

# **FORKLIFT TRUCKS 20 – 50 TONNE**

## **TECHNICAL INFORMATION KALMAR DCD200-500, DIESEL**

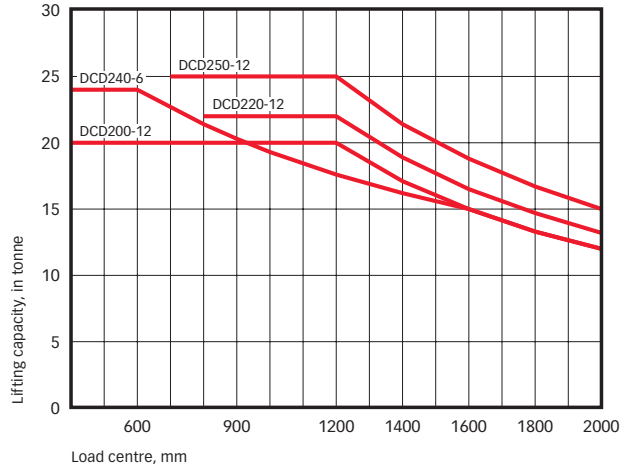




# A range of machines for all your applications

The Kalmar DCD 20 – 50 tonne range is the latest generation heavy forklift trucks from Kalmar. It offers you a broad choice of alternatives to really get the right machine for the right type of work. Kalmar 20 – 50 tonne machines are well proven with robust design, specifically made for the most demanding handling.

This range is a result of a continuous development in practise, and together with its predecessors, these are the most common machines in the world. Every design detail is thoroughly matched against your and your colleagues' demands, so when investing in Kalmar, you are investing in optimal productivity and overall economy.



DCD200-250 models: Full lifting capacity up to 4000 mm lift height with duplex/duplex freelif mast and integrated sideshift/fork positioning carriage.

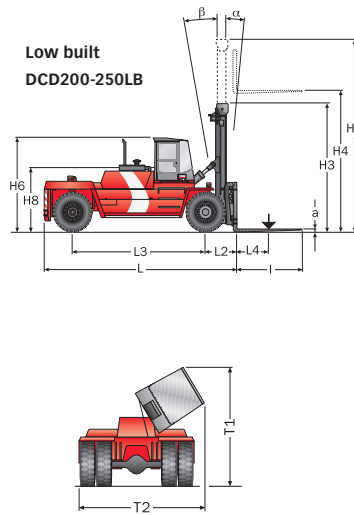
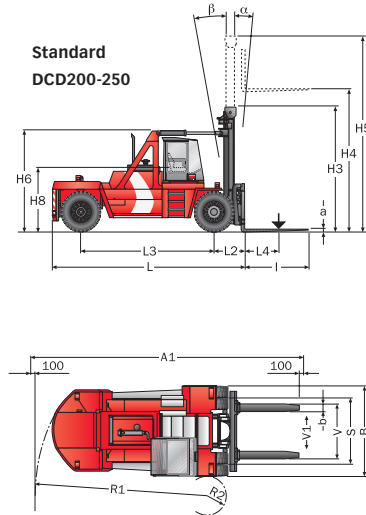
## Kalmar 20 – 25 tonne

These models are primarily dedicated to handling of heavy loads like steel, metal, concrete or stone blocks both at industrial sites and in ports and terminals. It is a comprehensive and versatile range including low-built models. Together with its compact and driver-friendly design these machines offer a productive and flexible resource to any industrial environment.

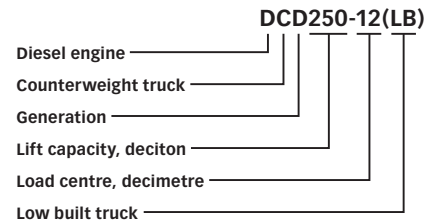


Capacity and dimensions					
Lifting	Lift capacity	Rated		kg	
		Load centre	L4	mm	
Dimensions	Truck	Truck length	L	mm	
		Truck width	B	mm	
		Truck height, basic machine	Spirit Delta	H6	mm
		Seat height		H8	mm
		Distance between centre of front axle - front face of fork arm		L2	mm
		Wheelbase		L3	mm
		Track (c-c)	front	S	mm
			rear	S	mm
		Turning radius	outer	R1	mm
			inner	R2	mm
		Ground clearance, min.			mm
		Max height when tilting cab	Spirit Delta	T1	mm
		Max width when tilting cab	Spirit Delta	T2	mm
		Minimum aisle width for 90° stacking with forks		A1	mm
		Standard duplex mast	Lifting height		H4
Mast height	min.			H3	mm
	max.			H5	mm
Mast tilting, forwards - backwards	α - β			°	
Forks	Width		b	mm	
		Thickness	a	mm	
		Length of fork arms	l	mm	
		Width across fork arms	min.	V	mm
			max.	V	mm
		Sideshift. ± at width across fork arms	V1 - V	mm	
Weight	Service weight	Unloaded		kg	
		At rated load		kg	
	Axle load back	Unloaded		kg	
		At rated load		kg	
Wheels, brakes, steering	Wheels/tyres	Type, front-rear			
		Dimensions, front-rear		inch	
		Number of wheels, front-rear (*driven)			
		Pressure		MPa	
		Steering system	Type - manoeuvring		
Misc.	Service brake system	Type - affected wheels			
		Parking brake system	Type - affected wheels		
		Hydraulic pressure	Max.	MPa	
Misc.	Hydraulic fluid volume	Gearbox		l	
		Fuel volume		l	
		Starting battery	Voltage - capacity		V-Ah

# Dimensions – DCD200-250



## Model designation

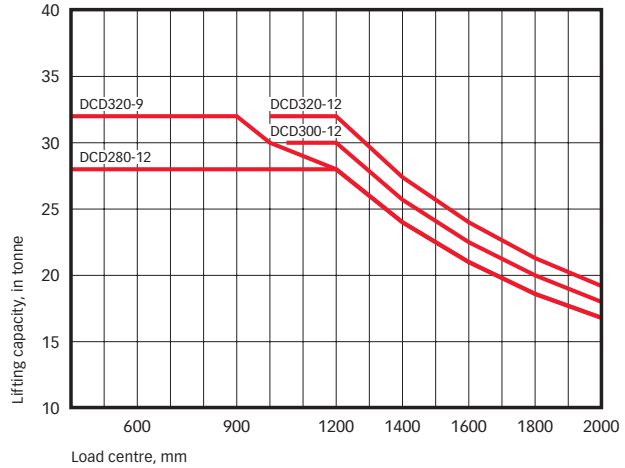


DCD 200-12	DCD 200-12LB	DCD 220-12	DCD 220-12LB	DCD 240-6LB	DCD 250-12	DCD 250-12LB
	20000		22000			25000
	1200		1200			1200
	6060		6070			6320
	3050		3050			3050
3450	3270	3450	3270	3270	3450	3270
	2150		2150			2150
	1060		1070			1070
	4000		4000			4250
	2200		2200			2200
	2140		2140			2140
	5500		5500			5800
	550		550			450
	300		300			300
-	3800	-	3800	3800	-	3800
-	3700	-	3700	3700	-	3700
	9160		9170			9470
	4000		4000			4000
	3820		3820			3820
	5820		5820			5820
	5 - 10		5 - 10			5 - 10
	250		250			250
	100		110			110
	2400		2400			2400
	2600		2600			2600
	1000		1000			1000
	400 - 1800		400 - 1800			400 - 1800
	29800		31200			32900
	15000		15000			15500
	46300		49500			53800
	14800		16200			17400
	3500		3700			4100
	Pneumatic		Pneumatic			Pneumatic
	14.00x24 - 14.00x24		14.00x24 - 14.00x24			14.00x24 - 14.00x24
	4* - 2		4* - 2			4* - 2
	0,9		0,9			0,9
	18,0		19,5			16,5
	270		270			320
	300		300			350
	2x12 - 140		2x12 - 140			2x12 - 140



## Kalmar 28 – 32 tonne

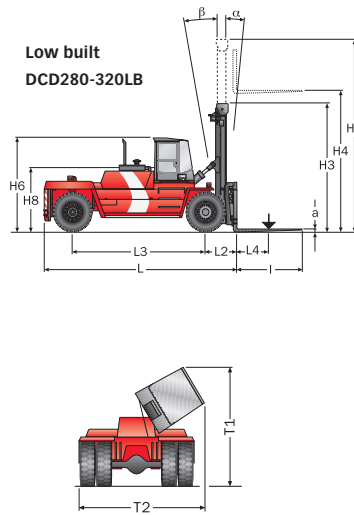
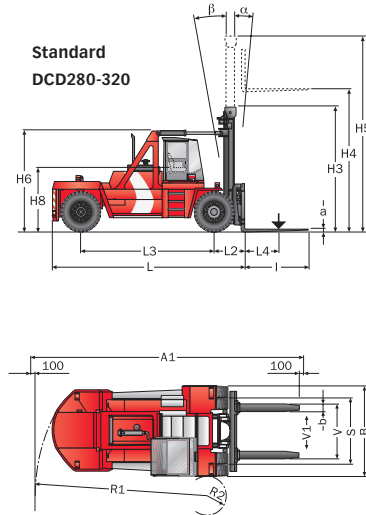
These models are well-proven and dedicated to handle heavy loads at industrial sites and ports and terminals.



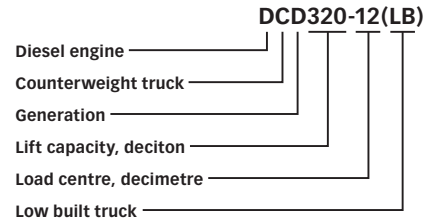
DCD280-320 models: Full lifting capacity up to 5000 mm lift height with duplex/duplex freelif mast and integrated sideshift/fork positioning carriage.

Capacity and dimensions					
Lifting	Lift capacity	Rated	kg		
	Load centre	L4	mm		
Dimensions	Truck	Truck length	L	mm	
		Truck width	B	mm	
		Truck height, basic machine	Spirit Delta	H6	mm
		Seat height	H8	mm	
		Distance between centre of front axle - front face of fork arm	L2	mm	
		Wheelbase	L3	mm	
		Track (c-c)	front	S	mm
			rear	S	mm
		Turning radius	outer	R1	mm
			inner	R2	mm
	Ground clearance, min.			mm	
	Max height when tilting cab	Spirit Delta	T1	mm	
	Max width when tilting cab	Spirit Delta	T2	mm	
	Minimum aisle width for 90° stacking with forks		A1	mm	
	Standard duplex mast	Lifting height	H4	mm	
Mast height		min.	H3	mm	
		max.	H5	mm	
Mast tilting, forwards - backwards		α - B	°		
Forks	Width	b	mm		
	Thickness	a	mm		
	Length of fork arms	l	mm		
	Width across fork arms	min.	V	mm	
		max.	V	mm	
Sideshift, ± at width across fork arms	V1 - V	mm			
Weight	Service weight		kg		
	Axle load front	Unloaded	kg		
		At rated load	kg		
	Axle load back	Unloaded	kg		
At rated load		kg			
Wheels, brakes, steering	Wheels/tyres	Type, front-rear			
	Dimensions, front-rear		inch		
	Number of wheels, front-rear (*driven)				
	Pressure		MPa		
Steering system	Type - manoeuvring				
Service brake system	Type - affected wheels				
Parking brake system	Type - affected wheels				
Misc.	Hydraulic pressure	Max.	MPa		
	Hydraulic fluid volume	Gearbox	l		
	Fuel volume		l		
	Starting battery	Voltage - capacity	V-Ah		

# Dimensions – DCD280-320



## Model designation

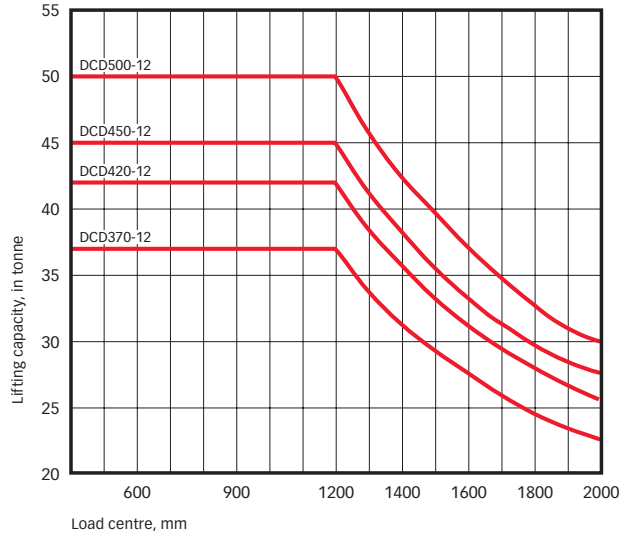


DCD 280-12		DCD 280-12LB		DCD 300-12		DCD 300-12LB		DCD 320-12		DCD 320-12LB	
	28000				30000				32000		
	1200				1200				1200		
	6675				6675				6925		
	3410				3410				3410		
3650		3415		3650		3415		3650			
	2300				2300				2300		
	1125				1125				1125		
	4500				4500				4750		
	2440				2440				2440		
	2540				2540				2540		
	6350				6350				6600		
	750				750				950		
	300				300				300		
-		3800		-		3800		-		3800	
-		3850		-		3850		-		3850	
	10075				10075				10325		
	5000				5000				5000		
	4520				4520				4520		
	7020				7020				7020		
	5 - 10				5 - 10				5 - 10		
	300				300				300		
	110				110				110		
	2400				2400				2400		
	2750				2750				2750		
	1550				1550				1550		
	300 - 2150				300 - 2150				300 - 2150		
	37700				39000				39200		
	19000				19000				19000		
	61500				64500				66700		
	18700				20000				20200		
	4200				4500				4500		
	Pneumatic				Pneumatic				Pneumatic		
	16.00x25 - 16.00x25				16.00x25 - 16.00x25				16.00x25 - 16.00x25		
	4* - 2				4* - 2				4* - 2		
	1,0				1,0				1,0		
Hydraulic servo - Steering wheel											
Oil cooled disc brakes (Wet disc brakes - drive wheels)											
Dry, spring activated disc brake - drive wheels											
	18,5				19,5				16,5		
	320				320				350		
	350				350				380		
	2x12 - 140				2x12 - 140				2x12 - 140		



## Kalmar 37 – 50 tonne

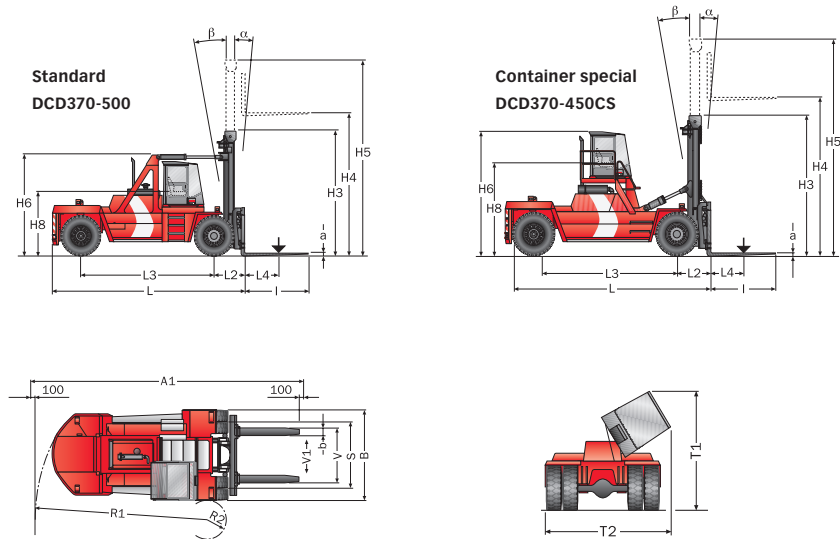
These models are dedicated for handling general cargos mainly in ports and terminals and for industrial purposes where extra lifting facilities are required.



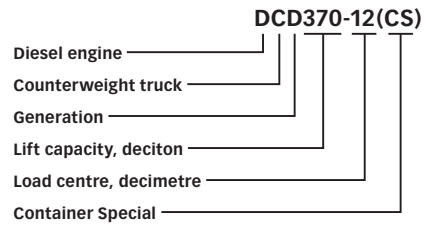
DCD370-500 models: Full lifting capacity up to 5000 mm lift height with duplex/duplex freelif mast and integrated sideshift/fork positioning carriage.

Capacity and dimensions				
Lifting	Lift capacity	Rated	kg	
		Load centre	L4 mm	
Dimensions	Truck	Truck length	L mm	
		Truck width	B mm	
		Truck height, basic machine	Spirit Delta H6 mm	
		Seat height	H8 mm	
		Distance between centre of front axle - front face of fork arm	L2 mm	
		Wheelbase	L3 mm	
		Track (c-c)	front	S mm
			rear	S mm
		Turning radius	outer	R1 mm
			inner	R2 mm
	Ground clearance, min.		mm	
	Max height when tilting cab	Spirit Delta T1	mm	
	Max width when tilting cab	Spirit Delta T2	mm	
	Minimum aisle width for 90° stacking with forks	A1	mm	
Standard duplex mast	Lifting height	H4	mm	
	Mast height	min.	H3 mm	
		max.	H5 mm	
	Mast tilting, forwards - backwards	α - B	°	
Forks	Width	b	mm	
	Thickness	a	mm	
	Length of fork arms	l	mm	
	Width across fork arms	min.	V mm	
		max.	V mm	
Sideshift, ± at width across fork arms	V1 - V	mm		
Weight	Service weight		kg	
	Axle load front	Unloaded	kg	
		At rated load	kg	
	Axle load back	Unloaded	kg	
At rated load		kg		
Wheels, brakes, steering	Wheels/tyres	Type, front-rear		
		Dimensions, front-rear	inch	
		Number of wheels, front-rear (*driven)		
	Pressure		MPa	
	Steering system	Type - manoeuvring		
Service brake system	Type - affected wheels			
Parking brake system	Type - affected wheels			
Misc.	Hydraulic pressure	Max.	MPa	
	Hydraulic fluid volume	Gearbox	l	
	Fuel volume		l	
	Starting battery	Voltage - capacity	V-Ah	

# Dimensions – DCD370-500



## Model designation



DCD 370-12	DCD 370-12CS	DCD 420-12	DCD 420-12CS	DCD 450-12	DCD 450-12CS	DCD 500-12
37000		42000		45000		50000
1200		1200		1200		1200
7345		7845		7845		8450
4150		4150		4450		4450
3725	4450	3725	4450	3725	4450	3750
2350	3350	2350	3350	2350	3350	2450
1295		1295		1295		1380
5000		5500		5500		6000
3030	3020	3030	3020	3030	3020	3030
2600		2600		2600		2600
6900		7400		7400		8100
1000		1100		1100	1100	1300
300		300		300		250
-		-		-		-
-		-		-		-
10795		11295		11295		12200
5000		5000		5000		7500
5110		5110		5110		6890
7610		7610		7610		10640
5 - 10		5 - 10		5 - 10		5 - 10
300		300		300		300
135		135		135		145
2400		2400		2400		2400
2750		2750		2750		2700
1950		1950		1950		1900
200 - 2350		200 - 2350		200 - 2350		200 - 2300
47500		50000		52300		60500
23700		25500		26100		33000
79200		86600		91500		104500
23800		24500		26200		27500
5300		5400		5800		6000
Pneumatic		Pneumatic		Pneumatic		Pneumatic
18.00x25 - 18.00x25		18.00x25 - 18.00x25		23.5x25 - 18.00x25		23.5x25 - 18.00x25
4* - 2		4* - 2		4* - 2		4* - 2
1,0		1,0		1,0		1,0
Hydraulic servo - Steering wheel						
Oil cooled disc brakes (Wet disc brakes - drive wheels)						
Dry, spring activated disc brake - drive wheels						
15,0		17,0		18,0		20,0
600		600		600		600
400		400		400		400
2x12 - 140		2x12 - 140		2x12 - 140		2x12 - 140





## Performance

When choosing from the Kalmar DCD 20 – 50 tonne range you will always get an optimised combination of engine, transmission, drive axle, braking and steering system. We have fine tuned the total concept to make sure that the machine will perform ultimately and cost efficiently in any environment during many years of demanding operations.

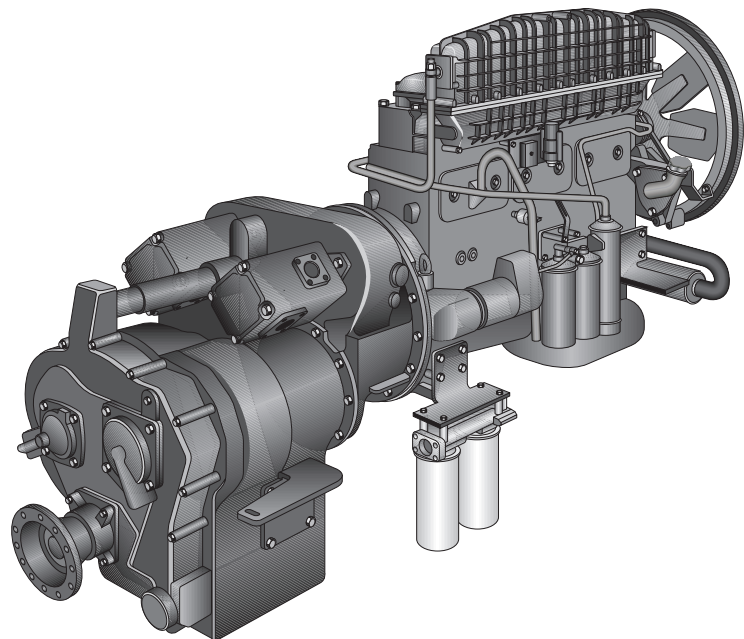


### Engine

The Kalmar DCD 20 – 50 tonne range of machines are equipped with a powerful and well matched diesel engine from Volvo (EU) or Cummins (USA) as standard, of course adapted to the specific working requirements of forklift truck operations.

Both these engines are turbocharged straight six cylinder diesels with intercooler and provide high power and torque levels even at low engine speed. The engines have low exhaust emission levels and comply with today's stringent legal environmental demands as EU, CARB, EPA.

The engines are also characterised by low fuel consumption as well as low noise and vibration levels.



### Transmission

The transmission is the well-proven hydrodynamic Dana, which very carefully and smoothly transforms the power from the engine. A number of different transmissions are available depending on your engine choice.

The transmission has an integrated gearbox and torque converter for smooth and quick acceleration with a minimum of "clutch-

slip". It also has Powershift – constant mesh gears and gear shifting by hydraulically applied clutches.

The gear changing is controlled by the operator through an easily managed multi-function lever and electrically achieved via solenoid valves, with three forward and three reverse gears.



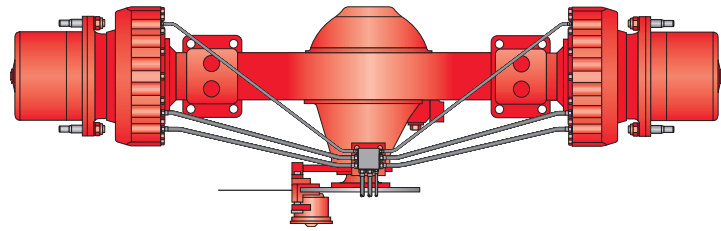
### Drive axle

The drive axle has a robust design in order to cope with the extreme stresses in tough working environments with heavy loads, high intensity operations and even towing tasks.

The axle has a two stage reduction to ensure a minimum strain on the transmission system – differential and hub reduction.

The axle is fitted with a hydraulic service brake system (Wet Disc Brakes). It is also fitted with the dry disc parking brake

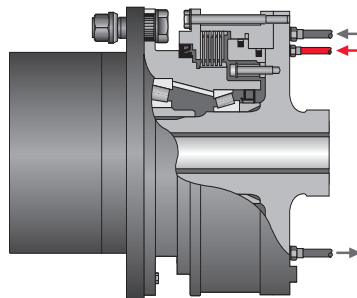
system, which operates on the input shaft of the axle by means of a powerful steel spring. The brake is released by the operator by activating a hydraulic pressure from the brake valve in the cab.



### Service brake system

The service brake system is of the Wet Disc Brake type, a well-proven system comprising a set of fixed and a set of rotating oil-cooled discs. When the brakes are applied, the discs are pressed together by a hydraulic pressure from the brake pedal.

This provides an extremely effective and smooth braking system which can cope with heavy stresses over an extended period of time without any risk of overheating or fading.



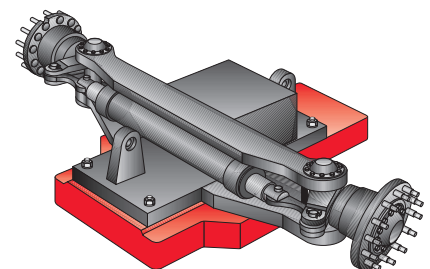
The system is virtually maintenance free with almost no wear and tear and need for brake adjustments.

The heat generated during the braking is transmitted via a cooling circuit which effectively uses the truck's total volume of hydraulic fluid. A special filter protects the brakes.

### Steering system

The steering system is a well-proven robust design with a double-acting cylinder and a pendulum suspension. It provides excellent shock absorption and advantageous steering geometry with large wheel displacement and a tight turning radius, which means an effective, stable, even and safe turning.

Technically the system is completely hydraulic and is fed directly from the pump via a priority valve to ensure that the system always has sufficient hydraulic pressure.



## Performance 20-32 tonne

Drive trains			Volvo TAD720VE (174 kW)	Volvo 731VE (175 kW)	Cummins QSB5.9E (160 kW)	Cummins 6CT8.3 (160 kW)	
Drive train	Engine	Manufacturer - type designation	Volvo TAD720VE (Turbo-Intercooler)	Volvo 731VE (Turbo Intercooler)	Cummins QSB5.9E (Turbo-Intercooler)	Cummins 6CT8.3 (6CTAA8.3) (Turbo)	
		Fuel - type of engine	Diesel - 4-stroke	Diesel 4-stroke	Diesel - 4-stroke	Diesel - 4-stroke	
		Rating ISO 3046 - at revs	kW/hp-rpm	174/236 - 2300	175/238 - 2400	160/217 - 2200	160(153)/217(208) - 2200
		Peak torque ISO 3046 - at revs	Nm-rpm	864 - 1400	949 - 1300	938 - 1300	872(994) - 1500
		Number of cylinders - displacement	cm <sup>3</sup>	6 - 7145	6 - 6730	6 - 5899	6 - 8267
		Fuel consumption, normal driving	l/h	12 - 14	12-14	11 - 13	12 - 14
	Gearbox	Manufacturer - type designation	Dana 13.7 HR 32000	Dana 13.7 HR 32000	Dana 13.7 HR 32000	Dana 13.7 HR 32000	
		Clutch, type	Torque converter	Torque converter	Torque converter	Torque converter	
		Gearbox, type	Hydrodynamic - Powershift	Hydrodynamic - Powershift	Hydrodynamic - Powershift	Hydrodynamic - Powershift	
		Numbers of gears, forward - reverse	3 - 3	3 - 3	3 - 3	3 - 3	
Alternator	Type - power	W	AC - 2240	AC - 2240	AC - 1960	AC - 1960	
Driving axle	Type	Differential and hub reduction	Differential and hub reduction	Differential and hub reduction	Differential and hub reduction		

Volvo TAD720VE			DCD 200-12		DCD 220-12		DCD 240-6 LB	DCD 250-12		DCD 280-12		DCD 300-12		DCD 320-9 LB	DCD 320-12		
			•	LB	•	LB		•	LB	•	LB	•	LB		•	LB	
Performance	Lifting speed	Unloaded	m/s	0,35	0,35	0,35	0,35	0,27	0,27	0,27	0,35	0,35	0,35	0,35	0,35	0,35	0,35
		At rated load	m/s	0,30	0,30	0,30	0,30	0,25	0,25	0,25	0,30	0,30	0,30	0,30	0,30	0,30	0,30
	Lowering speed	Unloaded	m/s	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30
		At rated load	m/s	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40
	Travelling speed, f/r	Unloaded	km/h	29	29	29	29	29	29	29	28	28	28	28	28	28	28
		At rated load	km/h	27	27	26	26	27	26	26	25	25	24	24	24	24	24
Gradeability	Max.	unloaded	%	62	62	58	58	64	54	54	46	46	44	44	44	44	
		at rated load	%	32	32	30	30	30	27	27	24	24	22	22	22	22	
	At 2 km/h	unloaded	%	49	49	46	46	50	43	43	37	37	35	35	35	35	
		at rated load	%	26	26	24	24	24	22	22	19	19	18	18	18	18	
Drawbar pull	Max.	kN	161	161	161	161	161	161	161	163	163	163	163	163	163		
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta	dB(A)	72	72	72	72	72	72	72	72	72	72	72	72	72	
	Noise level according to 2000/14/EC*	LwAZ (outside)	dB(A)	110	110	110	110	110	110	110	110	110	110	110	110	110	

Volvo 731VE**			DCD 200-12		DCD 220-12		DCD 240-6 LB	DCD 250-12		DCD 280-12		DCD 300-12		DCD 320-9 LB	DCD 320-12		
			•	LB	•	LB		•	LB	•	LB	•	LB		•	LB	
Performance	Lifting speed	Unloaded	m/s	0,35	0,35	0,35	0,35	0,27	0,27	0,27	0,35	0,35	0,35	0,35	0,30	0,30	0,30
		At rated load	m/s	0,30	0,30	0,30	0,30	0,25	0,25	0,25	0,30	0,30	0,30	0,30	0,22	0,22	0,22
	Lowering speed	Unloaded	m/s	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30
		At rated load	m/s	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40
	Travelling speed, f/r	Unloaded	km/h	32	32	32	32	32	32	32	31	31	31	31	25	25	25
		At rated load	km/h	30	30	30	30	30	29	29	28	28	27	27	22	22	22
Gradeability	Max.	unloaded	%	67	67	62	62	67	57	57	48	48	46	46	29	29	
		at rated load	%	34	34	31	31	31	28	28	25	25	23	23	24	24	
	At 2 km/h	unloaded	%	53	53	49	49	53	45	45	39	39	37	37	29	29	
		at rated load	%	28	28	25	25	25	23	23	20	20	19	19	18	18	
Drawbar pull	Max.	kN	167	167	167	167	167	167	167	169	169	169	169	187	187		
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta	dB(A)	72	72	72	72	72	72	72	72	72	72	72	72	72	
	Noise level according to 2000/14/EC	LwAZ (outside)	dB(A)	110	110	110	110	110	110	110	110	110	110	110	110	110	

Cummins QSB5.9E**			DCD 200-12		DCD 220-12		DCD 240-6 LB	DCD 250-12		
			•	LB	•	LB		•	LB	
Performance	Lifting speed	Unloaded	m/s	0,35	0,35	0,35	0,35	0,27	0,27	0,27
		At rated load	m/s	0,30	0,30	0,30	0,30	0,25	0,25	0,25
	Lowering speed	Unloaded	m/s	0,30	0,30	0,30	0,30	0,30	0,30	0,30
		At rated load	m/s	0,40	0,40	0,40	0,40	0,40	0,40	0,40
	Travelling speed, f/r	Unloaded	km/h	29	29	29	29	29	29	29
		At rated load	km/h	27	27	27	27	27	26	26
Gradeability	Max.	unloaded	%	63	63	59	59	64	54	54
		at rated load	%	32	32	30	30	30	27	27
	At 2 km/h	unloaded	%	49	49	46	46	50	43	43
		at rated load	%	26	26	24	24	24	22	22
Drawbar pull	Max.	kN	161	161	161	161	161	161	161	
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta	dB(A)	74	74	74	74	74	74	74
	Noise level according to 2000/14/EC	LwAZ (outside)	dB(A)	113	113	113	113	113	113	113

\* including noise reduction kit \*\* only for use outside EU

Cummins 6CT8.3**				DCD 200-12		DCD 220-12		DCD 240-6 LB	DCD 250-12		DCD 280-12		DCD 300-12		DCD 320-12****		
				•	LB	•	LB		•	LB	•	LB	•	LB	•	LB	
Performance	Lifting speed	Unloaded	m/s	0,35	0,35	0,35	0,35	0,27	0,27	0,27	0,35	0,35	0,35	0,35	0,35	0,35	
		At rated load	m/s	0,30	0,30	0,30	0,30	0,25	0,25	0,25	0,30	0,30	0,30	0,30	0,30	0,30	
	Lowering speed	Unloaded	m/s	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	0,30	
		At rated load	m/s	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	
	Travelling speed, f/r	Unloaded	km/h	29	29	29	29	30	29	29	28	28	28	28	28	28	
		At rated load	km/h	28	28	27	27	27	26	26	25	25	24	24	24	24	
	Gradeability	Max.	unloaded	%	61	61	57	57	62	53	53	45	45	43	43	43	43
			at rated load	%	32	32	29	29	29	26	26	23	23	22	22	22	22
At 2 km/h		unloaded	%	48	48	45	45	48	42	42	36	36	34	34	34	34	
		at rated load	%	26	26	24	24	24	21	21	19	19	18	18	18	18	
Drawbar pull	Max.	kN	158	158	158	158	158	158	158	160	160	160	160	160	160		
Noise level according to EN12053	LpAZ (inside) Spirit Delta	dB(A)	74	74	74	74	74	74	74	74	74	74	74	74	74		
Noise level according to 2000/14/EC	LWAZ (outside)	dB(A)	113	113	113	113	113	113	113	113	113	113	113	113	113		

\*\*\* Cummins 6CTAA8.3

## Performance 37-50 tonne

Drive trains			Volvo TWD1240VE (256 kW)	Cummins QSM11 (246 kW)	
Drive train	Engine	Manufacturer - type designation	Volvo TWD1240VE (Turbo-Intercooler)	Cummins QSM11 (Turbo-Intercooler)	
		Fuel - type of engine	Diesel - 4-stroke	Diesel - 4-stroke	
		Rating ISO 3046 - at revs	kW/hp-rpm	246/330 - 2000	243/330 - 2100
		Peak torque ISO 3046 - at revs	Nm-rpm	1751 - 1200	1590 - 1400
		Number of cylinders - displacement	cm <sup>3</sup>	6 - 12130	6 - 10820
		Fuel consumption, normal driving	l/h	18 - 22	14 - 16
Gearbox	Manufacturer - type designation	Dana 15.5HR 36432		Dana 15.5HR 36432	
		Clutch, type	Torque converter		Torque converter
		Gearbox, type	Hydrodynamic - Powershift		Hydrodynamic - Powershift
		Numbers of gears, forward - reverse	4 - 4		4 - 4
Alternator	Type - power	W	AC - 1920	AC - 2400	
Driving axle	Type		Differential and hub reduction	Differential and hub reduction	

Volvo TWD1240VE			DCD 370-12		DCD 420-12		DCD 450-12		DCD 500-12		
			•	CS	•	CS	•	CS			
Performance	Lifting speed	Unloaded	m/s	0,28	0,28	0,28	0,28	0,28	0,28	0,28	
		At rated load	m/s	0,25	0,25	0,25	0,25	0,25	0,25	0,20	
	Lowering speed	Unloaded	m/s	0,30	0,30	0,30	0,30	0,30	0,30	0,30	
		At rated load	m/s	0,40	0,40	0,40	0,40	0,40	0,40	0,40	
	Travelling speed, f/r	Unloaded	km/h	25	25	23	23	24	24	23	
		At rated load	km/h	22	22	20	20	22	22	20	
	Gradeability	Max.	unloaded	%	30	30	35	35	30	30	30
			at rated load	%	40	40	41	41	34	34	34
At 2 km/h		unloaded	%	30	30	35	35	30	30	30	
		at rated load	%	26	26	26	26	23	23	22	
Drawbar pull	Max.	kN	343	343	370	370	343	343	350		
Noise level according to EN12053	LpAZ (inside) Spirit Delta	dB(A)	74	74	74	74	74	74	74		
Noise level according to 2000/14/EC	LWAZ (outside)	dB(A)	112	112	112	112	112	112	112		

Cummins QSM11			DCD 370-12		DCD 420-12		DCD 450-12		DCD 500-12		
			•	CS	•	CS	•	CS			
Performance	Lifting speed	Unloaded	m/s	0,28	0,28	0,28	0,28	0,28	0,28	0,28	
		At rated load	m/s	0,25	0,25	0,25	0,25	0,25	0,25	0,25	
	Lowering speed	Unloaded	m/s	0,30	0,30	0,30	0,30	0,30	0,30	0,30	
		At rated load	m/s	0,40	0,40	0,40	0,40	0,40	0,40	0,40	
	Travelling speed, f/r	Unloaded	km/h	25	25	23	23	24	24	23	
		At rated load	km/h	22	22	20	20	22	22	20	
	Gradeability	Max.	unloaded	%	30	30	35	35	30	30	30
			at rated load	%	40	40	41	41	34	34	34
At 2 km/h		unloaded	%	30	30	35	35	30	30	30	
		at rated load	%	26	26	26	26	23	23	22	
Drawbar pull	Max.	kN	343	343	370	370	343	343	350		
Noise level according to EN12053	LpAZ (inside) Spirit Delta	dB(A)	74	74	74	74	74	74	74		
Noise level according to 2000/14/EC	LWAZ (outside)	dB(A)	112	112	112	112	112	112	112		



# Lifting equipment

The Kalmar DCD 20 – 50 tonne range offers you a comprehensive range and choice of masts, carriages, forks and attachments. Altogether you can specify your machine exactly according to your needs. The lifting equipment is well proven and continuously improved to match the increasing requirements for fast, accurate and safe handling, whatever the application.



## Masts

All masts are constructed on the free-visibility principle and can be supplied with the area controlled free-lift system which, in terms of function, is extraordinary reliable and secure.

The robust mast profiles of high tensile steel are designed for high stresses and long life. The narrow profiles improve the visibility from the operator's seat by minimising obstruction of the field of vision. The cylinders contribute as well and are positioned in the "dead" angles of the mast.

The long-life mast bearings are conical and fitted with high quality roller bearings.

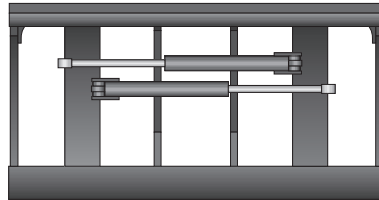
The standard lifting equipment for all models is the duplex, clear view mast.

Mast													
Lift-height	Mast height		Free-lift	Mast height		Free-lift	Mast height		Freelift	Mast height		Freelift	
	Min 1) H3	Max 1) H5	H2	Min 1) H3	Max 1) H5	H2	Min 1) H3	Max 1) H5	H2	Min 1) H3	Max 1) H5	H2	
DCD200-250			DCD280-320			DCD370-450			DCD500				
Duplex, standard, clear view	4000	3820	5820	-	4020	6020	-	-	-	-	-	-	
	4500	4070	6320	-	4270	6520	-	4860	7070	-	5410	7620	-
	5000	4320	6820	-	4520	7020	-	5110	7520	-	5660	8120	-
	5500	4570	7320	-	4770	7520	-	5360	8070	-	5910	8620	-
	6000	4820	7820	-	5020	8020	-	5610	8570	-	6160	9129	-
	6500	5070	8320	-	5270	8520	-	5860	9070	-	6410	9620	-
	7000	5320	8820	-	5520	9020	-	5860	9070	-	6660	10120	-
Duplex, clear view, free lift	4000	3900	5900	2000	4020	6020	2000	4610	6570	2000	-	-	-
	4500	4150	6400	2250	4270	6520	2250	4860	7070	2250	-	-	-
	5000	4400	6900	2500	4520	7020	2500	5110	7570	2500	-	-	-
	5500	4650	7400	2750	4770	7520	2750	5360	8070	2750	-	-	-
	6000	4900	7900	3000	5020	8020	3000	5610	8570	3000	-	-	-
	6500	5150	8400	3250	5270	8520	3250	5860	9070	3250	-	-	-
	7000	5400	8900	3500	5520	9020	3500	6110	9570	3500	-	-	-



### Fork carriages

The fork carriages are in most deliveries supplied with hydraulic side-shift and simultaneous fork positioning to facilitate efficient operations especially in industrial handling. There is a fixed carriage available for models 20 – 30 tonne.

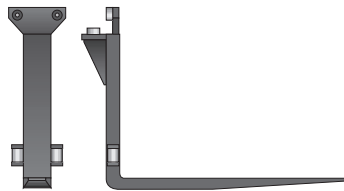


Fork carriage

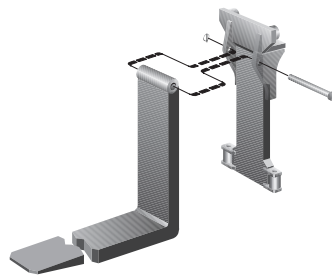
### Forks

The forks are a one-piece forged design manufactured from high tensile steel and fitted with four upper rollers and two lower rollers on each fork. A solution which provides both accurate and smooth fork movements as well as long service life.

To improve handling flexibility and ease of changing between forks and other attachments, a fork shaft system is available. In this case the forks are mounted on a separate fork holder.



Integrated forks



Fork shaft system



Inverted forks

### Attachments

For the Kalmar 20 – 50 tonne models there are a number of attachments available, which considerably extend the traditional fork-lift truck area of operation.

Attachments like coil rams for steel and metal applications and different toplifts for container handling.



Coil ram



Toplift attachment





# Operator environment

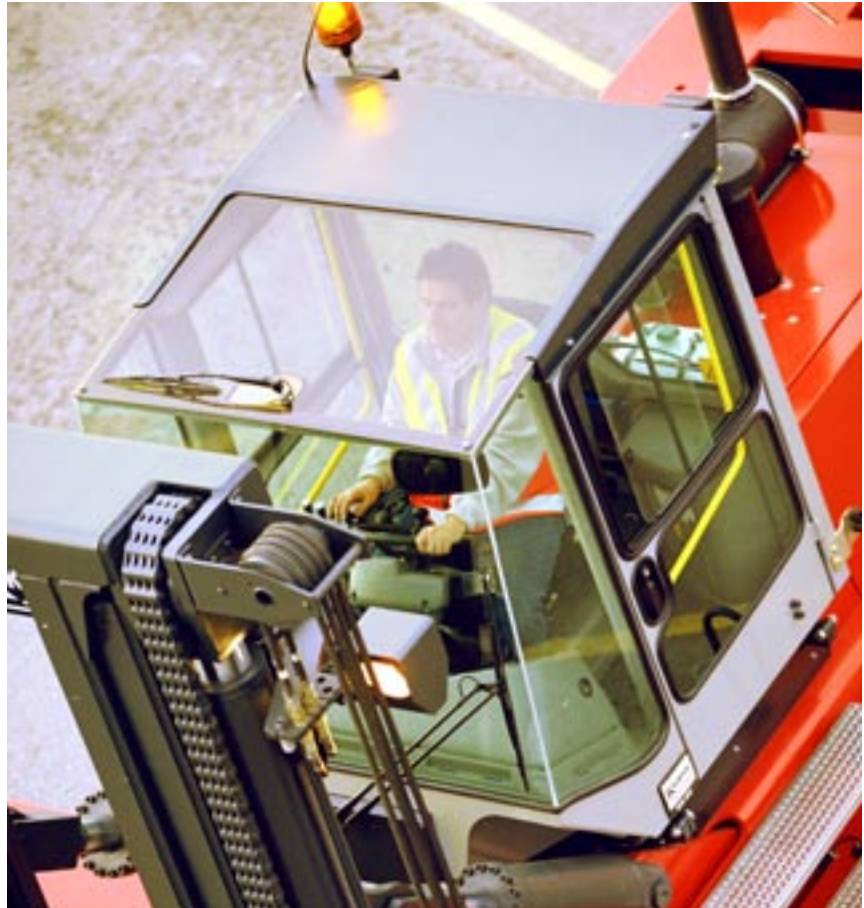
## Spirit Delta

The Spirit Delta design provides a state-of-the-art operator environment with an efficient, ergonomic and safe place to work. The design is based on a comprehensive research and analysis of the operator's working conditions.

The result is, among others, optimised visibility and ergonomics with individually adjustable operator seat, steering wheel and hydraulic controls as well as perfect monitoring of instruments and signals. The two adjustable multi-function levers are handling gear changing, windscreen wipers, washers and the horn.

The air comfort is secured by an efficient heating/ventilation unit with easily exchangeable fresh air filters which provides clean incoming air. The equipment includes a powerful 3-speed fan for cooling, heating, defrosting and re-circulation.

Access to the cab is comfortable and secure thanks to several well positioned steps and hand rails.



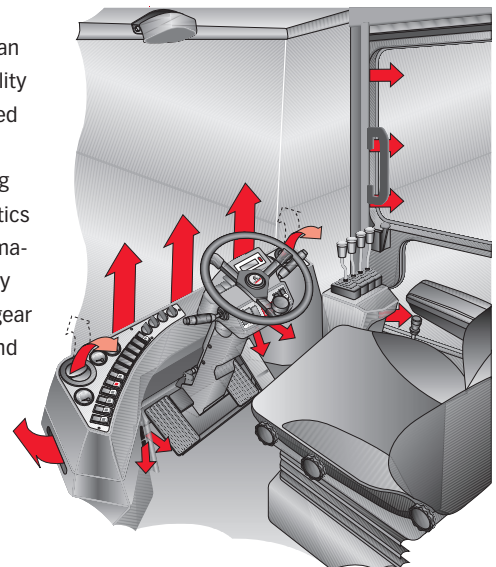
Spirit Delta cab

## Instrumentation

The instrument panel is gently rounded and ergonomically designed providing a clear view of all essential information and easy reach to all units.

The standard instrumentation includes warning lamps for battery, engine and gearbox oil pressure, service brakes, temperatures and applied parking brake. It also includes gauges displaying values for gearbox oil pressure, engine coolant temperature, fuel level and machine running time.

This basic but complete functionality can easily be upgraded for improved flexibility and safety when the machine is supplied with the Kalmar Control System, a fast and reliable electronic system providing warnings, monitoring and also diagnostics digitally presented on a separate information display. It also provides opportunity for extended functions like automatic gear change, lever steering, mini-steering and electro-hydraulic servo.







## Service friendly

Routine daily service checks contribute to a safer work place and reduce the risk of break-downs.

Daily service checks are made easier thanks to well thought out and grouped service points. The operator can reach all service points without having to climb up onto the truck.

The cabs on the low built machines can be tilted by means of a hydraulic cylinder operated by a manual pump. When the cab has been tilted the gearbox, hydraulic pumps, hydraulic fluid filter, parking brake, main valves, control valves etc. are readily accessible for service.

Standard machines have side cabs and large hatches for ease of service. All machines have hinged hoods that can be raised to facilitate engine service.



## Contact information:

### Kalmar global partner

#### Local presence, globally

Kalmar is a global supplier of heavy materials handling equipment and services for ports, terminals, industry and intermodal handling.

Local presence means that we can support our customers throughout the product's life cycle, wherever they are.

Our products are manufactured in Sweden, Finland, the USA, the Netherlands, China and Malaysia.



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