



DESCRIPTION

HX-Bolt is a friction-anchored dynamic rock bolt designed to control squeezing or seismically active ground. It combines primary and secondary support into a single product, offering a rapid single-pass installation with immediate dynamic support.

HX-Bolt is suited for mechanised installation using a wide variety of equipment, and anchors into the rock using a combination of a mechanical expansion shell for end-anchorage, and frictional anchorage with radial confinement along the full bolt length. This design provides a rugged, general-purpose rock bolt able to anchor into weak or highly fractured ground. The rapid installation process also makes it an attractive option for installation into competent rock, where installation efficiency and simplicity are required.

HX-Bolt features a hollow 28 mm yielding bar, produced from a proprietary steel that offers superior initial support stiffness while allowing for significant ductility once the yield limit of the bolt is exceeded. Post-yield, the HX-Bolt retains its tensile properties and deforms in conjunction with the rock mass while maintaining a nearly constant confinement force.

The increased cross-sectional area of the hollow bar improves resistance to buckling during installation, while also allowing the option to inject the installed bolt with grout or resin, if a fully encapsulated system is desired. If the bolt will not be post-grouted, the hollow core can be equipped with a residual capacity indicator that allows the elongation status of each bolt to be monitored throughout the bolt's life.

TYPICAL APPLICATIONS

HX-Bolt is a general-purpose dynamic rock bolt. It can be used to control ground prone to deformation or seismicity and is particularly effective in weak or highly fractured ground, or when installation holes are prone to becoming blocked by broken rock. The bolt design is also well-suited to applications where high shear forces are expected.

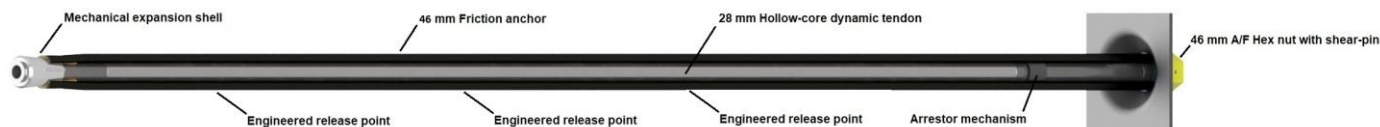
HX-Bolt can be configured to serve as temporary or permanent ground support in a wide variety of ground conditions. It is installed using bolters or jumbos and is driven into the hole using percussion, like installing a split set. Once driven fully into the support hole, the nut is rotated to tension the bolt and activate the expansion shell. Once installed, the bolt offers full dynamic support.

Any increase in tensile load on the bolt will cause the expansion shell to expand further, increasing its anchorage force to a maximum expansion diameter of 57 mm. The friction anchor component provides complementary full-column anchorage and radial confinement along the full bolt length.

The HX-Bolt can be injected with resin or grout after installation to encapsulate the bolt, shielding it from long-term corrosion and permanently bonding it into the rock. In this application, the friction anchor helps prevent the excessive leaking of resin or grout into the rock mass fractures.

If the bolt will not be injected with resin or grout, the hollow core can be equipped with a mechanical indicator, positioned at a fixed length from one end of the bolt and protruding from the other end by a specific length. As the bolt deforms, the length of the protruding section decreases, visually indicating the amount of bolt elongation that has occurred. This feature provides timely feedback when the deformation reaches the bolt's elongation capacity.

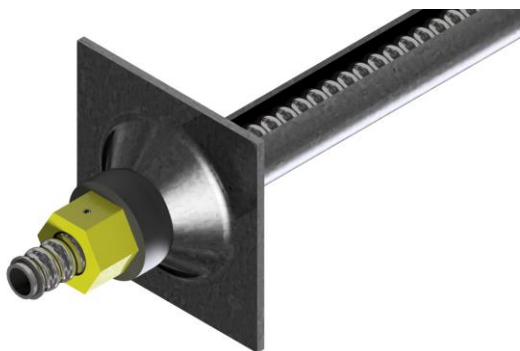
Dynamic Hollow-Core Hybrid Rock Bolt



KEY BENEFITS

- › Instantaneous dynamic reinforcement
- › Suitable for weak, fractured and competent ground
- › Combines primary and secondary support into a single-pass solution
- › Installs using Bolters and Jumbos
- › Simple and rapid installation
- › High-capacity mechanical and frictional anchorage
- › Option to use with or without resin or grout encapsulation
- › Option to include the residual capacity indicator

HX-Bolt Groutable



HX-Bolt with Residual Capacity Indicator



TECHNICAL DETAILS

Description of Parameter	HX-Bolt
Typical UTS	706 MPa
Typical Ultimate Load	250 kN
Typical Yield Strength	252 MPa
Typical Yield Load	180 kN
Energy Absorption ***	Typical 60 kJ (2.4 m)
Bar Diameter	28 x 17 mm
Friction Unit Diameter	47 x 3.2 mm
Total Cross-sectional Area	707 mm ²
Typical Elongation (A200 mm %) **	19%*
Installation Hole Size Range	Ø44 – Ø46 mm
Maximum Expansion Shell Diameter	Ø55 mm
Typical Weight (2.4 m Black)	13.5 kg
Bolt Finish	Black or Galvanized ISO 1461:2022
Nut Size	45 x 46 mm A/F

* 2.4 m Sample – DTS-20250601 Normet HX Bolt Dynamic testing

** A 200 mm

*** Based on 2.4 m length samples, R28 – 1.5 m free length split tube tests with urea silicate resin

Whilst any information and/or specification contained herein is to the best of our knowledge, true and accurate, we always recommend that a trial be carried out to confirm suitability of the product. Please note regional climatic conditions may cause a variation in the performance of the product. No warranty is given or implied in connection with any recommendations or suggestions made by us or our representatives, agents or distributors. The information in this data sheet is effective from the date shown and supersedes all previous data. Please check with your local Normet office to confirm that this is current issue.