SPLIT-SET

DESCRIPTION

The anchoring system of a friction bolt, also known as a Split Set, is a rock support method used in underground mining and tunnel construction. This system consists of a high-strength steel bolt with a “U” shaped cross-section and a longitudinal groove.

To install a Split Set bolt, a hole is made in the rock with a diameter slightly smaller than the bolt’s diameter, and the Split Set is inserted into it. As the bolt is pushed into the rock, the “U” shaped cross-section reduces and adjusts to the shape of the borehole. This expansion creates friction between the Split Set and the surrounding rock along its entire length, providing strong resistance to displacement.

The Split Set can also have a flat or curved plate on one end to distribute the rock load over a larger surface area, increasing its support capacity. Once the bolt is inserted in place, concrete masonry, fill or mesh can be placed to complete the support and stability.

The Split Set anchoring system is an effective way to support rock in underground mining and tunnel construction due to its ease of installation and immediate load-bearing capacity.

FIELDS OF APPLICATION

- Underground mining: In underground mining, Split Sets are used to support rock and prevent its displacement. This is especially important in metal mining, where the stability of the galleries is critical to the safety of miners and the efficiency of the operation.
- Tunnel construction: Split Sets are used in tunnel construction to provide support to the surrounding rock and prevent its collapse
- Infrastructure**:** Split Sets are used in infrastructure works such as bridges and dams to provide support to surrounding rocks and soils.
- Erosion control**:** In civil engineering, Split Sets are used to stabilize the ground and prevent erosion**.**

ADVANTAGES OF SPLIT-SET

- Immediate load-bearing capacity**:** friction bolts offer immediate load-bearing capacity upon installation due to the friction generated between the bolt and the surrounding rock.
- Good adaptability to different types of rocks**:** friction bolts can be installed in a wide variety of rock types, including soft rocks, and adapt well to irregularities and cracks in the rock.
- Easy and quick installation**:** the installation of friction bolts is simple and fast, reducing downtime and increasing productivity.
- Reduction of accident risk**:** friction bolts are less likely to cause accidents due to the elimination of the need to hammer the bolts in place. This reduces the risk of rock fracturing and decreases workers’ exposure to vibrations and dust.
- Cost-effectiveness**:** friction bolts are a cost-effective option compared to other types of anchors, making them ideal for projects with limited budgets.

TECHNICAL PROPERTIES OF SPLIT-SET

SPECIFICATIONS	D-33	D-39	D-47
Variable lengths Up to (m)	3	3	3
Tube Thickness (mm)	2	2.5	3
Raw Material Quality	S-355-JR	S-355-JR	S-355-JR
Outer Diameter (mm)	33	39	47
Recommended Drill Diameter (mm)	30-32	36-38	41-44
Weight (Kg x m)	1.5	1.8	2.9

INSTALLATION PROCEDURE

- Drill the hole according to specifications: a hole is drilled in the ceiling or wall using a rock drill. The diameter of this hole will be slightly smaller than the diameter of the bolt.
- Cleaning**:** it is recommended to clean the hole with compressed air to remove dust and loose particles.
- Insertion of the bolt: the Split Set friction bolt is inserted into the hole fully aligned with it, making sure that the head plate is on the surface of the ceiling or wall.
- Installation**:** an installation tool is placed over the bolt head and struck with a hammer until the bolt is fully installed. The tool and hammer percussion must be completely aligned with the axis of the bolt to avoid deformation. The head of the bolt is slightly deformed to make contact with the surface of the ceiling or wall, creating friction that helps maintain stability.
- Verification**:** the installation of the bolt is verified to ensure that it is properly placed and has the appropriate tension.

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