SENNEBOGEN

261 kW (Stage V)
268 kW (Stage IIIa)
250 kW (Electro)

97 - 125 t

27 m

maXCAB

maSTERCAB

870E Hybrid

Mobile material handling machine

Stage V

870E Hybrid Advanced. The E-Series

1962: rope-driven S833 with elevated operator cab

What makes up the E-Series

- 65 years of experience in designing and constructing hydraulic material handling machines
- Uncompromisingly high performance in all areas: Focus on material handling
- Technology that can be mastered: High-quality components without over-engineering
- Long service life and high value retention

Your top benefits

1 Green Efficiency
Save fuel - reduce operating costs
Work quietly - protect operator and environment

2 Top-level performance
Durable mechanical systems - stressed parts optimized
High speeds - high load capacities

3 Maximum usability
Maxcab comfort cab - work in comfort
SENCON – work program selection made easy

4 Maximum safety
Safe entry and exit - non-slip steps
State-of-the-art cameras - entire work area in view

5 Maintenance and service made easy
SENNEBOGEN Control System - easy diagnostics
Simple maintenance – clear labeling

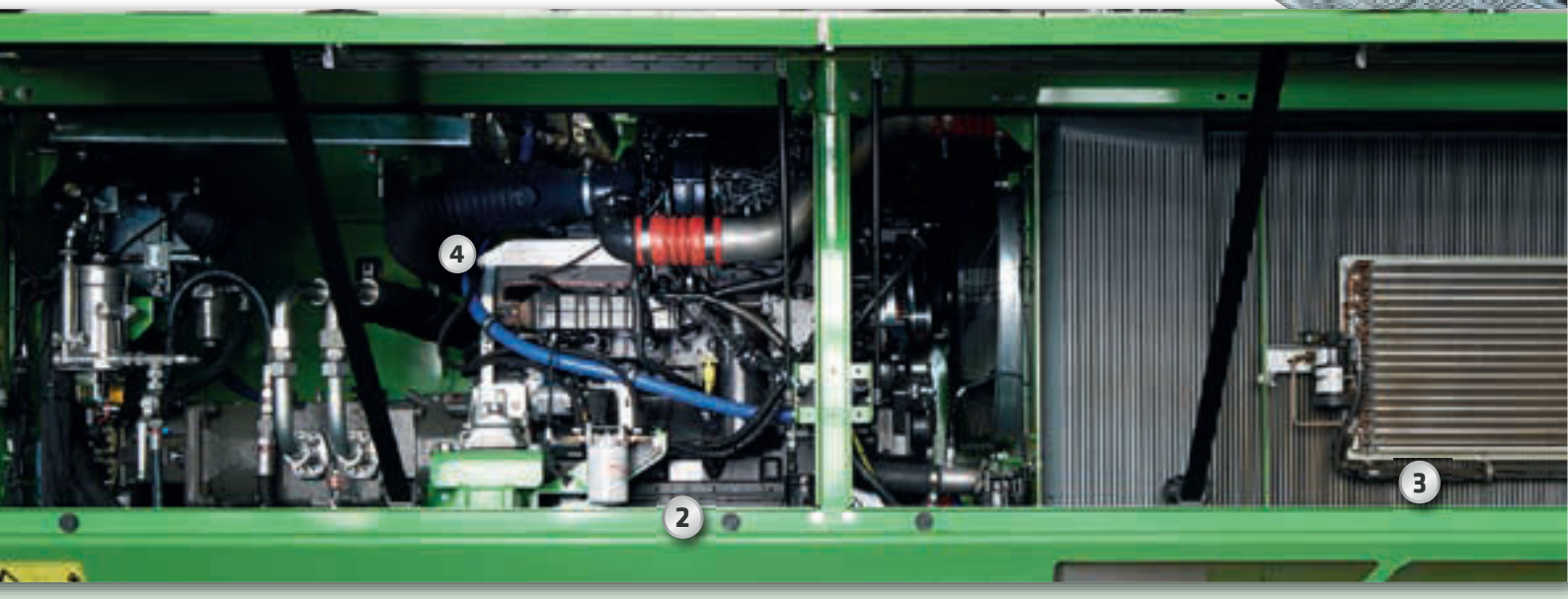
6 Consultation and support in your area
3 production locations - 2 subsidiaries
130 sales partners - more than 350 service stations


SENNEBOGEN
870 E

870E Hybrid The E-Series. At a glance.

Four ways to save fuel

- Savings of up to 20 %: Work in EcoMode with reduced engine speed
- Automatic idle reduces engine speed by 40 % of the operating speed
- Stop automation switches the engine off when not needed
- Optimized engine settings, reduced specific fuel consumption, state-of-the-art exhaust aftertreatment



Quiet operation 2

- Consistently quiet operation thanks to decoupled engine mounts and soundproofing in the doors
- Sound pressure level in accordance with 2000/14/EC as much as 2 dB lower than required

High-capacity cooling 3

- Constant, reliable performance thanks to large-scale, robust fans and coolers
- Water and oil coolers with top-notch efficiency thanks to axial-piston pump and engine control, and on-demand thermostatic control
- Fan reversal for cleaning in series

Powerful hydraulic system 4

- Strong pumps with power reserves
- Top efficiency thanks to large hydraulic valves and lines
- Extra-long change intervals of 4,000 operating hours through initial fill-up with special oil with extended service life when using SENNEBOGEN Hydro Clean*

Maximum safety

- Non-slip work surfaces
- Safe climbing up to the uppercarriage
- Hand rails* 1
- Gallery* 5
- 2 cameras to the right and rear
- Platform with railing next to cab sliding door
- Protective grating, windshield/roof*
- Ideal access for maintenance and service

* Option

The premium cab.

Equipment features

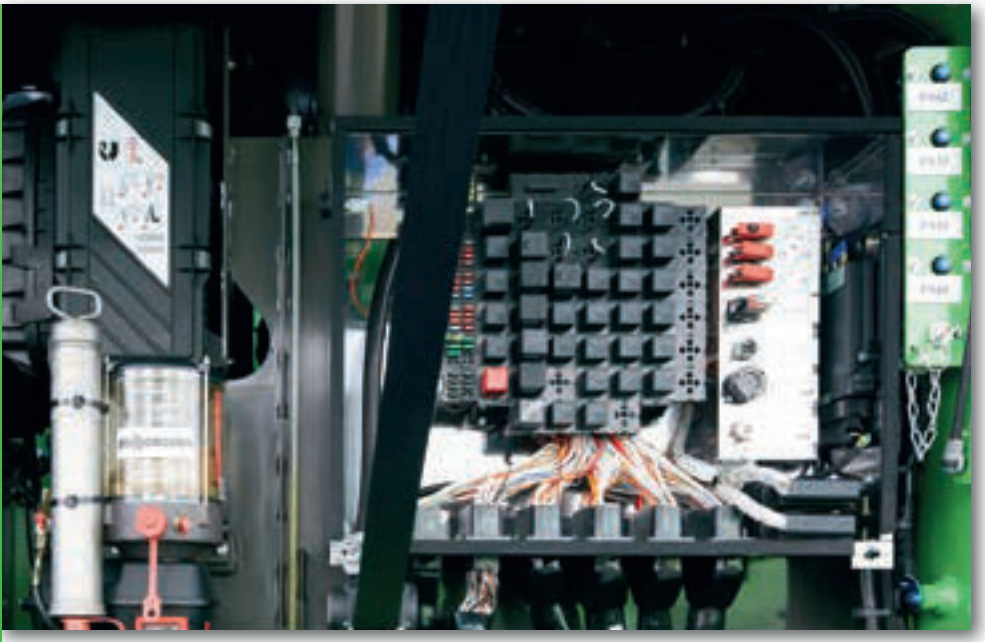
- optimal indoor climate with automatic climate control, partly tinted windows
- comfortable even temperature distribution via 9 air vents
- Panoramic view
- Air-suspension climate-controlled comfort seat*,
  seat heater
- quiet due to optimized soundproofing
- Safety & comfortthanks to the sliding door, large access opening
- operatingelements arranged ergonomically
- 12 V, 24 V, and USB charging sockets, cellphone holder, document folder
- Numerous options: electric coolingbox behind the operator seat, slip covers, seat climate control

SENNEBOGEN-Joysticks

- Joysticks on resonant, seat-mounted consoles
- Comfortable grip thanks to ergonomic design
- Shortcuts for direct and sensitive control of all functions
- Quicker access thanks to optimized design of buttons and switches

* Option

870E Hybrid Maintenance and service made easy.



Optimized for maintenance

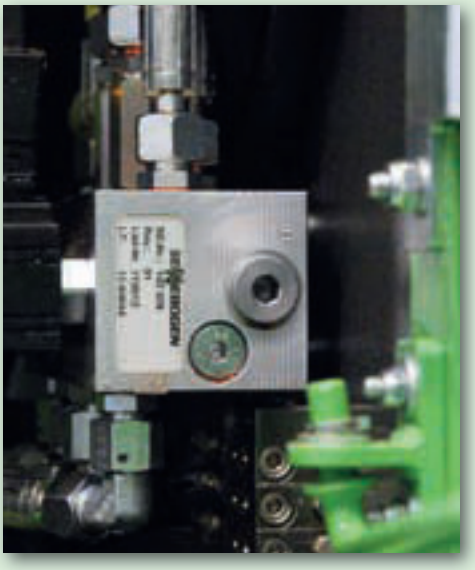
- Quick and easy diagnosis thanks to straightforward and clearly labeled electrical distributor
- Easy access to all the machine's service points
- Automatic central lubrication for equipment and live ring track

HydroClean*

- Optimal protection of hydraulic components thanks to 3 µm micro-filter
- Cleaner hydraulic oil, extended oil service life

Central measuring points

- Easily accessible
- Quick checking of the entire hydraulic system



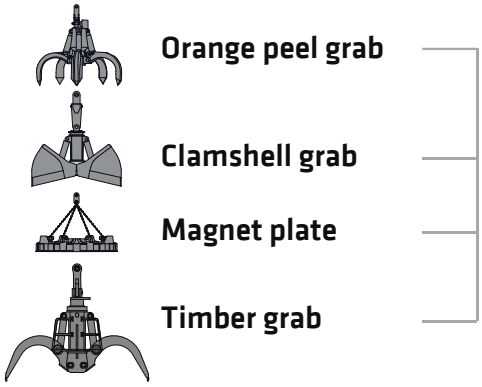
Clear labeling

- All parts labeled with a unique part number
- Easy and reliable spare parts ordering

* Option

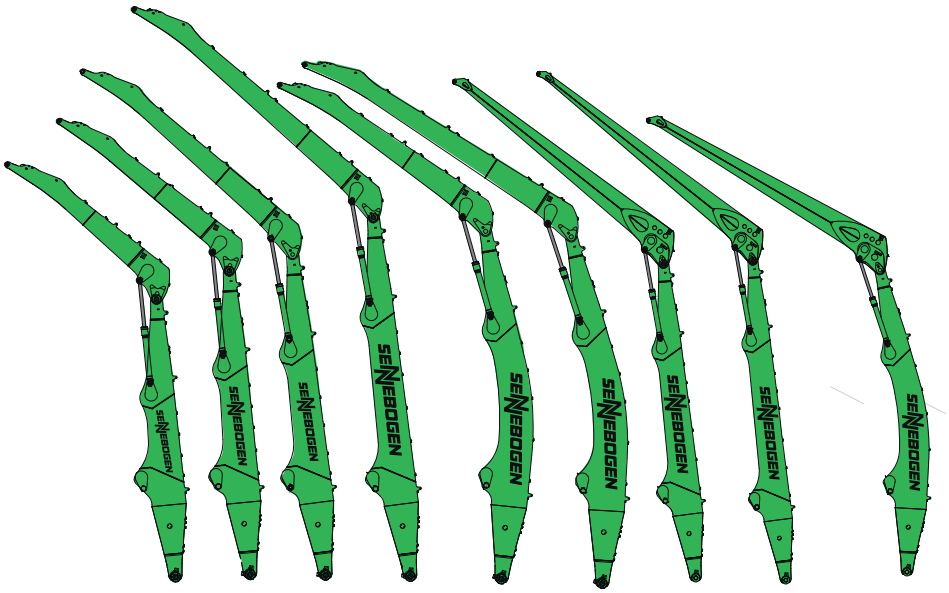
870E Hybrid Modular design - versatile solutions

Attachments



- Orange peel grab
- Clamshell grab
- Magnet plate
- Timber grab

Equipment options (others available upon request)



K18 | K20 | K22 | K25 | B21 | B24 | K25 Port* | K27 Port* | B24 Port*

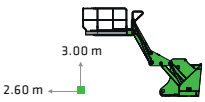
Cabs

Maxcab

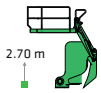
Maxcab Industry

Mastercab

Cab elevation



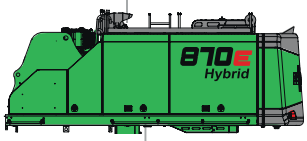
E300/260



E270

Skylift 700/900

Uppercarriage

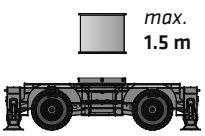


- Diesel-hydraulic drive
- Electrohydraulic drive

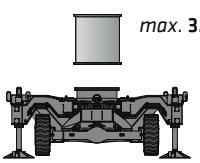
Options

- Motorized cable reel
- Transformer

Undercarriage variants

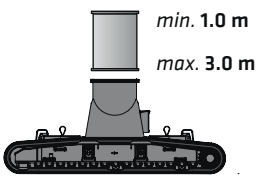


Mobile E MP80

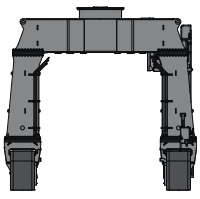


Mobile E MS120

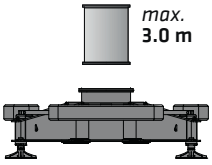
Crawler R83-450



Crawler R90-550



Crawler gantry P136-585



4-point-pedestal ST88-550

* increased load capacity

870E Hybrid Advantages at a glance

- decade-long experience
- most advanced computer simulation
- the greatest degree of stability and longest service life

Reliable working thanks to robust and FEM optimized equipment

Save up to 30 % energy with the energy recovery system

SENNEBOGEN GreenHybrid

Better illumination of the work area through powerful LED headlights

High load capacities even when fully extended, thanks to massive cylinders

Ideal overview and safe working height thanks to stable cab elevation

Robust side cover made from recyclable sheet steel

Safe entry to the upper carriage thanks to railings, grip handles and non-slip steps

Safe entering and exit of the cab via the gallery

High stability due to the broad outrigger area

870 E Hybrid Technical data, equipment

M

MACHINE TYPE

Model (type)	**870**

ENGINE

Power	**Stage V:** 261 kW at 1800 min^{-1} **Stage IIIa:** 268 kW at 1800 min^{-1}
Model	**Cummins 12 (Stage V)** **Cummins 11 (Stage IIIa)** Direct injection, turbo charged, charge air cooler, reduced emissions, Eco Mode, idle automation, stop automation, fuel pre-warming
Cooling	water-cooled, cooling fans change direction
Diesel filter	with water separator and heater
Air filter	Dry filter with integrated pre-separator, automatic dust discharge, main element and safety element, contamination indicator
Fuel tank	**1000 l**
DEF tank	**100 l**
Electr. system	**24 V**
Batteries	**2 x 180 Ah**, battery disconnect switch
Options	■ Engine block heater ■ Electric fuel pump ■ Jump start pole

UPPERCARRIAGE

Design	Torsion-resistant box design, precision crafted, steel bushings for boom mountings. Very service-friendly design, engine installed in the longitudinal direction
Central lubrication	Automatic central lubrication for equipment and live ring track
Electrical system	Central electrical distributor, battery disconnect switch
Cooling system	3-circuit cooling system with high cooling output, thermostatically regulated fan drive for oil cooler and water cooler, fan reversal for cleaning
Options	■ Swing bearing brake via foot pedal ■ LED lighting packages ■ Fire extinguisher ■ Sea climate resistant coating as corrosion protection ■ Electric heater for hydraulic tank ■ Low temperature package ■ Telematic system SENtrack DS
Options	■ Hydraulically-driven magnetic generator 25 kW / 33 kW ■ Gallery

HYDRAULIC SYSTEM

Load-sensing/ LUDV hydraulic system, hydraulically operated work functions, load limit control

Pump type	Swash plate-type variable-displacement piston pump, load pressure-independent flow distribution for simultaneous, independent control of work functions
Pump control	Zero-stroke control, on-demand flow control – the pumps only pump as much oil as will actually be used, pressure purging, load limit control
Flow rate	**2x 475 l/min** and **1x 274 l/min** for rotary drive in the closed circuit
Operating pressure	**up to 350 bar**
Filtration	High-performance filtration with long change interval
Hydraulic tank	**900 l**
Control system	Proportional, precision hydraulic actuation of work movements, 2 hydraulic servo joysticks for the work functions, additional functions via switches and foot pedals
Safety	Hydraulic circuits with safety valves, secured emergency lowering of the equipment at engine standstill, pipe fracture safety valves for lift cylinder and stick cylinder
Options	■ Bio-oil – environmentally friendly ■ Tool Control for programming pressure/rate of up to 10 tools ■ Supplementary hydraulic circuit for shear attachment ■ Load torque warning with capacity display ■ Overload safeguard with shutdown ■ 60 µm pressure filter for attachments ■ 3 µm hydraulic micro-filter - SENNEBOGEN HydroClean

SLEWING DRIVE

Gearbox	Compact planetary gear with bent-axis hydraulic engine, integrated brake valves
Parking brake	Spring-loaded multi-disk brake
Slewing ring	Externally geared slewing ring with 360° protection and pinion lubrication
Slewing speed	0-5 min^{1}, variable

CAB

Cab type	E270 hydraulically elevating cab
Cab equipment	Sliding door incl. sliding window, vibration damper, tinted safety glass, opening windshield, skylight, windshield wipers, radio, air-suspension comfort seat, joystick steering, SENCON
Options	■ E300/260 cab can be elevated and moved forward hydraulically ■ Cab elevation Skylift 700/900 ■ Maxcab Industry ■ Mastercab large capacity port cab ■ Platform next to cab ■ Bullet proof windshield ■ Bullet proof skylight ■ Polycarbonate safety glass ■ Wipers for windshield and skylight ■ Sun protection for skylight and windshield ■ Protective roof grating, FOPS where appropriate ■ Protective front grating ■ In cab active carbon filter for circulating/external air ■ Auxiliary heating system ■ Air-conditioned seat ■ Radio ■ Electric cooling box

EQUIPMENT

Design	Decade-long experience, most advanced computer simulation, the greatest degree of stability and longest service life, large-scale mounting points and precision-crafted sealed low-maintenance special bushings, quick change couplings for connecting/removing/turning grabs
Cylinders	Hydraulic cylinders with high-quality sealing and guide elements, end position damping, sealed mounting points
Options	■ Ball valves in the hydraulic lines for quick and easy grab switching ■ Sea climate resistant coating ■ Sea climate resistant coating of all cylinders, nickel-plated and chrome-plated ■ Equipment floating position ■ Adjustable stroke limiter / stick limiter ■ LED lighting ■ Stick mounted camera

UNDERCARRIAGE

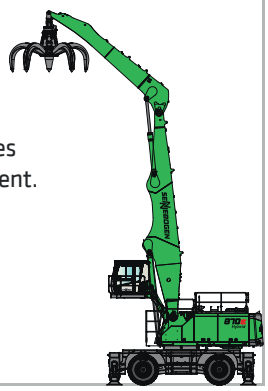
Design	Mobile undercarriage with integrated 4-point outriggers, steering axle as hydraulically locking pendulum axle, pendulum axle cylinder with pipe fracture safety valves, type MP80 E
Drive	All-wheel drive powered by a variable-displacement hydraulic engine with direct-mounted, automatically operated brake valve and planetary axles with integrated steering cylinder, 2-circuit multi-disk service brake
Parking brake	Spring-loaded multi-disk brake
Tires	**23.5-25**, 4x
Speed	**0-10 km/h** variable
Options	■ Solid-rubber tires **16.00-25,** 8x ■ Individual outrigger control for stability on uneven ground ■ Protection for travel drive ■ Shunting coupler ■ MP80: Solid-rubber tires 23.5-25, 4x ■ MS120: Solid-rubber tires 23.5-24, 4x

ELECTRIC DRIVE eGREEN

Option	■ Power: **250 kW / 400 Volt / 50 Hz** Total connected load 410 kVA, machine side fuse 500 A (alternatively 630 A with magnet system) for 400 V - star-delta connection motor start ■ Advantages: lowest operating costs, low-noise and virtually vibration-free work, long service life of the hydraulic components

OPERATING WEIGHT

Mass	**approx. 97,000 kg** Basic 870 M machine with equipment K18 and 3000 l orange peel grab
Note	Operating weight varies depending on equipment.



870 E Hybrid Load ratings

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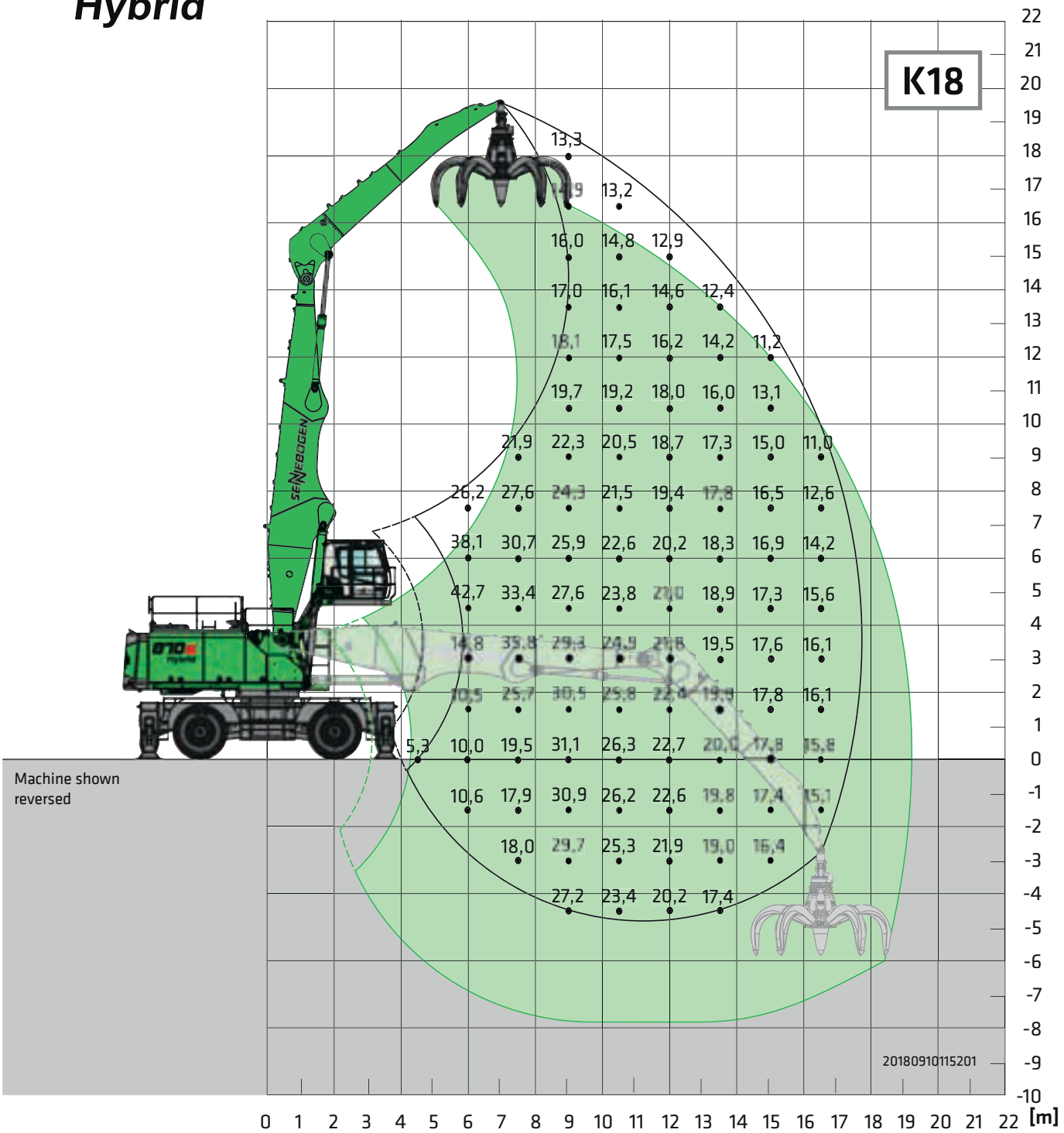

Undercarriage: MP80	**Compact boom:**	10.8 m	**Cab:**	Maxcab E270, hydraulically elevating
	Grab stick:	7.8 m		

All values are in tons (t) and are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. They apply on firm and level ground and 360° slewing. Attachments such as orange peel grabs, magnets, etc. are included in the load capacity. In accordance with harmonized EU standard EN 474-5, hydraulic excavators used for hoisting must be equipped with pipe fracture safety devices on the hoist cylinders and an overload warning device.

870E Hybrid Load ratings

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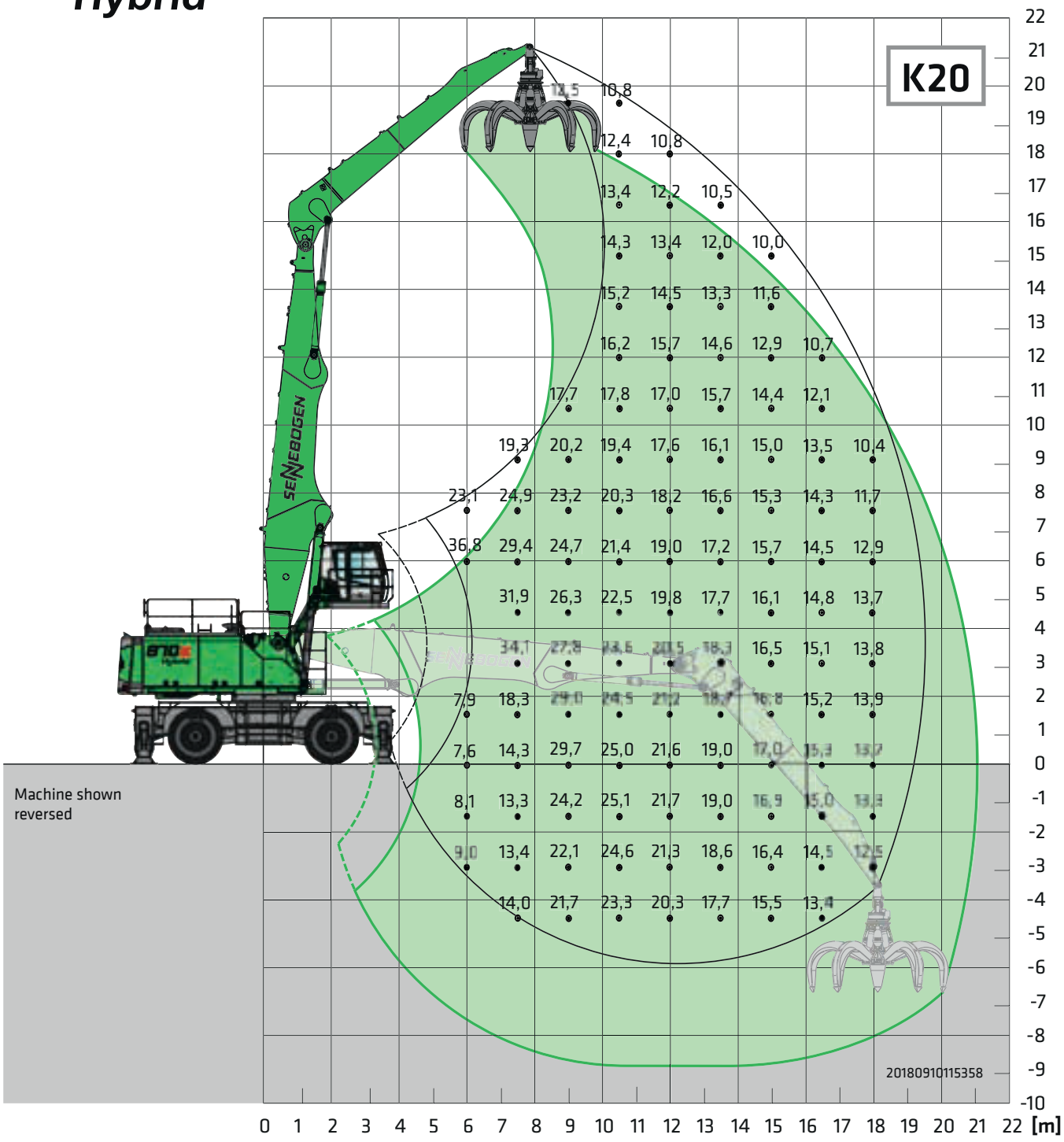

Undercarriage: MP80	**Compact boom:**	11.8 m	**Cab:**	Maxcab E270, hydraulically elevating
	Grab stick:	8.8 m		

All values are in tons (t) and are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. They apply on firm and level ground and 360° slewing. Attachments such as orange peel grabs, magnets, etc. are included in the load capacity. In accordance with harmonized EU standard EN 474-5, hydraulic excavators used for hoisting must be equipped with pipe fracture safety devices on the hoist cylinders and an overload warning device.

870E Hybrid Load ratings

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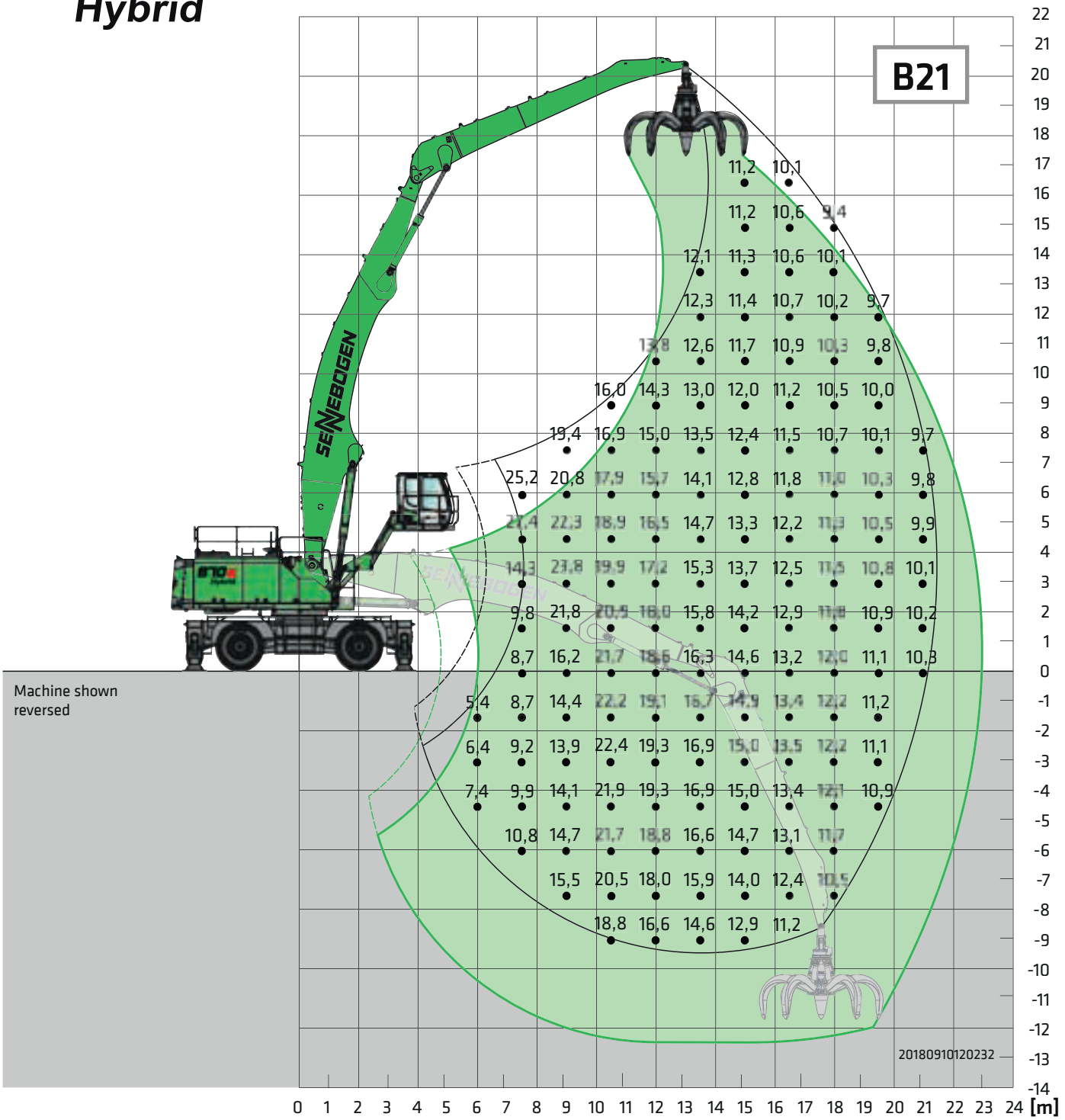

Undercarriage: MP80

Compact boom: 13.5 m Banana

Grab stick: 9.8 m

Cab: Maxcab E300/260 can be elevated and moved forward hydraulically

All values are in tons (t) and are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. They apply on firm and level ground and 360° slewing. Attachments such as orange peel grabs, magnets, etc. are included in the load capacity. In accordance with harmonized EU standard EN 474-5, hydraulic excavators used for hoisting must be equipped with pipe fracture safety devices on the hoist cylinders and an overload warning device.

870E Hybrid Load ratings

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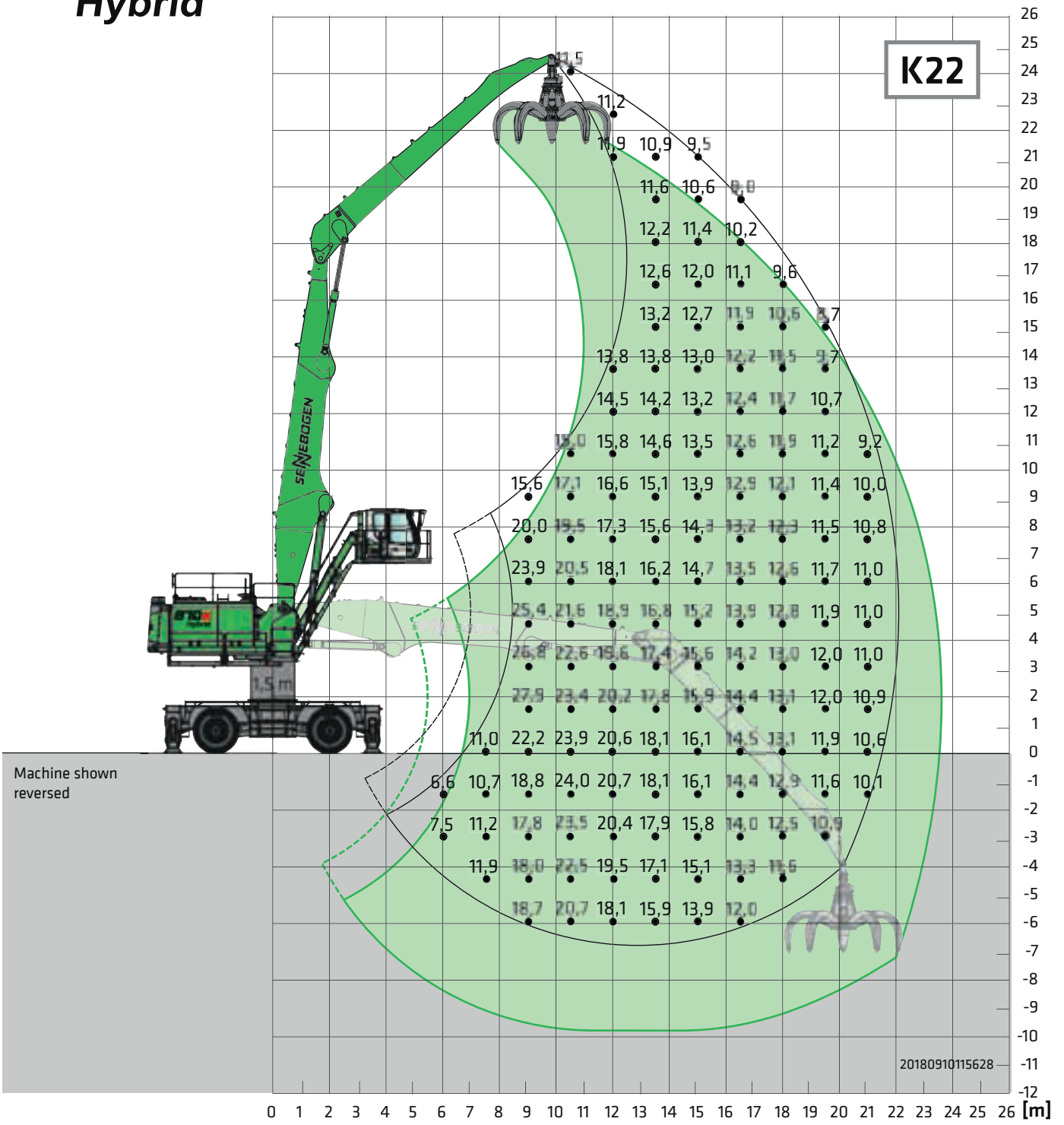

Undercarriage:	MP80	**Compact boom:**	12 m	**Cab:**	Maxcab Industry Skylift 700, hydraulically elevating (option)
Pylon:	1.5 m	**Grab stick:**	10.8 m		

All values are in tons (t) and are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. They apply on firm and level ground and 360° slewing. Attachments such as orange peel grabs, magnets, etc. are included in the load capacity. In accordance with harmonized EU standard EN 474-5, hydraulic excavators used for hoisting must be equipped with pipe fracture safety devices on the hoist cylinders and an overload warning device.

870 E Hybrid Load ratings

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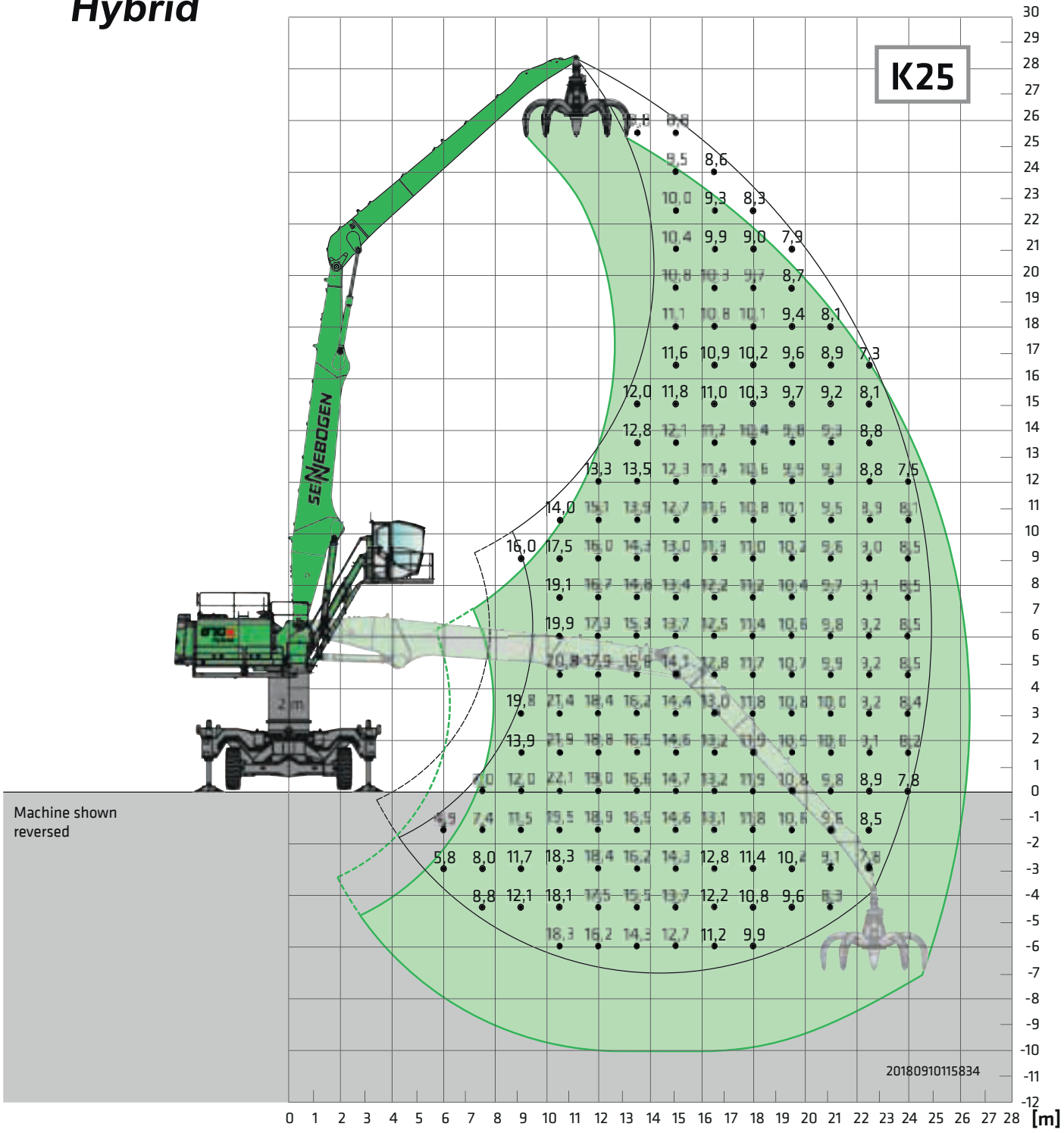
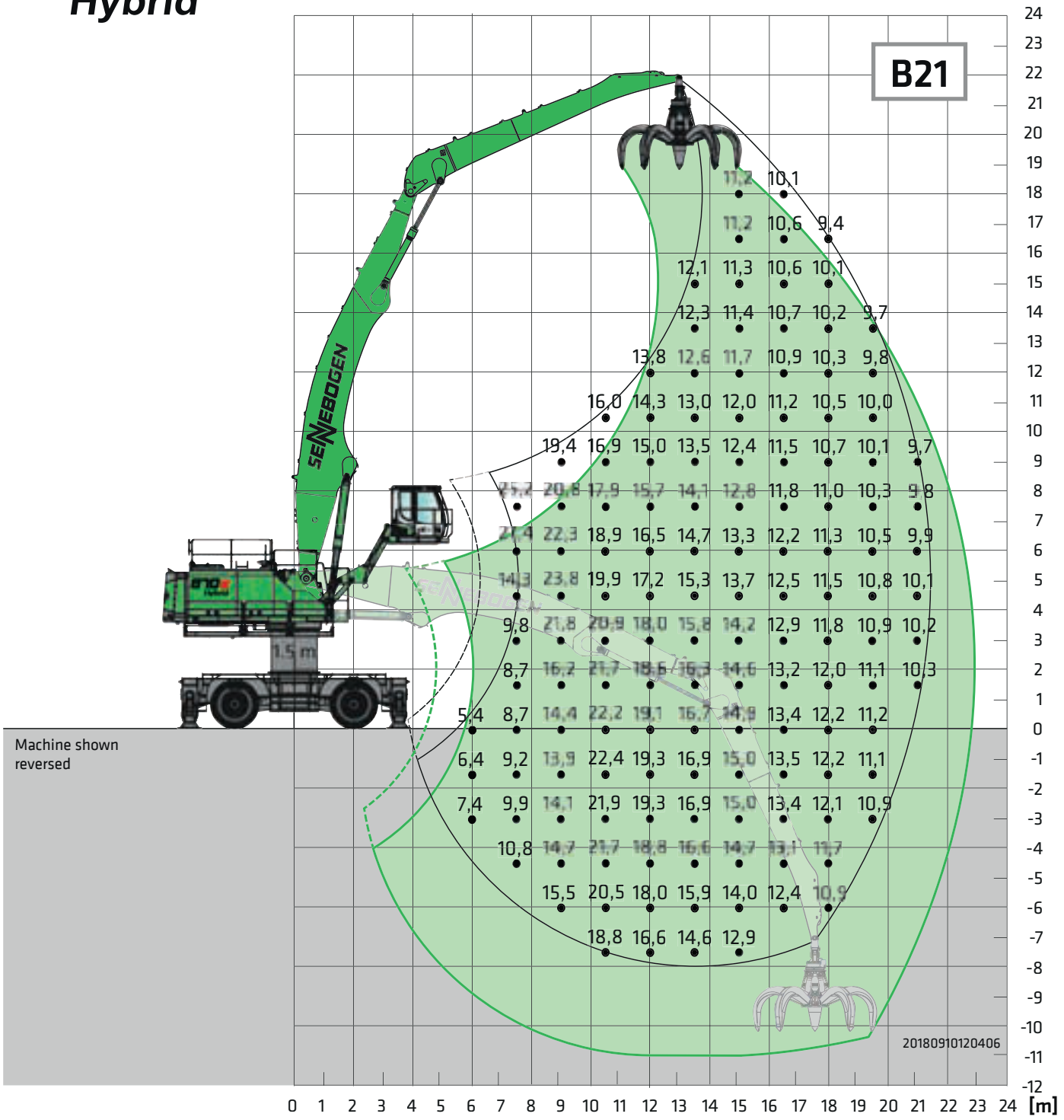


Undercarriage:	MS120	**Compact boom:**	14.0 m	**Cab:**	Mastercab Skylift 700, hydraulically elevating (option)
Pylon:	2.0 m	**Grab stick:**	12.3 m		

All values are in tons (t) and are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. They apply on firm and level ground and 360° slewing. Attachments such as orange peel grabs, magnets, etc. are included in the load capacity. In accordance with harmonized EU standard EN 474-5, hydraulic excavators used for hoisting must be equipped with pipe fracture safety devices on the hoist cylinders and an overload warning device.

Load ratings



Undercarriage:	MP80	**Compact boom:**	13.5 m Banana	**Cab:**	Maxcab E300/260 can be elevated and moved forward hydraulically
Pylon:	1.5 m	**Grab stick:**	9.8 m		

All values are in tons (t) and are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. They apply on firm and level ground and 360° slewing. Attachments such as orange peel grabs, magnets, etc. are included in the load capacity. In accordance with harmonized EU standard EN 474-5, hydraulic excavators used for hoisting must be equipped with pipe fracture safety devices on the hoist cylinders and an overload warning device.

870E Hybrid Load ratings

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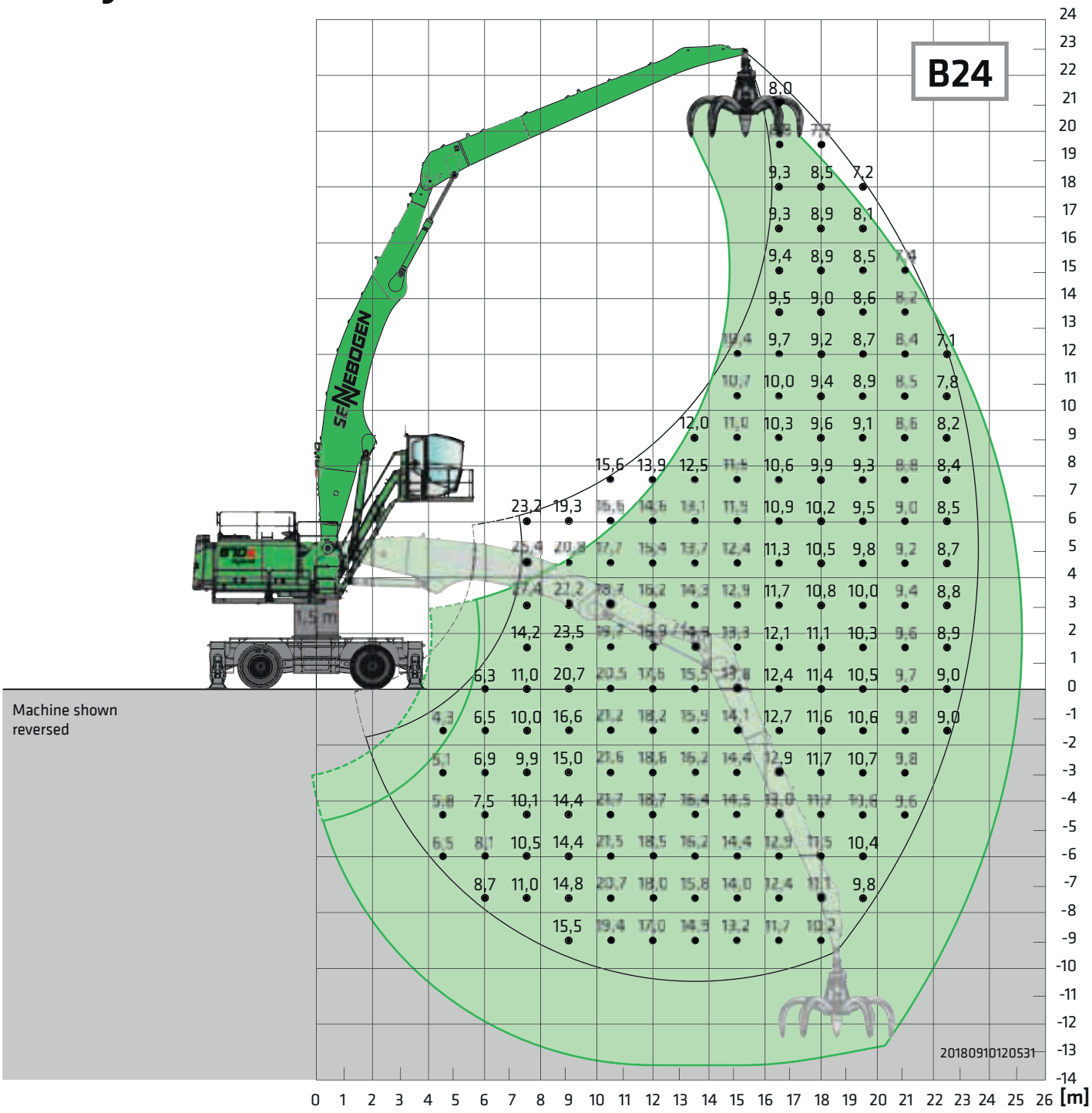
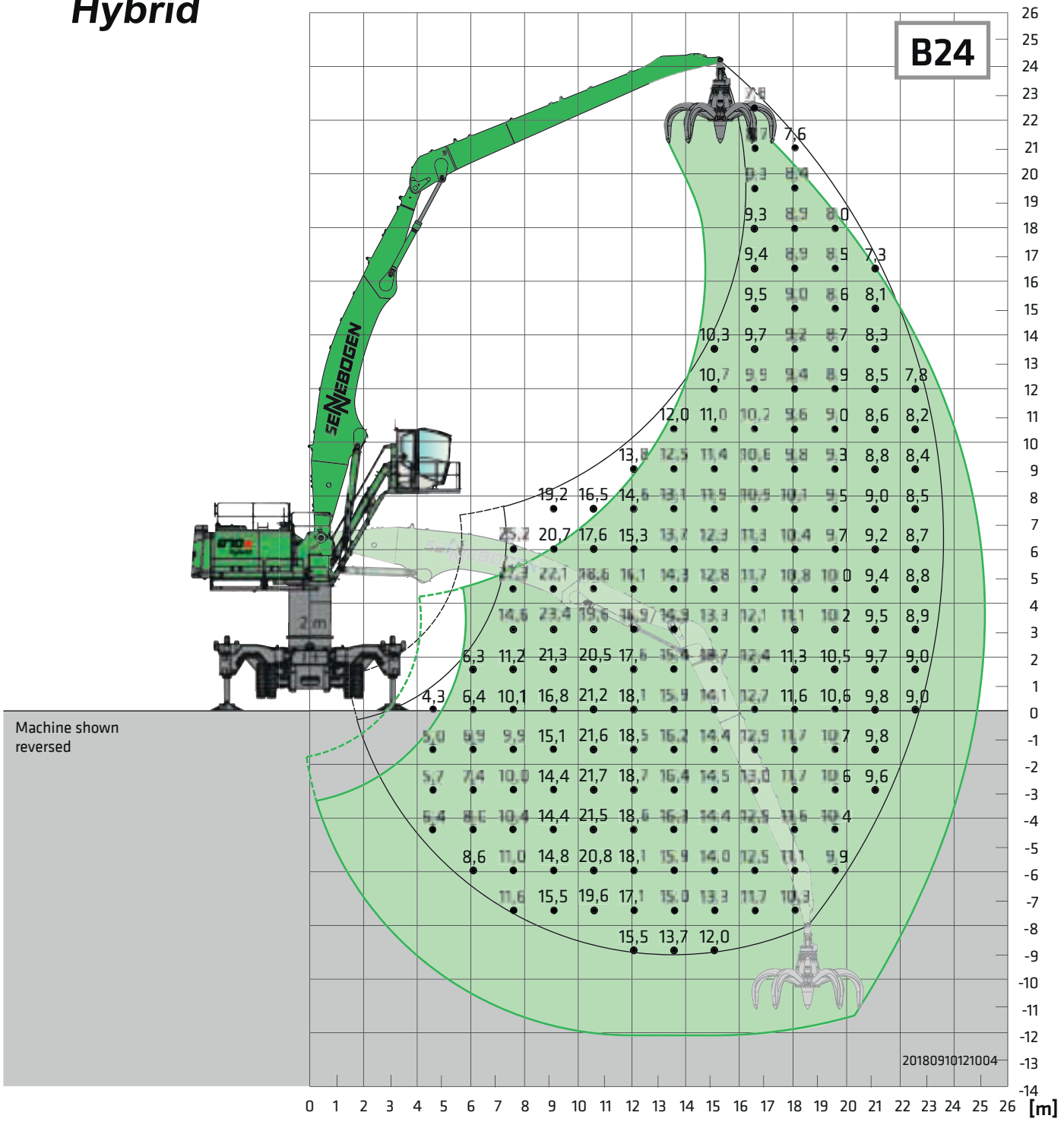


Undercarriage:	MP80	**Compact boom:**	13.5 m Banana	**Cab:**	Mastercab Skylift 700, hydraulically elevating (option)
Pylon:	1.5 m	**Grab stick:**	12.3 m		

All values are in tons (t) and are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. They apply on firm and level ground and 360° slewing. Attachments such as orange peel grabs, magnets, etc. are included in the load capacity. In accordance with harmonized EU standard EN 474-5, hydraulic excavators used for hoisting must be equipped with pipe fracture safety devices on the hoist cylinders and an overload warning device.

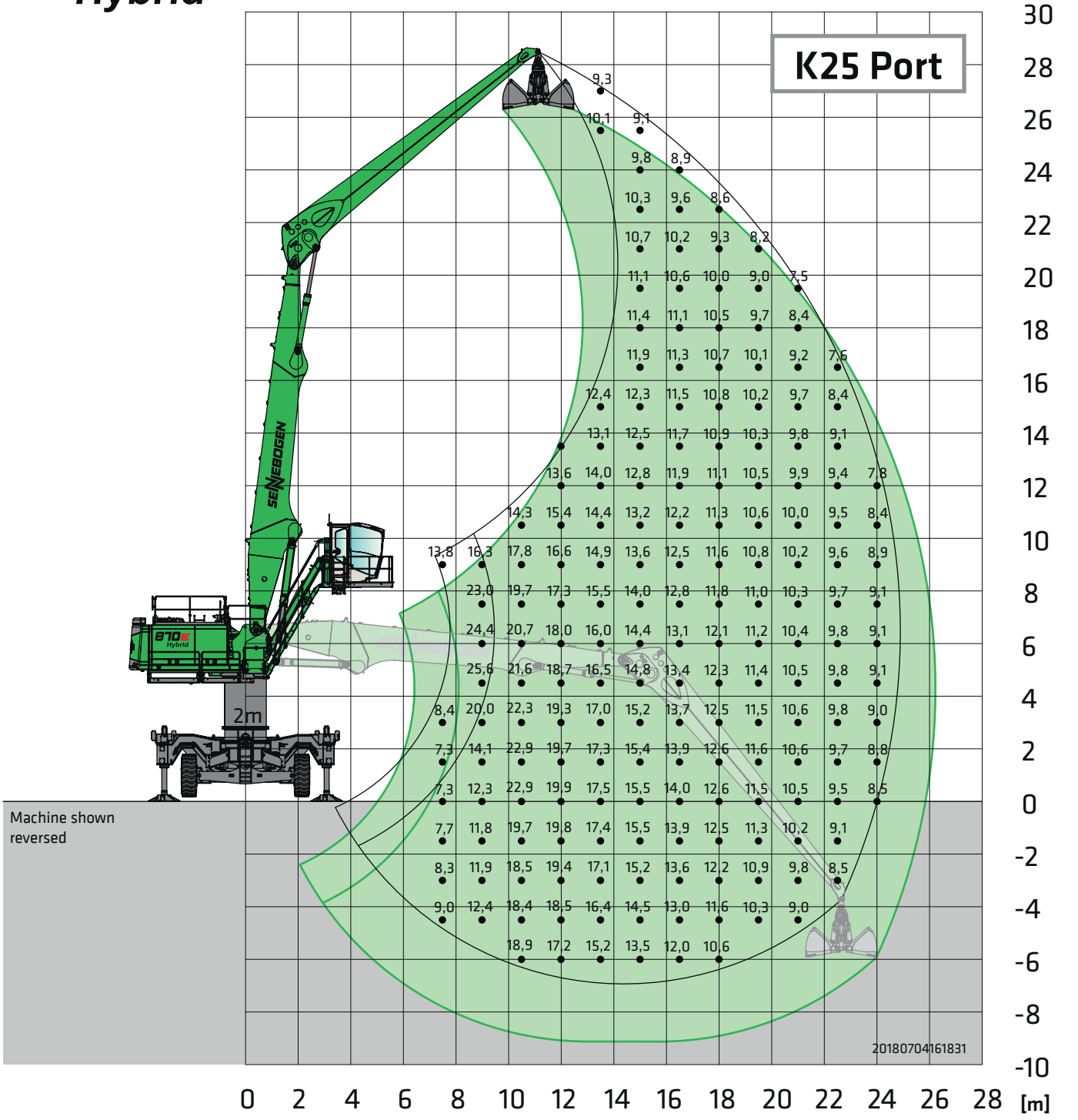
Load ratings



Undercarriage:	MS120	**Compact boom:**	13.5 m Banana	**Cab:**	Mastercab Skylift 700, hydraulically elevating (option)
Pylon:	2.0 m	**Grab stick:**	12.3 m		

All values are in tons (t) and are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. They apply on firm and level ground and 360° slewing. Attachments such as orange peel grabs, magnets, etc. are included in the load capacity. In accordance with harmonized EU standard EN 474-5, hydraulic excavators used for hoisting must be equipped with pipe fracture safety devices on the hoist cylinders and an overload warning device.

870E Hybrid Load ratings



Undercarriage:	MS120	**Compact boom:**	14 m	**Cab:**	Mastercab Skylift 700, hydraulically elevating (option)
Pylon:	2 m	**Grab stick:**	12.3 m		

All values are in tons (t) and are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. They apply on firm and level ground and 360° slewing. Attachments such as orange peel grabs, magnets, etc. are included in the load capacity. In accordance with harmonized EU standard EN 474-5, hydraulic excavators used for hoisting must be equipped with pipe fracture safety devices on the hoist cylinders and an overload warning device.

870E Hybrid Load ratings

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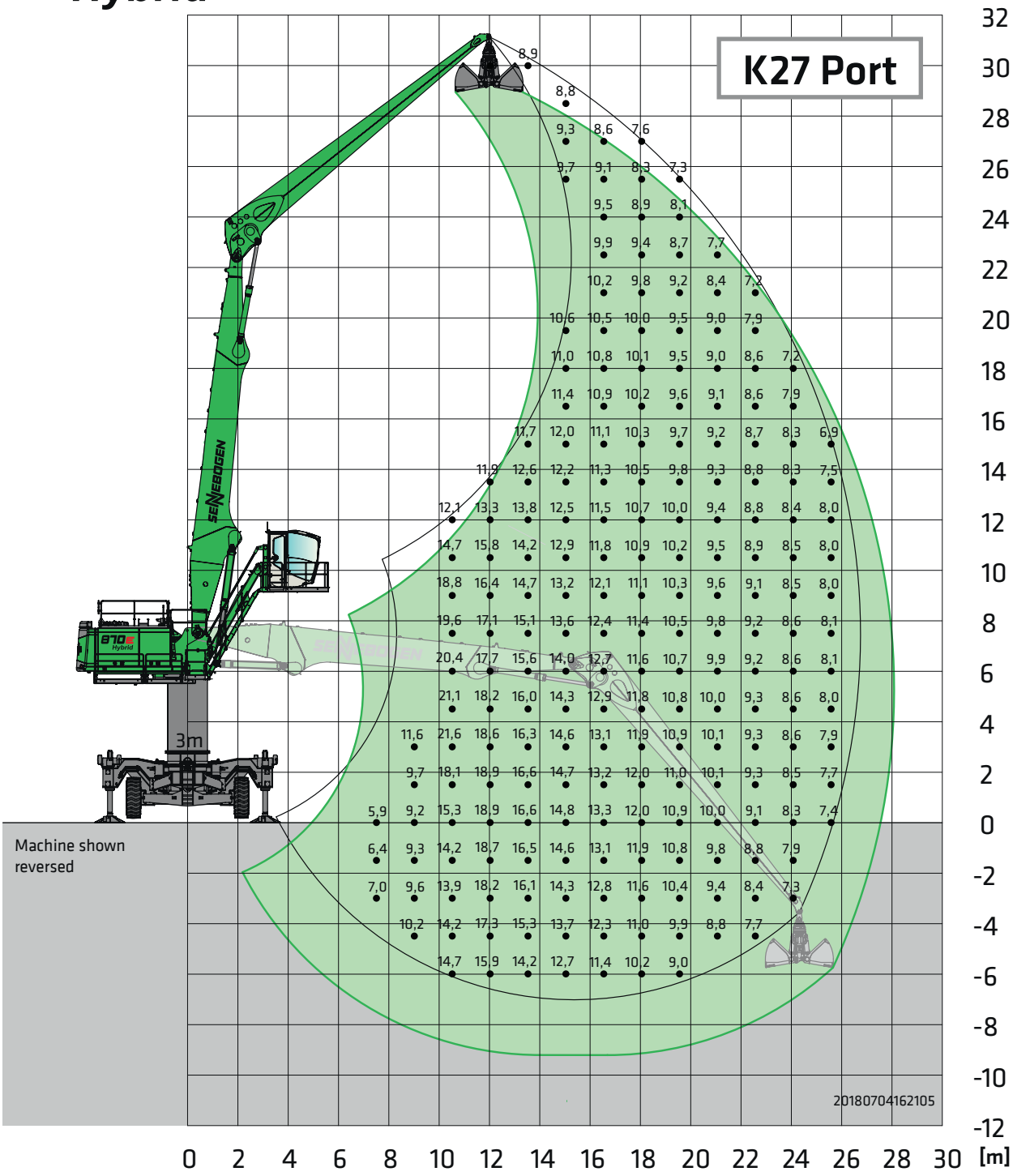

Undercarriage:	MS120	**Compact boom:**	15 m	**Cab:**	Mastercab Skylift 700, hydraulically elevating (option)
Pylon:	3.0 m	**Grab stick:**	13.3 m		

All values are in tons (t) and are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. They apply on firm and level ground and 360° slewing. Attachments such as orange peel grabs, magnets, etc. are included in the load capacity. In accordance with harmonized EU standard EN 474-5, hydraulic excavators used for hoisting must be equipped with pipe fracture safety devices on the hoist cylinders and an overload warning device.

870E Hybrid Load ratings

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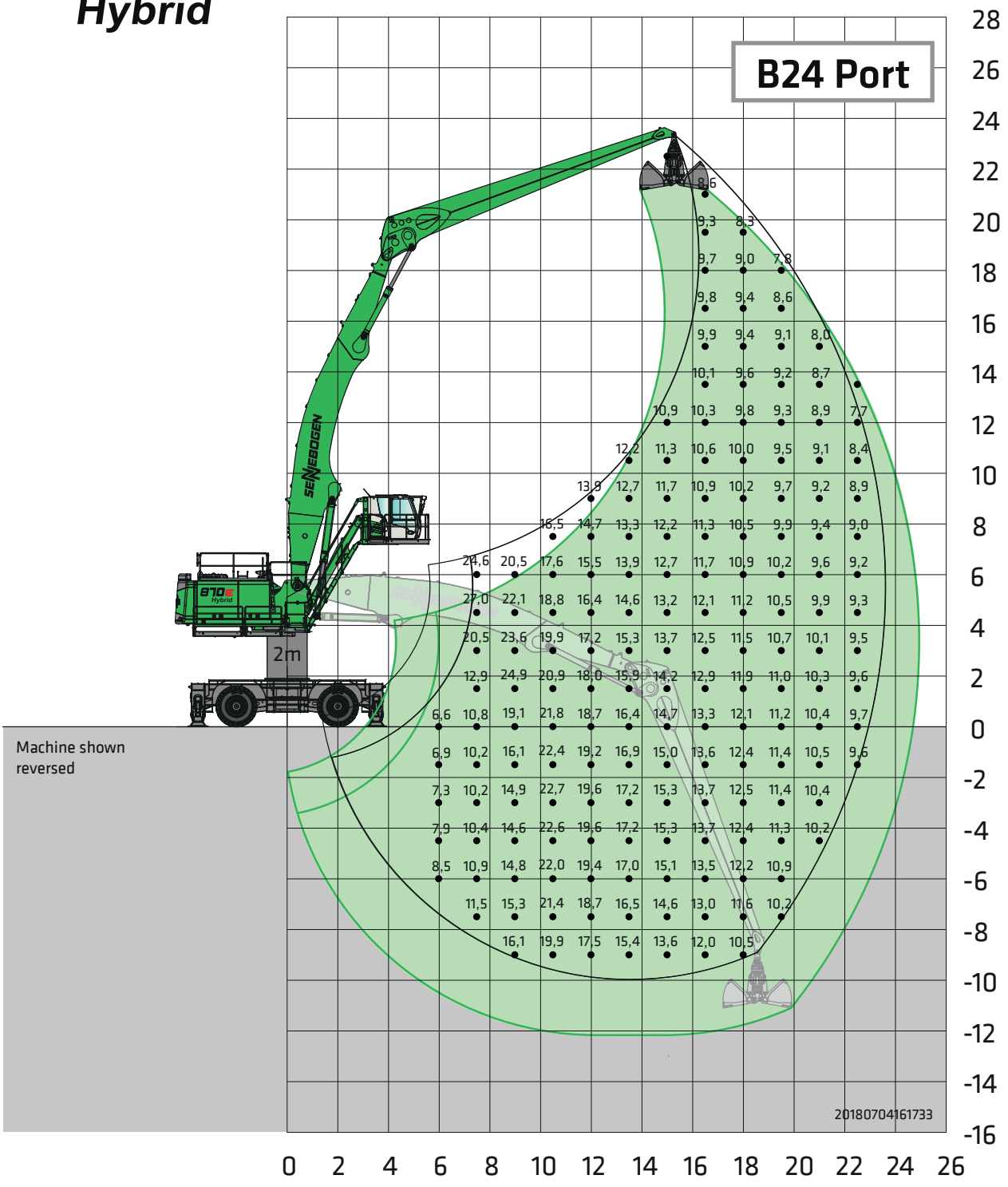


Undercarriage:	MP80	**Compact boom:**	13.5 m Banana	**Cab:**	Mastercab Skylift 700, hydraulically elevating (option)
Pylon:	2 m	**Grab stick:**	12.3 m		

All values are in tons (t) and are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. They apply on firm and level ground and 360° slewing. Attachments such as orange peel grabs, magnets, etc. are included in the load capacity. In accordance with harmonized EU standard EN 474-5, hydraulic excavators used for hoisting must be equipped with pipe fracture safety devices on the hoist cylinders and an overload warning device.

870 E Hybrid SENNEBOGEN Green Hybrid Energy Recovery System

Save 30 % energy
with the Green Hybrid System

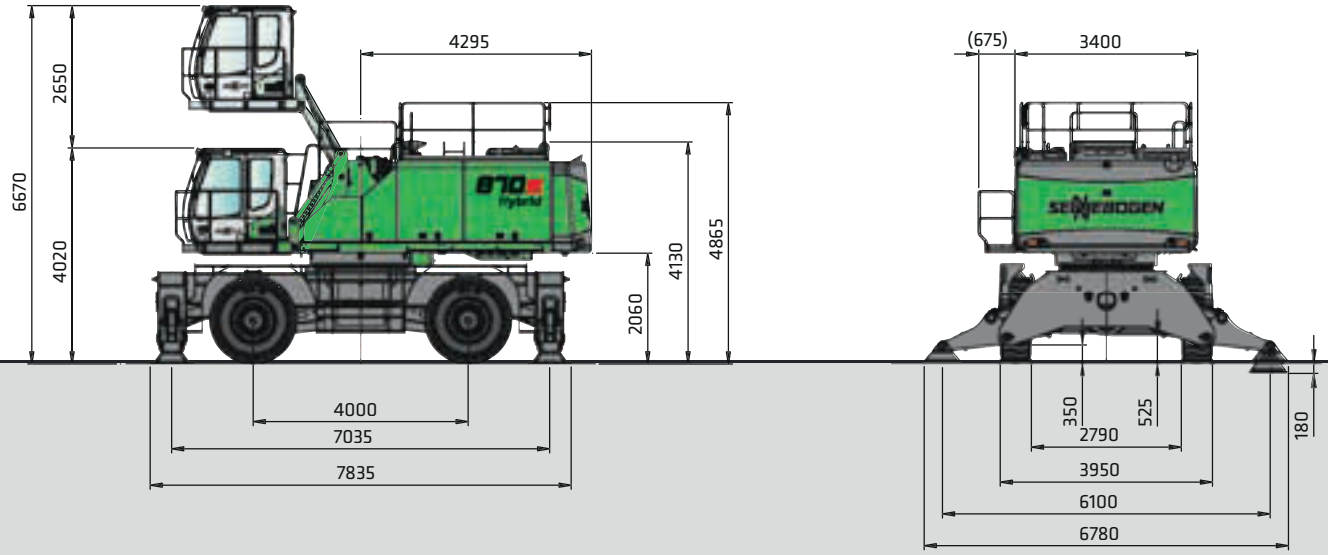
- A combination of hydraulic cylinders on the boom and nitrogen piston accumulators with gas recover energy during the work procedure
- Use of the recovered energy during the next working cycle reduces the engine power required

Safety

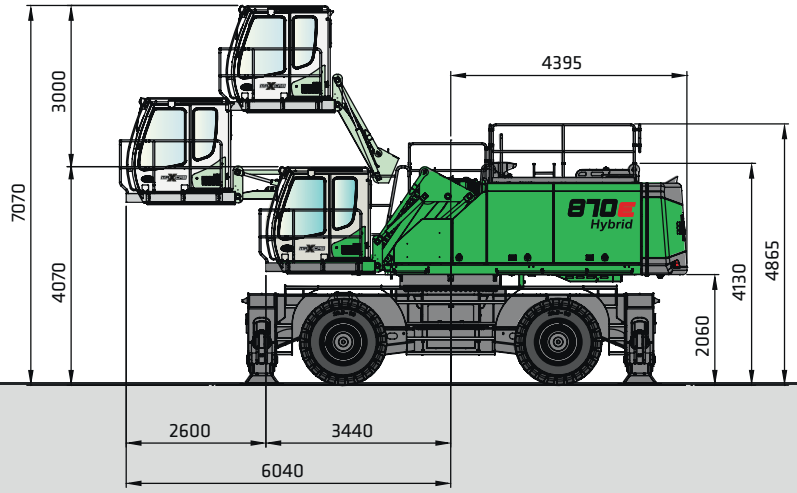
- Use of standard hydraulic components
- Energy storage in the enclosed rear section

Reduced operating costs

- High quality components for a long service life and reliability
- Proven concept: been used successfully since 2013
- Highly efficient system - already very effective in small lifting movements

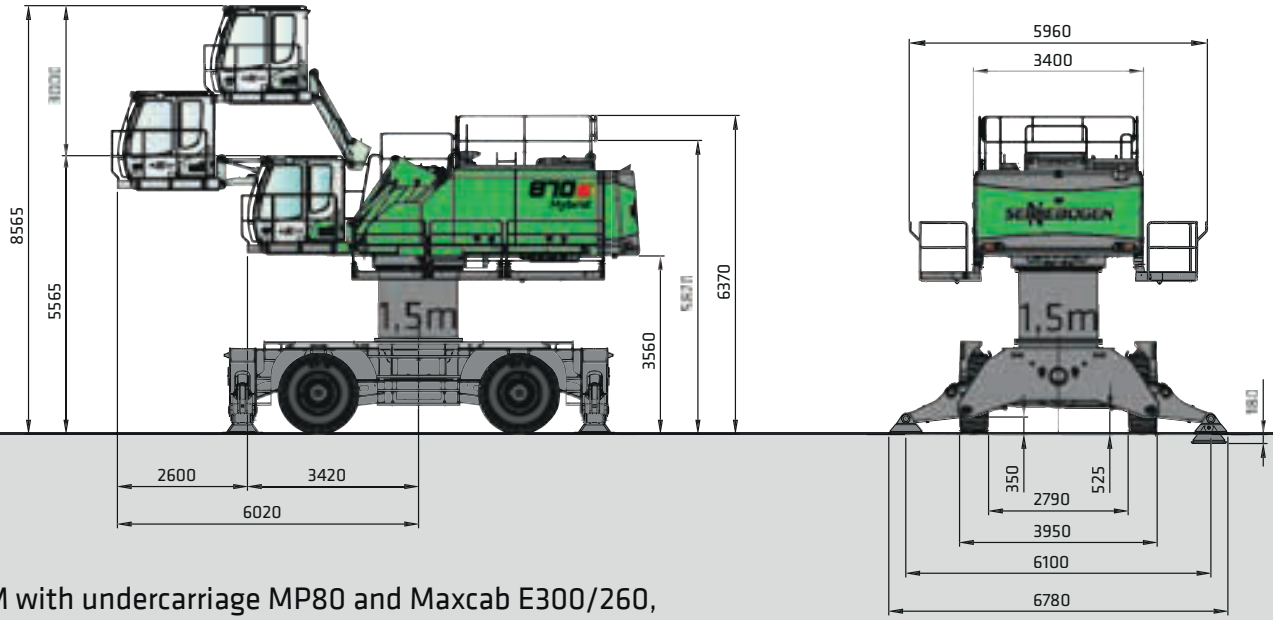


870 M with undercarriage MP80 and hydraulically elevating Maxcab E270

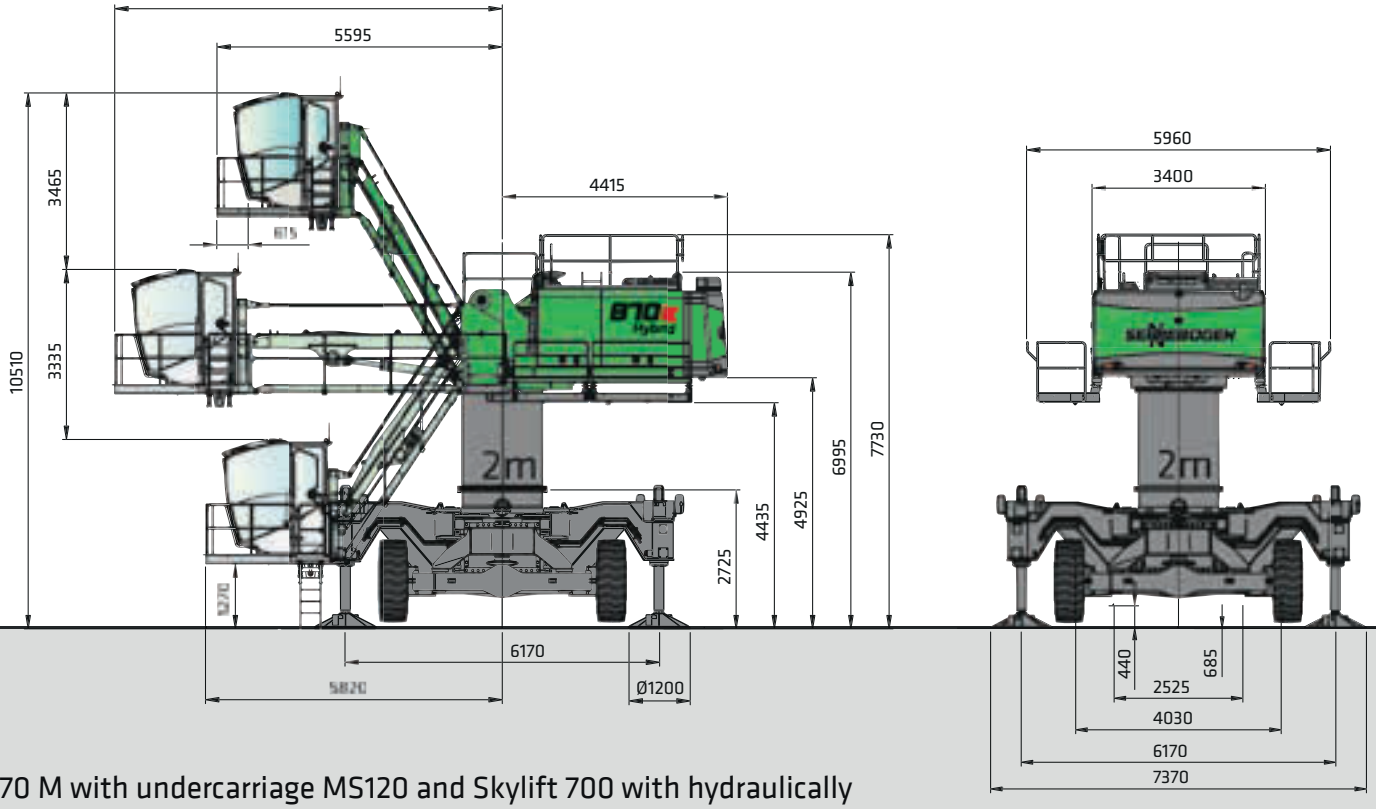


870 M with undercarriage MP80 and Maxcab E300/260, can be elevated and moved forward hydraulically

Dimensions

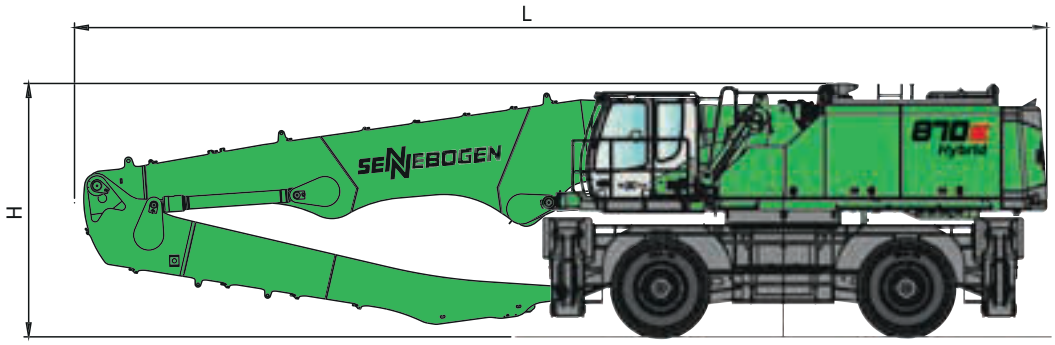


870 M with undercarriage MP80 and Maxcab E300/260,
can be elevated and moved forward hydraulically, and pylon 1.5 m



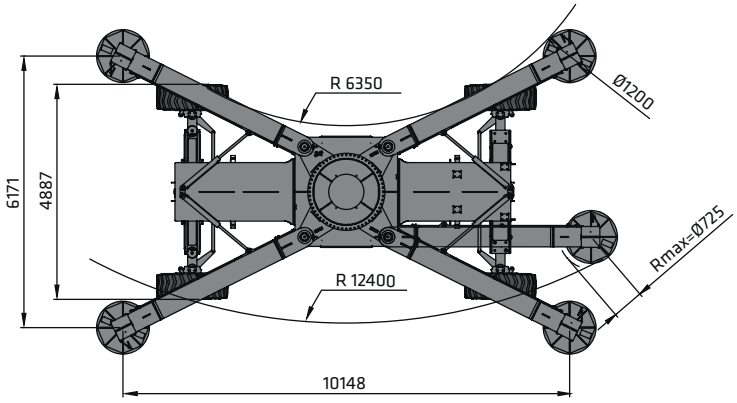
870 M with undercarriage MS120 and Skylift 700 with hydraulically elevating Mastercab and pylon 2.0 m

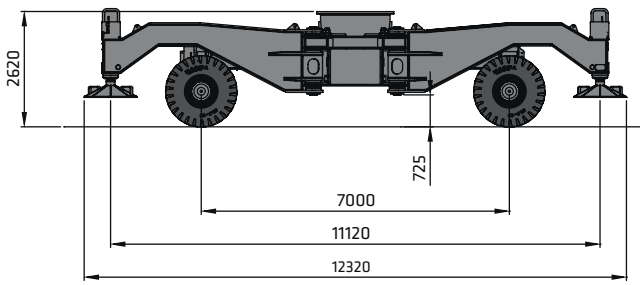
Transport dimensions



	Compact boom	Grab stick	Transport length (L)	Transport height (H)
K18	10.8 m	7.8 m	15.85 m	4.10 m
K20	11.8 m	8.8 m	16.9 m	4.10 m
K22	12.5 m	10.8 m	18.0 m	4.10 m
K25	14.0 m	12.3 m	19.4 m*	4.10 m
B21	13.5 m	9.8 m	18.3 m*	4.10 m
B24	13.5 m	12.3 m	18.8 m*	4.10 m
K25 Port	14.0 m	12.3 m	19.4 m*	4.10 m
K27 Port	15.0 m	13.3 m	20.5 m*	4.10 m
B24 Port	13.5 m	12.3 m	18.8 m*	4.10 m

* stick removed.





MS120 mobile undercarriage

870E Hybrid Recommended grabs

SGM orange peel grab (4 shells)

Design / size	Grab capacity	Weight[1]		max. piled density
		Shell profile		
		HO	G	
SGM	l	kg	kg	t/m³
800.50-4	800	2245	2490	2.0
1000.50-4	1000	2345	2585	
1500.50-4	1500	2475	2830	
2000.50-4	2000	2660	3075	

SGM orange peel grab (5 shells)

Design / size	Grab capacity	Weight[1]		max. piled density
		Shell profile[2]		
		HO	G	
SGM	l	kg	kg	t/m³
800.50	800	2580	2740	2.0
1000.50	1000	2710	2870	
1500.50	1500	2860	3100	
2000.50	2000	3060	3370	
2500.50	2500	3130	3615	
3000.50	3000	3250	3875	
3500.50	3500	3420	4140	

SGZ clamshell grab

Design / size	Grab capacity	Weight[1]	max. piled density
SGZ	l	kg	t/m³
2500.60	2500	2850	2.6
3000.60	3000	3030	2.0
3500.60	3500	3320	
4000.60	4000	3420	

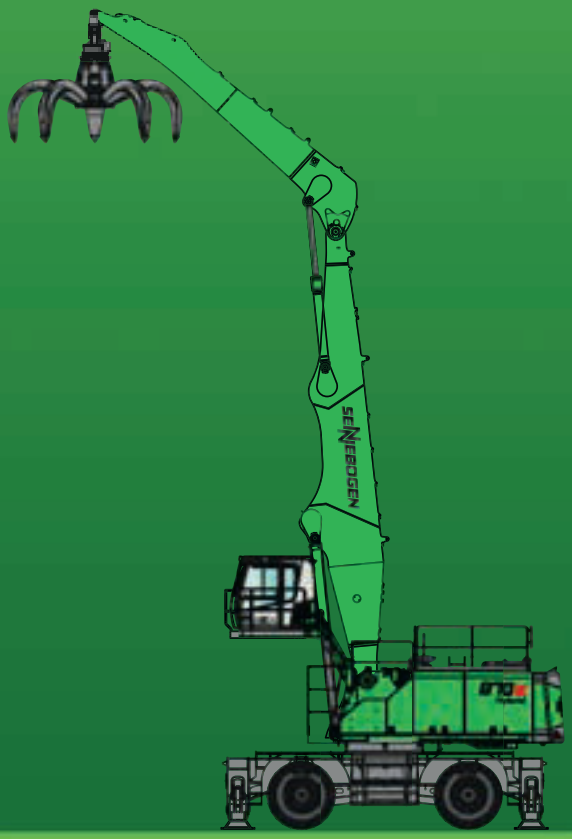
Magnet plates

Type series / model	Power	Dead weight	Pull-off strength	load capacity in kg
WOKO	kW	kg	kN	Slab (safety factor 2)
S-RLB 15	11.7	2400	380	19000
S-RLB 17	17.8	3300	640	32000
S-RLB 19	22.0	5090	790	39500
Recommended magnetic generator: 20 - 25 kW				

*) Available upon request [1]) Weight information without grab suspension, stick bolts, hose system [2]) Half-open shells: Shell sheet steel width 400 mm, 500 mm for 1,250 l capacity and higher

Detailed information on grabs, as well as timber grabs, quick-release systems, and other attachments can be found in the "Attachments" brochure

870E M



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