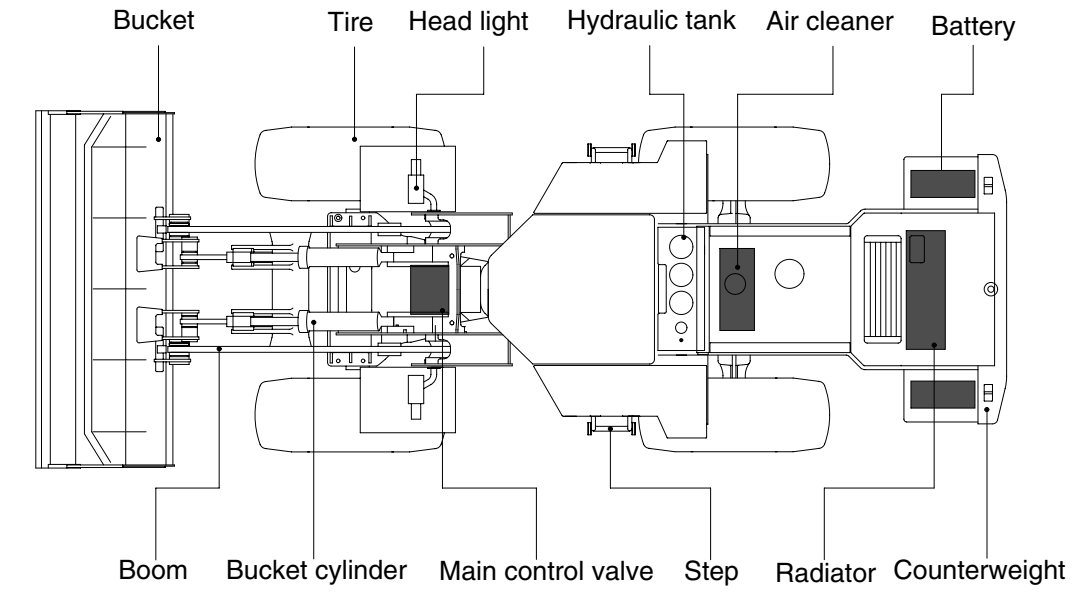
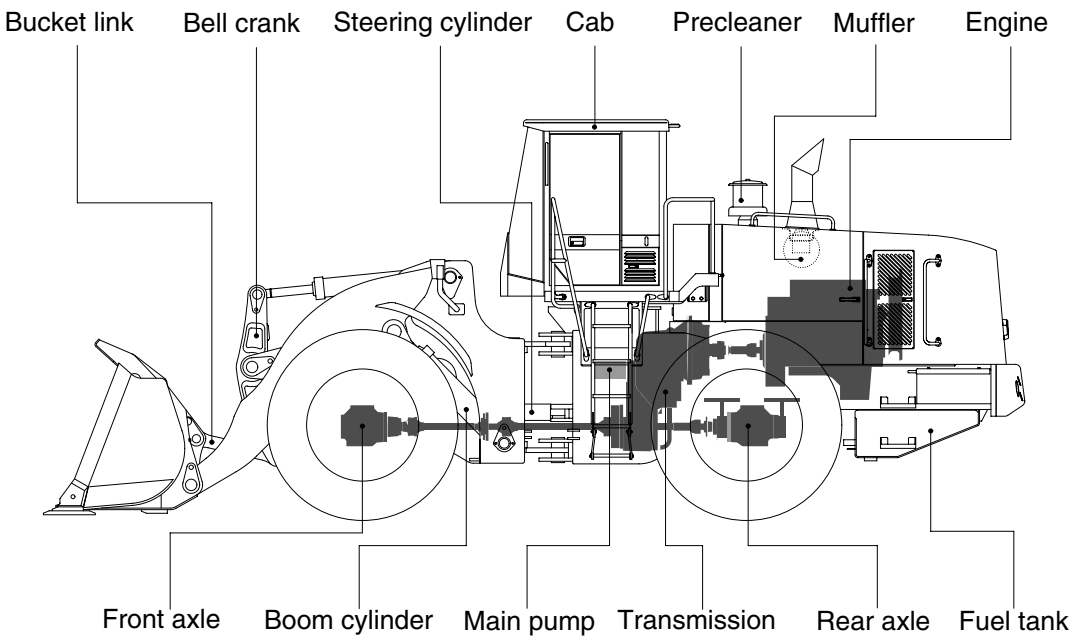
GROUP 2 SPECIFICATION

1. MAJOR COMPONENT





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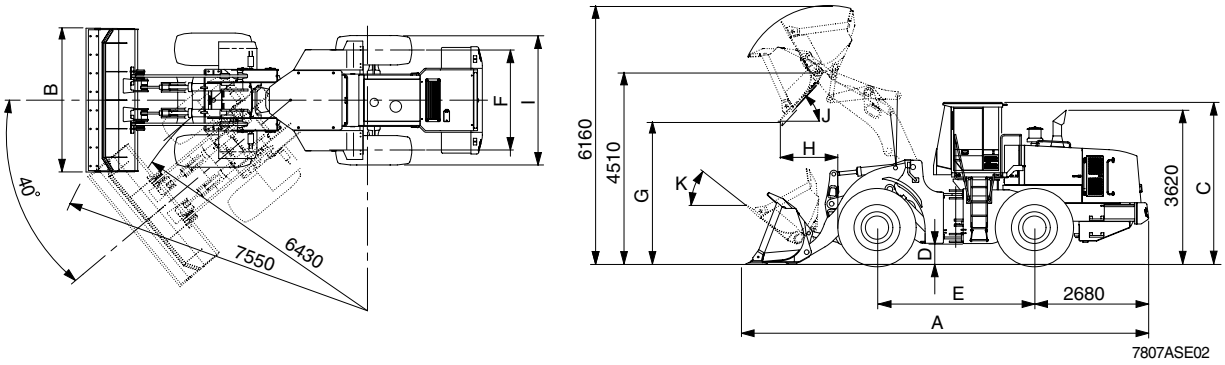
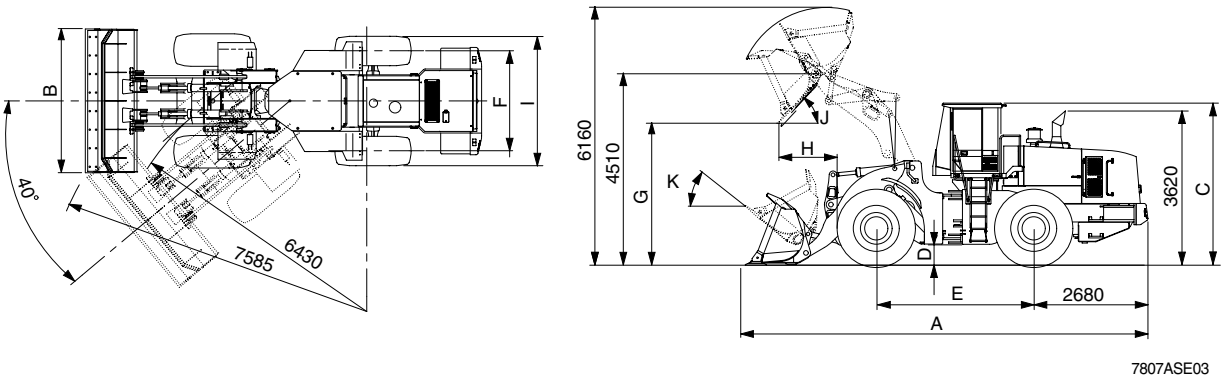
2. SPECIFICATIONS

1) WITHOUT TOOTH AND CUTTING EDGE TYPE BUCKET



Description			Unit	Specification
Operating weight			kg(lb)	29300(64600)
Bucket capacity		Struck	$m^3(yd^3)$	4.1(5.4)
		Heaped		4.8(6.3)
Overall length		A	mm(ft-in)	9325(30' 7")
Overall width		B		3450(11' 4")
Overall height		C		3805(12' 6")
Ground clearance		D		475(1' 7")
Wheelbase		E		3700(12' 2")
Tread		F		2440(8' 0")
Dump clearance at 45°		G		3385(11' 1")
Dump reach at 45°		H		1330(4' 4")
Width over tires		I		3220(10' 7")
Dump angle		J	Degree (°)	47
Roll back angle(Carry position)		K		48
Cycle time		Lift(With load)	sec	6.4
		Dump(With load)		1.4
		Lower(Empty)		3
Maximum travel speed			km/hr(mph)	33.9(21.1)
Braking distance			m(ft-in)	12(39' 4")
Minimum turning radius(Center of outside tire)				6.43(21' 1")
Gradeability			Degree (°)	30
Travel speed	Forward	First gear	km/hr(mph)	6.2(3.9)
		Second gear		11.4(7.1)
		Third gear		17.5(10.9)
		Fourth gear		33.9(21.1)
	Reverse	First gear		6.2(3.9)
		Second gear		11.4(7.1)
		Third gear		23.6(14.7)

2) WITH BOLT-ON CUTTING EDGE TYPE BUCKET



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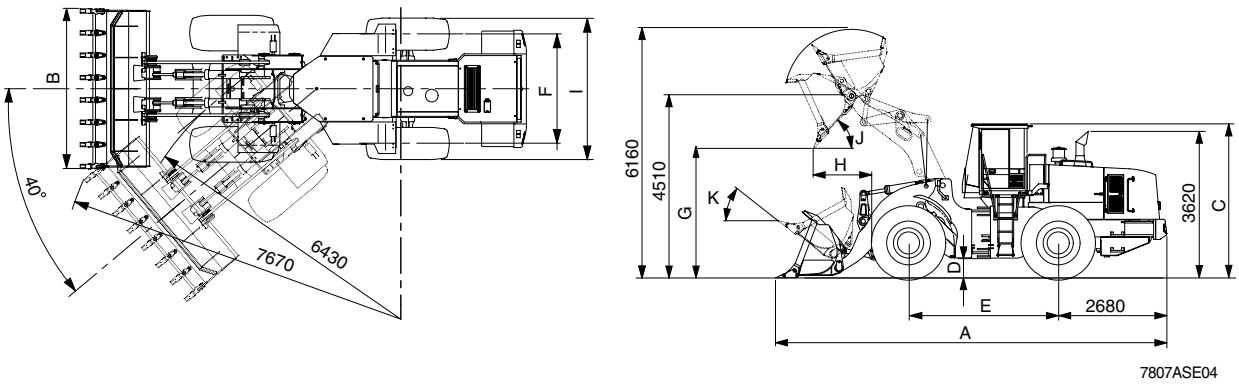
Description			Unit	Specification
Operating weight			kg(lb)	29300(64600)
Bucket capacity		Struck	$m^3(yd^3)$	4.3(5.6)
		Heaped		5.1(6.7)
Overall length		A	mm(ft-in)	9440(31' 0")
Overall width		B		3450(11' 4")
Overall height		C		3805(12' 6")
Ground clearance		D		475(1' 7")
Wheelbase		E		3700(12' 2")
Tread		F		2440(8' 0")
Dump clearance at 45°		G		3300(10' 10")
Dump reach at 45°		H		1365(4' 6")
Width over tires		I		3220(10' 7")
Dump angle		J	Degree (°)	47
Roll back angle(Carry position)		K		48
Cycle time		Lift(With load)	sec	6.4
		Dump(With load)		1.4
		Lower(Empty)		3
Maximum travel speed			km/hr(mph)	33.9(21.1)
Braking distance			m(ft-in)	12(39' 4")
Minimum turning radius(Center of outside tire)				6.43(21' 1")
Gradeability			Degree (°)	30
Travel speed	Forward	First gear	km/hr(mph)	6.2(3.9)
		Second gear		11.4(7.1)
		Third gear		17.5(10.9)
		Fourth gear		33.9(21.1)
	Reverse	First gear		6.2(3.9)
		Second gear		11.4(7.1)
		Third gear		23.6(14.7)

3) WITH TOOTH TYPE BUCKET



Description			Unit	Specification
Operating weight			kg(lb)	29300(64600)
Bucket capacity		Struck	$m^3(yd^3)$	4.1(5.4)
		Heaped		4.8(6.3)
Overall length		A	mm(ft-in)	9600(31' 6")
Overall width		B		3500(11' 6")
Overall height		C		3805(12' 6")
Ground clearance		D		475(1' 7")
Wheelbase		E		3700(12' 2")
Tread		F		2440(8' 0")
Dump clearance at 45°		G		3140(10' 4")
Dump reach at 45°		H		1485(4' 10")
Width over tires		I		3220(10' 7")
Dump angle		J	Degree (°)	47
Roll back angle(Carry position)		K		48
Cycle time		Lift(With load)	sec	6.4
		Dump(With load)		1.4
		Lower(Empty)		3
Maximum travel speed			km/hr(mph)	33.9(21.1)
Braking distance			m(ft-in)	12(39' 4")
Minimum turning radius(Center of outside tire)				6.43(21' 1")
Gradeability			Degree (°)	30
Travel speed	Forward	First gear	km/hr(mph)	6.2(3.9)
		Second gear		11.4(7.1)
		Third gear		17.5(10.9)
		Fourth gear		33.9(21.1)
	Reverse	First gear		6.2(3.9)
		Second gear		11.4(7.1)
		Third gear		23.6(14.7)

3. WEIGHT

Item	kg	lb
Front frame assembly	2714	5983
Rear frame assembly	3531	7785
Front fender(LH & RH)	74	163
Counterweight	1300	2866
Cab assembly	1030	2271
Engine assembly	984	2169
Transmission assembly	835	1841
Drive shaft(Engine to transmission)	14	31
Drive shaft(Front)	44	97
Drive shaft(Center)	46	101
Drive shaft(Rear)	27	60
Front axle(Include differential)	1550	3417
Rear axle(Include differential)	1550	3417
Tire(4EA)	430	948
Hydraulic tank assembly	253	558
Fuel tank assembly	509	1122
Main pump assembly	37	82
Steering pump assembly	24	53
Main control valve	95	209
Flow amplifier	29	64
Boom	2095	4619
Bell crank	263	580
Bucket link	55	121
5.1m^3 bucket, with bolt on cutting edge	2590	5710
4.8m^3 bucket, with tooth	2460	5423
4.7m^3 bucket, without tooth and cutting edge	2250	4960
Boom cylinder assembly(2EA)	290	639
Bucket cylinder assembly(2EA)	130	287
Steering cylinder assembly(2EA)	60	132
Seat	40	88
Battery	55	121

4. SPECIFICATION FOR MAJOR COMPONENTS

1) ENGINE

Item	Specification
Model	Cummins QSM 11
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	125×147mm(4.92"×5.79")
Piston displacement	10800cc(659cu in)
Compression ratio	16.3 : 1
Rated gross horse power	340ps at 2000rpm
Maximum gross torque at 1400rpm	171kgf · m(1235lbf · ft)
Engine oil quantity	38 ℓ (10 U.S. gal)
Wet weight	984kg(2170lb)
High idling speed	2130 ± 50rpm
Low idling speed	800 ± 50rpm
Rated fuel consumption	162g/ps · hr
Starting motor	Delco Remy 42MT(24V)
Alternator	Delco Remy 22SI(24V-70Amp)
Battery	2×12V×200Ah

2) MAIN PUMP(+BRAKE PUMP)

Item	Specification	
	Main pump	Brake pump
Type	Fixed displacement double vane pump	
Capacity	113.5cc/rev	15.9cc/rev
Maximum operating pressure	210kgf/cm^2(2987psi)	150kgf/cm^2(2130psi)
Rated oil quantity	212 ℓ /min(56U.S.gpm)	30 ℓ /min(7.9U.S.gpm)
Rated speed	2000rpm	

3) STEERING PUMP(+FAN PUMP)

Item	Specification	
	Steering pump	Fan pump
Type	Fixed displacement single vane pump	
Capacity	137.5cc/rev	24.9cc/rev
Maximum operating pressure	210kgf/cm^2(2987psi)	140kgf/cm^2(1990psi)
Rated oil quantity	270 ℓ /min(71.3U.S.gpm)	49 ℓ /min(12.9U.S.gpm)
Rated speed	2000rpm	

4) MAIN CONTROL VALVE

Item	Specification
Type	2 spool
Operating method	Hydraulic pilot assist
Main relief valve pressure	210kgf/cm^2(2987psi)
Overload relief valve pressure(Boom)	240kgf/cm^2(3414psi)
Overload relief valve pressure(Bucket)	240kgf/cm^2(3414psi)

5) REMOTE CONTROL VALVE

Item		Specification
Type		Pressure reducing type
Operating	Minimum	5.8kgf/cm^2(82.5psi)
	Maximum	24kgf/cm^2(341psi)
Single operation stroke	Lever	75mm(3.0in)

6) CYLINDER

Item		Specification
Boom cylinder	Bore dia × Rod dia × Stroke	ø200 × ø110 × 863mm
Bucket cylinder	Bore dia × Rod dia × Stroke	ø160 × ø80 × 580mm
Steering cylinder	Bore dia × Rod dia × Stroke	ø110 × ø55 × 480mm

7) DYNAMIC POWER TRAIN DEVICES

Item			Specification
Transmission	Model		ZF 4WG310
	Type	Converter	Single-stage, single-phase
		Transmission	Full-automatic power shift
	Gear shift		Forward fourth gear, reverse third gear
	Adjustment		Electrical single lever type, kick-down system, Automatic kick down from 2nd to 1st gear FNR Switch on joystick lever(option)
Axle	Drive devices		4-wheel drive
	Front		Front fixed location
	Rear		Oscillation 13° of center pin-loaded
Wheels	Tires		29.5-25, 22PR(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

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

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	615 ~ 832
M30 × 3.5	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	
	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	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	6	43.4
3/4"	36	12	86.8
1"	41	14	101

3) PIPE AND HOSE(ORFS TYPE)

Thread size	Width across flat(mm)	kgf · m	lbf · ft
13/16-16"	24	4.4	32.5
1-3/16-12"	36	9.3	67.3
1-7/16-12"	41	13.2	95.5
1-11/16-12"	50	18.3	132
2-12"	55	22.6	164

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	109

5) TIGHTENING TORQUE OF MAJOR COMPONENT

No.	Items		Size	kgf · m	lbf · ft
1	Engine	Engine mounting bolt, nut(Rubber, 4EA)	M24×3.0	100 ± 15.0	723± 108
2		Engine mounling bolt(Fly wheel housing, 8EA)	M16×2.0	19.4 ± 3.0	140± 21.7
3		Engine mounting bolt(Gear housing, 6EA)	M10×1.5	4.6 ± 0.7	33.3± 5.1
4		Radiator mounting bolt	M20×2.5	57.9 ± 8.7	419± 62.9
5		Fuel tank mounting bolt, nut	M16×2.0	29.7 ± 4.5	215± 32.5
6	Hydraulic system	Main pump housing mounting bolt	M16×2.0	29.7 ± 4.5	215± 32.5
7		Steering pump housing mounting bolt	M10×1.5	6.9 ± 1.4	49.9± 10.1
8		Main control valve mounting bolt	M12×1.75	12.8 ± 3.0	92.6± 21.7
9		Steering unit mounting bolt	M10×1.5	6.9 ± 1.4	49.9± 10.1
10		Flow amplifier mounting bolt	M10×1.5	6.9 ± 1.4	49.9± 10.1
11		Brake valve mounting bolt	M8×1.25	2.5 ± 0.5	18.1± 3.6
12		Cut-off valve mounting bolt	M12×1.75	12.3 ± 2.0	89.0± 14
13		Remote control lever mounting bolt	M6×1.0	1.1±0.2	8.0± 1.4
14		Pilot supply unit mounting bolt	M8×1.25	2.5 ± 0.5	18.1± 3.6
15		Safety valve	M8×1.25	2.5 ± 0.5	8.1± 3.6
16		Hydraulic oil tank mounting bolt	M20×2.5	57.9 ± 8.7	419 ± 62.9
17	Power train system	Transmission bolt, nut(Rubber, 4EA)	M24×3.0	100 ± 15.0	723 ± 108
18		Transmission bolt(Converter cover, 4EA)	M16×2.0	18.4 ± 2.0	133± 14.5
19		Front axle mounting bolt, nut	M33×2.0	225 ± 25.0	1627±181
20		Rear axle support mounting bolt, nut	M33×2.0	225 ± 25.0	1627±181
21		Tire mounting nut	M22×1.5	48.5 ± 2.5	351± 18
22		Drive shaft joint mounting bolt, nut	M20×2.5	57.9± 8.7	419± 62.9
23	Others	Counterweight mounting bolt	M30×2.0	199 ± 29.9	1439±216
24		Operator's seat mounting bolt	M8×1.25	3.4 ± 0.8	24.6± 5
25		ROPS Cab mounting bolt(4EA)	M27×2.0	124	900

6. 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 ℃(°F) -20 (-4) / -10 (14) / 0 (32) / 10 (50) / 20 (68) / 30 (86) / 40 (104)
Engine oil pan	Engine oil	38(10.0)	SAE 30 SAE 10W SAE 10W-30 SAE 15W-40
Transmission	Oil	43(11.4)	SAE 10W-30 SAE 15W-40
Axle	Gear oil	Front : 60(15.9) Rear : 60(15.9)	SAE 80W-90LS/API GL-5
Hydraulic tank	Hydraulic oil	Tank: 210(55.5) System: 340(90)	ISO VG 32 ISO VG 46 ISO VG 68
Fuel tank	Diesel fuel	470(124)	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	65(17.2)	Ethylene glycol base permanent type