

FORKLIFT TRUCKS 9 – 18 TONNES

TECHNICAL INFORMATION KALMAR DCE90-180, DIESEL





A truck offering many possibilities

The Kalmar 9 – 18 tonne series is an entirely new range of medium-size trucks.

Our highly praised medium range of trucks has now been further developed and improved. It has also benefited from many entirely new solutions.

The aim of our development work has been the creation of a unique driving experience, visibility and handling which, together with high quality, long life and ease of service, provide the conditions for efficient working and excellent overall economy.

Powerful and hard-wearing power trains with new improved gearboxes or electronically controlled gear units, perfectly matched with optional, environmentally friendly engines; well-balanced bodies for optimum dynamic stability and visibility; the number of options providing an unbelievable driving experience, safety and efficiency. Design and technical solutions result in increased lifetime and longer service intervals; simplified service and daily inspection, and in addition to all this, a wide selection of high-quality driving environments.

Welcome to the Kalmar 9 – 18 tonne range.

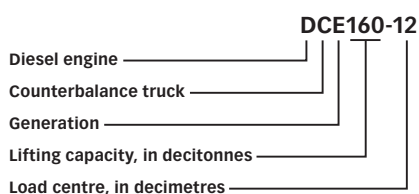


**DCE 90-6
Spirit Delta**

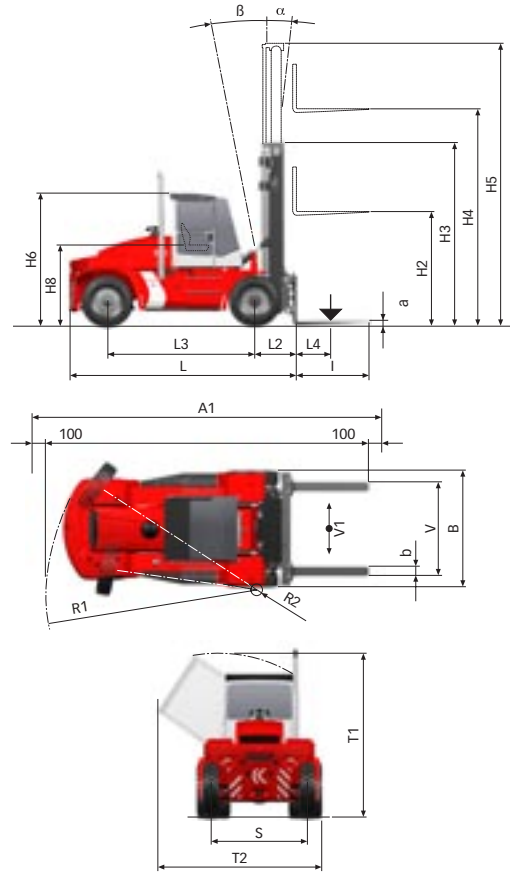
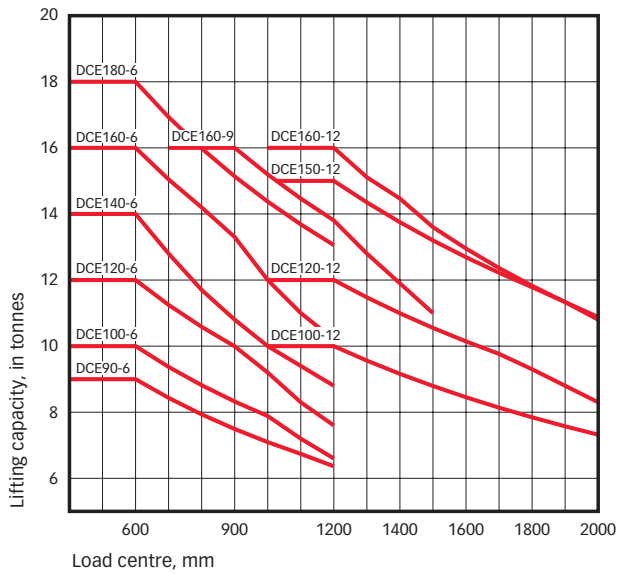


**DCE 160-12
FlexCab**

Model designation



Dimensions				
Lifting	Lift capacity	Rated	kg	
		Load centre	L4 mm	
Dimensions	Truck	Truck length without forks	L mm	
		Truck width	B mm	
		Height, basic machine, Spirit Delta	H6 mm	
		Height, basic machine, FlexCab	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 - rear	S mm	
		Turning radius, outer	R1 mm	
		Turning radius, inner	R2 mm	
		Ground clearance, min	mm	
		Max height when tilting cab (FlexCab)	T1 mm	
		Max width when tilting cab (FlexCab)	T2 mm	
		Min, aisle width for 90° stacking with forks	A1 mm	
		Standard duplex mast	Lifting height	H4 mm
			Mast height, min.	H3 mm
			Mast height, max.	H5 mm
			Mast tilting, forwards - backwards	α - B °
Ground clearance, min.	mm			
Forks	Width	b mm		
	Thickness	a mm		
	Length of fork arm	l mm		
	Width across fork arms, max.	v mm		
	Width across fork arms, min	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	
Wheels, brakes, steering	Steering system	Type - manoeuvring		
	Service brake system	Type - affected wheels		
	Parking brake system	Type - affected wheels		
	Hydraulic pressure	Max.	MPa	
Misc.	Hydraulic fluid volume		l	
	Fuel volume		l	
	Starting battery	Voltage - capacity	V-Ah	



DCE90-6 to DCE180-6 models:
 Full lifting capacity up to 5000 mm lift height with duplex/duplex freelift/triplex masts and integrated sideshift/fork positioning carriage.

	DCE 90-6	DCE 100-6	DCE 120-6	DCE 140-6	DCE 100-12	DCE 120-12	DCE 150-12	DCE 160-6	DCE 160-9	DCE 160-12	DCE 180-6
9000	10000	12000	14000	10000	12000	15000	16000	16000	16000	16000	18000
600	600	600	600	1200	1200	1200	600	900	1200	1200	1200
4470	4720	4725	4985	5065	5315	5325	5305	5315	5575	5065	5065
2480	2480	2480	2540	2540	2540	2540	2540	2540	2540	2540	2540
2895	2895	2895	2920	2920	2920	2920	2920	2920	2920	2920	2920
2995	2995	2995	3020	3020	3020	3020	3020	3020	3020	3020	3020
1770	1770	1770	1790	1790	1790	1790	1790	1790	1790	1790	1790
895	895	900	910	990	990	1000	980	990	1000	990	990
2750	3000	3000	3250	3250	3500	3500	3500	3500	3750	3250	3250
1480 - 1960	1840 - 1960	1840 - 1960	1855 - 1960	1855 - 1960	1855 - 1960	1855 - 1960	1855 - 1960	1855 - 1960	1855 - 1960	1855 - 1960	1855 - 1960
3950	4180	4180	4360	4360	4785	4785	4785	4785	5175	4360	4360
75	75	75	125	125	420	420	420	420	600	125	125
330	330	330	350	350	350	350	350	350	350	350	350
3370 (3450)	3370 (3450)	3370 (3450)	3395 (3475)	3395 (3475)	3395 (3475)	3395 (3475)	3395 (3475)	3395 (3475)	3395 (3475)	3395 (3475)	3395 (3475)
3350 (3440)	3350 (3440)	3350 (3440)	3380 (3470)	3380 (3470)	3380 (3470)	3380 (3470)	3380 (3470)	3380 (3470)	3380 (3470)	3380 (3470)	3380 (3470)
6240	6470	6475	6665	7945	8370	8380	7160	8160	8770	6745	6745
5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
4015	4015	4015	4035	4195	4195	4195	4195	4195	4195	4195	4195
6515	6515	6515	6535	6695	6695	6695	6695	6695	6695	6695	6695
5 - 10	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
250	250	250	250	250	250	250	250	250	250	250	250
200	200	200	200	220	220	250	200	220	250	220	220
65	65	70	80	90	90	100	80	90	100	90	90
1200	1200	1200	1200	2400	2400	2400	1200	1800	2400	1200	1200
2330	2330	2330	2360	2360	2360	2360	2360	2360	2360	2360	2360
570	570	570	570	640	640	700	600	640	700	640	640
440 - 1450	440 - 1450	440 - 1450	440 - 1450	430 - 1500	430 - 1500	415 - 1530	440 - 1480	430 - 1500	415 - 1530	430 - 1500	430 - 1500
15200	15600	16200	16900	18600	19700	21400	19200	20600	22400	21100	21100
7800	8100	8300	8400	10000	10100	9400	10000	9600	10500	9800	9800
21700	23100	26500	28900	26700	29600	33800	33200	34200	35800	36600	36600
7400	7500	7900	8500	8600	9600	1200	9200	11000	11900	11300	11300
2500	2500	1900	2000	1900	2100	2600	2000	2400	2600	2500	2500
Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic
11,00x20/16PR	11,00x20/16PR	11,00x20/16PR	12,00x20/20PR	12,00x20/20PR	12,00x20/20PR	12,00x20/20PR	12,00x20/20PR	12,00x20/20PR	12,00x20/20PR	12,00x20/20PR	12,00x20/20PR HD
4* - 2	4* - 2	4* - 2	4* - 2	4* - 2	4* - 2	4* - 2	4* - 2	4* - 2	4* - 2	4* - 2	4* - 2
0,9	0,9	0,9	0,9	0,9	0,9	0,9	0,9	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											
16,0	17,5	17,5	18,5	19,5	15,0	16,5	17,5	17,5	17,5	19,0	19,0
205	225	225	225	225	225	225	225	225	225	225	225
140	140	140	140	140	140	140	140	140	140	140	140
2x12 - 140	2x12 - 140	2x12 - 140	2x12 - 140	2x12 - 140	2x12 - 140	2x12 - 140	2x12 - 140	2x12 - 140	2x12 - 140	2x12 - 140	2x12 - 140



Choose your own driving environment

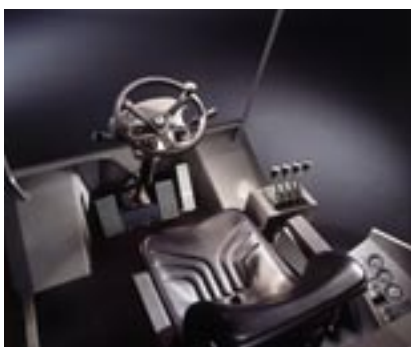
Spirit Delta

The scientific work that has featured throughout the development process has made the Spirit Delta the best designed driving environment available in the industry. Priority has been given to ergonomics for the driver. After a demanding shift in a Spirit Delta, the driver should be alert and attentive, resulting in improved working safety.

The overall design and all the adjustment options mean that the Spirit Delta will benefit every driver. Instruments and control layout allow the driver to see at a glance and have control over all the machine's various functions, while at the same time allowing the driver to work in an efficient

and relaxed way. Visibility has been optimised and has further benefited from the truck's new soft design lines. Comfort with regard to noise level, climate, lighting and accessibility is at the highest level possible.

The driver of the Spirit Delta can have Kalmar's range of intelligent efficiency and safety options in one place.



FlexCab

FlexCab is a robust alternative for those operations that do not require the total concept represented by Spirit Delta.

At the same time FlexCab provides good ergonomics, good visibility and also practical flexibility. FlexCab can be quickly and simply converted from a complete cabin to an open safety cage with or without windows, side panels and heating system, depending on climate.

The robust body has been designed to provide optimal visibility. This is especially noticeable at the corner posts and roof rails, which have the smallest cross-section possible for the benefit of the driver. The fields of vision are substantial and the distance between the driver's seat and the roof has been generously increased. Efficient operation is ensured by control and instrument layout and the degree of comfort of the driver's seat.



Kalmar's electronic system gives the truck intelligence

Kalmar's electronic system is a fast, intelligent and stable auxiliary electronic system that makes the truck driver-friendly, effective, safe and economical.

Kalmar's electronic system has been thoroughly upgraded using CANbus technology and new software to deliver high speeds and a high level of flexibility and operational safety.

We have also produced for the Kalmar 9 – 18 tonne range a new, very simple and non-language-specific interface for the information on the steering wheel display. Information is provided in three areas – diagnostics, operation and alarms.

There are plenty of options available, from ergonomic functions such as lever and mini steering wheel control, to functions for reduced fuel consumption (Optimum rev) or increased lifting speed (Optimum speed).



A complete program of lifting equipment

Choosing lifting equipment always involves a combination of different requirements – lift height, clearance, free lift, vehicle flexibility, as well as in-built functions in the vehicle.

Whatever the requirements, Kalmar has the combination that allows efficient operation and optimum visibility conditions.

The mast frame on the new Kalmar 9 – 18 series has been further improved, primarily in terms of the driver's visibility. Thin frame and cross bars have been combined with well-placed hoses and hoist chains that are "invisible" during normal operation. The fixing points for the tilt cylinders have also been strengthened to meet the ever-greater demands for heavier and more robust operations.

We are now able to offer a very interesting number of new options that make operation both more efficient and safer – Optimum speed (increased lifting speed), lift height pre-set (going directly to the right height), vertical hold (always vertical) and chain-slack elimination.

Masts

Mast							
	Lift height	Mast height		Free lift	Mast height		Free lift
		H3 min.	H5 max.	H2	H3 min.	H5 max.	H2
		90-140			120-180		
Duplex standard, clear view	3000	3015	4515	-	3195	4695	-
	3250	3140	4765	-	3320	4945	-
	3500	3265	5015	-	3445	5195	-
	3750	3390	5265	-	3570	5445	-
	4000	3515	5515	-	3695	5695	-
	4250	3640	5765	-	3820	5945	-
	4500	3765	6015	-	3945	6195	-
	4750	3890	6265	-	4070	6445	-
	5000	4015	6515	-	4195	6695	-
	5250	4140	6765	-	4320	6945	-
	5500	4265	7015	-	4445	7195	-
	5750	4390	7265	-	4570	7445	-
	6000	4515	7515	-	4695	7695	-
	6250	4640	7765	-	4820	7945	-
6500	4765	8015	-	4945	8195	-	
6750	4890	8265	-	5070	8445	-	
7000	5015	8515	-	5195	8695	-	
Duplex full free lift, clear view	3000	3015	4515	1500	3195	4695	1500
	3250	3140	4765	1625	3320	4945	1625
	3500	3265	5015	1750	3445	5195	1750
	3750	3390	5265	1875	3570	5445	1875
	4000	3515	5515	2000	3695	5695	2000
	4250	3640	5765	2125	3820	5945	2125
	4500	3765	6015	2250	3945	6195	2250
	4750	3890	6265	2375	4070	6445	2375
	5000	4015	6515	2500	4195	6695	2500
	5250	4140	6765	2625	4320	6945	2625
	5500	4265	7015	2750	4445	7195	2750
	5750	4390	7265	2875	4570	7445	2875
	6000	4515	7515	3000	4695	7695	3000
	6250	4640	7765	3125	4820	7945	3125
6500	4765	8015	3250	4945	8195	3250	
6750	4890	8265	3375	5070	8445	3375	
7000	5015	8515	3500	5195	8695	3500	
Triplex full free lift, clear view	4500	2950	5950	1500	3130	6190	1500
	4750	3033	6200	1583	3213	6440	1583
	5000	3117	6450	1667	3297	6690	1667
	5250	3200	6700	1750	3380	6940	1750
	5500	3283	6950	1833	3463	7190	1833
	5750	3367	7200	1917	3547	7440	1917
	6000	3450	7450	2000	3630	7690	2000
	6250	3533	7700	2083	3713	7940	2083
	6500	3617	7950	2167	3797	8190	2167
	6750	3700	8200	2250	3880	8440	2250
	7000	3783	8450	2333	3963	8690	2333

+25 mm on H3 and H5 on the DCE140

Carriages



Duplex standard, clear view



Fixed for manually moveable forks



Centre levelling



Fork positioning and sideshift



Sideshift



Duplex full free lift, clear view

Forks



Standard forks for manual adjustment



Fork shaft system with separate carriers for each fork



Triplex full free lift, clear view



Roller fittings for hydraulic adjustment



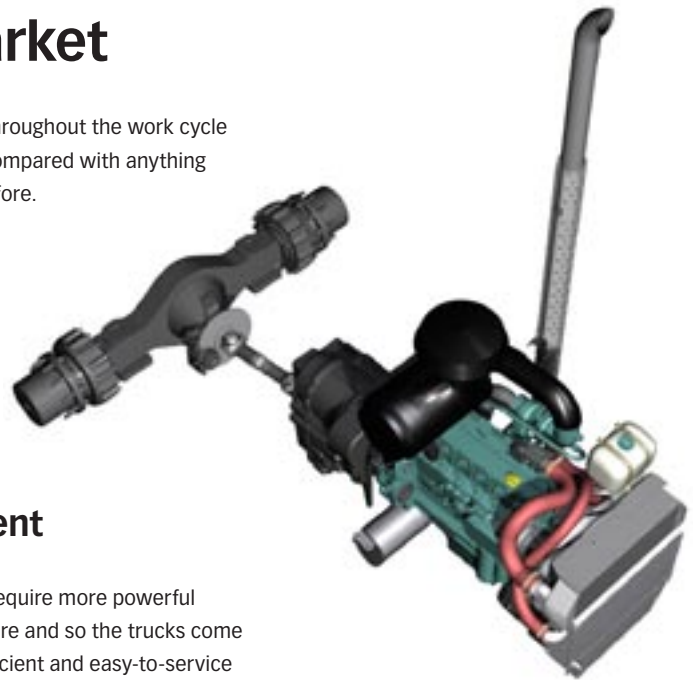
Hydraulic levelling



The most interesting power trains on the market

We have fitted the Kalmar 9 – 18 range with the very best power trains. Engine, gearbox, drive shaft and wet disc brakes – everything has been built and combined into a unit with the highest performance and durability possible. Together with the excellent dynamic stability of the new series, this provides a driving experience and

level of control throughout the work cycle that cannot be compared with anything that has gone before.



Low emission engines – a requirement

We can offer a number of different power trains based on Volvo and Cummins engines. All engines provide high torque even at low revolutions.

The engines fall well within the latest emission requirements and they also conform to the new noise power standards (previously noise pressure).

Level 2 engines require more powerful cooling than before and so the trucks come fitted with an efficient and easy-to-service split cooling system – for air and fuel and coolant to the engine and gearbox.

The air filter is a two-stage Donaldson with a pre-cleaner in stage one and a finer cellulose filter for the smallest particles in

stage two. This can also be replaced by a metallic or dust particle filter as an option. The filter has a high cleaning capacity and is easy to replace.

Unique transmission gives an unbelievable experience

We are able to offer three different gearboxes. First there is the Dana 20000, an improved version of the Clark 20000 with hydraulic modulation for 3+3 gears. Automatic gear changing is also available as an option using Kalmar's electronic system.

The Dana 13000 and 17000, which were developed in collaboration with Kalmar, are two entirely new gearboxes with integrated electronic control, monitoring and intelligence. The gearboxes have built-in reversing lock and modulation, providing safe

and smooth gear changing. In addition we also optimise slipping electronically before delivery to provide the best gear-changing characteristics depending on power train, wheel dimension and drive shaft.

There are three optional grades of "intelligence" to choose from: infinitely variable automatic gear-changing, Optimum drive (for precision driving with entirely independent working hydraulics) and electronic inching with controlled slipping.

A quality machine for optimum overall economy

Reducing operating costs

The Kalmar 9 – 18 range consists of a series of models that have been designed in every respect to provide long life with minimum downtime. This has been achieved by using technical solutions and components, but not subjecting the truck to “in-built” stresses that result in unnecessary wear and higher costs. In this case we have made a lot of improvements to something that was already good.

Optimised chassis modules, fixings, frames, dynamic stability, electronically controlled power trains, wet disc brakes, more reliable and more efficient hydraulic systems, smart options such as variable piston pumps or Optimum rev, and not least, an unbelievable driving experience. It is the entire package that determines the quality.

Greater service intervals

Service intervals for the Kalmar 9 – 18 range have been extended. Regular services are needed only after 500 hours driving. A simple calculation shows that a longer service interval alone reduces a truck’s operating costs by as much as 15% – and then there is the service downtime.

Daily inspection

Daily inspections must be simple and easy to carry out. All check points for daily inspection are directly accessible at working height under the engine cover on the side of the truck. It can all be done in just a few minutes.



Fast service and maintenance

The new Kalmar 9 – 18 range has been designed to provide the best possible accessibility. Tilting the cabin and opening the engine cover exposes the entire power train with easy accessibility to all vital components and service points.

Safety and the environment

The Kalmar DCE 90-180 is CE marked its construction complies with the following standards:

- The Machinery Directive 98/37/EC
- The EMC Directive 89/336/EC
- The Noise Emission Directive 2000/14/EC
- The Exhaust Gas Directive 97/68/EC

Optimum rev – lower noise level, reduced fuel consumption and lower emissions

The system, which is patented, reduces the noise and keeps fuel consumption to a minimum during lifting sequences in the operating cycle by optimising the engine revolutions compared to the weight of the load, deflection of the mast and the machine speed at the time. The intelligent and microprocessor-controlled Optimum rev system is variable and installed in parallel with the standard hydraulic system.

Power trains

Volvo TAD620VE (85kW) + Dana FT20000				Performance	
Drive train	Engine	Manufacturer - type designation		Volvo - TAD620VE (Turbo-Intercooler)	
		Fuel - type of engine		Diesel 4-stroke	
		Rating ISO 3046 - at revs	kW/hp-rpm	85/116 - 2300	
		Peak torque ISO 3046 - at revs	Nm-rpm	477 - 1650	
		Number of cylinders - displacement	cm ³	6 - 5702	
		Fuel consumption, normal driving	l/h	6-8	
	Gearbox	Manufacturer - type designation		Dana - FT20000	
		Clutch, type		Torque converter	
		Gearbox, type		Hydro-dynamic Powershift	
		Numbers of gears, forward - reverse		3 - 3	
Alternator	Type - power	W	AC - 1540		
Driving axle	Type		Kessler D81 - Differential and hub reduction		

Volvo TAD620VE (145kW) + Dana TE13000				Performance	
Drive train	Engine	Manufacturer - type designation		Volvo - TAD620VE (Turbo-Intercooler)	
		Fuel - type of engine		Diesel 4-stroke	
		Rating ISO 3046 - at revs	kW/hp-rpm	145/197 - 2300	
		Peak torque ISO 3046 - at revs	Nm-rpm	700 - 1500	
		Number of cylinders - displacement	cm ³	6 - 5702	
		Fuel consumption, normal driving	l/h	8-11	
	Gearbox	Manufacturer - type designation		Dana - TE13000	
		Clutch, type		Torque converter	
		Gearbox, type		Hydro-dynamic Powershift	
		Numbers of gears, forward - reverse		3 - 3	
Alternator	Type - power	W	AC - 1540		
Driving axle	Type		Kessler D81 - Differential and hub reduction		

Cummins 6B5,9e (138kW) + Dana TE13000				Performance	
Drive train	Engine	Manufacturer - type designation		Cummins 6B5,9e	
		Fuel - type of engine		Diesel 4-stroke	
		Rating ISO 3046 - at revs	kW/hp-rpm	138/188 - 2200	
		Peak torque ISO 3046 - at revs	Nm-rpm	780 - 1400	
		Number of cylinders - displacement	cm ³	6 - 5900	
		Fuel consumption, normal driving	l/h	8-11	
	Gearbox	Manufacturer - type designation		Dana - TE13000	
		Clutch, type		Torque converter	
		Gearbox, type		Hydro-dynamic Powershift	
		Numbers of gears, forward - reverse		3 - 3	
Alternator	Type - power	W	AC - 1540		
Driving axle	Type		Kessler D81 - Differential and hub reduction		

Volvo TAD722VE (180kW) + Dana TE17000				Performance	
Drive train	Engine	Manufacturer - type designation		Volvo - TAD722VE (Turbo-Intercooler)	
		Fuel - type of engine		Diesel 4-stroke	
		Rating ISO 3046 - at revs	kW/hp-rpm	180/245 - 2300	
		Peak torque ISO 3046 - at revs	Nm-rpm	1050 - 1400	
		Number of cylinders - displacement	cm ³	6 - 7145	
		Fuel consumption, normal driving	l/h	8-11	
	Gearbox	Manufacturer - type designation		Dana - TE17000	
		Clutch, type		Torque converter	
		Gearbox, type		Hydro-dynamic Powershift	
		Numbers of gears, forward - reverse		3 - 3	
Alternator	Type - power	W	AC - 1540		
Driving axle	Type		Kessler D81 - Differential and hub reduction		

Combination Table		DCE 90-6	DCE 100-6	DCE 120-6	DCE 140-6	DCE 100-12	DCE 120-12	DCE 150-12	DCE 160-6	DCE 160-9	DCE 160-12	DCE 180-6
Drive train	Volvo TAD 620 VE, 85 kW	Dana FT20000	x	x	x	x	x					
	Volvo TAD 620 VE, 145 kW	Dana TE13000	x	x	x	x	x	x	x	x	x	x
	Volvo TAD 722 VE, 174 kW	Dana TE17000		x	x	x	x	x	x	x	x	x
	Cummins 6B5,9e 138 kW	Dana TE13000	x	x	x	x	x	x	x	x	x	x
	Drive axle with oil cooled brakes		x	x	x	x	x	x	x	x	x	x
Options	Pneumatic rubber tyres	11,00 x 20	x	x	x							
		12,00 x 20				x	x	x	x	x	x	
		12,00 x 20 HD										x
	Automatic gear change*	(Dana FT20000)	x	x	x	x	x					
	Automatic gear change	(Dana TE13000/17000)	x	x	x	x	x	x	x	x	x	x
	Electronic inching	(Dana TE13000/17000)	x	x	x	x	x	x	x	x	x	x
	Optimum drive	(Dana TE13000/17000)	x	x	x	x	x	x	x	x	x	x

* Only in combination with Spirit Delta cab and Kalmar electronic system

Performance

Volvo TAD620VE (85kW) + Dana FT20000			DCE 90-6	DCE 100-6	DCE 120-6	DCE 140-6	DCE 100-12	
Performance	Lifting speed	Unloaded	m/s	0,40	0,40	0,35	0,35	0,35
		At rated load	m/s	0,35	0,35	0,30	0,30	0,30
	Lowering speed	Unloaded	m/s	0,40	0,40	0,40	0,40	0,40
		At rated load	m/s	0,40	0,40	0,40	0,40	0,40
	Travelling speed, f/r	Unloaded	km/h	30	30	30	30	30
		At rated load	km/h	30	30	30	29	29
Gradeability	Max	unloaded	%	54	52	49	44	39
		at rated load	%	30	28	25	22	24
	At 2 km/h	unloaded	%	38	37	36	32	29
		at rated load	%	22	21	18	16	17
Drawbar pull	Max	kN	74	74	74	71	71	
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta	dB(A)	74	74	74	74	74
		LpAZ (inside) FlexGuard	dB(A)	85	85	85	85	85
		LpAZ (inside) FlexCab	dB(A)	79	79	79	79	79
	Noise level according to 2000/14/EC	LWA (outside)	dB(A)	109	109	109	109	109

Volvo TAD620VE (145kW) + Dana TE13000			DCE 90-6	DCE 100-6	DCE 120-6	DCE 140-6	DCE 100-12	DCE 120-12	DCE 150-12	DCE 160-6	DCE 160-9	DCE 160-12	DCE 180-6
Performance	Lifting speed	Unloaded	m/s	0,50	0,50	0,40	0,40	0,50	0,40	0,40	0,40	0,40	0,40
		At rated load	m/s	0,45	0,45	0,35	0,35	0,45	0,35	0,35	0,35	0,35	0,35
	Lowering speed	Unloaded	m/s	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40
		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
	Travelling speed, f/r	Unloaded	km/h	30	30	30	30	30	30	30	30	30	30
		At rated load	km/h	30	30	30	30	30	30	30	30	30	30
Gradeability	Max	unloaded	%	>120	>120	110	93	78	71	63	74	66	59
		at rated load	%	56	52	45	39	43	37	32	33	31	30
	At 2 km/h	unloaded	%	73	70	66	60	52	49	44	50	46	41
		at rated load	%	39	36	32	28	31	27	23	24	23	22
Drawbar pull	Max	kN	121	121	121	116	116	116	116	116	116	116	
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta	dB(A)	73	73	73	73	73	73	73	73	73	73
		LpAZ (inside) FlexGuard	dB(A)	85	85	85	85	85	85	85	85	85	85
		LpAZ (inside) FlexCab	dB(A)	78	78	78	78	78	78	78	78	78	78
	Noise level according to 2000/14/EC	LWA (outside)	dB(A)	108	108	108	108	108	108	108	108	108	108

Volvo TAD722VE (180kW) + Dana TE17000			DCE 100-6	DCE 120-6	DCE 140-6	DCE 100-12	DCE 120-12	DCE 150-12	DCE 160-6	DCE 160-9	DCE 160-12	DCE 180-6
Performance	Lifting speed	Unloaded	m/s	0,50	0,40	0,40	0,50	0,40	0,40	0,40	0,40	0,40
		At rated load	m/s	0,45	0,35	0,35	0,45	0,35	0,35	0,35	0,35	0,35
	Lowering speed	Unloaded	m/s	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40
		At rated load	m/s	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	30	30	30	30	30	30	30
		At rated load	km/h	29	29	29	29	29	29	29	29	29
Gradeability	Max	unloaded	%	>120	>120	>120	100	89	77	93	82	71
		at rated load	%	62	54	45	50	44	37	39	37	35
	At 2 km/h	unloaded	%	100	93	82	70	64	57	66	60	53
		at rated load	%	46	41	35	39	34	29	30	29	27
Drawbar pull	Max	kN	137	137	132	132	132	132	132	132	132	
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta	dB(A)	74	74	74	74	74	74	74	74	74
		LpAZ (inside) FlexGuard	dB(A)	85	85	85	85	85	85	85	85	85
		LpAZ (inside) FlexCab	dB(A)	79	79	79	79	79	79	79	79	79
	Noise level according to 2000/14/EC	LWA (outside)	dB(A)	110	110	110	110	110	110	110	110	110

Cummins 6B5,9e (138kW) + Dana TE13000			DCE 90-6	DCE 100-6	DCE 120-6	DCE 140-6	DCE 100-12	DCE 120-12	DCE 150-12	DCE 160-6	DCE 160-9	DCE 160-12	DCE 180-6
Performance	Lifting speed	Unloaded	m/s	0,50	0,50	0,40	0,40	0,50	0,40	0,40	0,40	0,40	
		At rated load	m/s	0,45	0,45	0,35	0,35	0,45	0,35	0,35	0,35	0,35	
	Lowering speed	Unloaded	m/s	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	0,40	
		At rated load	m/s	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	30	30	30	30	30	30	30	30	30	
		At rated load	km/h	30	30	30	30	30	29	30	29	29	
Gradeability	Max	unloaded	%	>120	115	106	90	76	69	61	72	65	
		at rated load	%	54	50	44	38	42	37	31	32	31	
	At 2 km/h	unloaded	%	79	76	71	64	56	52	46	54	49	
		at rated load	%	41	38	34	30	32	29	24	25	24	
Drawbar pull	Max	kN	119	119	119	114	114	114	114	114	114		
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta	dB(A)	74	74	74	74	74	74	74	74	74	
		LpAZ (inside) FlexGuard	dB(A)	85	85	85	85	85	85	85	85	85	
		LpAZ (inside) FlexCab	dB(A)	79	79	79	79	79	79	79	79	79	
	Noise level according to 2000/14/EC	LWA (outside)	dB(A)	111	111	111	111	111	111	111	111	111	

Contact information:

Kalmar global partner

Local presence, globally

Kalmar is a global supplier of heavy materials handling equipment 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.

In addition to products, Kalmar also offers a wide range of services.



Kalmar Industries AB
SE-341 81 Ljungby, Sweden
Tel: +46 372 260 00, Fax: +46 372 263 90
www.kalmarind.com



Make things easy

