



Technical Information

9-18 tonnes forklift trucks

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
L3=2750mm



DCE 90-6
FlexCab
L3=2750mm



DCE 100-6, DCE 120-6
Spirit Delta
L3=3000mm



DCE 100-6, DCE 120-6
FlexCab
L3=3000mm



DCE 140-6, DCE 100-12, DCE 180-6
Spirit Delta
L3=3250mm



DCE 140-6, DCE 100-12, DCE 180-6
FlexCab
L3=3250mm



DCE 120-12, DCE 150-12, DCE 160-6
Spirit Delta
L3=3500mm



DCE 120-12, DCE 150-12, DCE 160-6
FlexCab
L3=3500mm

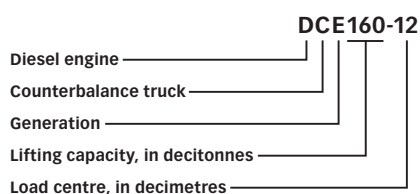


DCE 160-12
Spirit Delta
L3=3750mm

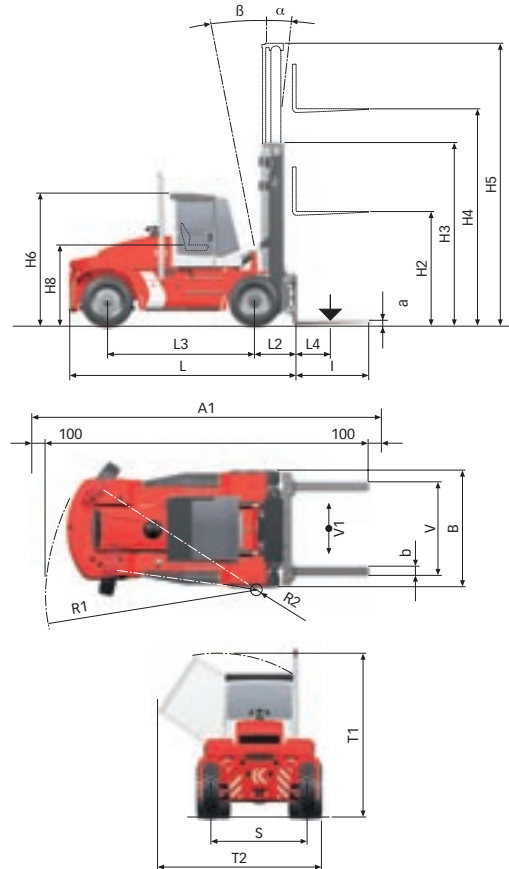
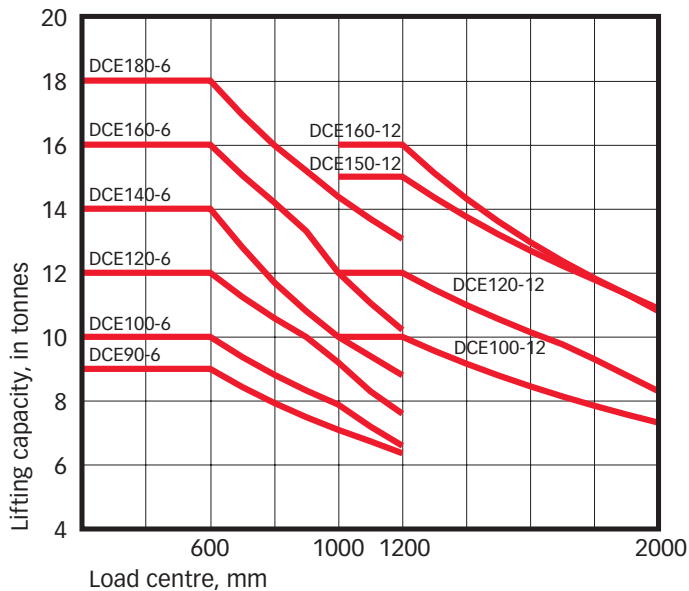


DCE 160-12
FlexCab
L3=3750mm

Model designation



Load diagram



Dimensions

				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 160-12	DCE 180-6
Lifting	Lift capacity	Rated	kg	9000	10000	12000	14000	10000	12000	15000	16000	16000	18000
		Load Centre	L4 mm	600				1200			600	1200	600
	Truck	Truck length without forks	L mm	4470	4720	4725	4985	5065	5315	5375	5305	5575	5115
Dimensions		Truck width	B mm	2480				2540					
		Height, basic machine, Spirit Delta	H6 mm	2895				2920					
		Height, basic machine, FlexCab	H6 mm	2990				3020					
		Seat height	H8 mm	1770				1790					
		Distance between centre of front axle - front face of fork arm	L2 mm	895		900	910	990		1000	980	1000	990
		Wheelbase	L3 mm	2750		3000	3250	3500			3750	3250	
		Track (c-c) front - rear	S mm	1840 - 1960				1855 - 1960					
		Turning radius, outer	R1 mm	3950	4180	4181	4360	4785			5175	4360	
		Turning radius, inner	R2 mm	75				125		420	600	125	
		Ground clearance, min	mm	330				350					
		Max height when tilting cab	T1 mm	3370 (3450)				3395 (3475)					
		Max width when tilting cab	T2 mm	3350 (3440)				3380 (3470)					
	Min, aisle width for 90° stacking with forks	A1 mm	mm	6240	6470	6475	6665	7945	8370	8380	7160	8770	6745
	Standard duplex mast	Lifting height	H4 mm	5000				5000					
		Mast height, min.	H3 mm	4015				4035			4195		
		Mast height, max.	H5 mm	6515				6535			6695		
		Mast tilting, forwards - backwards	α -B °					5 - 10					
Forks		Ground clearance, min.	mm	250				250					
		Width	b mm	200		200	200	220		250	200	250	220
		Thickness	a mm	65		70	80	90		100	80	100	90
		Length of fork arm	l mm	1200		1200	1200	2400		2400	1200	2400	1200
		Width across fork arms, max.	V mm	2330				2360					
		Width across fork arms, min	V mm	570				640		700	600	700	640
		Sideshift $\pm$ at width across fork arms	V1-V mm	440 - 1450				430 - 1500		415 - 1450	440 - 1480	415 - 1530	430 - 1500
Weight	Service weight		kg	14800	14800	15600	16100	18900	19700	21400	19200	22400	21100
	Axle load front	Unloaded	kg	7300	7300	7900	7700	10300	10100	9400	10000	10500	9800
		At rated load	kg	21200	22300	25900	28200	27000	29600	33800	33200	35800	36600
	Axle load back	Unloaded	kg	7500	7500	7700	8400	8600	9600	12000	9200	11900	11300
		At rated load	kg	2600	2500	1700	1900	1900	2100	2600	2000	2600	2500
Wheels, brakes, steering	Wheels/tyres	Type, front-rear						Pneumatic					
		Dimensions, front-rear	inch	11,00x20/16PR				12,00x20/20PR				12,00x20/20PRHD	
		Number of wheels, front-rear (*driven)		4* - 2									
		Pressure	MPa	0,9						1,0		1,0	
	Steering system	Type - manoeuvring						Hydraulic servo - Steering wheel					
Misc.	Service brake system	Type - affected wheels						Oil cooled disc brakes (Wet disc brakes - drive wheels)					
	Parking brake system	Type - affected wheels						Dry, spring activated disc brake - drive wheels					
	Hydraulic pressure	Max.	MPa	16,0	17,5	17,5	18,5	19,5	15,0	16,5	17,5	17,5	19,0
	Hydraulic fluid volume	l		205					225				
Misc.	Fuel volume	l		140					200				
	Starting battery	Voltage - capacity	V-Ah					2x12 - 140					



Choose your own driving environment

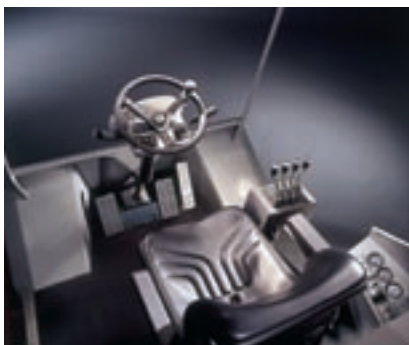
Spirit Delta

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 (Optirev) or increased lifting speed (Optispeed).

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 - Optispeed (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						
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	-
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
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	3350	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



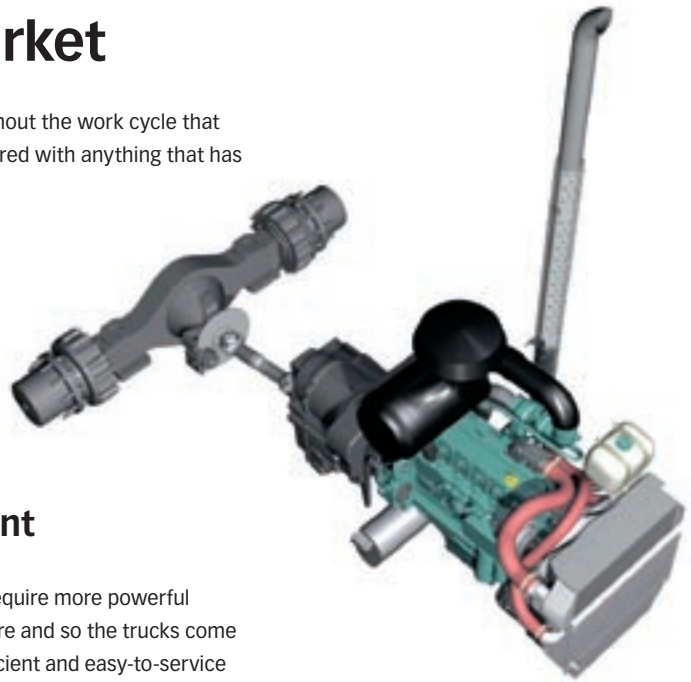
Hydraulic levelling



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 seven different power trains based on Volvo and Cummins engines. Both 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 five types of 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 28000 and 32000 are two tried and tested high-performance gearboxes.

The others, 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, Optidrive (for precision driving with entirely independent working hydraulics) and electronic inching with controlled slipping.

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	cm³	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 FT28000				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	cm³	6 - 5702
		Fuel consumption, normal driving	l/h	8-11
	Gearbox	Manufacturer - type designation		Dana - FT32000
		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	cm³	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

Volvo TAD720VE (174kW) + Dana FT32000				Performance
Drive train	Engine	Manufacturer - type designation		Volvo - TAD720VE (Turbo-Intercooler)
		Fuel - type of engine		Diesel 4-stroke
		Rating ISO 3046 - at revs	kW/hp-rpm	174/237 - 2300
		Peak torque ISO 3046 - at revs	Nm-rpm	864 - 1400
		Number of cylinders - displacement	cm³	6 - 7145
		Fuel consumption, normal driving	l/h	8-11
	Gearbox	Manufacturer - type designation		Dana - FT32000
		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 TAD720VE (174kW) + Dana TE17000				Performance
Drive train	Engine	Manufacturer - type designation		Volvo - TAD720VE (Turbo-Intercooler)
		Fuel - type of engine		Diesel 4-stroke
		Rating ISO 3046 - at revs	kW/hp-rpm	174/237 - 2300
		Peak torque ISO 3046 - at revs	Nm-rpm	864 - 1400
		Number of cylinders - displacement	cm³	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

Cummins 6B5,9e (138kW) + Dana FT28000				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	cm³	6 - 5900
		Fuel consumption, normal driving	l/h	8-11
	Gearbox	Manufacturer - type designation		Dana - FT32000
		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	cm³	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

Performance

Volvo TAD620VE (85kW) + Dana FT20000				DCE90-6	DCE100-6	DCE120-6	DCE140-6	DCE100-12		
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	28	28	28	28		28
	Gradeability	Max	unloaded	%	58	58	54	49		40
			at rated load	%	32	32	27	23		24
		At 2 km/h	unloaded	%	41	41	38	35		29
			at rated load	%	23	22	19	17		18
Drawbar pull	Max		kN	76	76	76	73	73		
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta		dB(A)	73	73	73	73		73
		LpAZ (inside) OHG		dB(A)	85	85	85	85		85
		LpAZ (inside) OHG FlexCab		dB(A)	78	78	78	78		78
	Noise level according to 2000/14/EC	LwA (outside)		dB(A)	109	109	109	109	109	

Volvo TAD620VE (145kW) + Dana FT28000				DCE90-6	DCE100-6	DCE120-6	DCE140-6	DCE100-12	DCE120-12	DCE150-12	DCE160-6	DCE160-12	DCE180-6	
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	30	30	30	30	
	Gradeability	Max	unloaded	%	103	103	92	81	63	59	53	62	50	54
			at rated load	%	48	46	40	34	36	32	28	29	26	25
		At 2 km/h	unloaded	%	65	65	60	55	44	42	38	43	36	39
			at rated load	%	35	33	29	25	27	24	20	21	19	19
Drawbar pull	Max		kN	107	107	107	103	103	103	103	103	103	103	
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta		dB(A)	73	73	73	73	73	73	73	73	73	
		LpAZ (inside) OHG		dB(A)	85	85	85	85	85	85	85	85	73	
		LpAZ (inside) OHG FlexCab		dB(A)	78	78	78	78	78	78	78	78	78	
	Noise level according to 2000/14/EC	LwA (outside)		dB(A)	109	109	109	109	109	109	109	109	109	

Volvo TAD720VE (174kW) + Dana FT32000				DCE100-6	DCE120-6	DCE140-6	DCE100-12	DCE120-12	DCE150-12	DCE160-6	DCE160-12	DCE180-6	
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	30	30	30	30	30	30	30	30	30	
		At rated load	km/h	30	30	30	30	30	30	30	30	30	
	Gradeability	Max	unloaded	%	>120	>120	>120	100	92	79	97	74	81
			at rated load	%	67	57	48	51	45	38	40	36	35
		At 2 km/h	unloaded	%	106	95	83	64	60	54	62	50	55
			at rated load	%	47	41	35	37	33	28	29	26	26
Drawbar pull	Max	kN	141	141	135	135	135	135	135	135	135		
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta	dB(A)	73	73	73	73	73	73	73	73	73	
		LpAZ (inside) OHG	dB(A)	85	85	85	85	85	85	85	85	85	
		LpAZ (inside) OHG FlexCab	dB(A)	78	78	78	78	78	78	78	78	78	
	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 TF28000				DCE90-6	DCE100-6	DCE120-6	DCE140-6	DCE100-12	DCE120-12	DCE150-12	DCE160-6	DCE160-12	DCE180-6	
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	30	30	30	30	
	Gradeability	Max	unloaded	%	111	111	96	84	65	61	54	63	51	55
			at rated load	%	51	48	41	35	37	33	28	29	26	26
		At 2 km/h	unloaded	%	69	69	62	56	45	43	39	44	37	40
			at rated load	%	36	35	30	26	27	24	21	22	20	19
Drawbar pull	Max	kN	111	111	109	105	105	105	105	105	105	105		
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta		dB(A)	73	73	73	73	73	73	73	73	73	
		LpAZ (inside) OHG		dB(A)	85	85	85	85	85	85	85	85	85	
		LpAZ (inside) OHG FlexCab		dB(A)	78	78	78	78	78	78	78	78	78	
	Noise level according to 2000/14/EC	LWA (outside)		dB(A)	109	109	109	109	109	109	109	109	109	

Combintaion Table			DCE90-6	DCE100-6	DCE120-6	DCE140-6	DCE100-12	DCE120-12	DCE150-12	DCE160-6	DCE160-12	DCE180-6
Drive train	Volvo TAD 620 VE, 85 kW	Dana FT20000	x	x	x	x	x					
	Volvo TAD 620 VE, 145 kW	Dana HR28000	x	x	x	x	x	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 720 VE, 174 kW	Dana HR32000		x	x	x	x	x	x	x	x	x
	Volvo TAD 720 VE, 174 kW	Dana TE17000		x	x	x	x	x	x	x	x	x
	Cummins 6B5,9e 138 kW	Dana HR28000	x	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, HR28000/32000)	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
	Optidrive	(Dana TE13000/17000)	x	x	x	x	x	x	x	x	x	x
			x	x	x	x	x	x	x	x	x	x

* Only in combintaion with Spirit Delta cab and Kalmar electronic

Volvo TAD620VE (145kW) + Dana TE13000				DCE90-6	DCE100-6	DCE120-6	DCE140-6	DCE100-12	DCE120-12	DCE150-12	DCE160-6	DCE160-12	DCE180-6	
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	30	30	30	30	
	Gradeability	Max	unloaded	%	103	103	92	81	63	59	53	62	50	54
			at rated load	%	48	46	40	34	36	32	28	29	26	25
		At 2 km/h	unloaded	%	65	65	60	55	44	42	38	43	36	39
			at rated load	%	35	33	29	25	27	24	20	21	19	19
Drawbar pull	Max		kN	107	107	107	103	103	103	103	103	103	103	
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta		dB(A)	73	73	73	73	73	73	73	73	73	
		LpAZ (inside) OHG		dB(A)	85	85	85	85	85	85	85	85	85	
		LpAZ (inside) OHG FlexCab		dB(A)	78	78	78	78	78	78	78	78	78	
	Noise level according to 2000/14/EC	LwA (outside)		dB(A)	109	109	109	109	109	109	109	109	109	

Volvo TAD720VE (174kW) + Dana TE17000				DCE100-6	DCE120-6	DCE140-6	DCE100-12	DCE120-12	DCE150-12	DCE160-6	DCE160-12	DCE180-6	
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	0,35	0,35	0,35	0,35	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	30	30	30	30	30	30	30	30	30	
		At rated load	km/h	30	30	30	30	30	30	30	30	30	
	Gradeability	Max	unloaded	%	>120	>120	>120	100	92	79	97	74	81
			at rated load	%	67	57	48	51	45	38	40	36	35
At 2 km/h		unloaded	%	106	95	85	64	60	54	62	50	55	
		at rated load	%	47	41	35	37	33	28	29	26	26	
Drawbar pull	Max		kN	141	141	135	135	135	135	135	135	135	
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta	dB(A)	73	73	73	73	73	73	73	73	73	
		LpAZ (inside) OHG	dB(A)	85	85	85	85	85	85	85	85	85	
		LpAZ (inside) OHG FlexCab	dB(A)	78	78	78	78	78	78	78	78	78	
	Noise level according to 2000/14/EC	LWA (outside)		dB(A)	110	110	110	110	110	110	110	110	

Cummins 6B5,9e (138kW) + Dana TE13000				DCE90-6	DCE100-6	DCE120-6	DCE140-6	DCE100-12	DCE120-12	DCE150-12	DCE160-6	DCE160-12	DCE180-6	
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	30	30	30	30	
	Gradeability	Max	unloaded	%	111	111	96	84	65	61	54	63	51	55
			at rated load	%	51	48	41	35	37	33	28	29	26	26
		At 2 km/h	unloaded	%	69	69	62	56	45	43	39	44	37	40
			at rated load	%	36	35	30	26	27	24	21	22	20	19
Drawbar pull	Max		kN	111	111	105	105	105	105	105	105	105	105	
Noise	Noise level according to EN12053	LpAZ (inside) Spirit Delta		dB(A)	73	73	73	73	73	73	73	73	73	
		LpAZ (inside) OHG		dB(A)	85	85	85	85	85	85	85	85	85	
		LpAZ (inside) OHG FlexCab		dB(A)	78	78	78	78	78	78	78	78	78	
	Noise level according to 2000/14/EC	LwA (outside)		dB(A)	109	109	109	109	109	109	109	109	109	

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 Optirev, 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

All Kalmar trucks are CE-marked and designed according to the following standards:

- Machine directive 98/37/EG
- EMC directive 89/336
- Sound emission directive 2000/14/EC

Optirev - 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 Optirev system is variable and installed in parallel with the standard hydraulic system.

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