

Holeopeners

The Mills Machine holeopener is used **to enlarge or ream an existing pilot hole** or can be run above a pilot bit to **simultaneously drill and enlarge a hole**. These rugged tools are built for the toughest drilling applications.

The use of holeopeners has gone from an optional operation to standard practice for most drillers. There are several advantages described on the reverse side of this page. The prime reasons for using holeopeners are **economy, accuracy, speed and flexibility of size**. With **over forty-five years of experience** Mills Machine can design and manufacture the exact tool for your individual requirements.

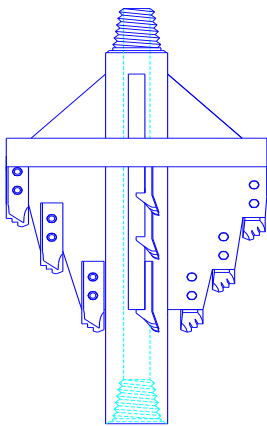
Fabricated Roller Cone (see Rotary Holeopeners, in this catalog)

Fixed Arm Roller Cone (see Rotary Holeopeners, in this catalog)

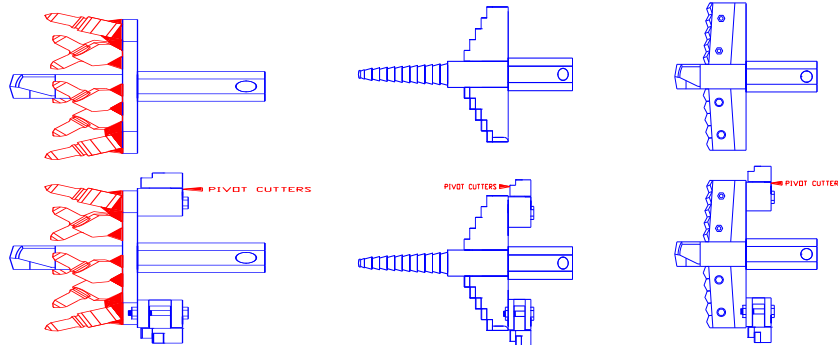
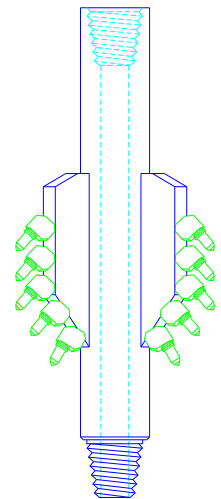
Drag Bit, fixed and replaceable blade (see Rotary Drag Bit in this catalog)

Claw Bit (see Rotary Claw Bit in this catalog)

Holeopeners or **Roller Back Reamers** are available for **Horizontal Road Boring** or **Horizontal Directional Drilling** applications. Configurations include roller cone, drag (blade) type or claw (bullet) type in any size and with any connection. These rugged units are manufactured with a reverse pitch on the cutters for pulling back through the pilot hole.



We also manufacture a line of **Free Bore** and **Casing Push** bits for the Horizontal road Boring market. Configurations include roller cone, drag (blade) type or claw (bullet) type in any size and with any hex connection. The **Roller Cone** type features a special **Positive Cam Lock Design** for pushing casing as you drill. This type of bit is made to cut very **hard rock** formations. **Blade and Bullet** configurations are offered with a flip out cutters for **soft to medium** formations.



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Advantages of Hole Openers

1. Cost and availability of large tricone rock bits.

Large diameter rock bits are expensive and difficult to find compared to the economy of Holeopeners using smaller rock bit segments.

2. Large diameter holes with small rigs.

Large holes can be drilled with smaller rigs by opening the hole up in stages. A smaller hole requires less power.

3. Straighter hole.

Drill a straighter hole by drilling a pilot hole then attaching the pilot bit to the bottom of a holeopener, which will follow the existing hole. A pilot hole will normally be straighter because the smaller the hole the straighter the hole.

4. Cutter replacement.

To extend the initial cost investment of a Holeopener, the cutters on most any design can be replaced. Bolt-on drag bit and claw holeopeners can be replaced in the field. Fixed blade and roller cone holeopeners may require factory replacement.

5. Sizes and formations available.

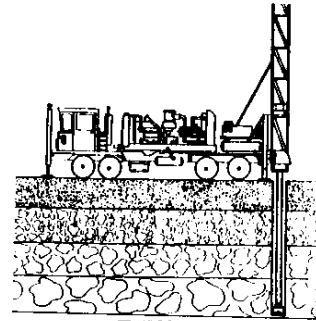
Holeopeners can be manufactured in any size and made to drill any formation from soft clay to hard granite.

6. Surface casing and starter holes.

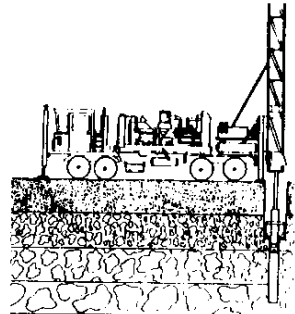
Holeopeners provide a convenient way to drill larger diameter holes for setting surface casing and shallow starter holes.

7. New jobs.

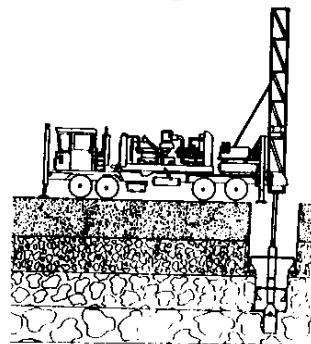
With the capability of drilling larger diameter holes, several job markets could open up. For example: mining air shafts, elevator holes, power line holes, municipal water wells, foundation holes and mouse or rat holes for drill pipe storage.



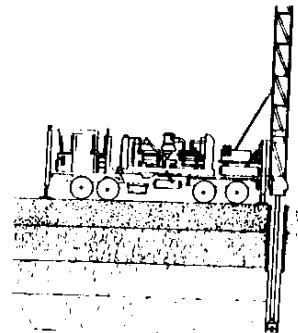
Drill Pilot Hole



Enlarge Hole



Either Enlarge Hole Further



Or Set Casing and Finish Hole

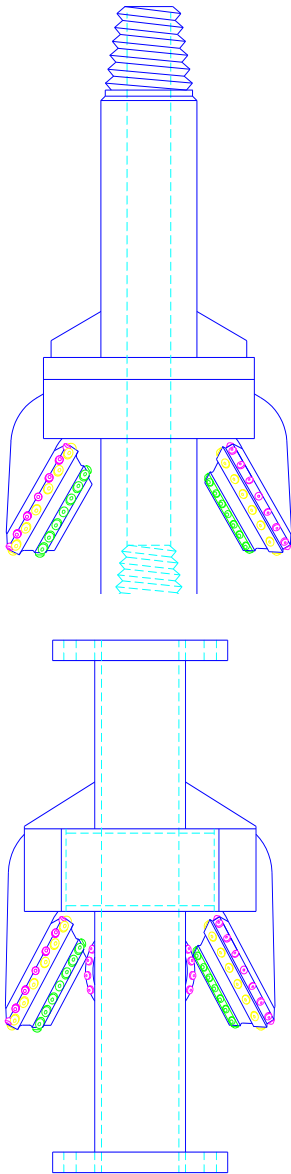
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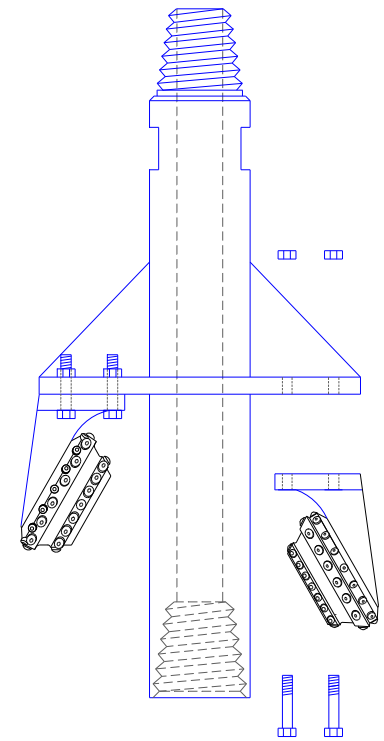
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Fabricated Roller Cone Holeopener

Mills Machine has been manufacturing **Split Bit Type Roller Cone Holeopeners** for over **45 years**. These ruggedly constructed, high-quality units are made from **4142 heat treated alloy steel** and split roller rock bit cutters. Each holeopener is custom manufactured for your specific application.



- Sizes Range from 5 1/2 to 118.
- One, Two or Multiple Stage Designs.
- Regular or Reverse and Air or Fluid Circulation as shown at left
- Any Thread or Flange Size
- Steel Tooth or TCI Button in New, Retip or Rerun Condition
- Soft, Medium or Hard Formation Cutters.
- Extended Top or Bottom Neck with Flats
- Fabricated Fixed Cutter or Bolt on Cutter Design
- Blade and Bullet Cutter Designs are available



Please use the **questionnaire** for the roller cone holeopeners on the next page.

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Application Questionnaire Fabricated Roller Cone Holeopener

Company _____

Phone _____

Address _____

Fax _____

City, State Zip _____

Contact _____

****Quantity:** _____ ****Hole Size** _____

****Pilot Diameter** _____ Pilot Bit Type _____

Cutters **Bearing**:** **Conventional** **Sealed**

****Steel Tooth Cones** **New** **Retip**

Formation: Soft Med. Soft , Medium ,
 Med. Hard , Hard

OR ****TCI Button Bit Cones** **New** **Rerun**

Formation: 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9

****Top Connection:** _____ **Pin** **Box**

****Bottom Connection:** _____ **Pin** **Box**

**** Must fill out these items. Fill out more if possible
or custom product requested.**

Number of Stages _____ Length: S to S _____ OR Overall _____

Is Holeopener Going Inside of Casing? Yes No

 Casing ID _____

Top Neck Dimensions: OD _____ ID _____ Length _____

 Knurled

Bottom Neck Dimensions: OD _____ ID _____ Length _____

Breakout

Flats: Two Sided Four Sided

 Special _____

 Flat Length _____ Location _____

 Dimensions: Flat to Flat _____ OR Depth per Side _____

 Location _____

Float Valve: Bore Only Install: Customer Furnished Mills Furnished

 Brand _____ Model & Size _____

Special Requirements: _____

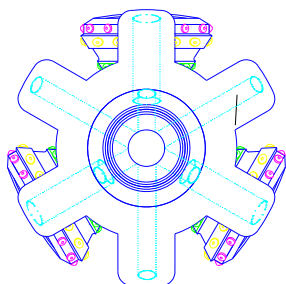
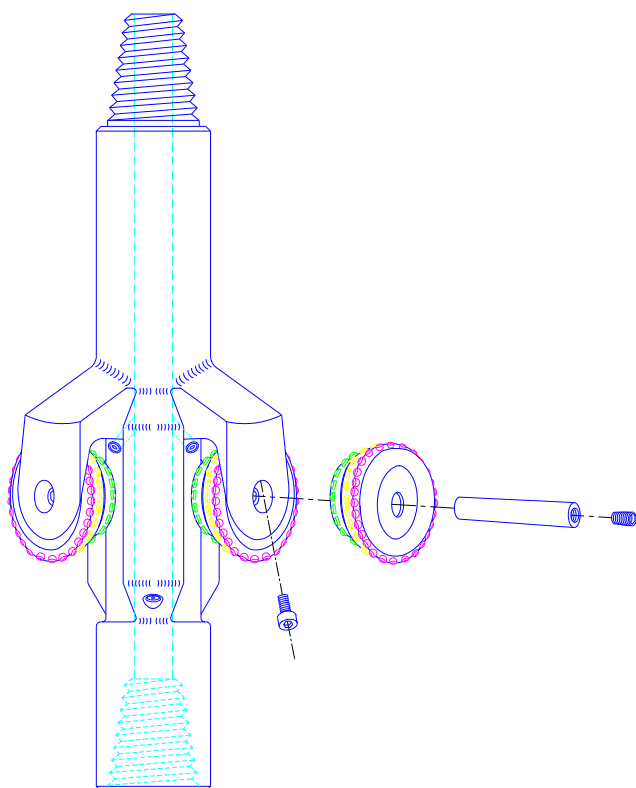
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Mills Machine Company has been a manufacturing fabricated cutter (split bit) holeopeners for over **45 years**. In 1994 we started working with some companies in Louisiana to secure prints and specifications to build oil field type holeopeners with demountable roller cones. These Holeopeners are manufactured from a solid piece of 4142 heat-treated alloy steel and the arms are fabricated into the body. The roller cones are held in place by sliding the cutter journal into a cam lock slot and then a load pin is inserted through the journal to hold the cutter in place. These rugged Holeopeners feature cutters that are interchangeable with one of the most popular name brand Oil Field Holeopener Manufacturers.



TOP VIEW

Fixed Arm roller cone holeopeners range in size from 10 5/8 to 26 diameter. We offer **open or sealed bearing** construction with **Steel Teeth or TCI Buttons** in **soft, medium and hard formations**. The bit is available in a **Single or Double Stage** design depending on the pilot hole and enlarged hole size. The Holeopeners are available with either 3 or 6 jets. We are one of the very few manufacturers that have ever made a Two Stage Holeopener in this design.

The cutters are **field replaceable** and can be disassembled to replace the bearings and seals. Steel tooth cutters can be retipped to **extend the life** of the cutter.

The top connection includes breakout flats or extended fishing neck. The bottom connection will be made to fit your pilot bit. We can also, furnish a bull nose to guide the holeopener.

Please use the **questionnaire** for the fixed arm roller holeopeners with replaceable cutters on the next page.

Application Questionnaire

Fixed Arm Roller Cone Holeopener with Replaceable Cutters

Company _____ Phone _____
 Address _____ Fax _____
 City, State Zip _____ Contact _____

****Quantity:** _____ **Hole Size** _____

****Pilot Diameter** _____ **Pilot Bit Type** _____

Cutters: Bearing:** Conventional Sealed

****Steel Tooth Cutters**

Formation: Soft , Med. Soft , Medium ,
 Med. Hard , Hard

OR **TCI Button Bit Cutters ▾

Formation: 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9

****Top Connection:** _____ Pin Box

****Bottom Connection:** _____ Pin Box

**** Must fill out these items. Fill out more if possible
 or custom product requested.**

Is Holeopener Going Inside of Casing? Yes No

Casing ID _____

Number of Stages _____ Length: S to S _____ OR Overall _____

Top Neck Dimensions: OD _____ ID _____ Length _____

Knurled

Bottom Neck Dimensions: OD _____ ID _____ Length _____

Breakout

Flats: Two Sided Four Sided

Special _____

Flat Length _____ Location _____

Dimensions: Flat to Flat _____ OR Depth per Side _____

Location _____

Float Valve: Bore Only ▾ Install: Customer Furnished ▾ Mills Furnished ▾

Brand _____ Model & Size _____

Special Requirements: _____

Sketch:

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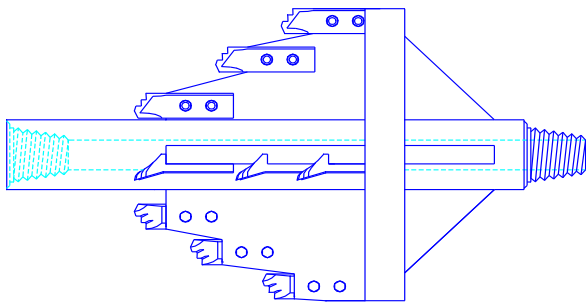
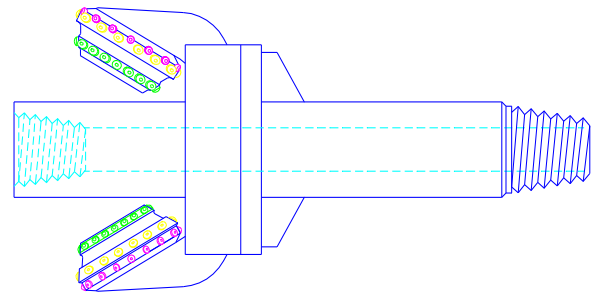
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Roller Cone Horizontal Holeopeners.

Mills Machine has **forty years of experience** behind our full line of horizontal roller holeopeners available in sizes from 6 to 120 (150 mm to 3 Meters) and larger. We manufacture the larger holeopeners to meet your specific design. These ruggedly constructed units are made from **4142 alloy steel** and the rock bit cutters of your choice.

The horizontal holeopeners can be single stage, two stage or multiple stage depending on the pilot hole and the enlarged hole size. The lead and trailing necks can be as long or short as you desire with breakout flats or lugs as needed. Circulation can be standard or reverse for horizontal or raised bore drilling. Circulation can also be fluid or air depending on your rig capabilities.

Roller cone, horizontal holeopeners are made from rock bits designed for the specific formation. Available are steel tooth or TCI button bits in new, retip or rerun condition.



Drag Type Horizontal Holeopeners

Mills also manufactures large drag holeopeners for horizontal drilling using step tooth or digger tooth construction or a combination of teeth and bits. Used in soft to medium formations, the sizes start where the standard catalog sizes leave off and are, again, designed for your specific needs. We have manufactured units with drag teeth on the working end and bullet claw bits on the reverse side in case of cave-in.

Bullet Type Horizontal Holeopeners

Replaceable bullet cutters give longer life for the cutter head body and ease of use for the driller. These holeopeners are meant for use in clay or medium shale rock (up to 6000 psi rock) and are available in sizes 6 inches to 10 feet in diameter and their corresponding metric dimensions.

The only limit on our capabilities is your imagination. Working together, we can solve the tough problems.

