



FIRMTECH

FIRMTECH DRILLING EQUIPMENT

PDC Bit & Reamer | Hole Opener | Roller Cutter

FIRMTECH >>>>

Fouss On Rock Drilling Tools

FIRMTECH is a hole opener, roller cutter, PDC bit & reamer manufacturer, located in Hebei province, China.

The company was established in 2009 and positions itself as a leading expert in HDD rock drilling tools.

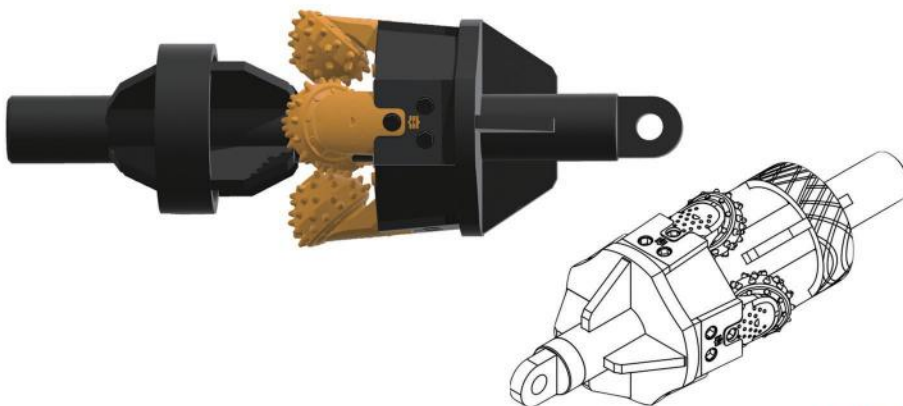
With years of dedicated work, the company earns its trust in both domestic and overseas markets. The company has a good reputation in Shenzhen, Guangzhou, and rapidly expands products and services in Europe, South Asia, and the Middle East.

"Deep knowledge of industry pain" is our core value. We believe our strength is from solving the customer's problem and challenges of application.

With deep industry understanding, the company develops a full range of hole openers, roller cutters, PDC bit & rock reamers, upgrades conventional oil & gas tools design, and brings into the HDD industry.



BOLT TYPE HOLE OPENER >>>>



PERFORMANCE FEATURE:

- Time saving, quick replaceable
- Higher penetration rate, more Tungsten Carbide Insert.
- Durable hole opener body, tungsten pads/hardfacing applied stabilizer

AVAILABLE SIZE:

14"-40"



Drillnova™ Hole Opener

Reliable Performance for HDD & Water Well Drilling



Specifications

- **Hole Opener Dia.:** 8" – 48"
- **Cutter Types:** welded & bolts type
- **Roller Sizes:** 5-7/8", 8-1/2", 9-7/8", 12-1/4", 13-5/8"
- **Thread:** API REG / IF / NC (2-7/8" to 6-5/8")

Select Cone Design



Chisel

60-110MPa
Medium-Hard



Conical

100-180MPa
Balanced Option



Spherical

150-280MPa
Ultra-Hard

Applications

Drillnova™ TCI Hole Opener is engineered for reliability and efficiency in tough drilling conditions, making it ideal for:

- **Horizontal Directional Drilling (HDD):** Utility pipeline installations, telecom & fiber optic conduits, trenchless crossings
- **Water Wells:** Deep and large-diameter boreholes, especially in mixed or hard rock formations
- **Microtunneling:** Designed for trenchless tunneling, our TCI Hole Opener works seamlessly with microtunneling systems to enlarge shafts and pilot holes for guided boring and pipe jacking.



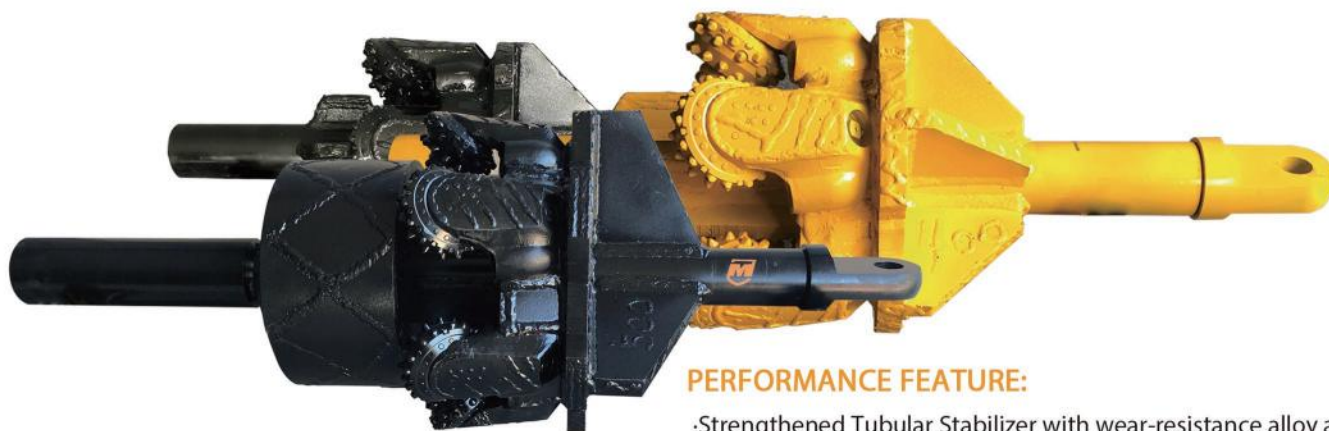
Bolts Type Cutter

- *Fast onsite cutter replacement with 3-bolt + lock-spring system*
- *Available in TCI chisel, conical, Spherical*
- *Adaptable to soft, medium, and hard formations*
- *No welding required — easy maintenance in*



| OD Size | Roller Bit Size Recommended | Rollers No. Recommended |
|---------|-----------------------------|-------------------------|
| 8" | 5-7/8" | 3 |
| 10" | 6" | 3 |
| 12" | 8-1/2" | 3 |
| 14" | 8-1/2" | 4 |
| 16" | 8-1/2" | 4 |
| 18" | 8-1/2" | 5 |
| 20" | 9-7/8" | 4 |
| 22" | 9-7/8" | 5 |
| 24" | 9-7/8" | 6 |
| 26" | 12-1/4" | 5 |
| 28" | 12-1/4" | 6 |
| 30" | 12-1/4" | 6 |
| 32" | 12-1/4" | 7 |
| 34" | 12-1/4" | 7 |
| 36" | 12-1/4" | 8 |
| 38" | 13-5/8" | 8 |
| 40" | 13-5/8" | 9 |

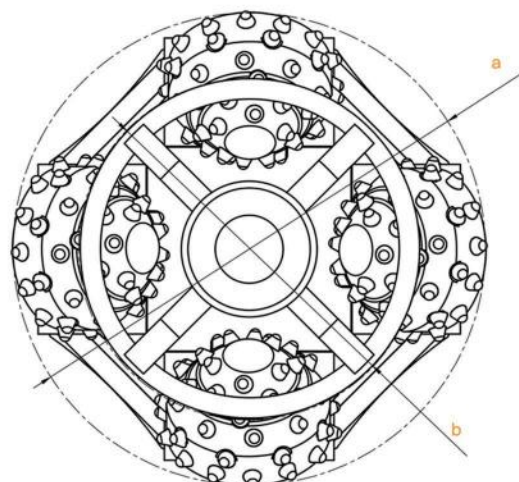
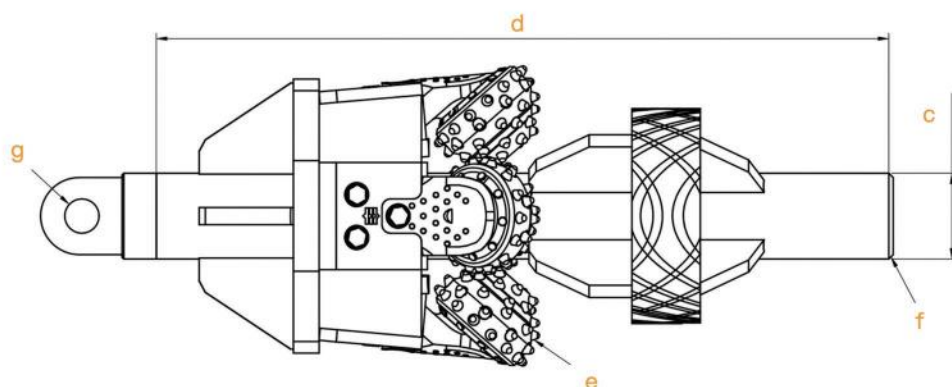
FIX CONE HOLE OPENER >>>



PERFORMANCE FEATURE:

- Strengthened Tubular Stabilizer with wear-resistance alloy applying.
- Journal bearing roller bit withstanding higher WOB.
- Auto-compensation grease system balance the inside and outside bearing pressure.
- The rear triangle plates supporting hole wall and easy to quite the hole.

- a. Diameter of hole opener
- b. Diameter of stabilizer
- c. OD of shaft
- d. Length of shaft
- e. Roller cutter
- f. Front thead
- g. Back pulling eyes



| | |
|--|--|
| 1. Diameter of hole opener(mm) | |
| 2. Diameter of stabilizer(mm) | |
| 3. OD of shaft(mm) | |
| 4. Length of shaft(mm) | |
| 5.Type of roller cutter | |
| 6. Quantity of roller cutter | |
| 7. Thread connection (pulling/ trailing) | |
| 8. WOB (KN) | |
| 9. RPM (r/min) | |
| 10 Applicable Formation | |
| Remarks: | |
| | |

Drillnova™ PDC Bit

Built for HDD & Mining | 2–4× Faster Penetration in Sandstone & Shale

Designed for aggressive performance in HDD and mining, Drillnova PDC bits cut faster, last longer, and steer better.

With fixed-cutter bodies and high-grade PDC cutters, they drill 2–4× faster in sandstone, shale, and limestone than traditional tricone bit— lowering cost per meter and reducing tool changes.

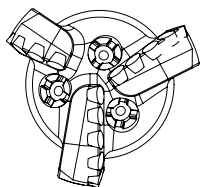
Applications:

- HDD pilot hole drilling
- Surface anchoring & Mining
- Water / Geothermal Well Drilling

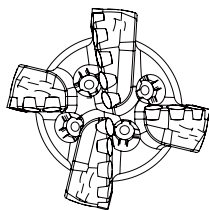


Why Choose Drillnova PDC Bits?

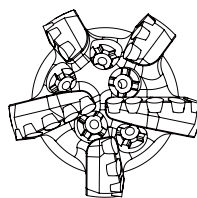
- *Optimized for HDD rigs* – Compatible with Vermeer, Ditch Witch, Tracto and others
- *Blade options* – 3 to 7-blade configurations



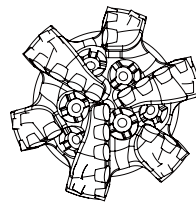
3-Blade



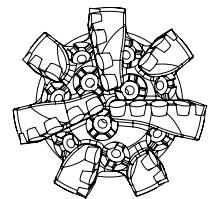
4-Blade



5-Blade



6-Blade



7-Blade

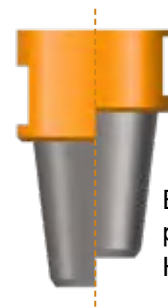
• *Durable cutters* – Cutter sizes 13mm, 16mm, 19mm, high-grade for extended life in abrasive formations

- *Hard-Facing*



- *40% higher carbide density*
- *Longer hours in abrasive formations*
- *Reduces Lost Cutters & Ring Out*

- *Compact short shank* – Enhanced directional control



Better steering
performance in
HDD rigs

Short Shank



ALWAYS ONE TURN AHEAD

Technical Parameters & Drilling Settings

Pouplar Spec. For HDD

| Size (in) | Cutter Size | Blade | Pin Connection | Rig Compatibility |
|-----------|-------------|-------|----------------|---|
| 5-1/2" | 1313 | 4/5 | 2-7/8" API Reg | JT2720AT/JT30AT/JT3020AT/D23x30DR S3/ACS130 |
| 6" | 1313 | 4/5 | 3-1/2" API Reg | JT4020/JT60AT/JT100AT/D36X50DR/18ACS/20ACS/ACS300 |
| 6-1/2" | 1313 | 4/5 | 3-1/2" API Reg | JT4020/JT60AT/JT100AT/D36X50DR/18ACS/20ACS/ACS300 |

Other sizes & API connections available upon request, **from 89mm to Maximum 700mm**

Recommended Weight & RPM Settings

| Size (in) | Blade | Thrust (ton) | RPM | Mud Flow (L/min) | Typical Ground |
|-----------|-------|--------------|---------|------------------|--------------------------|
| 5-1/2" | 4 | Up to 4 | 200-280 | 70-90 | Clay, soft sandstone |
| 6-1/2" | 5 | Up to 4 | 200-280 | 70-90 | Medium sandstone, shells |

Additional Notes from Field for using PDC bit:

- 200–300 RPM for most HDD rigs
- Torque monitoring is essential – if torque spikes & ROP drops → rock too hard → stop
- 4-blade bit, Very aggressive on hard clay / soft rock, 6-blade is slower, smaller chips – not ideal in tough rock for HDD
- PDC not recommended for granite, quartzite, high-silica ironstone or very hard basalt– use roller bits in those cases

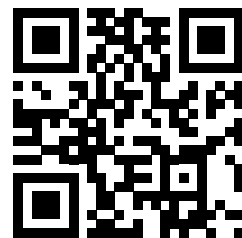
Field Tested in Australia

“We used Drillnova 4-blade PDC bit for hard clay and sandstone. Penetration rate was 5–8 mins per 3 meters with smooth torque. Very aggressive cut and stable mud return.”

— Directional Driller, QLD, Australia



Have Questions ?
Talk directly with our
drilling engineer.



Drillnova™ PDC Reamer

Fast Penetration. Simple Maintenance. Strong Performance

Drillnova™ PDC Reamers are engineered for performance in challenging formations. Compared to traditional roller cone reamers, our PDC design provides:

- Faster penetration in medium hard formations – thanks to ultra-tough polycrystalline diamond cutters.
- Lower maintenance costs – no moving parts, fewer failure points.
- Longer tool life – premium-grade steel body with optimized wear protection.
- **Custom fit for any HDD project**



| Specification | Details |
|---------------------|--|
| Size Range | 8" to 36" |
| Blade Count Options | 3 / 4 / 5 / 6 / 7 (More blades = more stability) |
| Cutter Sizes | 13 mm, 16 mm, 19 mm (Choose based on formation hardness) |
| Cutter Layout | Single-row / Double-row |
| Structure | Solid-body or replaceable blade type |
| Material | AISI 4145H heat-treated alloy steel |
| Jetting Options | Jet ports available for fluid circulation |
| Connection Type | API REG, IF and Custom thread (your choice) |

Replaceable Blade Design

Minimize Downtime. Maximize Productivity. Our bolt-on blade system enables quick replacement with basic hand tools – no need to send the body back to the factory.

- *Swap blades in minutes on site*
- *Compatible with multiple cutter sizes*
- *Reduces inventory cost and extends tool life*



Recommended Drilling Practice

To extend reamer life and improve drilling efficiency, we recommend staged reaming when enlarging boreholes.

- 4" to 6" steps are ideal
- Use 3–5 blade designs for small sizes
- Use 6–7 blade designs for large sizes for better stabilization

Drill smarter, not harder. Let the tool do the work while reducing wear and tear.



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