

PRELIMINARY





MATERIAL HANDLER

MOBILE / CRAWLER WITH A REACH OF MAX. 25 M

/ 🚠 🕫 110 t / 🖍 25 m / 🍽 261 kw / 🖏 250 kw

Stage V



SENEBOGEN

With the 865 E-Series, SENNEBOGEN is expanding its product range with the powerful 90-toner for coaster and feeder ships. Its versatility and precise handling make it the ideal machine for ports, industrial applications or steel mills.

A long-term investment

The E-Series is characterized by robust components and intelligent machine design – the machine retains its value over the longterm, even with demanding continuous use.

Energy efficiency

Appreciated around the world, thanks to drives that are resource- and environmentally-friendly and the Green Hybrid energy recovery system – whether with diesel drive or as an electric version.

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Modular variety

Unique machine variety – we build the perfect machine to meet the needs of your application.

Maximum comfort

The spacious cabs are designed with the needs of the operator in mind – comfortable and spacious with sophisticated features.

Maintenance & service

Intelligent fleet management and machine status monitoring via the SENtrack portal as well as unique accessibility of machine components.

Occupational safety

Thanks to the precisely controlled movements and the numerous safety features, you can work effortlessly and safely throughout your day.

SENjebogen

AN INVESTMENT THAT PAYS OFF.

The durability and reliability of the SENNEBOGEN Green Line is based on decades of experience in the design of high-quality crane and material handling technology. We find the perfect solution for any application at ports or steelworks worldwide – so that you can handle scrap, general cargo and bulk materials in a particularly economical and environmentally friendly manner.



Low operating costs thanks to energy-efficient electric drives and energy recovery through the Green Hybrid system



Manageable and service-friendly technology for maximum machine availability



Consistent performance thanks to robust steel construction, and high-quality drive and control components from renowned manufacturers



High handling capacity of up to 850 t per hour* reduces the berthing time of ships



Sophisticated technology thanks to the consistent further development up to the 5th generation of the E-Series – for demanding material handling Durable and robust in extreme weather and harsh operating conditions, works equally well in the cold of the Arctic Circle or the heat of Dubai



* The specified handling capacity is a reference value that can be achieved with the appropriate grab for the machine (see Attachments catalog). Actual handling capacities depend on the individual loading and unloading situation in the port and are the result of various parameters (e.g. lifting height, angle of rotation, ship shape, grab fill level, grab). * compared to comparable machines without energy recovery system at 4,000 operating hours/year

PRODUCT VIDEO



665

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SENJEBOBEN

Huge savings potential, high ease of maintenance: You can find out what makes the 865 E Hybrid so effective in the tour around the machine

www.sennebogen.com/product-video-865

Save up to 40,000 of fuel per year*

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SENJEBOG



LONG SERVICE LIFE, HIGH VALUE RETENTION

- Reliable and powerful thanks to its robust construction and high-quality components.
- Temperature-controlled cooling system, designed and tested for heavy-duty applications and high ambient temperature

SOPHISTICATED, STATE-OF-THE-ART TECHNOLOGY

In the 5th generation – decades of experience in designing and constructing material handlers

SIMPLE TO MAINTAIN AND SERVICE

- Manageable technology and no overengineering
- Ideal accessibility to all components for easy maintenance

ENVIRONMENTALLY-FRIENDLY DRIVE TECHNOLOGY

State-of-the-art engine, drive and emission systems in line with the latest technology standards (stage V)

GREEN

EFFICIENCY

Vige-

Large-scale pipes and valves for maximum efficiency







SENNEBOGEN -WORLD LEADER IN ELECTRIC MATERIAL HANDLERS. MAERSK

Over the last **35 years**, we have implemented by far the most electrical applications

- engine
- people
- comfort
- period

Up to 50% SENJEBUGEN

360

saving in operating costs by significantly reducing energy consumption

Image shows the electric version of the 860 E Hybr



A complete solution direct from the manufacturer – detailed route analyses and individual power supply project planning, tailored specifically to your application

A variety of solutions for power supplies, voltage types and emergency operating units ex works

No fueling stops or need to store fuel - always ready for use

Service intervals twice as long and lower service costs: No need for fuel/oil filter and oil changes compared to a diesel

High value retention and significantly longer service life

No exhaust gases – good for the environment, good for

Low-noise and vibration-free operation for greater working

I Cleaner engine compartment even after long operating



seNjebogen

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GREEN HYBRID THE MOST ADVANCED **ENERGY RECOVERY TECHNOLOGY ON** THE MARKET

Save up to energy with hybrid





Boom lowers, gas compresses

seNjebogen GreenHybrid

Protects the environment, saves energy, reduces your costs. accumulator

control

GREEN HYBRID ENERGY RECOVERY TECHNOLOGY



Energy recuperation through safe & smart design: Watch the video to find out how the SENNEBOGEN Green Hybrid system makes port handling even more efficient.

www.sennebogen.com/green-hybrid-865



Energy storage module consisting of hydraulic cylinder and nitrogen



The nearly constant force transmission throughout the cylinder cycle supports the next boom lift

System advantages: large system volume and constant force transmission over the entire cylinder cycle

/ System stability through constant pressure and temperature

Functional safety through the use of standard hydraulic components in the protected rear area of the machine

System is optimally adjusted to the individual machine configuration





SAFETY FIRST

Enjoy a safe work environment thanksto numerous safety features developed especially for port use. Protecting people, port and machine.

HOW TO OPERATE THE SAFETY BOOM LIFT



This video will show you how the SENNEBOGEN Safety Boom Lift works.

www.sennebogen.com/safety-boom-lift



Safety Boom Lift

Grab automatically lifts as it closes, protecting ship hulls, port surfaces, equipment and the grab itself



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Biodegradable oil

For extended oil change intervals, with safe environmental compatibility

SENtrack

Maintain fleet management safety by monitoring the condition of your machines

Powerful LED spotlights

SENJEBOGEN

For optimal illumination of the work area

Load moment limitation

Protection of equipment by switching off in the event of an impermissible load

Component safety

maximum service life thanks to the robust steel construction produced in our very own subsidiary

Safe & ergonomic

optimum cab and machine component accessibility via stairs and ascents

Optimal camera monitoring

Of all safety-relevant areas*



EXPERIENCE VARIETY FOR EVERY TYPE OF MATERIAL

Today general cargo, tomorrow bulk cargo – working in the port means staying flexible from day to day. The entire range of handling technology can be flexibly operated using the quick change system on the stick and the SENNEBOGEN material handlers' powerful hydraulics.



Bulk material (feed, coal, etc.)



Scrap handling



Timber grab



Big Bag loading



Timber spreader/wooden pallet loading



Pulp spreader





Paper coil grab



Quick change system with lifting beam



Vacuum lifter





Watch the video to see how quick and easy it is to change the grab with the quick change system on the stick!

www.sennebogen.com/quick-coupler

A MODULAR DESIGN. **NUMEROUS APPLICATIONS.**



865E | Hybrid

WHAT DOES YOUR MACHINE LOOK LIKE?

Configure your individual machine from our modular system. The great variety of solutions that we can implement in this way is unique.







Everything in view

The spacious cab with panoramic view gives you a practical overview of your work area. The window in the floor makes it possible to carry out precise loading operations even in close proximity. The safety cameras provide support and allow you to monitor the critical areas conveniently via the monitoring system in the cab.

Pleasant indoor climate

Whether in warmer areas or in ports with sub-zero temperatures, you can enter a work space with a comfortable temperature every day and concentrate on the essentials of work thanks to automatic heating and air conditioning.

Easy control

The intelligent SENCON control system gives you quick and easy feedback on the machine's condition. Thanks to the intuitive user interface, it has never been easier to monitor energy consumption and utilization, control the desired working modes and contribute towards reducing operating costs.

For your health

Operators spend many hours in their working position. The backfriendly comfort seat, adjustable armrests, joysticks that sit comfortably in the hand, and the optimally arranged controls make daily work as easy as possible.

"The development of the Green Line machines is based on user feedback in order to create the best operating experience."

ALI GÜLYAZ, Designer Green Line







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IN SERIES

CAB HIGHLIGHTS



Maxcab

ПЕСПВ

Maxcab Industry *



ENTRANCE	Sliding door incl. sliding window	Sliding door incl. sliding window
WINDSHIELD	Tinted safety glass	Undivided windshield made from bullet proof glass, rigidly glazed
SKYLIGHT	Bullet proof skylight	Bullet proof skylight
FLOOR WINDOW	-	-
	Wipers for skylight	Wipers for skylight
WIPERS	Wiper and washer system for front windshield	Wiper and washer system for front windshield
AIR CONDITIONER	Heating/air conditioning system with fresh air and recirculating air filter	Heating/air conditioning system with fresh air and recirculating air filter
FLOODLIGHTS	Floodlights integrated into roof	Floodlights integrated into roof
FOLDAWAY SEAT	-	-
RADIO PREPARATION	\checkmark	\checkmark
SENCON CONTROL AND DIAGNOSTIC SYSTEM	\checkmark	\checkmark
OPTIONS		
AIR-CONDITIONED SEAT	✓	✓
RADIO	✓	\checkmark
COOLING BOX BEHIND THE OPERATOR'S SEAT	\checkmark	\checkmark
PROTECTIVE GRILLE ON SKYLIGHT AND WINDSHIELD	\checkmark	\checkmark
SUN PROTECTION PACKAGE	\checkmark	\checkmark

Spacious Mastercab *

MR**S**TERCEB

Easy access through wide cab door

Tinted double glazing for side windows

Large roof window with sun protection slats

Bullet proof glass floor window

Wipers for skylight

Parallelogram wipers for harsh weather conditions

Automatic air conditioning with optimised de-icing and demisting function

Floodlights integrated into the uppercarriage and roof

Foldaway seat in cab

 \checkmark

 \checkmark

 \checkmark

 \checkmark

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865E | Hybrid

ALWAYS THE RIGHT **VIEWING ANGLE**

With the flexible cab adjustments, you can look up to 13.5 metres into the hull, depending on the version and undercarriage. Thanks to a sophisticated system of steps, ascents and railings, access to the cab and maintenance points on the uppercarriage is safe and comfortable.

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PROFESSIONAL FLEET MANAGEMENT **SEN**track

1. Reduce service costs

The dashboard is used to monitor the machine and its main operating parameters (temperatures, consumption). If key figures deviate significantly from the target value, the user is informed immediately.

2. Reduce consumption

You will receive daily updated insights into your fleet processes: Easily identify and optimize times when machines are idle or change set parameters when machines are underloaded to reduce consumption.

"What if you could receive real-time data from all your machines with just one click and so increase your productivity? SENNEBOGEN's SENtrack telematic system makes this possible."

3. Improve productivity

With just a few clicks, you can identify and optimize machine capacity, analyse routes if required and thus make your port processes more profitable.

4. Safeguard your investment

Practical alarm messages inform you about critical machine conditions. In the event of irregular movements, the machine can also easily be deactivated remotely.



MAINTENANCE AND SERVICE. KEEP IT SIMPLE. WITH MANAGEABLE TECHNOLOGY.



Reliable and practical technology makes life easier. Where electronics add no value, we rely on hydraulics and electrical systems.

We make you happy, not reliant. With cost-effective components and fewer process steps, you can take care of the machine on your own.





The SENCON control system supports you with diagnostics and makes troubleshooting easier. So your machine is back in action more quickly.





The most important components, such as the accumulator module or the electrical distributor, are all easily accessible from a central point for straightforward checking and troubleshooting.

All maintenance and service points are clearly arranged and easily accessible. The clear labeling of components makes finding your way around easy.



TECHNICAL DATA, EQUIPMENT

MACHINE TYPE MODEL (TYPE) 865 Hybrid DIESEL ENGINE TYPE Stage V: Cummins X12 FR210821 Rated power: 261 kW/1800 rpm Operating point standard: 261 kW/1800 rpm Operating point ECO: 260 kW/1600 rpm Stage Illa: Cummins QSM11 FR21134 Rated power: 268 kW/2000 rpm Operating point standard: 268 kW/2000 rpm Operating point ECO: 262 kW/1800 rpm both: Automatic idle/stop COOLING water-cooled, charge air cooling, coolant cooling DISPLACE-12 MENT NUMBER OF 6 CYLINDERS

CILINDERS	
BATTERIES	2 x 12 V, 180 Ah, battery disconnect switch
ELECTRICAL SYSTEM	24 V
OPTIONS	Engine block heater

Electric fuel pump Jump start pole

TANK CAPACITIES		
FUEL	1000 l	
ADBLUE	110 l	
HYDRAULIC TANK	900 l	
COOLANT	approx. 80 l	
ENGINE OIL	approx. 34 l	
CENTRAL LUBRICATION SYSTEM	Automatic central lubrication for equipment and slewing ring, display of fault and empty message via SENCON	

UPPERCARRIAGE 🚍	
DESIGN	Torsion-resistant box design, precision crafted, steel bushings for boom mounting.Very service-friendly design, engine installed in the longitudinal direction
COOLING SYSTEM	Cooling system with 3 cooling circuits and demand-driven fan control consisting of: Coolant cooling and hydraulic oil cooling, hydraulically driven, thermostatically controlled incl. fan reversal
OPTIONS	LED lighting package
	Swing bearing brake via foot pedal
	Fire extinguisher
	Maritime climate paint
	Low temperature packages
	Electrical Hydraulic tank preheating
	Magnet generator 20/25 kW

ELECTRIC D	RIVE 🥂
OPTIONS	Type: 250 kW, standard with 400 V / 50 Hz
	Transformer
	Cable reel



TECHNICAL DATA, EQUIPMENT

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HYDRAULIC	SYSTEM 🛓	
Load-sensing/ LDUV hydraulic system, hydraulically operated work functions		
DELIVERY RATE	2 x 475 l/min	
OPERATING PRESSURE	up to 350 bar	
CONTROL SYSTEM	Proportional, precision hydraulic actuation of the work movements, 2 hydraulic servo joysticks for work functions, additional functions via switches and foot pedals	
SAFETY	Hydraulic circuits safeguarded with safety valves	
	Pipe fracture safety devices	
	Emergency lowering of the equipment in case of engine standstill	
OPTIONS	Overload safeguard with shutdown	
	Tool control for programming pressure/ rate of up to 10 tools	
	Load torque warning with capacity display	
	Bio-oil filling	

SLEWING DRIVE 📿		
GEARBOX	Compact planetary gear with bent-axis hydraulic engine, integrated brake valves	
DELIVERY RATE	1 x 274 l/min	
SLEW BRAKE	Spring-loaded multi-disk brake	
SLEWING RING	Externally toothed, with pinion lubrication	
SLEWING SPEED	0-5.5 rpm, variable	
TORQUE	195 kNm	

¹ incl. exhaust gas aftertreatment (diesel particulate filter, SCR catalytic converter, AdBlue tank) Subject to technical changes. Additional options available upon request.

 $^{\rm 2}$ Vibration level: Max. Hand/Arm (acc. ISO 5349-2001) < 2.5 m/s $^{\rm 2}$ and max. body (acc. ISO/TR 25398:2006) < 0.5 m/s²

B65E | Hybrid

CAB ²	
CAB TYPE	Maxcab, 2.7 m elevation
CAB FEATURES	Sliding door incl. sliding window, vibration damped, tinted safety glass, opening windshield, skylight, windshield wipers, radio, air-suspension comfort seat, joystick steering (mobile version), SENCON
OPTIONS	Maxcab Industry with slanted windscreen
	Cab adjustment can be raised 3 m and moved forward 2.6 m
	Spacious Mastercab
	Skylift cab elevation (elevation 9 m)
	Skylift cab elevation (elevation 7 m)
	Windscreen/roof window made of bulletproof glass (Mastercab)
	Polycarbonate safety glass
	Protective roof guard, FOPS if applicable
	Protective front guard
	Active carbon filter for outside air
	Auxiliary heating system
	Air-conditioned seat
	Radio
	Cooling box

Optional: Work at a viewing height of up to 13.5 meters thanks to Skylift cab elevation



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TECHNICAL DATA, EQUIPMENT

UNDERCAR	RIAGE 🗝
MOBILE	MP71 mobile undercarriage with integrated 4-point outrigger, steering axle as hydraulically lockable pendulum axle, pendulum axle cylinder with pipe-fracture safety valves, all-wheel drive via an adjustable hydraulic motor with directly attached, automatically actuated brake valve and planetary axles with integrated steering cylinders, service brake with 2-circuit system
TIRE TYPE	8 x 14.00-24
BRAKES	hydraulic
TRAVEL SPEED	0-14 km/h variable
OPTIONS	Tires: 8x 16.00-25
	Pylon elevation max. 1.5 m
	Special mobile undercarriage MP80, optionally with pylon elevation max. 2 m

CRAWLER GANTRY		Π
Crawler gantry undercarriage PR90/585		
TRAVEL SPEED	0-3 km/h	
OPTIONS	900 mm rounded flat track shoes	
	900 mm canted flat track shoes	



TECHNICAL DATA, EQUIPMENT

EQUIPMENT		
REACH	up to 25 m	
CYLINDERS	Hydraulic cylinders (incl. hybrid cylinder) with high-quality sealing and guide elements, end position damping, sealed bearing points, all cylinders coated, nickel- plated and chromium-plated in a way that is suitable for maritime climates	
OPTIONS	Safety Boom Lift for equipment	
	Adjustable lift limitation / stick limitation	
	LED lighting	
	Stick mounted camera	
	Special port equipment with increased load capacities	

CRAWLER	
Crawler undercarriage	R83/450 with hydrau

Crawler undercarriage R83/450 with hydraulic travel drive on each chassis side integrated in the chassis frame by an axial piston engine via compact planetary gears, spring-loaded parking brake, hydraulically ventilated multi-disk brake

TRAVEL SPEED	0-3 km/h
OPTION	Special undercarriage R90/550 with up to 4 m pylon









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OPERATING DATA

OPERATING WEIGHT

NOTE

90-110 t

Operating weight varies by model and equipment.



SENJEBOGEN 27



LOAD RATINGS K18 (MOBILE)

The load ratings are given as information only. Please contact our regional sales partners or portdivision@sennebogen.de for a detailed project study.

MP71 10-01







LOAD RATINGS B20 (MOBILE)

MAXCAB

The load ratings are given as information only. Please contact our regional sales partners or portdivision@sennebogen.de for a detailed project study.

MP71

10 01



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Notes:

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All load ratings are given in tons (t) brought to bear at the end of the stick, without tools on firm level ground. Working tools such as grab, magnet, load hook, etc. are included in the specified load ratings. The stated values are 75 % of the static tipping load and 87 % of the hydraulic lifting force according to ISO10567 and apply at the required operating temperature in the Green Hybrid system. According to EU standard EN 474/5, hydraulic material handlers used for hoisting must be equipped with a pipe rupture safety device on lifting and stick cylinders and an overload warning device. Load ratings apply to a machine with 4-point outrigger and for 360° slewing.

Notes:

Machine

All load ratings are given in tons (t) brought to bear at the end of the stick, without tools on firm level ground. Working tools such as grab, magnet, load hook, etc. are included in the specified load ratings. The stated values are 75 % of the static tipping load and 87 % of the hydraulic lifting force according to ISO10567 and apply at the required operating temperature in the Green Hybrid system. According to EU standard EN 474/5, hydraulic material handlers used for hoisting must be equipped with a pipe rupture safety device on lifting and stick cylinders and an overload warning device. Load ratings apply to a machine with 4-point outrigger and for 360° slewing.

865E | Hybrid





SENIEBOGEN 29



LOAD RATINGS B24 PORT (MOBILE SPECIAL)

The load ratings are given as information only. Please contact our regional sales partners or portdivision@sennebogen.de for a detailed project study.



0 2 4 6 8 10 Notes: All load ratings are given in tons (t) brought to bear at the end of the stick, without tools on firm level ground. Working tools such as grab, magnet, load hook, etc. are included in the specified load ratings. The stated values are 75 % of the static tipping load and 87 % of the hydraulic lifting force according to ISO10567 and apply at the required operating temperature in the Green Hybrid system. According to EU standard EN 474/5, hydraulic material handlers used for hoisting must be equipped with a pipe rupture safety device on lifting and stick cylinders and an overload warning device. Load ratings apply to a machine with 4-point outrigger and for 360° slewing.

Notes:

All load ratings are given in tons (t) brought to bear at the end of the stick, without tools on firm level ground. Working tools such as grab, magnet, load hook, etc. are included in the specified load ratings. The stated values are 75 % of the static tipping load and 87 % of the hydraulic lifting force according to ISO10567 and apply at the required operating temperature in the Green Hybrid system. According to EU standard EN 474/5, hydraulic material handlers used for hoisting must be equipped with a pipe rupture safety device on lifting and stick cylinders and an overload warning device. Load ratings apply to a machine with 4-point outrigger and for 360° slewing.

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-10

-12

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865E | Hybrid



Pylon extension 2.0 m

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		8,9	8,0	6,8						
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LOAD RATINGS K20 (CRAWLER)

The load ratings are given as information only. Please contact our regional sales partners or portdivision@sennebogen.de for a detailed project study.



MAXCAB INDUSTRY N. can be elevated by 3 m and moved forward 2.6 m (option)





LOAD RATINGS K25 PORT (CRAWLER GRANTRY) The load ratings are given as information only. Please contact our regional sales partners

or portdivision@sennebogen.de for a detailed project study.



Notes:

ratings apply to maximum track width and 360° slewing.

Notes:

All load ratings are given in tons (t) brought to bear at the end of the stick, without tools on firm level ground. Working tools such as grab, magnet, load hook, etc. are included in the specified load ratings. The stated values are 75 % of the static tipping load and 87 % of the hydraulic lifting force according to ISO10567 and apply at the required operating temperature in the Green Hybrid system. According to EU standard EN 474/5, hydraulic material handlers used for hoisting must be equipped with a pipe rupture safety device on lifting and stick cylinders and an overload warning device. The specified load ratings apply to maximum track width and 360° slewing.

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865E | Hybrid

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All load ratings are given in tons (t) brought to bear at the end of the stick, without tools on firm level ground. Working tools such as grab, magnet, load hook, etc. are included in the specified load ratings. The stated values are 75 % of the static tipping load and 87 % of the hydraulic lifting force according to ISO10567 and apply at the required operating temperature in the Green Hybrid system. According to EU standard EN 474/5, hydraulic material handlers used for hoisting must be equipped with a pipe rupture safety device on lifting and stick cylinders and an overload warning device. The specified load

SENIEBOGEN 33



MOBILE DIMENSIONS



865 E HYBRID WITH MOBILE UNDERCARRIAGE MP71 AND HYDRAULICALLY ELEVATING CAB E270 MAXCAB (SERIES), SOLID RUBBER TIRES 14.00-24 (8X)



865 E HYBRID WITH MP80 MOBILE UNDERCARRIAGE AND E300/260 MAXCAB INDUSTRY THAT CAN BE ELEVATED AND MOVED FORWARD HYDRAULICALLY, SOLID RUBBER TIRES 26.5-25 (4X)





seNjebogen 34







CRAWLER DIMENSION

TRANSPORT DIMENSIONS MOBILE / CRAWLER





UNDER- CARRIAGE		COMPACT BOOM	GRAB STICK	TRANSPORT LENGTH (L)	TRANSPORT HEIGHT (H)
MP71	K18	10.8 m	7.8 m	15.7 m	3.9 m
MP71	K20	11.8 m	8.8 m	16.8 m	4.0 m
MP80	K25 Port	13.5 m	12 m Port	18.2 m	4,09 m *
MP80	B24 Port	13.8 m Banana	12 m Port	18.2 m	4,09 m *

Other transport dimensions on request

TRANSPORT DIMENSIONS 865 E HYBRID WITH R83/450 CRAWLER UNDERCARRIAGE



T									
	СОМРАСТ ВООМ	GRAB STICK	TRANSPORT LENGTH (L)	TRANSPORT HEIGHT (H)					
K18	10.8 m	7.8 m	15.8 m	3.7 m					
K20	11.8 m	8.8 m	16.8 m	3.7 m					
B21	13.8 m Banana	8.8 m	18.5 m	3.7 m *					

Other transport dimensions on request



ELEVATING

SENJEBOGEN 36

6300

7330

9165 8995 72



* = stick removed

* = stick removed





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Balancer

130-300 t

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17-420 t







experienced specialists worldwide

over 180



different material handlers

Duty cycle crane 13.5-300 t

Crawler crane 50-300 t

Telescopic crane 16-130 t

Port crane 300 t



865= Hybrid

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SENNEBOGEN Maschinenfabrik GmbH Hebbelstraße 30 94315 Straubing, Germany

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Green Line Sales Tel. +49 9421 540-146 materialhandling@sennebogen.de

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