

Kockum 555



Low tare weight for improved

Tare weight completely reappraised in 30 years

About 20—30 years ago, the price of a haulage vehicle was often evaluated in terms of the cost per tonne of tare weight. This meant that a poorly designed truck made of low-quality materials could compensate for this by means of large dimensions — and it would be considered better value for money than a truck with thoroughgoing design, made of high-quality steel. The idea was simply that a heavier truck was preferred to a lighter one. The general principle was that "The more castings and the larger the dimensions, the higher the quality". No one was particularly interested in the fact that the heavier truck would haul up to several tons of superfluous load for each metre it was driven, during its entire service life.

Development since then has been rapid indeed. Increased costs, above all for fuel, and more severe competition have forced vehicle owners to select their trucks on the basis of quite different criteria. A vehicle's efficiency is now measured in terms of the total cost per tonne of load hauled. This means that the tare weight of a truck is extremely important — simply because the cost of transporting 1 tonne of tare weight in terms of general wear, fuel consumption, tyre wear, etc. is almost twice as great as the cost of hauling a tonne of load! The explanation is of course that dump trucks almost never carry return loads, but are driven empty for roughly one-half of their service lives.

The load factor indicates efficiency

The various trucks on the market today have different load capacities and different tare weights. A comparison can thus appear difficult. A simple method which takes account of both capacity and weight involves comparing the load factor for each vehicle, i.e. the quantity of load the truck can carry for each tonne of tare weight.

The Kockum 555 has a tare weight of 37.0 metric tonnes and a permissible load capacity of 55 short tons, or 50 metric tonnes. The load factor for the K555 is thus $50.0:37.0 = 1.35$. A US-manufactured truck now on the market has the same load capacity but weighs 42.3 tonnes according to specifications. This vehicle thus has a load factor of $50.0:42.3 = 1.18$. The load factor is a direct measure of the vehicle's load efficiency. The difference between the two trucks above is $1.35 - 1.18 = 0.17$, which means that the K555 has a 14% higher load efficiency. And comparisons with other trucks in this capacity category are also to the benefit of the K555.

It may be difficult to compute the actual cost of hauling unnecessary tare tonnage. But the quantity of tonnage hauled during the service life of the truck speaks for itself. For example, if two trucks with the same load capacity and a 3-tonne difference in tare weight work the same 30 cycles per day for 200 days each year, the extra weight hauled by the heavier one will amount to 90,000 tonnes over 5 years!



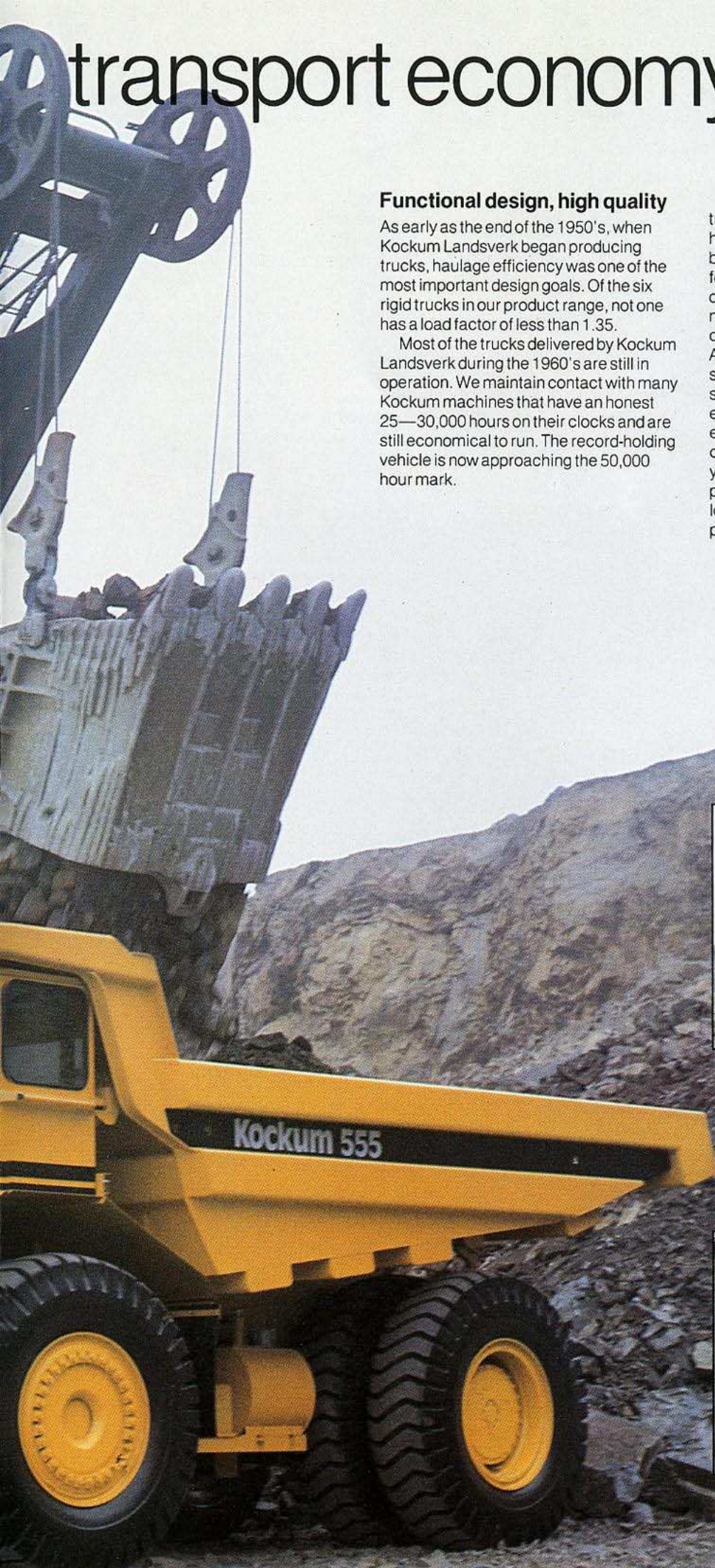
transport economy

Functional design, high quality

As early as the end of the 1950's, when Kockum Landsverk began producing trucks, haulage efficiency was one of the most important design goals. Of the six rigid trucks in our product range, not one has a load factor of less than 1.35.

Most of the trucks delivered by Kockum Landsverk during the 1960's are still in operation. We maintain contact with many Kockum machines that have an honest 25—30,000 hours on their clocks and are still economical to run. The record-holding vehicle is now approaching the 50,000 hour mark.

What is the secret of designing a dump truck that combines low tare weight with high quality? This is a complex question, but the answer can be summarized as follows: A design that is highly functional down to the last detail, where top-quality materials and optimal dimensions are combined at precisely the right points. Another advantage comes from being a specialized producer — with designers, service personnel and marketing engineers who do not dissipate their energies on many different types of contracting vehicles, but concentrate year-in and year-out on a single task — providing a transport vehicle that is as load-efficient and as economical as possible.



Easy to manoeuvre, extra str

In contrast to other trucks in the Kockum Landsverk product range, the K555 was not developed from a separate concept right from the design stage, but is based on the previously introduced K565.

The considerably higher capacity of the K555 (10 short tons) thus gives the K555 extra-large margins for strength in many vital respects, such as frame, axles, body and suspension. The decisive factors for the load capacity of the K555 are thus tyre dimensions, engine output and body volume — the only characteristics differing between the two models.

Convenient loading height, small turning radius

The loading height of the K555 is 30 cm lower than that of the average 55-tonner on the market. This makes it more compatible with loading machines already in service — and allows for faster loading. The large target area also facilitates loading operations.

The K555 also features the smallest turning radius in its class. In cramped loading and discharging areas, a metre less of required manoeuvring space cuts the operating cycle time.

The combination of low loading height and small turning radius saves minutes on each cycle. Minutes that grow into days over a full year of operations.

Disc brakes on front wheels

The Kockum 555 is fitted with disc brakes on the front wheels, for several reasons. The most important is perhaps that the risk of fading (deteriorating brake effect at high temperatures) is minimized when the air-hydraulic brakes are used intensively. The fact that the truck design enables brake linings to be replaced without dismantling the wheel is also an advantage. Another important benefit of disc brakes is that there is no risk of the brakes locking.

Simple, straightforward frame design

The frame is an extremely light structure that includes all-welded box sections of selected high-strength steel. The design is simple and straightforward without any unnecessary transition pieces or transverse joints. All mountings have been rationalized to reduce weights and simplify design. Loads are distributed evenly over the entire frame, so that there are no direct concentrations of stress. The simplified design also allows for automatic welding, which ensures welds of high, uniform quality.

Advanced rear axle suspension

The rear axle suspension is unique, consisting of a linkage system that provides a number of benefits. The longitudinal and transversal dynamic forces from the load are transmitted over the shortest path from the body pivot to the ground. Suspension motion does not generate any unnecessary increase in horizontal forces on the rear axle, as is the case with a conventional A-frame design.



length margins

Rock body as standard

The basis of Kockum Landsverk's new body design is the high quality of the steel, which allows for application of simpler, lighter design principles. The material in the bottom and side plates meets maximum demands for wearability (HB 360—400) and strength (110 kp/mm²). This enables us to build a body with longitudinal reinforcements without using conventional transverse ribs. Concentrations of stress are eliminated, so that there is no risk of cracks. The geometry of the body has also been carefully analysed. The result is a compact but roomy unit with low loading height.

Superior working environment

The K555 is designed for convenient cab-entry by means of a sloping, retractable ladder. Visibility from the cab is excellent, and is especially evident in restricted spaces. The view of the road is excellent for a truck in this capacity class. The roomy cab is light and airy, with large, tinted windows and it has been designed in detail with respect to the driver's various tasks.

The ergonomically designed seat is adjustable for individual weight and body height, and is of course fitted with hydraulic suspension. A safety belt is standard equipment. Another vital safety feature is the soft, shock-absorbent material that covers the walls of the cab as well as all edges and protrusions.

Controls and instruments are positioned for maximum convenience and efficiency, with the most important ones directly in front of the driver. Less frequently used instruments are positioned in the ceiling of the cab, which can be fitted with a radio. All instruments are clearly marked with easily understood ISO symbols.

True road "feel" and stable steering

The Kockum 555 gives the driver a real "feel" for the road. The truck is easy to drive and easy to manoeuvre, and it runs smoothly even on rough surfaces, partly because it is fitted with oil-pneumatic suspension all round. Speed on the flat is 65 km/h.

The 617 HP engine has been selected with reference to the total vehicle weight as well as maximum fuel economy. Power is transmitted through an Allison CLBT 6061 powershift gearbox, a torque converter and a lock-up.

The double brake system includes disc brakes on the front wheels, and consists of a hydraulic retarder and a dual-circuit brake system, for safety and high performance.

The steering system is servo-assisted and incorporates mechanical feed-back. This design contributes to the excellent road "feel" as well as to improved safety.



Kockum 555 — technical data

Payload capacity

Payload 55 tons (50.000 kg)
 Payload volume, struck (SAE) ... 22,3 m³
 Payload volume, heaped 2:1 (SAE) 33,6 m³

Weight distribution

	kg	lbs
<i>Empty</i>		
Front axle	19.200	42.350
Rear axle	17.800	39.250
Total	37.000	81.600

Loaded

Front axle	29.000	63.950
Rear axle	58.000	127.900
Total	87.000	191.850

Engine

Detroit 16V 71N, direct injection 2-stroke diesel, 16 cyl.

Max. output 455 kW (617 hp) SAE at 2.100 rpm

Max. torque 2170 Nm (221 kpm) SAE at 1.600 rpm

Bore 108 mm
 Stroke 127 mm
 Displacement 18,6 dm³ (litres)
 Compression ratio 18,7:1

Volumes dm³ (litres)

Engine, lubricating system 75
 Engine, cooling system 150
 Gear box 80
 Hydraulic system 250
 Rear axle 80
 Fuel tank 1100

Transmission

Allison CLBT 6061 • Powershift transmission • Converter with lock-up • Retarder

Torque conversion max. 2,16

Ratios

1	4,00	4	1,35
2	2,68	5	1,00
3	2,01	6	0,67
Reverse			5,12

Rear axle

Welded axle housing • Fully floating drive shafts • Final reduction in differential and wheel hubs (planetary gears)

Ratio Overall 17,48:1

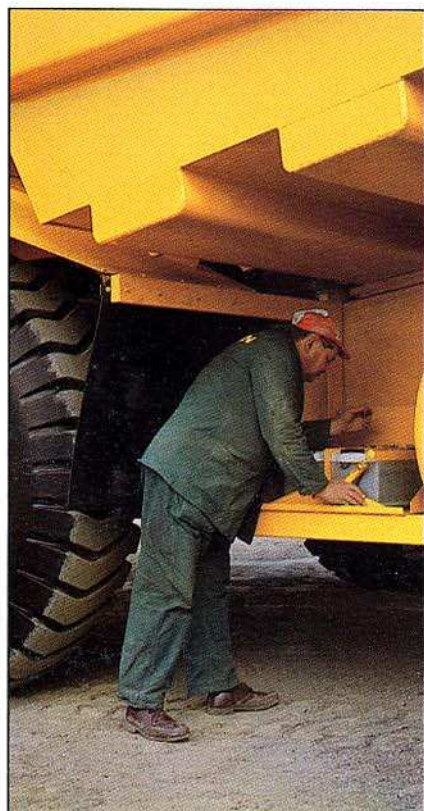
Front axle

Heavy-duty, all-welded axle with axle beam of box design • Carried in suspension system of pneumatic oil type

Suspension

Front and rear suspension system of pneumatic oil type.

The Kockum 555 is designed for fast service



The K555 is designed for maximum total economy, and ease of service has high priority. Fast, simple maintenance increases the vehicle's availability.

The K555 has thus been designed with reference to both daily maintenance and the inevitable replacement of parts. Simplification and standardization have resulted in a truck that meets the demands for simple service of drivers, mechanics and owners.

During testing of the prototype machine at various work sites, outside service technicians were asked to inspect and critically evaluate the vehicle from the service point of view — and we made good use of their suggestions as to simplification.

Fast daily maintenance

Coolant can be checked quickly from the roomy service platform, which is also fitted with a safety rail. The hydraulic-oil reservoir, the air cleaner, the dip-stick and the battery are all easy to reach from the ground.

Easily accessible engine

The engine is easily accessible from the sides or through the counter-balanced bonnet. The gearbox is mounted separately, so that there is plenty of room

for service. Comprehensive standardization of parts reduces the number of maintenance tools to a minimum.

Simple maintenance of suspension

The four oil-pneumatic suspension units are identical. The simple design includes removable end covers. There are no welding joints.

Oil-pressure dismantling

The vital bearings that demand a little more maintenance are designed for fast, easy oil-pressure dismantling. This applies to oil-pneumatic suspension units, tipping cylinders, frame connections and linkages.

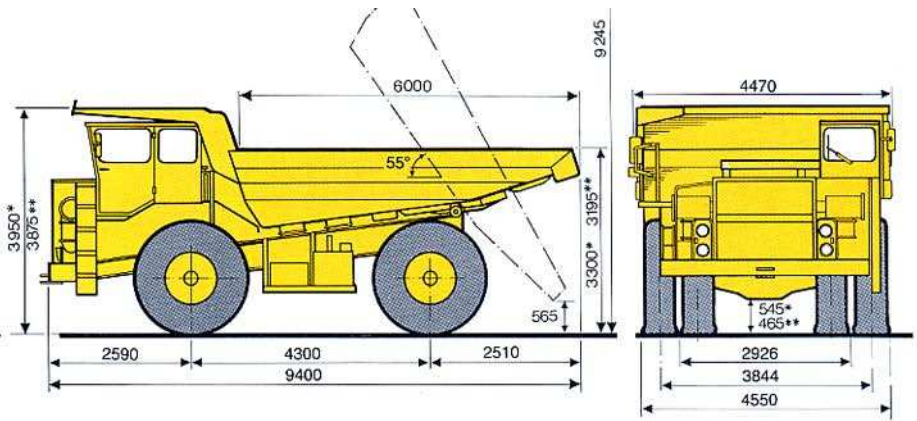
Disc brakes on front wheels

The front axle is fitted with highly-effective aviation-type disc brakes. Brake linings can easily be replaced without removing the wheel.

Compact electrical system

The electrical system is based on printed circuit boards, all of which are installed at an easily accessible control point. This means fewer contacts, simplified trouble-shooting and greater reliability.

Dimensions in mm
*Empty **Loaded



Wheels

Rims 15.00—35
Tyres 21.00—35/44

Brakes

Service brakes 1

Hydrodynamic brake (retarder) incorporated in transmission

Service brakes 2

Dual-circuit air-over-oil actuated
Front: disc brakes
Rear: drum brakes

Parking brake

Spring actuated, air released drum brake, mounted on the pinion flange

Steering

Hydraulic power steering with mechanical feed-back

Pump, gear type, direct-driven from the engine

Steering wheel turns lock to lock 3.5

Hoist

Pump, gear type, direct-driven from the gear box via an automatic hydraulically controlled power take-off

2 pcs 3-stage telescopic cylinders,
2 stages double-acting

Dumping angle 55°
Dumping time 15 seconds

Cab

All-steel cab • Heat and sound insulated • Heater and defroster equipment • Adjustable driver's seat

Frame

All-welded box sections with cross members

Body

All-welded construction with two external horizontal stiffeners along the entire length of the body. • Exhaust-heated

Material

High tensile heat-treated steel
Yield strength 110 kp/mm²
Hardness > 360 Brinell
Bottom 20 mm
Sides and front 10 mm
Weight 9.300 kg

Electrical system

Voltage 24 V
Batteries 2 pcs 12 V, 200 Ah
Alternator 50 A
Starter 9,6 kW (13 hp)

Lights

Headlights with full and dipped beam • Curve and fog lights • Parking light • Direction indicators • Brake lights • Tail lights • Reversing lights • Hazard flashers • Cab light • Instrument lights

Standard equipment

Instruments

Hour counter • Air pressure gauge • Oil pressure gauge, engine • Coolant temperature gauge • Oil temperature gauge, gear box • Oil pressure gauge, gear box • Speedometer • Revolution counter

Control lamps

Parking brake • Full beam • Direction indicators • Battery charging • Oil pressure, engine • Dump body • Lock-up

Miscellaneous

Cold starting device • Wind screen wipers • Wind screen washers • Horn • External rear-view mirrors • Rock ejectors on rear wheels • Electrical engine heater • Safety belt

Optional equipment

Body rubber lining • Increased body height • Tachograph • Spare wheel • Emergency steering • Air conditioning • Additional cab heater • Silencer • Electrical heater for the transmission

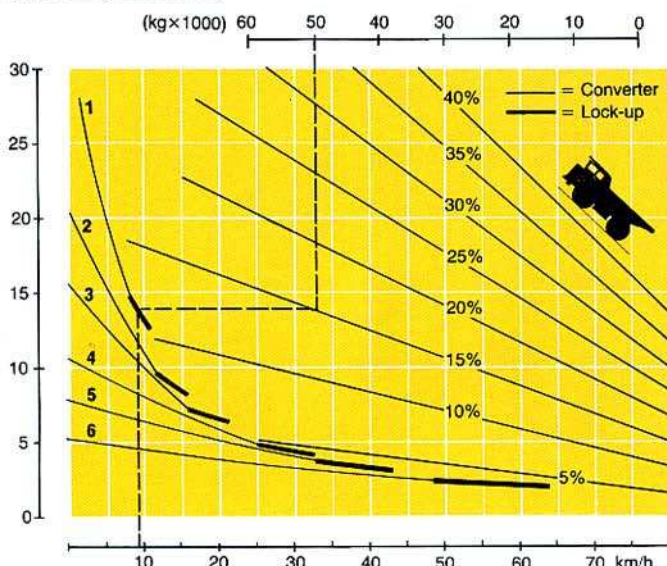
Operating data

Operating speed max. 65 km/h
Minimum turning radius 8.920 mm
Minimum swept radius
left turn 9.960 mm
right turn 10.100 mm

Dimensions and weights to tolerances of ±3%.
Specifications subject to change without notice.

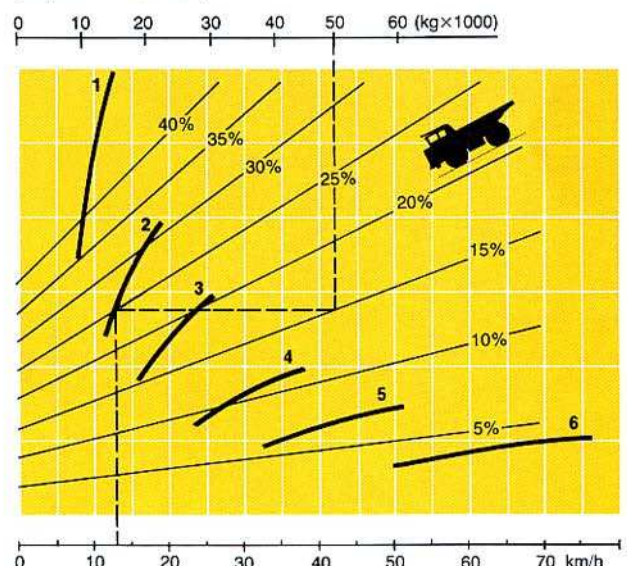
Gradeability — Speed — Rimpull

(2% rolling resistance)



Retarder chart

(engine friction incl.)



Specialists in dump trucks and articulated dumpers

Kockum Landsverk is one of four production units of the Kalmar Kockum Group, which is owned by the Swedish State Company — one of the largest industrial concerns in Sweden. The Kalmar Kockum Group is engaged exclusively in the design, manufacture and marketing of equipment and vehicles for heavy-duty transport and materials handling.

For the last 12 years, Kockum Landsverk has specialized in dump trucks and articulated dumpers for both permanent work stations and contracting operations. The current product programme includes 7 truck models with load capacities of between 20 and 65 short tons.

Top performance in any climate, under any conditions

Kockum trucks are now at work in more than 50 countries on every continent in the world. Our vehicles operate in all sorts of conditions, from -40°C at the Arctic Circle to $+50^{\circ}\text{C}$ at the Equator from altitudes of 4.000 meters above sea-level in Peru to 600 meters underground in the north of Sweden. Every one of our vehicles features low tare weight, compact design and high-quality components. And every one is built to meet rigorous demands for reliability, availability and low operating costs.

A new generation of dump trucks

In recent years we have emphasized the development of new designs. The K540 dump truck and the K414 articulated dumper were introduced in 1981. The K555 and K565 dump trucks and the K414B articulated dumper are being introduced on the international market this year. Prototypes of other truck models have been undergoing testing at various work sites in Scandinavia for some time. These vehicles have been hauling rock on double shifts, with overloads, month after month — so that designs and components have to prove their worth.

The Kockum range of products

	Payload capacity	Body volume SAE 2:1	Load factor
Kockum 414B	20 short tons	12.0 m ³	(articulated)
Kockum 425B	25 short tons	15.0 m ³	1.37
Kockum 442B	35 short tons	20.6 m ³	1.42
Kockum 540	40 short tons	23.5 m ³	1.41
Kockum 445	45 short tons	27.6 m ³	1.35
Kockum 555	55 short tons	33.6 m ³	1.35
Kockum 565	65 short tons	40.4 m ³	1.52

Documented durability

There are plenty of Kockum trucks with more than 25.000 hours on the clock and we keep in touch with owners of machines that have worked over 40.000 hours. We intend to maintain this sort of quality in the future, while efficiency and haulage economy are continuously improved.



Suspension, 6-wheel drive, triangular design bogie, lock-up and fully enclosed multipledisc brakes give the Kockum 414B unique driving characteristics on difficult surfaces.



The Kockum 540 can be equipped with a special body with rubber bottom (Rubber Body), which increases load efficiency and also considerably reduces the sound level when loading and unloading.

Kockum Landsverk

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