

# Kalmar 5 – 9 tonnes Challenging your expectations



# Power and precision

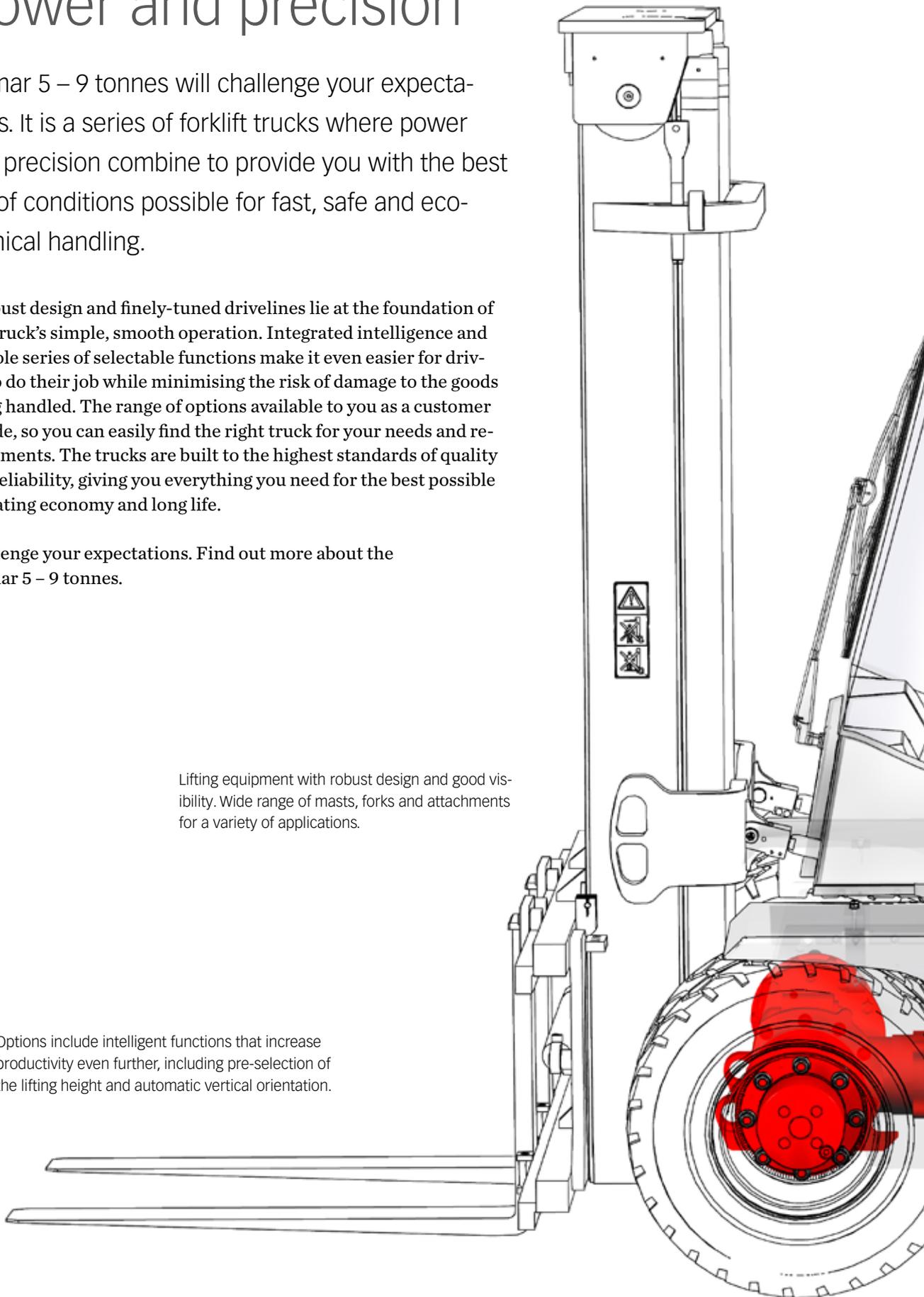
Kalmar 5 – 9 tonnes will challenge your expectations. It is a series of forklift trucks where power and precision combine to provide you with the best set of conditions possible for fast, safe and economical handling.

A robust design and finely-tuned drivelines lie at the foundation of this truck's simple, smooth operation. Integrated intelligence and a whole series of selectable functions make it even easier for drivers to do their job while minimising the risk of damage to the goods being handled. The range of options available to you as a customer is wide, so you can easily find the right truck for your needs and requirements. The trucks are built to the highest standards of quality and reliability, giving you everything you need for the best possible operating economy and long life.

Challenge your expectations. Find out more about the Kalmar 5 – 9 tonnes.

Lifting equipment with robust design and good visibility. Wide range of masts, forks and attachments for a variety of applications.

Options include intelligent functions that increase productivity even further, including pre-selection of the lifting height and automatic vertical orientation.



The best driver environment on the market is now even better, and is fully adapted to today's requirements. Three different concepts mean that you can choose the one that best meets your needs.

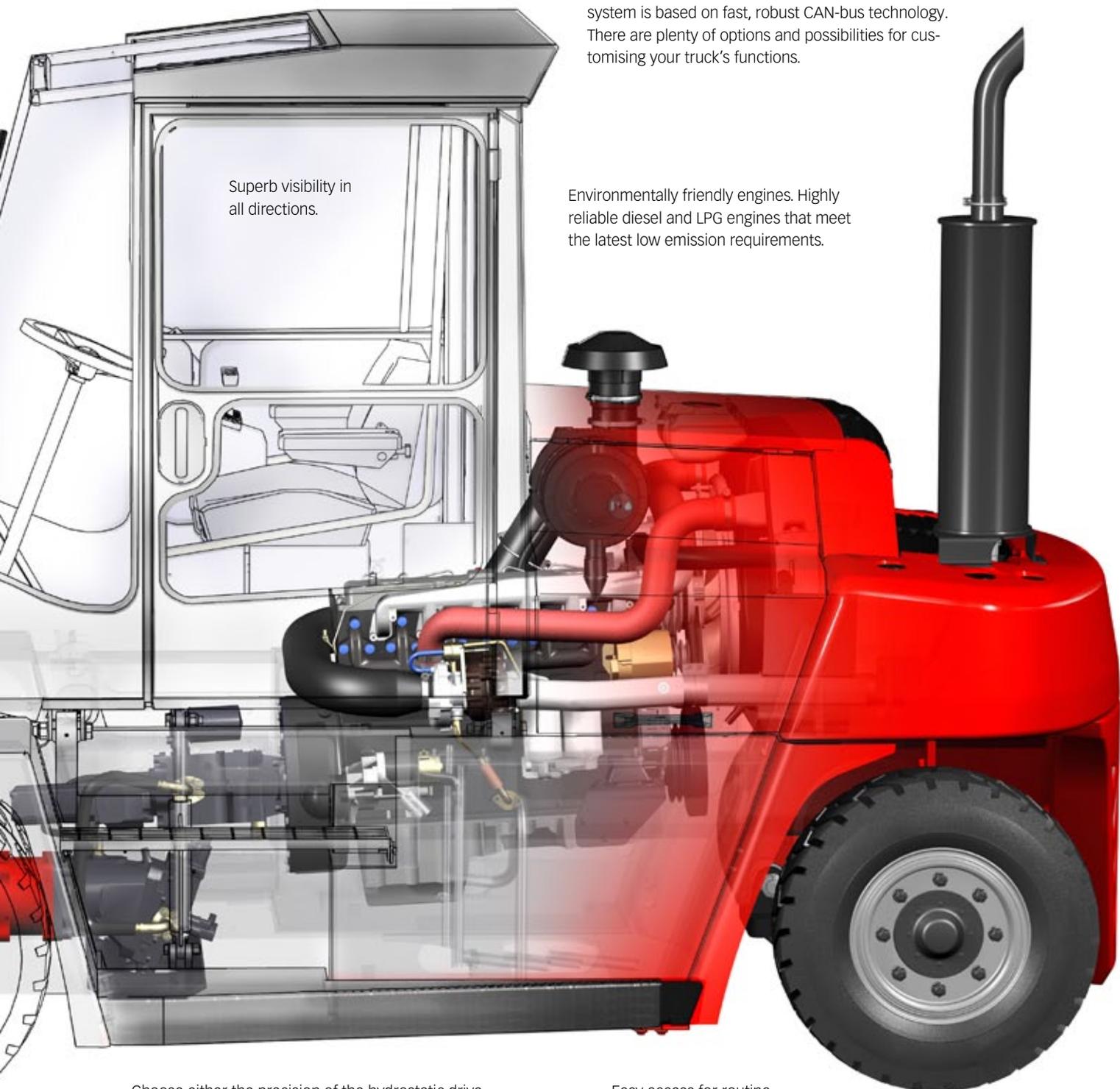
The well proven, Kalmar developed, KCS control system is based on fast, robust CAN-bus technology. There are plenty of options and possibilities for customising your truck's functions.

Superb visibility in all directions.

Environmentally friendly engines. Highly reliable diesel and LPG engines that meet the latest low emission requirements.

Choose either the precision of the hydrostatic drive or a robust and reliable gearbox, or electric power for whisper-quiet operation and no exhaust emissions.

Easy access for routine maintenance and servicing.



# Three concepts for your unique driver environment

Kalmar offers the best driving environment on the market. The Kalmar 5 – 9 tonnes is available in no less than three different concepts, all with Kalmar's unique visibility, ergonomics and efficiency.

## **Spirit Delta**

This driver environment, based on extensive research, has become the norm for the highest standards of comfort and ergonomics. A wide range of setting options, full control of all the truck's functions within easy view and reach, and optimum visibility in all directions mean the driver environment is made for efficiency. The new Spirit Delta is now also wider, allowing more space for mounting computers and communication equipment, for example.

## **Spirit Delta Space**

The design of the Spirit Delta Space is based on input from our customers. It provides the best possible space, safety and comfort. The concept is a more spacious version of Spirit Delta, and includes a fully variable rotating operator's seat with the pedals, steering column, instruments,

levers, controls and any additional equipment all following the rotation. The available space and the wide range of additional equipment mean that it is easy for you to customise the driver environment to your application.

## **FlexCab/FlexGuard**

FlexCab and FlexGuard comprise an exceptionally robust option. FlexCab is a complete cabin that can be adapted to an open safety cage, FlexGuard, with or without windscreens, doors and heating system depending on the climate and operating environment. FlexCab and FlexGuard provide excellent driver ergonomics and superb visibility in all directions. The strong frame of profiled beams is designed to allow optimum visibility in all directions. The interior is light, airy and robust, with generous headroom.



The space inside the Spirit Delta Space can only be described as extensive. Here's the driver able to survey the load and handling, with plenty of space for extra equipment, and with unimpeded visibility in all directions.



There's a full range of options available for Spirit Delta and Spirit Delta Space for improved ergonomics and handling, such as a joystick for controlling all the hydraulics.



Spirit Delta has extra width for more space for installing additional equipment.



The ergonomics of Spirit Delta are first class, with all controls and instruments easy to survey.



FlexCab is a robust and efficient driver environment that can easily be adapted to a FlexGuard safety cage.



The rotating driver's seat in the Spirit Delta Space provides optimum ergonomics and improved handling safety. The steering wheel, instruments and controls all rotate with the seat, allowing the driver to easily and safely operate the truck forwards or backwards.



# Integrated, fast and user-friendly – we call it KCS

Every Kalmar truck is built from the ground up for efficient handling, with components that work seamlessly together to ensure optimum driveability and safe lifting. KCS, Kalmar's own proprietary electronic control system for improved safety and efficiency, is fitted as standard on all trucks.

The KCS system uses fast processors and modern CAN-bus technology to give top performance and extremely high operational reliability. Information is presented on a clear display on the steering wheel panel, using a simple, language-independent interface. Function buttons make it easy to navigate between menus to get information fast, or make settings for the truck's functions.

KCS has many options, and all of them are fully integrated with the other functions of the truck.

## Examples include:

- Joystick control and mini steering wheel mounted in the arm rest for easy and safe manoeuvring of the truck with great ergonomics for the driver.
- Automatic vertical orientation, allowing the user to ensure that the load is being held vertical simply by pressing a button.
- Lifting height pre-selection with 15 height presets, making it simple to rapidly arrive at the correct lifting height.
- Chain slack protection, which prevents unwanted travel of the forks or attachments.



KCS is Kalmar's own electronic control system, developed in-house. CAN-bus technology and fast processors give high performance and safety.



Joystick control or a mini steering wheel in the arm rest mean great ergonomics for the driver.



All options are integrated with the other functions of the truck, and are easily controlled by the driver.

# Gearboxes for heavy-duty handling and low emissions

The gearbox models have a capacity of 6 to 9 tonnes and are extremely powerful and robust – built for very demanding industrial applications. The new diesel and LPG engines all run softly with low noise levels, low fuel consumption and low emissions that meet the latest requirements.

## **Turbo-charged and environmentally friendly engines**

Two new turbo-charged Perkins engines – one with four cylinders and one with six cylinders – deliver impressive torque at low engine speeds. The result is smooth operation with fast acceleration and efficient handling. In addition, they are highly fuel-efficient and require very little maintenance, resulting in excellent operation economy. Emissions are low, and exceed the Stage 3 requirements.

## **Purpose-built LPG engine**

The new LPG engine from GM was designed from scratch for LPG fuel, resulting in high reliability and low fuel consumption. The engine is a V8, delivering excellent performance and great feel for smooth handling.

It is also very quiet, with low exhaust emissions.



Electronic inching is available as an option, controlled by the KCS. Inching allows precision operation even while maintaining high engine speeds for efficient lifting.



The new turbo-charged diesel engines deliver excellent performance with low exhaust emissions that meet the Stage 3 requirements.



An effective particle filter is available as an option, reducing emissions to an absolute minimum.





# Efficient electric trucks right up to 9 tonnes

Kalmar is the undisputed market leader in electric trucks with capacities between 5 and 9 tonnes. The perfect choice when environmental considerations and low noise levels are important, for example, for indoor use. With their highly efficient motors controlled by intelligent electronics, the new electric trucks are extremely easy to operate, offering high precision and superior performance. Their high battery capacity and very robust basic design make them very reliable and ensure that they have a long service life.

## **Twin electric motors**

Kalmar's electric trucks have twin electric motors: one for driving and one for the lifting hydraulics. This, combined with a fully electronic control system, provides improved driving characteristics with smooth transitions when starting and stopping, and rapid responses to the driver's actions.

The battery is located behind the cabin to be easily accessible for servicing, and so that the driver does not have to sit right next to the power source. Battery capacity is high and the truck can operate for long periods, even when lifting heavy loads.



Reliable electronics with heavy duty cooling for high operational reliability even in very demanding applications.



Battery replacement system where the battery either slides out along tracks, or has slots for forklift, increases the truck's operational availability.



The electric motors are highly efficient, and are controlled by advanced electronics for the longest possible operating times and best driving characteristics.

# Hydrostatic drive for maximum precision

Our trucks with hydrostatic drive have a capacity of 5 to 9 tonnes, with superb driving characteristics and maximum precision. Hydrostatic drive delivers fast, safe and efficient handling because the speed and lifting functions of the truck are entirely independent of each other, making it possible to inch the truck forward while lifting at full power.

The new turbo-charged diesel engines have low noise levels and low exhaust emissions that meet the latest requirements. Very good overall economy is guaranteed by low fuel consumption, long intervals between servicing and high reliability.

## **Integrated electronics...**

The newly-developed hydrostatic drive is electronically controlled by Kalmar's proprietary control system, KCS. The engine, the hydrostatic transmission and the hydraulics are integrated in the one system, delivering high performance and excellent operational reliability. Newly developed software and fast computers return instant responses

to the operator. The engine brake can be adjusted to one of nine different settings, from soft braking (similar to a gearbox truck) to braking at full force. The options are many, making it possible for you to customise the truck's functions to improve productivity, safety and operator ergonomics.

## **...or mechanical control**

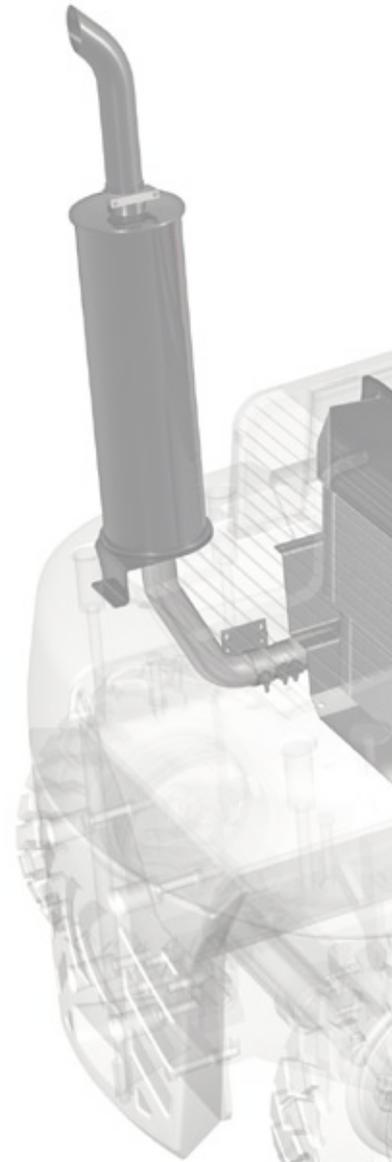
Our trucks that use a conventional mechanically-controlled hydrostatic drive offer superior driving characteristics, high precision and excellent reliability. They are exceptionally reliable, with a long service life and require only minimal servicing.



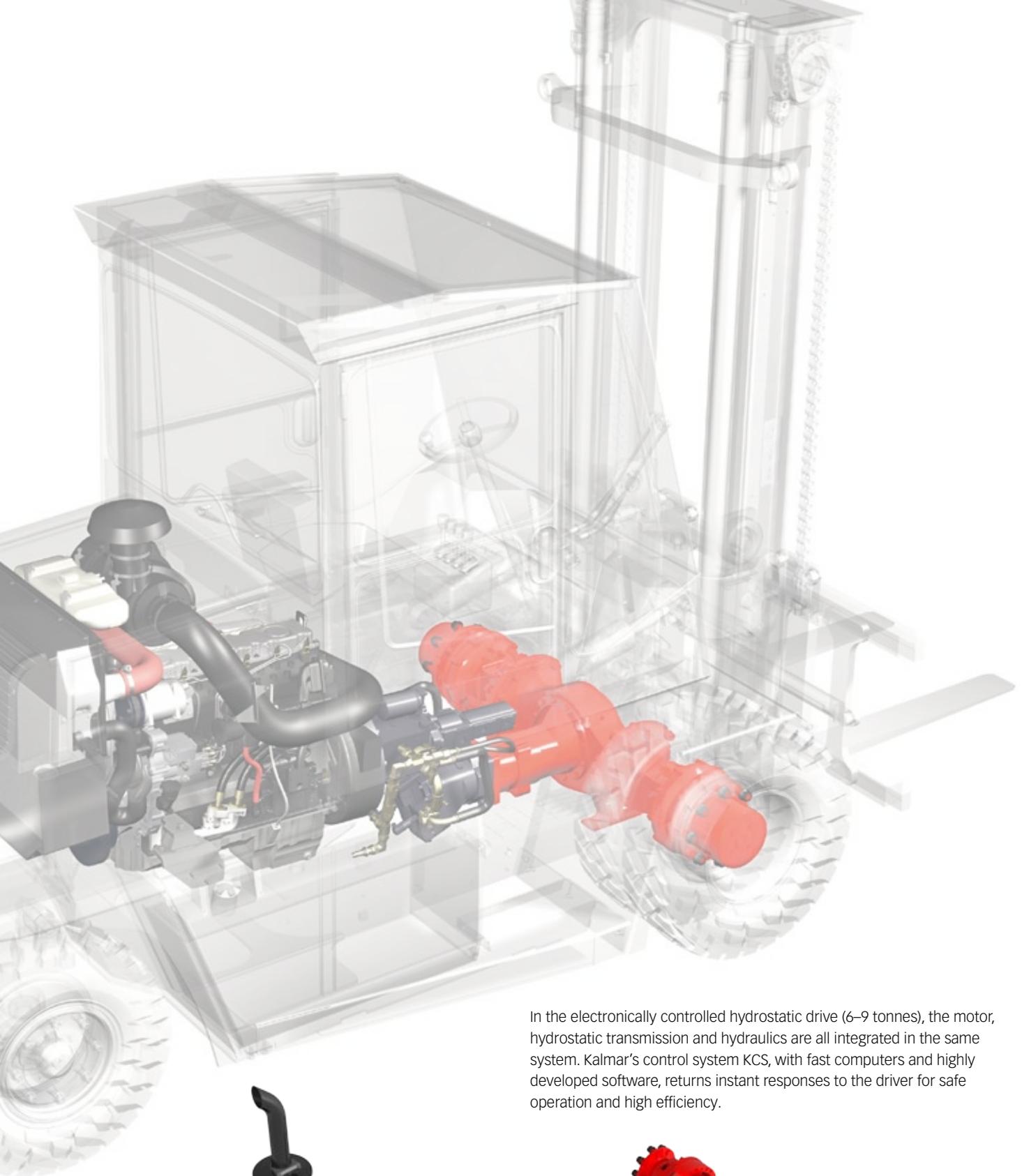
The engine brake can be adjusted to one of nine settings, from soft to full force.



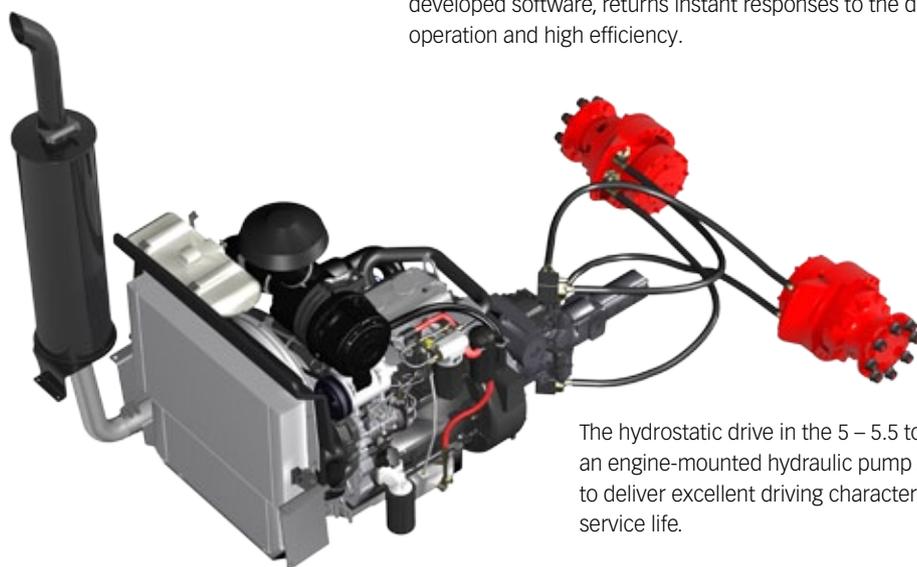
Dual pedals for forwards and backwards let the driver manoeuvre the truck quickly and safely, and ergonomically.



Robust design with long intervals between servicing means high reliability and great overall economy.



In the electronically controlled hydrostatic drive (6–9 tonnes), the motor, hydrostatic transmission and hydraulics are all integrated in the same system. Kalmar's control system KCS, with fast computers and highly developed software, returns instant responses to the driver for safe operation and high efficiency.



The hydrostatic drive in the 5 – 5.5 tonne model uses an engine-mounted hydraulic pump and wheel motors to deliver excellent driving characteristics and a long service life.



The large inspection hatches are easily accessible at working height, making routine maintenance quick and easy.



Double seals in the hydraulic cylinders and ORFS fittings minimise the risk of leakage.





# Clearly cost-effective

The Kalmar 5 – 9 tonnes series was developed from the start to provide reliable operation and a long service life with a minimum of downtime.

This has been achieved partly through technical solutions and components, but also by eliminating built-in stresses in the truck itself that generate unnecessary wear and thereby increase costs.

## **Easy inspection and servicing**

Routine maintenance is a quick and easy process. All inspection points are directly accessible at working height, and the large inspection hatches are easy to open. In addition, the cabin can be tilted to provide easy access to the entire drive line. Double seals in the cylinders and ORFS hydraulic fittings keep leakage to a minimum, extending intervals between servicing.

## **Everything you need**

Kalmar provides a genuinely comprehensive range of services for ownership, rental, servicing and everything else you might need. We focus on offering the lowest possible ownership costs by providing solutions that work and are adapted to your needs.

Global presence and local service bring  
our products and solutions closer to our customer.



*Cargotec improves the efficiency of cargo flows on land and at sea – wherever cargo is on the move. Cargotec's daughter brands Hiab, Kalmar and MacGregor are recognised leaders in cargo and load handling solutions around the world. Cargotec's global network is positioned close to customers and offers extensive services that ensure the continuous, reliable and sustainable performance of equipment. Cargotec's class B shares are quoted on the NASDAQ OMX Helsinki. [www.cargotec.com](http://www.cargotec.com)*



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