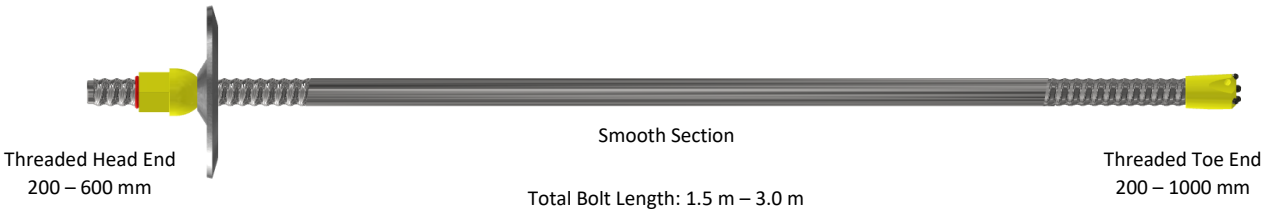
Self-Drilling Dynamic Bolt (SDDB®)

normet
ROCK REINFORCEMENT
TECHNICAL DATA SHEET

Rock Reinforcement Bolt (US Patent 9,845,678 B2)



DESCRIPTION

The Normet Self-Drilling Dynamic Bolt (SDDB) is a hollow deformable bolt with an R32 ISO thread at both ends and a smooth de-bonded centre section.

SDDB is permanent ground support intended for use in medium to competent ground under high-stress and prone to deformation or seismicity. SDDB is constructed from a proprietary steel that offers initially stiff support, but with the potential to tolerate significant deformation without failure, should it's yield limit be exceeded.

The SDDB offers rapid installation of permanent support, mitigating the need for secondary support. It is installed in combination with pumpable resin or grout encapsulation and can be installed as single-pass self-drilling product, or as a two-step installation into a pre-drilled support hole. The SDDB can be installed as single-length or multiple segments can be coupled together for extension applications.

FUNCTIONALITY

The SDDB adopts the design principle of the D-Bolt®, comprising of a hollow bar with a smooth centre shank, flanked by anchoring profiles at both ends of the bolt. The anchoring profiles rigidly bond the SDDB to the encapsulating resin or grout, while the smooth section remains de-bonded, allowing it to deform without constraint and absorbs dilation energy by utilizing the plastic deformation characteristics of the SDDB proprietary steel.

This design allows the SDDB to offer stiff resistance to deformation for loads less than the bolt yield load. However, should the yield load of the bolt be exceeded, the bolt will yield and absorb the excess load through plastic deformation, where conventional stiff-bolts would typically fail.

The installation process makes SDDB a consistent and highly efficient product to install in various ground conditions. In self-drilling configurations, the SDDB can be installed into ground prone to support hole collapse or closure.

KEY BENEFITS

- Can be installed into support holes prone to collapse or closing
- Consolidates primary and secondary support into one installation
- Simple and consistent installation
- Single length or coupled extension
- Suitable to high-pressure injection
- Can act as a deformable injection lance for strata consolidation and reinforcement

TYPICAL APPLICATIONS

- Deep mines with high in-situ stresses
- Operations seeking rapid installation of ground support
- Squeezing ground, broken, fractured, and fissured rock where typical bolts are difficult to install
- Problematic underground areas affected by stress redistribution or abutment
- Seismically active fault zones
- May be considered as an alternative to cable bolting in certain applications

TECHNICAL DATA

Specifications	Group A	Group B	Group C
Typical UTS (kN)	250	270	290
Typical Yield Load (kN)	170	190	200
Outer Diameter (mm)	32	32	32
Inner Diameter (mm)	~24.9	~23.3	~20.5
Cross Sect. Area (mm^2)	350	382	433
Typical Elongation	23%		
Weight (kg/m)	2.75	3.0	3.5

Self-Drilling Dynamic Bolt (SDDB®)

ROCK REINFORCEMENT
TECHNICAL DATA SHEET

Rock Reinforcement Bolt (US Patent 9,845,678 B2)

THREAD CONFIGURATIONS

200 – 300 mm

- Bolt head anchorage for the nut and plate assembly
- Coupler for bolt extension
- Not suitable as an end anchor on single length installations

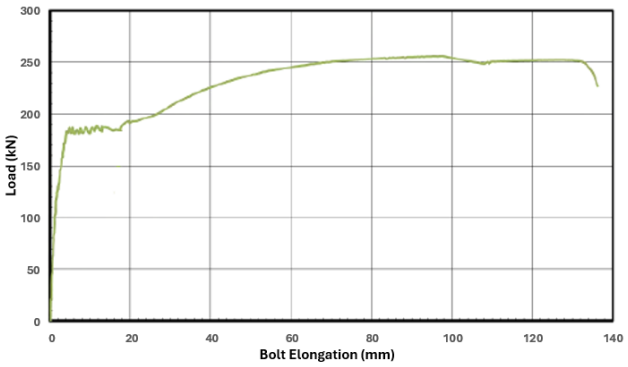
< 600 mm

- Anchor points
- Sacrificial drill bit attachment
- Suitable as an end anchor when combined with coupler or sacrificial bit

> 600 mm

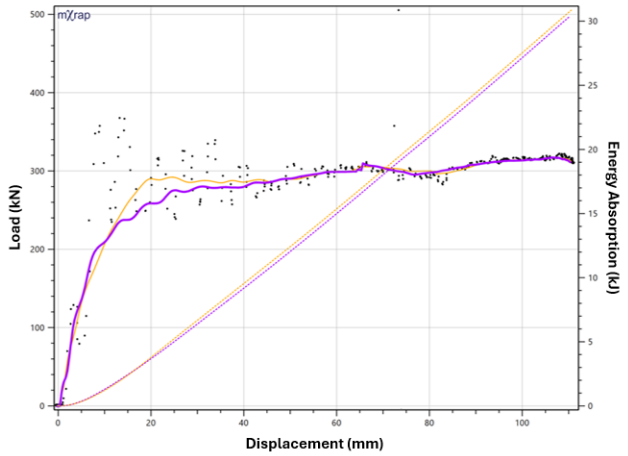
- Provides better bonding on fractured sections
- Suitable as an end anchor without couple or sacrificial drill bit

TYPICAL LOAD vs. DEFORMATION CURVE



*R32x2100 Quasi-static loading

TYPICAL DYNAMIC LOADING CURVE



*R32x2400 Group C – 30 kJ impulse.

DIMENSIONS / PACKING / THREADS

Typical lengths between 1.5 m to 3.0 m. Other lengths on request.

Bolts are supplied in bundles. Bundles can be either 50 or 100 bolts per bundle.

ACCESSORIES

Standard R32 accessories from SDA (Self Drilling Anchors) Bits, Plates, Nuts, Couplers and Centralizers – see TDS for SDA.

INSTALLATION

For mechanised applications, SDDBs are installed with Roto-Percussive drilling methods using typical drilling jumbos and bolters. SDDB can be installed using hand-held equipment adapted to this application.