



DS412iE FULLY ELECTRIC ROCK BOLTER



MAKE THE CHANGE

Sandvik DS412iE is a highly automated, productive battery powered bolter for underground mining operations and civil construction tunneling.

The bolter is equipped with an electric driveline system including a battery package and electric motor for zero emissions while tramming. Sandvik DS412iE avoids spreading emissions into the environment, reduces thermal load and thus requirements for ventilation capacity underground.

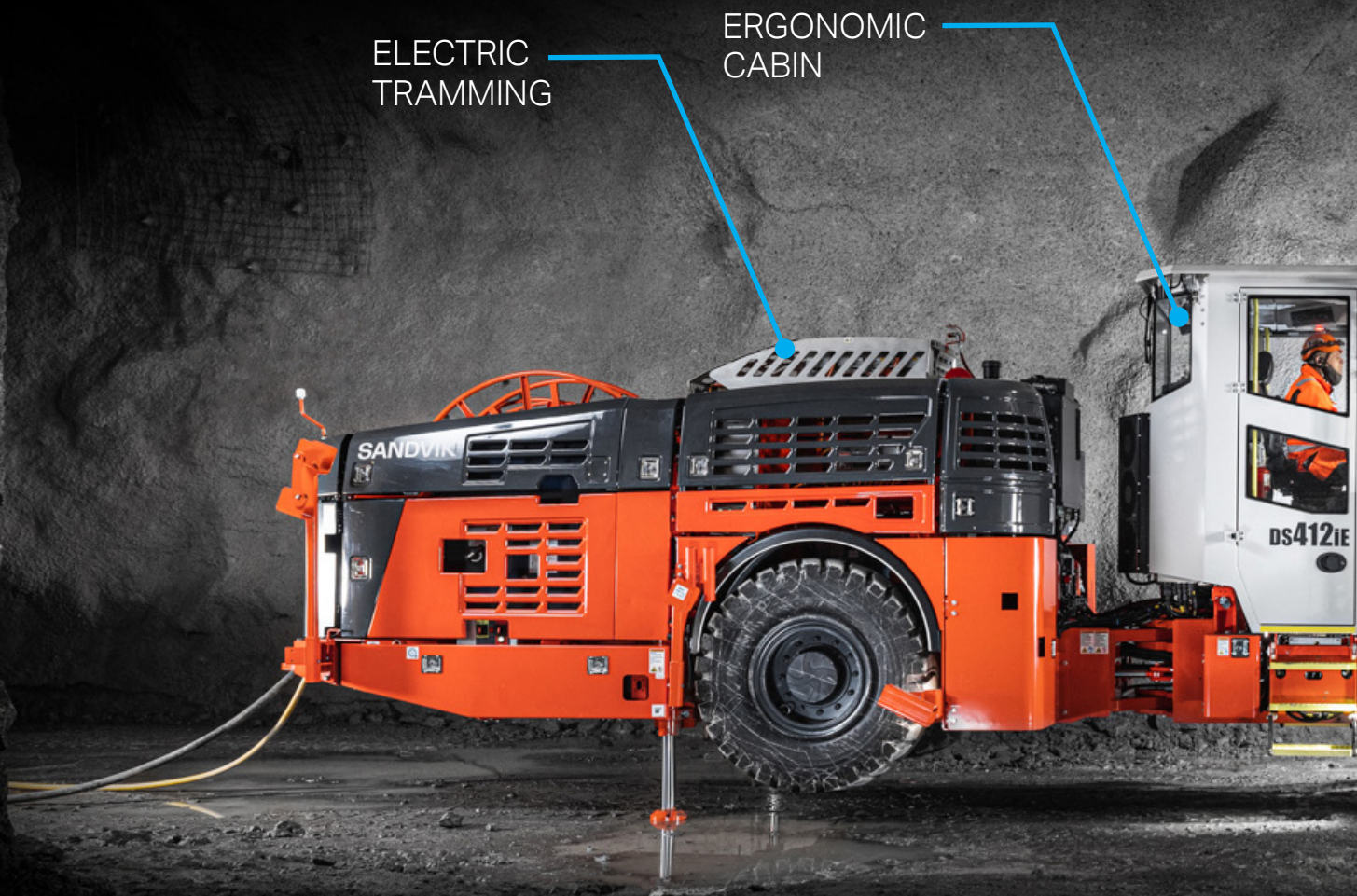


The i-Class platform offers various levels of automation for rock support drilling as well as a large component commonality through the 400i drill range.

This highly instrumented equipment ensures comprehensive data collection through the entire bolting process for better rock supporting quality in drifts and tunnels.

ELECTRIC
TRAMMING

ERGONOMIC
CABIN



MAIN BENEFITS

FAST AND AUTOMATED ONE BOLT AUTOMATION

Sandvik DS412iE is a bolter for 4m x 4m size headings combining a safe, ergonomic working environment with high levels of automation. Equipped with a completely new carrier, a high frequency rock drill, an intelligent control system and an ergonomic cabin, the DS412iE offers high levels of safety and efficiency providing peace of mind for all rock reinforcement operations.

Up to **90%*** automatic bolt installation

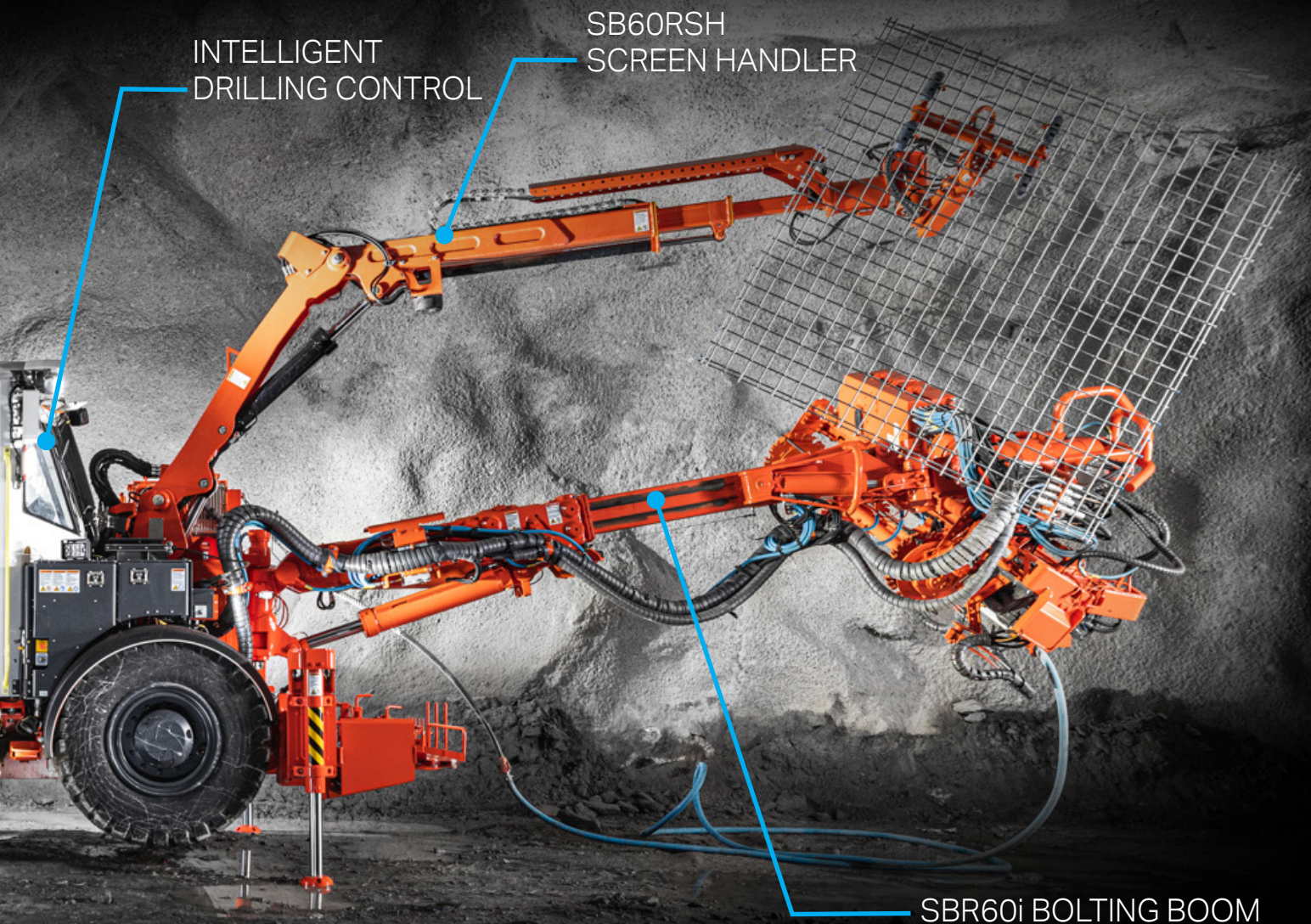
**BETTER
EFFICIENCY**

**IMPROVED
PRODUCTIVITY**

Up to **35%*** higher penetration rate

0% diesel emissions while tramming

**SAFER
WORKING
CONDITIONS**





UPGRADED BHi BOLTING HEAD



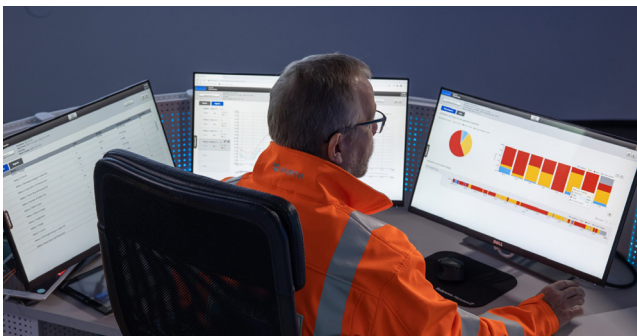
With different bolt lengths, it enables wider bolt selection for all customers. Automatic resin shooting and cement mixing system ensure high quality rock reinforcement process.



INTELLIGENT POWER MANAGEMENT SYSTEM



The charging of the batteries can be done during normal drilling cycle to ensure maximum tramming energy available all the time. It can also be used to draw additional electric power for drilling from the onboard battery pack increasing the drilling productivity without compromising the maximum peak power load taken from the mine electrics.



i-CLASS CONTROL SYSTEM



Enables advanced mine automation and future tele-remote solutions reducing the need for manual tasks. It allows integration with our digital offering like iSURE®, MySandvik Remote Monitoring Service, Optimine® and Automine®.



SANDVIK 365 PARTS & SERVICES

PROUDLY KEEPING YOU ON TRACK!

Sandvik 365 Parts & Services offer a variety of possibilities to enhance your Sandvik DS412iE drill's performance. As an OEM, we provide the best-suited choices to preserve your machine's high performance throughout its lifetime. These consist of highly skilled service specialists supporting you 365 days a year, all using Sandvik Genuine parts and components complemented by a range of robust tools. In addition, you get to enjoy the benefits of advanced digital services and a global infrastructure dedicated to keeping your Sandvik fleet on track.

TECHNICAL SPECIFICATION

KEY FEATURES

Optimum bolting coverage	4.5 m x 4.5 m
Hydraulic rock drill	1 x RD314, 14 kW
Bolting head	1 x BHi
Boom	1 x SBR60i
Onboard battery package	Sodium-Nickel-Chloride- technology
Max. battery energy	98.8 kWh
Tramming distances	18 km (flat ground), 3 km (1:7 incline upwards)
Bolt length	From 1.5 m to 3.0 m (5' to 10')
Drilling automation package	Silver
Turning width (T-section)	4 200 mm
Transport width	2 500 mm
Transport / drilling height	3 050 mm / 3 315 mm
Transport length	13 100 mm
Total weight	30 000 kg depending on options

HYDRAULIC ROCK DRILL

Type of rock drill	RD314 (TS2-137)
Percussion power	14 kW
Percussion pressure	Max. 160 bar
Percussion rate	110 Hz
Rotation speed	Max. 520 rpm (with OMS100)
Rotation torque	340 Nm (with OMS100)
Hole size (bolting)	33 - 43 mm
Shank adapter	45 mm / R32 female
Weight	122 kg
Length	571 mm

BOLTING HEAD

Type of bolting head	BHi (TS2-277)
Bolting head feed	KS140
Bolt carousel capacity	8 rock bolts with 200 x 200 mm maximum plate size
Bolt head length	Max. 4 342 mm (BH30)
Net weight	Max. 1 720 kg (BH30)

BOLTING BOOM

Type of boom	SBR60i (TS2-478)
Boom extension	1 200 mm
Boom weight, net	2 200 kg
Roll-over angle	358°

HYDRAULIC SYSTEM

Powerpack	160 kW (tramming and drilling)
Filtration size (pressure / return)	20 µ / 10 µ
Oil tank volume	270 liters
Oil tank filling pump	Electric
Cooler for hydraulic oil	OW30 oil-to-water (2 x 30 kW)

DRILLING CONTROL SYSTEM

Control system type	SICA
Drilling control modes	Intelligent Torque control / Feed percussion / manual
Upgradeable automation levels	
Comprehensive diagnostic system	
Electronic joystick controls	
15" full color touch screen	
Cable kit for spare part programming	
Safety lock for movement prevention	2 switches
MySandvik insight / OptiMine / WLAN	Data transfer readiness

ELECTRICAL SYSTEM

Multivoltage	Compliance from 380 to 1 000 V, 50 and 60 Hz
Total installed power	205 kW
Main switch gear	MSE10
IP classification	Specification TS2-132
Starting method	Inverter controlled soft starting Typical inrush current peak less than 1 kA (duration less than 20ms)
Automatic cable reel	TCR4CE with spooling system
Cable reel control	Operator station and remote control at rear machine
Front lights	6 x 50 W LED (24V) >125lx, 20 000 lm; 6 000 k
Rear lights	2 x 50 W LED (24V) and 2 x 17 W LED (24V) 8 000 lm; 6 000 k
Remoted search light	1 x 50 W LED (24V)
Parking rear brake / park lights	2 x Red LED
Stair and service lights	LED (24 V)
Amber flashing light	LED (24 V)
Electric quality monitoring	Voltage, Amperage, Power, Pf Energy, Phase-sequence
Onboard battery package	Sodium-Nickel-Chloride technology, 98 kWh max. energy
Intelligent power management system	Battery charging during drilling, Presettable power compensation available from the batteries during peak loads in drilling
Protection	MSE IP66/Nema4x, junction boxes ≥ IP68

AIR AND WATER SYSTEM

Flushing of holes	By Water
Water booster pump type	WBP1
Water pump capacity	50 l/min
Water pump inlet pressure	2 bar (Min.)
Flushing water pressure	10 - 15 bar
Shank lubrication device	SLU-1 (Air / oil mist)
Air compressor	CTN10 (1.0 m³/min at 7 bar)
Oil consumption	150 - 250 g/h
Air consumption	250 - 350 l/min

TECHNICAL SPECIFICATION

OPERATOR'S SAFETY CABIN

Safety cabin certification	FOPS / ROPS (ISO 3449 / 3471)
Operation	Seated tramming Standing and seated drilling
Sound pressure level	According to EN 16228, ISO4872, ISO1120. Operator station: 69 db(A)
Vibration level	According to EN 16228, ISO2631-1
Seat	Fully adjustable seat (tramming and drilling)
Optimized dust level control via air circulation	
Air conditioning	EU6/7 filtering capacity
Cabin heating	During tramming and drilling
Electricity outlets	1 x 24 V, 1 x 12 V and CD player readiness
Stairs and indoors lights	LED
Audio player	CD / MP3 player with radio
Boot washer	At each cabin entrance
Safety laminated acoustic windows	

CARRIER

Type of carrier	C400E (frame-steered)
Carrier articulation	± 40°
Rear axle oscillation	± 8°
Ground clearance	330 mm
Transmission	Inverter controlled electric motor with mechanical link to axles
Axles	Dana Spicer
Tires	14.00-24 PR28
Brakes	SAHR type, fail-safe wet disc brakes
Tramming speed	10 km/h (flat ground) 5 km/h (from 0 to 1.5 km) and 3 km/h (from 1.5 to 3 km) in 1:7 incline
Gradeability / sideways tilt	Max.15° / 5° (according to EN 16228-2)
Hydraulic jacks	2 x SJ500 (front) 2 x SJ600 (rear)
Brake release	Manual hand pump
Wheel chocks and holders	2 Sets
Centralized greasing points	Specification TS2-463
Manual greasing system	Specification TS2-463
Hand held fire extinguisher	1 x 7.7 or 9 kg (type ABC)
Tramming camera	Rear and side
Tramming alarm	Standard
Toolboxes and first aid kit	
Knowledge Box™	Connectivity solution (TS2-535)
Colour scheme	Sandvik
Documentation	1 x Operator's manual 1 x Maintenance manual 1 x Technical manual (in English only) 1 x Parts manual (in English only) 2 x Toolman USB key

OPTIONAL FEATURES AND PACKAGES

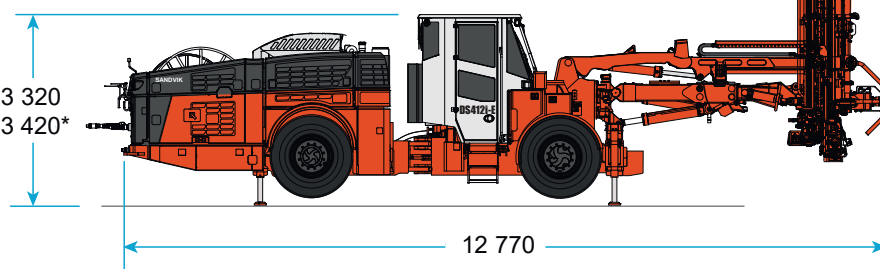
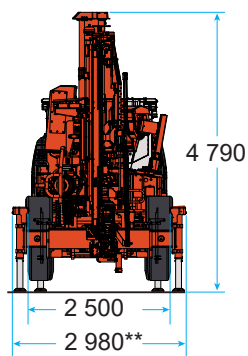
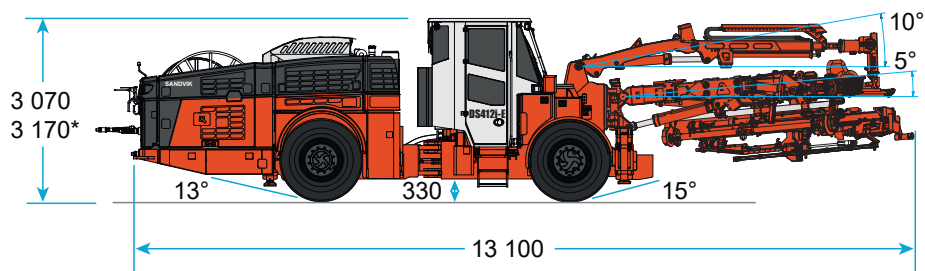
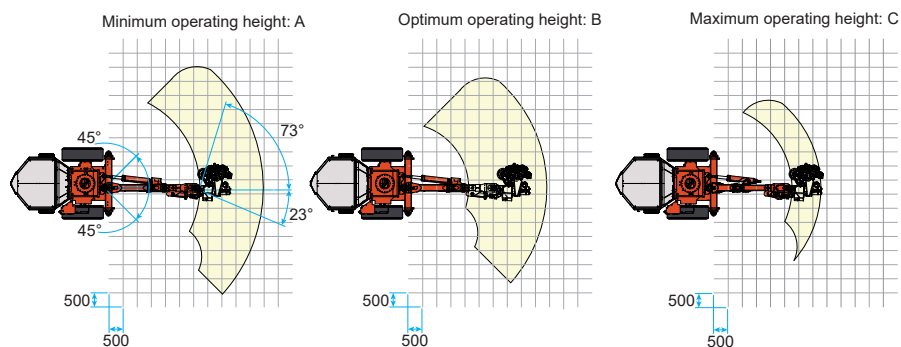
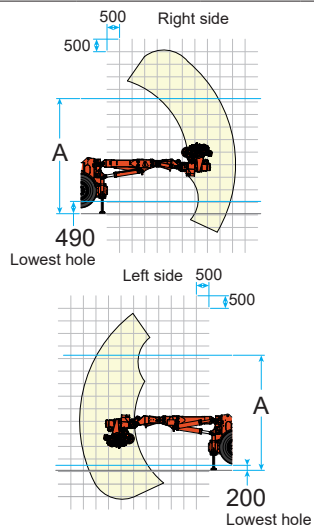
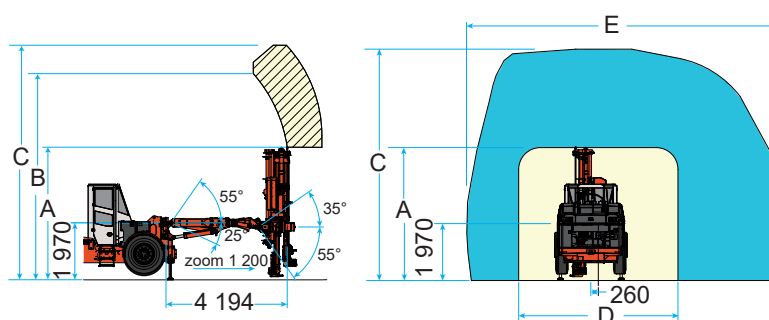
Bolting head	
*Bolt carousel capacity	10 rock bolts for square plate 200 mm 12 rock bolts for square plate 150 mm
Bolting option	
*Bolting alternatives	GCR, WI, S, M
Automatic resin shooting	ARI system (TS2-282)
"In the hole" resin cartridges injection system	Specification TS2-290
Screen handler	SB60RSH separate boom (TS2-324)
Bolt storage	On right side, or front module
Bolting head oiler	Recommended with BCS-system
Hydraulic system	
Vacuum pump	For hydraulic system
By pass oil filter	
Drilling control system	
Access detector	Mandatory in Europe (TS2-211)
Air and water system	
*Air compressor	CT28 (2.8 m³/min, at 7 bar)
Compressed air outlet	Quick coupling
Water hose reel and hose	THR2.5E, with Ø38 mm (1 ½"), 100 m
Cleaning system	
LP system with reel	Up to 15 bar (TS2-343)
HP system with reel	Up to 180 bar (TS2-343)
Bolting module continuous washing system	Remote controlled
Greasing systems	
Automatic system	Lincoln (complete)
Electric system	
*Electric cables	Specification TS2-121
Ground fault and overcurrent protection	VYK
Dewatering pump outlet	8 kW, Site voltage 380 - 690 V
Indicator lights for jacks	Up and down
Earth continuity control	1 wire pilot circuit with remote reset / disconnect
Battery jump start	Optional
Operator's safety cabin	
*Low height cabin	FOPS/ROPS (ISO 3449/3471) height 2 900 mm
Tilttable cabin	10° to improve operator's comfort
Cabin heating	During tramming and drilling
Tramming camera	Rear and side
Fire suppression system	
Spare hand held fire extinguisher	1 x 7.7 or 9 kg (type ABC)
Manual or automatic system	Ansul, 6 nozzles (TS2-460)
Automatic system	Sandvik Eclipse™ (TS2-461)
Carrier	
Reduced tramming speed	3 rd gear lockout
*Foam filled tires	4 pcs
Fast filling system	Complete
Bolt storage with bit rack	Front module
Bolt storage	On carrier right side
Rod rack	On carrier side (4 rods)
Extra items	
Spare rock drill	RD314
Spare wheel assembly	Standard or foam filled tire
Special tools for rock drill	Field kit, complete set
Spare batteries	3 x SoNick (purchased or rental)
Documentation	Extra, Catbase, Link one manuals
Warranty extension	One year (excl. Kazakhstan)

**) Replaces standard feature*

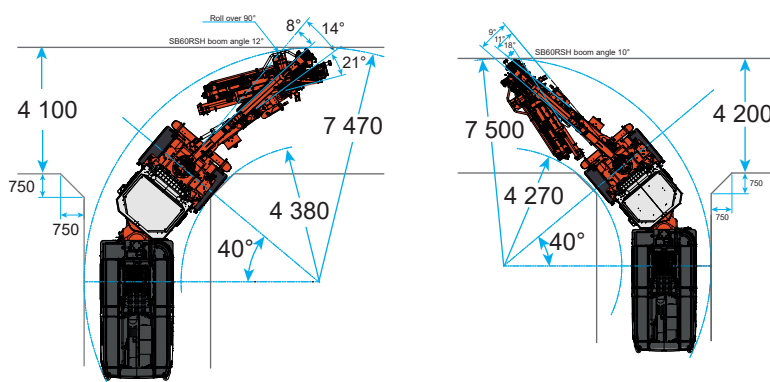
MAIN DIMENSIONS

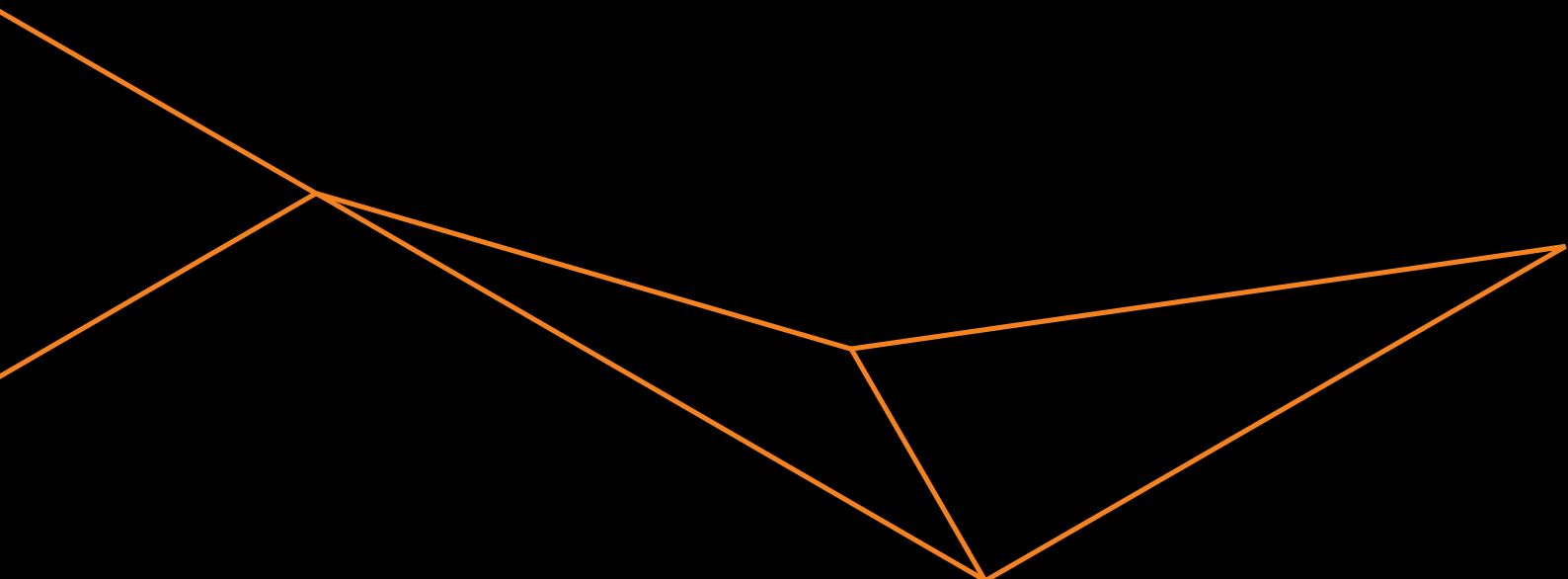
The dimensions are indicative only - All dimensions in mm

Bolting head	Minimum operating height and width (A;D)	Optimum operating height (B)	Maximum operating height (C)	Maximum width (E)
BHi18	3 150	6 600	7 585	9 970
BHi22	3 650	6 600	7 585	9 970
BHi24	3 900	7 060	8 045	10 890
BHi27	4 110	7 060	8 045	10 890
BHi30	4 450	7 060	8 045	10 890



* Add 100 mm height with tilting option - ** 3 100 mm with bolts storage option





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