

# MANTSINEN

# 300

HybriLift®



More load, less energy.



# MANTSINEN 300 R

**MANTSINEN 300** takes hydraulic material handlers to a totally new level. It is designed for bulk loading and unloading with ships up to Panamax size. Versions with a shorter front equipment are ideal for handling of fully laden containers and breakbulk, like heavy steel coils.

Mantsinen 300 features a patented next generation **HybriLift®** system. Now even a much greater share of lifting capacity is generated by energy stored in the hybrid system.

The two **HybriLift®** cylinders are connected to a high volume nitrogen accumulator system. The cylinders constantly pull the main boom up with connecting rods that are attached the end of the boom. This means a remarkable stress reduction for the main boom.

Three stick cylinders, of which one is on top of the boom, provide a great lifting capacity also when working close to the machine.



## FRONT EQUIPMENT

### STICK

Stick foot and tip are high-tensile steel structures dimensioned to withstand the high stresses of continuous operation.

The box of the stick is constructed of four C-profiles using high tensile steel. The design allows the stick to be constructed with no welding seams in high stress areas, making it light and extremely durable. Hydraulic lines are well protected on sides of the stick.

### MAIN BOOM

Main boom foot and bosses are constructed of cast steel, providing an extended service life to one of the most stressed structural components of the machine. The optimized design ensures evenly distributed stresses on the boom box structure. Robust structure and large pin diameters minimize surface pressures and wear on bushings.

## UPPERSTRUCTURE

### MAIN FRAME

Double steel plates extend from the boom pivot points to the counterweight, providing an extremely rigid and strong upperstructure frame. Robust frame structure is essential also for long slewing ring lifetime.

### SWING MECHANISM

The Mantsinen 300 swing mechanism consists of two robust swing gears and a heavy-duty three-row roller type slewing ring. Internal teeth run in a grease bath. The closed loop swing with a separate pump provides an extremely smooth and controllable swing function for accurate and safe placement of loads. The closed loop swing is also an important energy saving feature.

### ENGINE

Volvo Penta engines are appreciated in material handling industry for their performance, low fuel consumption and durability. The sound insulated engine and pump compartment keeps noise levels at a minimum. The crosswise mounted engine is accessible from both sides. Hydraulic pumps are insulated from the engine by protective plates.

### RADIATOR

Side by side mounted radiator and hydraulic oil cooler provide easy access and cleaning. Fan reversing function continuously cleans radiator screens without interrupting machine operation.



## ELECTRIC POWER

For extreme operational economy  
- Mantsinen with HybriLift® and electric motor is an unbeatable combination

### UNDERCARRIAGE

#### HYDRAULIC AND CONTROL SYSTEM

Mantsinen purpose made control system and advanced hydraulic solutions guarantee an easy and accurate controllability as well as an unbeatable productivity. Special attention has been paid to total energy efficiency to keep fuel consumption remarkably low.

Several modes are available to optimize each operation. Mantsinen machines are always equipped with Mantsinen Safety System MSS including load control system to meet EU-regulations.

Mantsinen Telematic System MTS is a standard feature of the machine.

#### SERVICE WALKWAYS

The wide and robust internal and external service walkways provide safe and easy access to all service points.

#### CRAWLER GANTRY

The gantry type undercarriage allows trucks or rail cars to pass through. Crawler gantry undercarriage is available in different heights. One or two additional fuel tanks are available as an option. Crawler gantry provides significant benefits for logistic layout planning. Machine cycle time is optimized due to the minimized swing angle.

#### CRAWLER WITH PYLON

Crawler undercarriages can also be supplied with an additional pylon to optimize loading geometry and operator visibility.

#### TRACKS

The long and wide undercarriage provides excellent stability and 360° lift capacities throughout all working ranges.

#### TRACK SHOES

The Mantsinen designed flat track shoes run smoothly on gravel, asphalt and concrete.

### CABIN AND CABIN ELEVATOR

#### OPERATOR CABIN

The spacious, air conditioned operator cab has large windows, and windshield and floor window in one piece for excellent visibility of loading operations. Stainless steel cab construction ensures a long service life in any environment.

#### CAB ELEVATOR

The extremely rigid Mantsinen N2-6000 cab elevator feature independent vertical and horizontal movements to position the operator for maximum visibility of loading targets. Optional N1-3000 cab elevator and three fixed raised cab positions are available to meet the application requirement.


# MANTSINEN 300 M

**MANTSINEN 300** takes hydraulic material handlers to a totally new level. It is designed for bulk loading and unloading with ships up to Panamax size. Versions with a shorter front equipment are ideal for handling of fully laden containers and breakbulk, like heavy steel coils.

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Three stick cylinders, of which one is on top of the boom, provide a great lifting capacity also when working close to the machine.



**The MANTSINEN 300 M** six-axle undercarriage provides a great mobility with a tight turning radius and two different steering modes:

- All-wheel steering
- Crab steering

## FRONT EQUIPMENT

### STICK

Stick foot and tip are high-tensile steel structures dimensioned to withstand the high stresses of continuous operation.

The box of the stick is constructed of four C-profiles using high tensile steel. The design allows the stick to be constructed with no welding seams in high stress areas, making it light and extremely durable. Hydraulic lines are well protected on sides of the stick.

### MAIN BOOM

Main boom foot and bosses are constructed of cast steel, providing an extended service life to one of the most stressed structural components of the machine. The optimized design ensures evenly distributed stresses on the boom box structure. Robust structure and large pin diameters minimize surface pressures and wear on bushings.

## UPPERSTRUCTURE

### MAIN FRAME

Double steel plates extend from the boom pivot points to the counterweight, providing an extremely rigid and strong upperstructure frame. Robust frame structure is essential also for long slewing ring lifetime.

### SWING MECHANISM

The Mantsinen 300 swing mechanism consists of two robust swing gears and a heavy-duty three-row roller type slewing ring. Internal teeth run in a grease bath. The closed loop swing with a separate pump provides an extremely smooth and controllable swing function for accurate and safe placement of loads. The closed loop swing is also an important energy saving feature.

### ENGINE

Volvo Penta engines are appreciated in material handling industry for their performance, low fuel consumption and durability. The sound insulated engine and pump compartment keeps noise levels at a minimum. The crosswise mounted engine is accessible from both sides. Hydraulic pumps are insulated from the engine by protective plates.

### RADIATOR

Side by side mounted radiator and hydraulic oil cooler provide easy access and cleaning. Fan reversing function continuously cleans radiator screens without interrupting machine operation.





## ELECTRIC POWER

For extreme operational economy – Mantsinen with HybriLift® and electric motor is an unbeatable combination

### UNDERCARRIAGE

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Several modes are available to optimize each operation. Mantsinen machines are always equipped with Mantsinen Safety System MSS including load control system to meet EU-regulations.

Mantsinen Telematic System MTS is a standard feature of the machine.

#### SERVICE WALKWAYS

The wide and robust internal and external service walkways provide safe and easy access to all service points.

#### RUBBER TYRE UNDERCARRIAGE

The robust rubber tyre undercarriage is available in different heights. Six-wheel drive provides excellent drawbar pull for operation on uneven surfaces. Large and wide tyres minimize surface pressures.

Four individually controllable stabilizers permit a full 360 degrees of rated loads lifting. The large 2 000 mm x 4 000 mm stabilizer pads are equipped with spherical bearings to adapt to surface conditions. If ground pressure is critical, the machine can be equipped with optional extra large 2 x 2 000 x 3 000 mm stabilizer pads.

#### RUBBER TYRE GANTRY

The robust rubber tyre gantry undercarriage is available in heights 7,8 to 12,8 meters. The gantry type undercarriage allows trucks or rail cars to pass through. Gantry undercarriage provides significant benefits for logistic layout planning. 12 individual axle units with large and wide tyres allow also crab steering.

### CABIN AND CABIN ELEVATOR

#### OPERATOR CABIN

The spacious, air conditioned operator cab has large windows, and windshield and floor window in one piece for excellent visibility of loading operations. Stainless steel cab construction ensures a long service life in any environment.

#### CAB ELEVATOR

The extremely rigid Mantsinen N2-6000 cab elevator feature independent vertical and horizontal movements to position the operator for maximum visibility of loading targets. Optional N1-3000 cab elevator and three fixed raised cab positions are available to meet the application requirement.

# MANTSINEN 300 ES

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### MAIN BOOM

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## UPPERSTRUCTURE

### MAIN FRAME

Double steel plates extend from the boom pivot points to the counterweight, providing an extremely rigid and strong upperstructure frame. Robust frame structure is essential also for long slewing ring lifetime.

### SWING MECHANISM

The Mantsinen 300 swing mechanism consists of two robust swing gears and a heavy-duty three-row roller type slewing ring. Internal teeth run in a grease bath. The closed loop swing with a separate pump provides an extremely smooth and controllable swing function for accurate and safe placement of loads. The closed loop swing is also an important energy saving feature.

### ELECTRIC MOTOR

Electric motor is mounted in a container unit, making it easily accessible from both sides. The sound insulated compartment keeps noise at minimum. Hydraulic pumps are isolated from the motor by a firewall.

### OIL COOLER

Hydraulic oil cooler is very easily accessible for cleaning. Fan reversing function continuously cleans the cooler screen without interrupting machine operation.



## UNDERCARRIAGE

### HYDRAULIC AND CONTROL SYSTEM

Mantsinen purpose made control system and advanced hydraulic solutions guarantee an easy and accurate controllability as well as an unbeatable productivity. Special attention has been paid to total energy efficiency to keep fuel consumption remarkably low.

Several modes are available to optimize each operation. Mantsinen machines are always equipped with Mantsinen Safety System MSS including load control system to meet EU-regulations.

Mantsinen Telematic System MTS is a standard feature of the machine.

### SERVICE WALKWAYS

The wide and robust internal and external service walkways provide safe and easy access to all service points.

### RAIL MOUNTED UNDERCARRIAGE

The configuration of the rail undercarriage can be adapted to the existing rails. The robust gantry type undercarriage allows truck traffic or railway wagons to pass through. Gantry configuration can be optimized according to rail and quay carrying capacities.

A robust and compact hydraulic drive with planetary gears ensures smooth travel. Cable reels are available to meet requirements of drive distance and speed.

### BOGIES

Mantsinen 300 ES is available with 4 to 8 wheel bogies according to rail and quay carrying capacities. The distance between the wheelbase can also be chosen according to application.

The number of powered wheels can be increased to meet requirements of hopper towing.

### WHEELS

Wheel diameter can be optimized to match the loads of the machine and bogie design. There are  $\varnothing$  400 mm and  $\varnothing$  630 mm wheels available.

## CABIN AND CABIN ELEVATOR

### OPERATOR CABIN

The spacious, air conditioned operator cab has large windows, and windshield and floor window in one piece for excellent visibility of loading operations. Stainless steel cab construction ensures a long service life in any environment.

### CAB ELEVATOR

The extremely rigid Mantsinen N2-6000 cab elevator feature independent vertical and horizontal movements to position the operator for maximum visibility of loading targets. Optional N1-3000 cab elevator and three fixed raised cab positions are available to meet the application requirement.

# TECHNICAL SPECIFICATIONS

Front equipment	
Max. horizontal reach	38 m with 21,5 m boom + 18 m stick
Main boom lengths, straight and curved	12,5 / 13,5 / 14,5 / 15,5 / 16,5 / 17,5 / 19,5 / 21,5 m
Stick lengths	10 / 11 / 12 / 13 / 14 / 15 / 16 / 18 m
Diesel Engine	
Stage II/Tier2	Volvo Penta TAD1643VE 565 kW / 1800 r/min
Stage IV/Tier 4f	Volvo Penta TAD1672VE 515 kW / 1800 r/min
Displacement	16,1 l
Number of cylinders	6
Voltage	24 V
Batteries	2 x 225 Ah / 12V
Electric motor with soft starter	
Motor type	355 kW IEC cast iron motor 1500 rpm @50Hz, 1800 rpm @60 Hz
Voltages	380 to 690 V as standard, other voltages upon request
Hydraulic system	
HybriLift® energy recovery system	Equivalent to 400 kW engine power
Oil flow, front equipment and drive	4 x 420 l/min
Operating pressure	330 bar
Operating pressure, travel and Heavy Lift mode	350 bar
Oil flow, swing	540 l/min, closed loop system
Swing pressure, max.	300 bar
Max. swing speed	4,1 r/min
Swing torque	480 kNm
300 M / 300 EM with rubber tyres	
Weight without attachments	320 to 370 t, depending on configuration
Heights	4,2 m as standard. With pylon 5,2 / 5,7 / 6,4 / 6,9 / 8,0
Wheelbase	2 m / 2 m / 4 m / 2 m / 2 m
Tyres	24 pcs 16.00-25 solid rubber
Service brakes	Wet multi disk brakes on three axles
Parking brake	Automatic wet multi disc brakes on three axles
Drive speed	Max 3,5 km/h
Stabilizer pads	2 000 x 4 000 mm. As option 2 x 2 000 x 3 000 mm
300 R / 300 ER with crawler	
Weight without attachments	320 to 380 t depending on configuration
Heights	3,0 m as standard. With pylon 4,0 / 4,5 / 5,2 / 5,7 / 6,8 / 8,3 m Gantry: 7,8 / 9,0 m. With pylon 10,0 / 10,5 / 11,2 / 11,7 / 12,8 / 13,1 m
Load carrying track length	10 000 mm
Track shoes	1 200 mm cast flat shoe
Travel speed	0 - 1,5 km/h
300 S / 300 ES mounted on rails	
	According to customer specification.
300 F / 300 EF fixed	
	According to customer specification.
Refill capacities	
Hydraulic oil reservoir	2 150 l
Fuel tank	3 000 l
AdBlue tank for Stage IV / Tier 4f diesel	160 l



# MANTSINEN HybriLift®

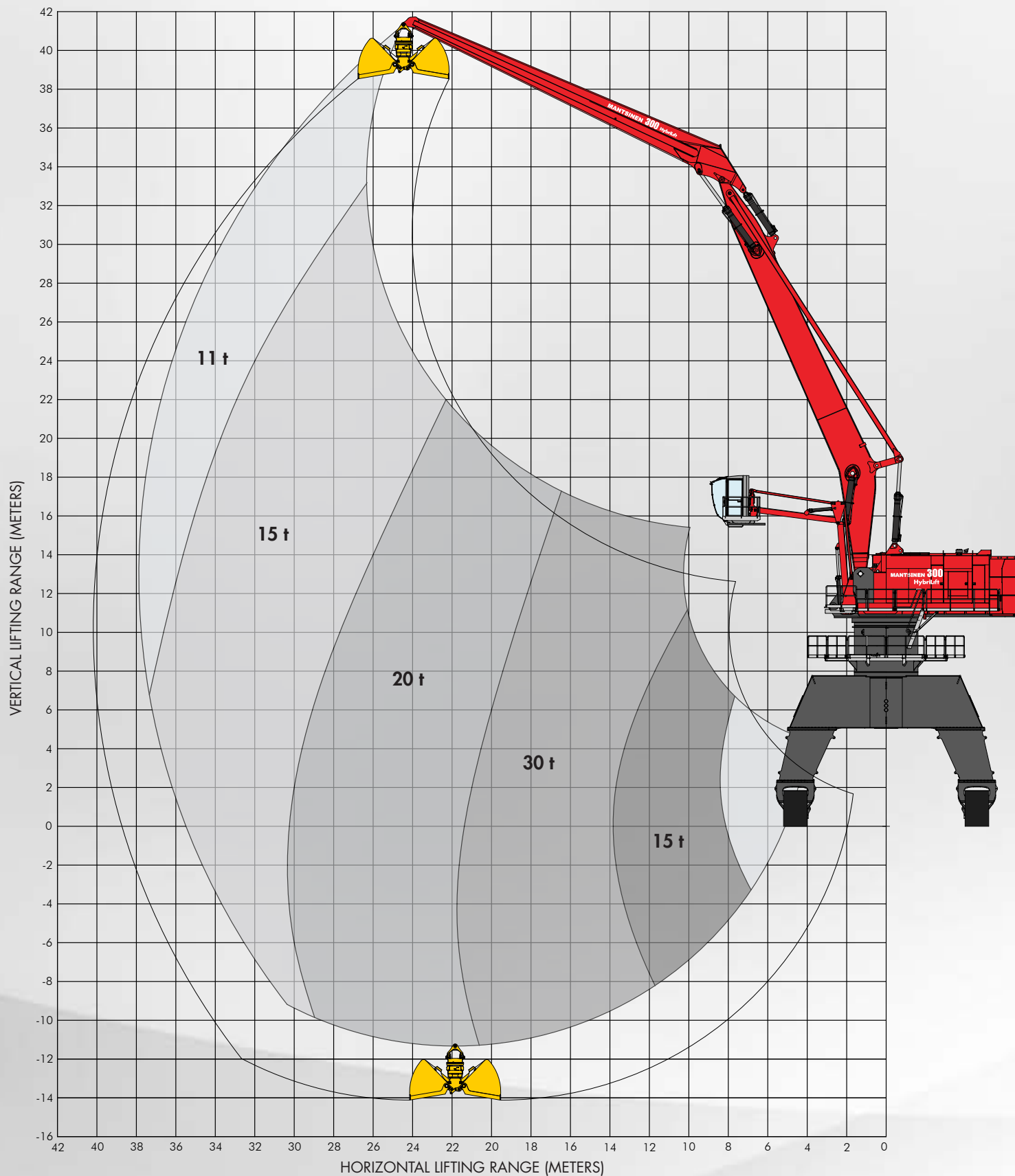
Increases Energy  
Efficiency by up to

## 50%

Operator cabin	Ergonomic seat
<b>Standard equipment</b> <ul style="list-style-type: none"> <li>• Windshield and floor window in one piece</li> <li>• Roof window</li> <li>• Tinted window glasses</li> <li>• Windshield wiper with adjustable intermittent function</li> <li>• Roof window wiper</li> <li>• Automatic heating and air conditioning</li> <li>• Sun shades</li> <li>• Folding instructor seat</li> <li>• Radio and CD player, MP 3 - compatible</li> <li>• Cup holder</li> <li>• Literature compartment</li> </ul>	<ul style="list-style-type: none"> <li>• Air suspension</li> <li>• Automatic weight adjustment</li> <li>• Swivel function</li> <li>• Seat belt</li> <li>• Heating</li> <li>• Fully adjustable               <ul style="list-style-type: none"> <li>- Slide, front - back</li> <li>- Height</li> <li>- Seat tilt</li> <li>- Armrests</li> <li>- Headrest</li> <li>- Back rest</li> </ul> </li> </ul>
<b>Mantsinen Control System MCS</b>	
<ul style="list-style-type: none"> <li>• Ergonomic, adjustable multi-function joysticks</li> <li>• Travel and steering by one grip joystick</li> <li>• All front equipment and attachment functions are proportional</li> <li>• Function speeds, ramps and control curves are adjustable</li> <li>• Electric end cushion boom, stick and cab elevator</li> <li>• Precision mode</li> <li>• Heavy Lift mode</li> <li>• Mantsinen Telematic System MTS</li> </ul>	<ul style="list-style-type: none"> <li>• Colour display 7.0" user interface               <ul style="list-style-type: none"> <li>- Operating data and gauges</li> <li>- Warning signals, illuminated pop up symbols</li> <li>- Acoustic signal for critical alarms</li> <li>- Settings</li> <li>- Diagnostics</li> <li>- Log function</li> <li>- Instant power consumption</li> <li>- Periodic fuel or electric power consumption</li> </ul> </li> </ul>
<b>Mantsinen Safety System MSS</b>	
<ul style="list-style-type: none"> <li>• Overload and stability control with motion cut</li> <li>• Cab collision prevention with motion cut</li> <li>• Adjustable operation limitations</li> <li>• Can Open CAN-bus technology</li> </ul>	<ul style="list-style-type: none"> <li>• Colour display 5.7" user interface               <ul style="list-style-type: none"> <li>- Animated machine operation</li> <li>- Load, reach and height information</li> <li>- Attachment menu</li> </ul> </li> </ul>
<b>Standard equipment</b>	
<ul style="list-style-type: none"> <li>• Load control valves on boom and stick cylinders including hose rupture valves</li> <li>• Thermostat controlled fans</li> <li>• Full flow filters</li> <li>• By-pass fine filter 3 µm with water absorption</li> <li>• Second pressure adjustment for attachments</li> <li>• Central lubrication system for front equipment and slewing ring raceway</li> </ul>	<ul style="list-style-type: none"> <li>• Central lubrication system for rubber tyre undercarriage</li> <li>• LED working lights, 4 underneath the cabin and 4 on stick</li> <li>• Acoustic travel alarm</li> <li>• Signal horn</li> <li>• Service platforms</li> <li>• Heavy Lift and precision mode</li> <li>• Emergency exit kit</li> </ul>
<b>Options</b>	
<ul style="list-style-type: none"> <li>• Fixed cab positions</li> <li>• Cab elevator N1-3000</li> <li>• Cab elevator N2-6000</li> <li>• Operator seat BE-GE 3000 SE               <ul style="list-style-type: none"> <li>- Airvent function</li> <li>- Air-cushioned</li> <li>- Centralized control panel</li> </ul> </li> <li>• Camera under stick</li> <li>• Rear view camera</li> <li>• Beacon light travel alarm</li> <li>• Loudspeaker</li> <li>• Bullet proof windshield</li> </ul>	<ul style="list-style-type: none"> <li>• Automatic clamshell bucket leveling while closing</li> <li>• Biodegradable hydraulic oil</li> <li>• Large by-pass fine filter with water absorption</li> <li>• Second and third hydraulic function for attachment</li> <li>• Additional filters for attachment hydraulic lines</li> <li>• Engine preheating</li> <li>• Hydraulic oil preheating</li> <li>• Cab preheating</li> <li>• Magnet generator 30 or 40 kW</li> <li>• Additional fuel tanks, depending on configuration</li> <li>• Electric re-fuelling and AdBlue pump</li> <li>• Fire suppression system</li> </ul>

# MANTSINEN 300 HybriLift®

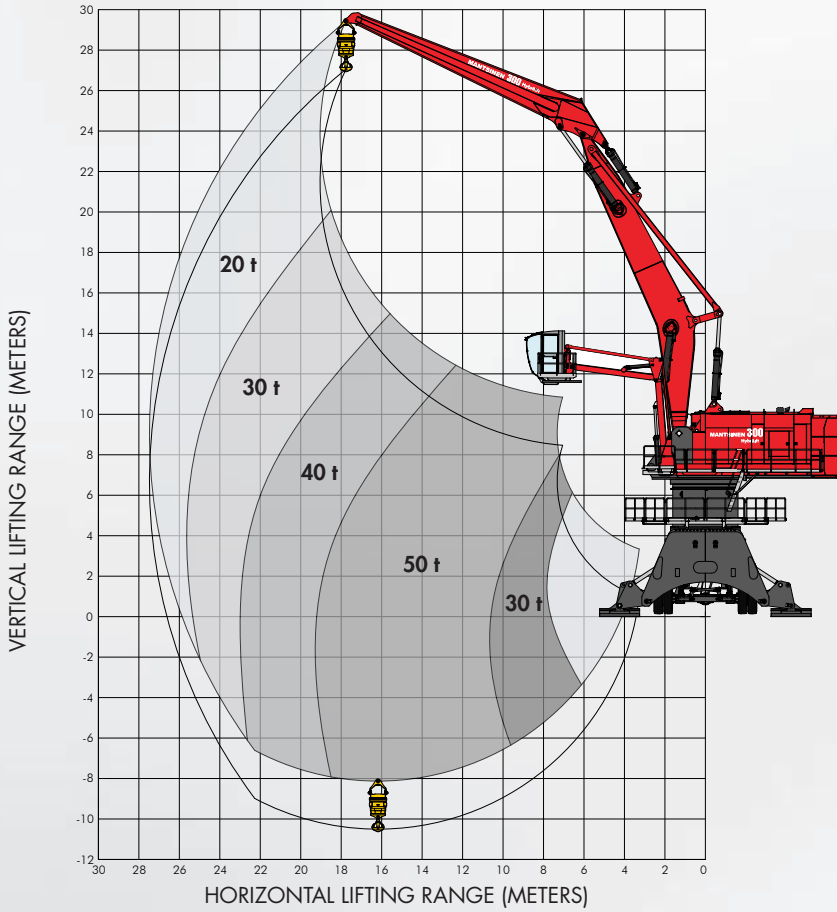
Lifting capacity range with 21,5 m curved main boom and 18 m stick



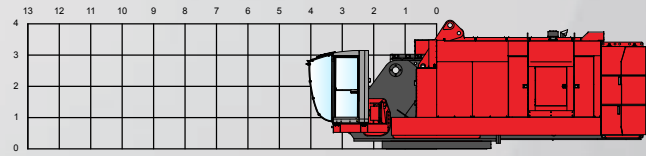
Specifications subject to change without prior notice. The photographs and/or drawings in this brochure are for illustrative purposes only, and the machines in the photographs can have optional equipment. Refer to the Operator's Manual for instructions on the proper use of this equipment.

# HEAVY LIFT

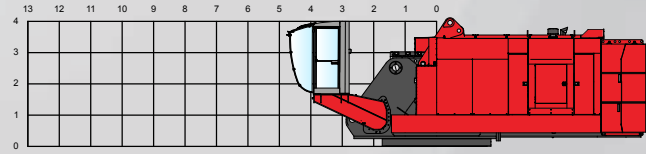
Lifting capacity range with 15,5 m curved main boom and 13 m stick



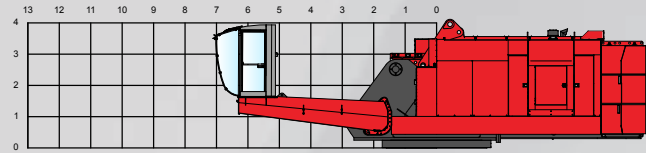
## Fixed cab position 1



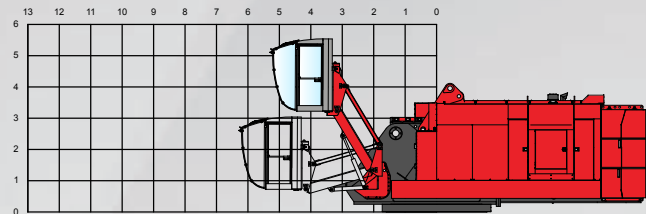
## Fixed cab position 2



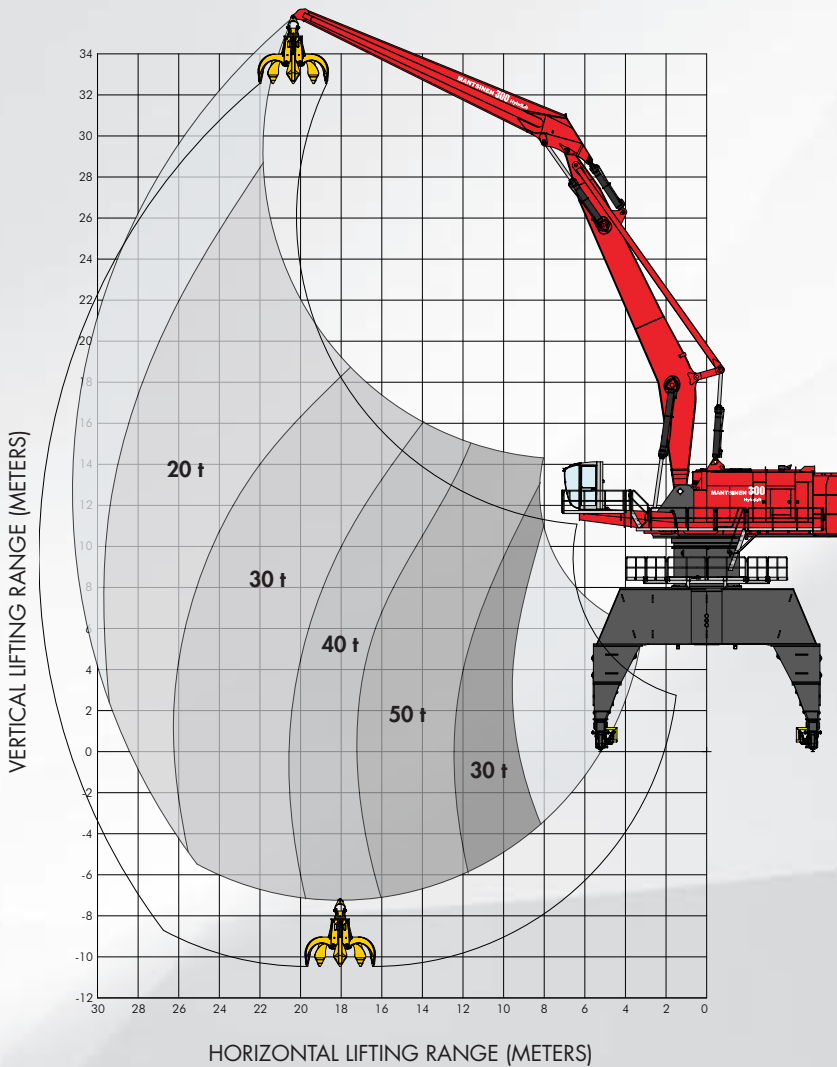
## Fixed cab position 3



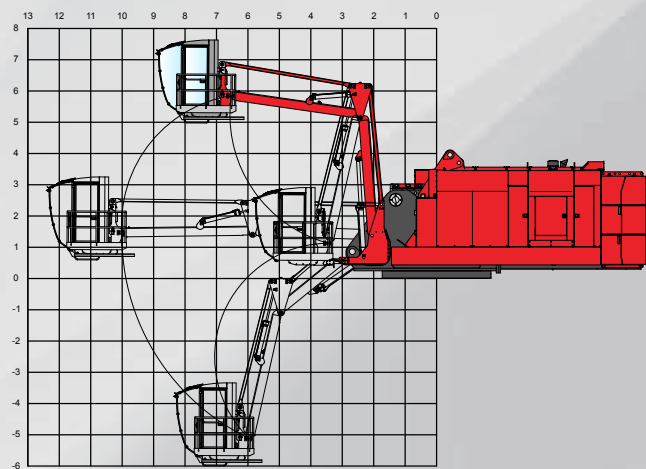
## Cab elevator N1-3000



Lifting capacity range with 17,5 m curved main boom and 15 m stick



## Cab elevator N2-6000



# More load, less energy.



**YOUR DEALER:**

**ISO 9001  
ISO 14001  
OHSAS 18001**

*We are committed to improve our integrated operational system continuously. We take care of environment and health&safety issues in all our operations.*



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