DEVICES

Item			Specification
4-speed transmission (std)	Model		ZF 4WG 210
	Type	Converter	Single-stage, single-phase
		Transmission	Full-automatic power shift
	Gear shift		Forward fourth gear, reverse third gear
	Control		Electrical single lever type, kick-down system
	Travel speed		See the page 2-2.
5-speed transmission (opt)	Model		ZF 5WG210
	Type	Converter	Single-stage, double-phase (with lock up clutch)
		Transmission	Full-automatic power shift
	Gear shift		Forward fifth gear, reverse third gear
	Control		Electrical single lever type, kick-down system
	Travel speed	Forward 1/2/3/4/5	6.7 / 11.7 / 18.0 / 27.9 / 42.5 km/hr
		Reverse 1/2/3	7.0 / 12.4 / 29.3 km/hr
Axle	Drive devices		4-wheel drive
	Front		Front fixed location
	Rear		Oscillation ±12˚ of center pin-loaded
Wheels	Tires		23.5-25, 20PR (L3)
Brakes	Travel		Four-wheel, wet-disc type, full hydraulic
	Parking		Spring applied, hydraulic released brake on transmission
Steering	Type		Full hydraulic, articulated
	Steering angle		40˚ to both right and left angle, respectively
	Relief pressure		235 kgf/cm^2 (3340 psi)

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 (T/C housing, 3EA)	M10×1.5	4.6 ± 0.9	33.3 ± 6.5
4		Engine mounting bolt (flywheel, 8EA)	M10×1.5	4.5 ± 0.6	32.5 ± 4.3
5		Radiator mounting bolt	M16×2.0	29.7 ± 5.9	215 ± 42.7
6		Fuel tank mounting bolt, nut	M16×2.0	29.7 ± 4.5	215 ± 32.5
7	Hydraulic system	Main pump housing mounting bolt	M16×2.0	29.7 ± 4.5	215 ± 32.5
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		Stop valve	M10×1.5	6.9 ± 1.4	50 ± 10.1
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	M12×1.75	12.8 ± 3.0	92.6 ± 21.7
16		Remote control lever mounting bolt	M6×1.0	1.1 ± 0.2	8.0 ± 1.4
17		Safety valve	M10×1.5	6.9 ± 1.4	50 ± 10.1
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, 6EA)	M20×2.5	46.3 ± 7.0	335 ± 50.6
21		Front axle mounting bolt, nut	M33×2.0	135 ± 15	976 ± 108
22		Rear axle support mounting bolt, nut	M36×3.0	308 ± 46.2	2227 ± 334
23		Tire mounting nut	M22×1.5	79 ± 2.5	571 ± 18.1
24		Drive shaft joint mounting bolt	1/2-20UNF	15 ± 2.0	108 ± 14.5
25	Others	Counterweight mounting bolt	M30×3.5	199 ± 30	1439 ± 216
26		Additional counterweight mounting bolt	M24×3.0	100 ± 15	723 ± 108
27		Operator's seat mounting bolt	M8×1.25	3.4 ± 0.8	24.6 ± 5
28		ROPS Cab mounting bolt (4EA)	M30×3.5	199 ± 29.9	1440 ± 216
		ROPS Cab mounting nut (4EA)	M16×2.0	29.7 ± 4.5	215± 32.5

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	18 (4.8)	SAE 30 SAE 10W SAE 10W-30 SAE 15W-40
Transmission	Engine oil	32 (8.5)	SAE 10W-30 SAE 15W-40
Axle	UTTO	Front : 35 (9.2) Rear : 35 (9.2)	★Refer to below list
Hydraulic tank	Hydraulic oil	Tank: 178 (47) System: 220 (58.1)	ISO VG 32 ISO VG 46 ISO VG 68
Fuel tank	Diesel fuel★1	327 (86.4)	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	47 (12.4)	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

★1 Ultra low sulfur diesel
- sulfur content ≤ 15 ppm