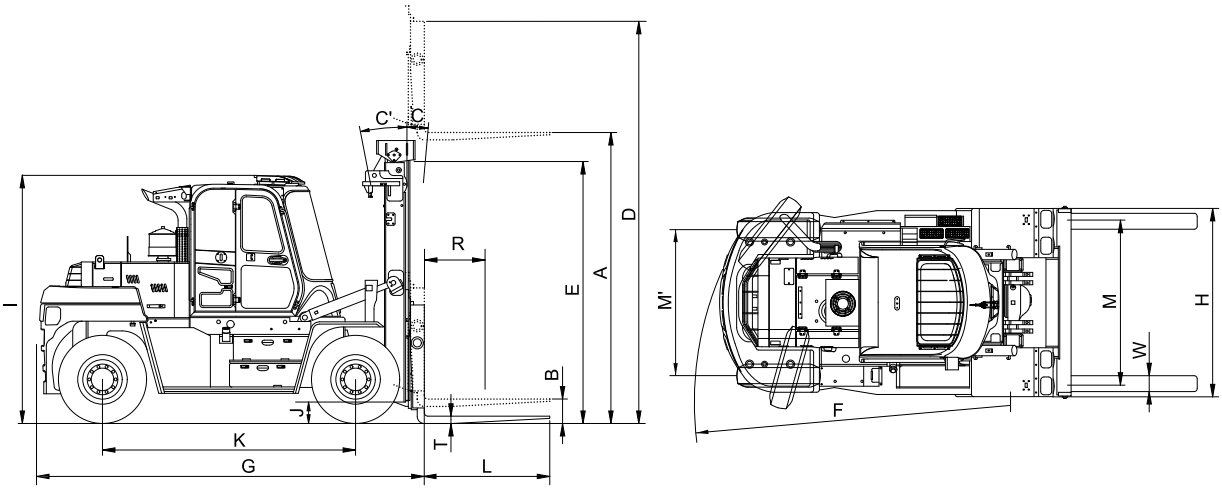
1. SPECIFICATION TABLE



110D9SP011

Model			Unit	110D-9	130D-9	160D-9
Capacity			kg (lb)	11,000 (25000)	13,000 (29000)	16,000 (36000)
Load center		R	mm (in)	600 (24")	←	←
Weight(Unloaded)			kg	16274 (35880)	16991 (37460)	19842 (43740)
Fork	Lifting height	A	mm (ft·in)	3005 (9' 10")	3000 (9' 10")	3010 (9' 11")
	Free lift	B	mm (in)	0	←	←
	Lifting speed (Unload/Load)		mm/sec	510/440	510/430	450/350
	Lowering speed (Unload/Load)		mm/sec	460/510	←	410/430
	L×W×T	L,W,T	mm (in)	1350×200×75 (53.1×7.9×3.0)	1350×200×85 (53.1×7.9×3.3)	1350×200×90 (53.1×7.9×3.5)
Mast	Tilt angle (forward/backward)	C/C'	degree	15/12	←	←
	Max height	D	mm (ft·in)	4465 (14' 8")	←	4710 (15' 5")
	Min height	E	mm (ft·in)	3000 (9' 10")	←	3250 (10' 0")
Body	Travel speed (Unload)		km/h	39.5	←	33.3
	Gradeability (Load)		%	45.3	41.0	40.2
	Min turning radius (Outside)	F	mm (ft·in)	4350 (14' 3")	←	4895 (16' 1")
ETC	Max hydraulic pressure		kgf/cm²	210	←	←
	Hydraulic oil tank		ℓ(USgal)	115 (30.4)	←	124.3 (32.8)
	Fuel tank		ℓ(USgal)	195 (51.5)	←	260 (68.7)
Overall length		G	mm (ft·in)	4570 (15' 0")	4580 (15' 0")	5080 (16' 8")
Overall width		H	mm (ft·in)	2777 (9' 1")	←	2497 (8' 2")
Cabin height		I	mm (ft·in)	2945 (9' 7")	←	2980 (9' 8")
Ground clearance		J	mm (in)	250 (9.8")	←	←
Wheel base		K	mm (ft·in)	3050 (10' 0")	←	3450 (11' 4")
Wheel tread front/rear		M/M'	mm (ft·in)	1842 / 1910 (6' 1" / 6' 3")	←	1842 / 1960 (6' 1" / 6' 5")
Drawbar pull			kg (lb)	12356 (27240)	12500 (27560)	13243 (29200)

2. SPECIFICATION FOR MAJOR COMPONENTS

1) 110/130D-9

(1) ENGINE

Item	Unit	Specification
Model	-	Cummins QSB6.7
Type	-	4 cycle turbocharged, charger air cooled 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
Cylinder bore × stroke	mm (in)	107 × 124 mm (4.21" × 4.88")
Piston displacement	cc (cu in)	6690 (409)
Compression ratio	-	17.3 : 1
Rated gross horse power	ps/rpm	165.8/2300
Maximum gross torque at rpm	kgf · m/rpm	74.7/1500
Engine oil quantity	ℓ (U.S.gal)	14.2 (3.8)
Dry weight	kg (lb)	520 (1146)
High idling speed	rpm	2250 ± 50
Low idling speed	rpm	600~1200
Rated fuel consumption	g/ps.hr	168
Starting motor	V-kW	DENSO, 24-3.7
Alternator	V-A	24-70
Battery	V-AH	24-100

2) MAIN PUMP

Item	Unit	Specification
Type	-	Variable displacement axial piston pump
Capacity	cc/rev	74+63
Maximum operating pressure	bar	300
Rated speed (Max/Min)	rpm	2800/300

3) MAIN CONTROL VALVE

Item	Unit	Specification
Type	-	Sectional
Operating method	-	Hydraulic pilot
Main relief valve pressure	bar	210/165
Flow capacity	lpm	180

(4) STEERING UNIT

Item	Unit	Specification
Type	-	Load sensing/Non load reaction/Dynamic signal
Capacity	cc/rev	369
Rated flow	lpm	45.4

(5) POWER TRAIN DEVICES

Item			Specification		
Torque converter	Model		05 W 340 (ZF SACH)		
	Type		3 Element, 1 stage, 2 phase		
	Stall ratio		2.362 : 1		
Transmission	Type		Full auto, power shift		
	Gear shift (FR/RR)		3/3		
	Adjustment		Electrical single lever type		
	Overhaul ratio	FR	1 : 5.630	2 : 2.396	3 : 0.994
		RR	1 : 5.647	2 : 2.404	3 : 0.997
Axle	Type		Front-wheel drive type, fixed location		
	Gear ratio		11.73 : 1		
	Gear		Ring & Pinion gear type		
Wheels	Q'ty (FR/RR)		Double : 4/2		
	Front (drive)		10.00-20-16 PR		
	Rear (steer)		10.00-20-16 PR		
Brakes	Travel		Front wheel, wet disc brake		
	Parking		Axle pinion, Caliper brake, hydraulic released		
Steering	Type		Full hydraulic, power steering		
	Steering angle		76˚ to both right and left angle, respectively		

2) 160D-9

(1) ENGINE

Item	Unit	Specification
Model	-	Cummins QSB6.7
Type	-	4 cycle turbocharged, charger air cooled 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
Cylinder bore × stroke	mm (in)	107 × 124 mm (4.21" × 4.88")
Piston displacement	cc (cu in)	6690 (409)
Compression ratio	-	17.3 : 1
Rated gross horse power	ps/rpm	165.8/2300
Maximum gross torque at rpm	kgf · m/rpm	74.7/1500
Engine oil quantity	ℓ (U.S.gal)	14.2 (3.8)
Dry weight	kg (lb)	520 (1146)
High idling speed	rpm	2250 ± 50
Low idling speed	rpm	600~1200
Rated fuel consumption	g/ps.hr	168
Starting motor	V-kW	DENSO, 24-3.7
Alternator	V-A	24-70
Battery	V-AH	24-100

2) MAIN PUMP

Item	Unit	Specification
Type	-	Variable displacement axial piston pump
Capacity	cc/rev	74+63
Maximum operating pressure	bar	300
Rated speed (Max/Min)	rpm	2800/300

3) MAIN CONTROL VALVE

Item	Unit	Specification
Type	-	Sectional
Operating method	-	Hydraulic pilot
Main relief valve pressure	bar	210/165
Flow capacity	lpm	180

(4) STEERING UNIT

Item	Unit	Specification
Type	-	Load sensing / Non load reaction / Dynamic signal
Capacity	cc/rev	369
Rated flow	lpm	45.4

(5) POWER TRAIN DEVICES

Item			Specification		
Torque converter	Model		05 W 340 (ZF SACH)		
	Type		3 Element, 1 stage, 2 phase		
	Stall ratio		2.362 : 1		
Transmission	Type		Full auto, Power shift		
	Gear shift (FR / RR)		3/3		
	Adjustment		Electrical single lever type		
	Overhaul ratio	FR	1 : 5.630	2 : 2.396	3 : 0.994
		RR	1 : 5.647	2 : 2.404	3 : 0.997
Axle	Type		Front-wheel drive type, fixed location		
	Gear ratio		12.7 : 1		
	Gear		Ring & pinion gear type		
Wheels	Q'ty (FR / RR)		Double : 4/2		
	Front (drive)		12.00-20-18PR		
	Rear (steer)		12.00-20-18PR		
Brakes	Travel		Front wheel, Wet disk brake		
	Parking		Axle pinion, caliper brake, hydraulic released		
Steering	Type		Full hydraulic, power steering		
	Steering angle		76° to both right and left angle, respectively		

3. TIGHTENING TORQUE

NO	Item		Size	kgf · m	lbf · ft
1	Engine	Engine mounting bolt, nut (bracket-frame)	M24 × 3.0	100 ± 15	723 ± 109
2		Engine mounting bolt (engine-bracket)	M12 × 1.75	12.3 ± 2.4	89.0 ± 17.4
3		Radiator mounting bolt, nut	M12 × 1.75	12.8 ± 3.0	92 ± 21.7
4	Hydraulic system	Hydraulic pump mounting bolt	M12 × 1.75	14.7 ± 2.2	106 ± 15.9
5		MCV mounting bolt	M10 × 1.5	6.9 ± 1.4	49.9 ± 10.1
6		Steering unit mounting bolt	M10 × 1.5	6.9 ± 1.4	49.9 ± 10.1
7		Tilt cylinder; rod-end bolt, nut	M20 × 2.5	57.9 ± 10	419 ± 72.3
8		Tilt cylinder pin; mounting bolt	M10 × 1.5	6.9 ± 1.4	50 ± 10.1
9	Power train system	Transmission mounting bolt, nut	M16 × 2.0	100 ± 15	723 ± 109
10		Torque converter mounting bolt	M10 × 1.5	4.5 ± 0.6	32.5 ± 4.3
11		Drive axle mounting bolt, nut	M24 × 2.0	100 ± 15	723 ± 109
12		Steering axle mounting bolt, nut	M24 × 3.0	100 ± 15	723 ± 109
13		Front and rear wheel mounting nut	M22 × 1.5	83.2 ± 10	602 ± 72.3
14		Propeller shaft (to T/M and D/Axle)	1/2-20UNF	15.0 ± 2.0	108 ± 14.5
15	Others	Counterweight mounting bolt 1	M30 × 3.5	199 ± 29.9	1440 ± 216
		Counterweight mounting bolt 2	M24 × 3.0	100 ± 15	723 ± 109
16		Operator's seat mounting nut	M8 × 1.25	3.4 ± 0.7	24.6 ± 5.1
17		Cabin mounting bolt	M16 × 2.0	7.5	54.2
18		Mast mounting bolt	M12 × 1.75	12.5 ± 1.3	90.4 ± 9.4