Guide to protecting and handling your drill rods

Drillers' guide

Epiroc

Content

Drill rods are a hugely important part of drilling equipment and taking care of your drill rods can have a major impact on your drilling performance. Some easy to perform maintenance tips can result in:

- Longer life for your rods
- Lower operational costs

Proper maintenance can also have a positive impact on penetration rates and core bit life. Having confidence that your rods are in good condition will keep you from having to reduce feed pressure or worry that water is leaking and not cooling your core bit.

Penetration rate is considered the most important metric or Key Performance Indicator (KPI). So problems with equipment will decrease the penetration rate while new improved products may increase your penetration rate. In either case, you should always have a baseline against which to compare any changes to your drilling equipment or procedures. Learn more about improving your rate of penetration in our free guide available on our website.

Common problems

Thread galling

Galling happens with drill rods when high torque or loading cause seizure or binding of the metal threads. There is pressure between the female and male threads and most often the culprit is dirt, or dust that has not been properly cleaned from the threads on your rods.

If your rods are lying around for a while before you used them, they may become dusty and the threads may trap small dirt particles. When the rods are used without proper cleaning, this dirt and dust will damage the threads.

The problem becomes worse when you use a male end that is damaged and try to thread it onto an undamaged female end. The damaged thread will damage the good one and the problem multiplies.

Incorrectly joining a drill rod joint can also cause binding which will lead to thread damage. A joint that has gone together incorrectly causes a galling effect, which then leads to extreme difficulty in unscrewing the rods, and can mean you may have to scrap the rods.

Many drillers believe that if they apply a thread compound or grease before use, it will protect against galling. Using grease or compounds before threading will not work well unless the threads have been cleaned beforehand.

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Solutions

Always properly clean your rods before use. Inspect the rods visually and use a metal brush to properly remove all dirt and grit particles. Wipe the rods with a rag before applying any thread compound.

If you plan on putting away your rods for any period of time, make sure you take anti-rust measures before storing.

Use the right thread compound on your rods. Ideally, the compound should contain at least 50% zinc. This high percentage of zinc provides extreme pressure properties and anti-seizure performance. We recommend **Z-50 Pipe Dope**.

Apply the thread compound properly. You should use a paint brush and cover the entire surface of the thread with a thin coat, like a coat of paint.

Do not use damaged rods. Using a rod with a thread that is pitted, embossed or has galling will damage other drill rods.

Stripped threads

When making and breaking drill rods, the rod threads can become stripped if you force a rotation and the threads have not connected properly. Jamming and wedging can occur as well. This can occur when a driller or helper is rushing to make a connection.

Solutions

A drill rod with a double-start thread, such as the **T2S thread profile**, has two leading edges that catch the thread, with one 180 degrees across from the other. This makes the connection easier to find, requires only half a revolution and reduces cross-threading. Being able to get a smooth start improves both productivity and reduces wear, so you get longer lasting drill rod threads. Drill rods that last longer means that drillers can get more meters per rod and will have to replace the rods less often so your bottom-line benefits.

Rod dents and other thread damage

Other types of damage can occur when two rods hit each other, and these include imprints and dents on the pin and box thread ends. “Stabbing” is another common problem, especially on hydraulic rigs that have automatic rod handlers, or improperly adjusted power float systems. This occurs when two rods are being made up and the pin “stabs” the box thereby damaging both rods. These rods can then damage others if they are not removed from the system. The problem can compound quickly.

Solutions

The threads on a wireline diamond drill rod are a finely tooled joint. Simply taking time to unpack, move or store your drill rods, and respect the suggested break-in period, can reduce potential damage, and greatly extend the life of your rods. You should make sure to remove them from packaging carefully and to make sure they do not bang against each other when storing them.

Leaking drill rods

As the threaded rods wear, or are damaged prematurely by abuse or misuse they will eventually leak. This will reduce the water pressure and the water flow to the bit. This can have a bad effect on the bit causing premature wear and tear and shortening its life. Poor or no lubrication of the drill string can cause vibration and increased torque, all which lead to increased wear and tear of the rods.

Solutions

Using rod grease or lubricant, such as **Black Widow**, on a regular basis will help as these products will coat the rods, produce an anti-rust film and will lessen the damage from rock abrasiveness. A drilling fluid additive, such as Torqueless, added to the polymer mix will help to reduce torque. This product is recommended for all drilling additive recipes.

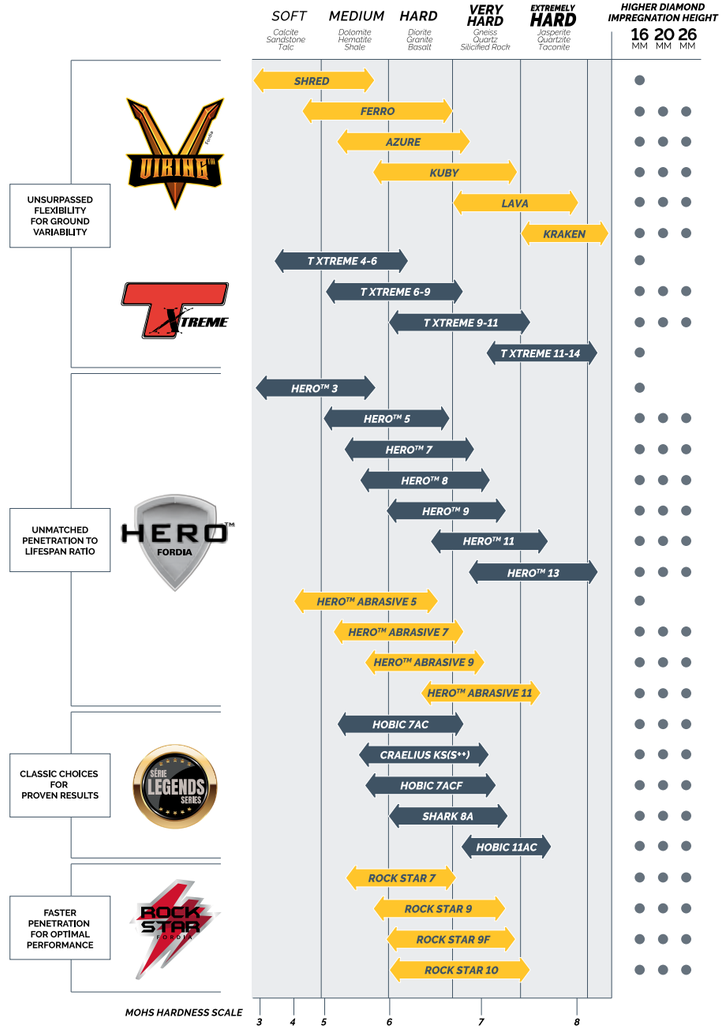
Taking care of your drill rods will allow you to drill hassle-free and worry-free.

Choosing the right core bit

The choice of the right core bit is one of the most important decisions a driller needs to make. The wrong choice of bit for the type of ground you will be drilling can result in a feed pressure that is too high and will lead to increased vibration and torque. Don’t forget to consider the abrasiveness of the ground as well. Many bits today have been developed specifically for use in abrasive ground conditions. For example the Hero Abrasive line of core bits are made with a special matrix that is very resistant to abrasive conditions.

Solutions

To be sure you make the right choice, you should refer to a matrix selection chart or a guide on how to choose the right bit.



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Recommended products

T2S drill rod

The T2S drill rod has a thread profile that allows for hands-free drilling. If you are threading by hand, then less rotation is required generating less fatigue and putting less stress on the wrists. The T2S thread profile is easier to thread and eliminates jamming and wedging with less chance of the threads stripping.

The T2S thread profile is based on the Tuff thread profile and when compared to a Q, it is longer and has wider crests. The profile is ideal for use with rod handlers and manipulators. These rod threads are suitable for both surface and underground drilling, and they come in all the standard sizes. T2S threads will thread and unthread twice as fast as standard rod threads, so adjusting your parameters may be necessary.

Z-50 Pipe Dope

Ideal for drill rods and bolts where high torque or loading may cause seizure or binding of the threads. This product's high percentage of solid type lubricants and anti-wear agents provide extreme pressure properties and anti-seize performance to prevent wear and galling. It is resistant to water washout, rust and corrosion.

Black Widow

This is an extra-sticky drill rod grease developed to offer great performance even in the worst conditions. Black Widow withstands all climates, from extremely hot to brutally cold temperatures. In hot weather, Black Widow will not liquefy and keeps great adhesive properties even in colder temperatures.

Simply taking more care and time to unpack or move your drill rods can reduce drill rod damage.

Torqueless

Reduction of torque leads to longer life of your drilling equipment. Torqueless helps to mix polymers, lubricates, reduces wear and rusting of the rods and cools the core bit. Using Torqueless enhances all polymers and should be added to every mix. It ensures proper mixing with the water by encapsulating each grain of the polymer to ensure a thorough mix. It reduces clumping and waste of product, especially if you are using a powdered product.

DD2000

This product coats the inside walls of the borehole, protecting it and helping to control water loss. It also raises the viscosity of the drilling fluids so that cuttings can be more easily flushed out.

Sand Drill

This polymer is used to solidify non-stable and abrasive grounds such as sand or gravel. In addition to stabilizing the borehole, it helps with core retrieval. With the use of Sand Drill, fluid penetrates the core and holds together the crumbly core so that it can be retrieved intact.

MATEX
CONTROL CHEMICAL

Other tips on handling your drill rods

Start the threads by hand

Make sure the threads are on track and not crossed before you add any torque with the drill head. This will help prevent damage.

Align the threads

Before starting to screw, make sure the threads are aligned, parallel and concentric.

Spin slowly

Don't use a high speed of rotation when starting to screw the threads with the machine. This can result in overheating and can cause galling. The recommended speed is one rotation per second.

Read the manufacturer's recommendations

Even if you think you know what you're doing, it always helps to read what the manufacturer recommends for handling and usage.

This guide was developed to help you improve your drilling performance. Contact our tech support team for more tips or for advice regarding your specific challenges. We're here to make your life easier.

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