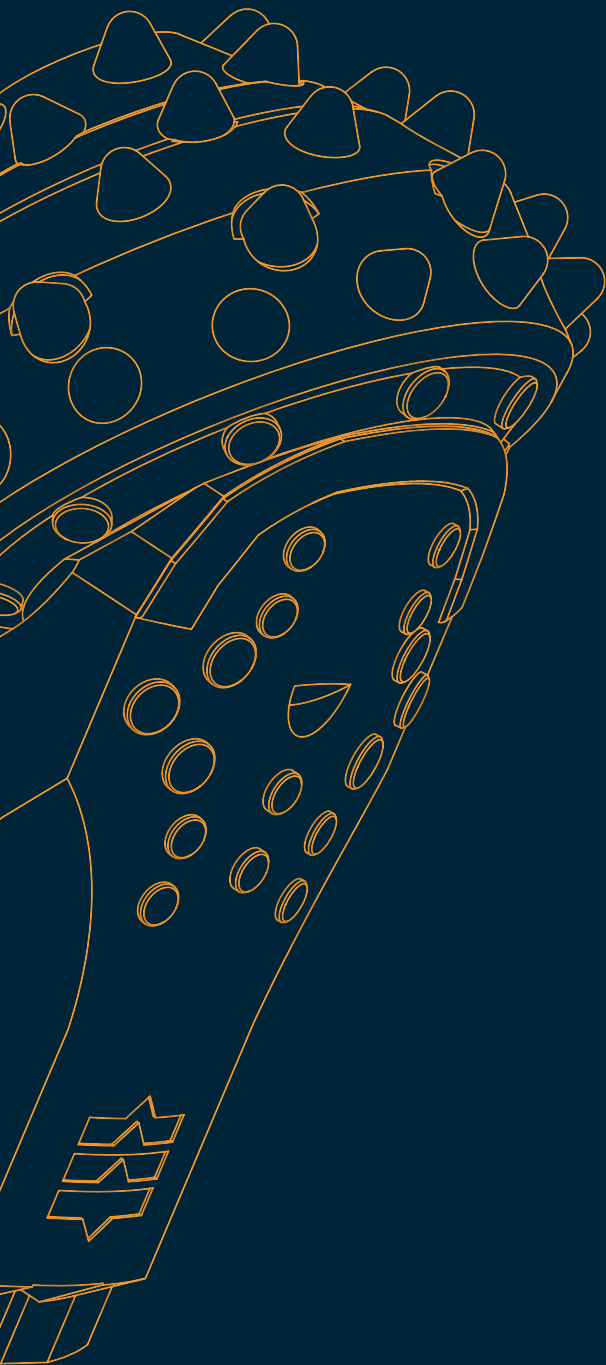




ROLLER BIT | CUTTING SYSTEMS



www.drillnova.com

DRILLNOVA

Welcome to DRILLNOVA

Drillnova, a FIRMTECH brand based in Hebei, China, develops and manufactures roller bits and round shank chisels for foundation piling, mining, and HDD applications. Building on FIRMTECH's field experience, we focus on reliable cutting structures, consistent production quality, and practical on-site support.

Supported by manufacturing and service resources in China, we serve customers across Europe, South Asia, and the Middle East. Our goal is to improve drilling efficiency, reduce tool-related downtime, and help customers control the cost per drilled metre.

From product selection to application support, Drillnova works as a long-term drilling solutions partner—helping customers stay Always One Turn Ahead.

2009

— Opened a branch office in Dubai and began supplying PDC and TCI bits to the Chinese water-well drilling market.

2015

Upgraded the production line and expanded into roller bits for foundation drilling.

2023

— Established an in-house production line for round shank chisels.

2024

— Launched Drillnova to provide one-stop drilling tool solutions.

Your Trusted Partner On-Site



ROLLER BIT MH-3

PREMIUM TYPE

Full-Coverage 52-Insert Layout

Ensures optimal rock contact for higher penetration and extended working life, boosting overall field performance.

Wear-Resistant Alloy Bearings

Bearings coated with a high-durability alloy, providing longer service life and stable performance - even under harsh drilling conditions.

Real-world tests show an average depth increase from 35 m to 45 m per run.

Beyond standard O-ring seals, we add a protective layer using high-precision machinery. This design shields the O-ring from cutting wear, further extending the bit's overall lifespan.



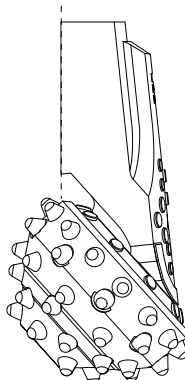
3rd Generation Cone



4th Generation Body

Preloaded Welding Angle

Specially engineered for piling operations, each leg arrives preset with the optimal welding angle. No measuring or adjustments needed—just place it on the cutting ring.



Vacuum Grease System

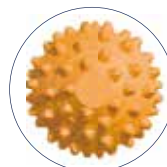
Upgraded lubrication system outperforms traditional methods, optimizing grease flow and effectively reducing heat from friction.

"This design innovation has simplified our daily workflow, allowing us to focus on productivity rather than tedious angle checks."

— On-Site Feedback

Select Cone Design

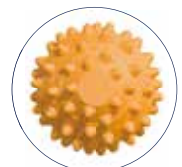
3rd Generation



Chisel
60-110MPa
Medium-Hard



Conical
100-180MPa
Balanced Option



Spherical
150-280MPa
Ultra-Hard

Faster, More Accurate Welding

Field feedback indicates up to 20% faster setup, with fewer alignment errors in both workshop and on-site operations.

DESIGN EVOLUTION

Continuous innovation for better penetration, simpler welding, and stronger durability

Cone Generation

Smarter Insert Layouts, Better Penetration



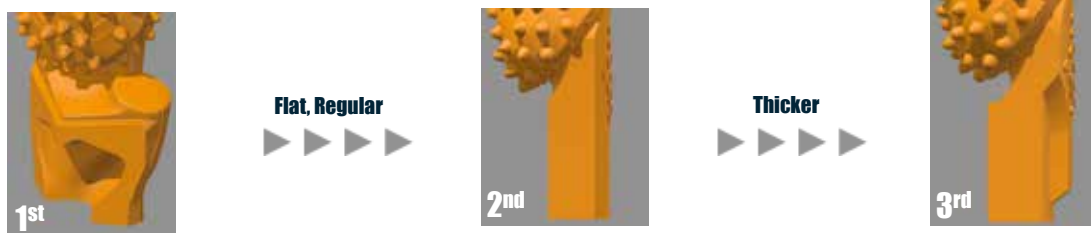
- **Tricone Bit Structure** (OD 118mm)
- **Limited Inserts** → Low penetration rate
- **Blind grooves** → Basic layout, less durability

- **Piling Bit Structure** (OD 118mm)
- **Increased Inserts** → Reduced blind spots, better cutting contact
- **Challenges** → Medium penetration, still room for improvement

- **Full Coverage Inserts** (OD 120mm)
- **No Blind Spot** → Maximized penetration, longer lifespan
- **Field Result** → Improved drilling efficiency in field use

Body Generation

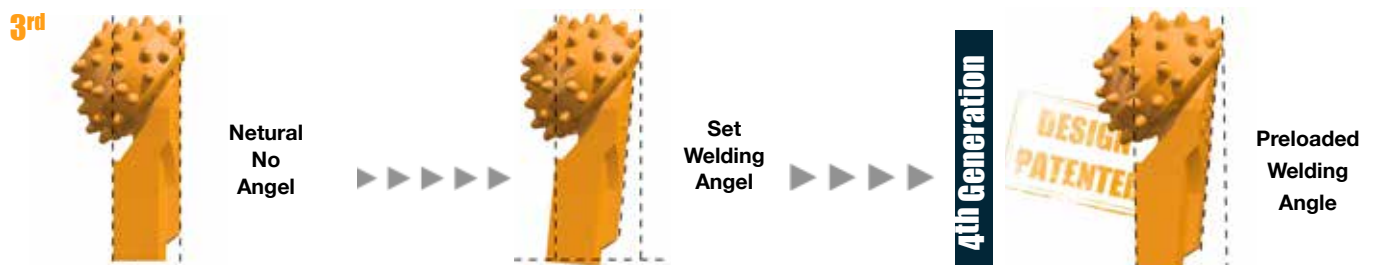
Refining shape & welding angles for robust performance



- **Shape:** Irregular 120° & nozzle segment
- **Challenges:**
 - Difficult welding & positioning
 - Risk of heat damage when cutting nozzle

- **Shape:** Flat, regular body
- **Advantages:** Fast welding to cutting ring
- **Challenges:** Reduced strength due to thinner body

- **Shape:** Flat & thicker body
- **Advantages:** Better drilling weight tolerance
- **Challenges:** Manual angle alignment still needed



- Automatic alignment
- Higher load capacity
- +20% Faster welding

DRILLNOVA - ALWAYS ONE TURN AHEAD

ROLLER BIT DATA SHEET

DRILLNOVA offers multiple Roller Bit models to tackle varied formations



MH-1
Entry-level



MH-2
Traditional



MH-3
Flagship



MH-3C
Quick-Change Holder



MH-3B
Qui-Change Bolts



MH-3H
Large Pile Dia.

Model	Cone Generation	Cone (Teeth Dia.×Qty-Dia.)	Body Type	Connect	Selection Advice
MH-1	2 nd	13×45-132	4 th	Welding	Smaller piles / moderate rock; cost-effective in construction
MH-2	3 rd	14×52-139	1 st	Welding	Widely used in oil & gas; stable penetration in medium-hard formations
MH-3	3 rd	14×52-139	4 th	Welding	For tough, abrasive rock; +20% faster drilling in field tests
MH-3H	3 rd	17×74-191	4 th	Welding	Large-diameter boreholes (OD> 2000 mm); robust torque capacity
MH-3C	3 rd	14×52-139	Holder	Qui-Change	Holder-based quick-change; easy on-site swaps, minimal downtime
MH-3B	3 rd	14×52-139	Bolts	Qui-Change	Bolt-type quick replacement; extra stability for specialized core barrels

* Material available on request

* All models come standard with Journal bearing, Double sealing, and a Vacuum grease system.



ROUND SHANK CHISEL

Bullet Teeth

Ultra-Coarse-Grain Tungsten Carbide

DRILLNOVA round shank chisel features top-grade, Ultra-coarse tungsten carbide, offering superior heat transfer capabilities. Even in hard and highly abrasive formations, the inserts effectively maintain a relatively low temperature, ensuring exceptional performance and durability.

Precision-Controlled Brazing

DRILLNOVA utilizes state-of-the-art automated induction brazing for the production of bullet teeth. The advanced welding system ensures precise control of brazing temperatures, maintaining a strict tolerance of $\pm 10^{\circ}\text{C}$. By seamlessly combining brazing and heat treatment into a single, efficient heating process, it effectively reduces decarburization and enhances the overall quality and durability of the product.

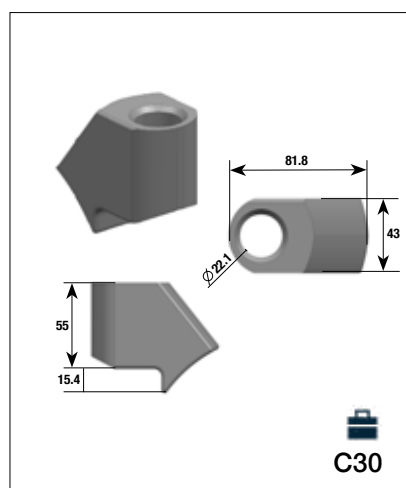
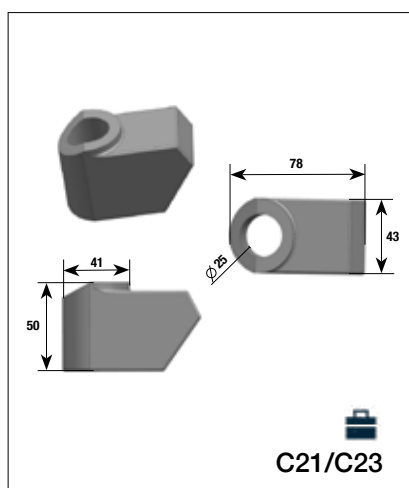
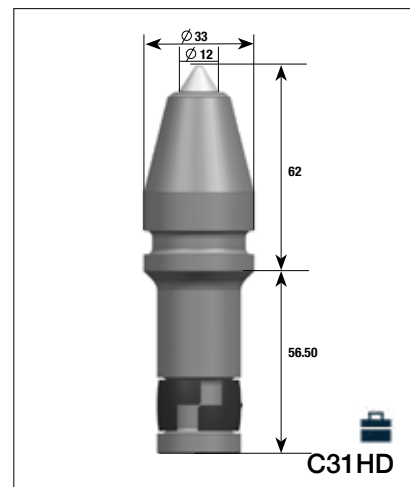
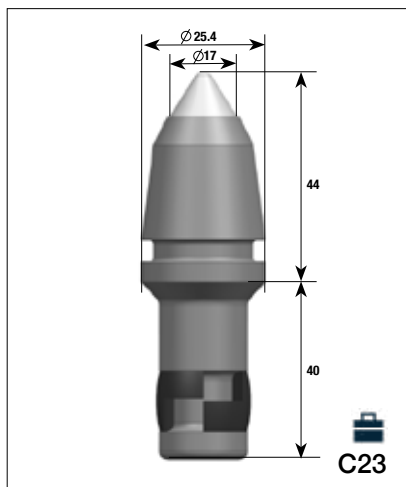
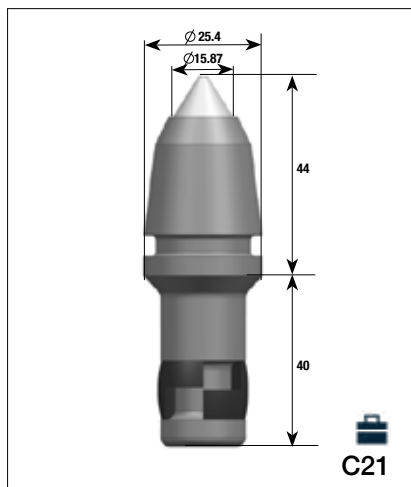
Superior Wear-Resistant Body

Crafted from advanced wear-resistant materials and refined through low-temperature forging, the body achieves exceptional surface hardness while preserving internal toughness.

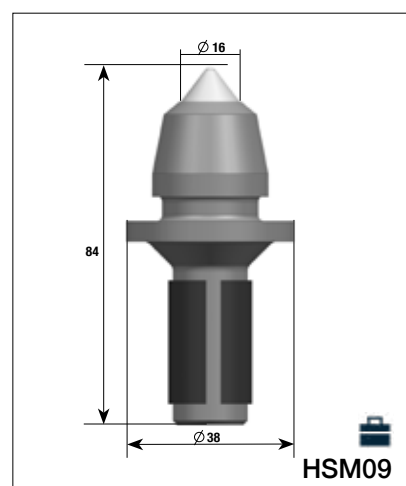
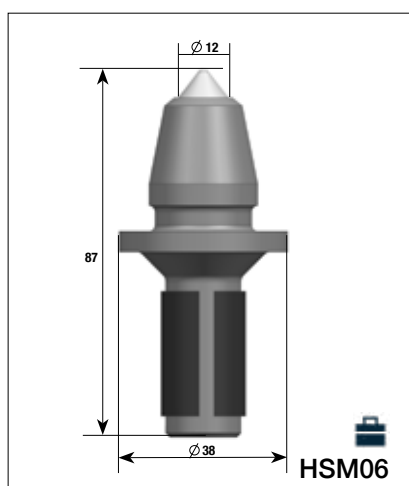


SPECIFICATION

Round Shank Chisels

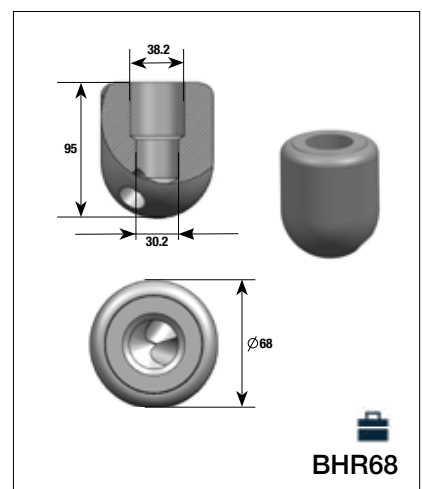
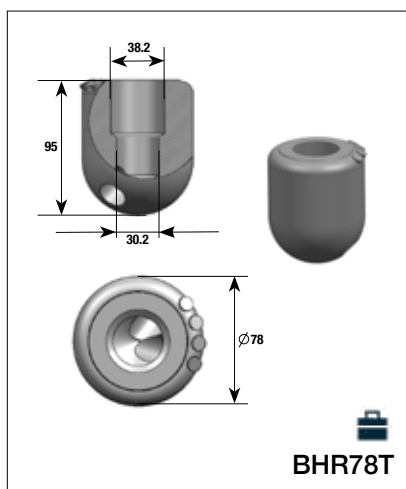
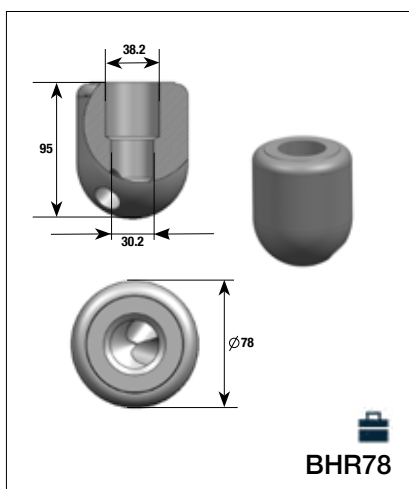
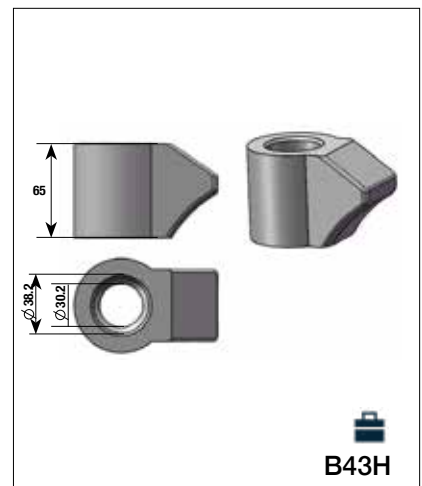
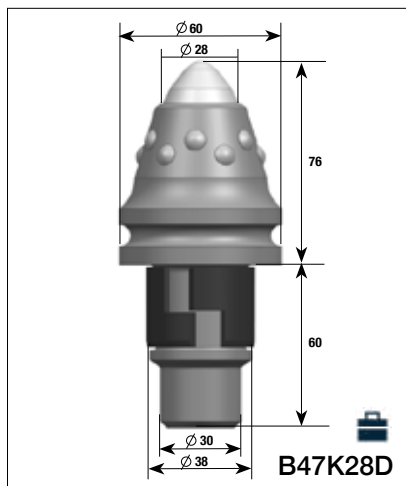
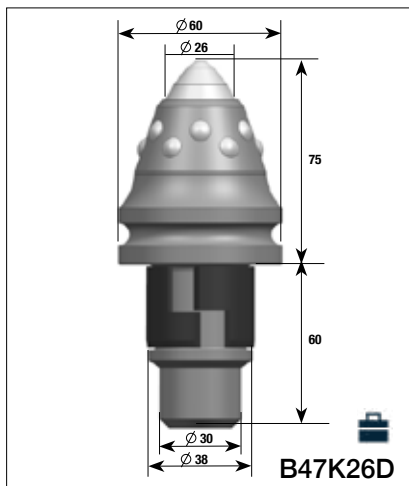
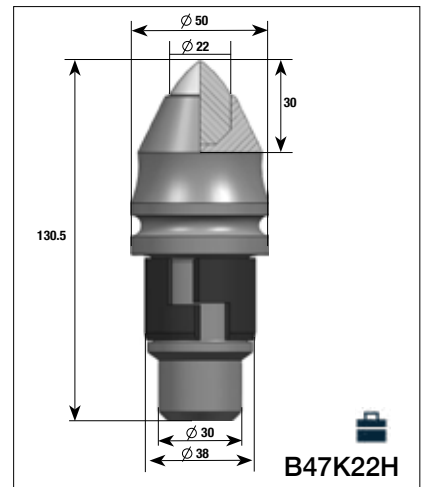
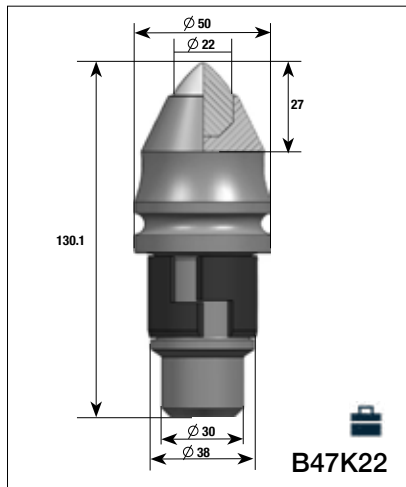
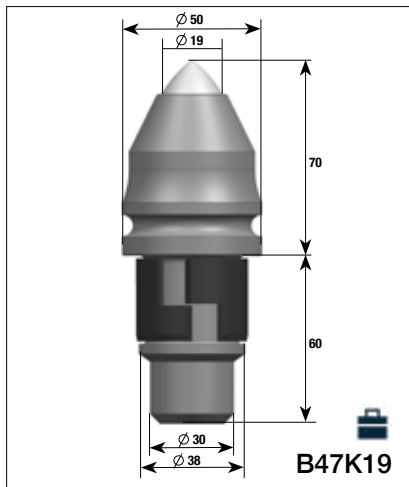


SM Series



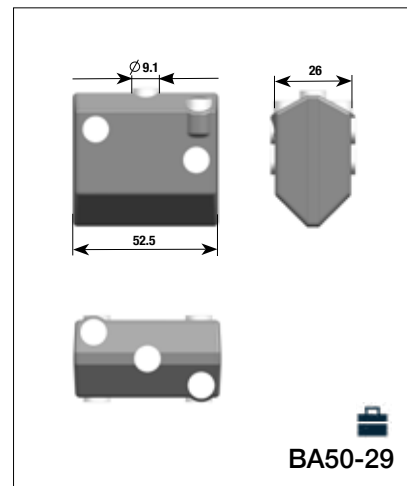
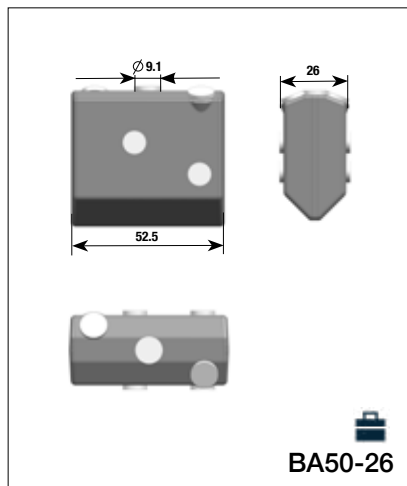
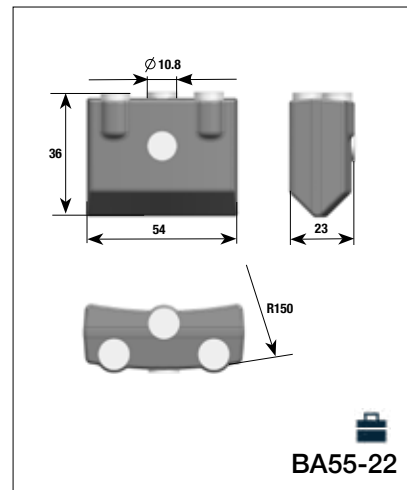
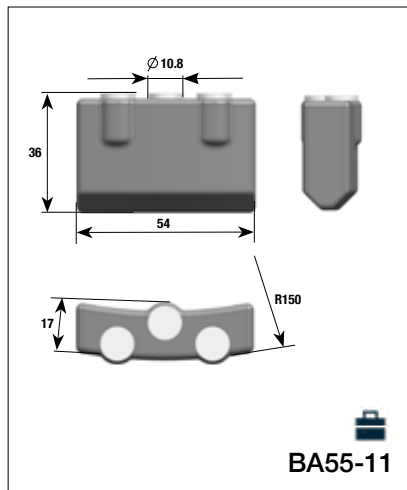
All dimensions are in mm unless otherwise specified.

B47 Series

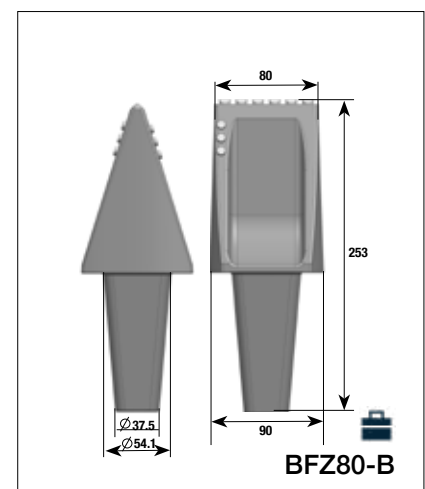
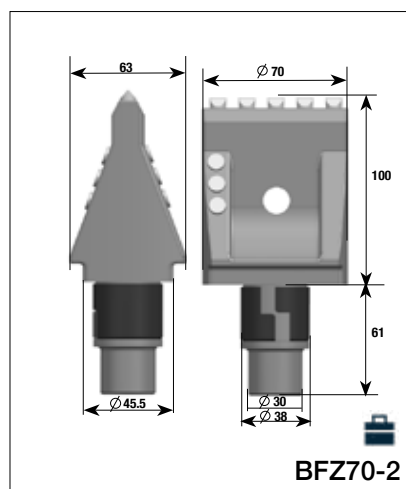
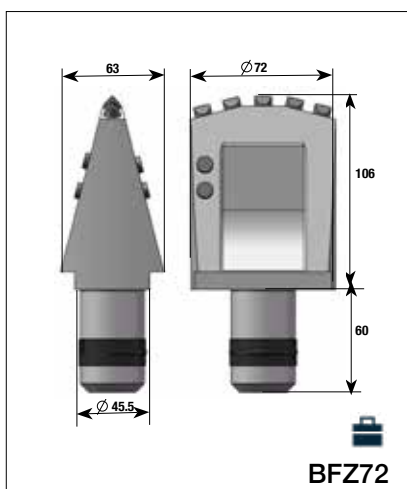


All dimensions are in mm unless otherwise specified.

Weld-On Wear Bars

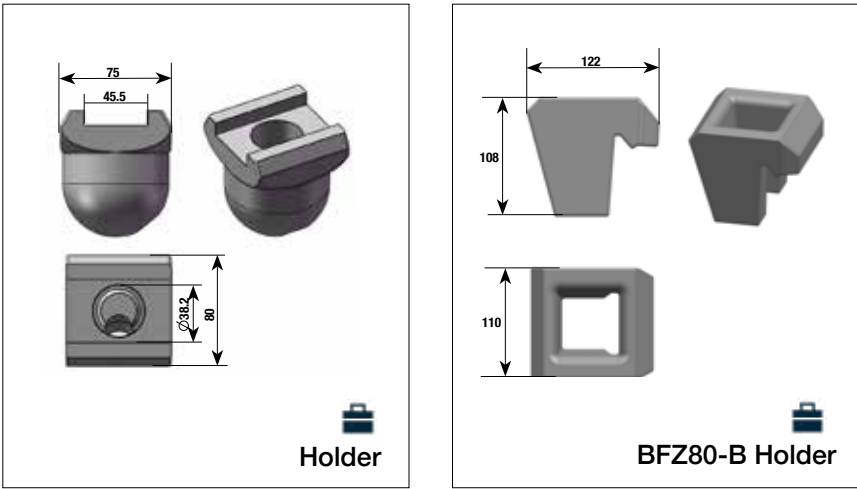


Flat Cutting Teeth

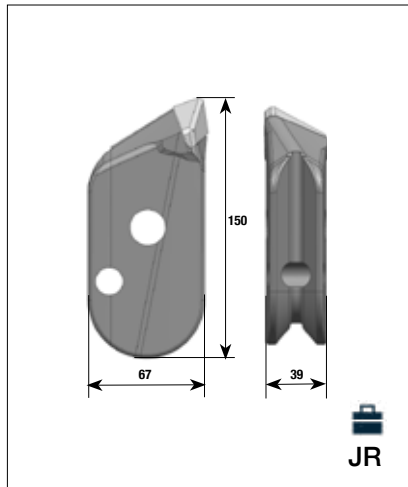
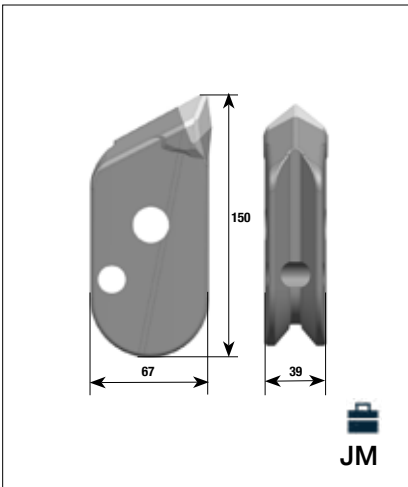
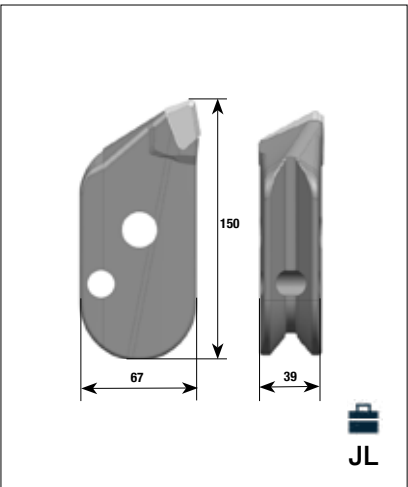
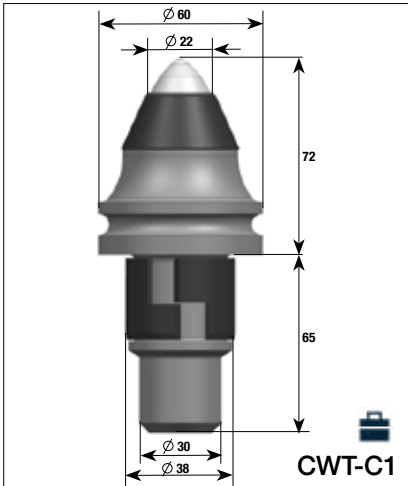
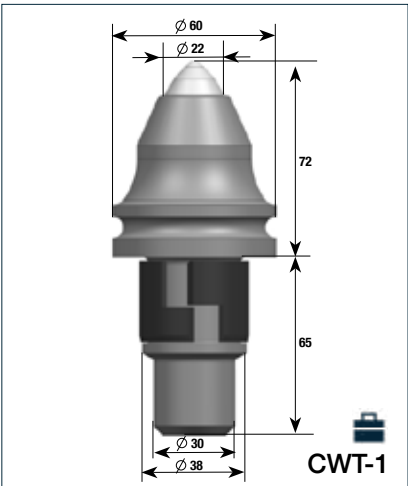
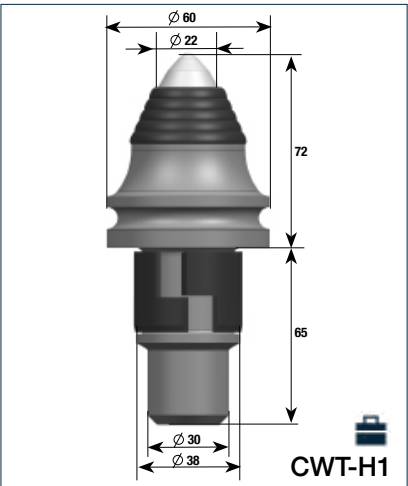


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Holders

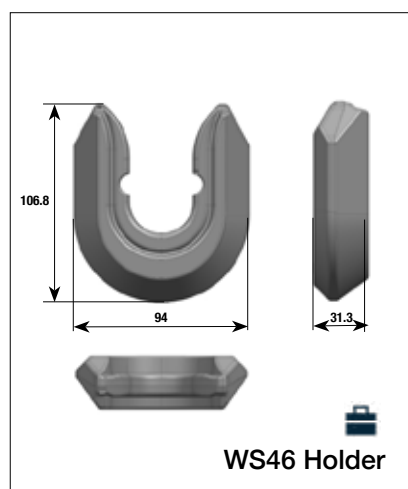
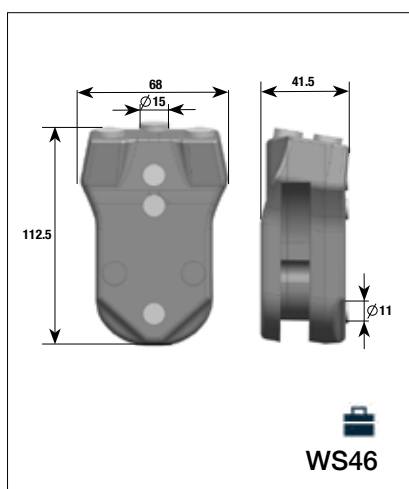
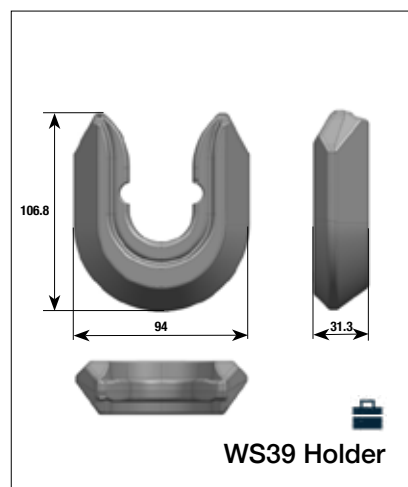
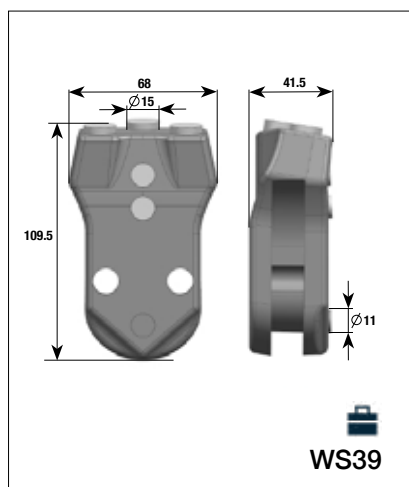


Trench Cutter Teeth

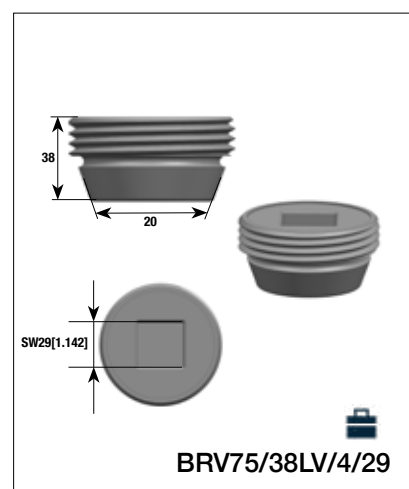
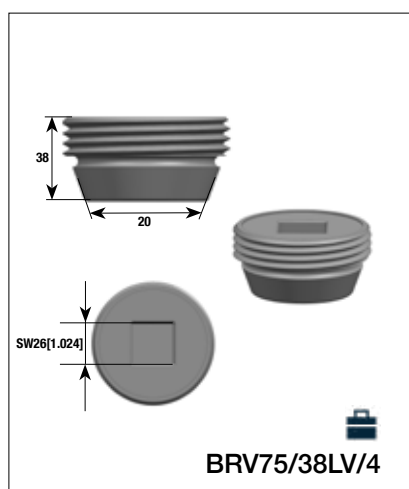
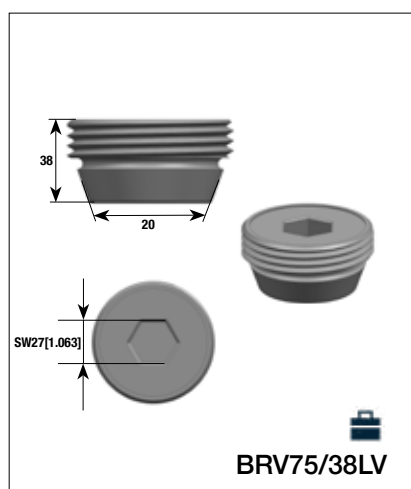


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Casing System

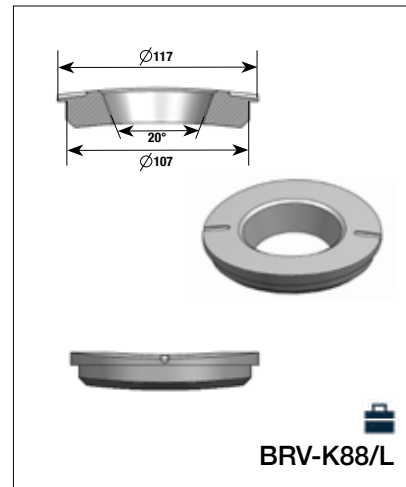
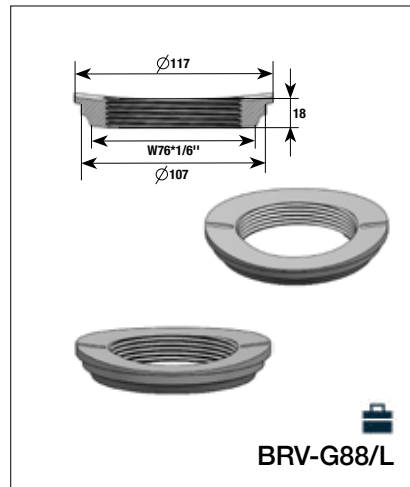


Casing Accessories

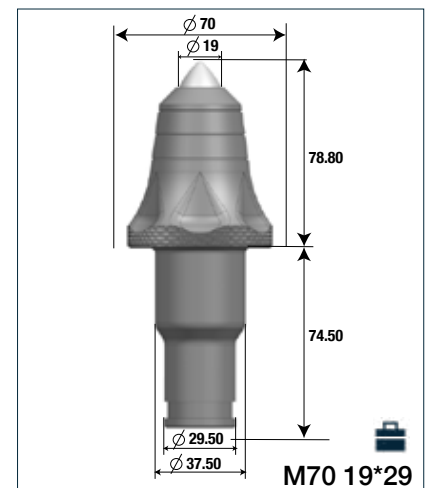
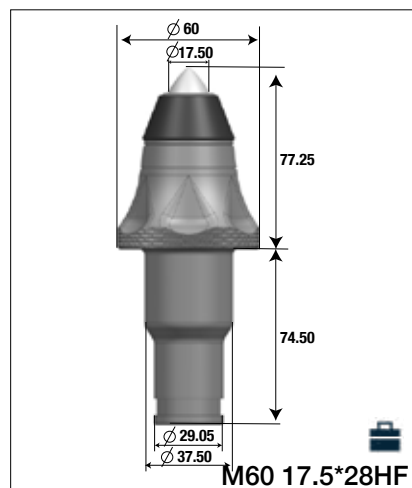
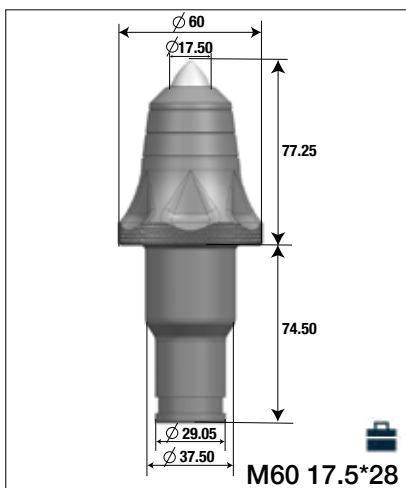


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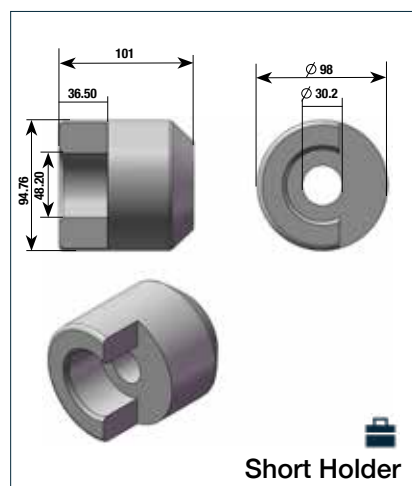
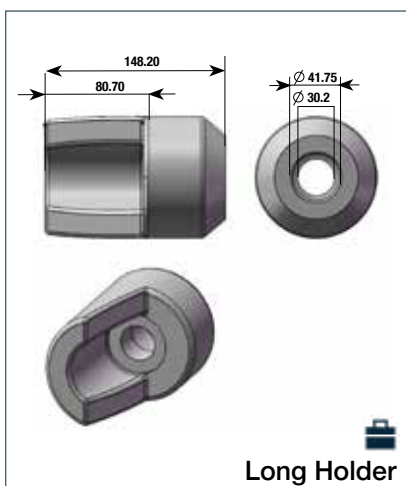
Casing Accessories



Mining Teeth



Pilot Teeth



FIELD APPLICATIONS



TianGui Intercity Railway, China

Tools: RSC CWT-1

Time: Dec. 2023

Location: Guangzhou, China

Company: Guangzhou Shenda Construction

Formation: Granite, UCS 100 MPa+

Shenzhen, Guangdong, China

Tool: MH-3C roller bit

Location: Shenzhen, Guangdong, China

Application: 1.5 m and 1.8 m core barrels

Formation: Granite

Result: One new set of roller bits completed approximately 35 m of rock socket drilling.



D'Erica @ Ctr Park D'sara, Malaysia

Tools: MH-3H Roller Bit

Time: May 2023

Location: Malaysia

Company: Geotechnical Alliance (a subsidiary of Soletanche Bachy)

Formation: Granite

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data

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Version 3.0

