

Small Boring Unit (SBU-A)

Technical Description

The Small Boring Unit (SBU-A) is a proven solution for medium to hard rock utility installations up to 150 m in length. The SBU-A can be used with any conventional auger boring machine (ABM) from 0.6 to 1.8 m in diameter and utilizes a full-face auger for spoils removal. For excavation, the SBU-A is welded to the lead casing. An ABM provides both torque and forward thrust to the cutting head. In hard rock, the circular cutterhead is fitted with disc cutters, while in mixed ground a combination of ripper teeth, drag, bits, and disc cutters are used.

Cutting Through Rock

Small Boring Units utilize disc cutters from 6.5" to 14" in diameter to excavate rock. Disc cutters penetrate the rock face and create a "crush zone" through which fractures propagate. Material between adjacent crush zones is then chipped from the face. Muck scrapers scoop the muck into openings on the cutterhead (called muck buckets), which transfer the material to a full-face auger for removal.

Improved Boring Efficiency

Unlike typical carbide bit or roller cone cutting heads, the SBU-A can power through rock over 175 MPa UCS. Most tungsten carbide cutting tools tend to break off in rock above 75 MPa UCS, requiring expensive replacements and machine downtime.



A Cost Effective Solution

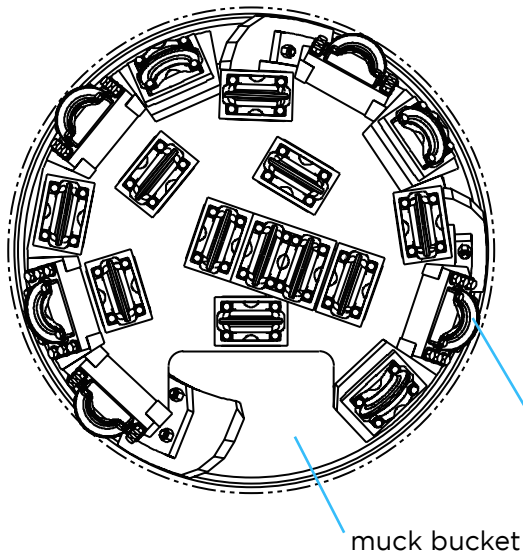
The SBU-A has been successfully used on hundreds of projects around the world to efficiently excavate hard rock. By maximizing machine availability and minimizing labor costs, a typical SBU-A/ABM setup is economically better than carbide bit or roller cone cutting heads.

SBU-A APPLICATIONS

- Full-face auger boring
- Replacement for carbide bit and roller cone cutterheads
- Bore lengths up to 150 m (depending on geology)



Front View

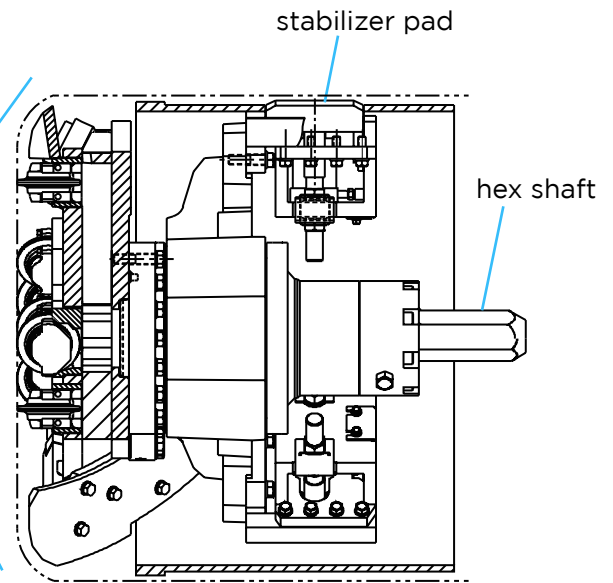


cutterhead

disc cutter

muck bucket

Side View



stabilizer pad

hex shaft

SPECIFICATIONS

MACHINE DIAMETERS

0.6 to 1.8 m

ROCK STRENGTHS

25 to over 175 MPa UCS

GROUND CONDITIONS

Medium to hard rock, or mixed ground

SBU-A 24

Bore Diameter 660 mm
Hex Size 102 mm or 77 mm
No. Cutters 9
Cutter Size 165 mm (6.5")
ABM Torque Required 7,865 to 10,575 N-m
ABM Thrust Required 200 to 400 kN

SBU-A 42

Bore Diameter 1,120 mm
Hex Size 102 mm
No. Cutters 16
Cutter Size 165 or 241 mm
(6.5" or 9.5")
ABM Torque Required 26,170 to 34,980 N-m
ABM Thrust Required 380 to 760 kN

SBU-A 60

Bore Diameter 1,570 mm
Hex Size 127 mm
No. Cutters 14
Cutter Size 165, 241, or 292 mm
(6.5, 9.5, or 11.5")
ABM Torque Required 51,800 to 69,000 N-m
ABM Thrust Required 830 to 1,560 kN

SBU-A 30

Bore Diameter 810 mm
Hex Size 102 mm or 77 mm
No. Cutters 9
Cutter Size 165 mm (6.5")
ABM Torque Required 7,865 to 10,575 N-m
ABM Thrust Required 200 to 400 kN

SBU-A 48

Bore Diameter 1,270 mm
Hex Size 127 mm or 102 mm
No. Cutters 19
Cutter Size 165, 241, or 292 mm
(6.5, 9.5, or 11.5")
ABM Torque Required 33,355 to 46,610 N-m
ABM Thrust Required 420 to 840 kN

SBU-A 66

Bore Diameter 1,730 mm
Hex Size 127 mm
No. Cutters 15
Cutter Size 292 mm (11.5")
ABM Torque Required 63,800 to 85,100 N-m
ABM Thrust Required 890 to 1,670 kN

SBU-A 36

Bore Diameter 970 mm
Hex Size 102 mm
No. Cutters 13
Cutter Size 165 or 241 mm
(6.5" or 9.5")
ABM Torque Required 17,085 to 22,915 N-m
ABM Thrust Required 290 to 580 kN

SBU-A 54

Bore Diameter 1,420 mm
Hex Size 127 mm or 102 mm
No. Cutters 21
Cutter Size 165, 241, or 292 mm
(6.5, 9.5, or 11.5")
ABM Torque Required 41,490 to 55,460 N-m
ABM Thrust Required 470 to 940 kN

SBU-A 72

Bore Diameter 1,880 mm
Hex Size 127 mm
No. Cutters 16
Cutter Size 292 mm/356 mm (14")
ABM Torque Required 86,920 to 108,200 N-m
ABM Thrust Required 1,000 to 1,780 kN

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