

Kalmar DCE60-90L,  
DCE60-90HE, DCE50-90HM  
Lift trucks 5 – 9 tonnes



# Kalmar Light lift trucks 5 – 9 tonnes

The Kalmar DCE light lift truck is a modern range of diesel fork lift trucks with a 5 – 9 tonnes capacity. The machines are built for reliability and efficiency in demanding industrial applications.

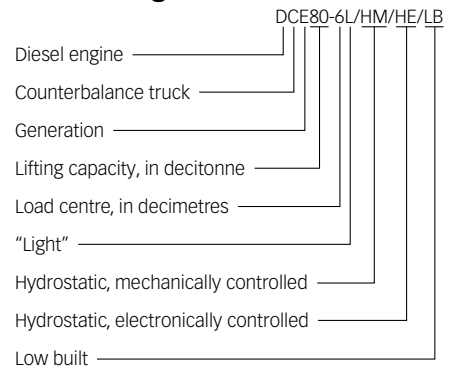
The possibilities are endless with the Kalmar light fork lift trucks, they can easily be adapted to meet your own requirements in any type of situation.

The engines have a smooth drive with low noise levels and emissions that meet

the environmental requirements. Low fuel consumption, good access with a low service requirement and excellent quality all result in good operational economy.

Our operator environment has one of the best designs in the industry. It is covering three different concepts, all with optimal view, ergonomics and comfort; guaranteed to benefit every driver.

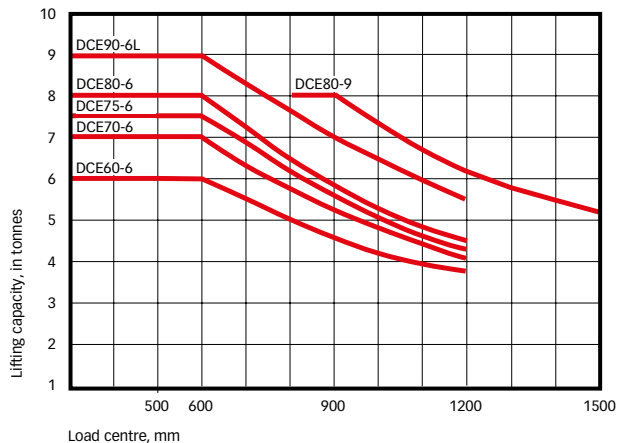
## Model designation



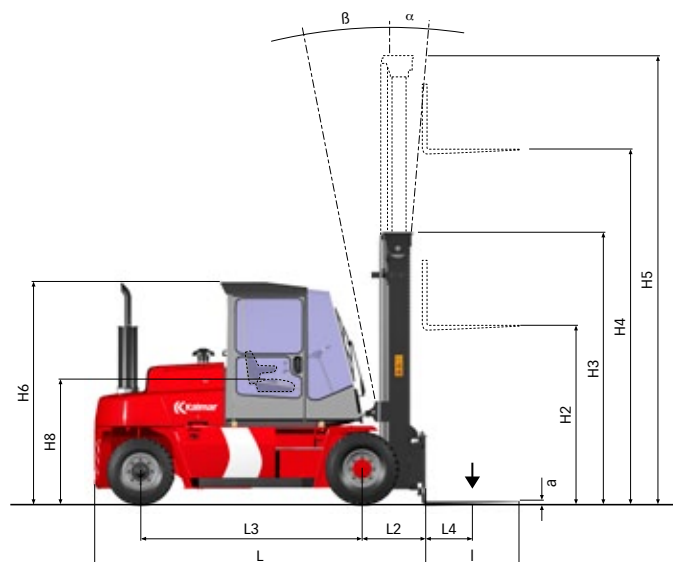
## Dimensions

		DCE60-6	DCE70-6	DCE75-6
Lifting capacity	Rated (kg)	6000	7000	7500
	Load centre (mm)	L4	600	600
Truck	Truck length (mm)	L	3700	3915
	Truck width (mm)	B	2000	2000
	Height, basic machine, Spirit Delta (mm)	H6	2590	2590
	Height, basic machine, Spirit Delta Space (mm)	H6	3090	3090
	Height, basic machine, FlexCab / FlexGuard (mm)	H6	2690	2690
	Seat height, Spirit Delta / FlexCab / FlexGuard (mm)	H8	1440	1440
	Seat height, Spirit Delta Space (mm)	H8	1940	1940
	Distance between centre of front axle – front face of fork arm (mm)	L2	710	710
	Wheelbase (mm)	L3	2450	2600
	Track (c-c) front – rear (mm)	S	1500 – 1360	1500 – 1360
	Turning radius, outer – inner (mm)	R1 – R2	3300 – 150	3300 – 150
	Ground clearance, min. (mm)		160	160
Standard duplex mast	Height when tilting cab, max. Spirit Delta (mm)	T1	3050	3050
	Width when tilting cab, max. Spirit Delta (mm)	T2	3100	3100
	Height when tilting cab, max. Spirit Delta Space (mm)	T1	3300	3300
	Width when tilting cab, max. Spirit Delta Space (mm)	T2	3200	3200
	Height when tilting cab, max. FlexCab / FlexGuard (mm)	T1	3150	3150
	Width when tilting cab, max. FlexCab / FlexGuard (mm)	T2	3150	3150
	Min. aisle width for 90° stacking with forks (mm)	A1	5410	5675
	Lifting height (mm)	H4	3500	3500
	Mast height, min. (mm)	H3	2625	2935
	Mast height, max (mm)	H5	4500	4660
	Mast tilting, forward – backward* (°)	$\alpha - \beta$	5 – 10	5 – 10
	Ground clearance, min.		170	170
Forks	Width (mm)	b	150	150
	Thickness (mm)	a	60	60
	Length of fork arm (mm)	l	1200	1200
	Width across fork arms, max. – min. (mm)	V	1900 – 420	1900 – 420
	Sideshift $\pm$ at width across fork arms (mm)	V1 – V	375 – 1160	375 – 1160
Weight	Service weight (kg)		8900	10400
	Axle load front, unloaded (kg)		4600	5200
	Axle load front, at rated load (kg)		14000	16900
	Axle load back, unloaded (kg)		4300	5000
	Axle load back, at rated load (kg)		900	1000
Wheels / tyres	Type, front – rear	Pneumatic – Pneumatic		
	Dimensions, front – rear (inch)	8,25x15 – 8,25x15	8,25x15 – 8,25x15	8,25x15 – 8,25x15
	Number of wheels, front – rear (*driven)	4* – 2	4* – 2	4* – 2
	Pressure (Mpa)	0,85 – 0,85	0,85 – 0,85	0,85 – 0,85
Steering system	Type – manoeuvring	Hydraulic servo – Steering wheel		
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)	15,5	17,5	19,5
Hydraulic fluid volume	(l)	155	155	155
Fuel volume	(l)	155	155	155

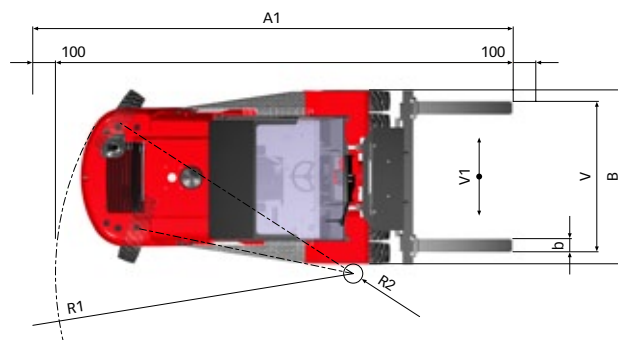
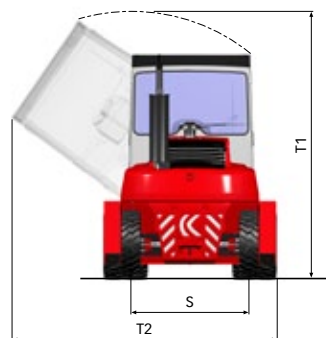
\* Mast tilting Duplex: H4 2035-5250 mm = 5 – 10° 5500-6000 mm = 3 – 5°  
 Mast tilting Triplex: H4 3060-5250 mm = 5 – 6° 5500-6450 mm = 3 – 6°  
 Spirit Delta Space, backward = 5°

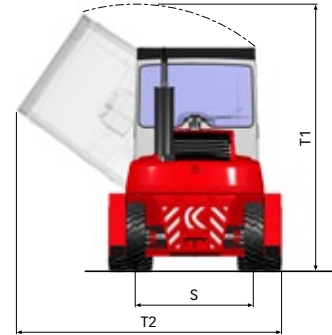
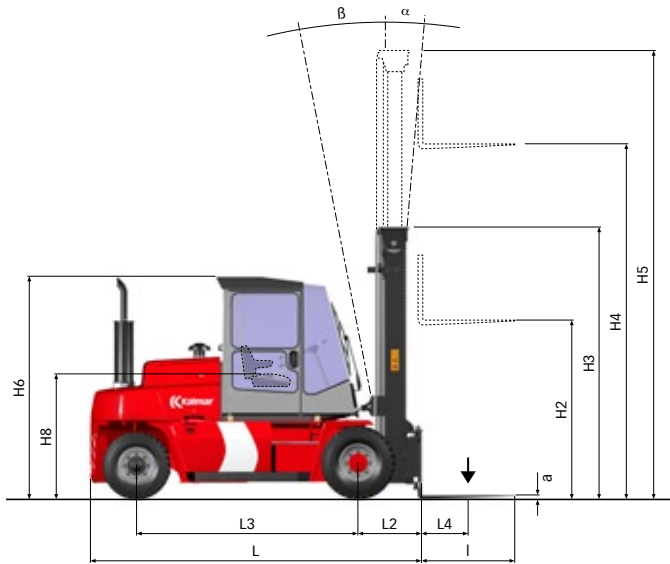


1. Full lifting capacity up to 4 m lifting height with duplex/duplex free lift/ triplex mast and fork carriage with side shift/fork positioning. Applies to DCE60-6 to DCE90-6, except for DCE80-9
2. Full lifting capacity up to a lift height of 4 m with duplex mast and FEM fork carriage. Only applies to DCE80-9.



DCE80-6	DCE80-9	DCE90-6	DCE80-6LB
8000	8000	9000	8000
600	900	600	600
3915	4075	4120	4365
2000	2000	2000	2000
2590	2590	2590	2200
3090	3090	3090	-
2690	2690	2690	-
1440	1440	1440	1250
1940	1940	1940	-
770	735	770	770
2600	2800	2800	3050
1500 - 1360	1500 - 1360	1500 - 1360	1500 - 1360
3500 - 250	3700 - 250	3700 - 250	4070 - 580
160	160	160	160
3050	3050	3050	2735
3100	3100	3100	2730
3300	3300	3300	-
3200	3200	3200	-
3150	3150	3150	-
3150	3150	3150	-
5675	6435	5880	6240
3500	3500	3500	2035
2935	2935	2935	2200
4660	4660	4660	3190
5 - 10	5 - 10	5 - 10	5-7
170	170	170	160
150	200	200	150
60	60	60	60
1200	1800	1200	1200
1900 - 420	-	1900 - 520	1900 - 420
375 - 1160	-	375 - 1210	375 - 1160
10700	11700	11300	9800
5200	5500	5300	5100
17600	18400	19100	16700
5500	6200	6000	4700
1100	1300	1200	1100
Pneumatic - Pneumatic			
8,25x15 - 8,25x15	8,25x15 - 8,25x15	8,25x15 - 8,25x15	8,25x15 - 8,25x15
4* - 2	4* - 2	4* - 2	4* - 2
0,85 - 0,85	1,0 - 0,85	1,0 - 0,85	0,85 - 0,85
Hydraulic servo - Steering wheel			
Oil cooled disc brakes (Wet disc brakes) - drive wheels			
Dry, spring activated disc brake - drive wheels			
20	20	21,5	19,5
155	155	155	155
155	155	155	155

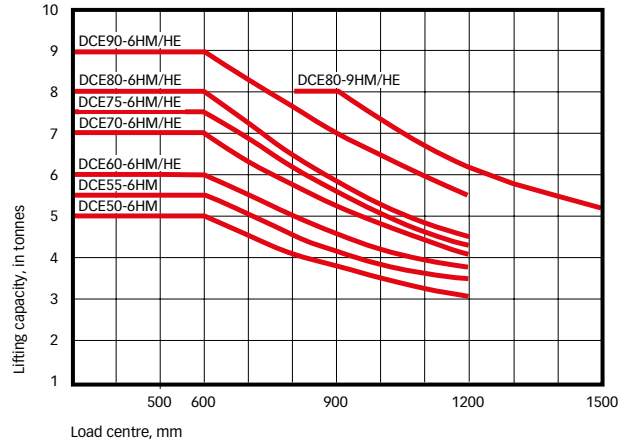
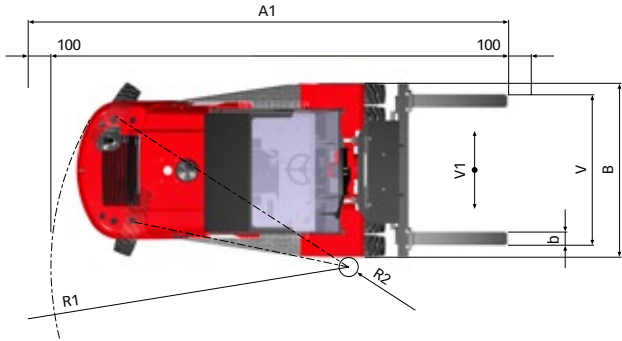




## Dimensions

		DCE50-6HM	DCE55-6HM	DCE60-6HM	DCE60-6HE
Lifting capacity	Rated (kg)	5000	5500	6000	6000
	Load centre (mm)	L4	600	600	600
Truck	Truck length (mm)	L	3285	3285	3700
	Truck width (mm)	B	1550	1550	2000
	Height, basic machine, Spirit Delta (mm)	H6	2590	2590	2590
	Height, basic machine, Spirit Delta Space (mm)	H6	-	-	3090
	Height, basic machine, FlexCab (mm)	H6	2690	2690	2690
	Seat height, Spirit Delta / FlexCab (mm)	H8	1440	1440	1440
	Seat height, Spirit Delta Space (mm)	H8	-	-	1940
	Distance between centre of front axle – front face of fork arm (mm)	L2	645	645	710
	Wheelbase (mm)	L3	2100	2100	2450
	Track (c-c) front – rear (mm)	S	1240 – 1195	1240 – 1195	1500 – 1360
Turning radius, outer – inner (mm)	R1 – R2	2850 – 120	2850 – 120	3300 – 150	
Ground clearance, min. (mm)		-	-	-	
Height when tilting cab, max. Spirit Delta (mm)	T1	3050	3050	3050	
Width when tilting cab, max. Spirit Delta (mm)	T2	2900	2900	3100	
Height when tilting cab, max. Spirit Delta Space (mm)	T1	-	-	-	
Width when tilting cab, max. Spirit Delta Space (mm)	T2	-	-	3200	
Height when tilting cab, max. FlexCab (mm)	T1	3150	3150	3150	
Width when tilting cab, max. FlexCab (mm)	T2	2950	2950	3150	
Min. aisle width for 90° stacking with forks (mm)	A1	4925	4925	5410	
Standard duplex mast	Lifting height (mm)	H4	3500	3500	3500
	Mast height, min. (mm)	H3	2625	2625	2625
	Mast height, max (mm)	H5	4500	4500	4500
	Mast tilting, forward – backward* (°)	$\alpha - \beta$	5 – 10	5 – 10	5 – 10
Ground clearance, min.		170	170	170	
Forks	Width (mm)	b	150	150	150
	Thickness (mm)	a	60	60	60
	Length of fork arm (mm)	l	1200	1200	1200
	Width across fork arms, max. – min. (mm)	V	1400 – 420	1400 – 420	1400 – 420
	Sideshift $\pm$ at width across fork arms (mm)	V1 – V	250 – 910	250 – 910	375 – 1160
Weight	Service weight (kg)		8300	8700	8900
	Axle load front, unloaded (kg)		4400	4400	4600
	Axle load front, at rated load (kg)		12450	13300	14000
	Axle load back, unloaded (kg)		3900	4300	4300
	Axle load back, at rated load (kg)		850	900	900
Wheels / tyres	Type, front – rear		Pneumatic – Pneumatic		
	Dimensions, front – rear		315/70 – 15 – 28x9 – 15		8,25x15 – 8,25x15
	Number of wheels, front – rear (*driven)		2* – 2	2* – 2	4* – 2
	Pressure (Mpa)		1,0 – 0,9	1,0 – 0,9	0,85 – 0,85
Steering system	Type – manoeuvring		Hydraulic servo – Steering wheel		
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)	14,0	14,5	15,5	15,5
Hydraulic fluid volume	(l)	125	125	155	155
Fuel volume	(l)	90	90	155	155

\* Mast tilting Duplex: H4 2035-5250 mm = 5 – 10° 5500-6000 mm = 3 – 5°  
Mast tilting Triplex: H4 3060-5250 mm = 5 – 6° 5500-6450 mm = 3 – 6°  
Spirit Delta Space, backward = 5°



1. Full lifting capacity up to 4 m lifting height with duplex/duplex free lift/triplex mast and fork carriage with side shift/fork positioning. Applies to DCE50-6HM/HE to DCE90-6HM/HE, except for DCE80-9HM/HE
2. Full lifting capacity up to a lift height of 4 m with duplex mast and FEM fork carriage. Only applies to DCE80-9HM/HE.

DCE70-6HM	DCE70-6HE	DCE75-6HM	DCE75-6HE	DCE80-6HM	DCE80-6HE	DCE80-9HM	DCE80-9HE	DCE90-6HM	DCE90-6HE
7000	7000	7500	7500	8000	8000	8000	8000	9000	9000
600	600	600	600	600	600	900	900	600	600
3700	3700	3915	3915	3915	3915	4075	4075	4120	4120
2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
2590	2590	2590	2590	2590	2590	2590	2590	2590	2590
-	3090	-	3090	-	3090	-	3090	-	3090
2690	-	2690	-	2690	-	2690	-	2690	-
1440	1440	1440	1440	1440	1440	1440	1440	1440	1440
-	1940	-	1940	-	1940	-	1940	-	1940
710	710	770	770	770	770	730	735	775	770
2450	2450	2600	2600	2600	2600	2800	2800	2800	2800
1500 – 1360	1500 – 1360	1500 – 1360	1500 – 1360	1500 – 1360	1500 – 1360	1500 – 1360	1500 – 1360	1500 – 1360	1500 – 1360
3300 – 150	3300 – 150	3500 – 250	3500 – 250	3500 – 250	3500 – 250	3700 – 250	3700 – 250	3700 – 250	3700 – 250
-	-	-	-	-	-	-	-	-	-
160	160	160	160	160	160	160	160	160	160
3050	3050	3050	3050	3050	3050	3050	3050	3050	3050
3100	3100	3100	3100	3100	3100	3100	3100	3100	3100
-	3300	-	3300	-	3300	-	3300	-	3300
-	3200	-	3200	-	3200	-	3200	-	3200
3150	-	3150	-	3150	-	3150	-	3150	-
3150	-	3150	-	3150	-	3150	-	3150	-
5410	5410	5675	5675	5675	5675	6435	6435	5880	5880
3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
2625	2625	2935	2935	2935	2935	2935	2935	2935	2935
4500	4500	4660	4660	4660	4660	4660	4660	4660	4660
5 – 10	5 – 10	5 – 10	5 – 10	5 – 10	5 – 10	5 – 10	5 – 10	5 – 10	5 – 10
170	170	170	170	170	170	170	170	170	170
150	150	150	150	150	150	200	200	200	200
60	60	60	60	60	60	60	60	60	60
1200	1200	1200	1200	1200	1200	1800	1800	1200	1200
375 – 1160	375 – 1160	375 – 1160	375 – 1160	375 – 1160	375 – 1160	375 – 1160	375 – 1160	375 – 1210	375 – 1210
9600	9600	10400	10400	10700	10700	11700	11700	11300	11300
4600	4600	5200	5200	5200	5200	5500	5500	5300	5300
15600	15600	16900	16900	17600	17600	18400	18400	19100	19100
5000	5000	5200	5200	5500	5500	6200	6200	6000	6000
1000	1000	1000	1000	1100	1100	1300	1300	1200	1200
Pneumatic – Pneumatic									
8,25x15 – 8,25x15									
4* – 2	4* – 2	4* – 2	4* – 2	4* – 2	4* – 2	4* – 2	4* – 2	4* – 2	4* – 2
0,85 – 0,85	0,85 – 0,85	0,85 – 0,85	0,85 – 0,85	0,85 – 0,85	0,85 – 0,85	1,0 – 0,85	1,0 – 0,85	1,0 – 0,85	1,0 – 0,85
Hydraulic servo – Steering wheel									
Oil cooled disc brakes (Wet disc brakes) – drive wheels									
Dry, spring activated disc brake – drive wheels									
17,5	17,5	19,5	19,5	19,5	19,5	20,0	20,0	21,5	21,5
155	155	155	155	155	155	155	155	155	155
155	155	155	155	155	155	155	155	155	155

# Operator 's environment in three versions

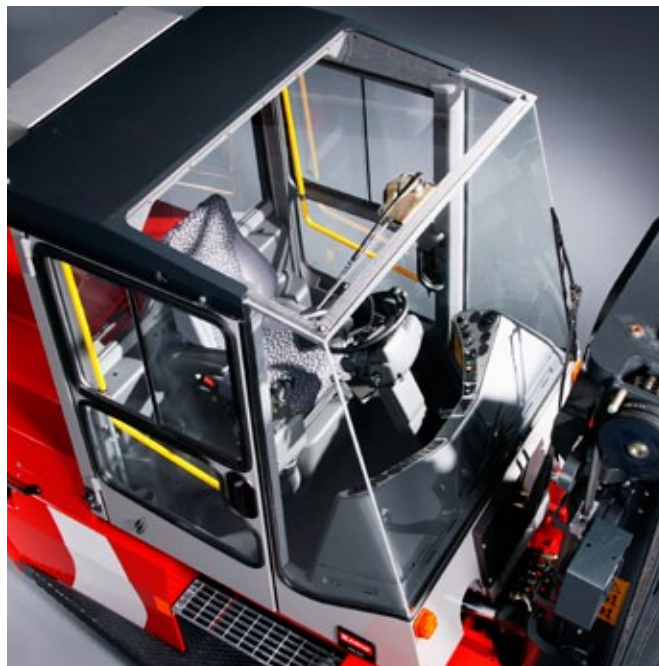
Kalmar is the market leader in terms of ergonomics and operator environments. There are three operator environment versions available: the Spirit Delta, the Spirit Delta Space, and the robust Flex-Cab/FlexGuard. Depending on model and your preferences you are able to choose the one that meets your needs best.



## Spirit Delta

Our highly regarded Spirit Delta is the best thought-out and most functional operator's environment in the entire industry. Based on extensive research, it provides superior ergonomics and total control of all the truck's various functions. The Spirit Delta provides extra space for installing your own equipment, for example a computer and communications equipment. The overall design and all the various adjustment options mean that the Spirit Delta is suitable for all kinds of operators. The instrument and control layout provides an entirely clear view and control of all the machine functions.

There is good all round visibility in every direction and a wide range of options mean that it is easy to customise the operator environment. All the options and accessories for ergonomics and smart handling are offered with the Spirit Delta. The Spirit Delta is available on all light models and comes as a lower built version on the DCE80-6 LB.



Spirit Delta

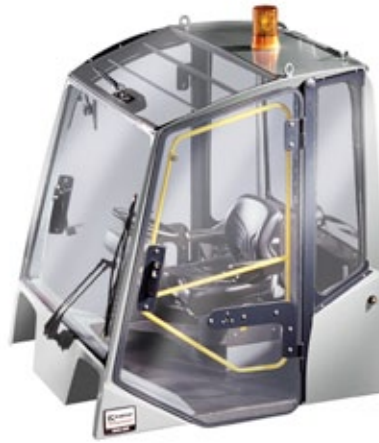


Top view of Spirit Delta Space interior.

### FlexCab/FlexGuard

The FlexCab/FlexGuard is a robust alternative for activities that do not require the Spirit Delta's total concept or the most advanced options. FlexCab is a complete cab that can be converted into an open safety cage, FlexGuard, with or without panes, door and heating system depending on climate and environment. FlexCab and FlexGuard allow for good ergonomics with an excellent all round visibility.

The design is robust with profiled beams for good visibility. The interior is spacious and robust with very good close-up vision and generously increased headroom. The FlexCab/FlexGuard are available on the DCE60-90L and DCE50-90HM.



FlexCab



FlexGuard



Spirit Delta Space

### Spirit Delta Space

The Spirit Delta Space has been developed in close collaboration with our customers in order to achieve the best possible degree of safety and comfort. This modern concept is based on a more spacious version of the Spirit Delta, with a variably reversible operator's seat. The field of vision is optimised, with all the instruments located to the operator's right. The bottom corners of the front window are located low down for maximum vision. By activating a switch on the steering wheel panel, the operator can simply turn the entire seat or adjust it to the required position. Pedals, steering column, instruments, hydraulic levers, controls and any additional equipment are mounted on a rotating plate that follows the operator's seat. All the options and accessories for ergonomics and smart handling are offered with the Spirit Delta Space. The Spirit Delta Space is available on DCE60-90L and DCE60-90HE.

# A complete program of lifting equipment

The lifting equipment on Kalmar machines is characterised by robust and high-quality design and numerous options combined with excellent visibility. We can offer many different types of masts all of with clear view design. In combination with forks and/or attach-

ments, we can provide the handling solution to meet your needs. For even better handling, there are also a number of intelligent options available, please advice the option list for further information.

## Duplex standard, clear view

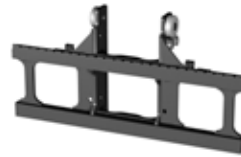
Lift height, H4		Mast height				Free lift, H2	
•	••	H3 min.		H5 max.		•	••
-	2750	-	2560	-	3910	-	-
-	3000	-	2685	-	4160	-	-
-	3250	-	2810	-	4410	-	-
3500	3500	2625	2935	4500	4660	-	-
3750	3750	2750	3060	4750	4910	-	-
4000	4000	2870	3185	5000	5160	-	-
4250	4250	3000	3310	5250	5410	-	-
4500	4500	3120	3435	5500	5660	-	-
4750	4750	3250	3560	5750	5910	-	-
5000	5000	3370	3685	6000	6160	-	-
5250	5250	3500	3810	6250	6410	-	-
5500	5500	3620	3935	6500	6660	-	-
5750	5750	3750	4060	6750	6910	-	-
6000	6000	3870	4185	7000	7160	-	-

• DCE50-70 •• DCE75-90



Duplex standard, clear view

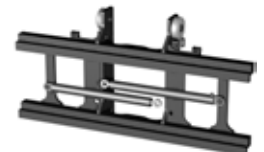
## Carriages



Fork carriage for manually adjustable forks



Sideshift carriage



Sideshift and fork positioning carriage

## Duplex full free lift, clear view

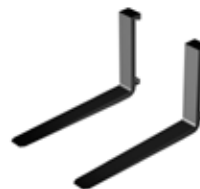
Lift height, H4		Mast height				Free lift, H2	
•	••	H3 min.		H5 max.		•	••
-	2750	-	2560	-	3910	-	1425
-	3000	-	2685	-	4160	-	1550
3250	3250	2620	2810	4350	4410	1530	1675
3500	3500	2750	2935	4600	4660	1655	1800
3750	3750	2870	3060	4850	4910	1780	1925
4000	4000	3000	3185	5100	5160	1905	2025
4250	4250	3120	3310	5350	5410	2030	2175
4500	4500	3250	3435	5600	5660	2155	2300
4750	4750	3370	3560	5850	5910	2280	2425
5000	5000	3500	3685	6100	6160	2405	2550
5250	5250	3620	3810	6350	6410	2530	2675
5500	5500	3750	3935	6600	6660	2655	2800
5750	5750	3870	4060	6850	6910	2780	2925
6000	6000	4000	4185	7100	7160	2905	3050

• DCE50-70 •• DCE75-90



Duplex full free lift, clear view

## Forks



Forks for manual operation



Forks with roller brackets for hydraulic operation

•••	•••	•••	•••
2035	2200	3190	1065

••• DCE80-6LB

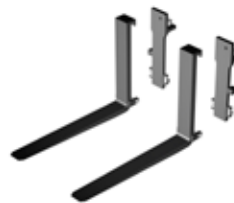
## Triplex full free lift, clear view

Lift height, H4		Mast height				Free lift, H2	
•	••	H3 min.		H5 max.		•	••
4950	4200	2570	2580	6010	5330	1530	1470
5450	4700	2740	2750	6515	5825	1690	1640
5950	5200	2910	2920	7015	6330	1860	1800
6450	5700	3070	3080	7510	6825	2030	1970
-	6200	-	3250	-	7330	-	2140

• DCE50-70 •• DCE75-90



Triplex full free lift, clear view



Fork shaft system with separate carriers for each fork



Fork with hydraulic levelling

•••	•••	•••	•••
3060	2200	4180	1090

••• DCE80-6LB



# Drive train – DCE60-90L, DCE80-6LB

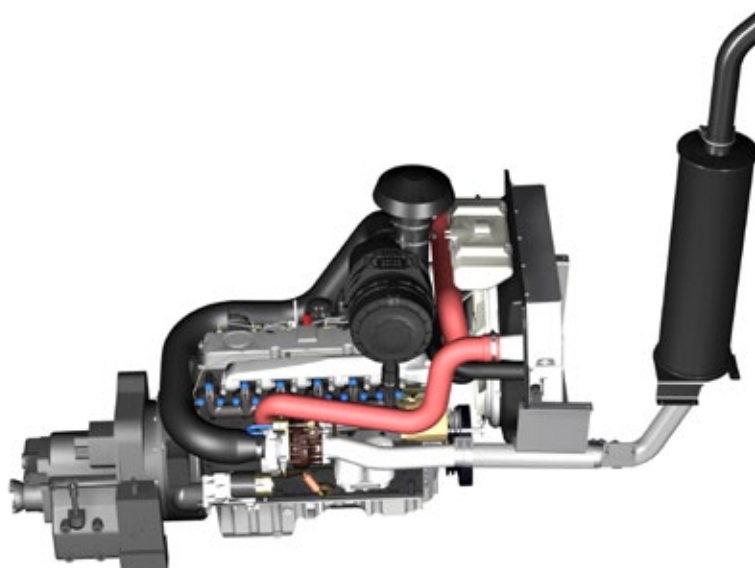
The Kalmar DCE60-90L range has modern drive trains for efficient running with minimal emissions and good fuel economy. The engine, gearbox, drive axle and brakes are all constructed and combined to form the highest performance and a long lifetime. The diesel trucks are available with two turbo-charged engine versions: a four cylinder and a six-cylinder engine, both from Perkins. The torque is powerful already from low revolutions, giving a smooth drive with good acceleration. Low fuel consumption and a low service requirement mean a good working economy.

The two Perkins engines are characterised by low noise and exhaust emissions that meet the latest requirements. The environmental features can be further improved by a range of catalysers and various particle filters.

## Hydrodynamic transmission

The ZF gearbox has integrated electronic control, monitoring and intelligence. The gearbox has built-in reversing lock and modulation, providing safe and smooth gear changing. In addition we also opti-

mise slipping electronically before delivery to provide the best gear-changing characteristics depending on power train, wheel dimension and drive shaft.



Drive train		Perkins 4 cyl. (•)	Perkins 6 cyl. (••)
Engine	Manufacturer, type designation	Perkins 1104D-E44T	Perkins 1106D-E66TA
	Fuel – type of engine	Diesel – 4-stroke	Diesel – 4-stroke
	Rating ISO 3046 – at revs (kW/hp – rpm)	74,5 – 2200	89 – 2200
	Peak torque ISO 3046 – at revs (Nm – rpm)	420 – 1400	545 – 1400
	Number of cylinders – displacement (cm³)	4 – 4400	6 – 6600
	Fuel consumption, normal driving (l/h)	5-7	6-8
Gearbox	Manufacturer, type designation	ZF 2WG-94	ZF 2WG-94
	Clutch, type	Torque converter	Torque converter
	Gearbox, type	Hydrodynamic powershift	Hydrodynamic powershift
	Number of gears, forward – reverse	2 – 2	2 – 2
Alternator	Type – power (W)	AC – 1540	AC – 2100
Starting battery	Voltage – capacity (V – Ah)	24 – 75	24 – 75
Driving axle	Type	Differential and hub reduction	Differential and hub reduction

Performance		DCE60-6		DCE70-6		DCE75-6		DCE80-6		DCE80-9		DCE90-6L		DCE80-6LB
		•	••	•	••	•	••	•	••	•	••	•	••	••
Lifting speed	Unloaded (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
	At rated load (m/s)	0,30	0,35	0,30	0,35	0,30	0,35	0,30	0,35	0,30	0,35	0,30	0,35	0,35
Lowering speed	Unloaded (m/s)	0,40	0,45	0,40	0,45	0,40	0,45	0,40	0,45	0,40	0,45	0,40	0,45	0,43
	At rated load (m/s)	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,47
Travelling speed, F/R	Unloaded (km/h)	25	24	25	24	24	23	24	23	22	23	23	23	23
	At rated load (km/h)	24	23	24	23	23	22	23	22	22	22	22	22	22
Gradeability, max.	Unloaded (%)	47	84	48	74	53	66	47	63	42	57	44	59	73
	At rated load (%)	25	42	26	37	28	34	25	32	23	30	23	29	34
Gradeability, at 2 km/h	Unloaded (%)	50	72	47	65	42	58	41	56	36	50	37	53	64
	At rated load (%)	27	37	25	33	23	30	22	29	19	27	20	26	30
Drawbar pull	Max. (kN)	45	58	45	58	45	58	45	58	45	58	45	58	58
Noise level, inside	LpAZ*, Spirit Delta (dB(A))	70	72	70	72	70	72	70	72	70	72	70	72	72
	LpAZ*, Spirit Delta Space (dB(A))	70	72	70	72	70	72	70	72	70	72	70	72	-
	LpAZ*, FlexGuard (dB(A))	85	85	85	85	85	85	85	85	85	85	85	85	-
	LpAZ*, FlexCab (dB(A))	76	77	76	77	76	77	76	77	76	77	76	77	-
Noise level, outside	LwAZ** (dB(A))	106	106	106	106	106	106	106	106	106	106	106	106	106

\* LpAZ according to EN12053 \*\* LpAZ according to 2000/14/EC

# Drive train – DCE50-90HM

The Kalmar DCE50-90HM range has a modern drive train for efficient running with minimal emissions and good fuel economy. The engine and transmission are constructed and combined to form the highest performance and a long lifetime.

The diesel engine is a turbo-charged four-cylinder Perkins with low noise levels and exhaust emissions that meet the latest environmental requirements. The torque is powerful already from low revolutions, giving a smooth drive and good acceleration. A powerful cooler for more efficient cooling of the engine and the hydraulic system.

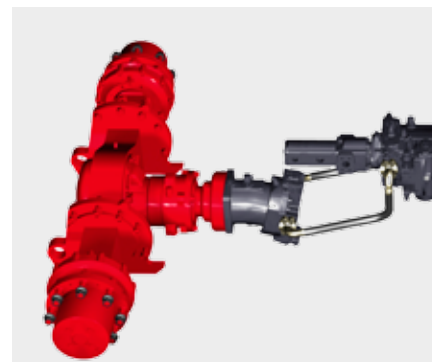
## Transmission

The transmission is hydrostatic with a hydraulic pump mounted directly on the engine and hydraulically driven wheel motors on the DCE50-55HM range or on the DCE60-90HM range a hydraulic motor connected to the drive axle. This

gives a smooth acceleration with a very comfortable drive and a high degree of precision. There is a high level of reliability with a low service requirement and a long lifetime.



Hydraulic pump mounted directly on the engine and hydraulically driven wheel motors on the DCE50-55HM range.



Hydraulic motor connected to the drive axle – on the DCE60-90HM range.

## Drive train

		Perkins 4 cyl. (•)	Perkins 4 cyl. (••)
Engine	Manufacturer, type designation	Perkins 1104D-E44T	Perkins 1104D-E44T
	Fuel – type of engine	Diesel – 4-stroke	Diesel – 4-stroke
	Rating ISO 3046 – at revs (kW/hp – rpm)	74,5 – 2200	74,5 – 2200
	Peak torque ISO 3046 – at revs (Nm – rpm)	420 – 1400	420 – 1400
	Number of cylinders – displacement (cm <sup>3</sup> )	4 – 4400	4 – 4400
	Fuel consumption, normal driving (l/h)	5-7	5-7
Transmission	Type	Hydrostatic with wheel motors – mechanical control	Hydrostatic with drive axle – mechanical control
	Hydraulic pump (cm <sup>3</sup> )	125	125
	Hydraulic engine (cm <sup>3</sup> )	940	940
Alternator	Type – power (W)	1540	1540
Starting battery	Voltage – capacity (V – Ah)	24 – 75	24 – 75
Driving axle	Type	-	Differential and hub reduction

## Performance

		DCE50-6HM	DCE55-6HM	DCE60-6HM	DCE70-6HM	DCE75-6HM	DCE80-6HM	DCE80-9HM	DCE90-6HM
		•	•	••	••	••	••	••	••
Lifting speed	Unloaded (m/s)	0,40	0,40	0,40	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
Lowering speed	Unloaded (m/s)	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45
	At rated load (m/s)	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Travelling speed, F/R	Unloaded (km/h)	24	24	24	23	23	23	23	23
	At rated load (km/h)	24	24	22	21	21	21	21	21
Gradeability, max.	Unloaded (%)	32	30	77	68	61	59	53	55
	At rated load (%)	19	19	39	34	32	30	29	28
Gradeability, at 2 km/h	Unloaded (%)	31	29	54	49	44	43	39	41
	At rated load (%)	19	19	29	26	24	23	22	21
Drawbar pull	Max. (kN)	26	26	26	26	55	55	55	55
Noise level, inside	LpAZ*, Spirit Delta (dB(A))	72	72	72	72	72	72	72	72
	LpAZ*, FlexGuard (dB(A))	85	85	85	85	85	85	85	85
	LpAZ*, FlexCab (dB(A))	76	76	76	76	76	76	76	76
Noise level, outside	LwAZ** (dB(A))	106	106	106	106	106	106	106	106

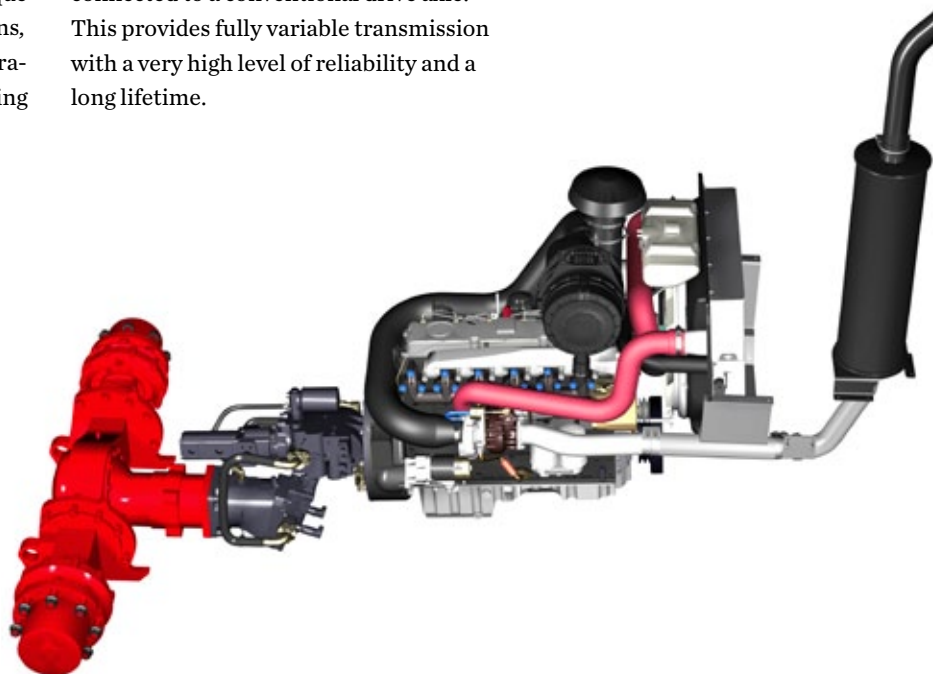
\* LpAZ according to EN12053 \*\* LpAZ according to 2000/14/EC

# Drive train – DCE60-90HE

The diesel engine is a fully electronically controlled turbo-charged six-cylinder Perkins engine with low noise levels and exhaust emissions that meet the latest environmental requirements. The torque is powerful already from low revolutions, giving a smooth drive with good acceleration. The recently developed split cooling is efficient and easily serviced.

## Transmission

The transmission consists of a variable hydraulic pump, which drives a variable hydraulic motor that is in turn directly connected to a conventional drive axle. This provides fully variable transmission with a very high level of reliability and a long lifetime.



## Drive train

Drive train		Perkins 6 cyl.
Engine	Manufacturer, type designation	Perkins 1106D-E66TA
	Fuel – type of engine	Diesel – 4-stroke
	Rating ISO 3046 – at revs (kW/hp – rpm)	89 – 2200
	Peak torque ISO 3046 – at revs (Nm – rpm)	545 – 1400
	Number of cylinders – displacement (cm <sup>3</sup> )	6 – 6600
	Fuel consumption, normal driving (l/h)	6-8
Transmission	Type	Hydrostatic with drive axle – electronic control
	Hydraulic pump (cm <sup>3</sup> )	75
	Hydraulic engine (cm <sup>3</sup> )	160
Alternator	Type – power (W)	2100
Starting battery	Voltage – capacity (V – Ah)	24 – 75
Driving axle	Type	Differential and hub reduction

## Performance

Performance		DCE60-6HE	DCE70-6HE	DCE75-6HE	DCE80-6HE	DCE80-9HE	DCE90-6HE
Lifting speed	Unloaded (m/s)	0,40	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
Lowering speed	Unloaded (m/s)	0,45	0,45	0,45	0,45	0,45	0,45
	At rated load (m/s)	0,50	0,50	0,50	0,50	0,50	0,50
Travelling speed, F/R	Unloaded (km/h)	23	23	22	22	22	22
	At rated load (km/h)	22	22	21	21	21	21
Gradeability, max.	Unloaded (%)	72	65	58	56	50	53
	At rated load (%)	37	33	30	29	28	27
Gradeability, at 2 km/h	Unloaded (%)	70	63	56	54	48	51
	At rated load (%)	36	32	29	28	27	26
Drawbar pull	Max. (kN)	53	53	53	53	53	53
Noise level, inside	LpAZ*, Spirit Delta (dB(A))	72	72	72	72	72	72
	LpAZ*, Spirit Delta Space (dB(A))	72	72	72	72	72	72
Noise level, outside	LwAZ** (dB(A))	106	106	106	106	106	106

\* LpAZ according to EN12053 \*\* LpAZ according to 2000/14/EC

# KCS – Kalmar Control System

KCS is Kalmar's own in-house developed electronic control system that provides increased safety and efficiency. KCS is based around fast processors and modern CAN-bus technology, resulting in a high level of performance and considerable operating safety.

Information is presented on a clear display on the steering wheel panel by means of a simple, non-language-based interface. Function buttons simplify navigation around the menus and provide fast access to information on operation, diagnostics and alarms where appropriate.

There are many options available in KCS, with plenty of opportunities for customising the truck's functions.



## KCS – hydrostatic operation

KCS, Kalmar's electronic control system, controls and adjusts the DCE60-90HE, with the engine, hydrostatic transmission and hydraulic system all integrated into the same system. Hydrostatic operation allows fast and smooth handling for increased productivity.

## Constant speed mode

The truck's driving and lifting speeds are entirely independent of each other, in other words it is possible to inch and at the same time use one or more hydraulic functions at full power. Individual rotary speed adjustments on each lever enable lifting, tilting, side shifting, spreading and levelling, all at different speeds and without affecting the truck's speed.

## Modern software and faster processors

The software for hydrostatic operation means a smoother ride and better driving comfort. The processors are faster, resulting in minimal reaction times, so that the operator can for example get an immediate response when using joystick steering. With current control rather than voltage-control outputs result in faster and more stable hydraulic control.



## Adjustable motor brake

The DCE60-90HE has a motor brake where the braking action can be adjusted in nine stages, from a gentle braking action (resembling a truck with a gearbox) to a very powerful action. It is possible for the operator to adjust this very simply on the KCS display.

# Quality & Reliability

The Kalmar 5 – 9 tonne range has been developed from the very beginning to give safe operation and a long lifetime with minimum downtime. In part this is due to technical solutions and components, but also to the fact that the truck is not exposed to any in-built loads that produce unnecessary wear and tear and higher costs. Optimised chassis modules, fittings, mast, dynamic stability, electronically controlled driving, wet disc brakes, double seals in all hydraulic cylinders, ORFS hydraulic couplings, reinforced drive axle bracket, a KCS system, welded cab mounting, etc. all result in a very high quality machine with low running costs.

There are a lot of Kalmar machines around the world, used in all kinds of climates. Overall, this has helped build our completely unique experience of this machine type. The functionality and operational reliability of each component is assured by extensive testing.



## Safety and the environment

The Kalmar DCE50-90 is CE marked and its construction complies with the following norms:

- The Machinery Directive 2006/42
- The EMC Directive 2004/108
- The Noise Emission Directive 2000/14/EC with amendment 2005/88/EC
- The Exhaust Gas Directive 97/68/EC with amendment 2004/26/EC
- According to standard EN1726-1 (ISO3691)
- According to standard ASME B56.1 (North America)

# Maintenance & Service

## Greater service intervals

Service intervals for the Kalmar 5 – 9 tonne range are only after 500 hours of driving. The longer service interval will reduce the operating cost of the machine – and decrease the service downtime.

## Fast service and maintenance

The Kalmar 5-9 tonne 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.



## Daily inspection

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

## Parts and service

The final piece that makes the Kalmar 5 – 9 tonne range a pre-eminent team player is parts & service. Cargotec has a truly comprehensive program of service for ownership, rental, and much more. All machines will need parts and service sooner or later and there is no difference with Kalmar products. What differentiates us and our products is the excellent after market support. We are well prepared with warehouses in all continents and local distribution centres for parts through either sales companies or dealers. Our long experience and global presence provide excellent customer service all around the globe.

# Notes

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our products and solutions closer to our customer.



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