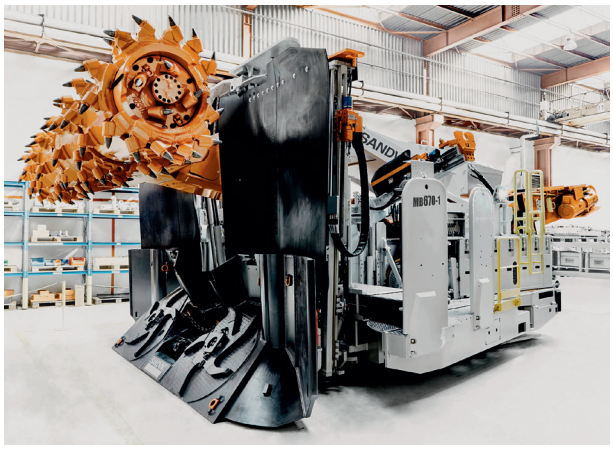
SANDVIK MB670-1 BOLTER MINER

TECHNICAL SPECIFICATION

Sandvik MB670-1 bolter miner is an electrically powered, track-mounted continuous mining machine designed to excavate roadways and install roof bolts simultaneously. MB670-1 is safer, uniquely efficient, high-capacity solution for both rapid entry development in longwall mining. Since the cutter drum is mounted on a hydraulically actuated sliding frame, it is able to sump into the face independently of the mainframe and tracks. And since the roof and rib bolters are mounted on the stationary mainframe, they can be operated throughout the cutting cycle.

The highlight of this new development is the integration of well-proven technology that offers better advance rates under tough mining and restricted space conditions.

The machines are in flameproof design, according to major country regulations:
ANZEX (Australia), ATEX (Europe), GOST (CIS),
MA (China), SANS (South Africa)



KEY FEATURES AND BENEFITS

SIL2 (safety integrity level) rated electric and hydraulic spool monitoring for increased safety

Adaptable auto cutting cycle based on geologic mining conditions guarantees better ground stability

Fully supported roof for operators due to support canopy behind the cutter drum to provide operator's safety

Simultaneous cutting and bolting by means of slide mechanism enabling instant roof support installation, preventing floor damages and higher advance rates

Slow speed revolution cutter head resulting in less dust generation and less vibration

Radio remote control system for machine functions except bolting operation giving the operator better visibility and ground condition monitoring possibilities

Electronically controlled sump- and shear movement to optimize the cutting sequence

On-board CH4 monitoring system to ensure safe operating conditions

OPTIMUM COMPRESSIVE STRENGTH RANGE OF OPERATIONS IS:
20 MPa – 30 MPa in salt operations,
30 MPa – 50 MPa in coal operations and
40 MPa – 80 MPa in coal and rock operations.
In particular cases the machines may cut intrusions up to 120 MPa, too.

The machines respectively the cutter drums are available in different width and lacing configurations build to the individual needs of our customers.
The smallest width is 5000 mm, the widest 6240 mm.
Lacings from 40 – 120 mm depending on geological conditions.
The retraction possibility varies between 150 and 300 mm depending on chosen cutting width.
The tooling system is built for easy replacement of sleeves and cutter picks by means of an oil injection method.
Furthermore the drums as well as the pick boxes can be protected by hard face welding to increase the life time in harsh mining conditions.

CUTTER GEAR BOX
The cutter gear box is of rugged design to operate either with 270, 315 or 400 kW drive electric motor. For the difference in frequency 50 and 60 Hz different input gears are available.
The cutting speed varies from 1.54 to 2.00 m / sec respectively 25.67 or 30.92 rpm.
The gear box is built either with telescopic extension sections or fixed cutter drum width.
Core breakers are an integrated part of it / the cutter drums. The max output is 120000 Nm.

LOADING DEVICE:

Designation	Unit	Type / Value
Loading device		Conventional spinners
Number of spinner arms		5
Loading capacity	t/min	25
Loading width range*	mm	5000 – 6240
Available power	kW	2 x 36

* in line with cutting width

LOADER GEAR BOX
The loader gear box is of rugged design to operate with 36 kW drive electric motor.
It is in different frequency 50 and 60 Hz available.
The output speed is either 44.6 or 48.5 rpm with a max torque of 50000 Nm

CONVEYOR:

Designation	Unit	Type / Value
Conveyor width	mm	760
Conveyor chain speed	m/sec	2.2
Conveyor capacity	t/min	25
Installed power	kW	1 x 36 (opt 2nd 36)

CONVEYOR GEAR BOX
The conveyor gear box is of rugged impact resistance design to operate with 36 kW drive electric motor. It is in both frequency ratings 50 and 60 Hz available.
The output speed varies between 59.72 and 173.76 rpm with a max torque ranging between 17000 and 24000 Nm.

MAIN FRAME / CRAWLER TRACK:

Designation	Unit	Type / Value
Tramming speed, variable	m/min	3.5 / 7.0 / 15.0
Ground clearance	mm	270
Ground pressure	N/cm²	29
Track pulling force	kN	2 x 400
Track overall width – track exterior	mm	~2900
Track chain width	mm	570

CRAWLER TRACK GEAR BOX
The crawler gear box is of rugged impact resistance design to operate with 75 kW drive hydraulic motor.
The output speed is 11.07 rpm with a max torque of 120000 Nm.

ELECTRICAL SYSTEM
MACHINE AND MOTOR POWER:

Designation	Unit	Type / Value
Electrical power supply	V / Hz	1000 or 1140 / 50 or 60
– Cutter motor	kW	270 or 315
– Hydraulic motor	kW	132
– Loader motors	kW	2 x 36
– Conveyor motor	kW	1 x 36 (optional 2)

MACHINE HYDRAULIC:

Designation	Unit	Type / Value
Available power	kW	132/175
Pressure, max	bar	280
Total oil quantity	l	approx. 600
Maximum operating temperature	°C	75

Designation	Unit	Type / Value
Maximum system pressure	bar	200
Maximum oil flow	l/min	120
Feed pressure – drill	bar	100
Feed pressure – thrust	bar	150

BOLTER HYDRAULIC:

Number of roof bolters		4
Type of roof bolters		DO200
Overall and bolt length / size		Depending on cutting height
Number of rib bolters		2
Type of rib bolters		DO800
Overall and bolt length / size		Depending on cutting width
Distance from roof support to face	mm	approx. 1900
Distance roof – rib	mm	approx. 1400
Distance between center bolts	mm	approx. 1100
Drilling		Rotating
Drill diameter	mm	20 – 35

DRILL HEADS:

Designation	Unit	Type / Value		
Drill head type – Roof bolter		V2i		
Motor product model		MB-06	ME-09	ME-10
Torque @ RPM (90% efficiency)		250 @ 600	400 @ 600	450 @ 550
Max. power	kW	20		
Lubrication		Fluid grease (Castrol EPL 00, or equivalent)		
Flushing water volume required	l/min	15		
Max. water pressure	bar	15		

Drill head type – Rib bolter		V2i		
Motor product model		MB-06	ME-09	ME-10
Torque Output	Nm	190	336	400
Max. power	kW		15	

ADDITIONAL EQUIPMENT:

Designation	Unit	Type / Value
Wet scrubber		HCN300/1 HY
Fire extinguisher		Gloria (ABC), 6 kg

	Air volume m³ / sec	rpm	dB
A	3	1835	77.1
B	4	2373	82.1
C	5.7	3336	89.4

A smaller built wet scrubber is also available for lower machine configurations.
The exhaust scrubber is equipped with a sound absorbing silencer. The exhaust air volume can be adjusted according to requirements up to max 5.7 m³ / sec
The HCN300 wet scrubber operates at the following parameters;

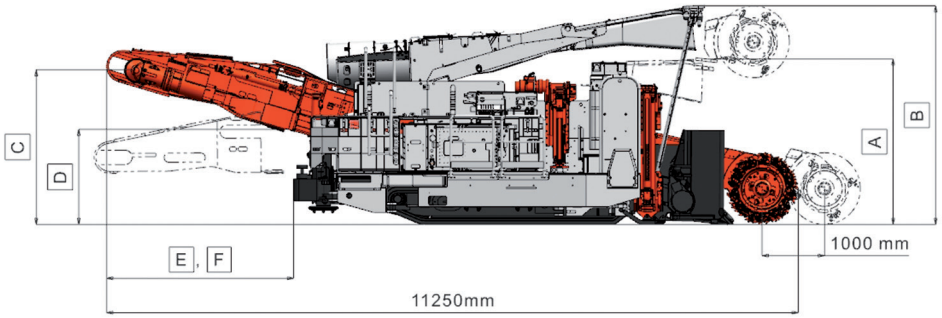
WATER SPRAY AND COOLING SYSTEM

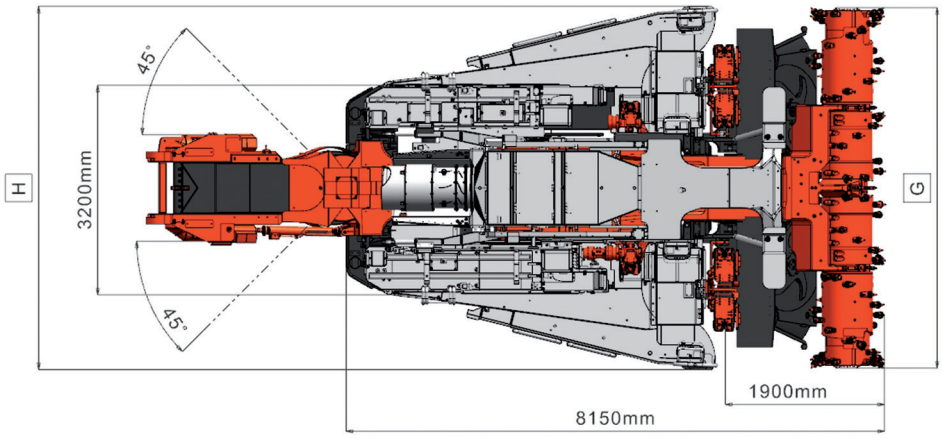
Volumes and stated pressures are only for reference and are subject to change according machine specification. The machines cooling system is designed with a 100 micron back flush filter, pressure peak control valves and an oil cooler. The machines effective operating pressure for the ITP spraying system is 15 bar.

COOLING AND SPRAYING SYSTEM REQUIREMENTS:

Input parameter	Required value	Comments
Minimum water volume	135 l/min	Approx. 66 l/min for loading device and cutter drum at 15 bar, 9 l/min for conveyor spraying at 10 bar, 15 l/min for one drill rig 30 l/min for the scrubber at 4.5 bar
Maximum temperature	25 °C	
Minimum temperature	10 °C	If the water temperature drops below 10 °C, condensation may form in the motors
Maximum pressure	20 bar	
Minimum pressure	8 bar	

DIMENSIONS





A Tramming height [m]: 2.65-3.7 depending on specification	B Cutting height modules [m]: 2.8-3.8 / 3.0-4.0 / 3.2-4.2 / 3.5-4.5 / 4.0-5.0 depending on specification
C Cutting width modules [m]: 5.0 / 5.2 / 5.4 / 5.5 / 5.6 / 5.7 / 5.8 / 6.0 / 6.2 depending on specification	D Platform width [m]: e.g. 4.36 depending on specification

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