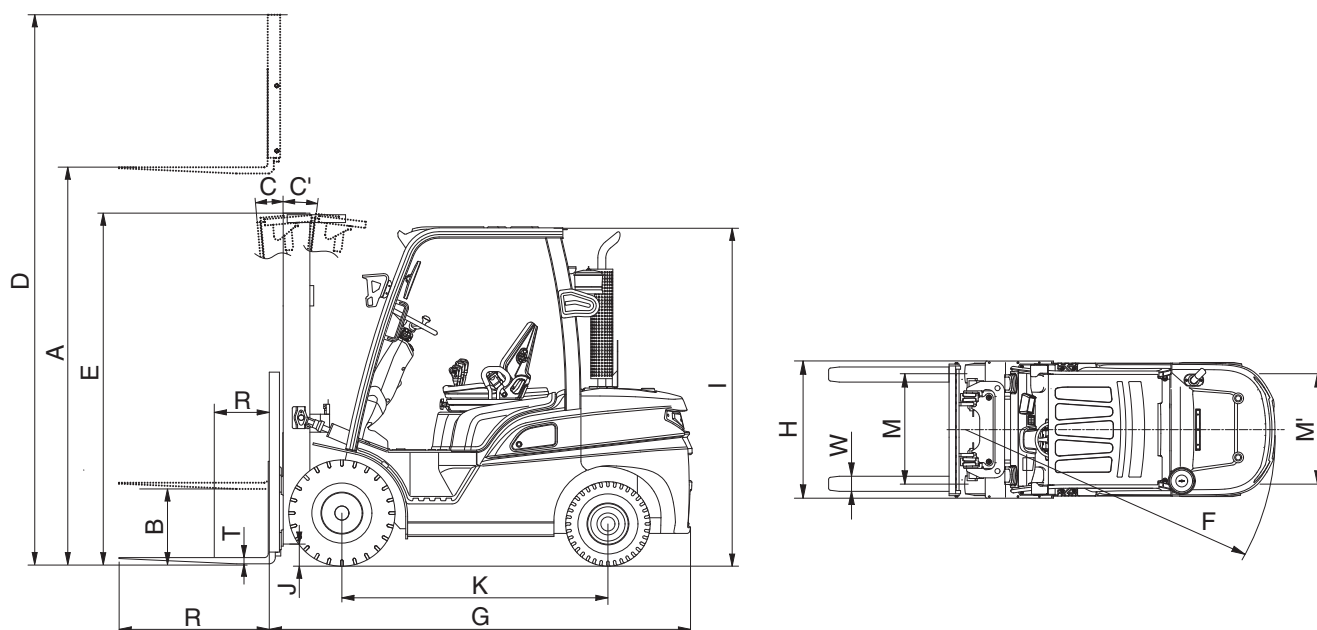


8. SPECIFICATIONS

1. SPECIFICATION TABLE

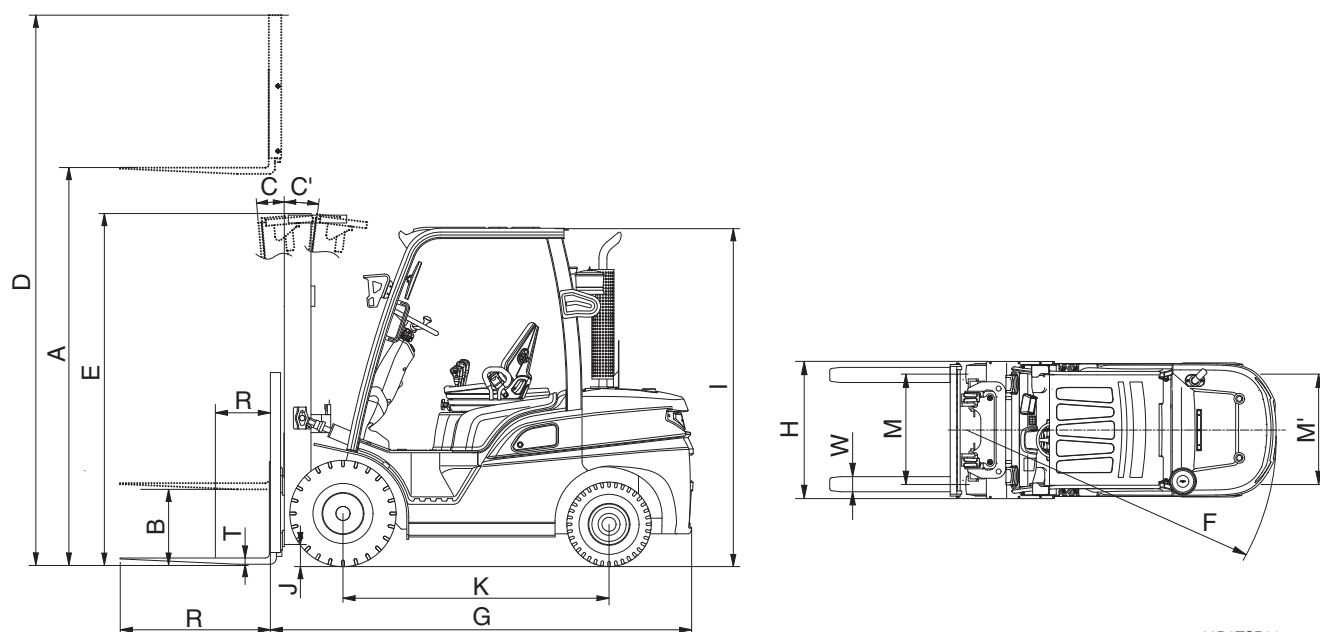
1) HMC ENGINE



22D9TSP01

Model			Unit	22D-9T	25D-9T	30D-9T	33D-9T
Capacity			kg (lb)	2200 (4400)	2500 (5000)	3000 (6000)	3300 (6500)
Load center		R	mm (in)	500 (24")	←	←	←
Weight (Unloaded)			kg (lb)	3587 (7910)	3897 (8590)	4298 (7475)	4567 (10070)
Fork	Lifting height	A	mm (ft·in)	3305 (10' 10")	←	←	←
	Free lift	B	mm (in)	155 (6.1")	←	←	←
	Lifting speed (Unload/Load)		mm/sec	550/530	550/520	460/440	460/430
	Lowering speed (Unload/Load)		mm/sec	450/500	←	←	←
	L × W × T	L,W,T	mm (in)	1050×100×45 (41.3×3.9×1.8)	←	1050×122×45 (41.3×4.8×1.8)	←
Mast	Tilt angle (forward/backward)	C/C'	degree	6/10	←	←	←
	Max height	D	mm (ft·in)	4485 (14' 9")	←	←	←
	Min height	E	mm (ft·in)	2175 (7' 2")	←	2190 (7' 2")	2260 (7' 5")
Body	Travel speed (Unload)		km/h	18.7	16.5	20.0	19.8
	Gradeability (Load)		%	38.1	34.1	26.6	24.5
	Min turning radius (Outside)	F	mm (ft·in)	2286 (7' 6")	2342 (7' 8")	2413 (7' 11")	2463 (8' 1")
ETC	Operating pressure		kgf/cm ²	200	←	←	←
	Hydraulic oil tank		ℓ (usgal)	40	←	←	←
	Fuel tank		ℓ (usgal)	55	←	←	←
Overall length		G	mm (ft·in)	2577 (8' 5")	2607 (8' 7")	2676 (8' 9")	2732 (9' 0")
Overall width		H	mm (ft·in)	1200 (3' 11")	←	1230 (4' 0")	1230 (4' 0")
Overhead guard height		I	mm (ft·in)	2160 (7' 1")	←	2180 (7' 2")	←
Ground clearance		J	mm (in)	130 (3.1")	←	145 (5.7")	←
Wheel base		K	mm (ft·in)	1650 (5' 5")	←	1700 (5' 7")	←
Wheel tread front/rear		M/M'	mm (ft·in)	999/980 (3' 3 3/8"/3' 3")	←	1005/980 (3' 6"/3' 3")	←

2) WIA ENGINE



22D9TSP01

Model		Unit	22D-9T	25D-9T	30D-9T	33D-9T
Capacity		kg (lb)	2200 (4400)	2500 (5000)	3000 (6000)	3300 (6500)
Load center	R	mm (in)	500 (24")	←	←	←
Weight (Unloaded)		kg (lb)	3587 (7910)	3897 (8590)	4298 (7475)	4567 (10070)
Fork	Lifting height	A	mm (ft·in)	3305 (10' 10")	←	←
	Free lift	B	mm (in)	155 (6.1")	←	←
	Lifting speed (Unload/Load)		mm/sec	550/530	550/520	460/440
	Lowering speed (Unload/Load)		mm/sec	450/500	←	←
	L × W × T	L,W,T	mm (in)	1050×100×45 (41.3×3.9×1.8)	←	1050×122×45 (41.3×4.8×1.8)
Mast	Tilt angle (forward/backward)	C/C'	degree	6/10	←	←
	Max height	D	mm (ft·in)	4485 (14' 9")	←	←
	Min height	E	mm (ft·in)	2175 (7' 2")	←	2190 (7' 2")
Body	Travel speed (Unload)		km/h	20.0	20.0	21.6
	Gradeability (Load)		%	37.0	33.1	26.3
	Min turning radius (Outside)	F	mm (ft·in)	2286 (7' 6")	2342 (7' 8")	2413 (7' 11")
ETC	Operating pressure		kgf/cm ²	200	←	←
	Hydraulic oil tank		ℓ (usgal)	40	←	←
	Fuel tank		ℓ (usgal)	55	←	←
Overall length		G	mm (ft·in)	2577 (8' 5")	2607 (8' 7")	2676 (8' 9")
Overall width		H	mm (ft·in)	1200 (3' 11")	←	1230 (4' 0")
Overhead guard height		I	mm (ft·in)	2160 (7' 1")	←	2180 (7' 2")
Ground clearance		J	mm (in)	130 (3.1")	←	145 (5.7")
Wheel base		K	mm (ft·in)	1650 (5' 5")	←	1700 (5' 7")
Wheel tread front/rear		M/M'	mm (ft·in)	999/980 (3' 3"/3' 3")	←	1005/980 (3' 4"/3' 3")

2. SPECIFICATION FOR MAJOR COMPONENTS

1) HMC ENGINE

(1) Engine

Item	Unit	Specification
Model	-	HMC D4BB
Type	-	Vertical, water-cooled, 4-cycle diesel, Turbo
Cooling Method	-	Water cooling
Number of cylinders and arrangement	-	4 cylinders, in-line
Firing order	-	1-3-4-2
Combustion type	-	Swirl
Cylinder bore X stroke	mm (in)	91.1 × 100 (3.6 × 3.9)
Piston displacement	cc (cu in)	2607 (159)
Compression ratio	-	22
Rated gross horse power	ps/rpm	60/2500
Maximum gross torque at rpm	kgf · m/rpm	17.3/2000
Engine oil quantity	l (U.S.gal)	5.4 (1.43)
Dry weight	kg (lb)	200 (440)
High idling speed	rpm	2570
Low idling speed	rpm	850 ± 50
Rated fuel consumption	g/ps.hr	173
Starting motor	V-kW	12V, 2.2kW
Alternator	V-A	12V, 65A
Battery	V-AH	12V, 72AH
Fan belt deflection	mm (in)	10~13 (0.39~0.51)

(2) Main pump

Item	Unit	Specification
Type	-	Fixed displacement gear pump
Capacity	cc/rev	27.7
Maximum operating pressure	bar	250
Rated speed (Max/Min)	rpm	2700/500

(3) Main control valve

Item	Unit	Specification
Type	-	Sectional
Operating method	-	Mechanical
Main relief valve pressure	kg/cm ²	200/165
Flow capacity	lpm	76

2) WIA ENGINE

(1) Engine

Item	Unit	Specification
Model	-	WIA WC30D
Type	-	Vertical, water-cooled, 4-cycle diesel
Cooling Method	-	Water cooling
Number of cylinders and arrangement	-	4 cylinders, in-line
Firing order	-	1-3-4-2
Combustion type	-	Swirl
Cylinder bore X stroke	mm (in)	98 × 98 (3.86 × 3.86)
Piston displacement	cc (cu in)	2957 (180)
Compression ratio	-	21.5
Rated gross horse power	ps/rpm	60/2500
Maximum gross torque at rpm	kgf · m/rpm	18.7/1800
Engine oil quantity	l (U.S.gal)	7.4 (1.95)
Dry weight	kg (lb)	200 (440)
High idling speed	rpm	2750 ± 50
Low idling speed	rpm	800 ± 50
Rated fuel consumption	g/ps.hr	192
Starting motor	V-kW	12-2.2
Alternator	V-A	13.5-75
Battery	V-AH	12V, 72AH
Fan belt deflection	mm (in)	10~13 (0.39~0.51)

(2) Main pump

Item	Unit	Specification
Type	-	Fixed displacement gear pump
Capacity	cc/rev	32
Maximum operating pressure	bar	250
Rated speed (Max/Min)	rpm	2700/500

(3) Main control valve

Item	Unit	Specification
Type	-	Sectional
Operating method	-	Mechanical
Main relief valve pressure	kg/cm ²	200/165
Flow capacity	lpm	76

(4) Power train devices

Item			Specification
Torque converter	Model		KAPEC 280 DB
	Type		3 Element, 1 stage, 2 phase
	Stall ratio		2.90
Transmission	Type		Power shift
	Gear shift(FWD/REV)		1/1
	Control		Solenoid ON/OFF type
	Overhaul ratio	FWD	1.143
		REV	1.143
Axle	Type		Front-wheel drive type, fixed location
	Gear ratio		14.2 : 1
	Gear		Spiral bevel gear type
Wheels	Q'ty (FR/RR)		Single : 2/2, Double : 4/2
	Front (drive)	2.2/2.5	Single : 7.00-12-14 PR (STD), 8.15-15-14 PR (OPT)
			Double : 6.00-15-10 PR
		3.0/3.3	Single : 8.5-15-14 PR
			Double : 6.00-15-10 PR
	Rear (steer)	2.2~3.3	Single : 6.50-10-14 PR
			Double : 6.50-10-12 PR
Brakes	Travel		Front wheel, wet disk brake
	Parking		Wet disk (negative brake)
Steering	Type		Full hydraulic, power steering
	Steering angle		78.9° to both right and left angle, respectively

3. TIGHTENING TORQUE

No.	Items		Size	kgf · m	lbf · ft
1	Engine (HMC)	Engine mounting bolt (RH, engine-bracket)	M12×1.25	7.7±1.9	70±13
2		Engine mounting bolt (LH, engine-bracket)	M10×1.25	7.4±1.5	53.5±10
3		Engine mounting nut (bracket-mount)	M12×1.25	9.7±1.9	70±13
4		Engine mounting bolt (mount-frame)	M12×1.75	12.8±3	92.6±21
5		Radiator mounting bolt, nut	M 8×1.25	2.5±0.5	18±3.6
6		Torque converter mounting bolt (8EA)	M10×1.25	7.4±1.5	53.5±10
7	Engine (WIA)	Engine mounting bolt (engine-bracket)	M10×1.5	7.4±1.5	53.5±10
8		Engine mounting nut (bracket-mount)	M12×1.25	9.7±1.9	70±13
9		Engine mounting bolt (mount-frame)	M12×1.75	12.8±3	92.6±21
10		Radiator mounting bolt, nut	M 8×1.25	2.5±0.5	18±3.6
11		Torque converter mounting bolt (8EA)	M10×1.25	7.4±1.5	53.5±10
12	Hydraulic system	MCV mounting bolt	M10×1.5	4±0.5	29±3.6
13		Steering unit mounting bolt	M10×1.5	4±0.5	29±3.6
14		Pump mounting bolt	M10×1.0	5.3±0.5	38.3±3.6
15	Power train system	Transmission mounting bolt, nut	M16×2.0	7.5	54
16		Drive axle mounting bolt, nut	M20×1.5	65±3	470±21
17		Steering axle mounting bolt	M20×2.5	58±8.5	420±61
18		Front wheel mounting nut	M20×1.5	40±10	289±72
19		Rear wheel mounting nut	M14×1.5	18±2	130±14
20	Others	Counterweight mounting bolt	M30×3.5	199±30	1439±217
21		Operator's seat mounting nut	M 8×1.25	2.5±0.5	18.1±3.6
22		Head guard mounting bolt, nut	M12×1.75	12.3±1.2	89.0±8.7