

MAJOR
Drilling



Hands-Free
Rod Handling

majordrilling.com

QUALITY • SAFETY • RESULTS

COMPLETELY HANDS-FREE ROD HANDLING

Rod handling from inception to automation has genuinely been an evolution in intention, as well as a strategic step in one of the world's largest drilling services providers' continuous improvement plans. Historically, Major Drilling has led the global drilling industry when it comes to rod handling. With safety at the absolute forefront of our culture, Major Drilling was the industry's first company to mechanize rod handling in the mid-1990s.

The initial intention of the original rod handler was not to automate rod handling, but to exceed compliance requirements when working at heights and fall rescue regulations in the Canadian market. In 1998, Major Drilling was the first to incorporate a manipulator into their in-house designed Major 50 diamond drill. This roller manipulator saw great success globally, and to this day is still the most popular manipulator design on the market.

Ten years later, 90% of Major Drilling's Canadian operations had incorporated rod handlers into their design, which resulted in over 1000 employees no longer working at heights.

Since then, Major Drilling has invested substantially in acquiring the latest technology. We were first to market as we deployed various types of rod handlers built by drill manufacturers as our competitors attempted to catch-up to us.

TRAILBLAZING THE WAY

Today, Major Drilling has over 250 rigs with rod handlers purchased from multiple manufacturers, improving the safe working environment of its employees.

Although these numbers are impressive, Major Drilling has refused to be satisfied with these efforts. Through its continuous improvement strategy, Major Drilling believes that all drills should have a rod handling option. Scouring the market for manufacturers' offerings, Major Drilling found that the available options proved deficient, failing our safety department's requirements of completely hands-free functionality.

We were at an impasse; Major Drilling is not traditionally a manufacturing company and the product we demand does not exist on the market. We had to consider our options, and we refused to accept incomplete solutions. Major Drilling acted in 2017.

In 2017, Major Drilling strategically invested in itself creating an innovation department tasked with analyzing current challenges, road-mapping the future of drilling, and developing products that will ensure our clients receive the best in market services. Developing a new solution for hands-free rod handling required agility, outside industry expertise, and needed to fit into the company's aspirations in automation.

OUR OBJECTIVES

Drawing on over 20 years of experience and the close relationships we have with key clients, we clearly outlined our objectives:

- Eliminate injuries related to the handling of steel on our jobs.
- Reduce the physical demands on employees, resulting in a diversified workforce.
- Make significant progress towards full automation of drilling.

FUNCTIONALITY REQUIREMENTS - FINAL PRODUCT

- Add/Remove 3m core barrel, rod, or casing from ground-to-chuck and chuck-to-ground with mainline and water swivel attached.
- Add/Remove 3m core barrel, rod or casing from ground-to-chuck and chuck-to-ground without mainline or water swivel attached.
- Add/Remove 3m core tube from rack-to-collar and collar-to-rack during drilling activities with head assembly and overshot attached.
- Add/Remove 6m core barrel, rod, or casing from ground-to-chuck and chuck-to-ground for bit change or break out.
- Allow for diverse site layout – rods stacked 3m wide in 3m or 6m lengths anywhere 220 degrees around the drill.
- Allow for rod pickup on unlevel ground.
- Capable of N, H, P rods, barrel, tube and casing.
- Adaptable to multiple rig models.
- Adaptable to both chuck drive and top drive models.



MECHANICAL REQUIREMENTS

- Minimize specialized parts.
- Common hydraulic components.
- No carbide rollers in contact with drill steel; extending rod life; minimizing down-hole tooling malfunction.
- No switch in tooling through common rod category (i.e.: HW casing, H rod, H core barrel, H tube with the same jaws).
- Safe human-machine interaction.
- Troubleshoot and repair with a current mechanical skill set.
- Capable of evolving into a fully automated system.

To gain a new perspective on an old problem, Major Drilling presented its requirements to a manufacturer not traditionally involved in drill manufacturing. The expertise gained in this decision, paired with Major Drilling's extensive experience on the subject, fueled the development of equipment considered state of the art, industry leading and finally, genuinely hands-free.

In spring 2019, Major Drilling's Trailblazer Hands-Free Handler was born into a conceptual prototype.

Currently, Major Drilling is working to provide a functional prototype and install it on a Sandvik 710 for stress and functionality testing.

In fall 2019, the product will be ready for field testing.

In early 2020, the first genuinely hands-free rod handler will be unveiled to its clients and made available to their sites worldwide.

