



Multipurpose machine for economical rock mining

Surface Miner 2200 SM



Selective mining of valuable minerals in a single operation

Flexible range of applications

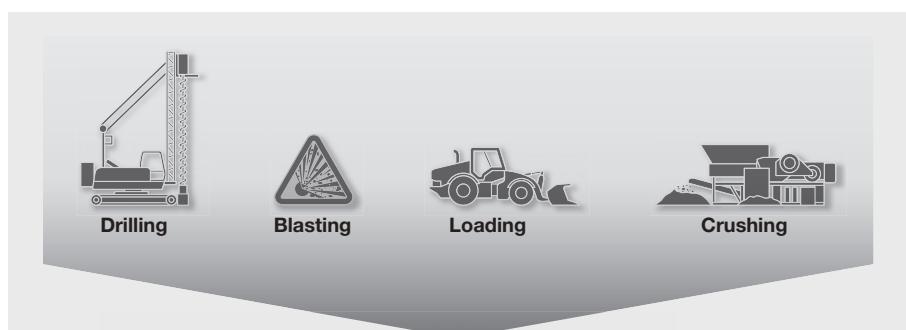
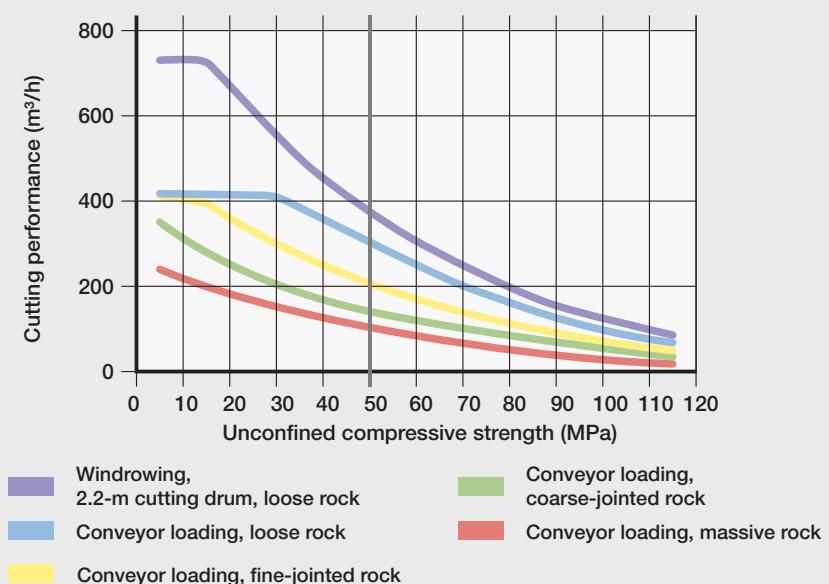
Mine operators have come to rely on the robust 2200 SM surface miner from Wirtgen when it comes to exploiting seams of valuable minerals with unconfined compressive strengths of up to 50 MPa in an economical, environmentally friendly process. Instead of requiring four separate operations – drilling, blasting, loading, crushing –, the 2200 SM cuts, crushes and mines rock selectively in a single machine pass. In addition to mining applications, the miner is also suitable for use in earthworks, rock and road construction.

The centrepiece of the compact, yet powerful machine is the 2.2 m wide, mechanically driven cutting drum for mining medium-hard rock such as limestone, bauxite, iron ore, gypsum, coal, phosphate or oil shale. In addition, the 2200 SM offers three different operating modes: the cut material can be directly loaded into trucks via the miner's conveyor system, discharged to the side of the machine by means of the slewing discharge conveyor, or deposited as a windrow between the machine's track units.





Cutting performance of the Wirtgen 2200 SM surface miner



A single operation instead of four – with the 2200 SM surface miner from Wirtgen

2200 SM – a winning model for many years

► Direct loading of the cut material into waiting dumpers via the miner's discharge conveyor.



► In many countries, the 2200 SM has a history of success in salt mining; in this operation, the salt is windrowed behind the machine.



► Discharging the material to the side via the miner's discharge conveyor.



Cutting foundations on a large scale for road construction on rocky ground.



Equipped with a low-temperature kit, the 2200 SM is all geared up for use in permafrost conditions at temperatures of up to -20°C.



An approved method – a tried-and-tested machine

Surface mining has made a name for itself around the globe as a successful mining process. The 2200 SM has employed this process successfully for many years in an extensive variety of different applications. Ideal conditions for use are found not only in the selective mining of medium-hard mineral deposits but also in earthworks, rock and road construction. The 2200 SM cuts foundations in existing rock to produce a stable base for road and railway line construction, lowers tunnel floors to utmost precision, produces defined surfaces, or cuts trenches, canals and slopes without the need for drilling and blasting.

Its compact dimensions and excellent manoeuvrability make it the ideal candidate also for smaller projects and operations in restricted space conditions, such as tunnel construction or operations in urban areas. And when equipped with the special low-temperature kit, the miner is even perfectly geared up for operations at up to -20°C.

Robust, fully developed cutting technology



Side plates provide effective closure of the cutting chamber on the left and right.

The powerful, hydraulic tool extractor makes easy work and improves machine productivity.





Special cutting drums tailored to the job at hand

Many years of expertise in the manufacture of cutting drums for surface miners and profound knowledge in the use of high-quality, wear-resistant materials for the production of mining tools are our hallmark of excellence.

For every application, we develop a cutting drum with toolholder system for the 2200 SM tailored to performance requirements and including optimal, application-specific positioning of the toolholders. Depending on the specific application,

we additionally offer a wide variety of hard-wearing mining tools. This not only increases the miner's cutting performance and uptime but also reduces the overall operating costs.

The cutting drum housing consists entirely of wear-resistant material. Effective closure of the assembly on the left and right is ensured by two hydraulically lifting side plates. A water spray system additionally minimizes dust development.

The hydraulically opening scraper blade provides ready access to the cutting drum for tool replacement. The hydraulically operated tool extractor then makes child's play of extracting the tools from the holders easily and in a comfortable body posture; the process is optimized further by the hydraulic drum turning device.

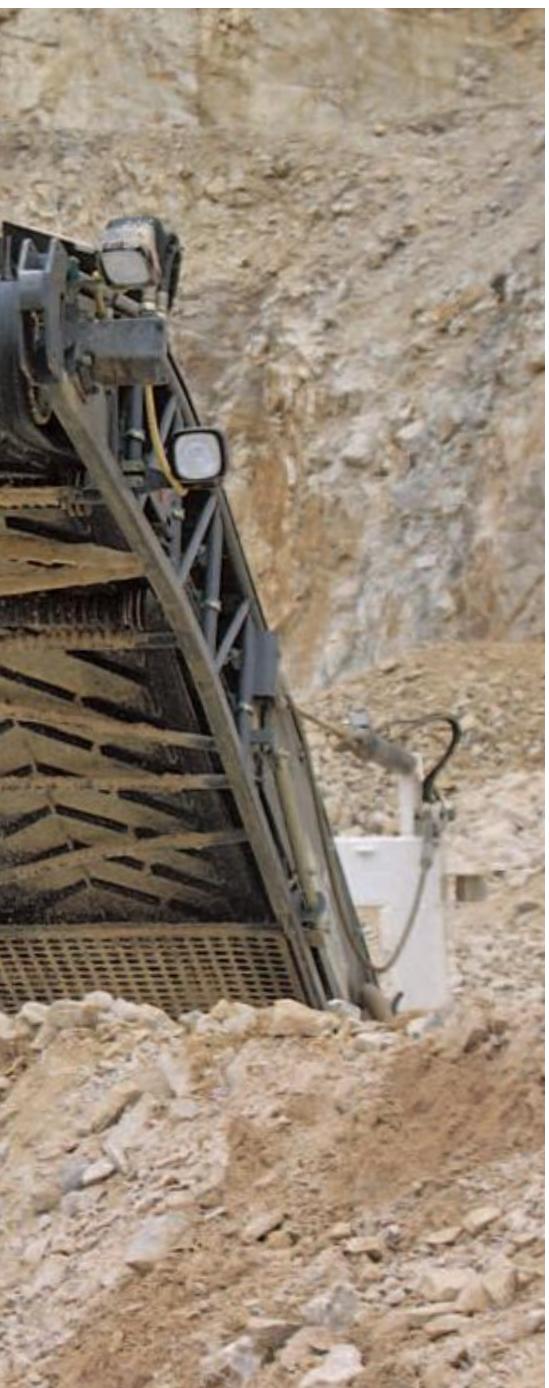
Loading huge amounts of rock in record time

Highly efficient, highly flexible

The 2200 SM's discharge conveyor is hydraulically height-adjustable and slewable to the left and right. The conveyor belt speed can additionally be adjusted independent of the engine speed. These features enable the miner operator to adjust the discharge pattern of the cut material so as to fill waiting trucks quickly and to full capacity or, alternatively, to discharge the material to the side of the machine.

The conveyor system comprises primary and discharge conveyors. A water spray system is integrated into the discharge conveyor to reduce dust development. High conveying speeds and the steep-incline belts with rugged cleat profile make sure that the material is transported away quickly. The gradation control beam can be raised and locked hydraulically, preventing the mining material from breaking into slabs. In addition, this feature effectively protects the discharge conveyor from wear and tear.





For optimal adjustment to site conditions, the discharge conveyor can be slewed to either side.

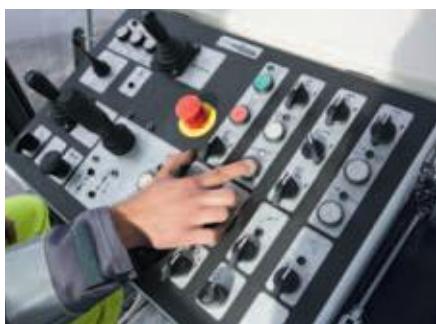
Effectively closed material transfer zone from primary to discharge conveyor.

Comfort cabin and ease of operation ensure relaxed working



► The ergonomic operating position and good visibility in the anti-vibration mounted cabin prevent fatigue during work.

Whether in upright or seated position: the operator always has a full view of the area to be cut and the controls located within easy reach.





Simple operating concept boosts performance

Space and operator comfort are two prerequisites for success – and both are hallmarks of the 2200 SM's spacious operator's cabin. The miner is conveniently accessed from the left side. As the cabin extends beyond the sides of the machine both on the left and right, the miner operator always has a full view of the area to be cut. The two separate control panels can be adjusted in height, swivelled and moved to the outside; they can be operated from both the left and the right. The cabin offers a pleasant working climate thanks

to the integrated air-conditioning and heating system: the operator is well-protected from extreme temperatures and dust. The anti-vibration mounted and soundproof cabin also protects the operator from vibration and noise emissions.

The miner is equipped with the LEVEL PRO electronic automatic levelling system for cutting depth control which quickly and precisely corrects any changes in the reference plane.

Outstanding all-terrain mobility



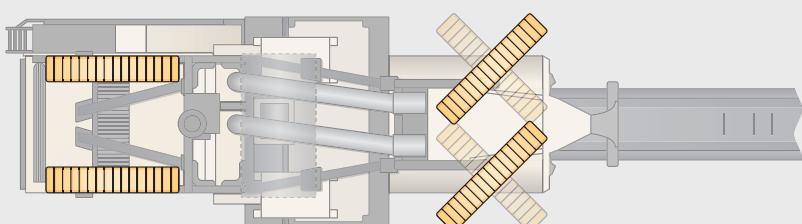
The inner turning radius of only 2.5 m allows fast manoeuvring even in restricted space conditions.



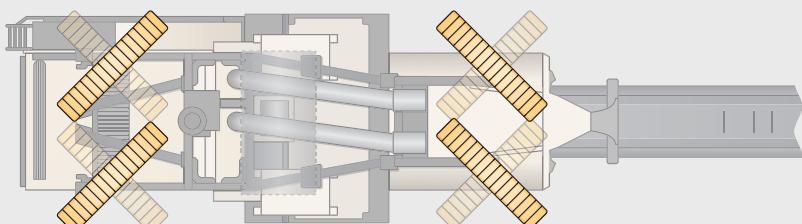
Material guide plates extend the service life of the miner's track units – extra-wide tracks (option) prevent the machine from sinking in on soft ground.



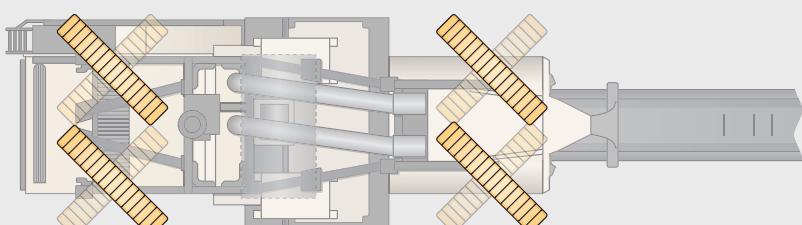
Three steering modes



Steering the front track units



All-track steering



Crab steering

Full traction and outstanding manoeuvrability

Manoeuvrability is one of the 2200 SM's many strong features: the surface miner is equipped with a finger-light all-track steering system. Large steering angles permit an extremely small turning radius. In addition, the miner's continuously adjustable travel speed can be adjusted to accurately match the work process. An automatic power control unit ensures optimum power adjustment to the operating conditions prevailing on site. The operator can choose from three different steering modes, each of which is the fastest way to achieve the goal in the specified field of application.

Each track unit is separately height-adjustable. Their large lift ensures high ground clearance allowing full adjustment to site conditions. Last but not least, a hydraulic flow divider acts as a differential lock, thus guaranteeing consistently high traction of all track units regardless of ground conditions.

Maintenance made easy



The few points of maintenance offer easy access – and the Wirtgen Group's service technicians are on location quickly whenever needed.





The air filters have been installed in an extra-high position – where the air is cleanest – and as far away as possible from the exhaust system.



Less maintenance, more uptime

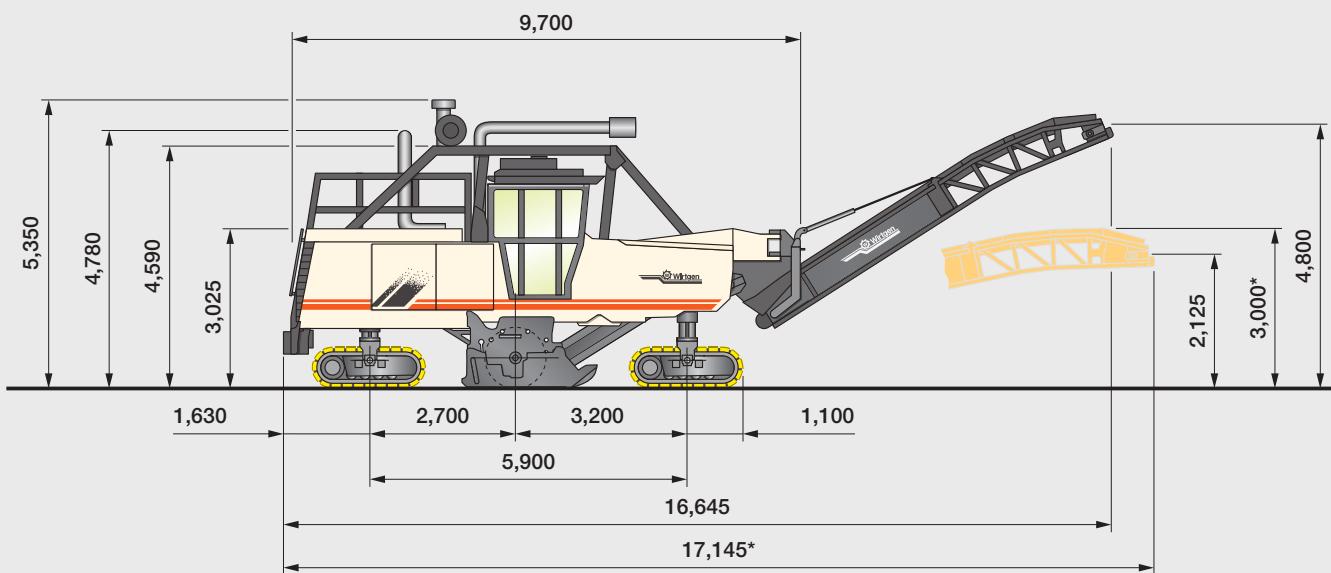
In tough mining operations, the mechanical cutting drum drive with three power belts stands out for its high efficiency. Changing the belt pulleys allows three different cutting speeds. The nearly loss-free power transmission guarantees highest efficiency and top-of-the-range daily production rates while keeping maintenance simple. In addition, the high-performance diesel engine unleashes tremendous power when it counts. An intelligent machine management system controls the miner's advance rate fuel-efficiently

and in accordance with the engine load.

All points of maintenance are arranged in a clear pattern and offer ready access. Separate accesses allow the air filters installed in optimal positions above the 2200 SM's cabin to be replaced quickly and easily. The engine cowling can be opened hydraulically and offers ideal access to the fully soundproofed engine compartment.

Technical specification 2200 SM

Dimensions in mm



Machine weights

Empty weight of machine without filling media	47,700 – 49,050 kg
Operating weight, CE*	52,560 – 53,910 kg

Transport weights of individual components

Weight of discharge conveyor	2,100 kg
Weight of cutting drum assembly	7,800 kg
Weight of upper part of operator's cabin	1,300 kg
Weight of overlay	1,450 kg

* = weight of machine with half-full water tank, half-full fuel tank, driver (75 kg) and on-board tools, excluding optional equipment

Weights of filling media

Water tank filling in kg	5,000 kg
Diesel tank filling in kg (0.83 kg/l)	1,160 kg

Optional equipment features increasing / reducing empty weight

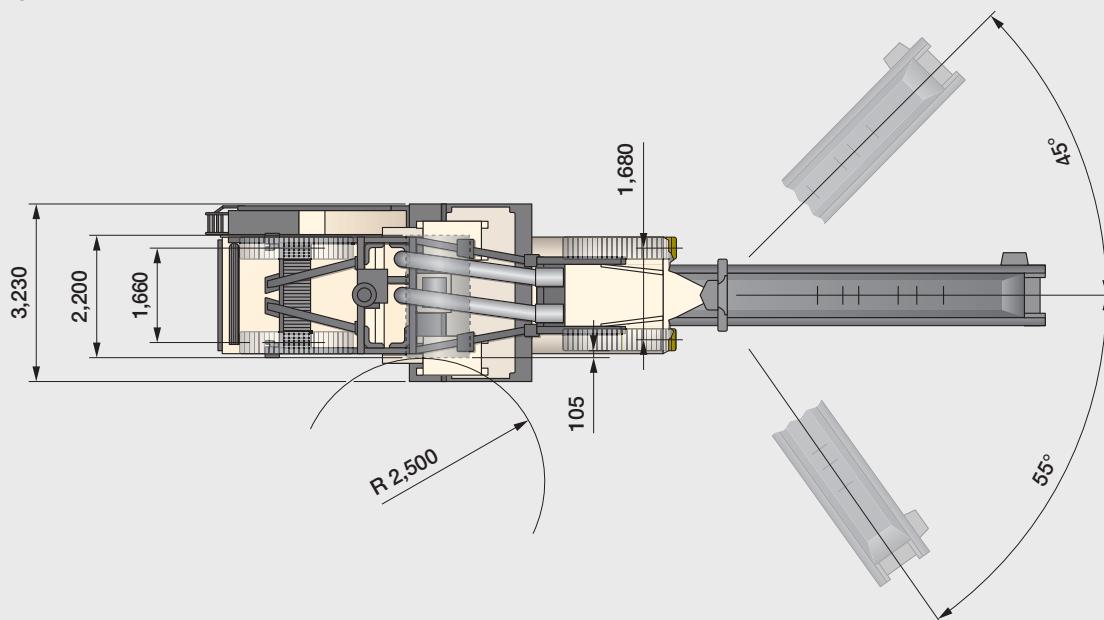
Driver and tools

Driver	75 kg
On-board tools	30 kg

Optional additional equipment

Canopy	280 kg
Fully enclosed operator's cabin	2,320 kg
Low-temperature kit	1,130 kg
Supplementary weight, rear	2,500 kg

Dimensions in mm



Equipment features of 2200 SM

Standard equipment

Basic machine

- › Hydraulically opening, soundproof engine cowling
- › Air intake with cyclonic pre-cleaner
- › Engine cooling system with temperature-governed fan speed
- › Storage compartments for cutting tool containers
- › Standard painting in Wirtgen white with orange stripes

Cutting drum assembly

- › Mechanical cutting drum drive via multiple V-belts with automatic belt tensioner
- › Cutting drum housing of wear-resistant material
- › Three cutting drum speeds
- › Water spray system in cutting drum assembly
- › Hydraulically lifting edge protection plates

Cutting drum

- › Cutting drum for cutting rock with a maximum compressive strength of 50 MPa
- › Cutting drum, working width 2,200 mm, HT6 welded toolholder system, tool spacing 38 mm
- › Hydraulically movable and adjustable scraper blade

Machine and levelling control

- › Clearly structured main control panel with functional switches
- › Multi-functional control screen including display of major machine parameters
- › Engageable, automatic cutting power control unit
- › Engageable, automatic traction control
- › Wirtgen information and diagnosis system WIDIS 32
- › Two exterior control panels for operation by ground staff
- › Digital height indicator
- › LEVEL PRO automatic levelling system with hydraulic milling depth sensors at the side plates, left and right
- › Cutting depth measurement via sensor package and display on LEVEL PRO screen

Operator's platform

- › Anti-vibration mounted, walk-through operator's platform
- › Individually adjustable comfort control panels
- › Individually adjustable comfort driver's seats, left and right
- › Lockable covers for control panels
- › Two mirrors at the front, one mirror at the rear of the machine

Chassis and height adjustment

- › All-track steering system with freely selectable steering modes
- › Double grouser track pads
- › Inner material guide plates at the rear track units
- › Fourfold full-floating axle for high machine stability
- › Intelligent track speed control with hydraulic all-track drive

Miscellaneous

- › Lighting package with 11 working spotlights
- › Air compressor system
- › Comprehensive toolkit in lockable toolbox
- › Safety package with 6 emergency stop switches
- › European design type certification, GS mark (Geprüfte Sicherheit = Tested Safety) and CE conformity
- › Standard warranty of 12 months or 1,000 engine operating hours
- › Machine commissioning by qualified personnel
- › Comprehensive operating manual and machine documentation

Optional equipment

Basic machine

- › Special painting in one or several colours
- › Battery-operated hydraulic module for emergency functions

Cutting drum assembly

- › Drum turning device for cutting tool replacement
- › Hydraulic cutting tool extractor
- › Material guide plate system

Cutting drum

- › Cutting drums, working width 2,200 mm, with application-related toolholder systems and different tool spacings

Loading of cut material

- › Conveyor system with manually or automatically adjustable conveying speed
- › Water spray system at primary conveyor
- › Discharge conveyor slewing angle 45° to the left and 55° to the right

Machine and levelling control

- › RAPID SLOPE cross slope sensor
- › Sonic ski sensor for scanning a stringline
- › Multiplex sensors with two additional ultrasonic sensors including bracket and cable in 3-fold Multiplex system package, right
- › Multiplex sensors with two additional ultrasonic sensors including bracket and cable in 3-fold Multiplex system package, left and right
- › Pre-installation of laser sensor including laser signal receiver but excluding laser signal transmitter

Operator's platform

- › Hydraulically extendable and retractable canopy
- › Spacious, comfortable cabin including heating and air-conditioning system

Miscellaneous

- › Screen system including display
- › Lighting system including 6 LED working lights and 3 LED flashing beacons
- › Water tank filling, rear
- › Comprehensive low-temperature kit including pre-heating system to achieve operational readiness and including insulation and heating system for permanent reliable machine operation at up to -20°C
- › "Wiggins" quick-filling system for diesel refuelling
- › Electrically operated diesel tank filling pump
- › Hydraulically operated water tank filling pump
- › High-pressure cleaner
- › Supplementary weight, 2,500 kg
- › Conveyor support legs for low-loader transport

Technical specification 2200 SM

Cutting drum	
Cutting width, max.	2,200 mm
Cutting depth with conveyor system *1	0–300
Cutting depth in windrowing mode *1	0–250 mm
Tool spacing	38 mm
Number of cutting tools	76
Drum diameter with tools	1,115 mm
Engine	
Manufacturer	Caterpillar
Type	C27 ATAAC
Cooling	water
Number of cylinders	12
Rated power	708 kW/950 HP/963 PS
Fuel consumption, full load	187 l/h
Fuel consumption, $\frac{2}{3}$ load	125 l/h
Emission standards	no EC regulation / US Tier 2
Electrical system	24 V
Tank capacities	
Fuel tank	1,400 l
Hydraulic fluid tank	550 l
Water tank	5,000 l
Driving properties	
Operating and travel speed	0–84 m/min (0–5 km/h)
Theoretical gradeability	90%
Max. longitudinal inclination of machine when operating at upward or downward slopes	25%
Ground clearance	370 mm
Crawler tracks	
Crawler tracks (L x W x H)	2,200 x 370 x 790 mm
Conveyor system	
Belt width 1 st conveyor (primary conveyor)	1,100 mm
Belt width 2 nd conveyor (discharge conveyor)	1,100 mm
Shipping dimensions	
Machine without cutting drum assembly (L x W x H)	9,700 x 2,800 x 3,000 mm
Machine with cutting drum assembly (L x W x H)	9,700 x 3,230 x 3,000 mm
Discharge conveyor (L x W x H)	8,700 x 1,700 x 1,300 mm
Upper part of operator's cabin (L x W x H)	2,550 x 3,300 x 1,500 mm
Overlay (L x W x H)	6,400 x 2,240 x 1,637 mm

*1 = The maximum cutting depth may deviate from the value indicated, due to tolerances and wear.





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