
MANTSINEN
MANTSINEN 120 HYBRILIFT®
POWER AND
AGILITY UNITED



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

CONSIDER IT LOADED

Combining precision and efficiency, the Mantsinen multipurpose material handling machines are a perfect solution for various operations in ports and industrial terminals. They are 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 over 50 years of experience in logistics services for heavy industry Mantsinen knows exactly the demands and challenges for material handling machines in different operations. The combination of a contractor's way of thinking and world-class manufacturing knowledge creates unique solutions for efficient handling operations. With our professional know-how, we can optimize your operation and machine configuration.

LIFELONG PRODUCTIVITY

Mantsinen material handling machines are a generation-to-another investment, in terms of durability. In-house manufacturing of machines and attachments ensures high quality without compromises. All of the critical components are thoroughly FEM-tested, the minimum lifetime expectancy being over two million work cycles with maximum load.

SUSTAINABLE BY NATURE



For over two decades Mantsinen has paved the way in energy saving innovations and sustainable solutions. Introduced in 2006, the Mantsinen Hybrilift potential energy storage and recovery system increases energy efficiency up to 35 per cent. HybriLift is a standard feature in all Mantsinen 120 models.

When the main boom is lowered, the potential energy is stored in the HybriLift accumulators, and again recovered, when lifting the main boom. The Hybrilift system is equivalent up to 125 kW, and it allows using downsized engines and minimizing energy consumption and emissions. It includes a temperature compensation, providing full lifting capacity, even when working in cold climates. Also the closed loop swing hydraulics returns kinetic energy back to the system, during swing deceleration. Hydraulic flow is created only on demand, and the thermostat adjusted fans run always with optimum speed, saving power and keeping noise levels down.

GET ELECTRIC

The electric or DualPower™ machines offer a cost-effective and ecological alternative to diesel powered machines. They provide the same performance level, with zero exhaust emissions, low noise level and lower energy and maintenance costs. The E-series machines are available with 380 and 690 V supply as standard, and other voltages upon request.

A variety of cable reel solutions is available to meet different travel demands, with all undercarriage types. An optional diesel-driven Mantsinen power pack allows electric machines to travel independently from the electric supply. IE3 efficiency class motors are started with a soft starter, to keep the start current low. Optional frequency converter start reduces the start current even more. Reactive power compensation system is also available as an option.

HYBRILIFT®
Increases energy efficiency by up to
35%

DualPower™
BY MANTSINEN

EVERYTHING UNDER CONTROL





MANTSINEN CONTROL SYSTEM (MCS)

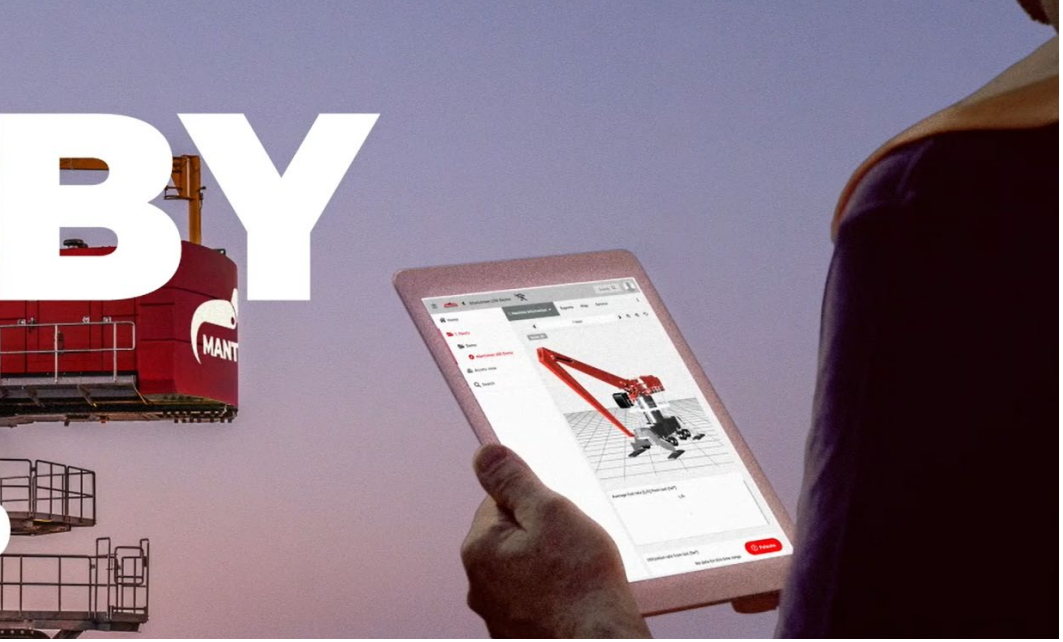
Mantsinen control system is engineered for cost efficient material handling with today's technology. Operator friendly user interface with "Only important is shown" approach eases daily operating, and allows operator to concentrate to current task. Adjustable multi-function joysticks for front equipment are ergonomic and comfortable.

Travel and steering are controlled by a one-grip joystick. Electrically controlled proportional main functions ensures smooth and efficient operating under all conditions.

The system has an electric end cushioning for boom, stick and cab elevator to avoid unpleasant dynamic shocks.

HUMAN-MACHINE INTERFACE

- Graphic user interface 7" display
- Easy to use multifunction control wheel
- 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
- Instant power consumption measurement
- Periodic fuel or electric power consumption



KEEP TRACK OF YOUR OPERATIONS



STANDARD IoT – MANTSINEN TELEMATIC SYSTEM (MTS)

With the Mantsinen Telematic System (MTS) you can remotely monitor the operation and productivity of your material handling machine either from your computer or mobile device. Visualization of the data makes interpretation quick and simple. Automatic scheduled operation reports can be sent to e-mail or events history can be verified from cloud service. Transferring the collected data to terminal or factory IT-systems is possible through a standardized API interface built in to the system.

MANTSINEN SAFETY SYSTEM (MSS)

The Mantsinen Safety System ensures safe and sustainable material handling – for operators and machines alike. Improved features and diagnostics improve usability, increase efficiency, and offer valuable information that help you optimize your operations.

- 10.1 inch touchscreen
- Effective cabin protection
- Sector restrictions for enhanced collision prevention
- Refined 3D kinematic calculations
- Adjustable attachment-specific work parameters

DEVELOPED TO GET THE JOB DONE

UPPER STRUCTURE

Mantsinen upper structure is specifically designed for fast and hard material handling. In-house experience of hundreds of millions of tons of materials and thorough fatigue analysis form the design, functionality and serviceability of upper structures.

POWERLINE

Volvo Penta diesel engines are known in material handling industry for their high performance, low fuel consumption and durability. Diesel or electric motor, inside its own housing, is easily accessible from both sides for service. Sound insulated engine and pump compartments keep noise level at minimum. To reduce fire risk, pump compartment is isolated from the engine compartment by a firewall.

HYDRAULICS

The main hydraulics consist of two variable displacement axial piston pumps and a closed loop swing pump. There is a separate circuit for rotator, cab elevator and optional attachment functions as well as for fans.

Efficient filtration ensures long lifetime for hydraulic components. Standard three-micron bleed-off fine filter with water absorption ensures continuously clean and dry oil, increases uptime and extends component and oil lifetime.

Side-by-side mounted hydraulic oil cooler and radiator are very easily accessible for cleaning from the service platform. Fan reversing function cleans the cooler and radiator without interrupting machine operation.

RIGID MAIN FRAME WITH SERVICE ROOF

The rigid main frame guarantees a long lifetime to your machine as well as for the three-row slewing ring. Top of upper structure is equipped with an openable roof for service comfort.

SERVICE WALKWAYS ALSO INSIDE

The wide inside and outside service walkways according to international safety standards provide unrestricted and safe access to all service points.

SWING MECHANISM

Mantsinen 120 has a large diameter heavy- duty three row roller type slewing ring with internal teeth running in grease bath. Two heavy planetary swing gears have integrated automatic multi disc brakes and the swing mechanism is operating in a closed loop. Connected with state-of-art electric controls the machine swing is extremely smooth, controllable, saves a considerable amount of energy and allows maximum operator performance.



FRONT EQUIPMENT

Tens of options with straight or curved booms and sticks are available to streamline the operation for maximum productivity. Mantsinen boom and stick structures are designed and analyzed with modern FEM-methods based on real operation analyses, measurements and long-term practical experience. Minimum life time expectation is over two million work cycles with maximum loads. Booms and sticks are manufactured in-house under close quality supervision to ensure long lifetime of these structures under extreme fatigue stresses.

MAIN BOOM

The main boom foot and bosses are constructed of steel castings, providing excellent service life to one of the most stressed structural components of the machine. Optimized box structure ensures maximum lifetime without compromise. Strong structure and large pin diameters minimize surface pressures and wear on bushings.

STICK

Stick foot is a 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 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. Thanks to the unique stick tip and rotator link design no hoses are sticking out of rotator link and attachment constructions.

UNDERCARRIAGES

You can find robust and proven under-carriage version for all your demands and conditions. Stability and robustness are the key features in all the Mantsinen undercarriages. All the machines are able to operate 360° sector with full load.

Undercarriages are available in several different heights to optimize operation, reach and visibility. Mantsinen organization provides you support load information and operational drawings case by case.

You can find more detailed information on the undercarriages from the product pages.

STRENGTH IS NOTHING WITHOUT VISION

STAINLESS STEEL CABIN

Spacious and modern operator cabin has an excellent visibility with a large wind-screen and floor window in one curved piece. The cabin is made of stainless steel for long lifetime even in the most demanding work environments. The cabin is also FOPS tested. Sound insulation, low vibration and high quality interiors create a comfortable environment for the operator.

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

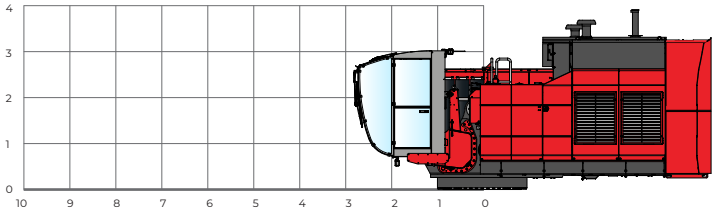
The operator works in an ergonomically designed environment. All joysticks, control panels and user interface displays can be easily controlled and operated. In case of emergency the cabin can be quickly and safely evacuated by using a harness.

EQUIPMENT FOR CABIN AND OPERATOR SEAT	STANDARD	OPTION
Windshield and floor window in one place	•	
Roof Window	•	
Tinted window glasses	•	
Automatic heating and air conditioning	•	
First aid kid	•	
Sun shades	•	
Folding instructor seat	•	
Radio, RDS, USB, MP3/WMA, Bluetooth receiver	•	
Cup holder	•	
Literature compartment	•	
Two 12 V plugs for chargers	•	
240 VAC plugs are standard in electric versions and optional in diesel machines	•	
Emergency exit herness	•	
Standard seat	•	
- Air suspension	•	
- Automatic weight adjustment	•	
- Swivel function	•	
- Seat belt	•	
- Heating	•	
- Fully adjustable; slide, front back, height, seat tilt, armrests, headrest, back rest	•	
- Windshield with heating	•	
Seat Be-Ge with airvent		•
Cabin protection guards		•
Impact proof windshield		•
Anemometer with alarm and slowdown		•
Camera systems		•
Shortwave radio and customer IT-system readiness		•
Loudspeaker, activation with pedal		•
Alcolock system with SMS function		•

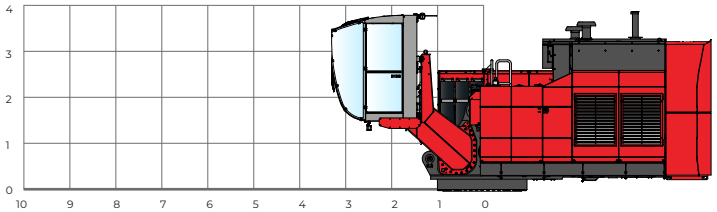
CABIN OPTIONS

Mantsinen 120 Hybrilift® has three fixed cab positions.

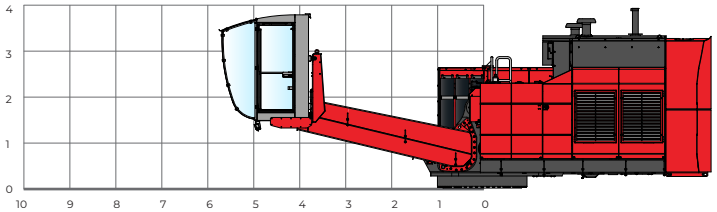
FIXED CAB POSITION 1.



FIXED CAB POSITION 2.



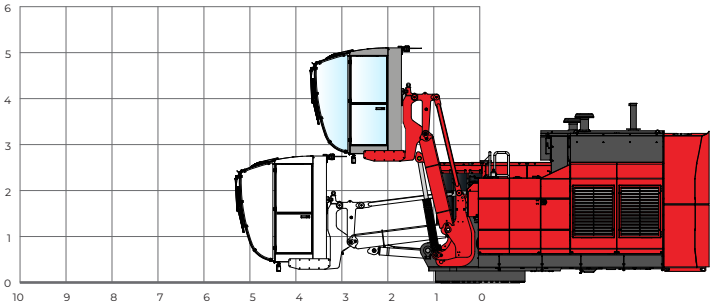
FIXED CAB POSITION 3.



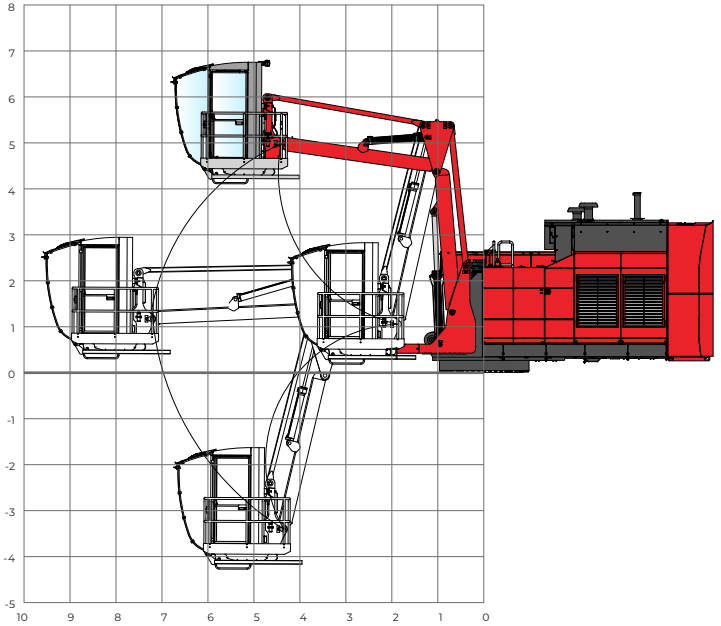
CABIN ELEVATORS

Mantsinen 120 Hybrilift® has two cab elevator options. Robust Mantsinen N2-5000 cab elevator features independent vertical and horizontal movement to position the operator for maximum visibility of loading targets. One arm cab elevator N1-3000, brings operator high up.

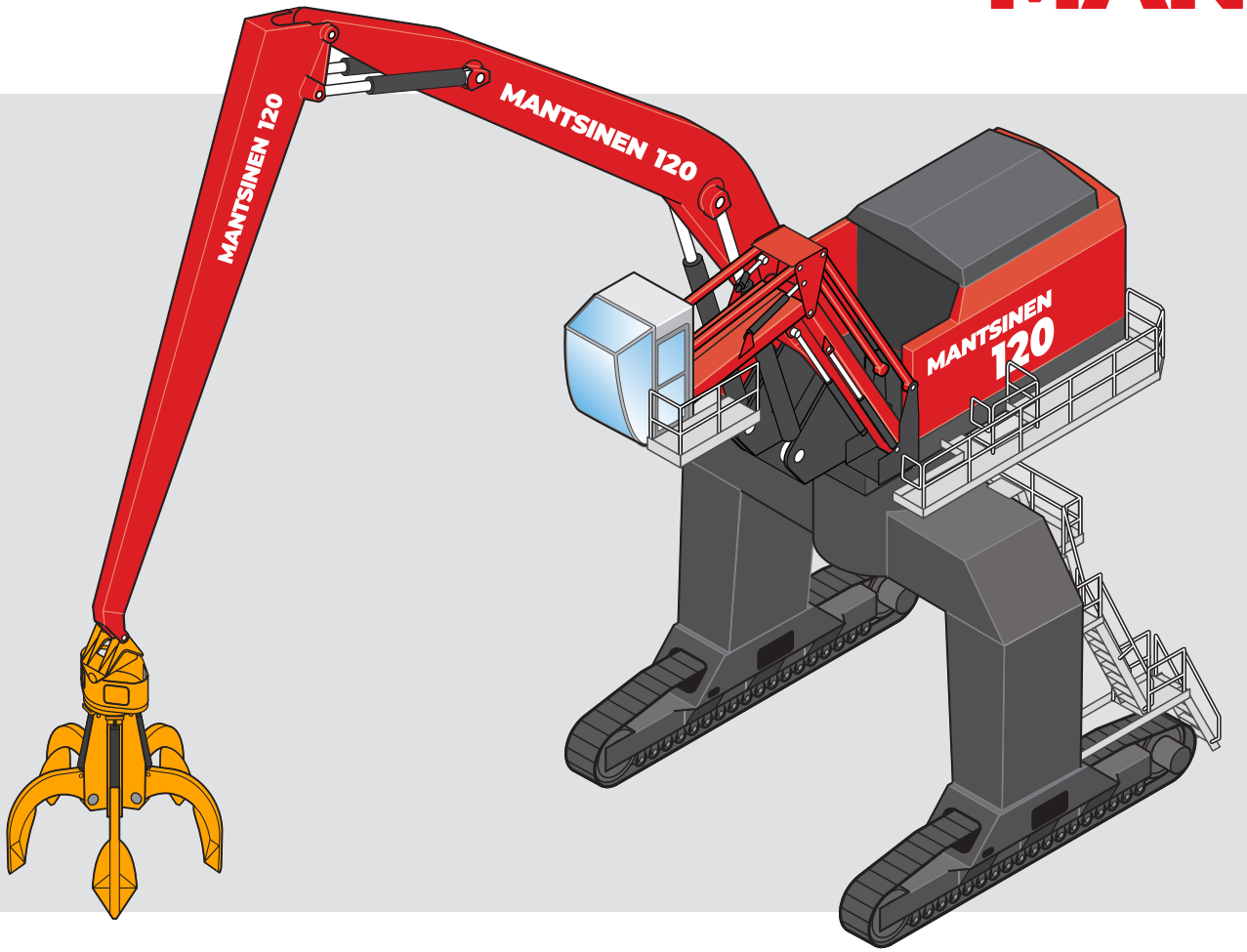
N1-3000



N2-5000



MANTSINEN 120R



CRAWLER GANTRY

Crawler gantry allows significant benefits for effective logistic layout design. The gantry type undercarriage allows trucks or rail cars to pass through and also machine cycle time and truck waiting times are minimized due to the optimized swing angle. One or two additional fuel tanks to gantry leg structure are available as an option.

CRAWLER TRACKS

Long and wide apart tracks create an excellent stability for the machine. The Mantsinen designed flat track shoes run smoothly on gravel, asphalt and concrete. Special Heavy Duty or extended tracks are available for extreme conditions.



CRAWLERS

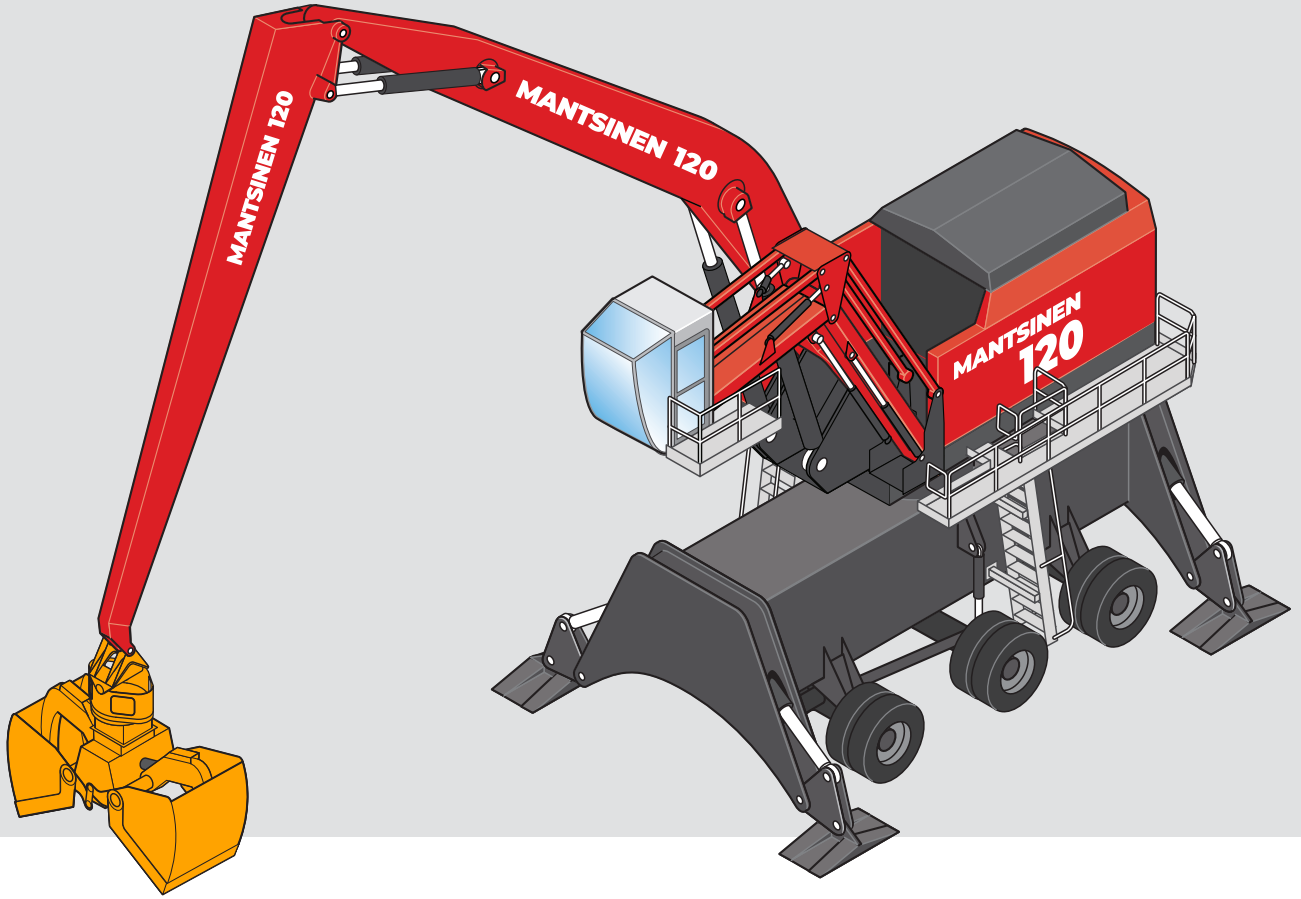
120ER sidemounted

MANTSINEN 120M

RUBBER TYRE

The three axel rubber tyre undercarriage provides great mobility in this machine size class with reduced axel loads. The four-wheel drive and steering provides a good drawbar pull and facilitates operation on uneven surfaces.

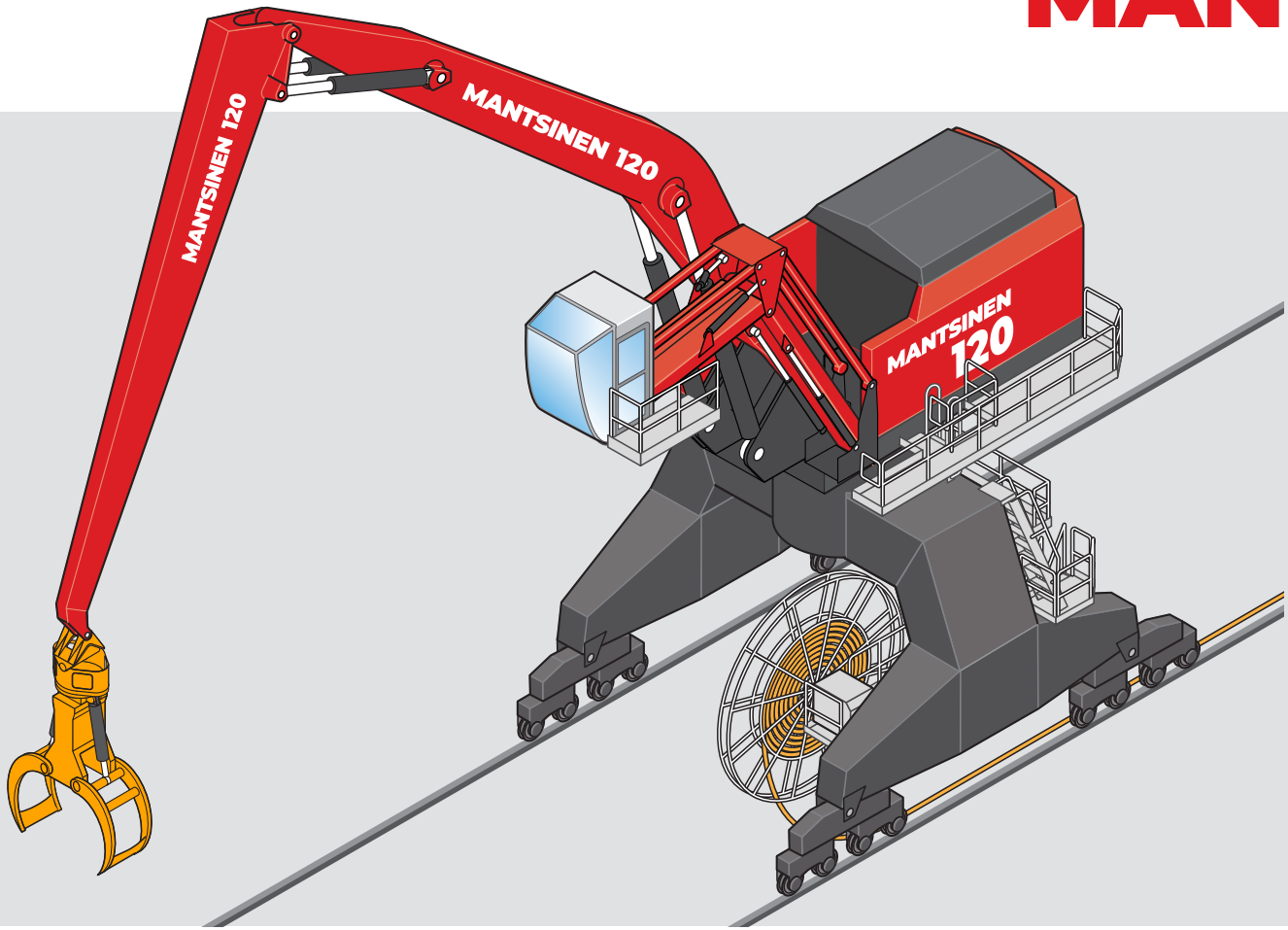
Four individually controllable outriggers permit a full 360° lifting sector with rated loads on firm and even underfoot conditions. Standard 950 × 1500 mm stabilizer pads are equipped with spherical bearings to adapt to the ground and to reduce ground pressure. Optional 1350 × 1500 mm pads available to reduce ground pressure even more.



RUBBER TYRE GANTRY

Rubber tyre gantry undercarriage combines the benefits for both logistic layout design as well as mobility. Gantry type undercarriage allows trucks or rail cars to pass through. Also cycle time can be minimized due to the optimized swing angle.

MANTSINEN 120S



RAIL MOUNTED

Rail undercarriage can be adapted to existing rails. Wheel diameter and number of wheels can be optimized to match the allowed rail loads. There are ⌀ 400 mm and ⌀ 630 mm wheel options available for different rail profiles. Hydraulic planetary wheel drives provide smooth travel and keep the machine steady during operation. The machine can be easily adapted to pull a hopper on rails. Rail cleaners, buffers and storm clamp are available as option. Depending on gantry width the undercarriage allows one or more rail wagons to pass through. Both diesel and electric versions are available for a rail mounted machine.



FIXED

Fixed undercarriage can be optimized using different gantrys and pylons. The machine, equipped with diesel engine or electric motor, can be adapted to existing quay or pontoon.

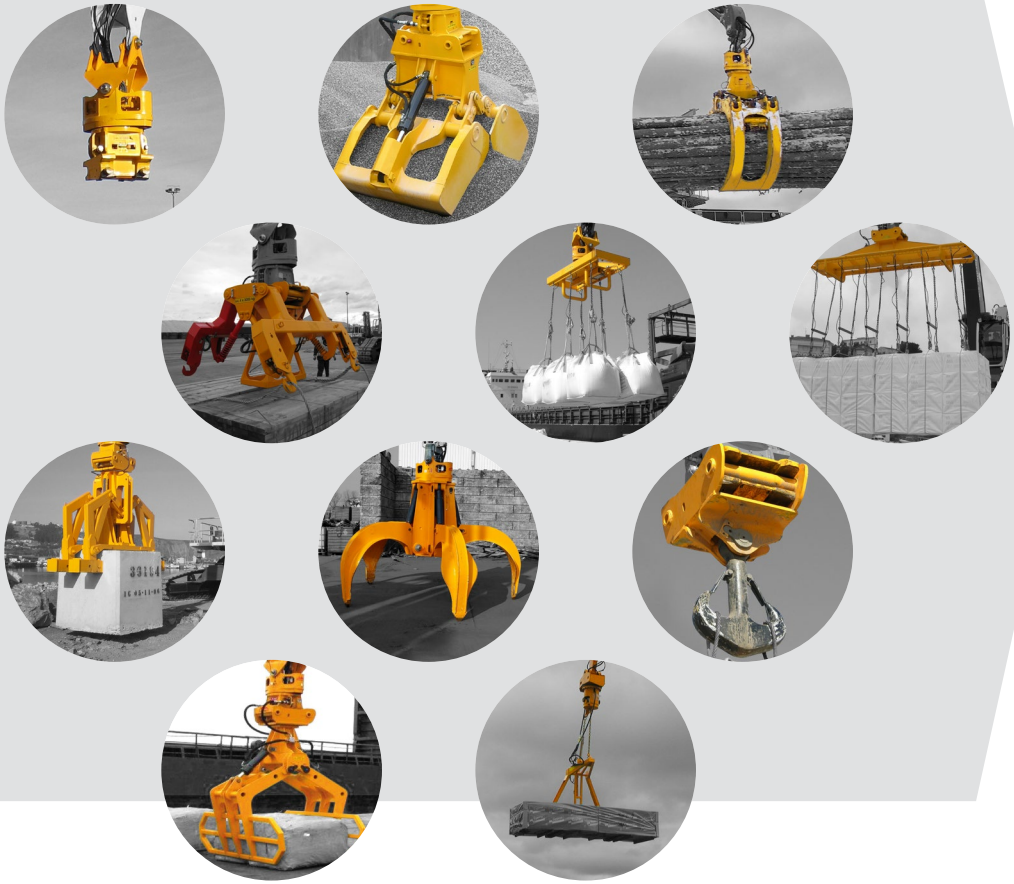
MAXIMUM PRODUCTIVITY

QUICK COUPLERS & ATTACHMENTS

Mantsinen offers a wide variety of attachments to optimize production in any 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 pipes or pulp bales maximize production with minimum labour. Customized 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 optionally with an electric slip ring column.

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



TECHNICAL SPECIFICATIONS

FRONT EQUIPMENT	
Max. horizontal reach	27,4 m with 15,0 m main boom and 13,0 m stick
Main boom lengths, straight and curved	10,0 / 11,0 /12,0 / 13,0 / 14,0 / 15,0 m
Stick lengths	8,0 / 9,0 / 10,0 / 11,0 / 12,0 / 13,0 m
DIESEL ENGINE	
Engine type	Volvo Penta TAD1384VE, Stage V / Tier 4f
Power	375 kW / 1 800 rpm
Displacement	12,8 l
Number of cylinders	6
Electric system	24 VDC, alternator 150 A / 24 V, batteries 2 × 225 Ah /12V
ELECTRIC MOTOR	
Motor type	250 kW IEC cast iron frame squirrel cage motor, 1500 rpm / 50 Hz
Voltages	380 to 690 V as standard, other voltages upon request
HYDRAULIC SYSTEM	
HybriLift® energy recovery system	Equivalent to 124 kW engine power
Oil flow, front equipment and travel	2 × 420 l/min
Operating pressure, front equipment	330 bar
Operating pressure, travel and Heavy Lift mode	350 bar
Oil flow, swing	410 l/min, closed loop system
Operating pressure, swing	270 bar
Max swing speed	6,0 r/min
Swing torque	240 kNm

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.

120R / 120ER, CRAWLER UNDERCARRIAGE	
Weight without attachments	110 to 135 t, depending on configuration
Standard undercarriage height	2,5 m, with pylon 4,0 / 4,7 / 5,2 m
Gantry undercarriage height	6,5 / 7,0 / 8,0 m with gantry and with pylon 8,0 / 8,7 m
Track shoes	850 mm cast flat, 680 mm flat welded, 850 mm flat welded
Travel speed	Max 3,5 km/h
120 M / 120 EM, RUBBER TYRE UNDERCARRIAGE	
Weight without attachments	125 to 140 t, depending on configuration
Standard undercarriage height	3,0 m with pylon 4,5 / 5,2 / 5,7 m
Wheelbase	2 × 2 800 mm
Wheel gauge	4 145 mm
Tyres	12 × 14.00-25 solid rubber
Service brakes	Wet multiple disc brakes on two axles
Parking brakes	Automatic wet multiple-disc parking brakes on two axles
Drive speed	Max 5 km/h
Stabilizer pads	950 × 1 500 mm, with spherical bearings, optional pads 1350 × 1500 mm
120M / 120EM, RUBBER TYRE GANTRY	Undercarriage height 6,5 / 7,0 / 8,0 / 8,7 m with pylon
120S / 120ES, RAIL UNDERCARRIAGE	According to customer specification
120F / 120EF, FIXED UNDERCARRIAGE	According to customer specification
REFILL CAPACITIES	
Hydraulic oil	1 000 l net volume
Fuel tank	1 500 l
Engine oil	36v l
AdBlue tank	160 l

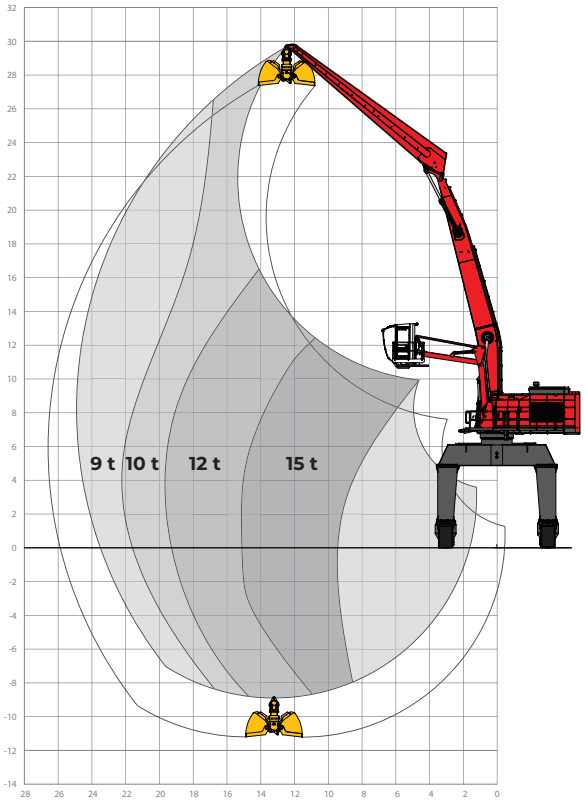
REACH FOR PRODUCTIVITY

MANTSINEN 120 HYBRILIFT®

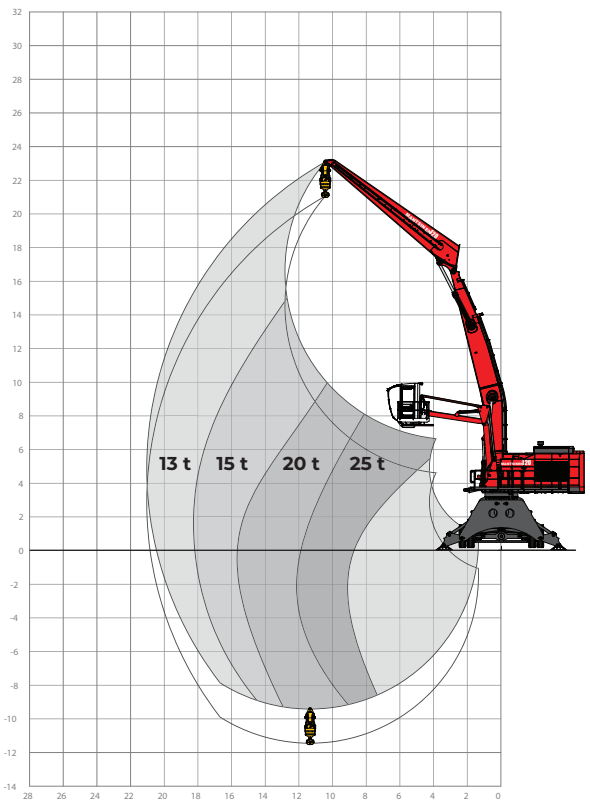
Contact your Mantsinen representative (www.mantsinen.com/en/sales/) for specific load diagrams for your operation.

Horizontal lifting range (meters)

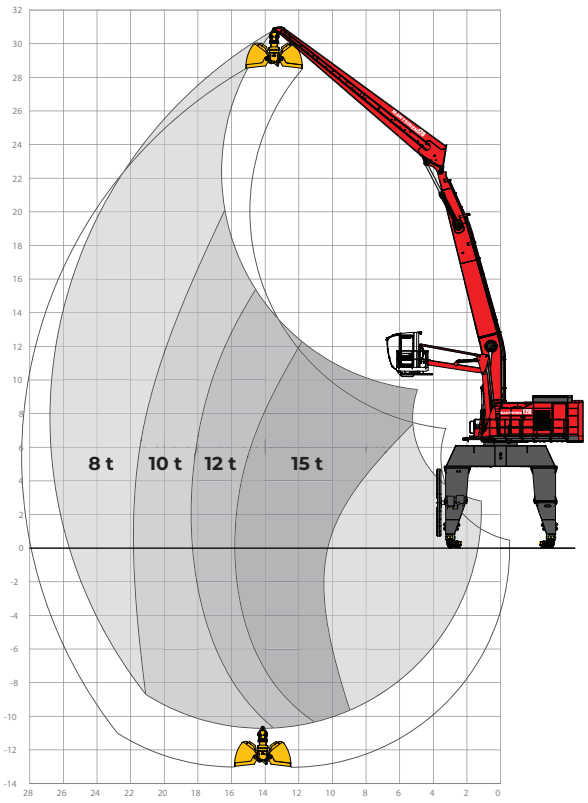
Lifting capacity range with 14 m curved main boom and 12 m stick



Lifting capacity range with 12 m curved main boom and 10 m stick



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



THE STRONGEST LINK IN THE GLOBAL LOGISTICS CHAIN

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

MANTSINEN GROUP LTD OY

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