



Our HDD tools,
equipment and
service offering

INROCK[®]

A SANDVIK COMPANY



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INROCK® PROFILE

Inrock® is the HDD industry-recognized global leader in performance drilling tools, equipment and services with sales and operations facilities in the USA, UK, Canada and Latin America. The company was founded in 1993 and together with the support of our customers has remained solely dedicated to the dynamic growth of the HDD industry and the success of our clients. Inrock pioneered the first rock drilling projects ever attempted in the HDD industry and continues to focus its resources on setting the standards for HDD performance drilling tools, equipment, and services. Historical industry advancing developments pioneered by Inrock include:

- Design and launch of proprietary XTR® – Extreme Reamer reaming platform. The only tool capable of utilizing XTR soft rock milled tooth (MT), XTR TCI and HDX premium hard rock cutters on the same reamer body.
- Development and design of bit and reamer cutting segments specifically designed for the HDD industry including HDX®, the industry's leading technology for hard rock environments.
- Introduction of ParaTrack guidance technology greatly broadening the scope of feasible HDD projects with the advent of Intersect technology, Gyro, BTS-Beacon Tracking System, single wire and parallel tracking applications and at bit inclination.
- Launch of CrossView®, the first electronic data recorder system (EDR) specifically designed for the HDD industry.
- Inhouse design and manufacturing functions to ensure quality and consistency of supply.

The experienced professionals at Inrock are dedicated solely to the HDD industry. Our primary focus is to utilize our technology and knowledge to help our customers be successful.

SETTING THE STANDARD FOR SUPERIOR PERFORMANCE



Pilot Hole Tooling

Inrock offers a comprehensive set of tooling for pilot hole drilling, specifically designed for the HDD industry to deliver lowest cost per foot drilling.

Tricone Bits

Drill bit selection is a key element of achieving high production rates. Inrock offers a complete assortment of drill bits for drilling in soft soils to ultra hard rock using either mud motors or steerable jets. Inrock can assist in designing pilot hole drilling assemblies to deliver the lowest drilling cost per foot.

Standard sizes*	
inches	mm
5-1/2"	140
6-1/2"	165
6-3/4"	171
9-7/8"	251
10-5/8"	270
12-1/4"	311

*other sizes are available upon request.



Features & Benefits	
HDD performance features HDD features ranging from increased shirrtail protection to proprietary seal technology to address the unique needs of the HDD market.	Premium components Proprietary bearing components and carbide chemistry drives superior performance
Cutting structure options A range of cutting structures are offered to meet the specific demands of your project	Optimized hydraulics Nozzle configurations customized to fit the hole cleaning needs of the HDD industry

Mud Motors

Inrock's motor options include sealed and open bearing designs in sizes ranging from 3-3/4" up to 9-5/8" incorporating fixed and adjustable bend housings. Inrock's mud motors can also be used with the industry leading ABIA guidance tool which provides inclination readings at the bit.



Air Hammers

Inrock's XTH® air hammer systems are specifically designed for the unique needs of the HDD market. Inrock's high efficiency, performance XTH line delivers tangible results for drillers. Inrock's XTH Hammer systems include everything a driller needs for a successful hammer project including the hammer, sonde housing, adapter, bits, oiler and safety tongs.



Hammer & Wireline Guidance

Inrock's XTH line can also be used in tandem with a wireline steering tool, allowing contractors to expand the applications where air hammers can be used. This solution uses Inrock's air hammer combined with ParaTrack, the industry's leading wireline steering tool system.

Guidance Technology & Services

Inrock has supplied the HDD Industry with cutting-edge guidance technology and services for over 25 years. Inrock offers the broadest set of technological solutions to address any guidance project.

Guidance Technology

The core of Inrock's guidance technology is the ParaTrack2 system built through Inrock's partnership with Vector Magnetics. The ParaTrack2 system is the most versatile and proven guidance technology platform in the HDD industry. Users have the ability to run multiple guidance technologies in tandem including: Gyro, Pressure Monitoring, At-Bit Inclination, Beacon Tracking, Passive Magnetic Ranging intersect technology, and surface coils. These independent technologies provide multiple sources of location verification and monitoring, leading to better project outcomes. The ParaTrack Suite offers an unrivaled ability to tackle the specific challenges of any project, making the system completely unique in the HDD marketplace.

ParaTrack2

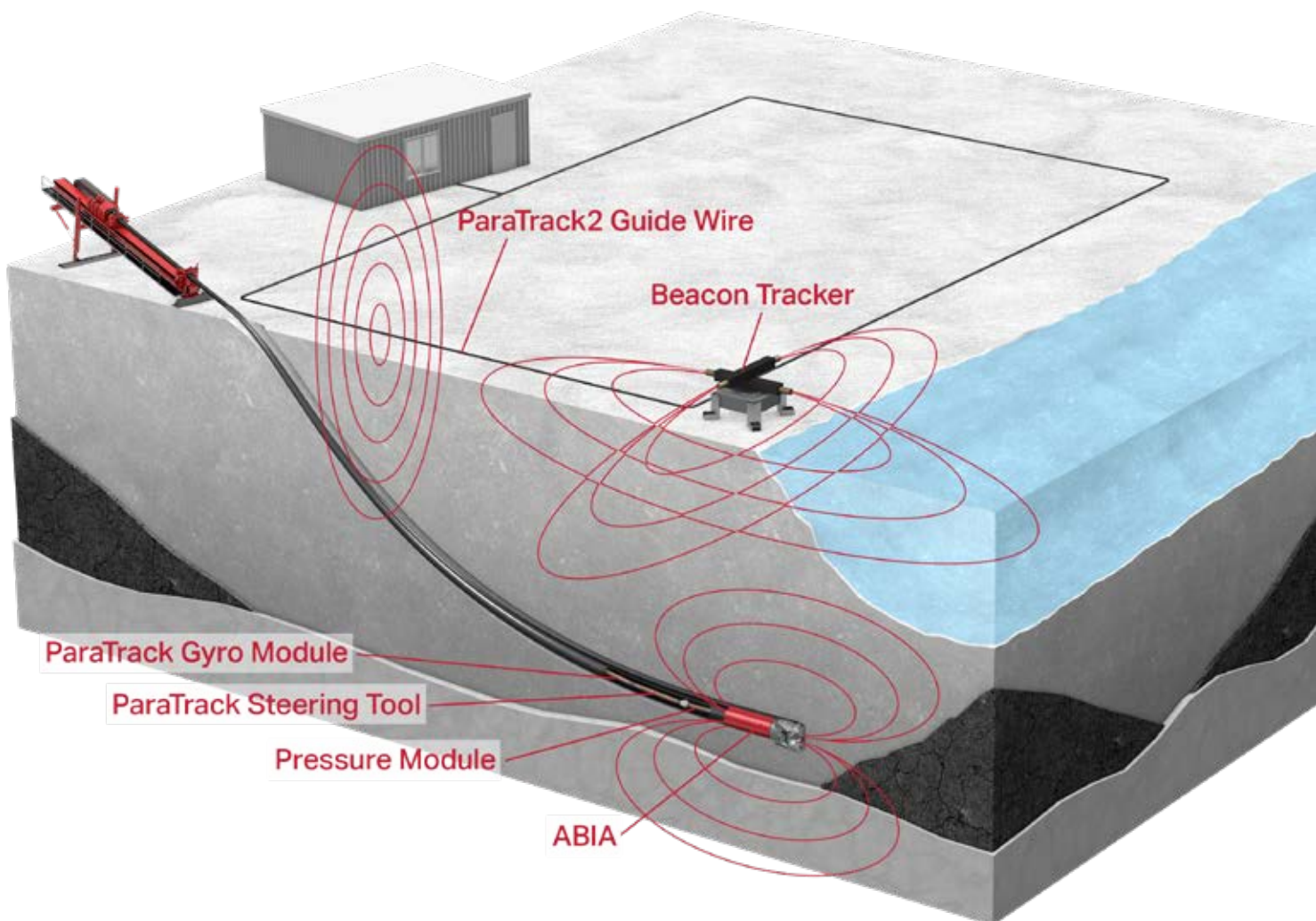
Field-proven on tens of thousands of projects, the ParaTrack Steering Tool is the foundation of the ParaTrack System of tools. Based on low current AC power, driven by a small light weight power supply, and utilizing inexpensive, light gauge wire, ParaTrack2 saves money by significantly reducing setup and survey time, while also offering superior survey quality at deeper depths or in magnetically noisy environments. State of the art magnetic and gravity sensors in a lightweight yet rugged housing provides reliable survey information on its own.

ParaTrack Gyro Module

The ParaTrack Gyro Module (PGM) is designed to extend the capabilities of the ParaTrack System in areas where magnetic interference poses operational challenges for tracking and surveying or for extended reach intervals where surface tracking is not available.

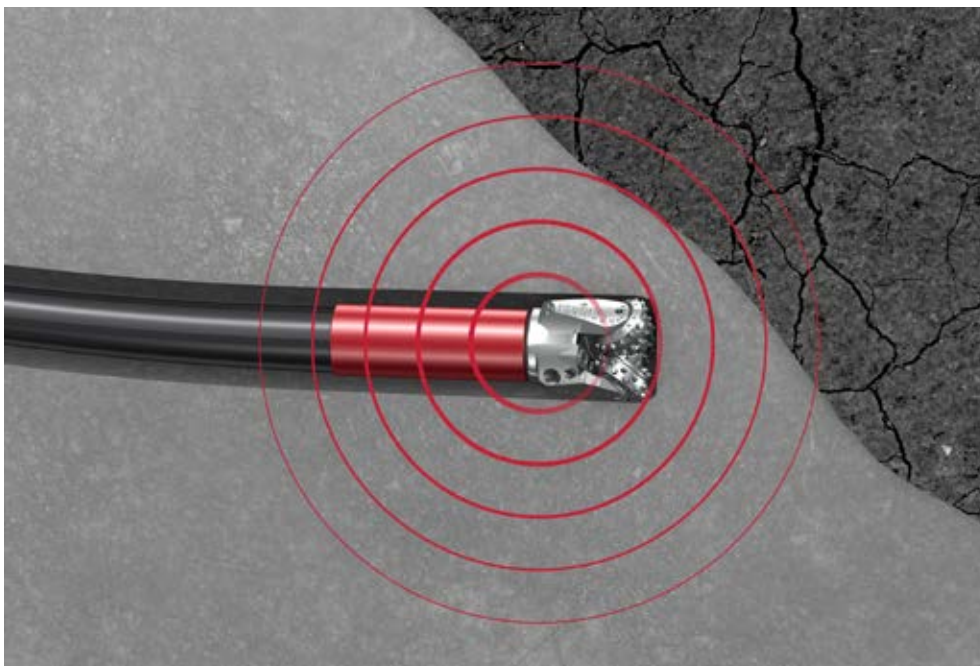
The PGM integrates seamlessly with the entire ParaTrack System of tools and software, giving the operator complete flexibility in choosing the tool best suited for each project. The PGM is effective even in hard-rock environments, with tolerance for high vibration drilling, and requires no lengthy down-hole re-orientations.

Prior to punch-out absolute bit position can be verified via one or more of the multiple surface tracking options offered through the ParaTrack System – at depths of up to 1500' – more than 10x the depth of competing systems.



ABIA

The ParaTrack At Bit Inclination Assembly (ABIA) reports inclination in real-time by taking readings directly behind the bit. This information is essential on tight radius bores, large diameter pipe or when the chances of deflections are high (hard or fractured formations). This information can make the difference between keeping the bore on target and abandoning the hole.



Pressure Module

Tracking downhole pressure is critical in managing the potential risk of inadvertent returns ("IR"). The ParaTrack Pressure Module measures real-time annular and drill pipe pressure, enabling monitoring of drill string and drilling performance and borehole IR detection. The pressure module can be utilized during the pilot hole in conjunction with the ParaTrack System or as a standalone tool during reaming operations.

Passive Magnetic Ranging

The Passive Magnetic Ranging (PMR) technology sets the standard for intersect technology in the HDD marketplace. PMR allows users to accurately locate and intersect another drill string regardless of depth. This technology is built into the ParaTrack2 probe and can be turned on and off at any time without a trip to surface to add additional equipment.

Beacon Tracking System

The Beacon Tracking System (BTS) provides another location measurement alternative. The BTS is used when a surface coil is not desired or feasible or for short intervals where surface tracking is not available. It is also used in conjunction with all other ParaTrack technologies to provide another independent source of location verification.

Guidance Services

Inrock's guidance engineers stand ready to support our clients' most challenging guidance projects anywhere in the world. Inrock's engineers undergo a rigorous selection and training process to ensure they can effectively serve our clients. Utilize Inrock guidance professionals to help you execute your next pilot hole from providing design recommendations, tooling strategies through to project execution.





Reaming

Inrock provides the most comprehensive reaming line in the HDD industry. The Inrock reaming line consists of multiple, proprietary, cutting segments and tool platforms specifically designed for the hdd marketplace. Inrock's offering includes tools for both small and large rigs as well as single use and replaceable cutter tools.

XTR

Inrock's proven XTR® platform utilizes an interchangeable segment cutter along with a durable and reusable reamer body. This platform enables customers to reuse the body multiple times across multiple bores to reduce overall tooling costs and increase profitability. Inrock provides three high performance cutter options (MT/TCI/Premium TCI) allowing customers to address the full spectrum of ground conditions. Inrock's XTR line is available in sizes ranging from 28" up to 72".



30"XTR TCI

MXR

Inrock's MXR line is designed for customers wanting to take the largest pass sizes possible. These tools utilize a 26" cutter segment allowing for maximum cut path, reducing the number of reaming passes required. MXR tools can be built with MT, TCI and Premium TCI segments. Inrock's MXR line is available in sizes ranging from 36" up to 72".



36"MXR

XTR-W

Inrock's patented XTR-W reaming platform, provides a high-quality alternative to traditional "split bit" reamers. The streamlined and robust XTR-W design leverages Inrock's proven cutter segment technology to deliver a cost-effective and high-performance reaming tool. XTR-W reamers can be built on a range of connection types and utilize MT, TCI, Hard Rock TCI or Premium TCI cutter segments. XTR-W reamers can be used on both small and large rigs and come in sizes ranging from 12-3/4" up to 48".



24" XTR-W TCI

XTR-S

Inrock's XTR-S® platform utilizes a proprietary design which allows for field interchangeable cutter segments. The XTR-S® reamer design enables customers to easily change cutter segments, both TCI and MT on the job site without welding. This platform provides the flexibility to use a single reamer body on multiple bores selecting the best cutter segments for the job without committing to purchasing multiple, single-use tools. Available in sizes ranging from 12-3/4" to 24".



24" XTR-S

Features & Benefits

Cutter segments designed for HDD

Inrock's reamer segments are specifically designed for HDD and include increased shirttail projection, proprietary seal technology, optimized journal angles, full carbide coverage, custom carbide grades and more to ensure success in the HDD market.

HDD tool design

Tools and reamer segments are designed to work in harmony to distribute and transfer loads efficiently leading to longer tool life.

Reusable tool bodies

All of Inrock's proprietary reaming platforms are designed to be easily rebuilt and reused saving customers money and time.

Multiple cutting structures

Multiple cutting structures offered to address the specific project needs including MT, Standard TCI, Hard Rock TCI and Premium TCI.

Reaming (cont'd)

Standard Rock Reamers

Inrock also offers standard rock reamers which are available in a wide variety of cutting structures and sizes covering the entire range of HDD rock drilling applications. Inrock stocks certain standard sizes but can also custom make tools to meet specific customer requirements.

Drilling Analytics

The collection and analysis of project data is critical to improving operations. Inrock's CrossView® system is the first electronic data recorder system (EDR) specifically designed for the HDD industry. CrossView® consists of a system of sensors, computers and networking equipment designed to deliver critical rig information to a variety of users. Use CrossView® to improve operations and increase profitability as well as share information securely with other project stakeholders in real-time.



Features & Benefits

Real-time data on rig operations

- Analyze critical operating parameters in real time
- Access data onsite or remotely

Intuitive user interface to monitor projects

- User interface designed for HDD driller
- HDD specific terminology incorporated throughout

Powerful data analysis

- Identify opportunities to improve performance
- Identify potential problems before they occur

Document HDD projects

- Store detailed record of projects
- Ensure compliance with key contract terms or regulatory requirements
- Share information with relevant stakeholders

Accessories

Inrock carries a variety of critical drilling and reaming accessories ranging from safety tongs



Safety Tongs

Inrock safety tongs are a portable, hydraulic powered, make-up/break-out tong set. Quick and easy hook up to safely handle your toughest connections with ease. These units provide a safe alternative for tool makeup and breakout and can be deployed quickly for the remote breakout or makeup of threaded joints anywhere in the field. Inrock offers Safety Tongs capable of handling connection torque values ranging from 2,600 ft/lbs to 120,000 ft/lbs and can be used with a manual hydraulic hand pump or an electrically operated pump.

Swivels

Inrock partners with DCD Design to provide the HDD industry recognized standard when it comes to swivels. Inrock's offering includes a variety of connection options ranging from 10 to 700 tons.



Centralizers

Inrock centralizers are designed specifically for HDD applications. The proper use of centralizers increases hole opening production rates and extends the life of cutters and hole opener bodies resulting in lower overall tooling costs. Inrock's tapered design guides the hole opening assembly through "tight spots" and the wide single ring profile minimizes drill string rotary torque and drag.





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