



Kalmar Electric Forklift

**Electric evolution.**

5–9 tonne capacity.





# Lower your costs with an eco-efficient solution.

Kalmar offers a range of 5-9 tonne electric forklifts, with a choice of battery technology, that will cost much less to operate in the long run than traditional diesel machines. In fact, a total electrically powered solution tailored to your specific needs will lower your operating costs, improve reliability, increase personnel safety and reduce your maintenance effort.



Being electrically powered you will also produce zero emissions, have a quieter machine that will vibrate less, making it better for your driver and ideal to operate indoors or out.



Built on our proven and tested G-Generation platform and powered by either Lead-Acid or Lithium-ion batteries, you will benefit from a forklift that matches the power of our diesel trucks – yet completely free from emissions.



Your drivers will be safer and more comfortable with our ergonomically designed EGO Cabin, where everything is within easy reach and includes many new and additional safety features.



You can use the truck for very heavy industrial tasks the same as your current diesel forklift, without losing out on either productivity or efficiency. So the true benefits of going electric start today and will pay back within two years.

 ECO-EFFICIENCY AT WORK

## Lifetime savings.

The purchase price of your new forklift represents only a small part of the total cost of ownership. What matters in the long run is reducing your operational and maintenance costs and your carbon emissions. Our eco-efficient electric forklifts will deliver on all fronts.





# A healthier working environment.

Electric forklifts have always been seen as specialist machines for handling sensitive goods, in fact they deliver many additional benefits:



Less vibrations make handling sensitive goods safer and reduce stress and strain on your operator's body.



Electric forklifts are extremely quiet, making working indoors less disruptive for both operators and by-standers.



As electric forklifts produce no exhaust fumes they are safe to operate inside and where other staff are working or sensitive goods are stored.

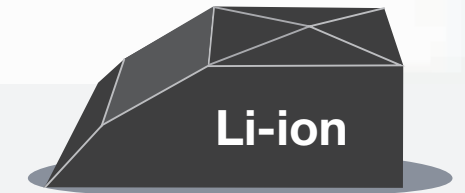
## Eco-efficiency at work.

Reducing the fuel consumption of your equipment also reduces your emissions, which will enhance your environmental reputation and help you meet current and future emissions standards. Together we can shape the future of cargo handling, with safe and eco-efficient solutions that improve your every move.

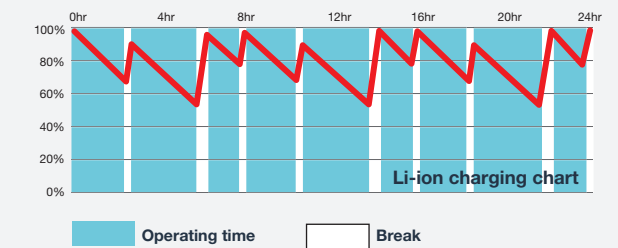
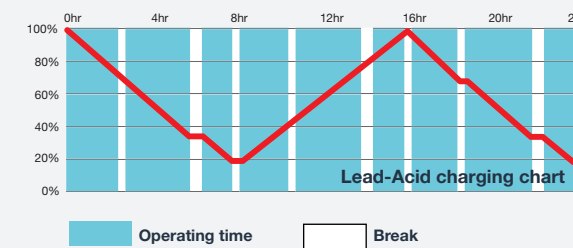
# Lead Acid vs Lithium-ion.

Kalmar offers two types of battery technology to power its forklifts, Lead Acid and Lithium-ion. Here is a chart that demonstrates the difference between the two battery types so you can decide which is the right solution for your operations.

The Lead-Acid battery is generally removed after a shift and then fully charged prior to being refitted onto the forklift, it can be charged directly in a safe location. The Li-ion battery can be continuously recharged during operational downtime or statutory breaks.



### CHARGING PATTERN



### FEATURES

- Last for **1,200 to 1,400** cycles
- Battery efficiency **70%**
- Generally removed to be fully charged
- Requires a ventilated charging space
- Requires some regular maintenance
- Additional batteries required for multi-shift operation.

- Last for **4,000** cycles
- Battery efficiency **95%**
- Is charged in-situ
- Does not require a ventilated charging space
- Requires minimal maintenance
- Can be opportunity charged for multi-shift operation.

### YOUR OPERATIONS

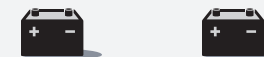
What is your operational cycle?

**8 hrs** | | | | | | | |

What is your operational cycle?

**2-3hr** | **2-3hr** | **2-3hr** | **2-3hr** | **2-3hr** | | | |

Are you operating more than one shift?



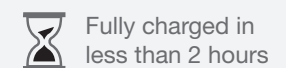
Are you operating more than one shift?



Charging time



Charging time

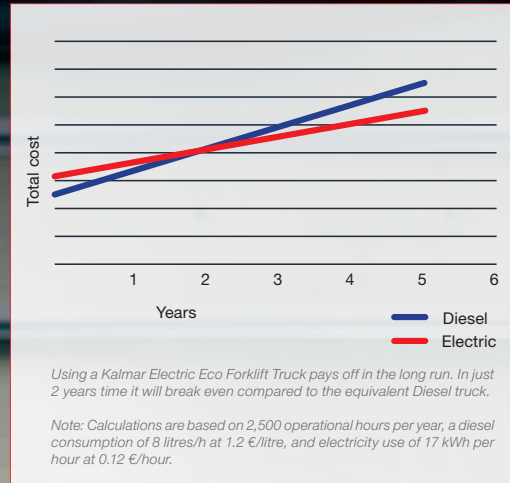




# A winning concept in the long run.

As your business partner, Kalmar has designed a total solution that will improve your competitiveness and help you build an eco-efficient sustainable business. A solution that will benefit both the environment and your performance – and make all of us winners in the long run.

Investing in a Kalmar electric forklift will break even in only two years time. Combined with savings from fewer and shorter standstills, faster maintenance and longer service life, this makes the truck a very attractive investment.



## A better driving experience.

All our electric forklifts have our ergonomically designed EGO cabin fitted as standard. This cabin has been built to provide a superior driving experience. With adjustable control panels, steering wheel and seat, which can also be rotated with the push of a button, your driver will be happier and more comfortable. The slim line B-Pillars provide an exceptional level of visibility, making the machine safer to operate, especially in busy environments.



## Better control.

With all of our electric forklifts you will be able have greater control over your machine with the speed pedal. Not only will you benefit from instant acceleration, you will also be able to slow down immediately by just taking your foot off the speed pedal.



## A focus on safety.

Our electric forklifts will meet, and exceed, any safety regulation that may apply in your local market. And, because electric trucks are exceptionally quiet, our blue safety light alerts people of its approach, reducing the risk of accidents.



# Efficient and productive.

Buying an electric forklift doesn't mean compromising on power, as electric drivelines provide full torque immediately and are smoother to operate. Making operating cycles shorter, driving up your operational productivity. With extended servicing cycles and improved diagnostic tools your machine will benefit from higher availability rates than the diesel alternatives.



## Eight features that add extra value to your forklift

- 1 Eco Drive Modes
- 2 Shorter wheelbases
- 3 Blue safety light
- 4 Improved driver experience
- 5 LED lights all around
- 6 High capacity model (8t@1100mm)
- 7 Lower energy consumption
- 8 Kalmar Insight, diagnostic systems and tools.



## More eco-efficient, energy saving features.

Sometimes a job must be done fast. Then you need all the speed you can get. The next day you may have to save energy to ensure your battery lasts throughout a long shift. Eco Drive Modes allow you to optimise the truck's performance characteristics for speed, energy saving or normal driving. With Eco mode activated, energy consumption is reduced by 15% compared to our previous model (ECF).

## A simpler design.

Electric forklifts have less moving parts than diesel models. Without the need to change the starter motor, turbo or fuel filters, servicing and maintenance on the machine will take less time and cost up to 50% less. As less parts are required, your parts replacement costs and stock levels will also be substantially reduced.

## Reduce energy consumption by up to 20%.

Kalmar ECO Drive allows you to optimise your truck's performance with three different modes:

**Power Mode:** when speed is of the essence. With full engine power, you will be able to move quickly about, lift and lower at full speed, without compromising on safety.

**Normal Mode:** when you need to retain some speed. With a slightly reduced acceleration you can expect 5-15% lower running and energy costs.

**Economy Mode:** when you need the lowest running costs. With acceleration reduced even further you can expect 10-20% lower running and energy costs.





# Kalmar Lifetime Services.

# All the support you need.

## Kalmar Care, making sure your business never stops.

We offer four different types of service and maintenance contracts. Each is designed to help you improve your operational efficiency, drive productivity and secure financial predictability. Each contract type includes a set of standardized service modules to meet your business needs.

## Specialist support.

Kalmar can also offer specialist support for your new electric forklift as working with battery powered drivelines is different from diesel units. We can offer additional batteries if you are working more than one shift, pockets for your batteries so they can easily be removed with a forklift and recommend what sort of charging technology you should consider.

## When the right part matters.

When something needs to be replaced you need a quality part that meets your exact needs – urgently. Kalmar Genuine Parts offers a rapid delivery service for over 50,000 premium-quality genuine parts to anywhere in the world, with installation support if needed.

## Optimise your fleet with Kalmar Insight.

Kalmar Insight is a performance management tool for cargo and material handling, which gives you a valuable and easy to use overview of your daily operations based on equipment status and performance. Making it quicker for you to take action on relevant information that will help you improve your operations, your equipment's performance and your business.

Kalmar Insight\* comes fitted in all new Kalmar machines and can be retrofitted to existing Kalmar machines or those built by other manufacturers.



Kalmar Insight: view each machine's movements as they occur.

## Financing options for you.

You may choose to buy your new forklift outright or consider leasing or renting your equipment. Kalmar offers a range of leasing and renting options that give you the financial predictability you need and the option to upgrade your equipment after a fixed period. With our leasing packages, you can focus on your core operations, while we perform all your service and maintenance needs. Kalmar can also look at you trading-in your old equipment.



Kalmar Insight: view each operator's performance in real time.

\*Installation costs and/or an annual subscription fee may apply.



## Kalmar Training Centre.

For your team to get the most out of their new forklift the Kalmar Training Centre offers a range of courses for both your technicians and operators. Operators will be shown how to optimise their day-to-day operational performance and what needs to be checked daily before operations begin.

Technicians will be given the knowledge needed to keep your new truck in top condition. Courses are a mix of theory and hands-on experience and can be held at Kalmar or at your site.



# 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	5000	5500	6000	7000	8000	8000	8000	8000	9000	9000	
	Load centre	L4	mm	600	600	600	600	600	900	900	1100	600	600	
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 – β	°	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, BRAKES, STEERING	Wheels/tyres	Type, front – rear			Pneumatic Diagonal – Pneumatic Diagonal	Pneumatic Diagonal – Pneumatic Diagonal		Air Radial/SE - Air Radial		SE – SE	Air Radial / Air Radial			
		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			
		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			
	Steering	Type – manoeuvring			Hydraulic Servo – Steering wheel	Hydraulic Servo – Steering wheel		Hydraulic Servo – Steering wheel						
	Service brake system	Type – affected wheels			Oil cooled disc brakes – Drive wheels	Oil cooled disc brakes – Drive wheels		Oil cooled disc brakes – Drive wheels						
Parking brake system	Type – affected wheels			Dry, spring activated disc brakes – Drive wheels	Dry, spring activated disc brakes – Drive 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 volume		l	125	125	155	155	155	155	155	155	155	155	

\* Mast tilting Duplex: H4 2035-5250 mm = 6 – 9° 5500-6000 mm = 4 – 4°  
Mast tilting Triplex: H4 3060-5250 mm = 6 – 5° 5500-6450 mm = 4 – 5°

# Drivetrain.

		ECG50-6	ECG55-6	ECG60-6	ECG70-6	ECG80-6	ECG80-9	ECG80-9S	ECG80-11	ECG90-6L	ECG90-6LS	
<b>DRIVETRAIN</b>	Drive axle - type	Differential and hub reduction			Differential and hub reduction							
	Drive motor, hourly capacity	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								
<b>LEAD-ACID</b>	Dimensions (WxHxL)	mm	1295x780x845	1295x780x845	1495x780x990	1495x780x990	1495x780x1190	1495x780x1190	1495x780x1190	1495x780x1190	1495x780x990	
	Capacity at 5h discharging - voltage	Ah - V	940 - 80	940 - 80	1240 - 80	1240 - 80	1400 - 80	1550 - 80	1240 - 80	1550 - 80	1550 - 80	1240 - 80
	Max charging current	A - V	175 - 80	175 - 80	225 - 80	225 - 80	250 - 80	300 - 80	225 - 80	300 - 80	300 - 80	225 - 80
	Battery weight	kg	2300	2300	2900	2900	3400	3700	3400	3700	3700	3400
<b>LI-ION</b>	Dimensions (WxHxL)	mm	1230x740x700	1230x740x700	1205x860x1005	1205x860x1005	1205x860x1005	1205x860x1005	1205x860x1005	1205x860x1005	1205x860x1005	
	Battery capacity	Ah	576	576	1080	1080	1080	1080	1080	1080	1080	
	Charging current	A	400	400	400	400	400	400	400	400	400	
	Battery weight (1 battery)	kg	893	893	1710	1710	1710	1710	1710	1710	1710	

# Performance.

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

\* According to EN12053 \*\* According to 2000/14/EG



# Lifting data.

DUPLEX STANDARD, CLEAR VIEW	Lift height			Mast height			Free lift		
	H4	H3 min	H5 max	H2	H4	H3 min	H5 max	H2	
	ECG50-70			ECG80-90					
-	-	-	-	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	Lift height			Mast height			Free lift		
	H4	H3 min	H5 max	H2	H4	H3 min	H5 max	H2	
	ECG50-70			ECG80-90					
-	-	-	-	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 FFL, CW	Lift height			Mast height			Free lift		
	H4	H3 min	H5 max	H2	H4	H3 min	H5 max	H2	
	ECG50-70			ECG80-90					
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



Duplex Freelift



Triplex



Forks for manual adjustment



Roller fittings for hydraulic adjustments



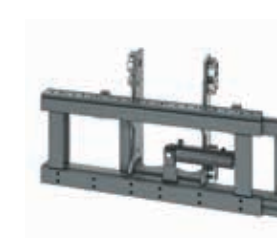
For shaft system



Hydraulic levelling



Fixed for manually moveable forks



Sideshift



Fork positioning and sideshift



Centre levelling



# Standard.

## Cabin, EGO

- Machinery Directive 2006/42/EC
- Standard seat including 2-point belt.
- Clear windows including sliding windows in left and right door.
- Complete doors with locks left and right side.
- Complete manoeuvre system right hand console including standard display (electric adjustable).
- Multi function level left side including horn, direction indicator, high and low beam.
- Brake system with pedal left and right side.
- Internal comfort including mirrors, handles, interior lighting etc.
- Wiper and washers front/rear and roof window.
- Hydraulic steering system including steering wheel with steering wheel knob.
- External reverse lights.
- Cab tilting
- Heat and ventilation ECH with fresh air inlet filter.
- Speed control pedal right side.
- Kalmar standard key system.
- Reverse camera with monitor in cab.

## Driveline

- Steering axle: Kalmar
- Drive axle: Kessler hub end with wet disc brakes
- Motor: Drive motor, 2x11 kW
- Hydraulics pump motor, 1 x 42 kW
- Accumulator pump motor, 5 Kw
- Power electrics: 80 V AC-technology

## Hydraulics

- Electric servo
- 2 functions
- Environment-friendly breather filter, hydraulic tank

## Body

- Tilttable cab
- Steps with anti-slip protection
- Tilt angles standard 5/10.
- Lifting eyes in mast

## Electrical system

- Electrical system 24 V
- Rear lights and brake lights, LED
- Working light front fenders 2 pieces, LED
- Working light mast 2 pieces, LED
- Flashing brake lights when reversing
- Indicator lamps including hazard lights, LED
- Main power switch
- Battery for 8 hours normal intensity operating time and central water topping system

## Wheels

- ECG50-55: front 315/70 15 PD; rear 225/75 15 PD
- ECG60-90: 8,25 15 PD/PR/SE

## Fleet management

- Equipped with telemetric hardware for Kalmar Insight.

## Colour

- Cabin: Kalmar Grey (Base ref RAL 7037/75)
- Chassis: Kalmar Red 2012 (Base ref RAL 3000/75)
- Lifting equipment: Kalmar Black (Base ref RAL 7021/30)

## Documentation and decals

- Operators manual (electronic)
- Maintenance manual (electronic)
- Parts catalogue (electronic)
- Load diagram in cabin
- Warning decals
- Information decals
- Diagram, fuses
- Sound plate (legal requirement in EU/EEC)







# KALMAR

Making your every move count

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