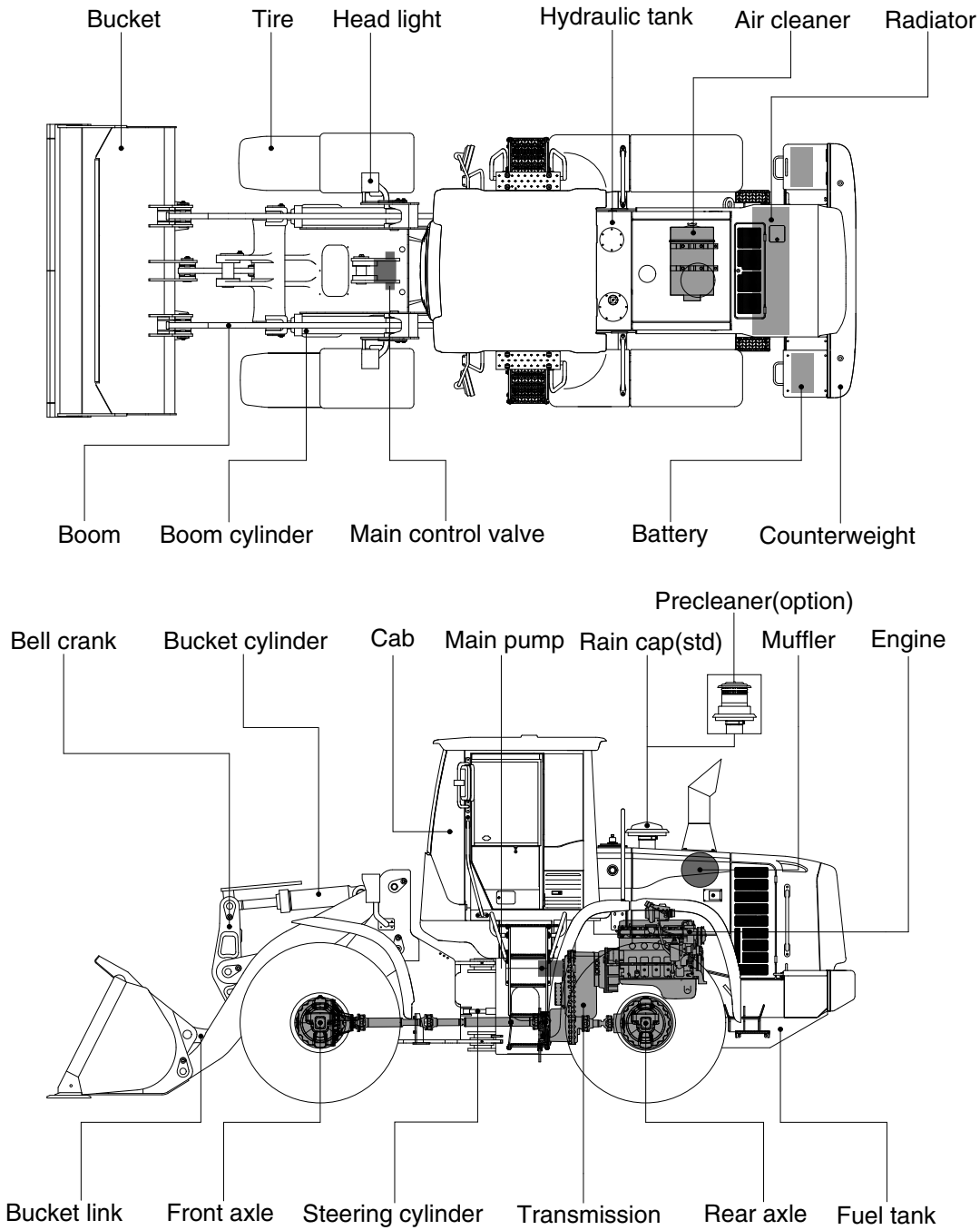


# GROUP 2 SPECIFICATION

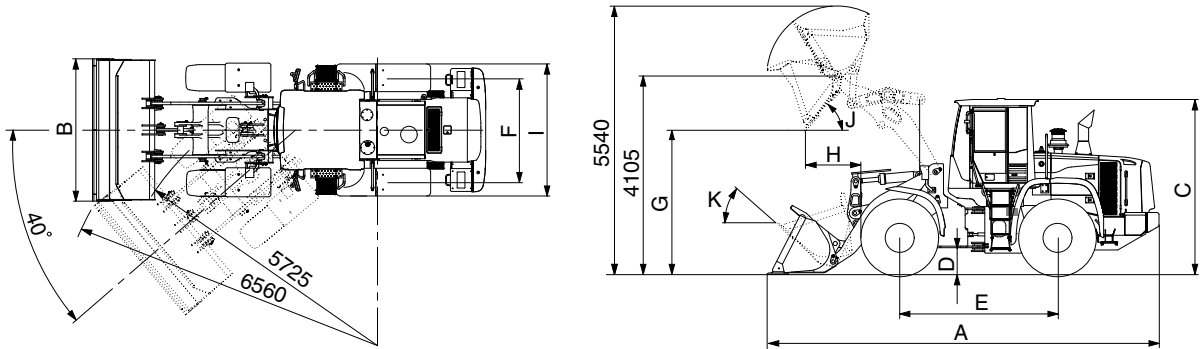
## 1. MAJOR COMPONENT



7609S2SE01

## 2. SPECIFICATIONS

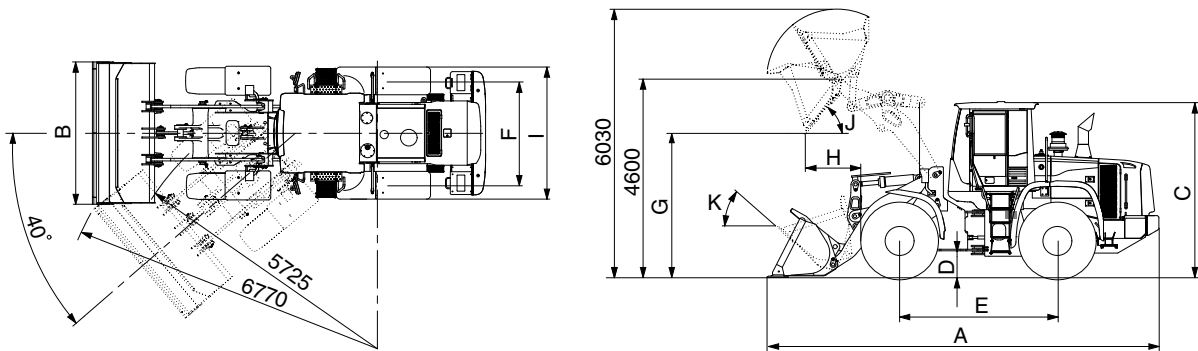
### 1) WITH BOLT-ON CUTTING EDGE TYPE BUCKET (HL760-9S)



7609S2SE03

Description		Unit	Specification	
Operating weight		kg (lb)	17600 (38800)	
Bucket capacity	Struck	m <sup>3</sup> (yd <sup>3</sup> )	2.7 (3.5)	
	Heaped		3.1 (4.1)	
Overall length	A	mm (ft-in)	8065 (26' 6")	
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		3000 (9' 10")	
Dump reach (full lift)	H		1190 (3' 11")	
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	6.2
	Dump (with load)			1.4
	Lower (empty)	3.0		
Maximum travel speed		km/hr (mph)	38.4 (23.9)	
Braking distance		m (ft-in)	12 (39' 4")	
Minimum turning radius (center of outside tire)			5.73 (18' 9")	
Gradeability		degree (°)	30	
Breakout force		kg (lb)	15950 (35170)	
Travel speed	Forward	First gear	6.4 (4.0)	
		Second gear	12.1 (7.5)	
		Third gear	24.2 (15)	
		Fourth gear	38.4 (23.9)	
	Reverse	First gear	6.8 (4.2)	
		Second gear	12.8 (8.0)	
Third gear		25.4 (15.8)		

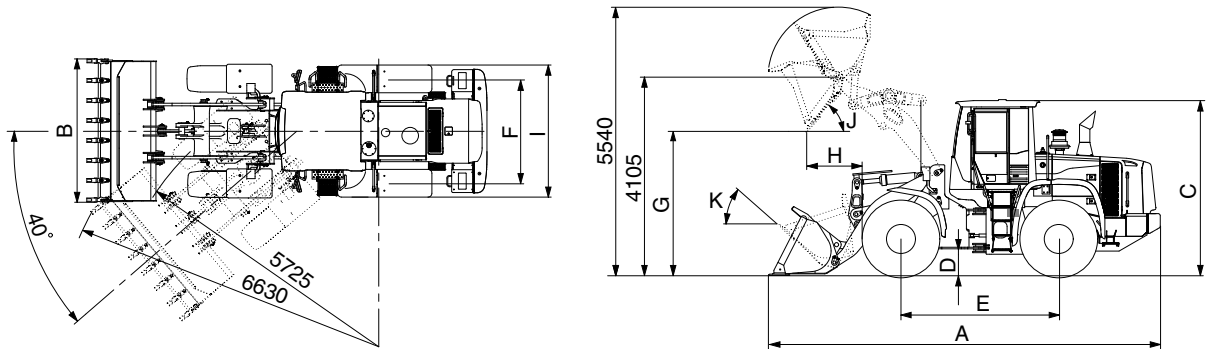
WITH BOLT-ON CUTTING EDGE TYPE BUCKET (HL760XTD-9S)



7609S2SE03-1

Description		Unit	Specification	
Operating weight		kg (lb)	18400 (40570)	
Bucket capacity	Struck	m <sup>3</sup> (yd <sup>3</sup> )	2.7 (3.5)	
	Heaped		3.1 (4.1)	
Overall length	A	mm (ft-in)	8640 (28' 4")	
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		3490 (11' 5")	
Dump reach (full lift)	H		1215 (4' 0")	
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	6.2
	Dump (with load)			1.4
	Lower (empty)	3.0		
Maximum travel speed		km/hr (mph)	38.4 (23.9)	
Braking distance		m (ft-in)	12 (39' 4")	
Minimum turning radius (center of outside tire)			5.73 (18' 9")	
Gradeability		degree (°)	30	
Breakout force		kg (lb)	15650 (34500)	
Travel speed	Forward	km/hr (mph)	First gear	
			Second gear	
			Third gear	
			Fourth gear	
	Reverse		First gear	
			Second gear	
Third gear				

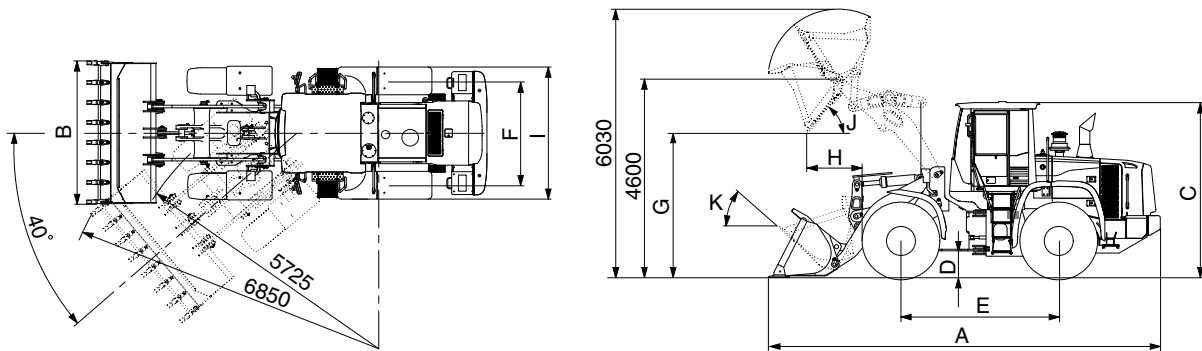
2) WITH TOOTH TYPE BUCKET (HL760-9S)



7609S2SE02

Description		Unit	Specification	
Operating weight		kg (lb)	17600 (38800)	
Bucket capacity	Struck	m <sup>3</sup> (yd <sup>3</sup> )	2.6 (3.4)	
	Heaped		3.0 (3.9)	
Overall length	A	mm (ft-in)	8220 (27' 0")	
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		2870 (9' 5")	
Dump reach (full lift)	H		1270 (4' 2")	
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	6.2	
	Dump (with load)		1.4	
	Lower (empty)		3.0	
Maximum travel speed		km/hr (mph)	38.4 (23.9)	
Braking distance		m (ft-in)	12 (39' 4")	
Minimum turning radius (center of outside tire)			5.73 (18' 9")	
Gradeability		degree (°)	30	
Breakout force		kg (lb)	16990 (37460)	
Travel speed	Forward	First gear	6.4 (4.0)	
		Second gear	12.1 (7.5)	
		Third gear	24.2 (15)	
		Fourth gear	38.4 (23.9)	
	Reverse	First gear	6.8 (4.2)	
		Second gear	12.8 (8.0)	
Third gear		25.4 (15.8)		

**WITH TOOTH TYPE BUCKET (HL760XTD-9S)**



7609S2SE02-1

Description		Unit	Specification	
Operating weight		kg (lb)	18400 (40570)	
Bucket capacity	Struck	m <sup>3</sup> (yd <sup>3</sup> )	2.6 (3.4)	
	Heaped		3.0 (3.9)	
Overall length	A	mm (ft-in)	8790 (28' 10")	
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		3360 (11' 0")	
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			49
Cycle time	Lift (with load)	sec	6.2	
	Dump (with load)		1.4	
	Lower (empty)		3.0	
Maximum travel speed		km/hr (mph)	38.4 (23.9)	
Braking distance		m (ft-in)	12 (39' 4")	
Minimum turning radius (center of outside tire)			5.73 (18' 9")	
Gradeability		degree (°)	30	
Breakout force		kg (lb)	16550 (36490)	
Travel speed	Forward	First gear	6.4 (4.0)	
		Second gear	12.1 (7.5)	
		Third gear	24.2 (15)	
		Fourth gear	38.4 (23.9)	
	Reverse	First gear	6.8 (4.2)	
		Second gear	12.8 (8.0)	
Third gear		25.4 (15.8)		

### 3. WEIGHT

Item		kg	lb
Front frame assembly		1610	3550
Rear frame assembly		2010	4430
Front fender (LH & RH)		31	68
Counterweight	HL760-9S	1000	2200
	HL760XTD-9S	1600	3530
Cab assembly		780	1720
Engine assembly		617	1360
Transmission assembly		535	1180
Drive shaft (front)		25	55
Drive shaft (center)		23	50
Drive shaft (rear)		12	26
Front axle (include differential)		1020	2250
Rear axle (include differential)		1040	2300
Tire (23.5-25, 20PR. L3)		300	661
Hydraulic tank assembly		230	507
Fuel tank assembly		235	518
Main pump assembly		36.4	80
Fan & brake pump assembly		5	11
Main control valve (2/3 spool)		45/55	99/121
Steering valve (EHPS)		15	33
Boom assembly	HL760-9S	1120	2470
	HL760XTD-9S	1285	2830
Bell crank assembly		355	780
Bucket link		66	146
3.1 m <sup>3</sup> bucket, with bolt on cutting edge		1480	3260
3.0 m <sup>3</sup> bucket, with tooth		1430	2950
Boom cylinder assembly		155	342
Bucket cylinder assembly		177	390
Steering cylinder assembly		29	64
Seat		40	88
Battery		55	121

#### 4. SPECIFICATION FOR MAJOR COMPONENTS

##### 1) ENGINE

Item	Specification
Model	Cummins 6CTAA8.3 / HYUNDAI HM8.3
Type	4-cycle turbocharged, charge air cooled diesel engine
Control type	Mechanical
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	114 × 135 mm (4.5" × 5.3")
Piston displacement	8300 cc (506cu in)
Compression ratio	18.0 : 1
Rated horse power (Net)	205 hp (153 kW) at 2200 rpm
Maximum torque at 1400 rpm	99.5 kgf · m (719 lbf · ft)
Engine oil quantity	20 l (5.3 U.S. gal)
Wet weight	617 kg (1360 lb)
High idling speed	2300 ± 50 rpm
Low idling speed	850 ± 50 rpm
Rated fuel consumption (at rated)	244 g/kW · hr
Starting motor	Denso 428000-1340 (24 V-7.8 kW)
Alternator	Delco Remy 24SI (24V-70 Amp)
Battery	2 × 12V × 130Ah

## 2) MAIN PUMP

Item	Specification	
	Steering	Loader
Type	Fixed displacement tandem gear pump	
Capacity	68 cc/rev	68 cc/rev
Maximum operating pressure	210 kgf/cm <sup>2</sup> (2990 psi)	
Rated oil quantity	140 l /min (37 U.S.gpm)	140 l /min (37 U.S.gpm)
Rated speed	2100 rpm	

## 3) FAN + BRAKE PUMP

Item	Specification	
	Fan	Brake
Type	Fixed displacement tandem gear pump	
Capacity	19.0 cc/rev	11.9 cc/rev
Maximum operating pressure	120 kgf/cm <sup>2</sup> (1710 psi)	150 kgf/cm <sup>2</sup> (2130 psi)
Rated oil quantity	43 l /min (11.4 U.S.gpm)	27 l /min (7.1 U.S.gpm)
Rated speed	2100 rpm	

## 4) MAIN CONTROL VALVE

Item	Specification
Type	2 spool
Operating method	Hydraulic pilot assist
System pressure	210 kgf/cm <sup>2</sup> (2990 psi)
Overload relief valve pressure	240 kgf/cm <sup>2</sup> (3410 psi)

## 5) REMOTE CONTROL VALVE

Item	Specification	
Type	Pressure reducing type	
Operating pressure	Minimum	5.8 kgf/cm <sup>2</sup> (82.5 psi)
	Maximum	19 kgf/cm <sup>2</sup> (270 psi)
Single operation stroke	Lever	70 mm (2.8 in)



## 6) CYLINDER

Item		Specification
Boom cylinder	Bore dia × Rod dia × Stroke	∅ 160 × ∅ 90 × 757 mm
Bucket cylinder	Bore dia × Rod dia × Stroke	∅ 180 × ∅ 90 × 530 mm
Steering cylinder	Bore dia × Rod dia × Stroke	∅ 80 × ∅ 45 × 440 mm

## 7) DYNAMIC POWER TRANSMISSION DEVICES

Item		Specification	
Transmission	Model	ZF4WG 210	
	Type	Converter	Single-stage, single-phase
		Transmission	Full-automatic power shift
	Converter stall ratio	2.121 : 1	
	Gear shift	Forward fourth gear, reverse third gear	
	Control	Electrical single lever type, kick-down system	
	Pump rated flow	105 ℓ /min (27.7 U.S.gpm) at 2000 rpm	
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	

## 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	46.3 ± 7.0	335 ± 50.6
2		Engine mounting bolt (bracket, 8EA)	M12 × 1.75	10.7 ± 1.6	77.4 ± 11.6
3		Engine mounting bolt (T/C housing, 12EA)	M10 × 1.5	4.6 ± 0.9	33.3 ± 6.5
4		Engine mounting bolt (flywheel, 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		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	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, 6EA)	M20 × 2.5	46.3 ± 7.0	335 ± 50.6
21		Front axle mounting bolt, nut	M33 × 2.0	225 ± 20	1630 ± 145
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	1440 ± 216
26		Operator's seat mounting bolt	M8 × 1.25	3.4 ± 0.8	24.6 ± 5
27		ROPS Cab mounting bolt (4EA)	M30 × 3.5	199 ± 30	1440 ± 216

## 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	20 (5.3)	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 : 150 (39.7) System : 220 (58.1)	ISO VG 32						
			ISO VG 46						
			ISO VG 68						
Fuel tank	Diesel fuel	334 (88.2)	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	33 (8.7)	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