Electric evolution

Kalmar ECG50-90
5–9 ton capacity

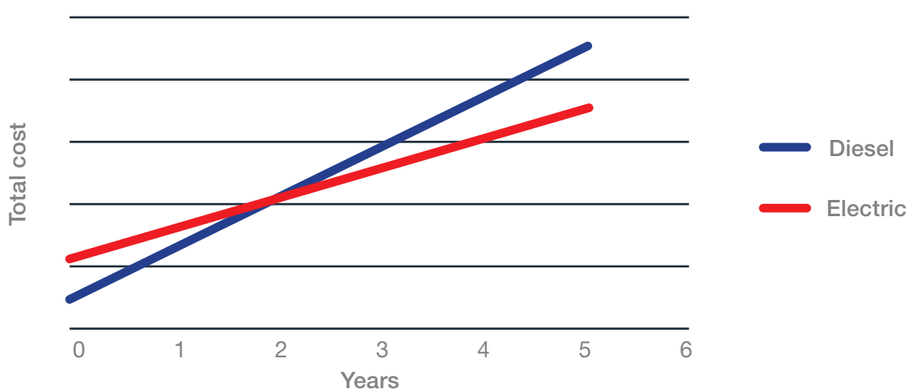
Technical information

KALMAR

An investment that pays off in the long run

Kalmar's new electric forklift truck pays off in the long run. With a slightly higher purchase price than a diesel forklift, an electric forklift will reach break even in about two years time. Add substantially lower maintenance costs, and you are looking at very attractive life cycle cost.

Energy costs – electric vs. diesel forklift
Total costs will reach break even within two years. Based on 2,500 hours of operation per year, you will reduce total energy costs by 75% when shifting from a diesel forklift to an electric forklift.

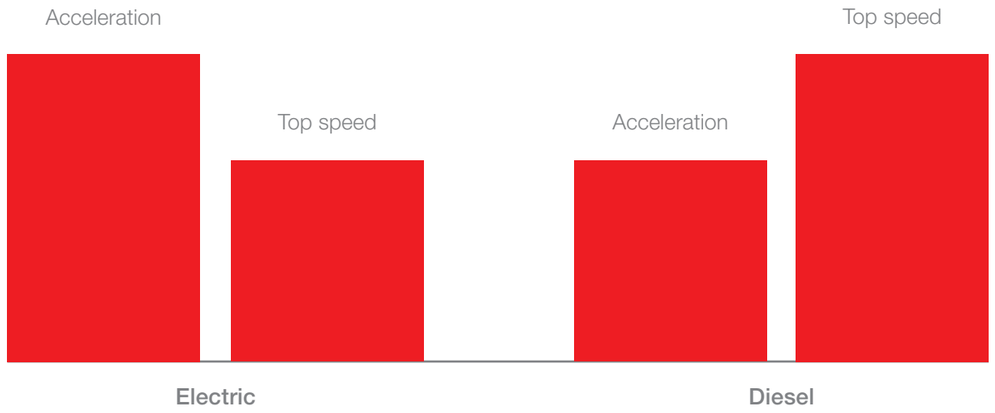


Using a Kalmar Electric Forklift truck pays off in the long run. In just 2 years time Kalmar's new Electric forklift truck will break even compared to the equivalent Diesel truck.

Note: Calculations are based on 2,500 operational hours per year, a diesel consumption of 8 litres/h at 1.2 €/litre, and electricity use of 17 kWh per hour at 0.12 €/hour.

What is better, an electric forklift or a diesel forklift?
It depends on the task at hand and on your driving patterns. An electric forklift gives you full torque immediately, which makes it very fast at short distances.

The diesel forklift, on the other hand, has a higher maximum speed. So for most common driving patterns – with short driving distances and many turns, stops and starts – an electric forklift offers similar or better performance.



The new Kalmar electric forklift outperforms the corresponding diesel forklift at short distances.

Optimized for time or speed?
Sometimes a job must be done fast. Then you need extra power. Sometimes it is more important to make sure your battery power lasts throughout a long shift. Or even necessary, if there is no spare battery pack available.

Optimizing the forklift for maximum battery time, speed or normal driving is set easily by the operator, using Eco Drive Modes.

Eco mode
Optimizes the forklift for maximum battery time.

Normal mode

Power mode
Optimizes the forklift for maximum speed.

Eco mode extends the forklift's battery time by 15% compared to Kalmar's previous electric forklift, the ECF50-90.

Hundreds of options to choose from

You can have your Kalmar forklift truck designed almost exactly as you want it. No other forklift brand offers as many options as Kalmar.

Cabin, lifting equipment and dimensions are only a few of hundreds of options you can choose from to tailor your forklift. It is not surprising then that most of our machines are delivered tailor made.

Cabins

Since its introduction in 2011, Kalmar's EGO cabin has set a new benchmark in driver comfort, visibility and simplicity – and, above all, ergonomics. The cabin is spacious, controls are easy to use and intuitively positioned, and visibility is excellent 360 degrees. The EGO cabin is available in a standard version with windows and an open, overhead-guard version, EGO OHG.

Dimension variants

Choose between eight standard models with capacities from 5 to 9 tons. Some models are available in different widths and wheelbases to meet different requirements. A wider version is more stable while a narrower version is easier to manoeuver in tight spaces. See model program below. See also page 10 for a complete set of data for each standard model.

Model program – selectable widths

Model	Wheelbase	Width					
		Single tire mounting			Dual tire mounting		
		1550 mm	1600 mm	1800 mm	1830 mm	2000 mm	2200 mm
ECG50-6	2100 mm	Standard				Option	
ECG55-6	2100 mm	Standard				Option	
ECG60-6	2450 mm		Option	Option		Standard	Option
ECG70-6	2450 mm		Option	Option		Standard	Option
ECG80-6	2600 mm		Option	Option		Standard	Option
ECG80-9	2800 mm				Option	Standard	Option
ECG80-9S	2600 mm				Option	Standard	Option
ECG90-6L	2800 mm				Option	Standard	Option
ECG90-6LS	2600 mm				Option	Standard	Option
ECG80-11	2800 mm					Standard	

Selectable widths and wheelbases make it possible to adapt the machine to your needs. A wider machine improves stability, while a narrower is suitable in limited spaces.

Diagonal, radial or super elastic tires
Radial or super elastic tires only
Super elastic tires only

Lifting equipment

We offer a full range of duplex, triplex and free-lift equipment. Based on our long tradition as supplier of heavy forklifts, our lifting equipment is robust and of the highest quality.

Duplex standard, clear view

ECG50-70				ECG80-90			
Lift height	Mast height H3 min.	Mast height H5 max.	Free lift H2	Lift height	Mast height H3 min.	Mast height H5 max.	Free lift H2
-	-	-	-	2750	2560	3910	-
-	-	-	-	3000	2685	4160	-
-	-	-	-	3250	2810	4410	-
3500	2625	4500	-	3500	2935	4660	-
3750	2750	4750	-	3750	3060	4910	-
4000	2870	5000	-	4000	3185	5160	-
4250	3000	5250	-	4250	3310	5410	-
4500	3120	5500	-	4500	3435	5660	-
4750	3250	5750	-	4750	3560	5910	-
5000	3370	6000	-	5000	3685	6160	-
5250	3500	6250	-	5250	3810	6410	-
5500	3620	6500	-	5500	3935	6660	-
5750	3750	6750	-	5750	4060	6910	-
6000	3870	7000	-	6000	4185	7160	-

Duplex full free lift, clear view

ECG50-70				ECG80-90			
Lift height	Mast height H3 min.	Mast height H5 max.	Free lift H2	Lift height	Mast height H3 min.	Mast height H5 max.	Free lift H2
-	-	-	-	2750	2560	3910	1425
-	-	-	-	3000	2685	4160	1550
3250	2620	4350	1530	3250	2810	4410	1675
3500	2750	4600	1655	3500	2935	4660	1800
3750	2870	4850	1780	3750	3060	4910	1925
4000	3000	5100	1905	4000	3185	5160	2025
4250	3120	5350	2030	4250	3310	5410	2175
4500	3250	5600	2155	4500	3435	5660	2300
4750	3370	5850	2280	4750	3560	5910	2425
5000	3500	6100	2405	5000	3685	6160	2550
5250	3620	6350	2530	5250	3810	6410	2675
5500	3750	6600	2655	5500	3935	6660	2800
5750	3870	6850	2780	5750	4060	6910	2925
6000	4000	7100	2905	6000	4185	7160	3050

Triplex full free lift, clear view

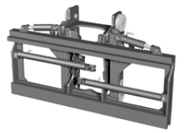
ECG50-70				ECG80-90			
Lift height	Mast height H3 min.	Mast height H5 max.	Free lift H2	Lift height	Mast height H3 min.	Mast height H5 max.	Free lift H2
4950	2570	6010	1530	4200	2580	5330	1470
5450	2740	6515	1690	4700	2750	5825	1640
5950	2910	7015	1860	5200	2920	6330	1800
6450	3070	7510	2030	5700	3080	6825	1970
-	-	-	-	6200	3250	7330	2140


Duplex standard, free visibility


Duplex full free lift, free visibility


Triplex full free lift, free visibility


Fixed for manually moveable forks


Centre levelling


Fork positioning and sideshift


Sideshift


Forks for manual adjustment


Fork shaft system with separate carriers for each fork


Roller fittings for hydraulic adjustment


Hydraulic levelling

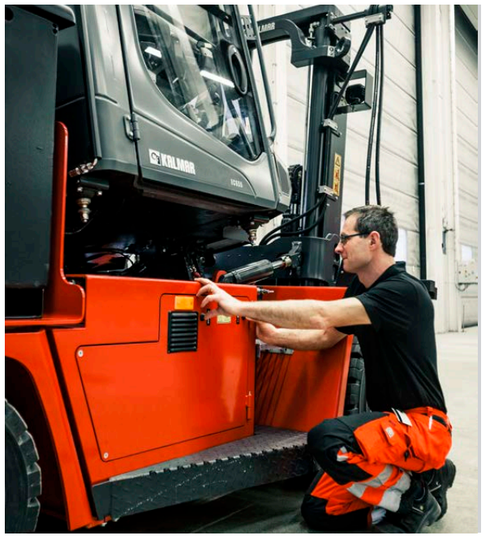
Lower maintenance costs

No starter, no generator, no turbo, no fuel pump, no water pump. Just to mention a few of the parts you never need to worry about with an electric forklift truck. Designed with few moving parts, the forklift keeps going year after year.

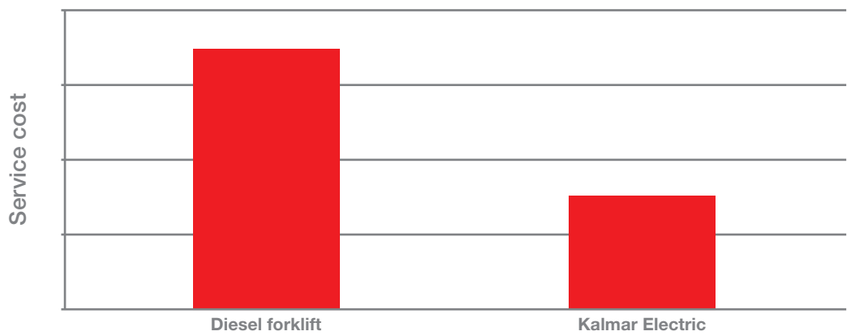
If a problem should occur, it is easily managed. What used to take hours of troubleshooting, is now presented as an error code in a display. This new level of fault handling is possible thanks to an advanced control system that continuously registers operational data.

Many times, operators can solve a problem themselves before it escalates into failure. Repairs are speeded up as the service technician will be aware of the problem in advance and can bring the appropriate replacement parts to your site.

High reliability, long intervals between maintenance and fast service combine to ensure the forklift's favourable life cycle cost.



Service costs – Diesel vs. Kalmar electric



Over a driving period of 7,000 hours, the service cost of Kalmar's new electric forklift is more than 50% lower than that of an equivalent diesel forklift with a gearbox. Calculation includes work and parts and is based on Scandinavian price levels.

More productive with Kalmar Smart fleet RMI

Is your truck used efficiently? For how long is it idle during the day? How many times has it been in a collision or overload situation? The new Kalmar Smart fleet RMI system can present lots of data about your truck, both in real time and as statistics. It helps you analyse how the truck is actually used and what can be done to improve operational efficiency.

Some of the functions in Kalmar Smart fleet RMI

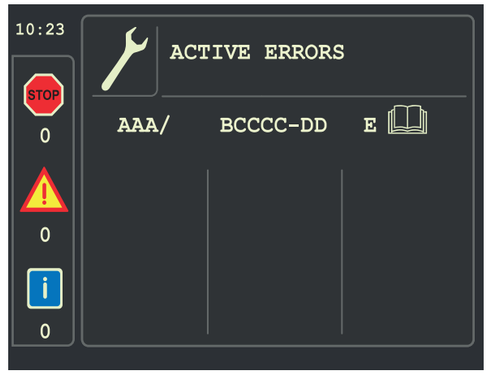
- Real time data
- Statistics
- Map functions
- Event analysis
- Alarm
- Vehicle error codes
- Report functions
- Service handling

A new platform

Kalmar's new electric system will from now on be used in all our new products. Our service engineers will therefore be closely familiar with the system, allowing them to carry out service faster.

See the fault, not the symptom

Error code 1/M6570-5, for example, means there is an open circuit to the heat fan. Before Kalmar's new electric system was introduced, you had to check the fuse, fan control, cable and fan in order to locate this fault. The procedure has now been shortened to nearly nothing.



A fault is presented as an error code consisting of device number (marked AAA in the above chart), component number (BCCCC-DD) and type of error (E).

Gentle to your goods, your people and the world

Driving an electric forklift truck is driving ecologically – no nitrogen oxides, no carbon dioxide, no particles. Going electric is taking a giant leap into building the factory of the future.

An electric forklift is a must have if you are dealing with sensitive goods such as food or pharmaceuticals. But whatever goods you are handling, you will enjoy the clean air that comes from using electric forklifts.

Operators will experience an improved working environment. They are relieved of the vibrations that are always at play with a combustion engine. And even if other machinery continues to make noise, you will no longer need ear protection because of your forklifts.

Look out for the blue light
If you are new to electric forklifts, it may seem strange at first, watching forklifts drive past in silence. Nice as it may be, the forklift's low noise level can actually be a risk. That is why we have introduced a blue safety light to alert people that the forklift is on its way.

Endless visibility
A totally new and spacious cabin design for optimized visibility at all angles. Smart profiles and curved windows combine to provide exceptionally good forward, diagonal and rearward visibility. The sensation is almost like working outdoors and helps improve both efficiency and safety.

Ergonomic steering wheel
The patented new steering wheel is engineered to reduce stress and increase productivity through carefully tested ergonomic design. It is adjustable and can be tilted at an angle to the side for comfortable manoeuvring, especially during reversing.

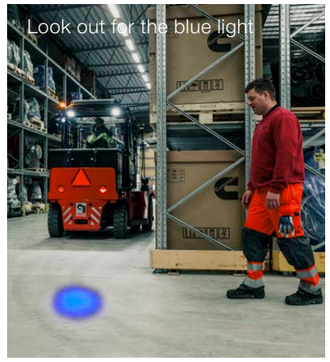
Comfort pedals
A new, flexible and fail-safe pedal system with adjustable pedal angles for minimal strain on the foot. The floor-based solution, with a hanging pedal feel, lets you drive hard longer with less fatigue.

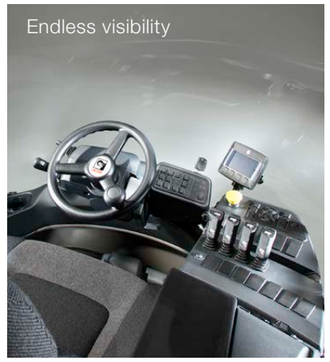
Work console
The operator's extended arm is easy to adjust, easy to use and easy to understand. Here you'll find all the controls, switches and indicators necessary for efficient operation, in a flexible and ergonomic design. The console consists of intuitively placed panels and controls for data display and machine control systems.

Adjustable multi-seat
The fully integrated Kalmar seat has been carefully developed to ensure the best possible comfort and sitting posture for long shifts and demanding operations. A rotatable seat is available as option, improving safety if you need to go in reverse due to limited forward visibility when handling bulky goods.

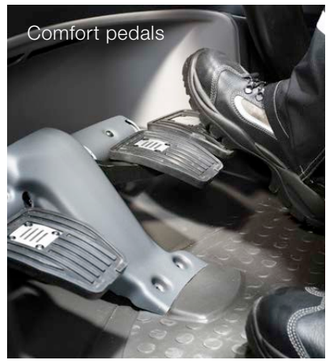
Climate package
A complete and fully automatic climate package that meets the stringent demands of our climate-tested EGO cabin. Large air intakes mean easy filter replacement at the front, while well dimensioned and carefully designed components provide superior interior comfort.

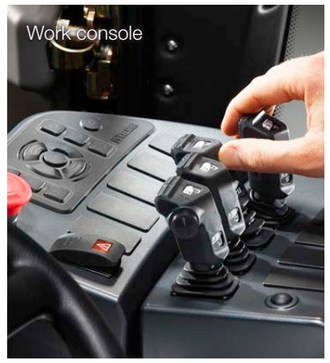
Intuitive interfaces
Numerous man-hours have been used to take the human-machine interface (HMI) to this new level. This includes sight, sound, touch, spatial sense and intuition, all in one logical, balanced and user-friendly design. At the centre is the 3.5" Kalmar Information Display, now in colour.

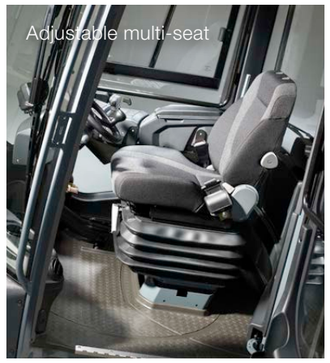

Look out for the blue light


Endless visibility


Ergonomic steering wheel


Comfort pedals


Work console


Adjustable multi-seat


Climate package

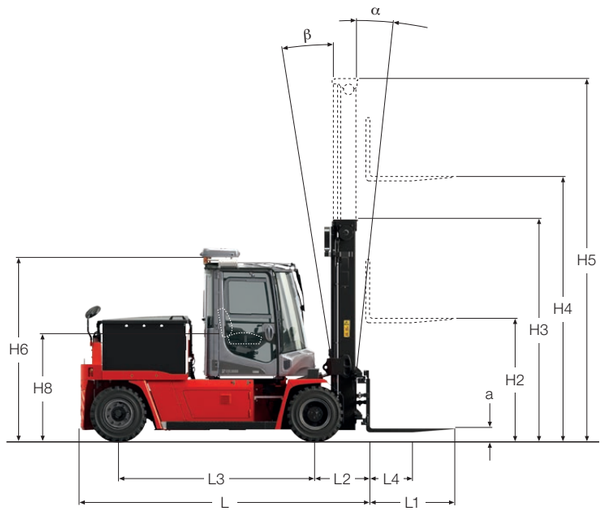

Intuitive interfaces

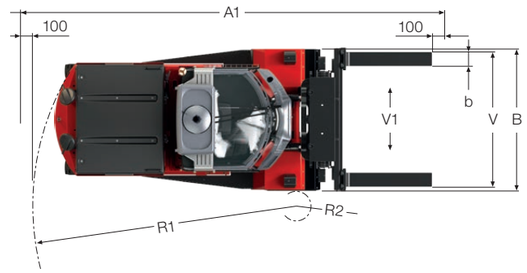
Technical data

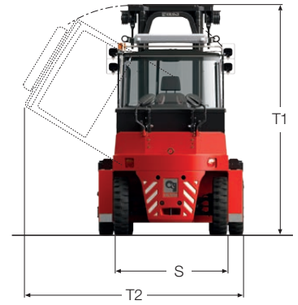
Model designation

ECG90-6LS

- Electric engine
- Counterbalance truck
- Generation
- Lifting capacity, In decitonnes
- Load centre, in decimeters
- Light
- Short wheelbase



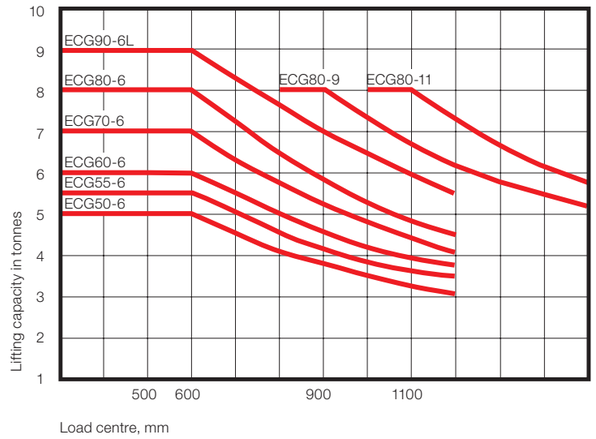




Dimensions

					ECG50-6	ECG55-6	ECG60-6	ECG70-6	ECG80-6	ECG80-9	ECG80-9S	ECG80-11	ECG90-6L	ECG90-6LS
Lifting capacity	Rated (kg)		kg		5000	5500	6000	7000	8000	8000	8000	8000	9000	9000
	Load centre	L4	mm		600	600	600	600	600	900	900	1100	600	600
Truck dimensions	Truck length	L	mm		3345	3345	3790	3790	4045	4105	3905	4110	4140	3940
	Truck width	B	mm		1550	1550	2000	2000	2000	2000	2000	2000	2000	2000
	Height, base machine, EGO	H6	mm		2590	2590	2590	2590	2590	2590	2590	2590	2590	2590
	Seat height, EGO	H8	mm		1440	1440	1440	1440	1440	1440	1440	1440	1440	1440
	Distance between centre of front axle – front face fork arm	L2	mm		665	665	730	730	790	760	760	765	795	795
	Wheelbase	L3	mm		2100	2100	2450	2450	2600	2800	2600	2800	2800	2600
	Track (c-c), front – rear	S	mm		1240 – 1266	1240 – 1266	1500 – 1360	1500 – 1360	1500 – 1360	1500 – 1360	1500 – 1360	1500 – 1360	1500 – 1360	1500 – 1360
	Turning radius, outer	R1	mm		2990	2990	3350	3350	3600	3700	3600	4050	3700	3600
	Turning radius, inner	R2	mm		120	120	150	150	250	300	250	850	300	250
	Ground clearance, min.		mm		160	160	160	160	160	160	160	160	160	160
	Height when tilting cab, max. EGO	T1	mm		3020	3020	3020	3020	3020	3020	3020	3020	3020	3020
	Width when tilting cab, max EGO	T2	mm		3000	3000	3225	3225	3225	3225	3225	3225	3225	3225
	Min. aisle width for 90° stacking with forks	A1	mm		5075	5075	5480	5480	5790	6450	6250	7000	5895	5695
	Standard duplex mast	Lifting height	H4	mm	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
		Mast height, min	H3	mm	2625	2625	2625	2625	2935	2935	2935	3060	2935	2935
		Mast height, max	H5	mm	4500	4500	4500	4500	4660	4660	4660	4910	4660	4660
		Mast tilting, forward – reverse	a – ß	°	6 – 9	6 – 9	6 – 9	6 – 9	6 – 9	6 – 9	6 – 9	6 – 9	6 – 9	6 – 9
		Ground clearance, min.		mm	170	170	170	170	170	170	170	170	170	170
	Forks	Width	b	mm	150	150	150	150	150	200	200	200	200	200
		Thickness	a	mm	60	60	60	60	60	65	65	70	65	65
		Length of fork arm	l	mm	1200	1200	1200	1200	1200	1800	1800	2200	1200	1200
		Width across fork arms, max.	V	mm	1400	1400	1900	1900	1900	-	-	-	1900	1900
		Width across fork arms, min.	V	mm	420	420	420	420	420	-	-	-	520	520
		Sideshift. ± at width across fork arms	V1 – V	mm	300 – 800	300 – 800	375 – 1160	375 – 1160	375 – 1160	-	-	-	375 – 1210	375 – 1210
Weight	Weight	With battery		kg	8500	8900	8900	9600	10700	11700	12100	12400	11200	11600
		Without battery		kg	6200	6600	6000	6700	7300	8000	8700	8700	7500	8200
	Axle load front	Unloaded		kg	4500	4500	4600	4600	5200	5500	5500	5500	5300	5300
		At rated load		kg	12650	13500	14000	15600	17600	18400	18400	19000	19100	19300
	Axle load rear	Unloaded		kg	4000	4400	4300	5000	5500	6200	6600	6900	5900	6300
		At rated load		kg	850	900	900	1000	1100	1300	1400	1400	1200	1300
Wheels	Wheels/tyres	Type, front – rear			Pneumatic Diagonal – Pneumatic Diagonal					Air Radial/SE - Air Radial		SE – SE	Air Radial / Air Radial	
Brakes		Dimensions, front – rear		tum	315/70-15 – 225/75-15			8,25-15 – 8,25-15		8,25-R15 – 8,25-R15		8,25-15 – 300-15	8,25-R15 – 8,25-R15	
Steering		Number of wheels, front – rear (*driven)			2* – 2					4* – 2				
		Pressure		MPa	1,0 – 0,9			0,85 – 0,85		1,0 – 1,0		- - - - - -	1,0 – 1,0	
	Styrsystem	Type – manoeuvring			Hydraulic Servo – Steering wheel									
	Service brake system	Type – affected wheels			Oil cooled disc brakes – Drive wheels									
	Parking brake system	Type – affected wheels			Dry, spring activated disc brakes – Drive wheels									
Misc.	Hydraulic pressure	Max.		MPa	14,0	14,5	15,5	17,5	20,0	20,0	20,0	20,0	21,5	
	Hydraulic fluid volyme			l	125	125	155	155	155	155	155	155	155	155

Technical data (continued)



1. Full lifting capacity up to 4000 mm lift height with duplex/duplex freelifting/triplex masts and integrated sideshift/fork positioning carriage for ECG50-6 to ECF90-6L, does not apply to ECG80-9.

2. Full lifting capacity up to 4000 mm lift height with duplex freelifting masts and FEM fork positioning carriage applies only to ECG80-9.

Drivetrain

				ECG50-6	ECG55-6	ECG60-6	ECG70-6	ECG80-6	ECG80-9	ECG80-9S	ECG80-11	ECG90-6L	ECG90-6LS
Drivetrain													
	Drive axle - type			Differential and hub reduction						Differential and hub reduction			
	Drive motor, hourly capacity		kW	2 x 11 kW						2 x 11 kW			
	Speed control, principle - number of steps			High frequency MOSFET, AC - Stepless						High frequency MOSFET, AC - Stepless			
	Pump motor hydraulics, intermittent capacity – duty factor			1 x 42 kW - S3 15%						1 x 42 kW - S3 15%			
	Pump motor brakes, intermittent capacity – duty factor			1 x 4,2 kW - S3 15%						1 x 4,2 kW - S3 15%			
	Pump control, principle - number of steps			High frequency MOSFET, AC - Stepless						High frequency MOSFET, AC - Stepless			
Battery	Dimensions (WxHxL)		mm	1295x780x845		1495x780x990		1495x780x1190	1495x780x1190	1495x780x990	1495x780x1190	1495x780x1190	1495x780x990
	Capacity at 5h discharging - voltage		Ah - V	940 - 80		1240 - 80		1400 - 80	1550 - 80	1240 - 80	1550 - 80	1550 - 80	1240 - 80
	Max charging current		A - V	175 - 80		225 - 80		250 - 80	300 - 80	225 - 80	300 - 80	300 - 80	225 - 80
	Battery weight		kg	2300		2900		3400	3700	3400	3700	3700	3400

Performance, drivetrain

				ECG50-6	ECG55-6	ECG60-6	ECG70-6	ECG80-6	ECG80-9	ECG80-11	ECG90-6l
Performance	Lifting speed	Unloaded	m/s	0,40	0,40	0,32	0,32	0,32	0,32	0,32	0,32
		At rated load	m/s	0,35	0,35	0,31	0,31	0,31	0,31	0,31	0,31
	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
	Traveling speed, F/R	Unloaded	km/h	18	18	17	17	16	15	15	15
		At rated load	km/h	16	16	15	15	14	13	13	13
	Gradeability, max	Unloaded	%	56	53	51	46	41	37	35	38
		At rated load	%	32	30	28	25	22	21	20	20
	Gradeability, at 2 km/h	Unloaded	%	42	40	39	36	32	29	27	30
		At rated load	%	25	23	22	20	17	16	15	16
	Drawbar pull		kN	40	40	40	40	40	40	40	40
Noise level, inside*		LpAZ, EGO Cabin	dB(A)	66	66	66	66	66	66	66	66
		LpAZ, EGO Cabin OHG	dB(A)	78	78	78	78	78	78	78	78
Noise level, outside**		LwAZ	dB(A)	92	92	92	92	92	92	92	92

* According to EN12053

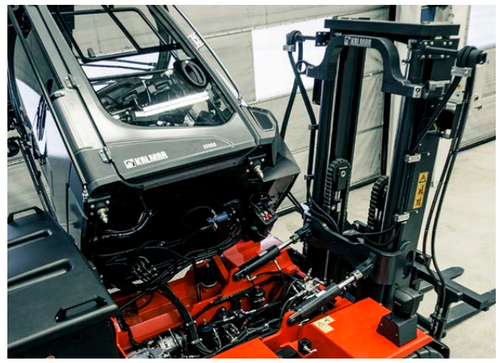
** According to 2000/14/EG

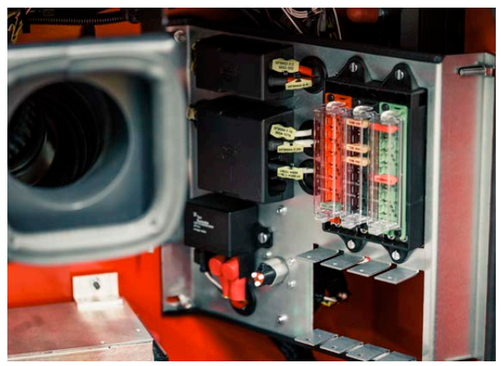
Service and support

With Kalmar, you are backed by global support and service network. This ensures short response times for service, support and spare parts throughout the world. Wherever you are, you can trust our network to be there to keep your business moving.

Extensive support network
As our customers, you have our global service and support network always at your disposal. This helps to ensure short response times for everything from spare parts and product support teams down to each individual local service engineer.

Kalmar Care service contract
A Kalmar Care service contract lets you take control over your maintenance costs. The right support will always be at hand when you need it. The flexible Kalmar Care contract includes 24/7 on-call support, scheduled preventive and corrective maintenance, and guaranteed spare parts availability.





KALMAR

MAKING YOUR EVERY MOVE COUNT

Kalmar offers the widest range of cargo handling solutions and services to ports, terminals, distribution centres and to heavy industry. Kalmar is the industry forerunner in terminal automation and in energy efficient container handling, with one in four container movements around the globe being handled by a Kalmar solution. Through its extensive product portfolio, global service network and ability to enable a seamless integration of different terminal processes, Kalmar improves the efficiency of every move. **www.kalmarglobal.com**

Kalmar is part of Cargotec. Cargotec's sales totalled approximately EUR 3.2 billion in 2013 and it employs approximately 11,000 people. Cargotec's class B shares are quoted on NASDAQ OMX Helsinki under symbol CGCBV. **www.cargotec.com**

Cargotec Sweden AB
Torggatan 3
SE-340 10, Lidhult, Sweden
tel. +46 372 260 10

TI-ELTG9-EN-WW / 2014.09.18