



**MANTSINEN 200**

**GIVES YOU MORE  
VERSATILITY**





***Lift your efficiency  
to the next level with  
hydraulic speed and  
precision.***

# CONSIDER IT LOADED

Combining precision with efficiency, the Mantsinen multipurpose material handling machine is the perfect solution for various operations in ports and industrial terminals. It is suitable for handling any kind of bulk material, scrap, timber and breakbulk. Equipped with the Mantsinen quick coupling system, working with different attachments is easy, safe and efficient.

With more than 55 years of experience in logistics services for heavy industry, Mantsinen has the knowledge of the demands and challenges of material handling in many different applications. The combination of this operational experience and world-class engineering

know-how create unique solutions for efficient handling operations. With our deep knowledge, we can optimise your operation and machine configuration.

## **LIFELONG PRODUCTIVITY**

Mantsinen material handling machines are a generational investment, in respect of the machine's life and durability. In-house manufacturing of the machines and attachments ensures high quality without compromise. All of the critical components are thoroughly analysed using the finite element method based on strain gauge tests in real operation. The minimum lifetime expectancy of our machines is over two million work cycles with maximum load.



# SUSTAINABLE BY NATURE

For more than two decades, Mantsinen has paved the way in energy-saving innovations and sustainable solutions. The machine has an energy-efficient, function-specific “power on demand” load-sensing LUDV hydraulic system. Additionally, the closed-loop swing hydraulics return kinetic energy back into the system during swing deceleration. The thermostat-adjusted hydraulic fans run with optimum speed, thus saving power and keeping noise levels down.

Introduced in 2006, the Mantsinen HybriLift® energy storage and recovery system increases energy efficiency, by up to 50 per cent. When the main boom is lowered, the boom potential energy is stored in the large volume HybriLift accumulators, and again recovered next lift by third HybriLift cylinder. The Mantsinen 200 HybriLift system is equivalent to 240 kW engine power at the average lifting speed. It boosts the operation and minimizes energy consumption and emissions accordingly. The system includes

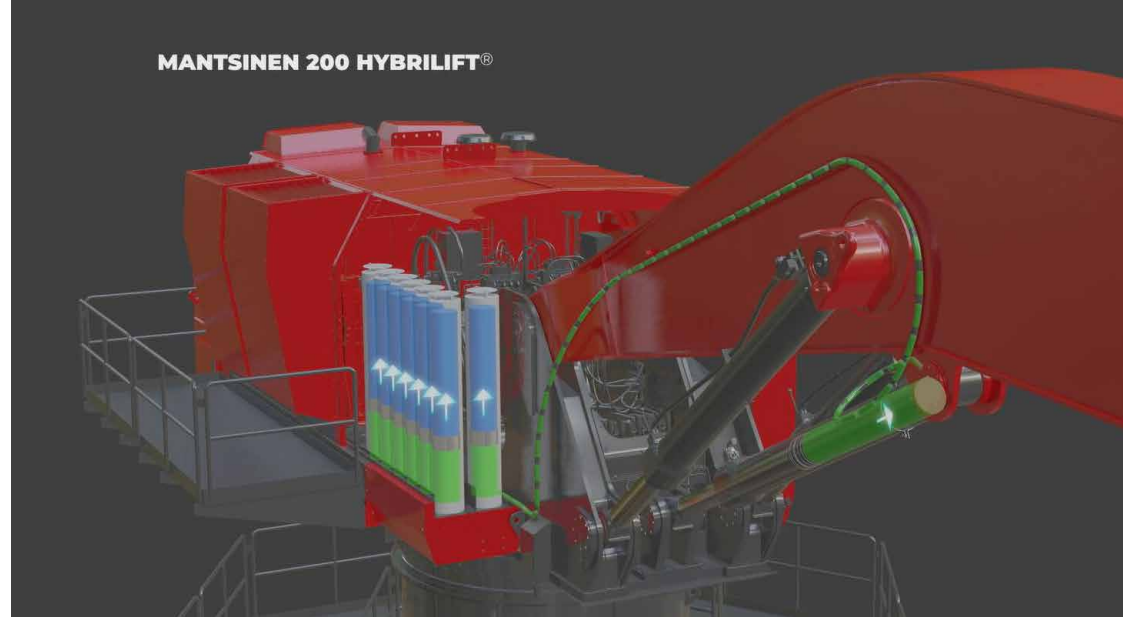
a temperature compensation providing full lifting capacity also in varying ambient temperatures.

## GET ELECTRIC

The electrically powered machines offer a cost-effective and ecological alternative to diesel-powered machines. They provide the same performance level, with zero exhaust emissions, a low noise level and lower energy and maintenance costs. The E-series machines are available configured for local voltages upon request.

A variety of cable-reel solutions are available to meet different travel demands, with all undercarriage types. An optional diesel-driven Mantsinen powerpack allows electric machines to travel independently of the electric supply. To keep the start currents low, IE3 efficiency class motors are started with converters. A reactive power compensation system is also available as an option.

MANTSINEN 200 HYBRILIFT®



**HYBRILIFT®**  
Increases energy  
efficiency by up to  
**50%**

**HYBRILIFT®**  
Reduces CO<sub>2</sub>  
emission down by  
**50%**

# EVERYTHING UNDER CONTROL

## MANTSINEN CONTROL SYSTEM (MCS)

The Mantsinen control system is engineered for cost-efficient material handling with today's technology. Its operator friendly user interface runs under an "Only what's important is shown" approach making daily operations easier, while allowing the operator to concentrate on their current task. The adjustable multi-function joysticks for front equipment are extremely ergonomic and comfortable. Electrically controlled proportional functions ensure smooth and efficient operation under all conditions.

Travel and steering are controlled by a onegrip joystick. Rail-mounted machines are driven by pedals. The system has electric end cushioning for the boom,

the stick and the cab elevator to avoid unpleasant dynamic shocks.

### HUMAN-MACHINE INTERFACE

- A Graphic 7" user interface display
- Easy-to-use multifunction control jog
- Operating data and gauges
- Optional functions state information
- On board and remote diagnostics with detailed error description
- Acoustic signal for critical alarms
- Precision mode and heavy lift mode
- Settings for main functions and options
- Error logging
- Instantaneous power consumption measurement
- Periodic fuel or electric power consumption



CONTROL SYSTEM	STANDARD	OPTION
Auto-idle mode	•	
Heavy lift mode	•	
Accuracy mode	•	
Dead man switch on joysticks		•
Automatic clamshell bucket levelling while closing		•
Anemometer with alarm at 25 m/s, slowdown 30 m/s		•
Remote control for travel		•
Temporary person lift prep		•
Turbo timer		•
Vertical lift		•
Container handling mode		•



# SAFETY WITHOUT COMPROMISES

## MANTSINEN SAFETY SYSTEM (MSS)

Mantsinen machines come equipped with an advanced safety system as a standard. Front equipment, swing and cab elevator are equipped with sensors ensuring continuous control of the machine operation.

There is an overload and stability control sensor, as well as cabin collision prevention with warning and automatic motion cutoff functions. The attachment menu is a part of the system as well. Real time load, reach and height information is provided on the graphic user interface,

which features a graphic animation of the machine's operation.

The system also enables various case-by-case adjusted safety features like maximum and minimum operational heights and restricted sectors. There are also optional operator-assisting systems available. For example, the automatic levelling system lifts the bucket while closing to avoid cargo hold or railcar damage. The system gathers operational load cycle history that enables evaluation of machine utilisation.





# LEAD BY DATA

## MANTSINEN INSIGHT™

MANTSINEN INSIGHT™ provides comprehensive information from individual material handling machines to a complete fleet. By following over 150 outputs per machine we will ensure that you keep track of your operations, on-site and remotely - wherever you are. With Insight, you will improve your performance and remain at the leading edge of your business.

MANTSINEN INSIGHT™ enables data storing automatically with access to operational and service information. Insight offers data storage, making the machine's history easily available when needed. In addition to remote machine monitoring, Insight enables a connection to the machine control system as standard. These features combined with the onboard diagnostics ensure the best possible support for all machine-related needs.

### MANTSINEN INSIGHT™

#### STANDARD

Asset reports	•
Productivity/efficiency views	•
Fleet view	•
Visualized sensor data	•
Upcoming services -tool	•
History data	•
Data for dealer/factory support	•
Control system remote access for factory support	•
Global SIM card	•



Machine history



Resale



Service history



Productivity improvement



Machine reports



Immediate data



# STRENGTH IS NOTHING WITHOUT VISION

## STAINLESS STEEL CABIN

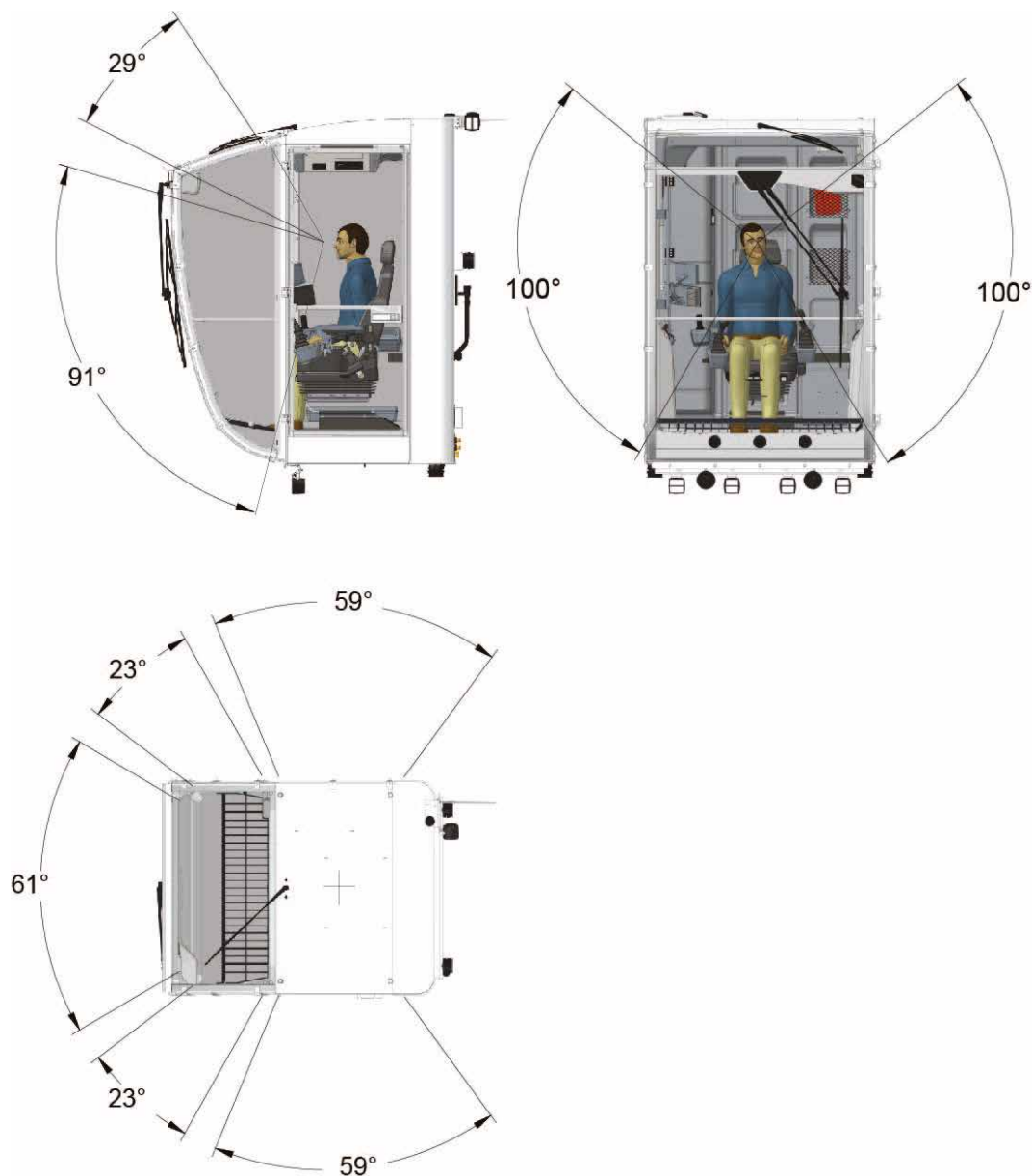
The spacious and modern operator's cabin has excellent visibility with a large one piece curved windshiled nd floor window eliminating obstructions in the operator's view. The cabin is made of stainless steel for long lifetime even in the most demanding or corrosive working environments. Sound insulation, low vibration and high quality interiors create the most comfortable environment for the operator.

The powerful heating and air conditioning, tinted windows and adjustable sun shades make the cabin comfortable in all weather conditions. The windshield wiper has two speeds, an adjustable intermittent function and a washer. There is also a wiper for the skylight.

The operator works in an ergonomically designed environment. All joysticks, control panels and user interface displays can be easily controlled and operated.



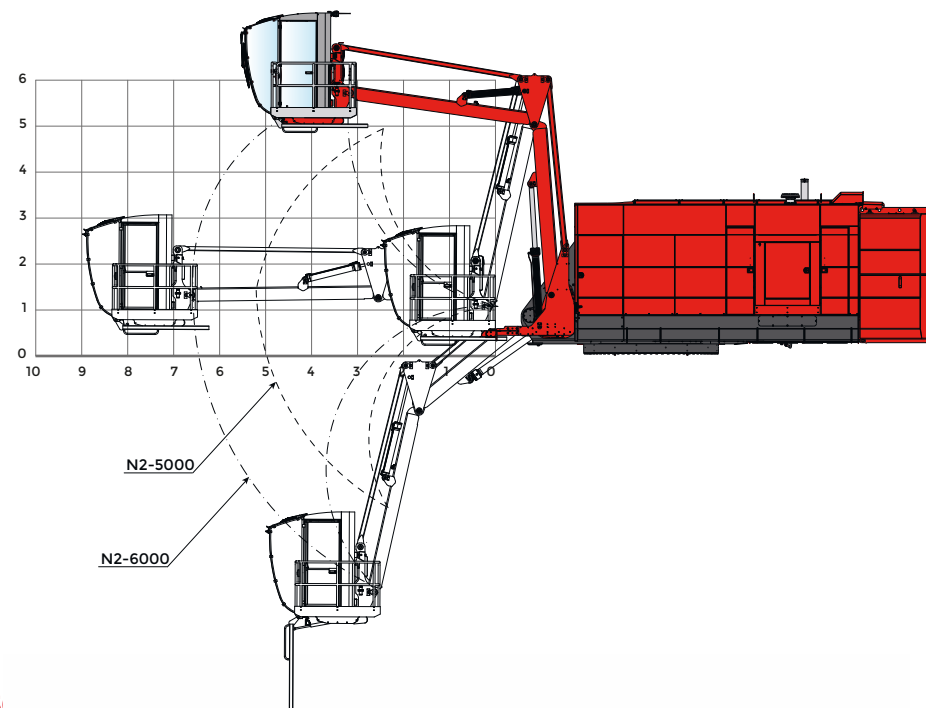
# VISIBILITY FROM CABIN



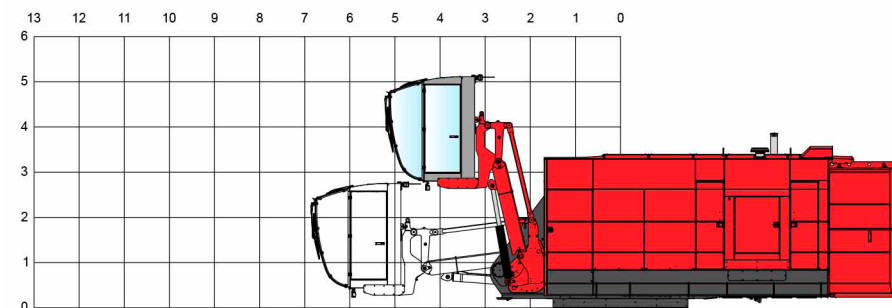
# CABIN ELEVATORS

Mantsinen 200 HybriLift® has three cab elevator options. Robust Mantsinen N2-5000 and N2-6000 cab elevator features independent vertical and horizontal movement to position the operator for maximum visibility of loading targets. The one-arm cab elevator N1-3000 lifts the operator providing improved visibility.

## N2-6000, N2-5000



## N1-3

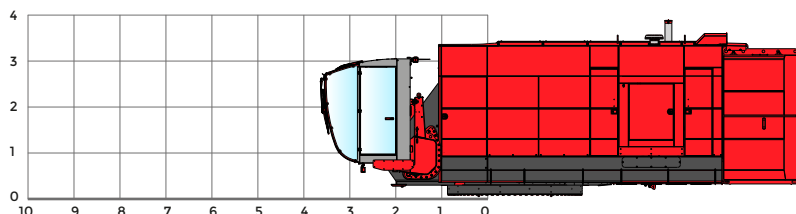




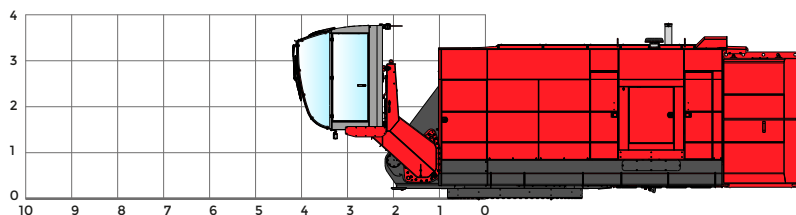
# FIXED CABIN POSITIONS

Mantsinen 200 HybriLift® has three fixed cab positions.

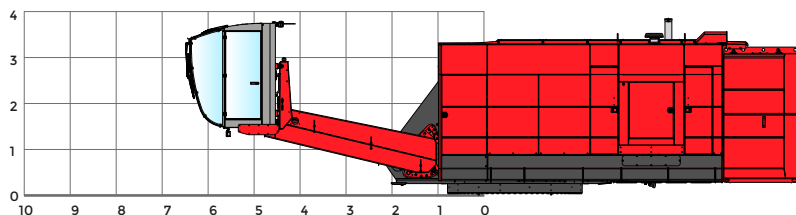
## FIXED CAB POSITION 1.



## FIXED CAB POSITION 2.



## FIXED CAB POSITION 3.



CABIN EQUIPMENT AND OPERATOR'S SEAT	STANDARD	OPTION
Automatic heating and air conditioning with defrost	•	
One-piece curved windshield with heating	•	
Skylight	•	
Tinted window glasses	•	
Sunshades	•	
Folding instructor seat with seatbelt	•	
Signal horn	•	
Rear view mirror	•	
Rescue harness and first aid kit	•	
Bluetooth CD/USB, MP3/WMA receiver	•	
Cup holder	•	
Literature compartment	•	
Two 12 V plugs for chargers	•	
Standard seat	•	
- Air suspension	•	
- Automatic weight adjustment	•	
- Seat belt	•	
- Heating	•	
- Fully adjustable	•	
Seat Be-Ge 3110 FC4 Airvent		•
Seat turntable		•
Cabin protection guards, windshield and skylight		•
Impact proof windshield		•
Sun protection foils, all windows except skylight		•
Emergency exit beam on top of cabin		•
Loudspeaker with gooseneck microphone and pedal		•
VHF-phone preparedness, microphone, pedal and harness		•
230 V AC socket in diesel machine cabin, max current 30 A		•
Alco lock system with SMS function		•
Additional air filtration unit including cabin pressure control		•
Camera with 7" display. Stick or rear-view camera		•
Camera with 12" display. Stick or rear-view camera		•
Stick, rear-view and right-view cameras with shared 12" display		•
Camera recording system with 160 h capacity		•
WiFi camera		•

# DEVELOPED TO GET THE JOB DONE

## UPPERSTRUCTURE

The Mantsinen upperstructure is specifically designed for fast and harsh material handling applications. In-house experience of hundreds of millions of tons in material handling provides a strong base for design, functionality and serviceability.

### POWERLINE

Volvo Penta diesel engines are known in the material handling industry for their high performance, low fuel consumption and durability. The engine, or electric motor is located in a sound-proofed compartment.

The doors ensure easy access to service on both sides. To reduce fire risk, the pump compartment is isolated from the engine compartment by a firewall.

### HYDRAULICS

The main hydraulics consist of four variable displacement axial piston pumps and a closed-loop swing pump. There is a separate circuit for the rotator, cab elevator and optional attachment functions as well as for fans. Efficient filtration and a three-micron bleed-off fine filter with water absorption ensures continuously clean and dry oil, which increases uptime and extends component and oil lifetime.

The hydraulic oil cooler and the radiator are easily accessible for cleaning from the service platform. The fan reversal function cleans the cooler and radiator without interrupting the machine's operation.

### RIGID MAIN FRAME

The rigid main frame and the large diameter pins guarantee a long lifetime for the machine.

### SERVICE WALKWAYS ALSO INSIDE

The wide inside and outside service walkways satisfy international safety standards, providing unrestricted and safe access to all service points.

### SWING MECHANISM

The Mantsinen 200 has a large-diameter heavy-duty, three-row roller-type slewing ring with internal teeth running in a grease bath. Two heavy planetary swing gears have integrated automatic multi-disc brakes. The closed-loop swing hydraulic circuit operating with state-of-the-art electric control system ensures an extremely smooth and controllable swing. The closed-loop swing system saves a considerable amount of energy and provides maximum operating performance.

## FRONT EQUIPMENT

A range of straight or curved booms, as well as different boom and stick lengths are available to optimize the operation for maximum productivity. Mantsinen boom and stick structures are designed and analysed with modern FEM-methods based on real operation measurements and long-term practical experience.

Their minimum expected lifetime is over two million work cycles under maximum load, assuming maximum load. Booms and sticks are manufactured in-house under close quality supervision to ensure a long lifetime for these structures.

### MAIN BOOM

The main boom foot and bosses are constructed from steel castings, providing an excellent service life to one of the most critical structural components of the machine. The optimised box structure ensures maximum lifetime without compromise. Strong structure and large pin diameters minimise surface

pressures and wear on bushings.

### STICK

The stick foot including cylinder brackets is a one-piece cast steel structure. The use of cast structures in the high-load stress areas ensures the component's strength, durability and long service life.

The stick box is constructed from 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 inside a U-channel on the sides of the stick. As a consequence of the unique cast stick tip and link design, attachment hoses are not exposed for damages.

There are also available a three cylinder stick option for heavy lifts. It is useful example for example for steel coil and container handling.

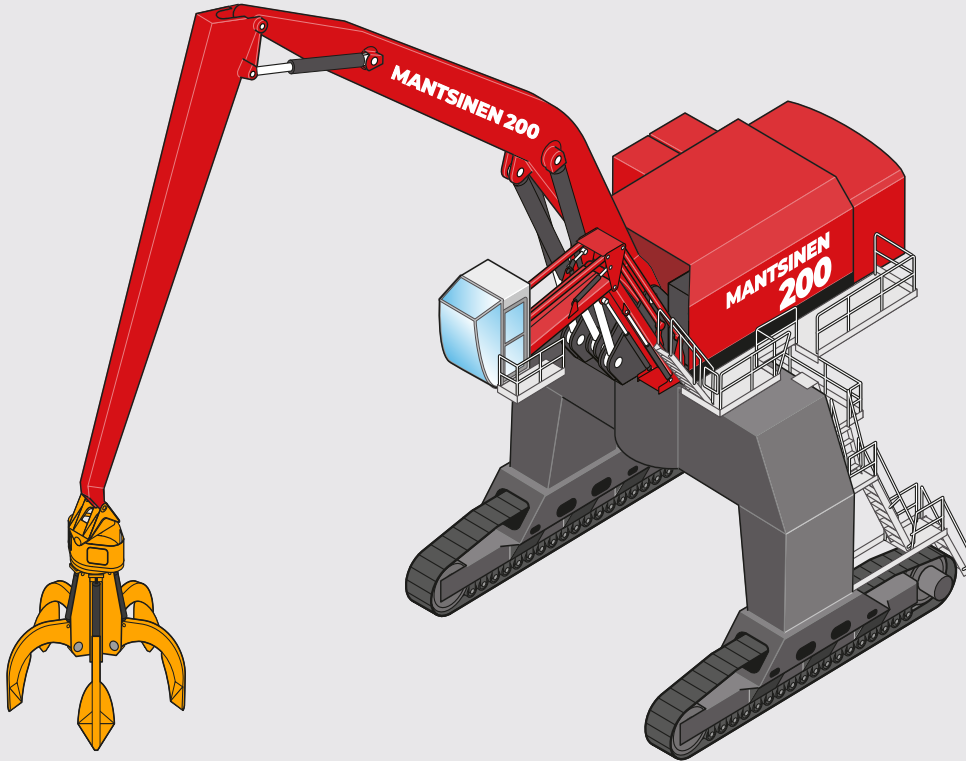


# OPTIONS AND STANDARD FEATURES

EQUIPMENT	STANDARD	OPTION
Working lights, 24 V LED; 4 underneath of cabin, 4 at stick, 1 on cab roof	•	
Central lubrication for front equipment and slewing ring raceway	•	
Central lubrication for mobile undercarriage	•	
Bleed-off fine filter	•	
Second pressure adjustment for attachments 250 bar	•	
Beacon and acoustic travel alarm	•	
Surface treatment for C3 medium according to ISO 12944-2	•	
User and service manuals, 2 printed, 2 on memory sticks	•	
Electronic spare part catalogue, 2 on memory sticks (English)	•	
HYDRAULICS		
Additional attachment function, 200 bar, 56 l/min		•
Second additional attachment function, 200 bar, 56 l/min		•
Magnet generator system 20 kW		•
Magnet generator system 30 kW		•
Additional undercarriage hydraulic function with pedal		•
Biodegradable hydraulic oil		•
FILTRATION		
Large by-pass fine filter with water absorption		•
Attachment line filters		•
Additional fuel filter with heating		•
LUBRICATION		
Automatic lubrication system up to link		•
Automatic lubrication system up to attachment		•
LIGHTS		
Additional 2 lights on boom		•
Undercarriage lights, one in each direction, totally 4		•
Undercarriage pad lights, one directed to each pad, totally 4		•
Travel lights for public roads		•

HEATING	STANDARD	OPTION
Electric heating for engine, hydraulics and cabin. 3-phase inlet socket		•
Automatic battery charger		•
Heating cable 25 m spring reel		•
Pre-heater for engine and cabin, by fuel. Including Multicontrol timer		•
REFILL		
Refuelling pump with 5 m suction hose, 24 V or hydraulic		•
Re-fuelling line 2" from ground level		•
AdBlue 24 V refill pump, harness, pistol & 15 m hose reel for IBC-container		•
GENERAL		
Fire suppression systems		•
Safety access gate, doorbell + operator openable electric lock		•
NATO jump start plug		•
Emergency stops in undercarriage, 2 pcs		•
Pull coupling		•
Stick corner covers, 4 pcs		•
Stick cover against grapple hits		•
Service lift SWL 500 Kg, 5m swing beam, electric 230VAC.		•
Toolbox in undercarriage, aluminium		•
BACK UP SYSTEMS		
Portable hydraulic unit for swing, main boom, stick, electric or engine driven		•
Diesel powerpack Mantsinen 100 for travel with remote control		•
Lift cylinder and swing release kit		•
SURFACE TREATMENT OPTIONS		
C4 Medium. Main component exterior surfaces		•
C5 Medium. Main component exterior surfaces		•
Customer stickers		•
Custom colour: Front equipment, cover panels, counterweight, cab elevator		•

# MANTSINEN 200R



Long and widely apart tracks and rigid box type frame create an excellent stability foundation for the machine. The flat track shoes run smoothly on gravel, asphalt or concrete. Hydrostatic track drive consists of two speed axial piston travel motors and planetary trackdrives. There are spring applied multidisc automatic brakes with hydraulic release.

## CRAWLER GANTRY

Crawler gantry provides logistic freedom by allowing trucks or railcars pass through the crane. Additionally the machine cycle time and truck waiting times can be minimised due to the optimised swing angle.

### 200R

	CRAWLER UNDERCARRIAGE	CRAWLER GANTRY UNDERCARRIAGE
Undercarriage heights	2.5 m, with pylon 3.5 / 4.0 / 4.7 / 5.2 / 6.3 m	4.8 / 7.8 / 9.2 m, with pylon 10.0 / 11.4 / 11.9 m
Track gauge	7 800 mm	7 800 mm
Track length	8 000 mm	8 130 mm
Track shoes	1 050 mm flat	1 050 mm flat
Travel speed	Max 3.1 km/h	Max 3.1 km/h
<b>OPTIONS</b>		
Track shoes	1 200 mm flat	1 200 mm flat
Additional fuel tank	1 x 1 000 l or 2 x 1 000 l	1 x 3 000 l or 2 x 3 000 l

Robust and proven undercarriage versions are designed for every demand and conditions. Stability and robust design are the key features in all the Mantsinen undercarriages. All the machines are able to operate 360° with full load.

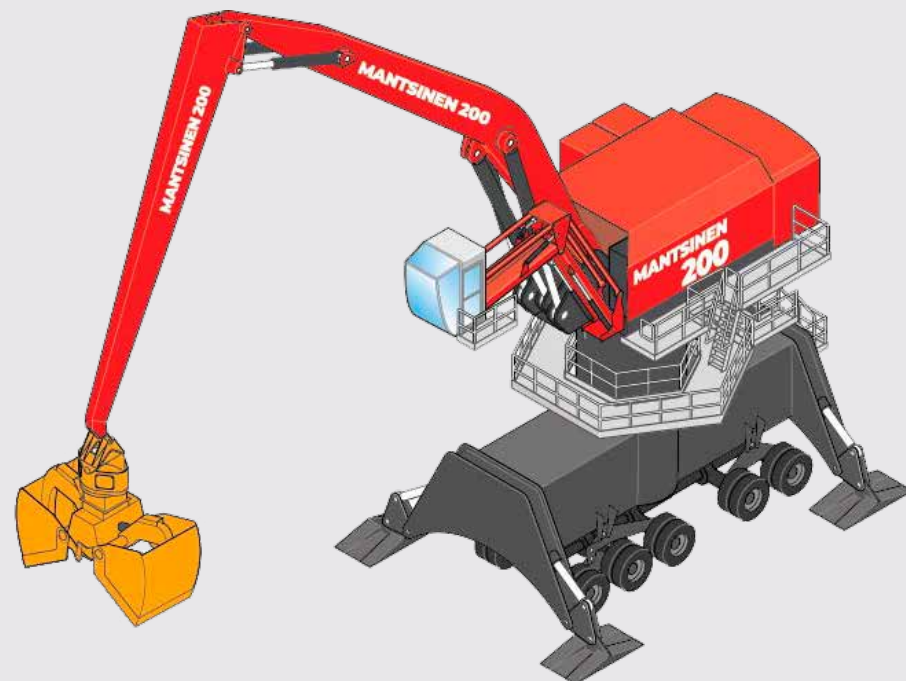


# MANTSINEN 200M

The robust five-axle solid tyre mobile undercarriage provides great mobility in this machine size. Three-axle drive and all wheel steering provides a good drawbar pull and facilitates operation on uneven surfaces. There are hydraulic wet disc service brakes and spring-applied multidisc parking brakes on the driven axels. Simultaneously or individually controllable outriggers permit stable 360° operation with full loads even in demanding conditions. Outrigger cylinder protection as well as automatic undercarriage lubrication are included as standard.

## MOBILE GANTRY UNDERCARRIAGE

The Mantsinen 200 mobile gantry undercarriage combines great mobility and logistic freedom by allowing trucks or railcars pass through the crane. Also the cycle time can be minimized due to the optimised swing angle. The Mantsinen 200's mobile gantry has a box type rigid gantry frame. Ten independently hydraulically suspended and steered oscillating axle units are standard features and enable crab drive mode and lateral drive mode. The twelve-wheel hydraulic drive has been implemented with variable displacement axial piston motors. Driven axels are equipped with hydraulic wet disc service brakes. Automatic levelling with 4-point hydraulic stabiliser cylinders as well as automatic undercarriage lubrication are included as standard features.

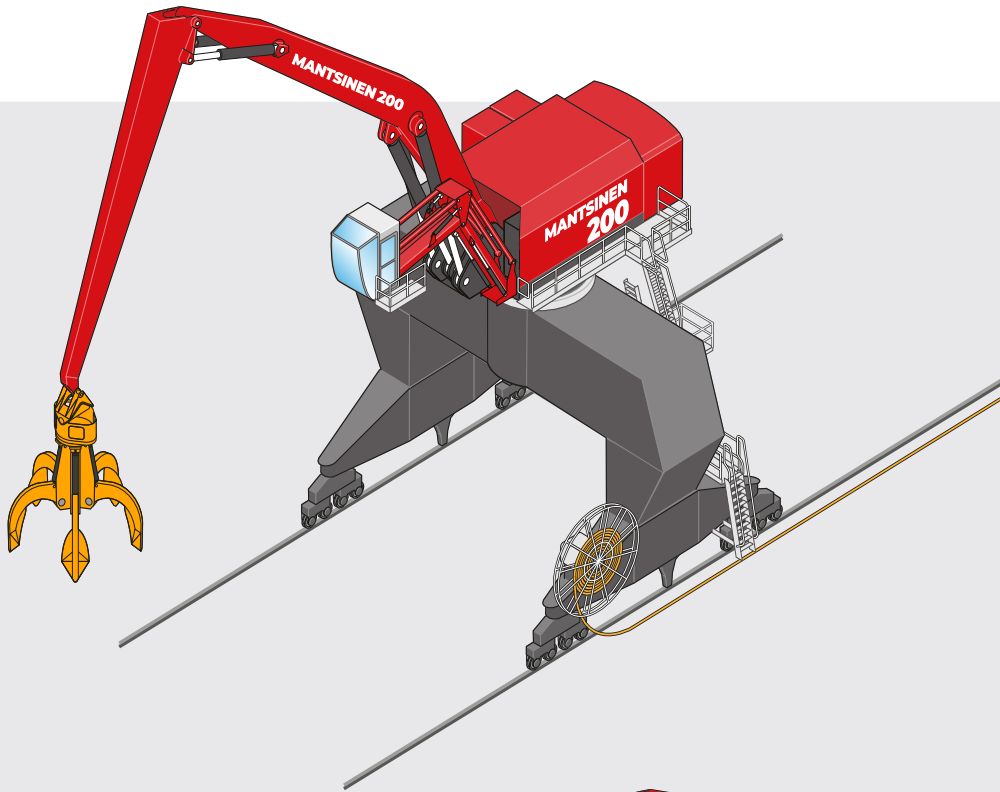


## 200M

	MOBILE UNDERCARRIAGE	MOBILE GANTRY UNDERCARRIAGE
Undercarriage heights	4.2 m, With pylon 5.2/ 5.7 / 6.4 / 6.9 / 8.0 m	7,8 / 9,0 m. With pylon 10,0/ 11,2 / 11,7 / 12,8 m
Wheelbase	2.0 / 2.0 / 4.0 / 2.0 m	4x 2,16 m
Wheel track width c - c	4 180 mm	6 880 mm
Tyres	20 x 16.00-25 solid rubber	20 x 16.00-25 solid tyres
Drive speed	Max 3.6 km/h	Max 3.5 km/h
Stabilizer pads (w x l)	2 000 x 4 000 mm	2 000 x 4 000 mm
Turning radius (wheelset centreline)	11.4 m	15,2 m
<b>OPTIONS</b>		
Large pads (w x l)	Double pads 2 x 2 000 x 3 000 mm	
Additional fuel tanks	1 x 3 000 l or 5 000 l with pylons	1 x 3 000 l or 2 x 3 000 l

Undercarriages are available in several different heights to optimise the operation, reach and visibility. Mantsinen organization can provide ground pressure information and operational drawings case by case.

# MANTSINEN 200S

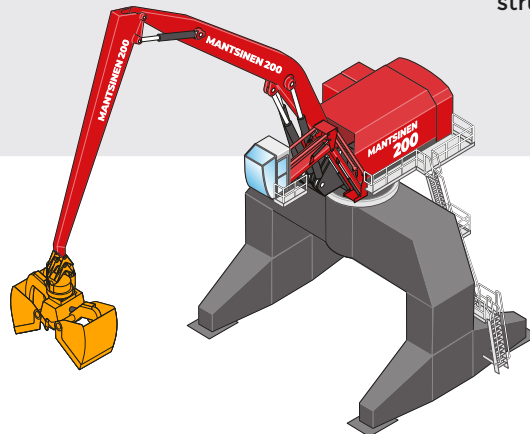


## RAIL MOUNTED

A Rail undercarriage can be tailored around existing rails. Both the wheel diameter and number of wheels can be optimized to match permissible wheel loads. There are Ø 400 mm and Ø 630 mm wheel options available for various rail profiles. Hydraulic planetary wheel drives provide smooth travel and keep the machine steady throughout operation. The machine can be easily adapted to pull a hopper on rails. Rail cleaners, buffers and storm clamps are all available as options. Depending on the gantry width the undercarriage allows one or more railcars or trucks to pass through. Both diesel and electric versions are available for rail mounted machine.

## FIXED

An electric or diesel powered machine can be installed for static operations on shore or alternatively on a pontoon or ship. Fixed installation can be delivered with different portal structures.





# TECHNICAL SPECIFICATIONS

## FRONT EQUIPMENT

BOOM STRAIGHT OR CURVED (m)	STICK (m)	HORIZONTAL REACH (m)
12.5	9	20.9
12.5	10	21.9
13.5	11	24.7
14.5	12	26.6
15.5	13	28.5
16.5	14	30.4
17.5	15	32.3
18.5	16	34.2
19.5	16	35.1
21.5	18	38.9

## DIESEL ENGINE

Volvo Penta	TWD1683VE 585 kW Stage V / Tier 4f TAD1643VE 565kW Stage II / Tier 2
Displacement	16,1 l
Number of cylinders	6
Electric system	24 VDC, alternator 150 A / 24 V, Batteries 2 × 225 Ah /12V

## ELECTRIC MOTOR

Motor	355 kW IEC cast iron frame squirrel cage motor, 1 500 rpm / 50 Hz
Voltages	380 to 690 V as standard, Other voltages upon request

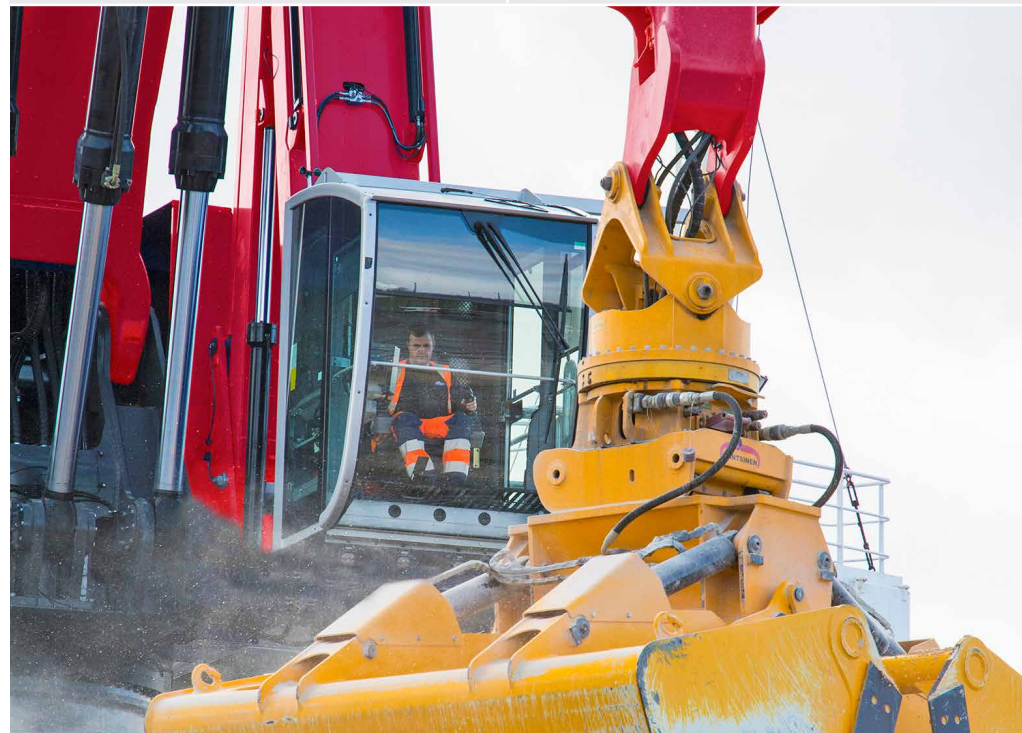
Specifications subject to change without prior notice. The photographs and/or drawings in this brochure are for illustrative purposes only. Refer to the Operator's Manual for instructions on the proper use of this equipment.

## HYDRAULIC SYSTEM

Oil flow, front equipment and travel	4 × 420 l/min
Operating pressure, front equipment	330 bar
Operating pressure, travel and Heavy Lift mode	360 bar
Oil flow swing closed loop system	540 l/min
Operating pressure, swing	300 bar
Swing speed	4.6 rpm max
Swing torque	460 kNm

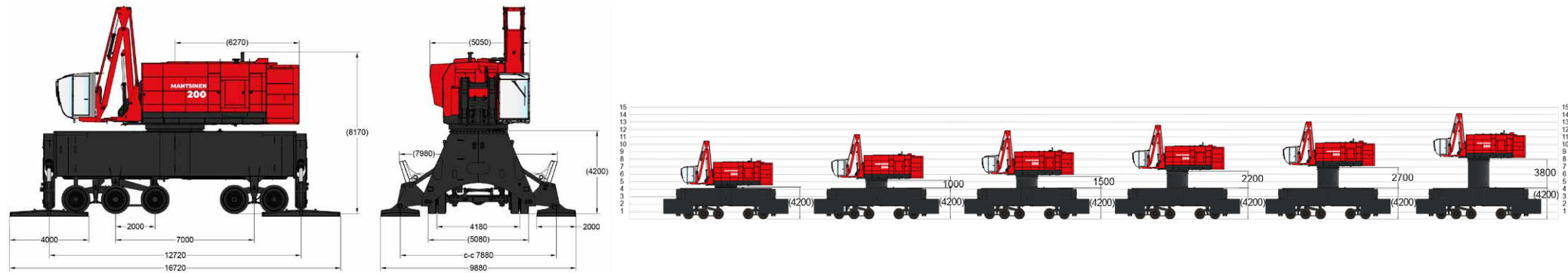
## REFILL CAPACITIES

Hydraulic oil	1 700 l net volume
Main fuel tank	3 000 l
Engine oil	48 l
AdBlue tank	160 l

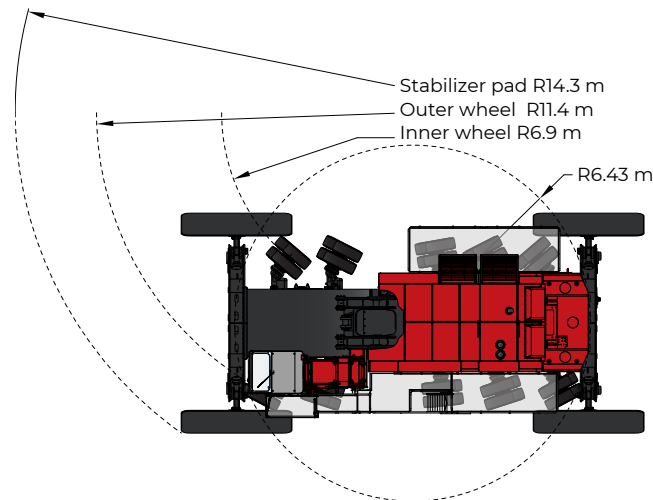


# MAIN DIMENSIONS FOR 200M

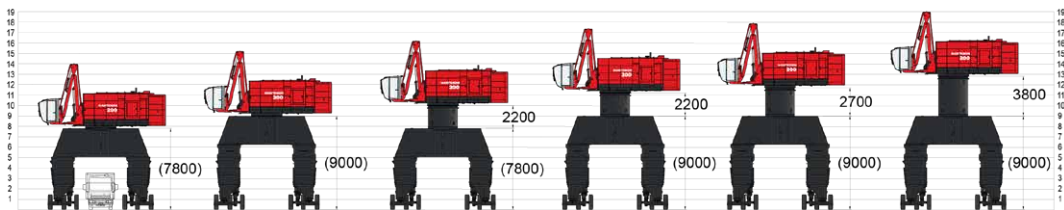
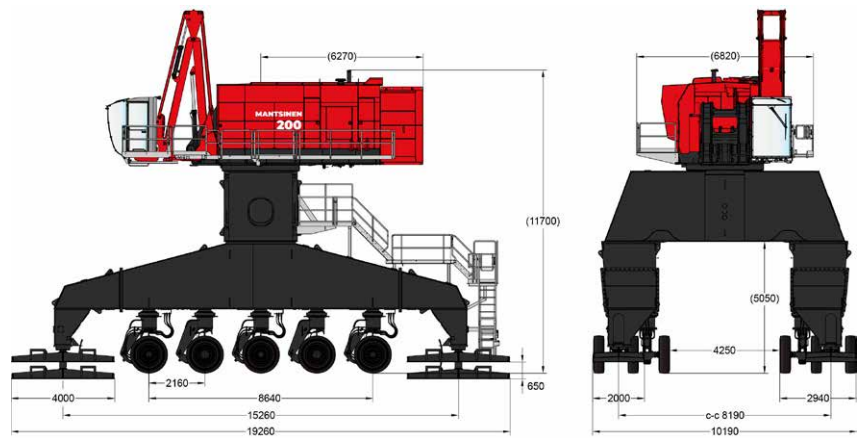
## MOBILE UNDERCARRIAGE



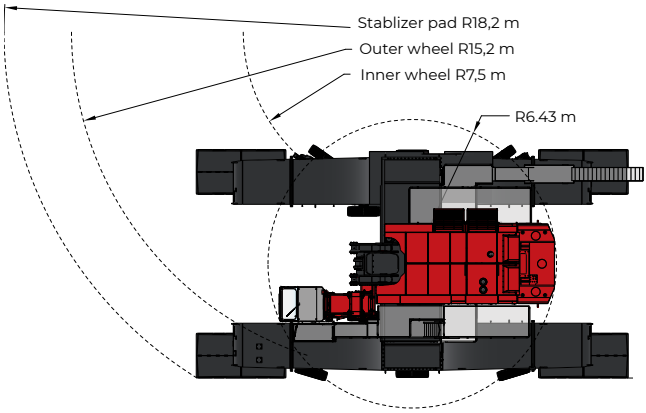
## TURNING RADIUS FOR MOBILE UNDERCARRIAGE



**MOBILE GANTRY UNDERCARRIAGE**



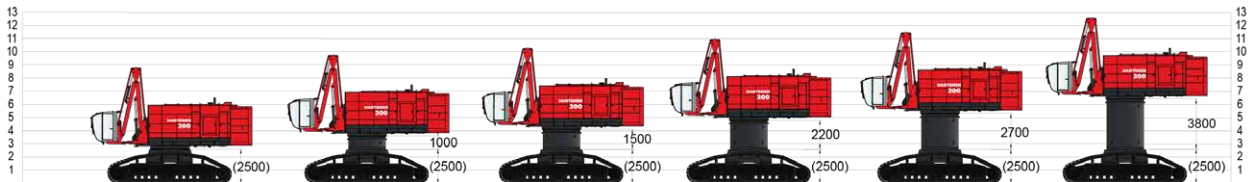
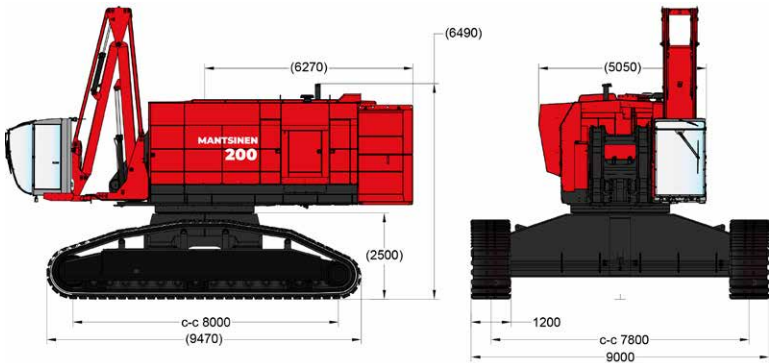
**TURNING RADIUS FOR MOBILE GANTRY UNDERCARRIAGE**



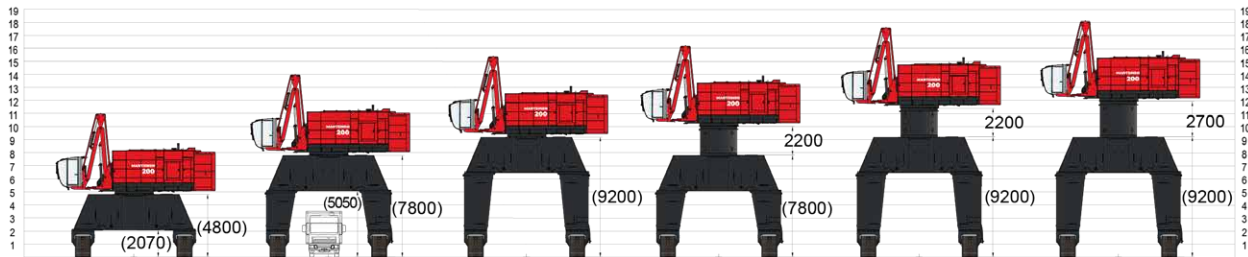
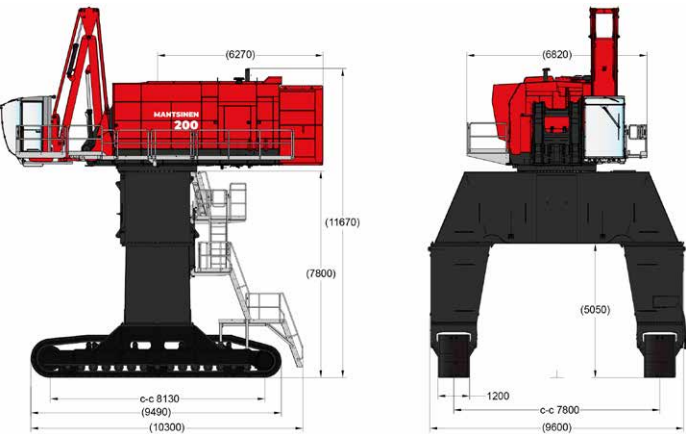


# MAIN DIMENSIONS FOR 200R

## CRAWLER UNDERCARRIAGE



## CRAWLER GANTRY UNDERCARRIAGE







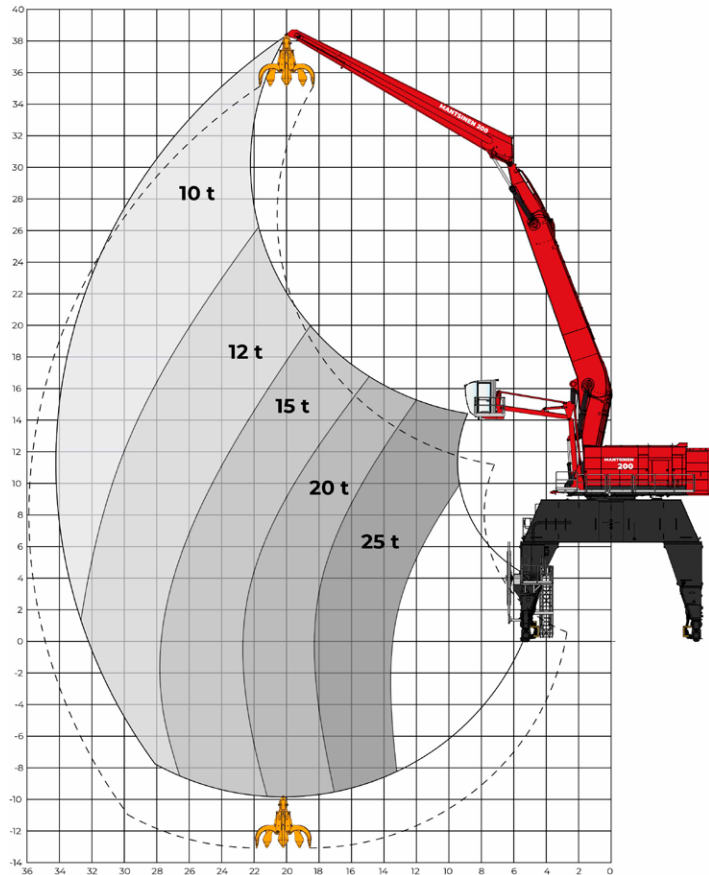


# REACH FOR PRODUCTIVITY

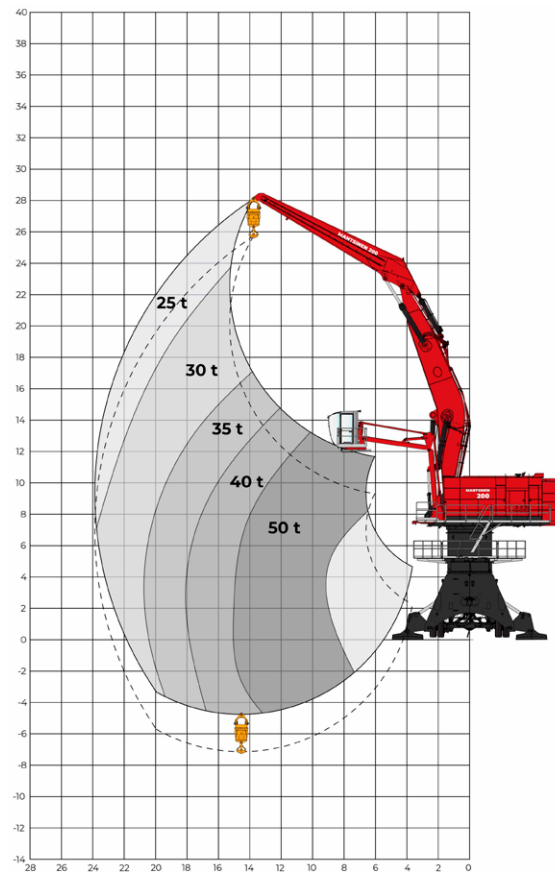
## MANTSINEN 200

Contact your Mantsinen representative ([www.mantsinen.com/en/sales/](http://www.mantsinen.com/en/sales/)) for specific load diagrams for your operation.

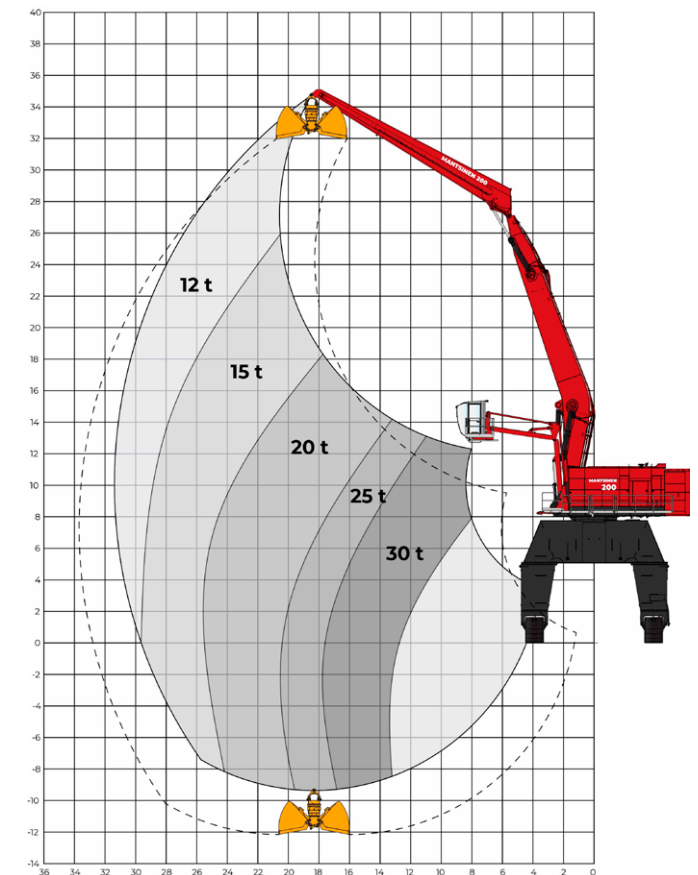
Lifting capacity range with 19,5 m curved main boom and 16 m stick.



Lifting capacity range with 13,5 m curved main boom and 11 m stick.



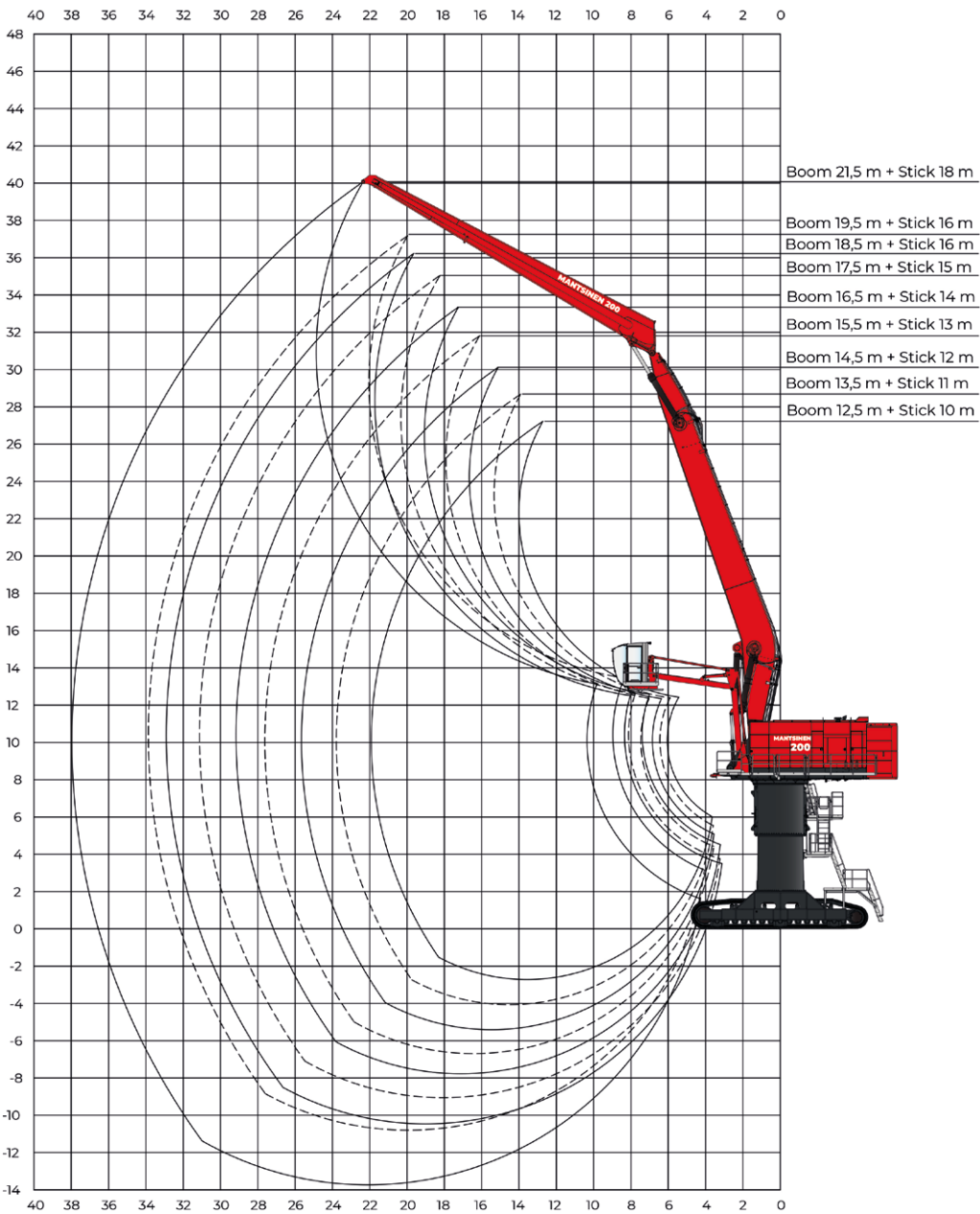
Lifting capacity range with 17,5 m curved main boom and 15 m stick.



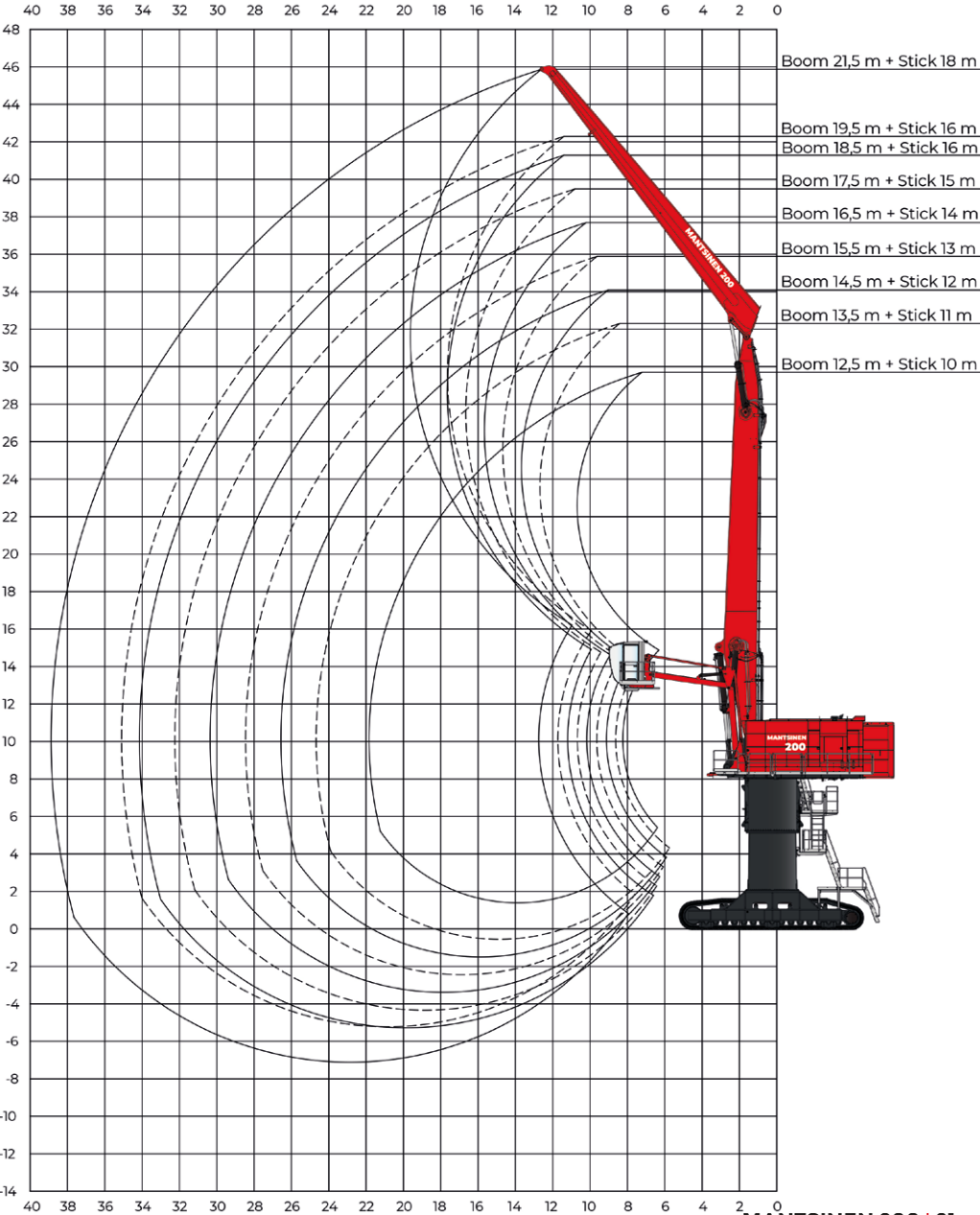


REACH WITH DIFFERENT BOOM AND STICK CONFIGURATIONS WITH 6,5 M UNDERCARRIAGE

CURVED BOOMS



STRAIGHT BOOMS



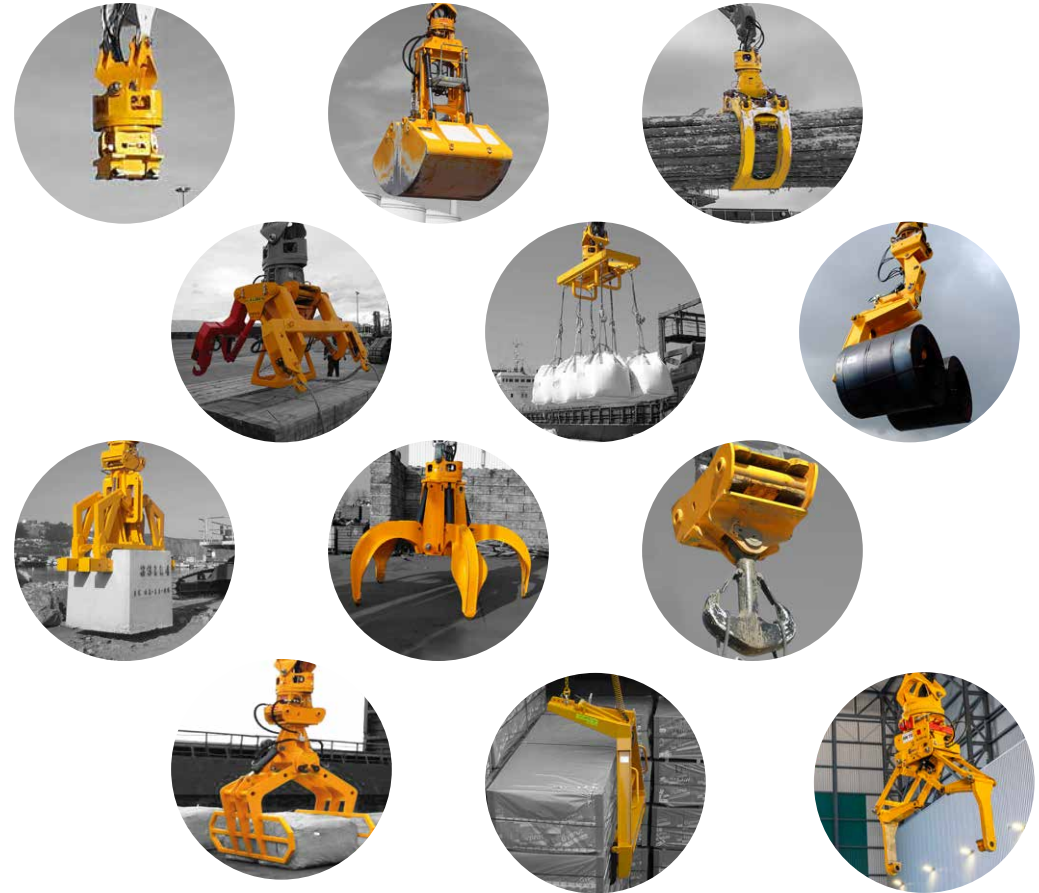
# MAXIMUM PRODUCTIVITY

## QUICK COUPLERS & ATTACHMENTS

Mantsinen offers a wide variety of attachments to optimize productivity for every operation. Semi-automatic attachments for example for big bags, pallets, and lumber bundles ensure an efficient and safe operation. Fully automatic attachments for example for handling pipes or pulp bales maximise production with minimal labour. Customised attachments are available on request.

Attachments can be equipped with a fixed rotator or with a separate quick coupling system. In both cases the hydraulic hoses from the machine to the attachment are routed directly through the rotator link. The rotator swivel can be equipped with two to six hydraulic lines and optional electric slip ring column.

The Mantsinen hydraulic quick coupling enables fast and safe attachment changes. It takes only a few minutes to swap from one attachment and operation to another.











## THE STRONGEST LINK IN THE GLOBAL LOGISTICS CHAIN

Mantsinen provides more efficiency, speed and capacity for our customers in the global logistics chain, operating with heavy and basic industry raw materials and semi-finished products. We are the hands-on frontrunner in material handling.

## MANTSINEN GROUP LTD OY

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