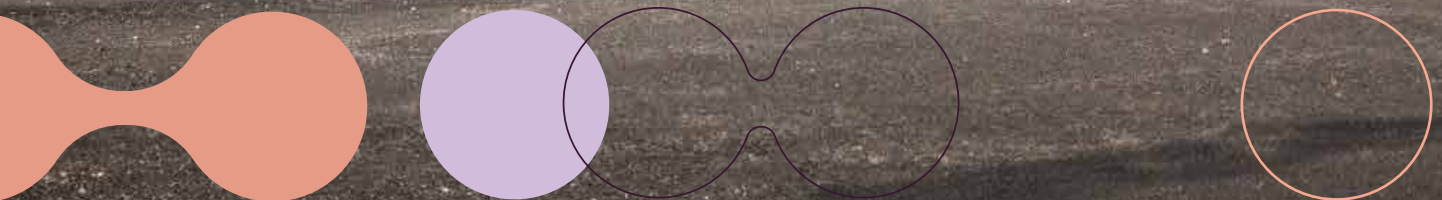




# Electric Empty Container Handler

ECG90-110 Range



# The time is now to go electric

To complement our industry leading range of traditionally powered empty container handlers you can now choose from an extensive range of electrically powered solutions that use the same technology platform as our tried and tested electric reachstacker and electric heavy forklift ranges.

## The market's largest range

You get more choice of machines, with a range of single stackers in 9 and 10 tonne capacities and lifting heights from 5 to 8 high (ES5-ES8). Double stackers are available in 10 and 11 tonne capacities, with stacking heights from 5+1 to 8+1-high. Plus, a greater choice of battery sizes and power levels that you can match to your individual needs. More comfort for your drivers, as all of our new range comes with our ergonomically designed EGO Cabin, which you can opt to have situated in either a high or low position on the chassis.

A more robust and efficient range, with the highest lifting and lowering rates and dramatically reduced running costs per move. Plus easier access for service and maintenance and more options across the whole range to choose from than ever before.

You have even more choice with:

- The ability to double or single stack containers
- Three different battery options
- Three different lifting capacities
- Lifting heights up to 8+1 high.

Giving you the ability to design a solution that is tailor made for your business, knowing you get a highly energy efficient power and hydraulics system and numerous safety features as standard.

## More choice in lifting capacities

You have four different lifting capacities to choose from:

### Single stacking:

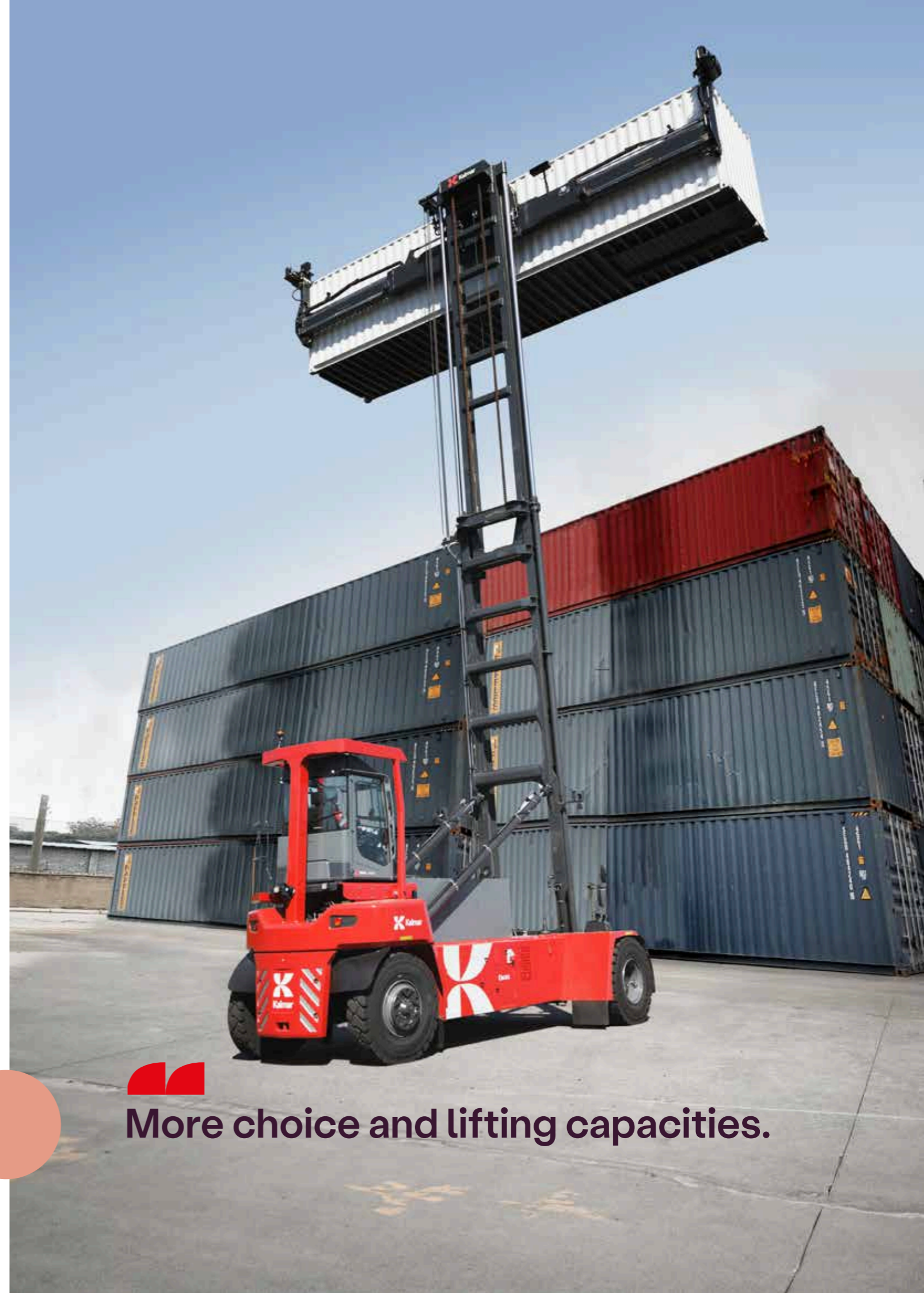


- ECG90-50ES - 9 tonne (19,800 lbs)
- ECG100-50ES - 10 tonne (22,000 lbs)



### Double stacking:

- ECG100-50ED - 10 tonne (22,000 lbs)
- ECG110-50ED - 11 tonne (24,250 lbs)



More choice and lifting capacities.



# Charged to go

## Eco-efficient by nature

By combining a highly efficient electrically powered motor, with direct drive hydraulics you get a driveline combination that will deliver on power and productivity while producing zero carbon emissions at source.

The complete system has been designed to minimise energy losses. With improved battery lifetime, performance and monitoring, energy losses have been minimised extending the time between charges. Regenerative power from the braking system returns power to the batteries, further enhancing the overall efficiency of the system.

## The power to meet your stacking needs

There are three different modular Lithium-ion battery options to choose from, each with a range of operating times, which is right for your operations is dependent on your drive cycle and the opportunities you have to top-up your battery during a shift.

By working out the types of loads and operating time you require, you can choose the battery solution that is right for your business. Here is an example of which battery solution might be best for your drive cycle,

### A choice of batteries

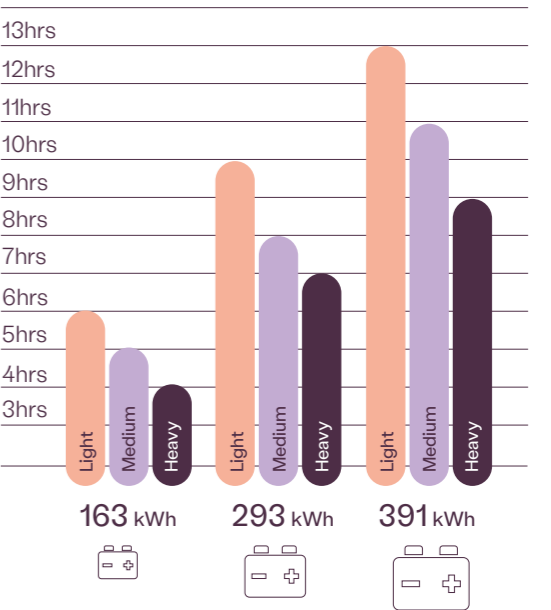


There are three different batteries to chose from, which one will be dependent on your drive cycle and the opportunity you have to top-up your battery during that shift. The more opportunities you have to recharge your battery during any given shift, the smaller the battery capacity required.

## Operational hours per drive cycle

By working out the types of loads and operating time you require, you can choose the battery solution that is right for your business. Here is an example of which battery solution might be best for your drive cycle, depending on your lifting needs: single or double.

### Single stacker Work Cycle



### Double stacker Work Cycle



Subject to change.

# Optimised battery performance

All of Kalmar's Electric Empty Container Handlers come fitted with a Thermal Management System which keeps your battery operating at an optimal temperature over a broad range of external temperatures.

## Thermal Management System



You are also able to monitor your battery's performance with our Battery Monitoring System, which keeps you up to date on how well your batteries are performing.

And for complete peace of mind your battery's performance is guaranteed for up to 5 years.

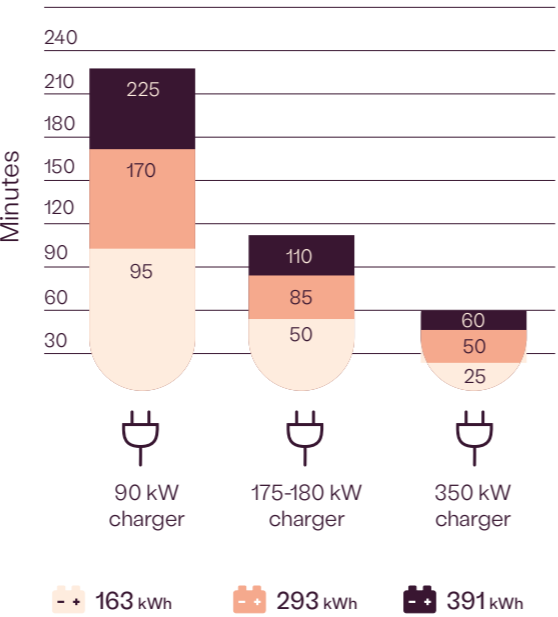
# High on safety

Equipment that uses high voltage power needs to provide the right level of protection so they can be operated safely. Which is why every Kalmar Electric Empty Container Handler encases and shields all high voltage cabling and, should the flow of power be interrupted, your whole machine will shut down until the issue is identified and rectified.

Kalmar also offers a range of training courses focused on handling high voltage equipment through the Kalmar Training Centre that are aimed at keeping your team safe at all times.

# Charged to go

There are three different charging options for you to choose from, all using CCS charging as standard. The figures below provide an indication of the time it takes to charge them fully, from 20% charge left for the three different batteries, using each of the three different charging options. Charging can be done after a shift with a 90 kW charger and in breaks or between shifts quickly, with a heavy duty 350 kW charger. Which one you choose will be dependent on your drive cycles and work rotas.



Note: The information in this chart are estimations

# Our electric portfolio

Kalmar's electrically powered empty container handler is part of our complete range of eco-efficient solutions, which include terminal tractors, forklifts and reachstackers.

## Battery and Charging Monitoring

Real-time status on battery capacity and health along with charging usage and timing allows for optimised operational planning and usage.

## Kalmar Insight

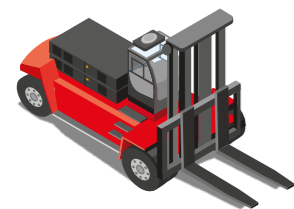
Kalmar Insight gives you the ability to monitor your fleet's operational status in real time no matter what type of your equipment you operate.

## Additional Energy Storage

You can use additional energy storage units to capture excess power that you may have produced to use at a later time when required instead of buying from the grid.

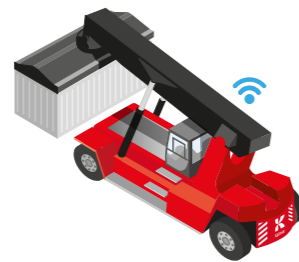
## Empty Container Handler

Kalmar's range of electrically powered empty container handlers can operate for up to two full shifts on a single charge, depending on work cycle, lifting loads up to 11 tonnes and placing them up to 8+1 high with our double stacker.



## Forklift Trucks

Kalmar's electrical powered forklifts offer a broad range of lifting capacities from 5 to 33 tonnes, a choice of battery solutions and can be used for a variety of material handling applications.



## Reachstackers

Kalmar offers a choice of electrically powered reachstackers with a wide range of lifting applications, battery solutions and can handle loads up to 45 tonnes.



## Terminal Tractors

Kalmar's TX or T2 EV electrically powered terminal tractor has been designed specifically for distribution centres and container terminals. There is a choice of different battery solutions designed to meet your operational requirements.

## Power Cabinets

Power cabinets manage the required electricity flow from the grid to your charging points. Power cabinets are modular and the number required is dependent on the number of charging points required.

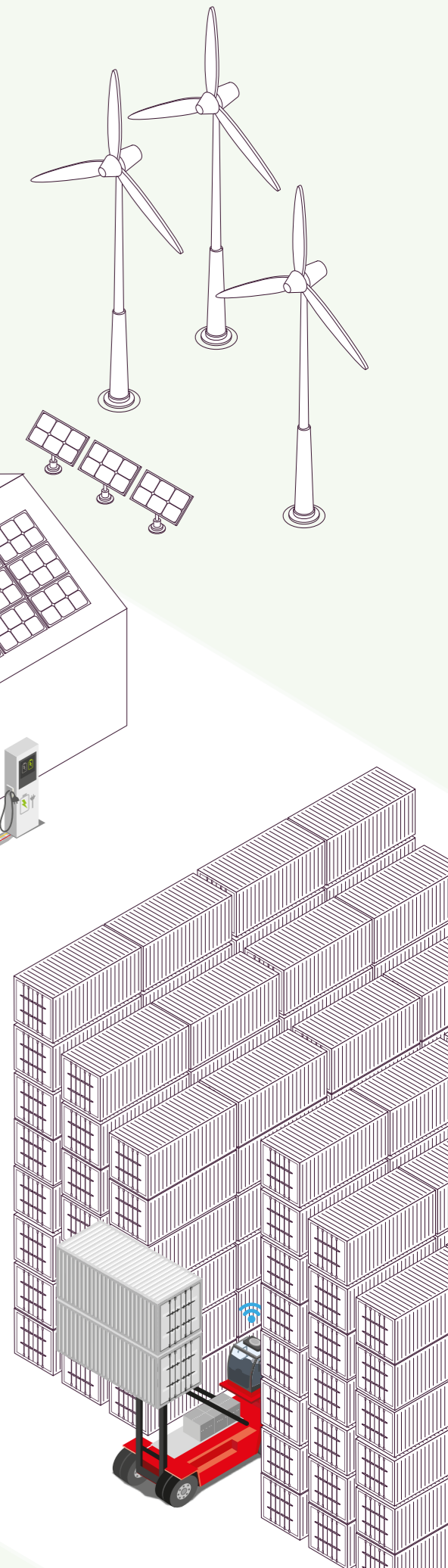
## Local Grid

## Site Power Grid

## Sub Station Transformer

## Charging Posts

We offer several different charging solutions. They can come with one or two charging guns and we have a small mobile unit that can be used to quickly charge your equipment if it isn't near a charging point and has run out of charge.



# Even more choice across the entire range

## More options

Now more safety features and options to customise your machine than ever before. From reverse warning systems to a range of different battery options and spreaders.

## More return

Higher productivity with zero emissions at source means a greener, lower cost per move. A lighter machine, with less wear and tear and lower energy consumption. Longer servicing intervals with easier access for service and maintenance, saving you time and money. Plus, the highest re-sale values in the market.

## More robust

Built on our proven G-Generation platform you get a stronger chassis with high and rear mounted cylinder package for improved stability and toughness. You also get upgraded drive axles with oil-cooled wet disc brakes and a wider rear steer for greater stability when lifting heavy loads to heights.

## More choice

You can choose from either a single stacker with two lifting capacities or a double stacker with two lifting capacities. There are 4 different cabin offerings, with a low or elevated cabin and the choice of single or dual access stairways. All machines can be equipped with mechanical or hydraulic side tilt or pile slope and there are 4 spreader options.



Double stackers, up to 11 tonnes, high mounted cabin.

## More efficient

To maximise your energy usage every Kalmar Electric Empty Container Handler is fitted with highly efficient hydraulic pumps, transmission, motor and inverter which, when combined, will extend your operating time between charges, improving battery lifetime and helping to optimise your return on investment. While Eco Drive modes, which allow for a choice of power levels and regenerative energy returning from the braking system, can enhance your battery performance and help to extend its operating life.

## More comfort

Our EGO cabin with a multi-functional joystick or linear lift levers is ergonomically designed, and delivers an improved visibility in all directions. Our electric powertrain provides an extremely quiet working environment with less vibrations, delivering even more comfort for your operator.

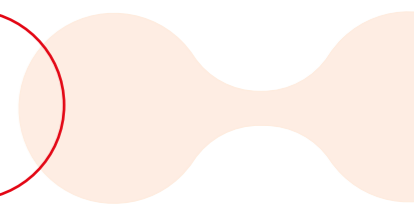
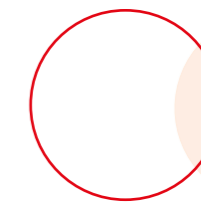
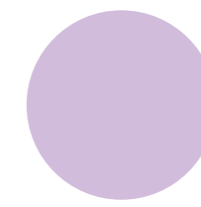
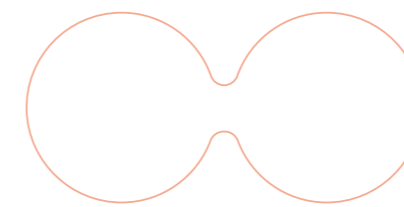
## More safety

Kalmar smart controls include several important safety functions as standard. The overload protection system offers safety information with the container weight in the main display, including warnings and pop-up messages. The battery monitoring system makes sure that your batteries are operating safely at all times. There is also a mechanical mast tilt indicator on the tilt cylinder and a transport position striping in the mast for additional driver and operational safety. With a new wider 5 metre wheelbase, you'll also benefit from improved stability when in operation.



Single stackers, up to 10 tonnes, low mounted cabin.

# More choice of spreaders



## A choice of spreaders

The first thing you need to do is know what sort of containers you will be handling, then you can decide what sort of lifting head / spreader version you will need on your single or double spreader.

For single stacker toplift spreaders you can choose from lifting heads with either a standard twistlock position (8' wide) for ISO containers or a wide twistlock position (8'6") and / or wide body containers (WBC / 8'6" wide).

For double stacker sidelif spreaders there are four choices:

1. Side lift hooks and hydraulic side clamps for single lifting of 20-53' or double lifting of 20-40' containers
2. Lift head with hooks-n-clamps with or without safety wedges, that will lock single containers of 45-53' length.

## A choice of spreader and lift beam levelling

All machines, mast designs and spreaders come with two different solutions for spreader carriage and lifting heads.

Choose from either:

1. A standard mechanical end beam levelling carriage (MPS, mechanical pile slope, stroke 0-250 mm)
2. Or the optional combined hydraulic pile slope (HPS  $\pm 5$  deg) and mechanical pile slope functions.

These solutions are ideal for operating on uneven grounds and poor yard conditions or when loading handling containers onto tilting trailers.

## 3 lifting capacities



9 tonnes



10 tonnes



11 tonnes



# Extra comfort, extra smart



**Every member of our empty container handler range comes fitted with our EGO cabin, the ultimate operating environment for your driver.**

With a more ergonomic design, smarter functions and an intuitive workspace than ever before, you can expect to get more from your operators.

## More to see

With A-posts being replaced with slim B-posts you can expect greater visibility in all directions: forward, backward, to the side and upwards. Our new dual wiper system cleans a bigger area of the front windscreen than before so your forward view will stay extra clean and clear.



## More comfortable

With a choice of comfortable driver seats, a fault safe pedal system and powerful Electronic Climate Control (ECC) system with smarter controls your operator will benefit from improved ventilation heating and cooling, plus a cabin with superior comfort and lowest noise level inside and outside.



## Easy to operate

With a wide choice of joysticks or lifting levers, an electronically adjustable work console and side tilt steering wheel they are designed for ease of operation, making them more efficient to operate.



## Extra smart

Our intuitive user interface combines visibility, sound and touch to create a perfectly balanced operating environment with an intelligent colour display at its heart. Advanced diagnostics and smart settings allow for improved operational control and safety.

# Safety fitted as standard

## All Kalmar equipment is compliant with EN 1175:2020.

At Kalmar, the safety of people working with our machines is always at the top of our minds, which is why meeting global safety standards is important to us. The safety standard EN 1175:2020, which sets the electrical and electronic component standards for industrial trucks, has been updated to improve the safety of these machines while in operation. This update is valid from April 2023. All Kalmar counter balanced machines, including reachstackers, empty container handlers and forklifts have been updated to meet this new standard to ensure that working with a Kalmar machine is as safe as it can be.

For Kalmar, the safety of your drivers and maintenance staff is of critical importance, which is why our machines come with many more safety features fitted as standard than other machines available in the market.

The features listed here come fitted as standard on all Kalmar machines. You can enhance your employees' safety further by fitting your machine with our additional safety options listed on the following pages.



**2-point seat belt.** Ensures that your driver is safe and secure while operating our equipment, all Kalmar machines are equipped with an adjustable 2-point seat belt system.



**3-point Contact System.** Makes sure your drivers are safe when entering or exiting our equipment. All machines are fitted with steps and handles to ensure they can always maintain three points of contact with the vehicle, helping to keep them safe and preventing incidental injuries.



**Double brake pedals/ Dual brake pedals.** To avoid driver leg fatigue, every machine is equipped with dual brake pedals which require only heel to toe movements, allowing the driver to move his foot between the accelerator and brake pedals without having to move their leg.



**Steps with anti-slip protection.** To reduce the risk of your driver slipping or falling on our equipment, all entering and exiting points are fitted with non-slip surfaces giving them extra grip, so your drivers stay safe.



**Control System.** All our equipment is fitted with an electronic Control System for monitoring the machine's different functions while in operation, helping to keep your driver fully informed at all times with up-to-date Operating, Event Controlled and Error Code information.



**Operating information.** Our equipment's Control System provides several operating information menus, which give your operator and maintenance personnel a great insight into the on-going performance of the machine, allowing them to keep it running optimally.



**Event controlled information.** Provided through the Overload Protection System to warn the driver through the equipment's Control System if their load exceeds the specified safety limits.



**Error code information.** Should there be any issue with your equipment while in operation, the electronic control system will immediately alert your driver with the appropriate error code, so they know exactly what is going on and can take appropriate action.



**Display.** Cabins are fitted with a large easy to read display which keeps your drivers fully aware of the machine's on-going performance and any maintenance actions that need to be taken.



**Control Breaker System for load handling.** All of our equipment is fitted with a Control Breaker System, which automatically shuts down the load handling system should a fault occur, until the fault has been corrected. Keeping your driver, equipment and load safe.



**Operator Presence Detection System.** Maintains the highest levels of safety for both the driver and pedestrians, as all our equipment is fitted with an alarm or visual indicator that comes on automatically if:

- The driver does not fasten their seat belt while in operation.
- The driver leaves their seat without engaging the parking brake.

In addition, if the driver leaves their seat while the machine is operational, the transmission is automatically shifted to neutral and load-handling functions are disabled.



**External reverse light.** For the safety of others, all our equipment is equipped with external reversing lights that help the driver keep everyone informed that they are moving backwards.



**LED lights.** These come fitted as standard on all our equipment, providing better visibility when working in reduced light than halogen lights.



**Protection against falling objects.** Cabin roof windows on all our equipment are fitted with high strength materials which can withstand heavy blows, helping to protect your drivers from falling objects.



**Good visibility.** Kalmar cabins provide your drivers with excellent visibility, forwards, upwards, sideways and behind them to help them stay safe while in operation.

# Even more options



A large range of options to make your operations even safer.

## Kalmar has a range of options that make operating your equipment even safer



**Fire Suppression System.** To protect your operator and machine from fire you can fit a Fire Suppression System\* to your machine. The system utilises multiple spray nozzles that release a high pressure water mist where the fire has been detected from a re-chargeable water tank. This can be activated manually or automatically through an in-cabin temperature sensor.



**Alcolock.** To ensure that your driver is at their best when operating your equipment you can install an Alcolock system. This system makes sure that the driver meets alcohol blood level standards before being able to start the machine, much like a breathalyser.



**Reverse Beeper System.** When your staff are working side by side with moving vehicles there is always a safety risk. Installing a reverse beeper system provides a clear acoustic alert when the machine is reversing so personnel can make sure that they are out of harm's way at all times.



**Reverse Warning System.** Knowing what's going on behind you is critical when other personnel are present. Four rear sensors and a reversing camera relay real-time information to an in-cabin display, alerting the driver to any dangers, increasing personnel and driver safety. You can also add additional cameras on the spreaders or on the front of the machine.



**Additional lighting.** Extra lighting, particularly if you operate your machine at night, as you can bring greater operational visibility and safety for personnel working on the site. You can choose additional LED working lamps on specific positions.



**Tyre Pressure Monitoring System.** Helps to reduce the risk of damage and fuel consumption. Bluetooth sensors keep the driver advised of the condition of the tyres continually. Active care of your tyres can result in a 10-40% increase in tyre life.



**Kalmar Safety Cameras.** There are a range of camera solutions available that will enhance the overall safety of your reachstacker when in operation. Cameras extend and enhance the drivers visibility range, record your reachstacker's movements and provide alerts if your reachstacker is at risk of hitting something by using radar. You can choose one solution or combine a number together.



**Safety cage.** An additional safety cage can be fitted around the cabin to provide additional safety for your driver from falling cargo.



**Cabin options.** Depending on your specific needs you can choose from a low or high mounted cabin (+600mm). High cabins provide better visibility for the driver particularly when working with two containers or on high stacks.



**Container Checking System.** The Kalmar Container Checking System makes it easy, fast and safe to identify and report containers that are not safe to handle. By automatically locking the mast and spreader to ensure a secure inspection position which makes the machine inoperable while in inspection mode, it will keep your team safe. The system ensures that damaged containers will be removed from service and not be filled with goods and shipped on, potentially causing issues at the next handling facility. If an insurance claim needs to be raised then this system can also help provide the documented evidence you need to support your claim.

\* Cannot suppress a battery fire.



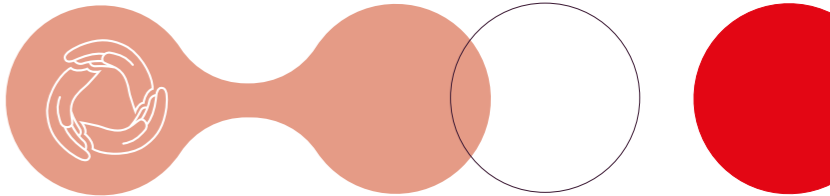
# Keep moving with Kalmar Services

To keep your business moving Kalmar Services offers a range of services that can help you keep your equipment moving optimally.

## Kalmar Care

**Care that keeps your business moving.**  
With Kalmar Care you get a flexible service that's built around your business. Including, the experience and knowledge of Kalmar's dedicated staff, coupled with transparency and increased predictability of costs.

Kalmar Care is available in three different service models: our two customisable contracts – Essential Care and Complete Care – and our flexible solution On Demand Care.



### Service models:



#### Essential Care

A maintenance solution to keep your equipment in an optimal condition.



#### Complete Care

A complete service solution providing piece of mind and maximum equipment uptime.



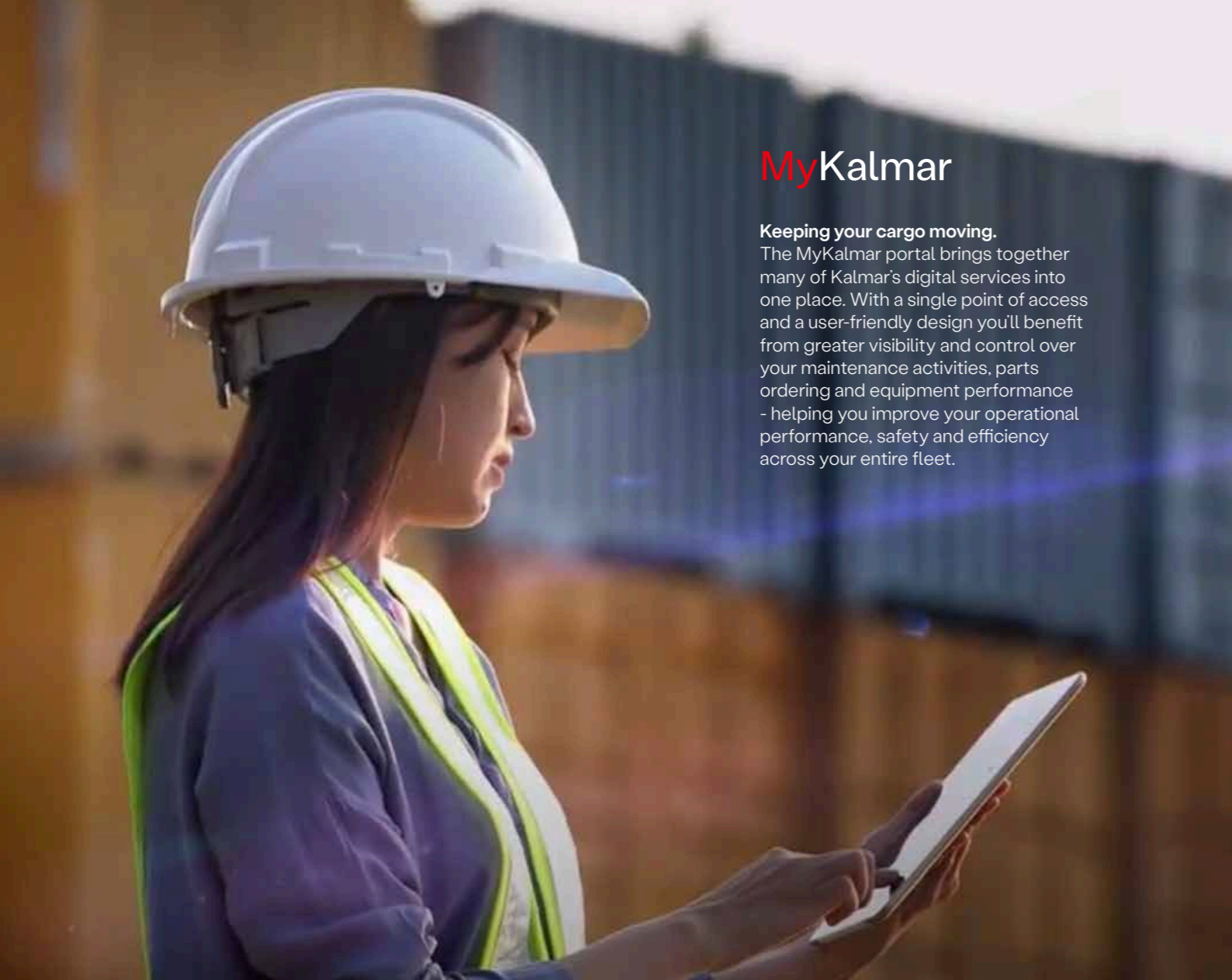
#### On Demand Care

Top-of-the-line service whenever you need it.

Maintenance Planning	●	●
Preventive Maintenance	●	●
Predictive Maintenance		●
Corrective Maintenance		●
Preventive Spare Parts	●	●
Corrective Spare Parts		●
Lubricants	●	●
MyKalmar	●	●
Kalmar Insight	●	●
Tyre Maintenance		●
Battery Maintenance		●

● Included    ● Optional

Top-of-the-line service  
whenever you need it



## MyKalmar

### Keeping your cargo moving.

The MyKalmar portal brings together many of Kalmar's digital services into one place. With a single point of access and a user-friendly design you'll benefit from greater visibility and control over your maintenance activities, parts ordering and equipment performance - helping you improve your operational performance, safety and efficiency across your entire fleet.

## Kalmar Insight

### Optimise your operations with Insight.

Kalmar Insight\* is a performance management tool for cargo handling, which gives you an easy to use overview of your fleet operations, by aggregating data from multiple sources, including equipment built by other manufacturers. Review your entire fleet activities, schedule maintenance activities and

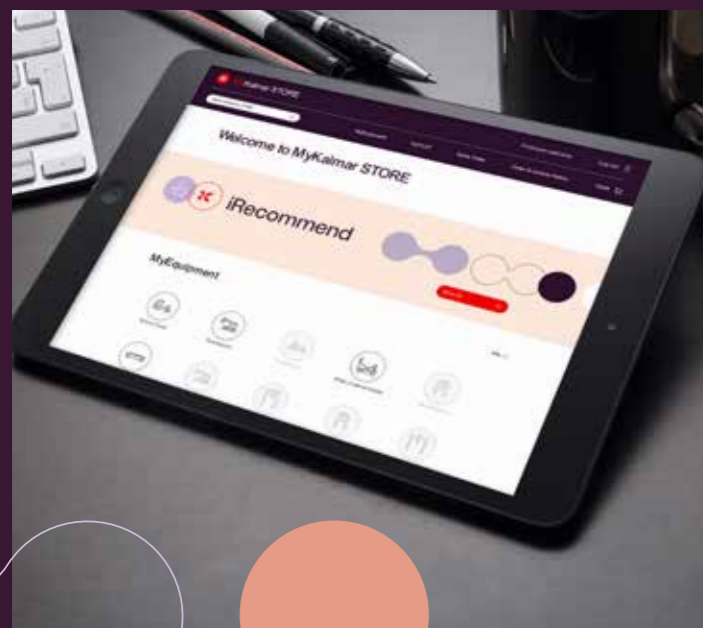
order the required parts automatically. All enabling you to take action on real-time information, that will help improve your overall operations immediately. Kalmar Insight comes fitted and ready to be activated in all new Kalmar equipment, it can also be retrofitted into existing Kalmar equipment or those built by other manufacturers.



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

## MyKalmar STORE

MyKalmar STORE is your one stop shop for all the parts you need which is accessible through MyKalmar. Open 24/7, accessible on any screen and available in different languages, MyKalmar STORE stocks 100s of thousands of Kalmar Genuine Parts at any given time and we can have them delivered quickly to you, no matter where you are in the world. You can search, order and then track your order all through the same application. MyKalmar STORE has been designed to make your life easier.



## Kalmar Training

### Enhance your skills.

To get the most out of your new machine our training centre offers a range of courses for both your technicians and operators. Operators can be taught how to drive the machine for optimum performance and minimum waste, and to learn what needs to be checked daily for optimal safety. Technicians can be educated with the knowledge they need to keep your new equipment in top condition in a safe way. Courses are a mix of theory and hands-on experience.



# Standard\*

ECG90-100ES - Single  
ECG100-110ED - Double

### Norms, standards and regulations according to:

- Machinery Directive 2006/42/EC
- Safety Industrial Trucks ISO 3691-1 & EN 16307-1
- Safety Low & High Lift Trucks ANSI/ITSDF B56.1
- Stability of EC-Handlers ISO 22915-9
- CE-marking for trucks within EU/EEA
- ANSI/ITSDF-marking for North America trucks
- Safety Electrics / Electronics EN 1175:2020
- Noise Emission Directive 2000/14/EC & 2005/88/EC
- Low Voltage Directive 2014/35/EU

### Chassis

- Strong, durable heavy-duty EC-Handler chassis
- High and rear mounted heavy-duty tilt cylinders
- LHS access stairway, with steps and a wide platform
- Low cabin mounting (LCM) at the rear of the truck
- Very good rear end visibility of the truck
- Chassis with full access to the drive line
- Easy-to-open drive line cover plates (low noise)
- Lifting eyes and anchor points (front & rear)
- Towing pin (rear - incasted)
- Easy access to battery, power distribution and connections

### Body

- Steps with anti-slip protection
- 2x Rear view mirrors - rear on front mudguards
- Strong and protective mudguards (front & rear)
- Noise insulation kit for the complete truck

### Steer Axle (rear)

- Kalmar steer axle mounted dual pivot bearings
- Wide track axle with mechanical stops (+3 deg)
- El-servo power steering with double acting cylinder
- Steer axle with narrow turning radius

### Drive Axle (front)

- Kessler planetary axle with differential drive
- Wide track axle for high side stability
- Oil-cooled Wet Disc Brakes (WDB)
- High pressure filter (10 my) for the brakes
- Maintenance-free oil-cooled Wet Disc Brakes (WDB)
- ECG90ES55-87: D81-ND, width 4,1 m.
- ECG100ES55-87: D91-ND, width 4,1 m.
- ECG100ED55-65: D91-ND, width 4,1 m.
- ECG10ED55-65: D91-ND, width 4,1 m.
- ECG100ED55-87: D91-HD, width 4,6 m.
- ECG10ED55-87: D91-HD, width 4,6 m.

### Wheels (Tyres & Rims)

- ECG90-110: Tyres 14.00x24" (4+2)
- Various brands of diagonal, radial and super-elastic tyres

### Powertrain

- BoschRexroth traction motor
- 115 kW cont./ 242 kW max.
- Load handling motor 98 kW cont./ 158 kW max.
- Auxiliary motor 22 kW / 44kW continuous
- Re-generative brake system / energy back to battery
- Electric motors and inverters with active water cooling & heating
- Electric motors are protected inside the chassis

### Power Electrics (670V)

- Electric system voltage 670V (Low Voltage Directive)
- Charging standards CCS charging plugs
- Electric cabinet mounted on chassis with main parts

### Battery (Lithium-ion)

- Lithium-ion integral battery unit, with TMS/BMS
- High capacity NMC-technology, 4000-5000 cycles
- Maintenance-free battery, need equalization-charging with efficiency 90-95%
- Battery capacity: 163 kWh / 2 string
- Battery with passive and active cooling and heating (TMS)
- Battery Management System (BMS) with CanBus
- Charging power: up to 350 kW per unit (1 charger)
- High-power Lithium-ion chargers with CanBus

### Load-Sensing Hydraulics

- Load-sensing variable piston pumps (2x)
- Power-on-demand with high lift & lowering speeds
- Pumps for mast, spreader, brakes & steering
- Vane pumps for brake pressure & oil cooling (2x)
- Return filters for the work hydraulics (2x/10 my)
- Servo filter for the work hydraulics (10 my)
- Pressure filter for hydraulics / brakes (10 my)
- Power steering, power brakes & ORFS-couplings
- Hydraulic tank with cooling, breather filter & ORFS-couplings

### Lift Mast

- Mast design for up to 8-high single & double stacking
- Duplex 2-stage mast with high mounted tilt cylinder
- Strong, durable lift mast, 1 pair of cylinders & chains
- Heavy-duty mast profiles and strong cross members
- Mast with strong mast wheels, bearings & guide pads
- Large diameter shafts / bearing for mast / tilt fixations
- Only 2 oil hoses + 1 electrical cable over the mast
- Mast tilt angles +3 / -3 deg (FW / BW)
- Mechanical tilt indicator on tilt cylinder
- Transport position striping (on lift mast)

### Lift Carriage

- Carriage with strong wheels, bearings & guide pads
- Large sideshift of +600 mm (total stroke 1200 mm)
- 2 fixed twistlocks with indication lamps
- Mechanical Pile Slope by gravity (MPS) 250 mm
- The carriage is connected by the 2 lift chains

### Attachment (ECG90-100 Single Stacker)

- Side lift with hydraulic extension 20'-40'
- 2 twistlocks with indication lamps
- Large sideshift of +600 mm (total stroke 1200 mm)
- Spring loaded floating vertical heads (0-250 mm)
- Safety locking, alignment pins & sensors (2x)
- Lowering interrupt sensors for safe handling

### Attachment (ECG100-110 Double Stacker)

- Side lift with hydraulic extension 20'-40'
- 2 mechanical lift hooks with 2 hydraulic side clamps
- The 2 lift hooks connects the bottom container (I)
- The 2 side clamps connect upper & bottom containers
- 20'-40' containers are locked by the side clamps
- Indication lamps for alignment / locked container (I+II)
- Large sideshift of +600 mm (total stroke 1200 mm)
- Spring loaded floating vertical heads (0-250 mm)
- Safety locking, alignment pins & sensors (4x)
- Lowering interrupt sensors for safe handling

### Electronic System

- OLS1, Over Loading System, monitoring lift with speed limit (pop-up)
- Electronic weight scale in main display
- Speed limit outside drive position (ED)
- Dynamic speed limits on 2 load levels (ED)

### Electrical System 24V

- Battery box 2x12V & main power switch
- Electric service box on chassis (LHS)
- 2 working LED-lights on spreader carriage (lift head)
- 2 working LED-lights on spreader on end beams
- 2 working LED-lights on mast
- 2 working LED-lights front on fenders (head beam)
- 2 working LED-lights rear below cabin (in reverse)
- 2 position LED-lights on each side of the truck
- 2 tail / brake LED-lights rear in counter weight
- 4 blinker LED-lights (front - rear / left - right)
- 2 flashing LED-brake lights (when reversing)
- 1 rotating warning LED-beacon
- Buzzer when reversing (reverse alarm)

### Cabin (EGO)

#### Structure

- Spacious, modern cabin with good ergonomy level
- Large windows, good visibility, in all directions
- Instep handle (left side)
- Sliding window on both sides
- Doors with air damper and key lock (L + R)
- Tinted laminated windows

#### Comfort

- Seat Kalmar, mech. spring, high back
- Adjustable armrest (RHS) & 2-point safety belt
- Inside rear view mirror (right side)
- Interior lights with fade away function
- Fully adjustable steering wheel incl tilt function
- Fully adjustable colour display
- Electric adjustable operational console with joystick, operational buttons & armrest (RHS)
- Power steering wheel with steer knob
- Electric horn
- LED background light for buttons & switches
- Cabin heater via TMS

#### Controls

- Electronic lift levers for mast & spreader functions
- Button for forward-neutral-reverse on 1st lift lever
- Auto rev-up accelelator at lifting / tilting / spreader
- Electric accelerator pedal
- Double brake pedals (L + R)
- Gear lever with electronic hand brake (on/off)
- Multi-function lever LHS (parking brake and gear/ direction switch)
- Combined horn and blinker lever
- Warning - hand brake (on/off) leaving seat
- Hour meter

### Climate

- ECH, electronic controlled heating/ventilation (Electronic climate control)
- Fresh air and recirculation filter
- Wipers/washers on front, rear and roof windows
- Interval wiper functions on front, rear and roof
- Tinted windows
- Extra cabin heater (incl. 1 x 400V outlet)
- Electronic Climate Control (ECC)

### Information systems

- CECS 2.1 Kalmar intelligent control system
- HMI based on TFT-display 4,3" (109 mm)
- Colour display DM430E (automatic fault analysis)
- Menu control with toggle wheel & push buttons

### ECO Drive Modes (EDM):

- Power mode
- Normal mode (default setting)
- Economy mode

### Operator menu:

- System voltage
- Travelling speed (km/h or m/h)
- Combined hydraulic and brake oil temperature
- Clock and date
- Operating time (hours)
- Service time indicator (hours)
- Electronic weight scale functions
- Status of heating system & AC system
- Service indicator
- Container counter with reset function
- Trip computer / statistics
- Head-Up display for twistlock indication:
- LED indicators for alignment & container(s)

### Various warning light & signals:

- Charging battery
- Low brake pressure
- Failure indicator
- Hydraulic and brake oil temperature
- Low washer fluid level
- Low coolant level battery
- Low coolant level electrical components
- High coolant temp battery
- High coolant temp electric components
- Low power battery volt level
- Low/high battery cell temp
- Low/high battery cell volt level/unbalanced power battery

### Indicator lamps:

- Head beam
- Direction indication
- Parking brake

### Fleet Management

- Equipped with telemetric hardware for Kalmar Insight

### Colour

- Cabin: Iron-Grey RAL 7011
- Chassis, tanks & mudguards: Red RAL 3000
- Boom, attachment & axles: Black RAL 7021
- Rims: Iron-Grey RAL 7011

### Documentation and Decals

- Load chart diagram inside cabin
- Machine data sign on chassis incl. load chart
- Warning, tyre pressure & oil pressure stickers
- Information & levers/joystick stickers
- Fuse diagram
- Instruction manual
- Maintenance manual
- Spare parts catalogue

### Warranty

- Base machine (excl. battery) 24 months / 4000 hours
- Battery warranty 5 years or defined kWh

# Options\*

ECG90-100ES - Single  
ECG100-110ED - Double

### Chassis/Body

- ES Empty Single Stacker
- ECG 90-50 ES (L3=5000 mm)
- ECG 100-50 ES (L3=5000 mm)
- ED Empty Double Stacker
- ECG 100-50 ED (L3=5000 mm)
- ECG 110-50 ED (L3=5000 mm)

### Lift Mast

- Duplex E5 (5-high 8'6" / 5-high 9'6")
- Duplex E6 (6-high 8'6" / 5-high 9'6")
- Duplex E7 (7-high 8'6" / 6-high 9'6")
- Duplex E8 (8-high 8'6" / 7-high 9'6")
- Triplex E6 (6 of 8'6" / 5 of 9'6") max 10 T
- Triplex E7 (7 of 8'6" / 6 of 9'6") max 10 T
- Container checker device in carriage

### Cabin

#### Structure

- Low mounted cabin (LCM) with dual access stairways & upper platforms
- High mounted cabin (HCM), +600 mm, improved visibility, single or dual access stairways & upper platforms
- Hydraulic tilting cabin (stroke 10 degrees)
- Globetrotter cabin, +200 mm, ledge mount windows
- Safety cage to protect cabin from falling cargo

#### Comfort

- Various seat alternatives
- Head rest for the seat
- Armrest with adjustment (LHS )
- Horizontal dampening/suspension of seat
- Extra trainer seat incl 2-p safety belt (LHS)
- Bracket for terminal and monitor (RHS)
- Writing pad, A4 paper box and reading lamp (RHS)
- Extra rear view mirror (inside cabin / left side)

#### Controls

- EGO joystick (G-generation)
- Mini-wheel steering incl switch for forward/reverse
- Safety override for hydraulic functions (by code)

#### Climate

- AC/ECC switched off when door is open
- Sun visor front window (black net)
- Sun visor roof window (black net)
- Sun visor rear window (black net)
- Sun visor roof window (reflective film)

### Powertrain

- 163 kWh battery 17,5Ah (nominal capacity)
- 293 kWh battery 21Ah (nominal capacity)
- 391 kWh battery 21Ah (nominal capacity)
- Stronger/wider drive axle, Kessler D91 width 4600 mm

### Hydraulics

- Hydraulic mast accumulator (shock dampening)
- Mast tilt angles +3 / -6 deg (FW / BW)
- Mast tilt angles +2 / -3 deg (FW / BW)
- Hydraulic longlife fine filter with by-pass (3 my)
- Block valve mounted on lift cylinders

### Electronic System and Settings

- OLS3, Over Loading System, cut lift with speed limit (pop-up)
- Lift height limitation
- Lift height warning over defined height (specify height)
- Speed limitation (specify speed)
- Speed limit over defined lift height (specify height)
- Speed limit outside drive position (ES)
- Dynamic speed limit depending of lift height
- Dynamic speed limit on 2 load levels (ES)

### Electrical System 24V

- 2 extra working LED-lights on mudguard
- 4 extra working LED-lights on mudguard
- 2 extra working LED-lights on cabin roof
- 4 extra working LED-lights on cabin roof
- 6 extra working LED-lights on cabin roof
- 8 extra working LED-lights on cabin roof
- 2 extra working LED-lights on mast
- 2 extra working LED-lights on carriage
- 2 extra reverse LED-lights on counter weight
- 1 extra warning LED-beacon the top of the mast
- Radio with MP3, Bluetooth, speakers (24V)
- DAB-Radio with CD, MP3, Bluetooth, speakers (24V)
- 2 x 24V sockets and 2 x 12V sockets in cabin
- 2 x 24V sockets and 2 x 5V / USB sockets in cabin
- Electric air pressure horn

### Lift Carriage

- Automatic extension 20'-30'-40' stop
- Soft landing by inductive sensor (on twistlocks only)
- Hydraulic Pile Slope by cylinders (HPS +5 deg), the MPS with 0-250 mm end beam levelling is included
- All trucks has full lifting capacity with MPS & HPS
- Available for both single and double stackers

### Attachment (ECG90-100 Single Stacker)

- Twistlock spreader for wide body (TWL-WTP)
- Spreader standard / wide body container
- Standard / wide body containers are 8' / 8,5' wide
- 2 lift heads with Wide Twistlock Position (WTP)
- Hydraulic moveable twistlocks (stroke 76 mm/3")

### Attachment (ECG100-110 Double Stacker)

- Hook, clamp & safety wedge double spreader
- Lift heads with lift hook and hydraulic side clamp
- Hydraulic safety wedge for bottom container lock
- Active safety locking of 45'-53' single containers
- 45'-53' containers are locked by safety wedge (SW)
- Dedicated Hydraulic Pile Slope (HPS) is included, no mechanical end-beam levelling is included
- Side lift with hydraulic extension 20'-40'
- 20'-40' containers are locked by the side clamps
- Indication lamps for alignment / locked container (I+II)
- Large sideshift of +600 mm (total stroke 1200 mm)
- Safety locking, alignment pins & sensors (4x)
- Lowering interrupt sensors for safe handling

### Steer Axle (rear)

- Wheel nut protection on steer tyres

### Wheels

- Spare wheel & rim 14.00×24" of various brands

### Additional equipment

- Reverse display inside cabin (7"/17 cm)
- Reverse camera connected to display in cabin
- Spreader cameras (2x) connected to display in cabin
- Reverse warning system (camera, display & sensors)
- Tyre pressure monitoring system (Bluetooth)
- Alcolock Draeger in cabin
- Fire extinguisher 5-6 kg, powder
- Central greasing base machine
- Central greasing spreader
- Chain greaser with replaceable cartridge
- Kalmar Insight solutions
- Soft landing function with ultrasonic sensor (only for single stacking spreader)

### Fleet Management

- Kalmar Insight licence (only in certified countries)
- Kalmar Insight Driver Monitor (RFID reader + 10 unique driver tags)
- Kalmar Insight extra monitoring tags

### Colour

- Other colour than standard - on chassis
- Other colour than standard - on cabin
- Other colour than standard - on rims
- Reinforced anti-corrosion protection (extra primer)

### Training

- Contact Kalmar Training Centre for training programs

### Warranty

- Additional warranty packages available:
  - Gold (complete EC-Handler): max 5 yr/10.000 hours
  - Silver (drive line): max 8 yr/16.000h
  - Bronze (structural parts): max 10 yr/20.000 hours
  - Cobalt (battery + charger): up to 8 yr/16.000 hours
- Contact Kalmar for more information

Note:

\* Data is preliminary and is subject to change.

Specifications\*

				ECG90-50ES				
MODELS LIFTING CAPACITY		Stacking model and height			ES5/5	ES6/5	ES7/6	ES8/7
		Type of handling			Single stackers			
		Lifting capacity, rated		kg	9000	9000	9000	9000
		Stacking height, no. of containers (8'6" / 9'6")			5 - 5	6 - 5	7 - 6	8 - 7
MAIN DATA		Spreader locking type, standard / optional			Standard: Twistlocks / optional: Twistlocks + WTP (76 mm)			
		Spreader type, extension stops, sensors			Sidelift, 20' + 40' stops, alignment & interrupt sensors			
		Wheelbase	L3	mm	5000			
		Load centre, front of tyres	L2	mm	1210 - 1280			
		Lost load centre, to front face of tyres		mm	700			
DIMENSIONS		Truck length (to attachment front)	L	mm	7400			
		Distance, centre drive axle - attachment face front	L2	mm	1210			
		Truck width (over tyres)	B	mm	4100 - 4500			
		Roof height cabin (basic machine)	H6	mm	Low built: 4000 / High built: 4600			
		Seat height EGO	H8	mm	Low built: 2860 / High built: 3460			
		Track (c-c), front / rear	S1-S2	mm	3270 - 2450			
		Turning radius, inner / outer 20ft / outer 40ft (mm)	R1-R2-R3	mm	1250 / 7450 / 9700			
		Min. aisle width for 90° stacking, 20ft container - 40ft container (mm)	A1-A2	mm	10850 - 14350			
		Ground clearance, min	G	mm	300			
LIFTING EQUIPMENT		Lift mast, type, stage, cylinders and chains			Duplex / 2-stage / 2 cylinders / 2 lift chains			
		Lifting height	H4	mm	15300	16300	18800	21300
		Mast height, min	H3	mm	8600	9100	10350	11600
		Mast height, max	H5	mm	15100	16100	18600	21100
		Mast tilt, forward – backward	alfa-beta	°	3 - 3			
		Spreader width, twistlocks / hooks, (min - max)	Va-Vb	mm	6085 - 12220			
		Spreader sideshift, stroke both directions (total)	V1	mm	±600			
WEIGHTS	Service weight		L4	kg	35 800	36 400	37 900	39 400
	Axle load front	Unloaded		kg	TBD			
		At rated load		kg	TBD			
	Axle load rear	Unloaded		kg	TBD			
		At rated load		kg	TBD			
WHEELS	Wheels	Number of wheels, front – rear (x = driven)			4 – 2			
	Tyres	Pneumatics, type / pressure (front - rear)			Tubeless - Diagonal - E4			
		Dimensions, front – rear		tum	14.00×24" - 14.00×24"			
	Rims	Dimensions, front – rear		tum	10.00x24" - 10.00x24"			
AXLES	Steer axle	Manufacturer, type - designation			Electro-hydraulic servo - steering wheel with orbitrol			
	Drive axle	Manufacturer, type - designation			Kessler D81 / D91 - Differential and hub reduction			
	Service brakes	Type – affected wheels			Wet disc brakes - Drive wheel			
	Parking brake	Type – affected wheels			Spring brake - Drive wheel			
HYDRAULICS		Brand, type			Bosch Rexroth - axial piston variable displacement / Mains vales parker			
		Load handling function			Electro hydraulic control			
		Hydraulic pressure		lt	20 - 25			
		Hydraulic oil volume		lt	352			

ECG100-50ES				ECG100-50ED				ECG110-50ED			
ES5/5	ES6/5	ES7/6	ES8/7	ED5/5	ED6/5	ED7/6	ED8/7	ED5/5	ED6/5	ED7/6	ED8/7
Single stackers				Double stackers				Double stackers			
10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	11 000	11 000	11 000	11 000
5 - 5	6 - 5	7 - 6	8 - 7	5+1 - 5+1	6+1 - 5+1	7+1 - 6+1	8+1 - 7+1	5+1 - 5+1	6+1 - 5+1	7+1 - 6+1	8+1 - 7+1
Standard: Twistlocks / optional: Twistlocks + WTP (76 mm)				Standard: Hooks + Clamps / optional: STD + Safety Wedge				Standard: Hooks + Clamps / optional: STD + Safety Wedge			
Sidelift, 20' + 40' stops, alignment & interrupt sensors				Sidelift, 20' + 40' stops, alignment & interrupt sensors				Sidelift, 20' + 40' stops, alignment & interrupt sensors			
5000				5000				5000			
1210 - 1280				1210 - 1280				1210 - 1280			
700				700				700			
7400				7400				7400			
1210				1210				1210			
4100 - 4500				4100 - 4600				4100 - 4600			
Low built: 4000 / High built: 4600				Low built: 4000 / High built: 4600				Low built: 4000 / High built: 4600			
Low built: 2860 / High built: 3460				Low built: 2860 / High built: 3460				Low built: 2860 / High built: 3460			
3270 - 2450				3270 - 2450				3270 - 2450			
1250 / 7450 / 9700				1250 / 7450 / 9700				1250 / 7450 / 9700			
10850 - 14350				10850 - 14350				10850 - 14350			
300				300				300			
Duplex / 2-stage / 2 cylinders / 2 lift chains				Duplex / 2-stage / 2 cylinders / 2 lift chains				Duplex / 2-stage / 2 cylinders / 2 lift chains			
15300	16300	18800	21300	15300	16300	18800	21300	15300	16300	18800	21300
8600	9100	10350	11600	8600	9100	10350	11600	8600	9100	10350	11600
15100	16100	18600	21100	15100	16100	18600	21100	15100	16100	18600	21100
3 - 3				3 - 3				3 - 3			
6085 - 12220				6615 - 12750				6615 - 12750			
±600				±600				±600			
38 500	39 100	40 600	42 100	38 900	39 500	41 000	42 500	40600	41200	42700	44200
TBD				TBD				TBD			
TBD				TBD				TBD			
TBD				TBD				TBD			
TBD				TBD				TBD			
4 – 2				4 – 2				4 – 2			
Tubeless - Diagonal - E4				Tubeless - Diagonal - E4				Tubeless - Diagonal - E4			
14.00×24" - 14.00×24"				14.00×24" - 14.00×24"				14.00×24" - 14.00×24"			
10.00x24" - 10.00x24"				10.00x24" - 10.00x24"				10.00x24" - 10.00x24"			
Electro-hydraulic servo - steering wheel with orbitrol				Electro-hydraulic servo - steering wheel with orbitrol				Electro-hydraulic servo - steering wheel with orbitrol			
Kessler D81 / D91 - Differential and hub reduction				Kessler D81 / D91 - Differential and hub reduction				Kessler D81 / D91 - Differential and hub reduction			
Wet disc brakes - Drive wheel				Wet disc brakes - Drive wheel				Wet disc brakes - Drive wheel			
Spring brake - Drive wheel				Spring brake - Drive wheel				Spring brake - Drive wheel			
Bosch Rexroth - axial piston variable displacement / Mains vales parker				Bosch Rexroth - axial piston variable displacement / Mains vales parker				Bosch Rexroth - axial piston variable displacement / Mains vales parker			
Electro hydraulic control				Electro hydraulic control				Electro hydraulic control			
20 - 25				20 - 25				20 - 25			
352				352				352			

Notes:  
\* Data is preliminary and is subject to change.

Powertrain\*

			ECG90-50ES	ECG100-50ES	ECG100-50ED	EC110-50ED
MODELS	Wheelbase (L3)	mm	5000	5000	5000	5000
MOTOR	Manufacturer - motor / inverter brand		Bosch-Rexroth / eLion range / CanBus			
	Motor - model / type		AC / Permanent Magnet Synchronous Motor			
	Motor - Inverter, type of cooling		Water-based cooling			
	Protection rating (IP-rating)		IP6K7 and IP6K9K			
	Regenerative brake function		Yes / charging of battery			
	Acceleration settings / power programming		In 10 steps (1 - 10)			
	Retardation settings / brake programming		In 10 steps (1 - 10)			
	Traction drive motor, max power (S1 continuous duty) @ rated speed	kW	115			
	Traction drive motor, max power (S2 short time duty) @ rated speed	kW	242			
	Hydraulic pump motor, max power (S1 continuous duty) @ rated speed	kW	98			
	Hydraulic pump motor, max power (S2 short time duty) @ rated speed	kW	158			
	Auxiliary motor, max power (S1 continuous duty) @ rated speed	kW	22			
	Auxiliary motor, max power (S2 short time duty) @ rated speed	kW	44			
TRANSMISSION	Manufacturer - transmission brand		Bosch-Rexroth			
	Transmission - type designation		1-speed / speed reduction			
	Manufacturer - drive axle brand		Kessler			
	Drive axle - type designation		D81-P489 std D91-PL489 Wide differential + hub reduction			
	Energy consumption, normal driving, average values*	kWh/h	25 - 40			
	Energy consumption, according EN16796	kWh/h	TBD			
BATTERY	Battery technology / type		Lithium-ion - NMC (LiNiMnCoO2)			
	Battery unit, cooling / heating		Water-based cooling / heating			
	Battery capacity	kWh	163			
	Battery usable capacity	kWh	139			
	Optional battery capacity	kWh	293 / 391			
	Optional usable battery capacity	kWh	210 / 314			
	System nominal voltage	V	666			
	Charging inlet capacity (max)	kW	350 (continuous)			
	Charging inlet standard		CCS2			
	Charging heater connection	A	400V / 32A / 3-PHASE / NE			
Control system battery, voltage – capacity		(V / Ah)	2x12 / 135 -145			

Notes:  
\*Technical data is preliminary and is subject to change.  
Energy consumption; low, medium or high intensity duty cycles.

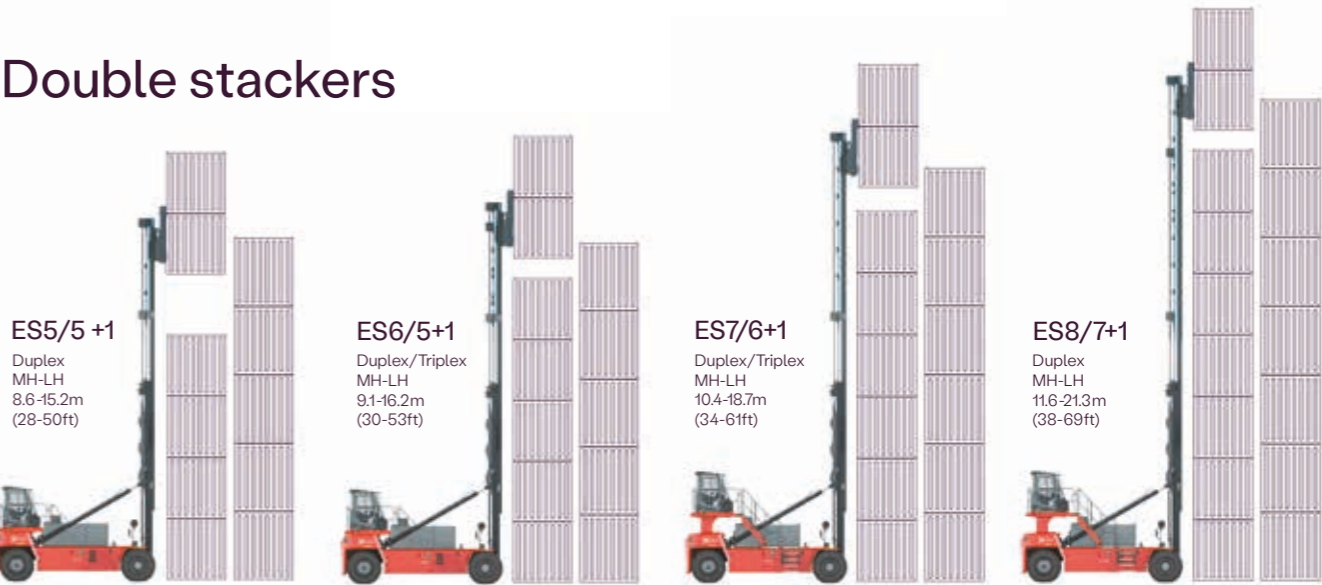
Lifting capacity

Single stackers



- Our single stackers can lift:
- 20', 30' or 40' containers picking up in the 20', 30' or 40' position.
  - 45', 48' or 53' containers picking up in the 40' position.
  - Can place 8'6 container up to 8 high and 9'6 container up to 7 high.
  - Lifting options 5/5, 6/5, 7/6 or 8/7 high.

Double stackers



- Our double stackers can lift:
- Single or double 20', 30' or 40' containers picking up in the 20', 30' or 40' position.
  - 45', 48' or 53' containers picking up in the 40' position.
  - Can place two 8'6 containers up to 8+1 high and 9'6 containers 7+1 high, with up to a 10 tonne capacity for the top container and up to 11 tonne for the lower container.
  - Lifting options 5/5, 6/6, 7/6 and 8/7.

Performance\*

				ECG90-50ES			
MODELS				ES5/5	ES6/5	ES7/6	ES8/7
SPEEDS	Travel speed, forward - reverse	Unloaded	km/h	25 - 25			
		At rated load	km/h	19 - 19			
	Lifting speed	Unloaded	m/s	0.6			
		At 70 % of rated load	m/s	0.6			
	Lowering speed	Unloaded	m/s	0.55			
		At rated load	m/s	0.57			
POWER	Gradeability, boost function (max)	Unloaded	%	24	23	22	21
		At rated load	%	19	18	18	17
	Gradeability, 1-5km/h (Cont)	Unloaded	%	16	15	15	14
		At rated load	%	12	12	12	11
	Drawbar pull, boost function (max)		kN	83.9			
	Drawbar pull, 1-5km/h (Pwr)		kN	57.2			
SOUND	Noise level, inside EGO cabin	EN12053, LpAZ	dB(A)	60 – 61			
	Noise level, outside	EN12053, LWAZ	dB(A)	97 – 98			
	Noise level, outside	2000/14/EC, LWAZ	dB(A)	99 – 101			

ECG100-50ES				ECG100-50ED				EC110-50ED			
ES5/5	ES6/5	ES7/6	ES8/7	ED5/5	ED6/5	ED7/6	ED8/7	ED5/5	ED6/5	ED7/6	ED8/7
25 - 25				25 - 25				25 - 25			
19 - 19				19 - 19				19 - 19			
0.6				0.6				0.6			
0.6				0.6				0.6			
0.55				0.55				0.55			
0.57				0.57				0.57			
22	21	21	20	22	21	20	20	21	20	20	19
17	17	16	16	17	17	16	16	16	16	15	15
15	14	14	13	14	14	14	13	14	14	13	13
11	11	11	11	11	11	11	10	11	11	10	10
83.9				83.9				83.9			
57.2				57.2				57.2			
60 – 61				60 – 61				60 – 61			
97 – 98				97 – 98				97 – 98			
99 – 101				99 – 101				99 – 101			

Note:  
\* Data is preliminary and is subject to change.





Kalmar

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